



**特种计算机**

**Industrial Computer**

**产品说明书**

**User Manual**

**NPC-8218**

**2U 上架式网络应用平台**

**2U Rack Mount Network  
Application Platform**

**Version: B00**



## Legal Information

### Warnings

Please pay attention to the tips within the manual so as to avoid personal injury or property losses. The tips for personal injury are indicated in warning triangles while the tips only related to property losses have no warning triangles. The warning tips are listed as follows with the hazardous scale from severe to slight.



#### **Danger**

If handled carelessly, death or severe human injury will occur.



#### **Warning**

If handled carelessly, death or severe human injury might occur.



#### **Caution**

Warning triangle indicates that slight human injury might occur if handled carelessly.

#### **Note**

Unexpected result or status might occur, if not handled according to the tips.

### Professional Personnel

The product/system covered by the manual can only be handled by qualified and professional personnel. During operation, please follow the respective instructive manuals, especially the safety warnings. The professional personnel have been trained and possess relevant experiences; therefore, he/she could be aware of the risks of the product/system and avoid possible damages.

### EVOC Product

Please pay attention to the following instructions:



#### **Warning**

EVOC product can only be used according to the descriptions within the manual, including the contents and the relevant technical documents. If the products or components from other companies are required, please get the recommendation and grant from EVOC first. Proper transportation, storage, assembly, installation, debugging, operation and maintenance are prerequisite to ensure product safety and normal operation; therefore, please ensure permitted environment conditions and pay attention to the tips within the manual.





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**Please visit our website: <http://www.evoc.com> for more information, or send an email to the Technical Support Mailbox [support@evoc.com](mailto:support@evoc.com) (International) or [support@evoc.cn](mailto:support@evoc.cn) (Domestic) for consultation.**

**Hotline: 4008809666**



## **About this manual**

### **Scope of the Manual**


The manual is appropriate for EVOC NPC-8218.

### **Convention**

The term “the PC” or “the Product” within the manual usually stands for EVOC NPC-8218.

### **Instructions**

Safety instructions

To avoid property losses or individual injury, please pay attention to the safety instructions within the manual. The warnings within the manual are marked with warning triangle , whose existence is dependent upon the scale of the potential hazard.



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# 1. Product Introduction

## 1.1 Overview

NPC-8218 is a 2U standard rack mount network application platform. The PC contains Intel® H61 chipset, supports Windows XP, Windows Server 2003, Linux operating systems.

The PC adopts double-layer Al-alloy framework structure, modular design, shock absorption, rugged installation design, IP protection, EMC design and outer appearance ID design. The PC has elegant appearance and only a few screws can be seen from outside of the chassis.

Targeting network security application, the product can be widely used in firewall, VPN, application delivery, Internet access management and other network security equipment.

## 1.2 Specifications

Item		Definition
Main Functional Index	Microprocessor	Supports Intel® LGA1155 package Sandy Bridge and Ivy Bridge CPU
	Chipset	Intel® H61
	Memory	Provides 2 x 240Pin DDR3 memory slot, supporting non-ECC un-buffered, dual-channel function. A single memory slot supports up to 8GB, which brings the total memory capacity to 16GB



	<b>Display</b>	<ul style="list-style-type: none"> <li>● Supports CRT display; support hotswap</li> <li>● Maximum resolution and refresh rate: 2048x1536@75Hz</li> </ul>
	<b>Network</b>	Provides 6 x 10/100/1000Mbps network port, LAN1 supports Wake-On-LAN
	<b>Expansion bus</b>	Provides one expansion slot for ENM network module card
	<b>External IO Ports</b>	<ul style="list-style-type: none"> <li>● Provides 1 x double-layer USB 2.0 port</li> <li>● Provides 1 x Console port</li> <li>● Provides 6 x RJ45 port</li> <li>● Provides 1 x VGA port (optional)</li> </ul>
Main Performance Index	<b>Dimensions (Excluding mounting ear)</b>	482.6mm(W) x 88.1mm(H) x 500mm(D)
	<b>Net weight</b>	9.7Kg
	<b>Temperature</b>	<ul style="list-style-type: none"> <li>● Operating temperature: 0℃～45℃</li> <li>● Storage temperature: -10℃～60℃</li> </ul>
	<b>Humidity</b>	Constant humidity/heat: (40)℃ (30-90)%RH
	<b>EMC</b>	<ul style="list-style-type: none"> <li>● Limits of radio disturbance are compliant with GB9254-2008, class A;</li> <li>● Limits of immunity are compliant with the threshold of GB/T 17626.</li> </ul>
	<b>Reliability</b>	<ul style="list-style-type: none"> <li>● MTBF≥50000h</li> <li>● MTTR≤0.5h</li> </ul>
	<b>Safety</b>	Meets basic requirements of GB4943.



