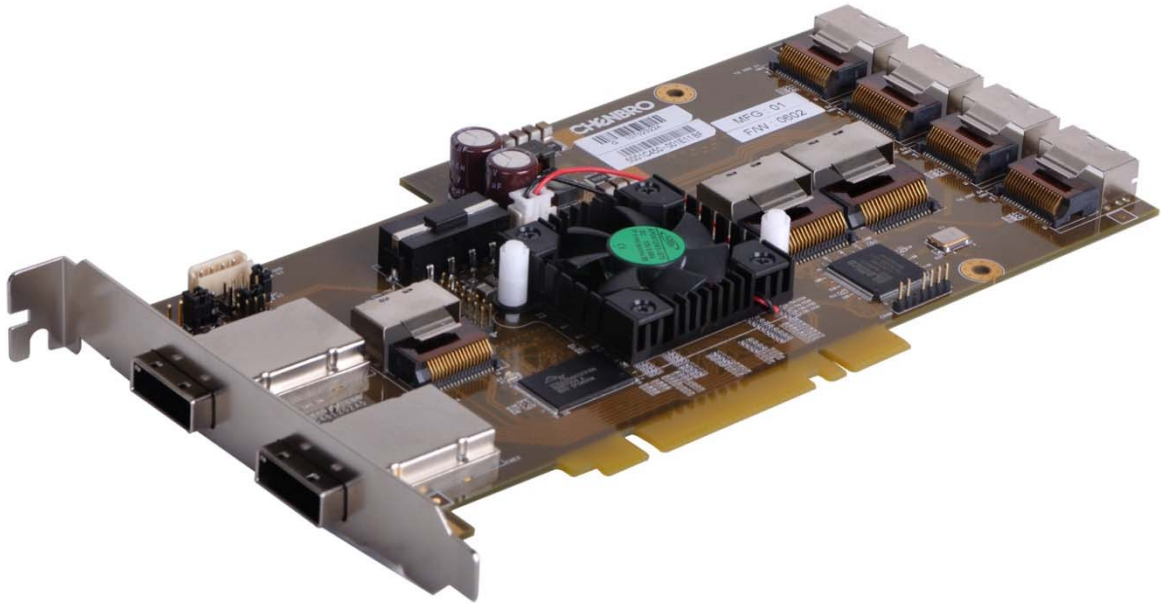


CHENBRO



CK23601

36-port 6Gbit SAS Expander Card User's Manual

Version A0

September / 01 / 2010

w w w . c h e n b r o . c o m

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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.

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:

CHENBRO HQ	CHENBRO Europe B.V.	CHENBRO Micom (USA) Inc.
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Revision History


Date	Modifications
Sep. / 01 / 2009	● First Release

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.

