

CHENBRO



Universal Expander Kit User's Manual

Version A1

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Technical Support

CHENBRO works hard to offer our customers maximum performance from our chassis. But in case you have any problem with our product you can find supports from the following resources.

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:

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Revision History

Date	Modifications
Dec. / 8 / 2008	● First Release
Feb. / 20 / 2009	● Update compatible SAS RAID cards & 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.

	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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Getting Start with UEK (Universal Expander Kit)

Thanks for purchasing Chenbro UEK! This section covers unpacking and identifying components.

Unpacking and Checking the Contents

The complete package includes the following items:

Item Description	Quantity	Picture
28-port or 36-port SAS Expander(s) + Power switch board + bracket	1 or 2	
#6-32 Screw	4	
Quick Guide	1	

Technical Specifications

SAS Expander	28-port: support 16x HDDs internal connection 36-port: support 24x HDDs internal connection
Power Switch Board	24-pin PSU connector 2-pin power LED cable pin header 2-pin power switch cable pin header
Mechanical Dimension	Refer to Page 11
Power Dissipation	12 Watts

Compatible CHENBRO Chassis

- RM21508B / RM21600 / RM21706 / RM21804 / RM22300 / RM22500 / RM23212 / RM23424 / RM24302
RM31212B / RM31300 / RM31408 / RM31616 / RM41100 / RM41416B / RM41500 / RM41648 / RM42200
RM51224B / RM51424 / RM51924B / RM91250
- SR105 / SR106 / SR107 / SR108 / SR109 / SR110 / SR209 / SR214

