

**Alnico Gen 2 RAID Subsystem  
3 Series ( AN-312 / AN-316)  
Hardware Installation Guide  
Ver. 1.0**

**2011/10/10**

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## Regulatory information



### For Europe

This drive is in conformity with the EMC directive.



### 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 circuit 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 Hardware 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**

### Caution

---

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

---

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**NOTE**

### Note

---

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

---

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

Screen text is given in **screen** font.

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SPECIFICATIONS.....25

# Chapter 1. INTRODUCTION

This chapter introduces the features and capabilities of Alnico RAID subsystems.

You will find:

- ⇒ A full introduction to your Alnico RAID subsystem.
- ⇒ Details of key features and supplied accessories.

## Model Variations

There are nine available models in Alnico RAID storage subsystem series, three of them utilize Ultra320 SCSI as Host interface, each with 8, 12 or 16 device bays. Another three models support 4Gb FC via SFP connector, then rest of three models provide SAS for Host connecting :

<b>Model Name</b>	<b>Host Interface</b>	<b>Device bays</b>
AN-308SC	2 x Ultra320 SCSI	8 bays
AN-308F4	2 x 4Gbps FC	8 bays
AN-308S3	2 x MiniSAS Connectors (2 x 3Gb Links per connector)	8 bays
AN-312SC	2 x Ultra320 SCSI	12 bays
AN-312F4	2 x 4Gbps FC	12 bays
AN-312S3	2 x MiniSAS Connectors (2 x 3Gb Links per controller)	12 bays
AN-316SC	2 x Ultra320 SCSI	16 bays
AN-316F4	2 x 4Gbps FC	16 bays
AL-316S3	2 x MiniSAS Connectors (2 x 3Gb Links per controller)	16 bays

## Features

The Alnico series is a high performance, external RAID subsystem using new generation of Serial ATA 2.0 channels for disk drives and either Ultra320 SCSI or 4Gbps Fibre channel I/O or 3Gb SAS standard to connect services to Host computer. Target usage ranges are set from small business to departmental and corporate server needs. The RAID subsystem is designed for easy integration, smooth data expansion and server migration.

When properly configured, the RAID subsystem can provide non-stop service with a high degree of fault tolerance through the use of RAID technology and advanced array management features.

The Alnico series supports the following features:

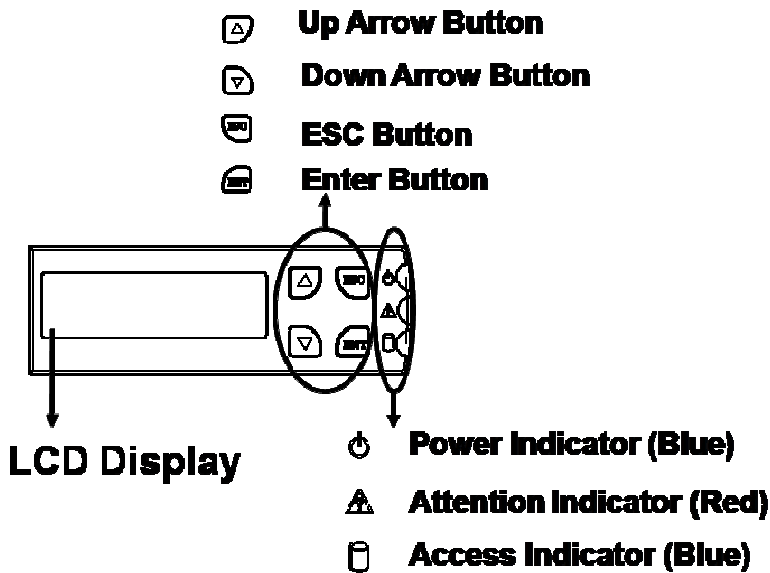
- High performance super scalar Intel Xscale 80348 IO processor.
- Superior Array Management Firmware supports RAID levels 0, 1 (0+1), 3, 5, 6 and JBOD RAID configurations.
- Advanced 100MHz/64-bit PCI-X and PCIe bus architecture
- Cache memory utilizes the DDR-II SDRAM with ECC and cache memory size up to 4 gigabytes.
- Serial ATA 2.0 Drive Interface supported.
  - AN-316** → Up to 16 SATA drives via two 8 channels SATA interface.
  - AN-312** → Up to 12 SATA drives via two 8 channels SATA interface.
  - AN-308** → Up to 8 SATA drives via single 8 channels SATA interface.
- Redundant and Hot Swappable Fan, Power and Drives.
- Hot Swap, Hot Spare and Automatic Drive Rebuild Supported.
- Configuration and environmental information is accessible either via the control panel or Serial Port or 10/100 Ethernet LAN port.
- E-mail event notification.
- Load sharing hot swappable redundant power system with PFC function and 80 Plus energy-efficient.
- Host System independent.
- Operating System independent.