	<b>Mechanical and Environmental Adaptability</b>	<ul style="list-style-type: none"><li>● Anti-vibration: frequency (5-200Hz); acceleration (1g); amplitude (0.5mm)</li><li>● Anti-shock: 10g acceleration, 11ms duration</li><li>● Noise: <math>\leq 55</math> dB</li></ul>
	<b>Power Features</b>	<ul style="list-style-type: none"><li>● Input voltage/frequency: 220VAC/50Hz;</li><li>● Power consumption of the PC: 71.5W (standby); Power consumption of the PC: 121W (operating SmartBits small packet 60 ~ 100%).</li></ul>



## 2. Application Scheme

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### 2.1 Transportation

Well-packaged products are suited for transportation by truck, ship, and plane. During transportation, products should not be put in open cabin or carriage. During transshipping, products should not be stored in open air without protection from the atmospheric conditions. Products should not be transported together with inflammable, explosive and corrosive substances and are not allowed to be exposed to rain, snow and liquid substances and mechanical force.

### 2.2 Storage

Products should be stored in package box when it is not used. And warehouse temperature should be 0°C ~ 40°C, and relative humidity should be 20% ~ 85%. In the warehouse, there should be no harmful gas, inflammable, explosive products, and corrosive chemical products, and strong mechanical vibration, shock and strong magnetic field interference. The package box should be at least 10cm above ground, and 50cm away from wall, thermal source, window and air inlet.

<b>Caution!</b>
<b>Risk of destroying the device!</b>
<b>When shipping the PC in cold weather, please pay attention to the extreme temperature variation. Under this circumstance, please make sure no water drop (condensation) is formed on the surface or interior of the device. If condensation is formed on the device, please wait for over twelve hours before connecting the device.</b>



## 2.3 Opening the Box and Initial Examination

### Opening the Box

Please pay attention to the following issues when opening the box:

- Do not discard the original packing material. Please keep the original packing material for re-transportation.
- Please keep the documentation at a safe place. The documentation, which is a part of the device, is required for initial device debugging.
- When doing the initial examination, please check whether there are distinct damages to the device caused during the transport.
- Please check whether the delivery contains the intact device and all of the independently ordered accessories. Please contact the customer service when any unconformity or transportation damages occur.




### 3. Installation Instructions

#### 3.1 Mounting Method

- ☒ 19" Rack Mount      ☐ Desktop      ☐ Embedded Panel  
☐ Wall Mount      ☐ VESA Standard Arm      ☐ Portable  
☐ Others \_\_\_\_\_

