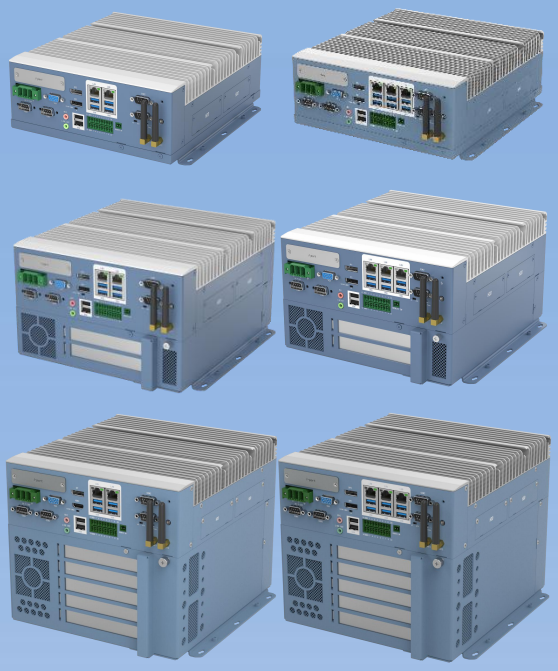
# KMDA-5610/5920/5921

# User's Manual



Ver.A1.1

Date：2022-03-22

# Version Note

| No. | Ver. | Note | Date | Writer | Check |
|---|---|---|---|---|---|
| 1 | A1.0 | First publish | 2021.04.07 | Xiong Ju | Colin |
| 2 | A1.1 | Updated KMDA-5610-S002 and AXM-I962 motherboard information, updated installation steps | 2022.03.22 | Julie | Colin |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

## Copyright



## Acknowledgements

Award is a trademark of Award Software International, Inc.

IBM, PC/AT, PS/2 and VGA are trademarks of International Business Machines Corporation.

Intel and Pentium are trademarks of Intel Corporation.

Microsoft Windows and MS-DOS are registered trademarks of Microsoft Corp.

RTL is a trademark of Realtek Semi-Conductor Co., Ltd.

All other product names or trademarks are properties of their respective owners.

For more information on this and other JHC products, please visit our websites at: http://www.jhctech.com.cn

## Product Warranty (2 years)

JHC warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by JHC, or which have been subject to misuse, abuse, accident or improper installation.

JHC assumes no liability under the terms of this warranty as a consequence of such events.

Because of JHC.s high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an JHC product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, JHC products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

## Declaration of Conformity

### CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from JHC. Please contact your local supplier for ordering information. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

### FCC Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## Technical Support and Assistance

Step 1. Visit the JHC web site at www.jhctech.com.cn where you can find the latest information about the product.

Step 2. Contact your distributor, sales representative, or JHC's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version,application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

# CONTENTS

CHAPTER 1

# General Information

## 1.1 Introduction

KMDA-5610/5920/5921 is a new generation of JHC embedded industrial box computer, equipped with Intel® 8/9th generation Coffee Lake LGA1151 CPU, Intel Q370/H310 chipset, Supports 260-pin SODIMM dual channel DDR4 2666/2400 MHz memory, up to 128GB (Q370) (UP to 64GB for H310), using Intel UHD Graphics, The KMDA-5920/5921 supports multiple PCI/PCIe expansion slots to meet users' application requirements in various projects.

KMDA-5610 / 5920 / 5921 products provide rich I / O interfaces, including 2 * DP + 1 * VGA (Q370) (H310: 1 * HDMI + 1 * DP + 1 * VGA), 3 GIGABit network port, 8 * USB (2 built-in pins) (Q370) (H310: 2 * GIGABit network port, 5 * USB (1 built-in pin)), 4 * COM, 16 bit isolated DIO, 1 * Full Size Mini PCIe (Q370: supports PCIe + USB signal and can be set to mSATA through BIOS), with SIM card slot, Support 4G, WiFi / BT and other wireless functions, 1 * m.2 E-Key, 1 * m.2 B-key (3052 by default, 3042 by option, support 4G module) with SIM card slot and support 5g module; 1*mSATA(H310), 1*M.2 M-Key(Q370), 2*2.5” SATA。At the same time, KMDA-5920 / 5921 supports 2 / 4 PCIe / PCI extensions. DC 9 ~ 36V wide voltage input, 3 LED lights are used to monitor the working condition of CPU, which is convenient for users to understand the working state of the machine. It is very suitable for industrial automation, CNC machinery, machine vision, power operation control, video security and other fields.

## 1.2 Features

1、General aluminum rectangular profile heat dissipation shell, SGCC box

2、Intel® Coffee lake 9th/8th-Gen Core™ i7/i5/i3/Pentium/Celeron LGA1151 CPU, Intel® Q370/H310 chipset

3、2/4 * 260-pin SODIMM, supports DDR4 2666/2400 MHz, 128GB maximum

4、1 * Mini PCIe(Q370: supports PCIe+USB signals and can be set to mSATA through BIOS. H310: full-length mSATA(SATA+USB signal) with SIM card slot, supports 4G and WIFI/BT wireless functions

5、2*SATA HDD/SSD bay, supports Raid0, 1(Intel Q370), 1*mSATA, 1*M.2 2280(Q370: PCIex4) supports NVMe

6、2*DP, 1*VGA, supports three independent display (Intel Q370) or 1*HDMI+1*DP+1*VGA 2+1

display (H310)

7、2*Intel I211AT (Q370) or 1*Intel I211AT (H310), 1*Intel I219LM controller, supporting iVpro technology, 3*RJ45 (H310:2*RJ45)

8、Optional Realtek ALC662VD chip, 1 * line out, 1 * mic

9、16-bit isolated DIO, 6*USB3.1(Q370 Gen2.0), 4*USB3.1 (H310 Gen1.0), 2/1*USB2.0(built-in), 4*COM

10、1*PCIe x16+1*PCIe x1+2*PCI Expansion slot (KMDA-5921)

11、1*PCIe x16+1*PCIe x4（KMDA-5920）

12、The clear CMOS switch is placed on the front panel to facilitate the user to clear CMOS

13、The AT/ATX power on mode selection switch is placed on the front panel to facilitate the user's selection of power on mode

14、9 ~ 36V DC wide voltage input, CPU temperature led analog display

15、Optional TPM2.0 data security encryption

## 1.3 Specifications

### 1.3.1 General

**CPU:** Intel® Coffee lake 9th/8th-Gen Core™ i7/i5/i3/Pentium/Celeron LGA1151 CPU

**PCH：** Intel H310(KMDA-5610-S001/5920-S001/5921-S001), Intel Q370(KMDA-5610-S002/5920-S002/5921-S002)

**System Memory:** 4 * dual-channel DDR4 2666/2400MHz SODIMM up to 128GB (Q370) (H310:2 * DDR4, up to 64GB)

**Watchdog Timer:** 0 ~ 255 level interval timer, set by software

**USB:** 6*USB3.1 (H310:4 *USB3.1), Type A interface; 2*USB2.0 built-in pin (H310:1 *USB2.0)

**Serial Ports：** 2* RS-232/422/485, DB9 male, 2* RS-232 DB9 male

**DIO:** 16-bit isolated DIO, 8-bit 2.5kV optical isolated input (H:5-24V, L:0-1.5V), 8-bit 2.5kV optical isolated output (200mA)

**I-Port：** Q370: optional USB2.0, 16 bit DIO, or Mini PCIe and M.2 function card interface, such as serial port; H310: optional USB2.0, 16 bit DIO or serial port

**Expansion Interface:**

1* Full-length Mini PCIe(Q370: supports PCIe+USB signals and can be set to mSATA through BIOS)

1*SIM slot

1*M.2 E-key 2230, 1*M.2 3052 B-key (optional support M.2 3042) (Q370)

PCI/PCIe slots

-KMDA-5920: 1*PCIe x16+1*PCIe x16(x4 signal)

-KMDA-5921: 1*PCIe x16+1*PCIe x4（x2 signal)+2*PCI slot/2*PCIe x8+2*PCIe x4（x2 signal)

**Storage:**

1 * mSATA, 1 * M.2 2280 M-Key supports NVME (Q370)

2 * 2.5-inch SATA HDD/SSD supports raid0,1 (In Intel® Q370)

### 1.3.2 Display

**Chip：** Intel UHD Graphics

**Display Memory：** Shared system memory

**Resolution:** DP maximum resolution 4096* 2304@60Hz , HDMI highest resolution 4096* 2160@24Hz , VGA maximum resolution 1900* 1200@60Hz

### 1.3.3 Ethernet

**Chipset:** 2*Intel® I211AT (H310:1 *Intel® I211AT), 1*Intel® I219LM Ethernet controller

**Speed:** 10/100/1000 Mbps adaptive

**Interface:** **3*RJ45（H310：2*RJ45）**

### 1.3.4 Audio

**Chipset:** Optional support for Realtek ALC662VD chip, none by default

**Interface:** 1* Line out, 1*Mic，3.5mm audio interface

### 1.3.5 Power Consumption

**Input Voltage:** DC 9-36V

**Power Consumption:**

**Power Adapter:** AC to DC 19V/6.32A, 120W (for KMDA-5610, and KMDA-5921/5920 without graphics card)

AC to DC 24V / 9.17A, 220W (for KMDA-5921/5920 with independent graphics card)

AC/DC Power Adapter, DC24V@12.5A,300W (for KMDA-5921/5920 graphics card)

## 1.4 Environmental requirement

**Operating temperature:** -20 ~65℃ (No fan, SSD, air flow) -10~55℃ (No fan, HDD, air flow)

**Relative humidity:**10%-90%@40°C (non-condensing)

**Storage temperature:** -40 ~ 85°C (-40 ~ 185°F)

**Vibration loading during operation:** With SSD: 5.0 grms/random/5～500 Hz；with HDD: 1.0 grms/random/5～500 Hz

**Shock during operation:** With SSD: 50g peak acceleration (continue 11ms)； with HDD: 20g peak acceleration (continue 11ms)

**EMC:** CE, FCC Class A

## 1.5 KMDA-5921/5920/5610 Series Ordering Information

| Model No. | KMDA-5921-S001 | KMDA-5920-S001 | KMDA-5610-S001 | KMDA-5921-S002 | KMDA-5920-S002 | KMDA-5610-S002 |
|---|---|---|---|---|---|---|
| CPU | Intel® Coffee lake 9th/8th-Gen Core™ i7/i5/i3/Pentium/Celeron CPU | | | | | |
| Chipset | Intel® H310 | | | Intel® Q370 | | |
| SODIMM | 2 | | | 4 | | |
| Storage | 2*SATA3，1* mSATA | | | 2*SATA3，1* mSATA（optional），1*M.2 2280 M-Key（supports NVMe） | | |
| LAN | 2 | | | 3 | | |
| USB | 4*USB3.1(gen1.0)，1*USB2.0(built-in pin） | | | 6*USB3.1(gen2.0)，2*USB2.0(built-in pin） | | |
| COM | 2* RS-232/422/485，2* RS-232 | | | | | |
| DIO/bit | 16-bit isolated DIO | | | | | |
| Display | 1*HDMI， 1*DP，1*VGA | | | 2*DP， 1*VGA | | |
| Audio | 1*Line Out, 1*MIC （optional） | | | | | |
| I-port | Optional USB2.0, 16 bit DIO or serial port | | | Optional USB2.0, 16 bit DIO, or Mini PCIe and M.2 function card interface, such as serial port | | |
| Expansion | 1*M.2 E-Key | 1*M.2 E-Key 2230, | 1*M.2 E-Key 2230 | 1*Mini PCIe, | 1*Mini PCIe, | 1*Mini PCIe，1*M.2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 2230, 1*PCIe x16+1*PCIe x4（x2 signal） 2*PCI | 1*PCIe x16+1*PCIe x16（x4 signal） | | 1*M.2 E-Key 2230, 1* M.2 3052 B-Key，1*PCIe x16+1*PCIe x4（x2 signal），2*PCI or 2*PCIe x8+2*PCIe x4 | 1*M.2 E-Key 2230, 1* M.2 3052 B-Key，1*PCIe x16+1*PCIe x16（x4 signal） | E-Key 2230, 1* M.2 3052 B-Key，1*M.2 2280 M-Key（Gen3，PCIe x4 signal） |

## 1.6 Structural Specification

KMDA-5921/5920/5610 embedded industrial box computer is assembled by JHC OSBC (single board computer AXM-I960/I962), JHC sub-card (ECB-9600), expansion base card (ECX-266/255/254), which is installed in the universal aluminum profile housing.

**Warning:** be sure to turn off the power and unplug before installation, do not operate with live power!

The specific arrangement and combination of the main board and sub-cards are as follows:

| Model No. | KMDA-5921 -S002 | KMDA-5921 -S001 | KMDA-5920 -S002 | KMDA-5920 -S001 | KMDA-5610 -S002 | KMDA-5610 -S001 |
|---|---|---|---|---|---|---|
| AXM-I960 | ✓ | | ✓ | | ✓ | |
| AXM-I962 | | ✓ | | ✓ | | ✓ |
| ECB-9600 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ECX-266 | ✓ | ✓ | | | | |
| ECX-255 | | | ✓ | ✓ | | |
| ECX-254 | ✓ | | | | | |

(* Note: The actual position of the physical interface may vary with the product version, please refer to the physical model.)