## Understanding the Alnico RAID subsystem

### Front Panel Overview

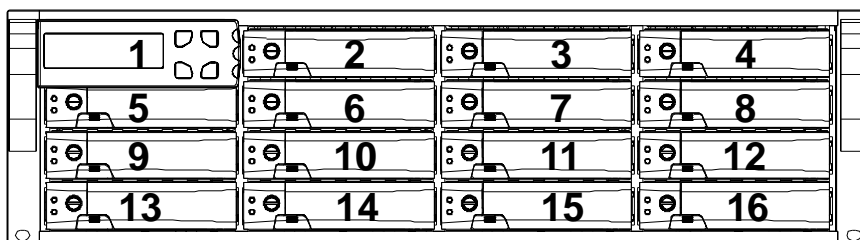
#### LCD Module



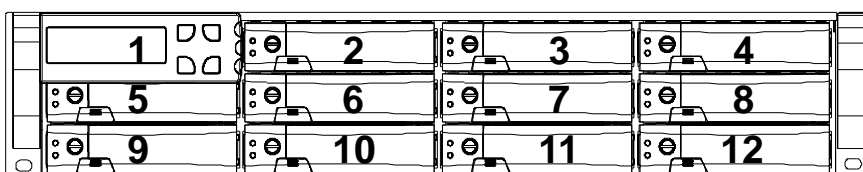
#### Driver Bay numbering convention

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 2.5-inch hard disk drive in his carrier module.

