User’s Manual

SIGM-3250

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Version Note

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Copyright

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 2 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 a 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

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CHAPTER 1

General Information

1.1 Introduction

SIGM-3250 is a fan-less reinforced on-board computer, and the mainboard and sub-board are designed with an all-in-one architecture without connection. The SIGM-3250 is equipped with equipped with Intel® Skylake/kabylake-U Core I3/I5/I7 CPU, support for dual channel DDR4 (on-board 4 /8GB +SODIMM), up to 16GB, and the 9th generation Intel® HD core display.

The SIGM-3250 provides 1*DP, 1*VGA, 1*Smart Display, three Display interfaces, 2*LAN, 4*POE, 2*USB3.0, 3*USB2.0, built-in dongle interface, 2* isolation COM, 8-bit Iso.DIO, optional 2*CAN. 2*Mini PCIe with PCIe X1+USB signal, with dual SIM card slot, support for dual 4G LTE/Wifi/BT/GPS; 1*Mini PCIe with SATA+USB signal, can be used as a mSATA; 1*Mini PCIe with USB signal. When 2*CAN is selected, this Mini PCIe slot is occupied. 1*2.5" HDD SATA bay, 1* full mSATA (SATA+USB) for storage. The SIGM-3250-S001/S003 power supply adopts DC 9~36V, ITPS, and the SIGM-3250-T001/T003 power input adopts the railway standard DC 48/72/110V, which is suitable for the road vehicle, railway vehicle applications.

1.2 Features

Model No. / Specification	SIGM-3250-S001	SIGM-3250-S003	SIGM-3250-T001	SIGM-3250-T003
CPU	Core I3-6100U /I3-7100U	Core I7-6500U /I7-7500U	Core I3-6100U /I3-7100U	Core I7-6500U /I7-7500U
Mermory	4GB+1*SODIMM DDR4	4GB+1*SODIMM DDR4	4GB+1*SODIMM DDR4	4GB+1*SODIMM DDR4
LAN	2	2	2	2
POE	4	4	4	4
USB3.0	2	2	2	2
USB2.0	3	3	3	3
COM	2	2	2	2
DIO	8-bit Iso. DIO	8-bit Iso. DIO	8-bit Iso. DIO	8-bit Iso. DIO

Smart Display	1	1	1	1
DP	1	1	1	1
VGA	1	1	1	1
Line out	1	1	1	1
Mic	1	1	1	1
mSATA	1	1	1	1
2.5" SATA bay	1	1	1	1
Power input	DC 48/72/110V	DC 48/72/110V	DC 9~36V, ITPS	DC 9~36V, ITPS

Table 1.1: Features

1.3 Specifications

1.3.1 General

CPU: Intel® Skylake/Kabylake-U Core I3/I5/I7 CPU

System Memory: Dual channel (on-board 4/8GB +SODIMM) DDR4, 2133MHz, up to 16GB

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

USB: 2*USB3.0 (Type A); 1*USB2.0 (Type A); 2*USB2.0 (M12)

Serial Ports: 1*RS232 isolated (DB9), 1*RS485 isolated (DB9)

DIO： 8-bit isolated (DB9), 2.5KV opto-isolated input(H: 5-24V, L:0-1.5V) , opto- isolated output(200mA）

Expansion Interface:

2*Mini PCIe with PCIe X1+USB signal, 2*SIM slot, support 2*4G/LTE/Wifi/BT/GPS

1*Mini PCIe with SATA+USB signal， support mSATA

1*Mini PCIe with PCIe+USB signal, when using 2*CAN, This slot is occupied

Storage:

1*2.5" HDD/SSD bay,

1*mSATA (SATA+USB)

1.3.2 Display

Chipset: Intel Gen. 9th Intel HD Graphics

Display Memory: Shared system memory

Resolution: DP：4096*2160@60Hz, Smart Display：1920*1200@60Hz, VGA： 1920*1200@60Hz

1.3.3 Ethernet

Chipset: 6*Intel I210AT

6*Intel I210AT PCIe Gig. Ethernet, 4 with POE, 802.3af (15.4w)

Speed: 10/100/1000 Mbps

Interface: 2*Gig-LAN (M12 X-coded), 4*Gig-LAN, with POE 802.3af 15.4W (M12 X-coded)

1.3.4 Audio

Chipset: Realtek ALC662VD

Interface:1* Audio out，1*Mic，3.5mm phone jack

1.3.5 Power Consumption

Input Voltage:

DC 9-36V，with ITPS power management (S001/S003)

Railway standard power input DC 48/72/110V（T001/T003）

Power Consumption: TDP 12V/2.33A (I5-6200U, 8GB)

Power Adapter: AC/DC 12V/5A 60W（S001/S003）, S002（adapter is not provided）

1.4 Environmental Specifications

Operating temperature: EN50155 TX: -40～70℃(It can run for 10 minutes at 85℃)

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

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

Vibration loading during operation: MIL-STD-801G, EN50155

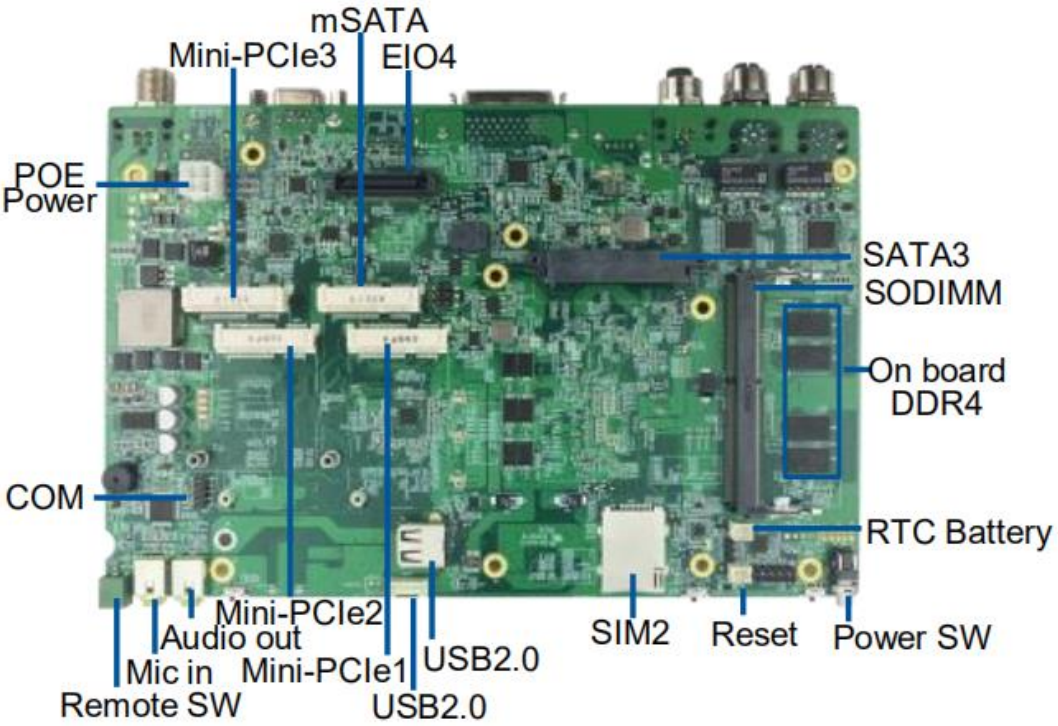
Shock during operation: MIL-STD-801G, EN50155