##### 3.1.1 19" Rack Mount Installation

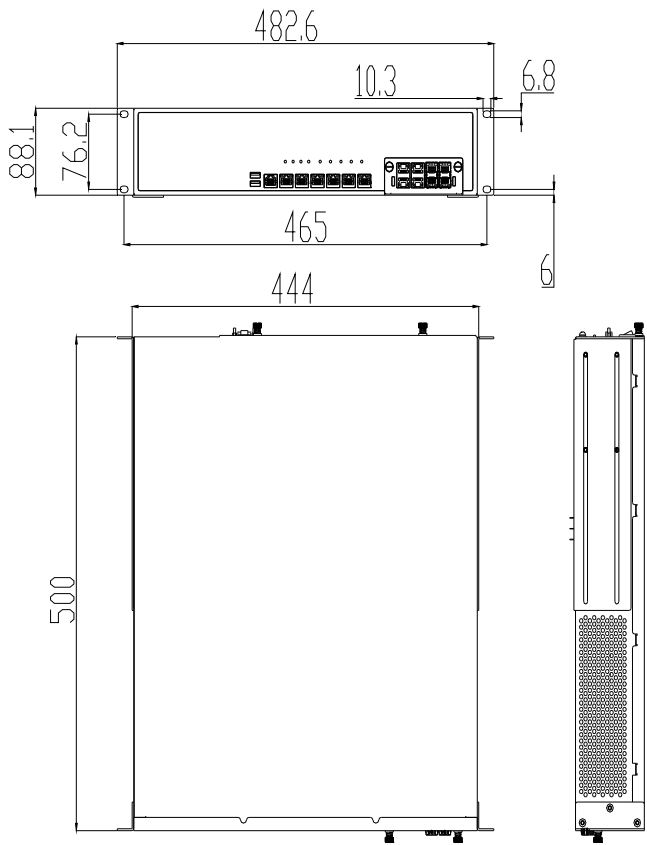
	<p>It is recommended to use M4*10 screws and four holes on the panel to fasten the PC into the cabinet.</p>
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#### Warning

Please make sure the wall or ceiling shall be able to support at least four times the total weight of the PC. (including cabinet bracket and additional expansion modules)



3.2 Product Dimensions

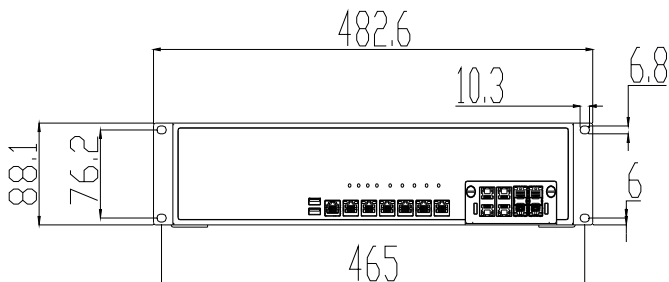


Unit: mm



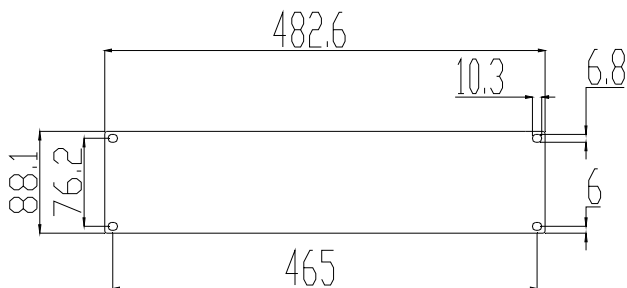
### 3.3 Installation Dimensions

#### 3.3.1 Installation Dimensions Drawing



Unit: mm

#### 3.3.2 Recommended Dimensions Drawing for Hole Drilling



Unit: mm



## 4. PC Connection

### 4.1 Notices before Connection

**Warning**

The connected or built-in peripherals with opposite polarities are not allowed.

**Warning**

The device only operates when connecting with grounded power. No operation is allowed when the device power is ungrounded or only impedance is grounded.

**Warning**

Rated voltage of the device in use shall be in accord with power feature of the product.

**Note:**

Only the peripheral devices approved for industrial application can be used. When operating the PC, hot swappable IO modules (USB) can be used. The IO devices without hot swap function can only be connected when the PC is powered off.

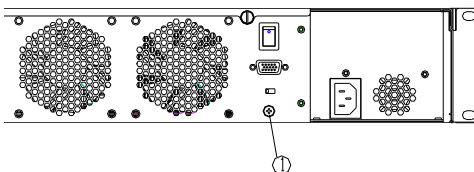
### 4.2 Product Grounding

Low impedance ground connection is more helpful to release the interference produced by the external cables, the signal cables or the cables connecting the IO module to the grounding system.