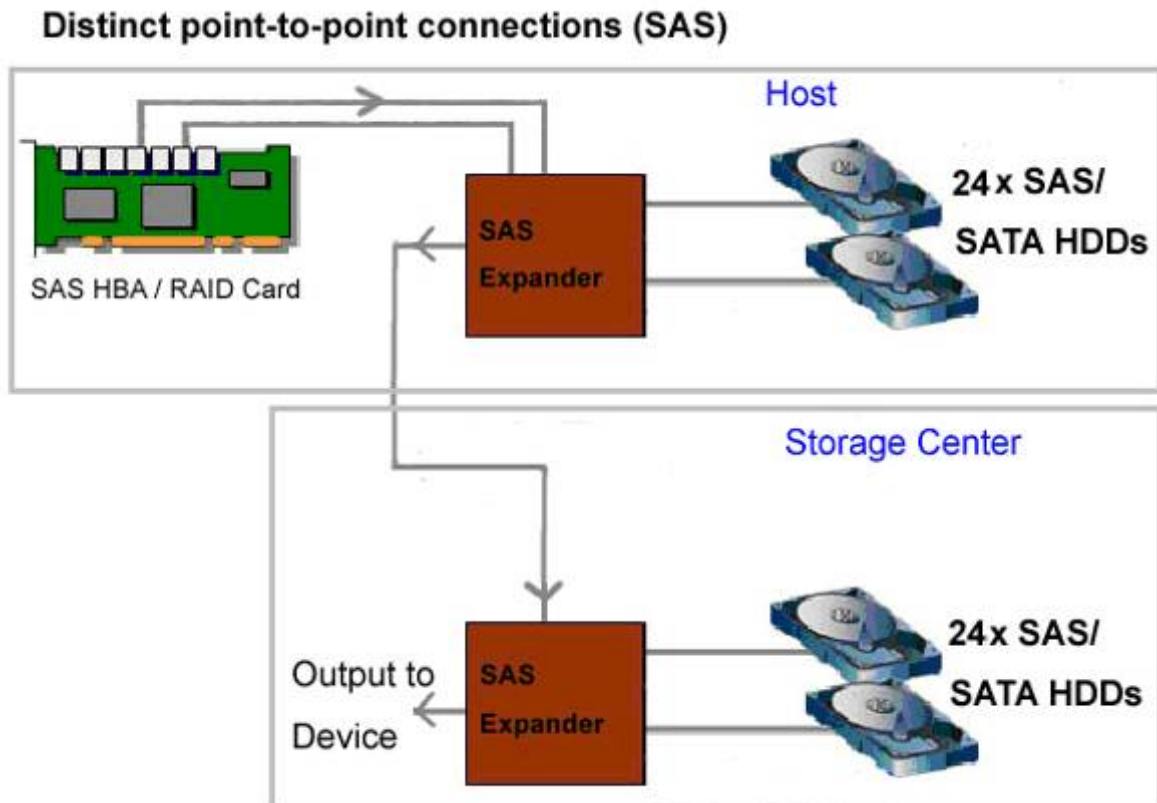
Introduction

About this Guide

The UEK user's manual provides the information for functions, capabilities, configuring and maintaining RAID arrays hosted by the SAS 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 28-port / 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 SASX28 / 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 Tunneling 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 SAS Expander card application.
