

6Gb/s SATA RAID Cards

ARC-1203 series

(PCIe 2.0 to 6Gb/s SATA RAID Controllers)

Quick Start Guide

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FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against 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.

Manufacturer's Declaration for CE Certification

We confirm ARC-1203 series has been tested and found compliant with the requirements in the council directive relating to the EMC Directive 2004/108/EC. Regarding to the electromagnetic compatibility, the following standards were applied:

EN 55022: 2006, Class B
EN 61000-3-2: 2006
EN 61000-3-3: 1995+A1: 2001+A2: 2005

EN 55024:1998+A1:2001=A2:2003
IEC61000-4-2: 2001
IEC61000-4-3: 2006
IEC61000-4-4: 2004
IEC61000-4-5: 2005
IEC61000-4-6: 2006
IEC61000-4-8: 2001
IEC61000-4-11: 2004

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INTRODUCTION

1. Introduction

This section presents a brief overview of the 6Gb/s SATA RAID controller, ARC-1203-4i/8i. (PCIe 2.0 to 6Gb/s SATA RAID controllers)

1.1 Overview

The ARC-1203-4i/8i internal PCIe 2.0 host RAID controllers are a cost-effective solutions for connecting up to 4/8 6Gb/s SATA peripheral devices. The RAID controllers are based on the same RAID kernel of field-proven internal/external RAID controller and same device driver architecture with widely used 3Gb/s and 6Gb/s SAS/SATA RAID controller. Applications that benefit most features from these controllers include NAS, server RAID solutions, web servers, near-line backup, security systems and streaming applications. ARC-1203 series support directly attached 4/8 internal 6Gb/s SATA ports via 1/2 SFF-8087 connector.

The ARC-1203 series 6Gb/s RAID controllers are low-profile PCI cards, ideal for 1U and 2U rack-mount systems. These controllers utilize the same RAID kernel that has been field-proven in existing external RAID controller products, allowing Areca to quickly bring stable and reliable PCIe 2.0 6Gb/s SATA RAID controllers to the market.

Unparalleled Flexibility

Embedded with ARM-based storage I/O processor makes those products a pure hardware RAID controller and raise the standard to higher performance levels with several enhancements including 6Gb/s SATA ports, on-board 512MB SDRAM memory and high performance PCIe 2.0 x8 lane host interface bus interconnection. The ARC-1203 series RAID card with a dedicated processor and cache memory that offloads the parity calculations from the CPU, as this means you can pair it with a slow, lower power processor, the cost to benefit ratio for this cost-effective RAID adapter is negligible. With several port configuration options 4 internal and 8 internal ARC-1203 series RAID can be easily integrated into a variety of hardware and software platforms, and are ideal for cost-effective, high-capacity NAS, DVR and cold storage market.

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Unsurpassed Data Availability

As storage capacities continue to rapidly increase, users need greater level of disk drive fault tolerance, which can be implemented without doubling the investment in disk drives. The RAID 6 can offer fault tolerance greater than RAID 1 or RAID 5 but only consumes the capacity of 2 disk drives for distributed parity data. Areca entry-level RAID controllers incorporate onboard storage processors to deliver true hardware RAID. Hardware RAID cards have their own local RAID processor onboard, plus dedicated onboard cache for full hardware offloading of RAID-processing functions. The ability of hardware RAID controllers to rebuild an array in the event of a drive failure is superior to what software RAID controllers offer.

The ARC-1203 series 6Gb/s SATA RAID controllers can also provide RAID levels 0, 1, 1E, 3, 5, 6, 10, 30, 50, 60, Single Disk or JBOD for maximum configuration flexibility. Its high data availability and protection derives from Areca Technology's advanced features: Online RAID Capacity Expansion, Array Roaming, Online RAID Level / Stripe Size Migration, Global Online Spare, Automatic Drive Failure Detection, Automatic Failed Drive Rebuilding, Disk Hot-Swap, Online Background Rebuilding, Instant Availability/Background Initialization, Auto Reassign Sector, Redundant Flash Image and Battery Backup Module. The optional battery backup module provides power to the cache if it contains data not yet written to the drives when power is lost.

Maximum Interoperability

The ARC-1203 series 6Gb/s SATA RAID adapters support broad operating system including Windows 10/8/server 2012/2008/Vista/2003/XP(64-bit), Linux (Open Source), FreeBSD (Open Source), VMware, Solaris (Open Source), Mac and more, along with key system monitoring features such as enclosure management (Serial bus & SGPIO) and SNMP function. Our products and technology are based on extensive testing and validation process; same as Areca 3Gb/s and 6Gb/s SAS/SATA RAID adapter field-proven compatibility with operating systems, motherboards, applications and device drives.