	Note Icon: Provides more information on the current topic.
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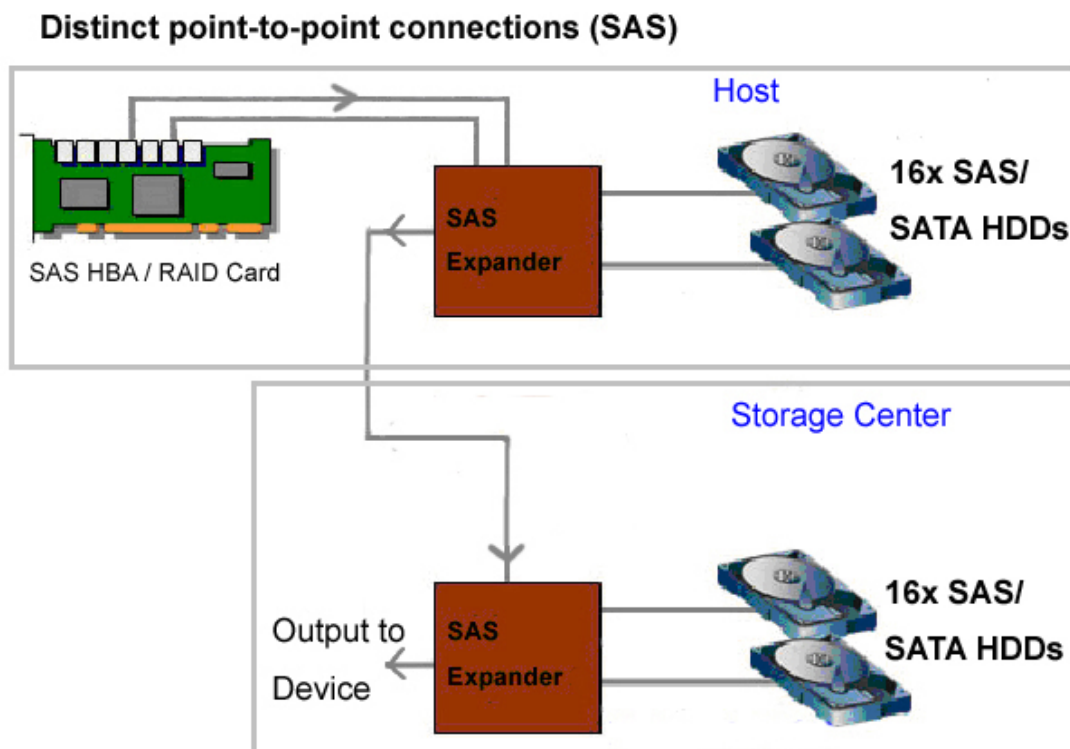
	Important Icon: Provides important information on the current topic that must not be overlooked.
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Introduction

Chenbro CK23601, which is a full-height 36ports 6Gb/s SAS expander card using LSI SASIIIX28 chip. CK23601 has 6 internal Mini-SAS connectors, which supports up to 24 internal drives and capable of running four SAS or SATA drives directly. And also offers an internal Mini-SAS connector to connections for RAID/HBA card, 2 external Mini-SAS connectors to connections for host system or JBOD subsystem.

Based on 6Gb/s SAS technology, CK23601 delivers high performance and data bandwidth up to 600 MB/s per physical link and contains full compatibility with 3Gb/s and 1.5 Gb/s technology.

CK23601 supports the Serial SCSI Protocol (SSP), SATA Tunneling Protocol (STP) and Serial Management Protocol (SMP) as defined in SAS protocol which described in SAS standard v1.0 and V1.1.



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.

Key Features

- 6Gb/s SAS technology delivers high performance and data bandwidth up to 600 MB/s per physical link and contains full compatibility with 3Gb/s and 1.5 Gb/s technology.
- Supports up to 24 internal drives plus 2 external to connections for multiple applications.
- Use Chenbro SAS Expander card and UEK work together to daisy-chained additional enclosures to provide more disk connection.
- Supports HDD Failure / Activity Indication and HDD ID Mapping
- Compatible with PCI-Express 8X, 16X & PCI slots on motherboard

Application

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

Technical Specifications

Order Code	CK23601H0C01
HW Version	A0
FW Version	0702
MFG FW Version	01
Mechanical Dimension	PCIe full-height card, 195.15 x 106.68 x 20mm
Chipset	LSI SASIIx36
Physical HDDs Supported	Support up to 24 internal HDDs
Supported Operation System	Windows Server 2003, Windows Server 2008 Red Hat 5.0, Cent OS 5.3, FreeBSD, Ubuntu 9.04
Internal Ports	Input from RAID/HBA : 4-ports (1x Mini-SAS) Output to Backplane : 24-ports (4x Mini-SAS)
External Ports	Input from Host : 4-ports (1x Mini-SAS) Output to JBOD : 4-ports (1x Mini-SAS)
Power Dissipation	12 Watts
Operating Temperature	0~50 °C (32~122 °F)
Relative Humidity	20%~90%, non-condensing

Getting Start with SAS Expander Card

Thanks for purchasing CHENBRO SAS Expander as your data storage solution. This section gives simple step-by-step instructions for installing and configuring CHENBRO SAS Expander. To protect your equipment and data, reading the following information package list carefully before you begin installing.

