RSC-4BT

Rackmount Storage Chassis

User's Manual

Document Number: MAN-00405-A

CONTENTS

PREFACE

- **Copyright**

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- **Warning**

  1. A shielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.
  2. Use only shielded cables to connect I/O devices to this equipment.
  3. You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

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SAFETY INSTRUCTIONS

- Before getting started, please read the following important cautions:
- All cautions and warnings on the equipment or in the manuals should be noted.
- Most electronic components are sensitive to electrical static discharge. Therefore, be sure to ground yourself at all times when installing the internal components.
- Use a grounding wrist strap and place all electronic components in static-shielded devices. Grounding wrist straps can be purchased in any electronic supply store.
- Be sure to turn off the power and then disconnect the power cords from your system before performing any installation or servicing. A sudden surge of power could damage sensitive electronic components.
- Do not open the system's top cover. If opening the cover for maintenance is a must, only a trained technician should do so. Integrated circuits on computer boards are sensitive to static electricity. Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on your body.
- Place this equipment on a stable surface when install. A drop or fall could cause injury.
- Please keep this equipment away from humidity.
- Carefully mount the equipment into the rack, in such manner, that it won't be hazardous due to uneven mechanical loading.
- This equipment is to be installed for operation in an environment with maximum ambient temperature below 35°C.
- The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.
- Never pour any liquid into ventilation openings. This could cause fire or electrical shock.
- Make sure the voltage of the power source is within the specification on the label when connecting the equipment to the power outlet. The current load and output power of loads shall be within the specification.
- This equipment must be connected to reliable grounding before using. Pay special attention to power supplied other than direct connections, e.g. using of power strips.
- Place the power cord out of the way of foot traffic. Do not place anything over the power cord. The power cord must be rated for the

- product, voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product.
- If the equipment is not used for a long time, disconnect the equipment from mains to avoid being damaged by transient over-voltage.
- Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.
- If one of the following situations arise, the equipment should be checked by service personnel:
  1. The power cord or plug is damaged.
  2. Liquid has penetrated the equipment.
  3. The equipment has been exposed to moisture.
  4. The equipment does not work well or will not work according to its user manual.
  5. The equipment has been dropped and/or damaged.
  6. The equipment has obvious signs of breakage.
  7. Please disconnect this equipment from the AC outlet before cleaning. Do not use liquid or detergent for cleaning. The use of a moisture sheet or cloth is recommended for cleaning.
- Module and drive bays must not be empty! They must have a dummy cover.

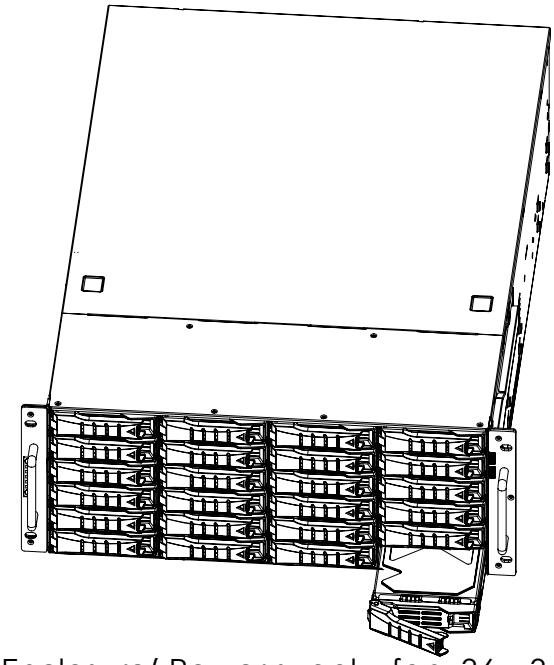
Product features and specifications are subject to change without notice.

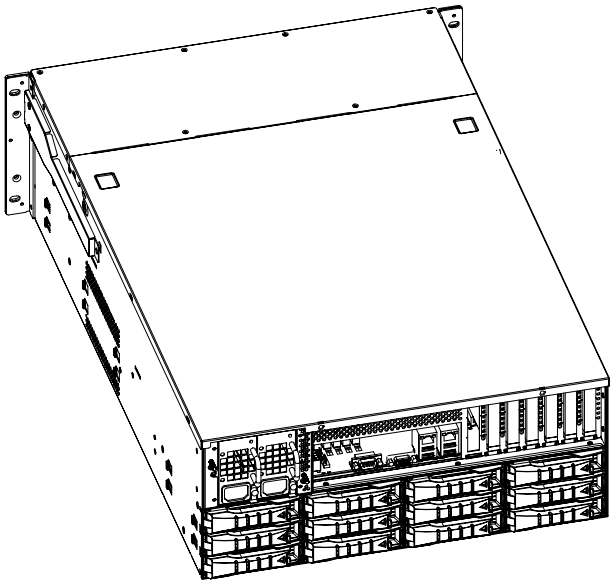
CAUTION :
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
AFTER PERFORMING ANY INSTALLATION OR SERVICING, MAKE SURE THE ENCLOSURE ARE LOCK AND SCREW IN POSITION, TURN ON THE POWER.

Chapter 1. Prodcut Introduction

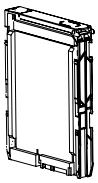
1.1 Box Content

Before removing the subsystem from the shipping carton, visually inspect the physical condition of the shipping carton. Exterior damage to the shipping carton may indicate that the contents of the carton are damaged. If any damage is found, do not remove the components; contact the dealer where the subsystem was purchased for further instructions. Before continuing, first unpack the subsystem and verify that the contents of the shipping carton are all there and in good condition.

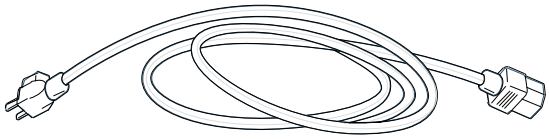




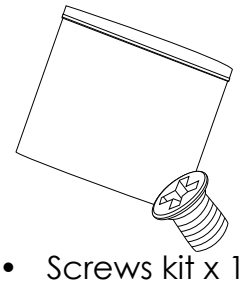
- Enclosure(Power supply, fan, 36 x 3.5" HDD tray included)



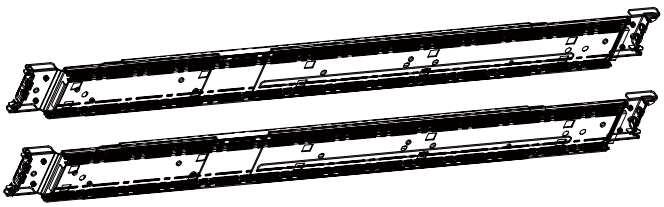
- 3.5'' HDD Tray



- Power cord



- Screws kit x 1set
- (Include console serial cable)



- Slide rail x 1set

♦ PACKAGE CONTENT MAY VARY PER REGION.

1.2 Specifications

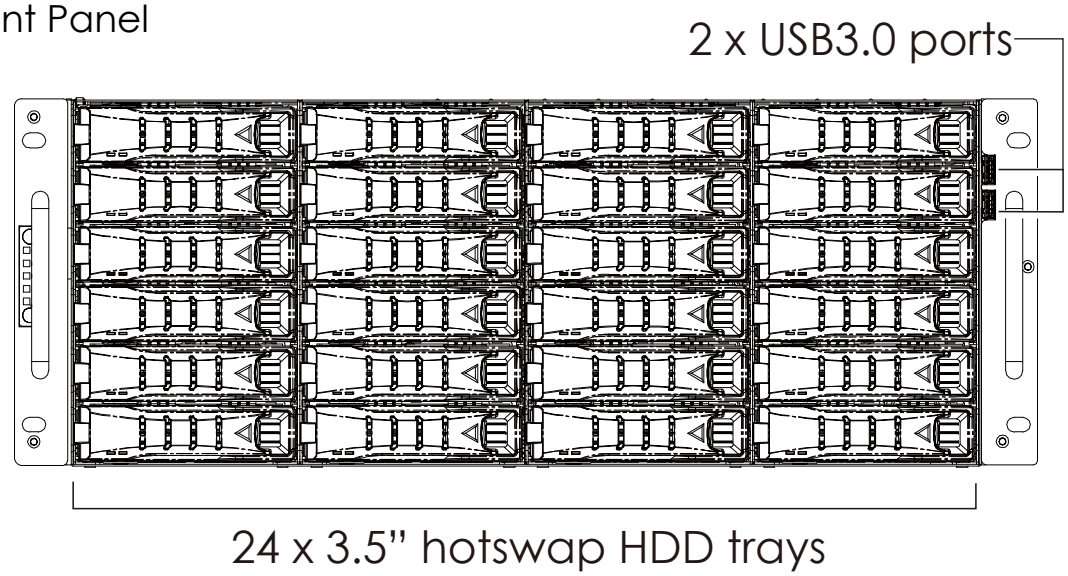
Dimensions (W x D x H) (with chassis ears)	mm : 483 x 680.4 x 173.5		
	inches : 19 x 26.7 x 6.8		
Industry Standard	EIA-RS310D		
Material	Heavy-duty preplated SPGC cold-rolled steel		
Color	Front Panel : Black		
Cooling	Middle : 6 x 80x38mm PWM & low-power consumption hot swap fans		
Power Supply	1200W 1+1 hot swap redundant 80+ Gold		
Expansion Slots	Options	3 full height & full length via riser card	
		7 low profile	
Front Panel	Power on/off and mute switch		
LED Indicators	Power, LAN and Drive		
System Board	12"(W) x 13"(D) E-ATX/SSI EEB 3.6 compliant MB		
Drive Bays	External	3.5" hot swap	36
	Internal	3.5"	Options: • 1 x 3.5" • 2 x 2.5"
		2.5"	

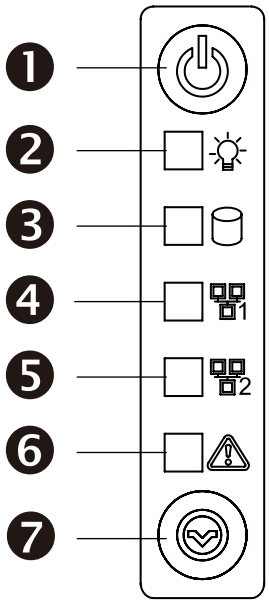
Backplanes	1 x 24-port 12Gb SAS backplane with 36-PHY expander and 3 SFF-8643 connectors	
	1 x 12-port 12Gb SAS backplane with 28-PHY expander and 3 SFF-8643 connectors	
Storage Temperature	0°C(32°F) ~ 50°C(122°F)	
Humidity	5%~95% non-condensing	
Gross Weight	(w/ PSU & Rail)	kgs : 40.4
		lbs : 89
Packaging Dimensions	(W x D x H)	mm : 610 x 920 x 380
		inches : 24 x 36.2 x 15
Cubic Feet	7.6	
Container Load Quantity	20'	110
	40'	230
	40' H	295
Mounting	Standard	25" tool-less slide rail

1.3 General Information

RSC-4BT is a 4U rackmount chassis with 36x3.5"HDD hot swap Bays at front and single 12G expander on HDD Backplane which is a high performance server storage product.

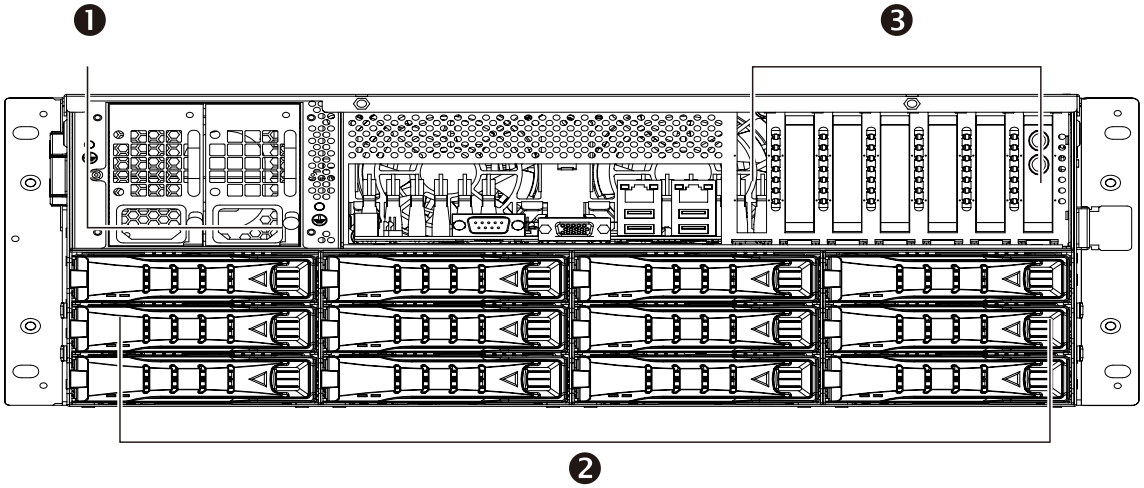
- Front Panel





1. Power On/Off Button
2. System Power LED
3. System HDD Activity LED
4. LAN1 Power LED
5. LAN2 Power LED
6. System Alert LED
7. System Reset button

- Rear Panel

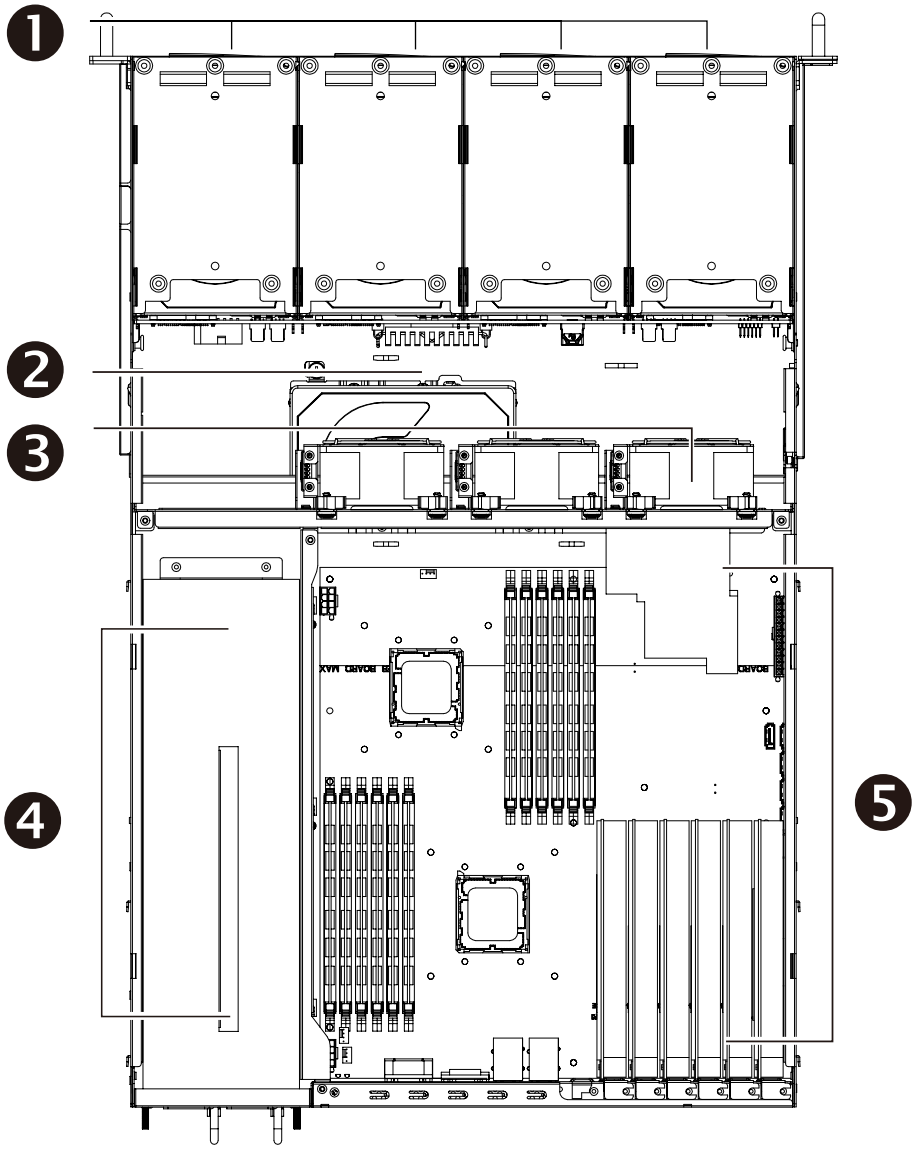


❶ Hot-swap redundant power supplies

❷ 12 x 3.5" hot-swap HDD supported

❸ 7 x PCI slots attribute to expansion and scalability

- Major Components



❶ 24 x 3.5” hotswap external HDD trays

❷ 2 x internal 2.5” HDD trays

❸ 3 x 8038 mm fans

❹ Hot-swap redundant power supplies

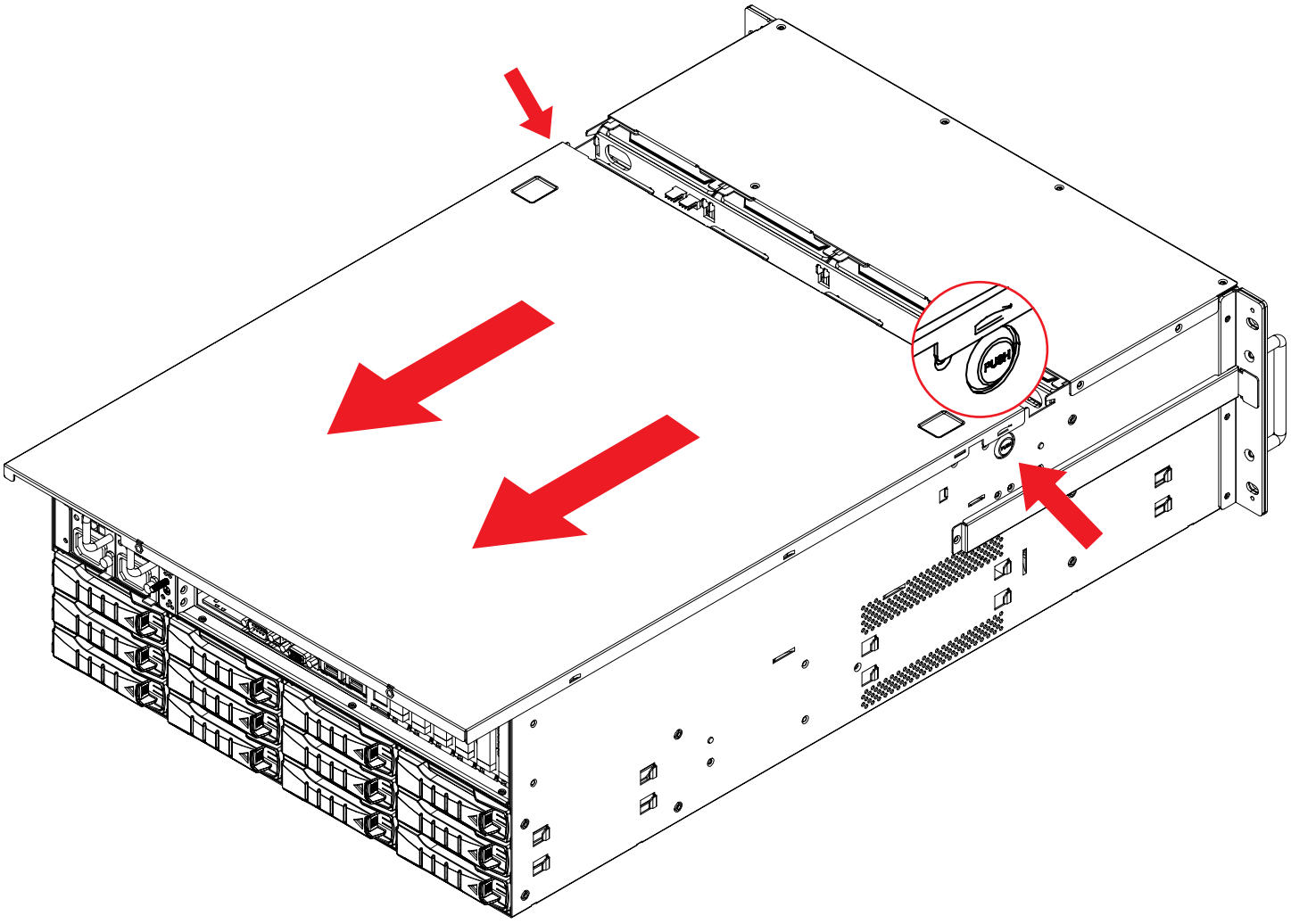
❺ 12”(W) x 13”(D) E-ATX/SSI EEB 3.6 compliant MB

Chapter 2. Hardware Installation

This chapter provides detailed instructions on hardware installation.

2.1 Removing and Installing Top Cover

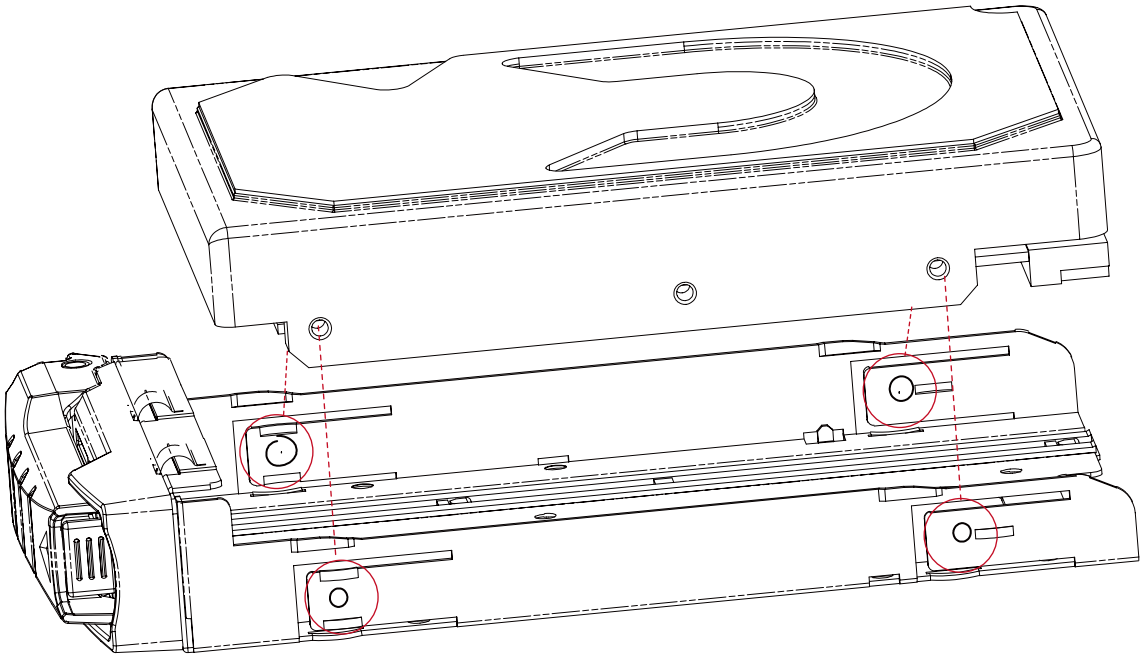
Pushing release button on both side and slide forward the top cover to open cover.