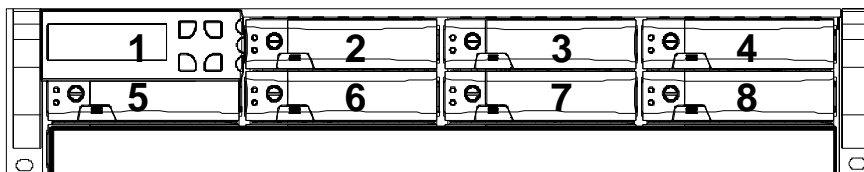
#### AN-316



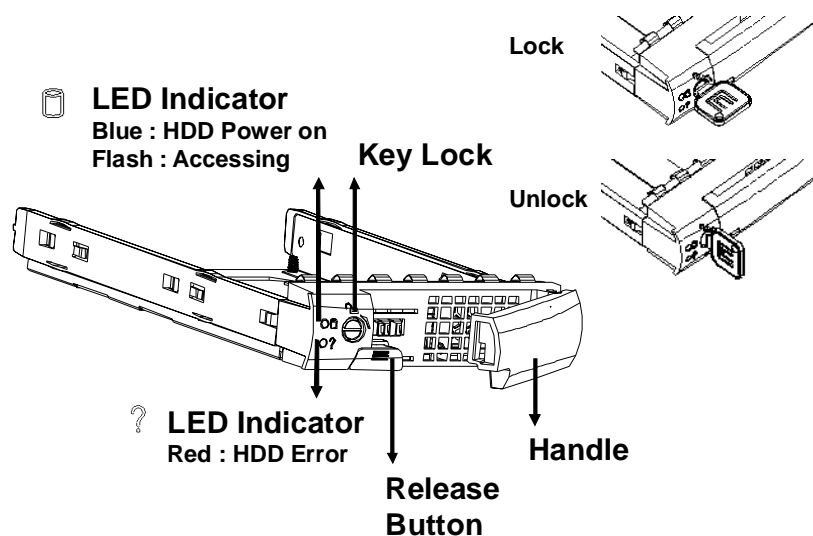
#### AN-312



## AN-308

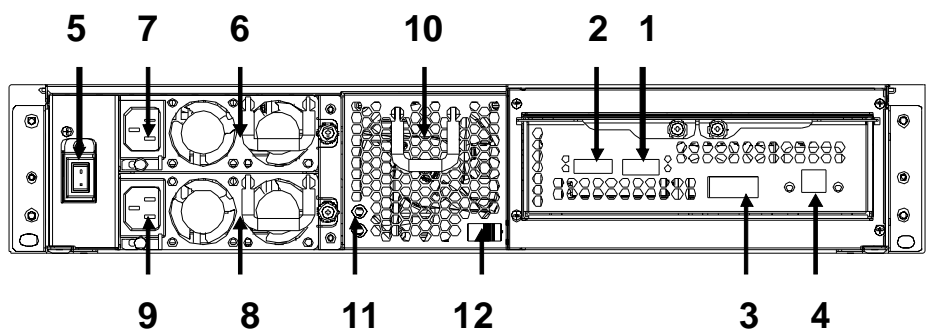


## Drive Bay



## Rear Panel Overview

AN-312 & AN-308



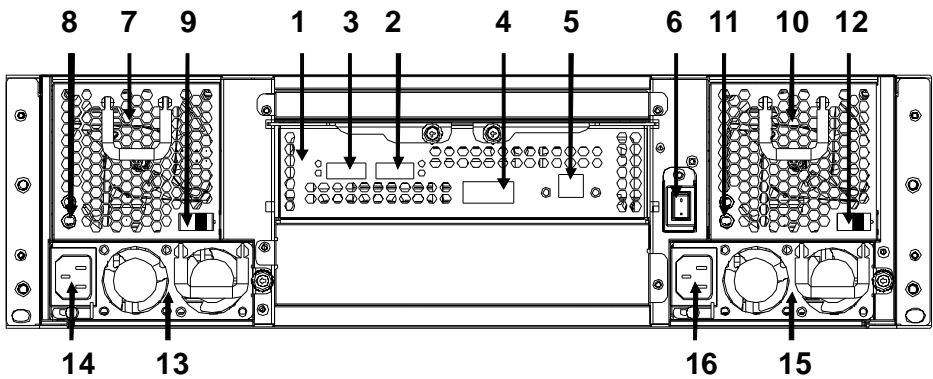
- 1. Primary Host Interface
- 2. Secondly Host Interface

Host Interfae LED Indicato

LED	Colors	Indicate
	Green	Link
	Blue + Blink	Access

- 3. Console
- 4. LAN port
- 5. Power Switch
- 6. Power Module 1
- 7. AC inlet 1 & Latch
- 8. Power Module 2
- 9. AC inlet 2 & Latch
- 10. FAN Module
- 11. FAN failure indicator (Rear / Front)
- 12. FAN Module latch

AN-316



- 1. Controller Box
  - 2. Primary Host Interface
  - 3. Secondly Host Interface
- Host Interfcae LED Indicato

LED	Colors	Indicate
	Green	Link
	Blue + Blink	Access

- 4. Console
- 5. LAN port
- 6. Power Switch
- 7. FAN Module 1.
- 8. FAN failure indicator 1. (Rear / Front)
- 9. FAN Module latch 1.
- 10. FAN Module 2.
- 11. FAN failure indicator 2. (Rear / Front)
- 12. FAN Module latch 1.
- 13. Power Module 1
- 14. AC inlet 1 & Latch
- 15. Power Module 2
- 16. AC inlet 2 & Latch

## ***Chapter 2. INSTALLATION***

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**This chapter presents:**

- ⇒ **Instructions on unpacking & checking the equipment**
  - ⇒ **Instructions on how to install Hard disk drive**
  - ⇒ **Instructions on how to install RAID in a Rack.**
  - ⇒ **Instructions on how to connect RAID.**
- 

### **Unpacking & checking the Equipment**

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

#### **SCSI to SATA Subsystem**

- RAID subsystem x1
- CD-ROM x 1 ( Includes Hardware Installation Guide, Software operation Manual & HTTP Proxy Server utility for Web browser-based Configuration).
- Ultra320 SCSI Cable x1
- Ultra320 SCSI Active Terminator x1
- Serial cable x1
- Key for Drive Bay x 4
- Power Cord x 2
- Spare Drive Bay x 1
- Rails for Rack
- Mounting screws : for 2.5" disks (bag) × 1 / for 3.5" disks (bag) × 1

#### **Fibre to SATA Subsystem**

- RAID subsystem x1
- CD-ROM x 1 ( Includes Hardware Installation Guide, Software operation Manual & HTTP Proxy Server utility for Web browser-based

- Configuration).
- Serial cable x1
- Key for Drive Bay x 4
- Power Cord x 2 (AN-612 & AN-616), Power Cord x 3 ( AN-624)
- Spare Drive Bay x 1
- Rails for Rack
- Mounting screws : for 2.5" disks (bag) × 1 / for 2.5" disks (bag) × 1

### SAS to SATA Subsystem

- RAID subsystem x1
- CD-ROM x 1 ( Includes Hardware Installation Guide, Software operation Manual & HTTP Proxy Server utility for Web browser-based Configuration).
- Serial cable x1
- Key for Drive Bay x 4
- Power Cord x 2
- SAS cable ( SFF-8088 ) x 1
- Spare Drive Bay x 1
- Rails for Rack
- Mounting screws : for 2.5" disks (bag) × 1 / for 2.5" disks (bag) × 1



#### NOTE

*To avoid the unmatched connector type between the Fibre HBA in the Host computer and Alnico RAID, Alnico RAID doesn't include the Fibre cable with the standard shipping.*

---

### 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 SCSI, Fibre or SAS interface.
- Dedicated terminal or PC with third party communication software that

supports ANSI terminal emulation (required for viewing Monitor Utility)

## ESD Precaution

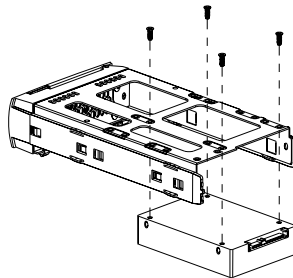
Use a suitable anti-static wrist or ankle strap and observe all conventional ESD precaution when handle Alnico RAID's modules and components. Avoid contact with backplane components and module connectors.

