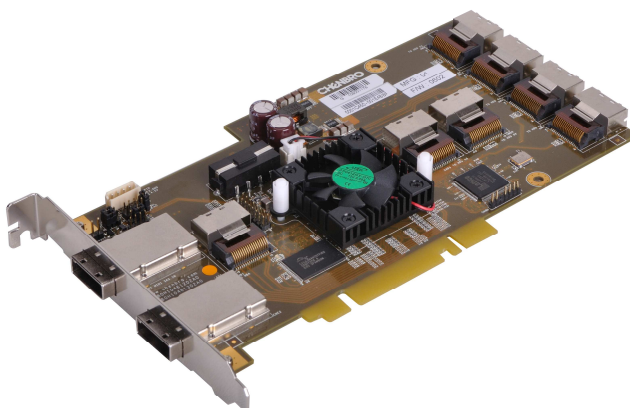


CHENBRO



CK23601

SAS Expander 6 Gb/s 36 Ports

User's Manual

Ver. 1.0

Sep / 10 / 2012

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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; contact information is as following:

Chenbro HQ	Chenbro Europe B.V.	Chenbro Micom (USA) Inc.
Tel: 886-2-8226-5500	Tel: 31-40-295-2045	Tel: 1-909-947-3200
Fax: 886-2-8226-5423	Fax: 31-40-295-2044	Fax : 1-909-947-4300
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Tel: 44-(0)161-425-5341	Tel: 86 010-6709-1786	
	Fax: 86 010-6709-1786	

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Revision History

Date	Modifications
Sep / 10 / 2012	● First release (V1.0)

Safety Information

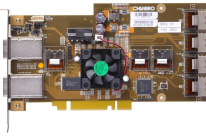
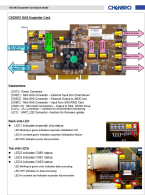
- Read the installation instructions before connecting to the power source.
- Only trained and qualified personnel should be allowed to install, replace or service this equipment.
- Never install this product in a wet environment.
- Position system cables and power cables carefully; route system cable 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.

Getting Start with SAS (Serial Attached SCSI) Expander Card

Thanks 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
Standard SAS Expander Card (80H10462301A0)	1	
Mini-SAS Cable, 350mm (26H11321528B0)	1	
Quick Guide (71H014622-001)	1	
D-SUB Cable, 9P-4P, 200MM (26H11462201A0)	1	

Remarks: P/N are subjected to be changed by version upgrade

Technical Specifications

Mini-SAS Ports	Internal Input from SAS 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	195 mm x 107 mm
Power Connector	4-Pin Connector
Power Consumption	15 Watts
Operating Temperature	0~50 °C (32~122 °F)
Relative Humidity	20%~90%, non-condensing

Features

General

- Flexible application of 36-port Standard SAS Expander Card
- Support HDD Failure / Activity Indication and HDD ID Mapping
- Mechanical fitting compatible with motherboard PCI-Express 4X, 8X, 16X & PCI slots

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 / data storage
- CAD/CAM engineering / scientific modeling
- Video streaming / editing workstation

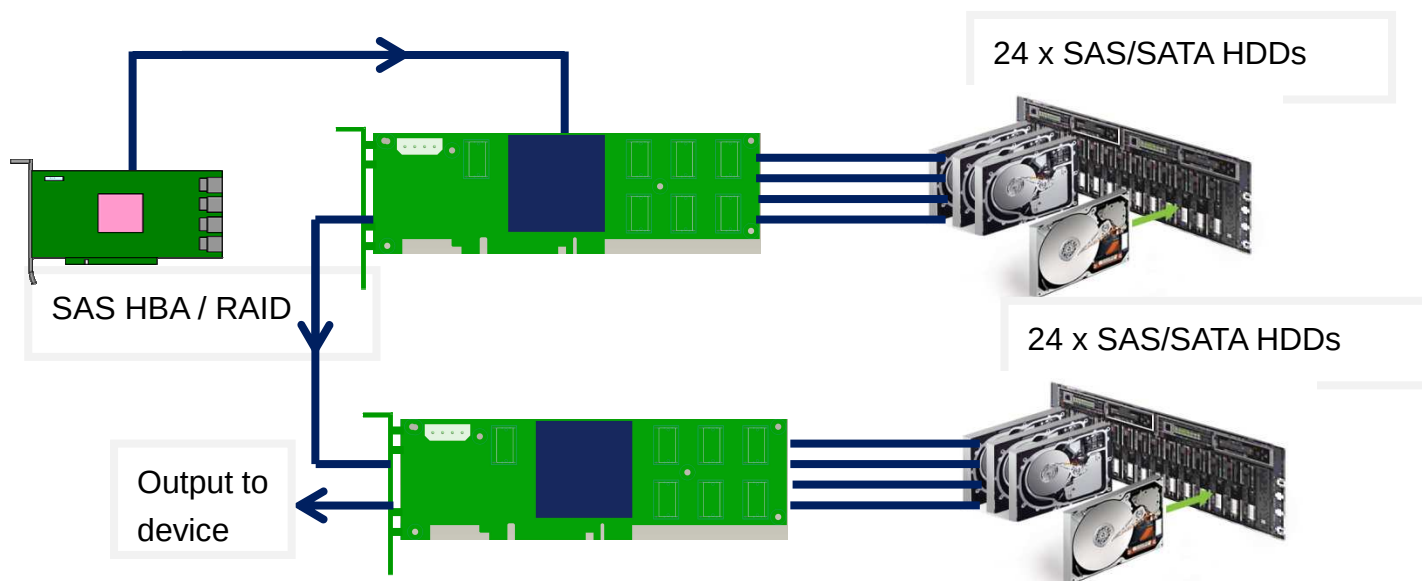
Introduction

About this Guide

The SAS expander card user's manual provides the information for functions, capabilities, configuring and maintaining the 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

