

# Ci Design NSR316 User Manual



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## ***Preface***

### **Limited Warranty**

Ci DESIGN WARRANTS TO THE ORIGINAL PURCHASER THAT ITS EXTERNAL ENCLOSURE PRODUCTS INCLUDING THE COMPONENTS THEREIN, SHALL BE FREE FROM DEFECTS IN MATERIAL AND CRAFTSMANSHIP FOR A LIMITED PERIOD OF THREE (3) YEARS. SHOULD Ci DESIGN BUNDLE, OFFER, COMBINE OR DISTRIBUTE ANY THIRD PARTY'S HARDWARE, PRODUCTS, COMPONENTS, THE WARRANTY OFFERED BY SUCH MANUFACTURERS OR SUPPLIERS MUST APPLY. ANY SOFTWARE INSTALLED, DISTRIBUTED, OR SOLD BY Ci DESIGN IS NOT COVERED BY Ci DESIGN'S LIMITED WARRANTY AND MUST ONLY REFER TO THE LICENSING AGREEMENT ACCOMPANYING TO THE SOFTWARE FOR THE TERMS AND CONDITIONS OF USING SUCH SOFTWARE. ANY OTHER LIMITED WARRANTY PERIOD OFFERED BY Ci DESIGN TO DIFFERENT PRODUCTS FREE FROM DEFECTS IN MATERIAL AND CRAFTSMANSHIP TO THE ORIGINAL PURCHASER WILL BE SPECIFIED IN OUR WRITTEN QUOTATION, CONTRACT OR IN ANY OTHER WRITTEN FORM TO PURCHASER. PURCHASER'S PURCHASE ORDER TO Ci DESIGN SHALL BE DEEMED IN ACCEPTANCE OF SUCH LIMITED WARRANTY. Ci DESIGN'S WARRANTY PERIOD STARTS FROM THE DATE OF INVOICE. THESE ARE THE ONLY WARRANTIES Ci DESIGN OFFERS. Ci DESIGN MAKES NO OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, WRITTEN, ORAL OR STATUTORY, AND EXPRESSLY DISCLAIMS ANY IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY OR FITNESS FOR ANY SPECIFIC PURPOSE, REGARDLESS OF ORIGIN. Ci DESIGN DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY FOR CLAIMS OF ACTUAL OR ALLEGED PATENT INFRINGEMENT FOR ANY Ci DESIGN PRODUCT, INCLUDING Ci DESIGN PRODUCTS THAT ARE COMBINED WITH HARDWARE, SOFTWARE, EQUIPMENT, OR OTHER MATERIALS NOT FURNISHED BY Ci DESIGN, INCLUDING ANY COVERAGE FOR COMPENSATORY DAMAGES, PUNITIVE DAMAGES, ATTORNEY FEES, COSTS, CONSEQUENTIAL DAMAGES, OR OTHER LOSSES, EXPENSES, OR DAMAGES. UNDER NO CIRCUMSTANCE IS Ci DESIGN LIABLE FOR ANY OF THE FOLLOWING EVEN IF PURCHASER HAS BEEN INFORMED OF THEIR POSSIBILITY: (a) LOSS OF, DAMAGE TO DATA, (b) INCIDENTAL OR CONSEQUENTIAL DAMAGES, (c) LOST BUSINESS, REVENUE, PROFIT, GOODWILL OR ANY ANTICIPATED SAVINGS, (d) THIRD PARTY CLAIMS AGAINST PURCHASER FOR DAMAGES.

## RMA Procedures

Should it be necessary for any reason to return a product to Ci Design, an RMA return authorization number must be obtained and the following procedures must be followed: (1) Fax or email a request to a Ci Design representative stating reason for return and provide: purchase order number, invoice number, Ci Design's part number, and serial number (when applicable). (2) Purchaser will be faxed or emailed a RMA number and instructions for returning products. (3) The RMA number must appear on the shipping label of each carton and all shipping documents that are being returned. RMA product must be received by Ci Design within thirty (30) days after authorization date. (4) Purchaser must ship returned products "prepaid" unless Ci Design has agreed in writing to other arrangements. (5) Under all circumstances, any products being returned to Ci Design must be authorized via Ci Design RMA procedures. (6) Items may be returned for replacement or credit only. Cash refunds will not be given without specific written authorization made at the time the RMA is issued by Ci Design. Items being returned must be original Ci Design products and covered by an applicable warranty period. The authorized returned products must be packaged in their original packing material with all components included. All returned items must be in resalable condition, new or no usage. If these requirements are not met, Ci Design will recover the loss via increased restocking charges or return the products to Purchaser. If Purchaser is requesting a credit to its account, Purchaser's written request for RMA must be made within three (3) days after the receipt of the applicable product(s). Upon acceptance of the returned product(s) by Ci Design, Purchaser's account will be credited, less a 25% "restocking fee". Ci Design cannot provide cash refunds.

UNDER NORMAL USE, SHOULD THE PRODUCT UNDER WARRANTY FAIL IN MATERIAL OR CRAFTSMANSHIP, Ci DESIGN WILL, AT ITS SOLE DISCRETION, (1) REPAIR AND RETURN THE PRODUCTS, FREIGHT PREPAID, AND HONOR THE BALANCE OF THE WARRANTY PERIOD OR (2) REPLACE OR SUBSTITUTE THE PRODUCTS, FREIGHT PREPAID, AND HONOR THE BALANCE OF WARRANTY PERIOD. PRODUCTS THAT HAVE BEEN DAMAGED THROUGH NEGLIGENCE, ACCIDENT, ABUSE, MISAPPLICATION, MODIFICATION, MISUSE OF THE PURCHASER OR ITS AGENT OR DAMAGED THROUGH SERVICES, UPGRADES, CHANGE VERSION OR EXPANSIONS PERFORMED BY NOT A Ci DESIGN'S REPRESENTATIVE OR Ci DESIGN AUTHORIZED SERVICE PROVIDER WILL BE, AT PURCHASER'S DISCRETION, REPLACED AT PURCHASER'S COST OR RETURN TO PURCHASER UN-REPAIRED, FREIGHT COLLECT.

## Important Safety Instructions

1. Read all these instructions before installation or connecting the system to the power outlet.
2. Save these instructions for later use.
3. Following all warnings and instructions marked on the product.
4. Do not use the product near water or block the cooling vent holes.
5. This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
6. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risk. Refer all servicing to authorized personnel.

## Remarks

### Guide to Conventions

The following notational conventions will be used throughout this manual. These blocks are warnings or cautions and they are used as follows:



#### **CAUTION**

*This icon indicates the existence of a potential hazard that could result in personal injury, damage to your equipment, or loss of data if instructions are not observed.*



#### **NOTE**

*This icon indicates important points to consider during the integration process.*

### Notational Conventions

The following notational conventions will be used in this document.

Dimension will be shown throughout this manual in a U.S. measurement and metric format e.g. 19in. (482.6mm).

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## **Chapter 1** *Chassis Description*

### **Overview**

The 3U 16-bay NSR 316 rack mountable storage enclosure is designed for storage server system and supports up to sixteen hot-swappable hard disk drives, available in SATA, SATA II 3 Gb/s or SAS interface. NSR316 allows support for a SSI 3.0 / 3.5 / 3.6, CEB 1.0, Nehalem / Tylersburg or AMD Dual Opteron compliant server board 12.0" x 13.0" in size. The chassis is shipped in a container designed for protection and prevention of damage during shipment. The chassis was carefully inspected before and during the packing procedure at the factory. Evidence of any damage to the NSR316 should be reported to the shipper immediately.



#### **NOTE**

*Electrostatic discharge can damage electronic components. Be sure you are properly grounded before beginning any procedure.*

### **Items Included**

The following components are included with the NSR316 Kits

1. 3U rack mount chassis
2. Sixteen Hard Drive Trays
3. Three Power Cords (U.S. or European version. Number of power cords may vary depends on power supply used.)
4. One 820W redundant Power Supply (Options are available)
5. One Fan Bracket consisting of four 92mm PWM hot swappable fans for system cooling
6. Fixed mounting bracket
7. One Slim-DVD adaptor
8. One CPU mounting plate
9. One handle set

***Items Needed to Be Purchased Separately***

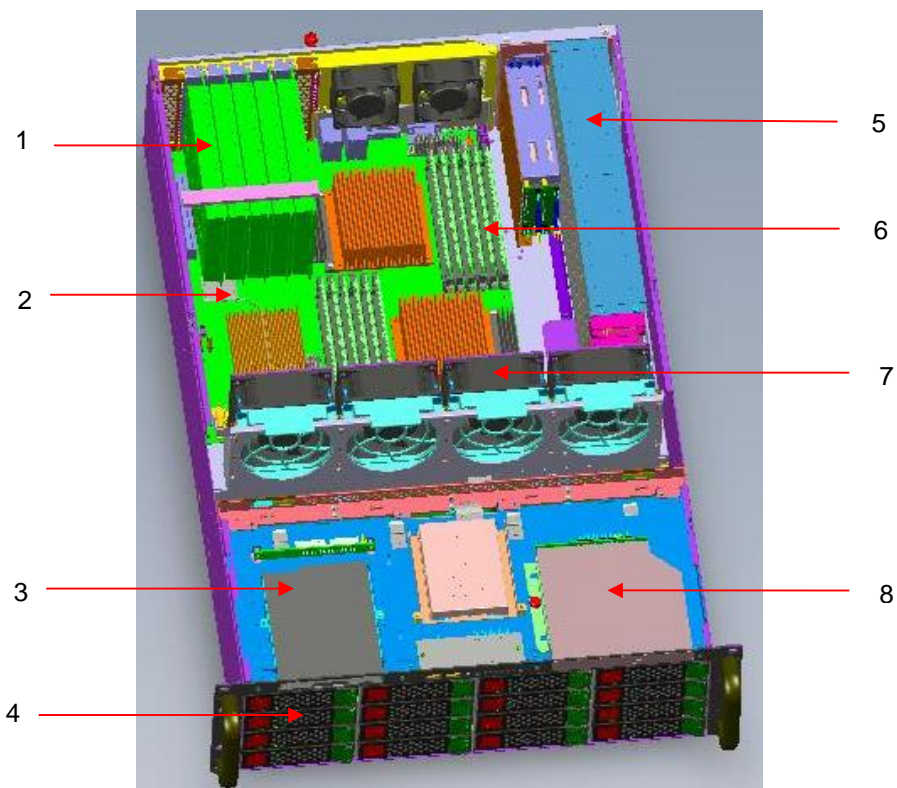
The following components will need to be purchased separately:

1. RAID/NAS controller board/card
2. Server Board
3. Processor to work with respective server board
4. DDR RAM memory DIMMs
5. Hard Disk Drives (HDD)
6. Slim Floppy Disk Drive (FDD)
7. Slim CD-ROM Drive
8. PCI add-in cards
9. CPU heat sink
10. Other peripheral devices
11. Rear fan kit
12. Rear air shroud
13. 2\*2.5" boot drive kit