## Installing hard disks

The Alnico Gen 2 RAID series includes 8/12/16 hot swappable drive bays. The following sections describe how to install disks into Alnico RAID subsystems.

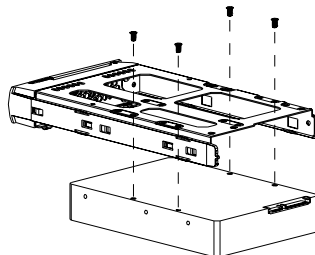
### Loading 2.5" Hard Disk to the drive bay.

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.

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.



### 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.



*The hard drives in a RAID array should match in size and speed. All drives in any array should be identical models with the same firmware versions. RAID arrays can use any size drive, however the smallest drive will determine the size of the array.*



1. *Only use the screws offered with Alnico RAID subsystem. Longer screws might cause the drive damage.*
2. *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 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.

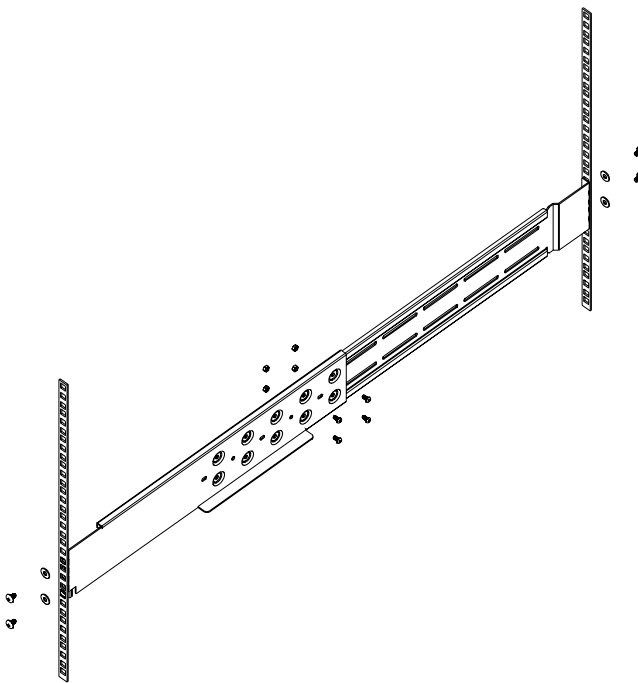


Figure 1.

### 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.

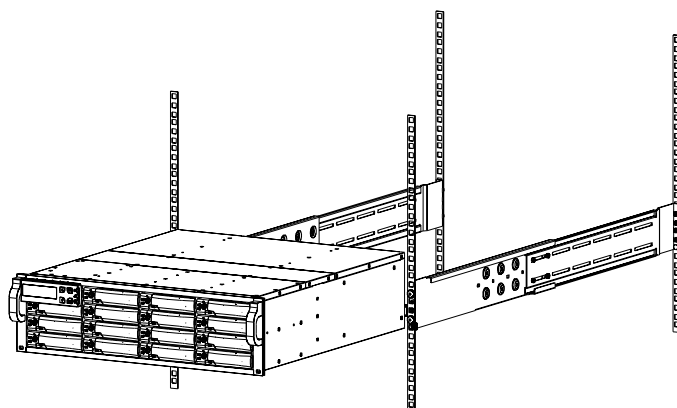


Figure 2.

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.

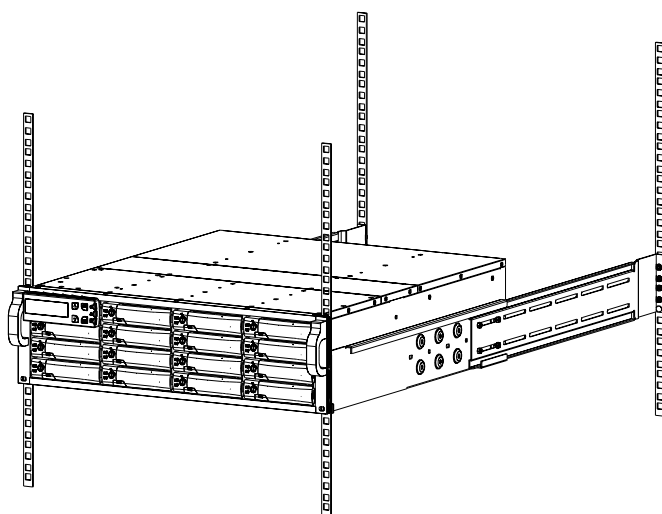


Figure 3.