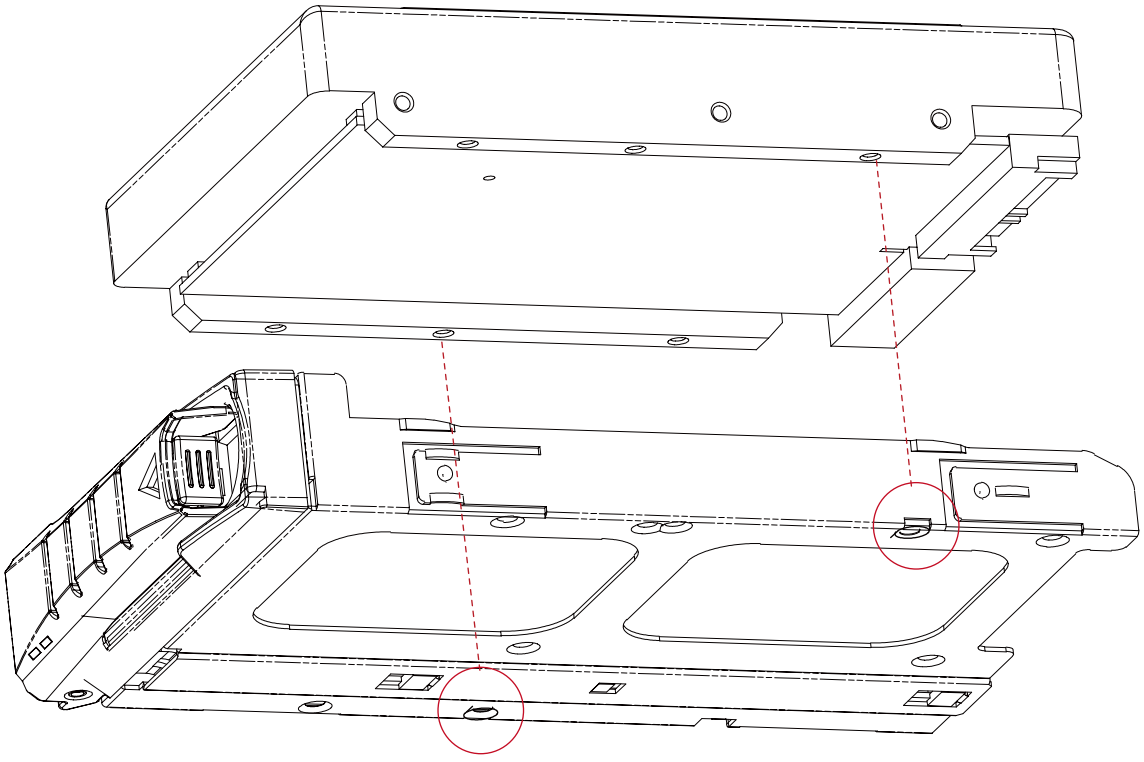
2.2 Installing/ Removing a Hard Disk Drive

2.2.1Installing a Hard Disk Drive

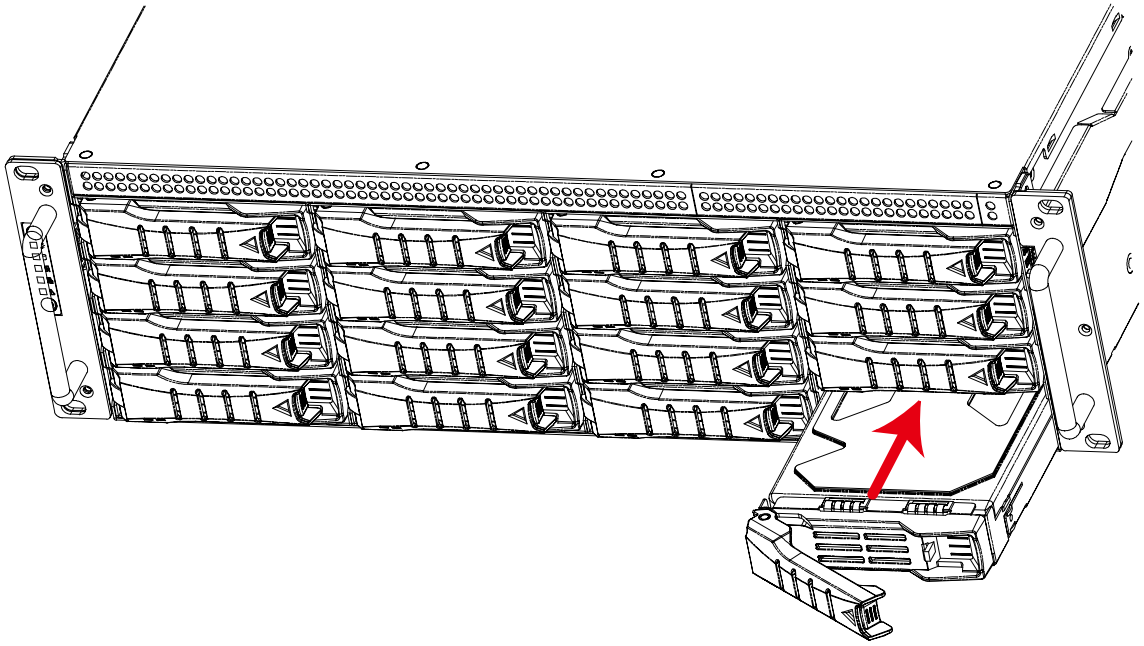
1 Directly place HDD into tool-less HDD tray untli it snaps. Please check if the screw holes on HDD match the dimples on HDD tray.



2 HDD can also be screwed on HDD tray by fastening two screws as picture showed.



3 Insert the drive tray into chassis HDD cage. Make sure the drive tray is correctly secured in place when its front edge aligns with the bay edge. Push the tray lever until it reaches the end and clicks.



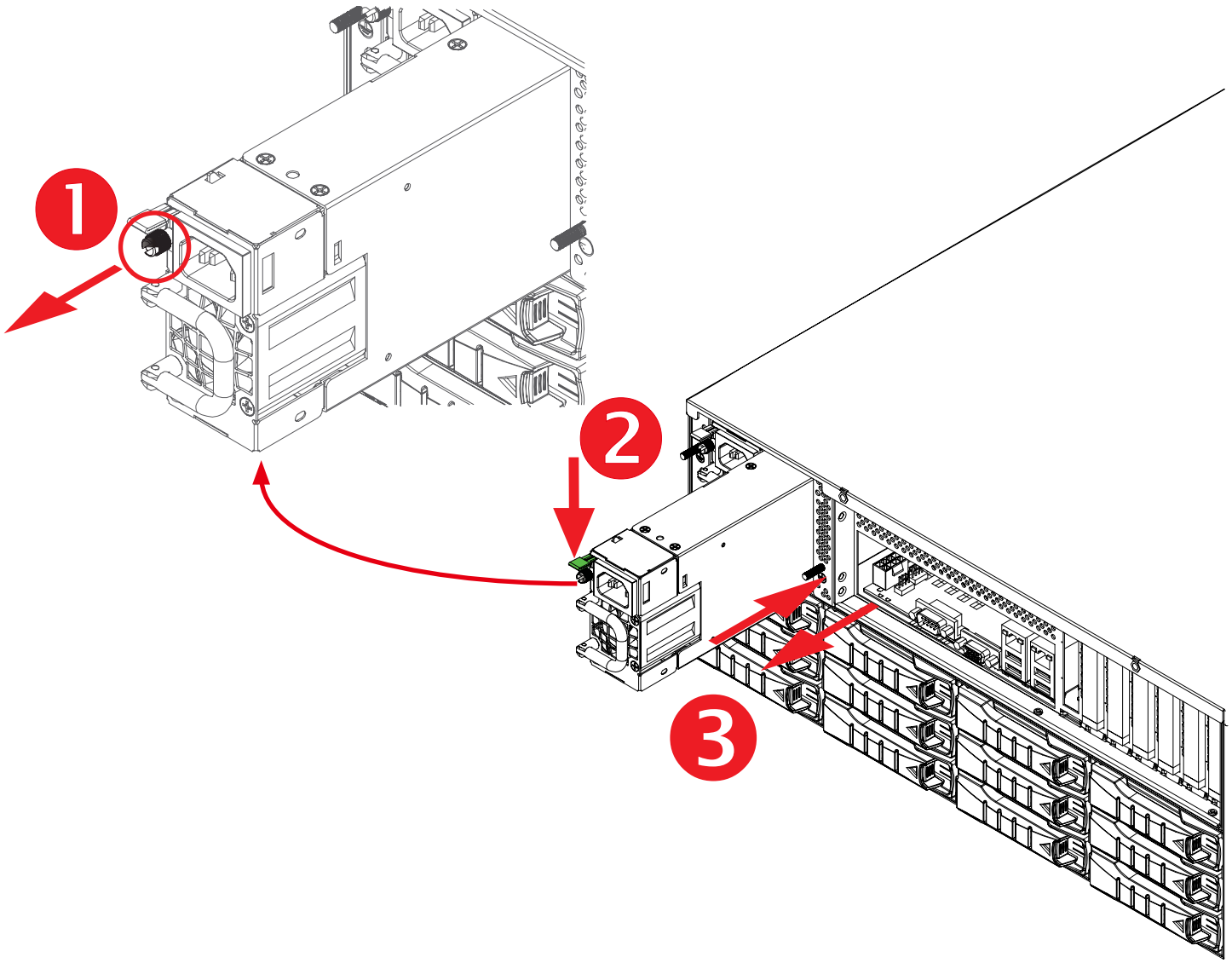
2.3 Removing and Installing a PSU Module

2.3.1 Removing a PSU module

1. Removing power cable and loosen the thumb screw.
2. Pushing the latch and hold the tray handle.
3. Pull the PSU module tray handle out gently to slides out the PSU module.

2.3.2 Installing a PSU Module

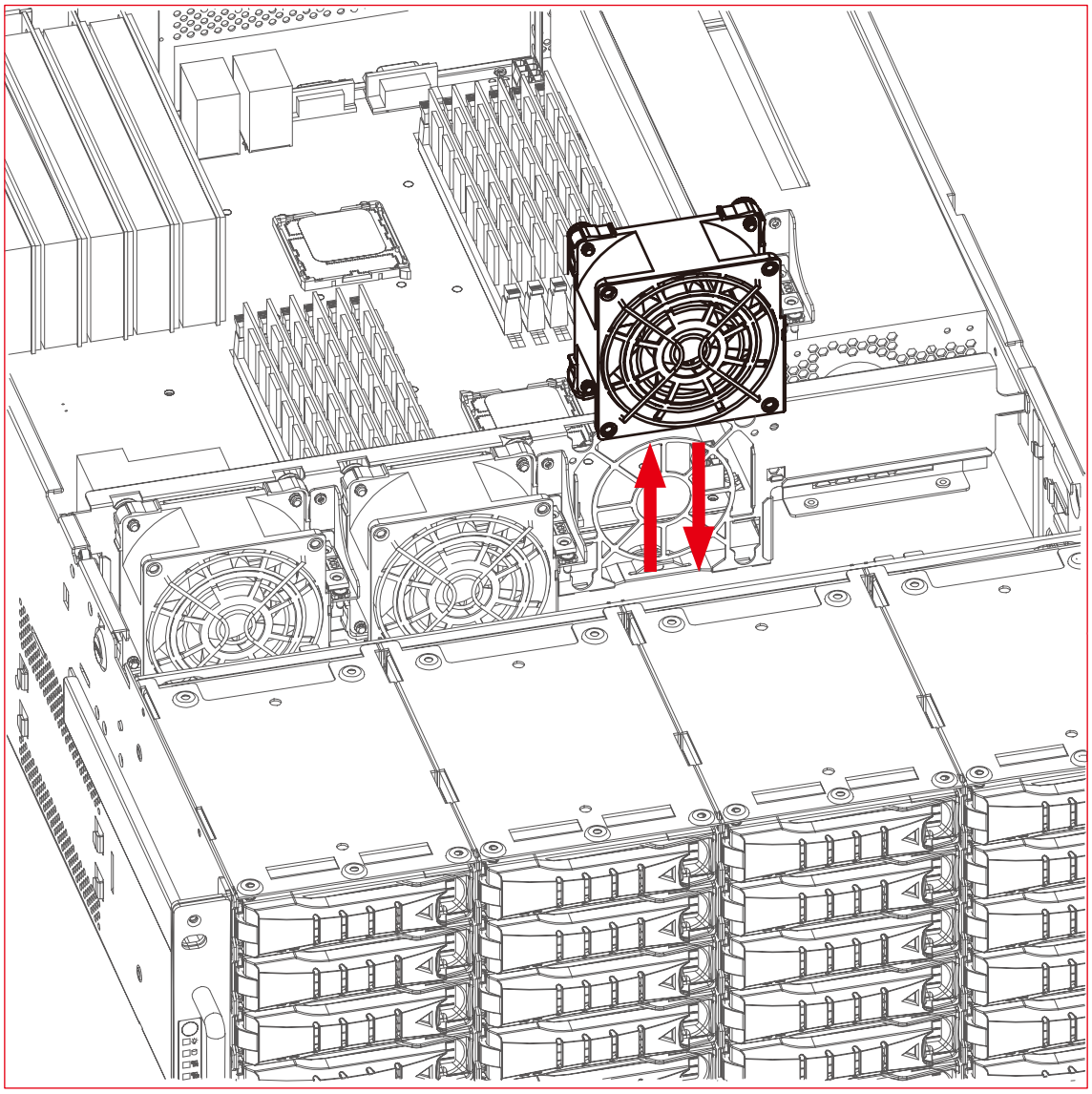
- To install PSU module, follow the reverse order.



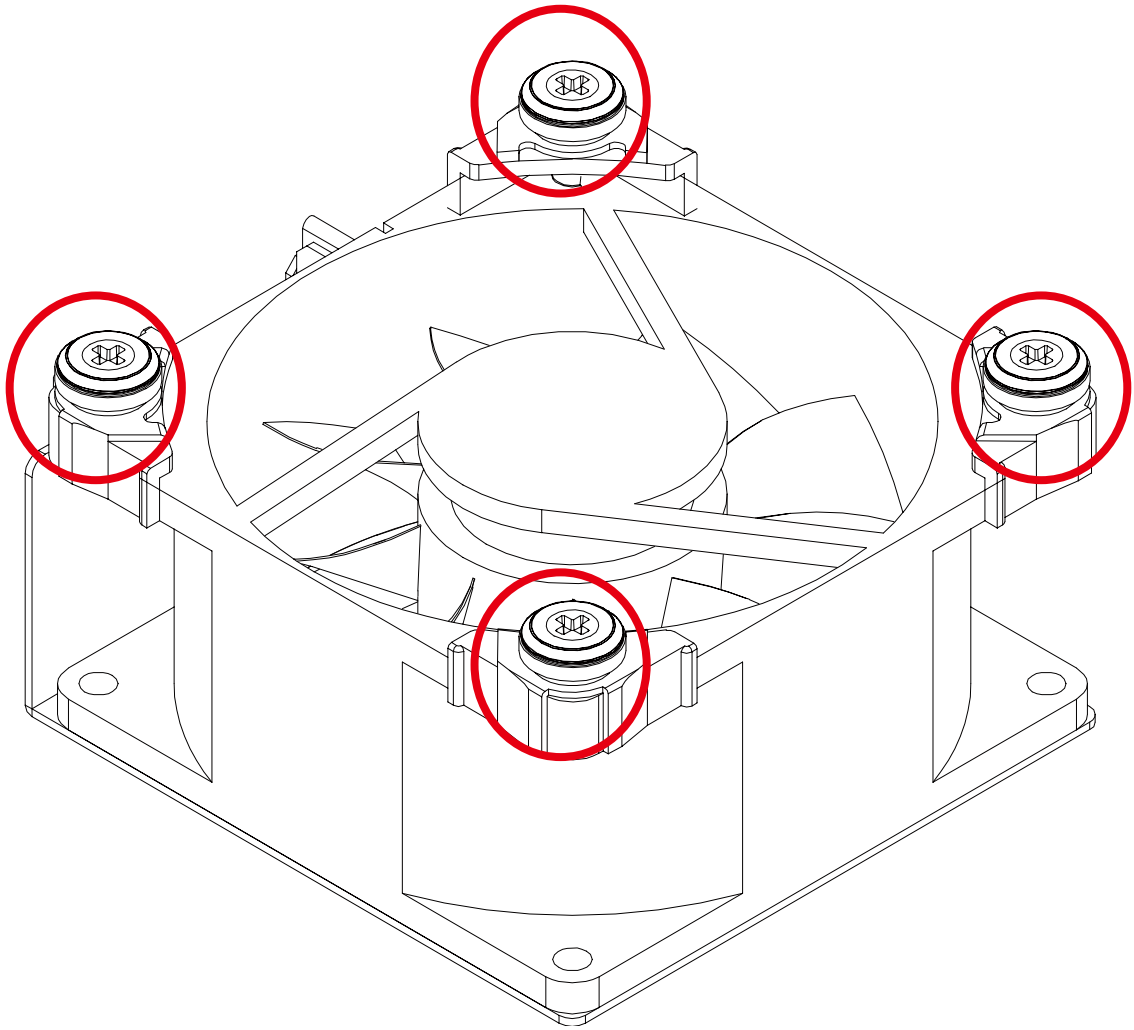
2.4 Removing and Installing a Fan Module

2.4.1 Removing a fan module

Grabbing and removing the fan module from the fan slot.



Pull the fan module up gently and taking out the fan module by removing rubbers out from the fan bar.



2.4.2 Installing a Fan Module

Make sure the 4 rubbers and connector insert firmly while fan module is inserted.

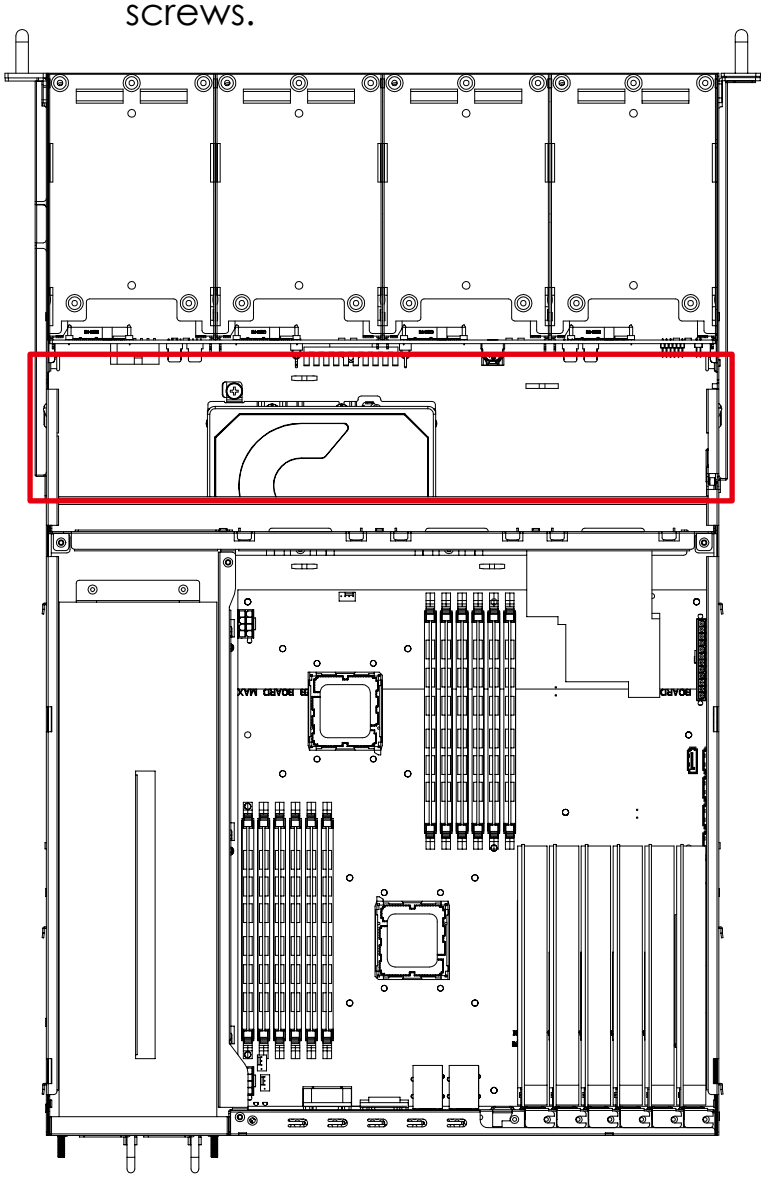
2.5 Removing and Installing the HDD backplane Module

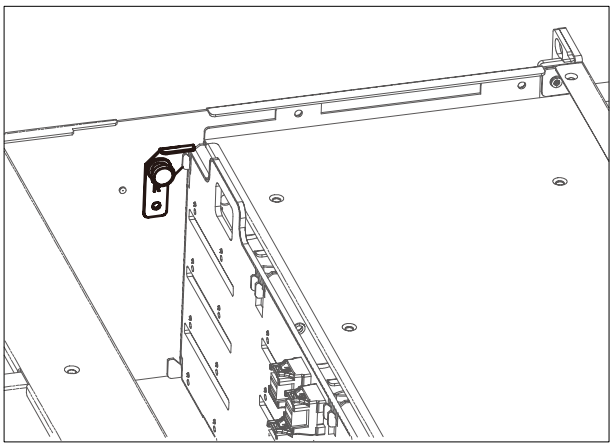
2.5.1 Removing a HDD backplane

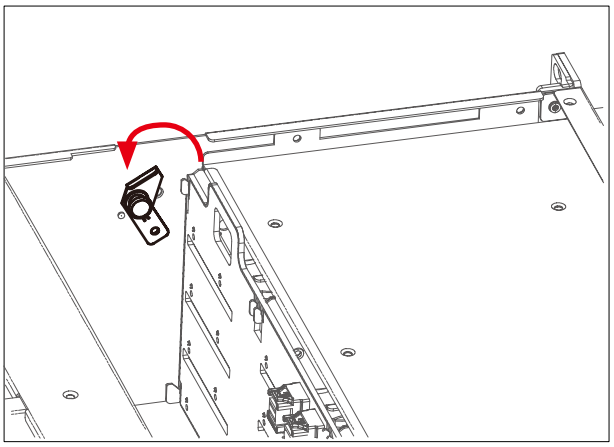
- Unplugging all connectors & HDDs from HDD backplane.
- Release the lock pin.

2.5.2 Installing a HDD backplane module

- Slide the HDD backplane module into enclosures.
- Secure the HDD backplane module onto the enclosures using the screws.



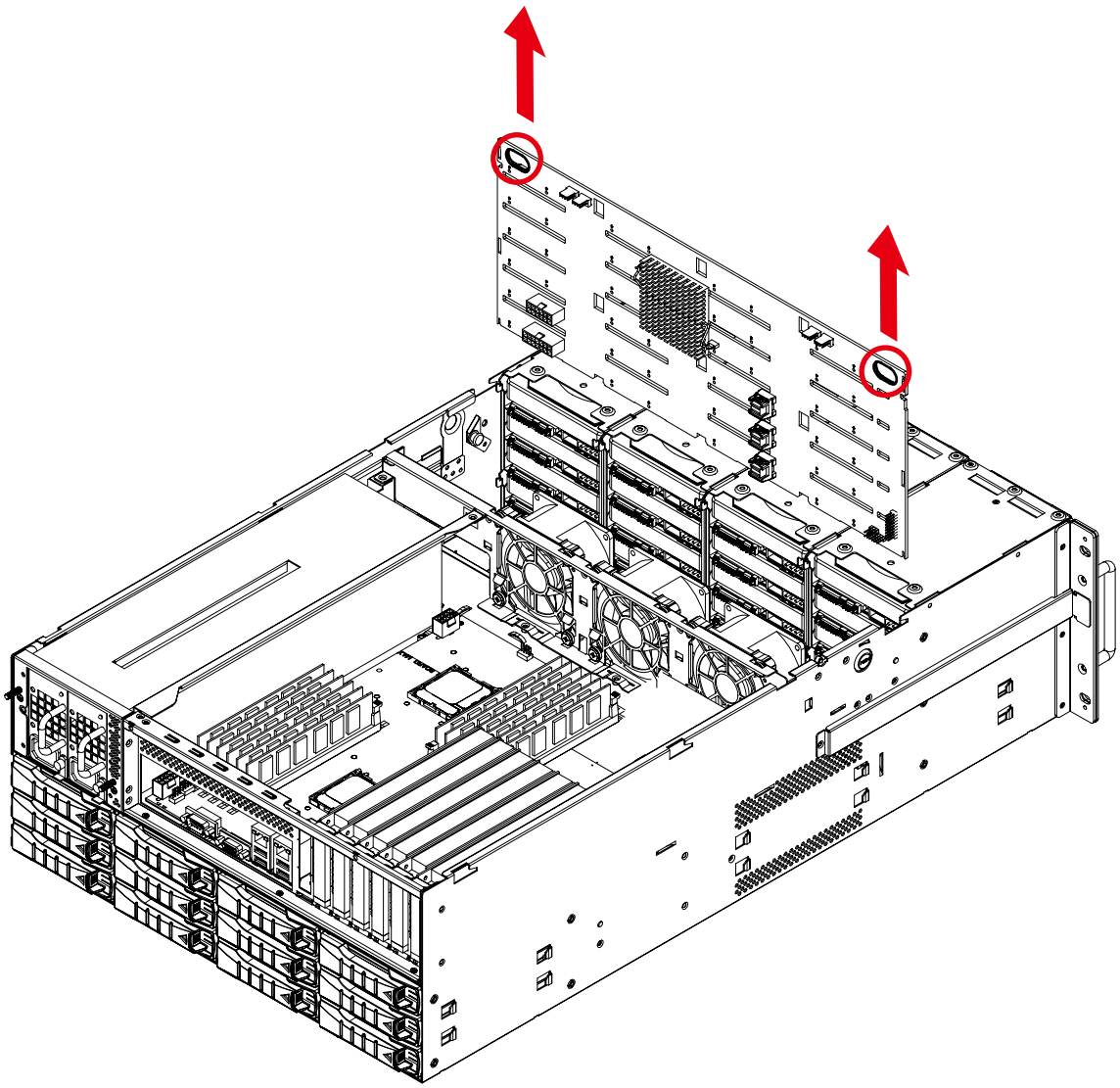




- Lift up and remove the blackplane to the a little bit up from hook then can get out.

