User's Guide

KMDA-3230

Ver.A1.0

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Version Note

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1	A1.	Final publish	20200701	Echo Guo

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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 B

Note: This equipment has been tested and found to comply with the limits for a Class B 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-3230 is an embedded industrial Box Computer, with aluminum chassis and fan-less design. It powered by Intel® Whiskey lake U Celeron/Core I3/I5/I7 series processors, 2-Ch DDR4, 2* SO-DIMM up to 32GB.

KMDA-3230 offers 1*HDMI, 1*DP, dual 4K display interfaces, 5*GbE LANs, 4*USB3.1, 2*USB2.0, 5*COM, 8-bit Iso DIO, 1*F-Mini PCIe with SIM slot, which supports 4G LTE/Wifi/BT. 1*M.2, 2230 E-Key, 1*mSATA and 1*2.5" SATA HDD/SSD are used for storage. DC 9~36V wide power input. The aluminum profile bottom shell design is good for heat dissipation of hard disk. The machine is small, powerful and delicate, suitable for industrial Internet of things, machine vision and other applications.

1.2 Features

Key Features

- Universal aluminum chassis, fan-less design
- Intel® Whiskey lake U Celeron/Core I3/I5/I7 CPU
- 2*260-pin SODIMM, DDR4 2400MHz , up to 32GB
- 1* Full Mini PCIe, with SIM slot, PCIe X1+USB2.0 signal, support 3G/4G/Wifi/ BT/ GPRS wireless
- 1* M.2 E-key 2230, with PCIe X1+USB2.0 signal, expansion of Wifi/BT module
- 1*2.5" SATA HDD/SSD bay, 1*mSATA for storage
- 1*DP, 1*HDMI, dual 4K display interfaces
- Realtek ALC662VD controller, 1*Line out & Mic
- 4*Intel® I210AT PCIe Gig. Ethernet, 10/100/1000 Mbps adaptive;
- 1*Intel®I219 LM ,support iAMT 12.0
- 8-bit Iso DIO,4*USB3.1, 2*USB2.0, 5*COM
- Clear CMOS switch is on the front panel, easy to clear CMOS data
- AT/ATX power-on mode selection switch is on the front panel, easy to set power-on mode
- DC 9~36V, CPU temperature show in LED

1.3 Specifications

1.3.1 General

CPU: Intel® Whiskey lake U Celeron/Core I3/I5/I7 CPU

System Memory: 2*DDR4 2400MHz SODIMM, Up to 32GB

Watchdog Timer: 255-level interval timer, setup by software

Serial Ports: 3* RS232 DB9 male, 2*RS485 10-Pin Phoenix terminal

USB: 4*USB 3.1 Type A ports, 2*USB2.0 Type A ports

Expansion Interfaces:

1*Full size Mini PCIe (PCIeX1+USB2.0) with SIM slot

1* M.2 E-key 2230, with PCIe X1+USB2.0 signal, expansion of Wifi/BT module

Storage: 1* mSATA

1*2.5" SATA HDD/SSD bay

1.3.2 Display

Chipset: Gen. 9th Intel® UHD Graphics

Display Memory: Shared system memory

Resolution: HDMI 4096* 2304@24Hz, DP 4096* 2304@60Hz

1.3.3 Ethernet

Chipset: 4*Intel® I210AT PCIe Gig. Ethernet, 1*Intel®I219LM, support iAMT12.0

Speed: 10/100/1000 Mbps Integrated

Interface: 5*RJ45

1.3.4 Audio

Chipset: Realtek ALC662VD controller

Interface: 1*Line out&MIC, 3.5mm phone jack

1.3.5 Power Consumption

Input Voltage: DC 9~36V Input

Power Consumption: TDP 12/2.5A (I5-8365UE CPU, 8GB RAM, 128GB SSD)

Power Adapter: AC to DC 12V/5A, 60W

1.4 Environmental Specifications

Operating temperature:

-20 ~ 70° C (Fanless, SSD, Airflow)

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

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

Vibration loading during operation:

With SSD: 1.09 Grms, random, 5 ~ 500 Hz

With HDD:1.09 Grms, random, 5 ~ 500 Hz

Shock during operation:

With SSD: 50g, peak acceleration (11 ms duration)

With HDD:20g peak acceleration (11 ms duration)

EMC: CE, FCC Class B

1.5 Ordering Info

Modol No.	CPU	Introduction
KMDA-3230/S001	Intel® Core I3-8145U	Fanless Box Computer，Dual channel DDR4 2*SO-DIMM，1*HDMI，1*DP，1*Line out&Mic，5*LAN，4*USB3.1，2*USB2.0，5*COM，8-bit DIO，1*M.2，1*Mini PCIe，1*SIM slot, 1*mSATA，1*2.5"SATA，DC9~36V
KMDA-3230/S002	Intel® Core I5-8265U	Fanless Box Computer，Dual channel DDR4 2*SO-DIMM，

		1*HDMI, 1*DP, 1*Line out&Mic, 5*LAN, 4*USB3.1, 2*USB2.0, 5*COM, 8-bit DIO, 1*M.2, 1*Mini PCIe, 1*SIM slot, 1*mSATA, 1*2.5"SATA, DC9~36V
KMDA-3230/S003	Intel® Core I7-8565U	Fanless Box Computer, Dual channel DDR4 2*SO-DIMM, 1*HDMI, 1*DP, 1*Line out&Mic, 5*LAN, 4*USB3.1, 2*USB2.0, 5*COM, 8-bit DIO, 1*M.2, 1*Mini PCIe, 1*SIM slot, 1*mSATA, 1*2.5"SATA, DC9~36V
KMDA-3230/S004	Intel® Celeron 4305U	Fanless Box Computer, Dual channel DDR4 2*SO-DIMM, 1*HDMI, 1*DP, 1*Line out&Mic, 5*LAN, 4*USB3.1, 2*USB2.0, 5*COM, 8-bit DIO, 1*M.2, 1*Mini PCIe, 1*SIM slot, 1*mSATA, 1*2.5"SATA, DC9~36V

1.6 Mechanical Specifications

The KMDA-3230 consists of a main board (ECM-I909), a subboard (ECB-251)

Main Board Front (ECM-I909)

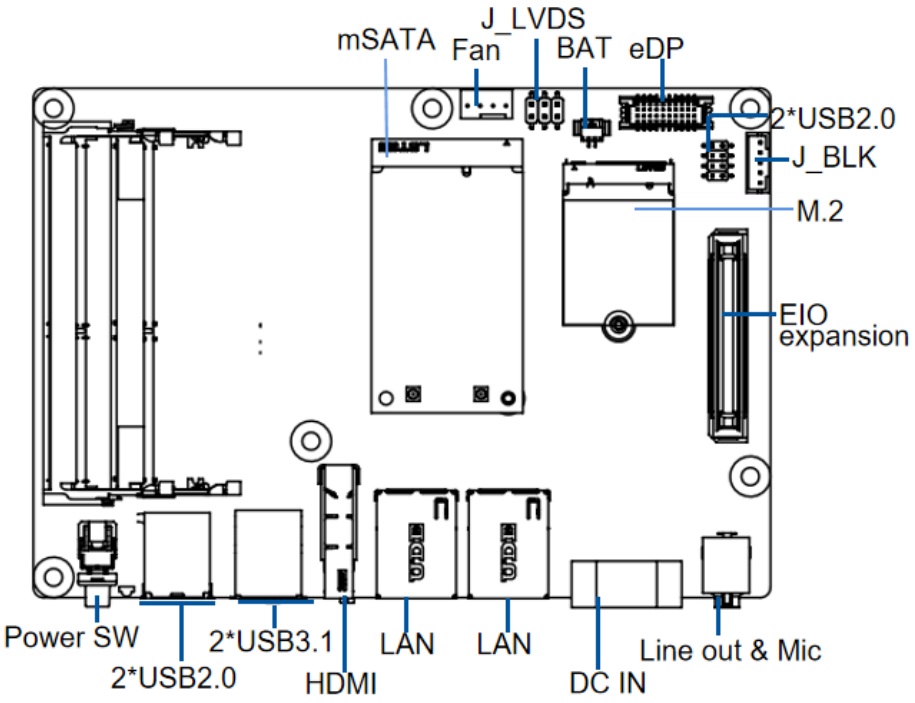


Figure 1.1

Main Board Rear (ECM-I909)

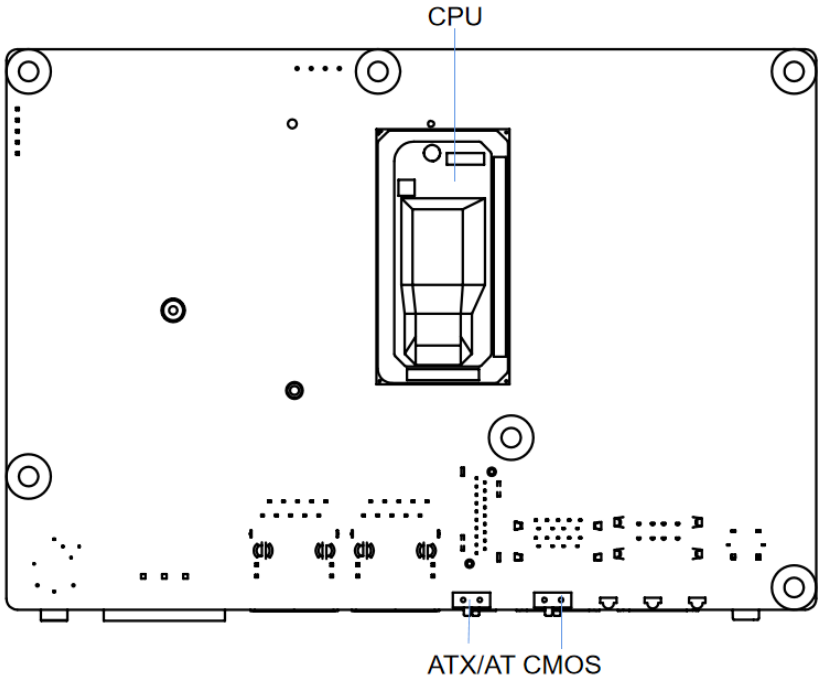


Figure 1.2

Sub-card (ECB-251)

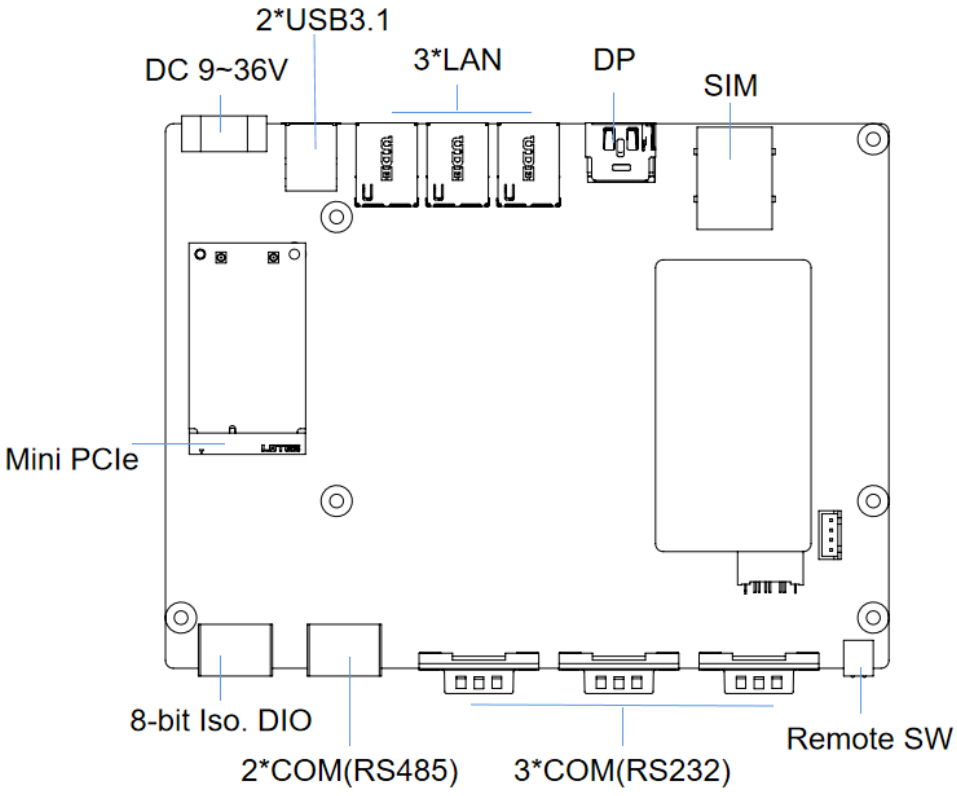


Figure 1.3

KMDA-3230 Front Panel

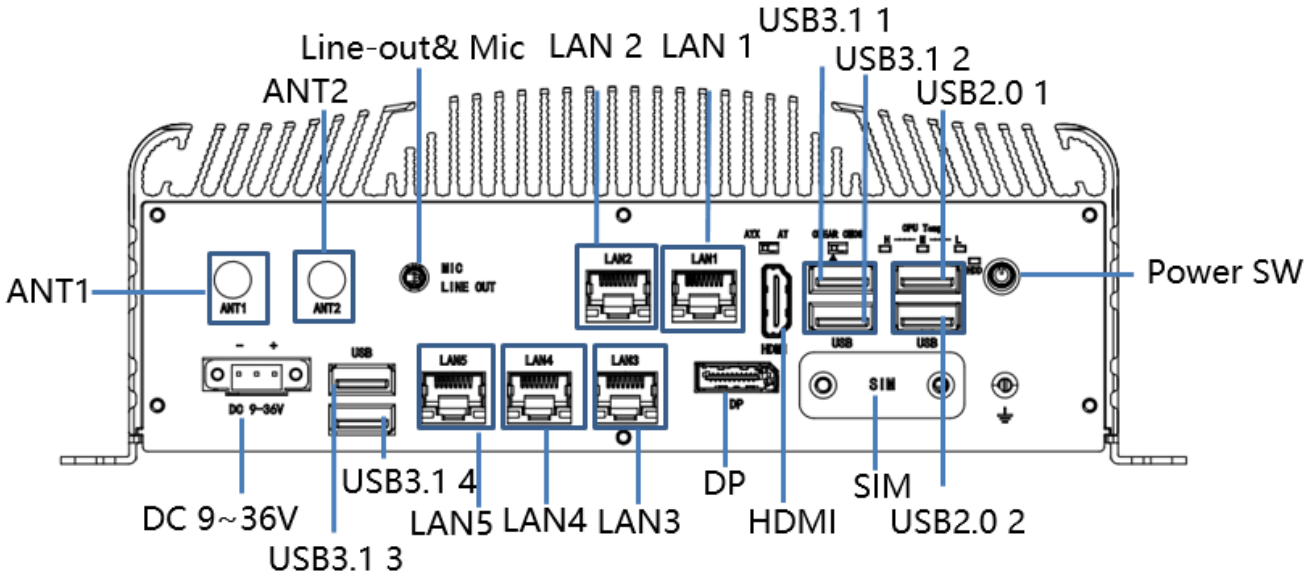


Figure 1.4

KMDA-3230 Rear Panel

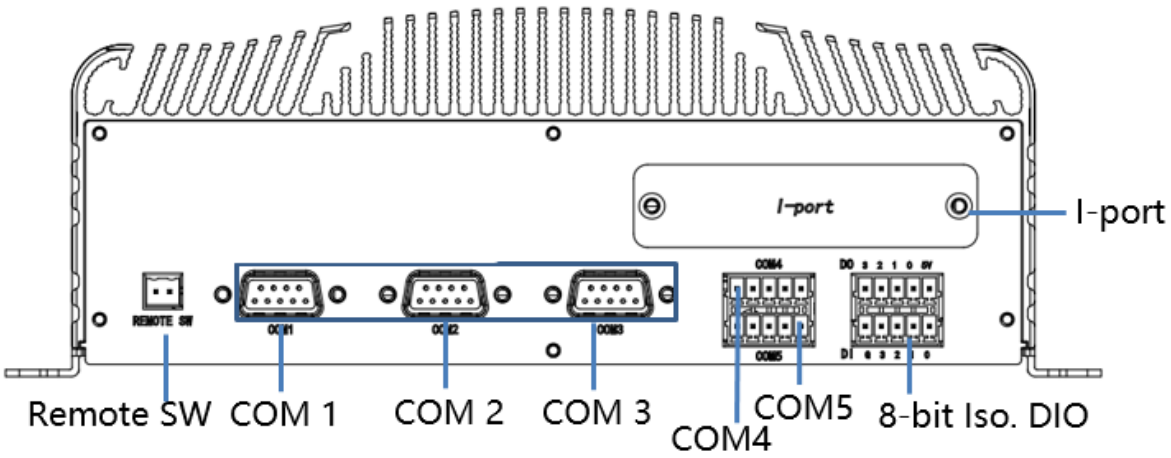


Figure 1.5

KMDA-3230 Dimension:

Unit: mm

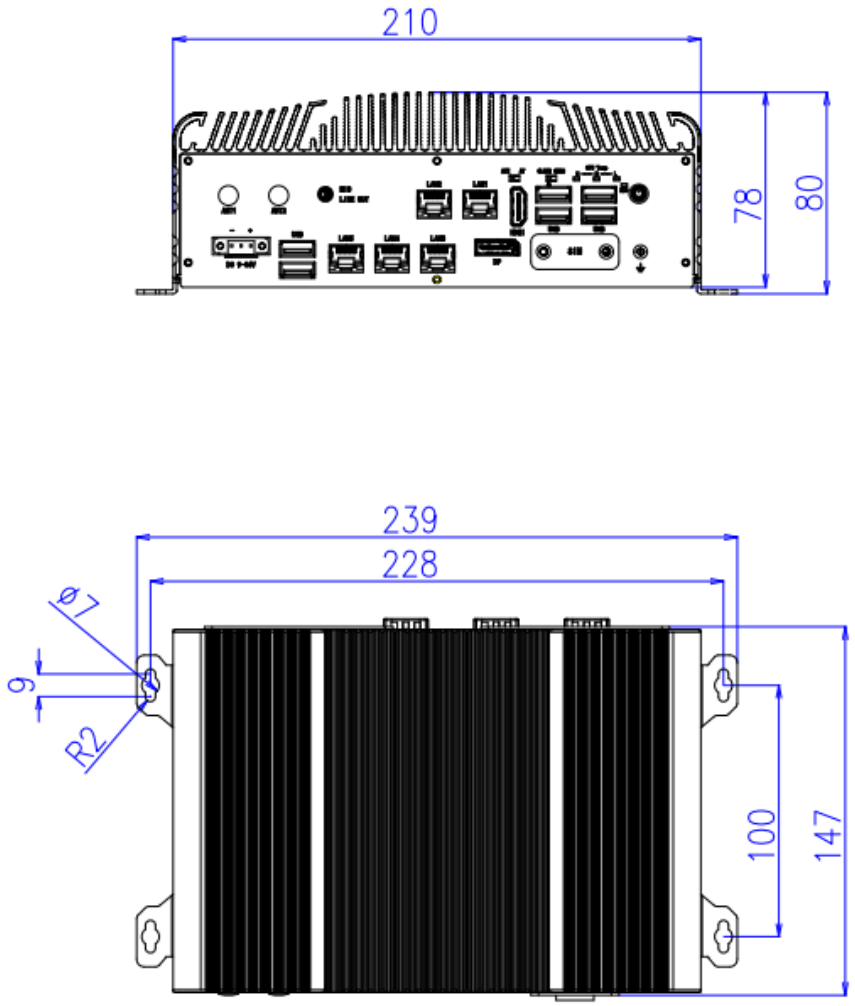


Figure 1.6

CHAPTER 2

Hardware Installation

2.1 Introduction

The following sections show the internal switch settings and the external connectors and pin assignments for applications.