**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 RAID	Device	Purpose
Serial Cable	Console Port	ANSI Terminal or a PC with Terminal emulator.	Configuration Utility
SCSI cable / Fibre cable / SAS Cable	Primary : SCSI/ FC-AL/SAS Secondly : SCSI/ FC-AL/SAS	HBA of Host computer	Host interface between RAID and Host computer
Power Cord	Power inlet	A/C power outlet	A/C power input
RJ 45 Cable	Ethernet Port	Switch or HUB	Connect to Internet .



### NOTE

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

## Chapter 3. TROUBLE SHOOTING

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

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⇒ **Instructions on how to replace the components of Alnico RAID subsystem.**

---

If the fault LED on the front panel and LCD of Alnico RAID lights red and LCD displays a error message , or if Alnico RAID's Internet manager indicates a fault, 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 Controller



**Caution**

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

---

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

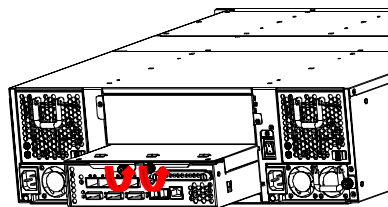
**Removing the controller from Alnico AN-308/ AN-312 and AN-316 RAID :**

**In order to access controller box, turn**

**anti-clock wise to release two thumb**

**screws, then use the eject bar to remove**

**controller box.**



**Installing the controller into  
Alnico RAID:**

**Reverse the procedure of  
“removing the controller” to  
install the controller into Alnico  
RAID.**

**Then according to “Appendix C.  
Configuration table” on “Soft  
Operation Manual” to reconfigure  
your RAID**

## Replacing / Upgrading DIMM

Alnico RAID are normally supplied with 128MB cache memory installed.



*There's no set formula to determine how much cache memory to use, but as a general rule, a workstation, with mostly very large files, such as for audio or video editing and playback, graphics or CAD files, can benefit from a large cache. File servers, with multiple random access of varying file size, generally have little or no performance improvement with additional cache.*

### Specifications:

Type	<ul style="list-style-type: none"> <li>◆ 200-pin DDR-II DIMM module (DDR-II-667)</li> <li>◆ ECC, without Register and Unbuffered.</li> </ul>
Parity (ECC)	◆ With parity for data security.
Size	◆ From 512MB, 1GB, 2GB, 4GB



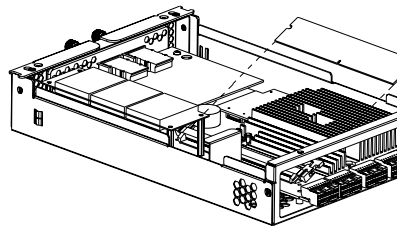
*If you have plan to install a Battery Back up module with Alnico RAID subsystem, we will strongly recommend you to choice the memory module which uses the low power consumption memory chips. Only this type of memory can meet the spec. of maximum memory back up duration. Especially, for memory sizes are 2GB and 4GB.*

---

### Installing DIMM

To install a DIMM, ensure the system power is off and disconnected. Then:

1. Turn anti- lock wise to release two thumb screws, then use the eject bar to remove controller box, then open the cover.
2. Remove the BBM module.
3. Insert a memory card at a 45-degree angle into the memory card socket so that the gold teeth of the card are no longer visible.
4. Press the card down firmly until the latches lock it into place.



1. *Before starting any kind of hardware installation, please ensure that all power switches have been turned off and all power cords disconnected to prevent personal injury and damage to the hardware.*
2. *Use screws provided with Alnico system only. Longer or shorter screws may cause electric shorting or un-proper installed.*
3. *Static electricity can damage electronic components. To guard against such damage:*

*Work in a static-free environment*

*Wear a grounded anti-static wrist strap*

*Store uninstalled components in anti-static bags*

*Handle PCBs by their edges and avoid touching chips and connectors.*

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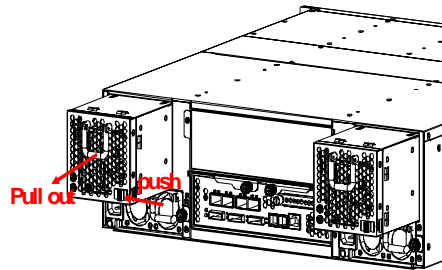
### Hot Swapping to replace the Fan Module

This section provides instructions for the removal and installation of the Fan

Module indicated in the figure below.

