RSC-4ETS

Rackmount Storage Chassis

User Manual

UM_RSC-4ETS_v1.3_123021

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PREFACE

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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.

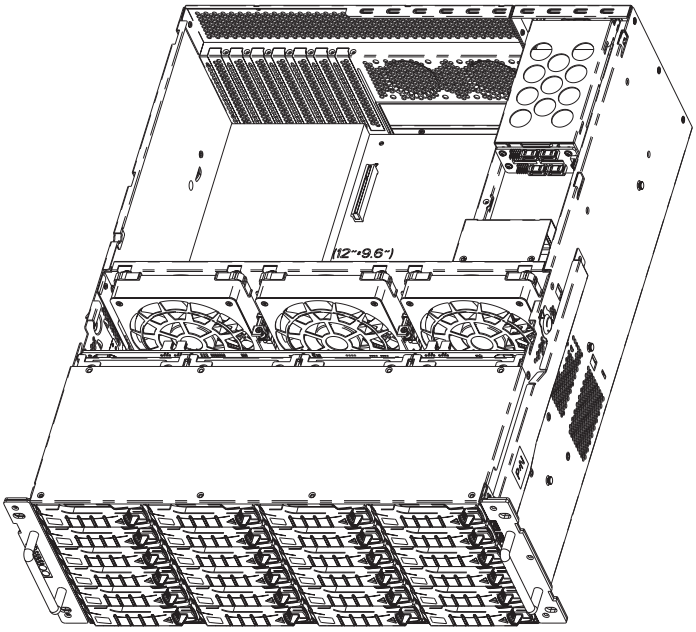
Product features and specifications are subject to change without notice.

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.

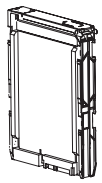
Chapter 1. Prodcut Introduction

1.1 Box Content

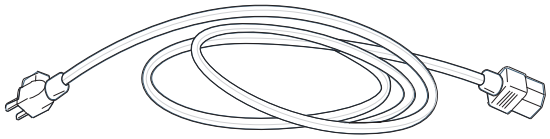
Before removing the subsystem from the shipping carton, visually inspect the physical condition of the shipping carton. Exterior damage to the shipping carton may indicate that the contents of the carton are damaged. If any damage is found, do not remove the components; contact the dealer where the subsystem 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.



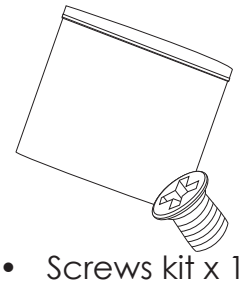
- Enclosure(Power supply, fan, 24 x 3.5" HDD tray included)



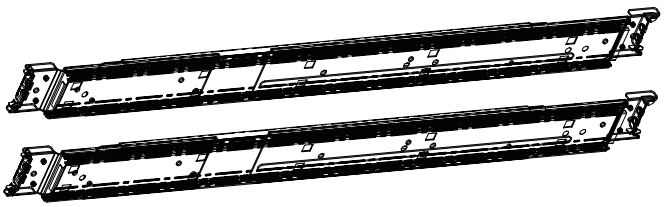
- 3.5'' HDD Tray



- Power cord



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



- Slide rail x 1set

♦ PACKAGE CONTENT MAY VARY PER REGION.

1.2 Specifications

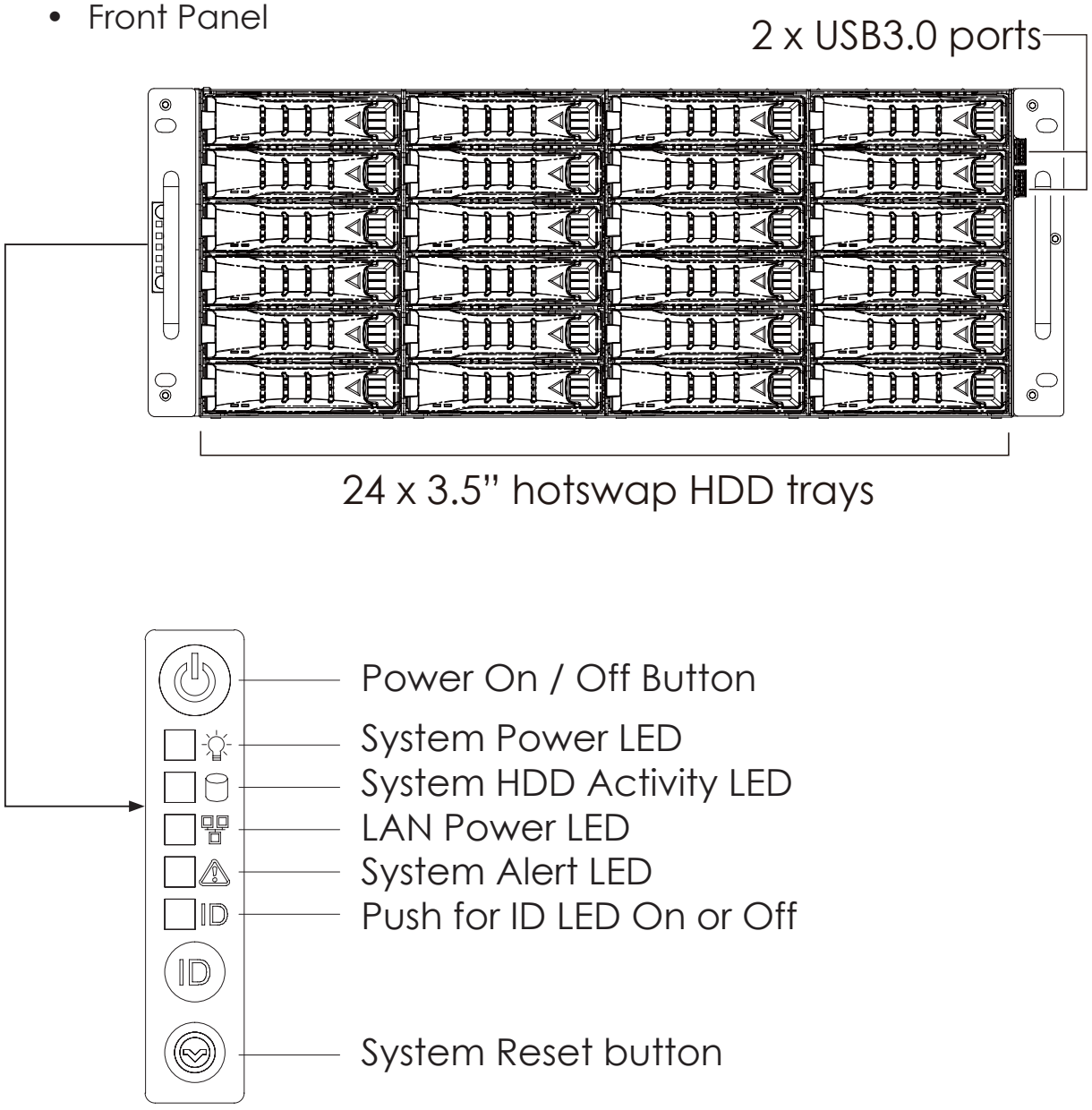
Dimensions (W x D x H)	mm : 435 x 560 x 177		
	inches : 17 x 22 x 7		
Industry Standard	EIA-RS310D		
Material	Heavy-duty preplated SPGC cold-rolled steel		
Color	Front Panel : Black		
Cooling	3 x 120x25mm PWM hot swap fans		
Power Supply	800W 1+1 redundant PSU 80+ Platinum		
Expansion Slots	7		
Front Panel	System power on/off, system reset and 2 x USB 3.0 ports		
LED Indicators	Power, LAN, Drive and Alert		
System Board	12"(W) x 9.6"(D) ATX		
Drive Bays	External	3.5" hot swap	24
		2.5" hot swap	Options: • 2 x 2.5" (7mm) hot swap • 1 x 2.5" (15mm) internal
	Internal	2.5"	

Backplane	1 x 24-port 12Gb SAS backplane with 36-PHY expander chip 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 : 28.4
		lbs : 62.6
Packaging Dimensions	(W x D x H)	mm : 645 x 835 x 310
		inches : 25.4 x 32.9 x 12.2
Cubic Feet	6.56	
Container Load Quantity	20'	145
	40'	298
	40' H	358
Mounting	Standard	28" tool-less slide rail

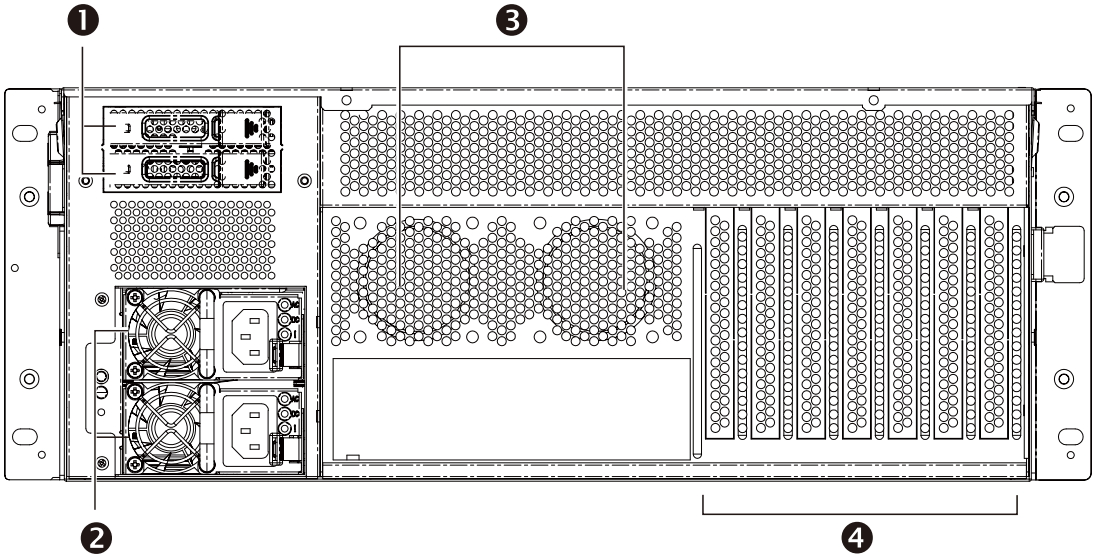
1.3 General Information

RSC-4ETS is a 4U rackmount chassis with 24x3.5"HDD hot swap Bays at front and single 12G expander on HDD Backplane which is a high performance server storage product.

- Front Panel

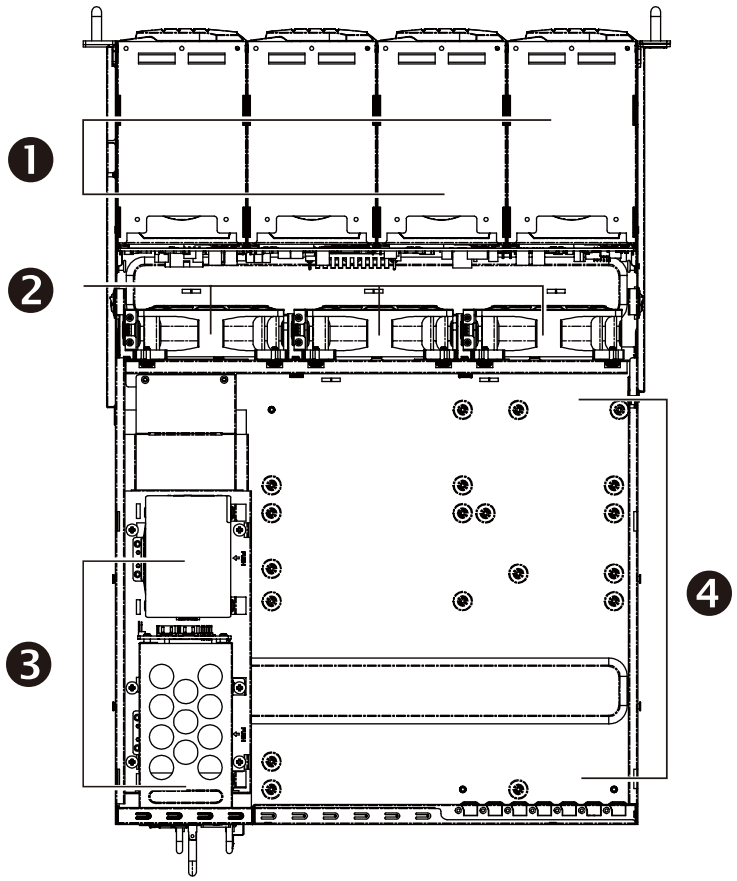


- Rear Panel



❶ Standard:
Two 2.5" internal HDD or
Optional:
Two 2.5" hot-swap HDD bays
❷ 1200W 1+1 redundant PSU
❸ Optional 60x60mm fans
❹ 7 x full height slots

- Major Components



❶ 24 x 3.5" hotswap external HDD trays

❷ 3 x 12025mm fans

❸ option1:
2 x internal 2.5" tool-less HDD trays
option2:
2 x external 2.5" hot-swap HDD trays

❹ 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

Push the button on both sides

1



Push the top cover backward.

2



Lift up the top cover from the enclosure.

3



2.2 Removing/Installing a Drive Tray

Release a drive tray by pressing the unlock button.

1



Pull out the HDD tray handle and slide out the HDD tray.

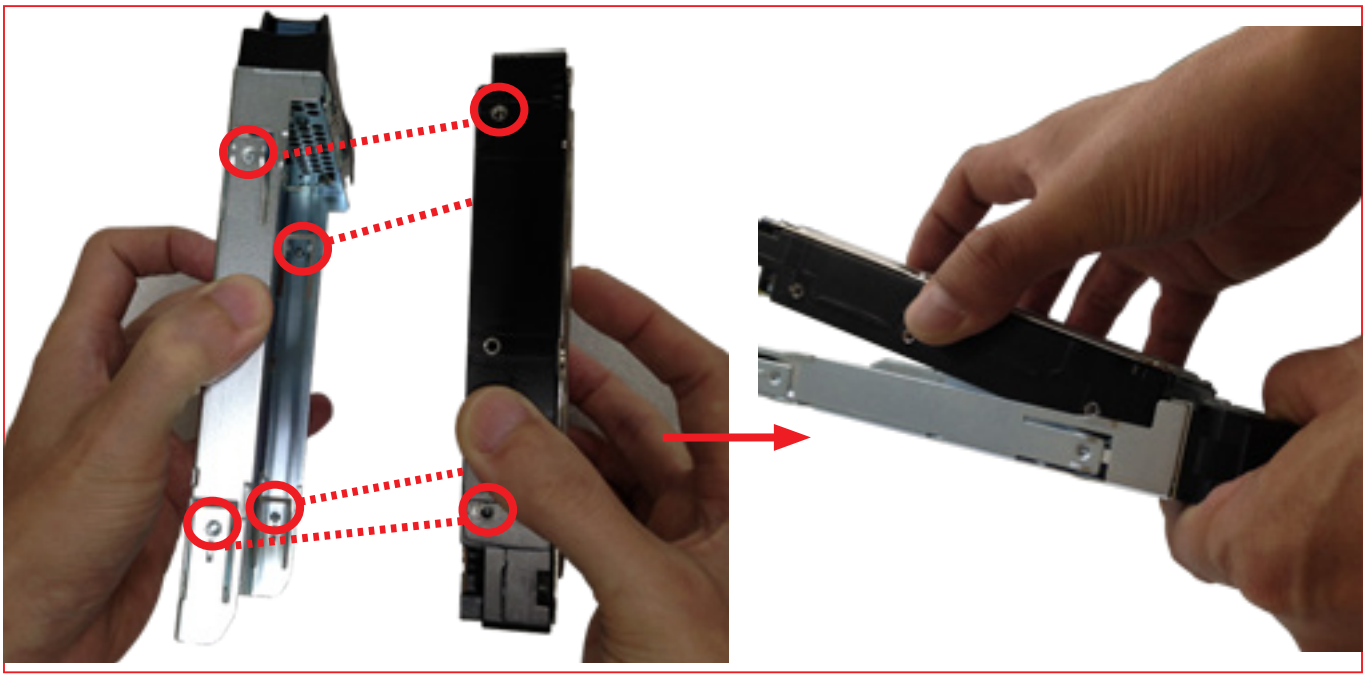
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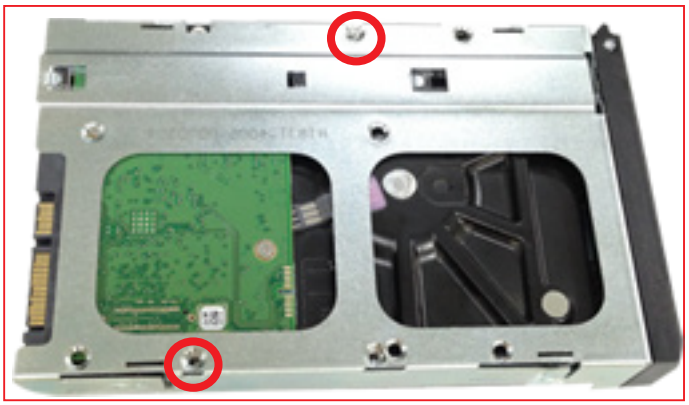
2.3 Installing/ Removing a Hard Disk Drive

2.3.1Installing 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 reserve 2 screw holes at the bottom for optional screw mounting.



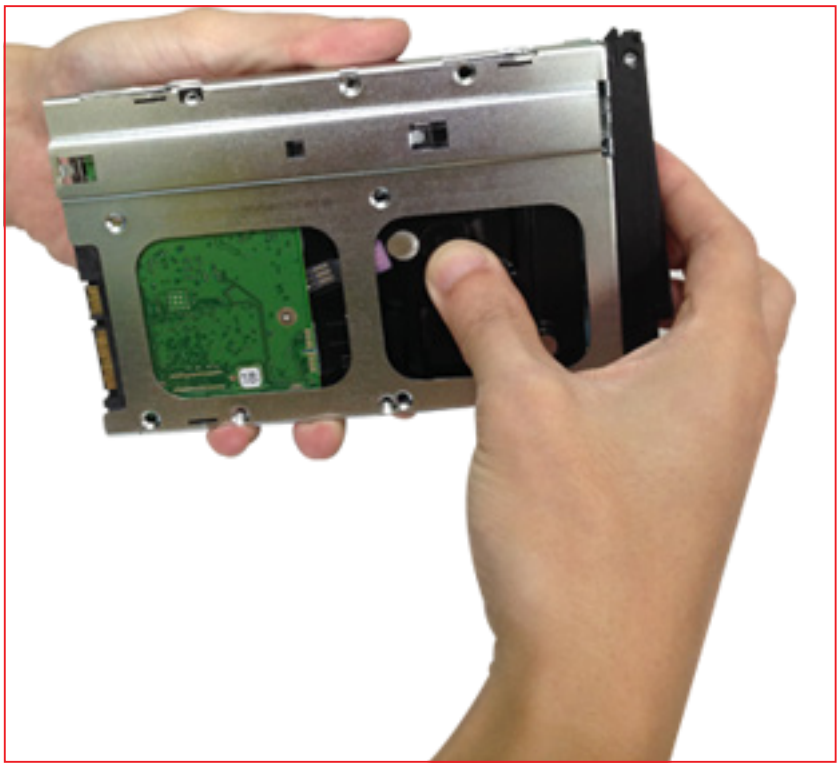
3 Insert the drive tray into chassis HDD cage. Make sure the drive tray is correctly secured in place when its front edge aligns with the bay edge. Push the tray lever until it reaches the end and clicks.



2.3.2 Removing a Hard Disk Drive

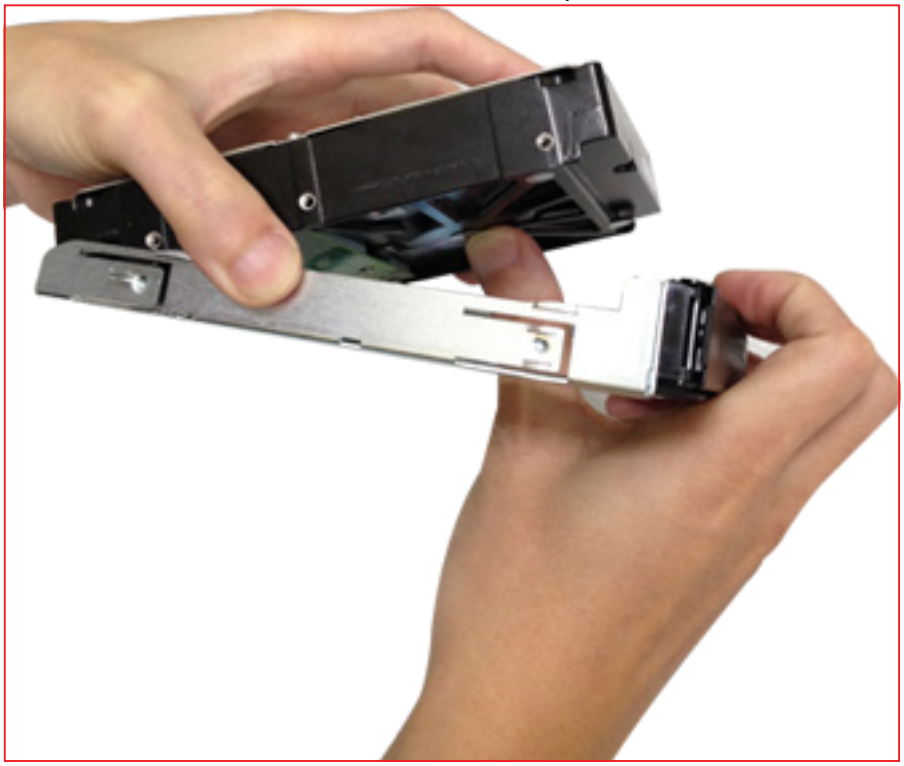
Push up HDD from the bottom.

1



Remove HDD out from HDD tray.