The supported HDD q'ty is 16, 24, 32, 40 or 48 pcs
- Fit all chassis with standard MB I/O window and mounting hole
- Bundled power switch board provides the convenient power On/Off control solution

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

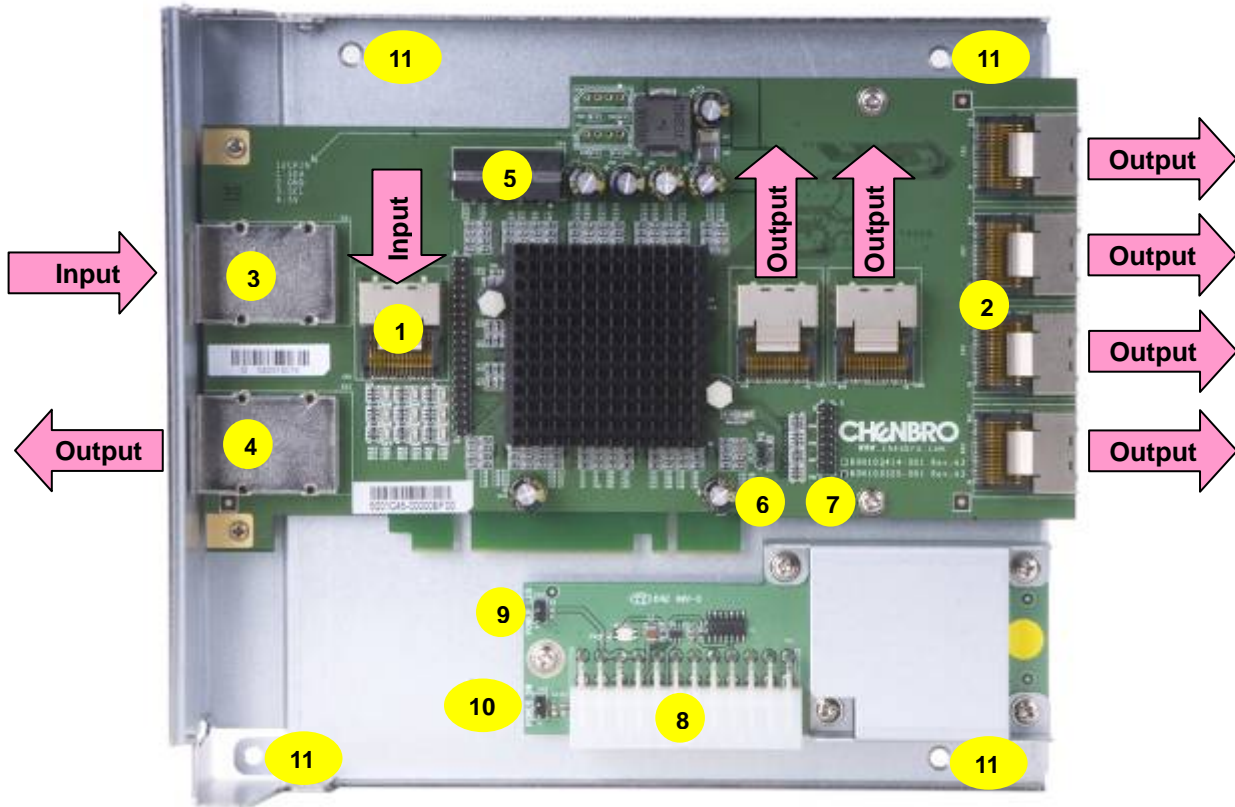


SAS expander card must be used only with SAS RAID card such as LSI Logic MegaRAID SAS 8888ELP