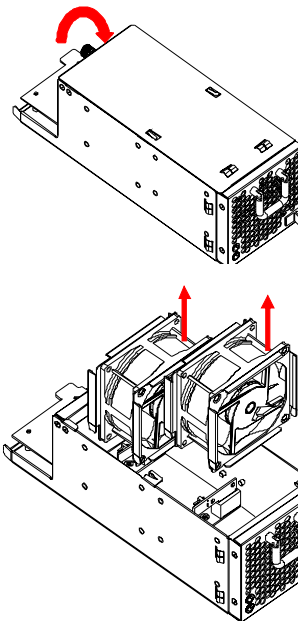
### Removing the Fan Module from

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



### 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.

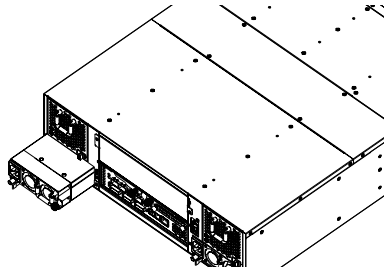


## Hot Swapping to replace the Power Module

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.



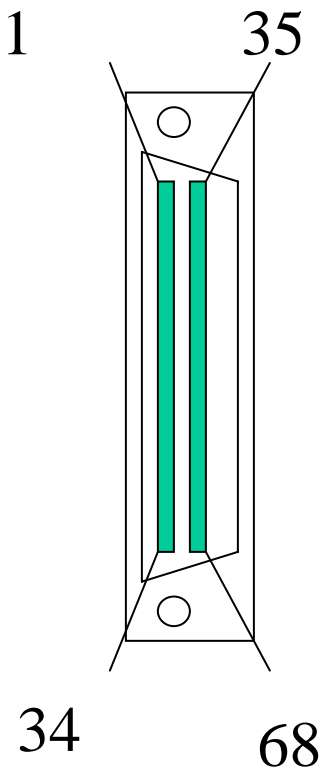
*The Power indicator will turn bright "Green" to indicate it has powered on*



# Appendix A

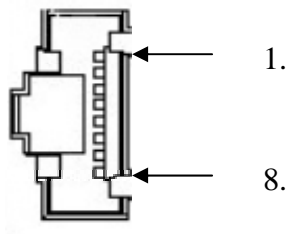
## Connectors

### SCSI Connector



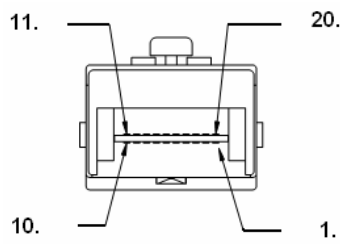
Pin#	Signal Name	Pin#	Signal Name
1	SCSI_AC_DAT<12>+	35	SCSI_AC_DAT<12>-
2	SCSI_AC_DAT<13>+	36	SCSI_AC_DAT<13>-
3	SCSI_AC_DAT<14>+	37	SCSI_AC_DAT<14>-
4	SCSI_AC_DAT<15>+	38	SCSI_AC_DAT<15>-
5	SCSI_AC_PAR<1>+	39	SCSI_AC_PAR<1>-
6	SCSI_AC_DAT<0>+	40	SCSI_AC_DAT<0>-
7	SCSI_AC_DAT<1>+	41	SCSI_AC_DAT<1>-
8	SCSI_AC_DAT<2>+	42	SCSI_AC_DAT<2>-
9	SCSI_AC_DAT<3>+	43	SCSI_AC_DAT<3>-
10	SCSI_AC_DAT<4>+	44	SCSI_AC_DAT<4>-
11	SCSI_AC_DAT<5>+	45	SCSI_AC_DAT<5>-
12	SCSI_AC_DAT<6>+	46	SCSI_AC_DAT<6>-
13	SCSI_AC_DAT<7>+	47	SCSI_AC_DAT<7>-
14	SCSI_AC_PAR<0>+	48	SCSI_AC_PAR<0>-
15	GND	49	GND
16	GND	50	GND
17	TERMPWRA	51	TERMPWRA
18	TERMPWRA	52	TERMPWRA
19	GND	53	GND
20	GND	54	GND
21	SCSI_AC_ATN_L+	55	SCSI_AC_ATN_L-
22	GND	56	GND
23	SCSI_AC_BSY_L+	57	SCSI_AC_BSY_L-
24	SCSI_AC_ACK_L+	58	SCSI_AC_ACK_L-
25	SCSI_AC_RST_L+	59	SCSI_AC_RST_L-
26	SCSI_AC_MSG_L+	60	SCSI_AC_MSG_L-
27	SCSI_AC_SEL_L+	61	SCSI_AC_SEL_L-
28	SCSI_AC_CD_L+	62	SCSI_AC_CD_L-
29	SCSI_AC_REQ_L+	63	SCSI_AC_REQ_L-
30	SCSI_AC_IO_L+	64	SCSI_AC_IO_L-
31	SCSI_AC_DAT<0>+	65	SCSI_AC_DAT<0>-
32	SCSI_AC_DAT<9>+	66	SCSI_AC_DAT<9>-
33	SCSI_AC_DAT<10>+	67	SCSI_AC_DAT<10>-
34	SCSI_AC_DAT<11>+	68	SCSI_AC_DAT<11>-