## Ground Terminals

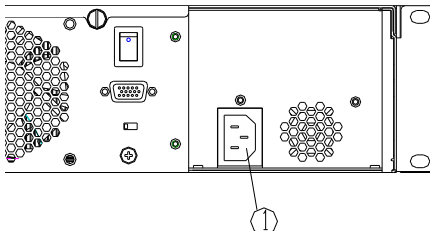
The equipotential bonding terminal ① on the device shall be connected with the cabinet installed with the PC or the central grounding busbar on the device. The minimum cross section area of the cable shall be no less than  $5\text{mm}^2$ , and the maximum ground resistance shall be no more than  $0.1\Omega$ .



## 4.3 Connecting the Device to Power

Steps to connect the device to power:

Connect the power cable to the socket ①. Before connection, please make sure the input voltage is consistent with the power feature of the product.



### Danger

Disconnect the power source and data cable during a lightning storm.

### Attention

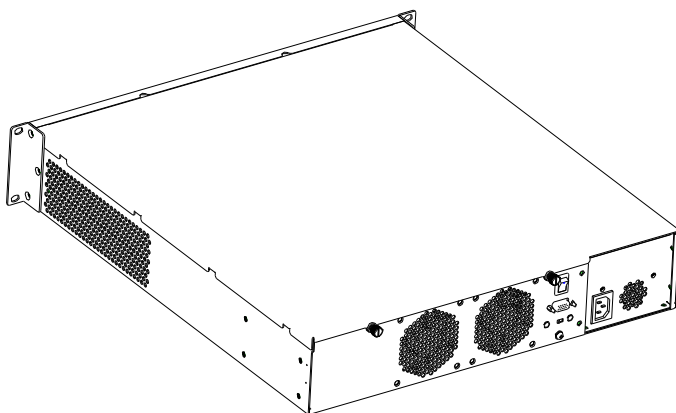
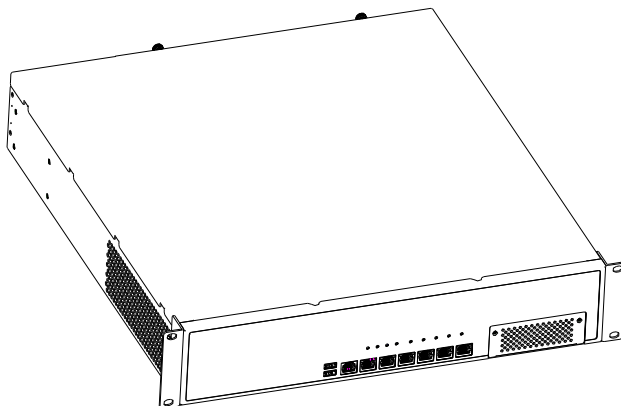
The PC is completely isolated from the power supply only by disconnecting the power connector.



## 5. Operating Instructions

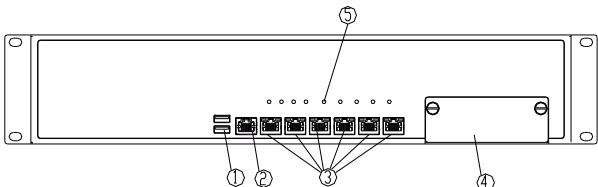
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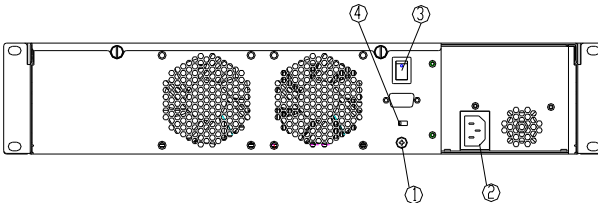
### 5.1 Product Outline





## 5.2 External Structure

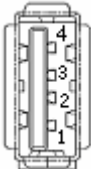
Front View	Item	Description
	①	USB port
	②	COM port
	③	RJ45 port
	④	Empty bracket
	⑤	Indicator

Rear View	Item	Description
	①	Ground screw cooling fan
	②	Power input
	③	Power switch
	④	BYBASS switch

## 5.3 Port Definition

### 5.3.1 USB Port

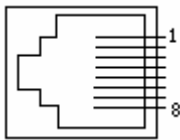
The PC provides one double-layer USB2.0 port. Its pin definition is as follows:

 <p>J1(USB1, USB2)</p>	Pin	Signal Name
	1	+5VUSB
	2	USB_Data-
	3	USB_Data+
	4	GND



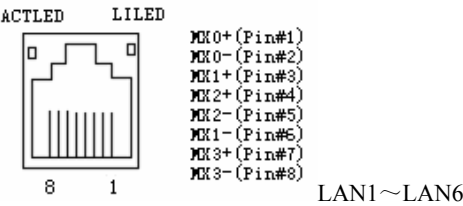
### 5.3.2 COM Port

The PC provides one RJ45 type COM1 port (Console port), which supports serial port redirection function. Its pin definition is as follows:

 COM1	Pin	Signal Name
	1	RTS#
	2	DTR#
	3	TXD
	4	GND
	5	GND
	6	RXD
	7	DSR#
	8	CTS#

### 5.3.3 Network Port

The PC provides six RJ45 network ports. The following figure provides the pin arrangement and corresponding input sockets. LILED and ACTLED are the two indicators located at the two sides of the network port, which respectively indicate the LAN activity and transmission speed. Please refer to the status description of each LED as follows:



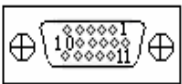
ACTLED (single color: green)	Network activity		LILED (Dual-color: yellow/green)	Network speed
			Green	1000Mbps



Flash	Data being transmitted	Yellow	100Mbps
Off	No data being transmitted	Off	10Mbps

### 5.3.4 Display Port

The PC provides one standard VGA port (optional). Its pin definition is as follows:

 VGA	Pin	Signal	Pin	Signal Name
	1	Red	2	Green
	3	Blue	4	NC
	5	GND	6	GND
	7	GND	8	GND
	9	NC	10	GND
	11	NC	12	DDCDATA
	13	HSYNC	14	VSYNC
	15	DDCCLK	-	-

### 5.4 Operation Control



#### Warning

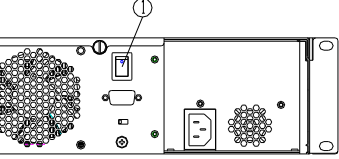
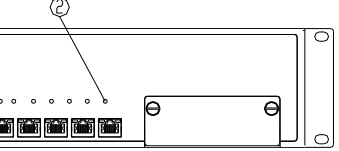
The On/Off button signal will not disconnect PC power supply!



#### Caution

When the PC executes hardware reset, data may be lost.



Control Button	Item	Description
	①	AT switch Used to switch on/off the PC.
	②	Reset button The button will trigger hardware reset, and the PC will be rebooted.

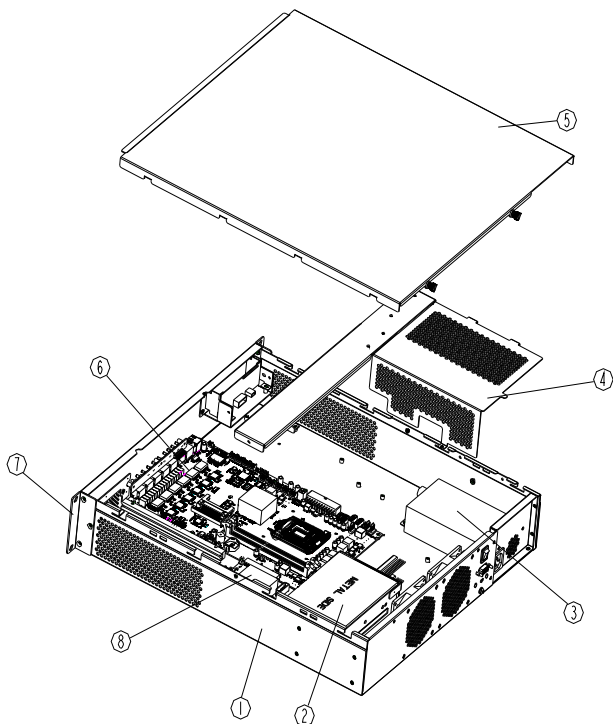
### 5.5 Status Indicators

Display	Meaning	LED	Description
POWER	PC status	Off	Power off
		Green	PC is operating
HDD	HDD access	Off	No access
		Green	Being accessed
BYPASS1/BYPASS2	BYPASS status	Off	BYPASS off
		Green	BYPASS on
USER LED1 ~ USER LED4	User-defined indicators	Off	User-defined
		Green	User-defined
LAN1~LAN6	Network activity (ACTLED)	Off	Not linked
		Green	Data being transmitted
	Network speed (LILED)	Off	10Mbps
		Yellow	100Mbps
		Green	1000Mbps