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Easy RAID Management

The controllers contain an embedded McBIOS RAID manager that can access via hot key at M/B BIOS boot-up screen. This pre-boot McBIOS RAID manager can use to simplify the setup and management of RAID controller. The controller firmware also contains a browser-based McRAID storage manager which can be accessed through the Ethernet port or ArcHttp proxy server in Windows, Linux, FreeBSD and more environments. The McRAID storage manager allows local and remote to create and modify RAID set, volume set, and monitor RAID status from standard web browser. The ArcSAP quick manager can scan for multiple RAID units in the local and remote systems and provide an effective mechanism to configure and monitor your RAID units.

1.2 Features

Controller Architecture

- ARM_based 1066MHz storage I/O processor
- 512MB on-board DDR3-1066 SDRAM with ECC protection
- PCIe 2.0 x4 lanes host interface
- Support up to 4/8 x 6Gb/s SATA HDDs/SSD
- Multi-adapter support for large storage requirements
- BIOS boot support for greater fault tolerance
- BIOS PnP (plug and play) and BBS (BIOS boot specification) support
- Boot support for the uEFI host BIOS
- NVRAM for RAID event & transaction log
- Redundant flash image for controller availability
- Battery Backup Module (BBM) ready (optional)
- RoHS compliant

RAID Features

- RAID level 0, 1, 10(1E), 3, 5, 6, 30, 50, 60, Single Disk or JBOD
- Multi-level RAID 0 and RAID 10 (R00 and R100)
- Support up to 1MB stripe size
- Multiple RAID selection
- Online array roaming
- Online RAID level/stripe size migration
- Online capacity expansion and RAID level migration simultaneously

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- Online volume set growth
- Instant availability and background initialization
- Support global and dedicated hot spare
- Automatic drive insertion/removal detection and rebuilding
- Greater than 2TB capacity per disk drive support
- Greater than 2TB per volume set (64-bit LBA support)
- SED (self-encrypting drives) function support
- Support intelligent power management to save energy and extend service life
- Support for native 4K and 512 byte sector SATA devices
- Multiple pairs SSD/HDD disk clone function
- SSD automatic monitor clone (AMC) support
- Support HDD firmware update

Monitors/Notification

- System status indication through global HDD activity/fault connector, individual fault connector, LCD/serial bus connector and alarm buzzer
- SMTP support for email notification
- SNMP support for remote manager
- Enclosure management (Serial bus & SGPIO) ready

RAID Management

- Field-upgradeable firmware in flash ROM

In-Band Manager

- Hot key "boot-up" McBIOS RAID manager via M/B BIOS
- Web browser-based McRAID storage manager via ArchHTTP proxy server for all operating systems
- Support Command Line Interface (CLI)
- API library for customer to write manager utility
- Single Admin Portal (ArcSAP) quick manager utility

Out-of-Band Manager

- Firmware-embedded web browser-based McRAID storage manager, SMTP manager, SNMP agent and Telnet function via Ethernet port
- Out-of-Band API sample and functional code for customer to quickly customize its AP
- Support push button and LCD display panel (optional)

Operating System

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- Windows 10/8/2012/7/2008/Vista/XP(64-bit)/2003
- Linux
- FreeBSD
- VMware (Driver 6.x support CLI in-band management utility)
- Solaris 10/11 x86/x86_64
- Mac OS 10.5.x or higher

6Gb/s SATA RAID controllers		
Model name	ARC-1203-4i	ARC-1203-8i
I/O Processor	ARM_based 1066MHz storage I/O processor	
Form Factor (H x L)	Low Profile: 64.4 x 168 mm	
Host Bus Type	PCIe 2.0 x4 Lanes	
Driver Connector	1xSFF-8087	2xSFF-8087
Drive Support	Up to 4 x 6Gb/s SATA HDDs/SSD	Up to 8 x 6Gb/s SATA HDDs/SSD
RAID Level	0, 1, 1E, 3, 5, 6, Single Disk, and JBOD	0, 1, 1E, 3, 5, 6, 10, 30, 50, 60, Single Disk, and JBOD
On-Board Cache	512MB on-board DDR3-1066 SDRAM with ECC protection	
Management Port	In-Band: PCIe / Out-of-Band: LCD, and LAN Port	
Enclosure Ready	Individual Faulty Header, SGPIO, and Serial bus	

Note:

Low-profile bracket has included on the low profile board shipping package.

2. Hardware Installation

This section describes the procedures for installing the 6Gb/s SATA RAID controllers.

2.1 Before You First Installing

Thanks for purchasing the 6Gb/s SATA RAID controller as your RAID data storage subsystem. This user manual gives simple step-by-step instructions for installing and configuring the 6Gb/s SATA RAID controller. To ensure personal safety and to protect your equipment and data, reading the following information package list carefully before you begin installing.