## Chapter 2 Feature Summary

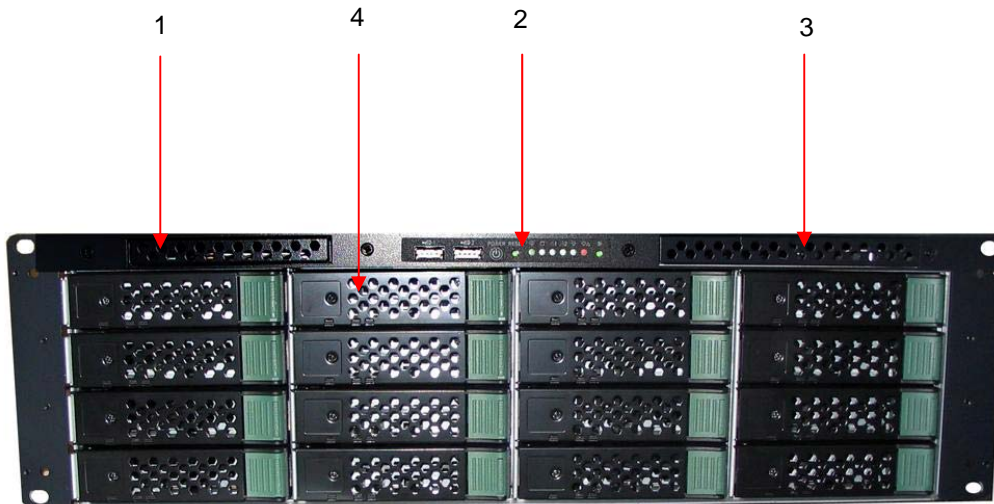
The Ci Design Inc NSR316 R3U chassis provides rugged and reliable housing for Storage and Server solutions. The chassis is designed to support up to sixteen hot-swappable hard disk drives, available in SATA, SATA II 3 Gb/s or SAS interface. NSR316 allows support for a SSI 3.0 / 3.5 / 3.6, CEB 1.0, Nehalem / Tylersburg or AMD Dual Opteron compliant server board 12.0" x 13.0" in size. The chassis can also feature an optional slimline FDD/CD-ROM and one fixed or redundant PFC power supply.



- |   |                             |   |                        |
|---|-----------------------------|---|------------------------|
| 1 | Controller Card             | 5 | Power Supply           |
| 2 | Server Board                | 6 | Memory Dimm            |
| 3 | Slim Floppy Disk Drive      | 7 | 92mm Hot Swappable Fan |
| 4 | Hot Swappable HDD Tray (16) | 8 | Slim DVD Rom Drive     |

### ***Chassis Front Panel and Peripheral Bays***

To access the system controls and peripherals when a front face plate is installed, unscrew the two thumbscrews and gently pull it towards you until it is released from the chassis



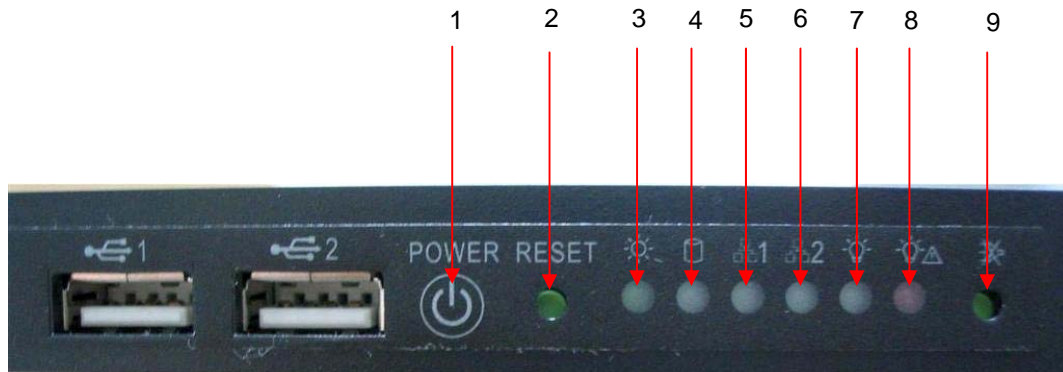
1. Slim Floppy Disk Drive

3. Slim DVD / CD-ROM Drive

2. Front Panel & System Control

4. Hard Drive tray

## Front Panel Controls and Indicators

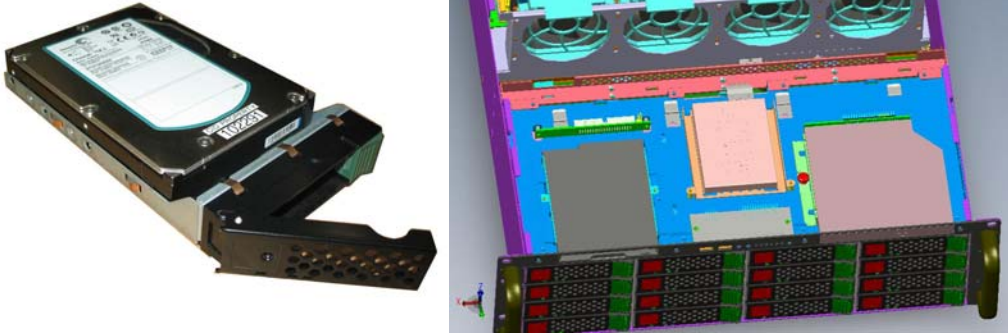


### Control Button and functions

1	Power Button	Toggles the system ON/OFF
2	Reset Button	Reboots and initializes the system
3	Alarm Reset Button	Reset the system alarm to mute
4	Power LED	Continuous green light indicates the system has power applied to it Blinking green light indicates the system is sleeping No light indicates the system does not have power applied to it
5	HDD Act LED	Blinking yellow light indicates the hdd is being access
6	NIC 1 LED	Blinking green light indicates the NIC 1 is being access
7	NIC2 LED	Blinking green light indicates the NIC 2 is being access
8	Temperature LED	Continuous amber light indicates the system is too hot
9	Power Fault LED	Continuous amber light indicates the power supply unit failed

## ***Peripherals***

The chassis provides a variety of peripheral options that can be purchased separately and added to the system such as Hard Drive, Floppy Drive, and Slim DVD-ROM:

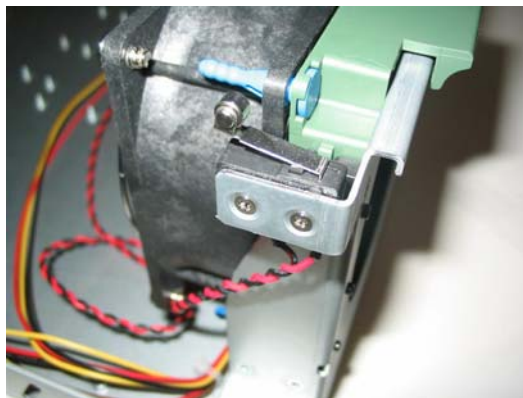


## ***Hot Swappable Hard Disk Drives***

The chassis comes with sixteen drive trays for mounting the SATA, SATAII or SAS hard disk drives. When a drive fails, the backplane will detect the failure, report it, and power down the failed drive. As the drives are hot swappable, a support technician can then replace the failed drive and restore the data without shutting down the system.

## ***Intrusion Switch***

The system may include a preinstalled intrusion switch for the access cover that can be monitored by server management software. When the cover is opened, the switch, located on the upper right hand corner of the chassis will transmit a signal to the server board where server management software will process the signal and respond by, for example, powering down the system or locking the keyboard.



## Chapter 3 *Integration Steps*

### Before You Begin

Before the Ci NSR316 can be installed, you must assemble all hardware components that make up the system. You may also need to purchase additional peripherals and add-in-cards before the installation. The following integration steps help guide you through this assembly process and create your desired system configuration.

**NOTE**

*To maintain and ensure regulation compliance, the fully integrated system should be tested, certified, and/or documented to illustrate compliance to the regional regulations and laws for where the product will be sold. The peripherals and add-in cards chosen for integration should have individual regulatory approvals.*

**CAUTION**

*System components must be installed in the order presented in the assembly instructions. Component damage may result if installed in a different order.*

*Back up all of your critical data before you proceed or attempt to install the unit.*

### Supplies Needed

Before beginning, you should make sure you have the following components available:

- Anti-static wrist strap
- NSR 316 accessory kit
- Server board, processors and memory to add to the server board (server version)
- Optional peripherals and add-in cards
- Philips screw driver

### Understand Assembly Safety Instructions

Before installation, you should make sure you follow certain basic safety precautions

**CAUTION**

*Integration and servicing of this chassis assembly should only be performed by technically qualified persons.*

Follow these guidelines to meet and maintain safety and product regulatory requirements when integrating this chassis assembly.

### ***Integration Warnings***

These warnings and cautions apply whenever you remove the chassis top cover to access the internal components.



#### **NOTE**

*Electrostatic discharge can damage electronic components. Be sure you are properly grounded before beginning any procedure.*

### **Safety Guidelines**

1. Turn off all peripheral devices connected to the server.
2. Turn off the server from the OS or by pressing the power button on the front of the chassis, then, unplug the AC power cord from the chassis. Disconnect all the peripheral cables and all network cable connected to the chassis.
3. Provide electrostatic discharge protection by wearing an antistatic wrist strap attached to ground.



#### **NOTE**

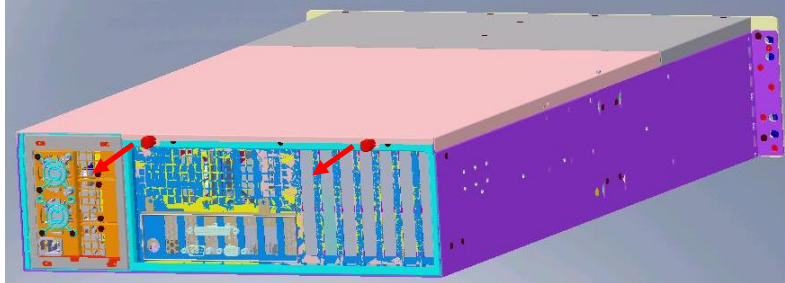
1. *The power button on the front or rear panel DOES NOT turn off the AC power. You MUST unplug the AC power cord.*
2. *Hazardous electrical conditions may be present on power, network, peripheral cables. Turn off the computer and disconnect all the cables before opening it. Otherwise, personal injury or component damage may result.*



#### **CAUTION**

*Do NOT open the Power Supply Unit. Hazardous voltages and currents are present within the power supply. Refer servicing of the power supply to a qualified technician.*

### ***Removing the Top Cover***



1. Unscrew the thumbscrew by turning in the counter-clock-wise direction on the rear of the top cover. If the thumb screw is too tight, use a Philips screwdriver to loosen it.
2. Pull the top cover handle backward and slide the whole top cover back until you can lift it up from the chassis.
3. Set the top cover away from the immediate working area

### ***Changing the Hot Swappable Fan***

If a fan has failed, the system alarm will beep and the Fan Fault LED will light up. In addition, the fan board will display a fault LED for the defective fan. Follow these procedures to replace the failed fan.