## 6. Assembly and Maintenance

### 6.1 Overall Assembly

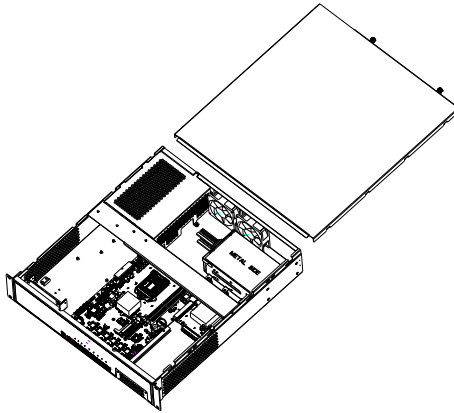


Item	Description	Item	Description	Item	Description
1	Chassis body	2	HDD	3	Power
4	Horizontal beam	5	Chassis cover	6	Motherboard
7	Mounting ear	8	PCIE expansion board		



## 6.2 Opening the Cover

Loosen the two captive screws on the backplane of chassis, then pull the chassis cover backward to open it.

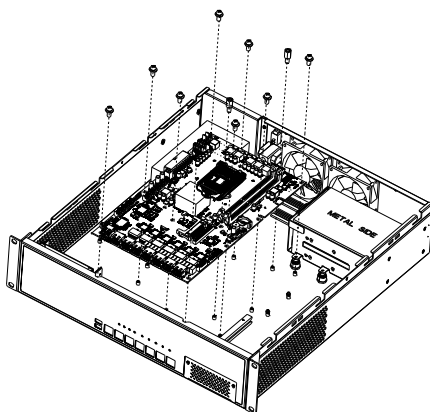


## 6.3 Installation/Removal of Motherboard

### 6.3.1 Installing the Motherboard

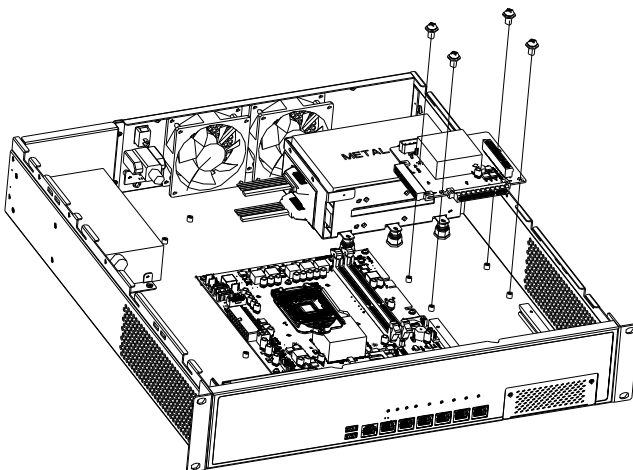
1. Place the motherboard into the chassis, and use 9 M3 panhead combo screws to fasten it in the right place;
2. Tighten the two M3\*6 copper hexagonal studs around the motherboard memory.