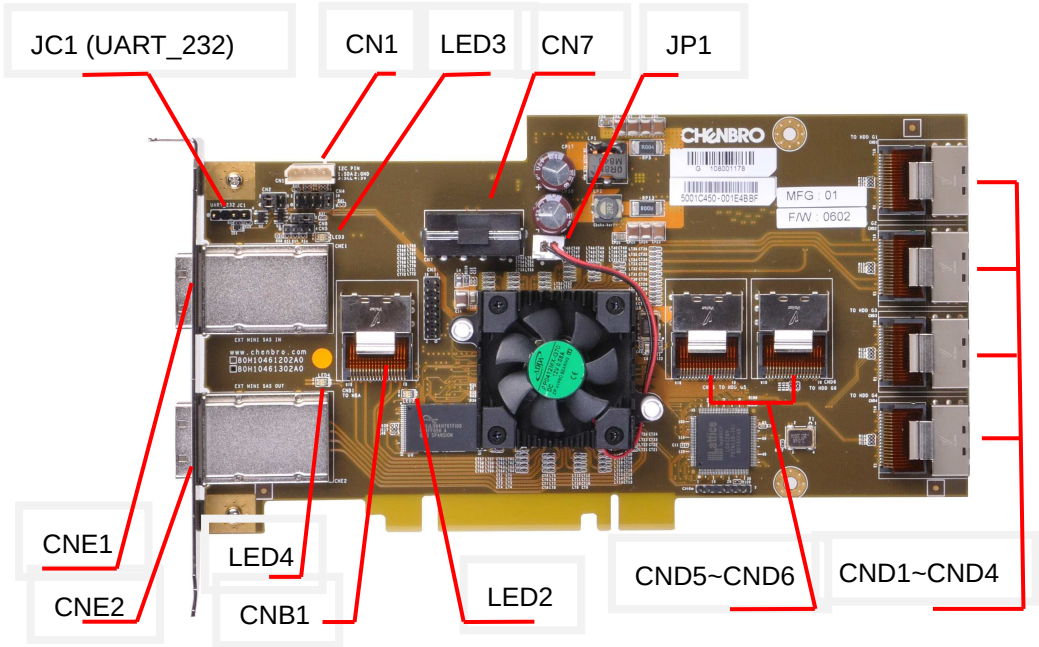


The CHENBRO 36-port Standard SAS expander card provides high performance, high disk drive connectivity, scalability and flexibility in various storage environments. It is a valuable solution to other expansive and complex topologies. The SAS expander is ideal for high availability, scalable server clustering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

The CHENBRO SAS Expander is based on LSI SASIIX36 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 6.0 Gbit/s or 3.0 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, V1.1 and V2.0.