Ethernet RJ-45 Connector



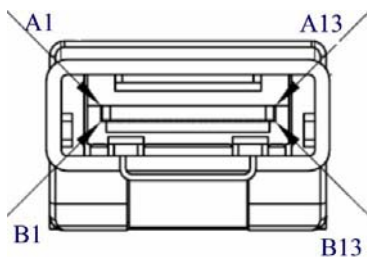
Pin#	Signal Name
1	TX+
2	TX-
3	RX+
4	NC
5	NC
6	RX-
7	NC
8	NC

Fibre SFP



Pin#	Signal Name
1	$V_{EFT}$
2	$T_{FAULT}$
3	$T_{DIS}$
4	MOD_DEF(2)
5	MOD_DEF(1)
6	MOD_DEF(0)
7	Rate Select
8	LOS
9	$V_{EER}$
10	$V_{EER}$
11	$V_{EER}$
12	RD-
13	RD+
14	$V_{EER}$
15	$V_{CCR}$
16	$V_{CCT}$
17	$V_{EET}$
18	TD+
19	TD-
20	$V_{EET}$

miniSAS (SFF-8088)

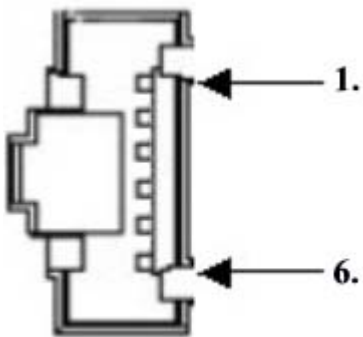


Pin#	Signal	Pin#	Signal
A1	GND	B1	GND
A2	RX0+	B2	TX0-
A3	RX0-	B3	TX0+
A4	GND	B4	GND
A5	RX1+	B5	TX1-
A6	RX1-	B6	TX1+
A7	GND	B7	GND
A8	RX2+	B8	TX2-
A9	RX2-	B9	TX2+
A10	GND	B10	GND
A11	RX3+	B11	TX3-
A12	RX3-	B12	TX3+
A13	GND	B13	GND



Only 2 of 4 SAS ports have physical connecting with HBA.

RJ-11



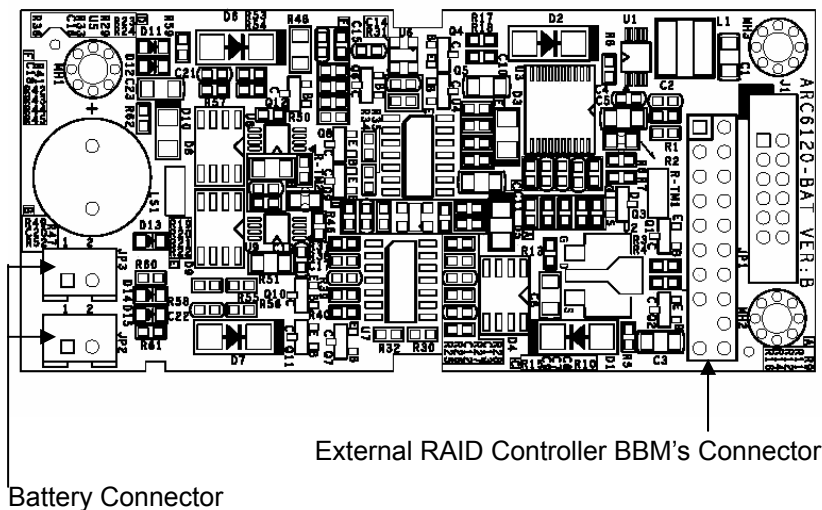
Pin#	Signal	Pin#	Signal
1	NC	6	NC
2	GND		
3	RX		
4	TX		
5	CTS		

## Appendix B

### Battery Backup Module (BBM)

The external RAID controller operates using cache memory. The battery Backup Module is an add-on module that provides power to the external RAID controller cache memory in the event of a power failure. The Battery Backup Module monitors the write back cache on the external RAID controller, and provides power to the cache memory if it contains data not yet written to the hard drives when power failure occurs.

