CHENBRO

2.5” 24-port 6Gb/s
SAS Expander Backplane Assembly

80H10341802A0

80H10341803A0

80H17341801A0

User’s Manual

Version A0

March / 31 / 2011

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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. You 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
Tel: 886-2-8226-5500
Fax: 886-2-8226-5423

CHENBRO Europe B.V.
Tel: 31-40-295-2045
Fax: 31-40-295-2044

CHENBRO Micom (USA) Inc.
Tel: 1-909-947-3200
Fax : 1-909-947-4300

Revision History

Date	Modifications
April / 18 / 2011	● **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.**

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

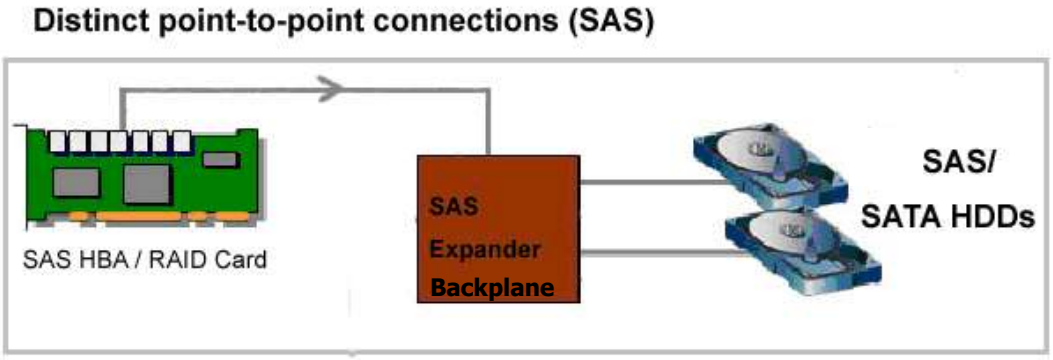
Introduction

About this Guide

The SAS expander backplane user's manual provides the information for functions, capabilities, configuring and assembly / disassembly of this backplane.

Introducing the SAS Expander

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



The CHENBRO SAS Expander Backplane provides high performance, 24 x 2.5" disk drives connectivity and flexibility in RM235/RM418/RM417 . 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 Backplane is based on LSI SAS2 X36 IC that enables the connection of 24 drives in directly attached SAS or SATA HDD. This Backplane performs SAS and SATA transfer rate at 6.0 Gbit/s or 3 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.

Features

General

- **To expand one Mini-SAS port (SFF-8087) to 24 x SATAII/SAS 2.5” HDD**
- **Support HDD Failure / Activity Indication and HDD ID Mapping**
- **Support RM235/RM418/RM417 only**

High-Speed I/O

- **6.0 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 Backplane must be used only with SAS RAID card**

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

Technical Specification

This SAS Expander backplane assembly is including three boards :

80H10341802A0 (2.5” 24-port Mini SAS Backplane)

Specification	
Host Interface	**Mini-SAS**
HDD Interface	**SAS**
Hot-Swap	**Yes, allows user to on line replace Hard Disk Drive**
Display	**LED indicates Hard Disk Drive status** **Power LED – Blue (When HDD is present)** **Access LED – Green (When HDD is busy)** **Error LED – Red (When HDD is error)**
Environment Monitor	**Temperature senor detect(RT1, RT2)**
Connectors	**1.SAS29 *24** **2.Mini-SAS Connector for bridge *8** **3.Standard 4P Power connector *6 for +5V, +12V from power supply**
Dimension	**419(L) x 81.2(W) x 2.4(H) mm**
Material	**FR4 6 layer**

80H10341803A0 (SAS Expander Daughter Board)

Specification	
SAS Expander Chip	**LSI SAS2 X36 (36 ports)**
Cooling	**Four Fan connectors**
Connectors	**1. Mini-SAS Connector for bridge *8** **2. Mini-SAS Connector for RAID card *1** **3. Mini-SAS Connector for Cable Link *1** **4. Pin Header 2.54mm (2x3) *1, (1x4) *1** **5. Wafer 2.54mm Connector 2P *2** **6. Wafer 2.5mm Connector 2P *1**
Dimension	**170(L) x 75(W) x 1.6(H) mm**
Material	**FR4 8 layer**

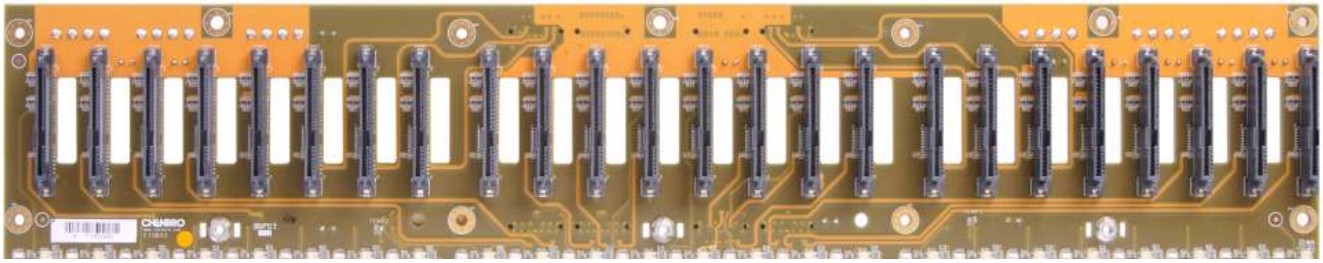
80H17341801A0 (SAS Expander Bridge Board)