2.2 Switches

The KMDA-3230 Box Computer has a number of switches on the panel that allows you to configure your system to suit your application. The table below shows the function of each of the board's switches:

Switches	Name	Description
SW1	Clear CMOS Data Setting	3-Pin Switch
SW2	Set Power-on mode at AT or ATX	3-Pin Switch

2.2.1 SW1-Clear CMOS Data

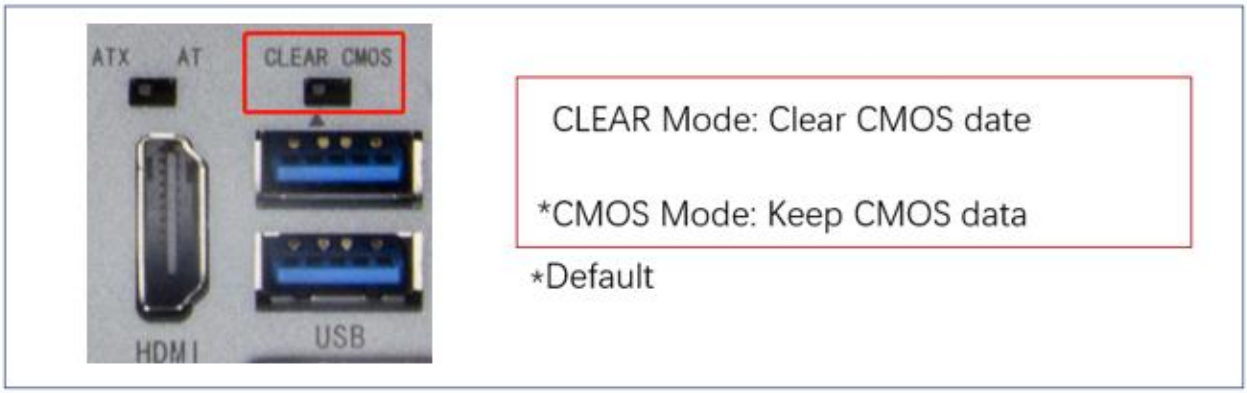


Figure 2. 1

If you encounter the followings

a) CMOS data becomes corrupted.

b) You forget the supervisor or user password.

You can reconfigure the system with the default values stored in the ROM BIOS.

To load the default values stored in the ROM BIOS, please follow the steps below.

1. Power-off the system and unplug the power cord.
2. Dial the dip switch to CLEAR mode, stay for 5~6 seconds, and then revert to CMOS mode;
3. Power-On the computer, press the Del key to enter the BIOS setting and reload the optimal default value;
4. Save and exit the Settings.

2.2.2 SW2- AT/ATX Power on mode selection

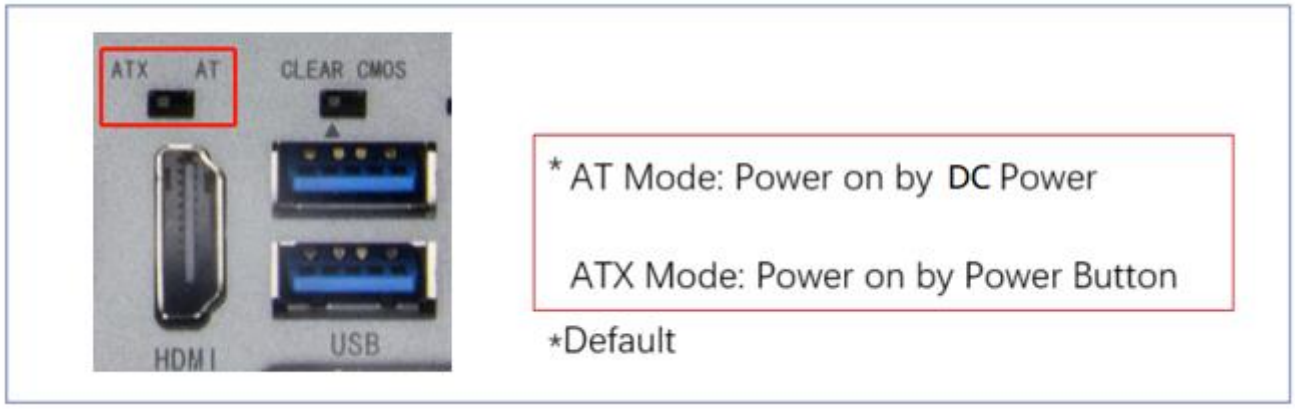


Figure 2. 2

The KMDA-3230 provides 1*AT/ATX SW, which users can set Power-on mode by it. When you dial it at AT, it means power on by AC Power; When you dial it at ATX, it means power on by Power button.

2.3 I/O/Button/LED Indication

KMDA-3230 Front Panel

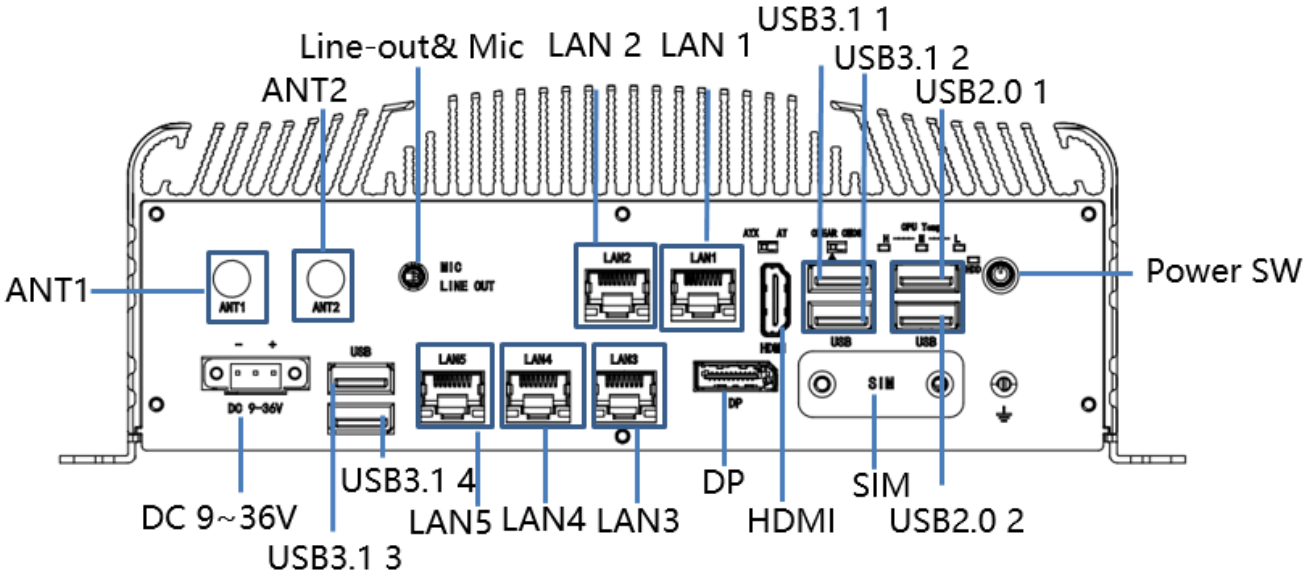


Figure 2.3

The front panel contains the I/O interface

- 1*DC-in Power jack: 3-pole Phoenix terminal block
- 1*Line out & Mic: 3.5 mm phone jack
- 1*DP, 1*HDMI
- 2*USB 2.0 Type A, 4*USB3.1 Type A
- 5*Gigabit LAN: RJ45 with LEDs
- 1*SIM
- 2*Antenna
- Power button
- HDD LED, CPU LEDs
- AT/ATX SW, Clear CMOS SW

KMDA-3230 Rear Panel

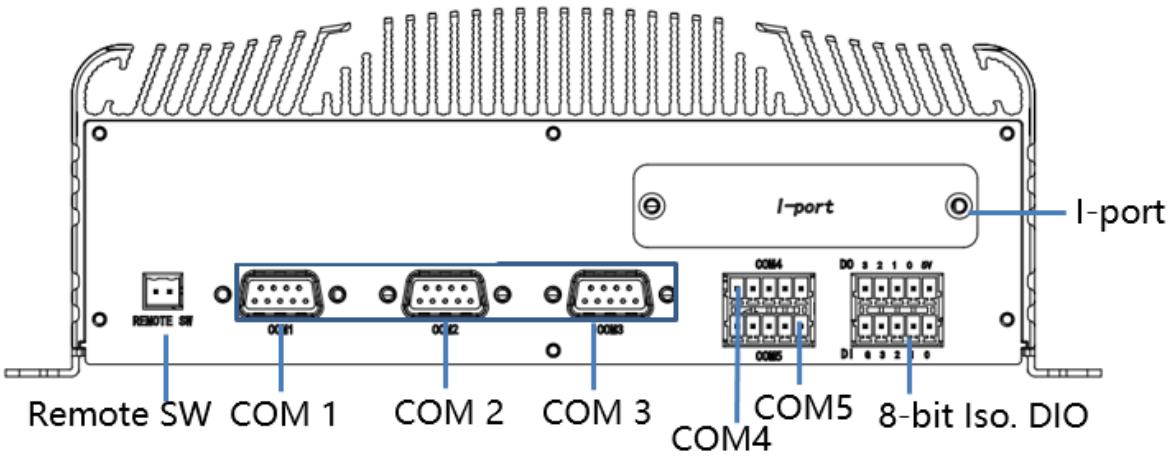


Figure 2.4

- 1*Remote SW: 2-pole terminal block
- 5*COM: 3*RS232 DB9, 2*RS485 10-pole Phoenix terminal block
- 8-bit Iso DIO: 10-pole terminal block
- 1*I-port

2.3.1 Ethernet Connector (LAN)

The KMDA-3230 is equipped with 4*Intel® I210AT (LAN1/LAN3/LAN4/LAN5) PCIe Gig. Ethernet for 10/100/1000Mbps adaptive; 1*Intel®I219LM (LAN2) support iAMT12.0. The product provides 5*RJ45, with LED indicators on the front side to show its Active/Link status (Green LED) and Speed status (yellow LED).

Table 2.1 for pin assignments.

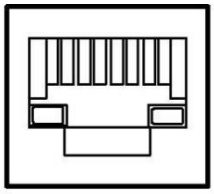


Figure 2. 5

Table 2.1: RJ-45 Connector pin assignments

Pin	10/100/1000BaseT Signal	Pin	10/100/1000BaseT Signal
1	TX+(10/100), LAN_DA+(GHz)	5	LAN_DC-(GHz)
2	TX-(10/100), LAN_DA-(GHz)	6	RX-(10/100), LAN_DB-(GHz)
3	RX+(10/100), LAN_DB+(GHz)	7	LAN_DD-(GHz)
4	LAN_DC+(GHz)	8	LAN_DD-(GHz)

2.3.2 USB Connector

The USB device allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

The KMDA-3230 provides 4*USB3.1, 2*USB2.0 (one inside for dongle). The USB interface can be disabled in the system BIOS setup.

Table 2.2 for USB2.0 pin assignments.

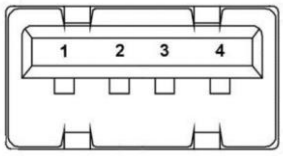


Figure 2. 6

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

Table 2.3 for USB3.1 pin assignments.

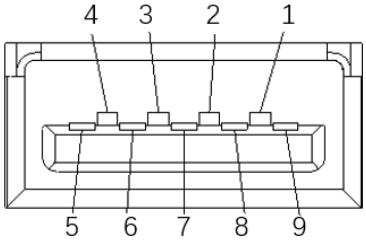


Figure 2. 7

Table 2.3: USB3.1 Port Pin Assignments			
Pin	Signal	Pin	Signal
1	VBUS	6	StdA_SSRX+
2	D-	7	GND_DRAIN
3	D+	8	StdA_SSTX-
4	GND	9	StdA_SSTX+
5	StdA_SSRX-	Shell	Shield

2.3.3 HDMI

The KMDA-3230 provides a high-resolution HDMI display port. They can support the most resolution up to 4096* 2304@24Hz. Table 2.4 for HDMI pin assignments.

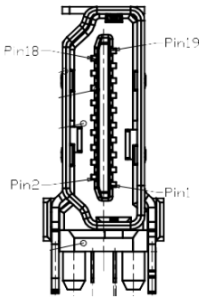


Figure 2. 8

Table 2.4: HDMI 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		

2.3.4 DP

The KMDA-3230 provides a high-resolution DP ports, it supports the most resolution up to 4096* 2304@60Hz.

Table 2.5 for DP pin assignments.

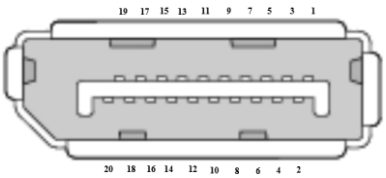


Figure 2. 9

Table 2.5: DP 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 DIO Connector

The KMDA-3230 provides 8-bit Iso DIO by 2*5Pin 8-bit Iso DIO terminal connector in rear. Table 2.6 for Pin assignments.

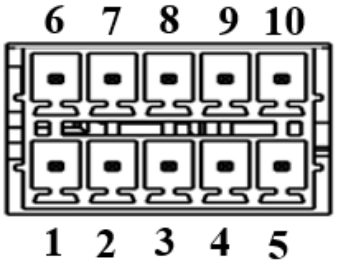


Figure 2. 10

Table 2.6: 8-bit Iso DIO Pin Assignments			
Pine	DIO Signal	Pin	DIO Signal
1	+5V	2	DI0
3	DO0	4	DI1
5	DO1	6	DI2
7	DO2	8	DI3
9	DO3	10	GND

2.3.6 Power Input Connector (DC-IN)

The KMDA-3230 provides a wide power input (DC 9~36V) by a 3-pin terminal.Table 2.7 for pin assignments.

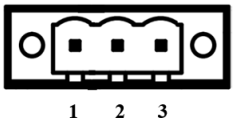


Figure 2. 11

Table 2.7:DC-IN port pin assignments			
Pin	Signal	Pin	Signal
1	9~36V	2	NC
3	GND		

2.3.7 COM1/2/3 Connector

The KMDA-3230 provides 3 serial ports of COM1/2/3 by 2*D-sub 9-pin connectors. COM1/2/3 can be configured as RS232 .Table 2.8 for COM1/2/3 pin assignments.

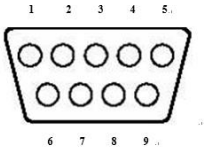


Figure 2. 12

Table 2.8: COM1/2/3 Serial Port Pin Assignments			
Pin	Signal	Pin	Signal
1	COM_DCD	2	COM_SIN
3	COM_SOUT	4	COM_DTR
5	GND	6	COM_DSR
7	COM_RTS	8	COM_CTS
9	COM_RI		

2.3.8 COM4/5 Connector

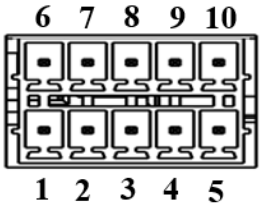


Figure 2. 13

COM3/4 are only for RS485. The Pin assignments are as follows:

Table 2.9: COM3/4 Serial Port Pin Assignments

Pin	Signal	Pin	Signal
1	COM4_A1	2	COM5_A1
3	COM4_B1	4	COM5_B1
5	GND	6	GND
7	NC	8	NC
9	NC	10	NC

2.3.9 Remote Switch signal Connector

For the remote switch signal interface of the switch machine, the terminal of the motherboard coastline is a 2-pin terminal. Table 2.10 for pin assignments.