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

UEK Hardware

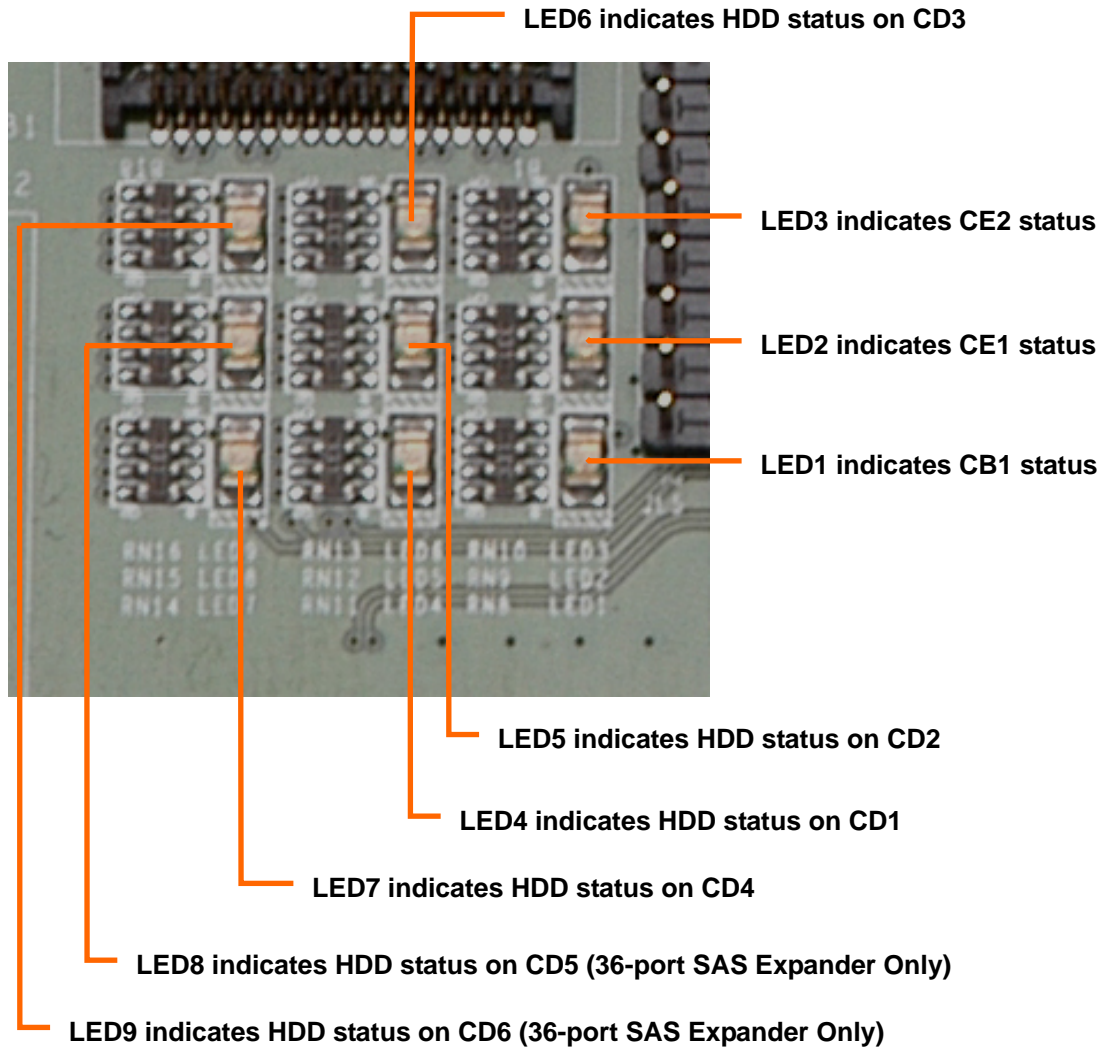


No.	Description	Function
1	Mini-SAS SFF-8087 Connector	Internal Input from SAS RAID Card
2	Mini-SAS SFF-8087 Connector	[CE1~4] : Output to SAS, SATA-II HDDs or Backplane (28-port & 36-port SAS Expander) [CE5~6] : Output to SAS, SATA-II HDDs or Backplane (36-port SAS Expander only)
3	Mini-SAS SFF-8088 Connector	External Input from SAS RAID Card
4	Mini-SAS SFF-8088 Connector	External Output
5	DC in, 4-Pin Connector	Power Connector
6	Firmware Setting Jumper	Firmware function selection, refer to page 10