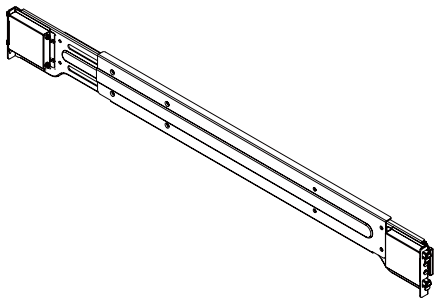
2.5.3 Installing a HDD backplane module(follow the reverse order)

- Align the backplane with the hooks, and insert it into the enclosure firmly.
- Lock the backplane. Follow the reverse order.

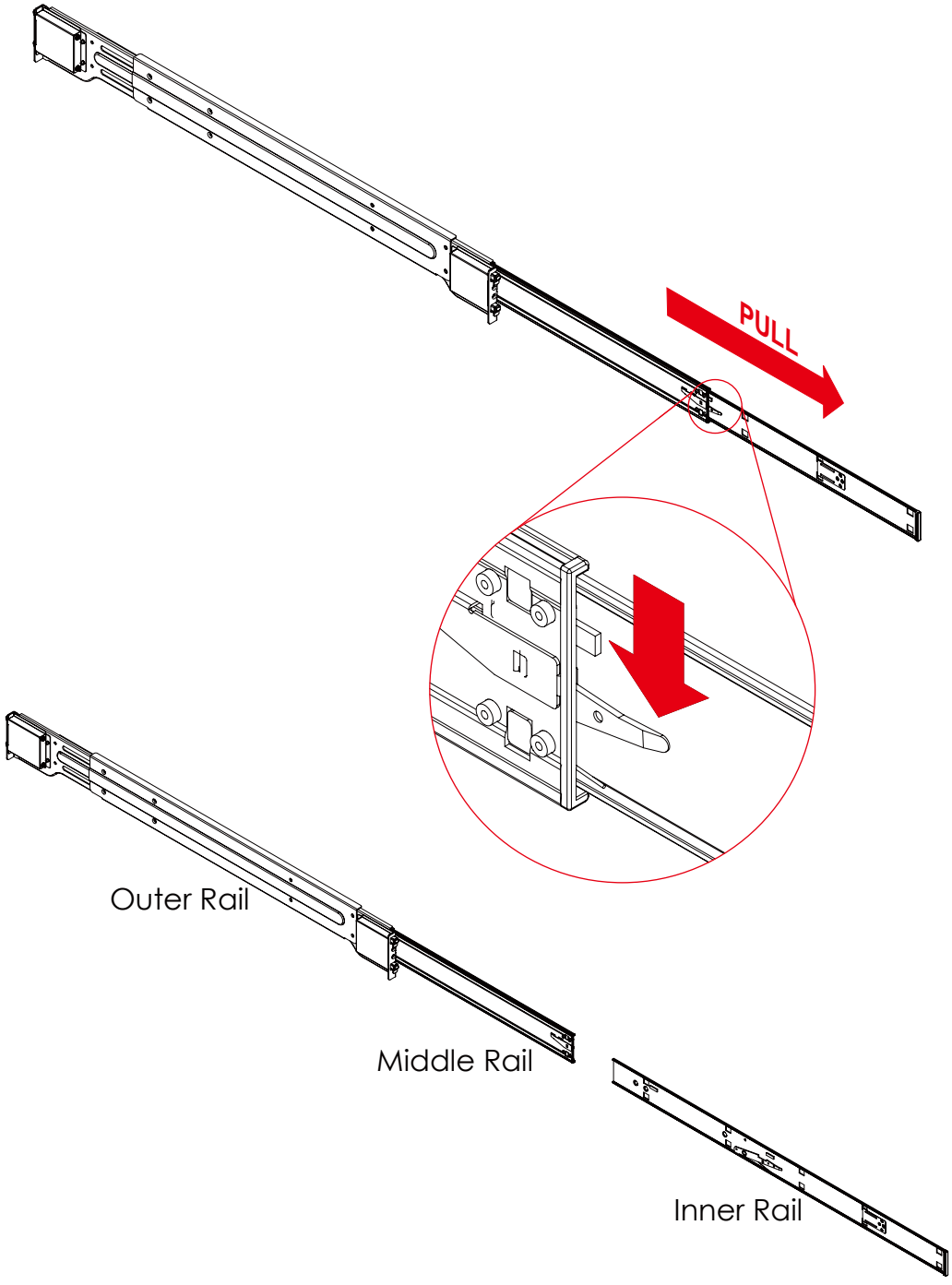


2.6 Tool-less Blade Slide Installation Instruction

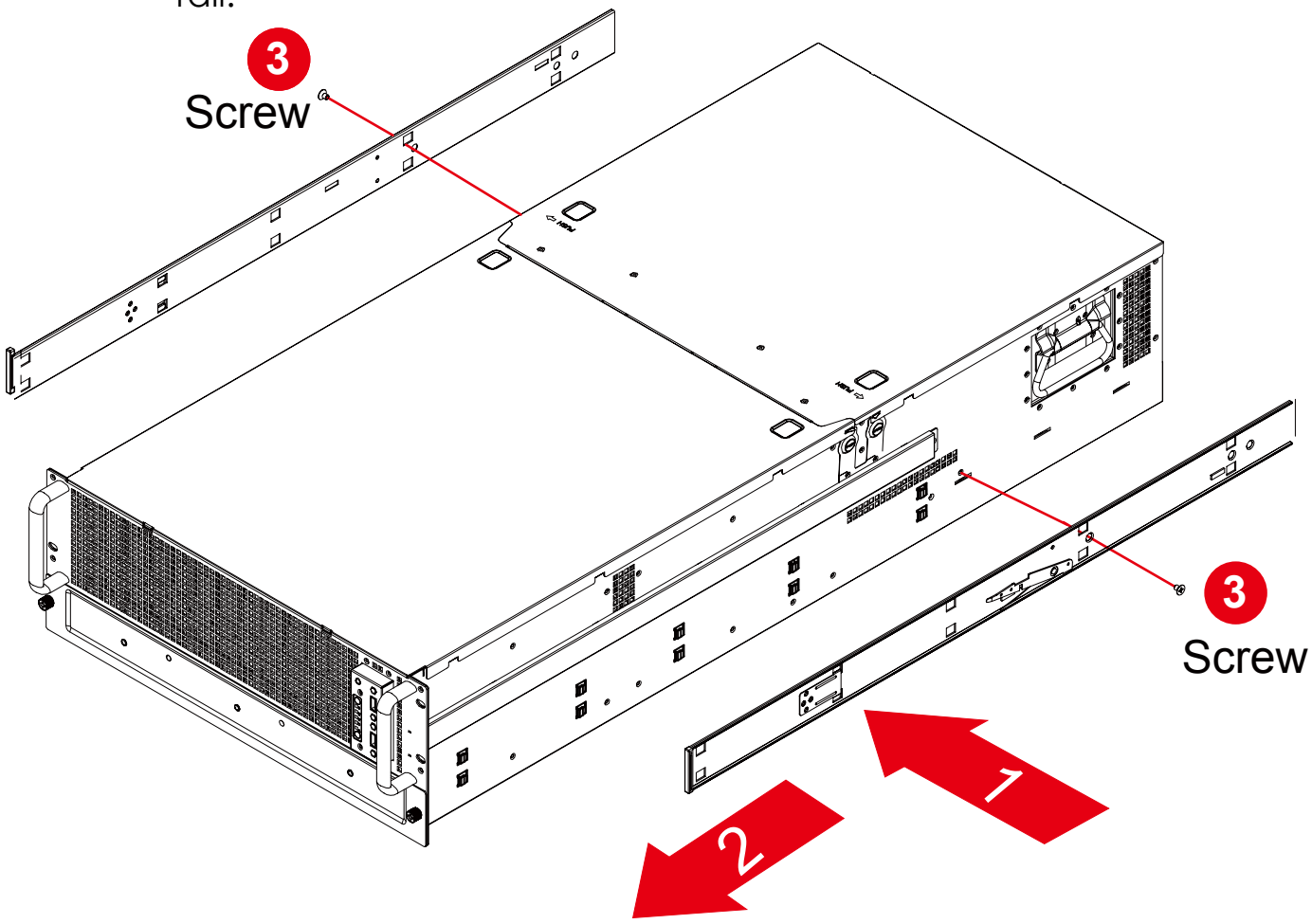
Separate the tool-less slide rail



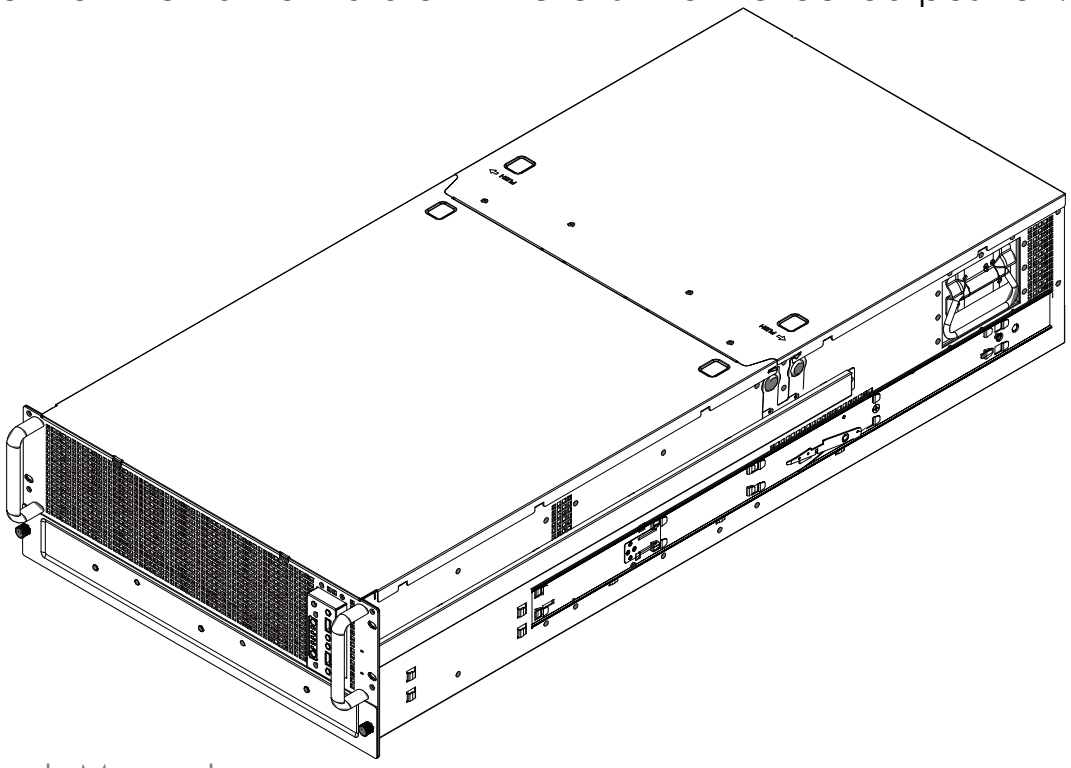
2.6.1 Pull the inner rail out of the outer rail until it is fully extended. Press the locking tab down to release the inner rail.



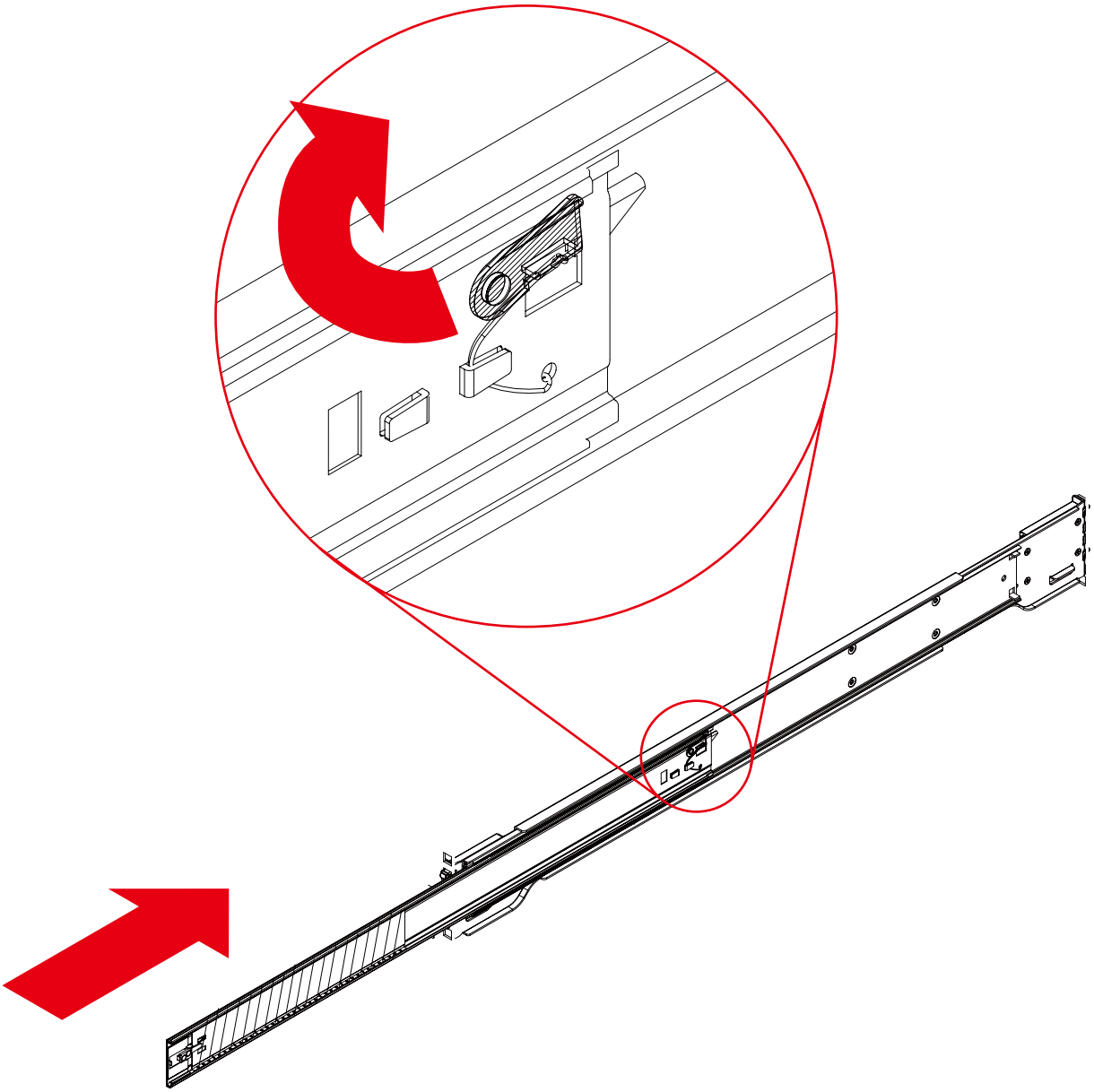
2.6.2 Place the inner rail firmly against the side of the chassis. Make sure that the hooks are straight and aligned with the holes in the inner rail.



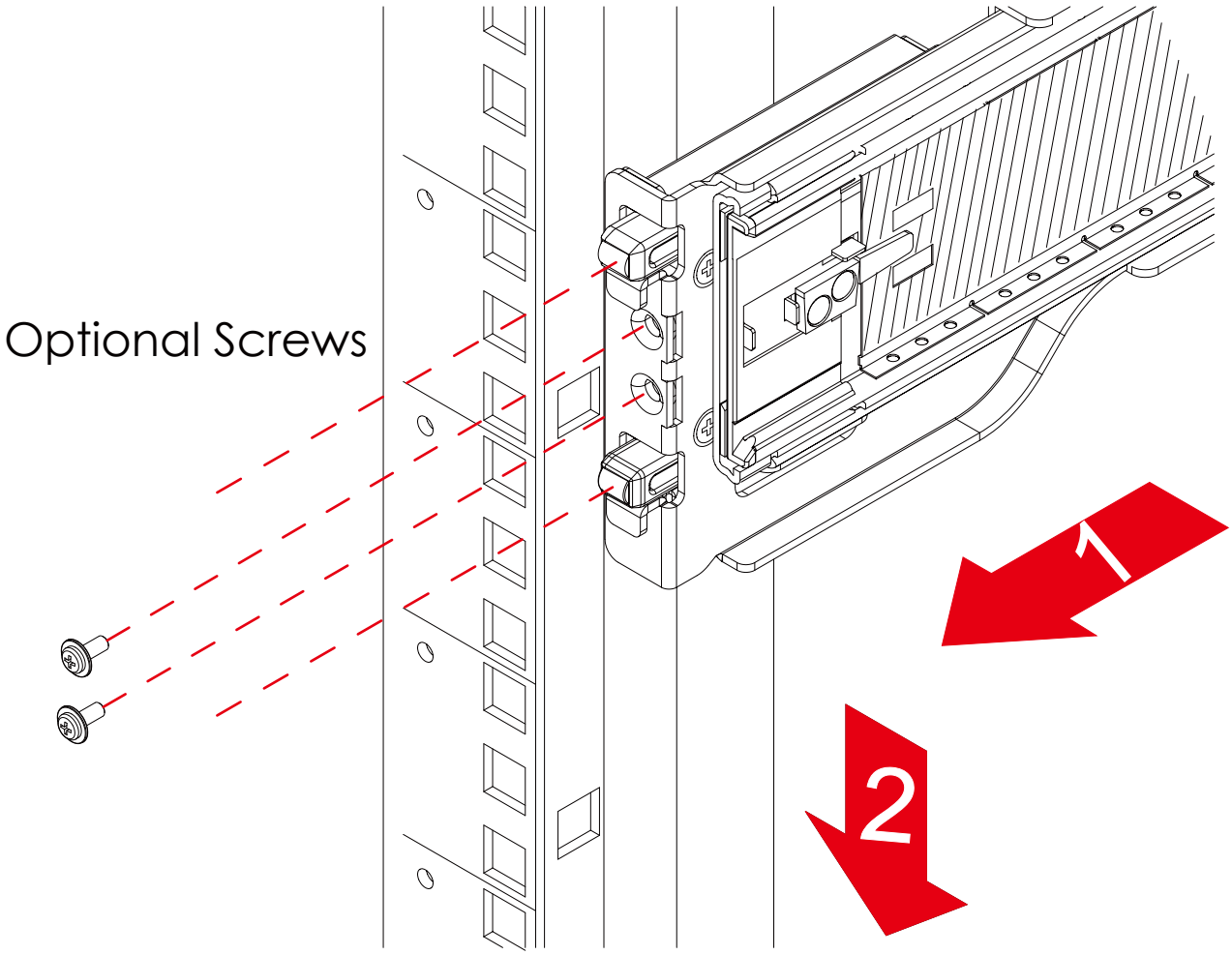
Slide the inner rail forward until it clicks into the locked position.



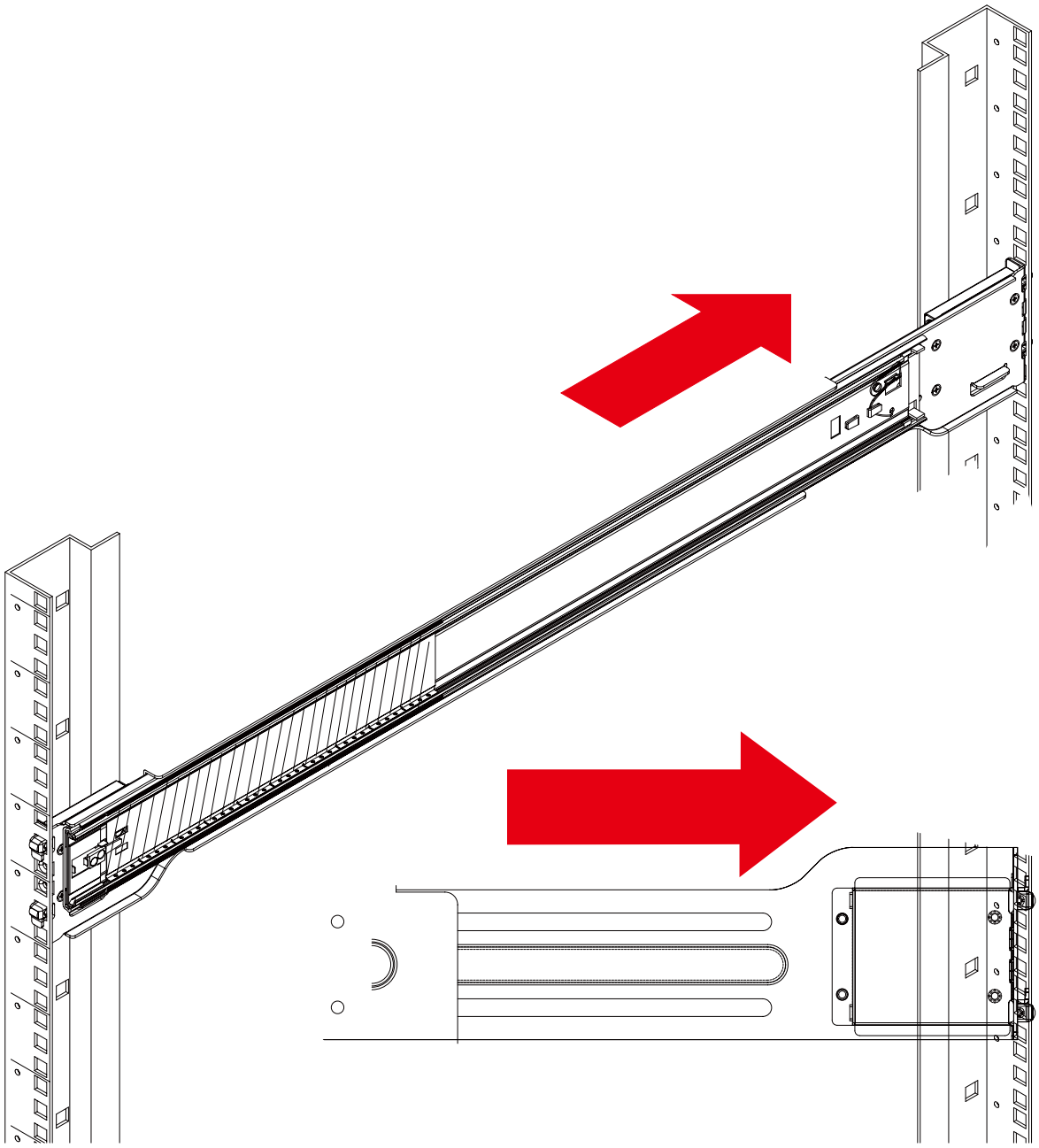
2.6.3 Press the locking tab and push the middle rail back into the outer rail.