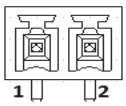


Figure 2. 14

Table 2.10: Remote Switch Pin Assignments

Pin	Signal
1	PWR_BTN
2	GND

2.3.10 Serial ATA

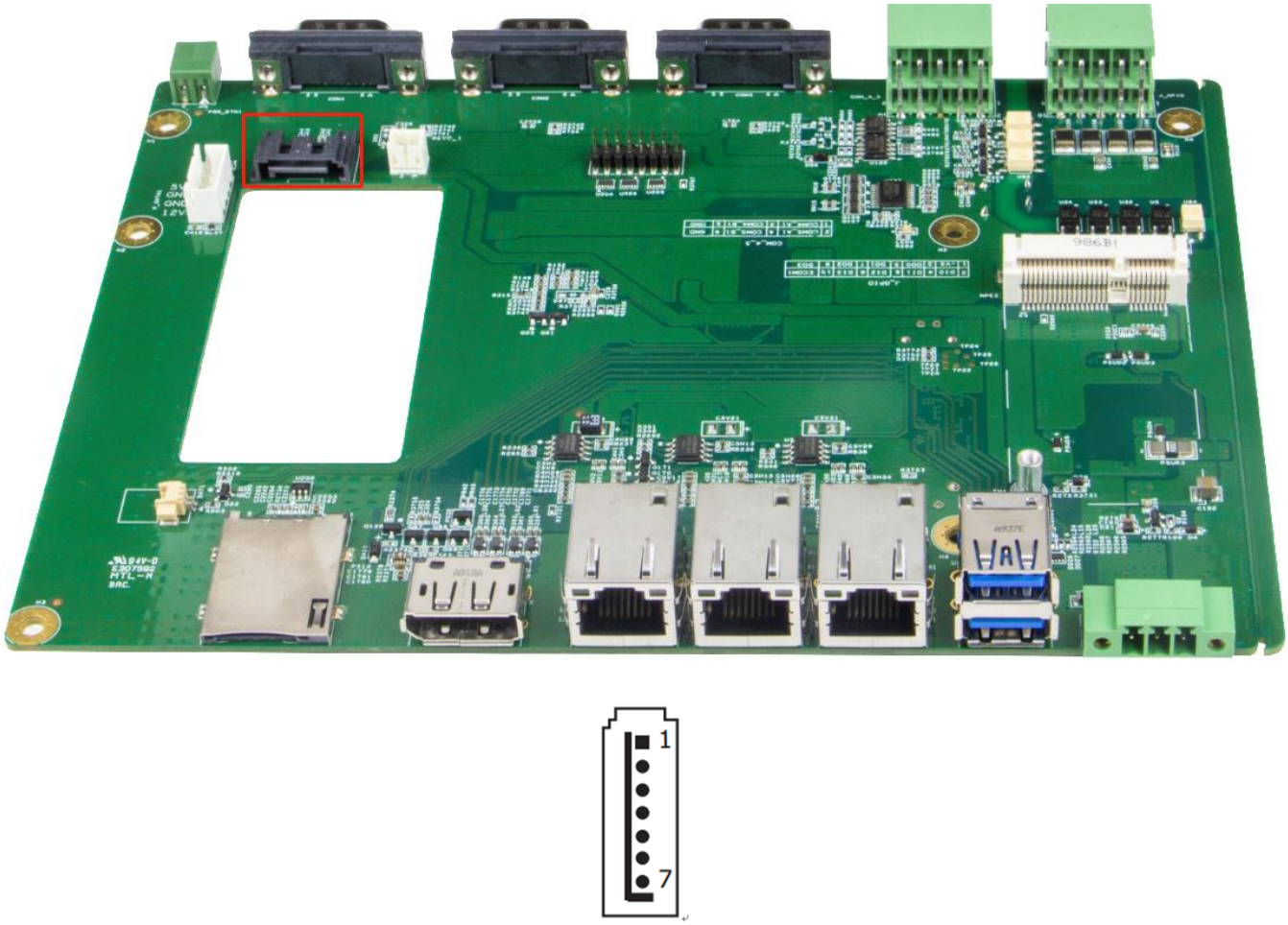


Figure 2. 15

Table 2.11 for pin assignments.

Table 2.11: Serial ATA pin assignments			
Pin	Signal	Pin	Signal
1	GND	5	RX-
2	TX+	6	RX+
3	TX-	7	GND
4	GND		

2.3.11 SATA power connector

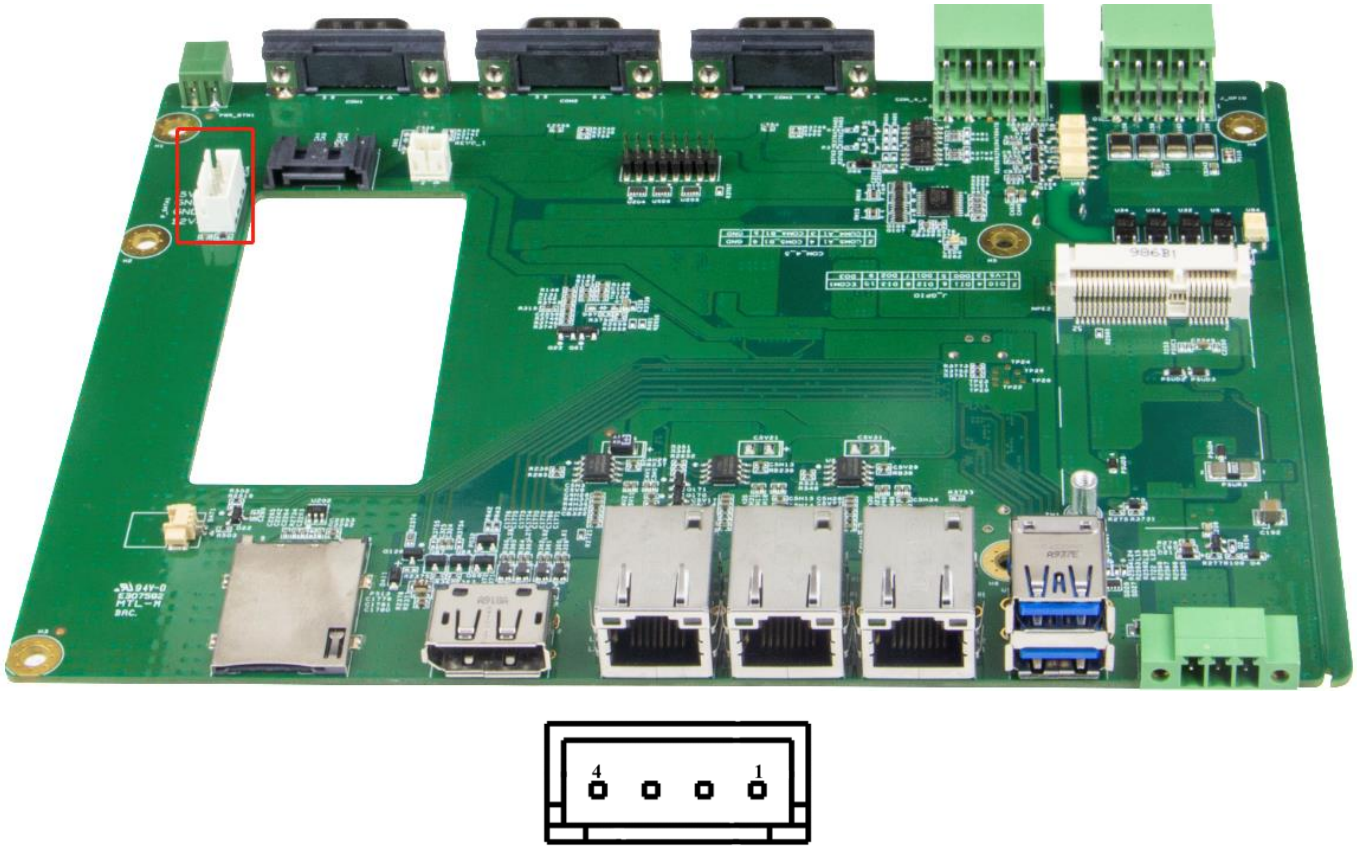


Figure 2. 16

Table 2.12 for pin assignments.

Table 2.12: SATA power connector			
Pin	Signal	Pin	Signal
1	5V	3	GND
2	GND	4	12V

2.3.12 mSATA Connector

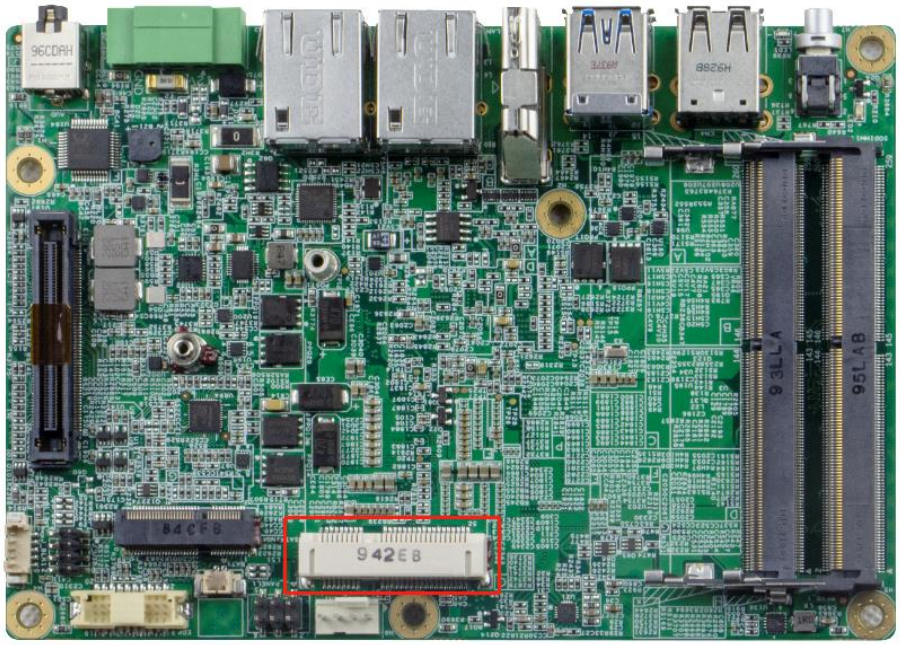


Figure 2. 17

Table 2.13 for Pin assignments.

Table 2.13: mSATA Connector Pin Assignments			
Pin	Signal	Pin	Signal
1	NC	2	+V3.3
3	NC	4	GND
5	NC	6	+V1.5
7	NC	8	LPC_FRAME#
9	GND	10	LPC_AD3
11	NC	12	LPC_AD2
13	NC	14	LPC_AD1
15	GND	16	LPC_AD0
17	PLTRST#	18	GND
19	LPC_CLK1	20	NC

21	GND	22	PLTRST#
23	SATA1_mSATA_z_RX+	24	+V3.3
25	SATA1_mSATA_z_RX-	26	GND
27	GND	28	+V1.5
29	GND	30	SMB_SCL
31	SATA1_mSATA_z_TX-	32	SMB_SDA
33	SATA1_mSATA_z_TX+	34	GND
35	GND	36	NC
37	GND	38	NC
39	+V3.3	40	GND
41	+V3.3	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+V1.5
49	NC	50	GND
51	NC	52	+V3.3

2.3.13 Mini-PCIe Connector

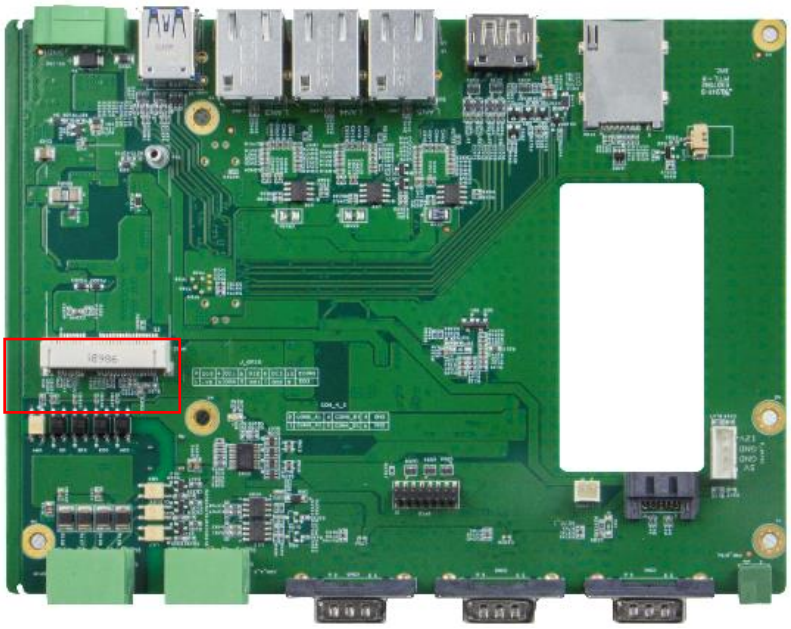


Figure 2. 18

Mini PCIe interface with PCIeX1 and USB2.0 signal, Install Mini PCI Express cards such as network cards or other cards that comply to the Mini PCI Express specifications into the Mini PCI Express slot.

(Note: SIM slot is connected to Mini-PCIe slot)

Table 2.14: Mini PCIe Pin Assignments

Pin	Signal	Pin	Signal
1	PCIE_WAKE_N	2	+V3.3_MINICARD2
3	NC	4	GND
5	NC	6	+V1.5
7	CLKREQ#	8	+VUIM_PWR
9	GND	10	UIM_DATA
11	CLK_MIO1_PCIE-	12	UIM_CLK
13	CLK_MIO1_PCIE+	14	UIM_RESET
15	GND	16	+VUIM_VPP
17	NC	18	GND

19	NC	20	WIFI2_DISABLE#
21	GND	22	PLTRST#
23	PCIE_MINI_RX2-	24	+V3.3_MINICARD2
25	PCIE_MINI_RX2+	26	GND
27	GND	28	+V1.5
29	GND	30	SMB_SCL_RSM
31	PCIE_MINI_TX2-	32	SMB_SDA_RSM
33	PCIE_MINI_TX2+	34	GND
35	GND	36	USB_HUB_P2-
37	GND	38	USB_HUB_P2+
39	+V3.3_MINICARD2	40	GND
41	+V3.3_MINICARD2	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+V1.5
49	NC	50	GND
51	NC	52	+V3.3_MINICARD2

2.3.14 M.2 connector

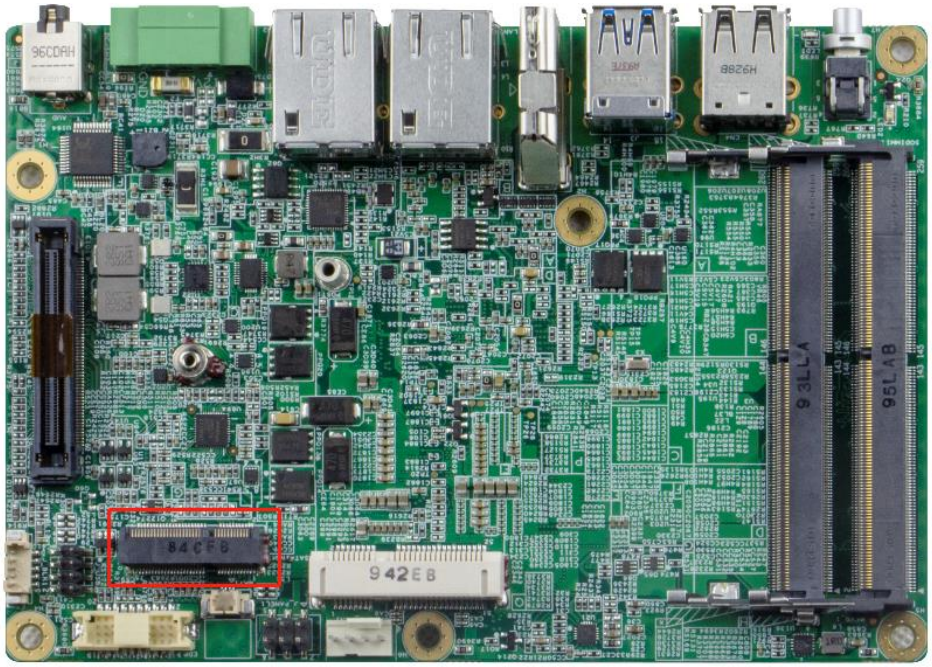


Figure 2. 19

M.2 connector with PCIe X1+USB2.0 signal, expansion of Wifi/BT module signal, Install M.2 E-key 2230 modules such as SATA SSD module that comply to the M.2 E-key 2230 specifications into the M.2 slot.

2.3.15 LED

There are 1*Power LED, 1*HDD LED, 3*CPU temperature class LEDS on the front. Users can monitor the working state of the CPU according to the display of LEDs.

Table 2.15 for LEDs state of CPU temperature class.

Table 2.15: LEDs state of CPU temperature class.

LED	State
Red	Warning
Yellow	High
Green	Normal

2.4 Installation

Here the hardware installation takes KMDA-3230 series for example.