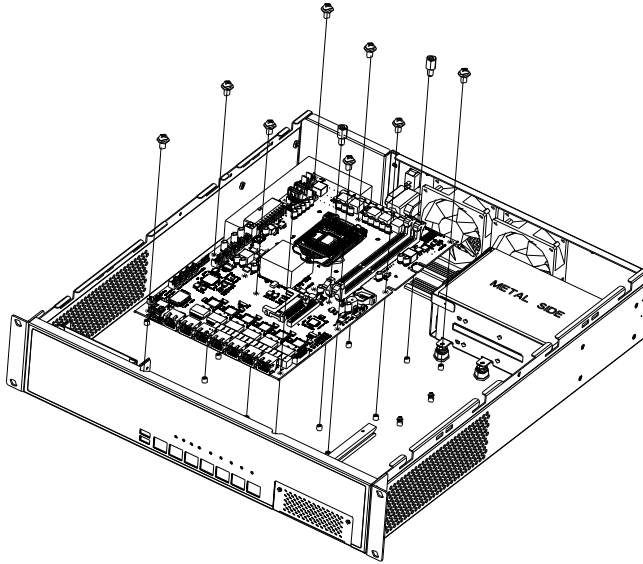


### 6.3.2 Removing the Motherboard

1. Open the chassis cover;
2. Loosen the four M3 screws, and remove PCIE expansion card;
3. Loosen the two M3 screws fixing the memory bracket;
4. Loosen the 9 M3 screws and two hexagonal studs fastening the motherboard, then you can remove it.

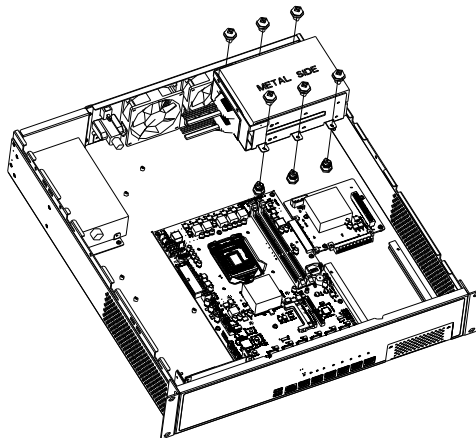






## 6.4 Installation/Removal of HDD

1. Use four #6-32 screws to fasten the HDD onto the HDD bracket;
2. Place the HDD assembly into the chassis, and use four M4 screws to fasten it in the right place.

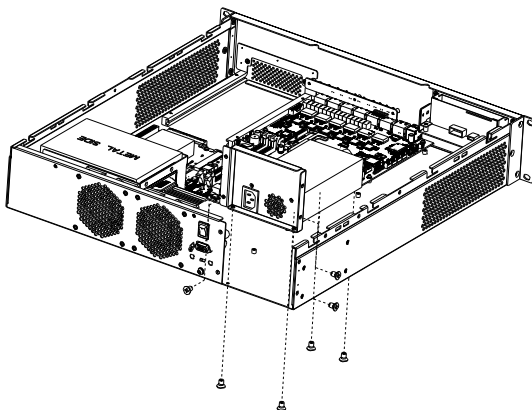




## 6.5 Installation/Removal of Power Supply

### 6.5.1 Installing the Power Supply

Use six M3 sunkhead screws to fasten the power bracket and chassis body, place the power supply into the chassis, then use two sunkhead #6-32\*1/4 screws to fasten the power supply onto the power bracket, finally use two M3 sunkhead screws to fasten the tail of the power supply from bottom of the chassis.



### 6.5.2 Removing the Power Supply

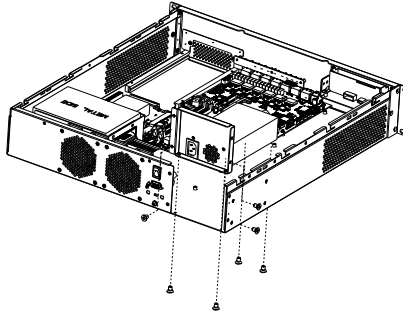


**Danger**

Before removing power supply module, it must be powered off, and power cable must be disconnected.

The method of removing the power supply: First open the chassis cover, loosen the two sunkhead #6-32\*1/4 screws fixing the power bracket and power supply, then loosen the two M3 sunkhead screws fixing the tail of power supply from the bottom of the chassis, pull out the power cable terminal, then you can remove the power supply from the chassis body.