Specification	
Dimension	**95.6(L) x 19.66(W) x 1.0(H) mm**
Material	**FR4 4 layer**

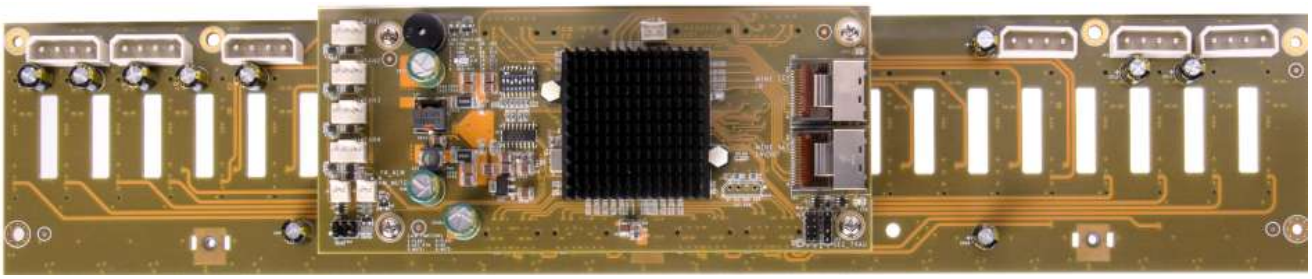
Accommodation Chassis

- ***RM235XX***
- ***RM417XX***
- ***RM418XX***

SAS Expander Backplane Assembly Outlook

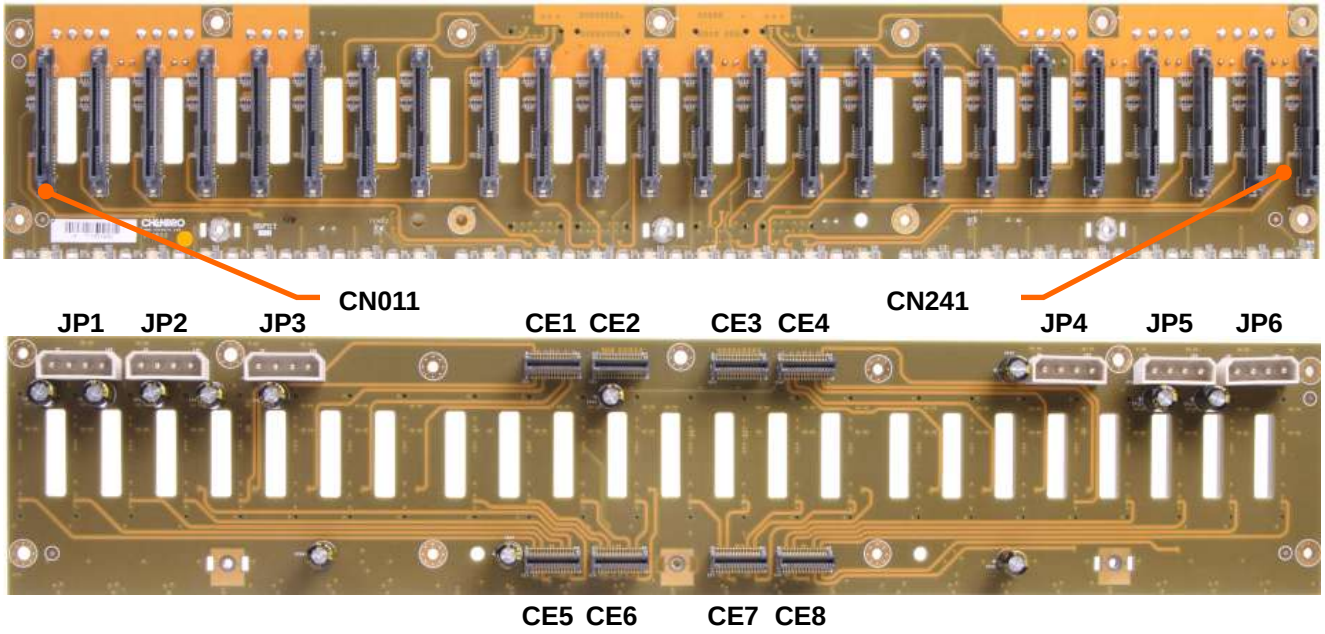


HDD Side



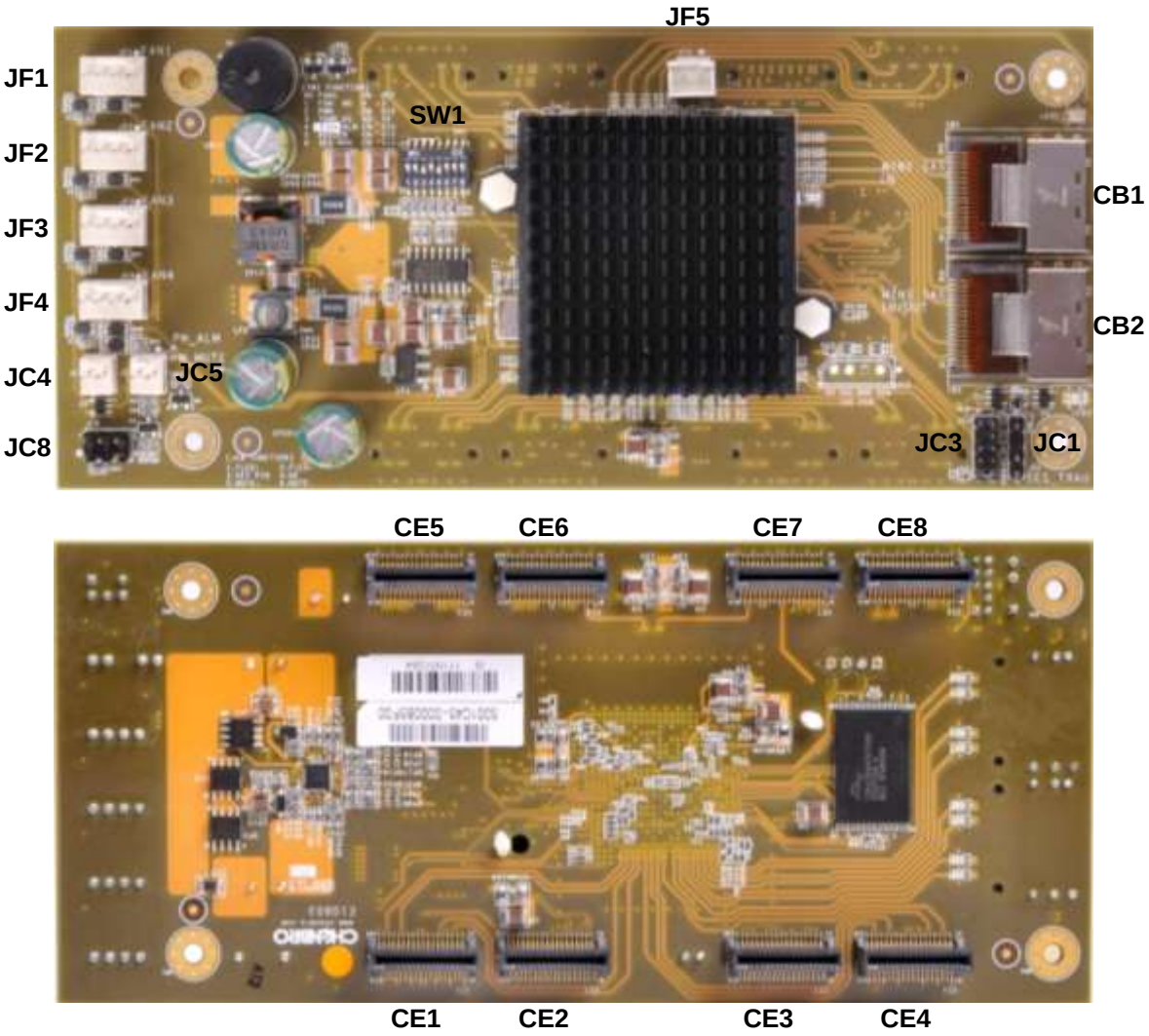
Host Side

p/n : 80H10341802A0 (2.5” 24-port Mini SAS Backplane Layout)



Components	Description	Function
JP1 ~ JP6	DC in, 4-Pin connector	For backplane power source from power supply
CE1 ~ CE8	bridge board connecter	Connection for SAS Expander daughter board
CN011 ~ CN241	SATAII / SAS HDD connecter	Connect to 22pin SATAII or 29pin SAS 2.5” HDD

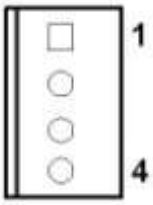
p/n : 80H10341803A0 (SAS Expander Daughter Board Layout)



Components	Description	Function
CB1	Mini-SAS SFF-8087 Connector – Internal Input	Internal input from SAS RAID Card
CB2	Mini-SAS SFF-8087 Connector – Internal Output	Internal output to rear window for expansion
CE1~CE8	Bridge Board Connector	Connection For Backplane
JF1~JF4	FAN connecter	4x Four Pin Connecter With PWM Function
JF5	Fan Connector	Power Source For Heat Sink Cooling Fan *(not used)*
JC1	RS232 Connector	For Debug (only for Chenbro Technician)
JC3	Firmware Upload Connector	For Firmware Update (only for Chenbro Technician)
JC4, JC5	Alarm、Mute Connecter	JC4 = PSU Alarm connecter (connect to PSU) JC5 = PSU Mute connecter (connect to PSU)
JC8	Chassis Failure LED And Alarm Mute Signal Connector	Send Chassis Failure LED And Alarm Mute Signal To Chassis Front LED / Control Board
SW1	DIP Switch (for FAN and Temperature)	Set FAN Function and Temperature Level