7	Pin Headers	Function Reserved
8	Power Connector	24-pin power connector from power supply
9	Power LED signal connector	Output to chassis power LED
10	Power On / Off signal connector	Input from chassis power switch
11	Mounting Holes	Fix UEK on chassis

Mini-SAS Cable Connector Type	
	SFF-8087 SFF-8088

Device LED Definition

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



Green LED blinking indicate the data transferring

Firmware Setting Jumper

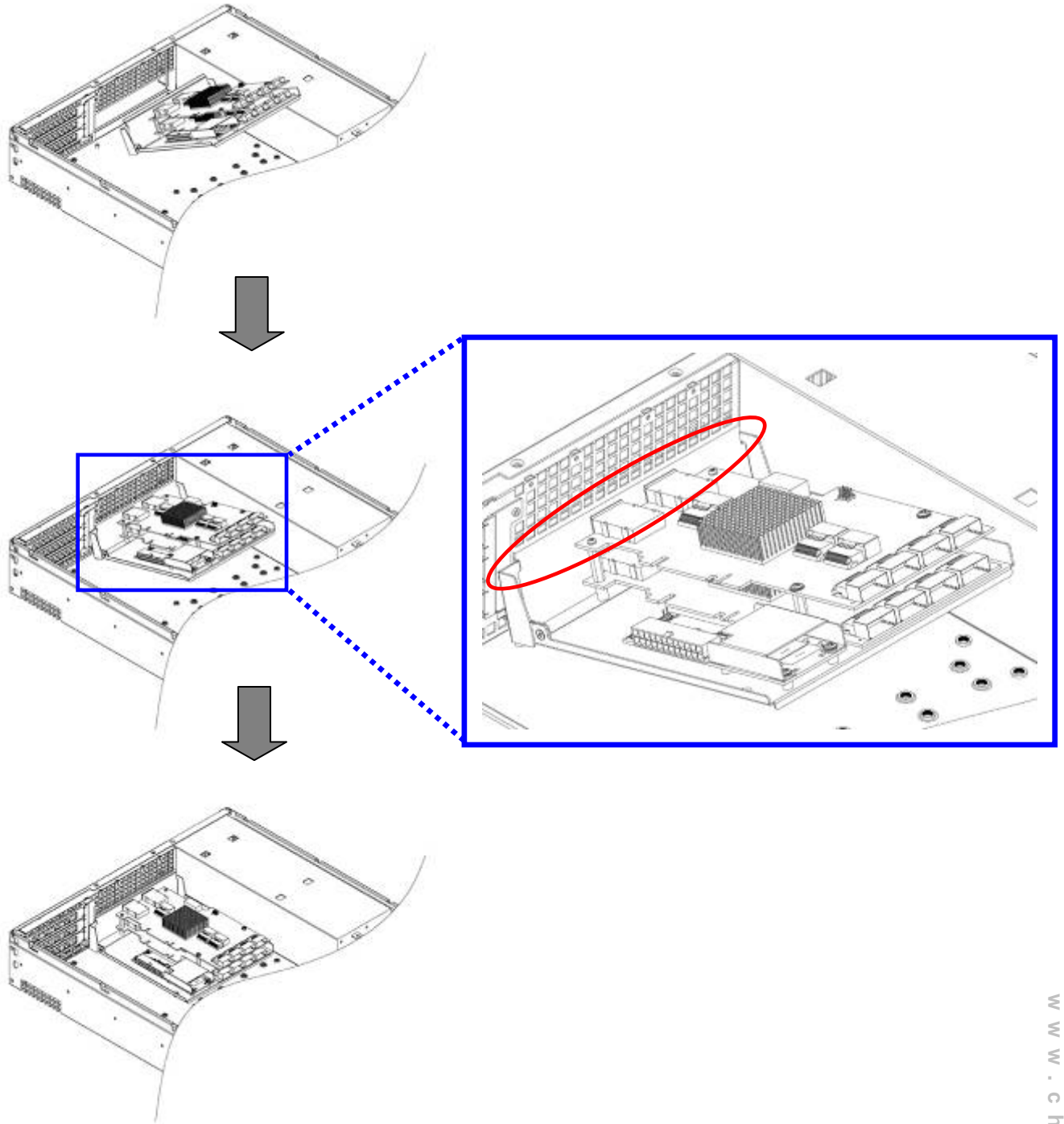
Jumper set on pin 1 & 2: Enable the upgraded firmware version (Default setting)