**Main board AXM-I960(front)：**


Figure 1. 1

**Main board AXM-I960 (back)：**

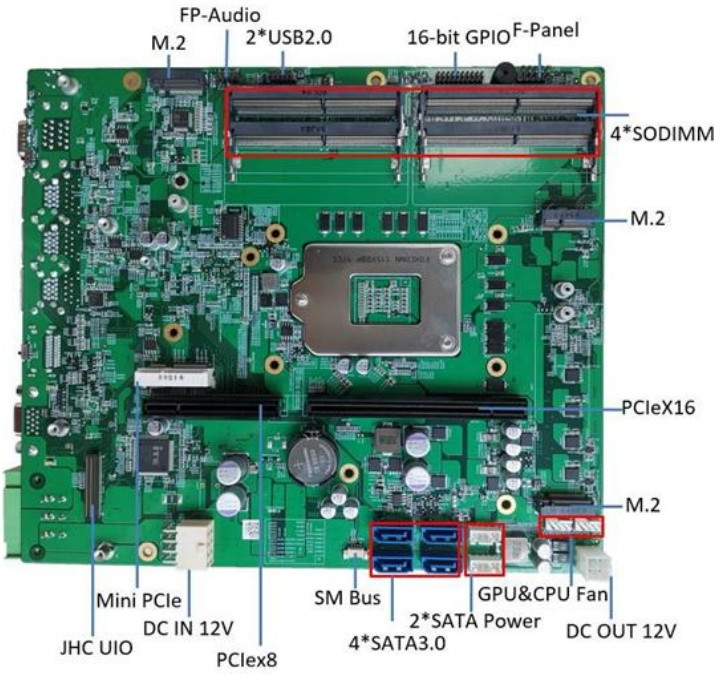



Figure 1. 2

**Main board AXM-I962 (front)：**

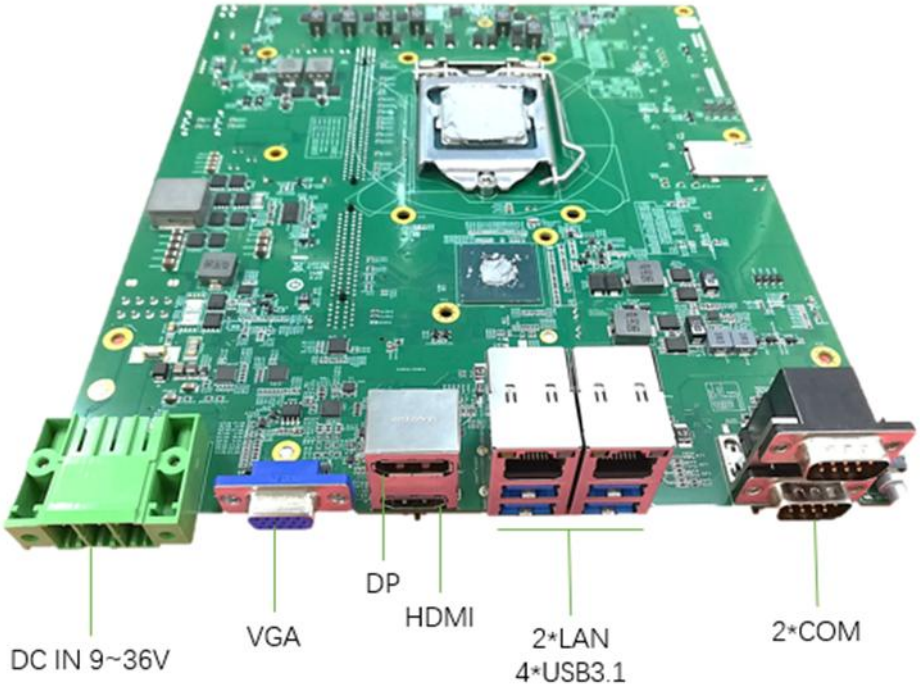



Figure 1. 3

**Main board AXM-I962(back)：**

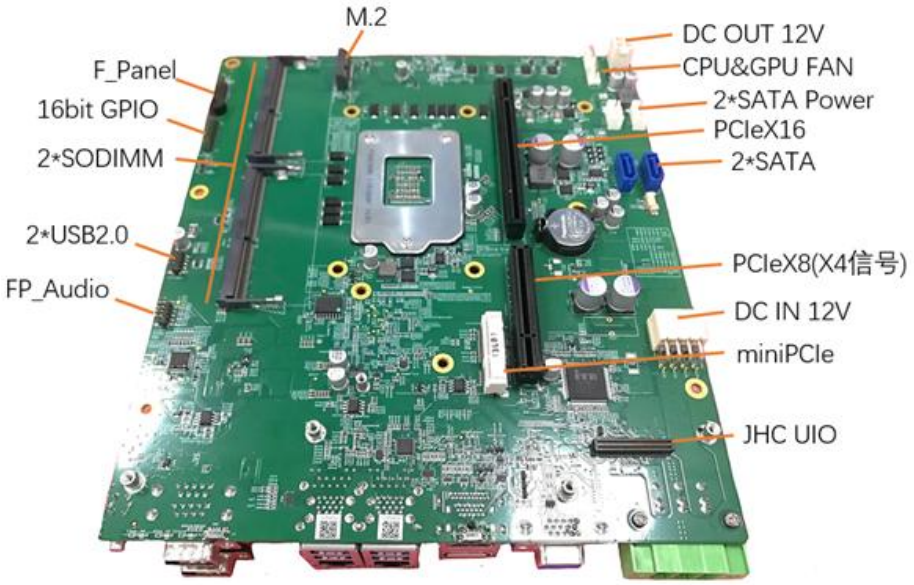



Figure 1.4

**Subcard (ECB-9600):**

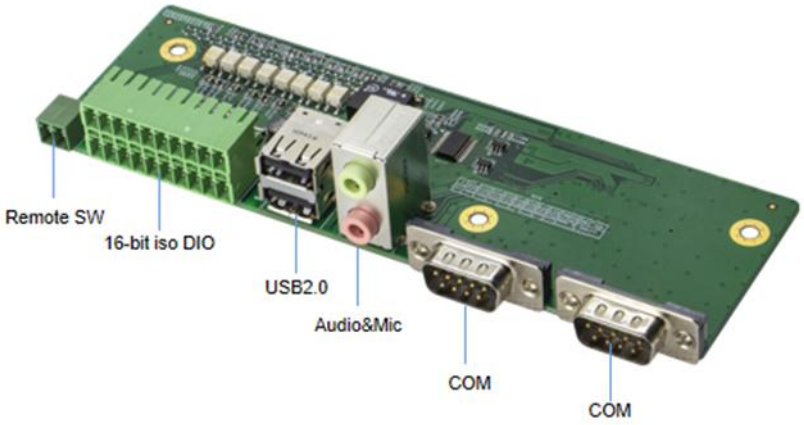



Figure 1.5

**Extension Sub-card (ECX-255):**

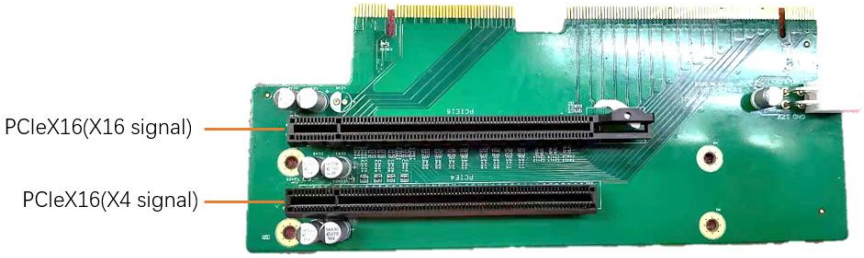



Figure 1.6

**Extension Sub-card (ECX-266):**


Figure 1.7

**Extension Sub-card (ECX-254):**

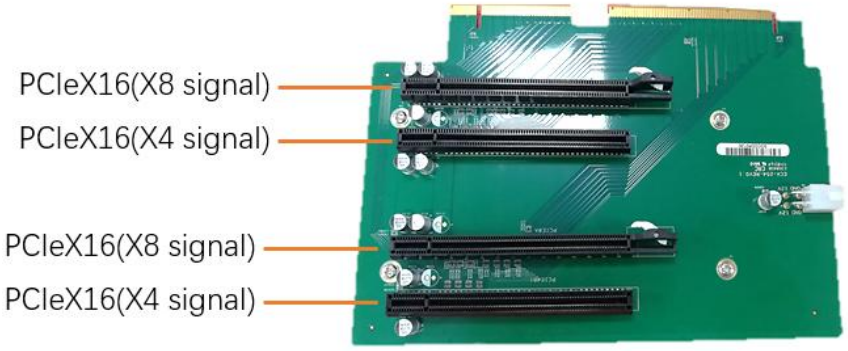



Figure 1.8

## 1.7 Dimension

KMDA-5921-S002 Dimension（Unit：mm）

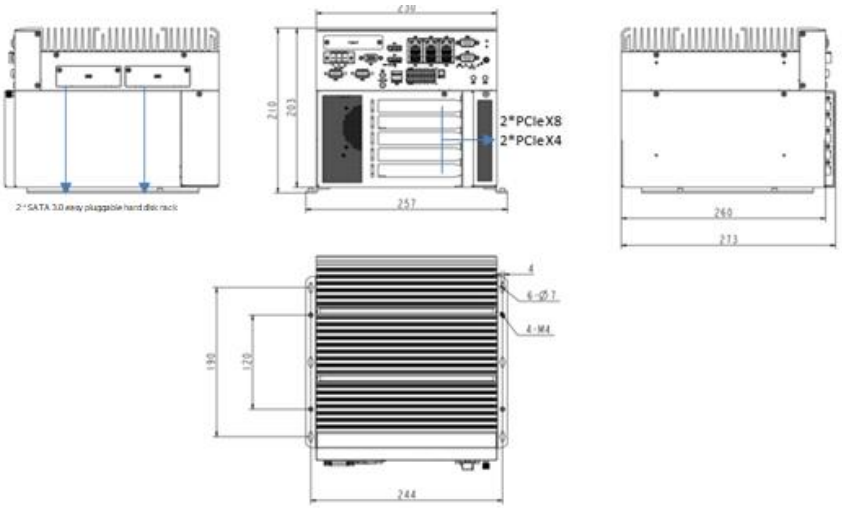



Figure 1.9

KMDA-5921-S001 Dimension（Unit：mm）

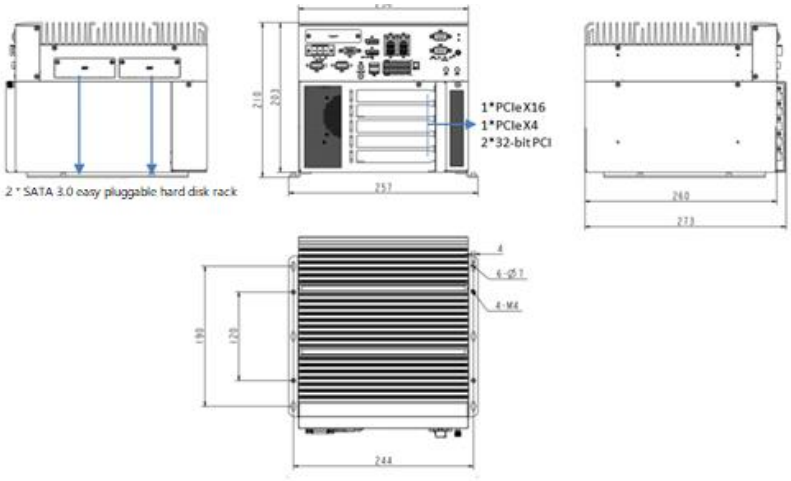



Figure 1.10

KMDA-5920-S002 Dimension（Unit：mm）

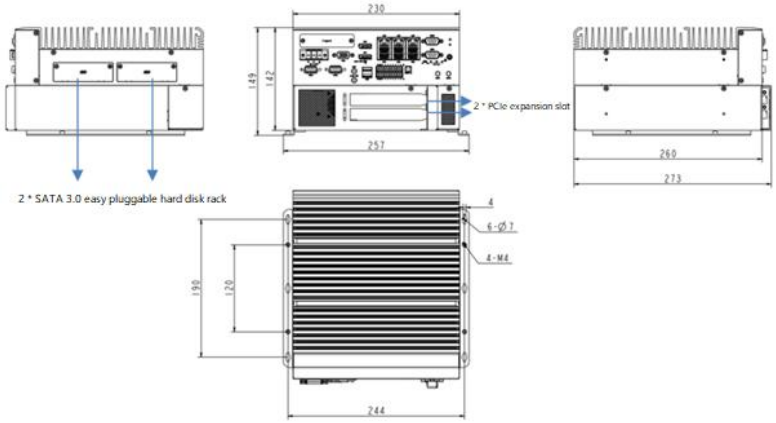



Figure 1.11

KMDA-5920-S001 Dimension（Unit：mm）

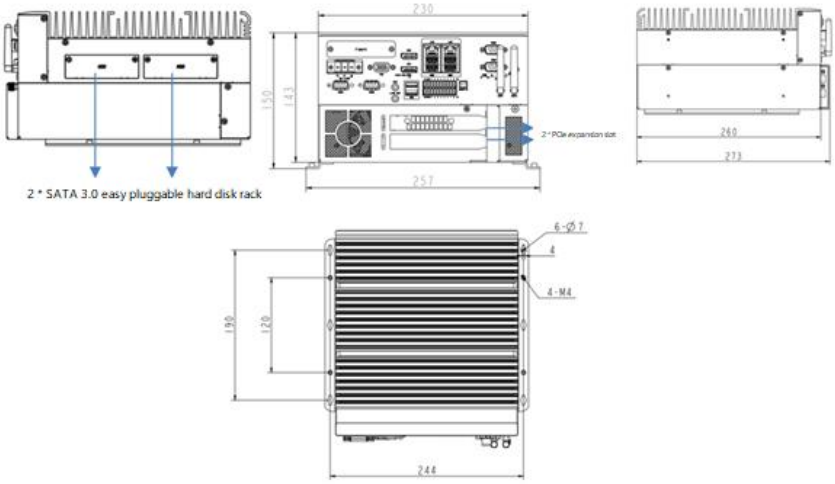



Figure 1.12

KMDA-5610-S002 Dimension（Unit：mm）

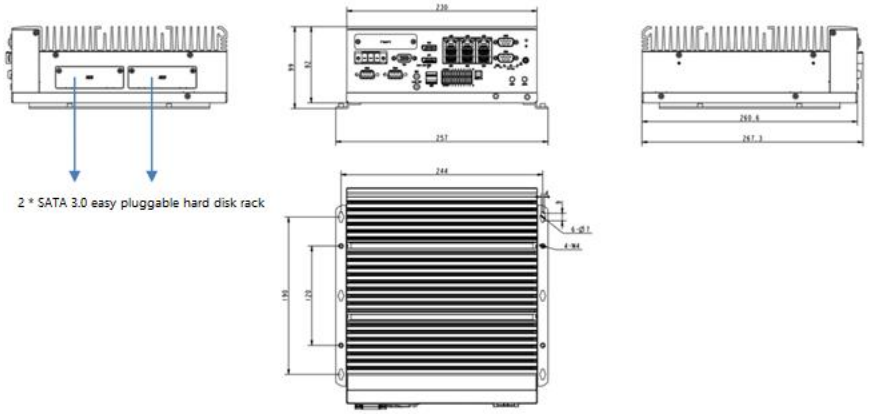



Figure 1.13

KMDA-5610-S001 Dimension（Unit：mm）

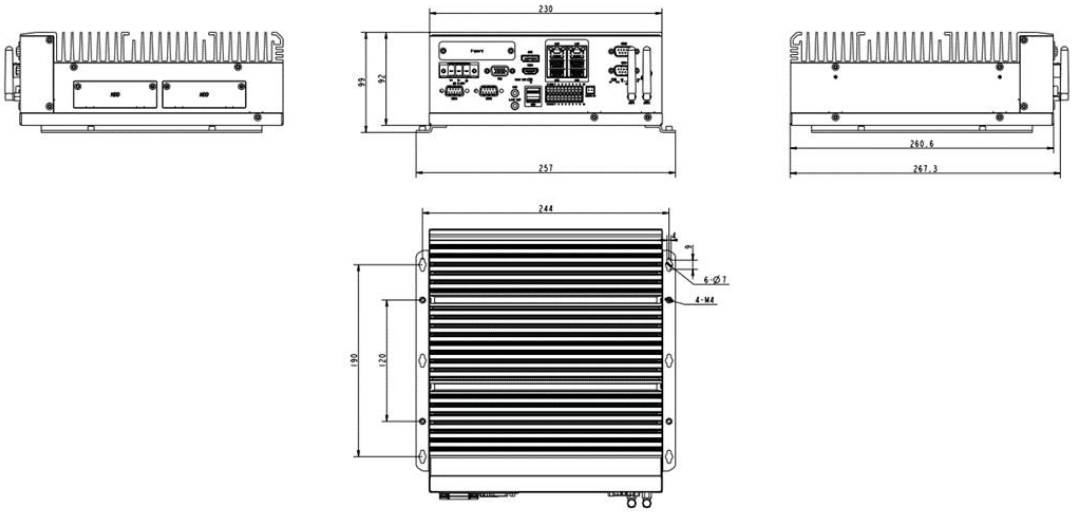



Figure 1.14

CHAPTER 2

# Hardware Installation

## 2.1 Introduction

The following chapters will state the panel DIP switch settings and external connectors and pin assignments of the product.

## 2.2 Panel DIP switch settings

KMDA-5921/5920/5610 high performance box computer is equipped with a simple DIP switch on the panel. This simple DIP switch can be toggled with tweezers or a card pin, which is convenient for users to set according to different configuration requirements. The following table lists the function of each DIP switch on the panel.

**DIP switch list:**

| Model No. | Introduction | Describe |
|---|---|---|
| CLEAR/CMOS | Clear CMOS data and restore default settings | 3-Pin SW |
| AT/ATX | Set the power-on mode, AT or ATX | 3-Pin SW |

### 2.2.1 CLEAR/COMS CMOS data clear switch

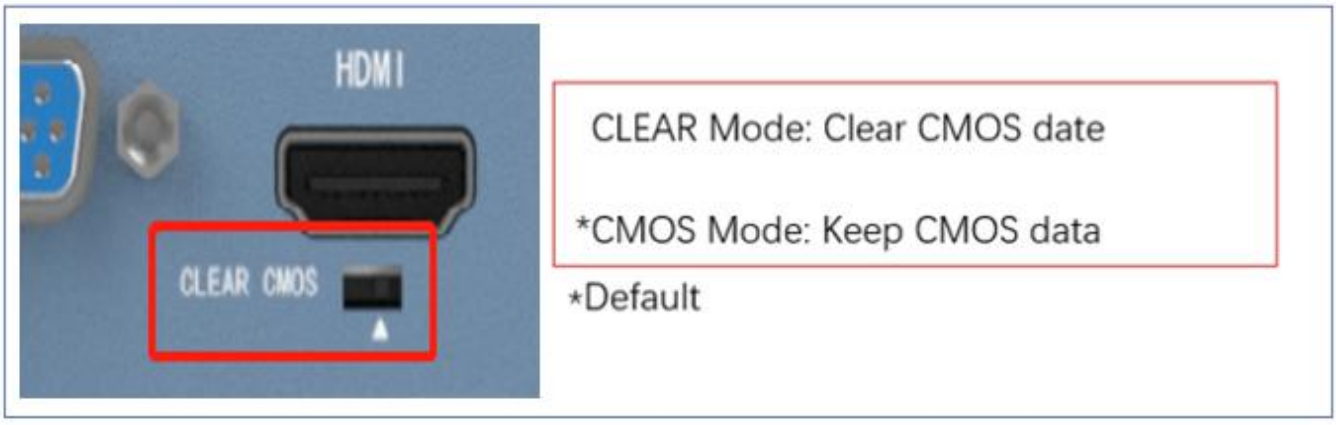



Figure 2.1

The CMOS is powered by the socket BAT battery. Clearing CMOS will permanently erase the previous system settings and set them to the original (factory settings) system settings.

When you encounter the following problems:

a) COMS data is messy and lost;

b) Forgot the super password and user password;

You can store the default values in the ROM BIOS to reconfigure your system. The steps:

(1) Turn off the computer and disconnect the power supply;

(2) Toggle the DIP switch to CLEAR mode, stay for 5~6 seconds, and then return to CMOS

mode;

(3) Start the computer, press the Del key to enter the BIOS settings during startup, and reload the optimal default values;

(4) Save and exit the setting.

### 2.2.2 AT/ATX Power-on mode selection switch

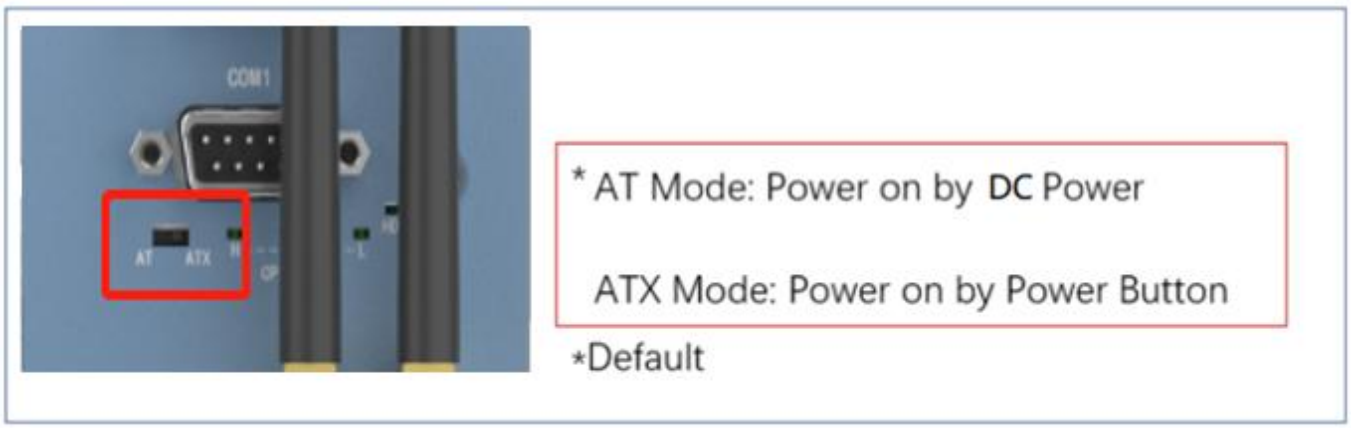



Figure 2.2

KMDA-5921/5920/5610 provides AT/ATX switch, users can use tweezers to toggle the DIP switch to set the machine's boot mode. When you switch it to AT mode, it means turning on the DC power and turning it on; when turning it to ATX, it means turning it on by the power switch button.

## 2.3 I/O Interface and LED light

**KMDA-5921-S001 front view:**

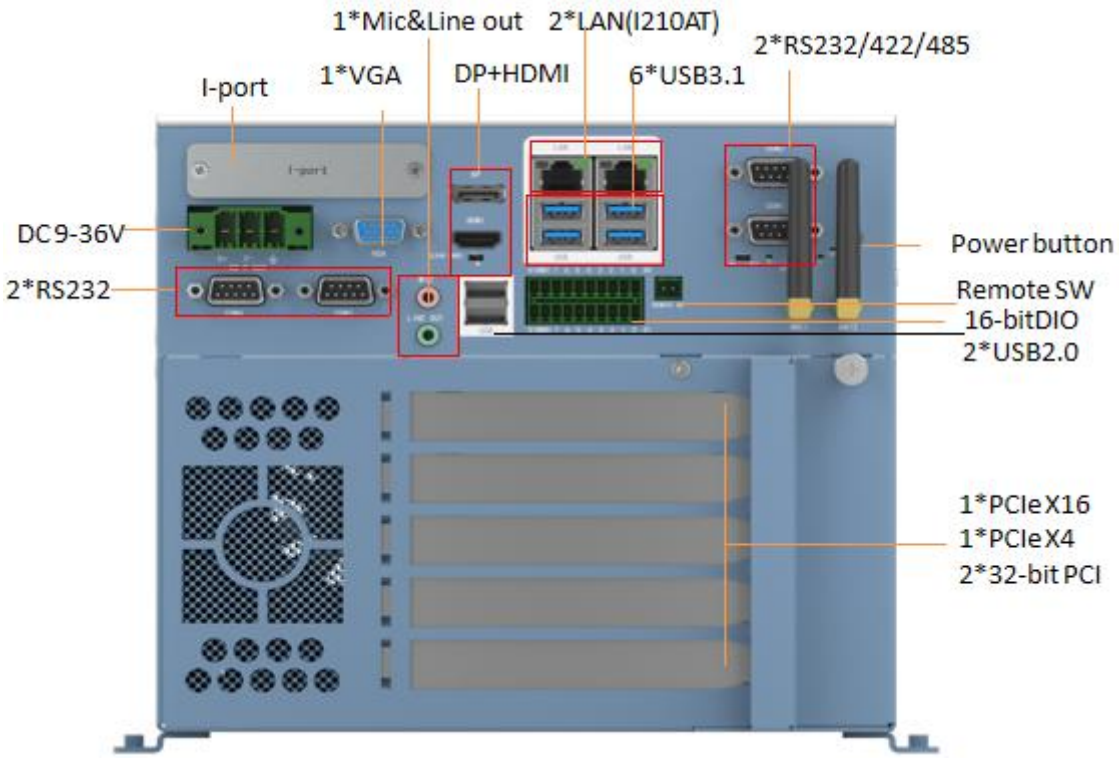


Figure 2.3

I/O ports on the front panel:

- 1*DC-in Power jack: 3-pole Phoenix terminal block
- 1*Remote SW: 2-pole terminal block
- 1*Mic, 1*Line out: 3.5mm phone jack
- 1*DP, 1*HDMI, 1*VGA
- 2*USB 2.0 Type A, 4*USB3.0 Type A, 1*I-Port
- 2*Gigabit LAN: RJ45 with LEDs
- 4*COM: DB9 2*RS232, 2*RS232/422/485
- 8-bit DIO:2*10Pin connector
- 1*PCIeX4, 1*PCIeX16, 2*PCI slots
- Power button
- HDD LED, CPU LEDs
- AT/ATX SW, Clear CMOS SW

qiangge

**KMDA-5921-S002 front view:**

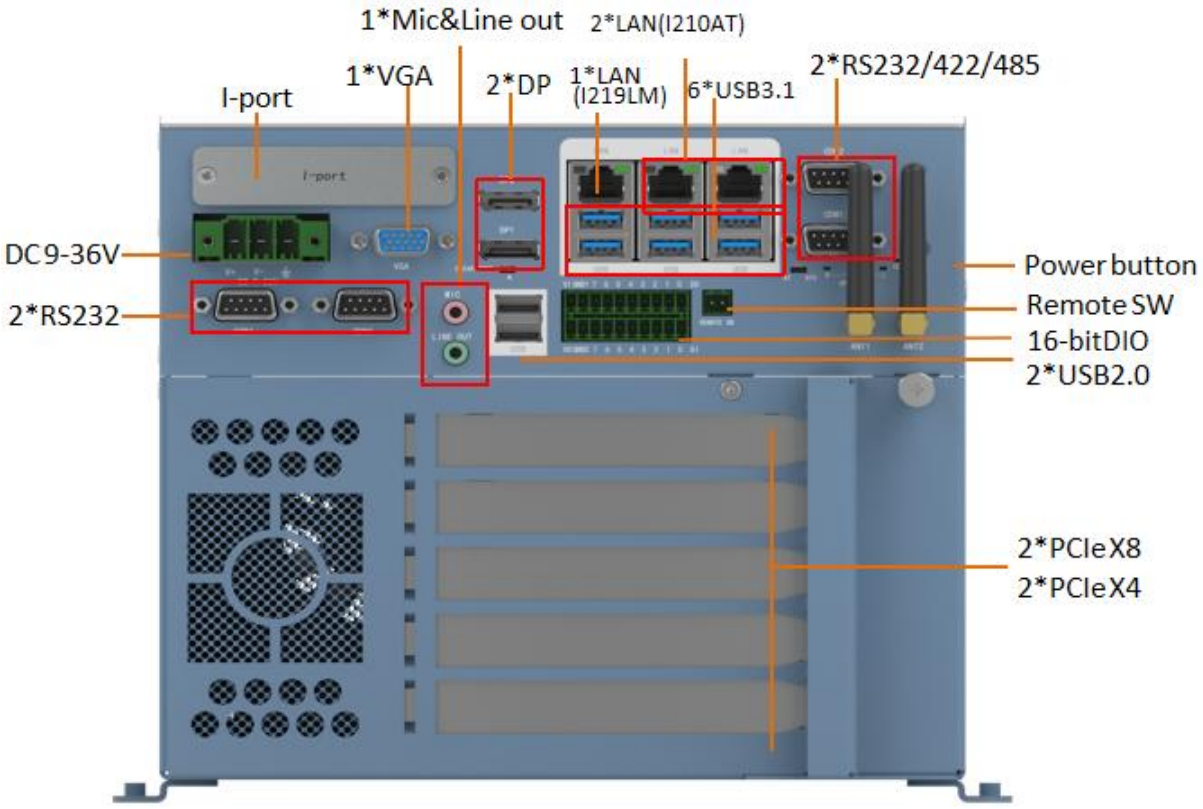



Figure 2.4

I/O ports on the front panel:

- 1*DC-in Power jack: 3-pole Phoenix terminal block
- 1*Remote SW: 2-pole terminal block

- 1*Mic, 1*Line out: 3.5mm phone jack
- 2*DP, 1*VGA
- 2*USB 2.0 Type A, 6*USB3.0 Type A, 1*I-Port
- 3*Gigabit LAN: RJ45 with LEDs
- 4*COM: DB9 2*RS232, 2*RS232/422/485
- 8-bit DIO:2*10Pin connector
- 5 expansion slots
- Power button
- HDD LED, CPU LEDs
- AT/ATX SW, Clear CMOS SW

**KMDA-5921 Side Panel:**

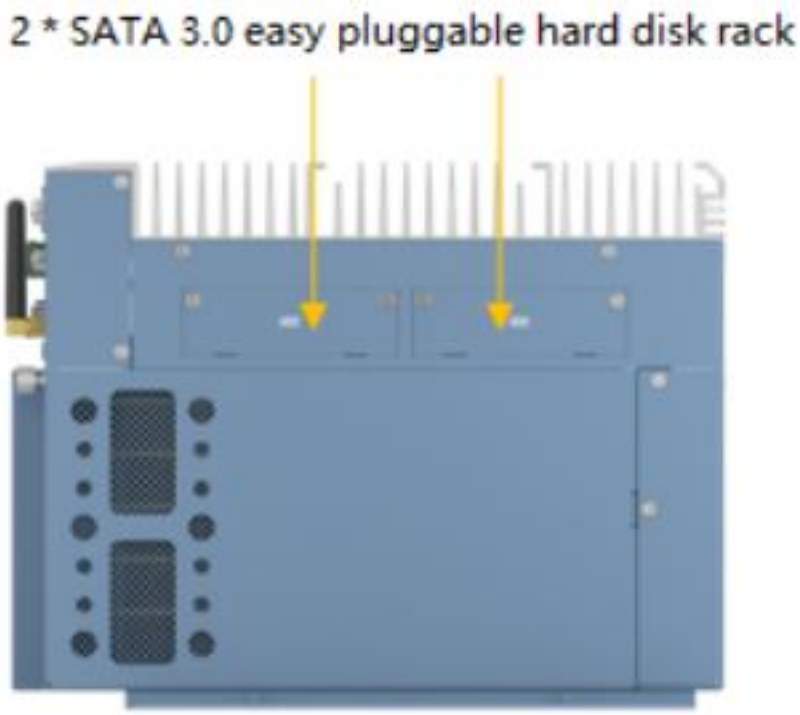



Figure 2.5

I/O ports on the side panel:

- 2*SATA SSD/HDD

**KMDA-5920-S001 front view:**

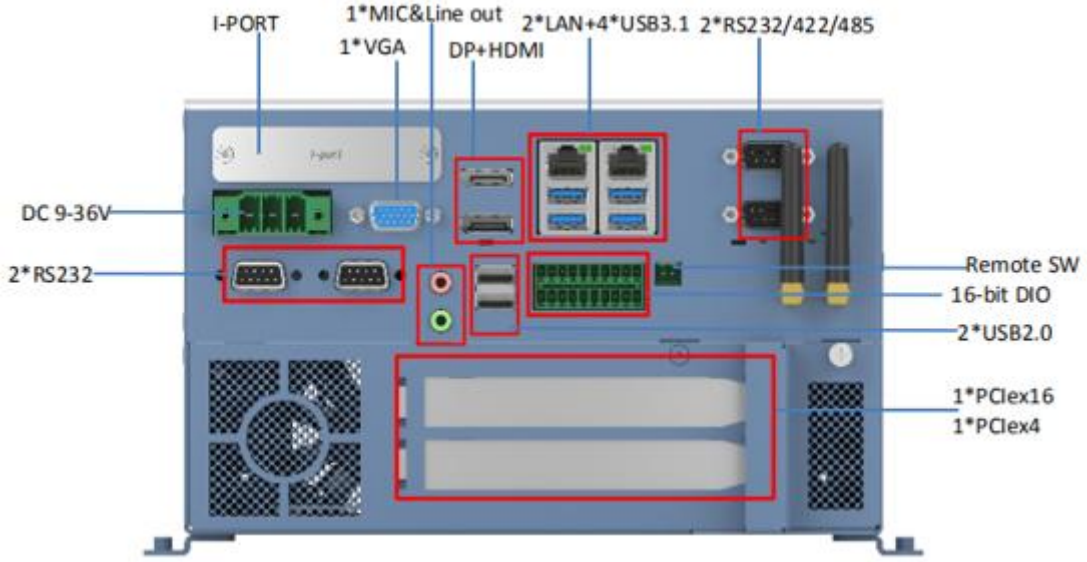



Figure 2.6

I/O ports on the front panel:

- 1*DC-in Power jack: 3-pole Phoenix terminal block
- 1*Remote SW: 2-pole terminal block
- 1*Mic, 1*Line out: 3.5mm phone jack
- 1*DP,1*HDMI, 1*VGA
- 2*USB 2.0 Type A, 4*USB3.0 Type A, 1*I-Port
- 2*Gigabit LAN: RJ45 with LEDs
- 4*COM: DB9 2*RS232, 2*RS232/422/485
- 16-bit ISO DIO: 2*10Pin connector
- 1*PCIeX16, 1*PCIeX16 slots
- Power button, ANT
- HDD LED, CPU LEDs
- AT/ATX SW, Clear CMOS SW

**KMDA-5920-S002 front view:**

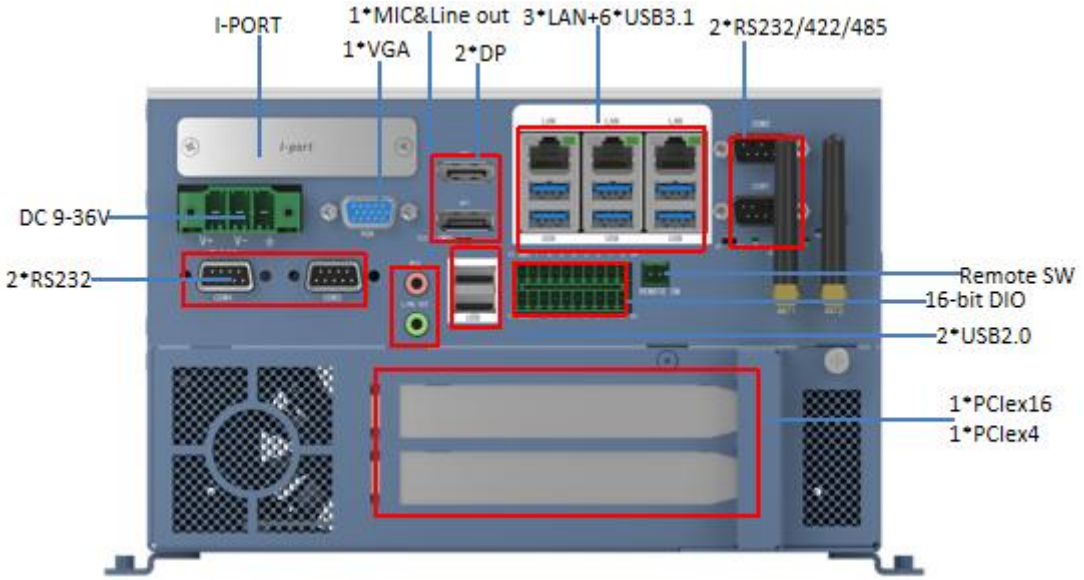



Figure 2.7

I/O ports on the front panel:

- 1*DC-in Power jack: 3-pole Phoenix terminal block
- 1*Remote SW: 2-pole terminal block
- 1*Mic, 1*Line out: 3.5mm phone jack
- 1*DP,1*HDMI, 1*VGA
- 2*USB 2.0 Type A, 6*USB3.0 Type A, 1*I-Port
- 3*Gigabit LAN: RJ45 with LEDs
- 4*COM: DB9 2*RS232, 2*RS232/422/485
- 16-bit ISO DIO: 2*10Pin connector
- 1*PCIeX16, 1*PCIeX16 slots
- Power button, ANT
- HDD LED, CPU LEDs
- AT/ATX SW, Clear CMOS SW

**KMDA-5920 Side Panel:**

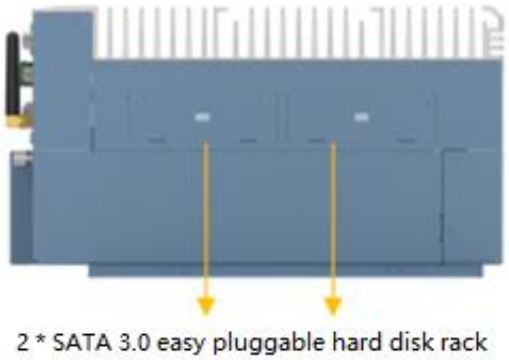



Figure 2.8

I/O ports on the side panel:

- 2*SATA SSD/HDD

**KMDA-5610-S001 front view:**

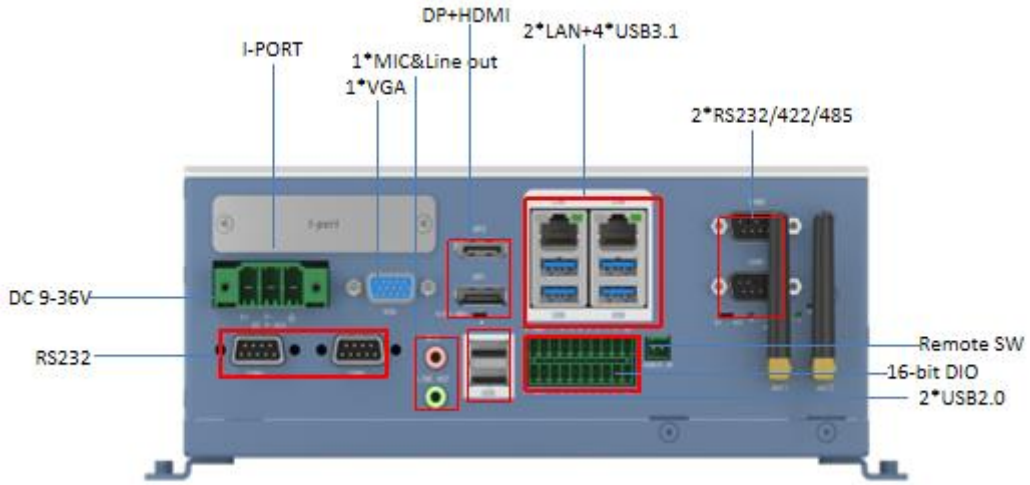



Figure 2.9

I/O ports on the front panel:

- 1*DC-in Power jack: 3-pole Phoenix terminal block
- 1*Remote SW: 2-pole terminal block
- 1*Mic, 1*Line out: 3.5mm phone jack
- 1*DP, 1*HDMI, 1*VGA
- 2*USB 2.0 Type A, 4*USB3.1 Type A， 1*I-Port
- 2*Gigabit LAN: RJ45 with LEDs
- 4*COM: DB9 2*RS232, 2*RS232/422/485
- 16-bit ISO DIO: 2*10Pin connector
- Power button, ANT
- HDD LED, CPU LEDs

- AT/ATX SW, Clear CMOS SW

**KMDA-5610-S001 Side Panel:**


Figure 2.10

I/O ports on the side panel:

- 2*SATA SSD/HDD

**KMDA-5610-S002 front view:**

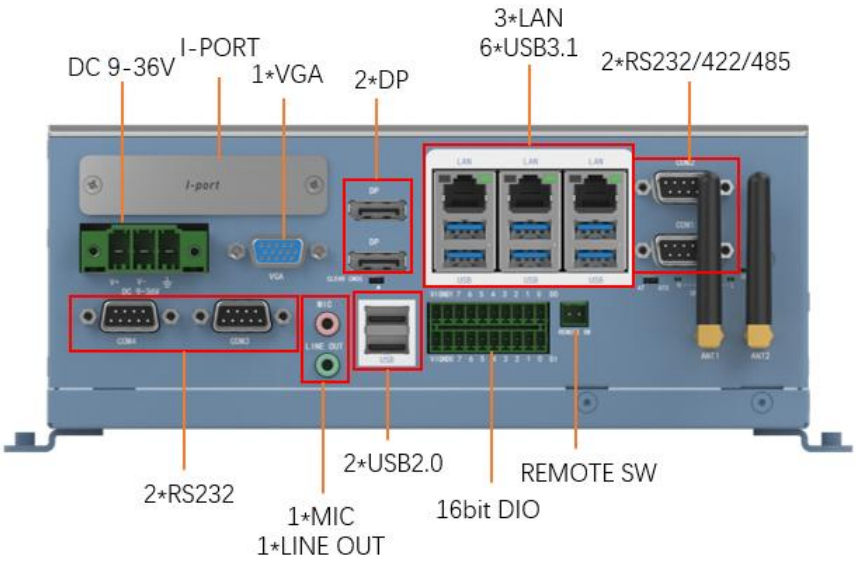



Figure 2.11

I/O ports on the front panel:

- 1*DC-in Power jack: 3-pole Phoenix terminal block
- 1*Remote SW: 2-pole terminal block
- 1*Mic, 1*Line out: 3.5mm phone jack
- 2*DP, 1*VGA
- 2*USB 2.0 Type A, 4*USB3.1 Type A， 1*I-Port

- 3*Gigabit LAN: RJ45 with LEDs
- 4*COM: DB9 2*RS232, 2*RS232/422/485
- 16-bit ISO DIO: 2*10Pin connector
- Power button, ANT
- HDD LED, CPU LEDs
- AT/ATX SW, Clear CMOS SW

**KMDA-5610-S002 Side Panel:**

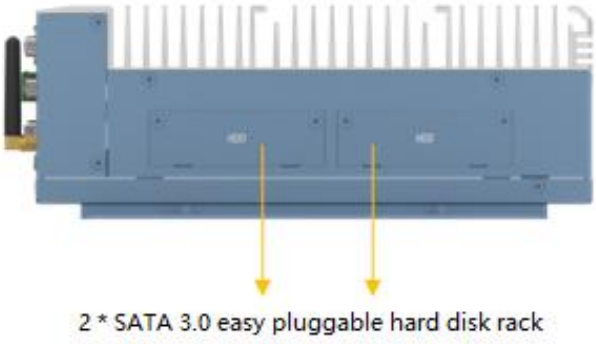



Figure 2.12

I/O ports on the side panel:

- 2*SATA SSD/HDD

## 2.3.1 Ethernet port（LAN）

The KMDA-5921/5920/5610 is equipped with 1/2 * Intel® I211AT chip and 1 * Intel® I219LM chip, and supports 10/100/1000Mbps self-adaptation. The Ethernet provides a standard RJ-45 port with an LED indicator indicating network port activity. Table 2.1 describes pin assignments in detail.

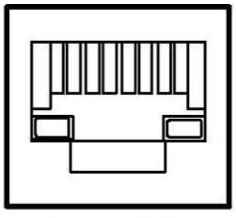


Figure 2.13 Ethernet port

Table 2.1: RJ-45 Port Pin Assignments

| Pin | 10/100/1000BaseT Signal | Pin | 10/100/1000BaseT Signal |
|---|---|---|---|
| 1 | TX+(10/100),<br>LAN_DA+(GHz) | 5 | LAN_DC-(GHz) |

| | | | |
|---|---|---|---|
| 2 | TX-(10/100),<br>LAN_DA-(GHz) | 6 | RX-(10/100),<br>LAN_DB-(GHz) |
| 3 | RX+(10/100),<br>LAN_DB+(GHz) | 7 | LAN_DD-(GHz) |
| 4 | LAN_DC+(GHz) | 8 | LAN_DD-(GHz) |

Table 2.1 shows the connection rate represented by the network port LED.

### 2.3.2 USB Interface

The KMDA-5921/5920 Q370 chipset supports 8*USB ports, including 6*USB3.0 and 2*USB2.0; The KMDA-5921/5920/5610 H310 chipset supports 6*USB ports, including 4*USB3.0 and 2*USB2.0. These USB interface connectors support plug and play and hot plug capabilities and can be disabled through the system BIOS Settings.

Table 2.2 describes pin assignments for USB2.0 in detail.

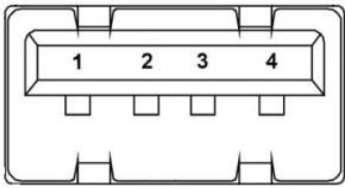



Figure 2.14

| Table 2.2: USB2.0 Port Pin Assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| 1 | USB_VCC | 2 | USB_D- |
| 3 | USB_D+ | 4 | USB_GND |

KMDA-5921/5920/5610 provides USB3.1 ports through type A connectors. The pins are defined in Table 2.3 below:

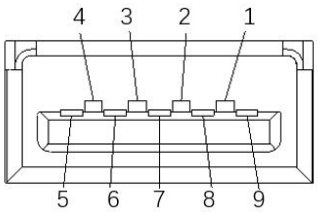



Figure 2.15

| Table 2.3: USB3.0 Port Pin Assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| 1 | VBUS | 6 | StdA_SSRX+ |

| | | | |
|---|---|---|---|
| 2 | D- | 7 | GND_DRAIN |
| 3 | D+ | 8 | StdA_SAXM- |
| 4 | GND | 9 | StdA_SAXM+ |
| 5 | StdA_SSRX- | Shell | Shield |

### 2.3.3 HDMI

KMDA-5921/5920/5610 H310 chipset provides a high-resolution HDMI display interface, and the maximum resolution supported can reach 4096* 2160@24Hz.Table 2.4 shows the detailed pin allocation.

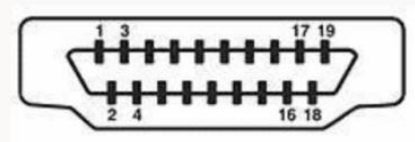



Figure 2.16

Table 2.4: HDMI Port Pin Assignments

| Pin | Signal | Pin | Signal | Pin | Signal |
|---|---|---|---|---|---|
| 1 | DATA2_P | 8 | GND | 15 | SCL |
| 2 | GND | 9 | DATA0_N | 16 | SDA |
| 3 | DATA2_N | 10 | CLK_P | 17 | GND |
| 4 | DATA1_P | 11 | GND | 18 | VCC |
| 5 | GND | 12 | CLK_N | 19 | DETECT |
| 6 | DATA1_N | 13 | NC | | |
| 7 | DATA0_P | 14 | NC | | |

Note: NC indicates no connection

### 2.3.4 DP Port

The KMDA-5921/5920/5610 provides a high resolution DP interface up to a maximum resolution of 4096*2304@60Hz. Table 2.5 provides a detailed description of pin assignments.

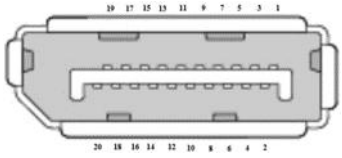


Figure 2.17

Table 2.5: DP Port Pin Assignments

| Pin | Signal | Pin | Signal | Pin | Signal |
|---|---|---|---|---|---|
| 1 | DATA0_P | 8 | GND | 15 | AUXP |
| 2 | GND | 9 | DATA2_N | 16 | GND |

| | | | | | |
|---|---|---|---|---|---|
| 3 | DATA0_N | 10 | DATA3_P | 17 | AUXN |
| 4 | DATA1_P | 11 | GND | 18 | HPD |
| 5 | GND | 12 | DATA3_N | 19 | GND |
| 6 | DATA1_N | 13 | CTRL | 20 | PWR |
| 7 | DATA2_P | 14 | GND | | |

### 2.3.5 VGA Port

The KMDA-5921/5920/5610 provides a standard VGA interface that supports up to 1920*1200@60Hz resolution. Table 2.6 describes pin assignments in detail.

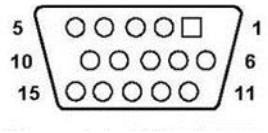



Figure 2.18

Table 2.6: VGA Port Pin Assignments

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | RED | 9 | VCC |
| 2 | GREEN | 10 | GND |
| 3 | BLUE | 11 | NC |
| 4 | NC | 12 | SDA |
| 5 | GND | 13 | HS |
| 6 | GND | 14 | VS |
| 7 | GND | 15 | SCL |
| 8 | GND | | |

### 2.3.6 COM1/2/3/4 Port

KMDA-5921/5920/5610 provides 2 * COM interface (COM1 / 2) through a double-layer DB9, and RS232 / 422 / 485 mode can be set through BIOS. 2 * RS232 (COM3 / 4) is provided through two DB9 interfaces. Table 2.7 shows the detailed pin allocation of COM1 / 2. Table 2.8 shows the detailed pin allocation of COM3 / 4.

