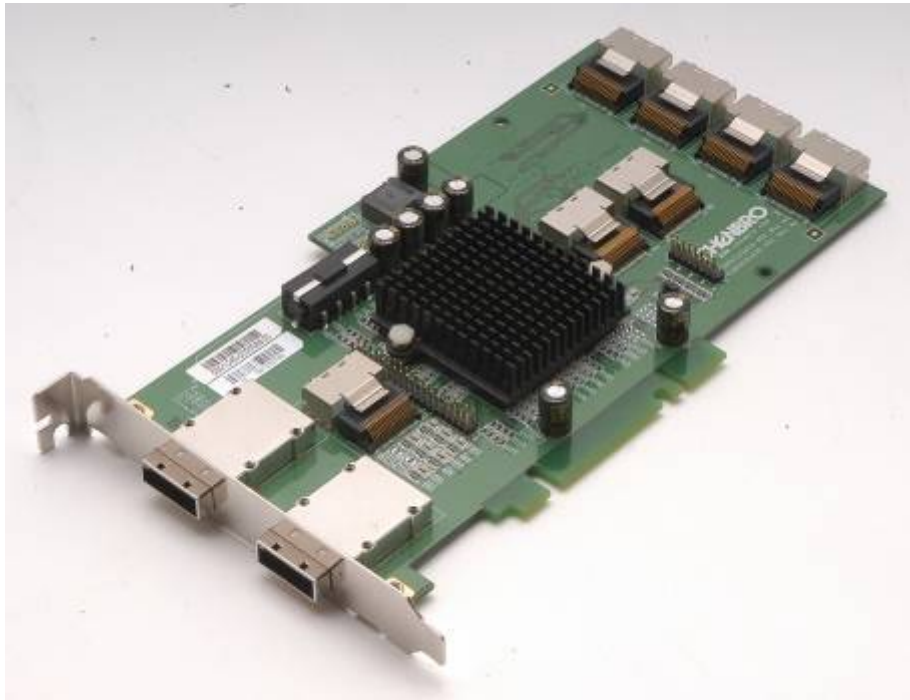


# CHENBRO



## CK13601

### 36-port SAS Expander Card User's Manual

### Version A1

October / 15 / 2008

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### ***Web Support***

Detail information of our products is in our website. You can find technical updates, installation guides, FAQs, technical specifications and more. Our web address is: [www.chenbro.com](http://www.chenbro.com).

### ***Email Support***

You can also fill out the technical support form at our [Technical Support](#) page. Your technical issue inquiries will be sent directly to our support professionals.

### ***Phone Support***

**You can also contact CHENBRO HQ or branch office for immediate support; their contact information is as following:**

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## Revision History


Date	Modifications
July / 10 / 2008	● First Release
Aug. / 20 / 2008	● Update supported SAS RAID cards
Oct. / 15 / 2008	● Update Mini-SAS Cable List

## Safety Information

- Read the installation instructions before connecting to the power source.
- Only trained and qualified personnel should be allowed to install, replace or service this equipment.
- Never install this product in a wet environment.
- Position system cables and power cables carefully; route system cable and the power cable and plug so that they cannot be stepped on or tripped over. Be sure that nothing rests on your system component cables or power cable.

## Conventions Used in this Manual

The following conventions are used in this manual.

	<b>Note Icon:</b> Provides more information on the current topic.
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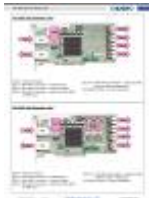
	<b>Important Icon:</b> Provides important information on the current topic that must not be overlooked.
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## Getting Start with SAS (Serial Attached SCSI) Expander Card

Thank you for purchasing CHENBRO SAS Expander Card! This section covers unpacking and identifying components.