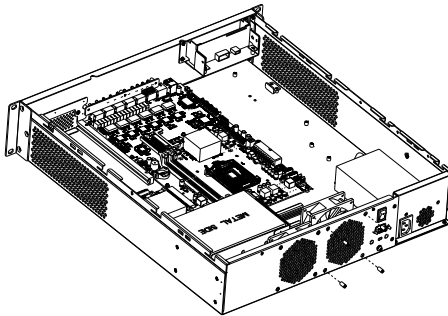




## 6.6 Installation/Removal of Fan

### 6.6.1 Installing the Fan

Place the fan into the chassis, use four sunkhead self-tapping screws ST4.8\*10 to fasten it in right place.



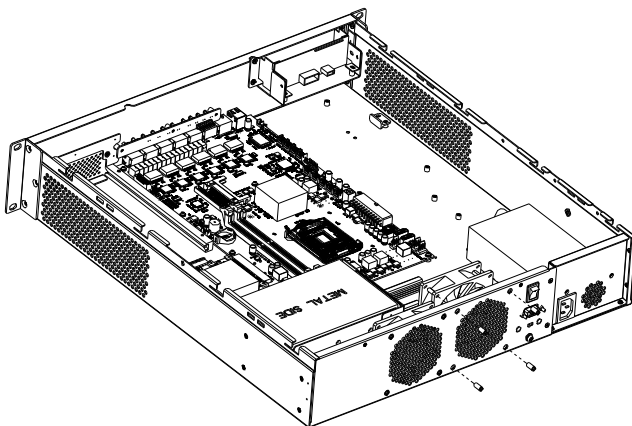
#### Note

Because the fan is rotating fast, do not touch the fan before it stops moving.

### 6.6.2 Removing the Fan

Open the chassis cover, then loosen the four sunkhead self-tapping screws ST4.8\*10 from rear of the chassis to remove the fan.




**Note**

Because the fan is rotating fast, do not touch the fan before it stops moving.



---

## **7. Installing the Drivers**

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Regarding the installation of the driver program and the detailed information of the motherboard, please refer to the enclosed CD of the PC.



## 8. Appendix

### 8.1 Troubleshooting and Solutions

Common Malfunctions	Possible Reasons	Troubleshooting and Solution
The device is not operating	No power supply	Please check the power supply and the power cable/connector.
	Improper device operating environment	1. Check the environment conditions; 2. Please wait for twelve hours before powering on the
The external display is black	The display has not been turned on	Turn on the display
	The display is under “power saving” mode	Press any key on the keyboard.
	The luminance control is set to “Black”.	Increase the screen luminance by luminance control. Please refer to the instructions of the display for detailed information.
	Power cable or display cable is not connected	1. Please check whether the power cable is correctly connected with the display, the system unit or the ground port. 2. Please check whether the display cable is correctly connected with the display and the system unit. 3. Contact Technique Support if the screen remains black after implementing the above measures.
Incorrect time or date on PC	Incorrect BIOS setting	Follow the power-on prompt and press the key to enter the BIOS Setup; adjust the time and date in BIOS Setup.



BIOS setting is correct while the time and date are incorrect.	Insufficient backup battery capacity	Replace the battery
USB device has no response	USB port is disabled in BIOS	Use other USB ports or enable that port.
	USB 2.0 device is connected; however, USB 2.0 is disabled.	Enable USB 2.0.
	USB port is not supported by the operating system.	1. Enable USB Legacy Support for the mouse and keyboard (Legacy USB is supported); 2. For other devices, appropriate USB drivers are required.
The computer is not booted or displays “Boot device not found”	In booting priority of the BIOS setting, the device is not the first priority or the device is not include in the booting device.	Modify the booting priority of the device in the Boot menu of BIOS setting or include that device into the booting priority.
No system disk can be found when powering on	The HDD power cable or data cable is not connected well	Check whether the power cable and the data cable of the hard disk (the hard disk shall be installed with operating system and is bootable) are well connected.
	System files on the hard disk are damaged	Enter the system (usually WinPE system) with a bootable disk; check whether the system in the hard disk is damaged. Reinstall the system if necessary.



Plug and play I/O card, no IO card is detected or no IO card can be used when used again	Poor contact of the slot	Poor contact is usually caused by frequent installation/uninstallation of the PCI or ISA card, unstable fixing or improper dust-proof measures; please remove and install the card for a few times or use another slot.
--	--------------------------	---