Package Contents

If your package is missing any of the items listed below, contact your local dealers before you install. **(Disk drives and disk mounting brackets are not included)**

- 1 x 6Gb/s SATA RAID controller in an ESD-protective bag
- 1 x Installation CD – containing driver, relative software, an electronic version of this manual and other related manual
- 1 x Quick start guide
- 1 x Low-profile bracket

System Requirement

The 6Gb/s SATA RAID controller can be installed in an universal PCIe slot and requires a motherboard that:

ARC-1203 series 6Gb/s SATA RAID controller requires:

- Comply with the PCIe 2.0 x4 lanes
It can work on the PCIe 2.0 x1, x4 and x8 signal with x4 or x8 slot M/B.
- Backward-compatible with PCIe 1.0

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2.2 Board Layout

The RAID controllers can support a family SATA interface included 4/8 internal ports with 6Gb/s capability. This section provides the board layout and connector/jumper for the 6Gb/s SATA RAID controller.

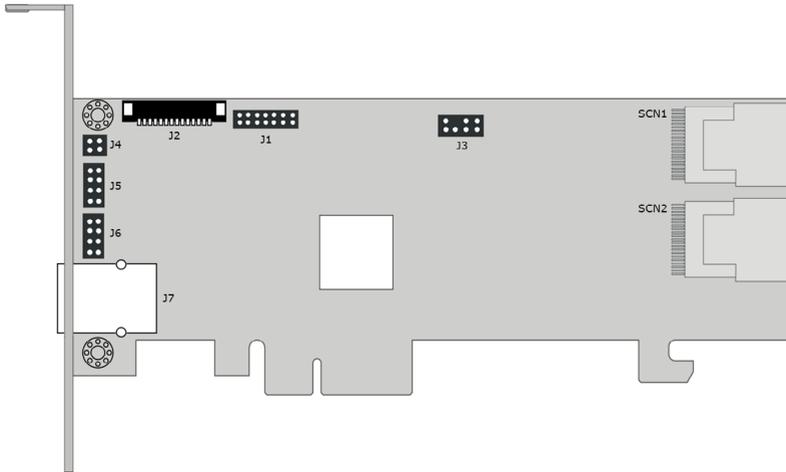


Figure 2-1, ARC-1203-4i/8i 6Gb/s SATA RAID controller

Connector	Type	Description
1. (J1)	Manufacture Purpose Port	14-pin header
2. (J2)	Battery Backup Module Connector	14-pin box header
3. (J3)	I ² C/LCD Connector	7-pin header
4. (J4)	Global Fault/Activity LED	4-pin header
5. (J5)	Individual Activity LED (1-8 Ports) Header	8-pin header
6. (J6)	Individual Fault LED (1-8 Ports) Header	8-pin header
7. (J7)	Ethernet port	RJ45
8. (SCN1)	SATA 1-4 Ports	SFF-8087
9. (SCN2)	SATA 5-8 Ports (for ARC-1203-8i)	SFF-8087

Table 2-1, ARC-1203-4i/8i connectors

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2.3 Installation

Use the following instructions below to install a PCIe 2.0 6Gb/s SATA RAID controller.

Step 1. Unpack

Unpack and remove the PCIe 2.0 6Gb/s SATA RAID controller from the package. Inspect it carefully, if anything is missing or damaged, contact your local dealer.

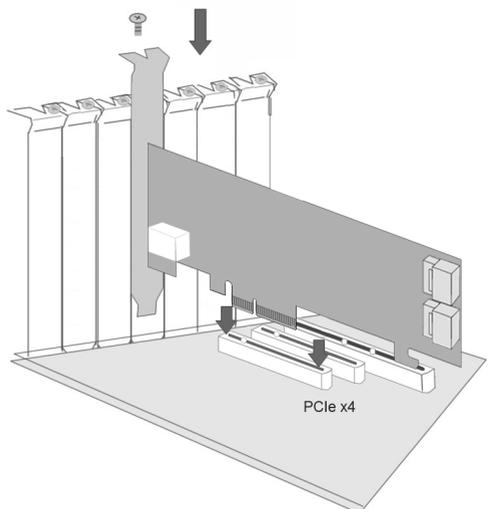
Step 2. Power PC/Server Off

Turn off computer and remove the AC power cord. Remove the system's cover. For the instructions, please see the computer system documentation.

Step 3. Install the PCIe 6Gb/s SATA RAID Cards

To install the 6Gb/s SATA RAID controller, remove the mounting screw and existing bracket from the rear panel behind the selected PCIe 2.0 slot. Align the gold-fingered edge on the card with the selected PCIe 2.0 slot. Press down gently but firmly to ensure that the card is properly seated in the slot, as shown on Figure 2-2. Then, screw the bracket into the computer chassis. ARC-1203 series controllers require a PCIe 2.0 x4/x8 slot.