EMC/ Certification: EN50155, CE/FCC Class B

1.5 Mechanical Specifications

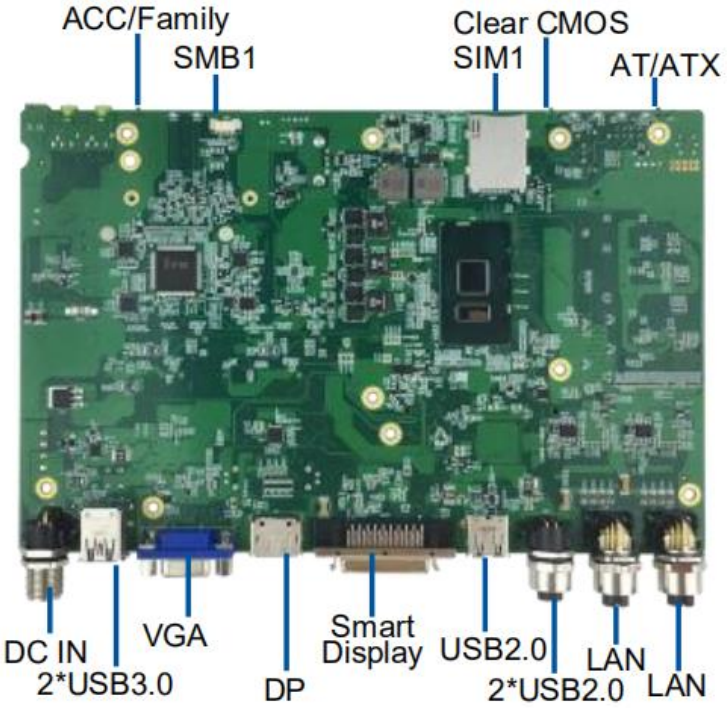
The SIGM-3250 is a fan-less reinforced on-board computer, consists of a mainboard (STX-I907), a sub-card (ECB-9070), power strip (OFX-100).