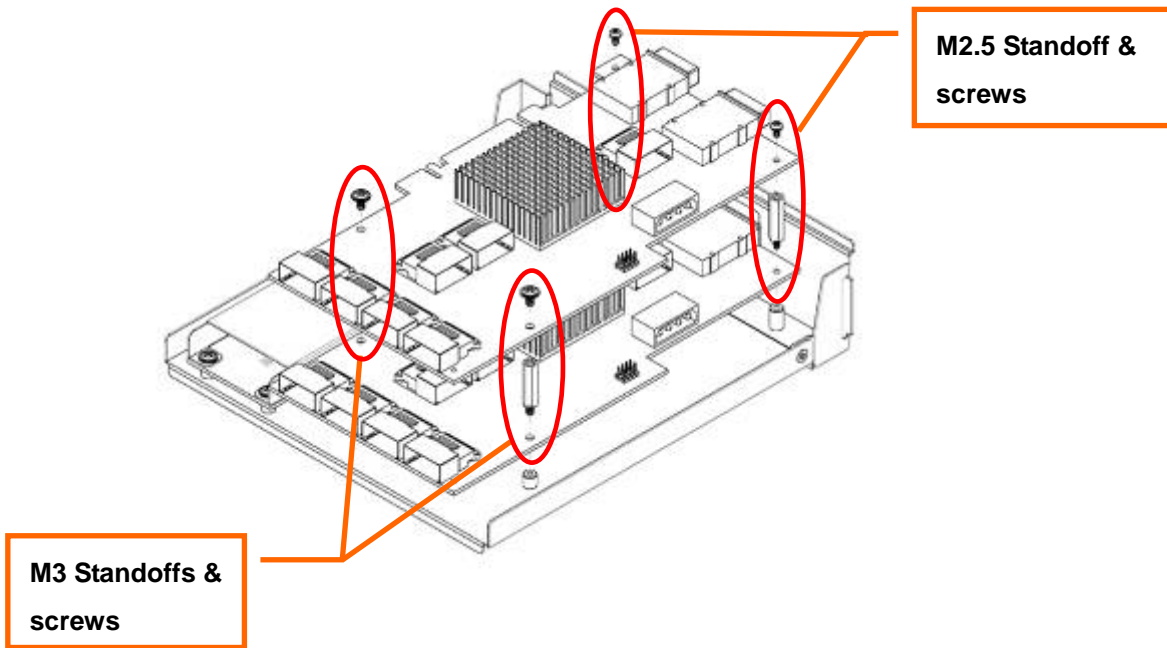
Default setting

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

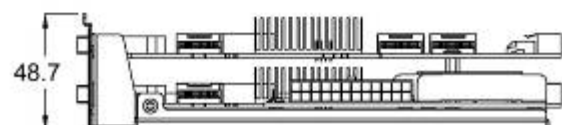
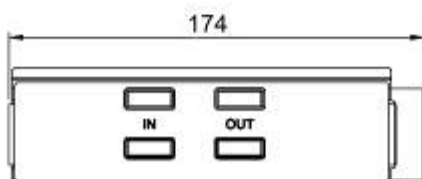
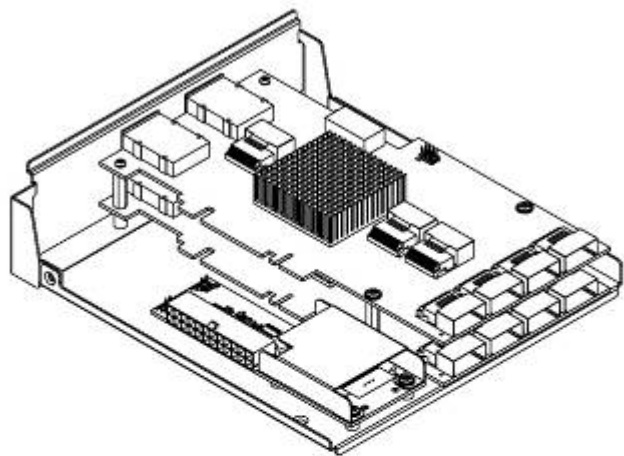
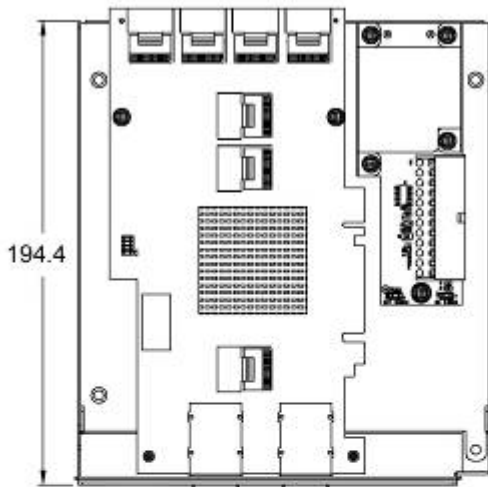
Installing Into Chassis



Dual SAS Expander Kit



Mechanical Dimension



Units: mm

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-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)