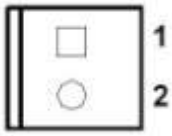
Fan Connector Pin Definition (JF1 ~ JF4)

Pin NO.	Descriptions
1	GND
2	12V
3	FAN Clock Input
4	FAN PWM Output



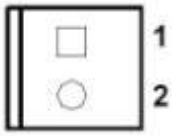
Power Failure Connector Pin Definition (JC4)

Pin NO.	Descriptions
1	GND
2	Fail signal Input(Active Low)



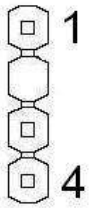
Power Alarm Mute Connector Pin Definition (JC5)

Pin NO.	Descriptions
1	MUTE -
2	MUTE +



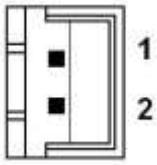
RS232 Connector Pin Definition (JC1)

Pin NO.	Descriptions
1	GND
2	KEY PIN
3	RXD
4	TXD



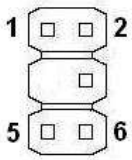
Fan Connector Pin Definition (JF5)

Pin NO.	Descriptions
1	GND
2	12V

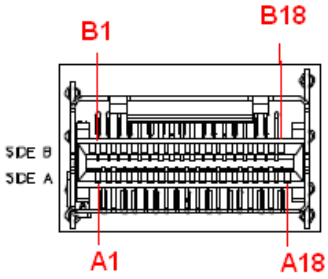


Front LED / Control Board Connector Pin Definition (JC8)

Pin NO.	Descriptions	Pin NO.	Descriptions
1	FAIL LED +	2	FAIL LED -
3	KEY PIN	4	NC
5	MUTE SW +	6	MUTE SW -

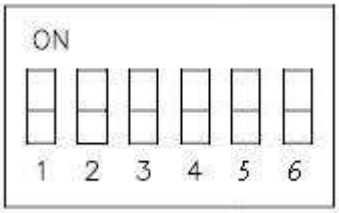


Mini SAS Connector Pin Definition (CB1 ~ CB2)



Pin NO.	Descriptions	Pin NO.	Descriptions
A1	GND	B1	GND
A2	RP1	B2	TP1
A3	RN1	B3	TN1
A4	GND	B4	GND
A5	RP2	B5	TP2
A6	RN2	B6	TN2
A7	GND	B7	GND
A8	NC	B8	NC
A9	NC	B9	NC
A10	NC	B10	NC
A11	NC	B11	NC
A12	GND	B12	GND
A13	RP3	B13	TP3
A14	RN3	B14	TN3
A15	GND	B15	GND
A16	RP4	B16	TP4
A17	RN4	B17	TN4
A18	GND	B18	GND