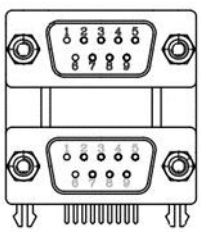


Figure 2.19

Table 2.7: COM1/COM2 Port Pin Assignments

| Pin | RS-232 Signal | RS-422 Signal | RS-485 Signal |
|---|---|---|---|
| 1 | DCD | TX- | DATA- |
| 2 | RxD | TX+ | DATA+ |
| 3 | TxD | RX+ | NC |
| 4 | DTR | RX- | NC |
| 5 | GND | GND | GND |
| 6 | DSR | NC | NC |
| 7 | RTS | NC | NC |
| 8 | CTS | NC | NC |
| 9 | RI | NC | NC |

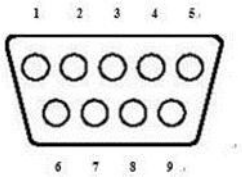



Figure 2.20

| Table 2.8: COM3/COM4 Port Pin Assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| 1 | COM_DCD | 2 | COM_SIN3 |
| 3 | COM_SOUT | 4 | COM_DTR |
| 5 | GND | 6 | COM_DSR |
| 7 | COM_RTS | 8 | COM_CTS |
| 9 | COM_RI | | |

## 2.3.7 DIO Port

The KMDA-5921/5920/5610 provides 16-bit isolated DIO with a 2*10 Pin connector. The 2.5KV opto-isolated input (H: 5-24V, L: 0-1.5V) and the opto-isolated output (200mA) can be configured by setting the BIOS for I/O.

Table 2.9 provides a detailed description of pin assignments.

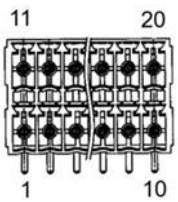



Figure 2.21

| Table 2.9: DIO Port Pin Assignments | | | |
|---|---|---|---|
| Pin | DIO Signal | Pin | DIO Signal |
| 1 | DI0 | 11 | DO0 |
| 2 | DI1 | 12 | DO1 |
| 3 | DI2 | 13 | DO2 |
| 4 | DI3 | 14 | DO3 |
| 5 | DI4 | 15 | DO4 |
| 6 | DI5 | 16 | DO5 |
| 7 | DI6 | 17 | DO6 |
| 8 | DI7 | 18 | DO7 |
| 9 | ECOM1 | 19 | E_GND |
| 10 | VCC_ISO | 20 | PCOM1 |

### 2.3.8 SATA Port

KMDA-5921/5920/5610 provides two standard SATA3.0 interface, and the data transmission rate reaches 6GB/s, which is used to connect SATA devices. Table 2.10 provides a detailed description of pin assignments.

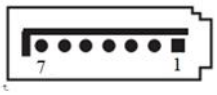



Figure 2.22

| Table 2.10: SATA1 Port Pin Assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| 1 | GND | 5 | RX- |
| 2 | TX+ | 6 | RX+ |
| 3 | TX- | 7 | GND |
| 4 | GND | | |

### 2.3.9 SATA Power Interface

Table 2.11 provides a detailed description of pin assignments.

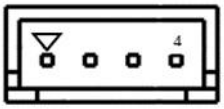



Figure 2.23

| Table 2.11: SATA Power Port Pin Assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| 1 | 5V | 3 | GND |
| 2 | GND | 4 | 12V |

Warning: ensure that pin-1 of SATA power connector has been inserted into pin-1 of corresponding plug to avoid damaging board and hard disk drive.

### 2.3.10 Remote Switching Interface

The remote switch signal interface used for switching on and off the machine. The terminal of the sub-card coastline is a 2-pin terminal. The pin definition is shown in Table 2.12.

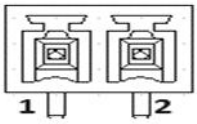



Figure 2.24

| Table 2.12: Remote Switch Signal Interface Pin Assignments | |
|---|---|
| Pin | Signal |
| 1 | PWR_BTN |
| 2 | GND |

### 2.3.11 Mini PCIe Interface

KMDA-5921/5920/5610 provides a standard full height Mini-PCIe interface, with PCIe x1 and USB signal (Q370), with SIM card slot, with detection and switching to mSATA. It can install 4G card, network card, serial port card and other functional module cards conforming to Mini-PCIe specification. Table 2.13 shows the detailed pin allocation. **(Note: SIM1 slot is connected to Mini-PCIe slot)**

(Note: The Mini-PCIe interface of KMDA-5921/5920/5610 H310 has USB signal, but no PCIe signal. It has SIM card slot, and the detection is selected to be changed to mSATA.)

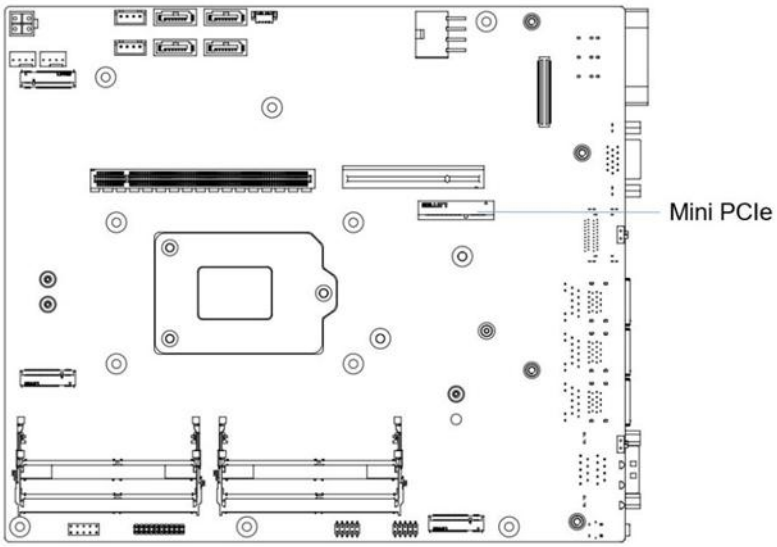



Figure 2.25

| Table 2.13: Mini-PCIe Interface Pin Assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| 1 | PCIE_WAKE_N | 2 | +V3.3_MINICARD2 |
| 3 | NC | 4 | GND |
| 5 | NC | 6 | +V1.5 |
| 7 | +V3.3_MINICARD2 | 8 | +VUIM_PWR |
| 9 | GND | 10 | UIM_DATA |
| 11 | PCIe_MINI_CLK5- | 12 | UIM_CLK |
| 13 | PCIe_MINI_CLK5+ | 14 | UIM_RESET |
| 15 | GND | 16 | +VUIM_VPP |
| 17 | NC | 18 | GND |
| 19 | NC | 20 | WIFI2_DISABLE# |
| 21 | GND | 22 | PLTRST_MINIPCIE_N |
| 23 | SATA_RXP_PCIE17+ | 24 | +V3.3_MINICARD2 |
| 25 | SATA_RXP_PCIE17- | 26 | GND |
| 27 | GND | 28 | +V1.5 |
| 29 | GND | 30 | SMB_CLK_RESUME |
| 31 | SATA_TXN_PCIE17- | 32 | SMB_DATA_RESUME |
| 33 | SATA_TXN_PCIE17+ | 34 | GND |
| 35 | GND | 36 | USB_N6 |
| 37 | GND | 38 | USB_P6 |
| 39 | +V3.3_MINICARD2 | 40 | GND |
| 41 | +V3.3_MINICARD2 | 42 | NC |

| | | | |
|---|---|---|---|
| 43 | SATA_PCIE0_DET | 44 | SIM1_DET |
| 45 | NC | 46 | NC |
| 47 | NC | 48 | +V1.5 |
| 49 | NC | 50 | GND |
| 51 | NC | 52 | +V3.3_MINICARD2 |

### 2.3.12 M.2 Interface

The KMDA-5921/5920/5610 Q370 provides three M.2 ports, including one full-height M.2 M-key 2280 with PCIe x4 signal and NVMe storage; One half height M.2 B-key 3052 (optional support 3042) with SIM card slot, with PCIe x1+USB signal, support 5G wireless network, with PCIe x1 signal; One half-height M.2 E-Key 2230 with PCIe x1, USB, and CNVi signals.

KMDA-5921/5920/5610 H310 provides one M.2 interface: one half height M.2 E-Key 2230 with PCIe x1 + USB + CNVi signal.

Table 2.14 describes the detailed pin allocation for M.2 2280 M-key, Table 2.15 describes the detailed pin allocation for M.2 B-key 3052, and Table 2.16 describes the detailed pin allocation for M.2 E-key 2230.

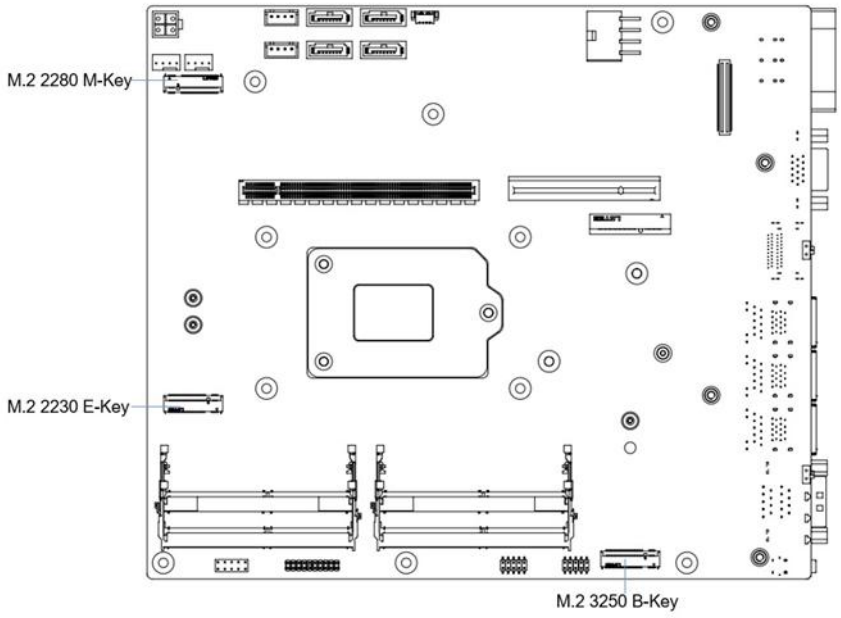



Figure 2.26

| Table 2.14: M.2 2280 M-Key （NGFF）Pin Assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| 1 | GND | 2 | +V3.3_M2 |
| 3 | GND | 4 | +V3.3_M2 |
| 5 | PCIE_M2_RX24- | 6 | NC |

| | | | |
|---|---|---|---|
| 7 | PCIE_M2_RX24+ | 8 | NC |
| 9 | GND | 10 | +V3.3_M2 |
| 11 | PCIE_M2_TX24- | 12 | +V3.3_M2 |
| 13 | PCIE_M2_TX24+ | 14 | +V3.3_M2 |
| 15 | GND | 16 | +V3.3_M2 |
| 17 | PCIE_M2_RX23- | 18 | +V3.3_M2 |
| 19 | PCIE_M2_RX23+ | 20 | NC |
| 21 | GND | 22 | NC |
| 23 | PCIE_M2_TX23- | 24 | NC |
| 25 | PCIE_M2_TX23+ | 26 | NC |
| 27 | GND | 28 | NC |
| 29 | PCIE_M2_RX22- | 30 | NC |
| 31 | PCIE_M2_RX22+ | 32 | NC |
| 33 | GND | 34 | NC |
| 35 | PCIE_M2_TX22- | 36 | NC |
| 37 | PCIE_M2_TX22+ | 38 | SSD_SATA_DEVSLP |
| 39 | GND | 40 | NC |
| 41 | PCIE_M2_RX21- | 42 | NC |
| 43 | PCIE_M2_RX21+ | 44 | NC |
| 45 | GND | 46 | NC |
| 47 | PCIE_M2_TX21- | 48 | NC |
| 49 | PCIE_M2_TX21+ | 50 | PLTRST_M2_N |
| 51 | GND | 52 | CLK_REQ6# |
| 53 | PCIe_M2_CLK6- | 54 | PCH_WAKE_N |
| 55 | PCIe_M2_CLK6+ | 56 | NC |
| 57 | GND | 58 | NC |
| 59 | NC | 60 | NC |
| 61 | NC | 62 | NC |
| 63 | NC | 64 | NC |
| 65 | NC | 66 | NC |
| 67 | NC | 68 | SUSCLK_R |
| 69 | M.2_SSD_DET | 70 | +V3.3_M2 |
| 71 | GND | 72 | +V3.3_M2 |
| 73 | GND | 74 | +V3.3_M2 |
| 75 | GND | 76 | |

| Table 2.15: M.2 B-Key 3052（NGFF1）Pin Assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| 1 | GND | 2 | +V3_M2 |
| 3 | GND | 4 | +V3_M2 |
| 5 | GND | 6 | +V3_M2 |
| 7 | USB_P9 | 8 | WIFI_DISABLE |
| 9 | USB_N9 | 20 | NC |
| 21 | +V3_M2 | 22 | NC |
| 23 | NC | 24 | NC |
| 25 | NC | 26 | NC |
| 27 | GND | 28 | NC |
| 29 | NC | 30 | SIM2_RESET |
| 31 | NC | 32 | SIM2_CLK |
| 33 | GND | 34 | SIM2_DATA |
| 35 | NC | 36 | SIM2_PWR |
| 37 | NC | 38 | SSD_SATA5_DEVSLP |
| 39 | GND | 40 | NC |
| 41 | PCIE_RX18- | 42 | NC |
| 43 | PCIE_RX18+ | 44 | NC |
| 45 | GND | 46 | NC |
| 47 | PCIE_TX18- | 48 | NC |
| 49 | PCIE_TX18+ | 50 | PLTRST_M2_N |
| 51 | GND | 52 | CLK_REQ15# |
| 53 | CLK_PCIe_N15 | 54 | PCH_WAKE_N |
| 55 | CLK_PCIe_P15 | 56 | NC |
| 57 | GND | 58 | NC |
| 59 | NC | 60 | NC |
| 61 | NC | 62 | NC |
| 63 | NC | 64 | NC |
| 65 | NC | 66 | SIM_DET |
| 67 | +3VS | 68 | SUSCLK |
| 69 | M.2_SSD_PEDET | 70 | +V3_M2 |
| 71 | GND | 72 | +V3_M2 |

| | | | |
|---|---|---|---|
| 73 | GND | 74 | +V3_M2 |
| 75 | NC | | |

| Table 2.16: M.2 E-Key 2230（NGFF2）Pin Assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| 1 | GND | 2 | +V3.3M2SB |
| 3 | USB_P5 | 4 | +V3.3M2SB |
| 5 | USB_N5 | 6 | NC |
| 7 | GND | 8 | M.2_BT_PCMCLK |
| 9 | CNV_WR_D1_DN | 10 | M.2_BT_PCMFRM_CRF_RST_N |
| 11 | CNV_WR_D1_DP | 12 | M.2_BT_PCMIN |
| 13 | GND | 14 | M.2_BT_PCMOUT_CLKREQ |
| 15 | CNV_WR_D0_DN | 16 | NC |
| 17 | CNV_WR_D0_DP | 18 | GND |
| 19 | GND | 20 | UART_BT_WAKE_N |
| 21 | CNV_WR_CLK_DN | 22 | M.2_CNV_BRI_DT_BT_UART0_RX |
| 23 | CNV_WR_CLK_DP | 32 | M.2_CNV_RGI_DT_BT_UART0_TX |
| 33 | GND | 34 | M.2_CNV_RGI_RSP_BT_UART0_CTS |
| 35 | PCIE_X4_TX12+ | 36 | M.2_CNV_BRI_DT_BT_UART0_RTS |
| 37 | PCIE_X4_TX12- | 38 | M.2_WLAN_CL_RST_N |
| 39 | GND | 40 | M.2_WLAN_CL_DATA |
| 41 | PCIE_X4_RX12+ | 42 | M.2_WLAN_CL_CLK |
| 43 | PCIE_X4_RX12- | 44 | DISC_WLAN_WWAN_COEX3 |
| 45 | GND | 46 | DISC_WLAN_WWAN_COEX2 |
| 47 | CLK_PCIe_P14 | 48 | DISC_WLAN_WWAN_COEX1 |
| 49 | CLK_PCIe_N14 | 50 | SUSCLK |
| 51 | GND | 52 | PLTRST_M2_N |
| 53 | CLK_REQ14# | 54 | NC |
| 55 | PCH_WAKE_N | 56 | NC |
| 57 | GND | 58 | NC |
| 59 | CNV_WT_D1_DN | 60 | NC |
| 61 | CNV_WT_D1_DP | 62 | NC |
| 63 | GND | 64 | PULSAR_38P4M_REFCLK |
| 65 | CNV_WT_D0_DN | 66 | NC |

| | | | |
|---|---|---|---|
| 67 | CNV_WT_D0_DP | 68 | GPPC_B10_CLKREQ5_WIGIG_R_N |
| 69 | GND | 70 | +V3.3M2SB |
| 71 | CNV_WT_CLK_DN | 72 | +V3.3M2SB |
| 73 | CNV_WT_CLK_DP | 74 | +V3.3M2SB |
| 75 | GND | | |

## 2.3.13 PCIe x4 Interface (KMDA-5921)

KMDA-5921 provides two PCIe x16 (x4 signal) expansion slots through the sub-card ECX-254 (Figure 2.28), and ECX-266 (Figure 2.27) provides one PCIe x4 expansion slot for connecting PCIe x4 expansion devices, such as motion control cards, data acquisition cards, etc. The length of the expansion card cannot exceed 210mm.

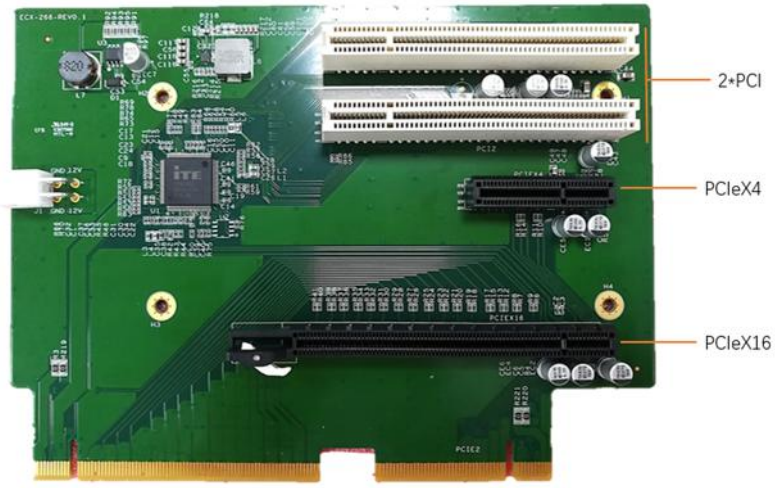



Figure 2.27

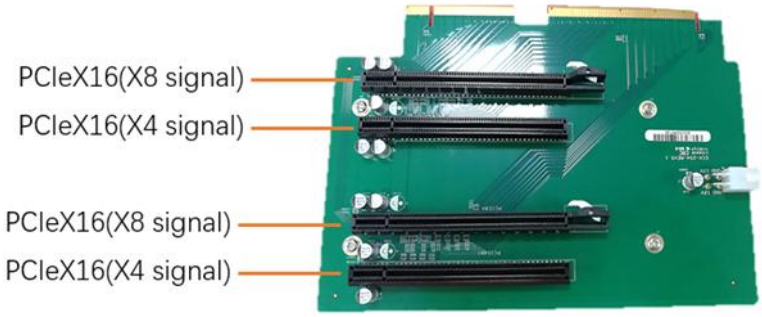



Figure 2.28

## 2.3.14 PCIe x8 Interface (KMDA-5921)

KMDA-5921 provides two standard PCIe x16 (x8 signal) expansion slots through the sub card ECX-254, which are used to connect the PCIe x8 expansion equipment. It supports flexible expansion function cards, such as motion control card and data acquisition card. It supports up to 2 * 150W graphics

card, and the length of the expansion card does not exceed 210mm.

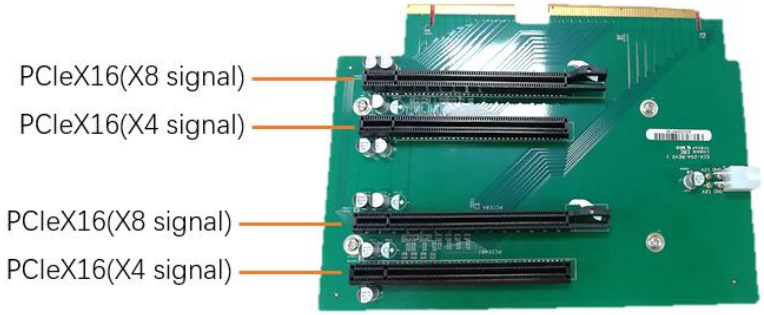



Figure 2.29

## 2.3.15 PCIe x16 Interface (KMDA-5921)

KMDA-5921 provides a standard PCIe x16 expansion slot through the sub card ECX-266, which is used to connect the PCIe x16 expansion device. It supports flexible expansion function cards, such as motion control card and data acquisition card. It supports up to 1 * 150W graphics card, and the length of the expansion card does not exceed 210mm.

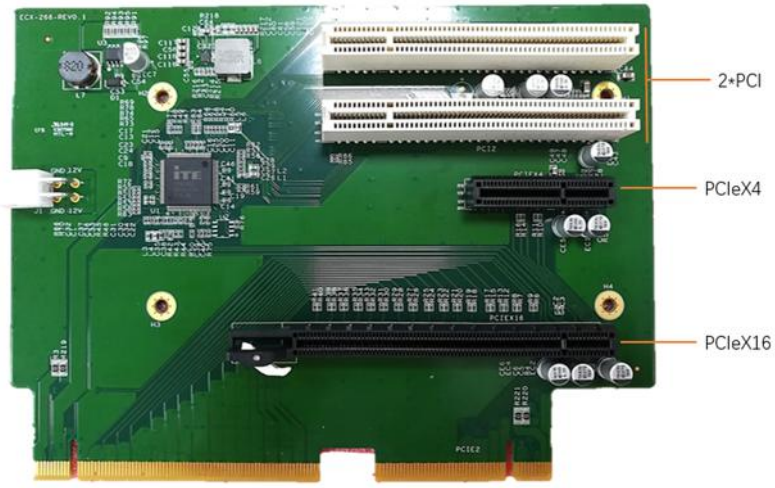



Figure 2.30

## 2.3.16 PCI Interface (KMDA-5921)

KMDA-5921 provides two standard 32-bit PCI expansion slots through the sub card ECX-266, which are used to connect PCI expansion equipment and support flexible expansion function cards, such as motion control card, data acquisition card, etc. The length of the expansion card shall not exceed 210mm.