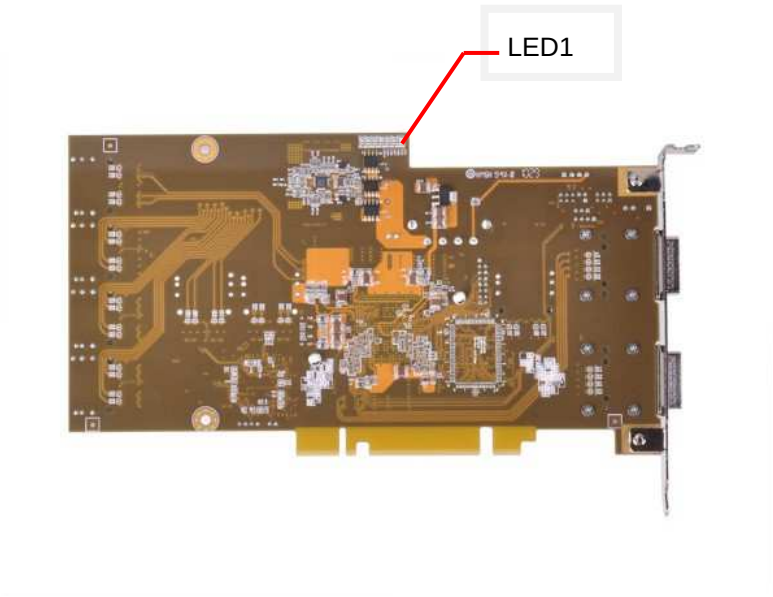
SAS Expander Card Hardware

SAS Expander Card Layout

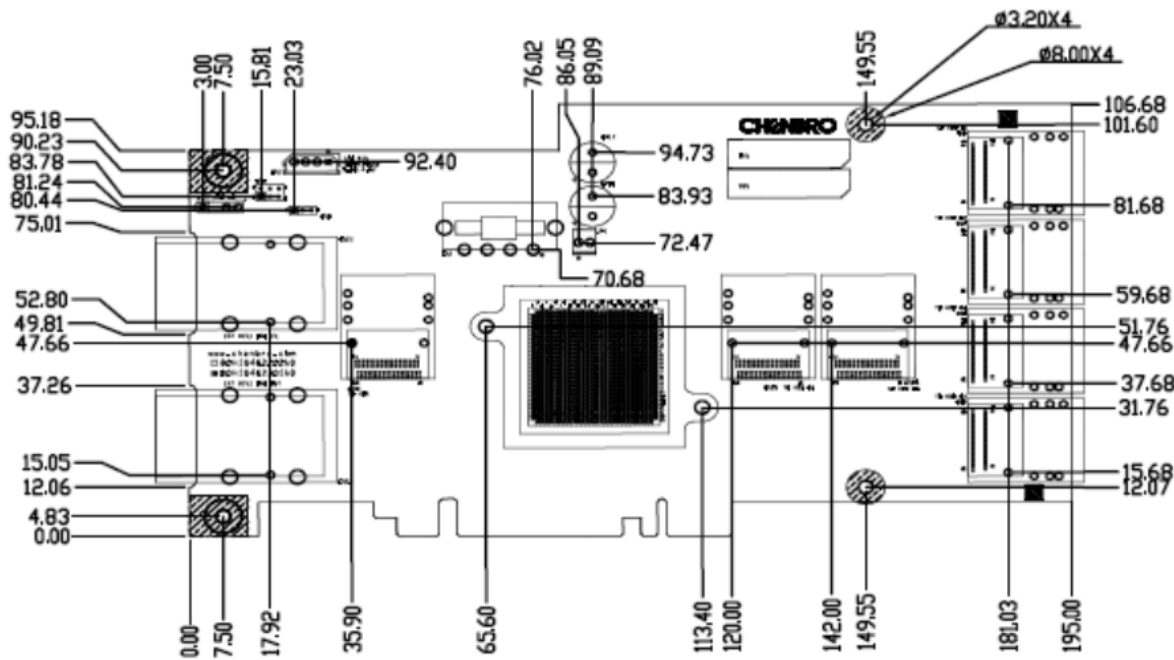


Components	Description	Function
CNB1	Mini-SAS SFF-8087 Connector – Internal Input	Internal input from SAS RAID Card
CND1~CND6	Mini-SAS SFF-8087 Connector – Internal Output	Internal output to SAS / SATA HDDs (See Appendix 1 about pin assignment)
LED1	SAS Expander Status LED	Green LED blinking indicates SAS Expander works / ready
LED2	Internal Input (CNB1) Status LED	Green LED blinking indicates internal input link activity; Red LED indicates no signal connection No LED indication while no activity (under signal connection)
LED3	External Input (CNE1) Status LED	Green LED blinking indicates internal input link activity; Red LED indicates no signal connection No LED indication while no activity (under signal connection)

LED4	External Input (CNE2) Status LED	Green LED blinking indicates internal input link activity; Red LED indicates no signal connection No LED indication while no activity (under signal connection)
JP1	Fan Power Connector	DC in, 2-Pin, +12V from Power Supplier
JC1	UART RS232 connector	Command Line Interface (CLI) Console port for firmware upgrade Baud Rate: 115,200 - 8 data bit - 1 stop bit (See Appendix 2 about the firmware update procedure)
CN1	IIC Connector	Factory reserved
CN2	Default Setting	Default Setting Jumper
CN3	Debug Connector	Factory reserved
CN4	Test Connector	Factory reserved
CN5	SGPIO Connector	Factory reserved
CN6	Test Connector	Factory reserved
CN7	Power Connector	DC in, 4-Pin, +5V/+12V from Power Supplier
CN8	Default Setting	Default Setting Jumper



Mechanical Dimension



Mini-SAS Cables Option

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) mini SAS SFF-8087 to mini SAS SFF-8087



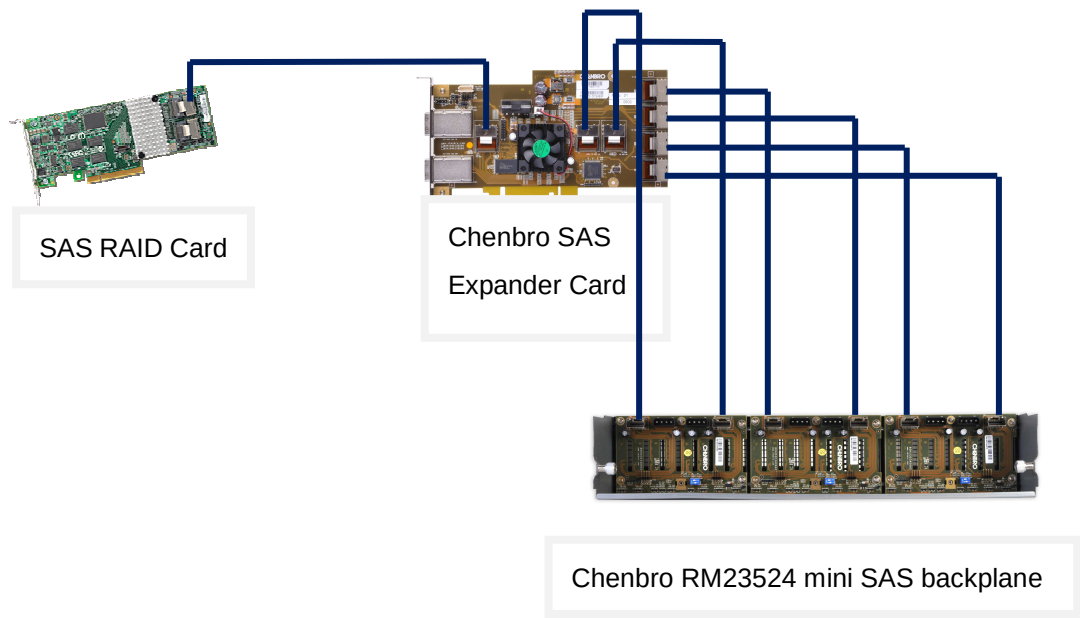
(B) mini SAS SFF-8087 to 4 SATA

Connector		P/N	Cable Length	Remarks
Host (RAID card)	Backplane			
Mini-SAS (SFF-8087 36 pin)	Mini-SAS (SFF-8087 36 pin)	26H11321528B0	350 mm	In package
Mini-SAS (SFF-8087 36 pin)	Mini-SAS (SFF-8087 36 pin)	26H113215-030	600 mm	
Mini-SAS (SFF-8087 36 pin)	SATA x 4 ports (7 pin)	26H12323601A0	600 mm	