#### BBM Components



## BBM Specifications

### Mechanical

Module Dimension (W x H x D) : 148 x 128 x 244 mm

### BBM Connector

2 \* 10 box header

### Input Voltage

+3.6VDC

### On Board Battery Capacity

2000MAH (2\*1000MAH)

## Installation

- Make sure all power to the system is disconnected.
- Connector J5 is available for the optional battery backup module. Connect the BBU cable to the 12-pin battery connector on the controller
- Integrators may provide pre-drilled holes in their cabinet for securing the BBM using its three mounting positions.

## Battery Backup Capacity

Battery backup capacity is defined as the maximum duration of a power failure for which data in the cache memory can be maintained by the battery. The BBM's backup capacity varied with the memory chips that installed on the external RAID controller..

Capacity	Memory Type	Battery Backup duration (Hours)
256MB DDR	Normal (27mA)	74
256MB DDR	Low Power (18mA)	111

### **Operation**

- Battery conditioning is automatic. There are no manual procedures for battery conditioning or preconditioning to be performed by the user.
- Battery had a tendency to “remember” its capacity. In order to make sure of all the capacity of your battery cells, allow the battery cell to be fully charged when installed for the first time. The first time charge of battery cells takes about 24 hours to complete.

### **Removing the Battery Backup Module**

The battery module will need to be removed for one of the following reason:

- Disconnect battery module if there is a long storage period before deployment
- The LI-ION battery will no longer accept a charge properly.

# Appendix C. Specifications

## Specifications

Alnico AN-3 RAID Series									
Model	AN-316			AN-312			AN-308		
	AN- 316F4	AN- 316S3	AN- 316SC	AN- 312F4	AN- 312S3	AN- 312SC	AN- 308F4	AN- 308S3	AN- 308SC
Controller Number	1 1		1	1 1		1	1 1		1
RAID Architecture	Intel 81348 I/O processor								
	Support extreme performance hardware RAID 6 function								
	Up to 4GB DDR-II SDRAM on one DIMM socket with ECC protection								
	Write-through and write back-cache support								
	NVRAM for RAID event log and real time clock support.								
RAID Features	RAID Levels: 0, 1, 3, 5, 0+1, 6 & JBOD					Support spin down drivers for idle disk to extend service life ( MAID )			
	Multiple RAID selection					Online capacity expansion and RAID level migration simultaneously			
	Online RAID level / stripe size migration								
	Online Array roaming								
	Greater than 2TB per volume set								
	Instant availability and background initialization								
	Hot Spare Disk / Pass through Disk support								
	Automatic drive insertion / removal detection and rebuilding								
System Type	3U Rackmount			2U Rackmount					
Host Interface	Dual 4Gb FC ports	Dual miniSAS (2x3Gb) ports	Dual Ultra320 SCSI ports	Dual 4Gb FC ports	Dual miniSAS (2x3Gb) ports	Dual Ultra320 SCSI Ports	Dual 4Gb FC ports	Dual miniSAS (2x3Gb) ports	Dual Ultra320 SCSI Ports
Disk Interface	16 of SATA II drives			12 of SATA II drives			8 of SATA II drives		
	Lockable Disk Carrier can support both 2.5” and 3.5” device without additional accessories								
Battery Backup Module	Optional, supporting 72 hours battery backup time								

Model	AN-316			AN-312			AN-308		
	AN- 316S3	AN- 316SC	AN- 312F4	AN- 316S3	AN- 316SC	AN- 312F4	AN- 316S3	AN- 316SC	AN- 312F4
<b>RAID Management</b>	Firmware-embedded Web browser-based RAID manager via built-in 10/100 Ethernet. Firmware-embedded manager through front LCD control panel. Firmware-embedded manager via RS-232 port. Field-upgradeable firmware in flash ROM.								
<b>Monitoring / Indicators</b>	All system status can be monitored by firmware-embedded Web browser-based RAID manager. Firmware-embedded SNMP agent allows the remote to monitor events with no SNMP agent required. System status indication through LCD, LED and alarm buzzer. All system events can be sent to multiple user alerts via e-mails. ( SMTP)								
<b>Operating System</b>	OS independent and transparent								
<b>Power Supply</b>	Redundant by dual 500W / 80 Plus energy-efficient power modules with PFC, load sharing and cable-less design.								
<b>Electrical</b>	AC Voltage 100-240 VAC / AC Frequency 50-60Hz								
<b>Temperature</b>	Operating temperature: 5 to 35 degree C. Non operating temperature: -40 to 60 degree C.								
<b>Relative Humidity</b>	20% to 80% non-condensing								
<b>Dimension</b>	446.5mm(W) x 517mm(D) x 3U			446.5mm(W) x 517mm(D) x 2U					
<b>Weight</b>	20KGS			17KGS					



*Specifications subject to change without notice.*