SW1 Function Definition



SW1-1: FAN Quantity Setting

Sw1-1	FAN
ON	4
OFF	3

SW1-2: PWM Enable/Disable Setting

Sw1-2	PWM
ON	Enable
OFF	Disable

SW1-3: TEMP Threshold Setting

Sw1-3	TEMP
ON	65℃
OFF	55℃

SW1-4: FAN Enable/Disable Setting

Sw1-4	FAN
ON	Enable
OFF	Disable

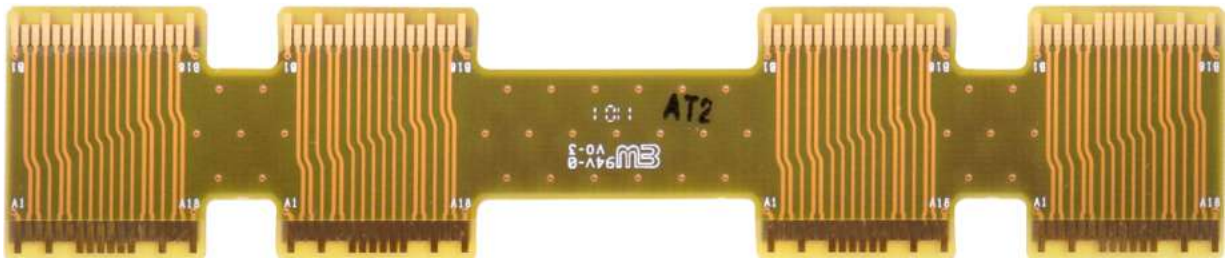
SW1-5: BUZZER Enable/Disable Setting

Sw1-5	BUZZER
ON	Enable
OFF	Disable

SW1-6: SES Enable/Disable Setting

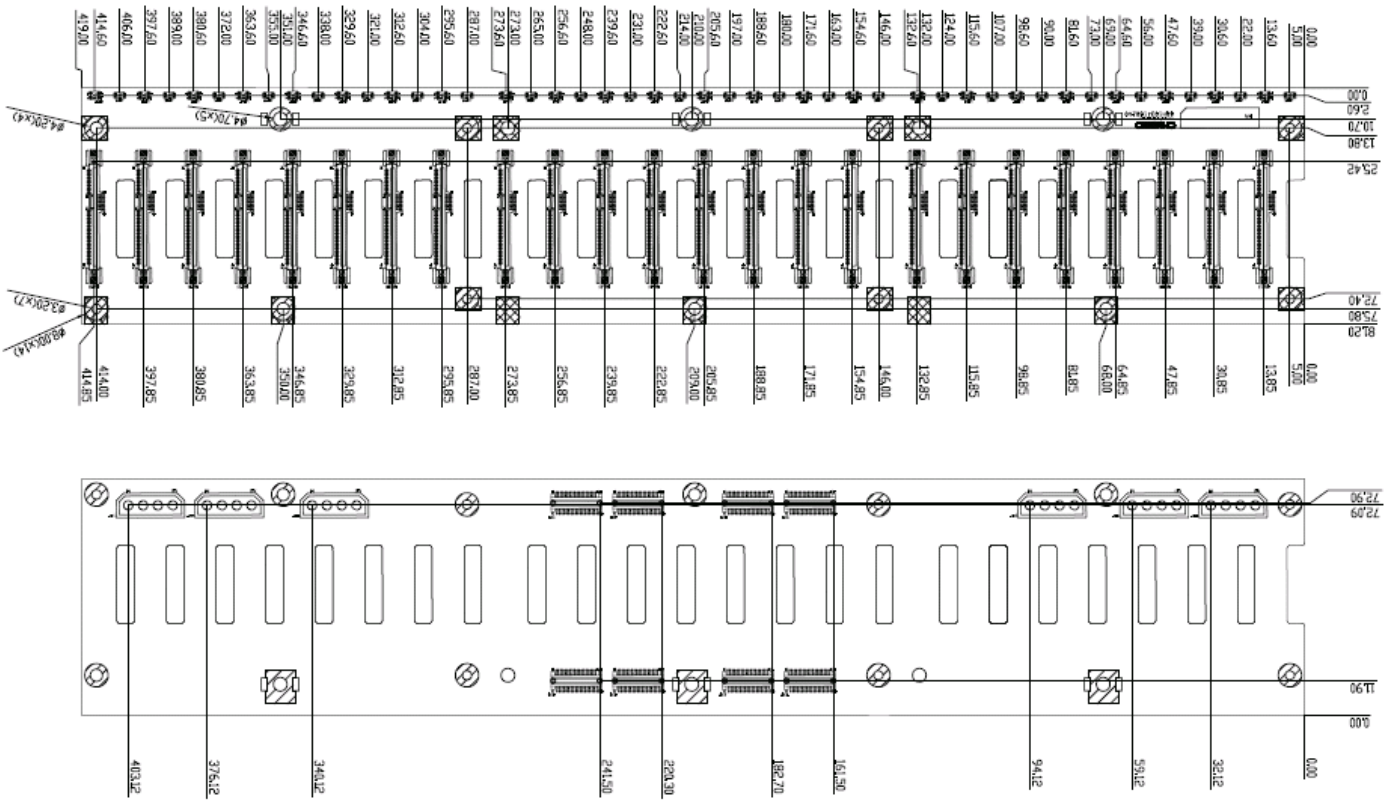
Sw1-6	SES
ON	Enable
OFF	Disable

p/n : 80H17341801A0 (Bridge Board Layout)