Chassis Assembly Example

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

Example for RM23524 chassis Mini-SAS backplane wiring



Compatible SAS RAID Cards

CK23601 Firmware Version 0701; MFG configuration version 01 ; Hardware Version A0

Brand	Model No.	Firmware	Device protocol	Ports	Internal connector	External connector	Validation result	SES message display at RADI card UI
LSI	MegaRAID 9266-8i	23.4.1-0028	6Gb/S	8	2	-	OK	V
LSI	MegaRAID 9261-8i	12.7.0-0007	6Gb/S	8	2	-	OK	V
LSI	MegaRAID 9260-8i	2.120.33-1197	6Gb/S	8	2	-	OK	V
LSI	MegaRAID SAS 9260-4i	2.70.03-0862	6Gb/S	4	1	-	OK	V
LSI	MegaRAID SAS 9280-24i4e	FH9X 5.08.00.008	6Gb/S	28	6	1	OK	V
LSI 3Ware	SAS 9750-4i	FH9X 5.08.00.008	6Gb/S	4	1	-	OK	V
LSI 3Ware	SAS 9750-8i	FH9X 5.08.00.008	6Gb/S	8	2	-	OK	V
Areca	ARC-1880-ix-242	V1.48A	6Gb/S	28	6	1	OK	V
Areca	ARC-1880ixl-8	V1.48A	6Gb/S	12	2	1	OK	V
Adaptec	RAID 6805	b18276	6Gb/S	8	2	-	Tested by 3rd party	X

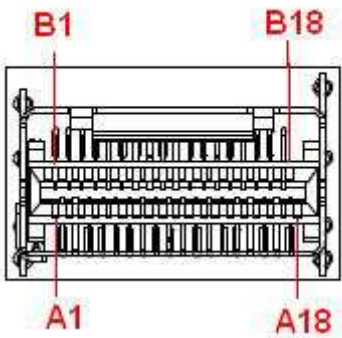
SES: SCSI Enclosure Services

Appendix 1

SFF-8087 Pin Assignment

MINI SAS CONNECTOR (FOR HBA)(CNB1)
MINI SAS CONNECTOR (FOR HDD)(CND1-CND6)

Front View



PIN NUMBER	Signal	PIN NUMBER	Signal
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

Appendix 2

Firmware update environment setting

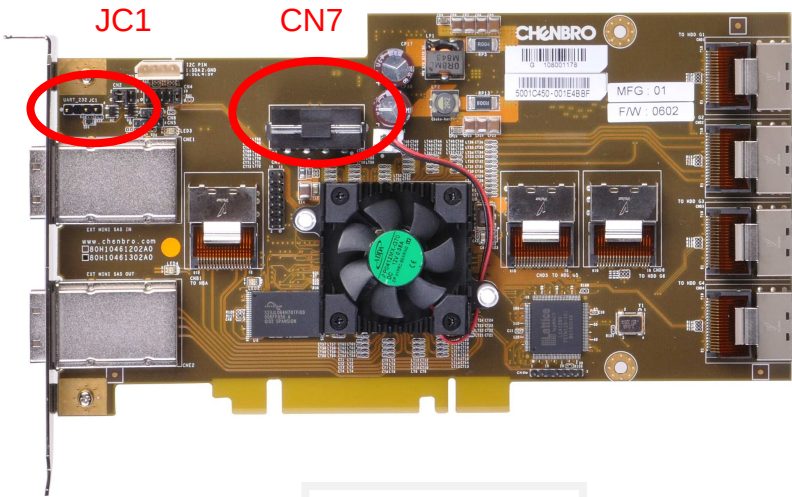


Photo 1-1

Step1: Plug firmware upgrade cable to **JC1**

Setpe2: Plug Big 4-Pin Power cable to **CN7**.

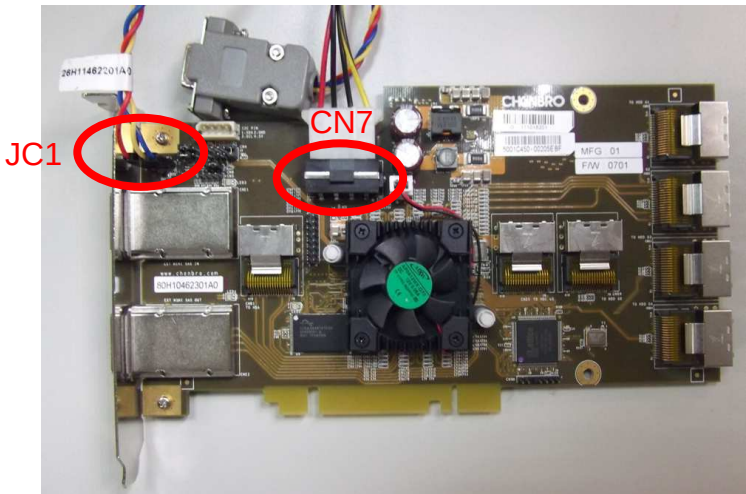
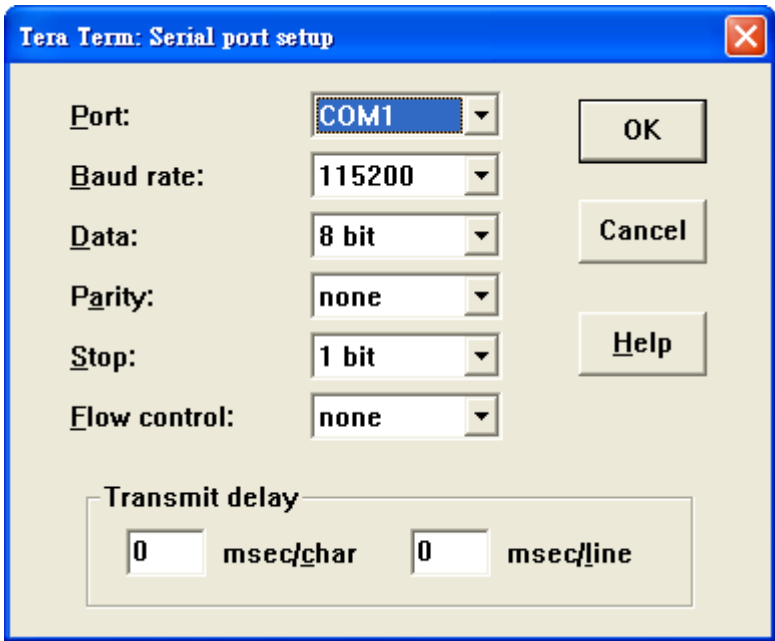