Package Contents

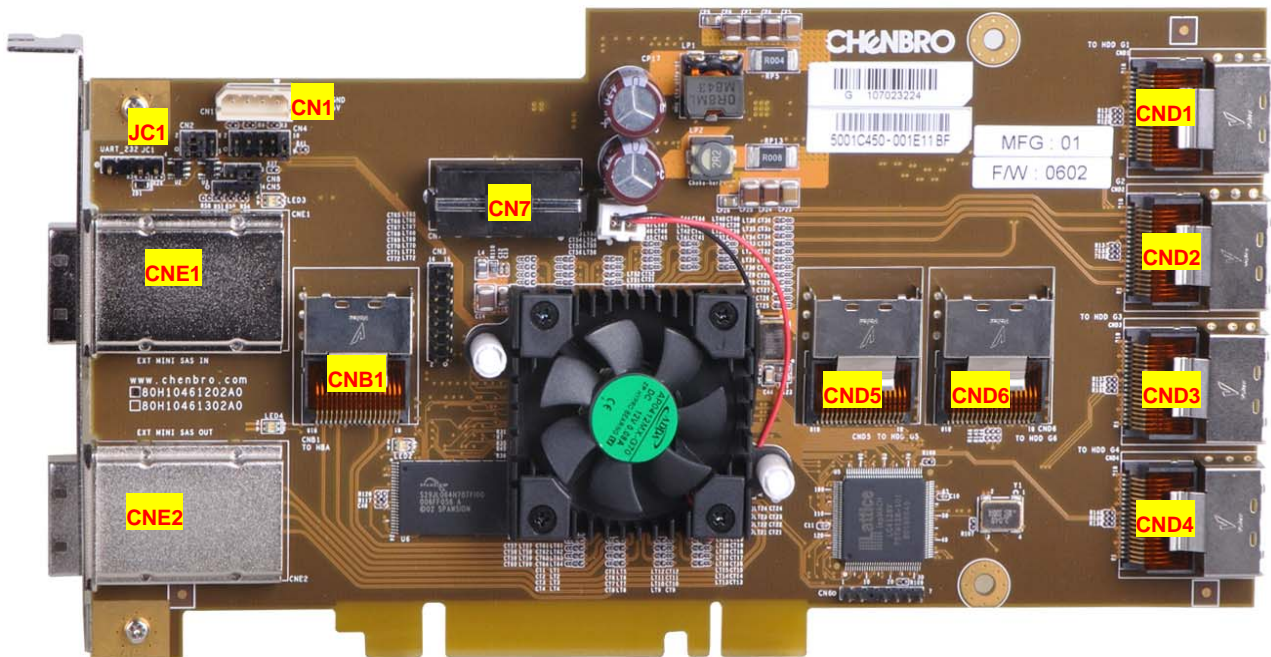
Unpacking and make sure that none of the items listed below are missing. If any item is missing or damaged, please contact your local resellers for service.

The complete shipping package may have included the following items:

Item Description	Quantity	Picture
SAS Expander Card (Hardware ver. A0)	1	A photograph of the SAS Expander Card (Hardware ver. A0) showing its components, including a fan and various connectors.
Mini-SAS Cable, 350mm	1	A photograph of a Mini-SAS Cable, 350mm long, with red and black braided shielding.
Quick Guide	1	A screenshot of the Quick Guide document, showing a diagram of the SAS Expander Card and a list of connection instructions.

SAS Expander Card Layout

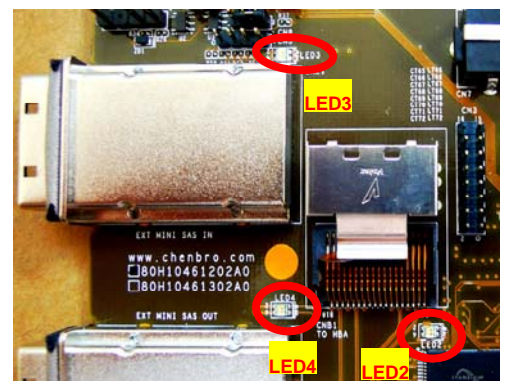
TOP Side



No.	Components	Description	Function
1	CNE1	Mini-SAS SFF-8088 Connector – External Input	External Input from host
2	CNE2	Mini-SAS SFF-8088 Connector – External Output	External Output to storage center
3	CNB1	Mini-SAS SFF-8087 Connector – Internal Input	Internal input from SAS RAID card
4	CND1~CND6	Mini-SAS SFF-8087 Connectors – Internal Output	Output to SAS / SATA-II HDDs
5	CN1	I ² C Connector	Function for environment monitoring
6	CN7	DC in, 4-Pin Power Connector	From power supplier
7	JC1	Firmware (FW) Upgrade Connector	Upgrade F/W to latest version