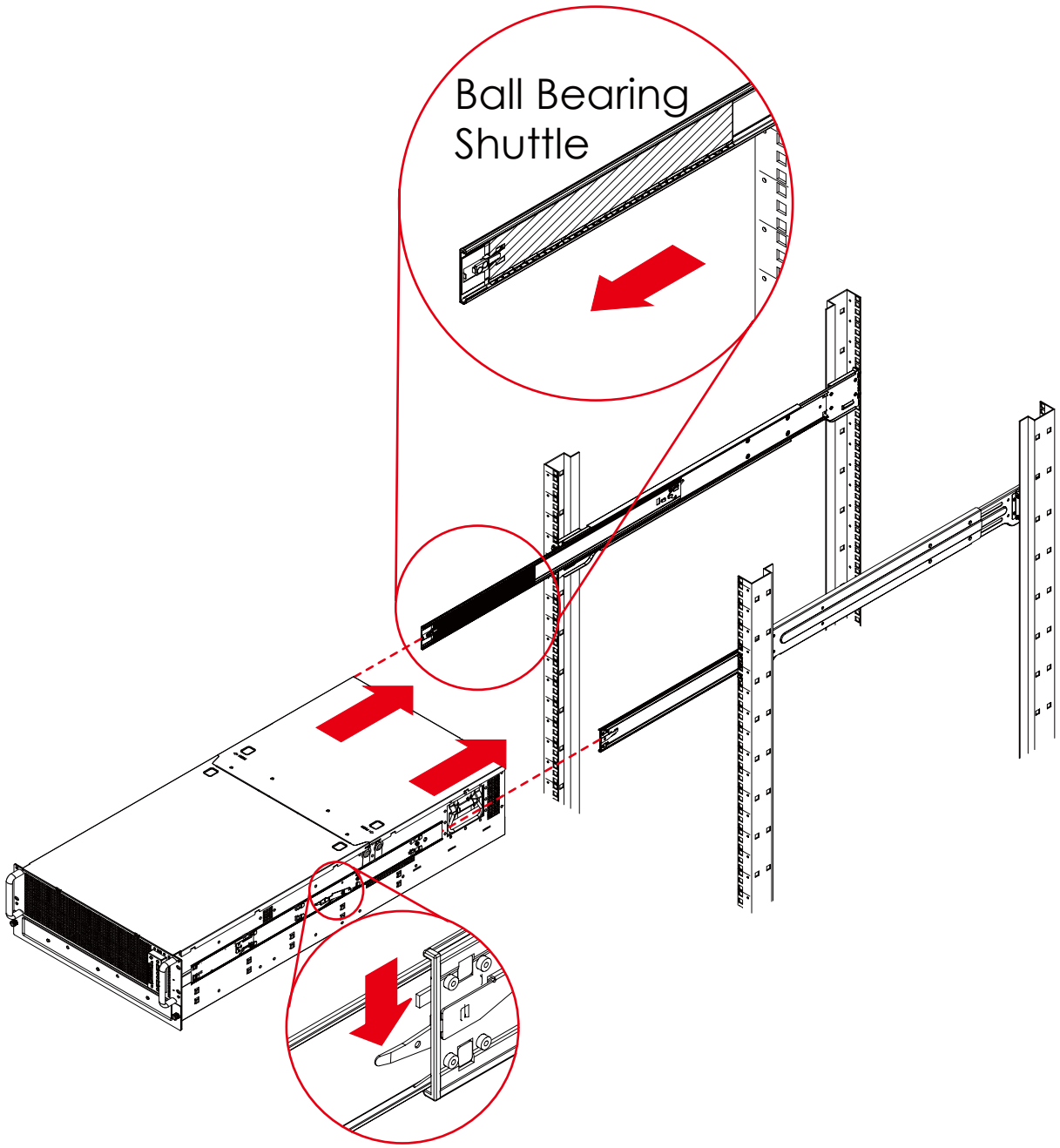
2.6.4 Hang the hooks of the rails on the rack holes and if necessary, secure with screws.



2.6.5 Repeat step 2.7.4 to mount the four ends, extending the rails as necessary.

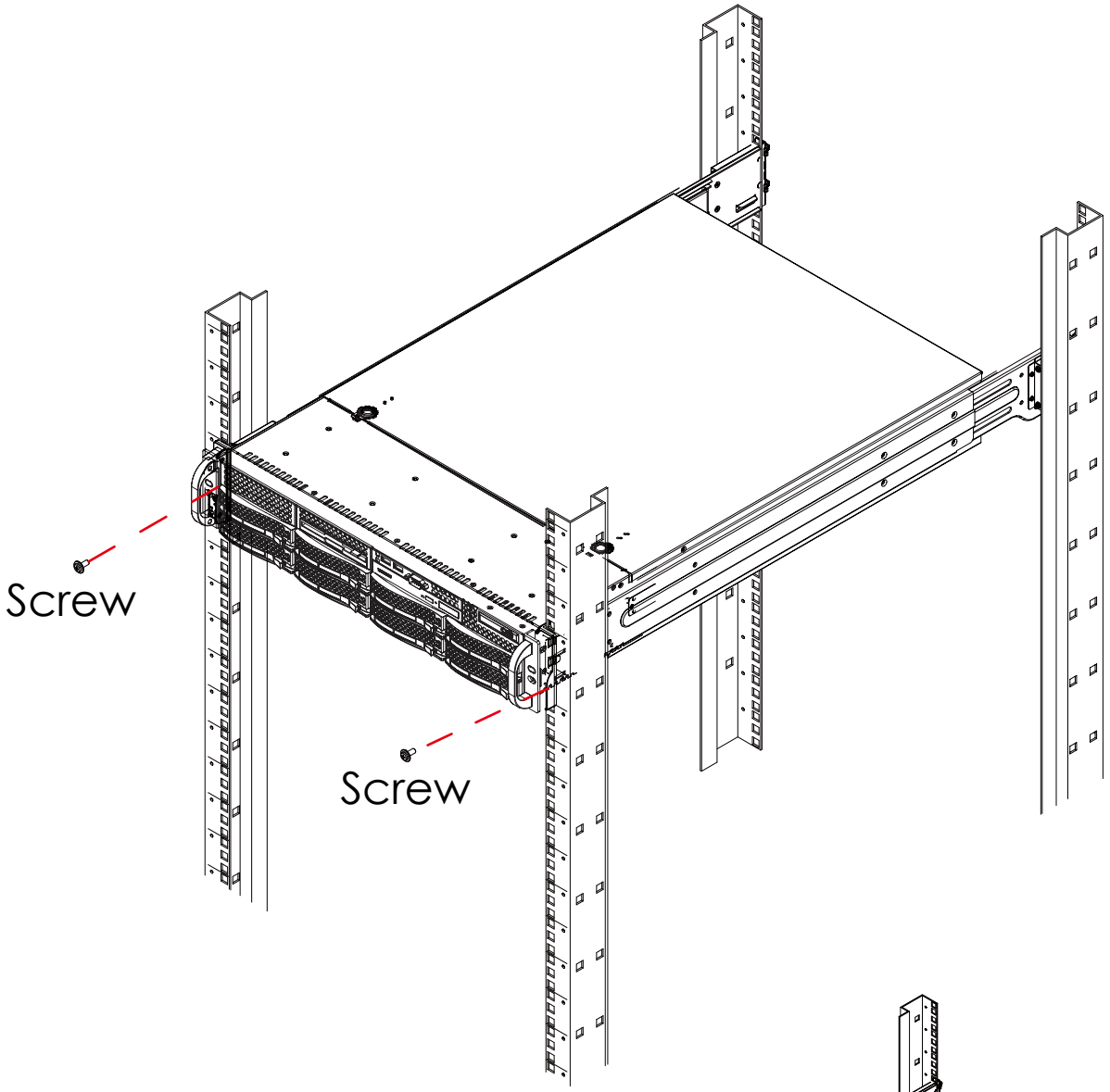


2.6.6 Pull the middle rail out of the front of the outer rail and make sure that the ball bearing shuttle is locked at the front of the middle rail.

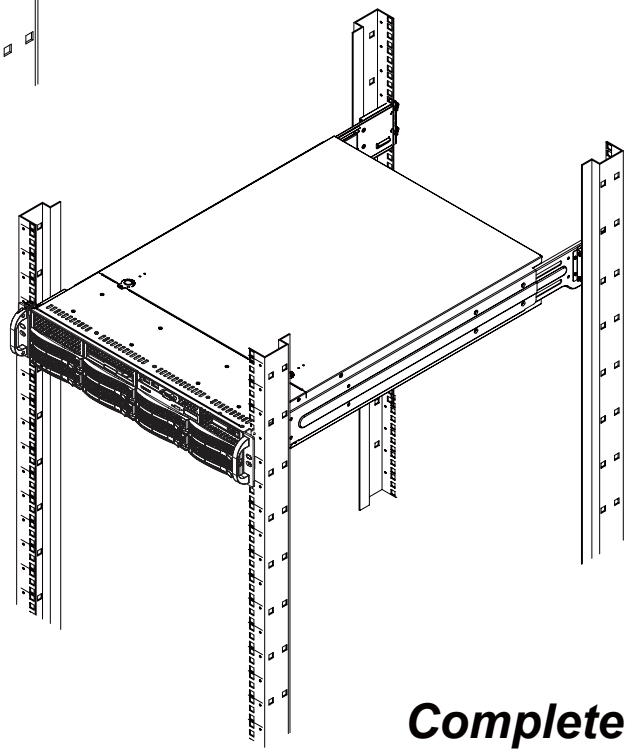


Align the inner rails with the middle rails and then push evenly on both sides of the chassis until it clicks into the fully extended position.

2.6.7 Depress the locking tabs on both sides of the chassis simultaneously and push the chassis all the way into the rear of the rack.



If additional security is required, secure the chassis handles to the front of the rack with two screws (optional).



Complete

Chapter 3. Hardware Introduction

This chapter provides detailed instruction guide on hardware instruction

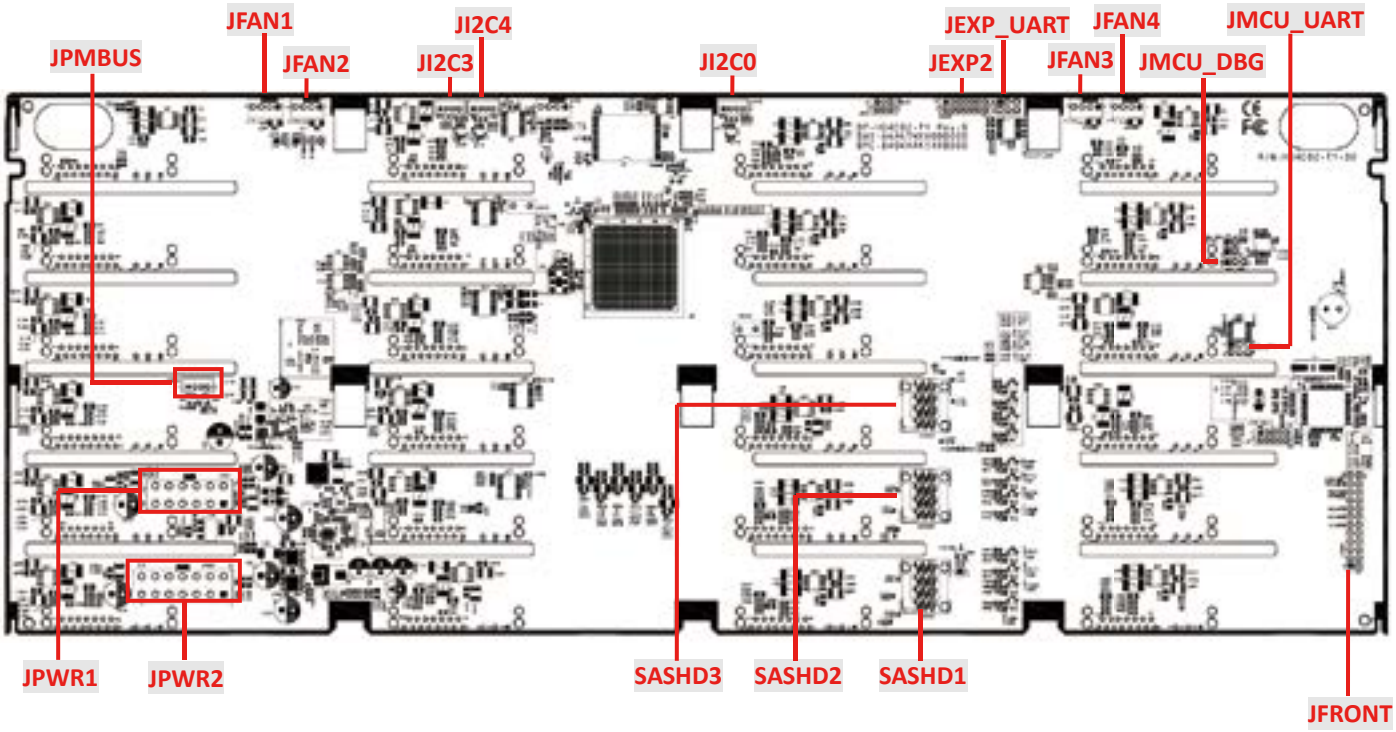
3.1 HARDWARE DESIGN SPECIFICATION

3.1.1 Placement

PCBA Placement

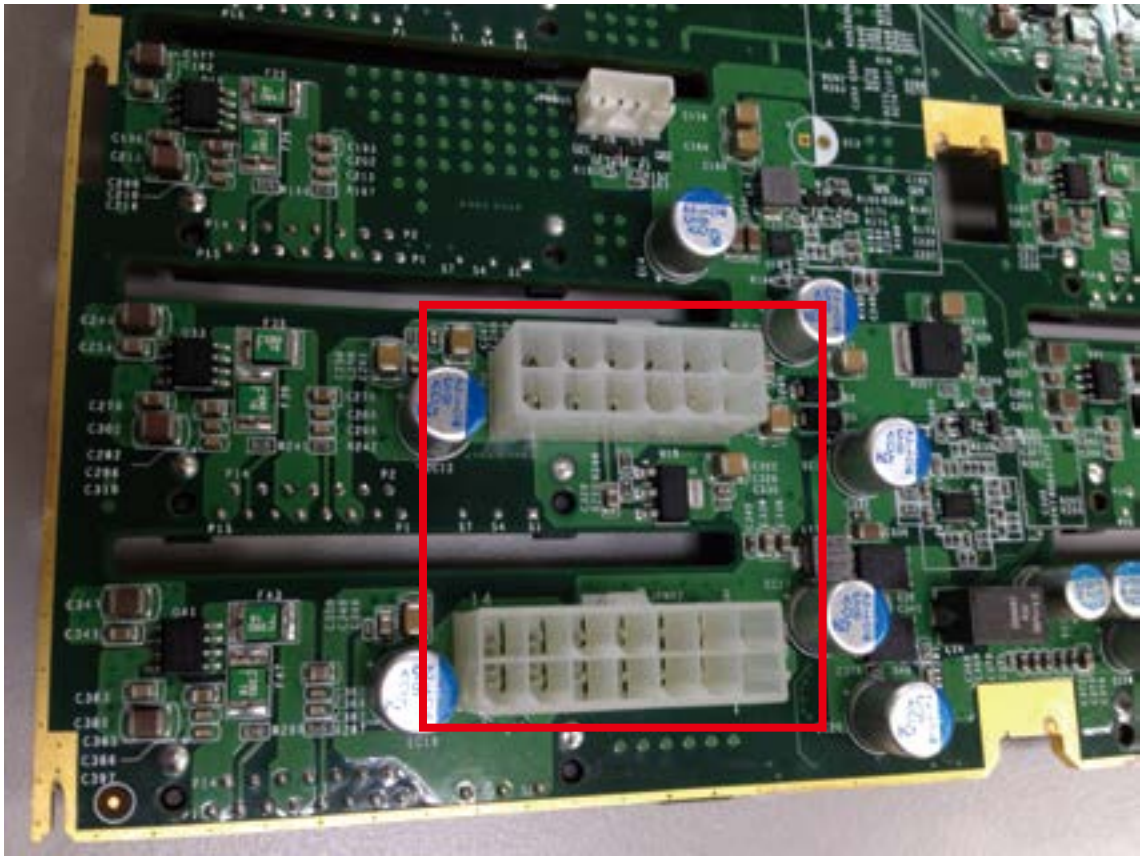
3.1.2 Connector Location

Connector Location

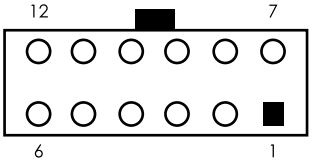


3.1.3 Power Connector

Power Connector

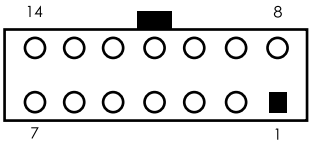


Power Connector – JPWR1



Pin	Description	Pin	Description
7	+12V	1	GND
8	+12V	2	GND
9	+3.3V	3	GND
10	+5V	4	MUTE_L
11	+5VSTBY	5	PSU_N1
12	PS_ON_L	6	GND

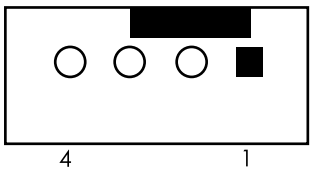
Power Connector – JPWR2



Pin	Description	Pin	Description
8	+12V	1	GND
9	+12V	2	GND
10	+12V	3	GND
11	+12V	4	GND
12	+5V	5	GND
13	+5V	6	GND
14	+5V	7	GND

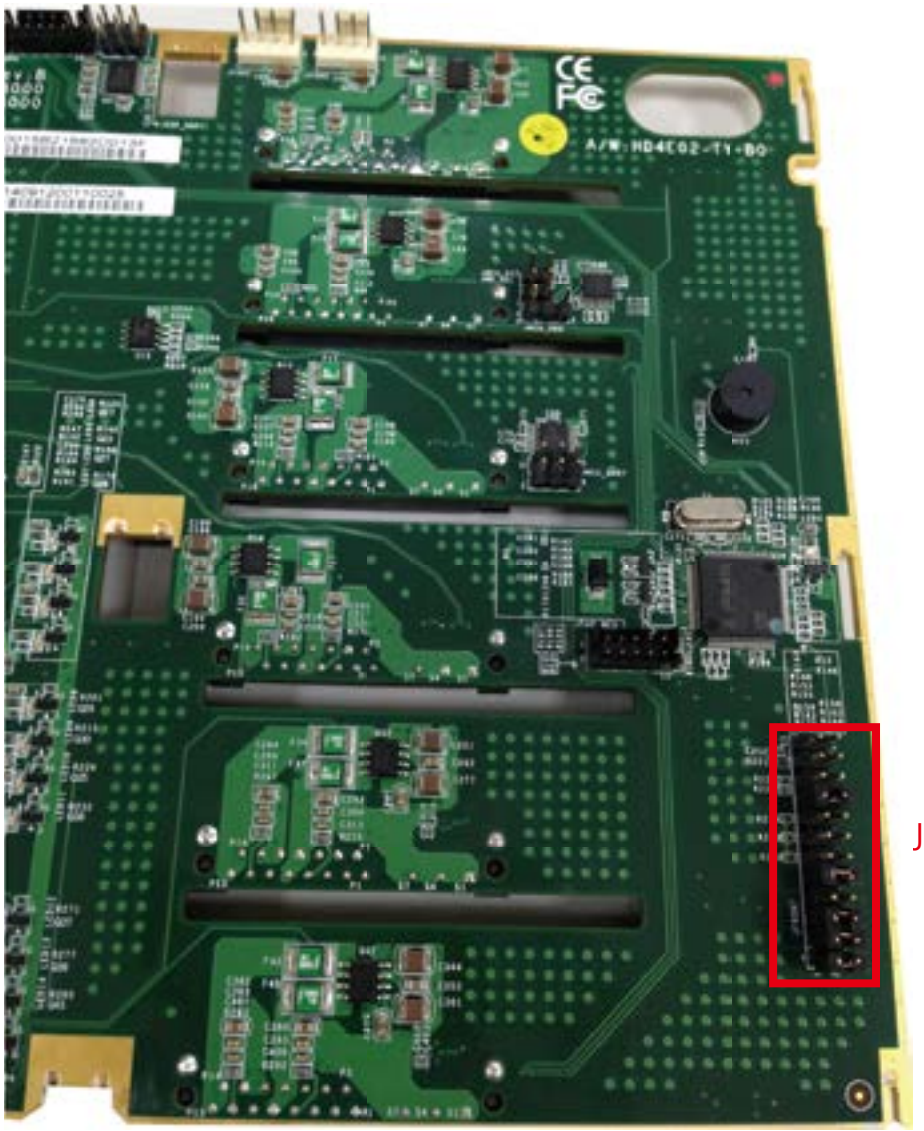
3.1.4 Fan Connector

FAN Connector – JFAN1, JFAN2, JFAN3, JFAN4

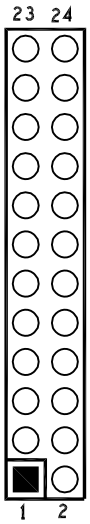


Pin	Description
1	GND
2	+12V
3	TACH
4	PWM

3.1.5 FAN setting (if insert fan on HDD BP)



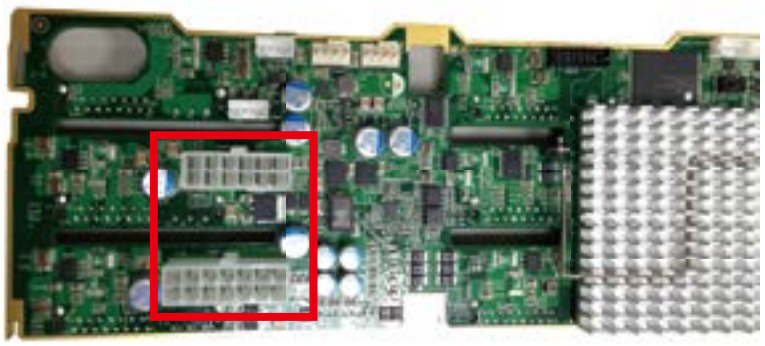
Jumper Setting - JFRONT



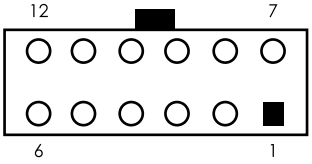
Pin[5,6]	Pin [3,4]	Pin [1,2]	Fan no. support	Active Fan Locate
Close	Close	Close	No fan	
Close	Close	Open	One Fan	JFAN1
Close	Open	Close	Two Fans	JFAN1 and JFAN2
Close	Open	Open	Three Fans	JFAN1,JFAN2 and JFAN3
Open	Open	Close	Four Fans	JFAN1,JFAN2,JFAN3 and JFAN4

3.1.6 Power Connector

Power Connector

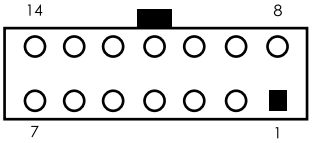


Power Connector – JPWR1



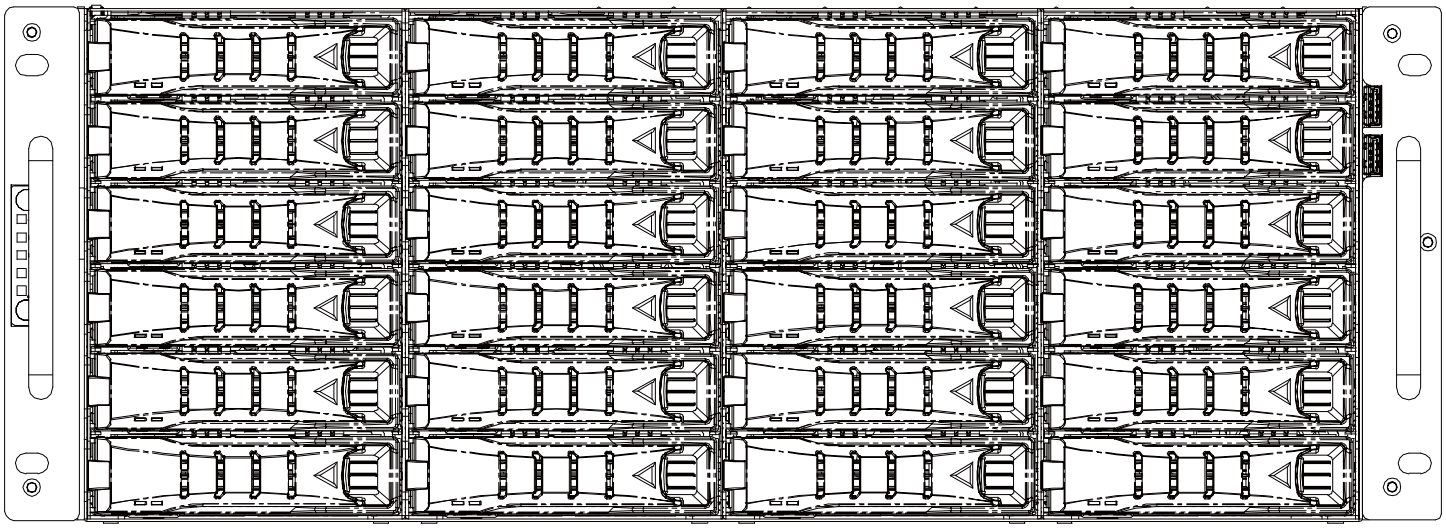
Pin	Description	Pin	Description
7	+12V	1	GND
8	+12V	2	GND
9	+3.3V	3	GND
10	+5V	4	MUTE_L
11	+5VSTBY	5	PSU_N1
12	PS_ON_L	6	GND

Power Connector – JPWR2



Pin	Description	Pin	Description
8	+12V	1	GND
9	+12V	2	GND
10	+12V	3	GND
11	+12V	4	GND
12	+5V	5	GND
13	+5V	6	GND
14	+5V	7	GND

3.1.7 Drive Slot Map



HBA card			
0	1	2	3
4	5	6	7
8	9	10	11
12	13	14	15
16	17	18	19
20	21	22	23

MegaRaid card			
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24

Chapter 4. HDD Blackplane Introduction

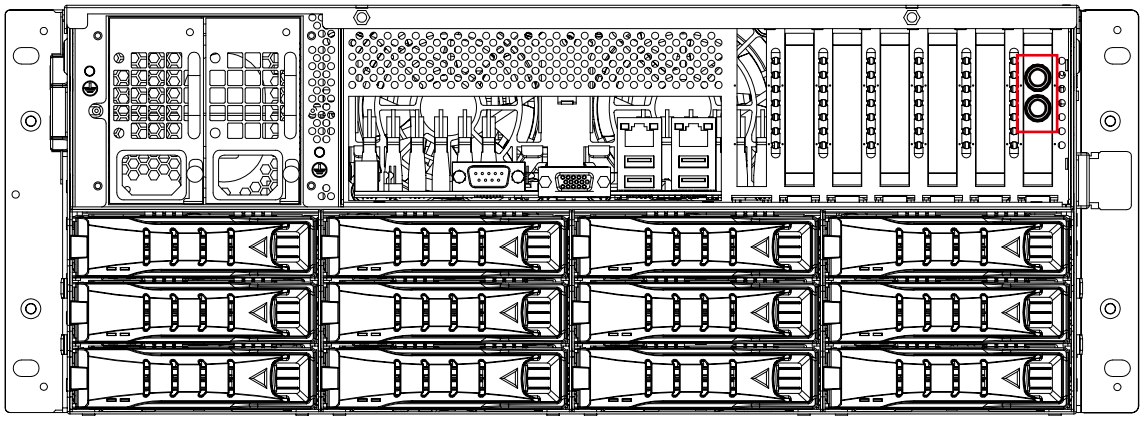
4.1 Expender firmware update through phone connector port

4.1.1 Update Expander firmware revision

Step 1: Set up RSC-4BT phone connector.