Figure 2.31

## 2.3.17 PCIe x4 Interface (KMDA-5920)

KMDA-5920 provides a PCIe x16 (x4 signal) expansion slot through the sub card ECX-255, which is used to connect PCIe x4 expansion devices, such as motion control card, data acquisition card, etc. It supports up to 1 * 75W AI acceleration card, and the length of the expansion card does not exceed 210mm.

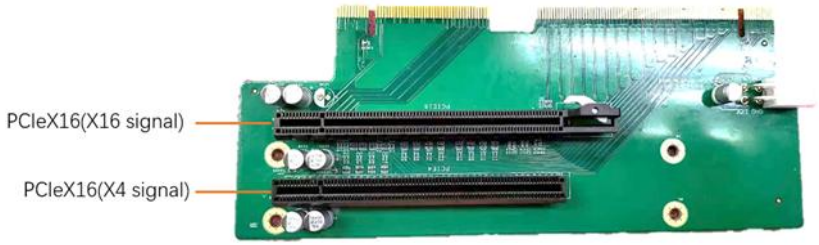



Figure 2.32

## 2.3.18 PCIe x16 Interface (KMDA-5920)

KMDA-5920 provides a standard PCIe x16 expansion slot through the sub card ECX-255, which is used to connect the PCIe x16 expansion device. It supports flexible expansion function cards, such as motion control card and data acquisition card. It supports up to 1 * 150W graphics card, and the length of the expansion card does not exceed 210mm.

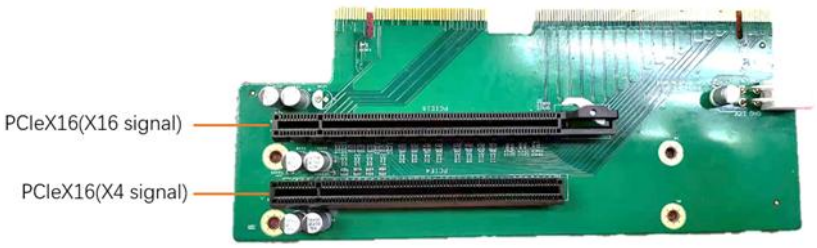



Figure 2.33

## 2.3.19 LED Light

KMDA-5610/5920/5921 panel has one power indicator, one hard disk indicator, three network link status indicators and three CPU operating temperature indicators. When the working temperature of CPU is ≤ 85 ℃, the green light is on; When the temperature of CPU is between 86 ℃ and 95 ℃, the yellow light is on, and when the working temperature of CPU is ≥ 96 ℃, the red light is on. If you keep the CPU working under the red light, it will affect the service life of the machine.


Figure 2.34

## 2.3.20 Power Interface (DC-IN)

KMDA-5610/5920/5921 provides wide voltage (9 ~ 36V) power input through a terminal with 3-pin and 7.62mm spacing; Table 2.17 shows the detailed pin allocation.

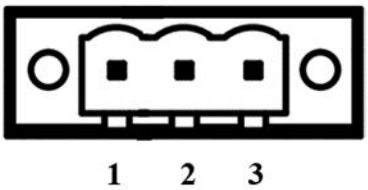



Figure 2.35

Table 2.17: DC-IN Port Pin Assignments

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | 9~36V | 2 | NC |
| 3 | GND | | |

## 2.4 Installation

The KMDA-5921 is used as an example for hardware installation. The KMDA-5920/5610 series is similar.

### 2.4.1 HDD/SSD Install

Step 1: Unscrew the four screws on the disk cover and remove the disk cover.

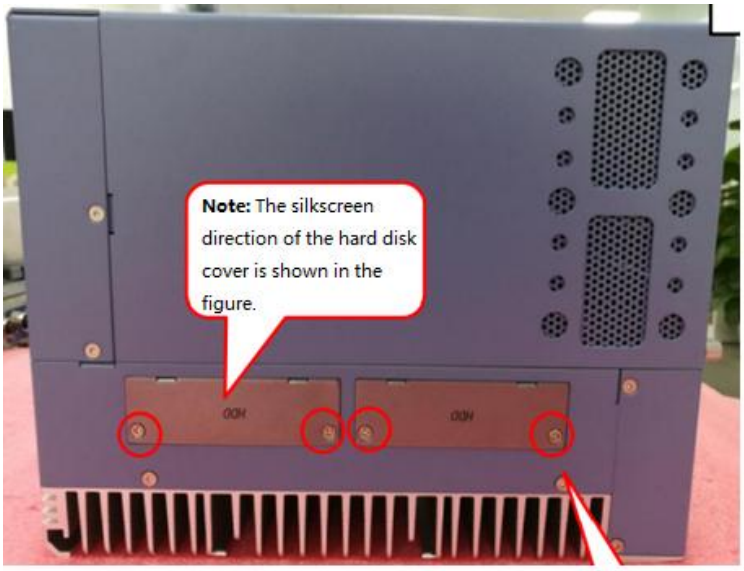



Figure 2.36

Step 2: Unscrew the two screws on the hard disk tray and remove the hard disk tray.

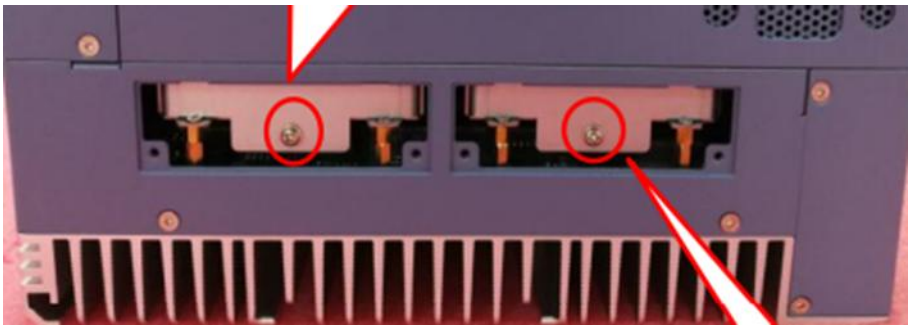


Figure 2.37

Step 3: Install the HDD or SSD in the hard disk tray, tighten the four screws to secure them.

Figure 2.38

Figure 2.39

Step 4: Insert the hard disk and the hard disk tray into the hard disk slot, as shown in the figure.

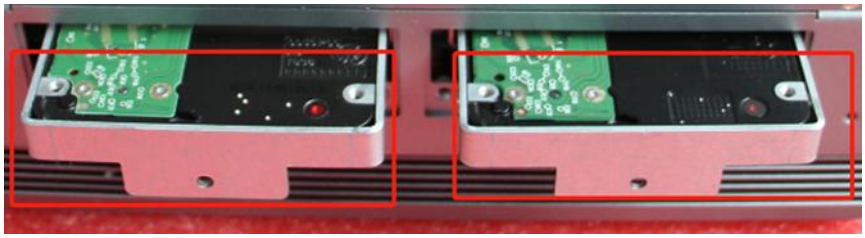


Figure 2.40

Step 5: Tighten one screw to secure the hard disk and the hard disk tray.

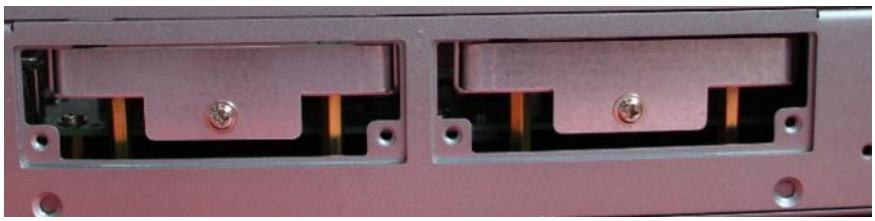


Figure 2.41

Step 6: Install the hard disk cover and tighten the 4 screws, as shown.

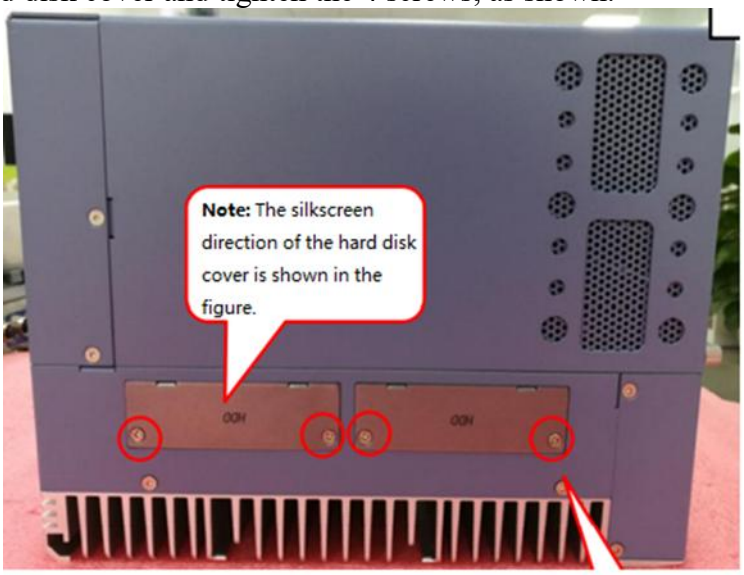



Figure 2.42

## 2.4.2 Mini PCIe Module Install

**(KMDA-5921/5920):**

Step 1: unscrew the screws on the mounting bracket, as shown in the figure, and remove the mounting bracket.

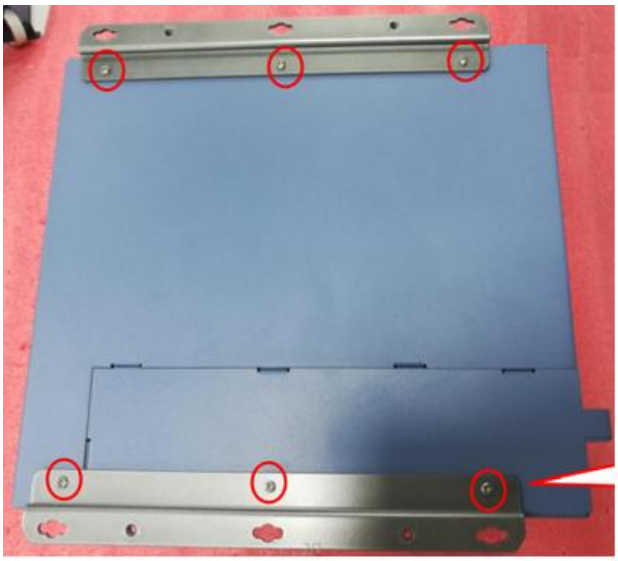


Figure 2.43 KMDA-5921/5920 Installation Method 1

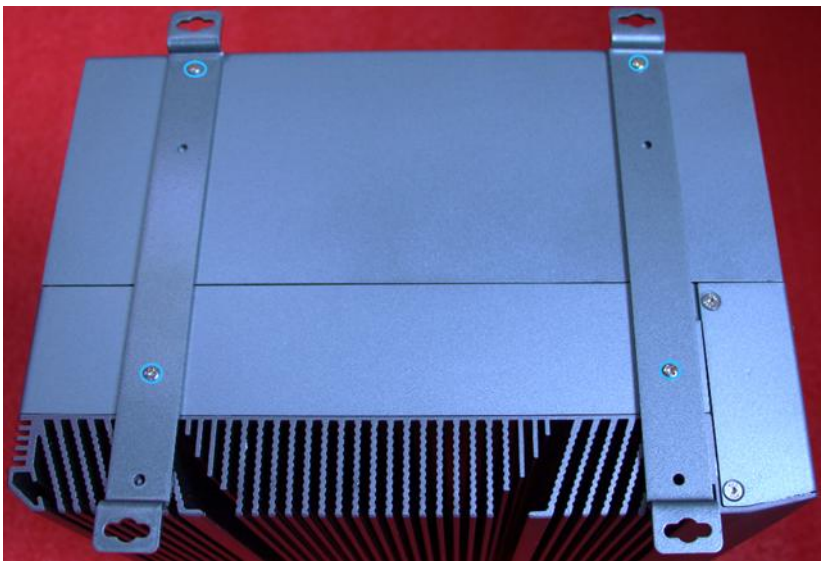


Figure 2.44 KMDA-5921/5920 Installation Method 1

Step 2: Loosen the screws as shown in the figure.


Figure 2.45

Step 3: Unscrew the screws (6 in total) on the expansion cover and remove the expansion cover.

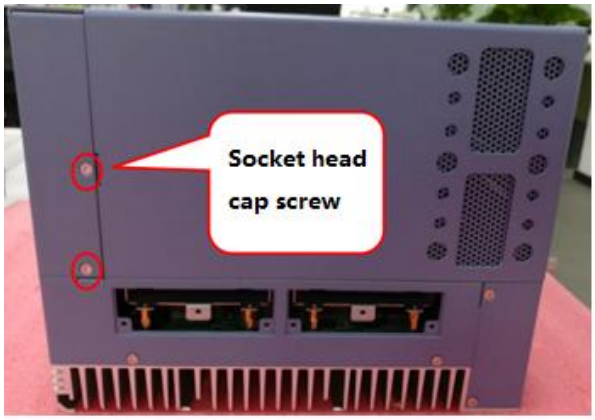



Figure 2.46

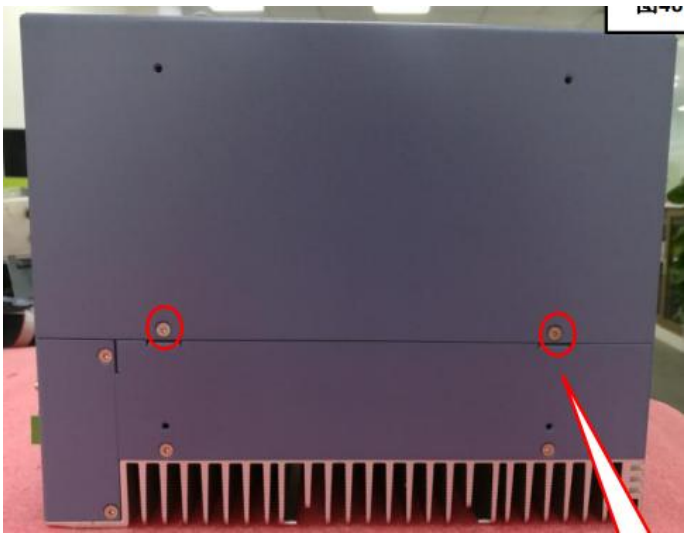


Figure 2.47

Figure 2.48

Figure 2.49

Figure 2.50

Step 4: Remove the expansion cover to insert the module.

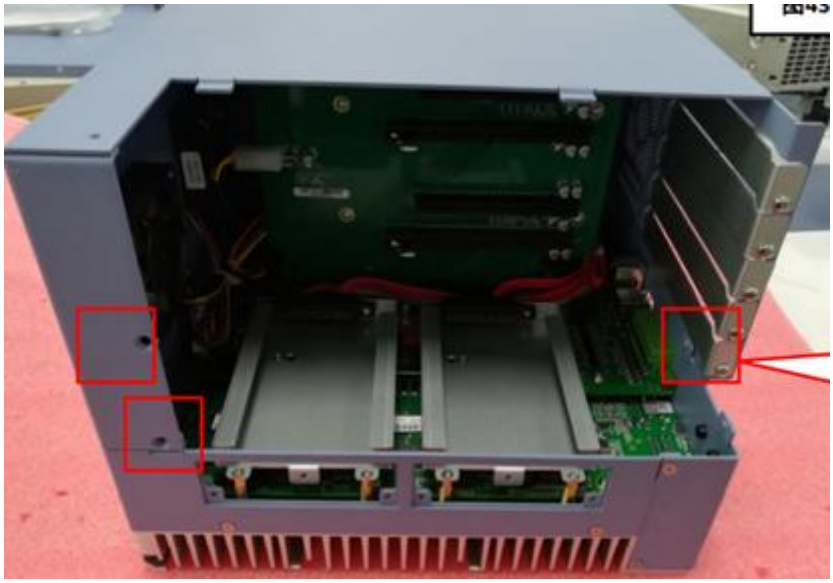


Figure 2.51

**(KMDA-5610):**

Step 1: Unscrew the 7 screws on the bottom cover (4 at the front and back, 3 at the side) as shown in the figure and remove the bottom shell.

Figure 2.52

Figure 2.53

Step 2: Align the slot of the Mini PCIe module with the Mini PCIe slot on the mainboard, and insert the Mini PCIe module into the socket at a 30-degree angle.

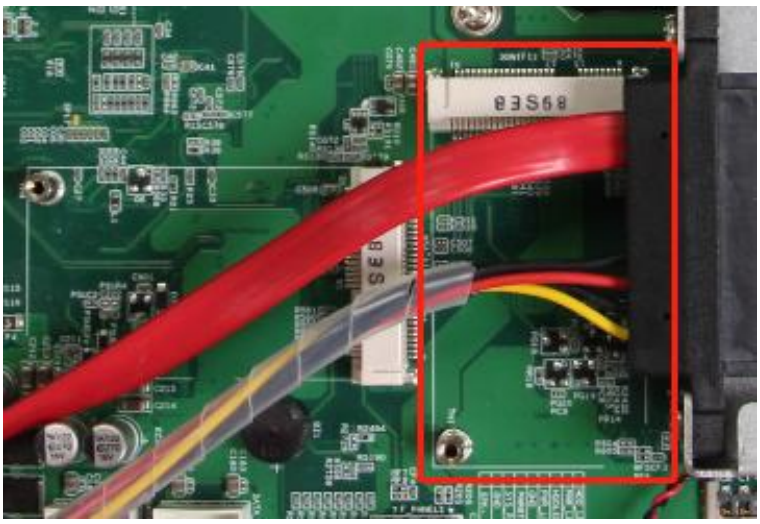


Figure 2.54

Step 3: Tighten one screw as shown in the figure to fix the mini PCIe module.

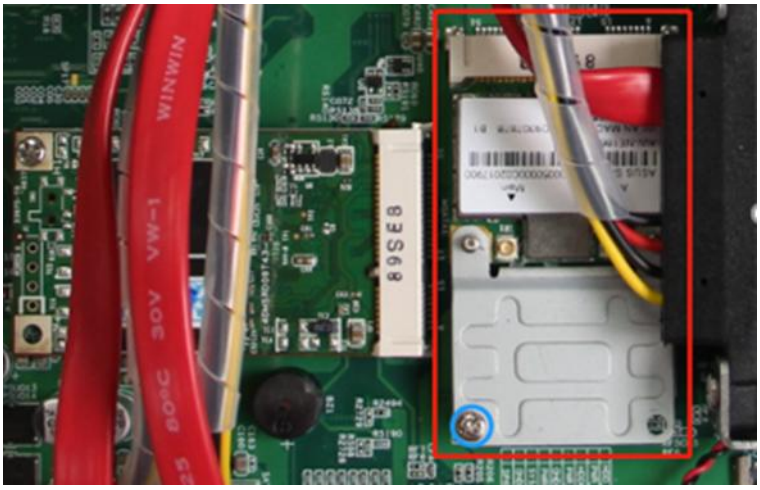


Figure 2.55

Step 4: Follow the reverse removal steps to complete product installation.

## 2.4.3 MSATA Module Install

Step 1: This step is consistent with the disassembly steps in the above chapter "2.4.2 Mini PCIe module install". Remove some casings that need to be removed. Please refer to the above chapter for details.

Step 2: Align the mSATA slot with the mSATA slot on the mainboard, and insert the mSATA into the socket at a 30-degree angle.

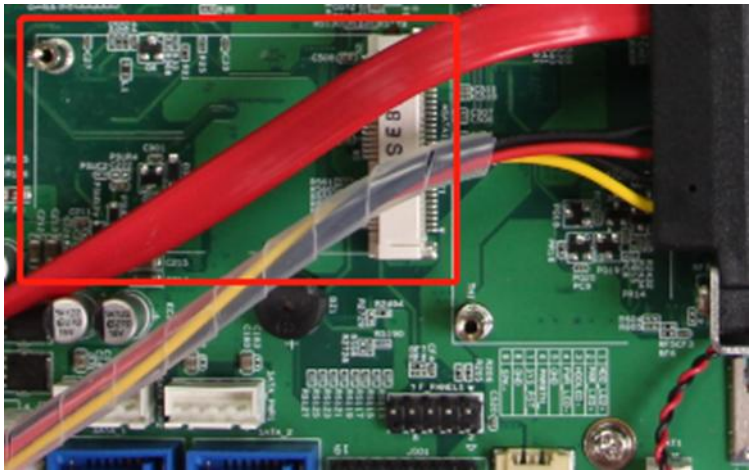


Figure 2.56

Step 3: Tighten 1 screw to secure the mSATA module as shown..