Photo 1-2

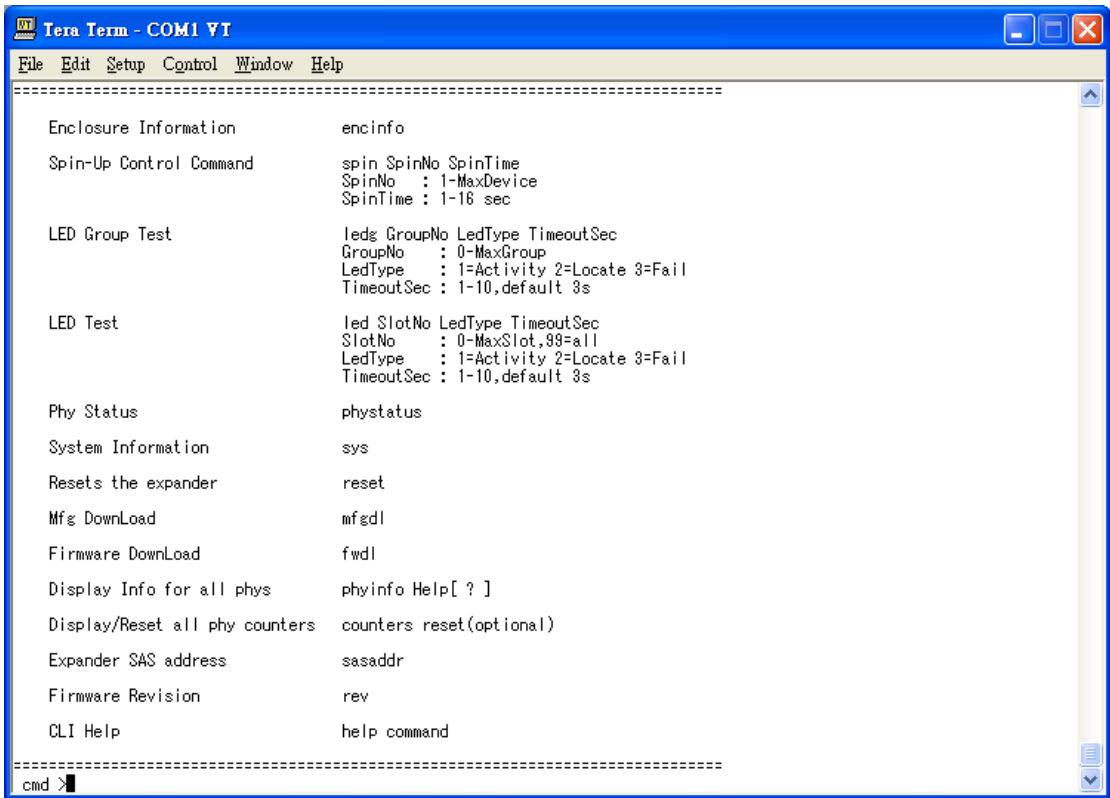
STEP3: Open terminal software (ex. Hyper terminal)

STEP4: Set baud rate and serial port (Please refer photo 1-1)



STEP5: Power on expander card or expander BP

STEP6: Check connection state

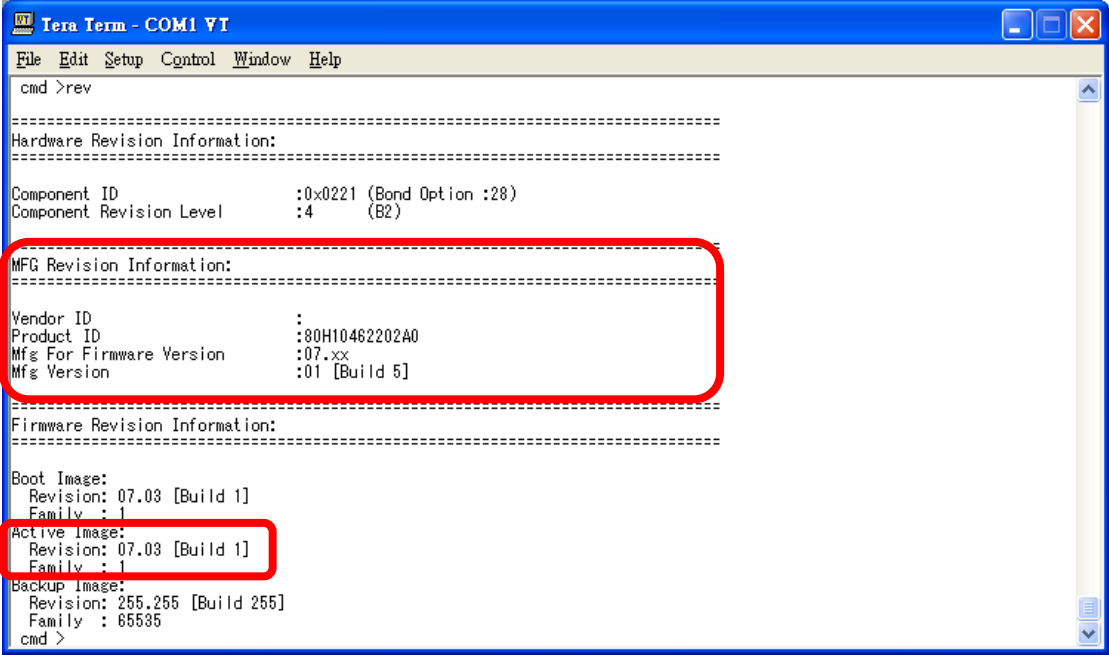


- **How to verify firmware revision information**

STEP1: Use "**rev**" command to get firmware information from expander card or expander Backplane.