Insert phone connector into phone connector port shown below also the other side inert cable into host PC or notebook.

PLEASE FIND THE PHONE CONNECTOR CABLE IN THE PACKAGE BOX.



Step 2: Set up RSC-4BT connector connection

Set up connector connection application into your RSC-4BT as shown in the example process below.

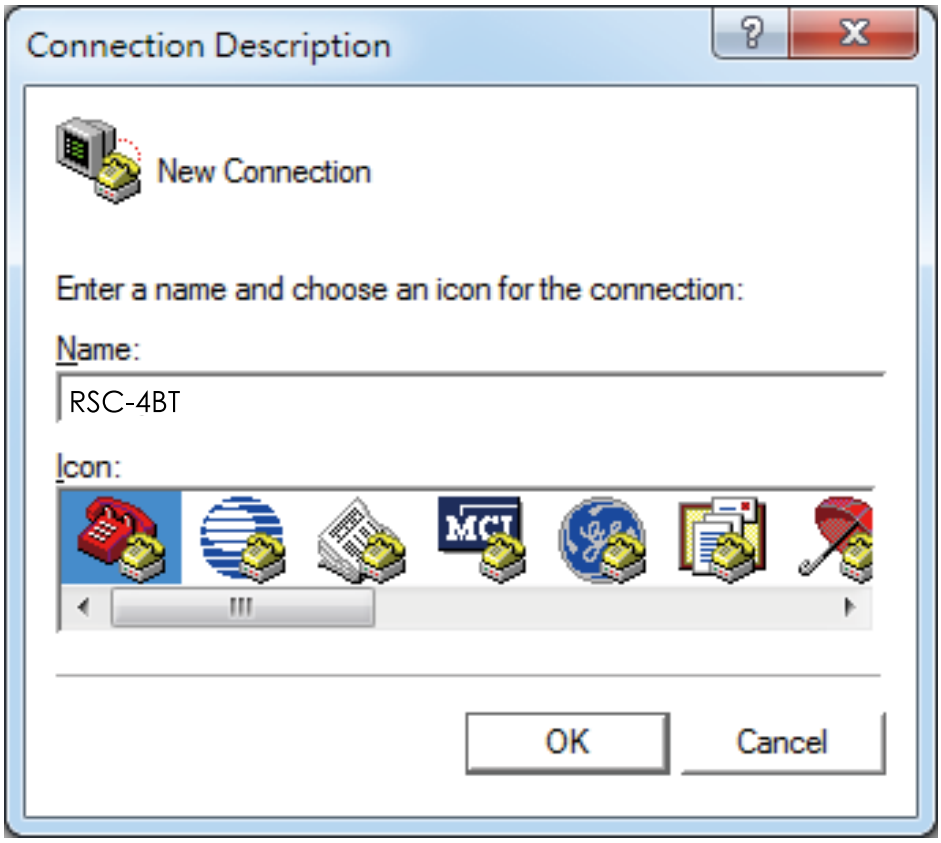
For example:

OS: Microsoft Windows

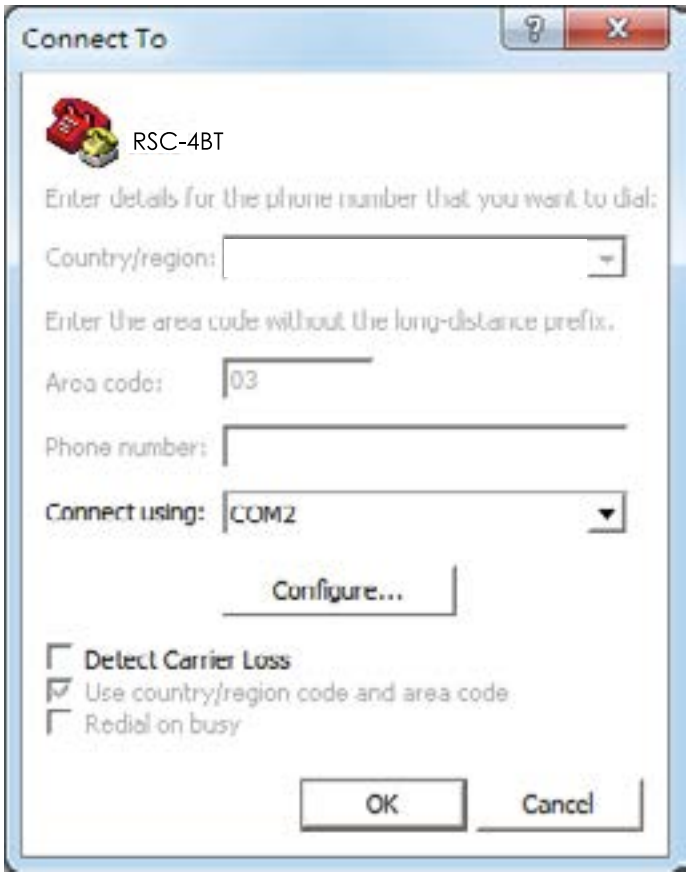
RS232 connection application: Hyperterminal

Step 2: Install HyperTrm.exe

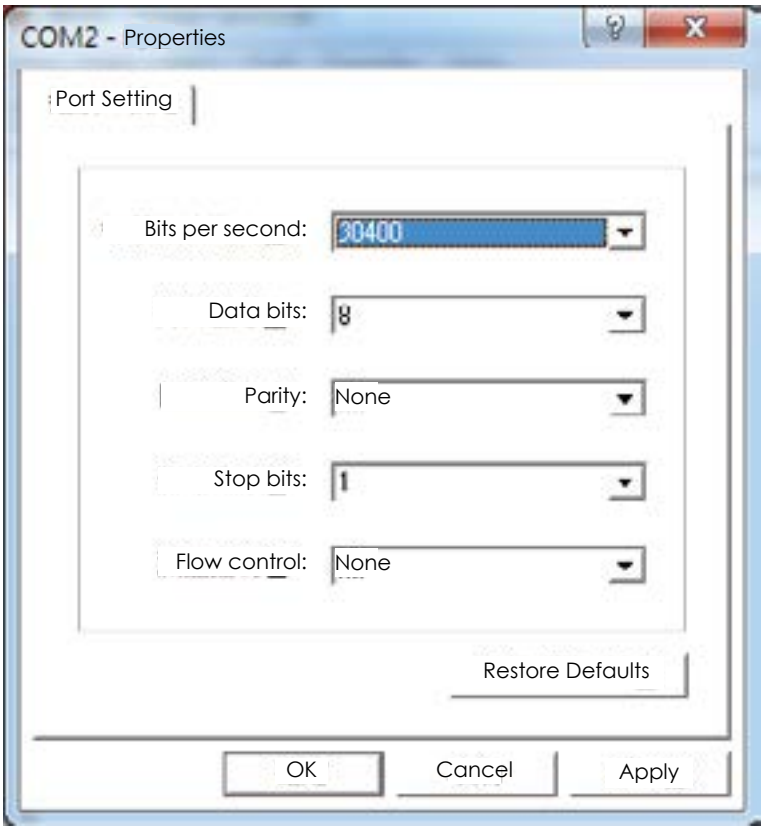
Step 3: Enter a new name for the icon in the field below and click OK.



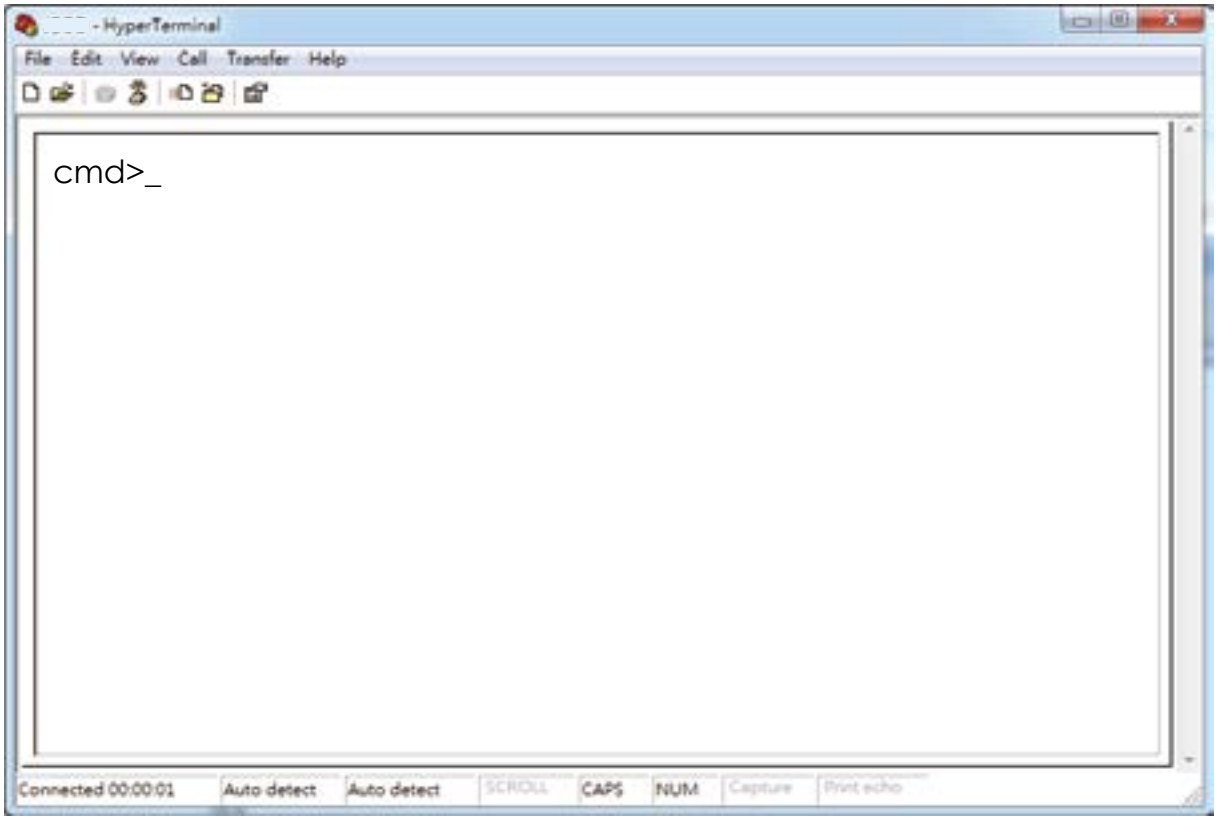
Step 4: Connecting by using selecting an option in the drop down menu circled in red below (we selected COM2 in this example) and click OK.



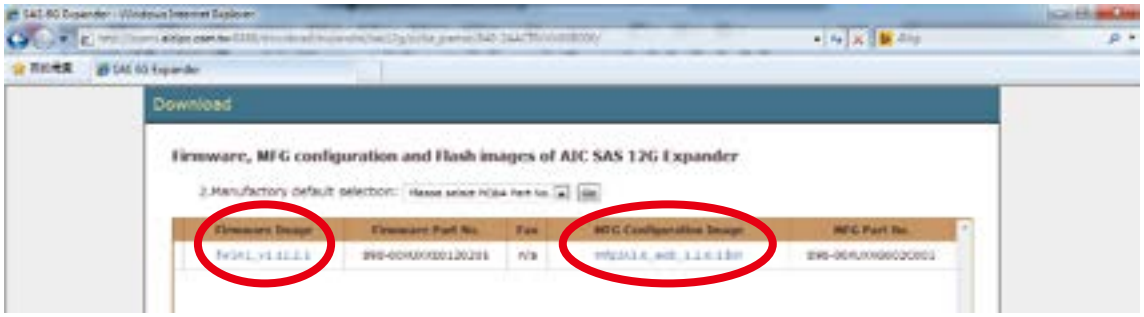
Step 5: For "Bits per second", select 38400. For "Flow control", select: None. Click OK when you have finished your selections.



Step 6 : Set up is complete. The diagram below depicts what screen should displayed.



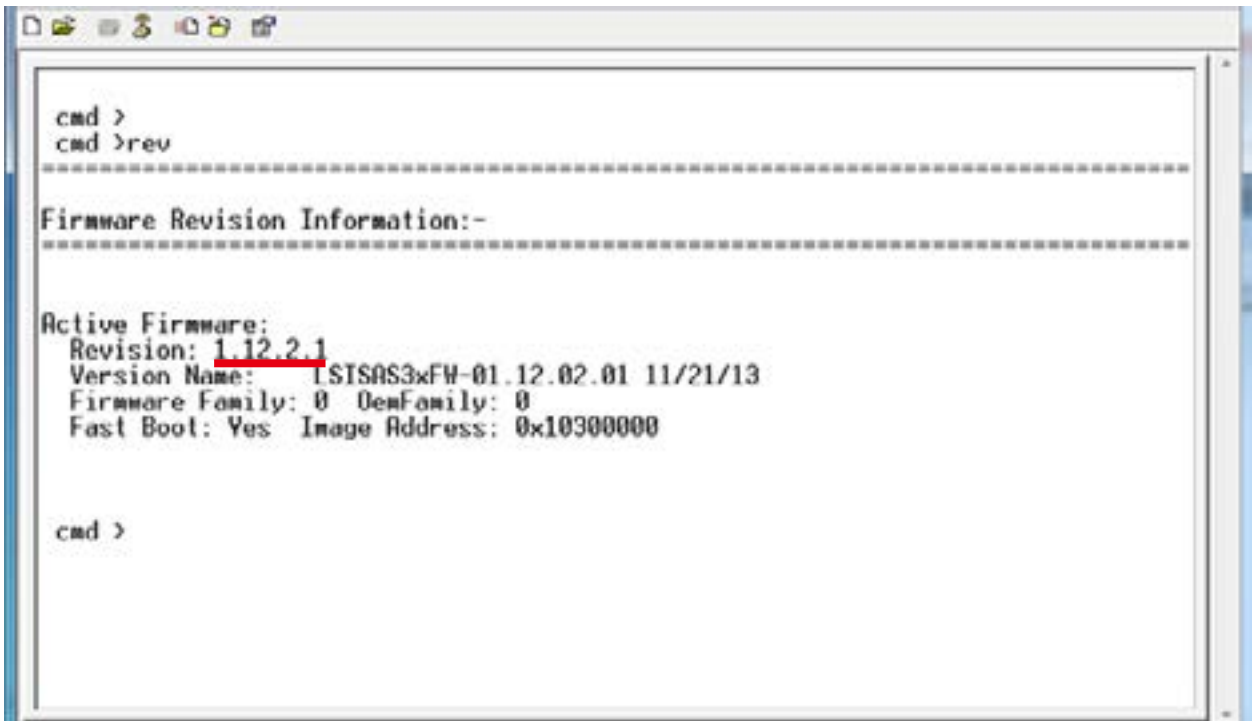
Step 7:To get **firmware image** & **MFG Configuration Image** version information from "AIC SAS Related Firmware Downloadne" website.
http://ppms.aicipc.com.tw:8888/download/expander/mcu/



Step 8:

Comand line for show current firmware revision.

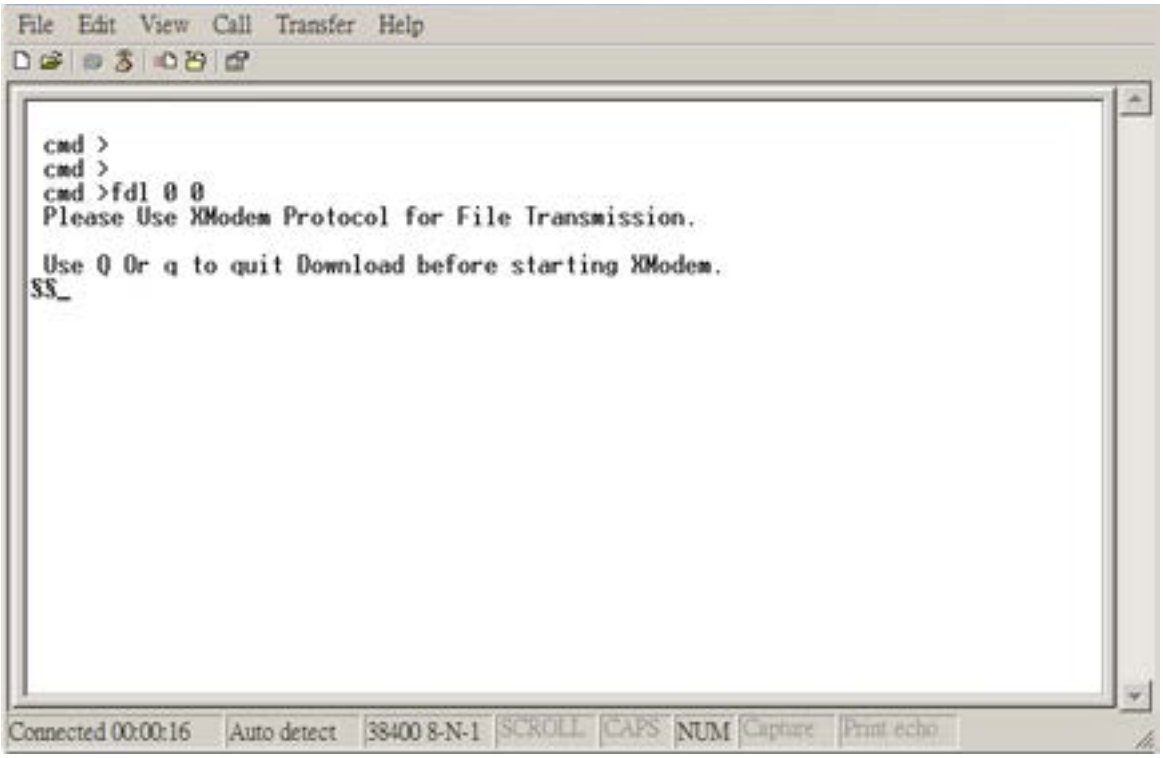
cmd>rev



Step 9:

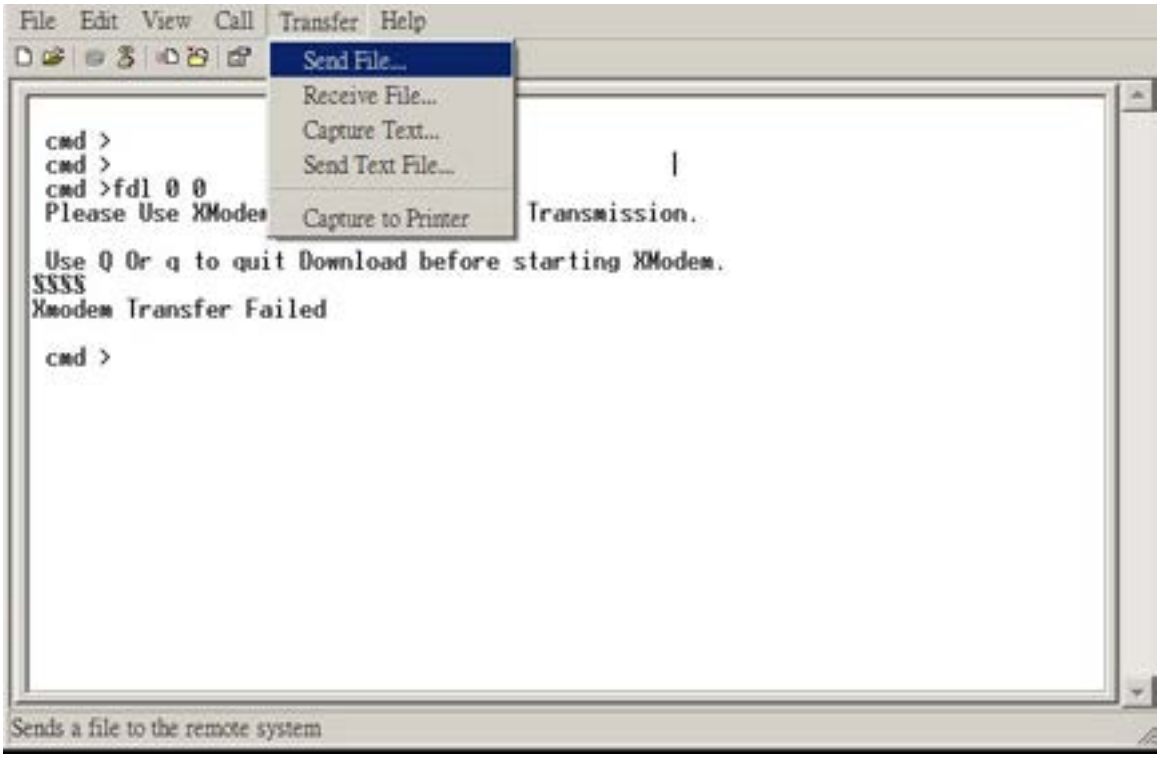
Start to update expander firmware

cmd>fdl 0 0_



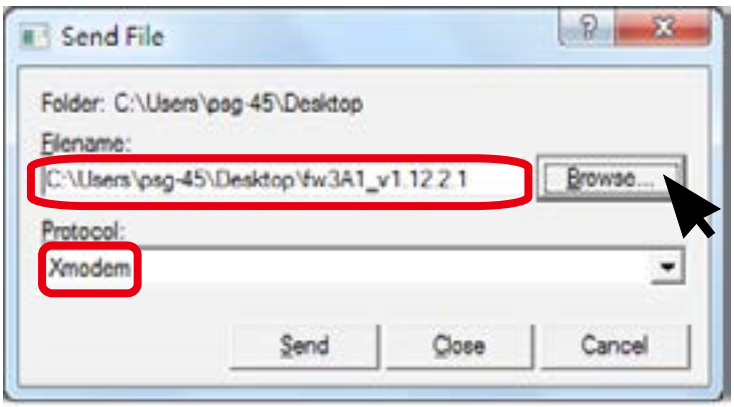
Step 10:

Select the tool bar "Transfer" -> "Send File".