Figure 2-2, Insert into a PCIe slot



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Step 4. Mount the Drives

You can connect the SATA drives to the controller through direct cable and backplane solutions. In the direct connection, SATA drives are directly connected to 6Gb/s SATA RAID controller port with SATA cables. The 6Gb/s SATA RAID controller can support up to 8 ports. Remove the front bezel from the computer chassis and install the cages or SATA drives in the computer chassis. Loading drives to the drive tray if cages are installed. Be sure that the power is connected to either the cage backplane or the individual drives.

In the backplane solution, SATA drives are directly connected to 6Gb/s SATA system backplane. The number of SATA drives is limited to the number of slots available on the system backplane.

Step 5. Install SATA Cable

This section describes SATA cable how to connect on controller.

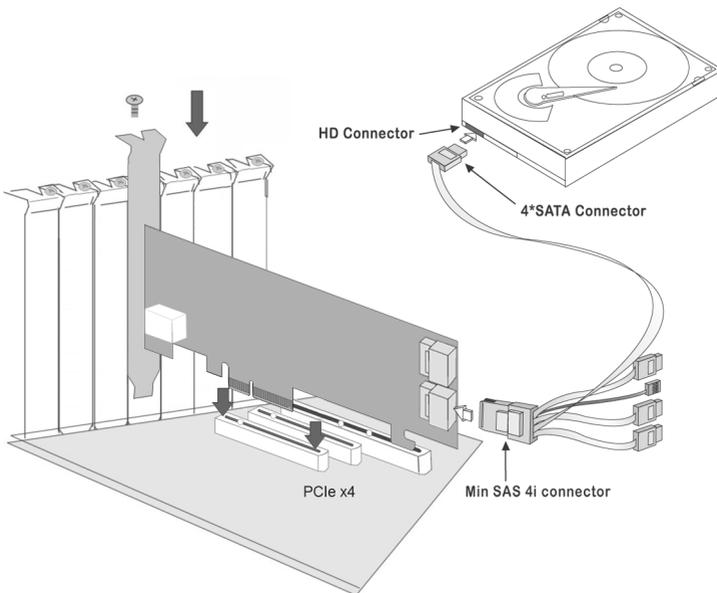


Figure 2-3, Connecting to HDD

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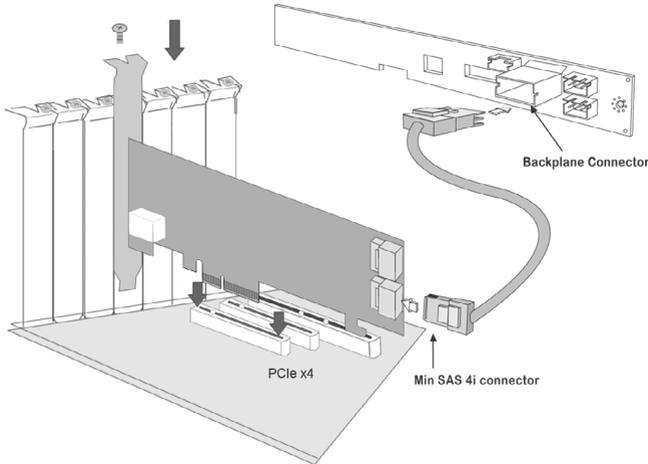


Figure 2-4, Connecting to Backplane

Step 6. Install the LED Cable (Optional)

The preferred I/O connector for server backplanes is the internal SFF-8087 connector. This connector has eight signal pins to support four SATA drives and six pins for the SGPIO (Serial General Purpose Input/Output) side-band signals. The SGPIO bus is used for efficient LED management and for sensing drive Locate status. See SFF 8485 for the specification of the SGPIO bus. For backplane without SGPIO supporting, Please refer to Section 2.6 LED cables for fault/activity LED cable installation.

LED Management: The backplane may contain LEDs to indicate drive status. Light from the LEDs could be transmitted to the outside of the server by using light pipes mounted on the SATA drive tray. A small microcontroller on the backplane, connected via the SGPIO bus to a 6Gb/s SATA RAID controller, could control the LEDs. Activity: blinking 5 times/second and Fault: solid illuminated

Drive Locate Circuitry: The location of a drive may be detected by sensing the voltage level of one of the pre-charge pins before and after a drive is installed.

The following signals define the SGPIO assignments for the Min SAS 4i internal connector (SFF-8087) in the 6Gb/s SATA RAID controller.

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PIN	Description	PIN	Description
SideBand0	SClock (Clock signal)	SideBand1	SLoad (Last clock of a bit stream)
SideBand2	Ground	SideBand3	Ground
SideBand4	SDataOut (Serial data output bit stream)	SideBand5	SDataIn (Serial data input bit stream)
SideBand6	Reserved	SideBand7	Reserved

Step 7. Adding a Battery Backup Module (Optional)

Please refer to Appendix B Battery Backup Module (ARC-6120BA-T121) for installing the BBM in your 6Gb/s SATA RAID controller.