2



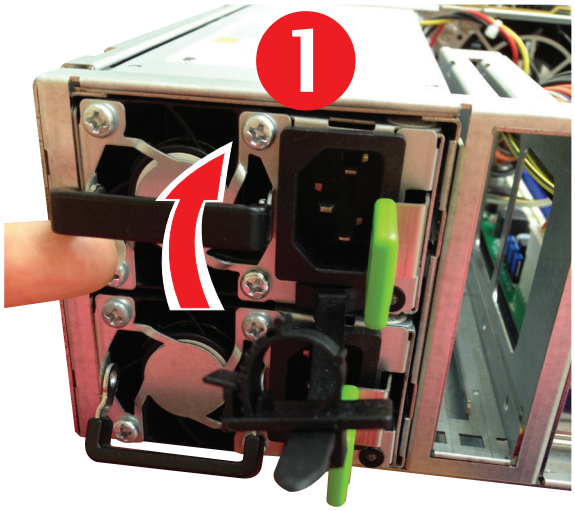
2.4 Removing and Installing a PSU Module

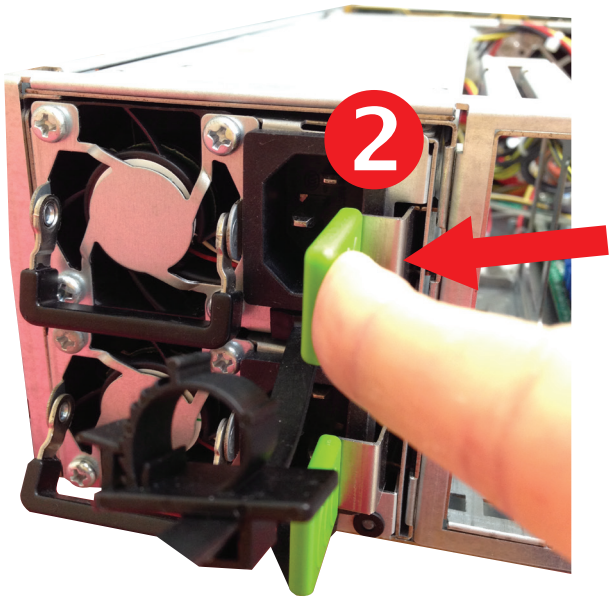
2.4.1 Removing a PSU module

- Remove power cables connected to the PSU module.
- Allow a minute for fan to spin down.
- Pushing the latch then hold the tray handle tab. Then pull the PSU
- module gently until it slides out of the enclosure.

2.4.2 Installing a PSU Module

- Slide in PSU module.
- Make sure the latch on the module is fully hooked onto the PSUhousing.





2.5 Removing and Installing a Fan Module

2.5.1 Removing a fan module

Grabbing and removing the fan module from the fan slot.

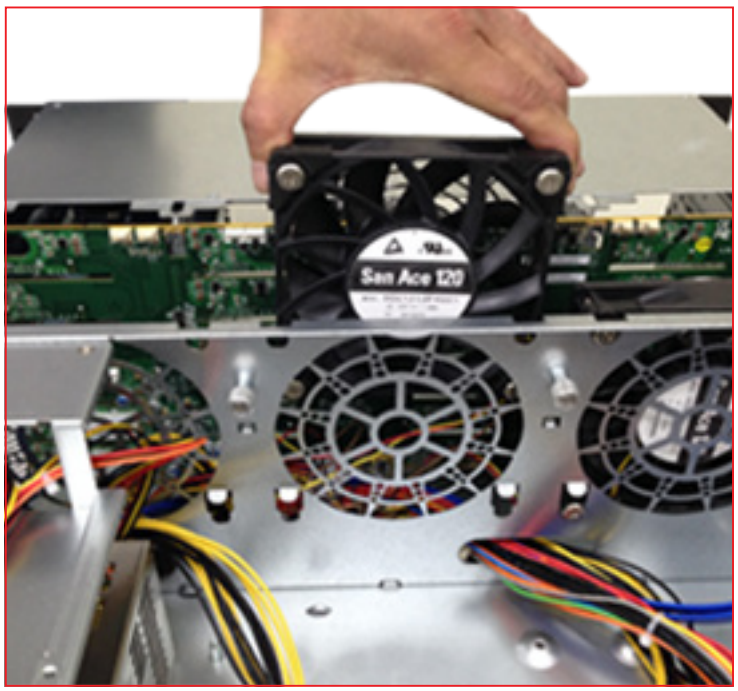
1





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

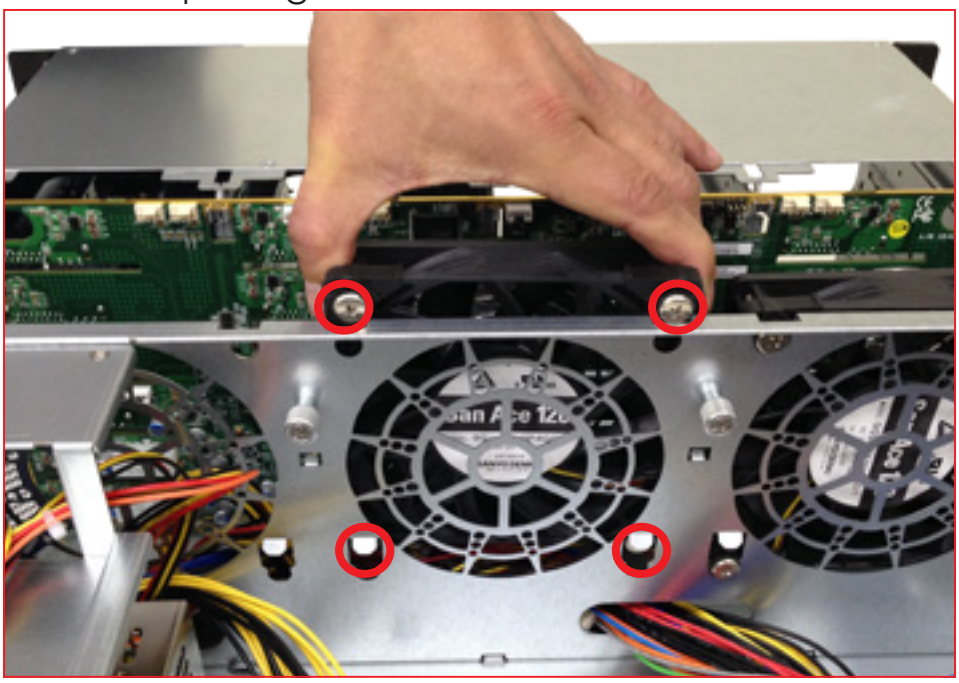
2



2.5.2 Installing a Fan Module

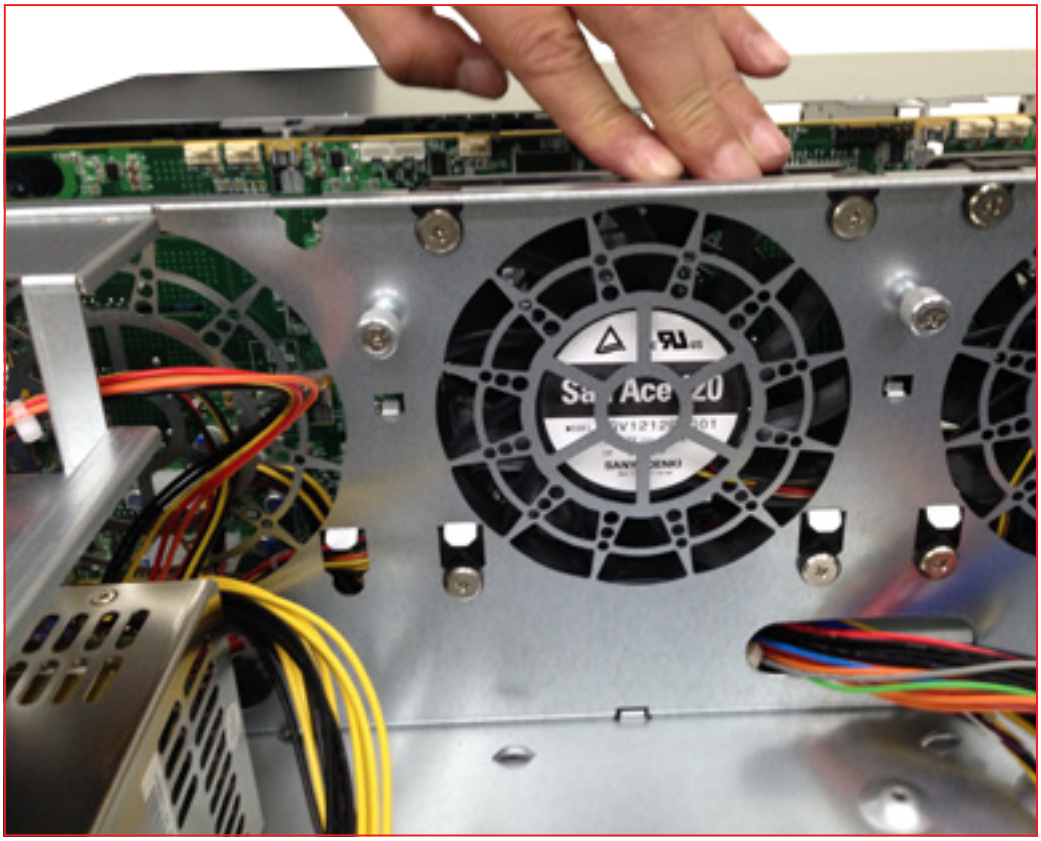
Align the fan module and make sure insert 4 screws with the opening in the enclosure.

1



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

2

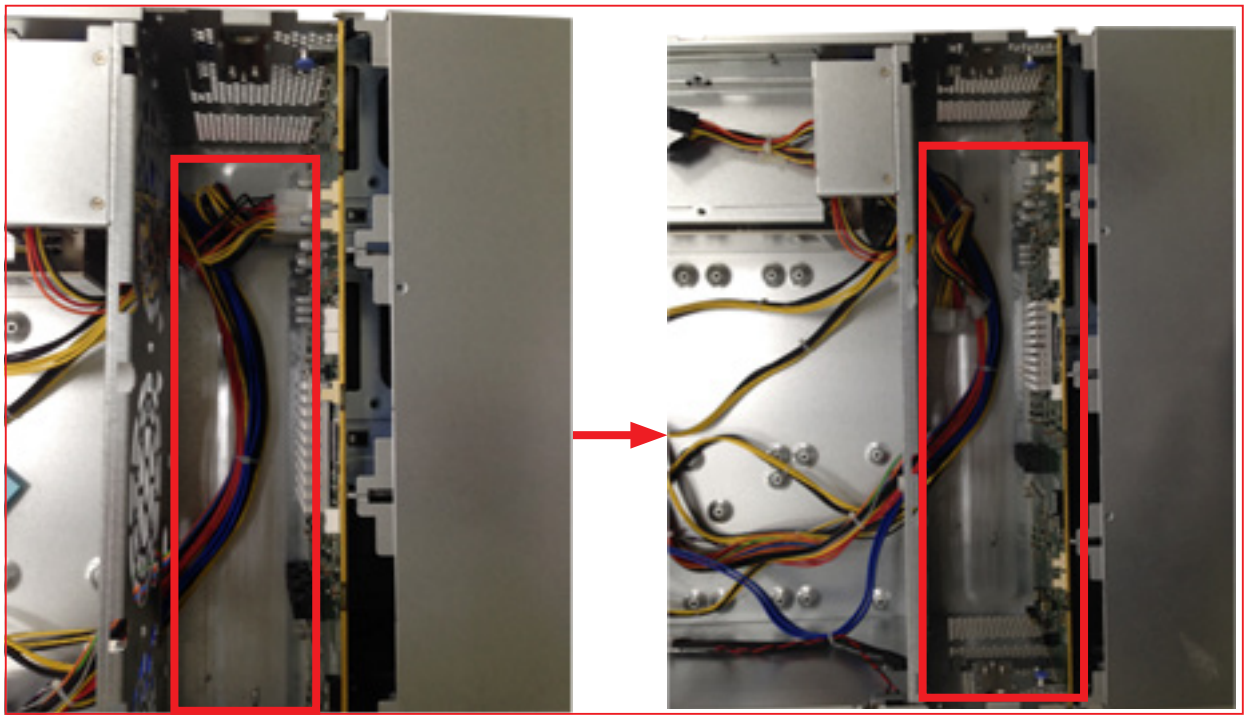


2.6 Removing and Installing HDD Backplane

2.6.1 Removing HDD Backplane

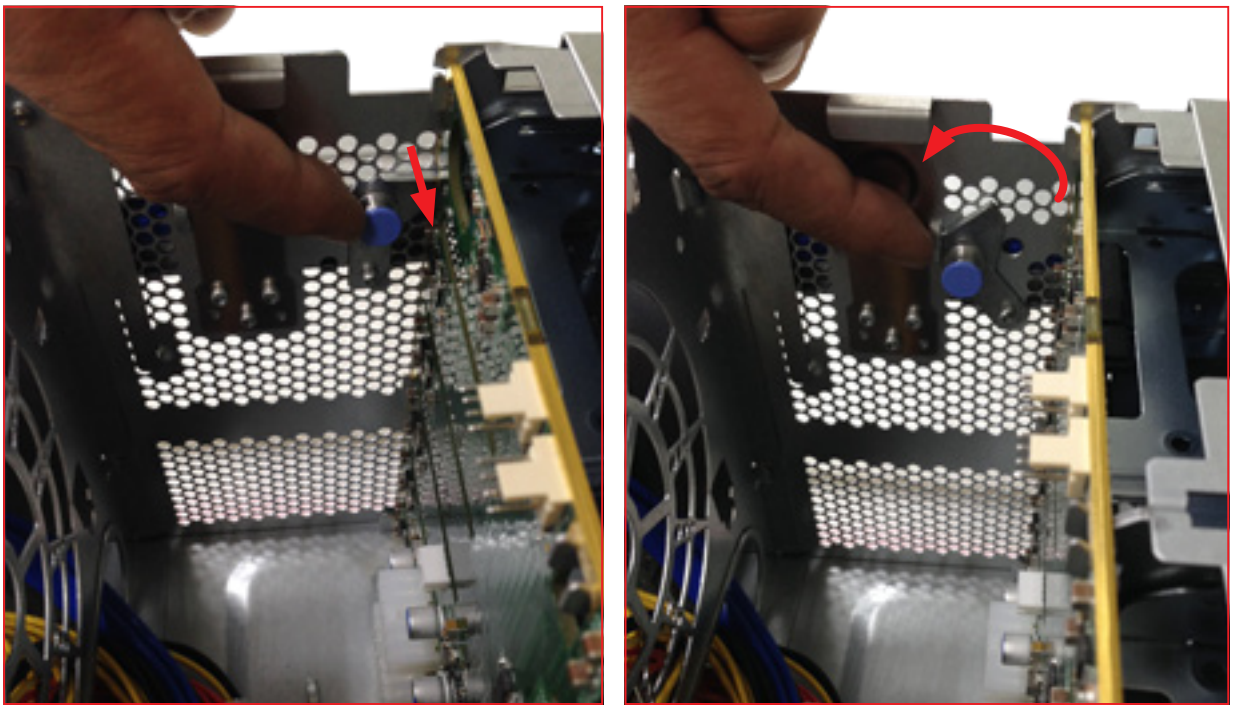
Unplugging all connectors & HDDs from HDD backplane.

1



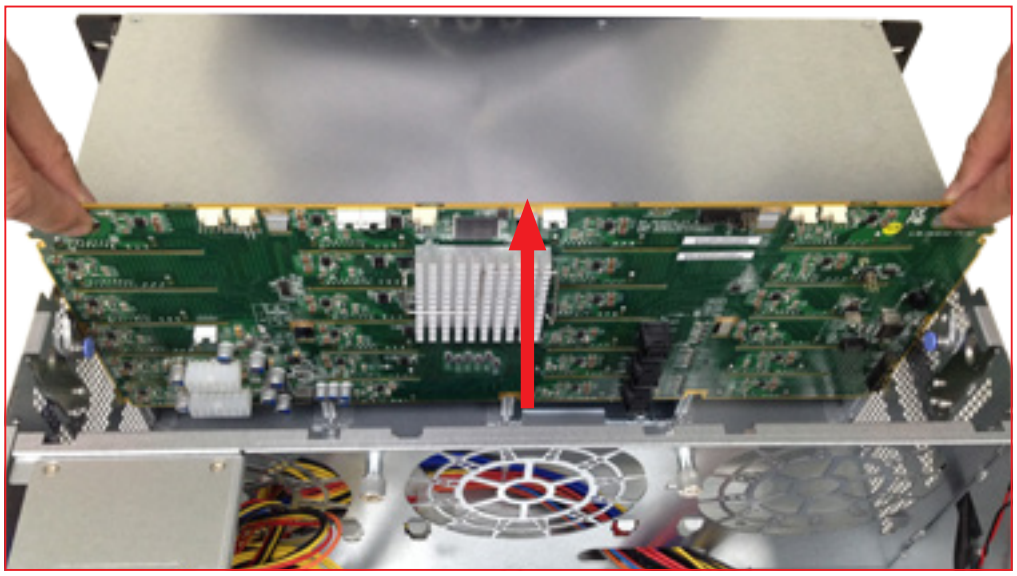
Release the lock pin.

2



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

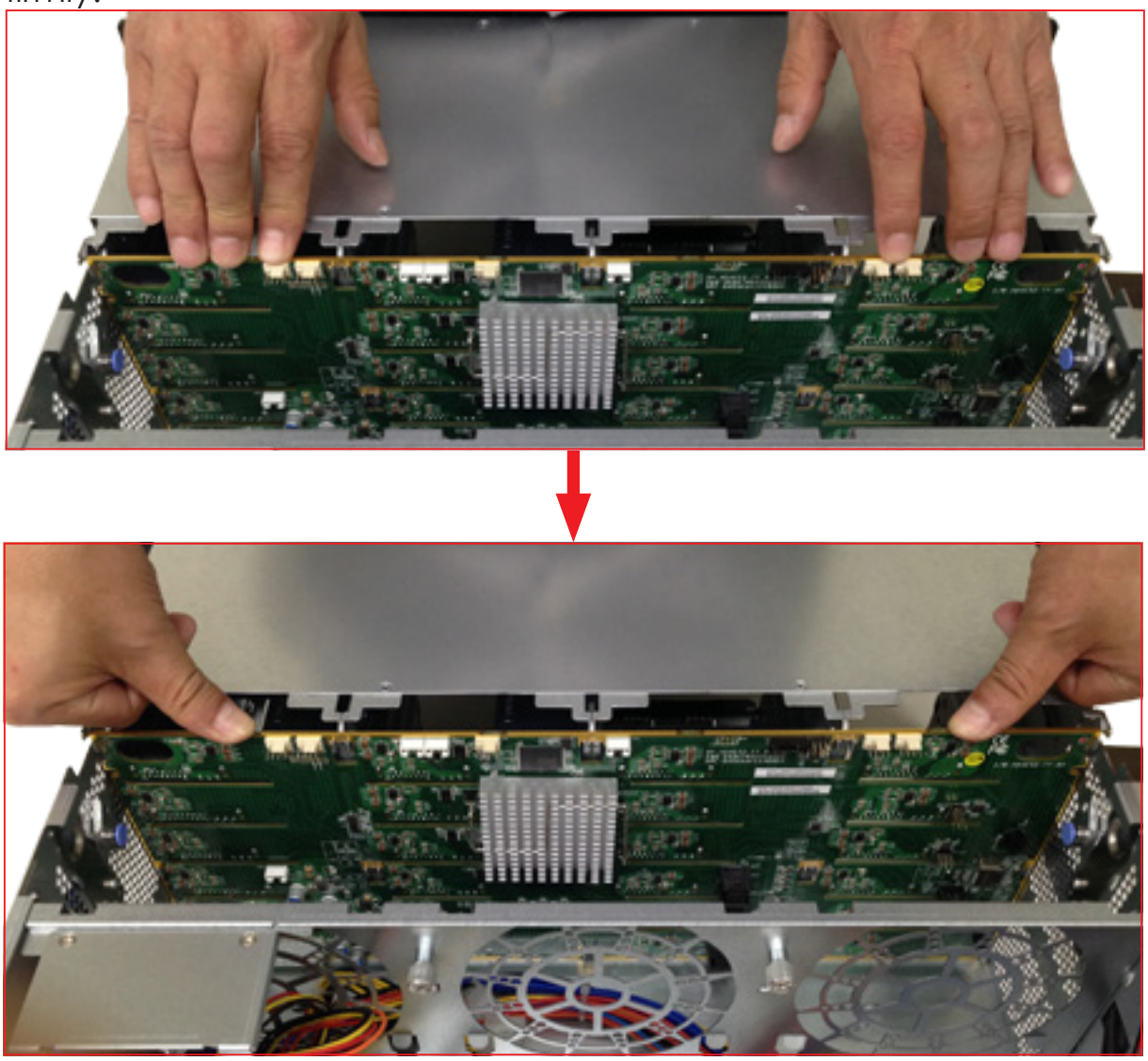




2.6.2 Installing a HDD Backplane

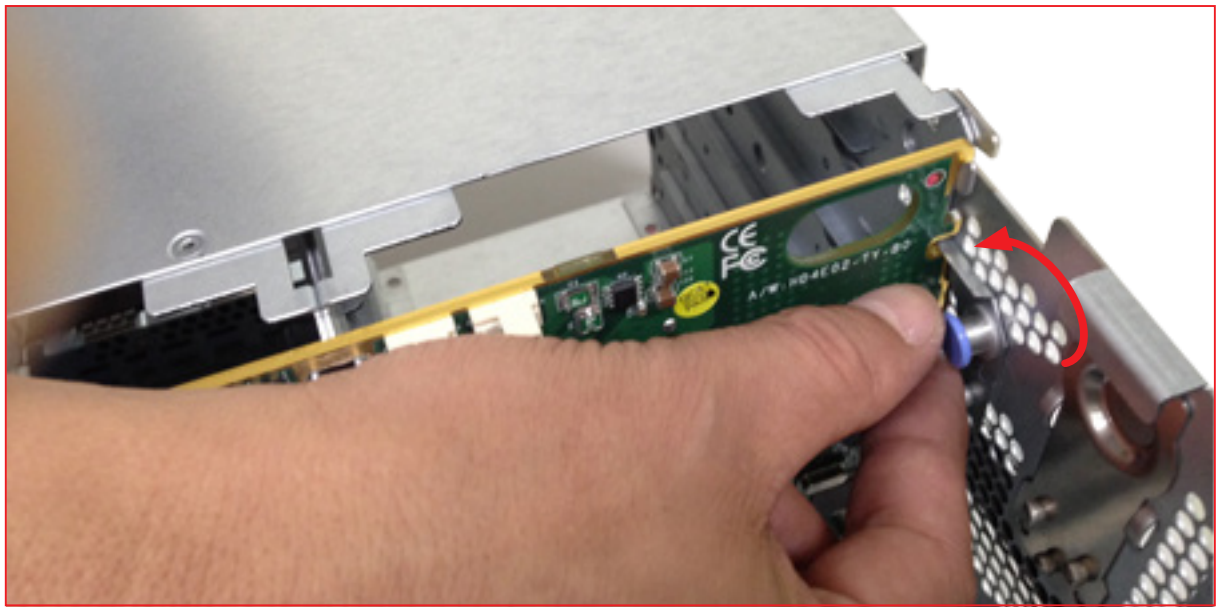
Align the backplane with the hooks, and insert it into the enclosure firmly.

1



Lock the backplane. Follow the reverse order.