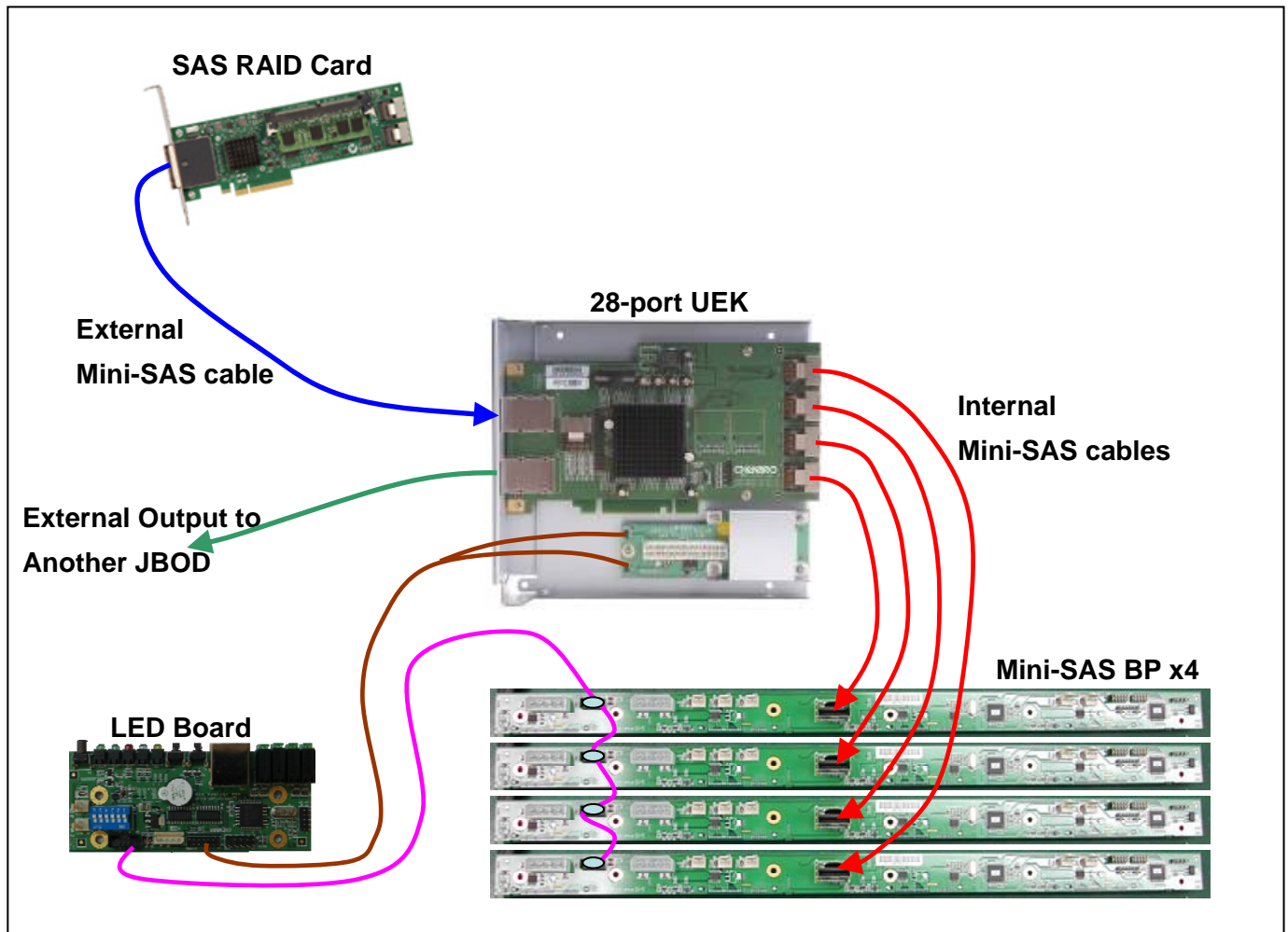
SFF-8088 to SFF-8088

Table of Mini-SAS cable solution

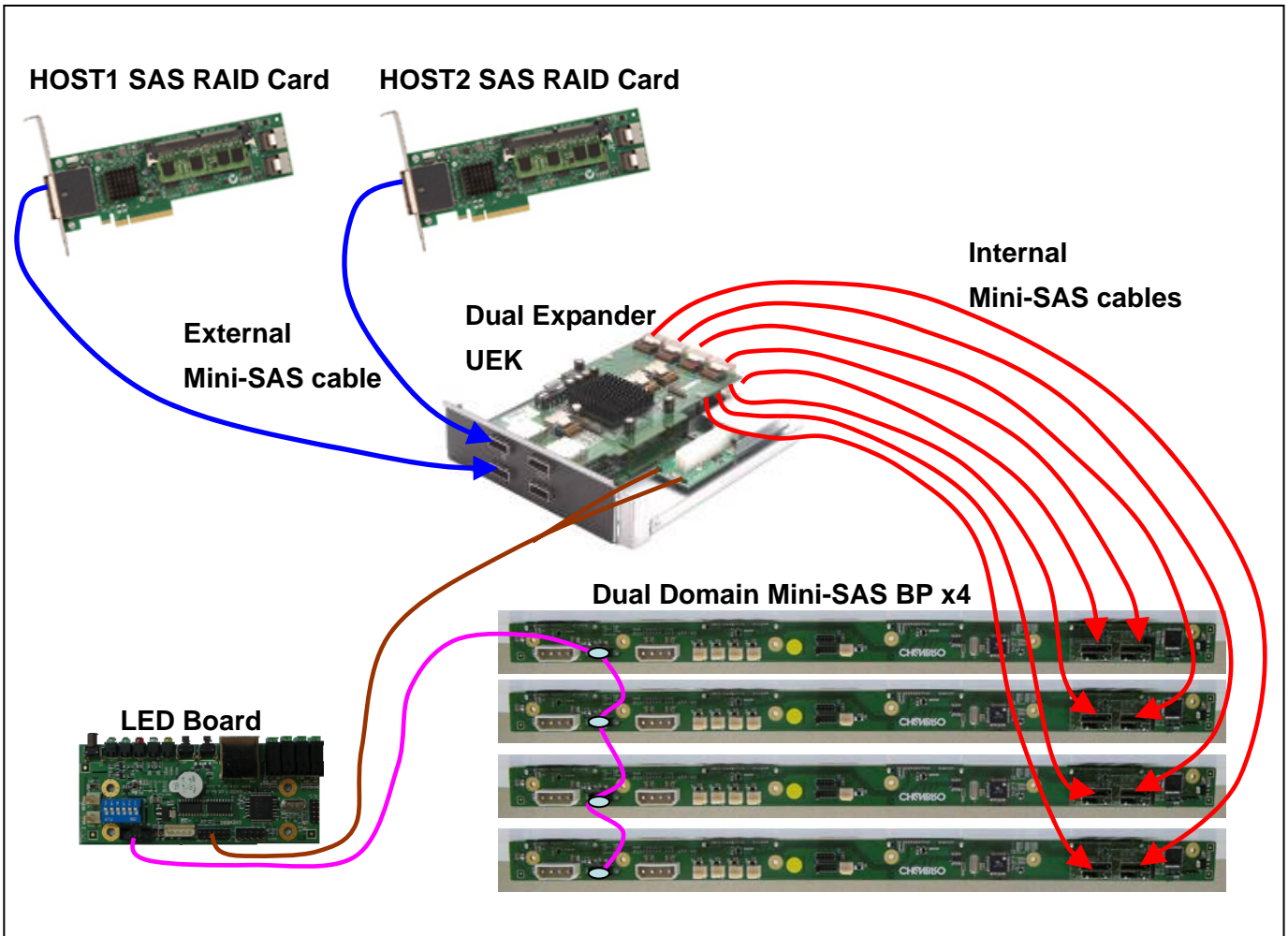
Cable Type	Connector		P/N	Length
	BP side	Host side		
A	Mini-SAS (SFF-8087 36pin)	Infiniband / Multilane (SFF-8470)	26H113215-011	600 mm
B1	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	26H113215-027	200 mm
B2	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	26H113215-028	350 mm
B3	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	26H113215-029	500 mm
B4	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	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






Application Example - 4U Chassis



Application Example - Dual Domain BP



Compatible SAS RAID Cards

Manufacture	Model Number	Maximum Physical Drives per Controller	Verified RAID Card Firmware Version
	SRCSASRB	32	1.20.22_0495
	SRCSASJV	240	1.20.72_0562