Step 8. Re-check Fault LED Cable Connections (Optional)

Be sure that the proper failed drive channel information is displayed by the fault LEDs. An improper connection will tell the user to “Hot Swap” the wrong drive. This can result in removing the wrong disk (one that is functioning properly) from the controller. This can result in failure and loss of system data.

Step 9. Power up the System

Thoroughly check the installation, reinstall the computer cover, and reconnect the power cord cables. Turn on the power switch at the rear of the computer (if equipped) and then press the power button at the front of the host computer.

Step 10. Install the Controller Driver

For a new system:

- Driver installation usually takes place as part of operating system installation. Please refer to Chapter 4 “Driver Installation” for the detailed installation procedure.

For an existing system:

- To install the controller driver into the existing operating system. For the detailed installation procedure, please refer to the Chapter 4, “Driver Installation”.

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Step 11. Install ArcHTTP Proxy Server

The ARC-1203 firmware has embedded the web-browser McRAID storage manager. ArcHTTP proxy server will launch the web-browser McRAID storage manager. It provides all of the creation, management and monitor ARC-1203 series RAID controller status. Please refer to the Chapter 5 for the detail "ArcHTTP Proxy Server Installation". For SNMP agent function, please see the "SNMP Operation & Installation" section in the Appendix C of the user manual.

Step 12. Configure Volume Set

With Areca series RAID cards, there are 4 methods to manage your ARC-1203 series RAID controller. It can be configured by using the LCD with keypad, McBIOS RAID manager (terminal emulation) or McRAID storage manager (via LAN port and ArcHTTP proxy utility).

- **Method 1: Internal PCIe Connection (McBIOS RAID Manager)**
The ARC-1203 series RAID controller can be configured via a BIOS start up McBIOS manager. The McBIOS RAID manager is firmware-based and is used to configure RAID sets and volume sets. Because the utility resides in the ARC-1203 series RAID controller firmware, operation is independent of any operating systems on your computer. For additional information on using the BIOS on-screen to configure the RAID subsystem see the Chapter 3 of "BIOS Configuration" of the user manual.
- **Method 2: Internal PCIe Connection (McRAID Storage Manager)**
You're now ready to use the McRAID storage manager to set up RAID volumes. Your ARC-1203 series RAID controller can be configured by using McRAID storage manager (launched by ArcHTTP proxy server). ARC-1203 RAID controller has embedded the TCP/IP & web browser-based RAID manager in the firmware. User can use the standard web browsers to manage the RAID controller using ArcHTTP proxy server installed. For additional information on using the McRAID storage manager to configure the RAID controller see the Chapter 6 of "Web Browser-Based Configuration" of the user manual.
- **Method 3: LAN Port Connection (McRAID Storage Manager)**
The ARC-1203 RAID controller has embedded the TCP/IP & web

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browser-based RAID manager in the firmware. User can remote manage the RAID controller without adding any user specific software (platform independent) via standard web browsers directly connected to the 10/100Mbps RJ45 LAN port. For additional information on using the LAN port to configure the RAID subsystem see the Chapter 6 of “Web Browser-Based Configuration” of the user manual.

- **Method 4: Front LCD Panel with Keypad (Optional)**
You can use LCD front panel and keypad function to simply create the RAID volume. The LCD status panel also informs you of the disk array’s current operating status at a glance. For additional information on using the LCD to configure the RAID controller see the ARC1000_LCD manual on the shipping CD. The LCD provides a system of screens with areas for information, status indication, or menus. The LCD screen displays up to two lines at a time of menu items or other information.

Step 13. Format, Partition and Mount the ARC-1203 RAID Controller Volumes

After the volume set is ready for system accesses, it needs to be partitioned, formatted, and mounted by the operating system. There are various steps, depending on what operating system you are using (Windows, Linux, FreeBSD or Mac, etc.). Detailed steps for each operating system are provided on their disk utility. After that, the ARC-1203 series RAID controller can be fully used.

Step 14. Determining the Boot Sequences

The ARC-1203 series RAID controller is a bootable device. You can use it as primary boot drive or secondary storage drive. If your system already contains a bootable device with an installed operating system, you can set up your system to boot a second operating system from the new ARC-1203 series RAID controller volume.

For PC system:

To add a second bootable controller, you may need to enter setup of motherboard BIOS and change the device boot sequence so that the new ARC-1203 series RAID controller volume heads the list. If the system BIOS setup does not allow this change, your system

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may be not configurable to allow the new ARC-1203 RAID controller volume to act as a second boot device.

For Apple Mac Pro system:

Areca controller has supported the uEFI BIOS on the PCIe 2.0 6Gb/s SATA RAID controller. You have other alternatively to add volumes on the Intel-based Mac bootable device listing. You can follow the following procedures to add 6Gb/s SATA RAID controller on the Mac bootable device listing.