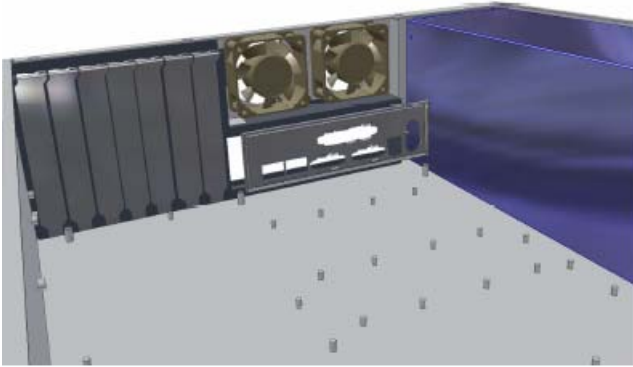
1. Pull out the defective fan from the Fan Bracket as shown.



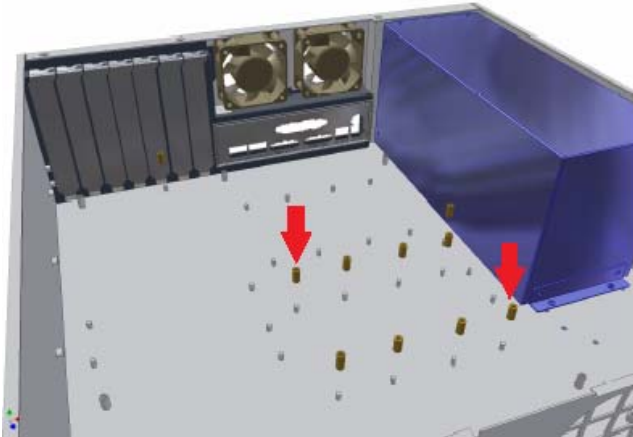
2. Replace with a functional fan and install back to the fan bracket.



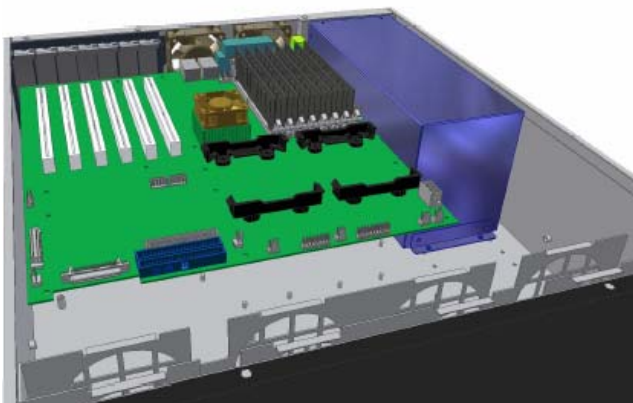
## Installing the Server Board



1. Install the I/O shield from the inside of the chassis to the rear panel. Position one edge so the groove is outside the rear panel wall and push until it is seated completely. Make sure the I/O shield's edges snap into place (Refer to your server board manual for further instruction.)



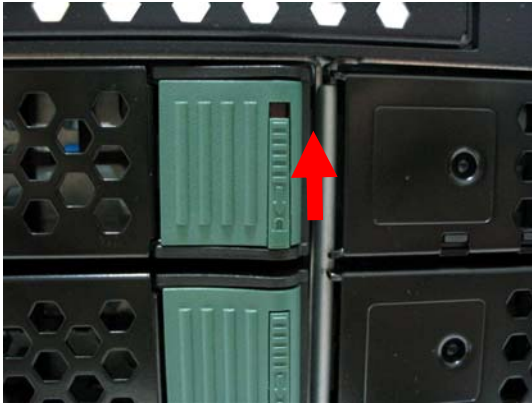
2. Check the server board mounting holes location. Place the brass spacer from the accessories box into the chassis stud according to the server board mounting holes location as shown.



3. With the brass standoffs installed into the correct location, place the server board carefully into the chassis and secure the server board with the provided #6-32 screws.

### ***Removing the Hard Disk Drive Tray***

Follow the instructions below to remove the Hard Disk Drive Tray from the chassis:



1. Make sure the HDD lock is changed to unlock position.



1. Pull the retention lever toward yourself, the lever will become free from the housing slot.



3. Pull the hard drive tray until it is free from the chassis.

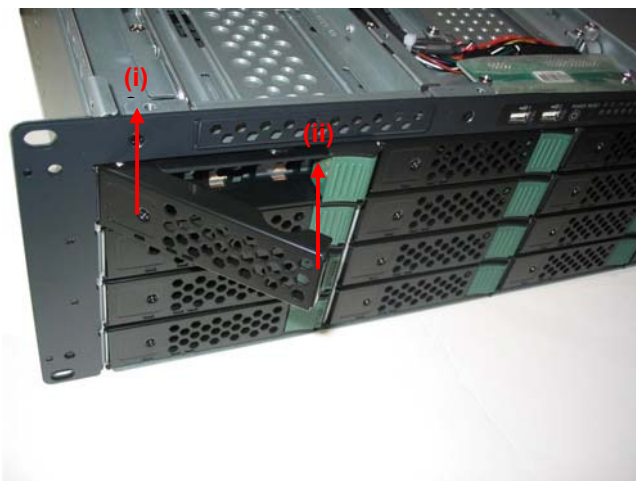
## Installing a SAS or SATA Hard Disk Drive



1. Remove the hard drive from its wrapper, and with the drive circuit-side-down, position the connector end so that it is facing the rear of the carrier. Align the holes in the drive to the holes in the drive mounting tray. Insert the provided screws into the tray and secure the drive.



2. Push the drive tray into the drive bay slot.



3. Secure the drive into the bay:  
(i) Push the right corner of the tray (not the retention lever) with your thumb toward the chassis. The retention lever will automatically shift toward the mounting tray slot.

(ii) Push the retention lever to lock in the drive tray.

### ***Setting Up the Mini-SAS Back Plane***

Please refer to the attachment depends on the RAID controller card.

3Ware – Page 28

Areca – Page 34

Adaptec – Page 36

LSI – Page 42

### ***Installing a Slim Floppy Disk Drive***

The chassis allows the user to install a slim Floppy, CD or DVD drive. Follow these steps to install the device:



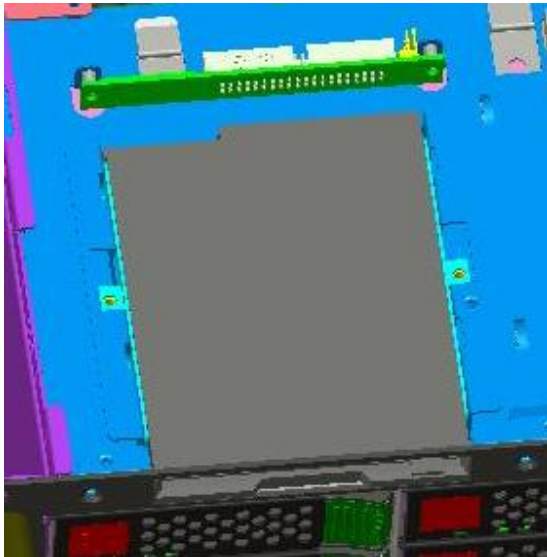
1. Unscrew the screws of the front top cover and take the cover apart.



2. Take the slim FDD-drive adapter PCB from the package.



3. Mount the slim FDD-drive adapter PCB into the chassis. Tighten the two screws that come with the slim FDD-drive adapter PCB.



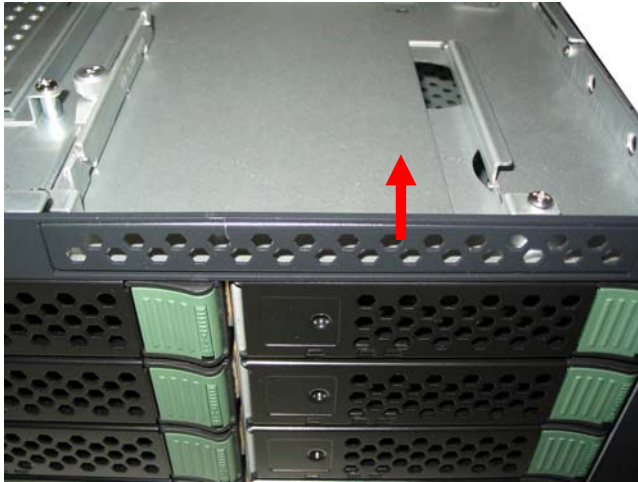
4. Place the slim FDD drive into the chassis. Align the drive mounting holes to the chassis hooks.

5. Slide the mounting bracket towards the slim FDD-drive.

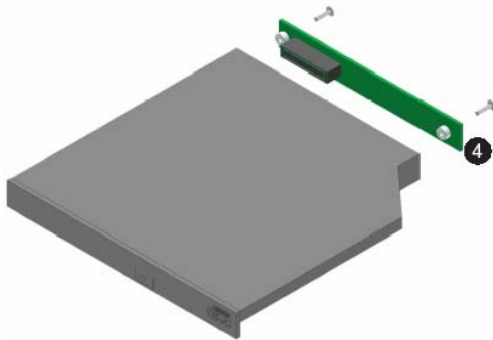
Fasten the mounting screw from the top of the chassis to secure the drive as shown.

6. Connect the data and power cable

### Installing a Slim CD/DVD-ROM Drive

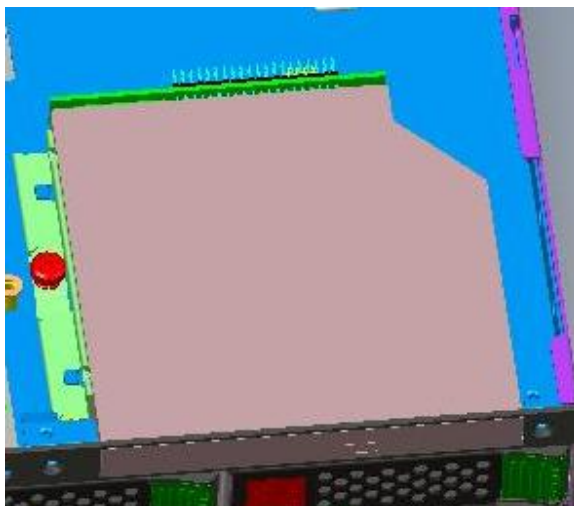


1. Unscrew the two slim CD-ROM cover plate mounting screws.
2. Pull out the slim CD-Rom cover plate and put it back into the accessories box.



3. Take the slim CD/DVD drive from the package and the slim CD/DVD adapter PCB from the accessories box.

4. Mount the slim CD/DVD adapter PCB into the slim CD/DVD drive. Tighten the two screws as shown.



5. Place the CD/DVD-drive into the chassis. Align the CD/DVD drive mounting holes with the chassis hooks.
6. Slide the other side mounting bracket towards the CD/DVD-drive as shown.
7. Fasten the mounting screws from the top of the chassis to secure the drive as shown.
8. Connect the mini 4-pin power and the data cable.

### Installing the Power Cord

If the power cord supplied with the system is not compatible with the AC wall outlet in your region, get one that meets the following criteria:

- The cord must be rated for the available AC voltage and have a current rating that it at least 125% of the current rating of the server.
- The plug on the power cord that plugs into the wall outlet must be a grounding-type male plug designed for use in your region.
- The connector that plugs into the AC receptacle on the power supply must be an IEC 320, sheet C13, type female connector.
- In Europe, the cord must be less than 4.5 meters long and it must be flexible <HAR> (harmonized) or VDE (TUV) certified cordage.