STX-I907 Front



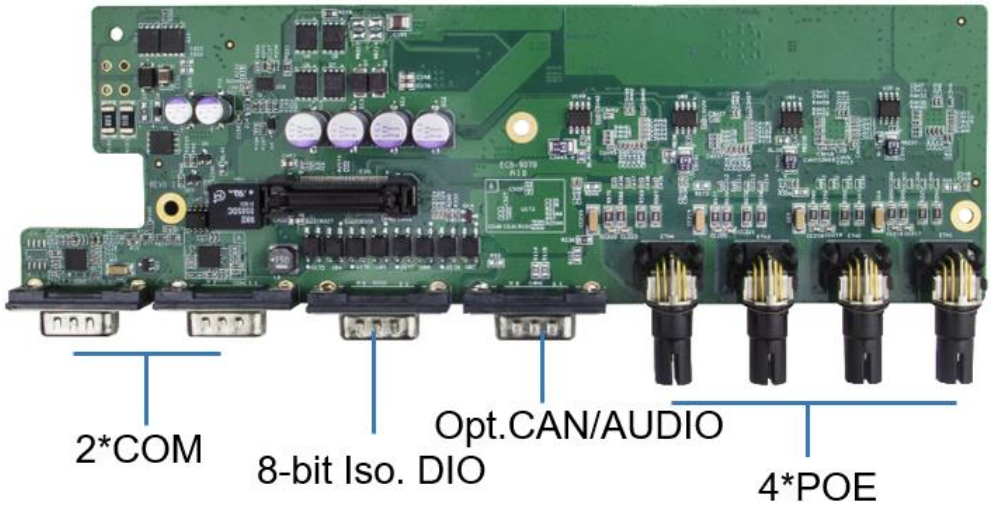
Picture 1.1: STX-I907 Front

STX-I907 Rear



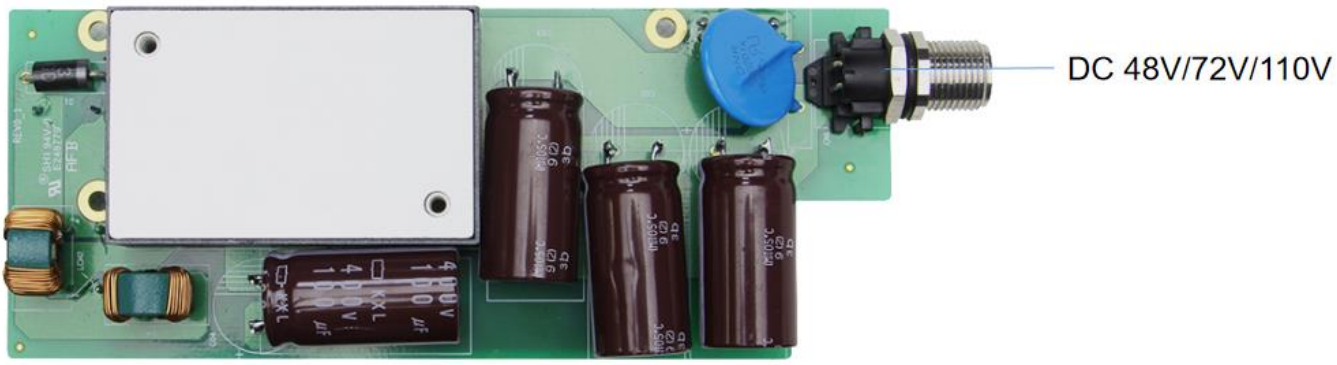
Picture 1.2: STX-I907 Rear

ECB-9070 Front



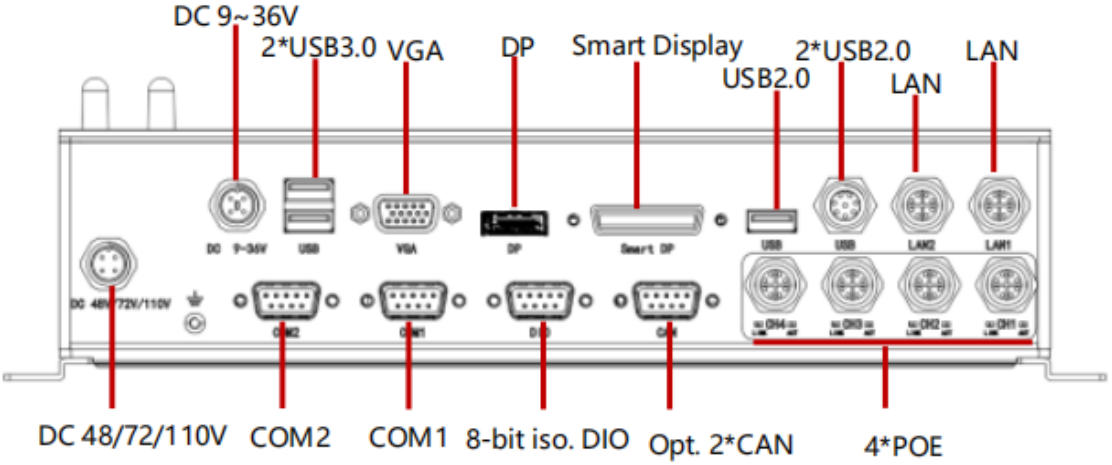
Picture 1.3: ECB-9070

OFX-100 Front



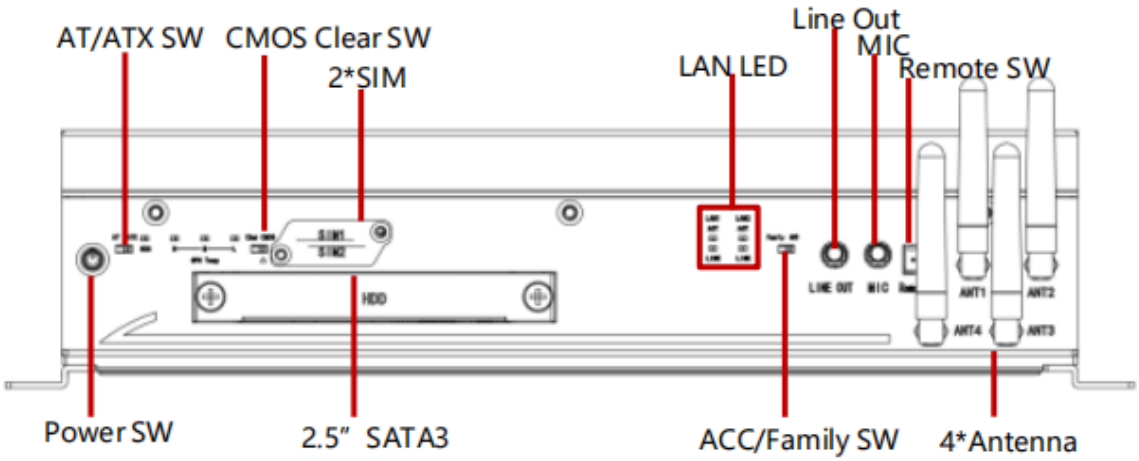
Picture 1.3: OFX-100

SIGM-3250 Front Panel



Picture 1.4: SIGM-3250 Front Panel

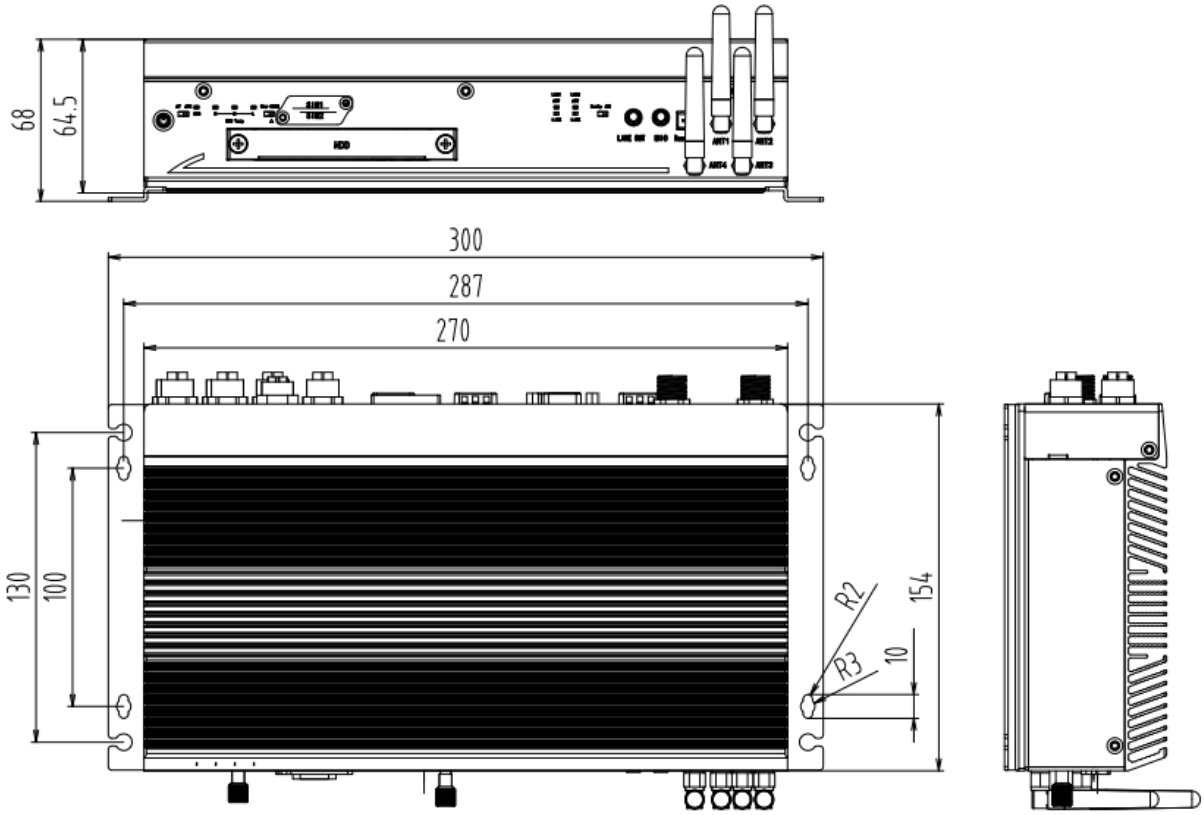
SIGM-3250 Rear Panel



Picture 1.5: SIGM-3250 Rear Panel

SIGM-3250 Dimension:

Unit: mm



Picture 1.6 SIGM-3250 Dimension

CHAPTER 2

Hardware Installation

2.1 Introduction

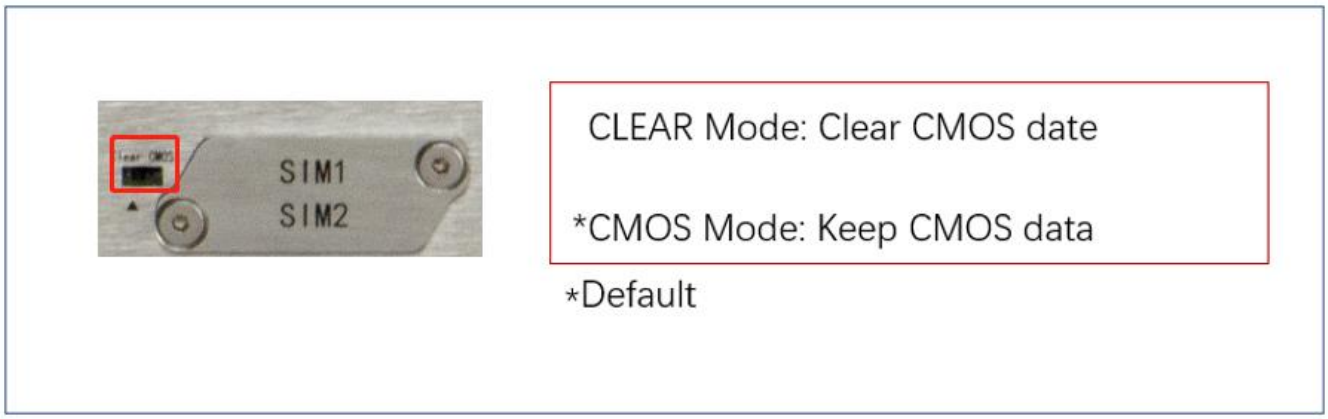
The following sections show the internal switch settings and the external connectors and pin assignments for applications.