1. Set the BIOS selection in System Controls: Advance Configuration to "uEFI" option for Intel_based MacPro boot.
2. Ghost (such as Carbon Copy Cloner ghost utility) the Mac OS X system disk on the Intel-based Mac to the external 6Gb/s SATA RAID controller volume set. Carbon Copy Cloner is an archival type of back up software. You can take your whole Mac OS X system and make a carbon copy or clone to Areca volume similar as an other hard drive.
3. Power up Intel-based Mac, it will take about 30 seconds for controller firmware ready. Areca volume will be added in the bootable device automatically.

2.4 SATA Cables

You can connect the end devices to each other through direct cables or through the SATA backplane connections. The following is an example of some internal SATA cables.

2.4.1 Internal Min SAS 4i to SATA Cable

The Min SAS 4i to SATA cables are used for connection between the 6Gb/s SATA RAID controller internal connectors and connectors on the SATA disk drives or SAS/SATA connector backplane. The 6Gb/s SATA controllers have 1-4 Min SAS 4i (SFF-8087) internal connectors, each of them can support up to four SATA drives.

These controllers can be installed in a server RAID enclosure with standard SATA/SAS connectors backplane. The following diagram

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shows the picture of Min SAS 4i to 4*SATA cables. Backplane supports SGPIO header can leverage the SGPIO function on the 6Gb/s SATA RAID controller through the sideband cable.

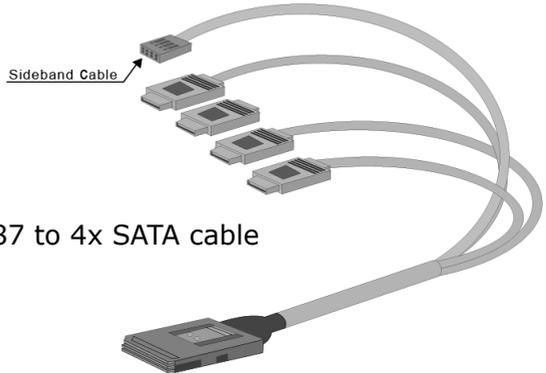


Figure 2-5, SFF-8087 to 4x SATA cable

The SFF-8448 sideband signals cable is reserved for the backplane with header on it.

2.4.2 Internal Min SAS 4i (SFF-8087) to Internal Min SAS 4i (SFF-8087) cable

The 6Gb/s SATA RAID controllers have 1-4 Min SAS 4i internal SFF-8087 connectors, each of them can support up to four SATA signals. These controllers can be installed in a server RAID enclosure with Min SAS 4i internal connectors backplane. This Min SAS 4i cable has eight signal pins to support four SATA drives and six pins for the SGPIO (Serial General Purpose Input/Output) sideband signals. The SGPIO bus is used for efficient LED management and for sensing drive Locate status.



Figure 2-6, SFF-8087 cable

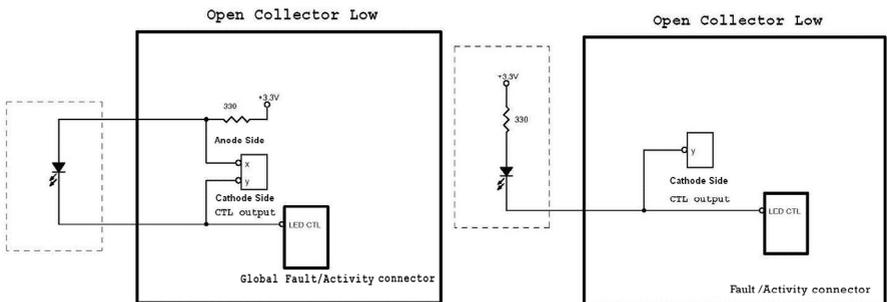
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2.5 LED Cables

There is no SGPIO supported in the most of old version SATA backplane. The 6Gb/s SATA controller also provides two kinds of alternative LED cable header to support the fault/activity status for those backplanes. The global indicator connector is used by the server/desktop system global indicator LED.

The following electronics schematic is the 6Gb/s SATA RAID controller logical of fault/activity header. The signal from EPLD CTL output pin is cathode (-) side.

The following diagrams and descriptions describe each type of connector.



Note:

A cable for the global indicator comes with your computer system. Cables for the individual drive LEDs may come with a drive cage, or you may need to purchase them.

A: Individual Fault LED and Global Activity/Fault Indicator Connector

Most of the backplanes have supported the HDD activity from the HDD. The 6Gb/s SATA RAID controller also provides the fault activity for fault LED. Connect the cables for the drive fault LEDs between the backplane of the cage and the respective connector on the 6Gb/s SATA RAID controller.

The following table is the fault LED signal behavior.