**CAUTION**

*Do not attempt to modify or use the supplied AC power cord if it is not the exact type required.*

Country	Cable Type	Country	Cable Type
US		Switzerland	
Continental Europe		Italy	
UK		Australia New Zealand	



**NOTE**

*Please contact your sales representative for order information.*

## **Chapter 4** *Installing the System into a Rack*

The NSR316 is a rack mounted chassis. Mounting holes on the front panel are set to RETMA spacing and will fit into EIA standard equipment rack with 3.5 inches of available vertical space.

### **Rack Equipment Precautions**

This document should be used only as an information source for planning your deployment. Avoid personal injury and equipment damage by following accepted safety practices.

#### **Floor Loading**

**CAUTION:** Ensure proper floor support and ensure that the floor loading specifications are adhered to. Failure to do so may result in physical injury or damage to the equipment and the facility. Deployment of rack servers, related equipment, and cables exceeds 1800 pounds for a single 42U rack.

External cable weight contributes to overall of the rack installation. Carefully consider cable weight in all designs

#### **Installation Requirement**

**CAUTION:** Be aware of the center of gravity and tipping hazards. Installation should be such that a hazardous stability condition is avoided due to uneven loading. Ci Design recommends that the rack footings extend 10 inches from the front and back of any rack equipments 22U or higher. Adequate stabilization measures are required. Customer / user shall review the rack to use should adequately and safely hold the total weight of the units with all equipments, devices, hard drives installed. Ensure that the entire rack assembly is properly secured and that all personnel are trained in proper maintenance and operation procedures. Tipping hazards include personal injury and death.

#### **Power Input and Grounding**

**CAUTION:** Ensure your installation has adequate power supply and branch circuit protection. Check nameplate ratings to assure there is no overloading of supply circuits that could have an effect on over current protection and supply wiring. Reliable earthing of this equipment must be maintained. Particular attention should be given to supply connections when connecting to power strips, rather than direct connections to the branch circuit.



### Thermal Dissipation Requirement

**CAUTION:** Thermal dissipation requirements of this equipment deployment mandate minimum unrestricted airspace of three inches in both the front and the rear. The ambient within the rack may be higher than room ambient. Installation should be such that the amount of air flow required for safe operation is not compromised. The maximum temperature for the equipment in this environment is 122°F (50°C). Consideration should be given to the maximum rated ambient.

### Installation Sequence

**CAUTION**

*It is strongly recommended to securely fasten the mounting rack to the floor or wall to eliminate any possibility of tipping of the rack. This is especially important if you decide to install several SR 316 chassis' in the top of the rack.*

A brief overview of server installation follows:

1. Select an appropriate site for the rack.
2. Unpack the server and rack mounting hardware.
3. Attach the rack mounting hardware to the rack and to the server enclosure.
4. Mount the server enclosure into the rack.
5. Connect the cables.
6. Turn on and initialize the server.

### **Fixed Rail Installation**

Skip this procedure if side rails are to be used. For fixed installation, mount the two extend rear brackets with the provided screws as shown in the figure below. The bracket includes multiple holes allowing the enclosure to be mounted in racks of varying depths.



1. Tighten the screws into the rear rack bracket on both sides of the chassis with the screws provided.



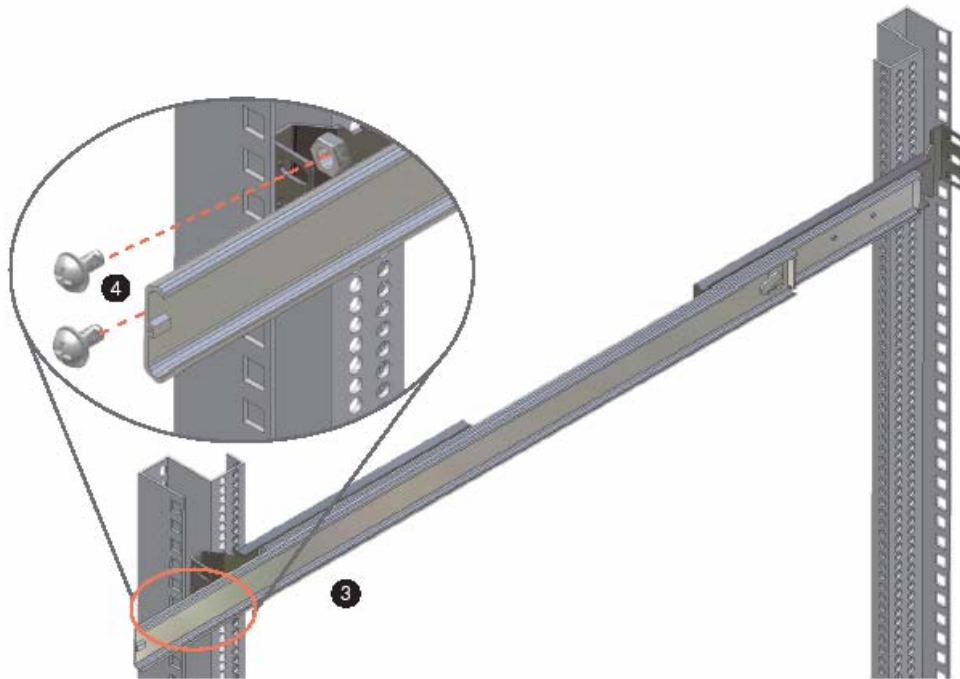
2. While holding the chassis in the mounting position, tighten the screws, the nuts or nut plate in the rear of the mounting bracket. Some rail-frames have threaded mounting holes; if that is the case, just simply tighten the mounting screw.

### **Remove the Server Chassis Rail**



1. Pull the Slide Rail from the outer slide rail.
2. Push down the Spring Latch.
3. Pull the server chassis rail out.
4. Use the fastener to mount it to the chassis side (LH &RH).

### Mount Bracket and Outer Rail to the Rack Cabinet



- 3 Align the extend mounting bracket and the external rail to the rack frame
- 4 Make sure to tighten the screw hex nuts to the rack frame

### Assemble Inner Rail to Chassis

1. Place the inner rail to both side of the Chassis (LH & RH)
2. Align the slide mounting holes to the chassis' mounting holes
3. Fasten the inner rail to the chassis sidewall using the provided screws.



#### **CAUTION**

*Due to the weight of the chassis with the peripherals installed, lifting the chassis and attaching it to the cabinet may need additional manpower. If needed, use an appropriate lifting device.*

## Bay LED Support on Ci Design NSR Unit Using I<sup>2</sup>C with 3Ware AMCC Controller Card

### I. Introduction

This manual will go through the information of using the I<sup>2</sup>C method with 3Ware Controller Card ( 9650 SE) on Ci Design NSR Enclosures using Horizontal Backplane Board 12-6429-02A, 12-6429-05A, 12-6429-06A.

This manual includes the steps of flashing the EPCT onto your 3Ware Controller Card thus enabling the drive bay Power LED and Status LED functions from the I<sup>2</sup>C Bus. The drive bay Activity LED is supported from the P11 of the HDD.

### II. Required materials:

#### 1. Cables



Figure 1 I<sup>2</sup>C Cables

#### 2. Software Kit

Download the appropriate 3ware ECPT Code from [www.cidesign.com](http://www.cidesign.com) or contact Ci Design Engineer or your 3Ware Rep for software kit compatible with Ci Design chassis.

### III. Instructions for flashing your controller card

1. Download the 3ware ECPT Code and program, use the appropriate esconfig and ECPT file.

2. Unzip the kit and remember the location.

3. Run the esConfig.exe file.

Example: `esconfig -c0 -i xxxx.bin`

- `-c#` is the controller card port.
- `-i` install the CCU onto controller card.
- `xxxx.bin` is the name of the ECPT file.

4. After flashing is complete, the system must be restarted.

### IV. Settings on Backplane Board

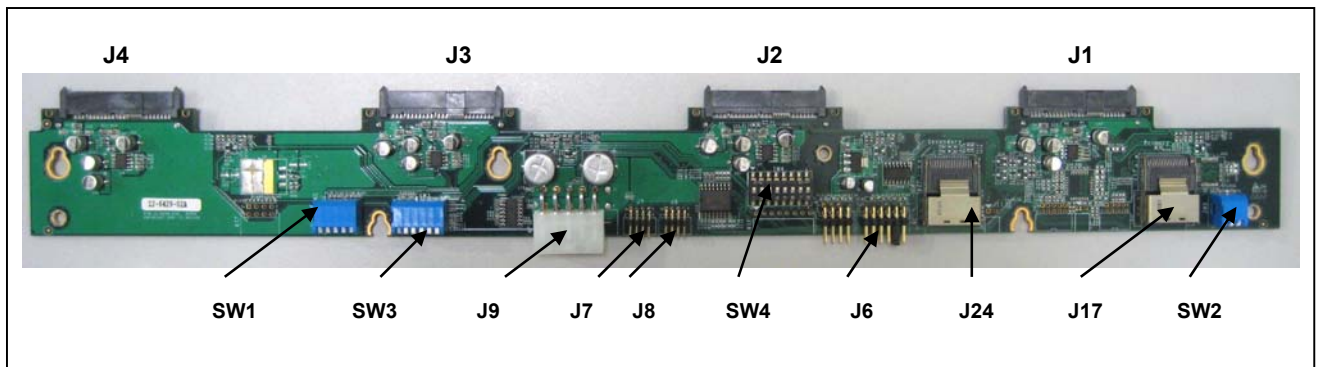


Figure 2 Backplane Board 12-6429-02A

HEADER	J6	Shunt-Jumper on pin 9 - 10				
SWITCH	SW1	All DIP keys → ON				
	SW3	DIP Key 1 → ON DIP Key 2-6 → OFF				
	SW4	All DIP keys → ON				
	SW2	Backplane Board	Card Port	SW2 DIP POSITION		
			1	2	3	
		1	0-3	ON	ON	ON
		2	4-7	ON	ON	OFF
		3	8-11	ON	OFF	ON
		4	12-15	ON	OFF	OFF
		5	16-19	OFF	ON	ON
		6	20-23	OFF	ON	OFF

Table 1 Switch &amp; Header Setting on Backplane Board

## V. Connection on Backplane Board

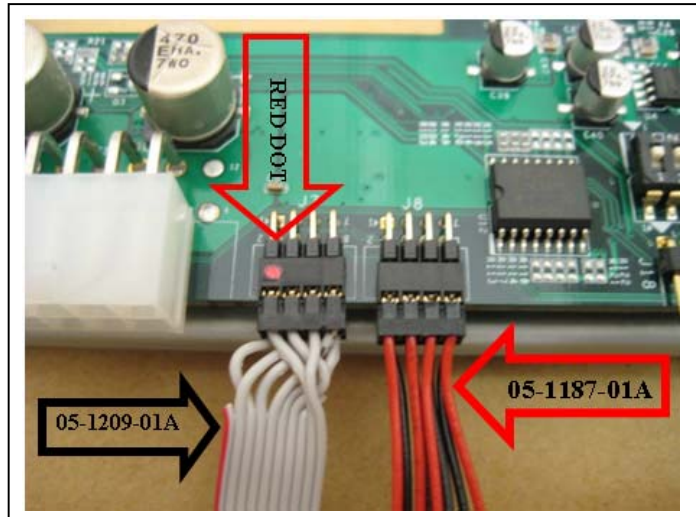
### 1. Data Cable Connection.