2.2 Switches

The SIGM-3250 box computer has a number of switches inside the chassis that allows you to configure your system to suit your application. The table below shows the function of each of the board's switches:

Switcher	Name	Description
CLEAR/CMOS	Clear CMOS Data Setting	3-Pin switch
AT/ATX	Set Power-on mode at AT or ATX	3-Pin switch
ACC/Family	Mode selector switch	3-Pin switch

2.2.1 CLEAR/COMS -Clear CMOS Data



Picture 2.1: CLEAR/COMS

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.

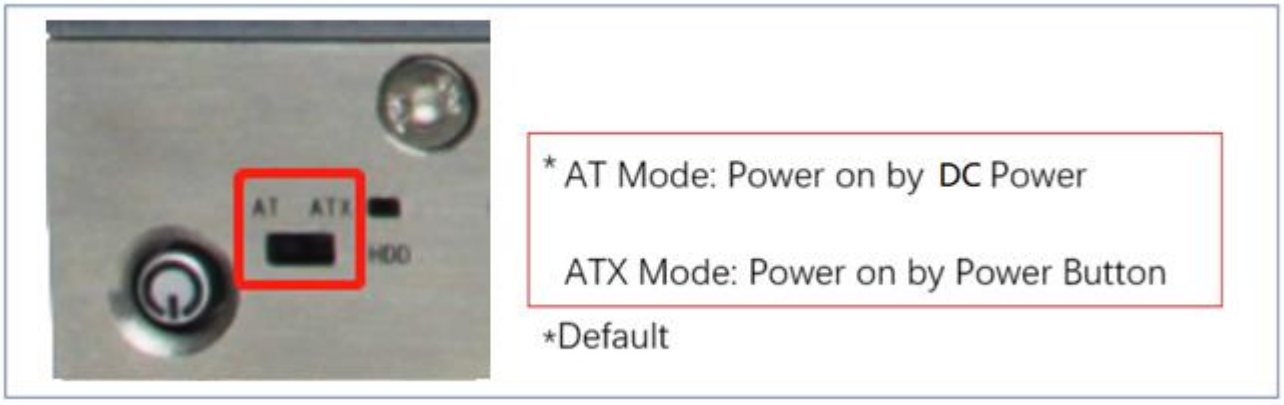
1. Power-off the system and unplug the power cord.

2. Dial the dip switch to CLEAR mode, stay for 5~6 seconds, and then revert to CMOS mode;

4. Power-On the computer, press the Del key to enter the BIOS setting and reload the optimal default value;

5. Save and exit the Settings.

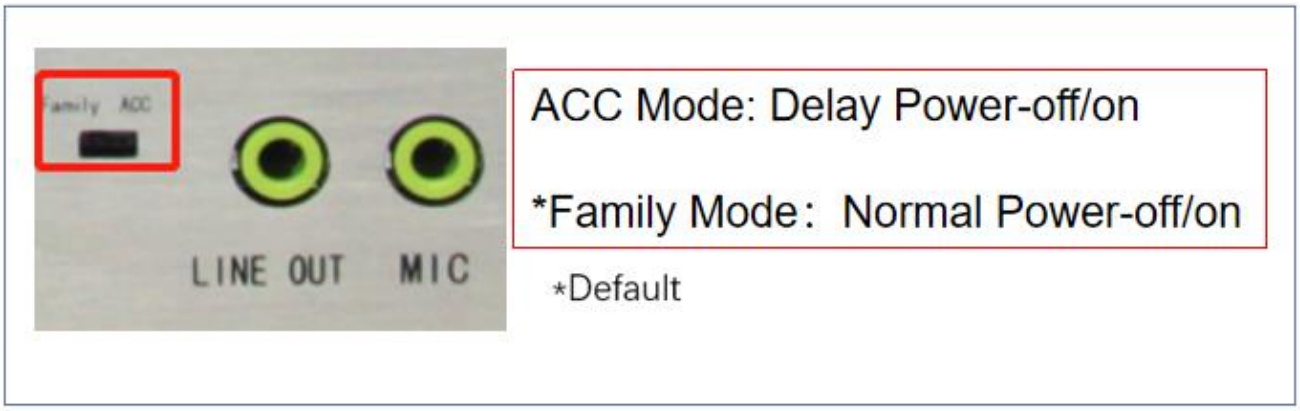
2.2.2 AT/ATX Power on mode selection



Picture 2.2: AT/ATX

The SIGM-3250 provides an 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.

2.2.3 ACC/Family Mode selector switch

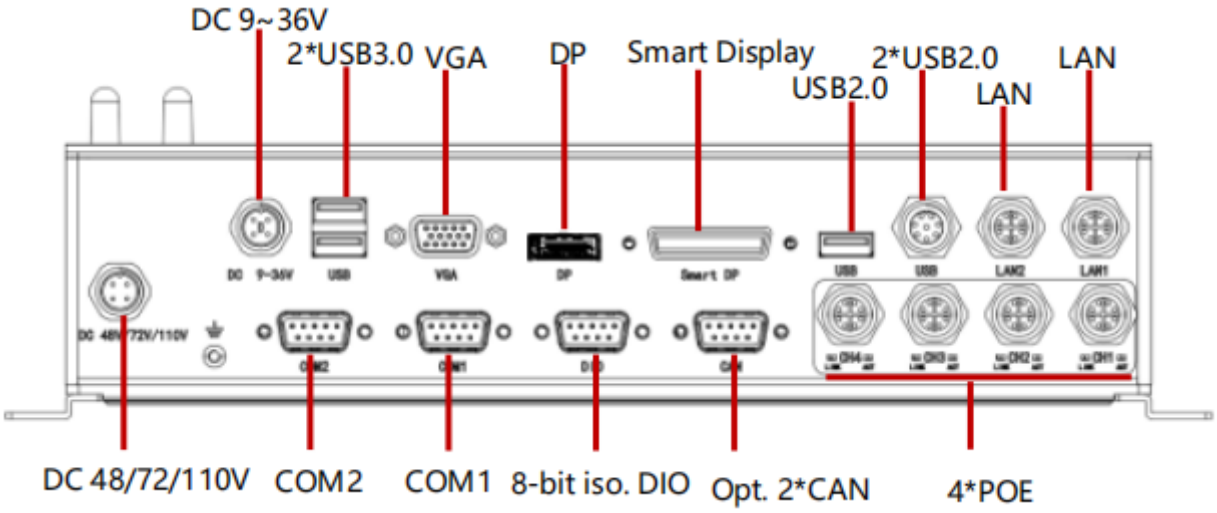


Picture 2.3: ACC/Family

The SIGM-3250 provides ACC/Family switch, and users can set the on-off mode of the machine by pushing the switch with tweezers. When you put it to ACC mode, it means that power on or power off will delay, until the voltage is stable; When dialed to Family, the machine is on and off normally.