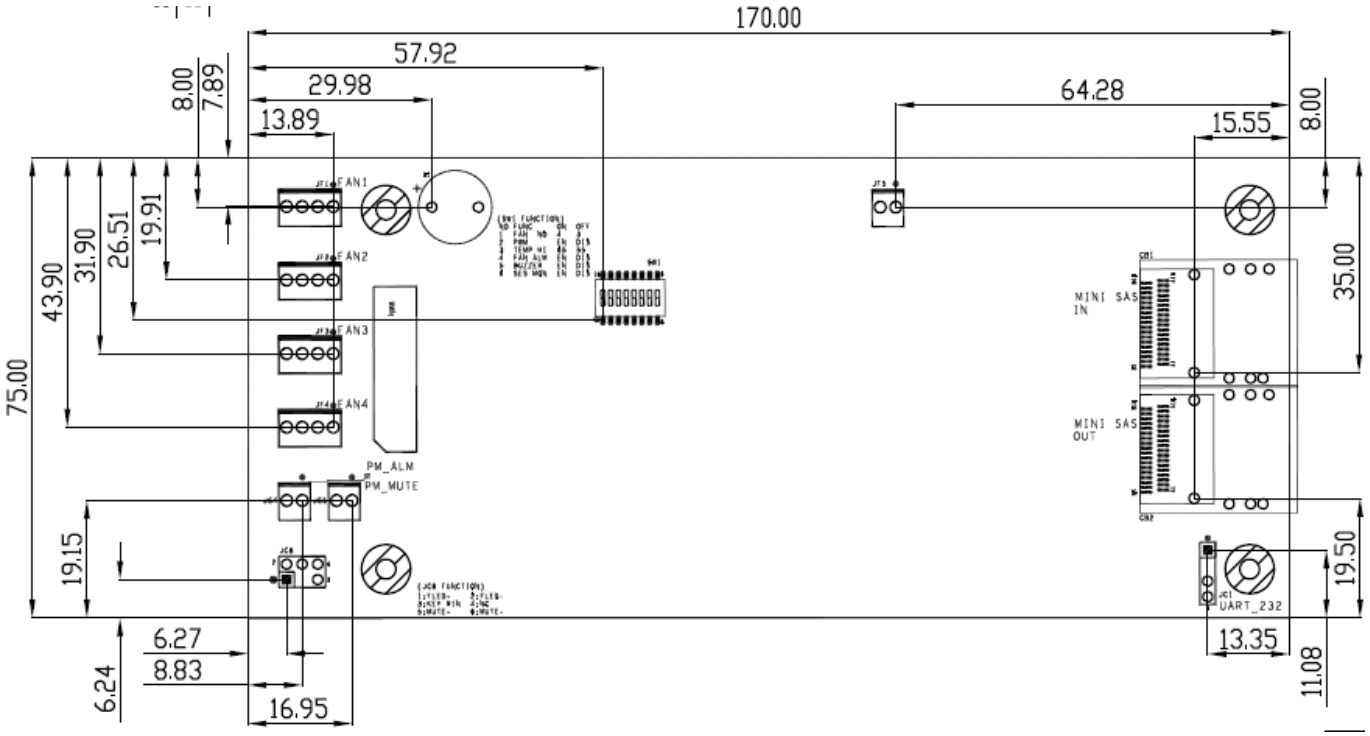


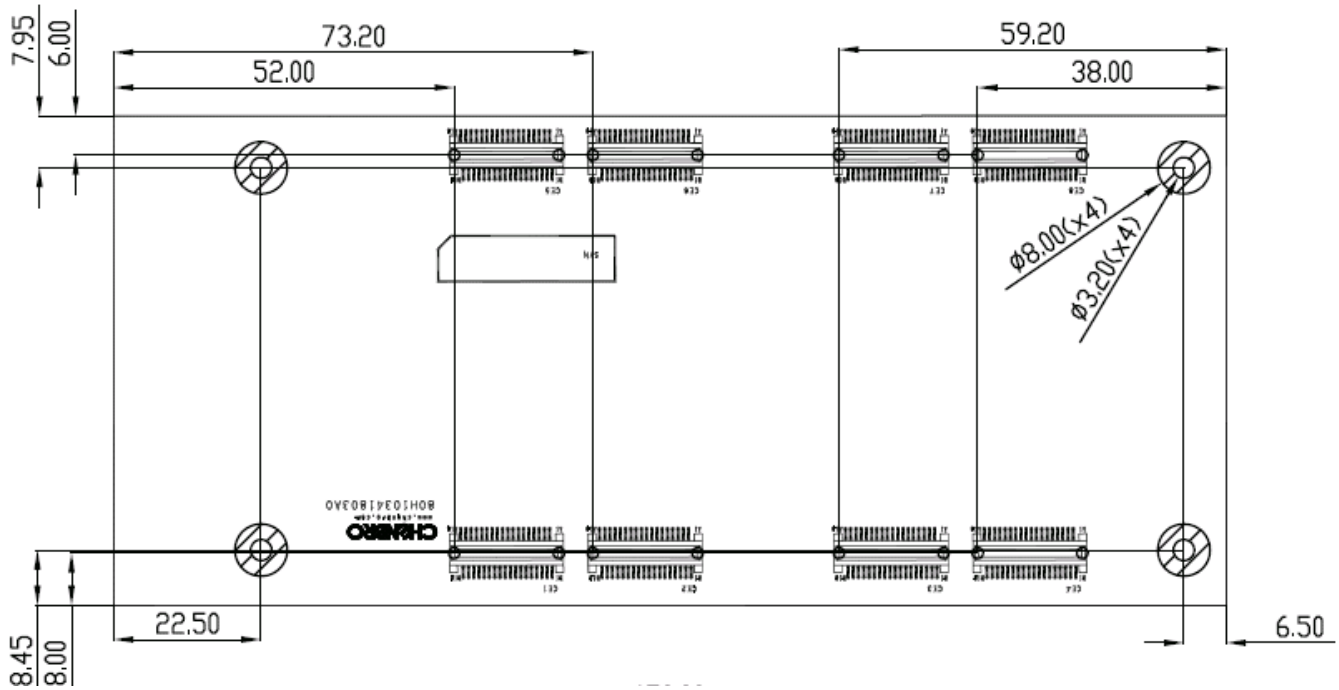
Mechanical Dimension

80H10341802A0 (2.5” 24-port Mini SAS Backplane)