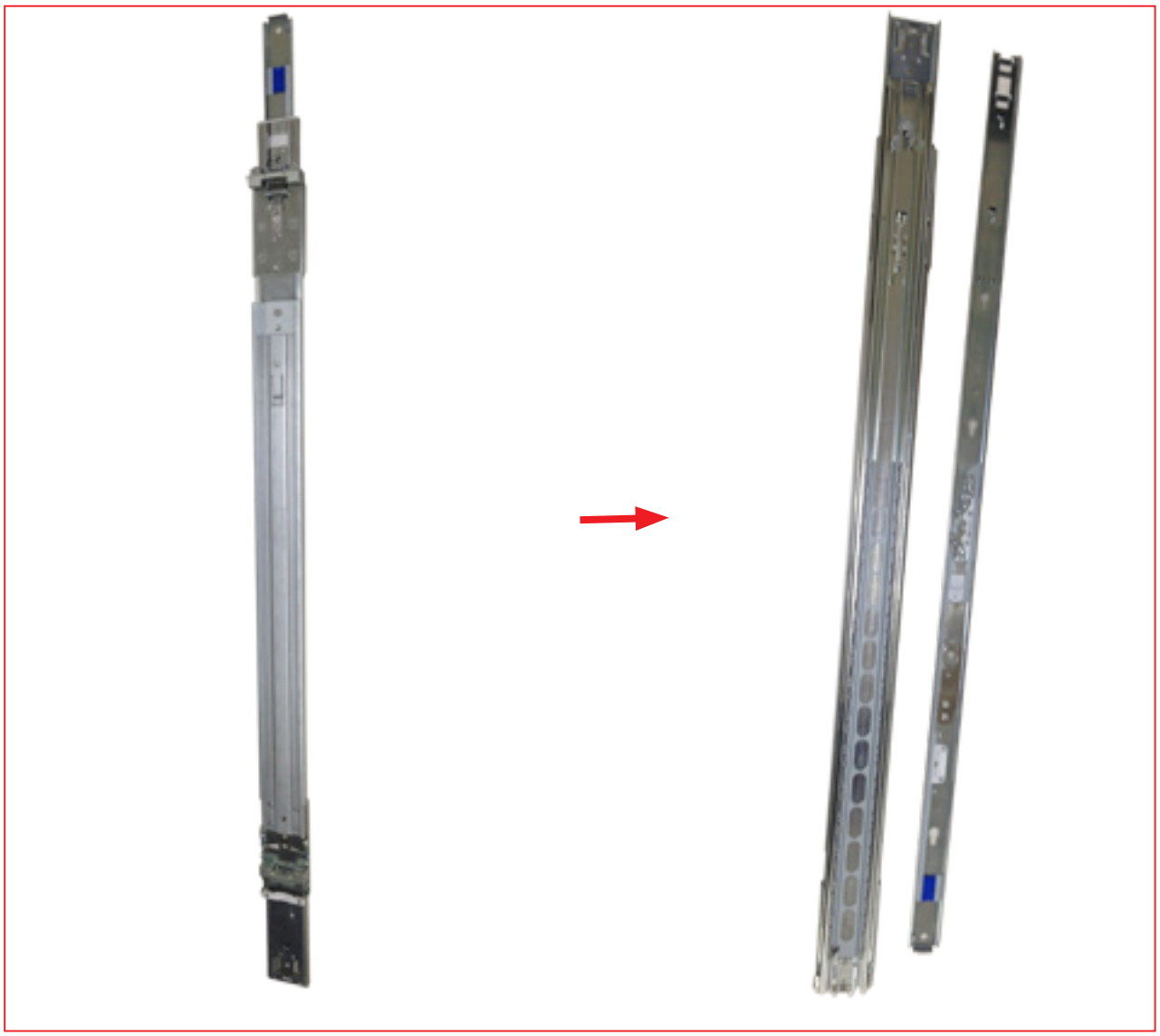
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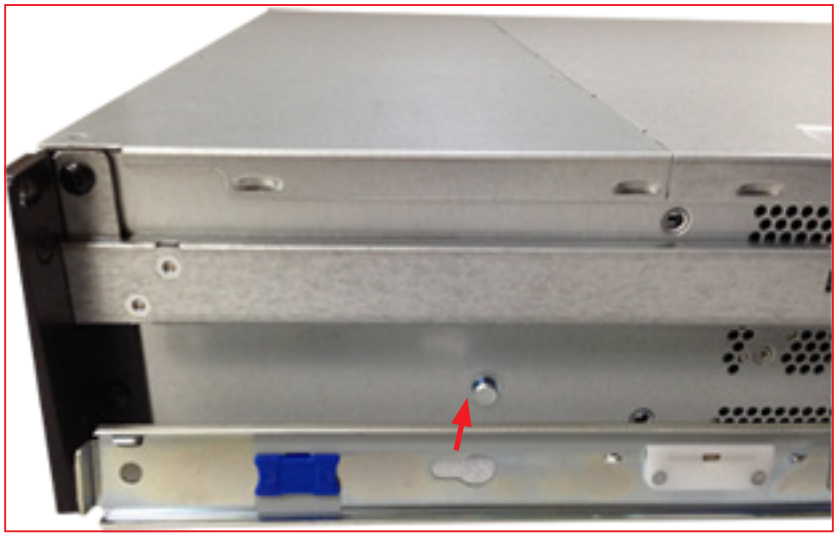
2.7 Tool-less Blade Slide Installation Instruction

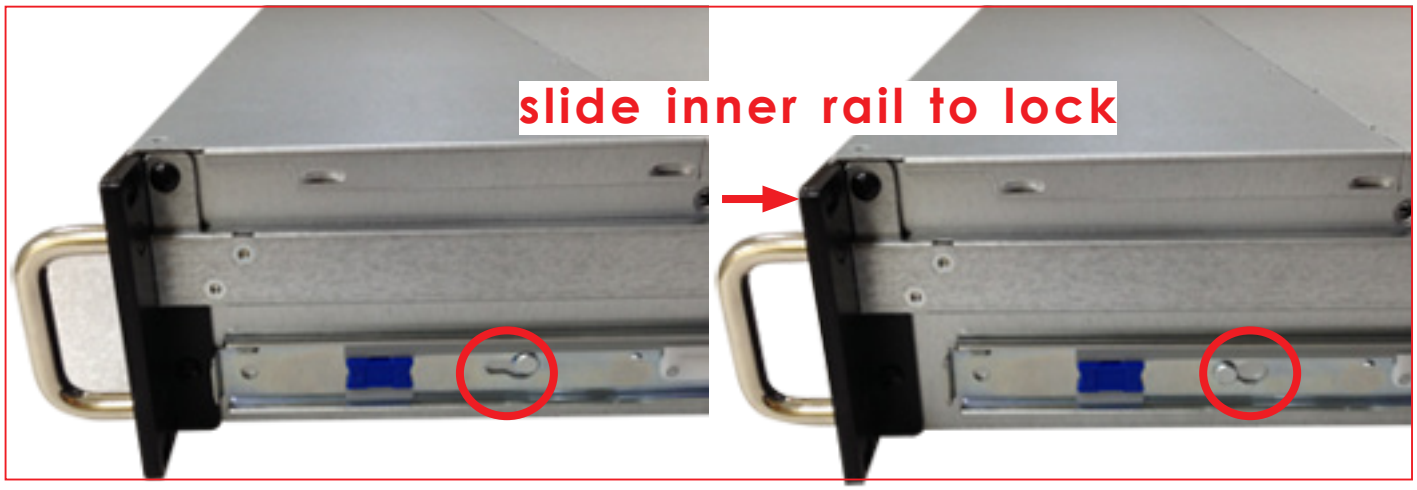
2.7.1 Release and detach the inner rail from the slide.

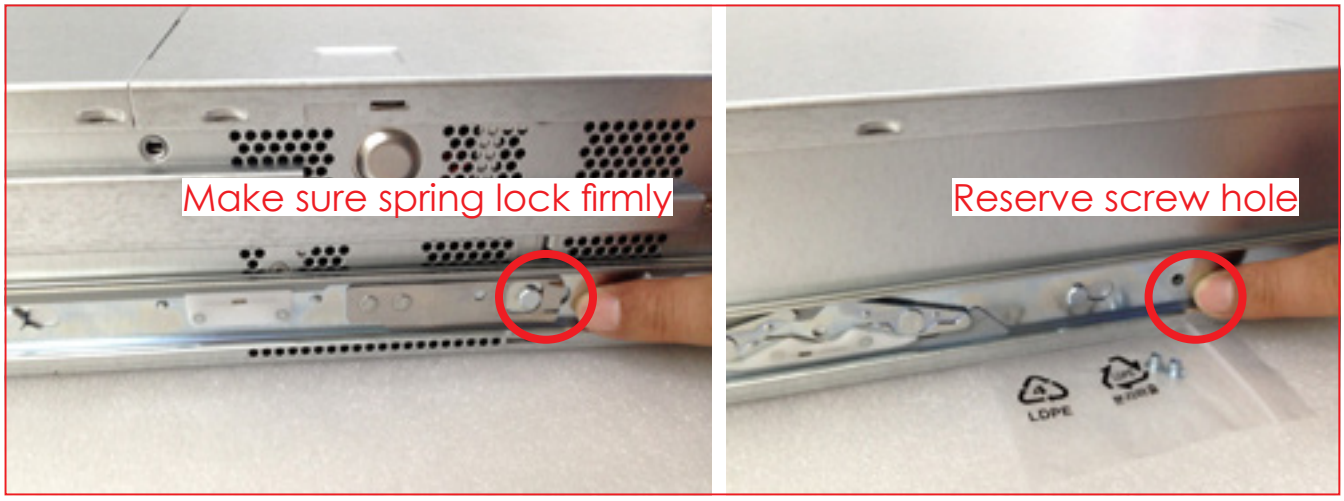




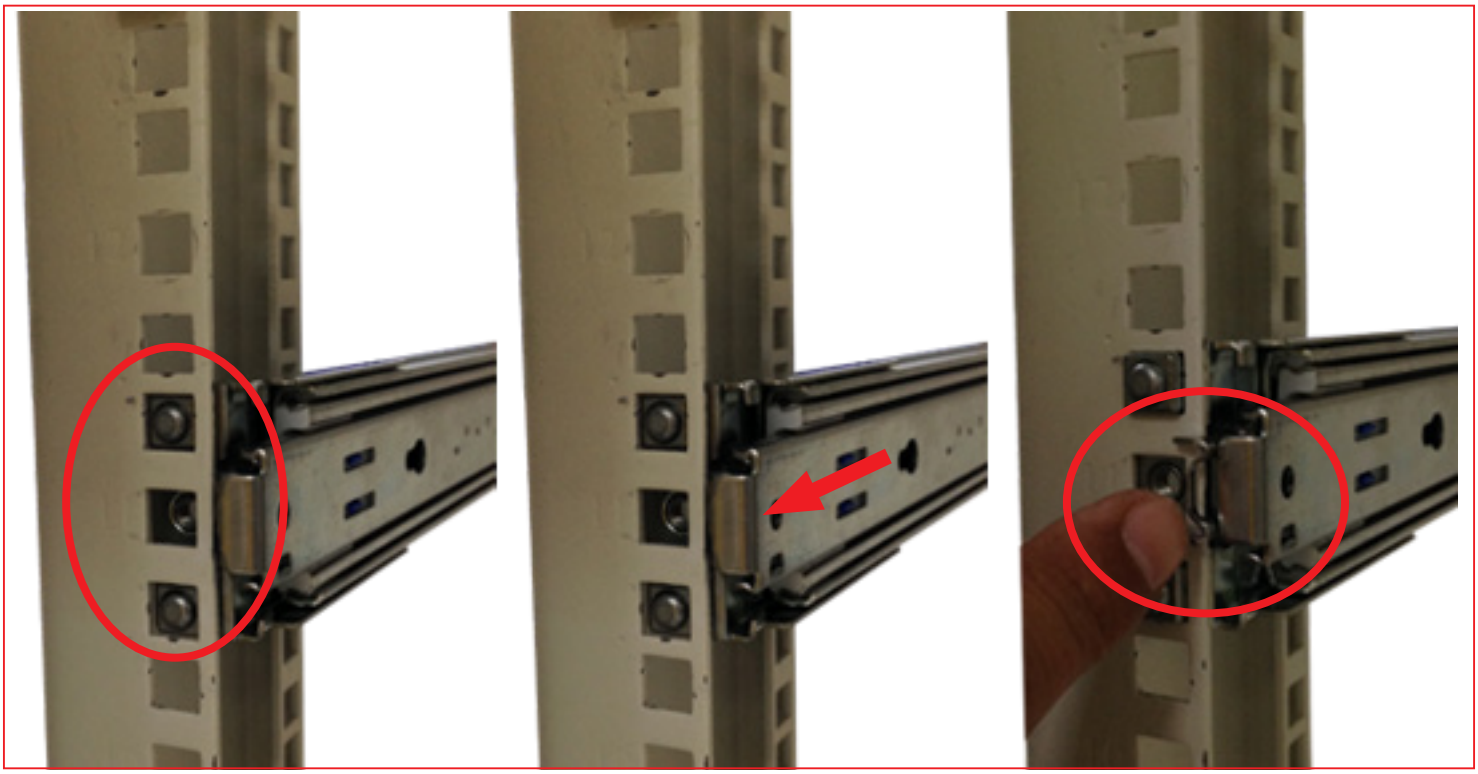
2.7.2 Attach inner rail to the system.



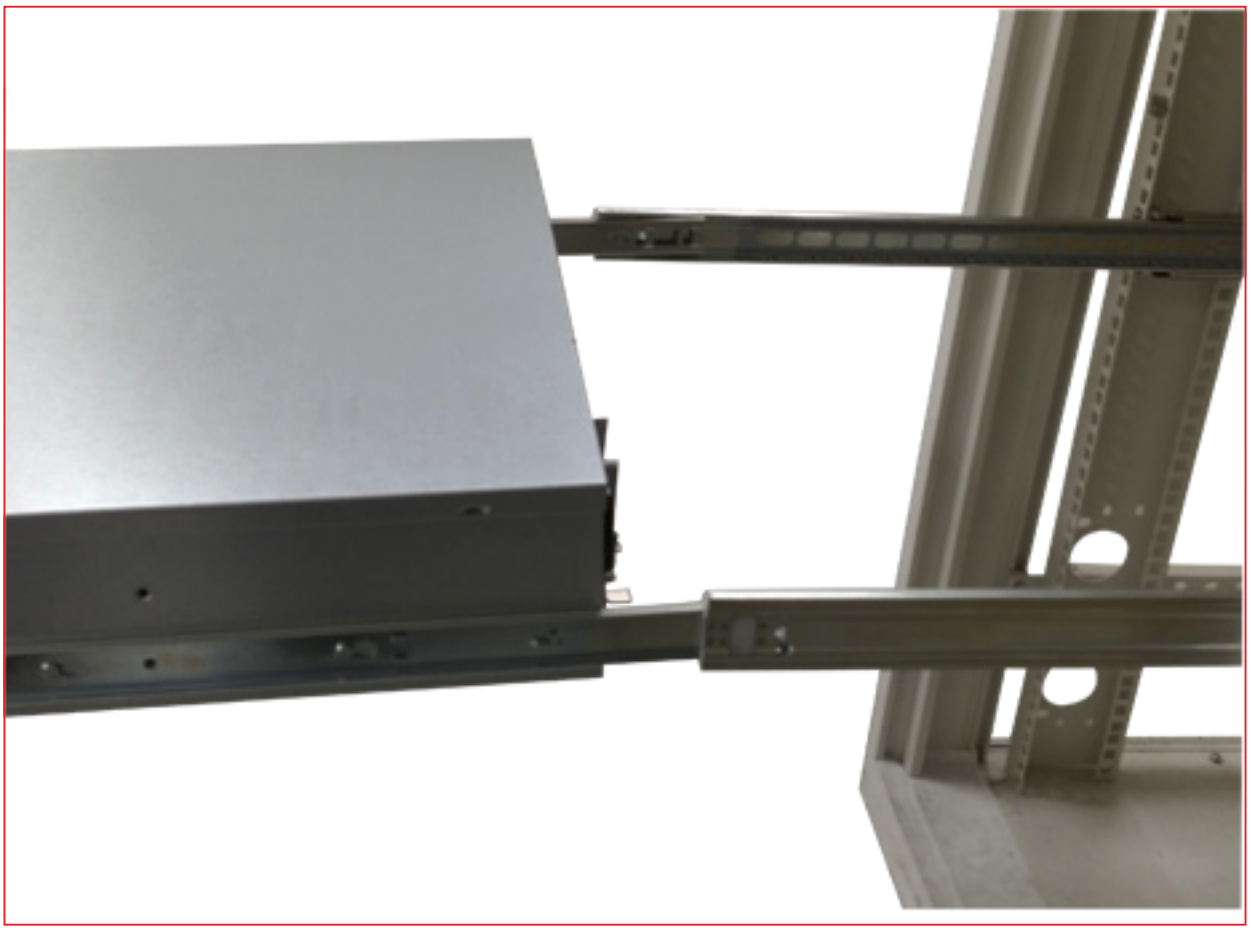




2.7.3 Attach outer rail to the rack.



2.7.4 1.CAUTION! Verify ball bearing retainer is locked forward.
2.Pull out the intermediate member until locked out.
3.Slide release tab and push system into rack.



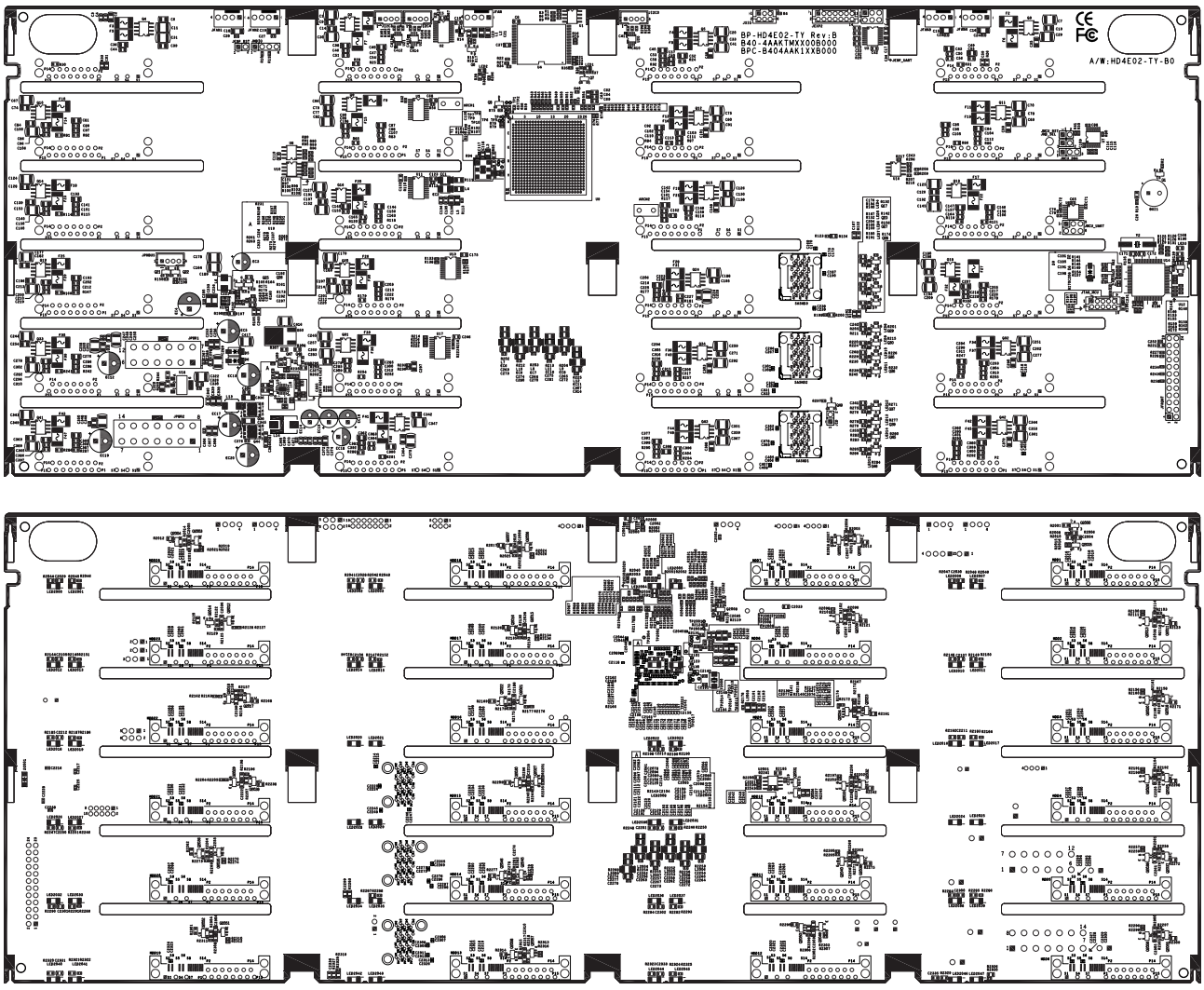
Chapter 3. Hardware Instruction

This chapter provides detailed instruction guide on hardware instruction

3.1 HARDWARE DESIGN SPECIFICATION

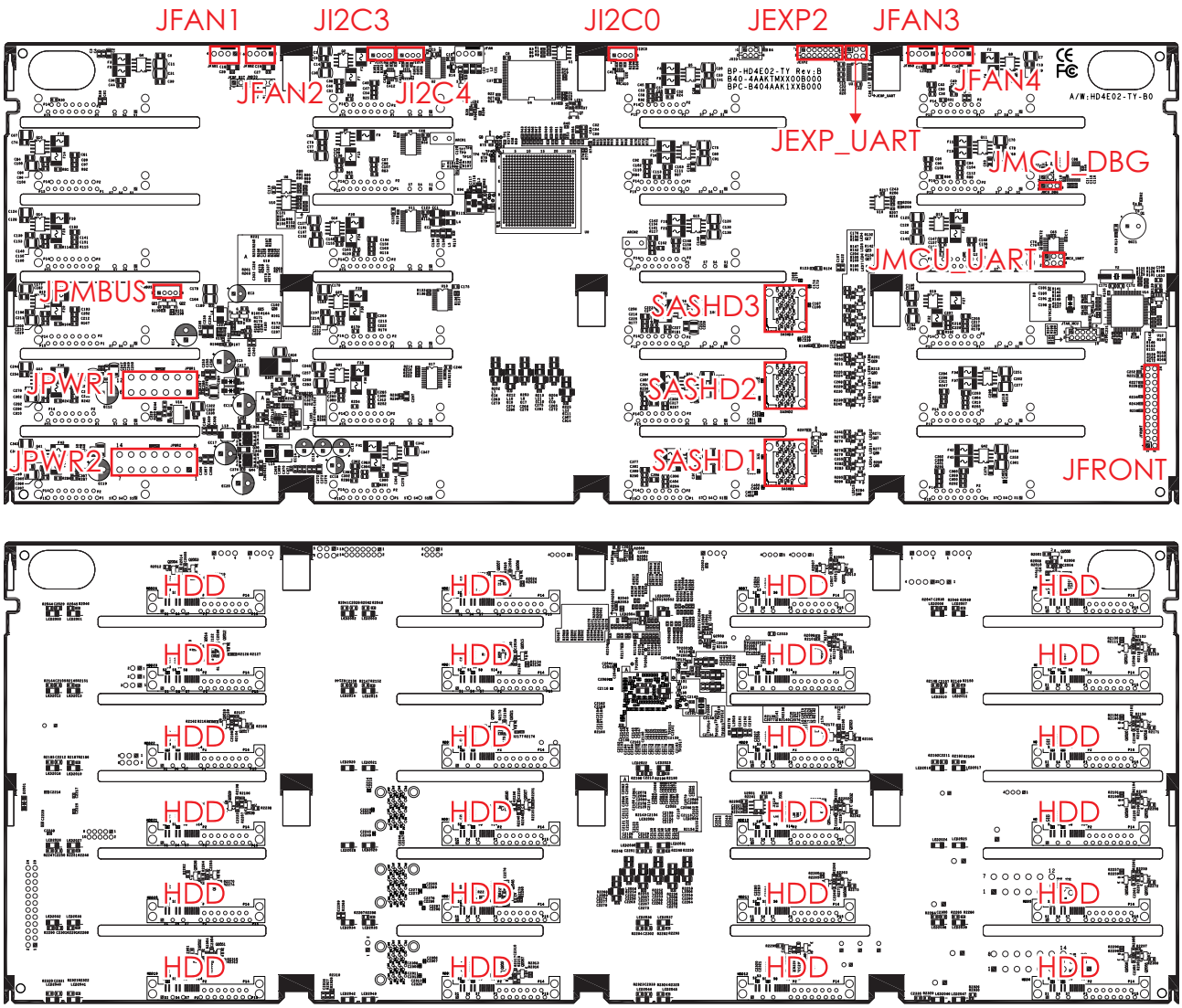
3.1.1 Placement

PCBA Placement



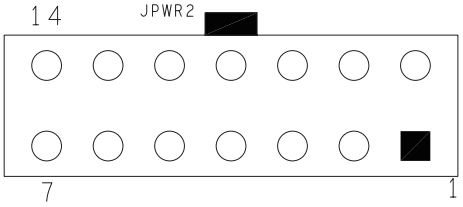
3.1.2 Connector Location

Location



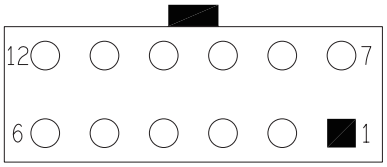
3.1.3 Connectors

Power Connector – JPWR1



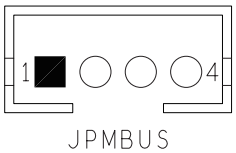
PIN	Description	PIN	Description
7	+12V	1	GND
8	+12V	2	GND
9	+3.3V	3	GND
10	+5V	4	MUTE_L
11	+5VSTBY	5	PSU_N1
12	PS_ON_L	6	GND