Topside LEDs

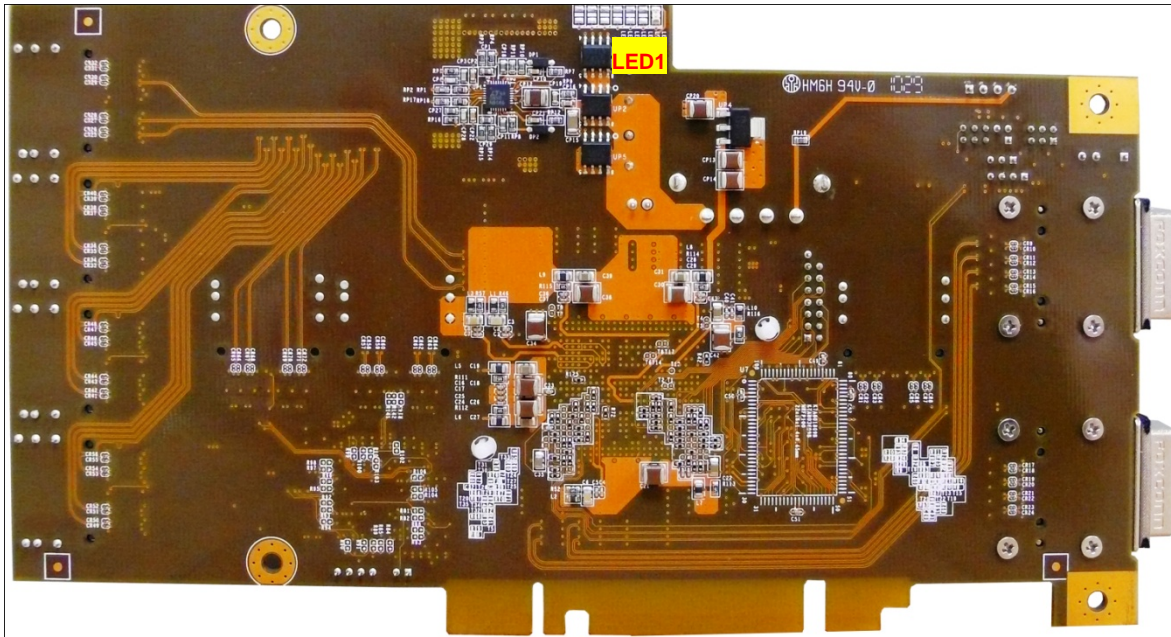
- LED2 indicates CNB1 status:
 - LED3 indicates CNE1 status:
 - LED4 indicates CNE2 status:
- LED blinking in green color indicate when data access
LED OFF indicates no data access
LED in constant red indicate expander disconnection



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	Mini-SAS Cable Connector Type SFF-8087 SFF-8088
	The internal input Mini-SAS connector CNB1 is only available to connect with SAS RAID card / controller. It will not work when connecting other SAS expander products.