2.4.1 HDD/SSD Installation

Step 1: Unscrew the 4 screws on the edge of the bottom cover and take out the mounting bracket;

Step 2: Unscrew the 2 screws on the side of the bottom cover and take out the bottom cover;

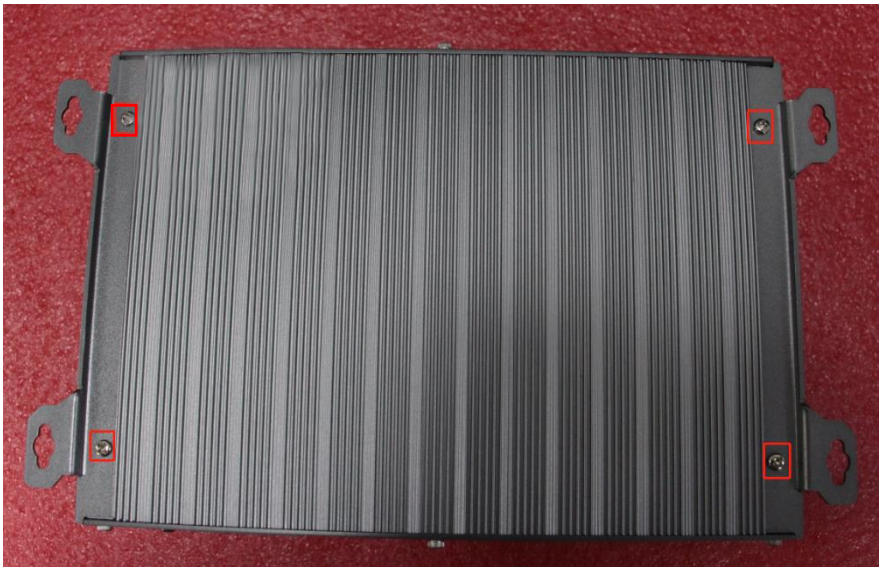
Step 3: Put the HDD/SSD into the HDD/SSD bay and screw 4 screws as the picture shows;

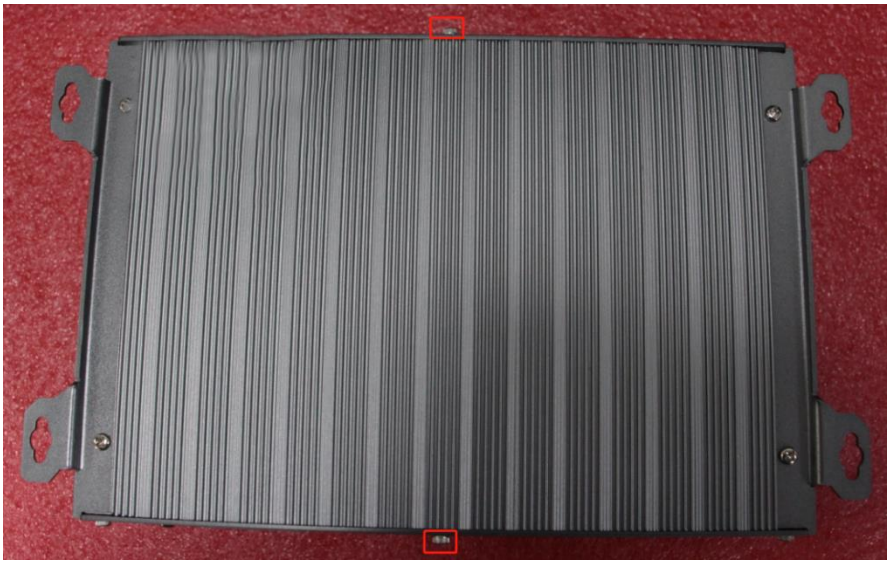
Step 4: Fix the HDD/SSD bay on the bottom cover with 4 screws as shown in the picture.

Step 5: Connect the SATA cable and SATA power cord to the corresponding interface as the picture shows;

Step 6: Tighten the bottom cover with 2 screws.

Step 7: Tighten the mounting bracket with 4 screws.






There are also 2 screws on the side
FORESEE
2.5"128GB SSD SATA6.0Gbps
S40JS128G
P/N: FSCGM3C-128G
S/N: J4511SR00021 7
Manufacturer: Shenzhen Longsys Electronics Co., Ltd.

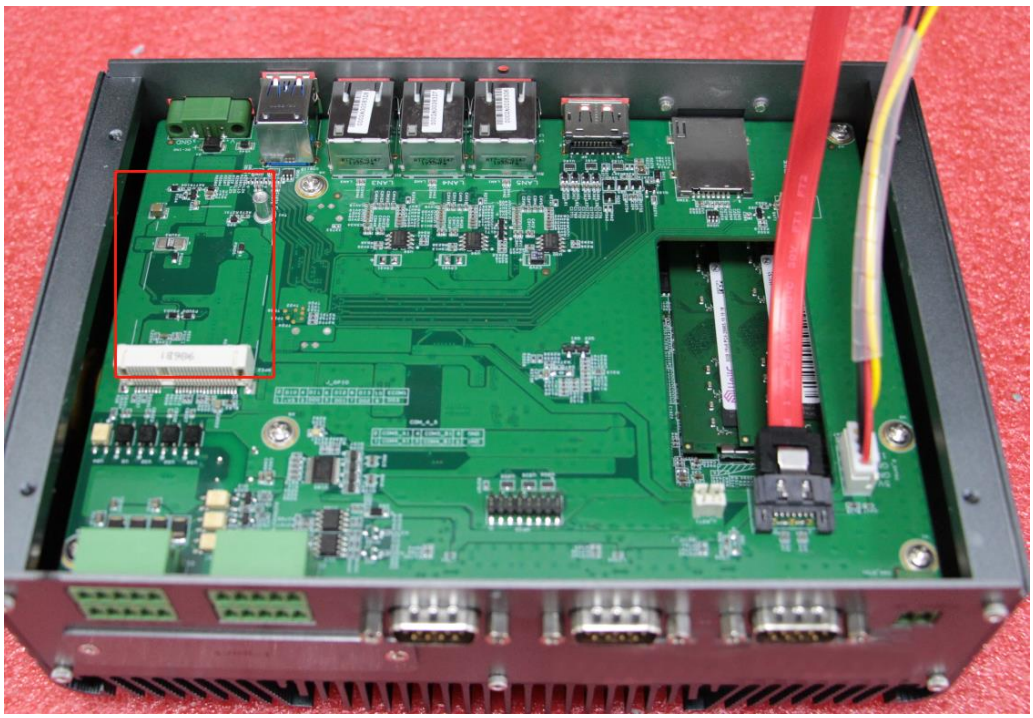

FORESEE
2.5"128GB SSD SATA6.0Gbps
S40JS128G
P/N: FSCGM3C-128G
S/N: J4511SR00021 7
Manufacturer: Shenzhen Longsys Electronics Co., Ltd.

2.4.2 Installing Mini PCIe

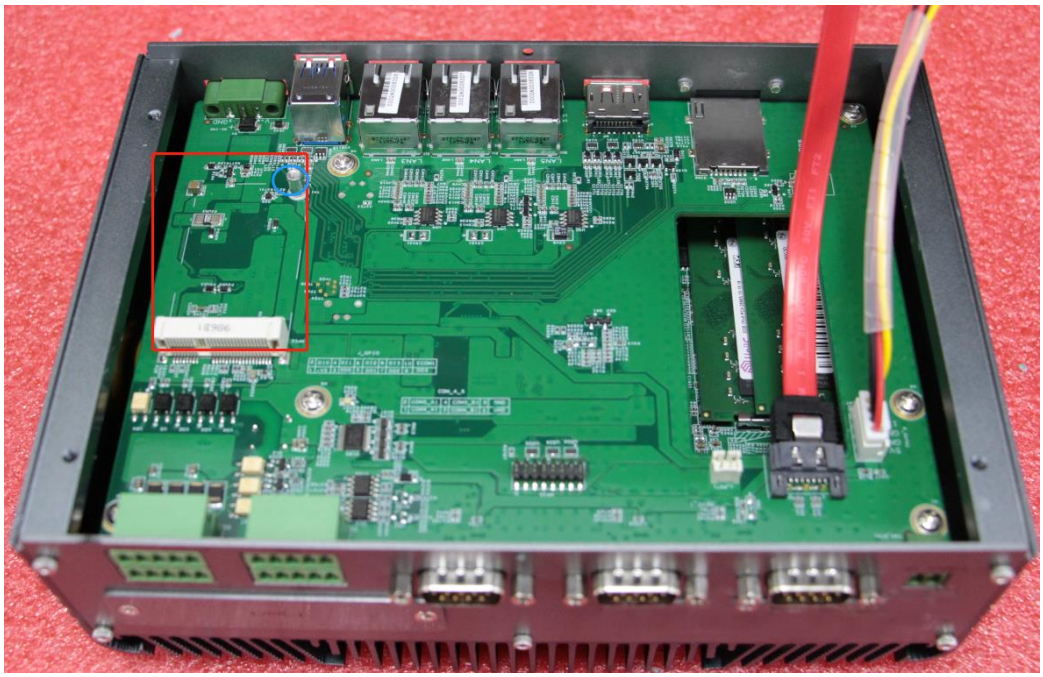
Step 1: The step here is the same as above chapter "2.4.1 Installing HDD/SSD Module -Step 1", For details, please refer to the above chapter "2.4.1 Installing HDD/SSD Module -Step 1"

Step 2:The step here is the same as above chapter "2.4.1 Installing HDD/SSD Module -Step 2", For details, please refer to the above chapter "2.4.1 Installing HDD/SSD Module -Step 2"

Step 3: Hold the Mini PCIe module with its notch aligned with the MPE2 socket of the sub-board and insert it at a 30 degrees angle into the socket (Note: Pay attention to avoiding the hard disk cable during the installation process);



Step 5: Screw one screw to the holder as shown in the picture.



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

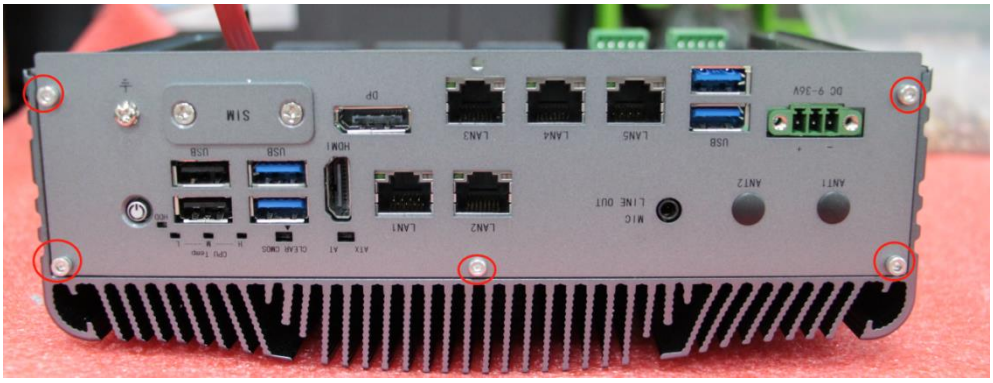
2.4.3 Installing mSATA

Step 1: The step here is the same as above chapter "2.4.1 Installing HDD/SSD Module -Step 1", For details, please refer to the above chapter "2.4.1 Installing HDD/SSD Module -Step 1"

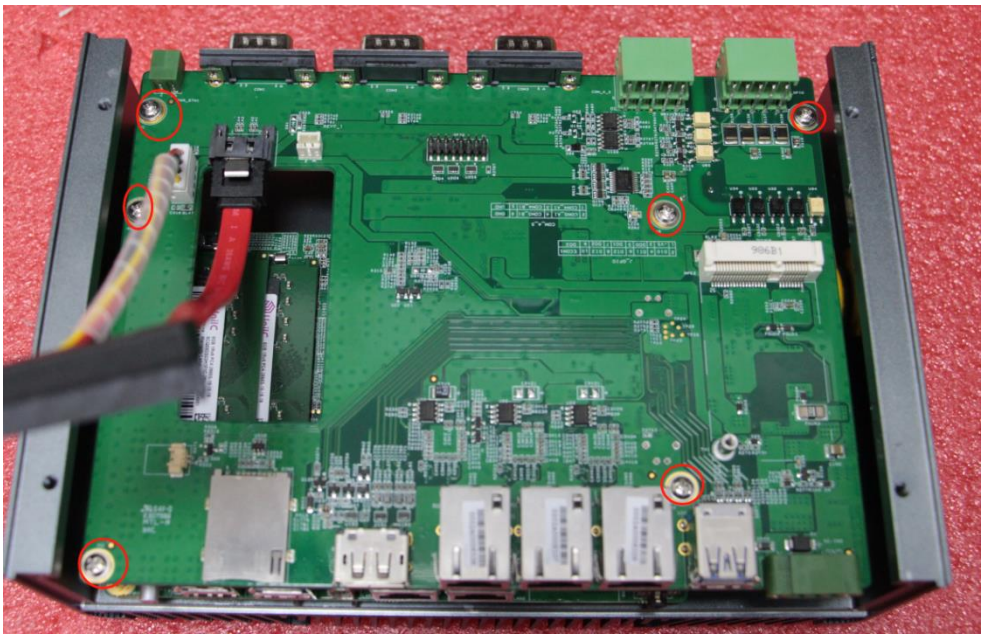
Step 2:The step here is the same as above chapter "2.4.1 Installing HDD/SSD Module -Step 2", For details, please refer to the above chapter "2.4.1 Installing HDD/SSD Module -Step 2"

Step 3: Step 3: unscrew the 5 screws of the back panel and take out the back panel

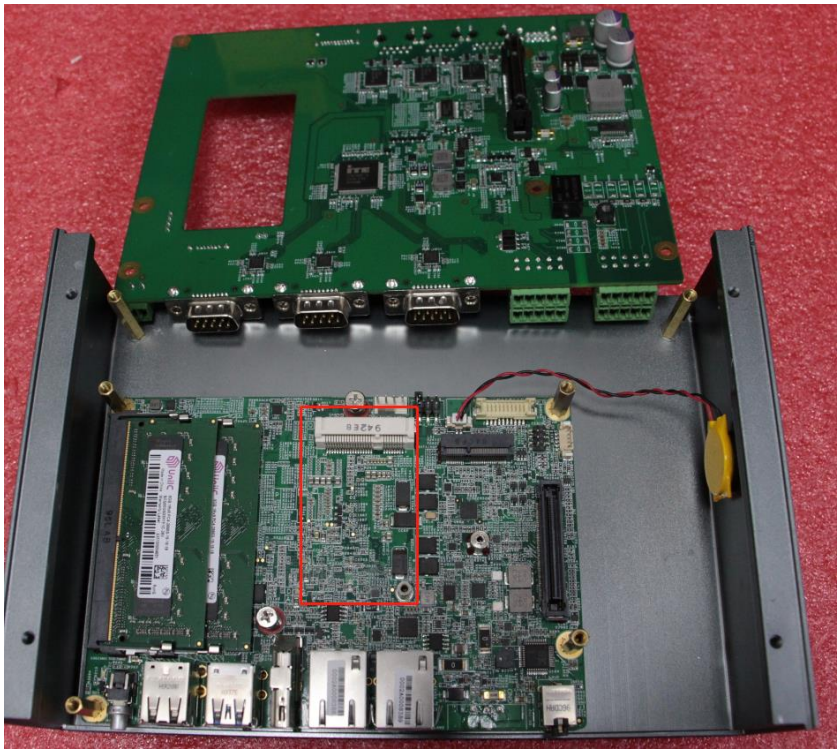
Step 4: unscrew 5 screws from the front panel and take out the front panel



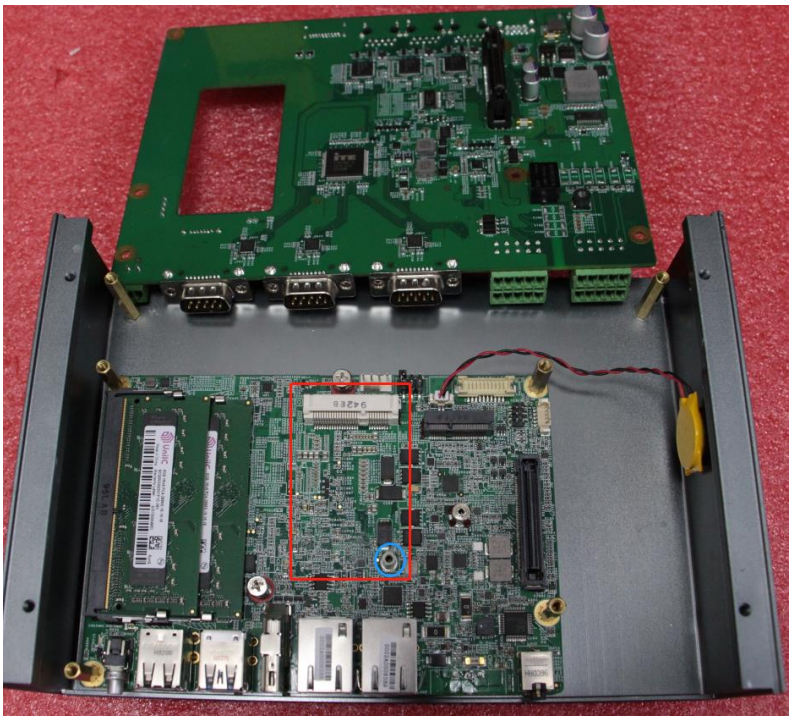
Step 5: unscrew 6 screws from the ECB-251 and take out the ECB-251



Step 6: Hold the mSATA module with its notch aligned with the MSATA1 socket of the sub-board and insert it at a 30 degrees angle into the socket (Note: Pay attention to avoiding the hard disk cable during the installation process);



Step 7: Screw one screw to the holder as shown in the picture.



Step 8: Follow the reverse steps of disassembly to complete the product installation.