Power Connector – JPWR2



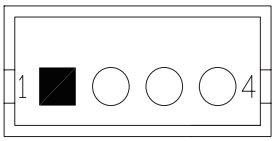
PIN	Description	PIN	Description
8	+12V	1	GND
9	+12V	2	GND
10	+12V	3	GND
11	+12V	4	GND
12	+5V	5	GND
13	+5V	6	GND
14	+5V	7	GND

PMBUS Connector – JPMBUS



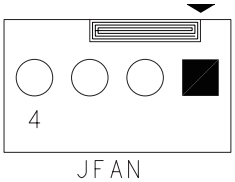
PIN	Description
1	GND
2	PMBUS_CLOCK
3	PMBUS_DATA
4	N/A

I2C Connector – JI2C0, JI2C3, JI2C4



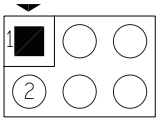
PIN	Description
1	GND
2	I2C_CLOCK
3	I2C_DATA
4	N/A

FAN Connector – JFAN1, JFAN2, JFAN3, JFAN4



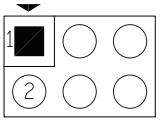
PIN	Description
1	GND
2	I2C_CLOCK
3	I2C_DATA
4	N/A

Console for Expander – JEXP_UART



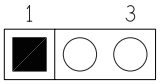
PIN	Description	PIN	Description
2	DEBUG_RXD	1	SMART_RXD
4	+12V	3	GND
6	DEBUG_TXD	5	SMART_TXD

Remote Power Control – JMCU_UART



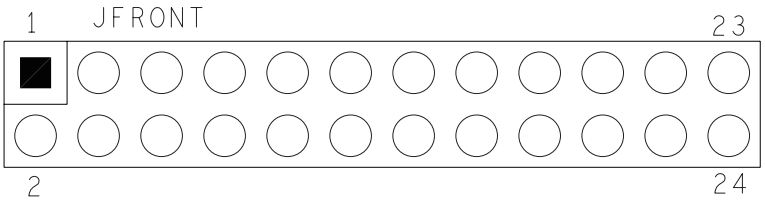
PIN	Description	PIN	Description
2	DOWN_RXD	1	UP_RXD
4	GND	3	GND
6	DOWN_TXD	5	UP_TXD

Console for MCU – JMCU_DBG



PIN	Description
1	MCU_RXD
2	GND
3	MCU_TXD

2.54mm Header for Front I/O – JFRONT



- Fan number select

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 Fan	JFAN1 and JFAN2
Close	Open	Open	Three Fan	JFAN1,JFAN2 and JFAN3
Open	Close	Close	Four Fan	JFAN1,JFAN2,JFAN3 and JFAN4

- Power Module Fault Input

PIN	Description	Remark
7	GND	
8	Power Fault Input	Active Low

- AT Mode Setting

PIN	Description	Remark
9	GND	
10	AT_SEL_N	Active Low

- Temperature Warning LED

PIN	Description	Remark
11	For External LED(+)	LED Anode
12	For External LED(-)	LED Cathode

- FAN Fail LED

PIN	Description	Remark
13	For External LED(+)	LED Anode
14	For External LED(-)	LED Cathode

- Power Fault LED

PIN	Description	Remark
15	For External LED(+)	LED Anode
16	For External LED(-)	LED Cathode

- Mute SW

PIN	Description	Remark
17	GND	
18	MUTE Input(-)	Active Low

- Power/ID LED

PIN	Description	Remark
19	For External LED(+)	LED Anode
20	For External LED(-)	LED Cathode

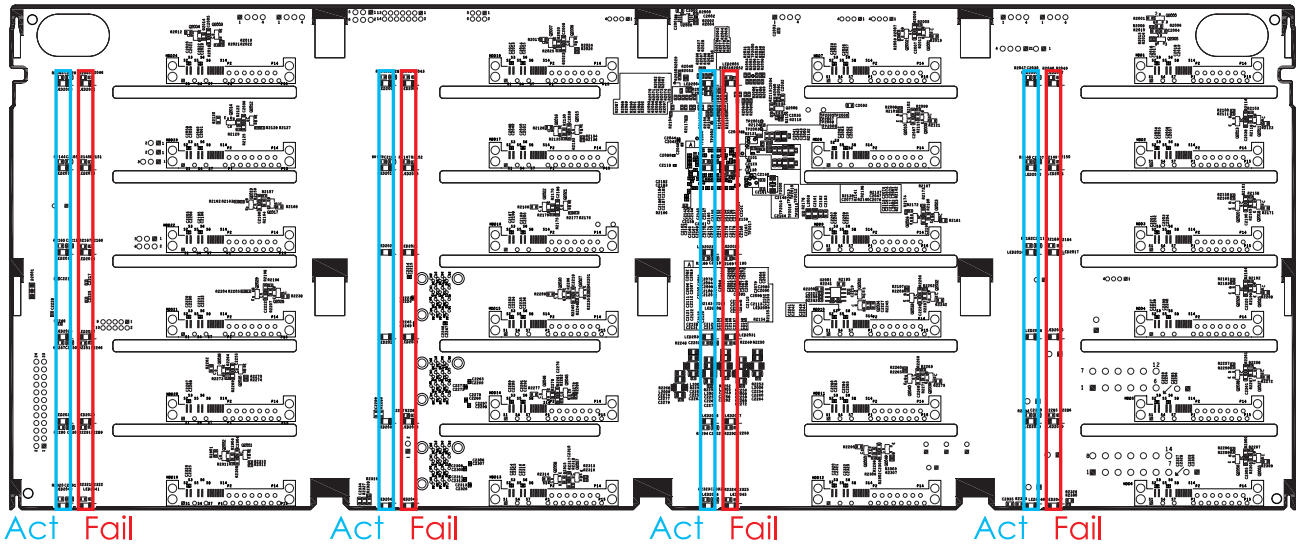
- Power SW

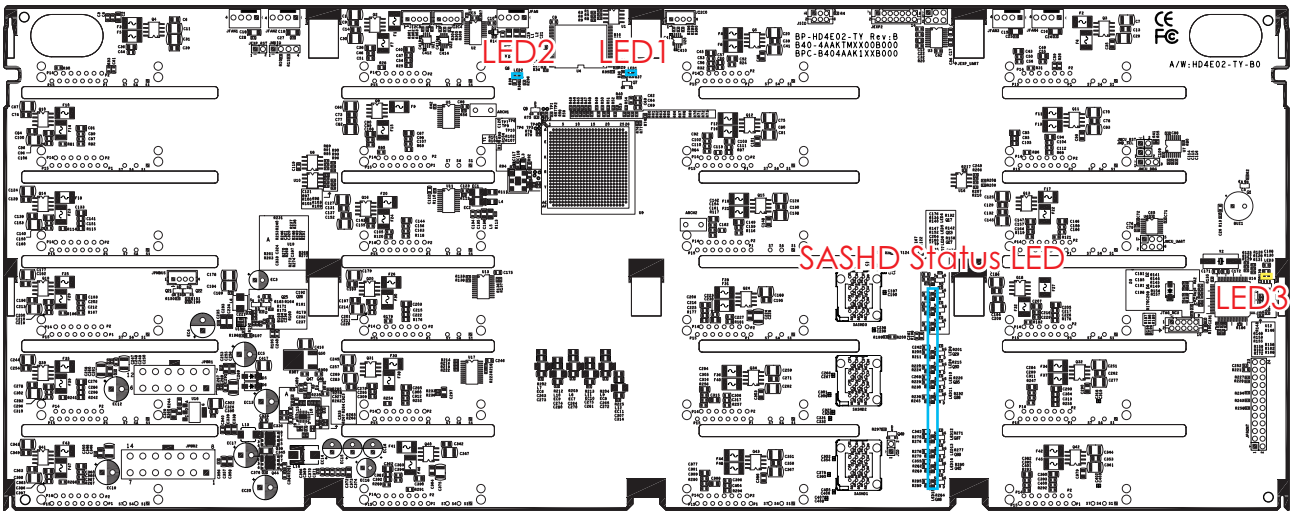
PIN	Description	Remark
21	Power SW Input(-)	Active Low
22	GND	

- PMBUS Support

PIN	Description	Remark
23	PMBUS_Disable_N	Active Low
24	GND	

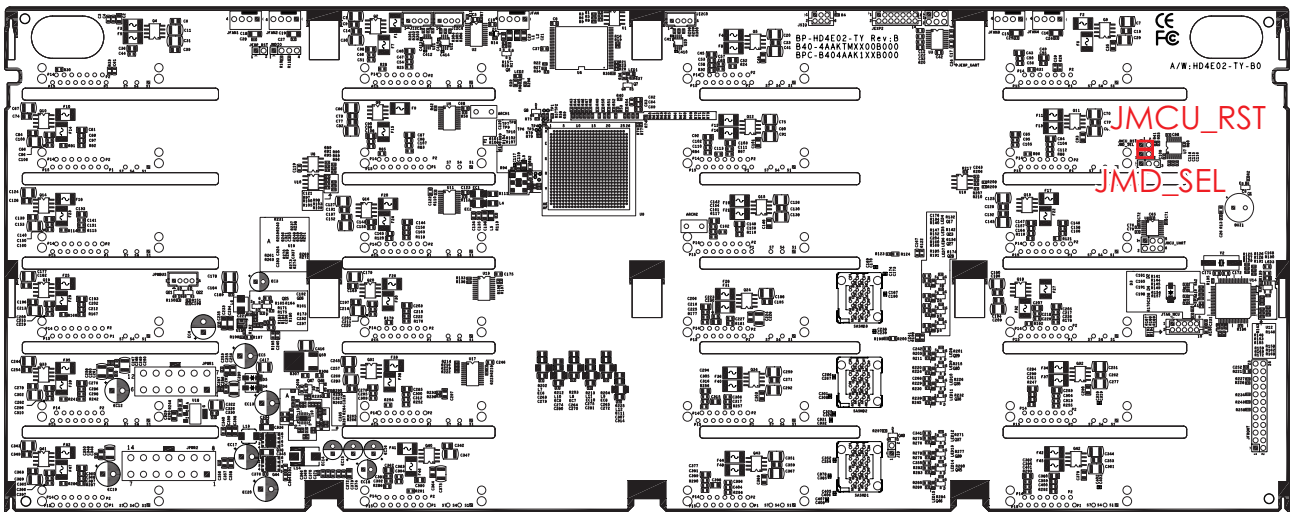
3.1.4 LEDs





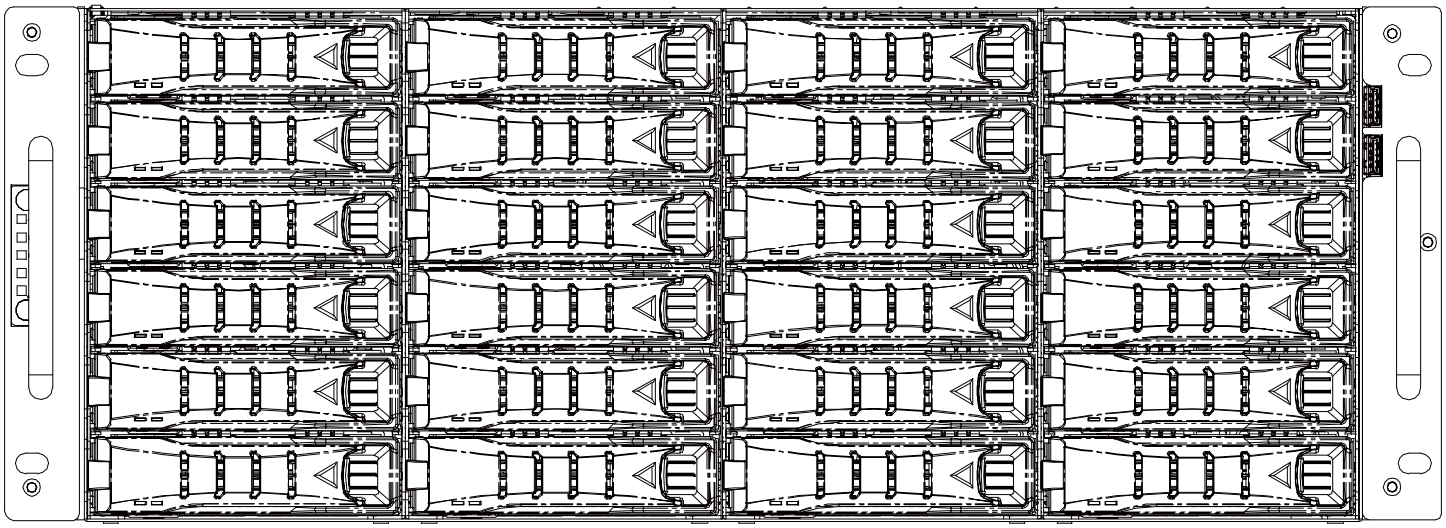
HDD Activity LEDs	Blue (On)	HDD present
	Blue (Blinking)	HDD Activity detected or Locate HDD
	Off	HDD no connect or Power Off
HDD Fault/Status LEDs	Off	Normal
	Red (Blinking)	Re-build status
	Red (On)	HDD Fault or Locate HDD
Remark	Blue (On)	Link up
	Blue (Blinking)	Activity detected
	Off	Link down
Expander Blink (LED2)	Blue (Blinking)	Expander alive, 0.833Hz (12 seconds per cycle)
Expander Heart Bit (LED1)	Blue (Blinking)	Expander FW running
MCU Status (LED3)	Yellow (On)	MCU alive
	Yellow (Off)	Boot loader mode

3.1.5 Jumpers



JMCU_RST	Open	Normal, default
	Close	Reset MCU
JMD_SEL	Open	Normal, default
	Close	Boot loader mode

3.1.6 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 Instruction

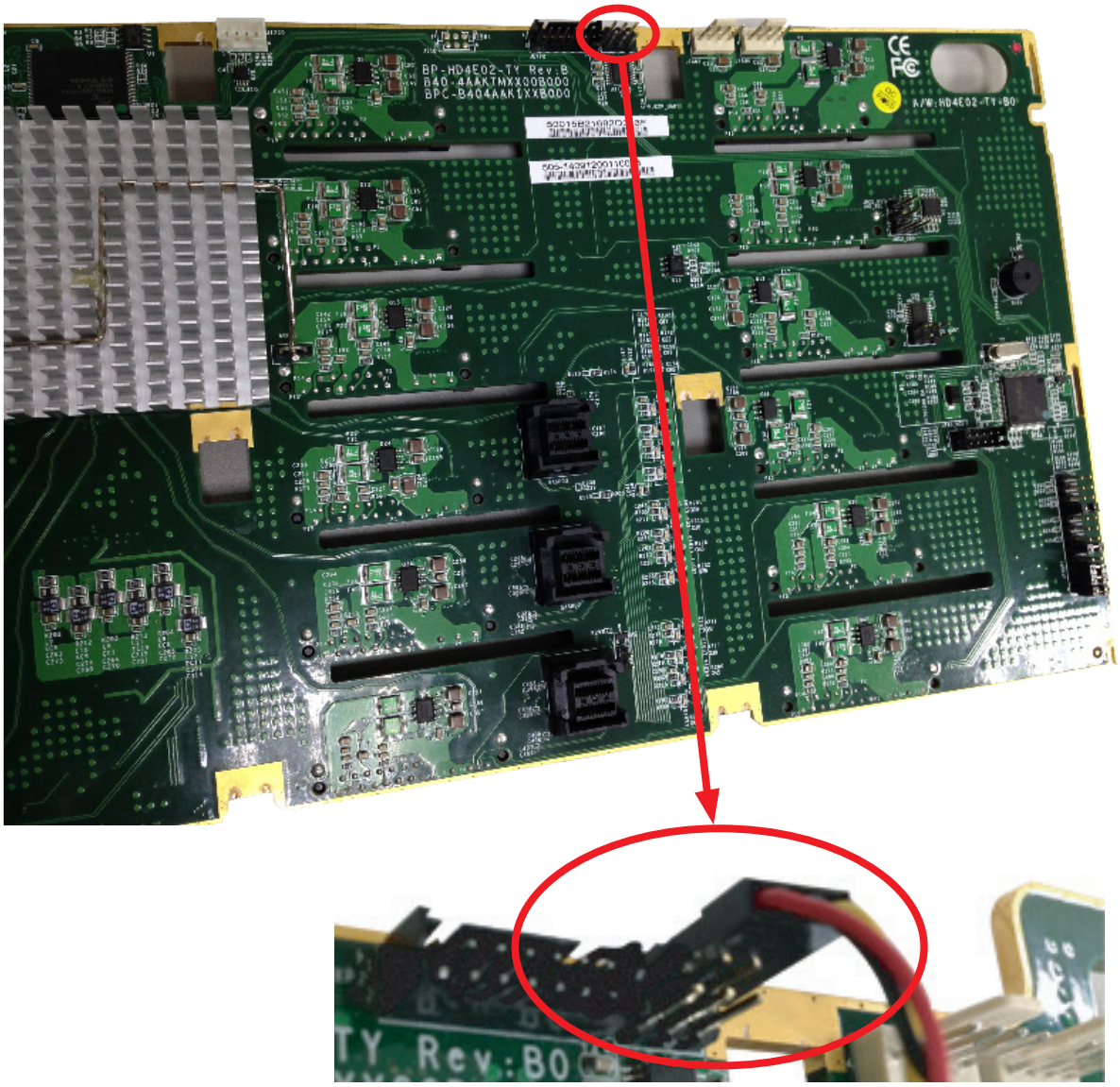
4.1 Expender firmware update through smart console port

4.1.1 Update Expander firmware revision

Step 1: Set up RSC-4ETS console serial cable.

Insert console serial cable into console port shown below also the other side inert serial port into motherboard.

YOU CAN FIND OUT CONSOLE SERIAL CABLE IN THE PACKAGE BOX.



Step 2: Set up RSC-4ETS RS232 connection

Set up RS232 connection application into your RSC-4ETS as shown in the example process below.