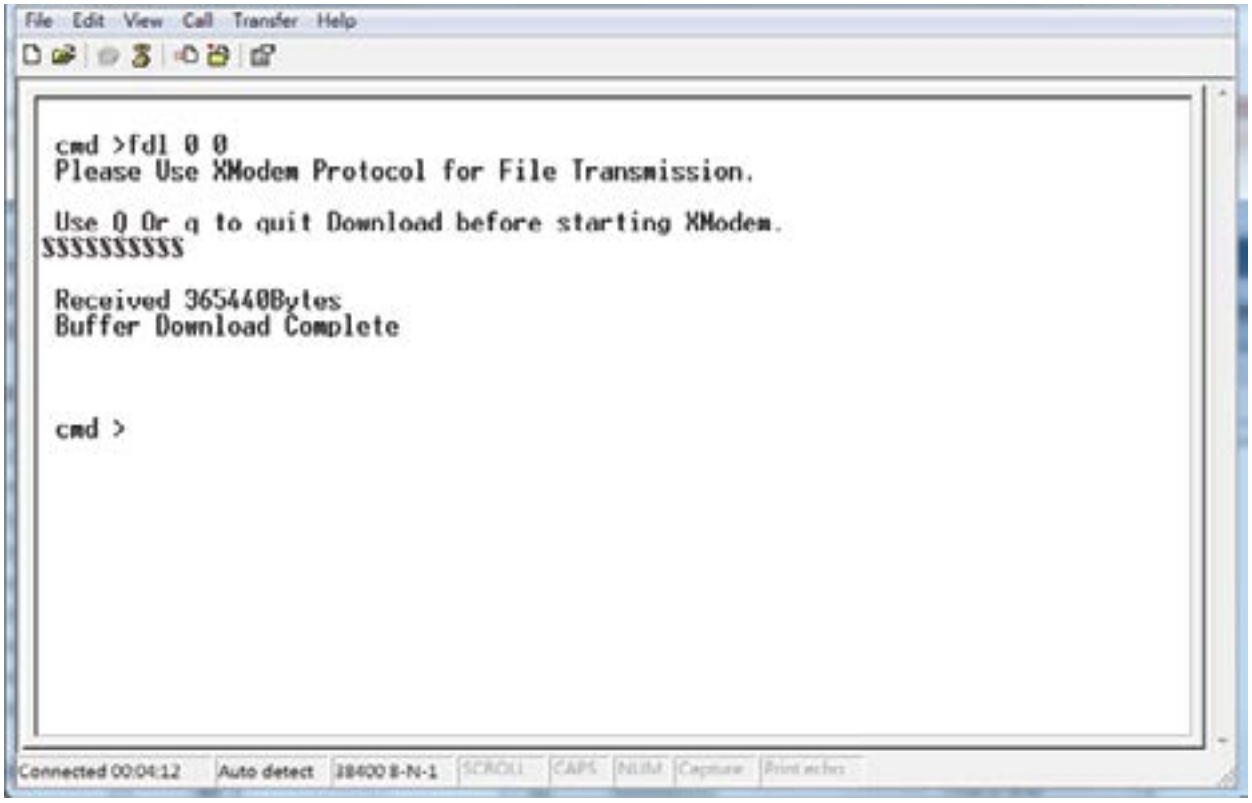
Step 11:

- Choose new firmware path file "fw 3A1_v1.12.2.1".
- Protocol have to choose "Xmodem".



Step 12:

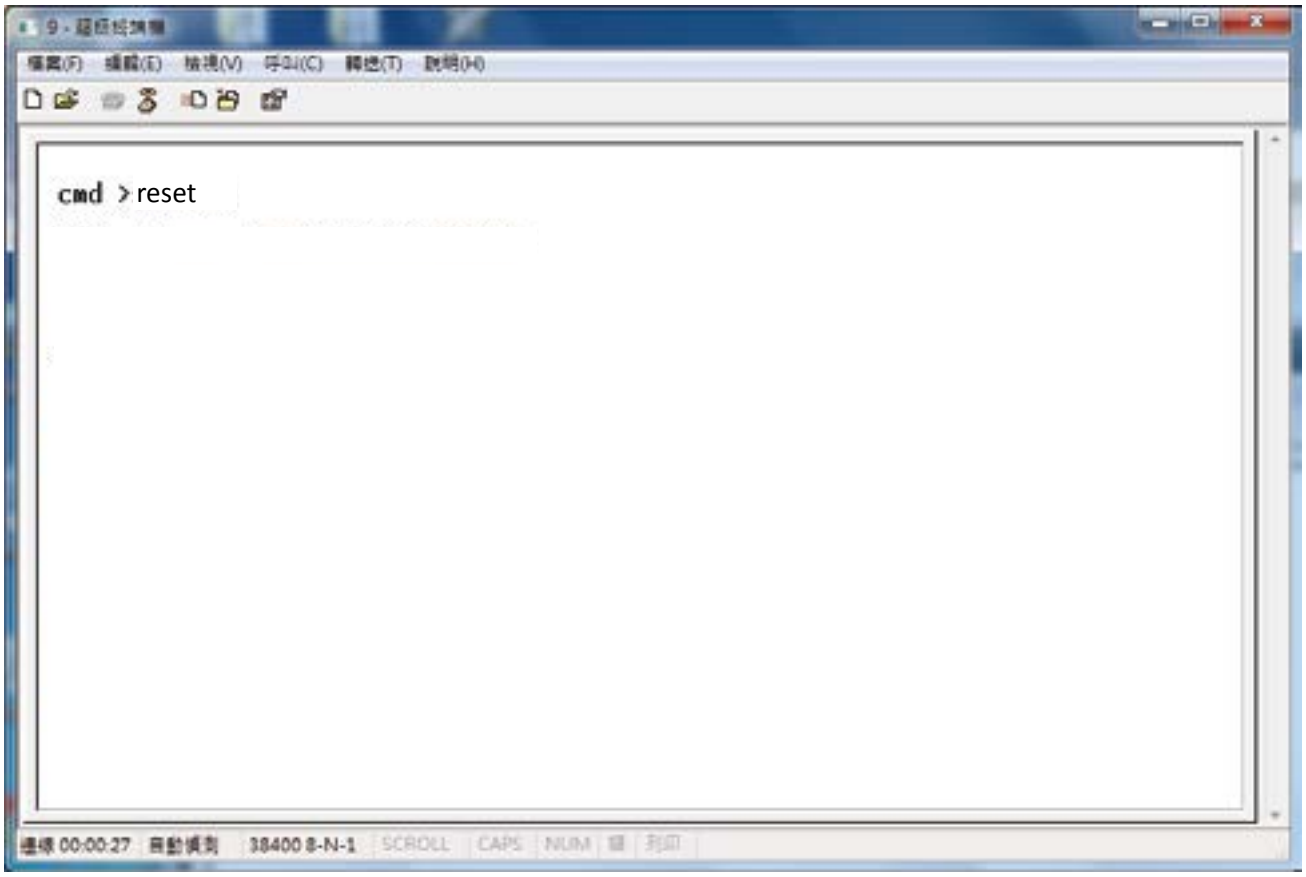
Firmware download complete



Step 13:

Reset computer for success update firmware.

cmd>reset

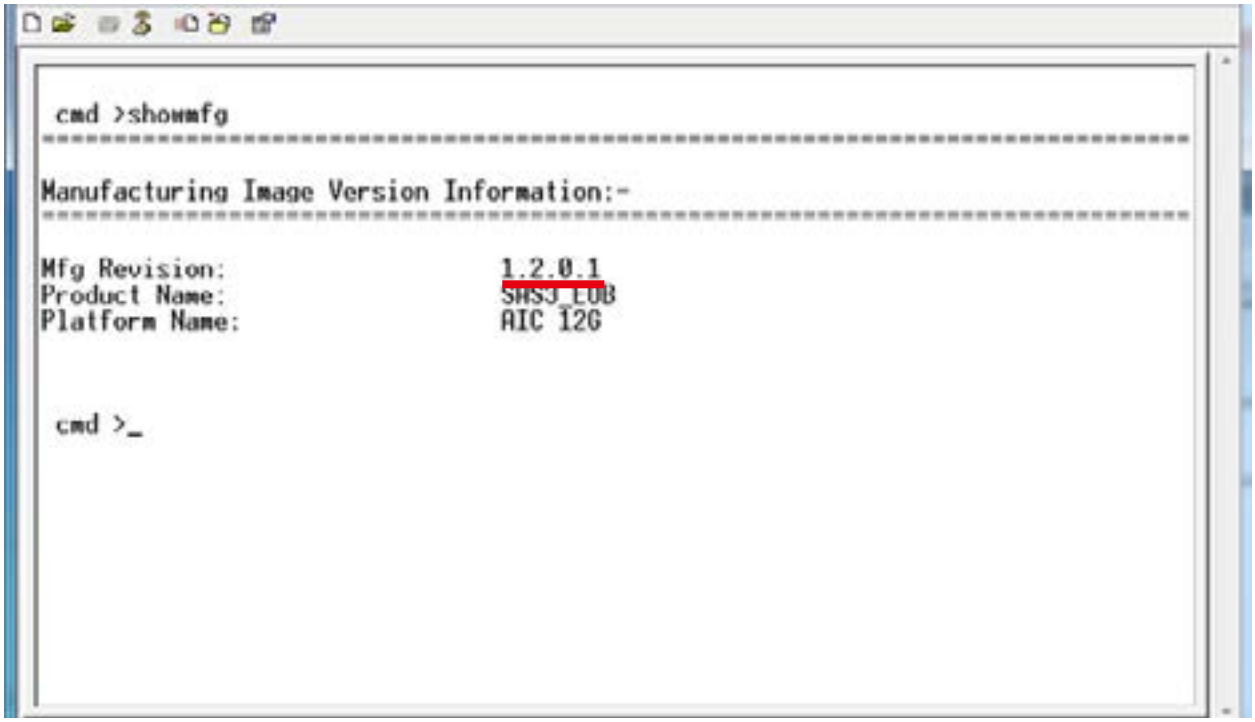


4.1.2 Update expander configuration MFG

Step 1:

Comand line for show current configuration MFG

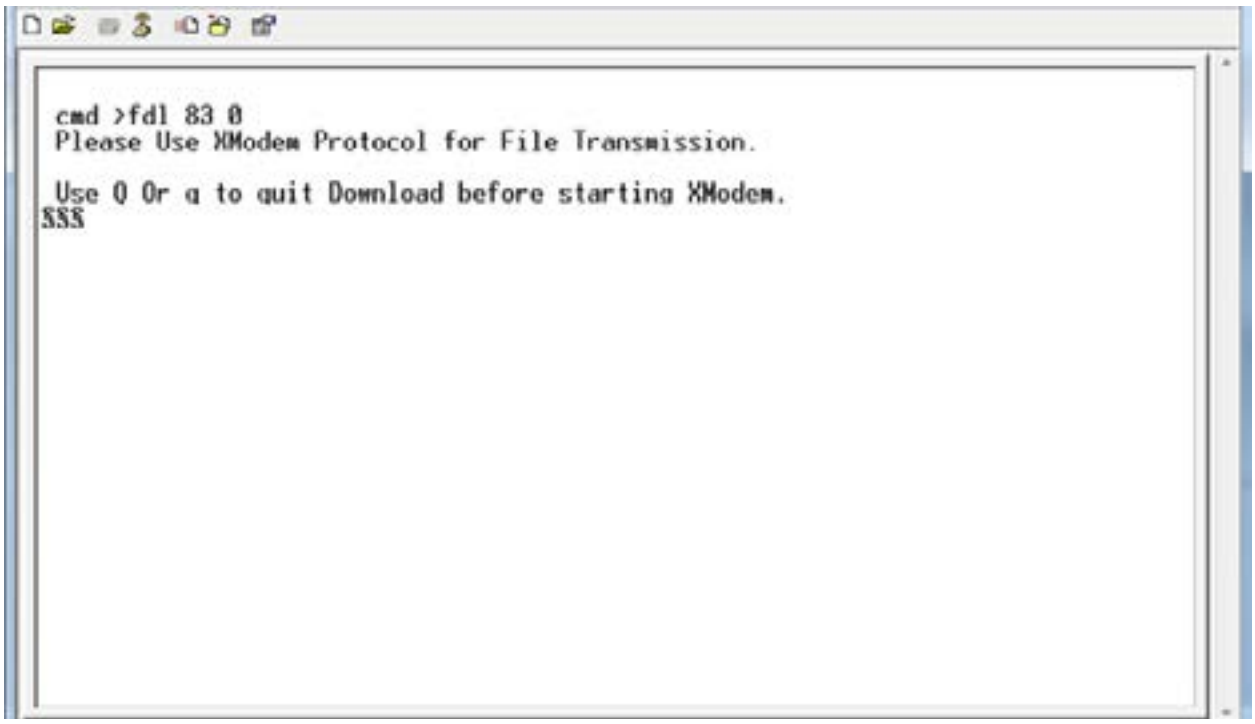
cmd> showmfg



Step 2:

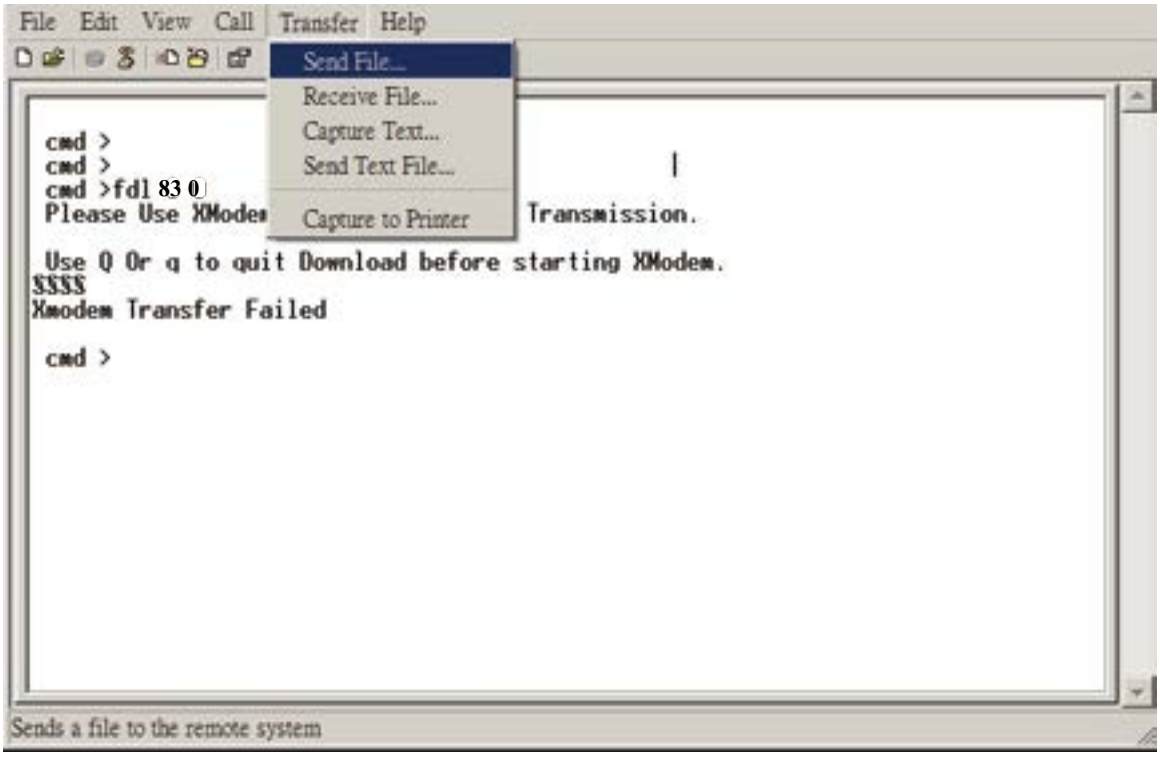
Start to update expander configuration MFG

cmd>fdl 83 0_



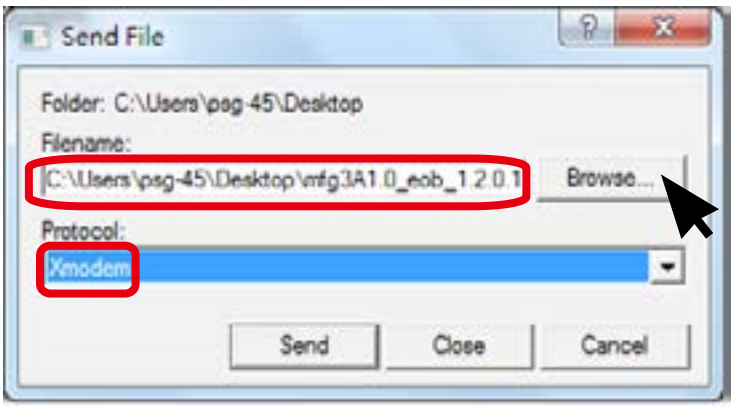
Step 3:

Select the tool bar "Transfer" -> "Send File".



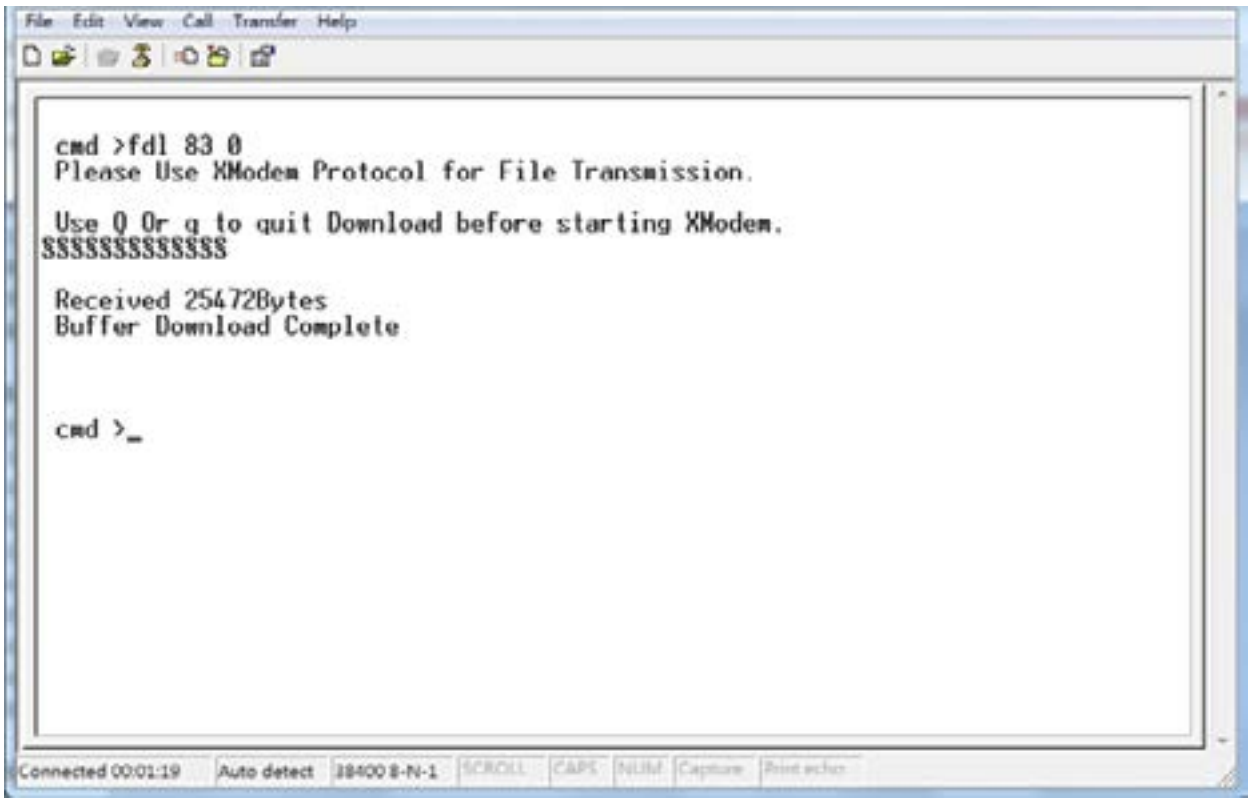
Step 4:

- Choose new MFG path file "mfg 3A1.0_eob_1.2.0.1.bin".
- Protocol have to choose "Xmodem".



Step 5:

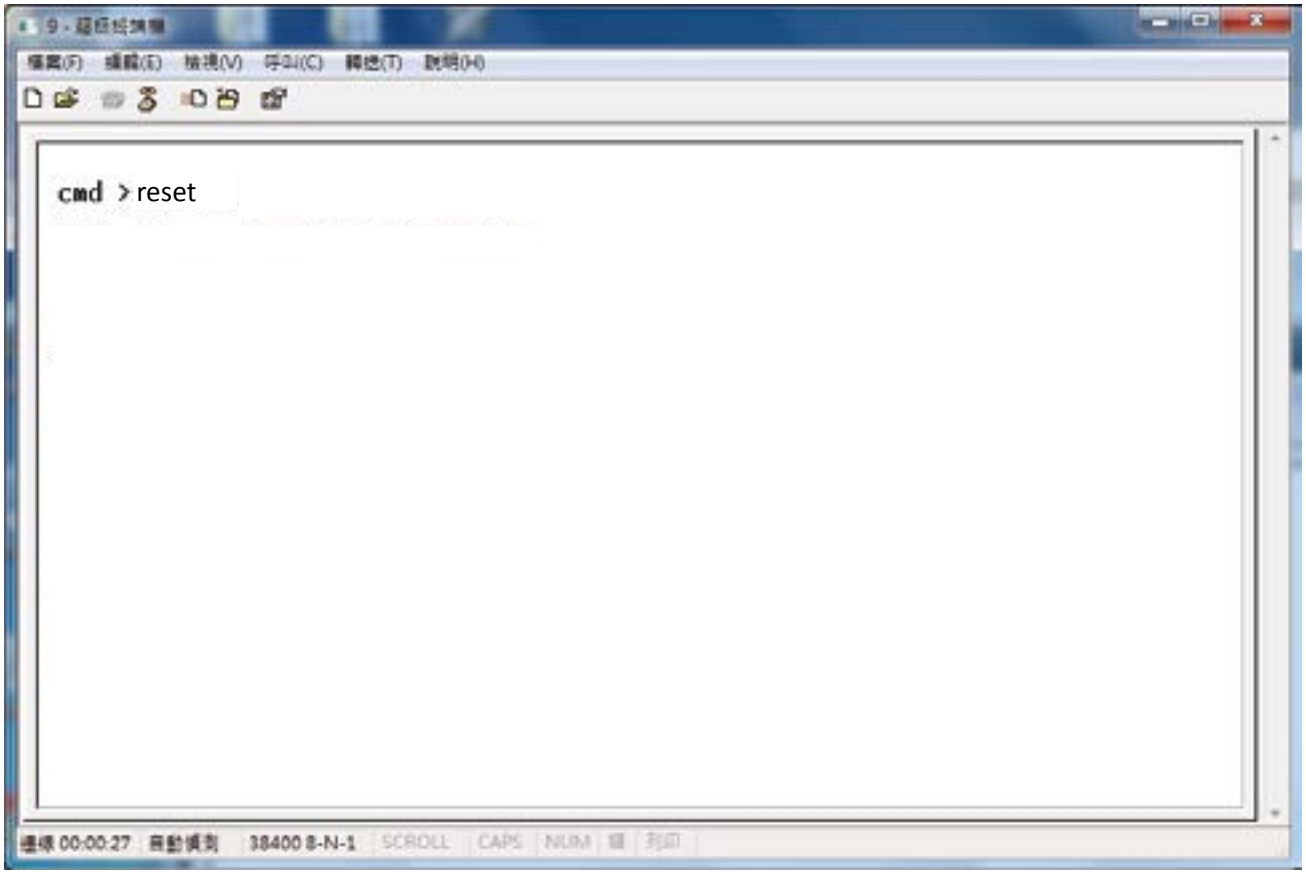
MFG download complete.