2.4.4 Installing M.2

Step 1: The step here is the same as above chapter "2.4.1 Installing HDD/SSD Module -Step 1", For details, please refer to the above chapter "2.4.1 Installing HDD/SSD Module -Step 1"

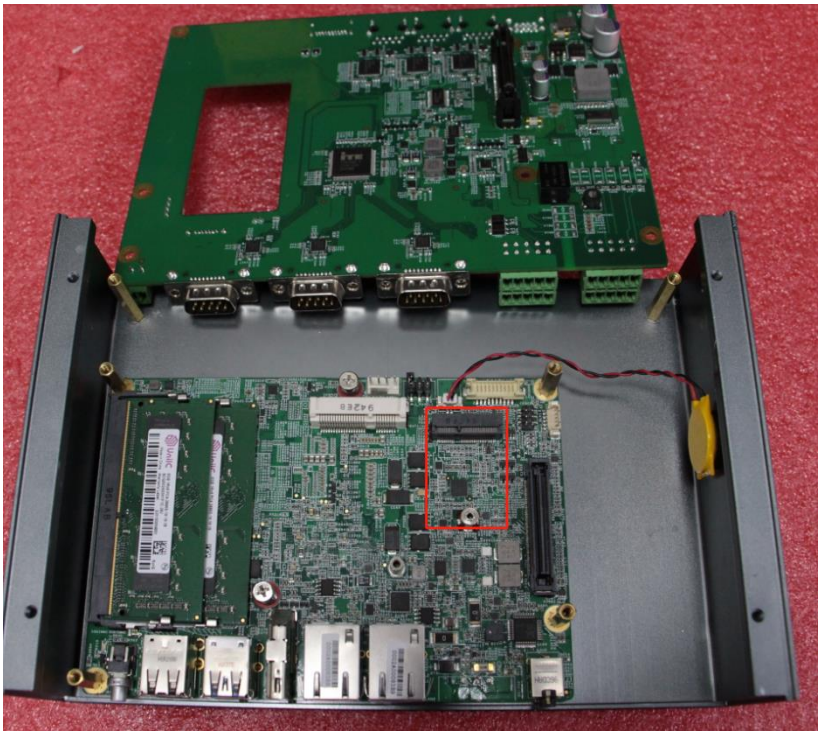
Step 2:The step here is the same as above chapter "2.4.1 Installing HDD/SSD Module -Step 2", For details, please refer to the above chapter "2.4.1 Installing HDD/SSD Module -Step 2"

Step 3: The step here is the same as above chapter "2.4.3 Installing mSATA Module -Step 3", For details, please refer to the above chapter "2.4.1 Installing HDD/SSD Module -Step 3"

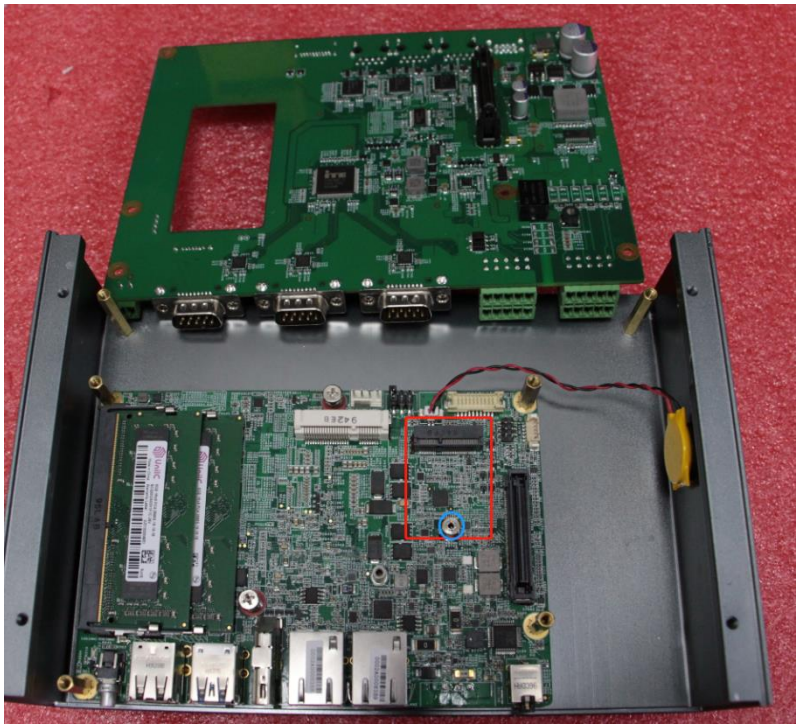
Step 4:The step here is the same as above chapter "2.4.3 Installing mSATA Module -Step 4", For details, please refer to the above chapter "2.4.3 Installing mSATA Module -Step 4"

Step 5: The step here is the same as above chapter "2.4.3 Installing mSATA Module -Step 5", For details, please refer to the above chapter "2.4.3 Installing mSATA Module -Step 5"

Step 6:Hold the M.2 module with its notch aligned with the NGFF socket of the sub-board and insert it at a 30 degrees angle into the socket (Note: Pay attention to avoiding the hard disk cable during the installation process);



Step 7: Screw one screw to the holder as shown in the picture.



Step 8: Follow the reverse steps of disassembly to complete the 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.

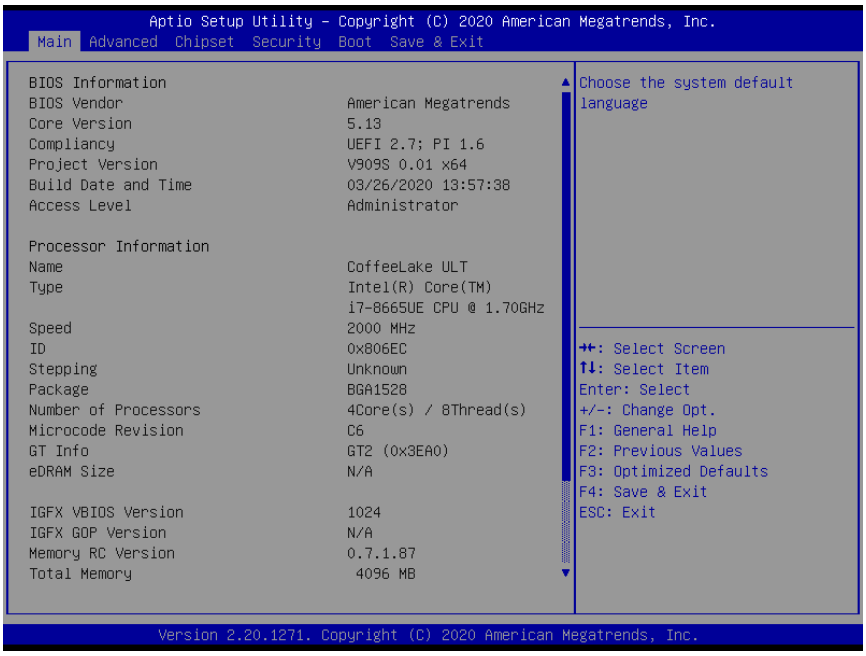
(But in general, customers are not recommended to set it up. In most cases, using the default value is already the best setting.)

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

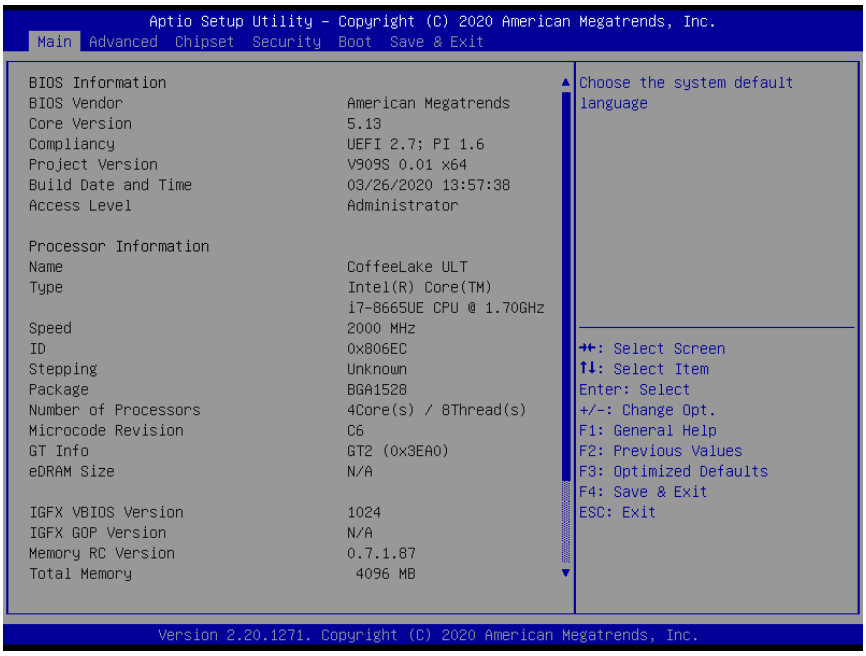
Enter the SETUP settings interface, The BIOS navigation keys are listed below:

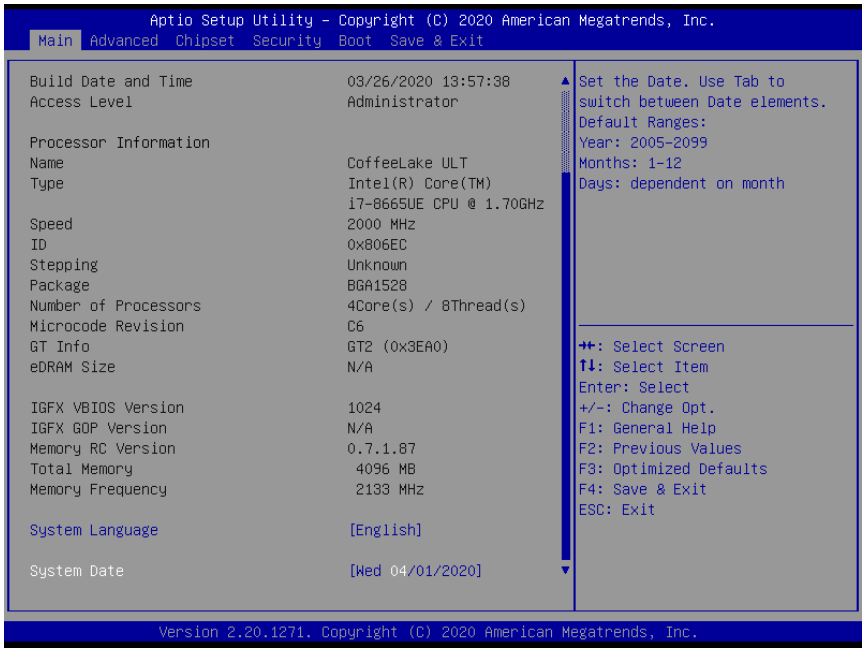
Table 3.1: The BIOS navigation keys	
KEY	**FUNCTION**
ESC	Exit the current menu
↑↓→←	Scrolls through the items on a menu
+/-	Change Opt.
Enter	Select
F1	General Help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit

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 Vendor (American Megatrends)

This item shows the information of the BIOS vendor.

Core Version (5.13)

This item shows the information of the Core Version.

Project Version (V909S 0.01 X64)

This item shows the information of the motherboard Version.

Build Date and Time

This item shows the information of the BIOS build date and time

Processor Information

This item shows the basic information about the currently used processor, including name, type, speed.

IGFX VBIOS Version

This item shows the Current VBIOS version of the CPU integrated graphics.

Total Memory

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

Memory Frequency

This item shows the current memory operating frequency.

PCH Information

This item shows the basic information about PCH, including name, PCH SKU, etc.

System Language

Set the language interface of the BIOS.

System Date

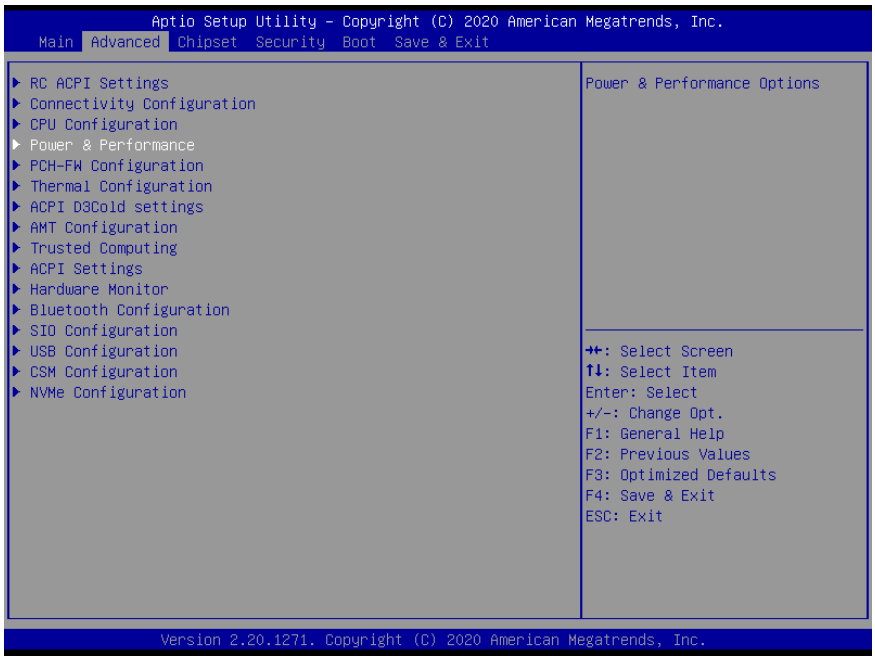
Set the date. The format of the date is <week><month><day><year>.

System Time

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

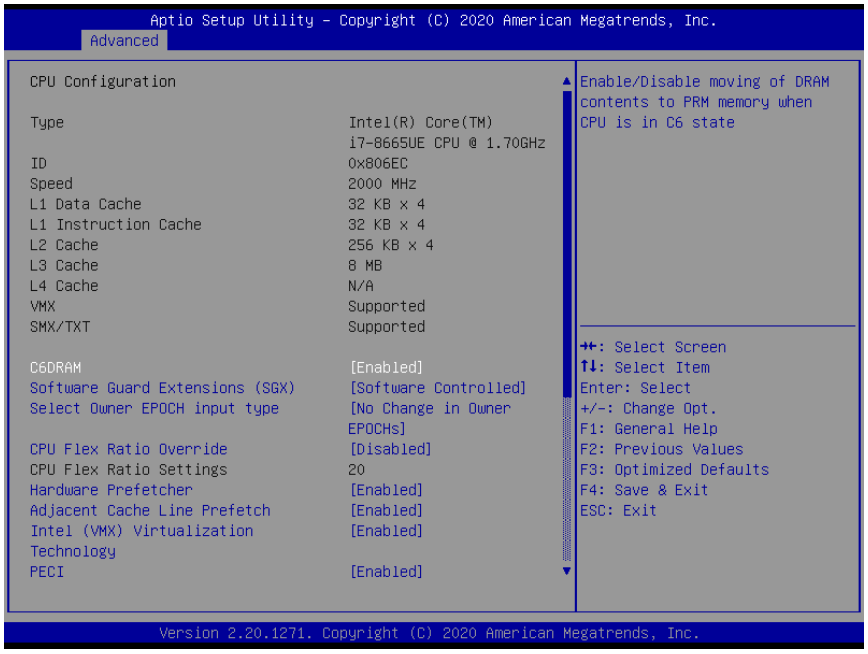
3.2.3 Advanced Menu

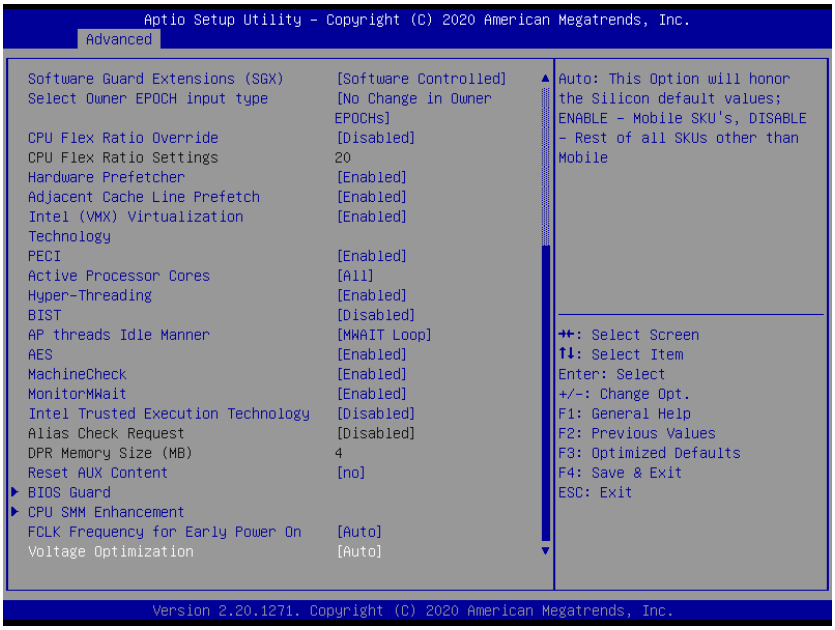
This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.



▶CPU Configuration

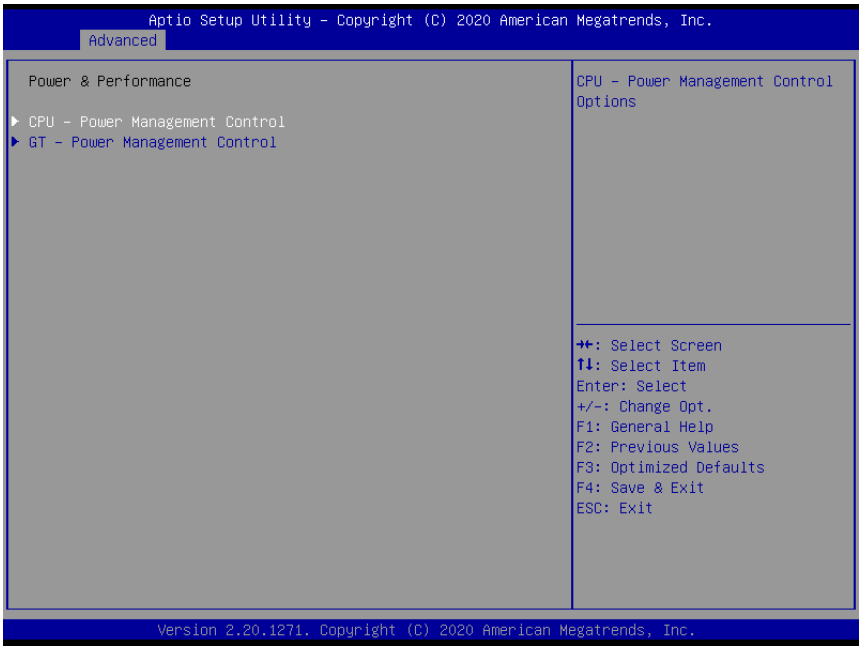
The configuration of the central processor, enter this sub-menu, there will be detailed details of the CPU, as well as various settings of the CPU.