For example:

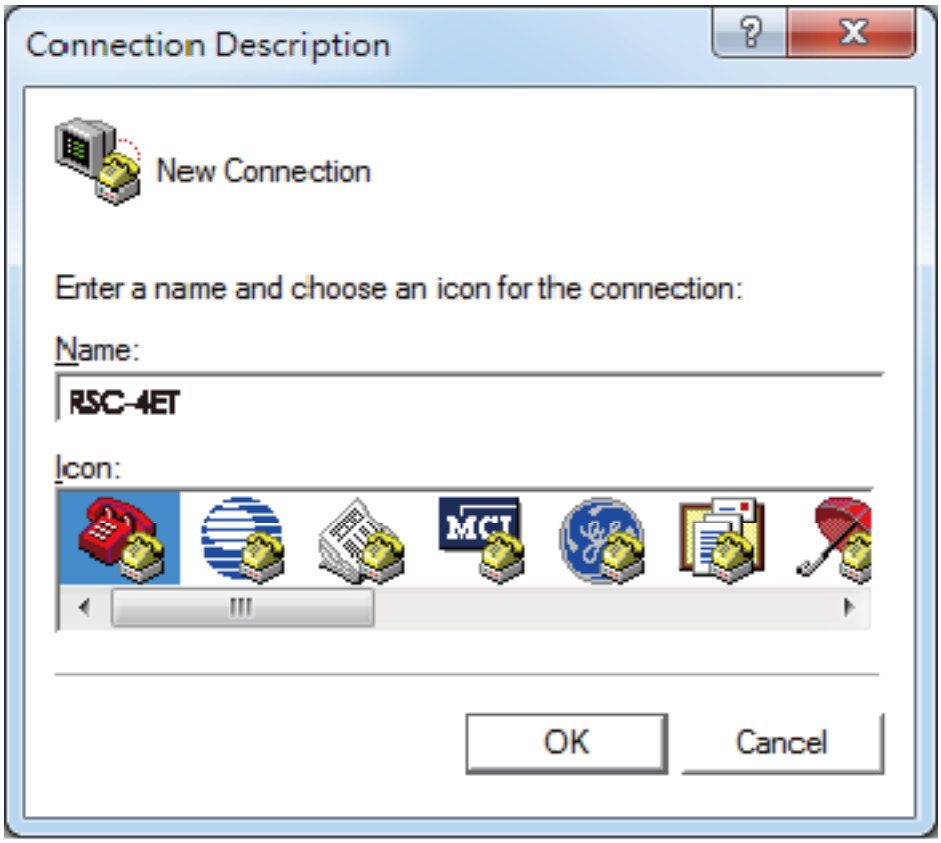
OS: Microsoft Windows

RS232 connection application: Hyperterminal

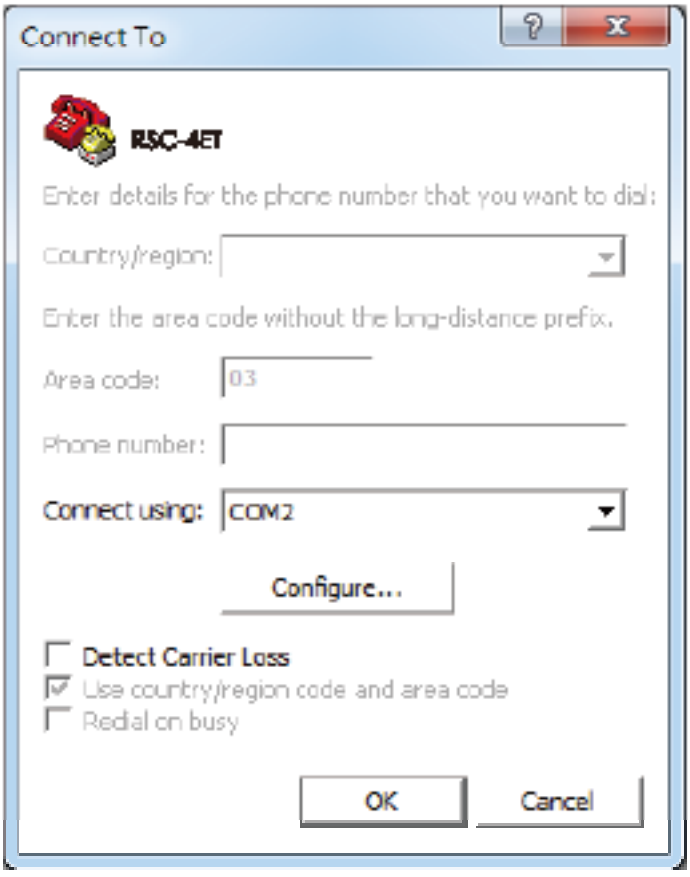
Step 2: Install HyperTrm.exe



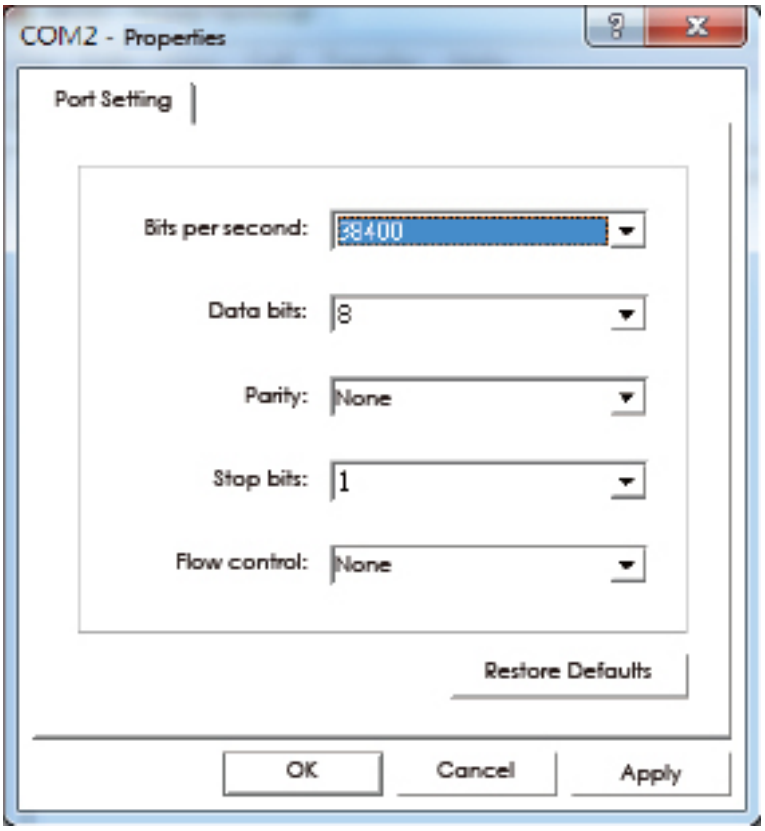
Step 3: Enter a new name for the icon in the field below and click OK.



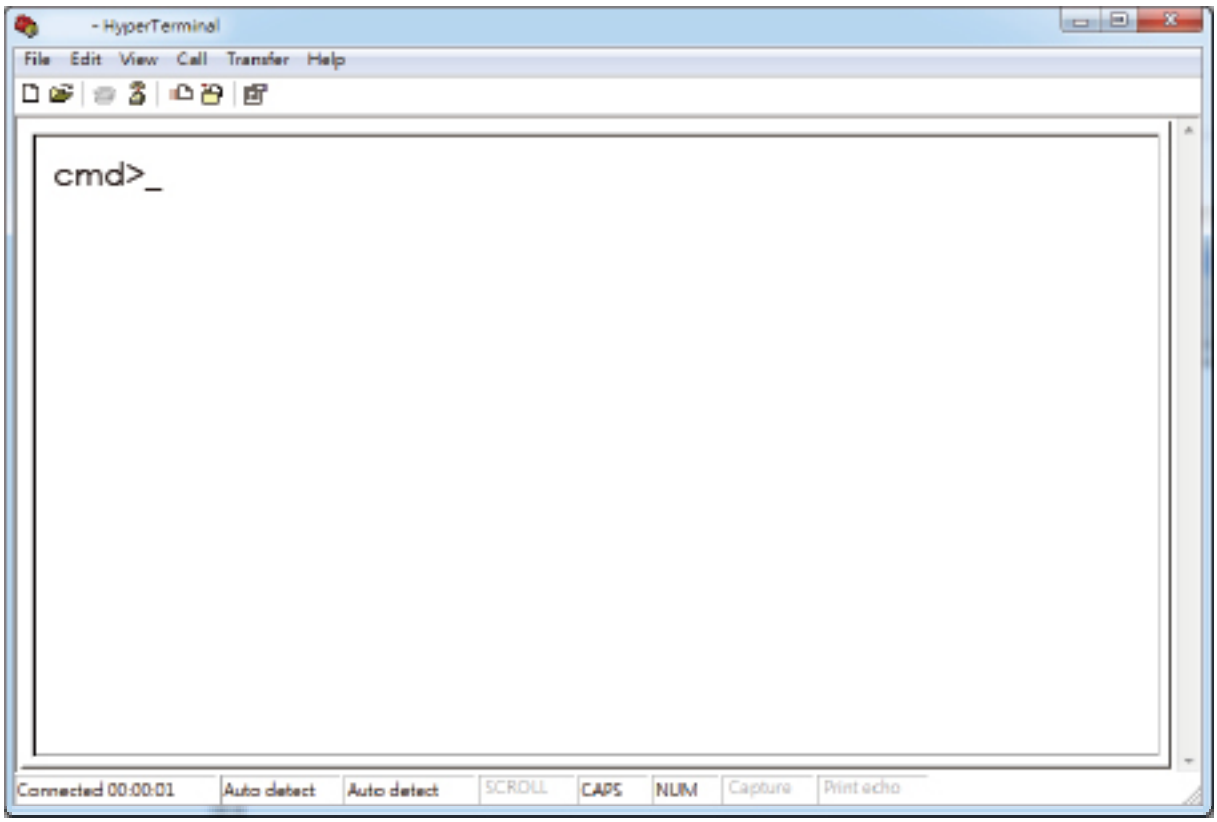
Step 4: Connecting by using selecting an option in the drop down menu circled in red below (we selected COM2 in this example) and click OK.



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

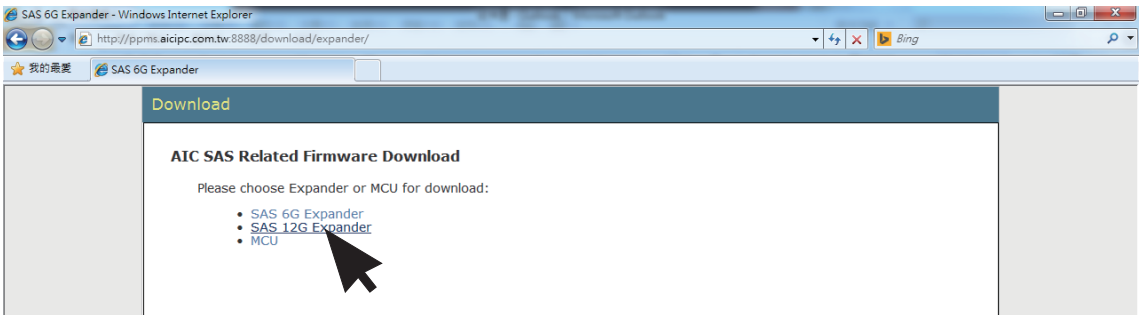


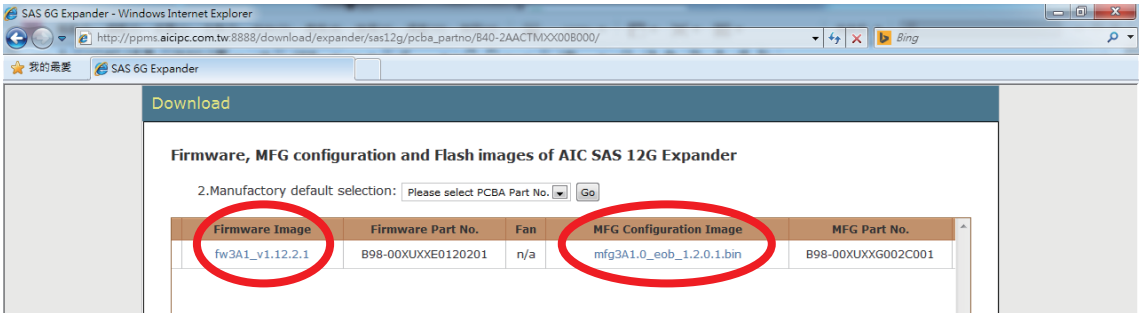
Step 6 : Set up is complete. The diagram below depicts what screen should displayed.



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/

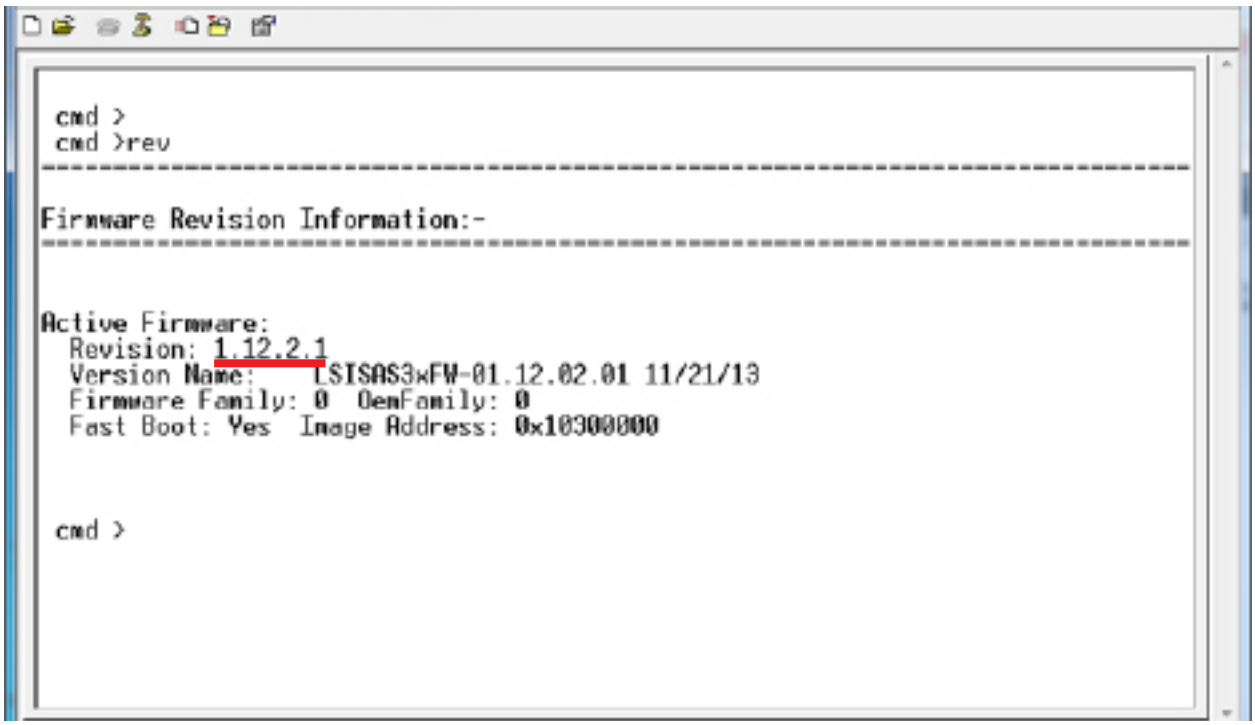




Step 8:

Comand line for show current firmware revision.

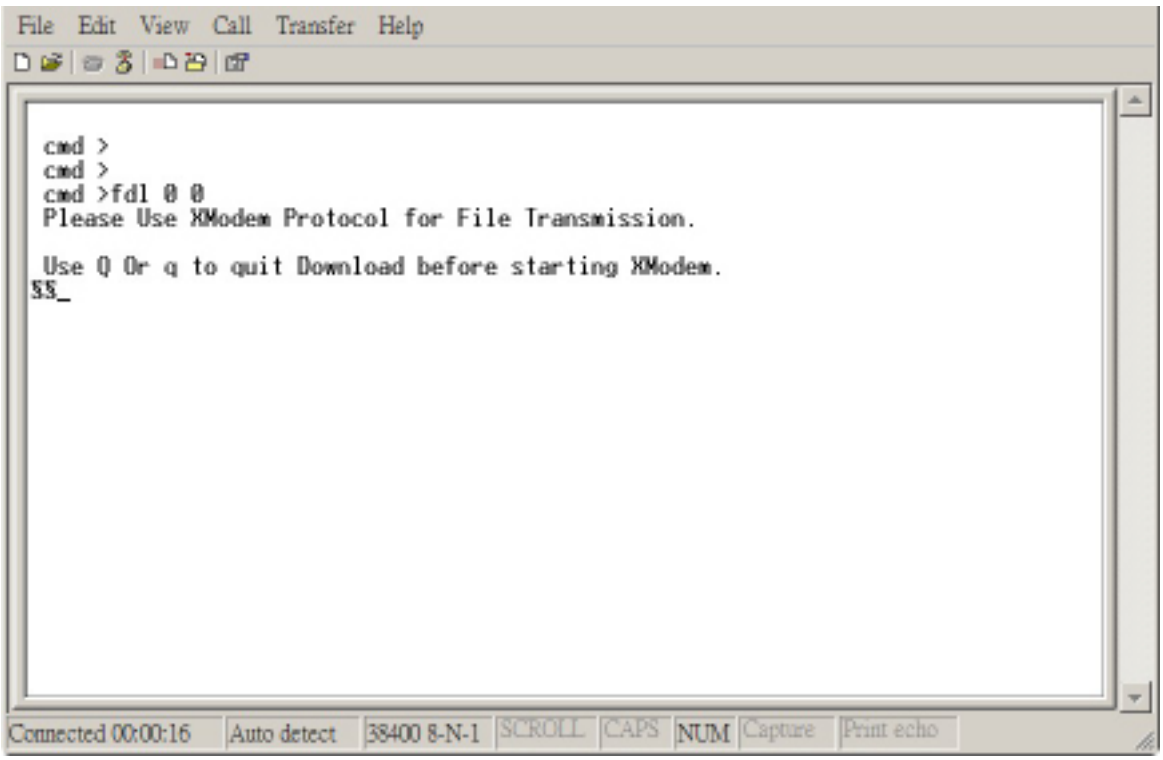
cmd>rev



Step 9:

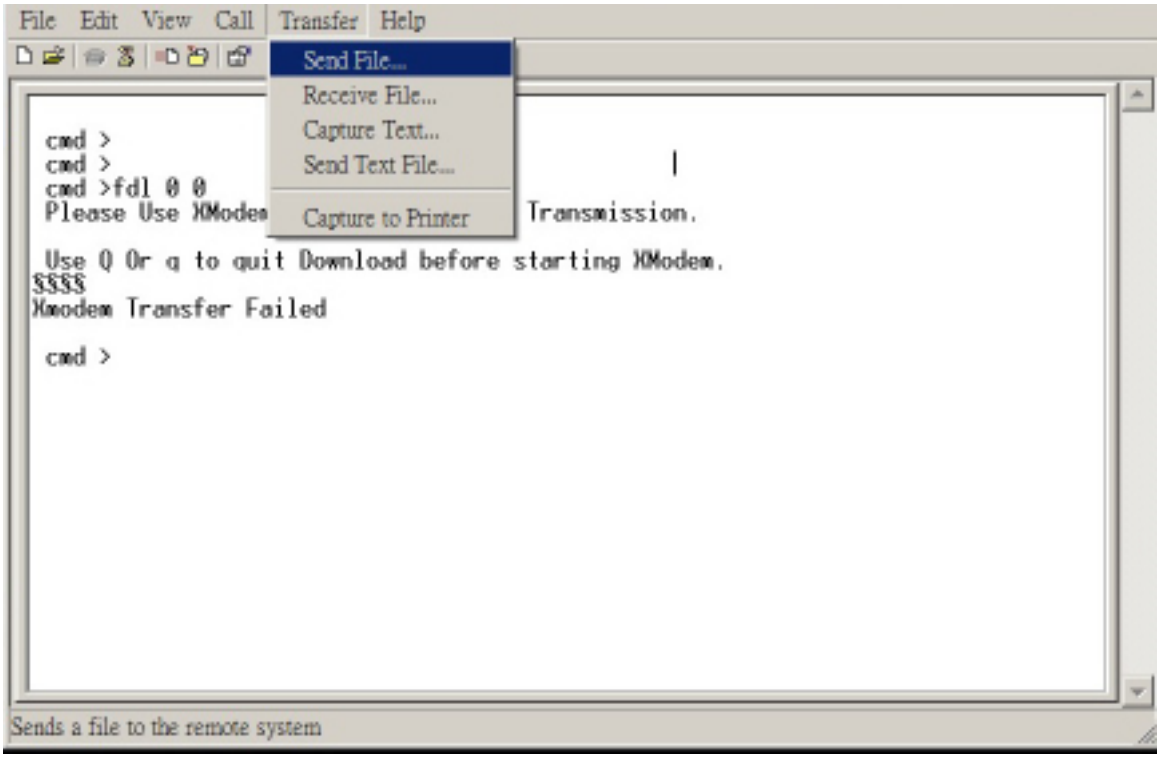
Start to update expander firmware

cmd>fdl 0 0_



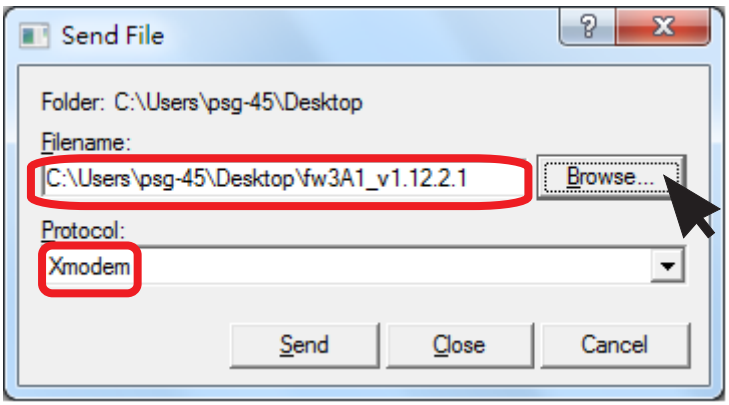
Step 10:

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



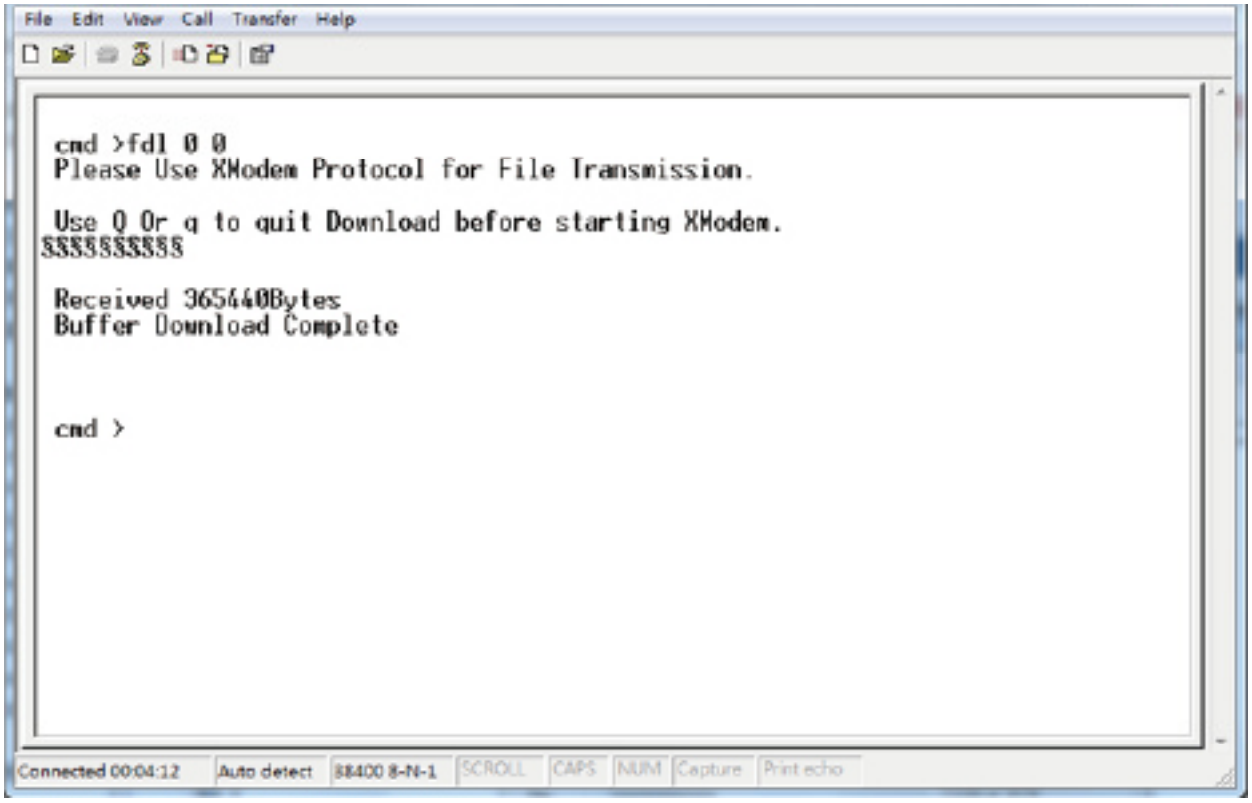
Step 11:

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



Step 12:

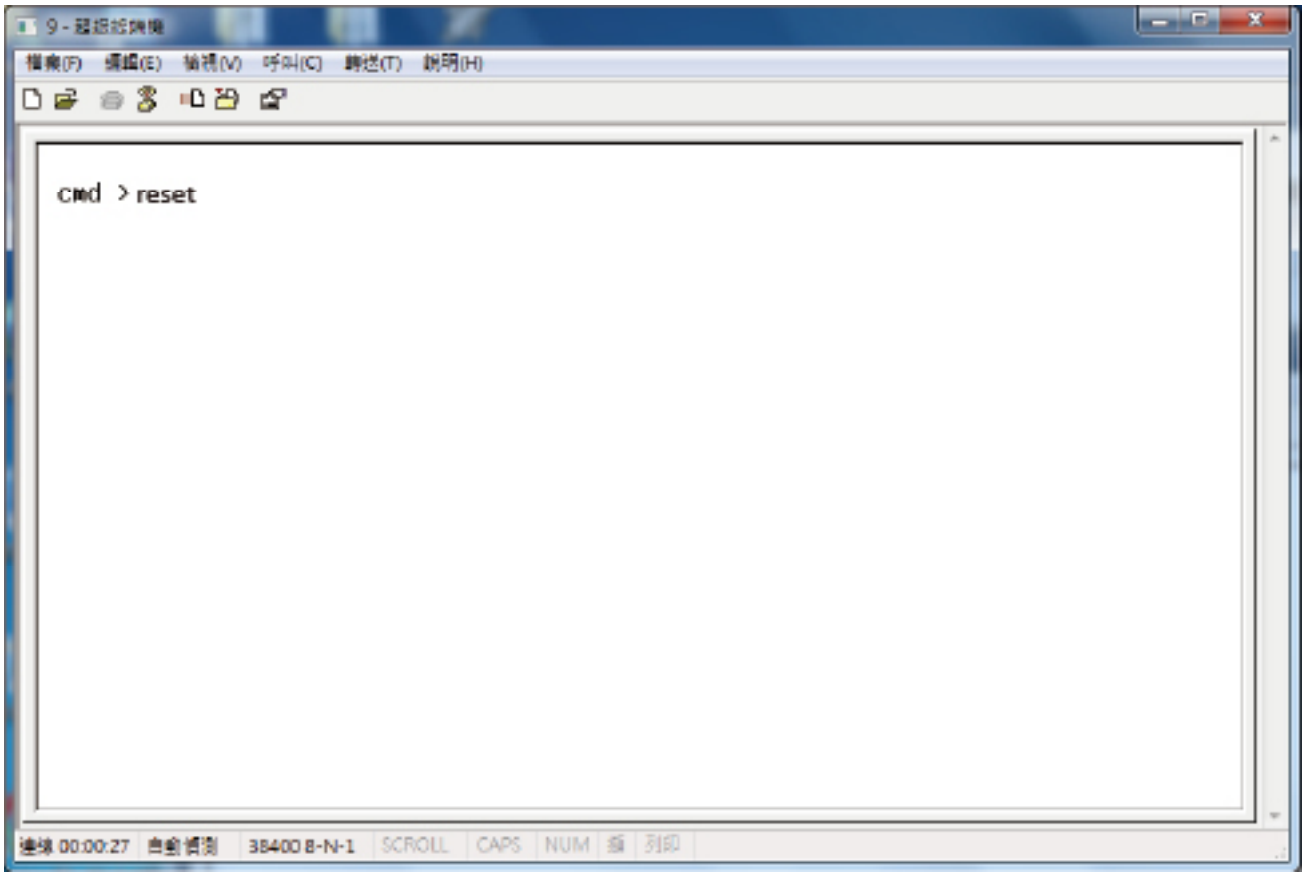
Firmware download complete



Step 13:

Reset computer for success update firmware.

cmd>reset

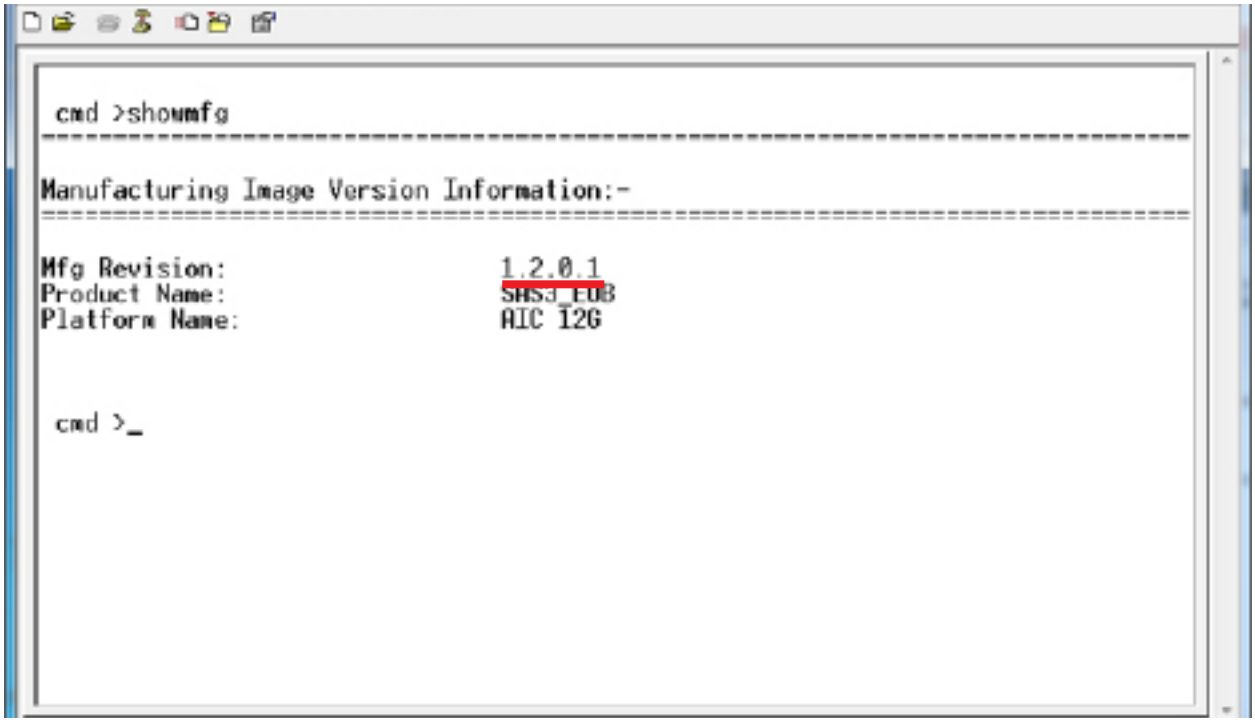


4.1.2 Update expander configuration MFG

Step 1:

Comand line for show current configuration MFG

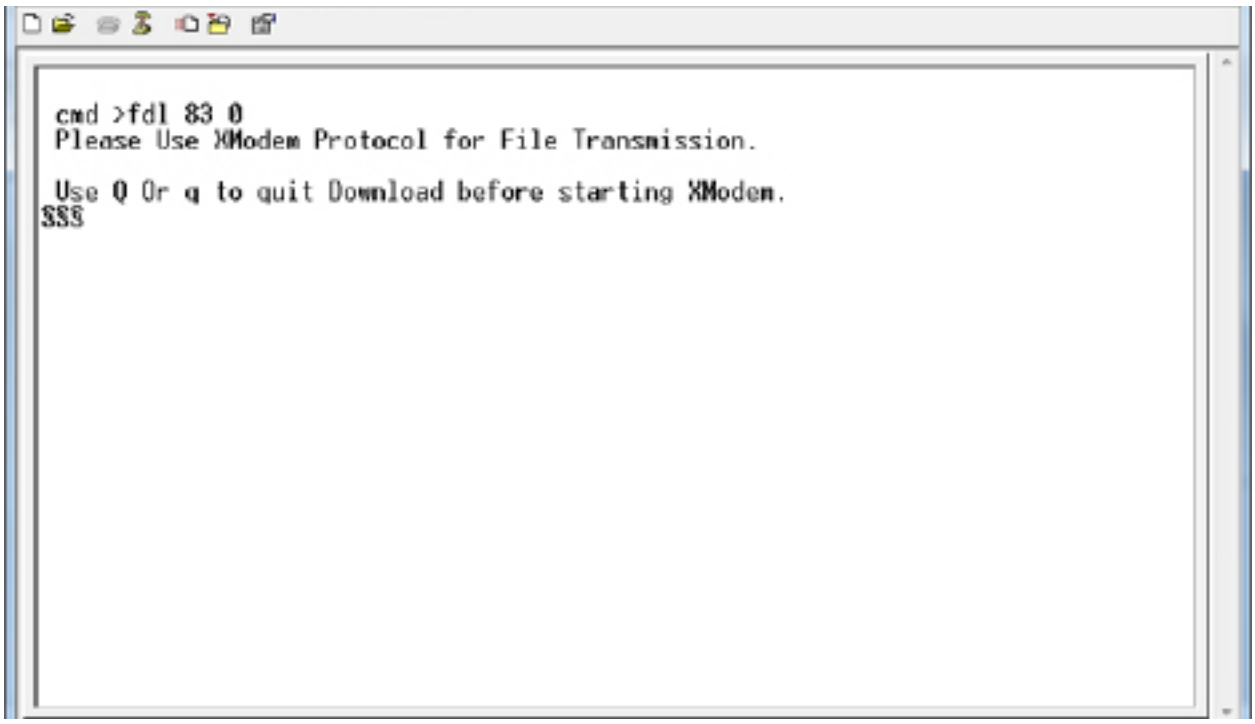
cmd> showmfg



Step 2:

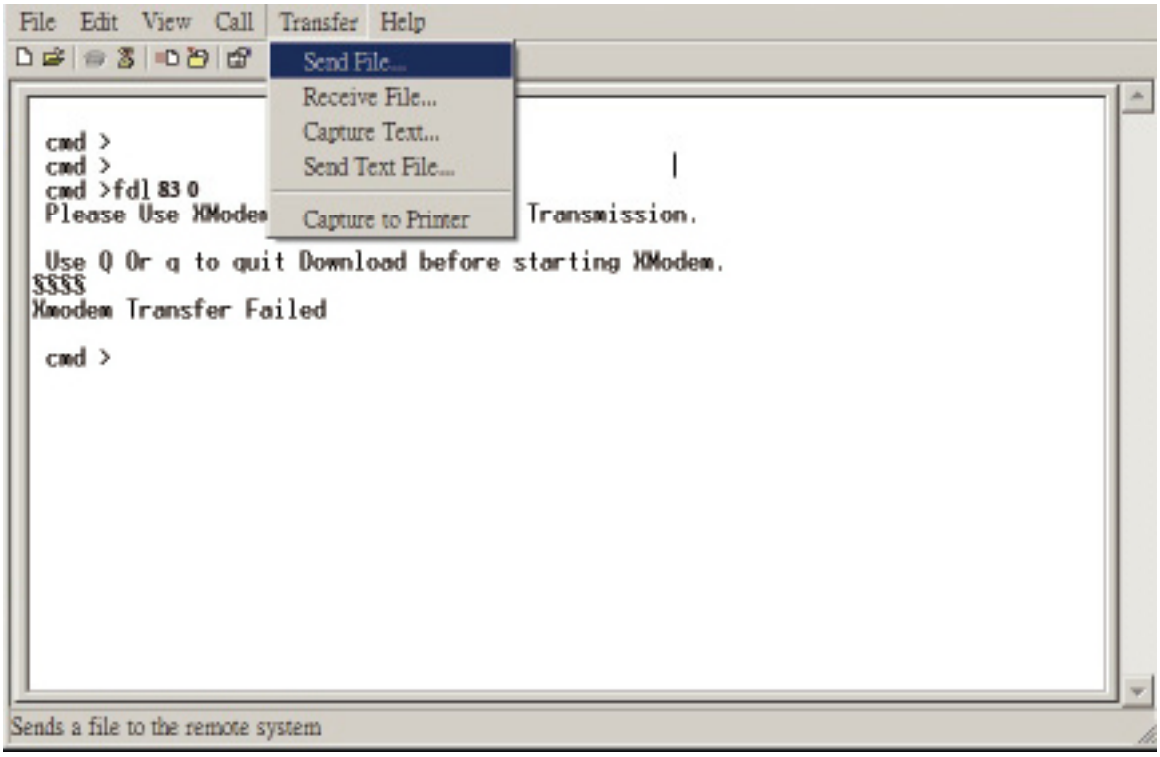
Start to update expander configuration MFG

cmd>fdl 83 0_



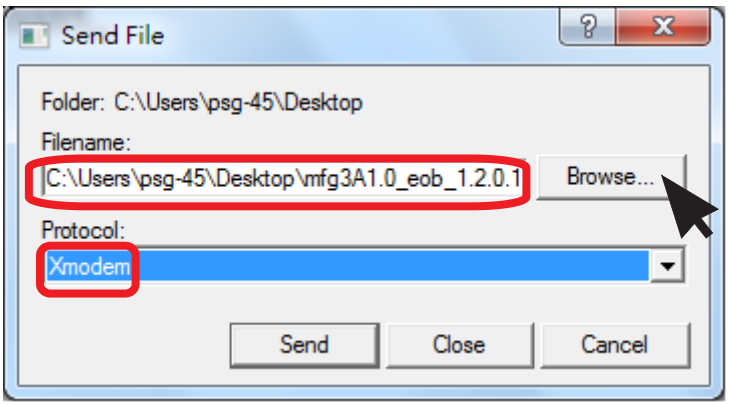
Step 3:

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



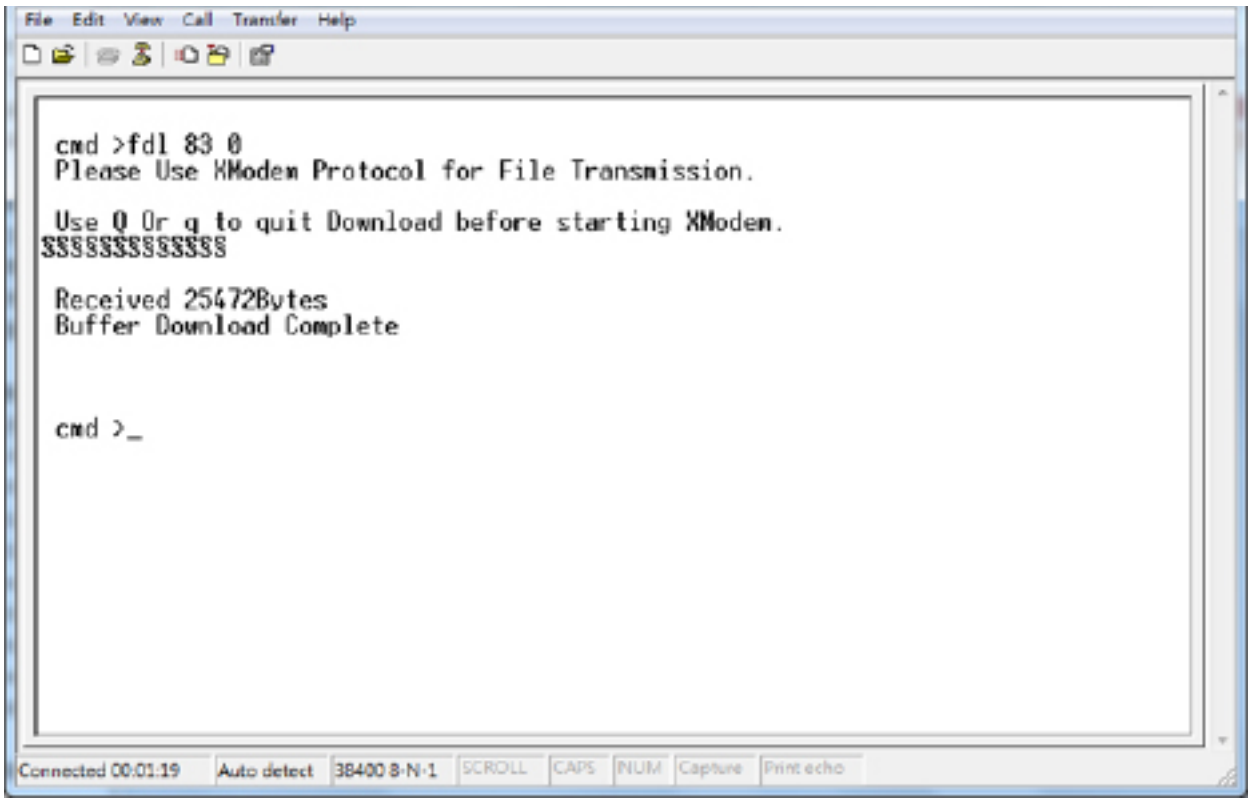
Step 4:

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



Step 5:

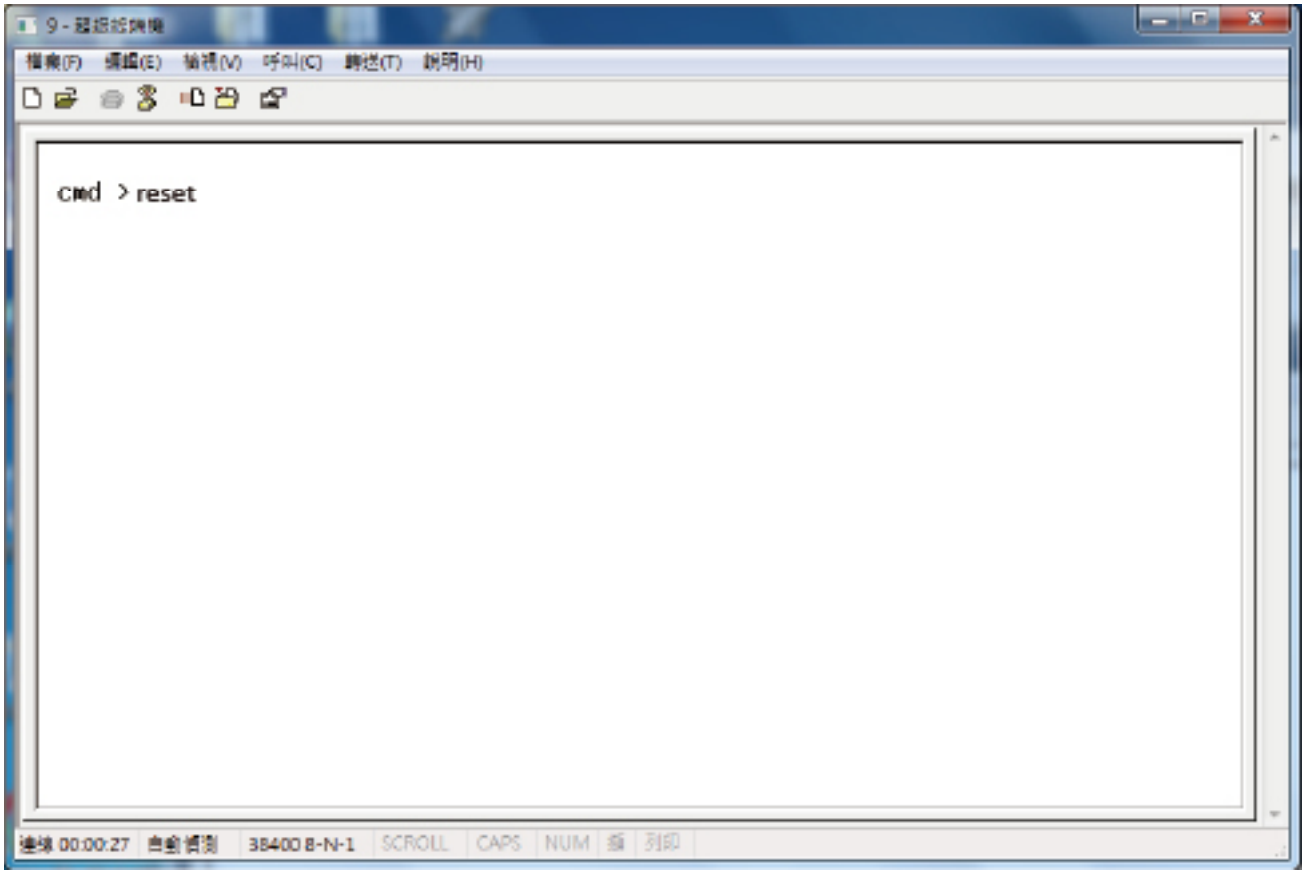
MFG download complete.