Data Cable Connector	HDD Type
J17	SATA / SAS (primary)
J24	SAS (secondary)

Table 2 Data Cable Connector on the board

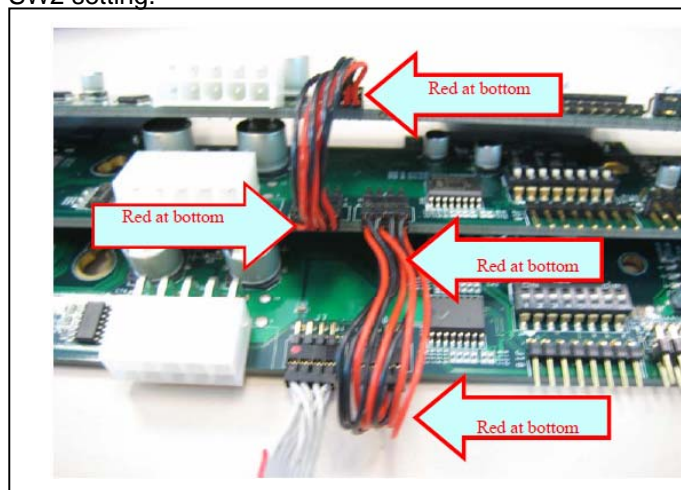
## 2. I<sup>2</sup>C Cable Connection

1. The I<sup>2</sup>C Cable 05-1209-01A must be installed on the First Backplane Board of the unit. Connect the 4x2 Cable Connector Housing to the J7 Header on the Board ("Red Point" of Housing Connector to pin #1 J7 Header). The SW2 of this First Board that connect to PORT 0 of the Card must be set to Binary 0 (ON ON ON).



**Figure 3 - I<sup>2</sup>C cable plugged into backplane**

2. The next/ Second Board (if any) must be daisy chained with the First Board using cable 05-1187-01A on J8 and J7. Please be consistent in the way of connecting this cable (Red wires to Odd pin number). The SW2 of this Second Board that connect to PORT 1 of the Card SW2 must be set to Binary 1 (ON ON OFF).
3. Repeat similar step no.2 if there is additional backplane boards. Refer to Table 1 for SW2 setting.



**Figure 4 Daisy Chain Connection**

3. Power Supply Cable Connection Connect the Power Supply DC Cable to J9 on each Backplane Board (B/P).

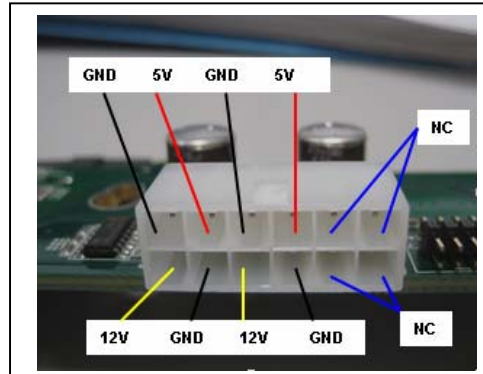


Figure 5 J9 Power Input Pin Out

4. HDD Connection

Engage the HDD on J1, J2, J3, J4.

## VII. I<sup>2</sup>C Cable Connection on Controller Card

1. The I<sup>2</sup>C 5x2 Cable Connector Housing connects to the 3Ware Card I<sup>2</sup>C Header (The Red Point of the Cable Housing Connector to Pin-1 of Card Header).

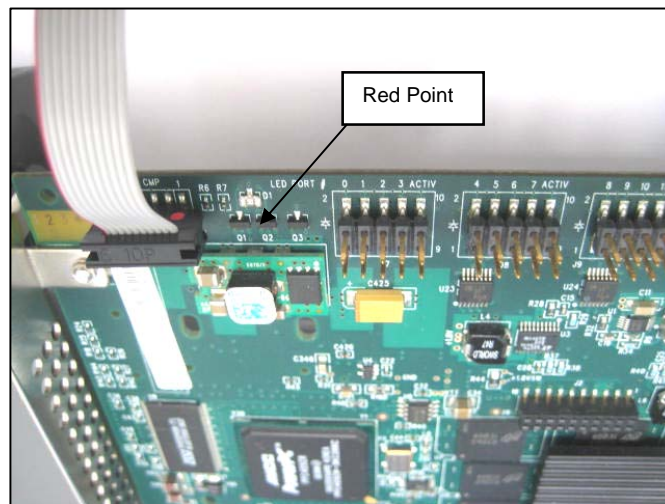


Figure 6 - I<sup>2</sup>C cable plugged into controller card



## VII. Description of LED codes

The following table describes the drive status LED code.

COLOR	STATUS
Solid Green	Drive OK
Blinking Green	Identify
Black	No Drive
Red and Green	Hot Spare
Blinking Red and Green	Rebuilding
Solid Red	Drive timeout or RAID DCB Error
Blinking Red	SMART threshold exceeded error or ECC error
Blinking and Solid Blue	Drive Activity

Table 3 Drive Bay Status LED Code Description

Drive time-out, DCB error, SMART threshold exceeded, or ECC error will retain across power cycle (non-volatile).

The exceptions are:

- ECC error if mapped out by drive (through RAID creation, initialize, write operation), firmware will report solid green instead of blinking red.
- DCB error result in solid red across power cycles, unless user creates new array using the same drive, which firmware will report solid green.
- SMART error will retain its status through initialization, rebuilding, and array creating by blinking red.
- Drive timeout error may or may not retain solid red, if firmware at any point can communicate with the drive after power cycle, reset, or hard reset.

## Bay LED Support on Ci Design NSR Unit Using SGPIO with Areca Controller Card

### I. Introduction

This manual will provide the information for Bay LED Support on Ci Design NSR Enclosures with the Horizontal Backplane Board 12-6429-03A, 12-6429-08A using the SGPIO of Areca Controller Card for enabling the drive bay Activity LED and the Status / Fail LED. The drive bay Power LED is supported from the backplane board.

### II. Required materials:

1. Data Cable SFF8087 with Side-Band.
2. The Backplane Board that has been flashed with the correct Firmware (Blue Point marking on U10 surface on the board).

### III. Settings on Backplane Board

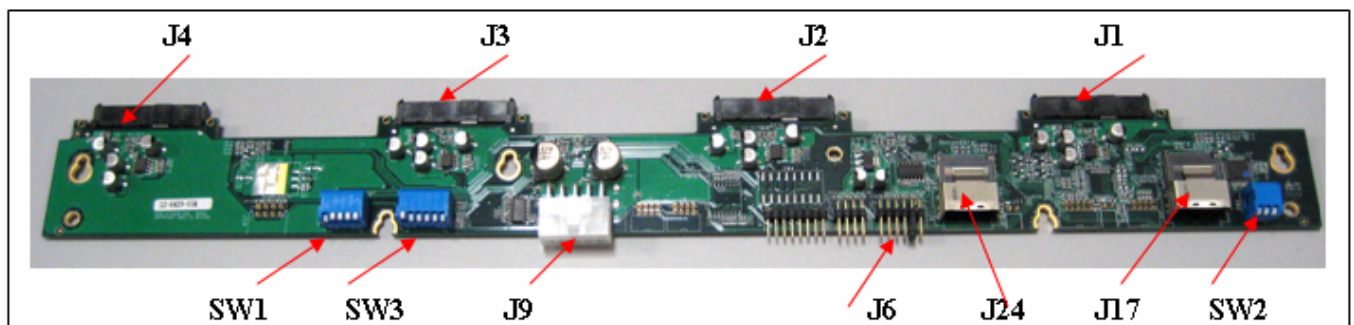


Figure 1 Backplane Board 12-6429-03A

HEADER	J6	Shunt-Jumper on pin 9 - 10
SWITCH	SW1	DIP Key 1 → ON DIP Key 2-5 → OFF
	SW2	All DIP keys → ON
	SW3	DIP Key 1 → OFF DIP Key 2-6 → ON

Table 1 Switch & Header Setting on Backplane Board

## IV. Connection on Backplane Board

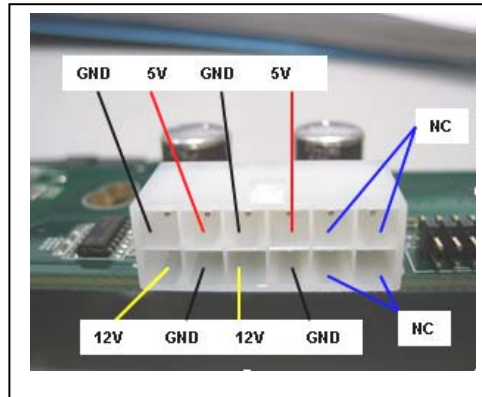
### 1. Data Cable Connection.

Data Cable Connector	HDD Type
J17	SATA / SAS (primary)
J24	SAS (secondary)

**Table 2 Data Cable Connector on the board**

### 2. Power Supply Cable Connection

Connect the Power Supply DC Cable to J9 on each Backplane Board (B/P).



**Figure 2 J9 Power Input Pin Out**

### 3. HDD Connection

Engage the HDD on J1, J2, J3, J4.

## VI. Installing the cables onto controller card

Using SGPIO, the only cable that needs to be connected to the card is the DATA Cable with Side-Band.

## Bay LED Support on Ci Design NSR unit Using Adaptec Controller Card

### I. Introduction

This manual will provide the information for bay LED Support on Ci Design NSR Enclosures using the Horizontal Backplane Board 12-6429-04A, 12-6429-09A, 12-6429-10A with Adaptec Controller Card.

Bay L E D	LED Light Color	LED Activation Support
Bay Power LED	Green	Backplane Board
Bay HDD Activity LED	Blue	HDD (P11)
Bay Status/ Fail LED	Red	Discrete Cable

**Table 1 LED Support with Adaptec Card**

### II. Bay Status/ Fail LED Support using Discrete Cable

For some Adaptec Cards that do not have the dedicated Status/ Fail LED Header (such as: model 3405, 3805, 31205, 31605), the Bay Fail LED Feature may still be obtained by connecting the Fail LED Discrete Cable to the Drive Activity LED Header and by setting an option on the Adaptec RAID Configuration Utility as follow:

1. Turn on Computer, when prompted press Ctrl+A to enter the BIOS-based configuration utility.
2. Select Serial Select Configuration Utility menu.
3. On 'LED Activity Control', select option "Disable".