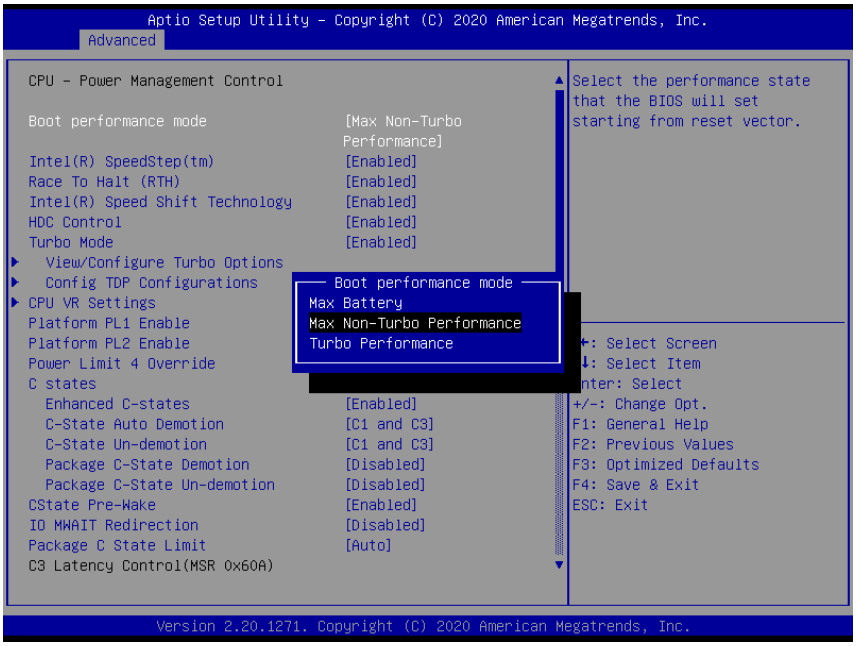


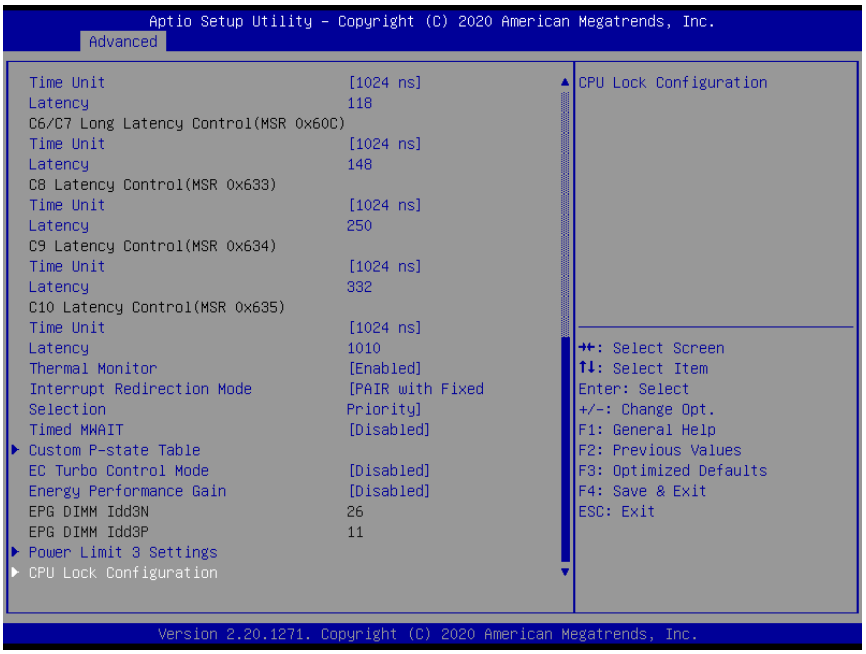


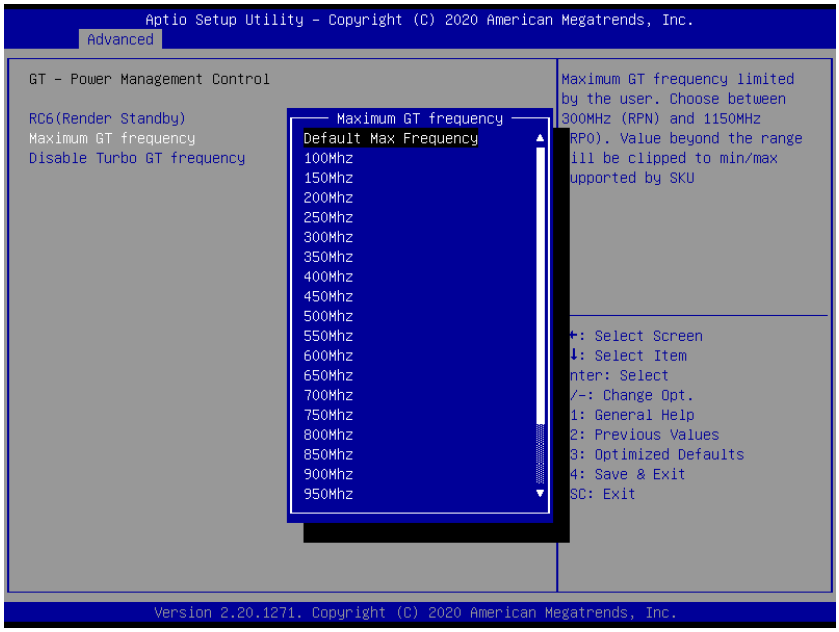
▶Power & Performance

This item in the menu shows how to set the Power Management Control of CPU and GT.



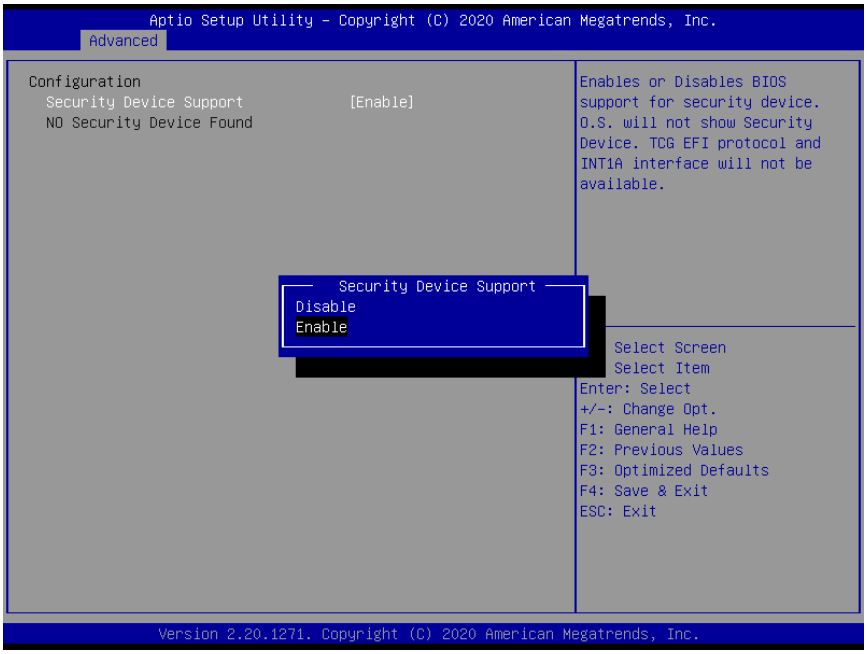

Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Advanced
CPU – Power Management Control
Boot performance mode [Max Non-Turbo Performance]
Intel(R) SpeedStep(tm) [Enabled]
Race To Halt (RTH) [Enabled]
Intel(R) Speed Shift Technology [Enabled]
HDC Control [Enabled]
Turbo Mode [Enabled]
View/Configure Turbo Options
Config TDP Configurations
CPU VR Settings
Platform PL1 Enable
Platform PL2 Enable
Power Limit 4 Override
C states
Enhanced C-states [Enabled]
C-State Auto Demotion [C1 and C3]
C-State Un-demotion [C1 and C3]
Package C-State Demotion [Disabled]
Package C-State Un-demotion [Disabled]
CState Pre-Wake [Enabled]
IO MWAIT Redirection [Disabled]
Package C State Limit [Auto]
C3 Latency Control(MSR 0x60A)
Boot performance mode
Max Battery
Max Non-Turbo Performance
Turbo Performance
Select the performance state that the BIOS will set starting from reset vector.
+: Select Screen
↓: Select Item
nter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Advanced
Time Unit [1024 ns]
Latency 118
C6/C7 Long Latency Control(MSR 0x60C)
Time Unit [1024 ns]
Latency 148
C8 Latency Control(MSR 0x633)
Time Unit [1024 ns]
Latency 250
C9 Latency Control(MSR 0x634)
Time Unit [1024 ns]
Latency 332
C10 Latency Control(MSR 0x635)
Time Unit [1024 ns]
Latency 1010
Thermal Monitor [Enabled]
Interrupt Redirection Mode [PAIR with Fixed Selection Priority]
Timed MWAIT [Disabled]
Custom P-state Table
EC Turbo Control Mode [Disabled]
Energy Performance Gain [Disabled]
EPG DIMM Idd3N 26
EPG DIMM Idd3P 11
Power Limit 3 Settings
CPU Lock Configuration
CPU Lock Configuration
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.



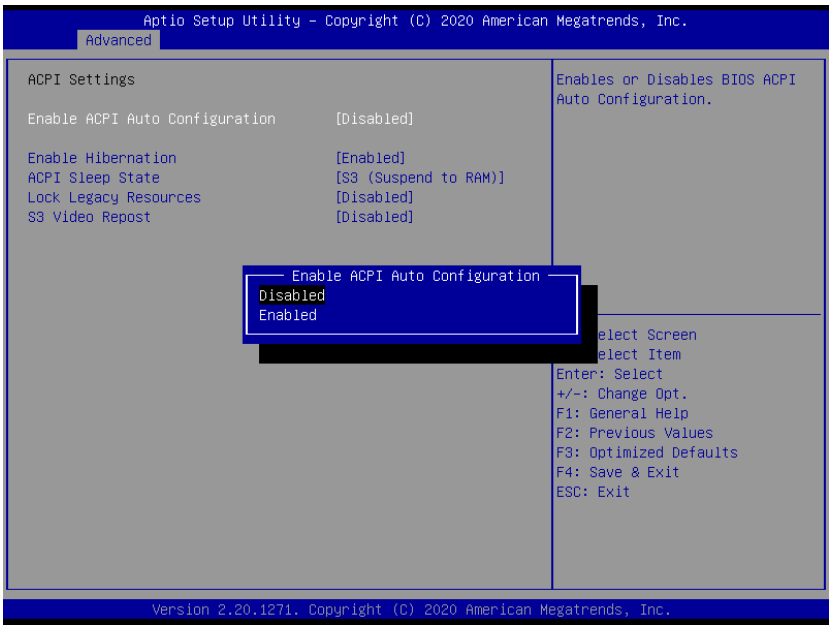
▶Trusted Computing

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.



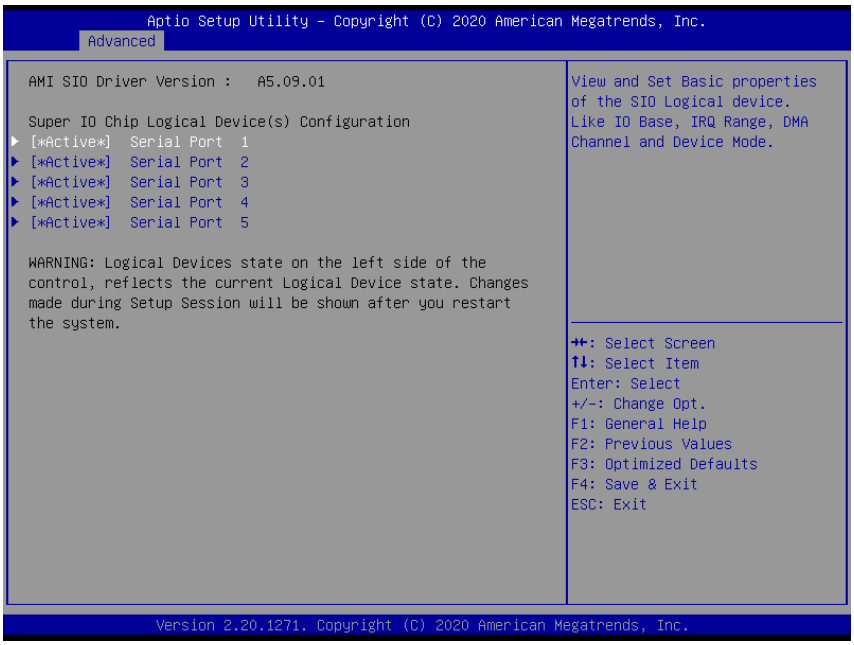
ACPI Sleep State (S3 (Suspend to RAM))

This item allows user to enter the ACPI S3 (Suspend to RAM) Sleep State (default).

Press <Esc> to return to the Advanced Menu page.

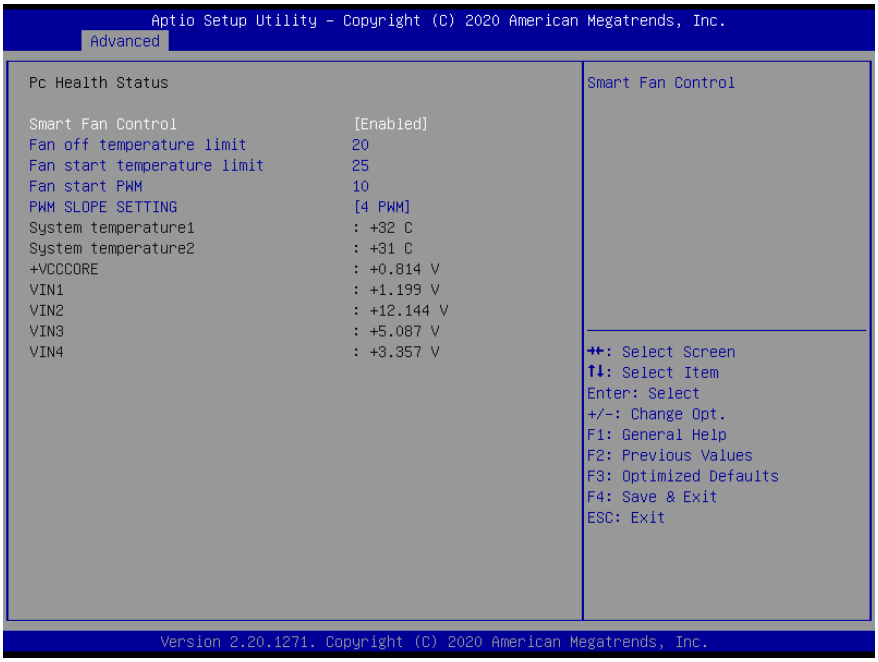
▶SIO Configuration setting

Super IO Configuration settings, enter this sub-menu, there will be set COM working mode or disabled the Serial port function. COM1/2/3 can be set as RS232. COM4/5 can be RS485.



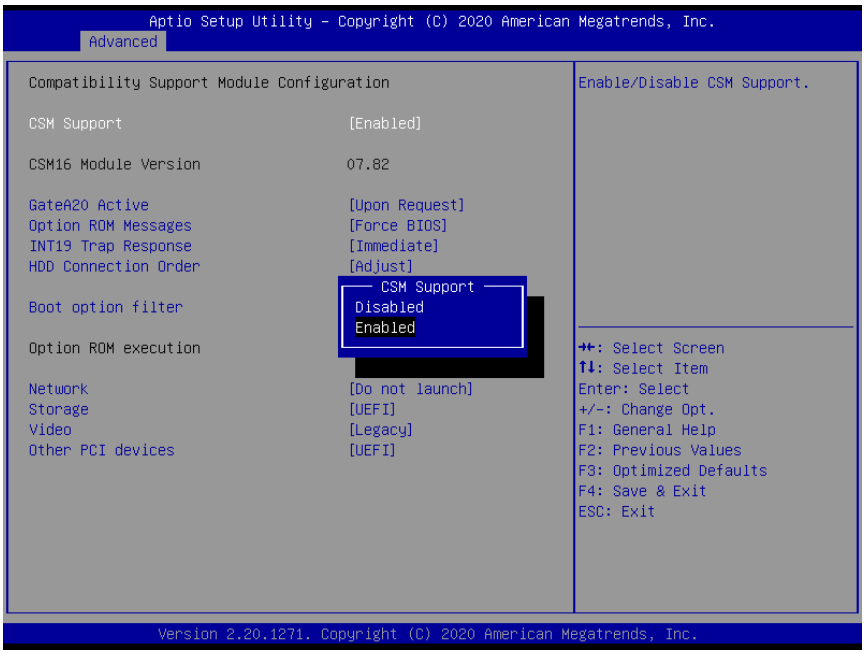
▶Hardware Monitor

Hardware monitoring, enter this sub-menu, there will be CPU temperature, System temperature, status display of each common working voltage.



▶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.



CSM Support

Compatibility Support Module, which is a compatibility module, is a special module of UEFI and provides compatibility support for system that do not support UEFI.

GateA20 Active

This item indicates whether to disable GA20 through the BIOS server or keep the activation status all the time.

Option ROM Messages

This item shows the display mode of option ROM Message.

Boot option filter

This item indicates the boot priority of controlling EFI or Legacy option ROM.

Network

This item is used to set the EFI network card Option ROM boot or the traditional network card Option ROM boot or priority boot.

Storage

This item is used to set the EFI storage Option ROM boot or the traditional storage Option ROM boot.

Video

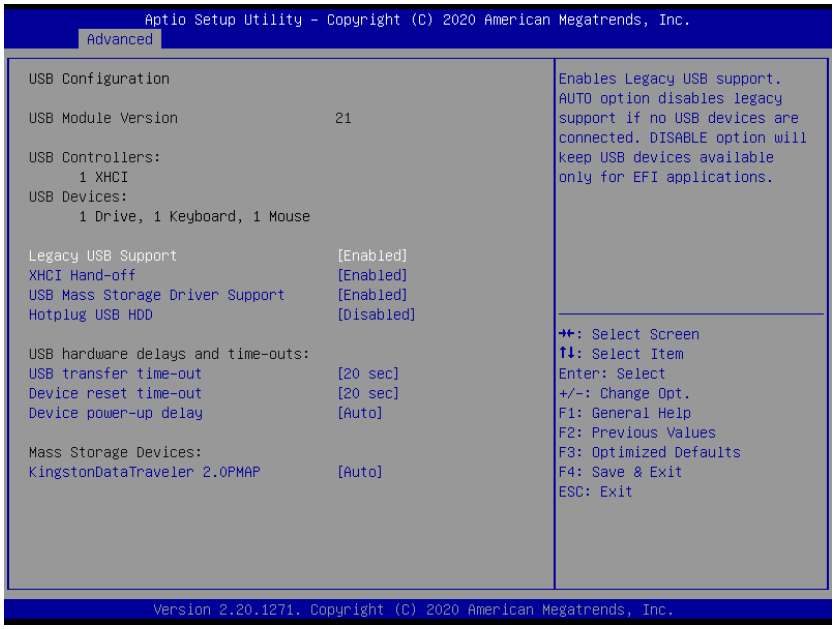
This item is used to set EFI display Option ROM startup or traditional display Option ROM startup.