STEP2: Firmware revision information

Firmware revision was combined by revision of **MFG image** (MFG Configuration Version) and **active image** (Firmware Version).



```
Tera Term - COM1 VT
File Edit Setup Control Window Help
cmd >rev

=====
Hardware Revision Information:
=====
Component ID          :0x0221 (Bond Option :28)
Component Revision Level :4      (B2)

MFG Revision Information:
=====
Vendor ID              :
Product ID             :80H10462202A0
Mfg For Firmware Version :07.xx
Mfg Version            :01 [Build 5]

Firmware Revision Information:
=====

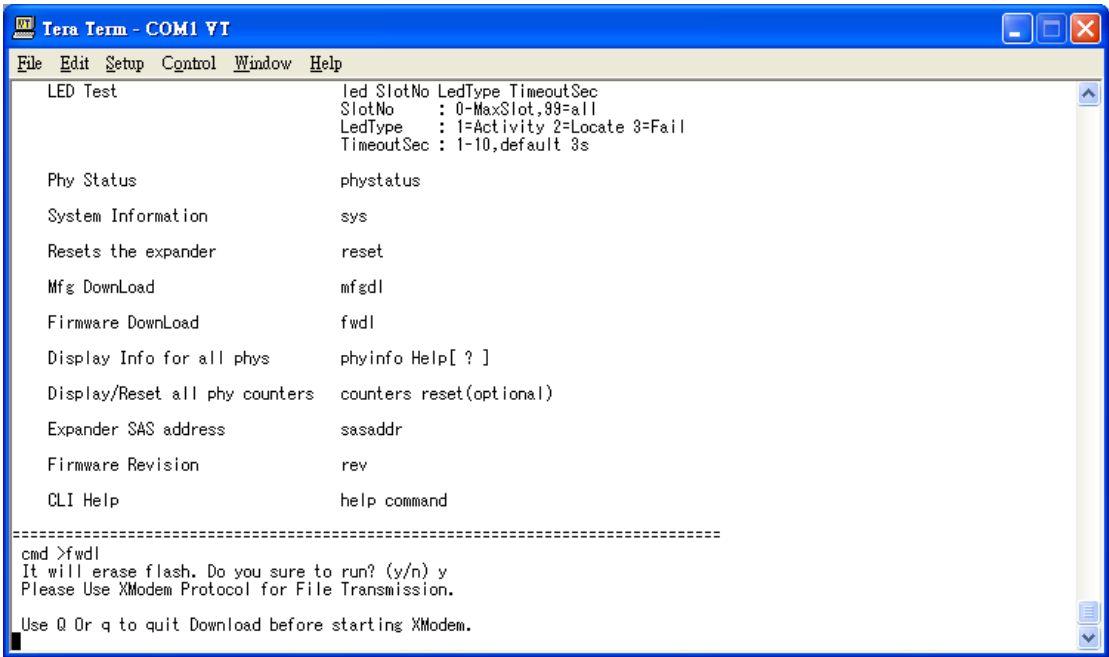
Boot Image:
Revision: 07.03 [Build 1]
Family : 1

Active Image:
Revision: 07.03 [Build 1]
Family : 1

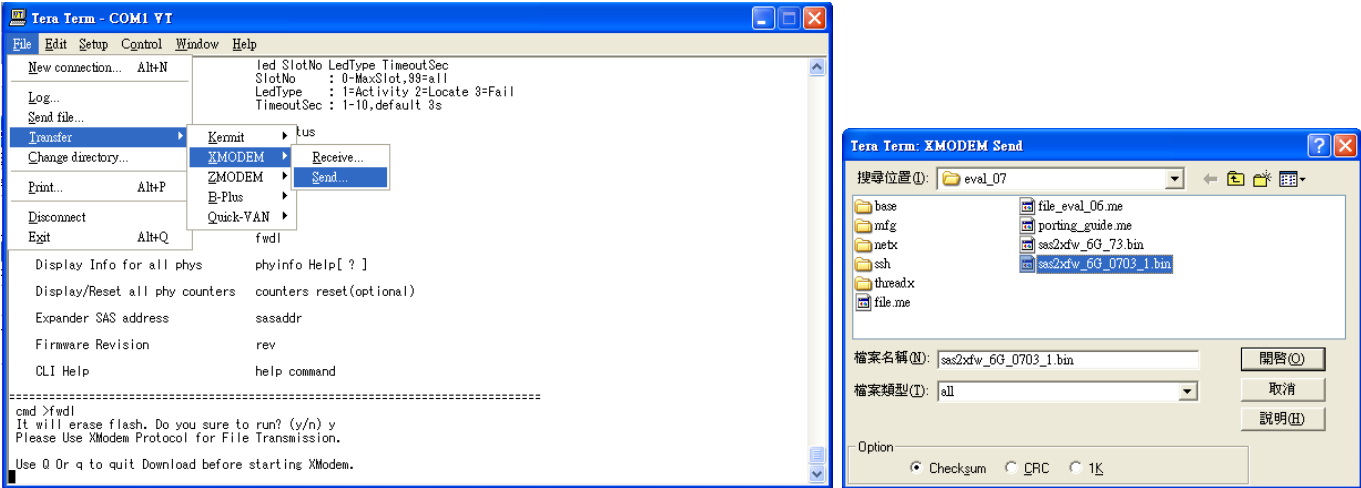
Backup Image:
Revision: 255.255 [Build 255]
Family : 65535
cmd >
```