2.3 I/O/Button/LED Indication

SIGM-3250 Front:

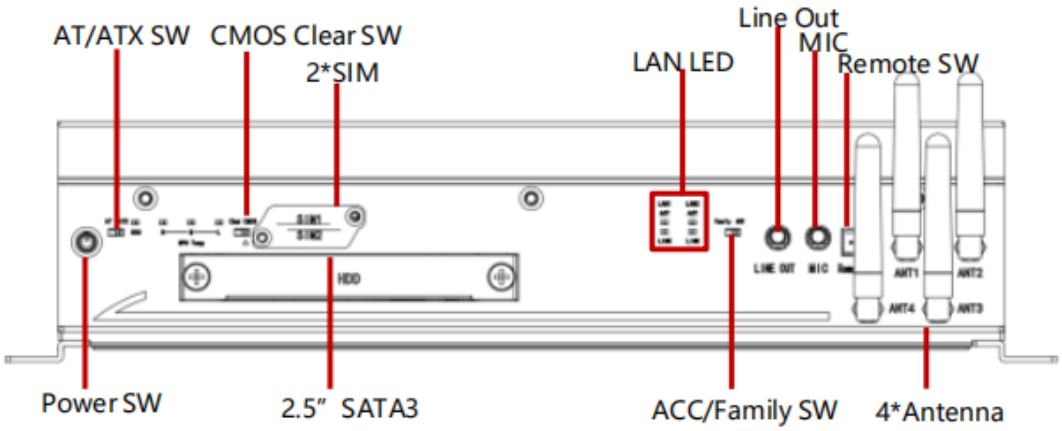


Picture 2.4: SIGM-3250 Front

The front panel contains the I/O interface:

- 1*DC-in Power: M12 A-Code 5-pole terminal DC9~36V（S001/S003）
- 1*DC-in Power: M12 A-Code 4-pole terminal DC 48/72/110V（T001/T003）
- 2*USB3.0 Type A, 1*USB2.0 Type A, 2*USB2.0 M12 A-Code
- 1*VGA,1*DP,1*Smart Display
- 4*POE: M12 X-Code, 2*LAN: M12 X-Code
- 2*COM: DB9
- 2*8-bit DIO: DB9
- 2*Opt.CAN:DB9

SIGM-3250 Rear:



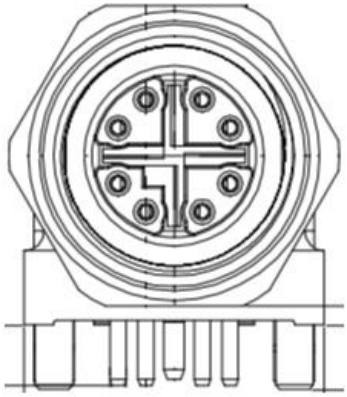
Picture 2.5: SIGM-3250 Rear

The rear panel contains the I/O interface：

- Power button
- HDD LED, CPU LEDs,LAN LEDs
- AT/ATX SW, Clear CMOS SW, ACC/Family SW
- 2*SIM,1*2.5”SATA bay
- 1*Line-out,1*Mic
- 1*Remote SW
- 4*Antenna

2.3.1 Ethernet Connector (POE)

The SIGM-3250 is equipped with 6*Intel® I210AT, the Ethernet provides M12 interface, 4 of which have POE function, 802.3af (15.4w). The Ethernet provides LED indicator light, which is used to indicate the active state of the network interface. Table 2.1 provides a detailed description of pin assignment.



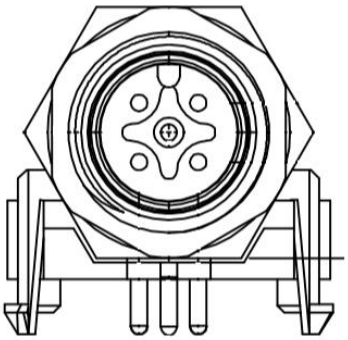
Picture 2.6: POE

Table 2.1: POE/LAN Connector Pin Assignments

Pin	Signal
1	TXD0+
2	TXD0-
3	TXD1+
4	TXD2+
5	TXD2-
6	TXD1-
7	TXD3+
8	TXD3-

2.3.2 Power input (DC-IN)

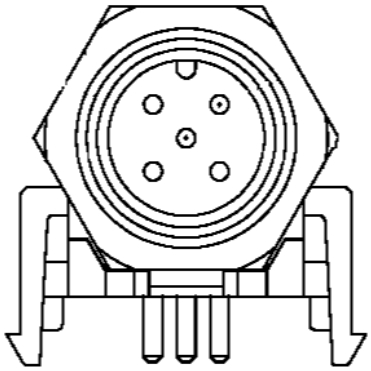
SIGM-3250-S001/S003 power input adopts DC 9~36V, ITPS, SIGM-3250-T001/T003 power input adopts railway standard power DC 48/72/110V. The DC 9~36V equipped 5-Pin M12 A-code power socket can support up to 60W power. This is a low power solution that uses a 12V AC to DC adapter for input DC power to the socket. Railway standard power DC 48/72/110V is equipped with 4-Pin M12 A-code power socket, suitable for use in railway vehicle. If the voltage used is greater than the recommended voltage, the system will not start and may even damage the motherboard. Table 2.2 is the detailed introduction of pin allocation for 9-36V M12 A-code power supply interface. Table 2.3 provides detailed introduction of pin assignment for DC 48/72/110V M12 a-code power interface.