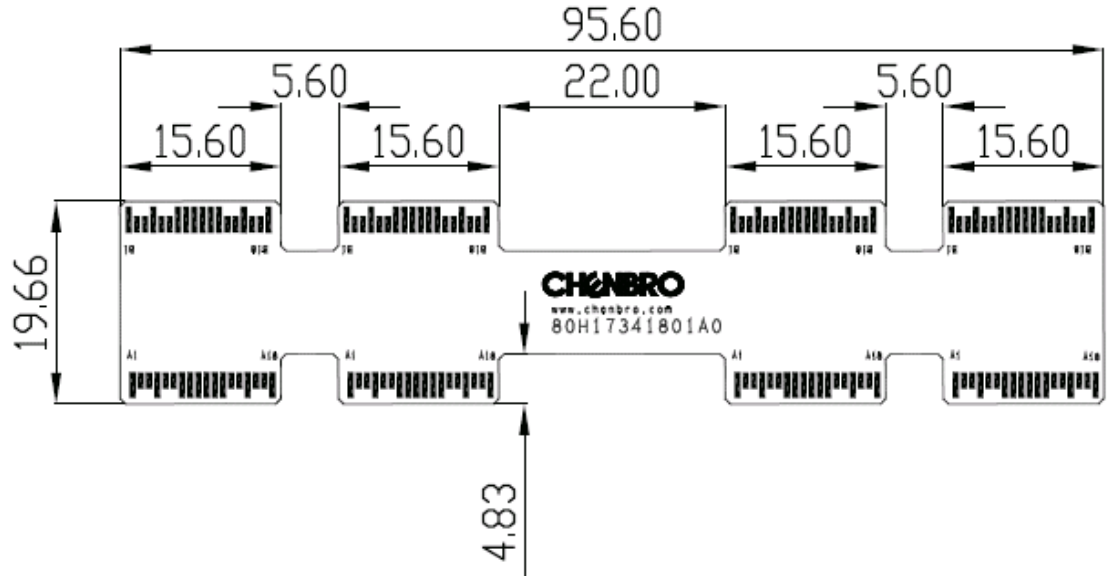


80H10341803A0 (SAS Expander Daughter Board





80H17341801A0 (Bridge Board)



PWM (Pulse Width Modulation) Function of Backplane

See the table below for PWM level

	Duty Cycle
Under 45℃ (113℉)	50%
45℃~50℃ (113℉~122℉)	85%
50℃ (122℉) and above	100%

Mini-SAS Cables

RM23212 SAS Expander Backplane provides most benefits to users using various SAS RAID card via different conversion cables. Chenbro provides various cables for different interfaces which include the followings:

SFF-8087 to SFF-8087

(A)

SFF-8087 to 4 SATA

(B)

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	SATA-7Pin x4	Mini-SAS (SFF-8087 36pin)	26H113215-010	600 mm

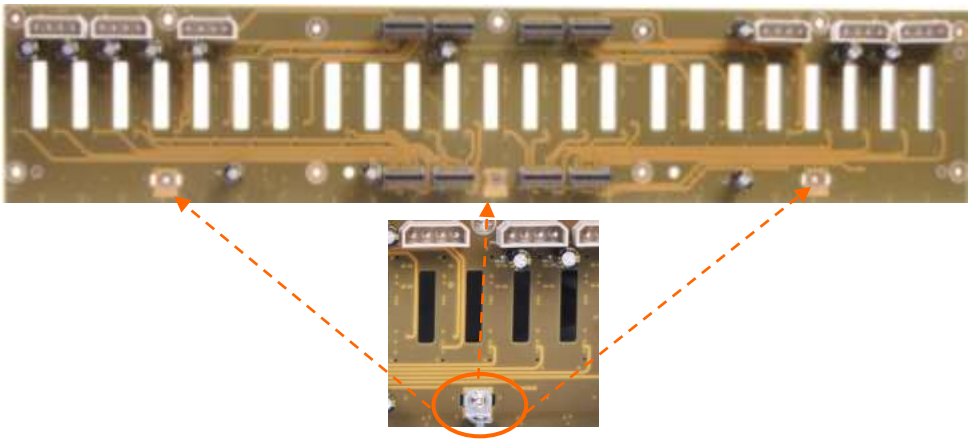
Compatible SAS RAID Cards

Manufacture	Model Number
LSI	3Wware 9750-8I
	MegaRAID 9260-8I
areca	1680DI-IX20-16
adaptec	52445

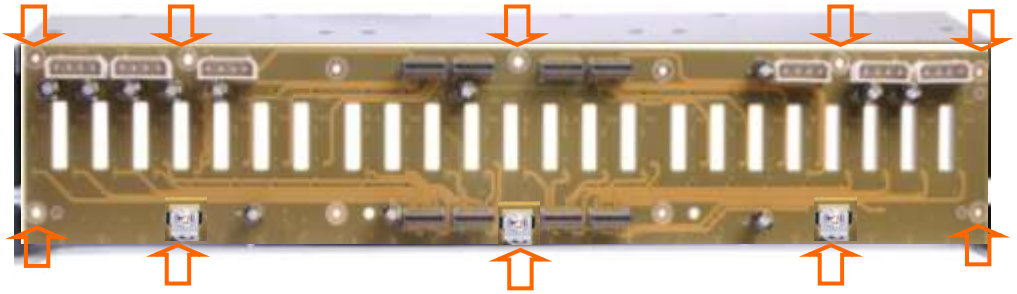
	**The maximum quantity of supported physical drives per SAS RAID Card is depended on the capability of the SAS RAID card in the system. Refer to the technical document or user guide provided by RAID card manufacturer.**