### *Unpacking and Checking the Contents*

The complete package includes the following items:

Item Description	Quantity	Picture
SAS Expander Card	1	
Mini-SAS Cable, 350mm	1	
Quick Guide	1	

## Technical Specifications

Mini-SAS Ports	Internal Input from SAS HBA / RAID Card : 4-port (1x Mini-SAS) Internal Output to Backplane : 24-port (6x Mini-SAS) External Input from Host : 4-port (1x Mini-SAS) External Output to Storage Center : 4-port (1x Mini-SAS)
Number of Supported SAS / SATA in directly connection of HDD	24 HDDs (Internal connection)
Mechanical Dimension	Refer to Page 11
Power Connector Type	4-Pin Connector
Power Dissipation	12 Watts

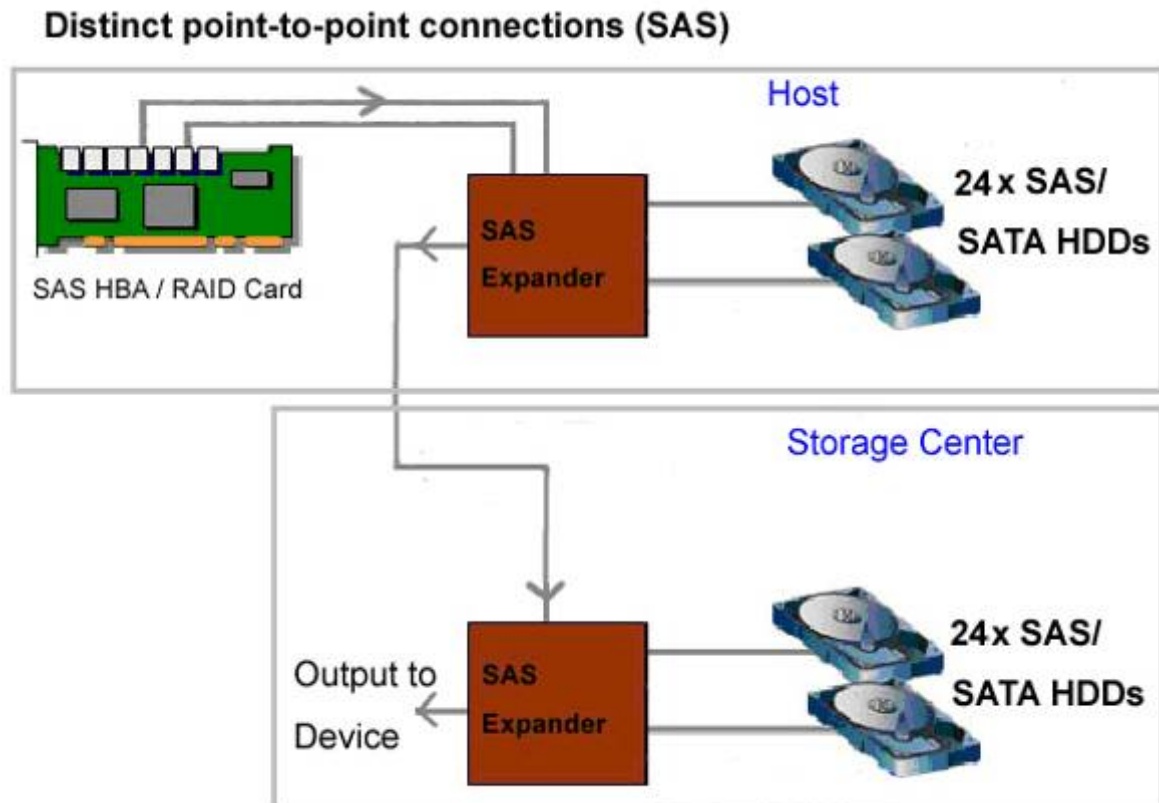
## Introduction

### **About this Guide**

The SAS expander card user's manual provides the information for functions, capabilities, configuring and maintaining RAID arrays hosted by the expander card.