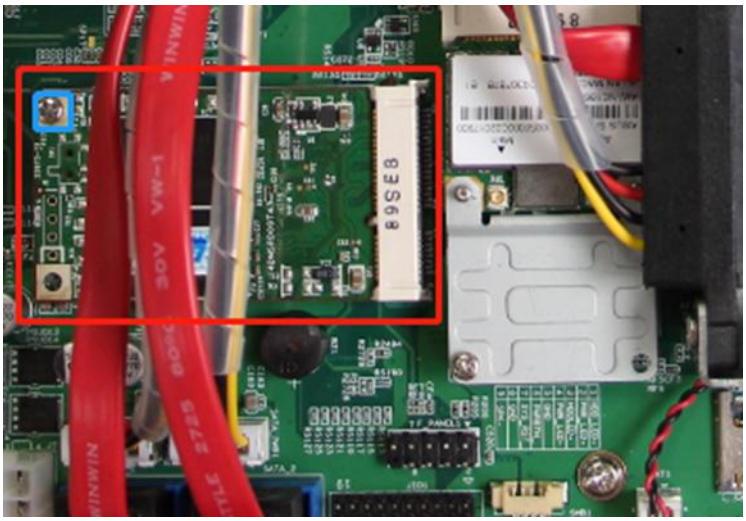


Figure 2.57

Step 4: Follow the reverse removal steps to complete product installation.

## 2.4.4 M.2 Module Install

Step 1: This step is consistent with the disassembly steps in the above chapter "2.4.2 Mini PCIe module install". Remove some casings that need to be removed. Please refer to the above chapter for details.

Step 2: Align the slot of the M.2 module with the NGFF1 slot of the motherboard and insert the M.2 module into the socket at a 30 degree angle.

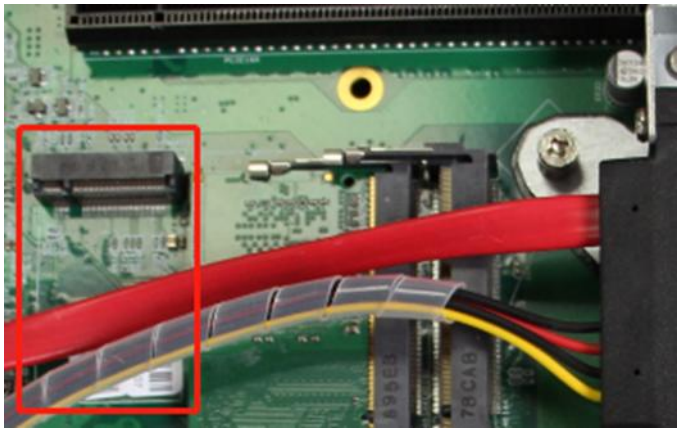


Figure 2.58

Step 3: As shown, tighten one screw to secure the M.2 module.

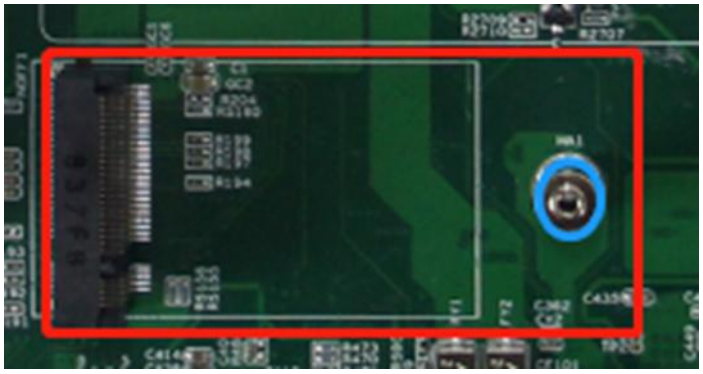


Figure 2.59

Step 4: Follow the reverse removal steps to complete product installation.

### 2.4.5 Extended Function Module Install

**(Note: this operation is only for KMDA-5921/5920, KMDA-5610 does not support the installation of PCIe / PCI expansion card. Here, take KMDA-5921 as an example, and the installation operation of KMDA-5920 is similar)**

Step 1: This step is consistent with the disassembly steps in the above chapter "2.4.2 Mini PCIe module install". Remove some casings that need to be removed. Please refer to the above chapter for details.

Step 2: Unscrew the four screws on the four retaining strips and remove the four retaining strips, as shown in the figure.

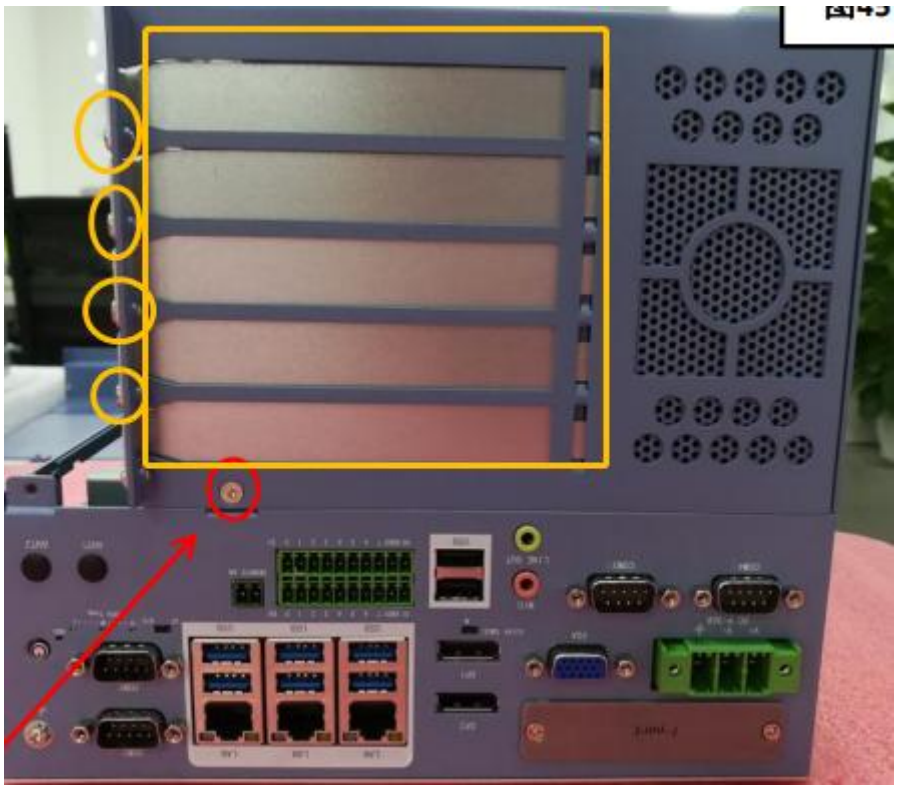


Figure 2.60

Step 3: Insert the PCIe/PCI expansion card into the ECX-254/255/266 expansion slot.

Step 4: Follow the reverse removal steps to complete product installation.

CHAPTER 3

# BIOS Setup

## 3.1 BIOS Description

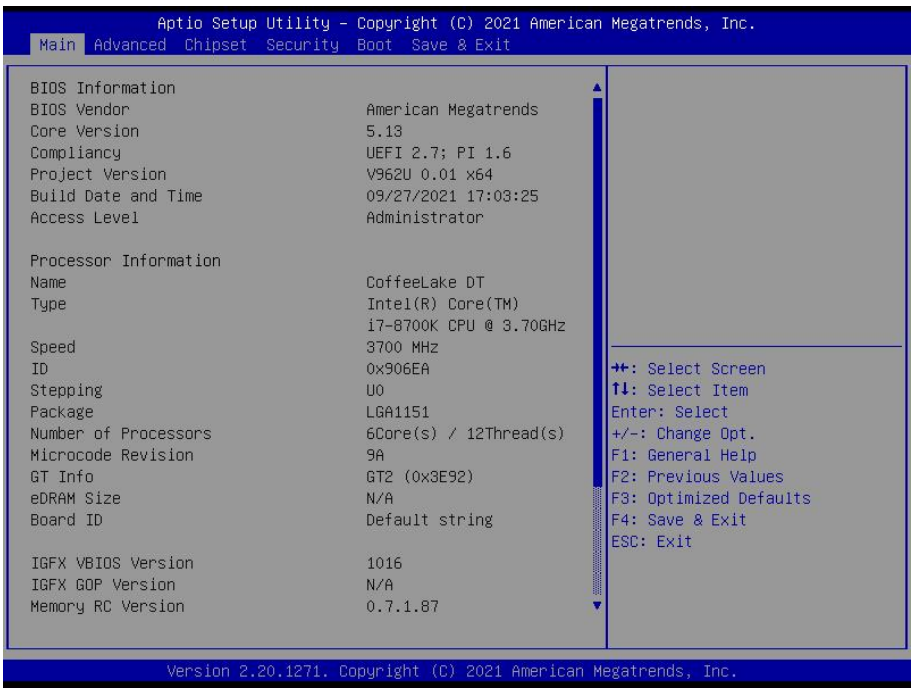
BIOS is the communication bridge between hardware and software. How to correctly set the BIOS parameters is crucial for the system to work stably and whether the system works at its best.
This chapter describes how to change the system settings through the BIOS settings.
*Note: For the purpose of better product maintenance, the manufacture reserves the right to change the BIOS items presented in this manual. The BIOS setup screens shown in this chapter are for reference only and may differ from the actual BIOS.*

You need to make SETUP settings as follows:
1. An error message appears on the screen during the system self-test and asks for the SETUP setting.
2. You want to change the factory default settings based on customer characteristics.
(But in general, customers are not recommended to set it up. In most cases, using the default value is already the best setting.)

The BIOS Setup Utility enables you to configure:
- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

### 3.1.1 Entering the Setup Utility

When you power on the system, BIOS enters the Power-On Self-Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, Press the "**DEL**" key to enter BIOS Setup Utility.




## 3.2 BIOS parameter settings

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ▶) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle ▶.

*The default BIOS setting for this motherboard apply for most conditions with optimum performance. We do not suggest users change the default values in the BIOS setup and take no responsibility to any damage caused by changing the BIOS settings.*

### 3.2.1 BIOS Navigation Keys

Enter the SETUP settings interface, The BIOS navigation keys are listed below:

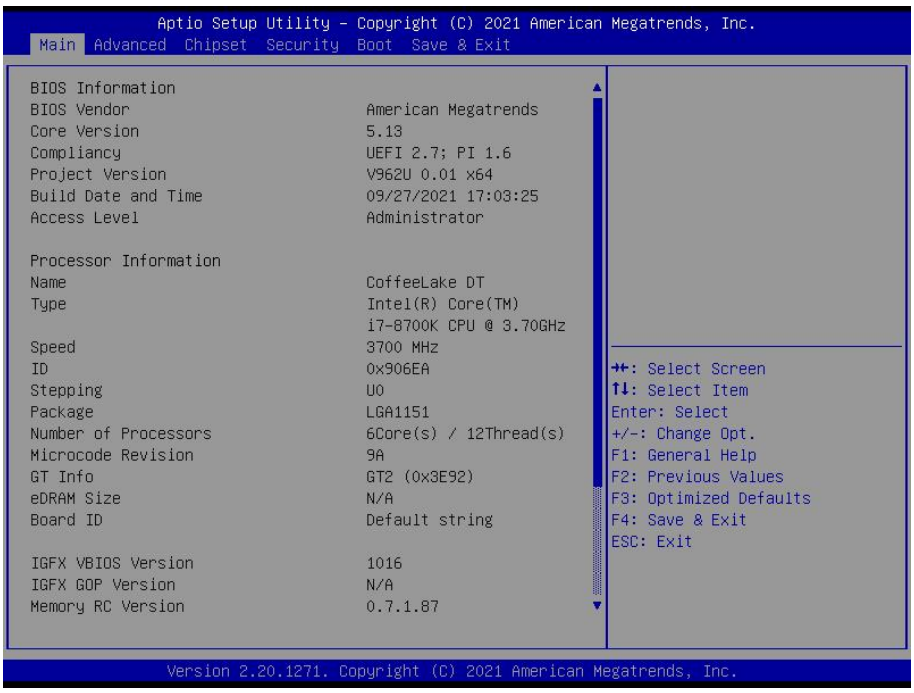
Table 3.1: The BIOS navigation keys

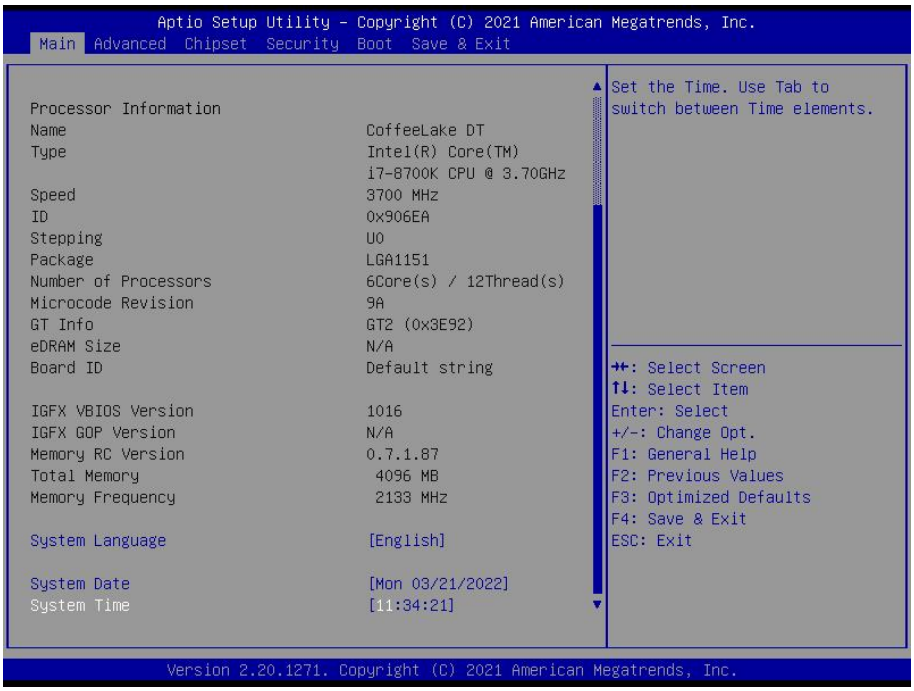
| KEY | FUNCTION |
|---|---|
| ESC | Exit the current menu |
| ↑↓→← | Scrolls through the items on a menu |
| +/- | Change Opt. |
| Enter | Select |
| F1 | General Help |
| F2 | Previous Values |
| F3 | Optimized Defaults |
| F4 | Save & Exit |

### 3.2.2 Main Menu

When you enter the BIOS Setup program, the main menu appears, giving you an overview of the basic system information. Select an item and press <Enter> to display the submenu. Press <Esc> to back to the main menu.

The BIOS setup program provides a help screen. You can call up this help screen from any menu by simply pressing the <F1> key. This help screen lists the corresponding keys and possible selections. Press <Esc> to exit the help screen.




### BIOS Information

This item shows the information of the BIOS vendor, version, build date and time etc.

### Processor Information

This item shows the basic information about the currently used processor, including name, type, speed, ID, core, Microcode version, etc.

### Total Memory

This item shows the total memory size of the current motherboard.

### Memory Frequency

This item shows the current memory operating frequency.

### System Language

Set the language interface of the BIOS.

### System Date

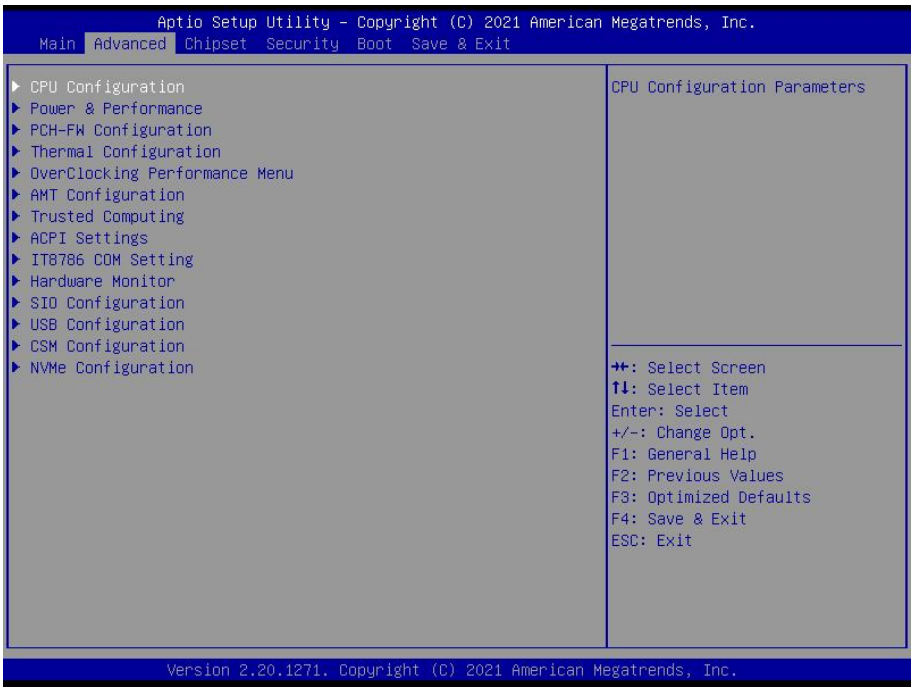
Set the date. The format of the date is <week><month><day><year>.

### System Time

Set the time. The format of the time is <hour><minute><second>.

## 3.2.3 Advanced Menu

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.

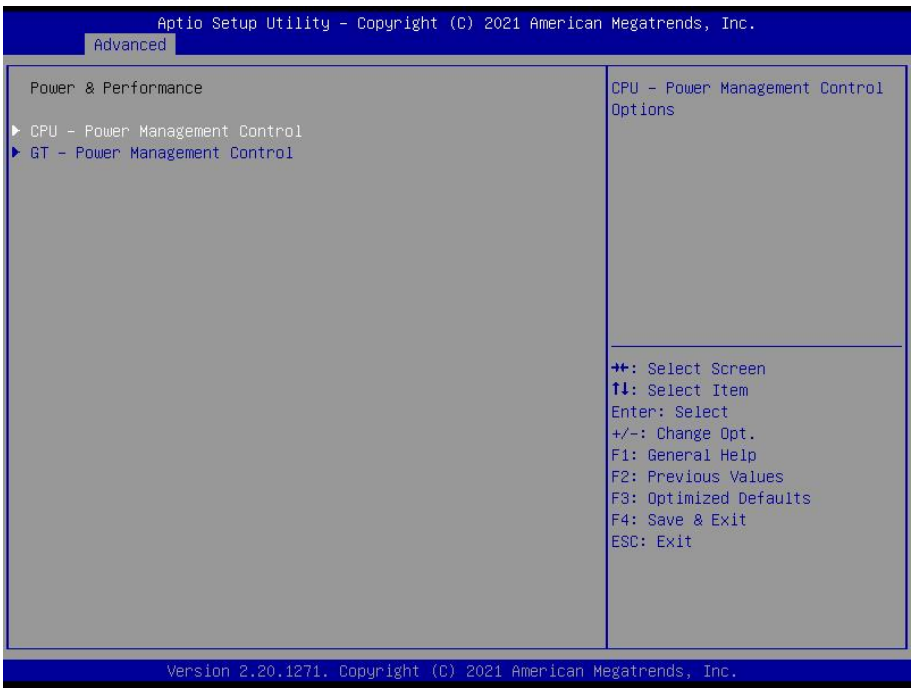



### CPU Configuration

The configuration of the central processor, enter this sub-menu, there will be detailed details of the CPU, as well as various settings of the CPU.

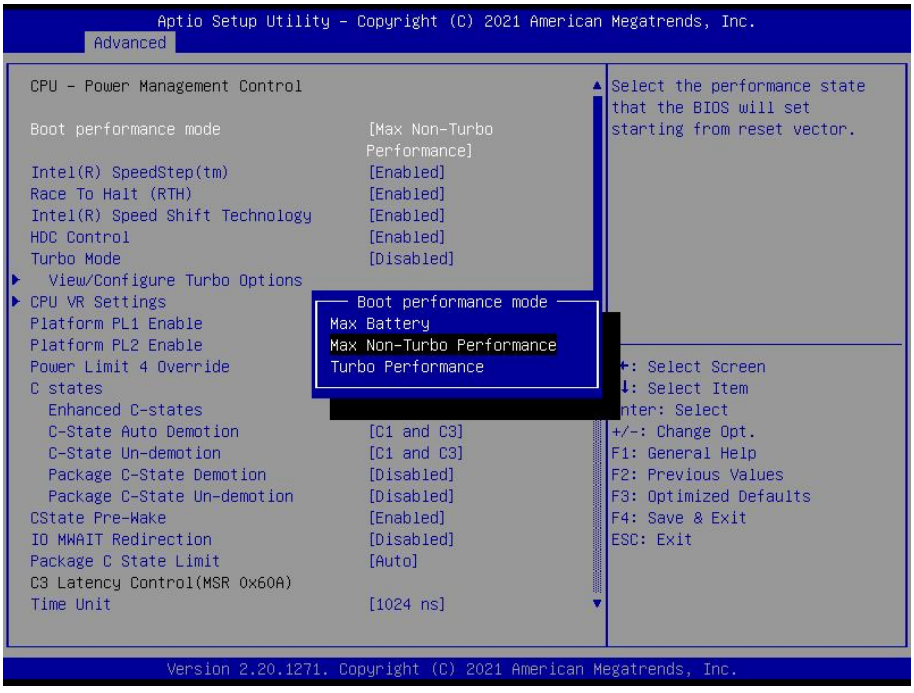
### Power & Performance Configuration

This item contains the Power & Performance configuration, enter this sub-menu, there will be detailed details of the Power & Performance, as well as related settings of the Power & Performance function.