Picture 2.7: DC 9~36V M12 A-Code

Table 2.1: DC 9~36V M12 A-Code Connector Pin Assignments

Pin	Signal
1	9~36V VIN
2	9~36V VIN
3	GND
4	GND
5	ITPS_ACC

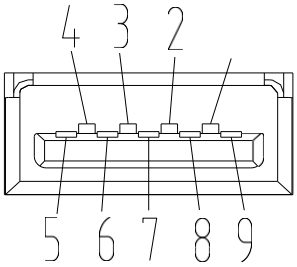


Picture 2.8: DC 48/72/110V M12 A-Code

Table 2.1: DC 48/72/110V M12 A-Code Connector Pin Assignments	
Pin	Signal
1	VIN+
2	VIN+
3	VIN-
4	VIN-

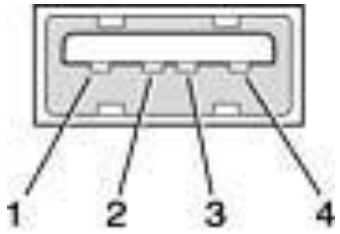
2.3.3 USB

SIGM-3250 supports 2*USB3.0 (Type A); 1*USB2.0 (Type A); 1*USB2.0 (8-pin M12 A-code), These USB connectors support plug and play and hot plug capabilities. Interface comply with the USB UHCI version 3.0 and 2.0 protocols and can be disabled through the system BIOS Settings. These USB can be connected to any other device with a USB interface and are suitable for many new digital devices. Table 2.4 provides detailed description of pin assignment for USB3.0 Type A. Table 2.5 provides a detailed description of pin assignment for USB2.0 Type A. Table 2.6 provides a detailed description of pin assignment for USB2.0 M12 A-Code.



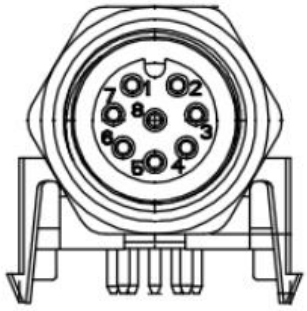
Picture 2.9: USB3.0 Type A

Table 2.4: USB3.0 Type A Connector Pin Assignments	
Pin	Signal
1	VBUS
2	D-
3	D+
4	GND
5	StdA_SSRX-
6	StdA_SSRX+
7	GND_DRAIN
8	StdA_SSTX-
9	StdA_SSTX+
Shell	Shield



Picture 2.10: USB2.0 Type A

Table 2.5: USB3.0 Type A Connector Pin Assignments	
Pin	Signal
1	USB_VCC
2	USB_D-
3	USB_D+
4	USB_GND

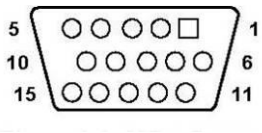


Picture 2.11: USB2.0 M12 A-Code

Table 2.6: USB2.0 M12 A-Code Connector Pin Assignments	
Pin	Signal
1	VBUS
2	DN1
3	DP1
4	GND
5	VBUS
6	DN2
7	DP2
8	GND

2.3.4 VGA

SIGM-3250 provides a standard VGA interface that supports up to a maximum resolution of 1920* 1200@60Hz. Detailed pin assignment is described in table 2.7.

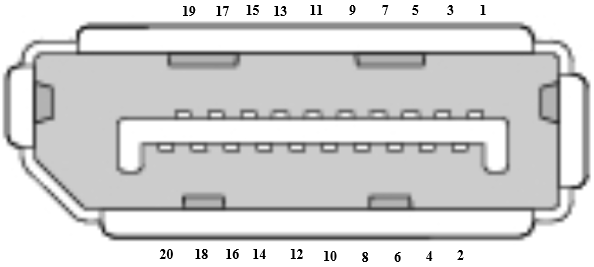


Picture 2.12: VGA

Table 2.6: VGA Connector 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		

2.3.5 DP

The SIGM-3250 provides a high resolution DP interface that supports up to a maximum resolution of 4096* 2160@60Hz. Detailed pin assignment is described in table 2.7.

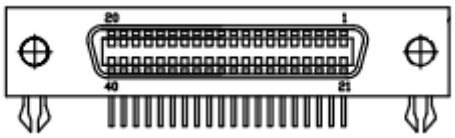


Picture 2.12: DP

Table 2.7: DP Connector 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		

2.3.6 Smart Display

The SIGM-3250 provides a Smart Display interface through a SCSI socket, supporting up to a maximum resolution of 1920* 1200@60 Hz. Detailed pin assignment is described in table 2.8.



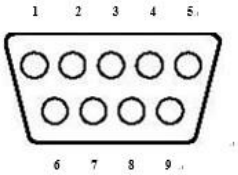
Picture 2.13: Smart Display

Table 2.8: Smart Display Connector Pin Assignments

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	LVDS_CLKA_P	2	LVDS_CLKA_N	21	USB2_DN11	22	USB2_DP11
3	GND	4	GND	23	LVDS_VDD	24	LVDS_VDD
5	LVDS_DA_3P	6	LVDS_DA_3N	25	LVDS_VDD	26	GND
7	GND	8	GND	27	GND	28	LVDS_12V
9	LVDS_DA_2P	10	LVDS_DA_2N	29	LVDS_12V	30	LVDS_12V
11	GND	12	CTRL	31	RS232_RTS5	32	GND
13	LVDS_DA_1P	14	LVDS_DA_1N	33	RS232_TXD5	34	RS232_RXD5
15	GND	16	GND	35	RS232_TXD4	36	RS232_RXD4
17	LVDS_DA_0P	18	LVDS_DA_0N	37	SYS_RST#	38	PWRBTN#
19	PANEL_BLEN	20	PANEL_BLCTL	39	GND-AUD	40	LINE2_L_S

2.3.7 COM1/2

SIGM-3250 provides 2 COM1/2 isolated serial ports through the 2* d-sub 9-pin connector. COM1 can only be configured as RS485, COM2 can only be configured as RS232. Table 2.9 is a detailed description of pin assignment.



Picture 2.14: COM1/2

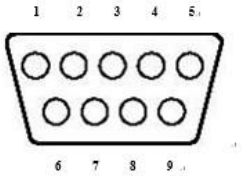
Table 2.9: COM1/2 Connector Pin Assignments

Pin	RS-485 Signal	RS-232 Signal
1	DCD	DATA-
2	RxD	DATA+
3	TxD	NC
4	DTR	NC
5	GND	GND

6	DSR	NC
7	RTS	NC
8	CTS	NC
9	RI	NC

2.3.8 Option CAN /AUDIO

SIGM-3250 provides 2* optional CAN/AUDIO port through 1* d-sub 9-pin connector. Table 2.10 provides detailed descriptions of pin assignments. (When selecting AUDIO, the signal definition can be customized according to the line.)



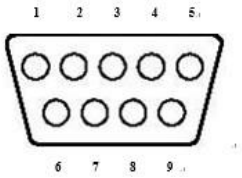
Picture 2.15: optional CAN/AUDIO

Table 2.10: Option CAN Connector Pin Assignments

Pin	Signal	Pin	Signal
1	NC	2	CAN1L
3	CAN1G	4	CAN2L
5	NC	6	NC
7	CAN1H	8	CAN2G
9	CAN2H		

2.3.9 DIO

SIGM-3250 provides 8-bit isolation DIO, 2.5KV photoelectric isolation input (H: 5-24V, L: 0-1.5V) and photoelectric isolation output (200Ma) through 1* d-sub 9-pin connector.



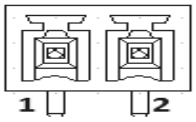
Picture 2.16: DIO

Table 2.11: DIO Connector Pin Assignments

Pin	Signal	Pin	Signal
1	DI0	6	DO0
2	DI1	7	DO1
3	DI2	8	DO2
4	DI3	9	DO3
5	GND		

2.3.10 Remote Switch

The remote switch signal interface for switching machine is a 2-pin terminal at the end of the sub-card coastline, pin definition is shown in table 2.12.