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LED	Normal Status	Problem Indication
Fault LED	<ol style="list-style-type: none"> When the fault LED is solid illuminated, there is no disk present. When the fault LED is off, then disk is present and status is normal. 	<ol style="list-style-type: none"> When the fault LED is slow blinking (2 times/sec), that disk drive has failed and should be hot-swapped immediately. When the activity LED is illuminated and fault LED is fast blinking (10 times/sec) there is rebuilding activity on that disk drive.

If the system will use only a single global indicator, attach the LED to the two pins of the global activity/fault connector. The global fault pin pair connector is the overall fault signal. This signal will light up in any disk drive failure.

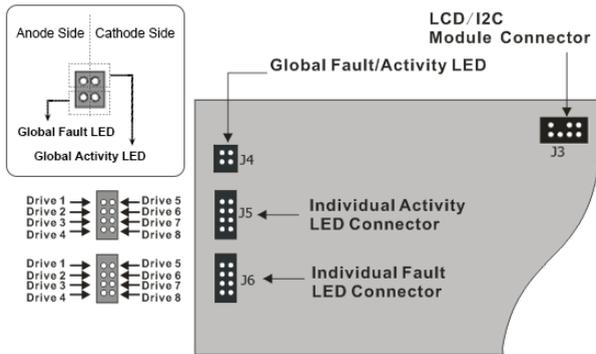


Figure 2-7, ARC-1203-4i/8i LED Indicator Connector

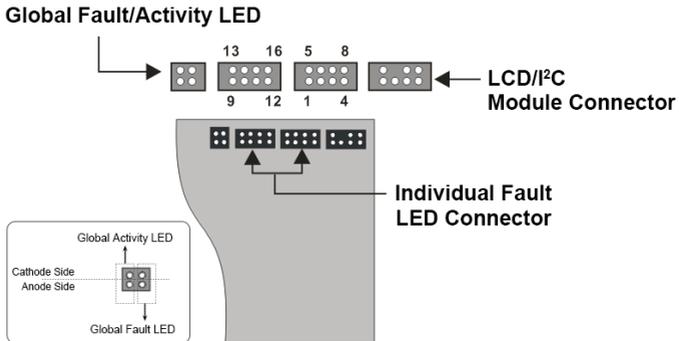


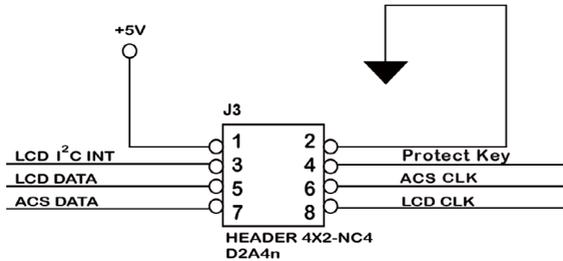
Figure 2-8, ARC-1203-12i/16i LED Indicator Connector

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B: Areca Serial Bus Connector

The serial bus connector can add optional accessories to add RAID controller more functions. You can connect this interface to Areca LCD module for information, status indication, or menus or Card LED indicator for status message. This interface can also cascade to another Areca serial bus accessories for the additional status display.

The following picture and table is the serial bus signal name description for the LCD/I²C Module Connector (J3).



PIN	Description	PIN	Description
1	Power (+5V)	2	GND
3	LCD Module Interrupt	4	Protect Key
5	LCD Module Serial Data	6	Fault/Activity Clock
7	Fault/Activity Serial Data	8	LCD Module Clock

You can use one optional LCD front panel and keypad function to simply create the RAID volume. The LCD status panel also informs you the disk array's current operating status at a glance. The LCD configuration is described in a separate manual: RAID Card_LCD manual. The LCD housed in a 5¼-inch half-height or 3.5-inch canister.

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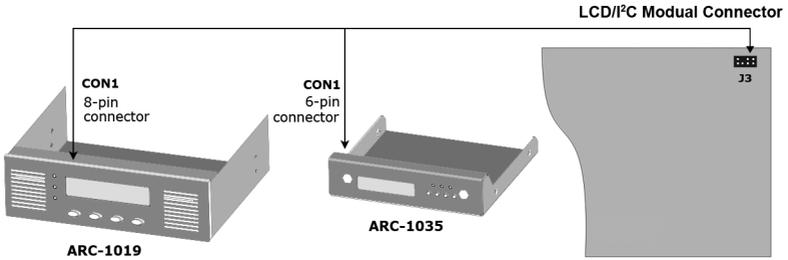


Figure 2-9, Connect to LCD Status Panel

You can use one optional Card LED indicator connected serial bus interface to display fault/activity status on I/O bracket or 3.5-inch canister. This LED provides indications about the operational state of the HDD on the RAID controller.