### III. Required Discrete LED Cable

Adaptec Card Model	Discrete Cable Part Number	
	05-3242-03A (600 mm)	05-3242-01AX (600 mm) / 05-3242-02AX (910 mm)
3405, 3805	√	N/A
31205, 31605, 5445	N/A	√
52445	√ ( for J3, J1)	√ (for J2)

**Table 2 LED Discrete Cable for Adaptec**

### IV. Settings on Backplane Board

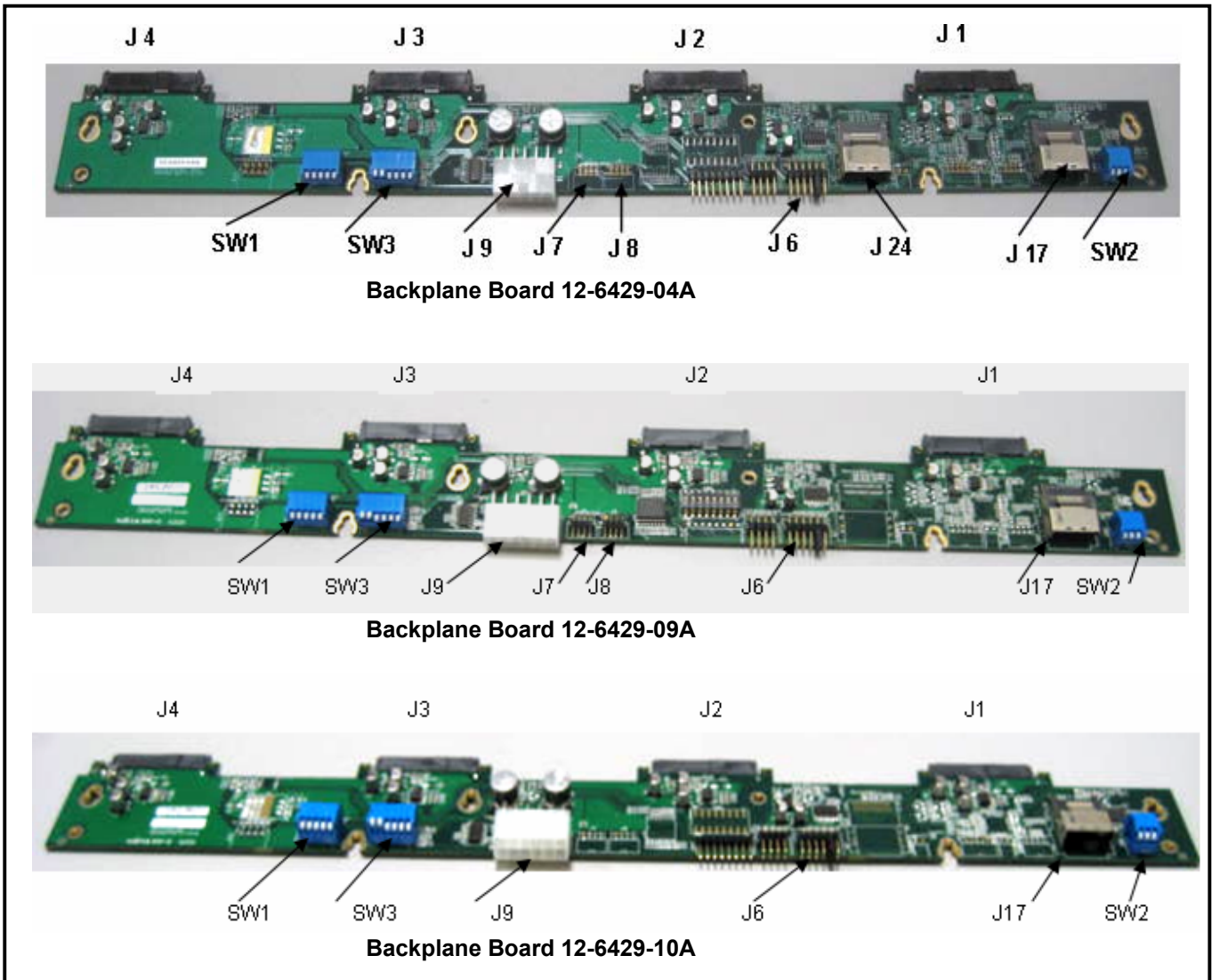


Figure 1 Backplane Board 12-6429

HEADER	J6	Shunt-Jumper on pin 9-10
SWITCH	SW1	All DIP keys → ON
	SW3	DIP Key 1-2 → OFF DIP Key 3-6 → ON
	SW2	All DIP keys → ON

**Table 3 Switch & Header Setting on Backplane Board**

## V. Connection on Backplane Board

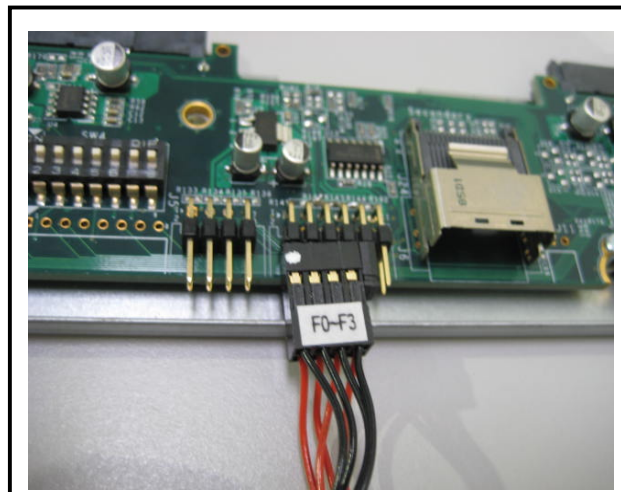
### 1. Data Cable Connection.

Data Cable Connector	HDD Type
J17	SATA / SAS (primary)
J24	SAS (secondary)

**Table 4 Data Cable Connector on the board**

### 2. LED Discrete Cable Connection

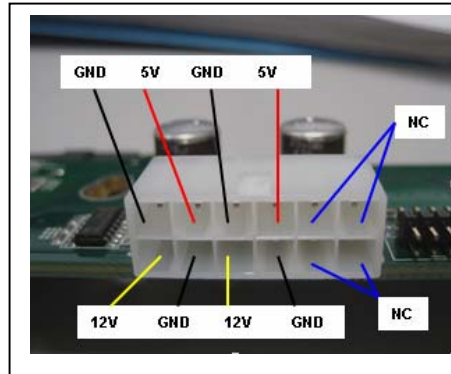
The 4x2-pin Cable Connector must be connected to the Backplane Board on Header J6 with “White Dot” of Cable Connector connects to pin-1 of J6 (Red Wires on lower row).



**Figure 2 The 2x4 Cable Housing Connection to Backplane Board**

### 3. Power Supply Cable Connection

Connect the Power Supply DC Cable to J9 on each Backplane Board (B/P).



**Figure 3 J9 Power Input Pin Out**

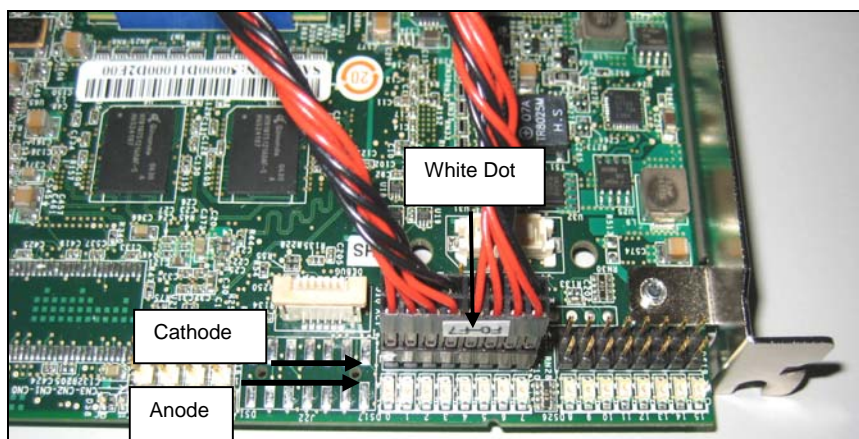
### 4. HDD Connection

Engage the HDD on J1, J2, J3, J4.

## VI. LED Discrete Cable Connection on Adaptec Controller Card

The 8x2 Cable Connector must be connected to the Controller Card on the Status/ Fail LED Headers with the Red wires are connected to the Anode (A) pin-row (Arrow of Cable Connector to pin-2 of Header or “White-Dot” of Cable Connector to pin-1 of Header). See Figure 4.

**Note:** The Location of LED Header on the Card will vary and depend on the Card Model, but the LED Cable Connection Orientation to the Card LED Headers follows this direction.



**Figure 4 The 8x2 Cable Housing Connection to Adaptec Card**

## VII. Instructions for connecting the Discrete Fail LED Cable

1. Connect the 4X2-pin Cable Connector (labeled **F0-F3**) to backplane board whose Data Cable is connected to Port **CN0** on the controller card. Refer to Section V for cable connection.
2. Connect the other 4X2-pin Cable Connector (labeled **F4-F7**) to the next backplane (if any) whose Data Cable is connected to Port **CN1** on the controller card. Refer to Section V for cable connection.
3. Connect the 8X2-pin Cable Connector of this Discrete Cable (labeled **F0-F7**) to the Card 8x2 LED Header that is corresponding to the above Data Port (**CN0** and **CN1**). Refer to section VI for cable connection. Refer to Section VIII for Location of the Status/ Fail LED Headers on the Card. If there are more backplane boards and there are more Data Ports available on the Card, similarly follow step VII.1 – VII.3 for the additional boards:
4. Connect the 4X2-pin Cable Connector (labeled **F8-F11**) to backplane board whose Data Cable is connected to its corresponding Port (**CN2**) on the controller card. Refer to Section V for cable connection.
5. Connect the other 4X2-pin Cable Connector (labeled **F12-F15**) to the next backplane (if any) whose Data Cable is connected to its corresponding Port (**CN3**) on the controller card. Refer to Section V for cable connection.
6. Connect the 8X2-pin Cable Connector of this Discrete Cable (labeled **F8-F15**) to the Card 8x2 LED Header that is corresponding to the above Data Port (**CN2** and **CN3**). Refer to section VI for cable connection. Refer to Section VIII for Location of the Status/ Fail LED Headers on the Card.