Back Side

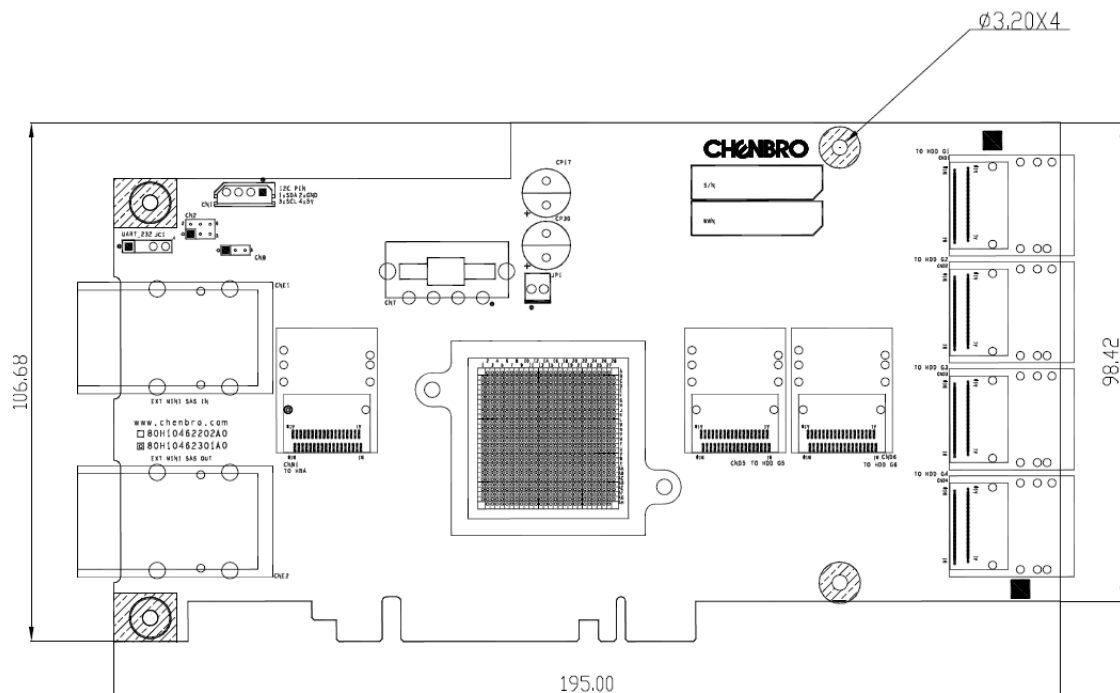


Backside LED

- LED1 indicates expander chip status:
 - LED blinking in green indicates expander initialization OK
 - LED in constant green indicates expander initialization failure
 - LED OFF indicates power disconnection