● **How to upgrade Firmware-Active Image**

STEP1: Use command ("**fwdl**" and "**y**")



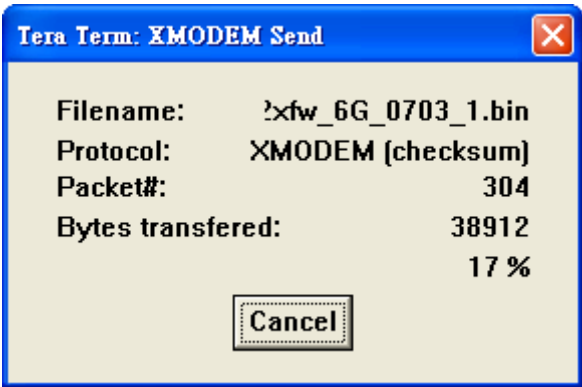
STEP2: Please use transfer mode as "XMODEM", selection firmware code "*.bin"



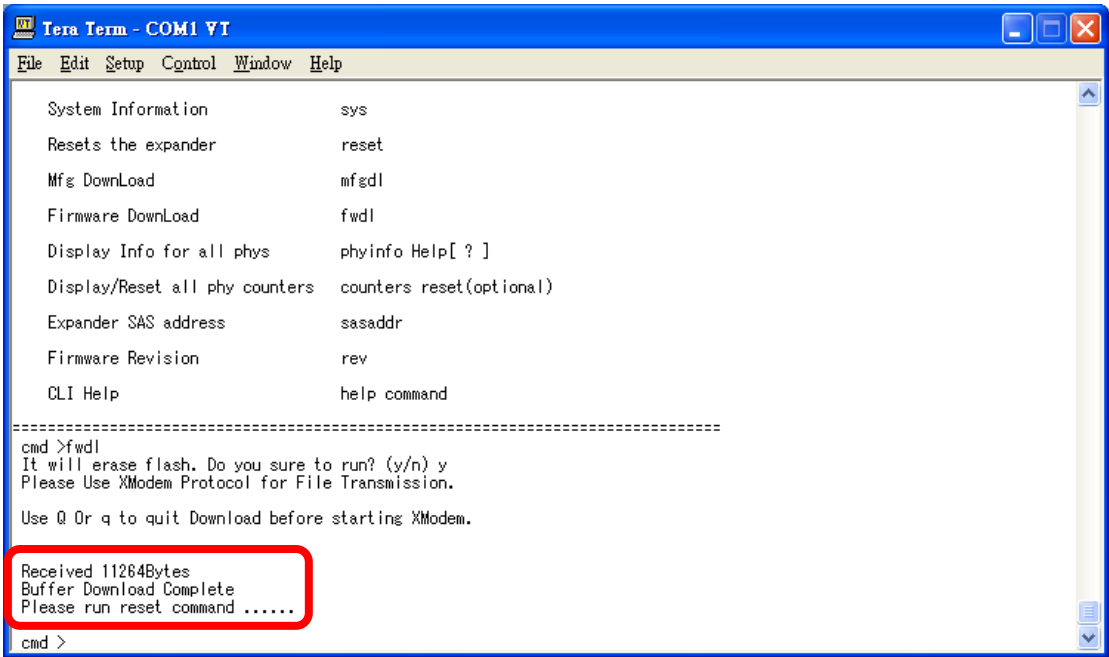
Example: download sas2xfw_6G_0703_1.bin

Please verify your SAS expander model & P/N, suitable hardware/software revision should be matched.

STEP3: Send file process status

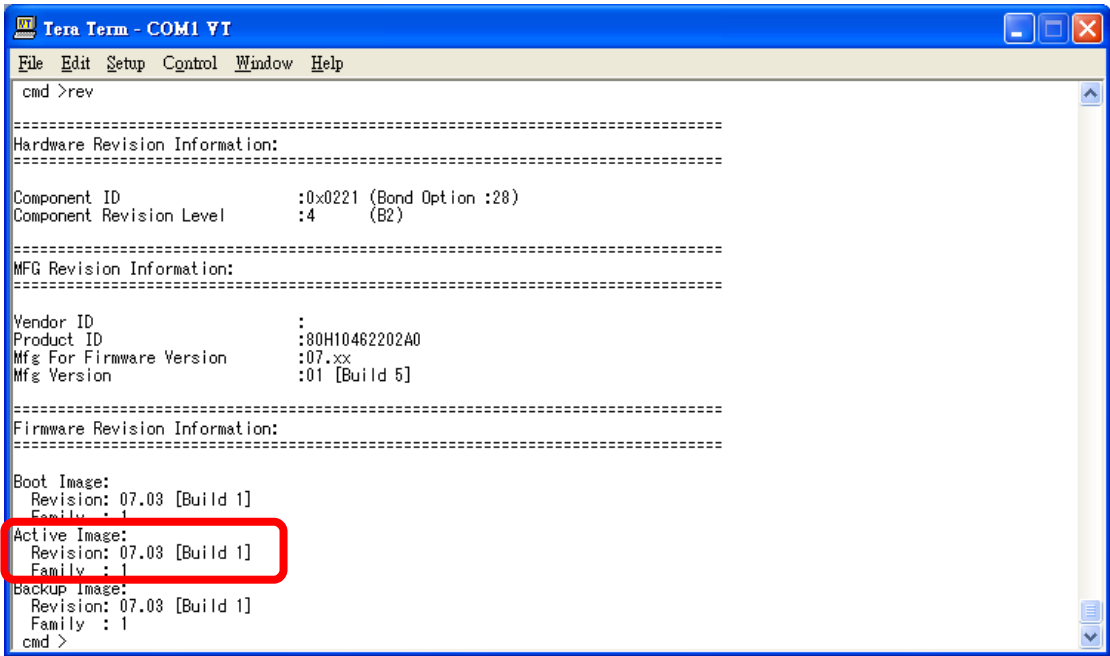


STEP4: Download firmware file complete.