## VIII. Location of the Status/ Fail LED Headers on the Card

The Status/ Fail LED Header Location on the Card is indicated with ellipse-mark

### 1. Adaptec 3805, 3405

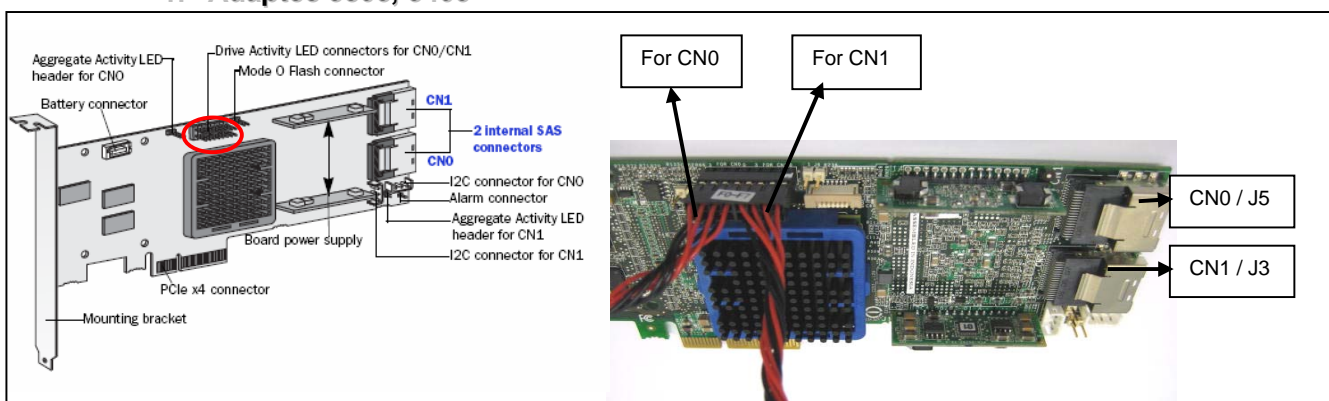


Figure 5 Adaptec 3805



## 2. Adaptec 31605, 31205

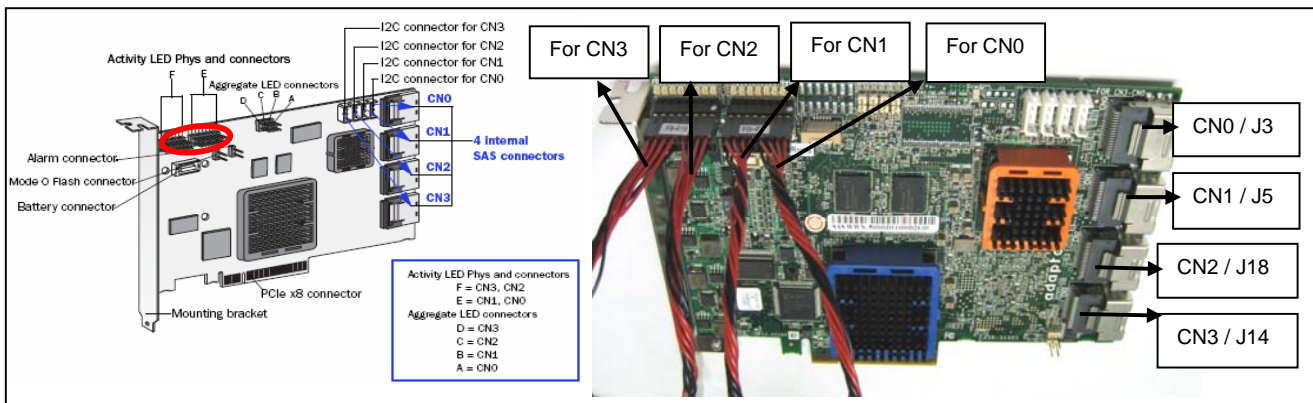


Figure 6 Adaptec 31605

## 3. Adaptec 5445

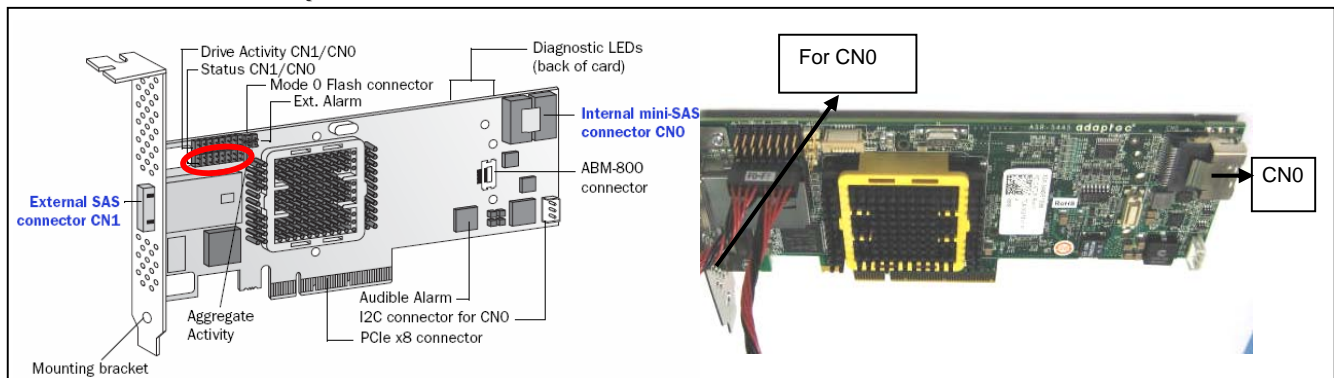


Figure 7 Adaptec 5445

## 4. Adaptec 52445

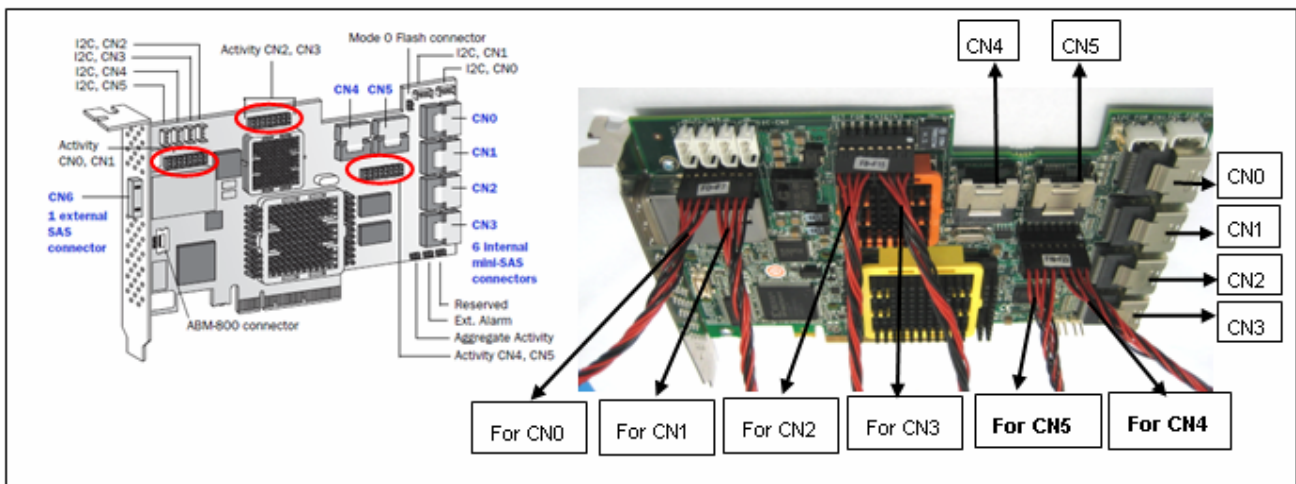


Figure 8 Adaptec 52445

## Bay LED Support on Ci Design NSR Unit With LSI Logic Controller Card

### I. Introduction

The following instructions will provide information to support the Bay LED on Ci Design NSR Unit using the horizontal Backplane Board 12-6429-04A with LSI Logic Controller Card.

Bay L E D	LED Activation Support
Bay Power LED	Backplane Board
Bay HDD Activity LED	HDD (P11)
Bay Status/ Fail LED	Discrete Cable

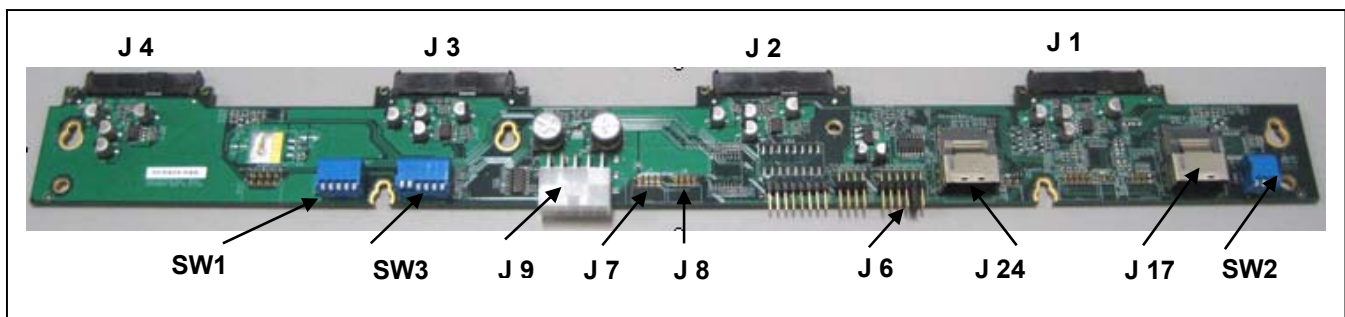
**Table 1 LED Support with LSI Logic Card**

### II. Required LED Cable:

LSI CONTROLLER CARD	LED CABLE PART NUMBER	
	L 600 mm	L 910 mm
MegaRAID SAS/SATA 84016E	05-3243-03A	05-3243-04A
MegaRAID SAS/SATA 8708ELP	05-3243-01A	05-3243-02A

**Table 2 LED Discrete Cable**

### III. Settings on Backplane Board



**Figure 1 Backplane Board 12-6429**

HEADER	JP 6	Shunt Jumper on pin 9 -10
SWITCH	SW1	All DIP keys → ON
	SW3	DIP Key 1-2 → OFF DIP Key 3-6 → ON
	SW4	All DIP keys → OFF
	SW2	All DIP keys → ON

**Table 3 Switch & Header Setting on Backplane Board**

## IV. Connection on Backplane Board

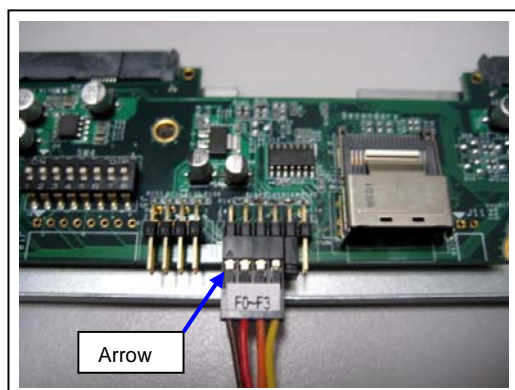
### 1. Data Cable Connection.

Data Cable Connector	HDD Type
J17	SATA / SAS (primary)
J24	SAS (secondary)

**Table 4 Data Cable Connector on the board**

### 2. LED Discrete Cable Connection

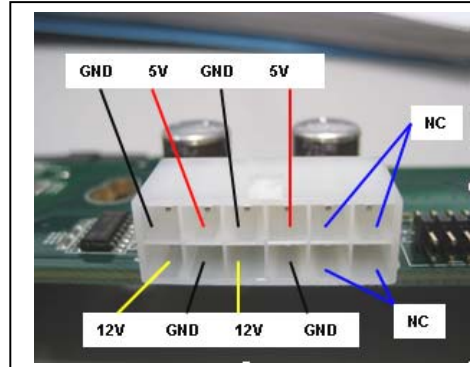
The 4-pin Cable Connector of the LED Discrete Cable must be connected to the Backplane Board on the Upper Row of J6 (Arrow of Cable Connector to pin-1 of J6) as shown on Figure 2.



**Figure 2 The 4-pin LED Cable Connection to the Backplane Board**

### 3. Power Supply Cable Connection

Connect the Power Supply DC Cable to J9 on each Backplane Board (B/P).