Step 6:

Reset computer for success update MFG.

cmd>reset



4.2 Update the expander firmware through in-band.

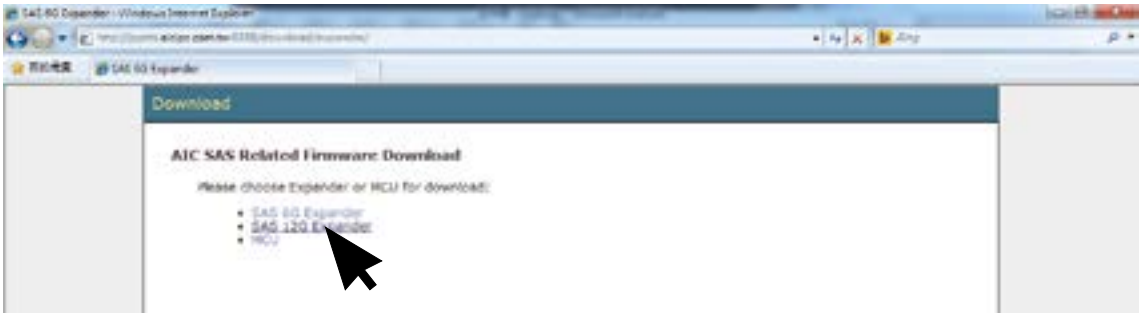
FOR EXAMPLE

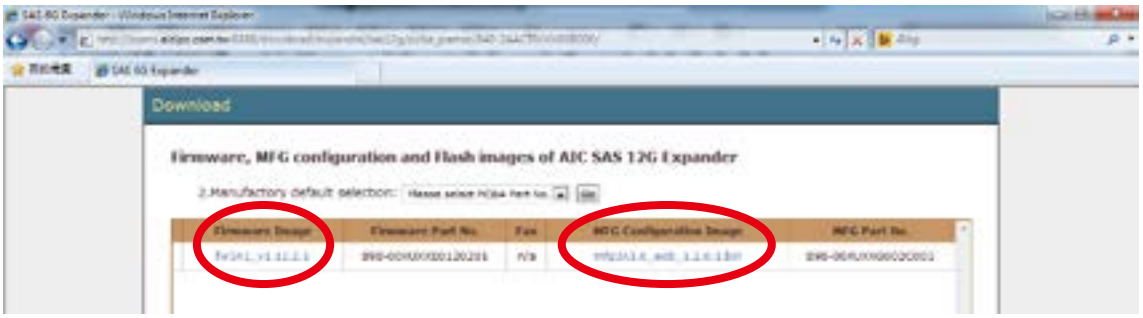
Step 1:

Download and install SG3_utils.exe which compatible with Linux OS.
From website http://sg.danny.cz/sg/sg3_utils.html
website
Reference version sg3_utils-1.40.tgz

Step 2:

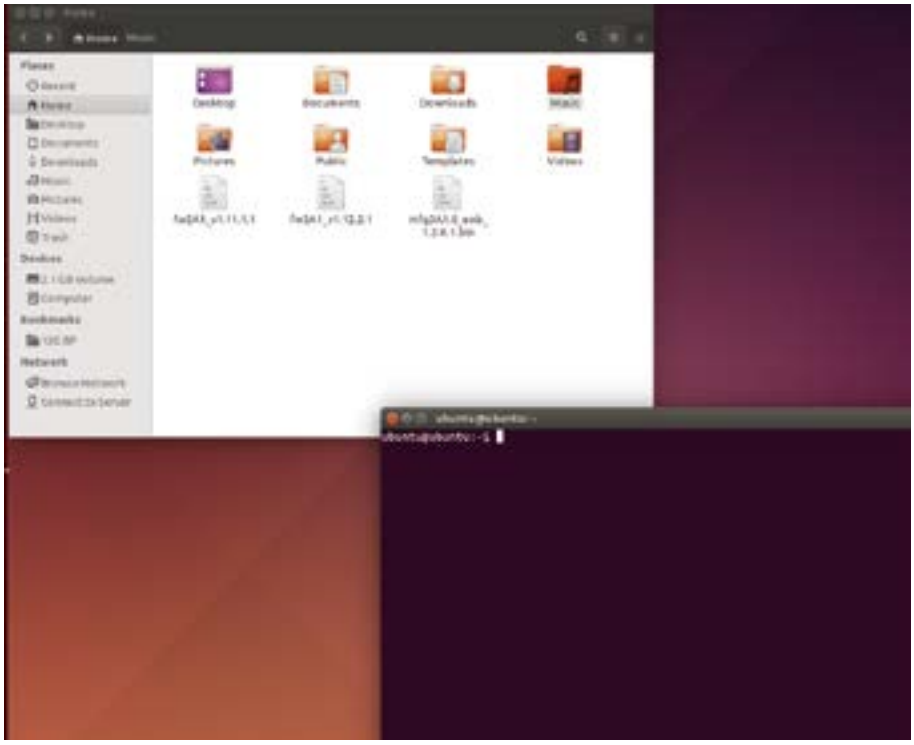
To get **firmware image** & **MFG Configuration Image** version information from "AIC SAS Related Firmware Downloadne" website.
http://ppms.aicipc.com.tw:8888/download/expander/mcu/





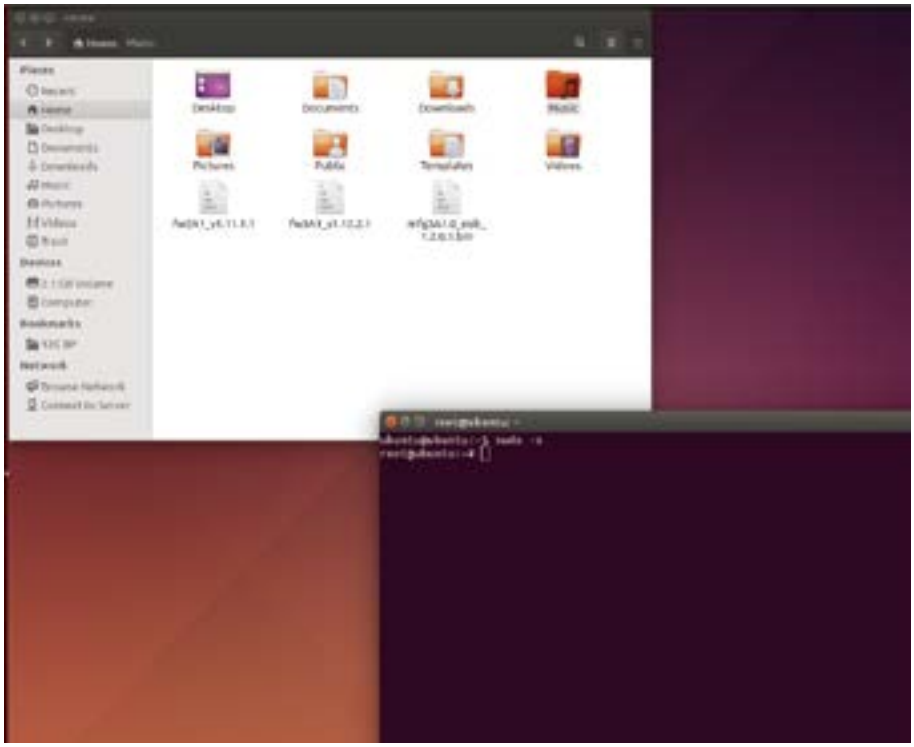
Step 3:

Execute terminal under the same new firmware folder.
example: Setting a new firmware folder on "Home" page. Open Terminal by click to the right button of mouse in the same window "Home".



Step 4:

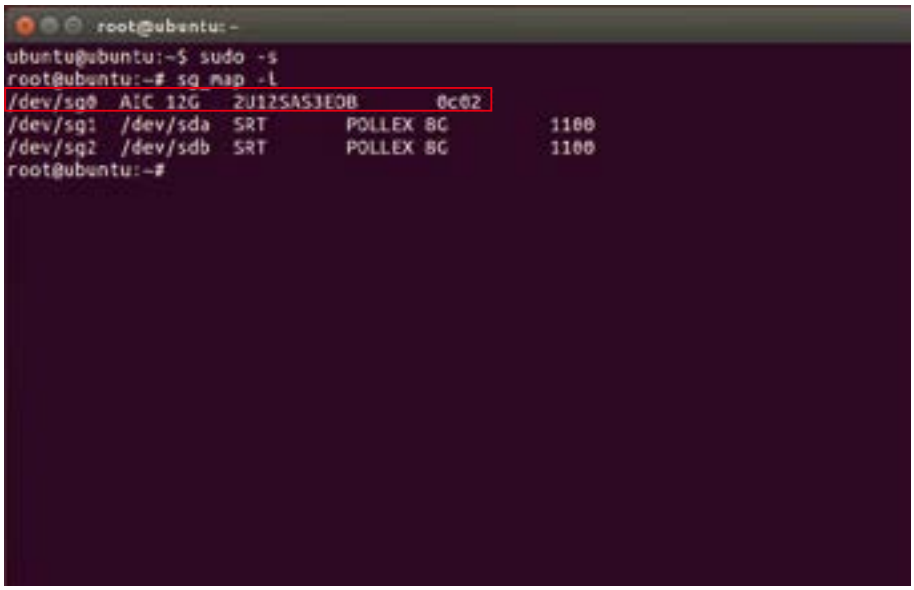
Typing "sudo -s" to into administrator mode.



Step 5:

Find expander location.

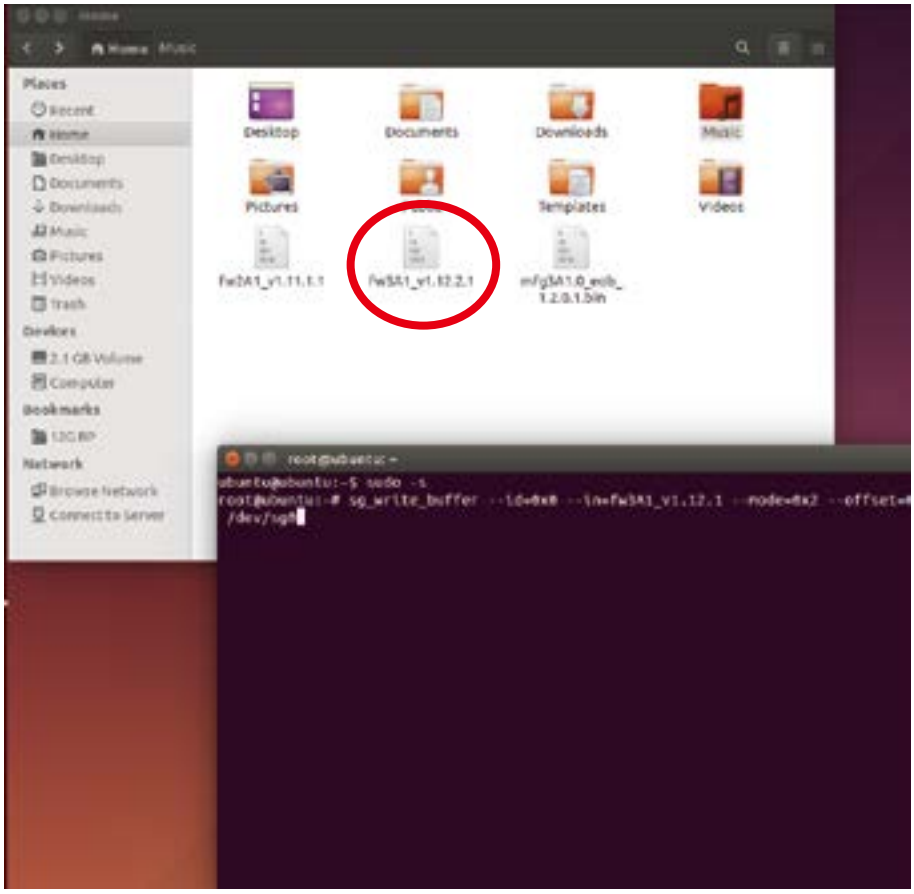
$ sg_map -i



Step 6:

Update Expander firmware

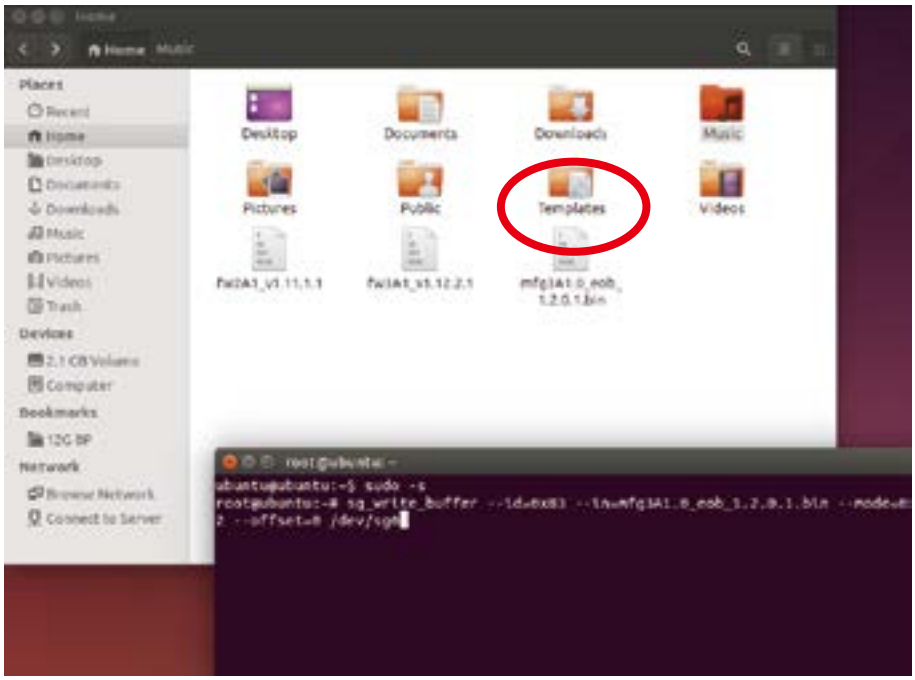
$ sg_write_buffer --id=0x0 --in=fw3A1_v1.12.2.1 --mode=0x2 --offset=0 /dev/sg0



Step 7:

Update Expander MFG

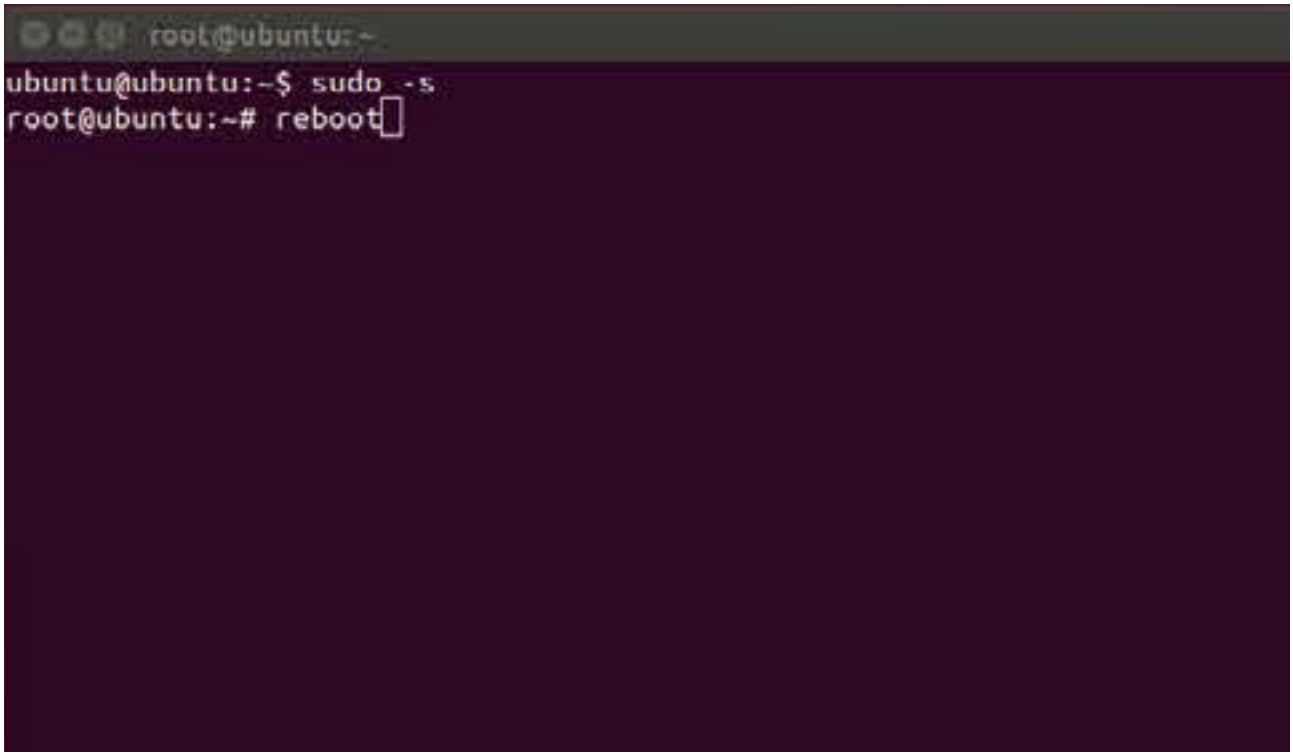
$ sg_write_buffer --id=0x83 --in=mfg3A1.0_eob_1.2.0.1.bin --mode=0x2 --offset=0 /dev/sg0



Step 8:

Reboot computer for success update firmware & MFG.

root@ubuntu:~# reboot



4.3 12G expander EDFB setting

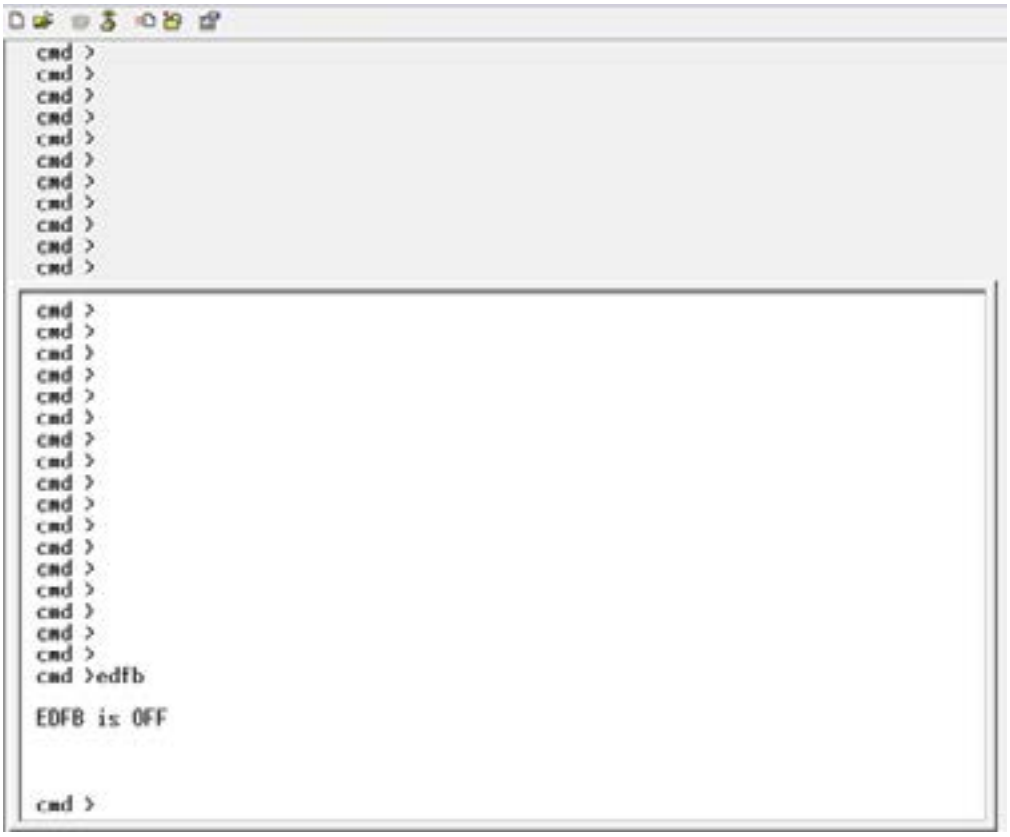
Step 1:

For Install HyperTerminal.exe refer to section 4.1

Step 2 :

Get EDFB status

cmd> edfb

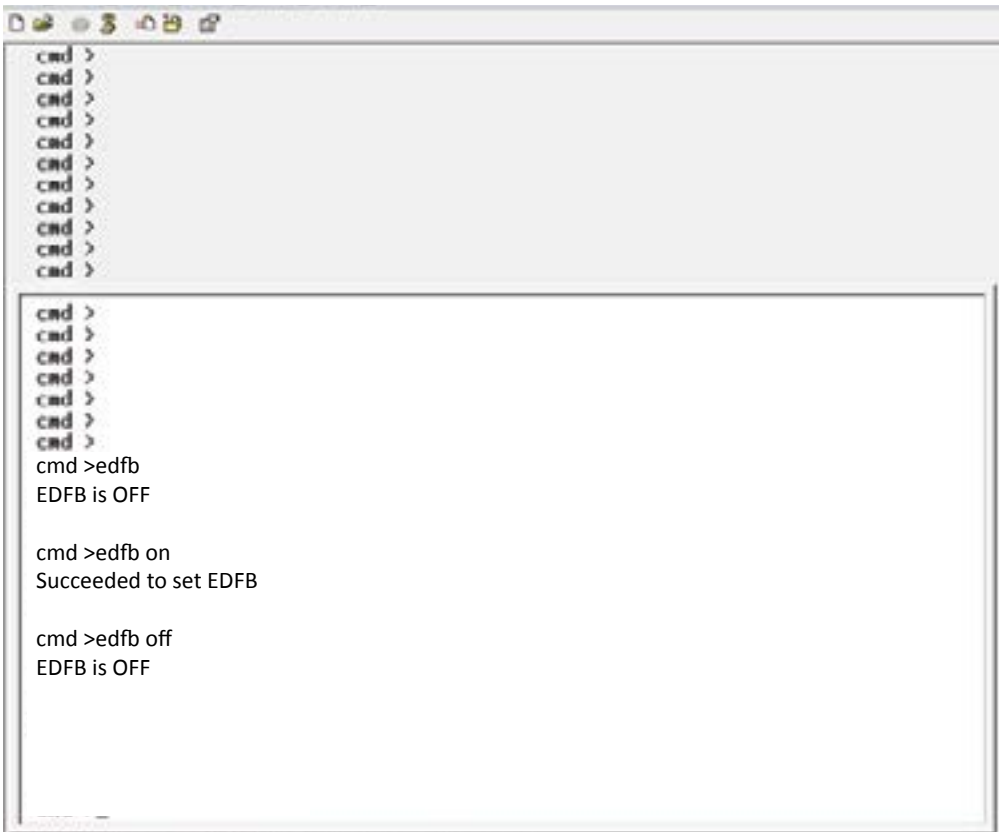


Step 3:

Change EDFB setting

Enable EDFB function
cmd>edfb on

Disable EDFB function
cmd>edfb off



4.4 Slot HDD power setting

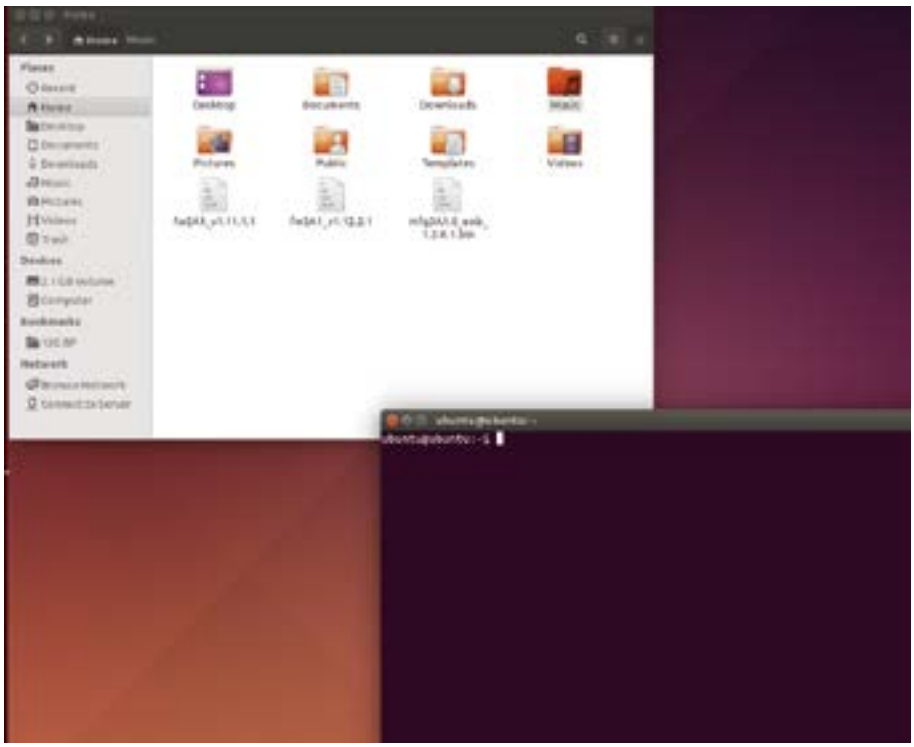
(Only for system cooling Fan controled by expander.)