Mechanical Dimension



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Mini-SAS Cables

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



(A) SFF-8087 to SFF-8087



(B) SFF-8088 to SFF-8088



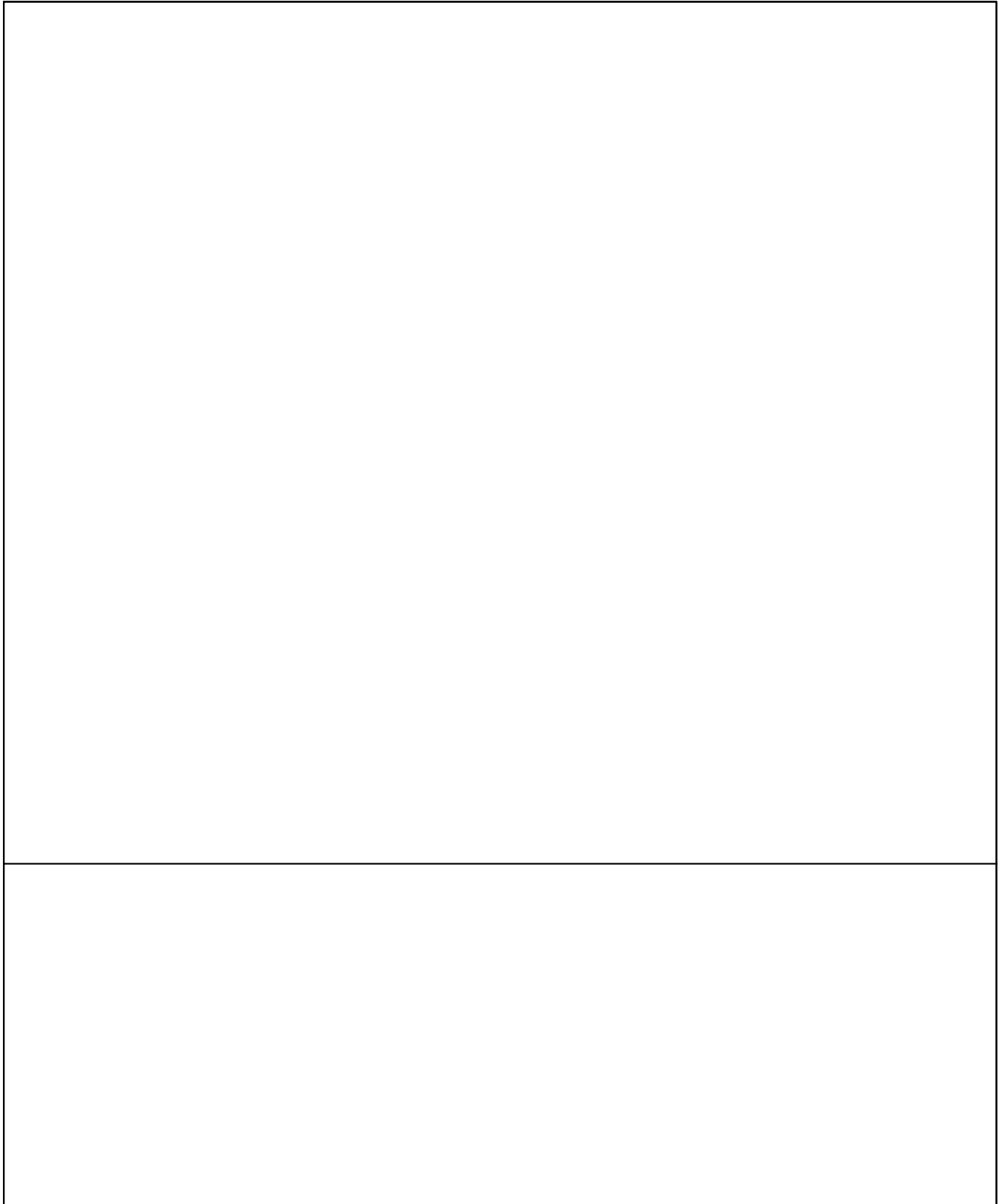
(C) SFF-8087 to 4 SATA

Cable Type	Connector		P/N	Length
	Host (RAID Card) Side	Backplane Side		
A1	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	26H113215-027	200 mm
A2	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	26H113215-028	350 mm
A3	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	26H113215-029	500 mm
A4	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	26H113215-030	600 mm
B	Mini-SAS (SFF-8088 26pin)	Mini-SAS (SFF-8088 26pin)	26H12453403A0	1000 mm
C	Mini-SAS (SFF-8087 36pin)	SATA-7Pin x4	26H113215-009	450 mm, 500 mm 650 mm, 750 mm