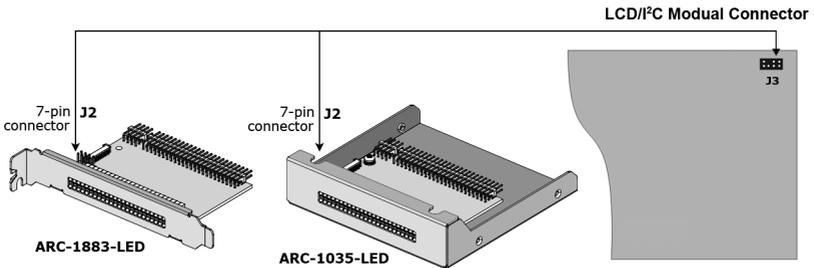
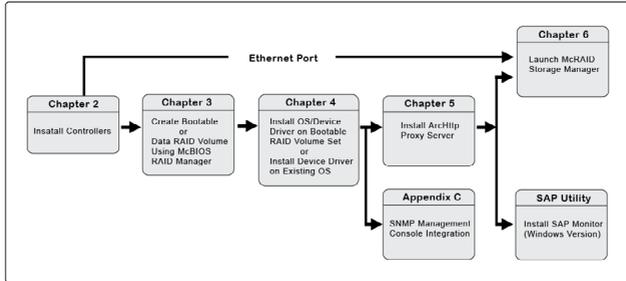


Figure 2-10, Connect to LED Indicator

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2.6 Summary of the installation

The flow chart below describes the installation procedures for 6Gb/s SATA RAID controllers.



These procedures includes hardware installation, the creation and configuration of a RAID volume through the McBIOS/McRAID manager, OS installation and installation of 6Gb/s SATA RAID controller software.

The software components configure and monitor the 6Gb/s SATA RAID controllers as following table.

Configuration Utility	Operating System Supported
McBIOS RAID Manager	OS-Independent
McRAID Storage Manager (Via ArchHTTP proxy server)	Windows 10/8/2012/7/2008/Vista/ XP(64-bit)/2003, Linux, FreeBSD, So- laris and Mac
McRAID Storage Manager (Via Ethernet port)	OS-Independent
SAP Monitor (Single Admin Portal to scan for multiple RAID units in the net- work, via ArchHTTP proxy server)	Windows 10/8/2012/7/2008/Vista/ XP(64-bit)/2003
SNMP Manager Console Integration	Windows 10/8/2012/7/2008/Vista/ XP(64-bit)/2003, Linux and FreeBSD

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McRAID Storage Manager

Before launching the firmware-embedded web browser, McRAID storage manager through the PCIe bus, you need first to install the ArchHTTP proxy server on your server system. If you need additional information about installation and start-up of this function, see the McRAID Storage Manager section in Chapter 6 of the user manual.

ArchHTTP Proxy Server

ArchHTTP has to be installed for GUI RAID console (MRAID storage manager) to run. It is used to launch the web browser McRAID storage manager. It also runs as a service or daemon in the background that allows capturing of events for mail and SNMP traps notification. If you need additional information about installation and start-up of this function, see the ArchHTTP Proxy Server Installation section in Chapter 5 of the user manual.

CLI Utility

CLI (Command Line Interface) lets you set up and manage RAID controller through a command line interface. CLI performs many tasks at the command line. You can download CLI manual from Areca website or software CD <CDROM>\DOCS directory.

SNMP Manager Console Integration

There are two ways to transport SNMP data on the ARC-1203 RAID controller: in-band PCIe host bus interface or out-of-band built-in LAN interface. Enter the "SNMP Tarp IP Address" option on the firmware-embedded SNMP configuration function for user to select the SNMP data agent-side communication from the out-of-band built-in LAN interface. To use in-band PCIe host bus interface, keep blank on the "SNMP Tarp IP Address" options.

- **Out of Band-Using LAN Port Interface**

Out-of-band interface refers to transport SNMP data of 6Gb/s SATA controllers from a remote station connected to the controller through a network cable. Before launching the SNMP manager on the clinet, you need firstly to enable the firmware-embedded SNMP agent function and no additional agent

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software inquired on your server system. If you need additional information about installation and start-up this function, see the section 6.8.4 SNMP Configuration of the user manual.

- **In-Band-Using PCIe Host Bus Interface**

In-band interface refers to management of the SNMP data of 6Gb/s SATA controllers from a PCIe host bus. In-band interface is simpler than out-of-band interface for it requires less hardware in its configuration. Since the 6Gb/s SATA RAID controller is already installed in the host system, no extra connection is necessary. Just load the necessary in-band Areca SNMP extension agent for the controllers. Before launching the SNMP agent in the sever, you need first to enable the firmware-embedded SNMP community configuration and install Areca SNMP extension agent in your server system. If you need additional information about installation and start-up the function, see the SNMP Operation & Installation section in the Appendix C of the user manual.

Single Admin Portal (ArcSAP) Monitor

This utility can scan for multiple RAID units in the local and remote systems and provide an effective mechanism to configure and monitor your RAID units. For additional information, see the utility manual (ArcSAP) in the packaged CD or download it from the web site <http://www.areca.com.tw>