Step 1:

For Install sg3.exe tool and get new firmware from website refer to section 4.2

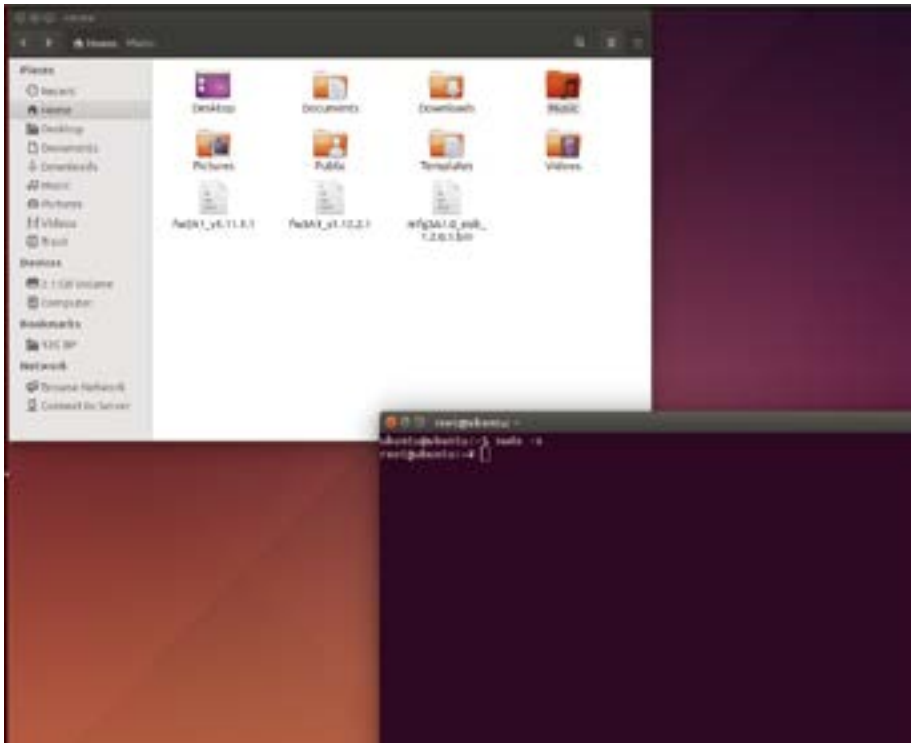
Step 2:

Execute terminal under the same new firmware folder.
example: Setting a new firmware folder on "Home" page. Open Terminal by click to the right button of mouse in the same window "Home".



Step 3:

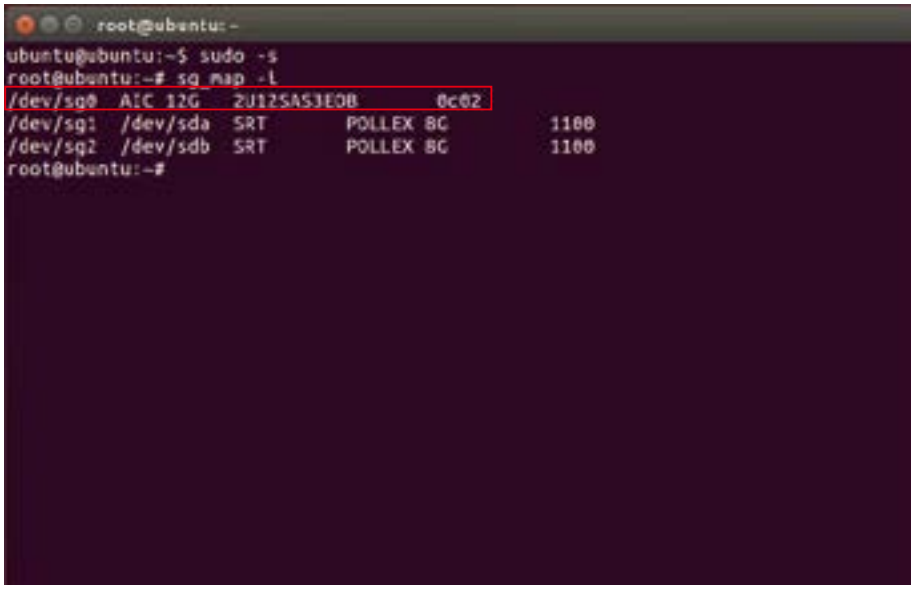
Typing "sudo -s" to into administrator mode.



Step 4:

Find expander location.

$ sg_map -i



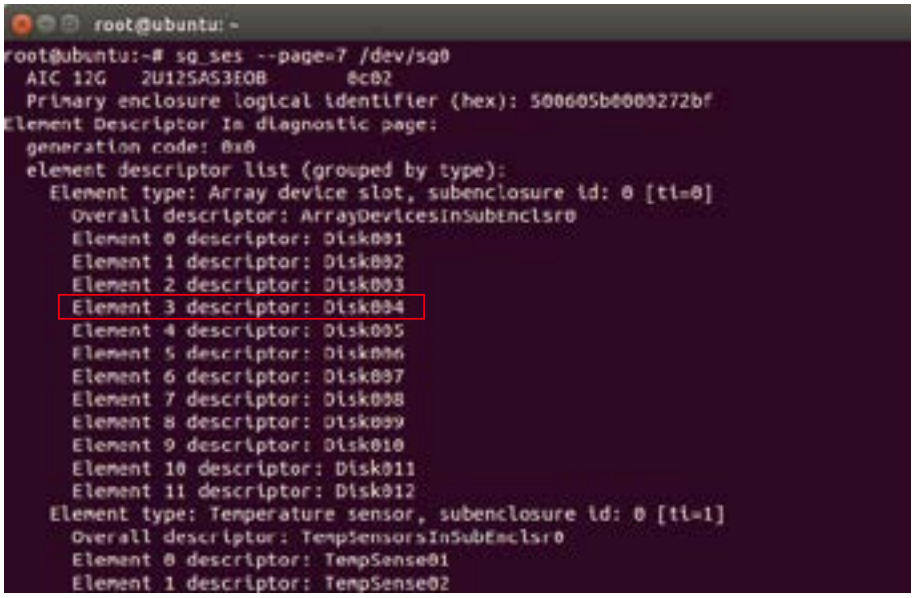
Step 5:

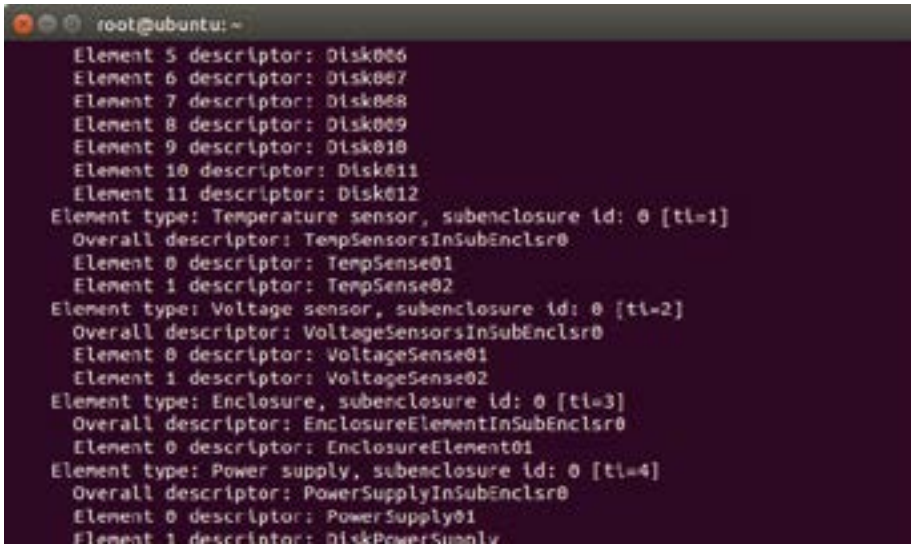
For example:

If would like to turn the Disk004 power off under the HBA card. Need to check Disk004 power status.

$ sg_ses --page=7 /dev/sg0

Under HBA card the Element 3 = Disk004.

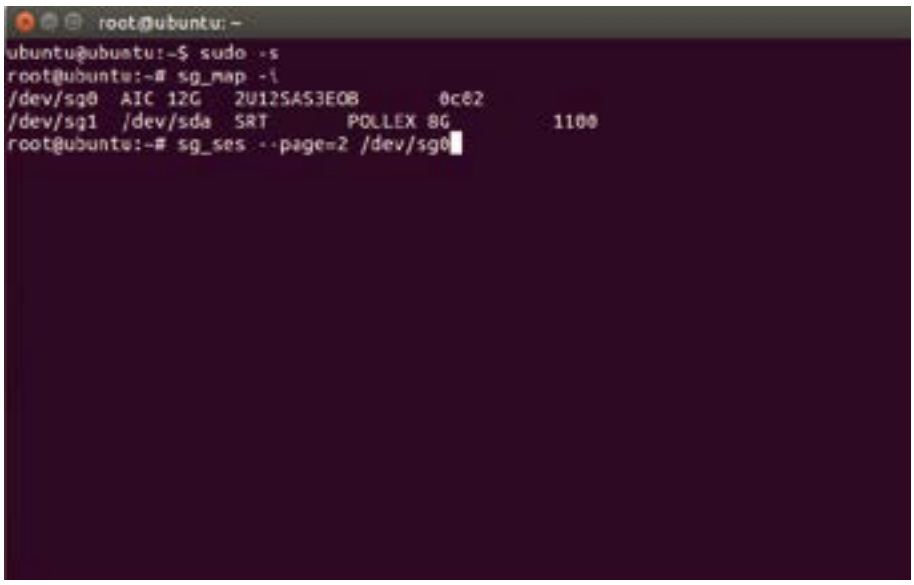




Step 6:

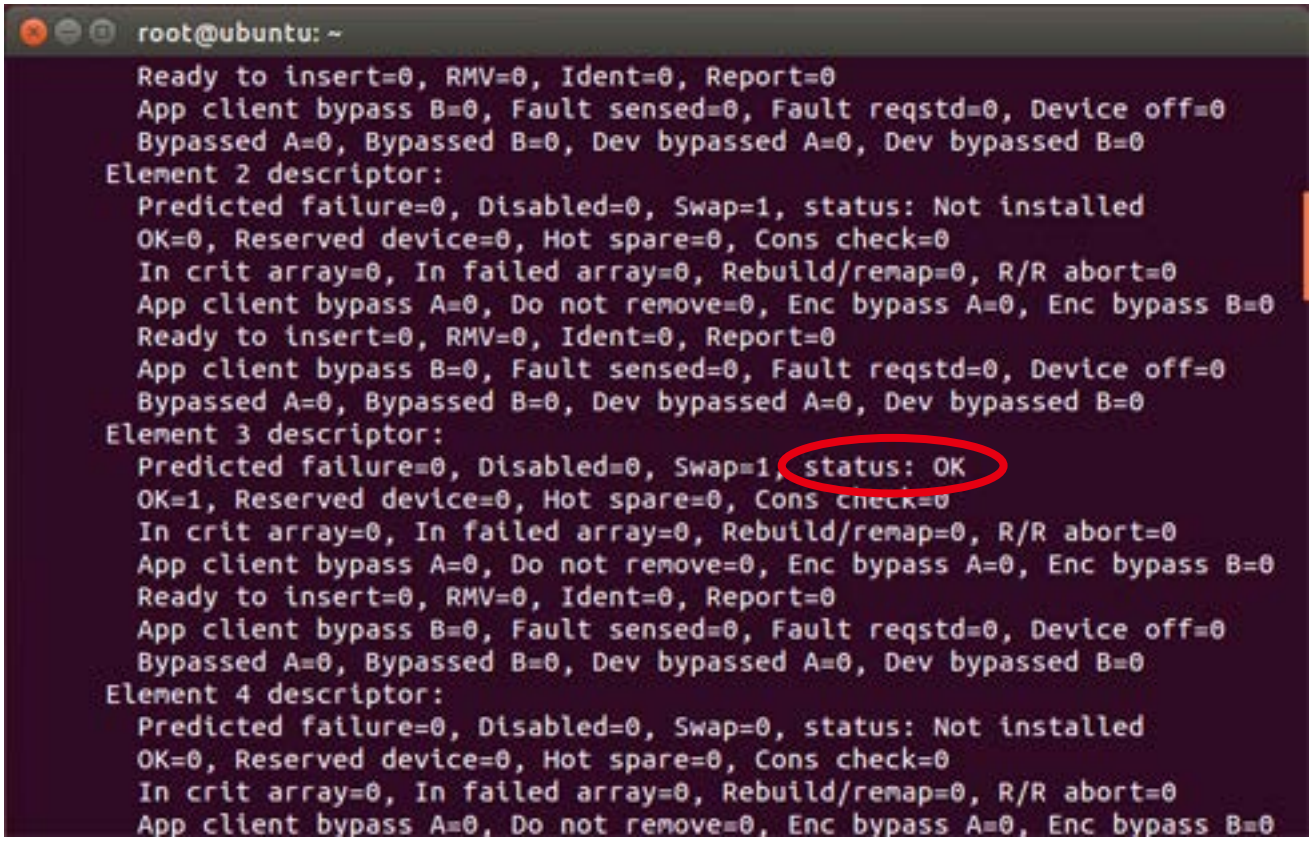
To check Disk004 (element 3) power status is ok

$ sg_ses --page=2 /dev/sg0



Status shows below:

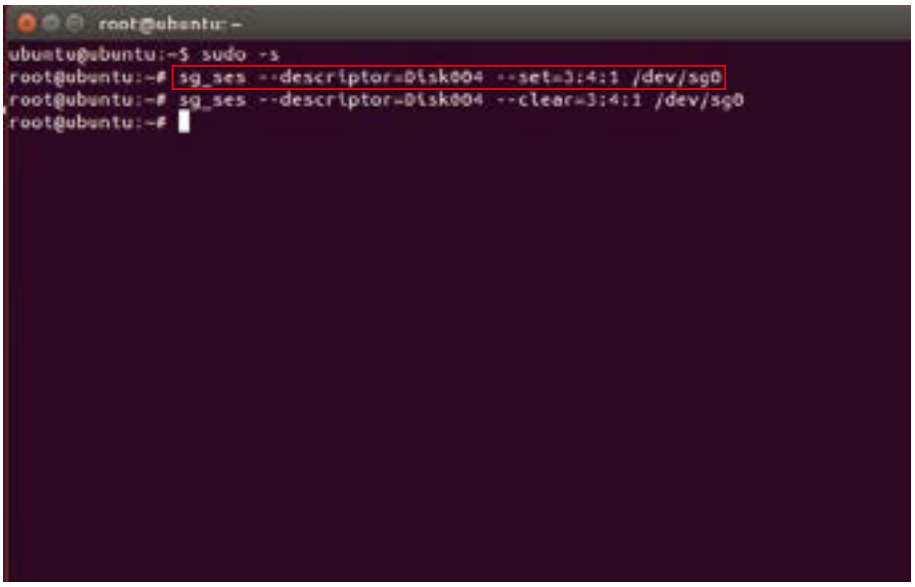
The status of Element 3 is OK.



Step 7:

Turn off a HDD power

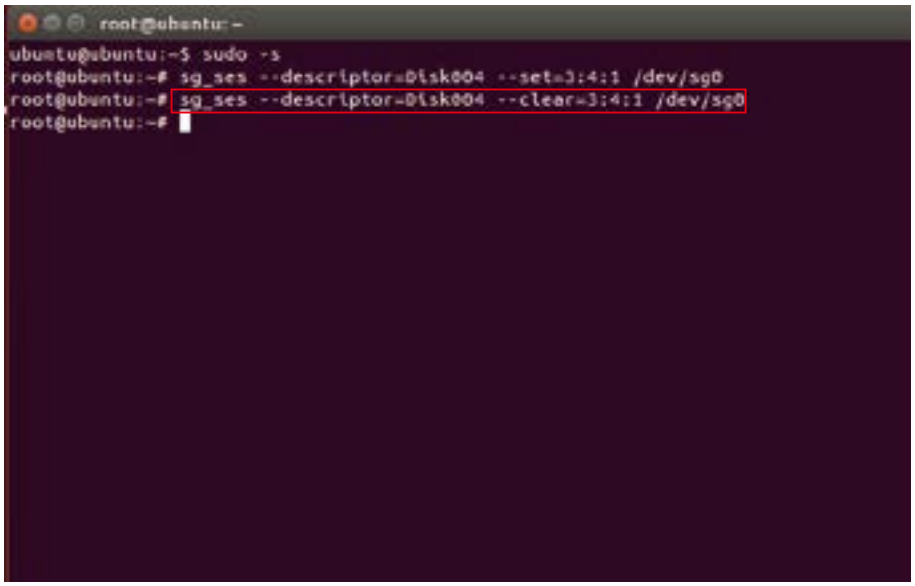
$ sg_ses --descriptor=Disk004 --set=3:4:1 /dev/sg0



Step 8:

Turn on a HDD power

$ sg_ses --descriptor=Disk004 --clear=3:4:1 /dev/sg0



4.5 HDD BP thermal sensor temperature setting

(Only for system cooling Fan controled by expander.)

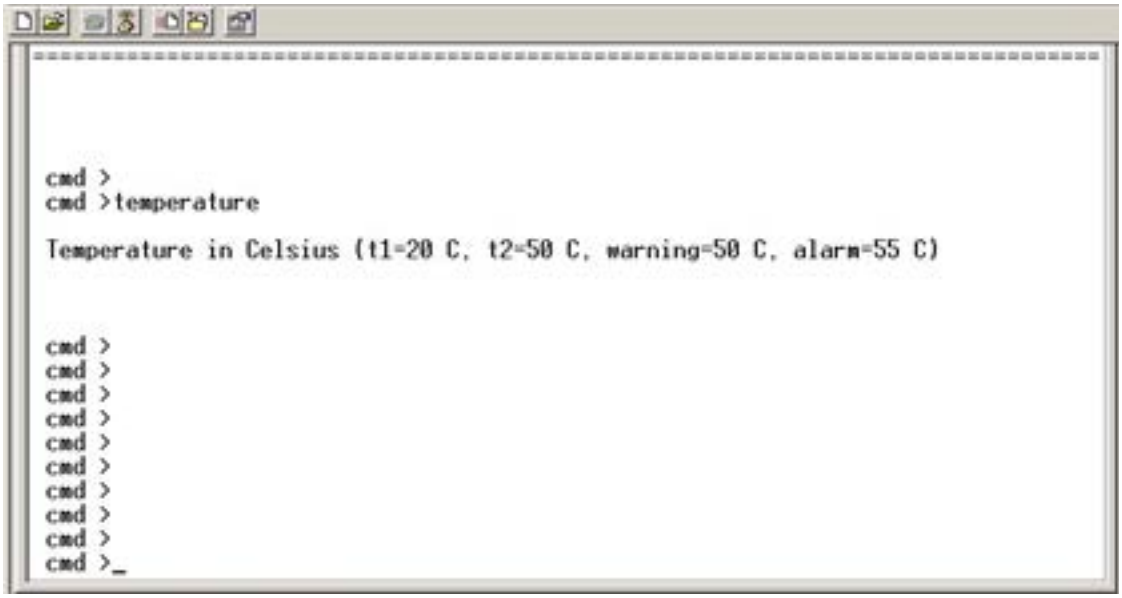
Step 1:

For Install HyperTerminal.exe refer to section 4.1

Step 2:

Get the current temperature settings

cmd> temperature



Step 3.

For example:

Set new temperature

T1=20 C ▸ 18 C

T2=50 C ▸ 52 C

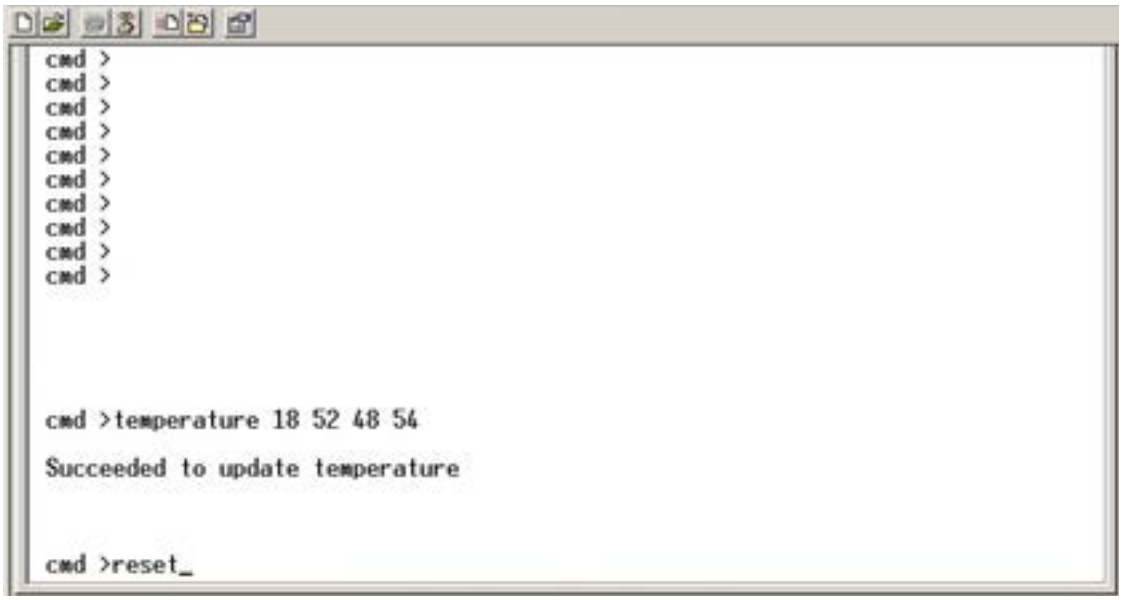
Warning threshold=50 C ▸ 48 C

Alarm threshold=55 C ▸ 54 C

The new setting will take effect after reset.

cmd> temperature 18 52 48 54

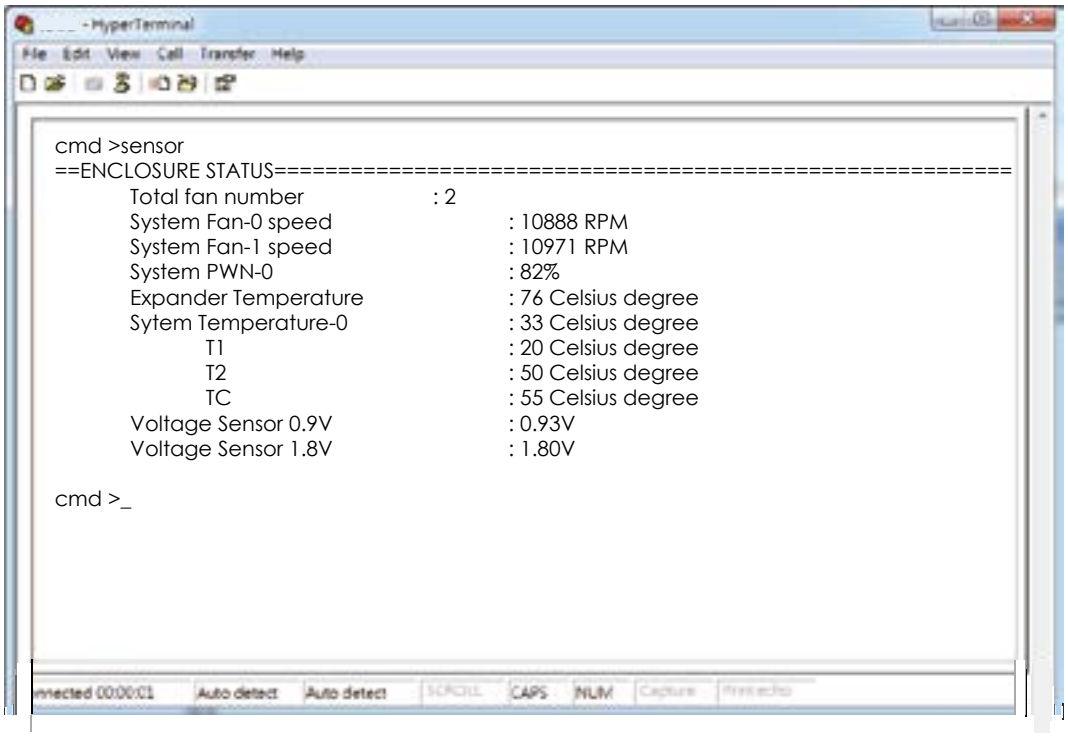
cmd> reset



Step 4.

Check fan speed & temperature information.

cmd> sensor



Chapter 5. Technical Support

www.aicipc.com

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