Other PCI devices

This item is used to set the EFI PCI device Option ROM boot or the traditional PCI device Option ROM boot.

▶USB Configuration

USB configuration, enter this sub-menu, there will be USB-related detailed settings.



Legacy USB Support

This item is used to set the USB interface support. If you need to support USB devices under DOS, such as U disk, USB keyboard, etc., set this item to [Enabled]. Otherwise, select [Disabled].

USB Mass Storage Driver Support

USB mass storage device support switch.

USB Transfer time-out

This item Sets the timeout period for control, batch, and interrupt transmission. The default is 20 seconds.

Device reset time-out

This item sets boot command timeout of the large capacity USB disk. The default is 20 seconds.

Device power-up delay

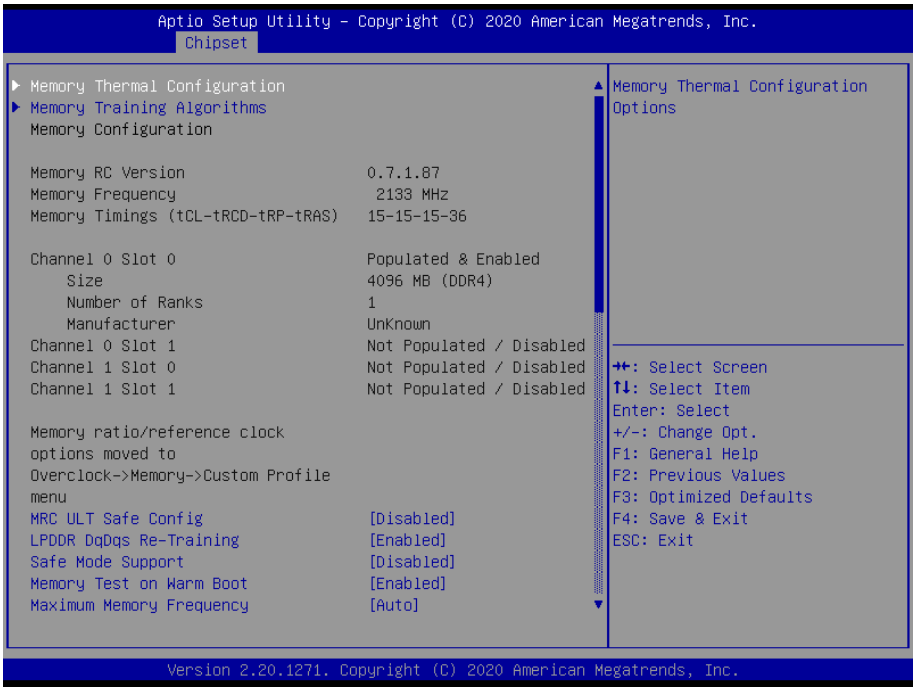
This item sets boot command delay of the large capacity USB disk. The default is Auto.

3.2.4 Chipset Menu

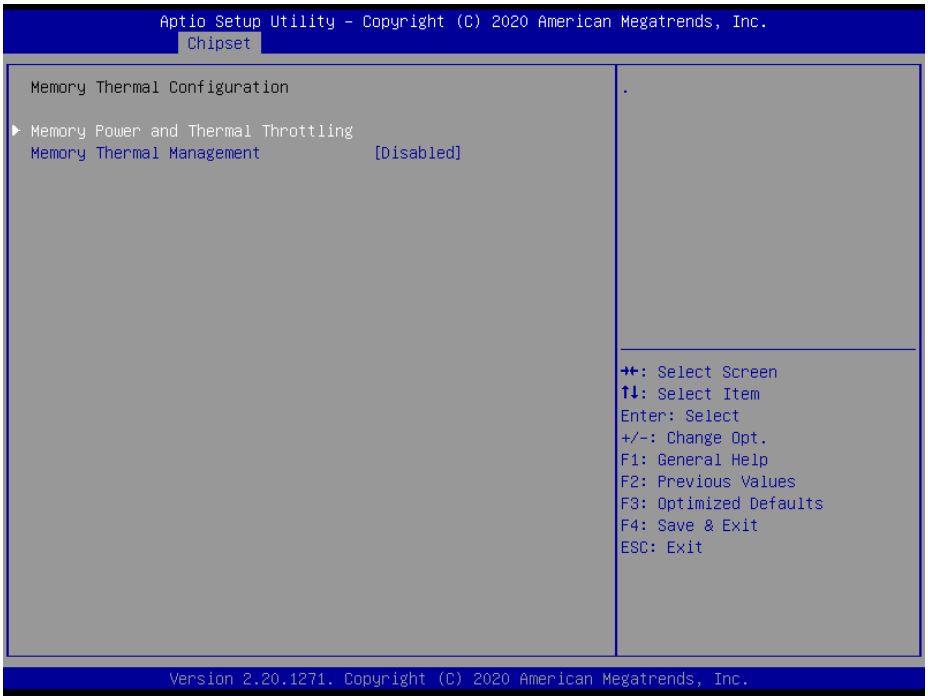
The chipset menu items allow you to change the settings for the North Bridge chipset, South Bridge chipset and other system.

▶Memory Configuration

Memory configuration, enter this submenu, there will be detailed memory information.



▶Memory Thermal Configuration



Memory Power and Thermal Throttling

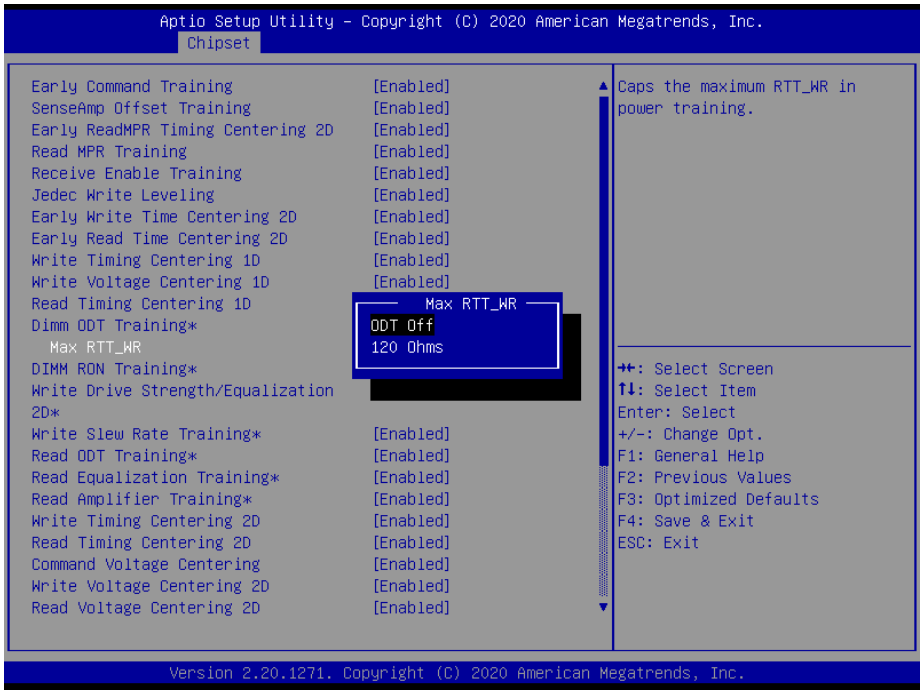
This item contains the configuration of the Memory Power and Thermal Throttling.

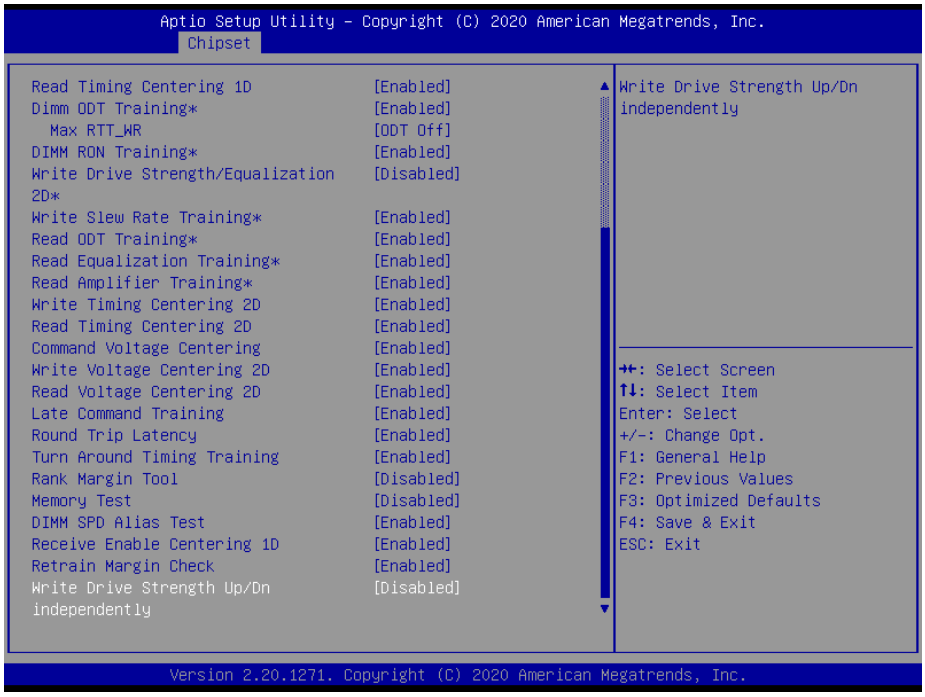
Memory Thermal Management

This item sets the Memory Thermal Management on(Enabled) or off(Disabled).

▶Memory Training Algorithms

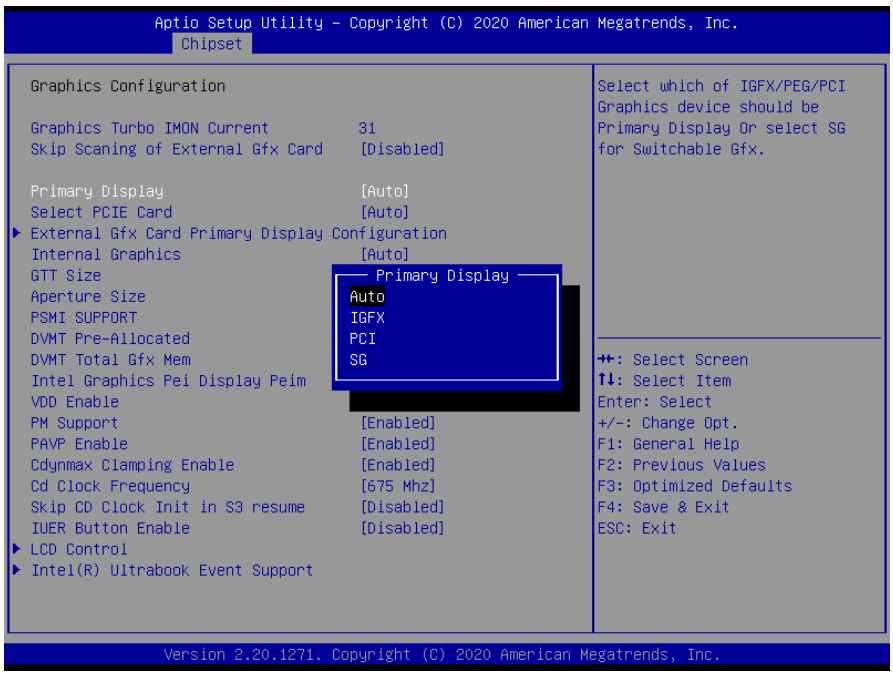
This item shows the information of the Memory Training Algorithms.



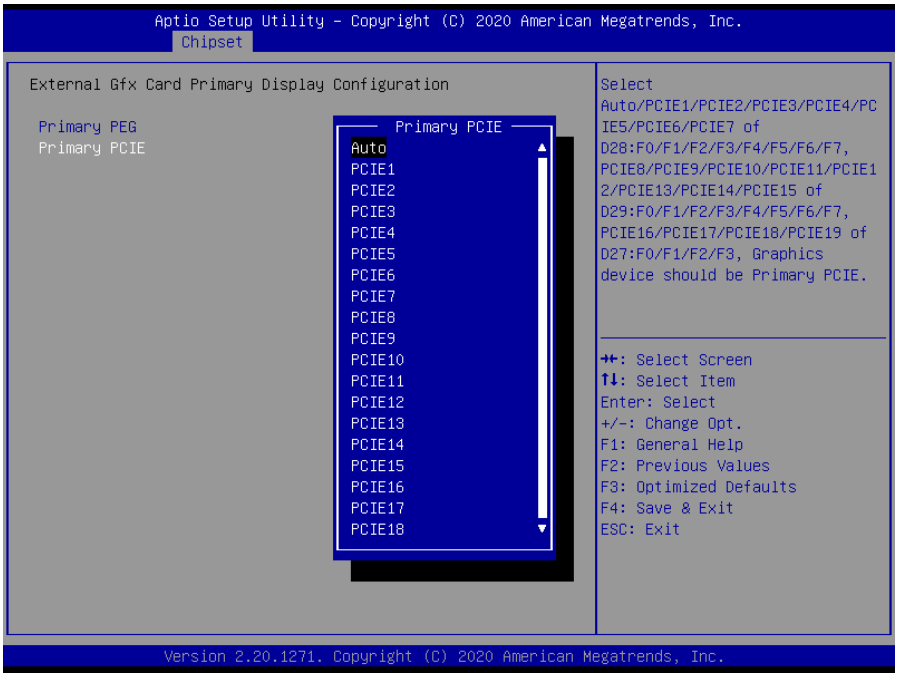


▶Graphics Configuration

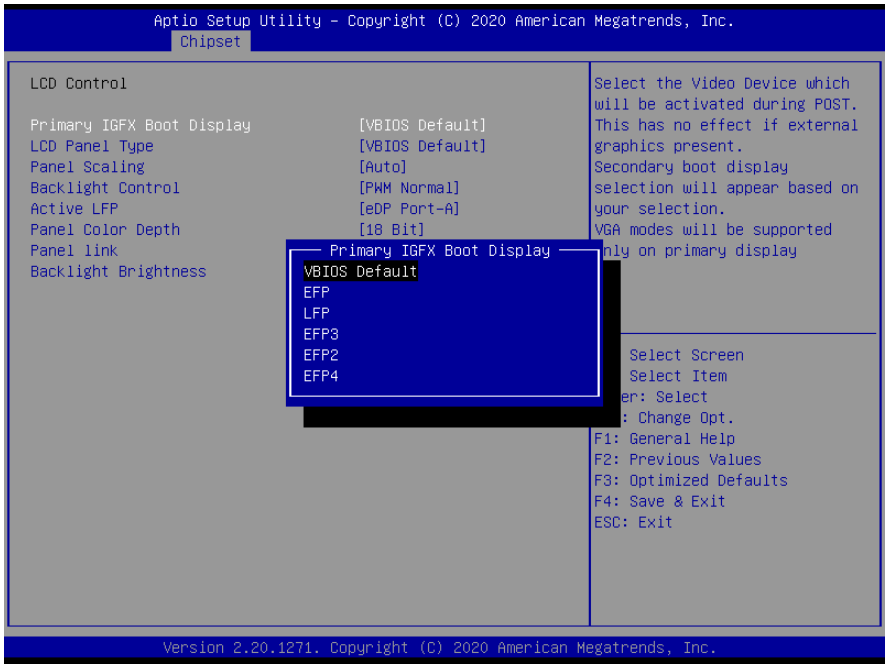
Image processing configuration, enter this sub-menu, there will be CPU-integrated graphics related settings.



▶External Gfx Card Primary Display Configuration



▶LCD Control

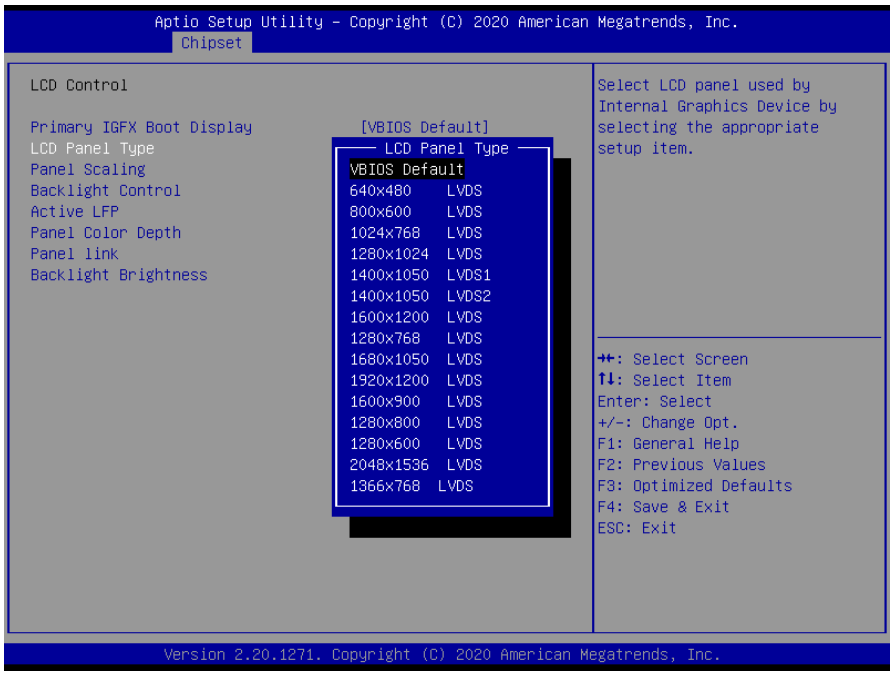


Primary IGFX Boot Display

This item sets IGFX main display device on POST stage, not affected by external graphics card, options are HDMI, LFP, EFP3, DP, EFP4. It defaults by VBIOS.