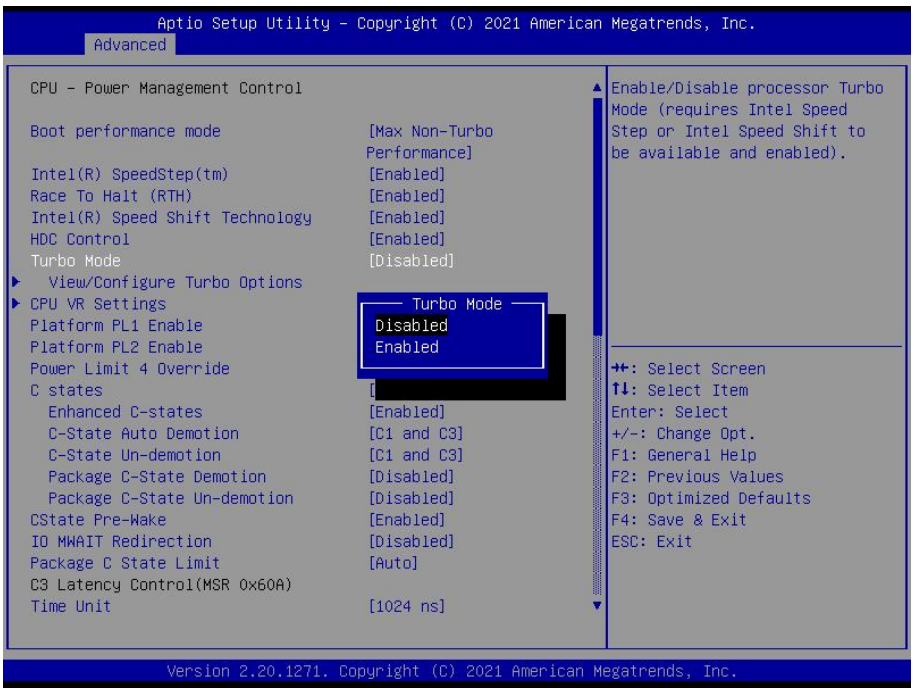

## CPU-Power Management Control

This item contains the CPU-Power management control configuration, enter this sub-menu, there will be detailed details of the CPU-Power Management Control, as well as related settings of the CPU-Power Management Control function.



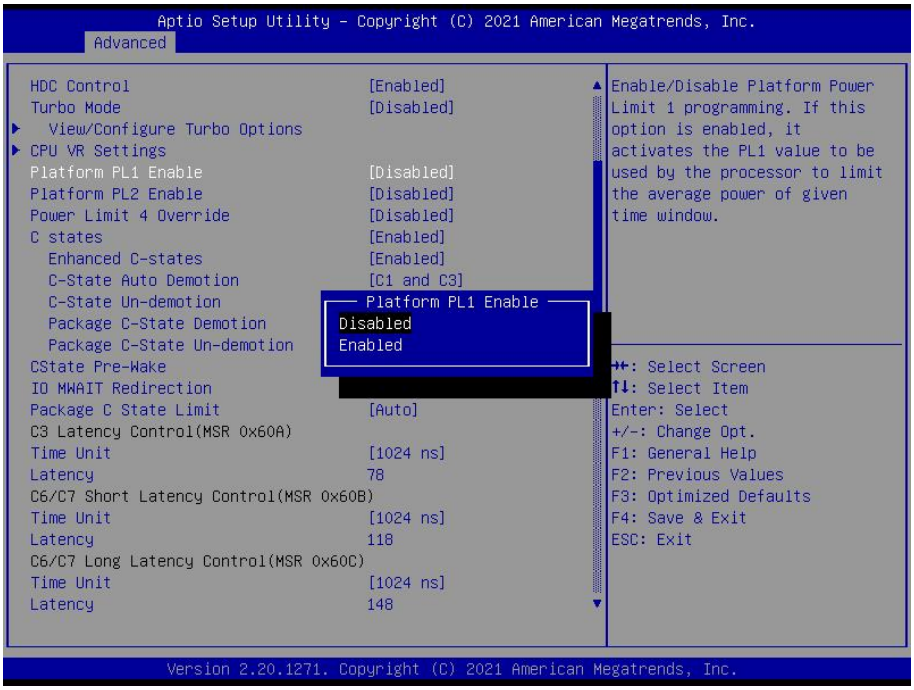

## Boot performance mode

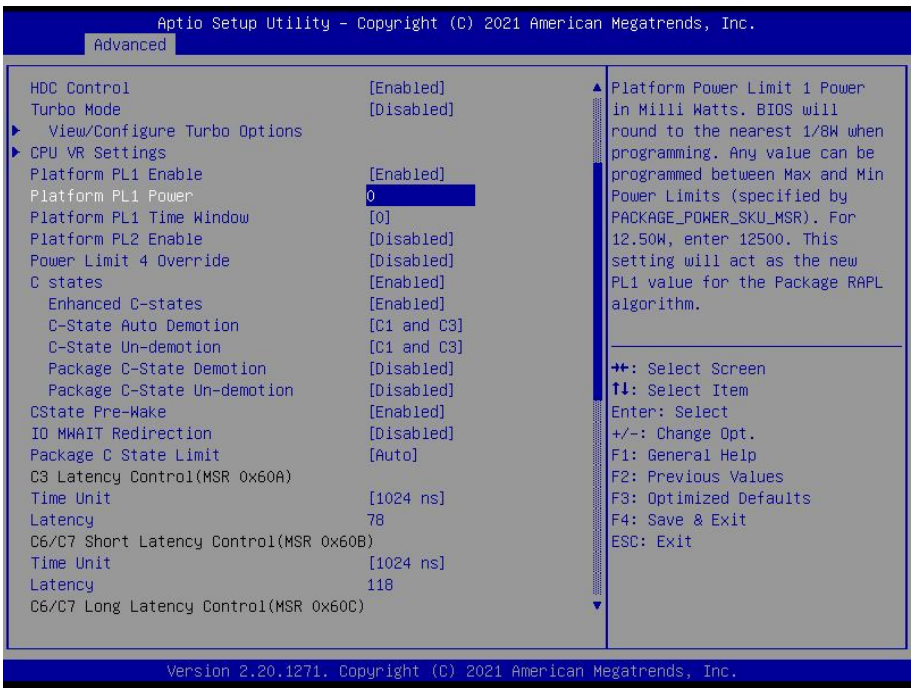
Boot performance mode settings, enter this sub-menu, there will be set boot performance mode: Max Battery, Max Non-Turbo Performance, Turbo Performance.




## Turbo Mode

Turbo mode settings, enter this sub-menu, you can choose whether to set it to turbo mode.






### Platform PL1 Enable

If Platform PL1 is enabled, you can manually limit CPU power consumption at Platform PL1 Power.

### PCH-FW Configuration

This item contains the PCH firmware configuration, enter this sub-menu, there will be detailed details of the ME, as well as related settings of the AMT function.

### Thermal Configuration

Thermal configuration, enter this sub-menu, there will be the setting of the thermal configuration parameter.

### OverClocking Performance Menu

Overclocking performance setting menu， enter this submenu, there will be overclocking performance related settings.

### AMT Configuration

This item contains the AMT configuration, enter this sub-menu, there will be detailed details of the ATM, as well as related settings of the configure intel (R) Active Management Technology parameters.

### Trusted Computing

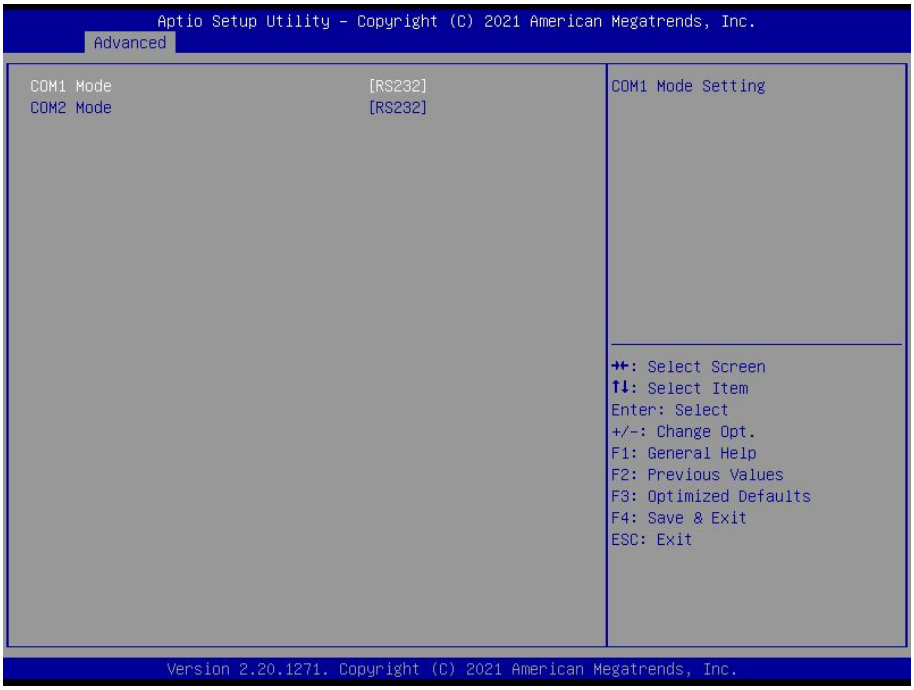
Trusted computing, enter this sub-menu, there will be the setting of the encryption security module (the motherboard will install the encryption module hardware will take effect).

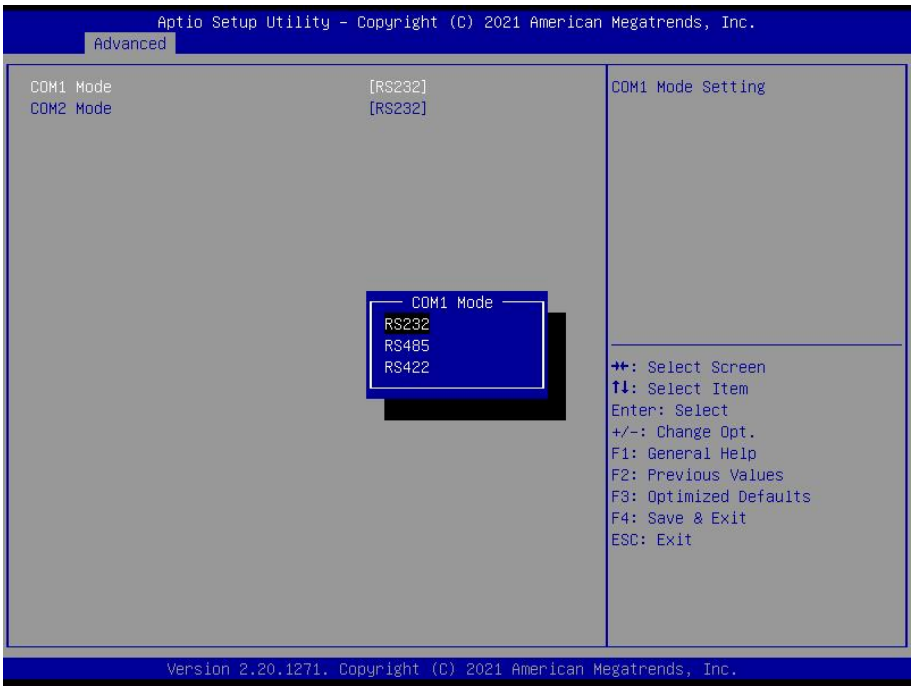
### ACPI Settings

Advanced configuration and power management interface settings, enter this submenu, there will be ACPI related settings.

### IT8786 COM Setting

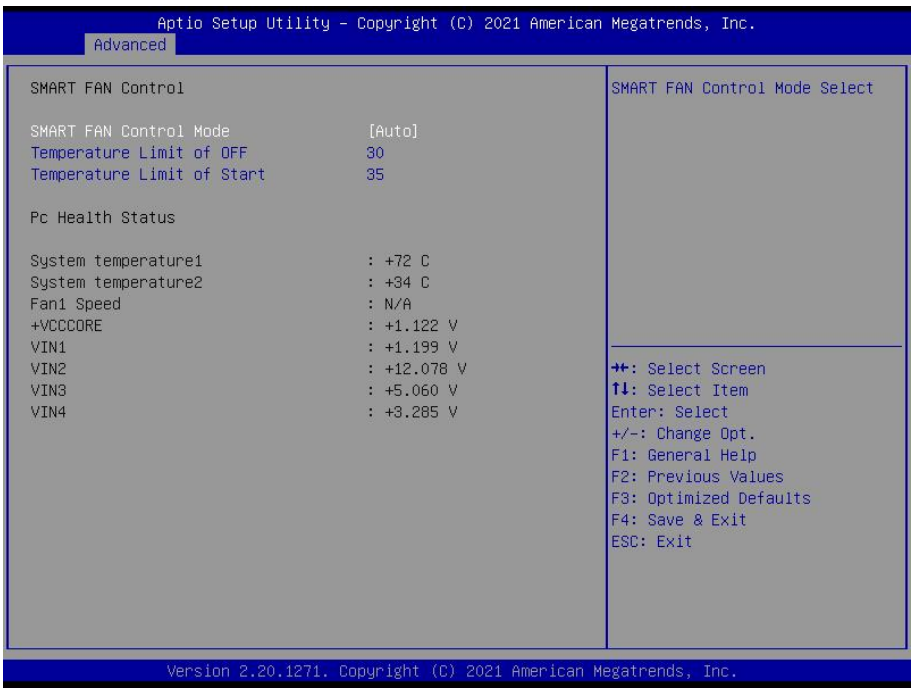
COM port settings, enter this sub-menu, there will be set COM working mode: RS232, RS485, RS422.



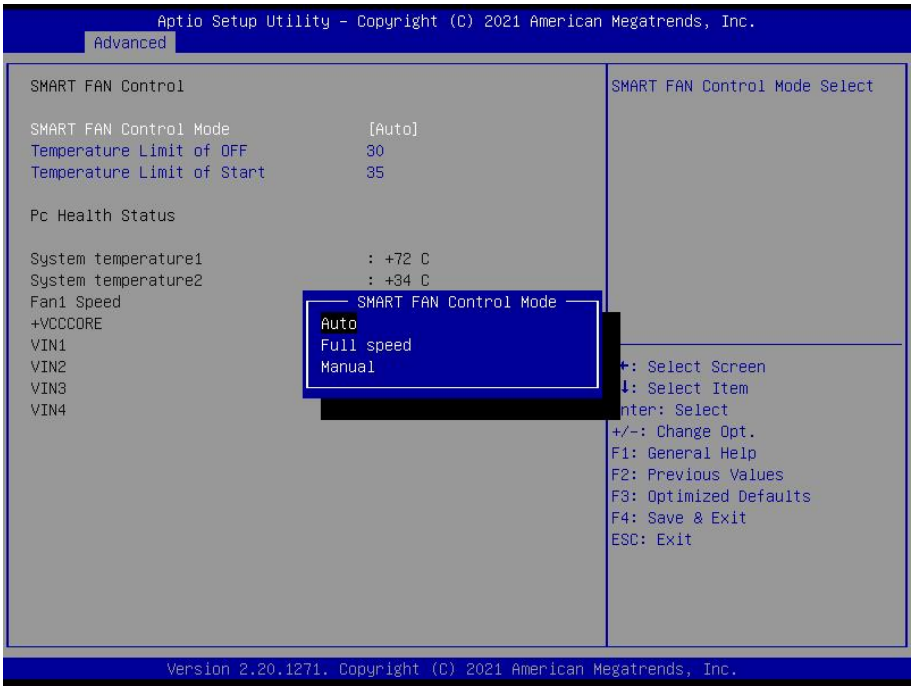

## Hardware Monitor

Hardware monitoring, enter this sub-menu, there will be CPU temperature, fan speed, status display of each common working voltage, as well as parameter settings of intelligent fan control.

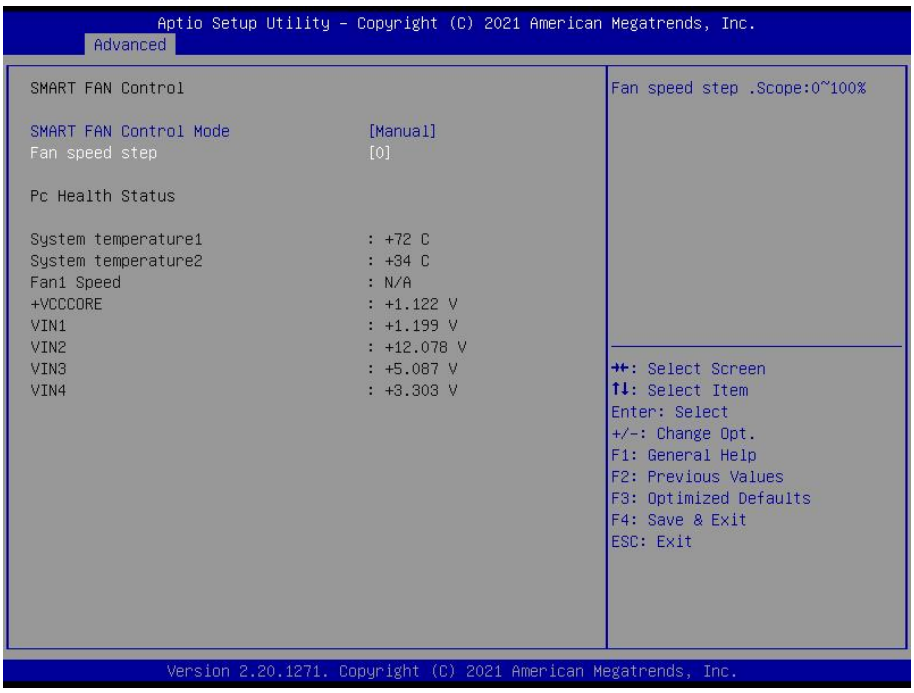



## SMART FAN Control Mode

In this item, you can set the fan speed to Auto, Full Speed, or Manual.




If you choose to set the fan speed manually, you can select it in the Fan speed step.

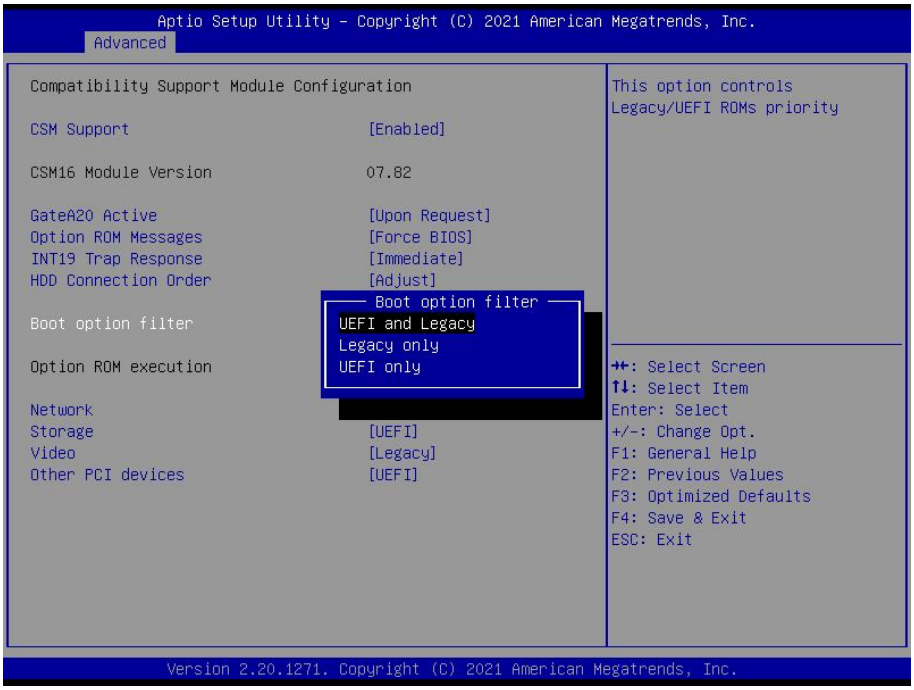



## USB Configuration

This item contains the USB configuration, enter this sub-menu, there will be detailed details of the USB, as well as related settings of the USB.

## CSM Configuration

CSM (Compatibility Support Module) configuration, enter this sub-menu, there will be various settings to support UEFI startup and non-UEFI startup. If you need to start the traditional MBR device, you need to enable CSM. Turning off the CSM turns it into a pure UEFI boot.