### **Introducing the SAS Expander Card**

SAS expander card expands one SAS address to a number of additional ports. It is an optimal device for usage in data centers



The CHENBRO 36-port SAS expander card provides high performance, high disk drive connectivity, scalability and flexibility in various storage environments. It is a valuable solution to other expansive and complex topologies. The SAS expander is ideal for high availability, scalable server clustering environments, front-end storage subsystems used in clusters, SANs and NAS environments.

The CHENBRO SAS Expander is based on LSI SASX36 IC that enables the connection of multiple drive devices in directly attached SAS or SATA. Each expander PHY performs SAS and SATA transfer rate at 3.0 Gbit/s or 1.5 Gbit/s with individual configurations. The SAS expander IC supports the Serial SCSI Protocol (SSP), SATA Tunneled Protocol (STP) and Serial Management Protocol (SMP). Those are based on SAS protocol and described in the SAS standard v1.0 and V1.1.

## Features

### **General**

- Flexible application of 36-port SAS Expander Card
- Compatible with PCI-Express 4X, 8X, 16X & PCI slots on motherboard
- Integrated non-blocking cross bar switch allowing port to port connections

### **High-Speed I/O**

- 1.5 Gbit/s or 3.0 Gbit/s operations
- Automatic negotiation of linking speed

### **Application**

- SAS / SATA HDD NAS storage sever or enclosure
- Security system
- Video streaming / editing workstation



SAS expander card must be used only with SAS RAID / HBA card such as LSI Logic MegaRAID SAS 8308ELP