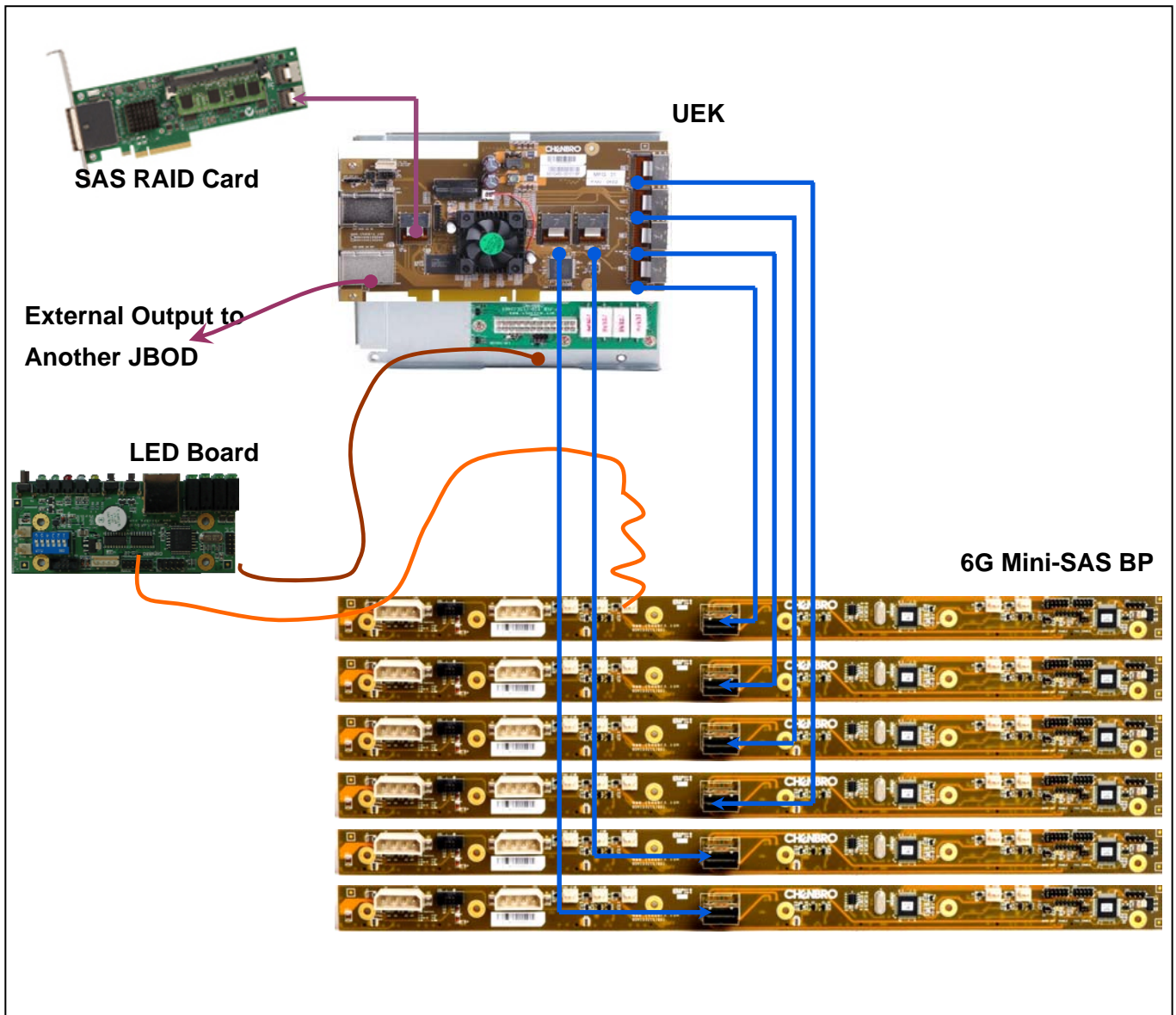
Chassis Assembly Example

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

Example for Host Application (RM31616)



Example for JBOD Application(RM51424)



- Mini-SAS cable (SFF-8087 to SATA)
- Mini-SAS cable (SFF-8088 to SFF-8088)
- Chassis power On/Off & PSU alarm mute switch cable
- Fan Signal cable (BP to LED board)

Compatible SAS RAID Cards

CK23601 Firmware Version 0702, MFG Version 01; Hardware Version A0

Brand	Brand	Model No.	Firmware	Device Protocol	Ports	Internal Con.	External Con.	Validation Result
	3Ware	SAS 9750-4i	FH9X 5.08.00.008	6Gb/S	4	1	-	OK
	LSI	MegaRAID SAS 9260-4i	2.70.03-0862	6Gb/S	4	1	-	OK
	LSI	MegaRAID SAS 9280-24i4e	FH9X 5.08.00.008	6Gb/S	28	6	1	OK
	Areca	ARC-1880-ix-242	V1.48A	6Gb/S	28	6	1	OK
	Adaptec	RAID 5445	17899	3Gb/S	8	1	1	OK
	Areca	ARC-1680ix-12	V1.47A	3Gb/S	12	3	1	OK
	3Ware	9690SA-8I	4.10.00.007	3Gb/S	8	2	-	Not support 6G



The maximum quantity of supported physical drives per SAS RAID Card is depended on the capability of the SAS RAID card in the system. Refer to the technical document or user guide provided by RAID card manufacturer.