Step 6:

Reset computer for success update MFG.

cmd>reset



4.2 Update the expander firmware through in-band.

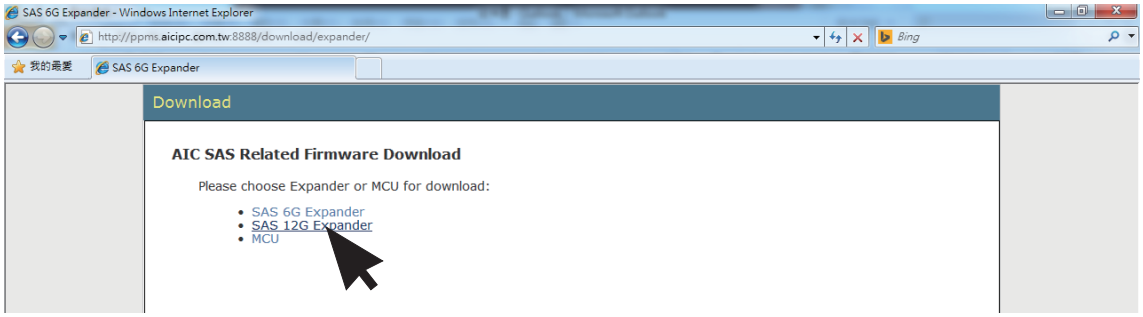
FOR EXAMPLE

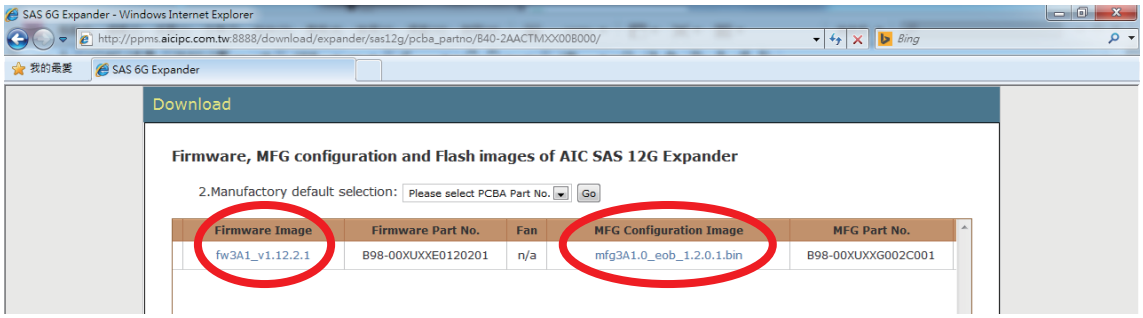
Step 1:

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:

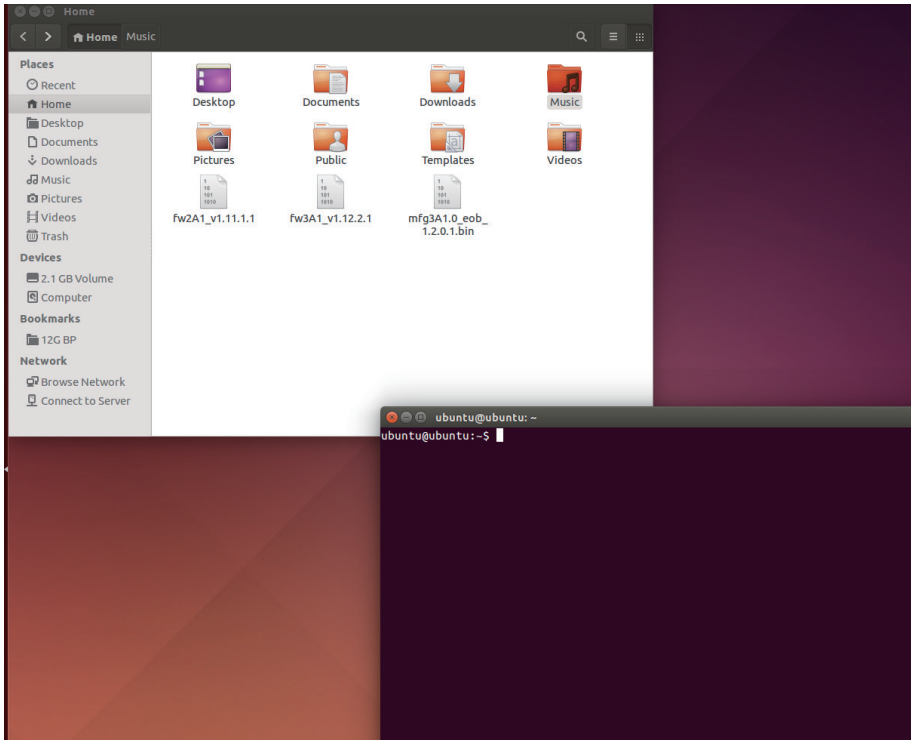
To get **firmware image** & **MFG Configuration Image** version information from "AIC SAS Related Firmware Downloadne" website.
http://ppms.aicipc.com.tw:8888/download/expander/





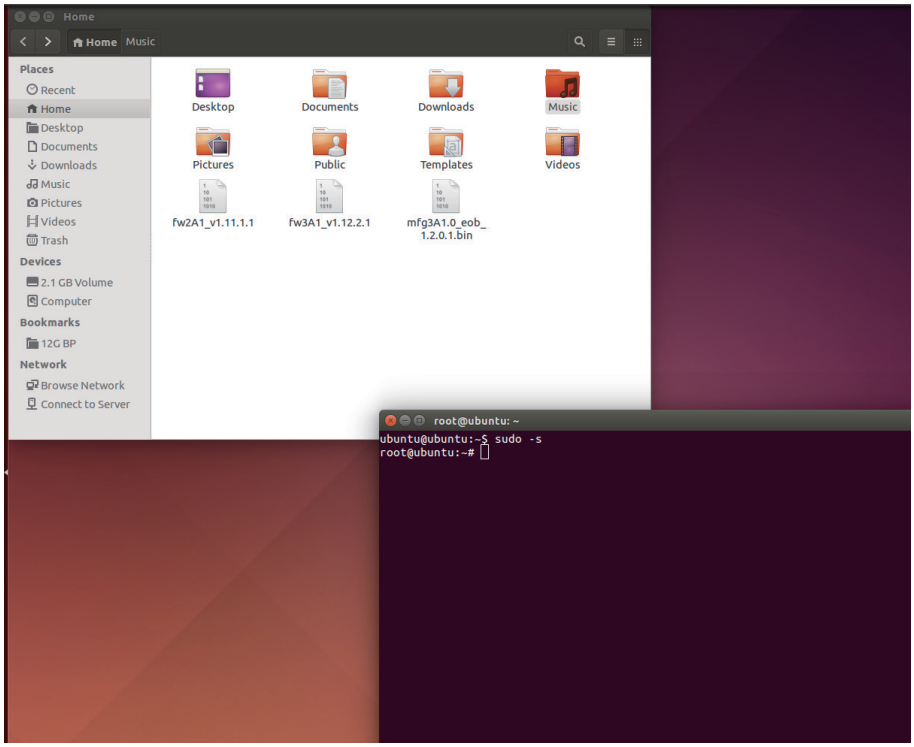
Step 3:

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:

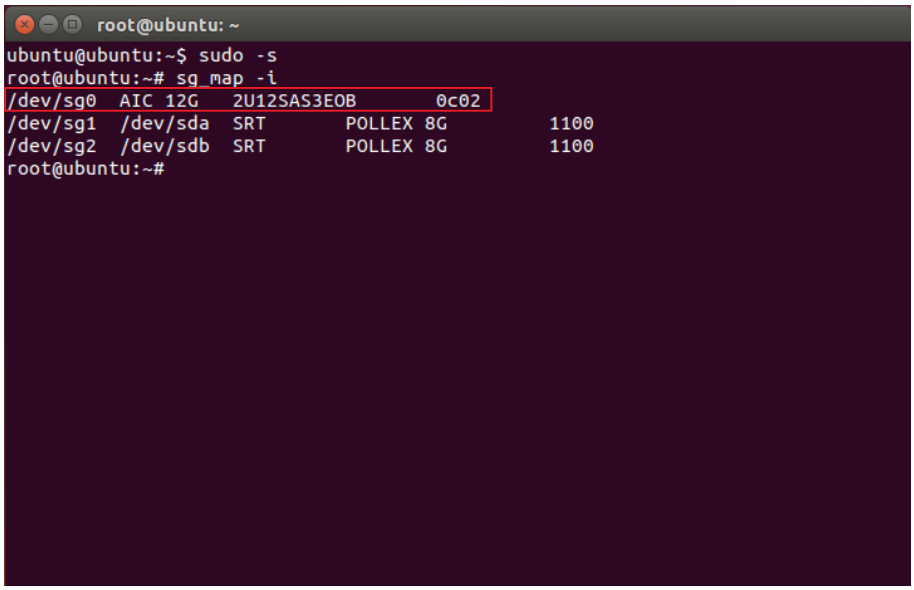
Typing "sudo -s" to into administrator mode.



Step 5:

Find expander location.

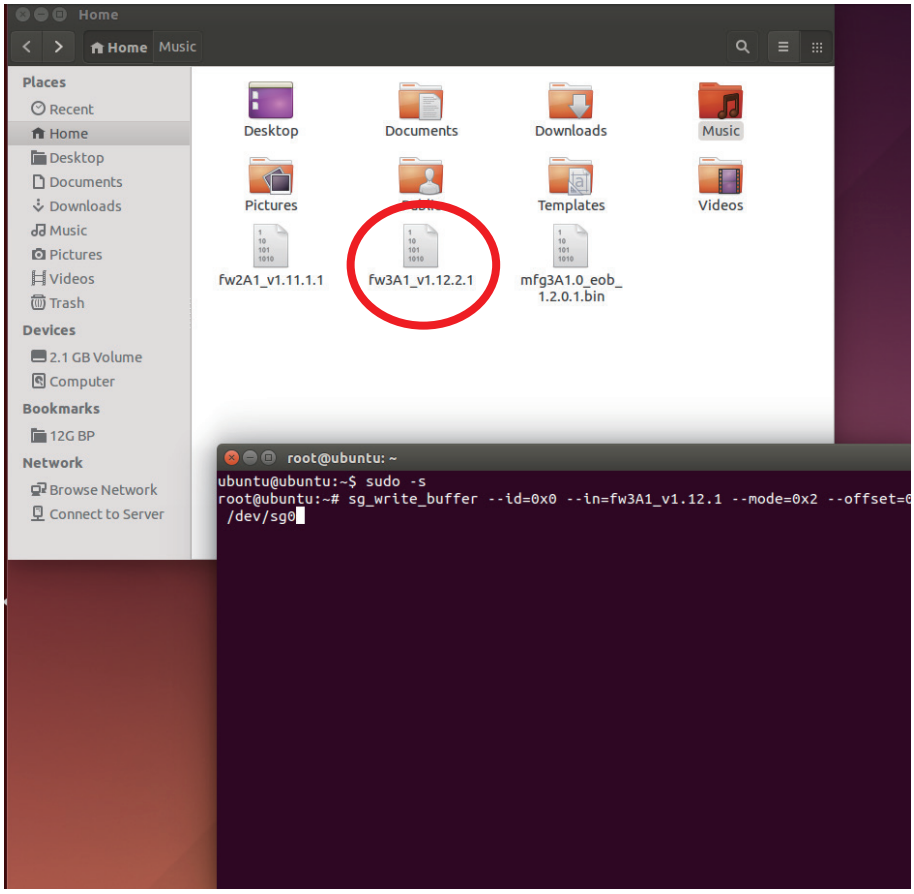
$ sg_map -i



Step 6:

Update Expander firmware

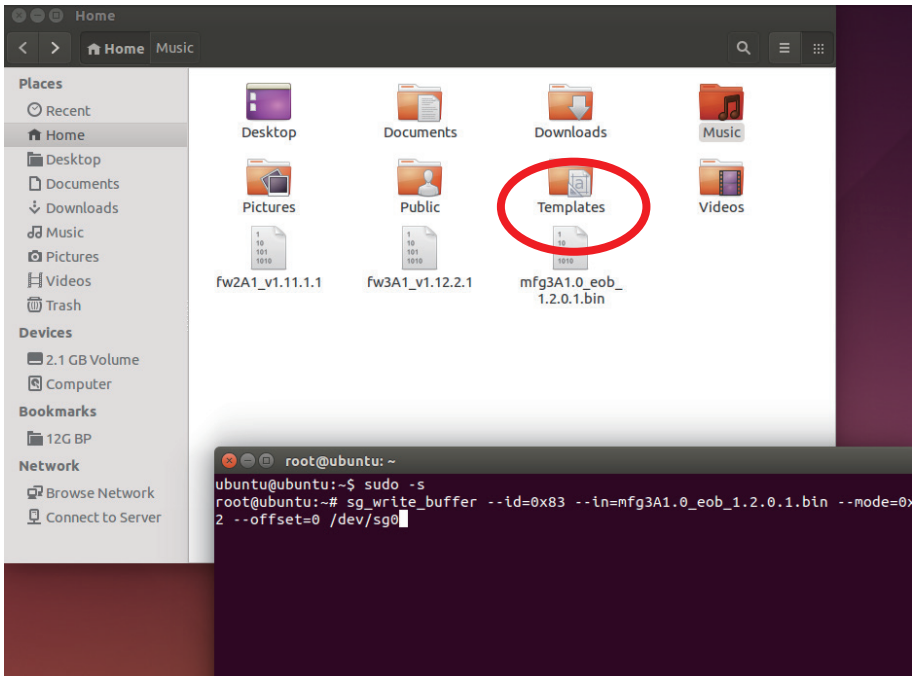
$ sg_write_buffer --id=0x0 --in=fw3A1_v1.12.2.1 --mode=0x2 --offset=0 / dev/sg0



Step 7:

Update Expander MFG

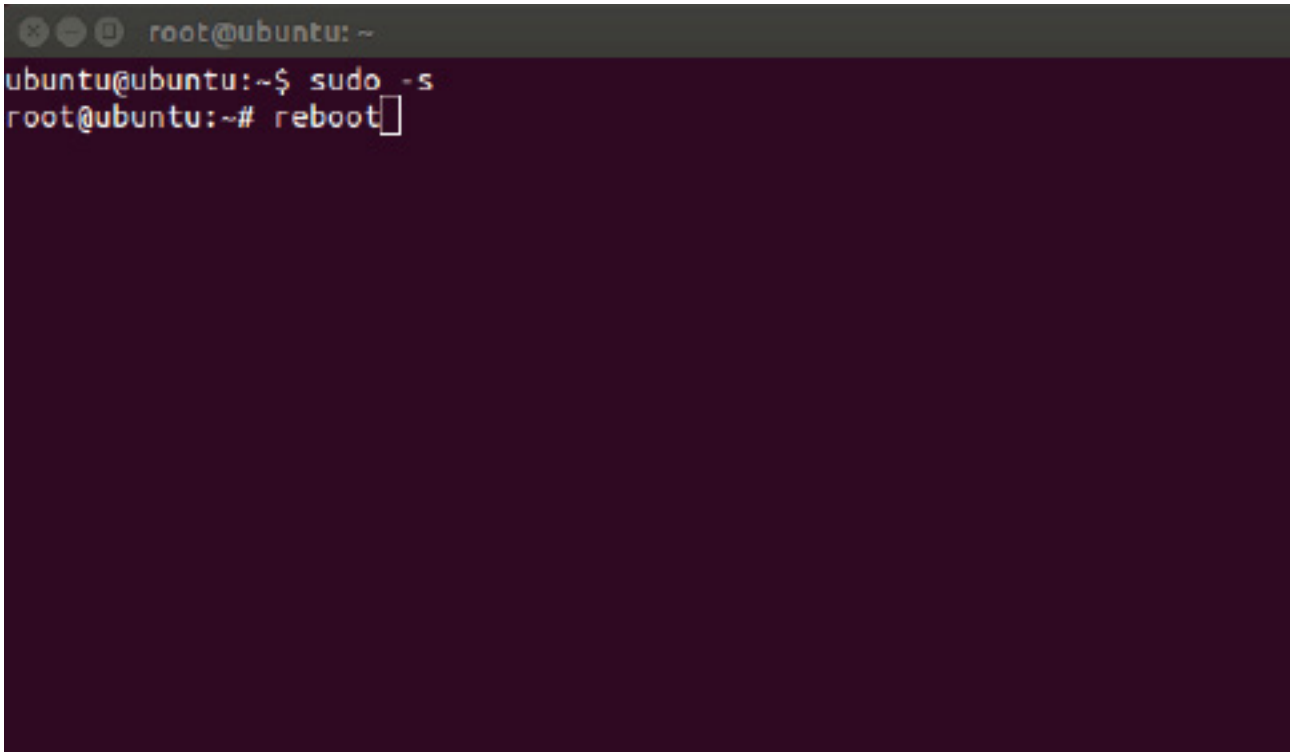
$ sg_write_buffer --id=0x83 --in=mfg3A1.0_eob_1.2.0.1.bin --mode=0x2 --offset=0 /dev/sg0



Step 8:

Reboot computer for success update firmware & MFG.

root@ubuntu:~# reboot



4.3 12G expander EDFB setting

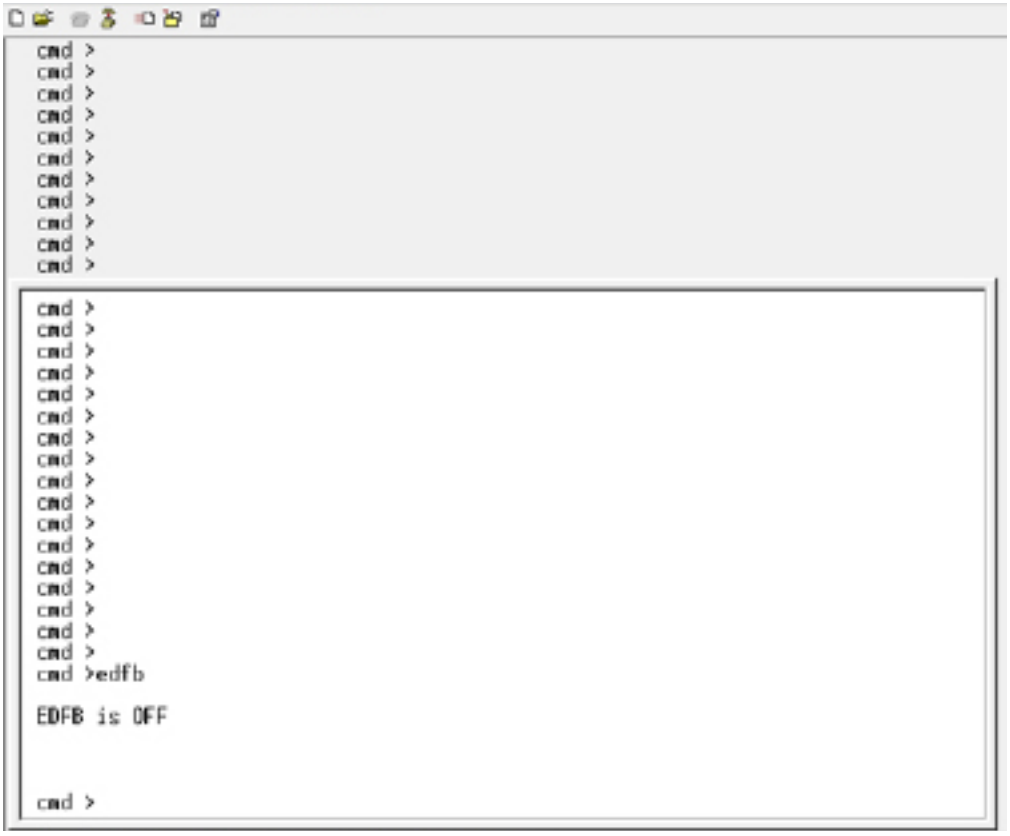
Step 1:

For Install HyperTerminal.exe refer to section 4.1

Step 2 :

Get EDFB status

cmd> edfb

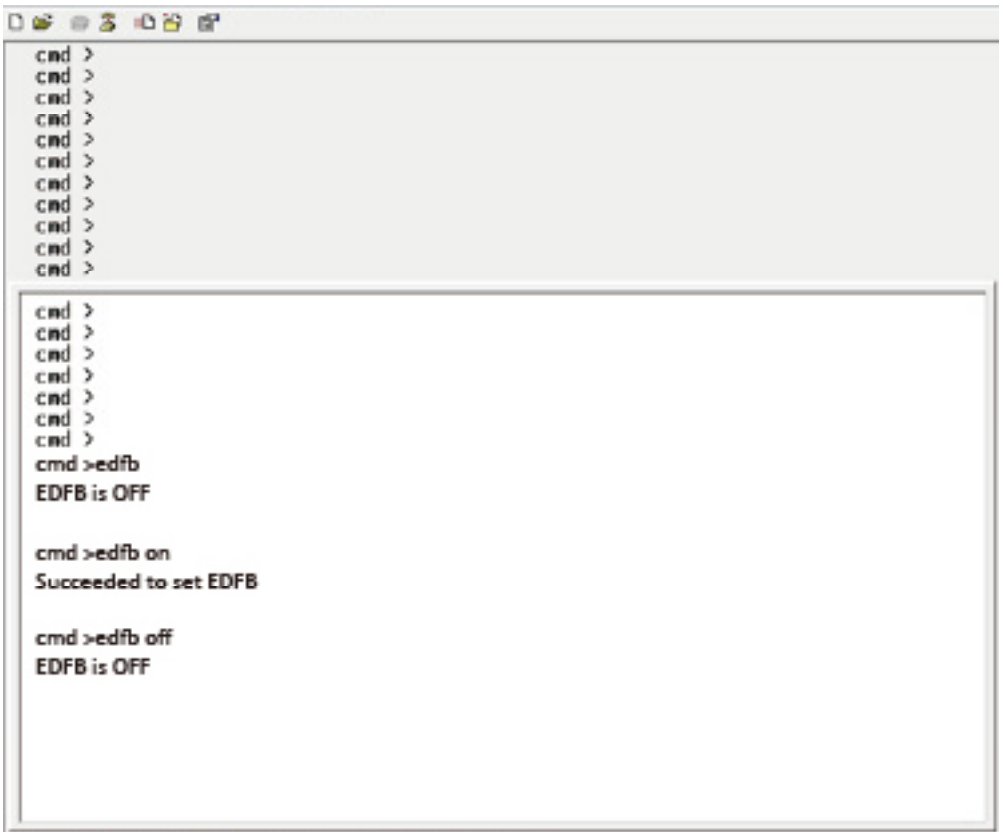


Step 3:

Change EDFB setting

Enable EDFB function
cmd>edfb on

Disable EDFB function
cmd>edfb off



4.4 Slot HDD power setting

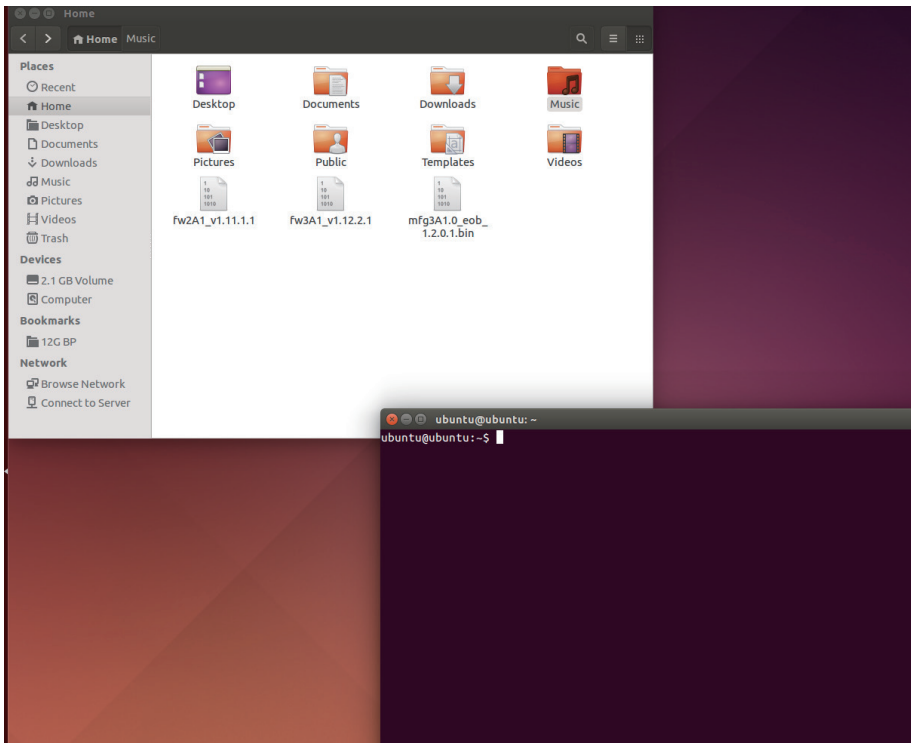
(Only for system cooling Fan controled by expander.)