	MegaRAID SAS 84016E	122	1.12.220-0560
	MegaRAID SAS 8708ELP	16	1.20.72-0562
	MegaRAID SAS 8708EM2	16	1.20.72-0562
	MegaRAID SAS 8888ELP	240	1.20.42-0525
	ARC-1680LP	128	1.45
	ARC-1680ix Series	128	1.45
	9690SA series	128	4.06.00.006
	3xx5 series	128	5.2.0.15753
	5xx45 series	256	5.2.0.16343

Compatible Power Supplies

Manufacturer	Model	Type	Watts
Zippy	P2G-5500V	Single	500W
Zippy	P2G-5600V	Single	600W
Zippy	P2M-6601P	Single	600W
Zippy	P2G-5650V	Single	650W
Zippy	R2Z-6400P	Redundant	400W
Zippy	R2W-6500P	Redundant	500W
Zippy	M1W4-6D50P	Redundant	1350W
3Y	YM-7501	Single	500W
3Y	YH-7501	Redundant	500W
FSP	FSP550-60PLN	PS/2	550W
FSP	FSP550-60PLG	PS/2	550W
FSP	FSP600-80GLC	PS/2	600W
Etasis	EFAP-552	Single	550W



Minimum system requirements to apply UEK: 4x HDDs & 2x Fans



Refer to Chenbro website www.chenbro.com for compatible PSU update information.