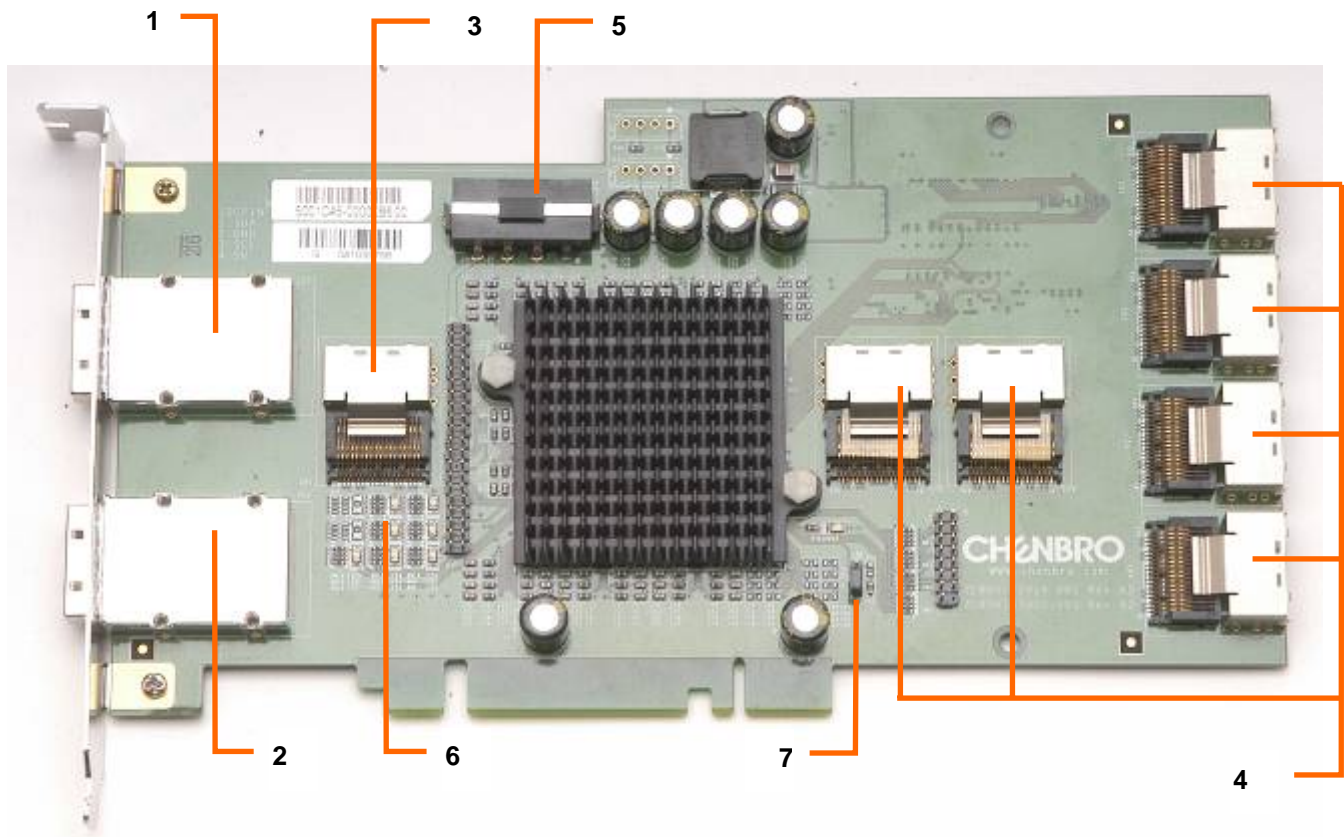


The supported HDD quantity is depended on the capability of the SAS RAID / HBA card in the system.






## SAS Expander Card Hardware

### SAS Expander Card Layout



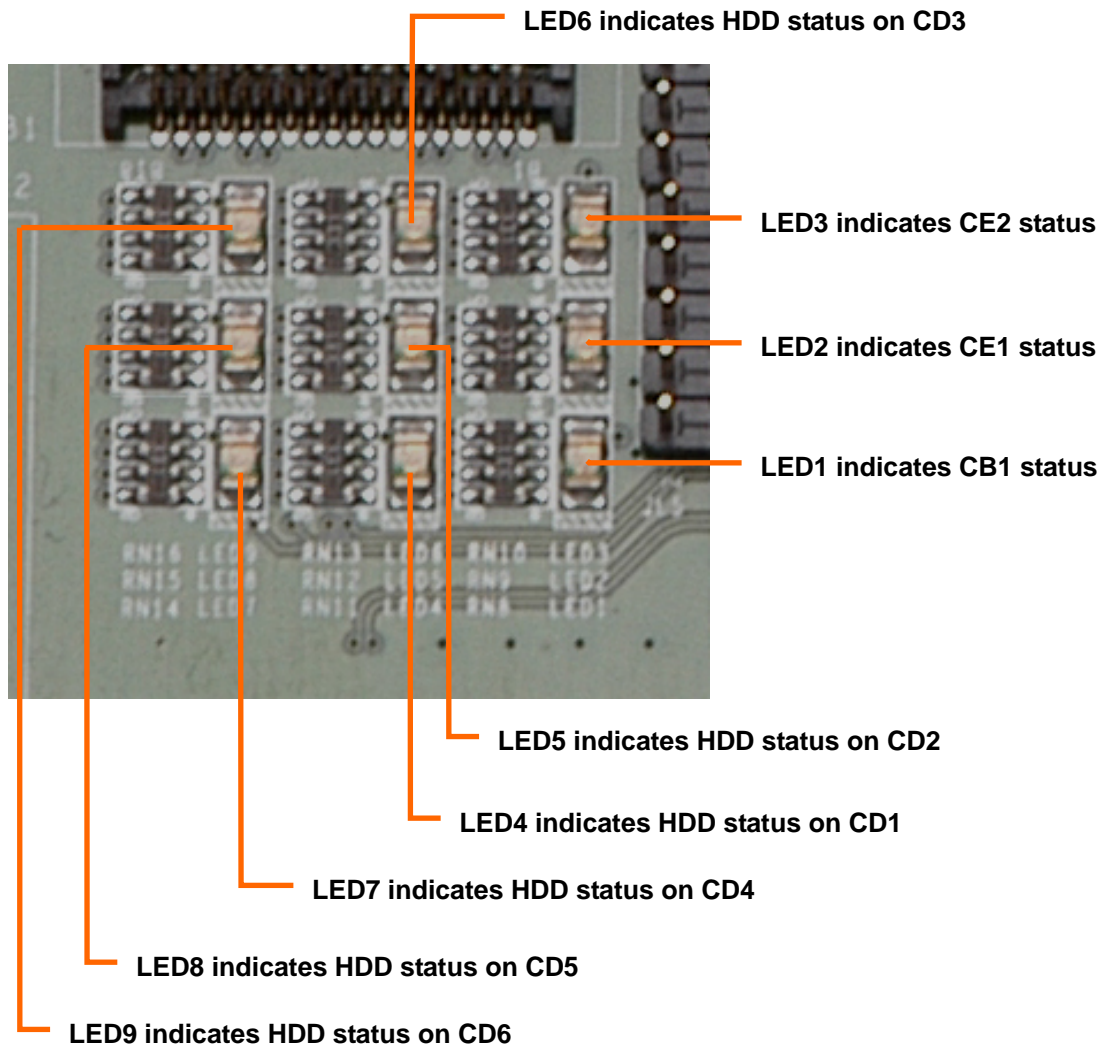
No.	Components	Description	Function
1	CE1	Mini-SAS SFF-8088 Connector – External Input	Input from Host
2	CE2	Mini-SAS SFF-8088 Connector – External Output	Output to Storage Center
3	CB1	Mini-SAS SFF-8087 Connector – Internal Input	Input from SAS HBA / RAID Card
4	CD1~CD6	Mini-SAS SFF-8087 Connectors – Internal Output	Output to SAS / SATA-II HDDs
5	CN3	DC in, 4-Pin Connector	From Power Supplier
6	LED1~LED9	Device LEDs	Refer to page 10
7	CN9	Firmware Setting Jumper	Firmware function selection, refer to page 10