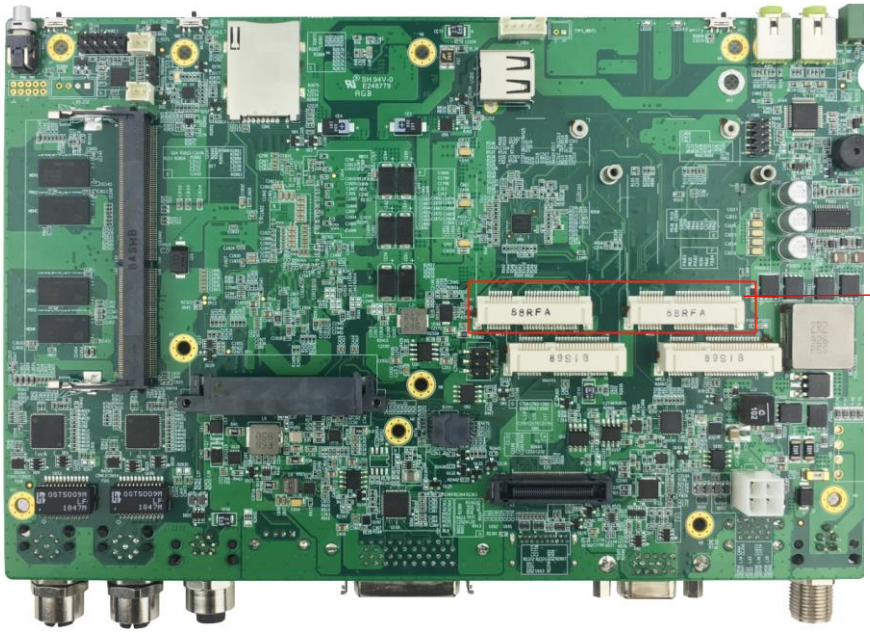
Picture 2.17: Remote Switch

Table 2.12: Remote Switch Connector Pin Assignments

Pin	Signal
1	PWR_BTN
2	GND

2.3.11 Mini PCIe1/2

The SIGM-3250 mainboard (STX-I907) provides 2*Mini PCIe pin spacing 9.9mm interface (Mini PCIe1/3), with PCIe X1+USB signal, with dual SIM card slot, support for dual 4G LTE/Wifi/BT/GPS. The Mini PCIe 1/2 interface definition is shown in table 2.11.

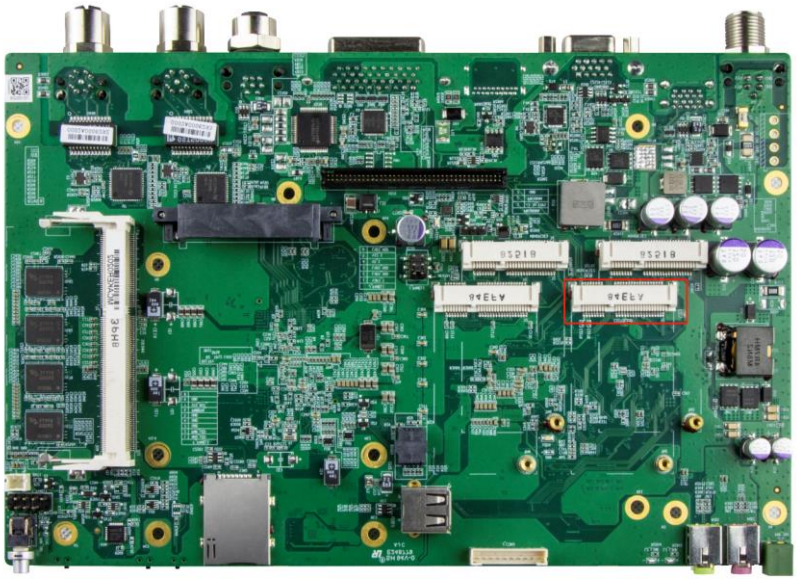


Picture 2.18: Mini PCIe1/2

Table 2.13: Mini PCIe 1/2 Connector Pin Assignments			
Pin	Signal	Pin	Signal
1	PCIE_WAKE_N	2	+V3.3_MINICARD1
3	NC	4	GND
5	NC	6	+V1.5
7	+V3.3_MINICARD1	8	+VUIM_PWR
9	GND	10	UIM_DATA
11	CLK_MINI1_PCIE-	12	UIM_CLK
13	CLK_MINI1_PCIE+	14	UIM_RESET
15	GND	16	+VUIM_VPP
17	NC	18	GND
19	NC	20	WIFI1_DISABLE#
21	GND	22	PLTRST#
23	PCIE_MINI_RX1-	24	+V3.3_MINICARD1
25	PCIE_MINI_RX1+	26	GND
27	GND	28	+V1.5
29	GND	30	SMB_SCL_RSM
31	PCIE_MINI_TX1-	32	SMB_SDA_RSM
33	PCIE_MINI_TX1+	34	GND
35	GND	36	USB_N7
37	GND	38	USB_N9
39	+V3.3_MINICARD2	40	GND
41	+V3.3_MINICARD2	42	NC
43	GND	44	SIM1-DET
45	NC	46	NC
47	NC	48	+V1.5
49	NC	50	GND
51	NC	52	+V3.3_MINICARD1

2.3.12 Mini PCIe3

The SIGM-3250 mainboard (STX-I907) also provides 1*Mini PCIe pin spacing 5.2mm interface (Mini PCIe2) with USB signal. When 2*CAN is selected, this Mini PCIe slot is occupied. Devices with USB signals can be extended, such as CAN Bus. The Mini PCIe2 interface definition is shown in table 2.14.