How To Assemble On The HDD Cage

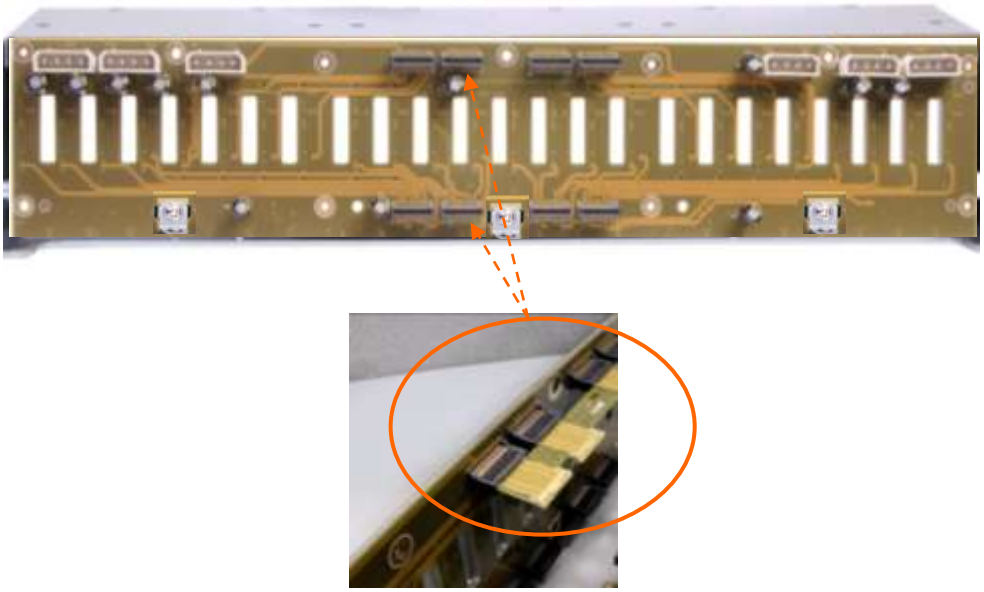
Step 1 : Attach three “ L “ shape metal brackets on the backplane by screw



Step 2 : Fasten backplane on the rear side of HDD cage by screw

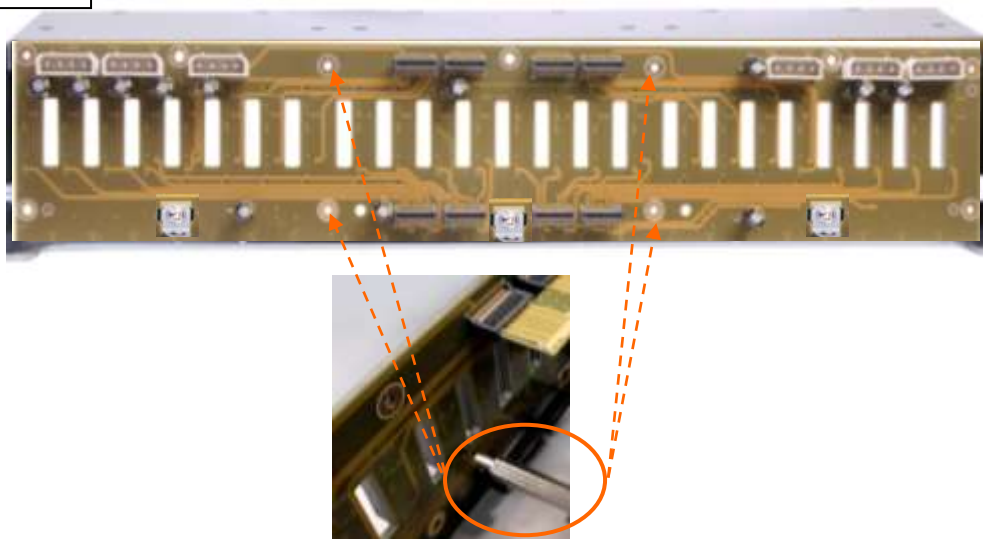


Step 3 : Insert two bridge boards on the backplane

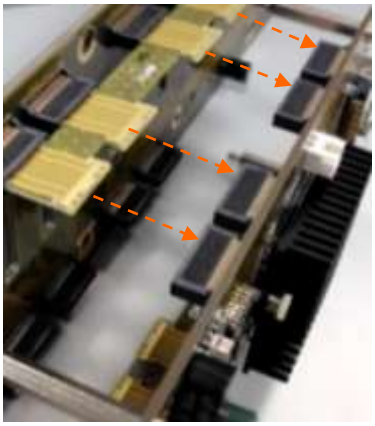


HDD LED Cable: 26H113215-005

4 : Screwing four studs on the backplane



Step 4 : Ducking SAS Expander daughter board on the bridge board



Step 5 : Align with the screwing hole on the studs and fasten by four screws to finish whole HDD Cage assembly

Note : Regarding assembly for HDD cage on the chassis , Please refer to RM417/RM418 Chassis quick installation guide from Chenbro official web site