Mini-SAS Cable Connector Type		
	 <p><b>SFF-8087</b></p>	 <p><b>SFF-8088</b></p>

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## Device LED Definition

The following picture shows the relations between LED and device connector.



Green LED blinking indicate the data transferring

## Firmware Setting Jumper

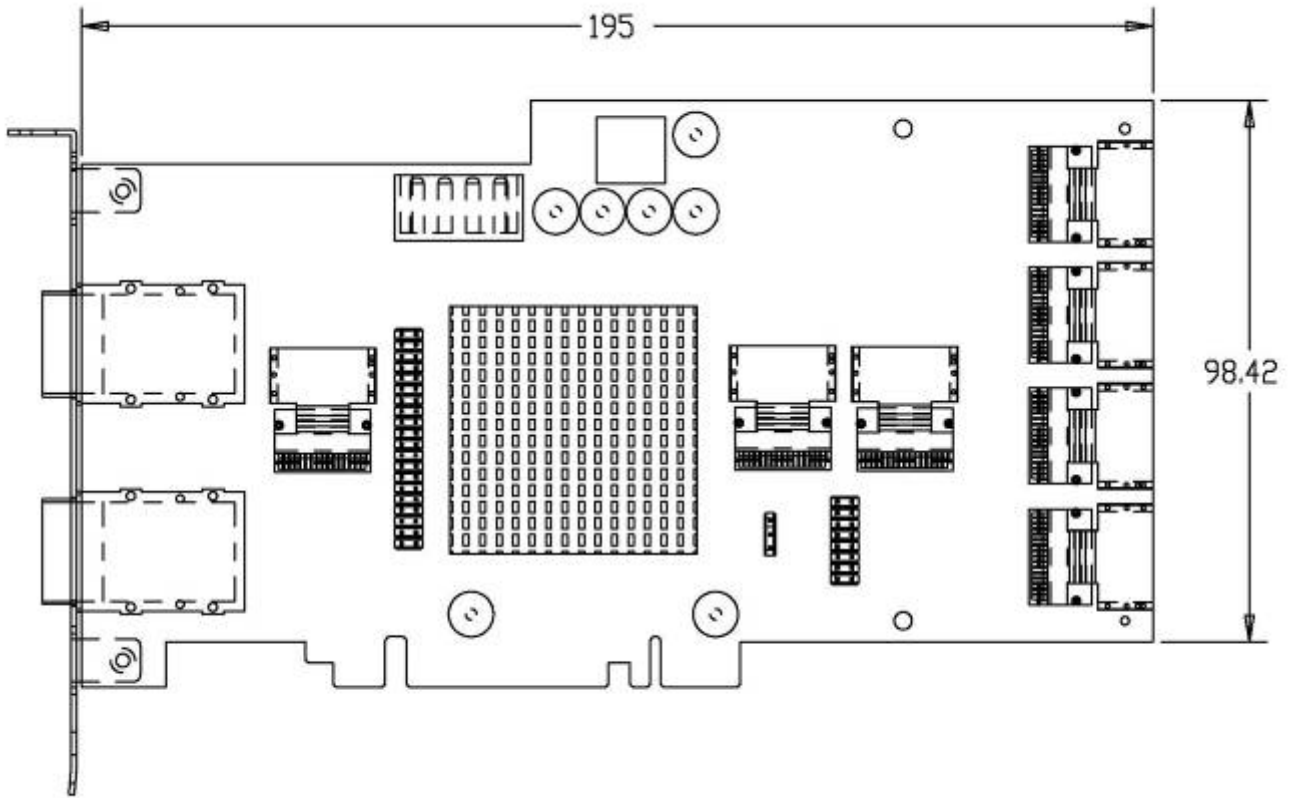
Jumper set on pin 1 & 2: Enable the upgraded firmware version (Default setting)



Default setting

Jumper set on pin 2 & 3: Enable the original firmware version

## Mechanical Dimension



## Supported SAS RAID Card

Manufacture	Model Number	Maximum Drives per Controller
	MegaRAID SAS 8344ELP	122
	MegaRAID SAS 8308ELP	16
	MegaRAID SAS 84016E	122
	MegaRAID SAS 8708ELP	16
	SRCSASRB	16

## Mini-SAS Cables

The Mini-SAS backplane provides most benefits to users using the same backplane to support various SAS/SATA HBA or RAID card via different conversion cables. Chenbro provides various cables for different interfaces which include the followings:



(A)

SFF-8087 to SFF-8470



(B)

SFF-8087 to SFF-8087



(C)

SFF-8087 to 4 SATA



(D)

4 SATA to SFF-8087



(E)

SFF-8484 to SFF-8087



(F)

SFF-8088 to SFF-8088

Table of Mini-SAS cable solution

Cable Type	Connector		P/N	Length
	BP side	Host side		
A	Mini-SAS (SFF-8087 36pin)	Infiniband / Multilane (SFF-8470)	26H113215-011	600 mm
B1	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	26H113215-027	200 mm
B2	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	26H113215-025 26H113215-028	350 mm
B3	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	26H113215-024 26H113215-029	500 mm
B4	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	26H113215-012 26H113215-030	600 mm
C	Mini-SAS (SFF-8087 36pin)	SATA-7Pin x4	26H113215-010	600 mm
D	SATA-7Pin x4	Mini-SAS (SFF-8087 36pin)	26H113215-009	450 mm, 500 mm 650 mm, 750 mm
E	Mini-SAS (SFF-8087 36pin)	Wide-Port SAS (SFF-8484 R/A)	26H113215-026	600 mm
F	Mini-SAS (SFF-8088 36pin)	Mini-SAS (SFF-8088 36pin)	26H113325-003	860 mm



## Chassis Assembly Example

See below for the example of how the wiring to be performed.

**Example for Host Application (RM51224B / RM51924B)**