## Boot option filter

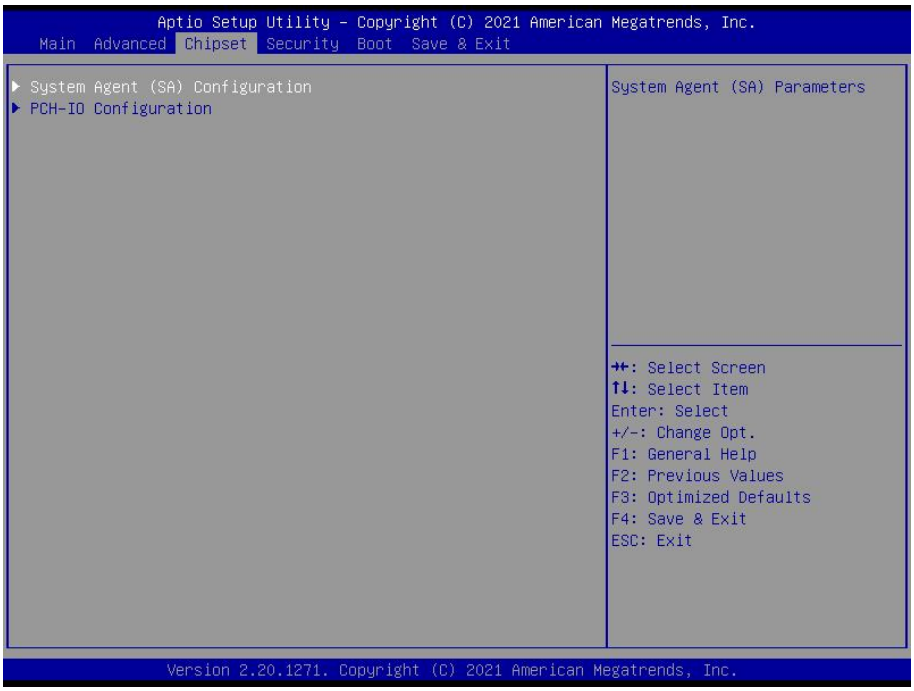
In this item, you can choose UEFI and Legacy, Legacy Only, UEFI Only boot mode.

## NVMe Configuration

NVMe device settings, enter this sub-menu, there will be set NVMe device.

## 3.2.4 Chipset Menu

The chipset menu items allow you to change the settings for the North Bridge chipset, South Bridge chipset and other system.

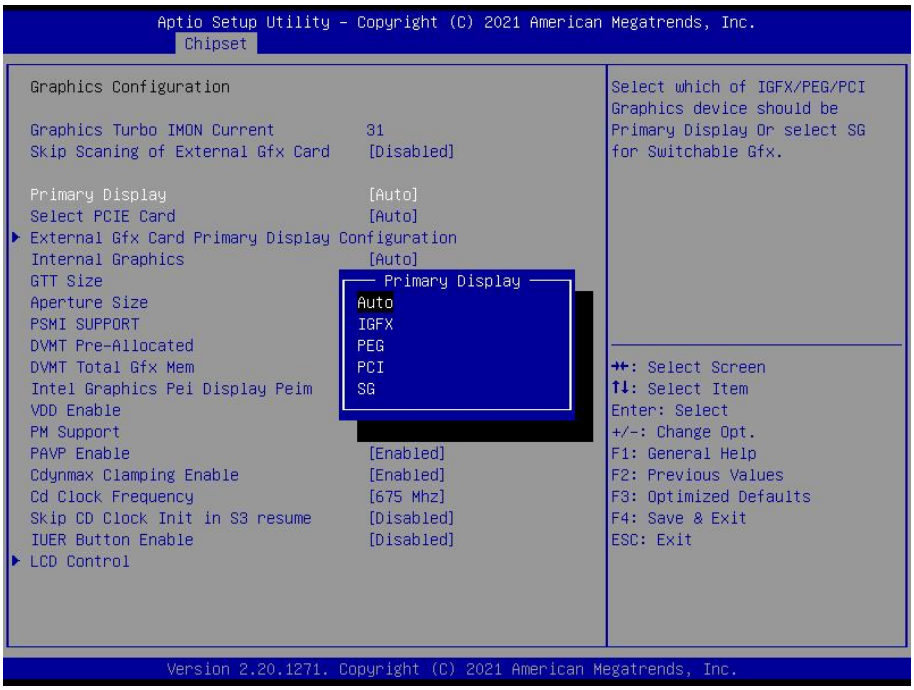



### System Agent (SA) Configuration

System agent configuration menu， enter this submenu, there will be system agent configuration related settings.

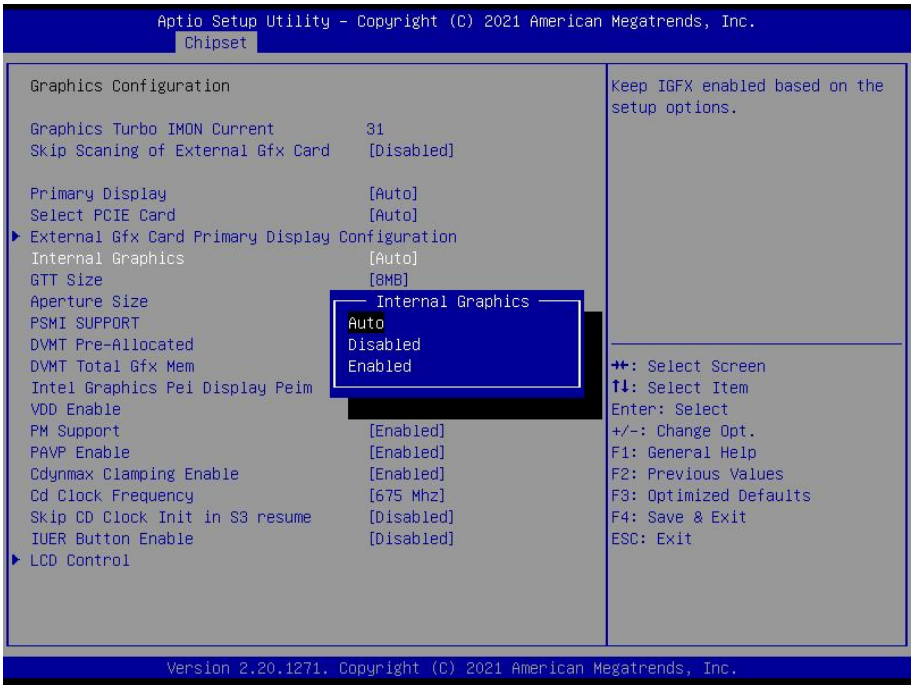

### Graphics Configuration

Graphics configuration menu， enter this submenu, there will be graphics configuration related settings.




## Primary Display

When Auto mode is selected, if an independent graphics card is inserted, it will be displayed by the independent graphics card first. If there is no independent graphics card, it will be displayed by the core display; When IGFX mode is selected, whether there is an independent graphics card or not, it will give priority to core display.

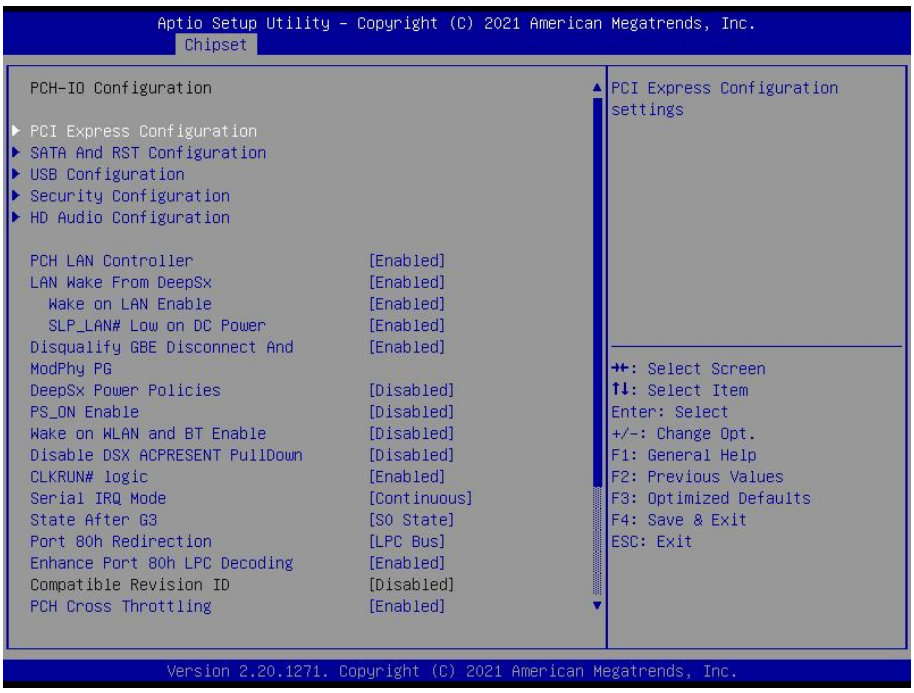



## Internal Graphics

If you need to display both independent graphics card and core display, you need to select enabled.

## PCH-IO Configuration

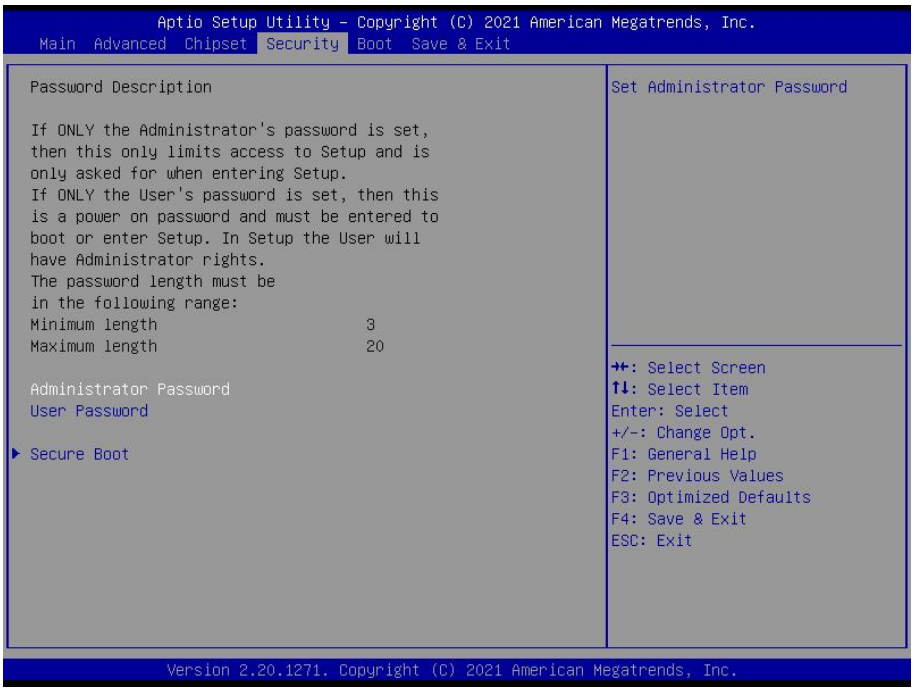
PCH-IO configuration menu， enter this submenu, there will be PCH-IO configuration related settings.




### SATA And RST Configuration

SATA hard disk and fast storage configuration, enter this sub-menu, there will be related settings of the hard disk.

## 3.2.5 Security menu



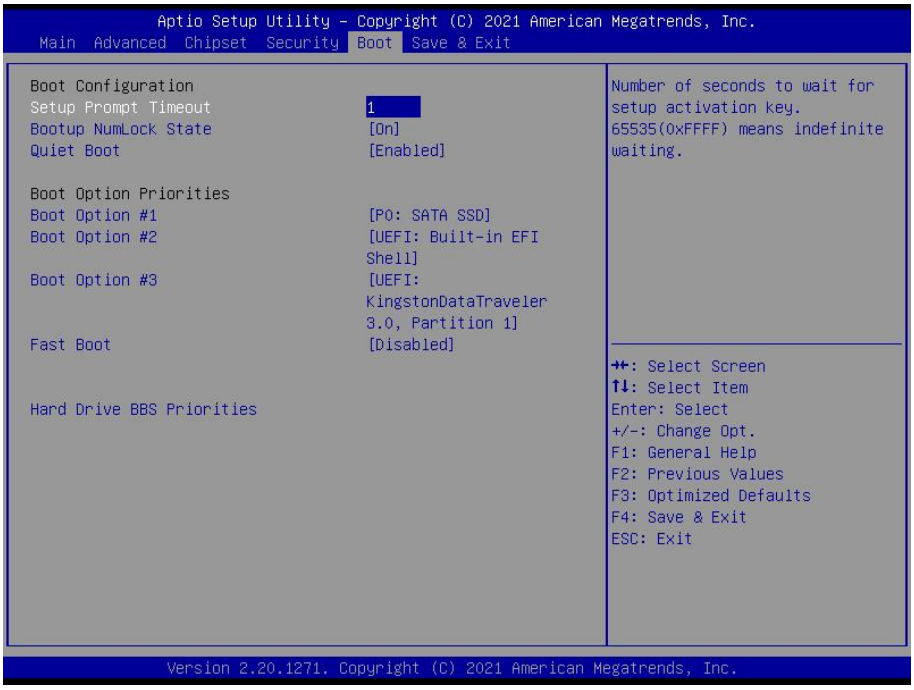

### Administrator Password

This item sets the information of the administrator password.

### User Password

This item sets the information of the normal user password.

## 3.2.6 Boot menu




### Setup Prompt Timeout

Setup prompts for waiting time. This option is to set the time to wait for the Del key to enter the BIOS setup after booting.

### Bootup NumLock State

Set the state of the small numeric keypad at startup.

### Quiet Boot

Switch full screen logo control.

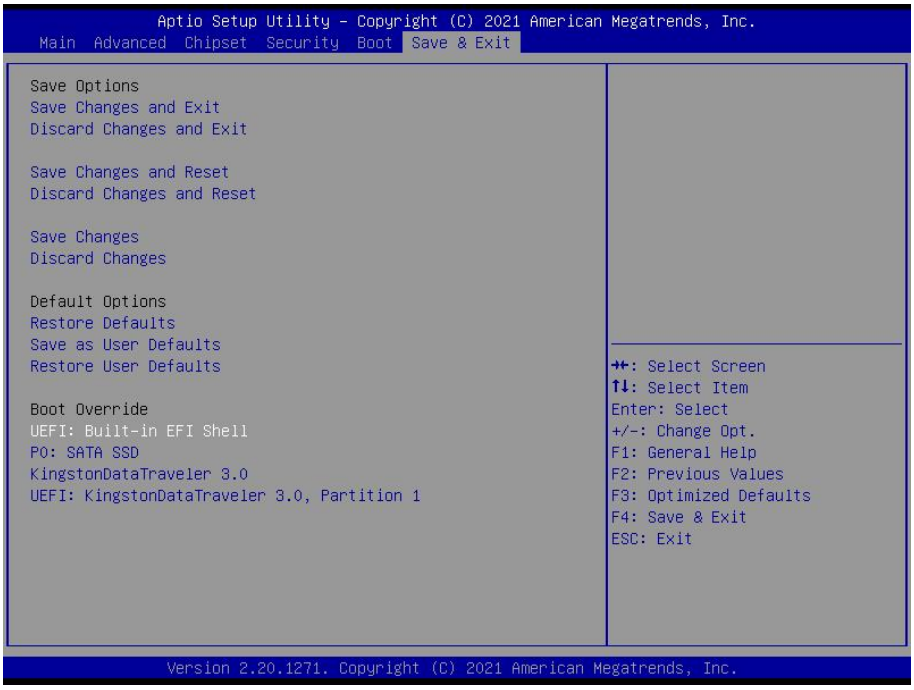
### Set Boot Priority

Start device priority settings. If the user wants to install the operating system, please set "Boot Option #1" as your CD-ROM device or your U disk device (make sure that your CD-ROM drive has an operating system or your U disk has a PE system). After the setting is completed, press the “F4” button to save and exit. The system will boot from your CD-ROM drive or USB flash drive.

### Fast Boot

Turn the quick start function on or off. When set to "Enabled", the system will skip some detection items and reduce the startup time.

## 3.2.7 Save & Exit menu




### Save changes and Exit

This item enables you to save the changes that you have made and exit.

### Discard Changes and Exit

This item enables you to discard the changes that you have made and exit.

### Save Changes and Reset

This item enables you to save the changes that you have made and reset.

### Discard Changes and Reset

This item enables you to discard the changes that you have made and reset.

### Save Changes

This item enables you to save the changes that you have made.

### Discard Changes

This item enables you to discard the changes that you have made.

### Restore Defaults

This item enables you to restore the system defaults.

### Save as User Defaults

This item enables you to save the changes as user defaults that you have made.

### Restore User Defaults

This item enables you to restore the user defaults.

## 3.3 Updating the BIOS

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS provides the underlying driver for hardware resources and is the bridge between hardware and operating system. Now hardware and various applications are constantly updated. When your system encounters problems, such as the system does not support the latest published CPU, you need to upgrade your BIOS.

**NOTE:**

1. Only upgrade the BIOS if you encounter problems and need to.
2. To upgrade the BIOS, please use the BIOS read/write program attached to our driver CD or download the updated version of the program from the relevant website.
3. Do not turn off the power or reboot the system during the upgrade process, so your BIOS data will be damaged and the system may not boot.
4. After the refresh is complete, you need to manually optimize the LOAD Default.
5. To prevent accidents, please backup the current BIOS data first.

CHAPTER 4

# Driver Installation

The KMDA-5921/5920/5610 comes with a CD-ROM that contains all drivers and utilities that meet your needs.

## 4.1 Follow the sequence below to install the drivers:

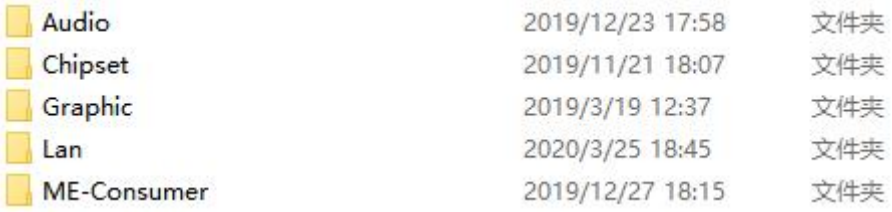



Figure 4.1

Step 1 – Install Audio Driver

Step 2 – Install Chipset Driver

Step 3 – Install Graphic Driver

Step 4 – Install LAN Driver

Step 5 – Install ME Driver

Please read instructions below for further detailed installations.

## 4.2 Installation:

Insert the KMDA-5921/5920/5610 CD-ROM into the CD-ROM drive. And install the drivers in turn.

Step 1 – Install Audio Driver
1. Double click on the Audio folder and double click on the Setup.exe
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 2 – Install Chipset Driver
1. Double click on the Chipse folder and double click on the Setup.exe
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 3 –Install Graphic Driver
1. Double click on the Graphic folder and double click on the Setup.exe
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 4 –Install LAN Driver
1. Double click on the LAN folder and double click on the Setup.exe
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 5 –Install ME Driver

1. Double click on the ME folder and double click on the Setup.exe
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

## 4.3 Utility Software Reference

All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license. These software(s) are subject to change at any time without prior notice. Please refer to the support disk for available software.

CHAPTER 5

# SYSTEM RESOURCE

## 5.1 WDT and GPIO

```
/* ================================================================================
 1    * void jhctech_init();
 2    * function description: library initializated, this function must be called before calling other
functions
 3    * parameter description：
 4    * creation date：
 5*================================================================================*/

/* ================================================================================
 1    * void jhctech_deinit();
 2    * function description: library release, pair with jhctech_init, release the library's occupied
resources when not needed
 3    * parameter description：
 4    * creation date：
 5* ================================================================================*/

/*================================================================================
 1   * void watchdog_set(int time);
 2   * function description：Watchdog function
 3   * parameter description：time is to set the dog feeding time，value between 0 and 255
                              setting 0 means to turn off the watchdog
 4   * creation date：
5*================================================================================*/

/*================================================================================
 1   * void smbus_16pin_gpio_mode(int port,int mode);
 2   * function description: Subcard input and output mode settings
 3   * parameter description:

     Parameter: port represents the GPIO number of the subcard, 1 or 2
     Mode 8 bit of a bit, each bit controls the input and output mode of a GPIO pin,
     Bit =1, the corresponding pin is used as the input port.
     Bit =0, the corresponding pin is used as an output port.
```

| Mode | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|---|
| GPIO pin | PIN8 | PIN7 | PIN6 | PIN5 | PIN4 | PIN3 | PIN2 | PIN1 |

Note: The output value is valid only when the pin is in output mode.

4 * creation date:

5*==========*/

/*==========

* void smbus_16pin_gpio_output(int port,int level);

2 * function description: high and low levels output of the subcard

3 * parameter description:

Parameter: port represents the GPIO number of the subcard, 1 or 2

Level 8 bit of a bit, each bit controls a GPIO pin output value,

Bit =1, means output high level

Bit =0, means output low level

| level | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|---|
| GPIO pin | PIN8 | PIN7 | PIN6 | PIN5 | PIN4 | PIN3 | PIN2 | PIN1 |

Note: The output value is valid only when the pin is in output mode.

4 * creation date:

5*==========*/

/*==========

1 * int smbus_16pin_gpio_input(int port);

2 * function description: read the motherboard GPIO input level

3 * parameter description:

Return value: return a byte (8 bit), each bit of the 8-bit corresponding to the level state of a GPIO pin

| Return value | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|---|
| GPIO pin | PIN8 | PIN7 | PIN6 | PIN5 | PIN4 | PIN3 | PIN2 | PIN1 |

Parameter：port fill in sub-card GPIO number, 1 or 2

Note: The read value is valid only when the pin is in input mode

4 * creation date：

5*==========*/

**Note:** If you want more programs of the motherboard's watchdog and GPIO, please call +86-0755-86021176-(8021)/+86-0755-86021176-(8023) for more information.