Step 1:

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

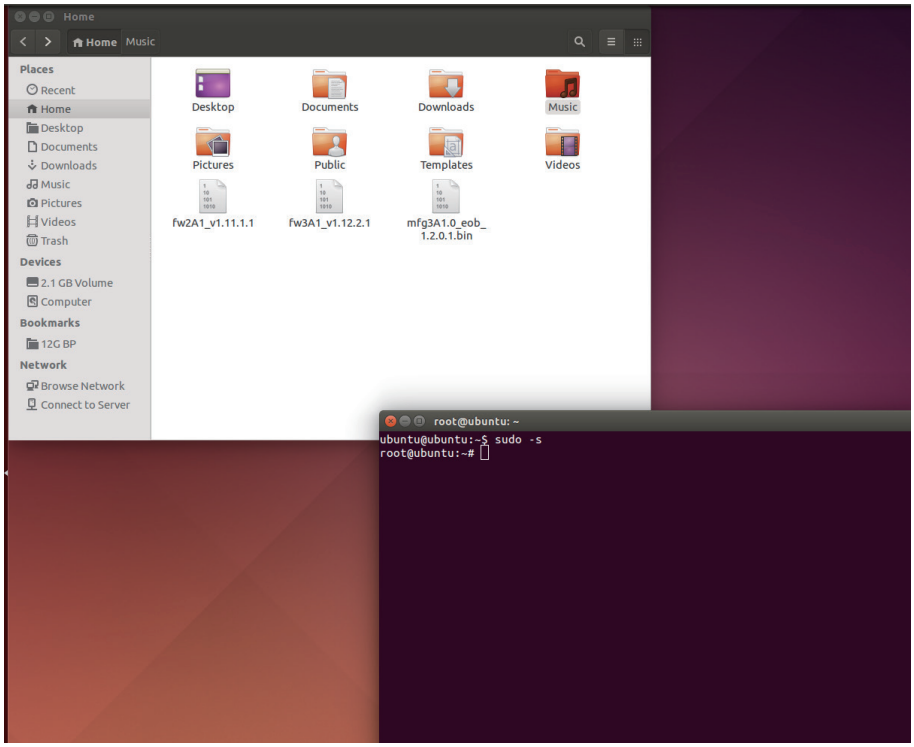
Step 2:

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:

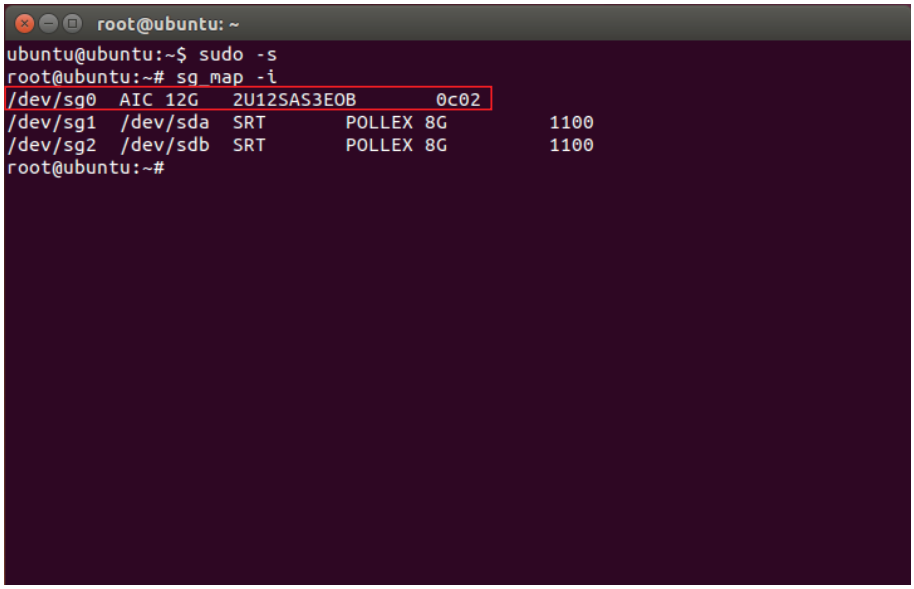
Typing "sudo -s" to into administrator mode.



Step 4:

Find expander location.

$ sg_map -i



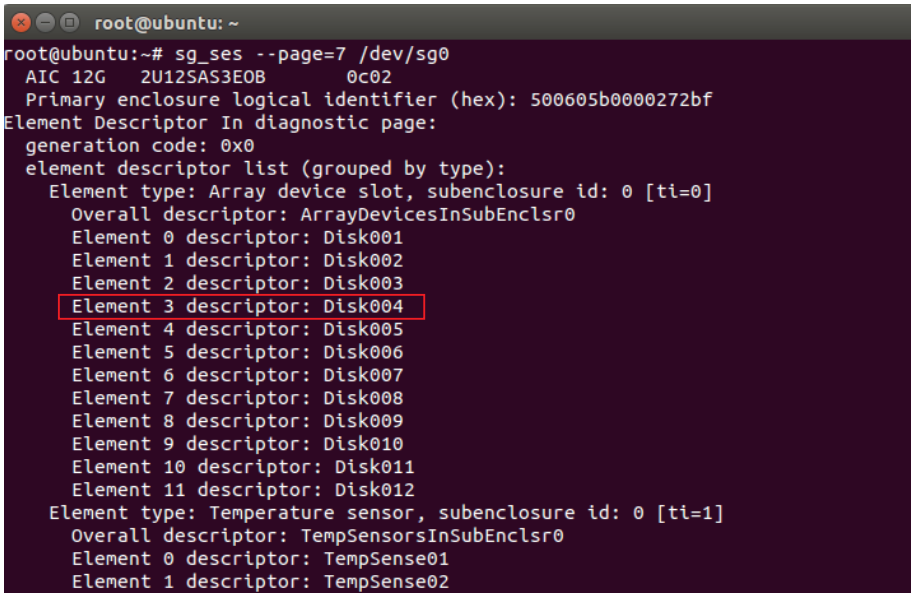
Step 5:

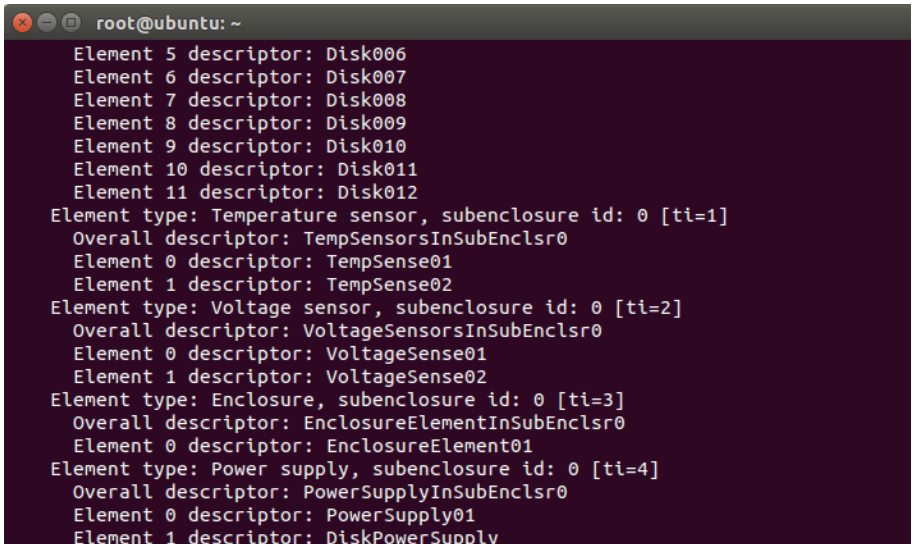
For example:

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.

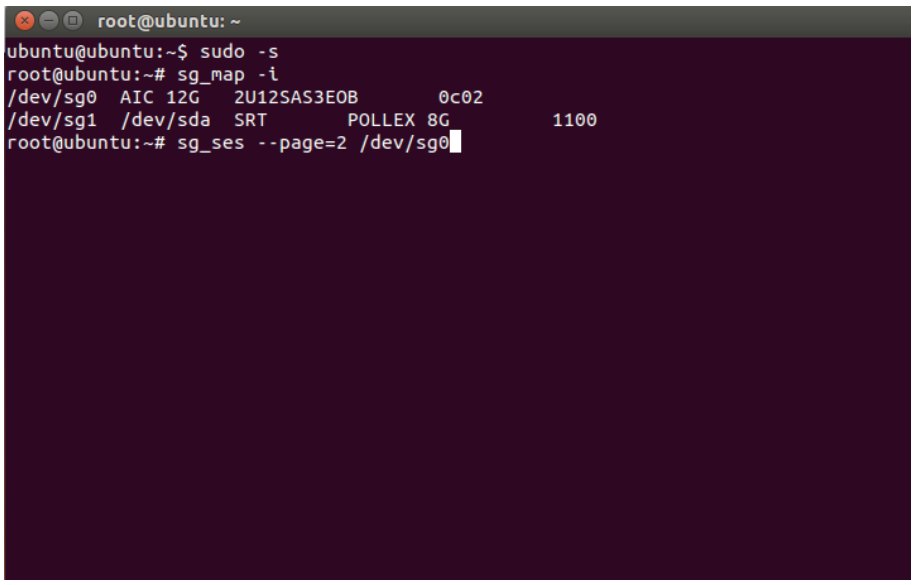




Step 6:

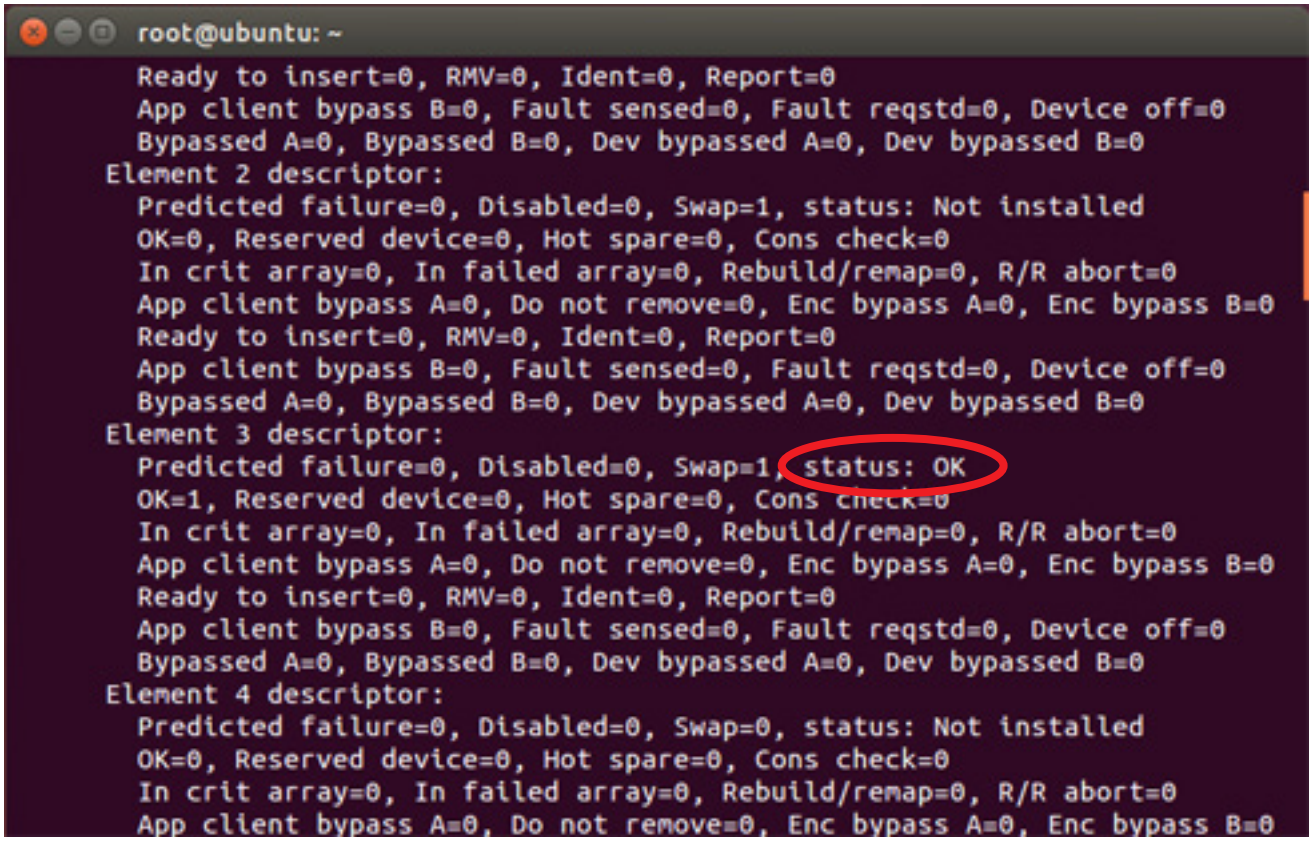
To check Disk004 (element 3) power status is ok

$ sg_ses --page=2 /dev/sg0



Status shows below:

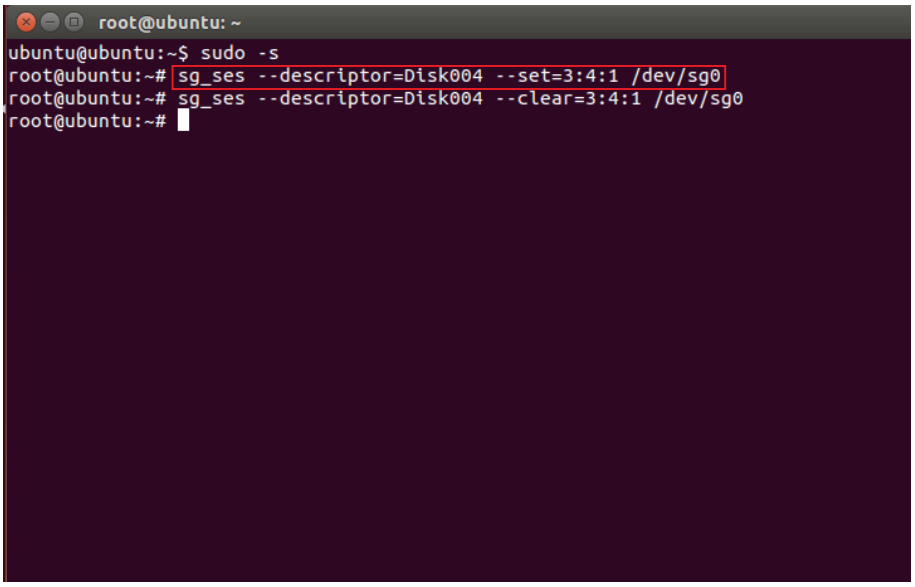
The status of Element 3 is OK.



Step 7:

Turn off a HDD power

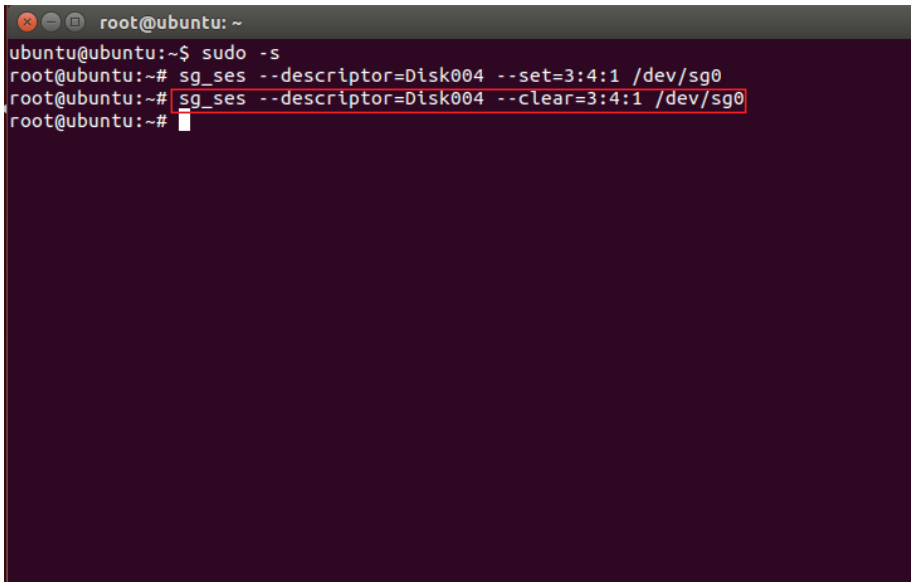
$ sg_ses --descriptor=Disk004 --set=3:4:1 /dev/sg0



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.)

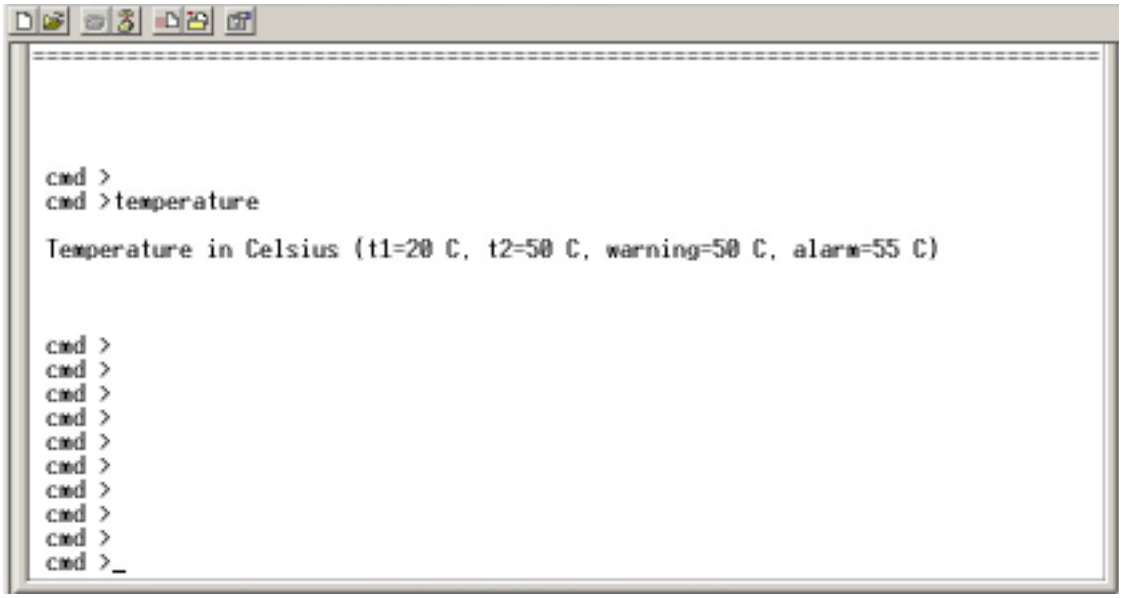
Step 1:

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

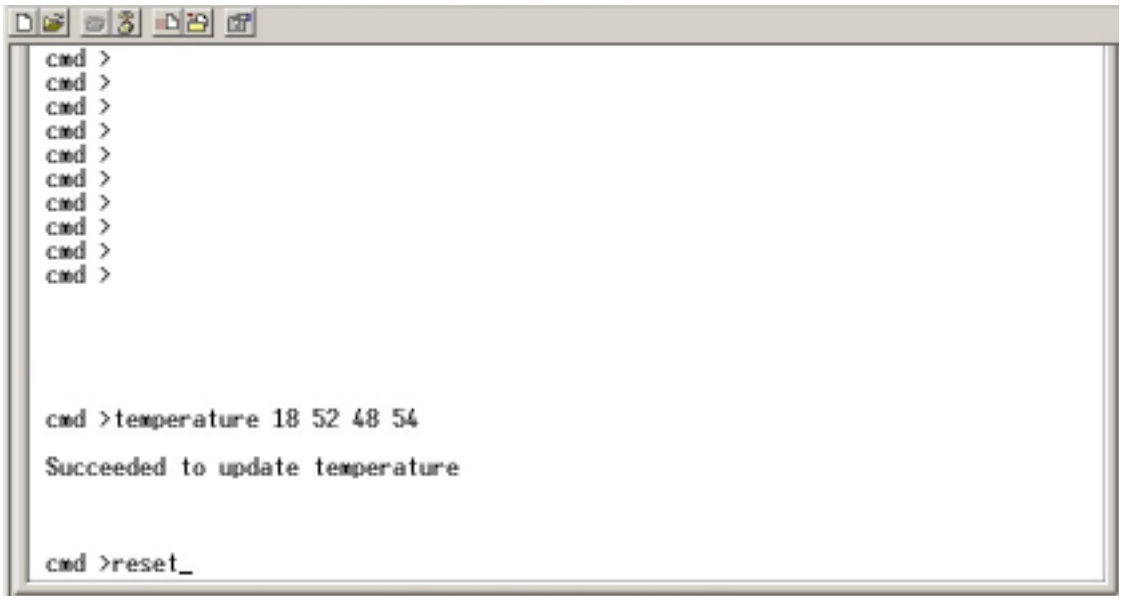
Warning threshold=50 C ▸ 48 C

Alarm threshold=55 C ▸ 54 C

The new setting will take effect after reset.

cmd> temperature 18 52 48 54

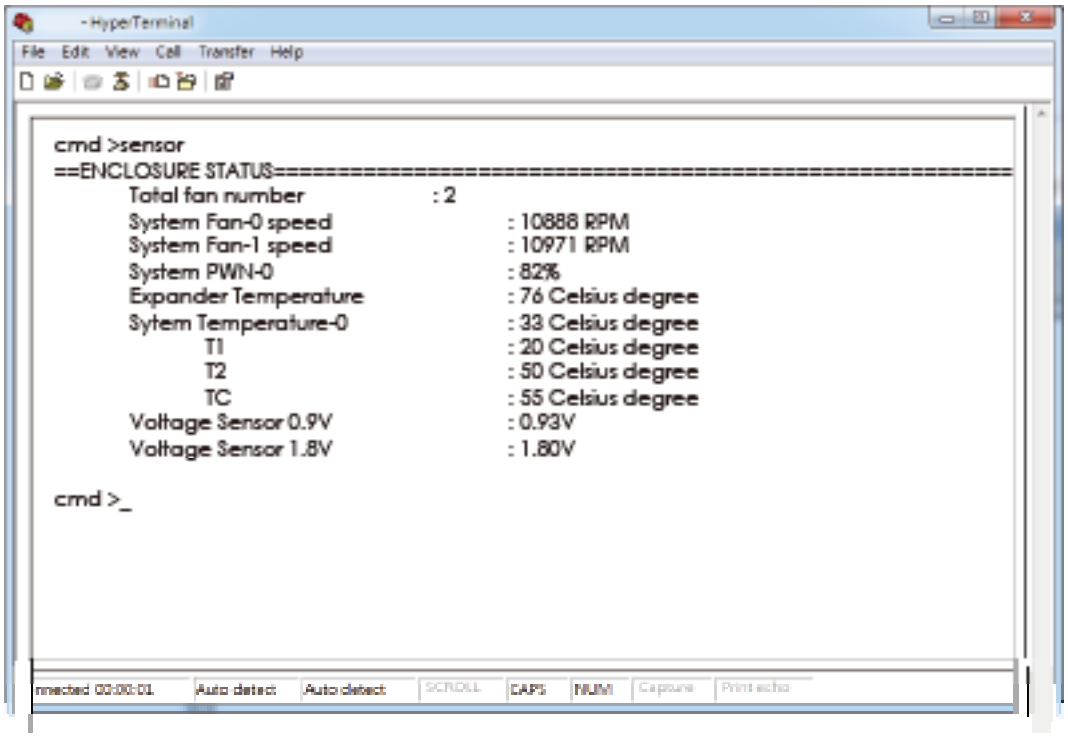
cmd> reset



Step 4.

Check fan speed & temperature information.

cmd> sensor



Chapter 5. Technical Support

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