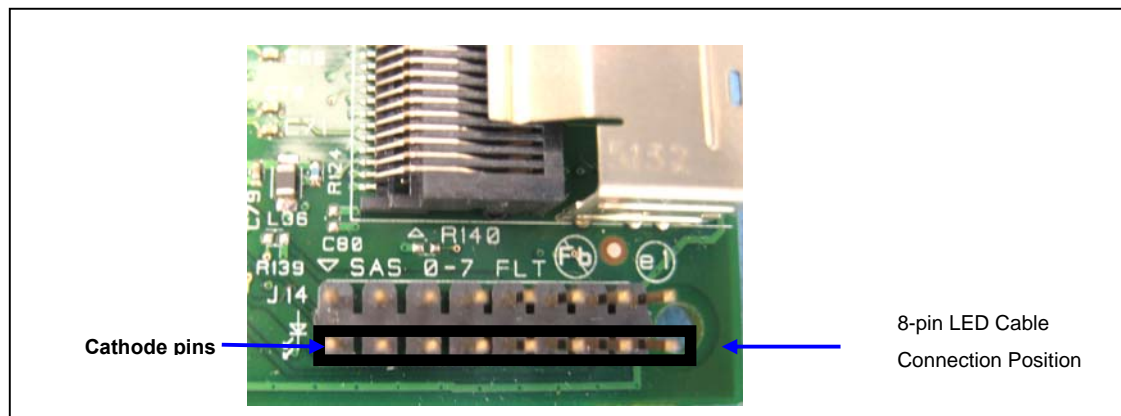
**Figure 3 J9 Power Input Pin Out**

### 4. HDD Connection

Engage the HDD on J1, J2, J3, J4.

## V. LED Discrete Cable Connection on Controller Card

The 8-pin Cable Connector must be connected to the LSI Card on the 8x2 Fault LED Header on Cathode Pins as shown on Figure 3.



**Figure 3 Connection of the 8-pin LED Cable Connector to LSI Card**

The Location and Cable Connection/ Orientation to this LED Header depend on the LSI Card Model. Refer to Section VII for details.

## VI. Instructions for connecting the discrete Fail LED cable

1. Connect the 4-pin Cable Connector of the LED Cable Assembly (Label F0-F3) to the First Backplane Board. The Data Cable connects to the Data Ports 0-3 on LSI Card. Refer to IV.2 for the Backplane LED Cable Connection.
2. Connect the other 4-pin Cable Connector (Label F4-F7) to the Second Backplane Board, if any, whose Data Cable connects to the Data Ports 4-7 on LSI Card. Refer to IV.2 for the Backplane LED Cable Connection.
3. Connect the 8-pin Cable Connector of this LED Cable Assembly (Label 0-7) to the Card on the 8x2 Fault LED Header Location that is corresponding to the Data Ports 0 - 7. Refer to Section V for the LED Cable Connection on the Card.

For more backplane boards on more location of Data Ports on the Card, similarly follow step VI1- VI3:

4. Connect the 4-pin Cable Connector of the LED Cable Assembly (Label F8-F11) to the Third Backplane Board whose Data Cable connects to the Data Ports 8-11 on LSI Card. Refer to IV.2 for the Backplane LED Cable Connection.
5. Connect the other 4-pin Cable Connector (Label F12-F15) to the Forth Backplane Board whose Data Cable connects to the Data Ports 12-15 on LSI Card. Refer to IV.2 for the Backplane LED Cable Connection.
6. Connect the 8-pin Cable Connector of this LED Cable Assembly (Label 8-15) to the Card on the 8x2 Fault LED Header Location that is corresponding to the Data Ports 8 -15. Refer to Section V for the LED Cable Connection on the Card.

## VII. LED Cable Connection and Orientation on LSI Card

The Fault LED Header is highlighted on the drawing.

### 1. LSI 84016E

LED Cable F0-F7 connects to J14 Header on the Card, Arrow of Cable Connector to pin-2 of Header.

LED Cable F8-F15 connects to J3 Header on the Card, Arrow of Cable Connector to pin-2 of Header.

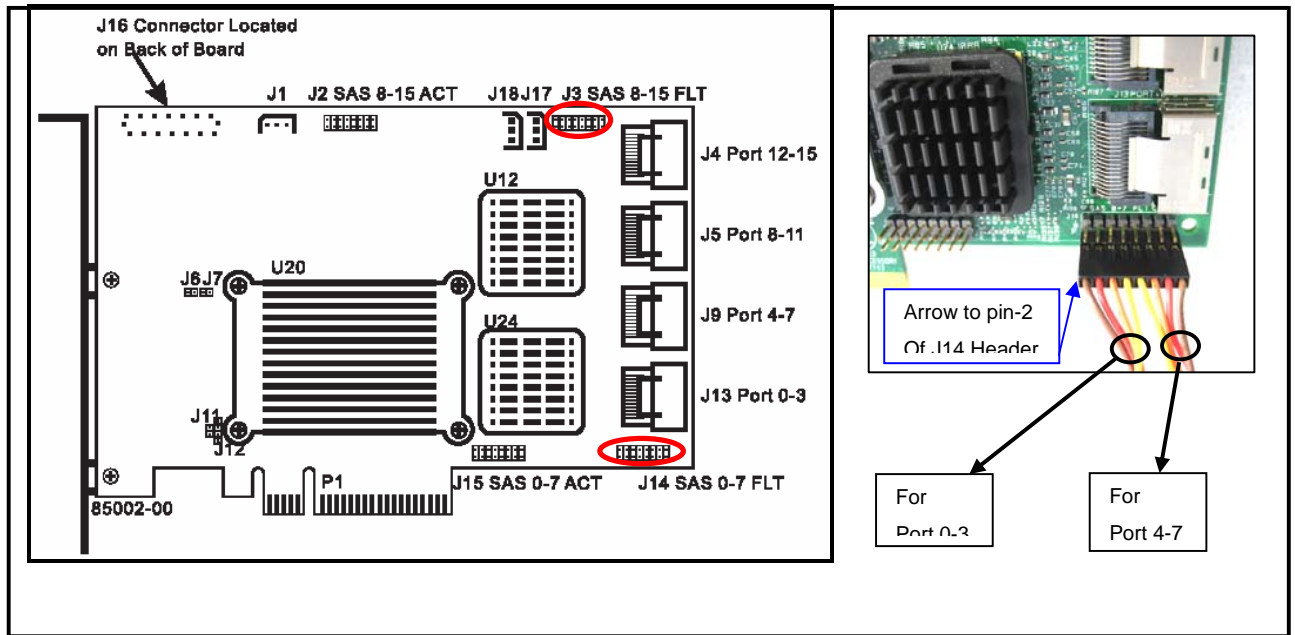


Figure 4 LSI SAS/SATA 84016E

### 2. LSI 8708ELP

LED Cable F0-F7 connects to J5 Header on the Card, Arrow of Cable Connector to pin-16 of Header.

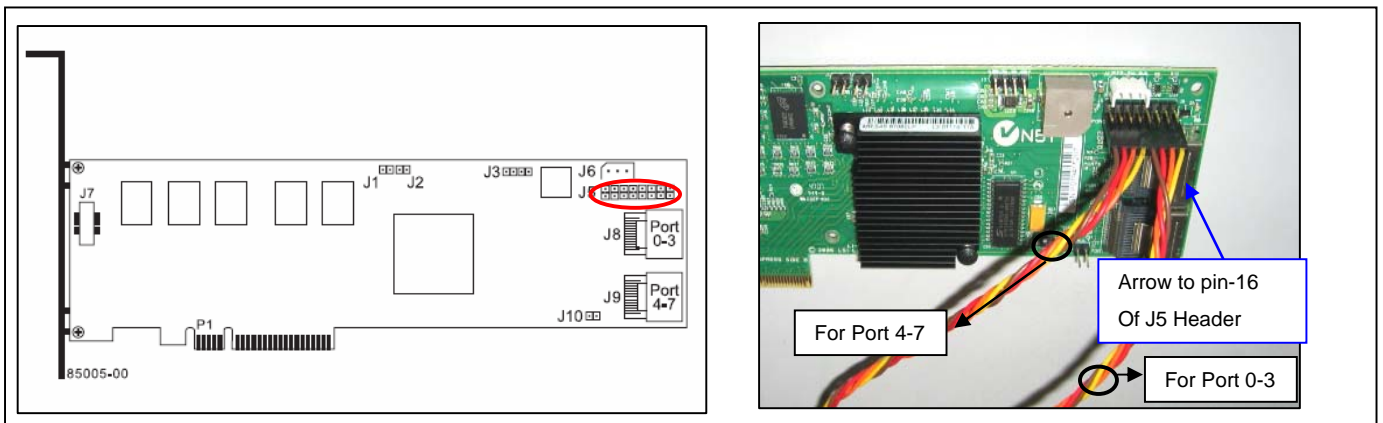


Figure 5 LSI SAS/SATA 8708ELP

## Appendix A *Equipment Log*

Use the following worksheet provided below to record information about your system.

Item	Manufacture Name and Model Number	Serial Number	Date Installed
Chassis			
Server Board			
Processor 1			
Processor 2			
Memory			
Video Card			
Hard Disk 1			
Hard Disk 2			
Hard Disk 3			
Hard Disk 4			
Hard Disk 5			
Hard Disk 6			
Hard Disk 7			
Hard Disk 8			
Hard Disk 9			
Hard Disk 10			
Hard Disk 11			
Hard Disk 12			
Hard Disk 13			
Hard Disk 14			
Hard Disk 15			
Hard Disk 16			
Slim CD-ROM			
Slim FDD			
Controller Card			

## Appendix B *Calculating Power Usage*

### Calculating DC Current Usage

List all current consumption into the appropriate voltage level for each device and calculate the total current on each voltage level.

Device	Current (Maximum) at voltage level:					
	(+5Vsb)	(+3.3V)	(+5V)	(+12V)	(-5V)	(-12V)
Server Board						
Processor(s)						
Total Memory						
Front Panel LEDs			0.10			
SCSI/ATA/FC backplane			1.00			
Slim Floppy Disk Drive						
Slim CD-Rom Drive						
Total Hard Disk Drives						
Add-in-Card 1						
Add-in-Card 2						
Add-in-Card 3						
Cooling Fans* , 4x80mm				3.00		
Total Current						
<b>Maximum Ratings**</b> (for comparison)	<b>2.0A</b>	<b>28A</b>	<b>35A</b>	<b>28A</b>	<b>0.5A</b>	<b>0.8A</b>

\* Typical 7500rpm 40mm x40mm fan. Higher speed fans required more current, refer to the fan label for power consumption information.

\*\* Typical 400W 1U Power Supply, refer to the PSU label for power output characteristics information.

### Calculating Total Power Usage

From the worksheet above, enter the total current for each column and then multiply the voltage by the total current to get the total wattage for each voltage level. Add all the wattages up and find the total power usage.

Voltage level and total current	Total Watts for each voltage level
+5 Vsb x (     )A =	
(+ 3.3V) x (     )A =	
(+ 5 V) x (     )A =	
(+ 12 V) x (     )A =	
(-5 V) x (     )A =	
(-12V) x (     )A =	
<b>Total Combined Wattage</b>	



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