LCD Panel Type

This item sets resolution of the motherboard LVDS screen. It defaults by VBIOS.

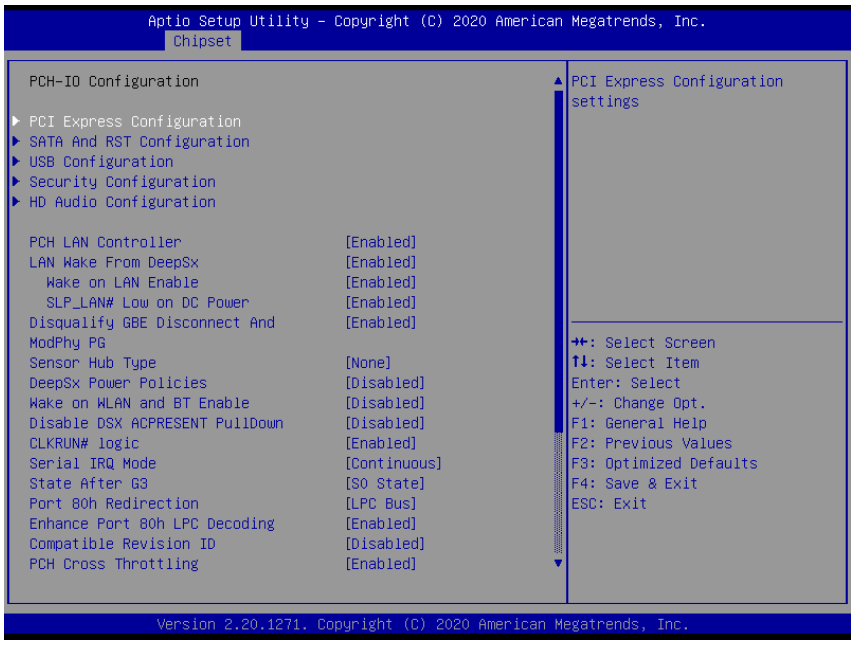


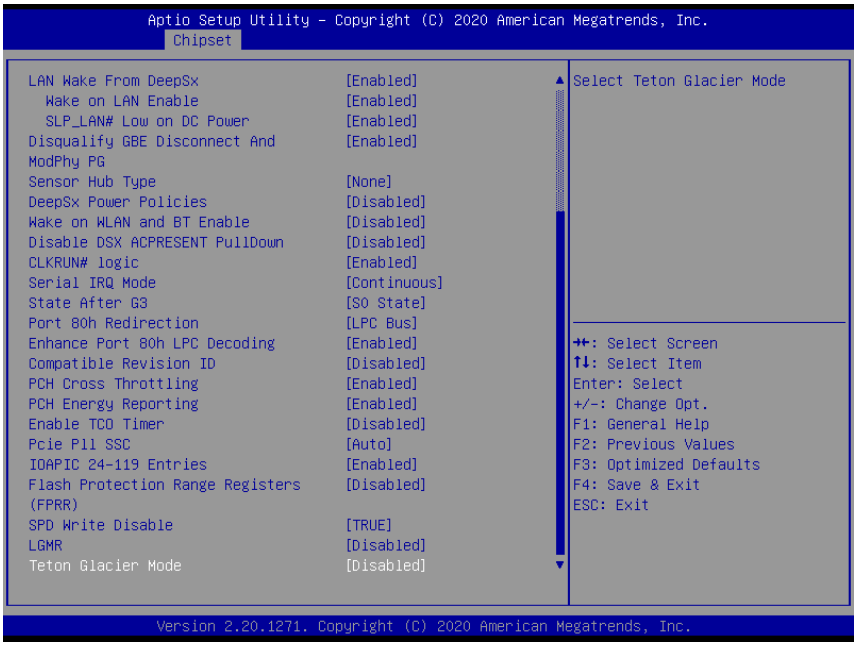
VT-d

This item sets the VT-d technology to open or close. The default is Enabled.

PCH-IO Configuration (South Bridge Configuration)

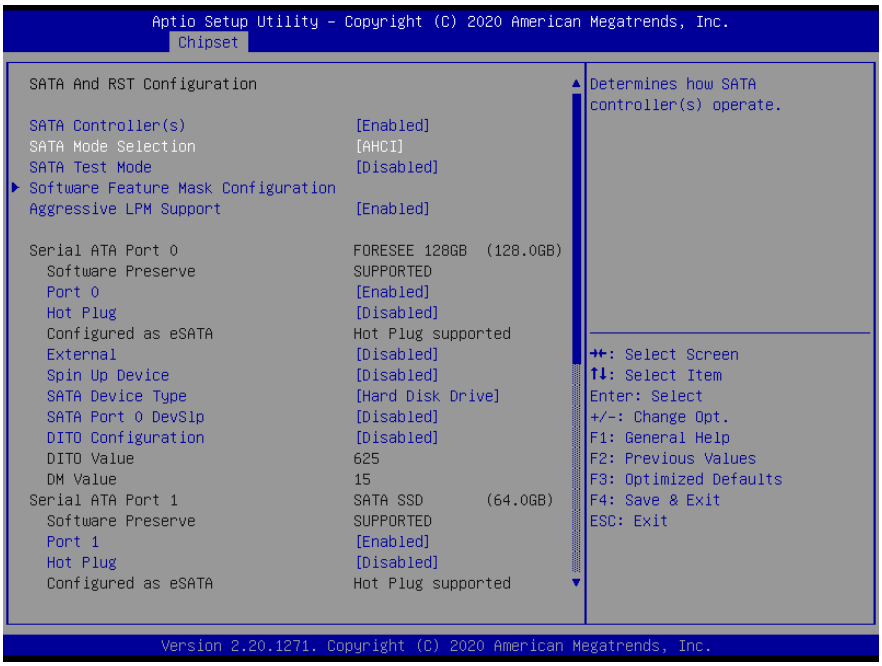
▶PCI Express Configuration



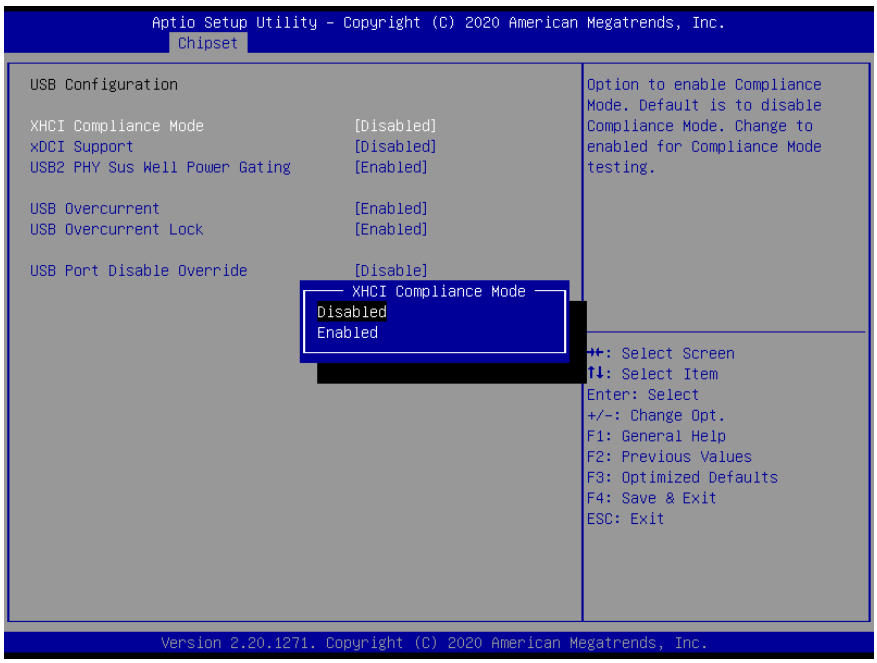


▶SATA And RST Configuration

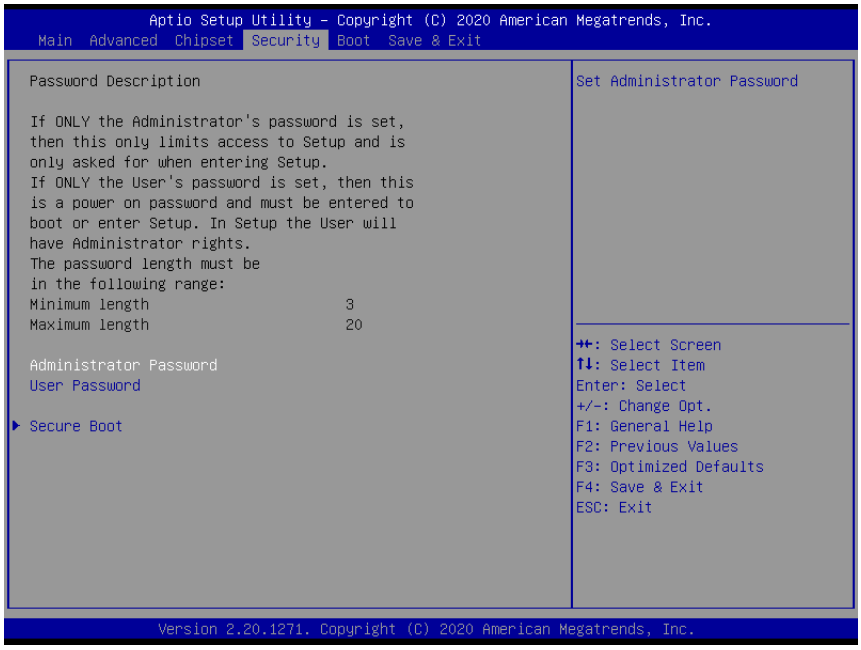
SATA hard disk and fast storage configuration, enter this sub-menu, there will be related settings of the hard disk.



▶USB Configuration



3.2.5 Security menu



Administrator Password

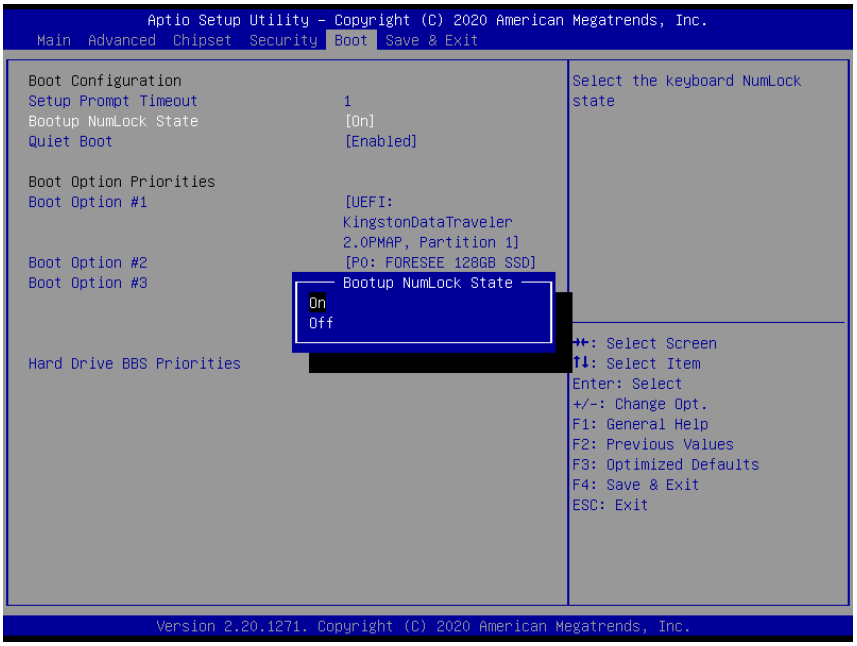
This item sets the information of the administrator password.

User Password

This item sets the information of the normal user password.

▶Secure Boot

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.

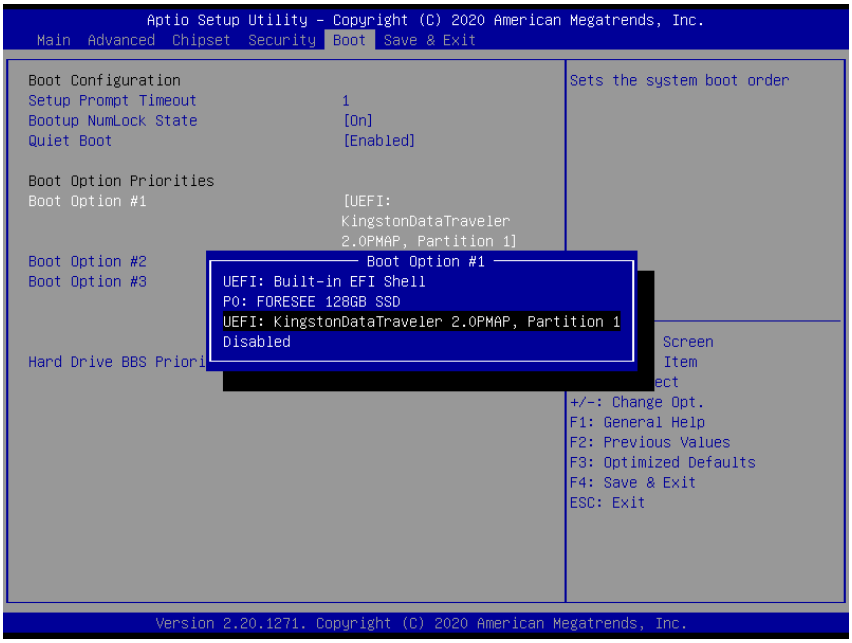
Quiet Boot

Switch full screen logo control

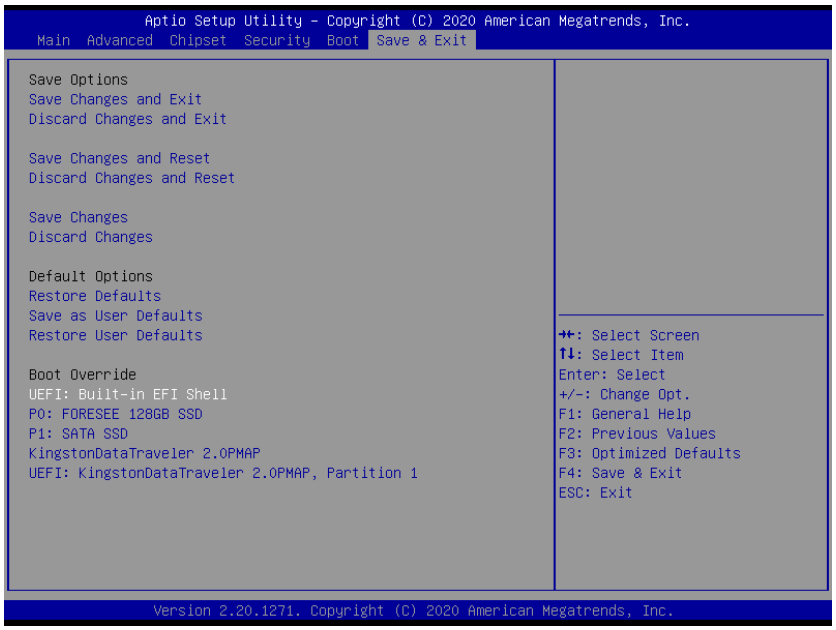
Fast Boot

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

New Boot Option Policy



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-3230 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:

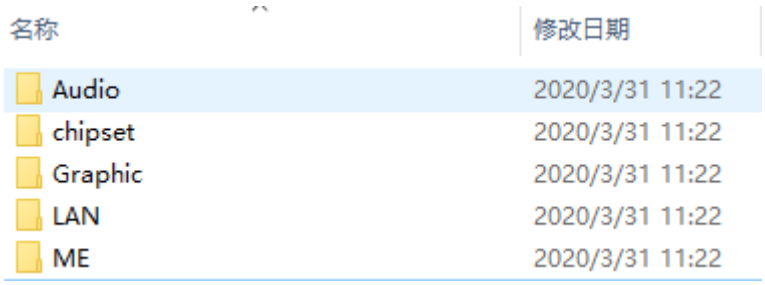


Figure 5.1 Win10 drivers

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 K92619-100 CD-ROM into the CD-ROM drive. And install the drivers in turn.

Step 1 – Install Graphic Driver

1. Double click on the Display 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 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 3 –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 4 –Install Chipset Driver

1. Double click on the Chipset 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 CPU TEMP LED driver

The K92619-100 provides temperature showing in LEDs, economic and reliable. Users can monitor the working state of the CPU according to the display of the LED. Please perform the following operations, making LEDs work normally.

Find the CPU temperature test tool folder and open it, as shown below;

Run the exe application;

NOTE: Please add the exe application to the startup item to ensure that the program can run when power on.

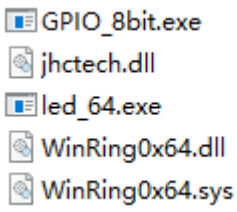


Figure 5.2

4.4 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 initialization, This function must be called before calling other functions

3 * parameter description：

4 * creation date：

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

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

1 * void jhctech_init();

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 * BYTE MB_gpio_input(WORD port)

2 * function description: read the motherboard GPIO input level

3 * parameter description:

Return value： return a byte (8 bit), each bit of 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 motherboard GPIO number which is designed by factory

Note:

4 * creation date：

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

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

1 * void MB_gpio_output(WORD port,BYTE value);

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

3 * parameter description:

Parameter: port fill in motherboard GPIO number which is designed by factory

Value 8 bit of a Byte, each bit controls a GPIO pin output value,

Bit =1, means output high level

Bit =0, means output low level

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

Note:

4 * creation date：

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

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

1 * void MB_gpio_init();

2 * function description: initialization function of the motherboard gpio, This function must be called once before using it

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*========================================================================*/
```

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