STEP5: Please use “reset” command reset expander system.

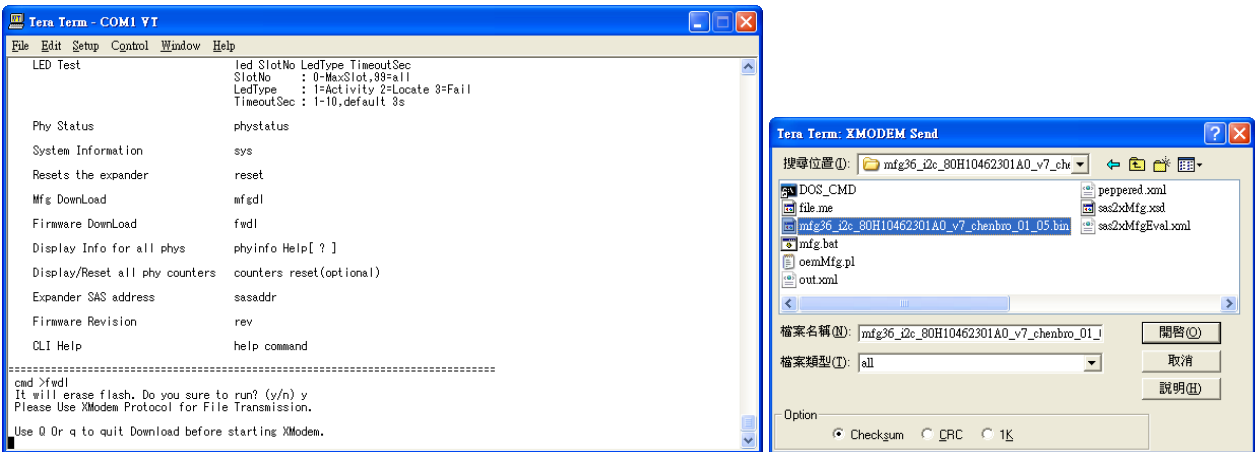
STEP6: Use command “rev” verify MFG and firmware version



● How to upgrade Firmware-MFG Image

STEP1: Use command (“mfgdl” and “y”)

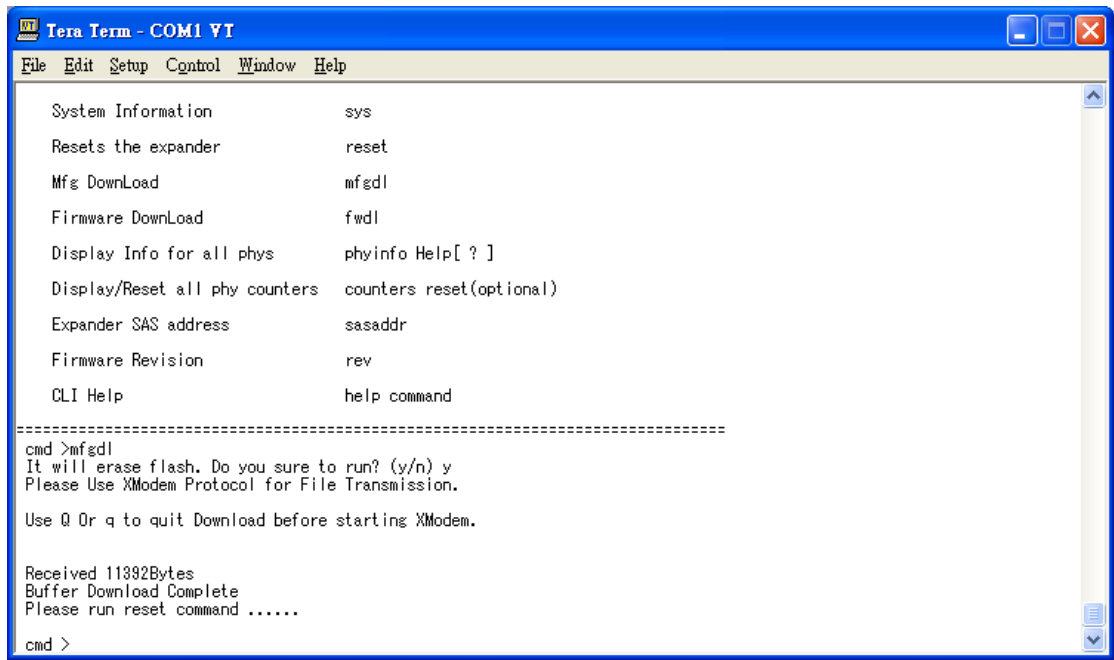
STEP2: Please use transfer --> XMODEM --> Send file, selection mfg code .bin



Ex: mfg36_i2c_80H10462301A0_v7_chenbro_01_05.bin

Please verify your SAS expander model & P/N, suitable hardware/software revision should be matched.

STEP3: Download mfg image file complete



STEP4: Use “reset” command reset expander system.

STEP5: Use command “rev” verify MFG and firmware version