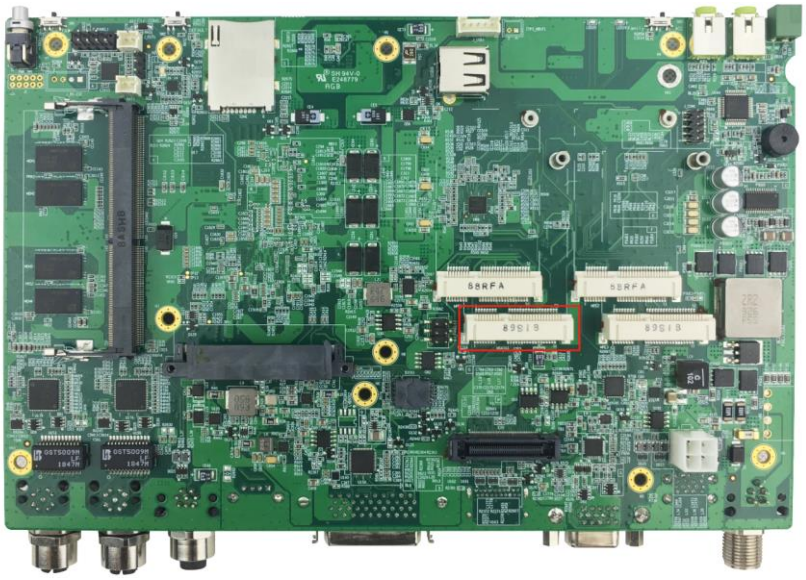
Picture 2.18: Mini PCIe3

Table 2.14: Mini PCIe2 Connector Pin Assignments			
Pin	Signal	Pin	Signal
1	PCIE_WAKE_N	2	+V3.3_MINICARD3
3	NC	4	GND
5	NC	6	+V1.5_MINICARD3
7	+V3.3_MINICARD3	8	+VUM_PWR3
9	GND	10	UIM_DATA3
11	CLK_MINI3_PCIE-	12	UIM_CLK3
13	CLK_MINI3_PCIE+	14	UIM_RESET3
15	GND	16	+VUIM_VPP3
17	NC	18	GND
19	NC	20	WIFI3_DISABLE#
21	GND	22	PLTRST_N
23	PCIE_MINI3_RX5-	24	+V3.3_MINICARD3
25	PCIE_MINI3_RX5+	26	GND
27	GND	28	+V1.5_MINICARD3
29	GND	30	SMB_SCL_RSM
31	PCIE_MINI3_TX5-	32	SMB_SDA _RSM
33	PCIE_MINI3_TX5+	34	GND
35	GND	36	USB_HUB_P-
37	GND	38	USB_HUB_P+

39	+V3.3_MINICARD3	40	GND
41	+V3.3_MINICARD3	42	NC
43	GND	44	GND
45	NC	46	NC
47	NC	48	+V1.5_MINICARD3
49	NC	50	GND
51	NC	52	+V3.3_MINICARD3

2.3.13 mSATA

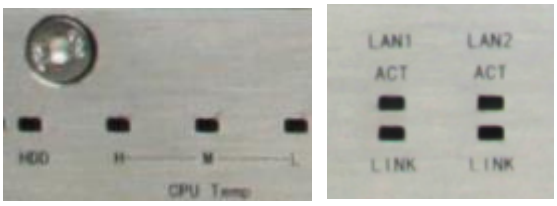
The SIGM-3250 mainboard (STX-I907) provides a standard mSATA interface with SATA+USB signal.



Picture 2.19: mSATA

2.3.14 LED

The SIGM-3250 panel has one power indicator, one hard disk indicator, three network connection status indicators, and three CPU operating temperature indicators. When the CPU operating temperature ≤85℃, the green light; When the CPU temperature is between 86℃ and 95℃, the yellow light is on, and when the CPU operating temperature is ≥96℃, the red light is on. If you keep the CPU running at a red light, it will affect the life of the machine.



Picture 2. 20: HDD/CPU/LAN LED

2.4 Installation

2.4.1 HDD/SSD installation

Step 1: unscrew the 2 screws on the HDD/SSD bracket of the rear panel.

Step 2: remove the HDD/SSD stent.

Step 3: load the HDD/SSD into the bracket and tighten the 4 screws on the left and right sides to fix the HDD/SSD.

Step 4: push the bracket with HDD/SSD into the slot and tighten the 2 screws on the bracket.

Picture 2.20: HDD/SSD installation（1）

Picture 2.21: HDD/SSD installation（2）

Picture 2.22: HDD/SSD installation（3）

Picture 2.23: HDD/SSD installation（4）

2.4.2 SIM1/SIM2 installation

Step 1: unscrew the 2 screws of the rear panel SIM1/SIM2 and remove the SIM1/SIM2 baffle

Step 2: push the SIM card into the corresponding SIM card slot

Step 3: fix the SIM1/SIM2 baffle with 2 screws

Picture 2.24: SIM1/SIM2 installation（1）

Picture 2.25: SIM1/SIM2 installation（2）

2.4.3 mSATA installation

Step 1: unscrew the 2 screws on the HDD/SSD bracket in the back panel, and remove the HDD/SSD bracket

Step 2: unscrew the 5 screws on the bottom cover and remove the mounting bracket and bottom cover

Step 2: unscrew 12 screws on left and right sides and back panel

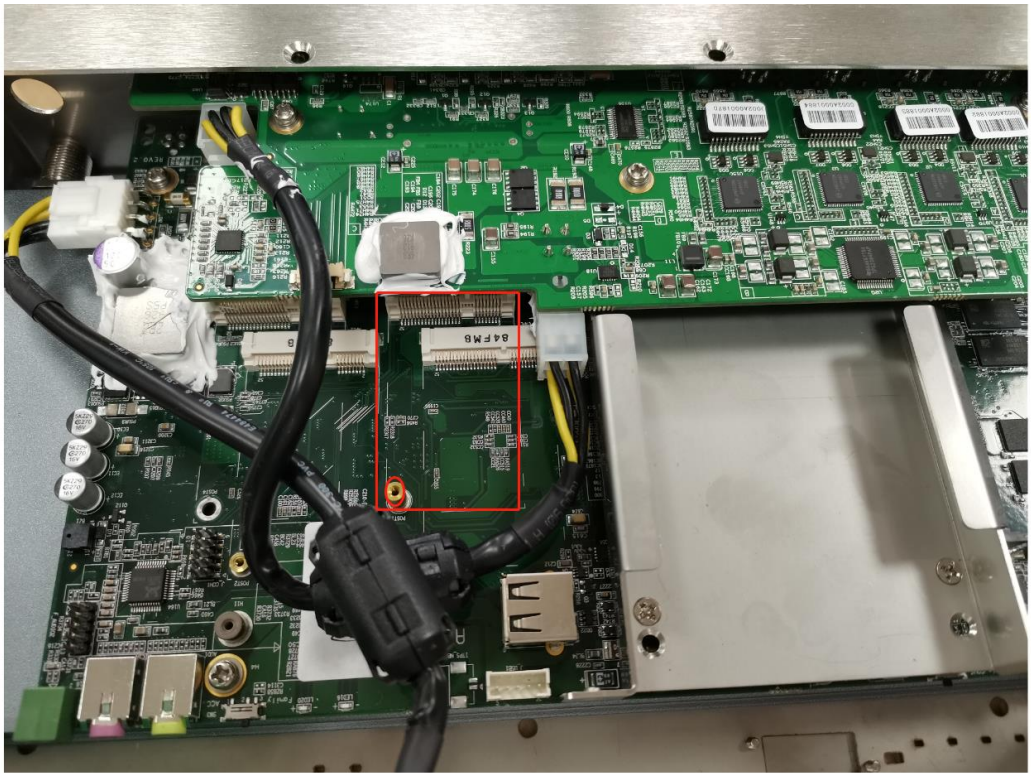
Step 3: remove the back panel cover, insert the mSATA module, and screw

Step 5: complete the installation of the panel cover and bottom cover with the reverse step

Picture 2.26: mSATA installation（1）

Picture 2.27: mSATA installation（2）

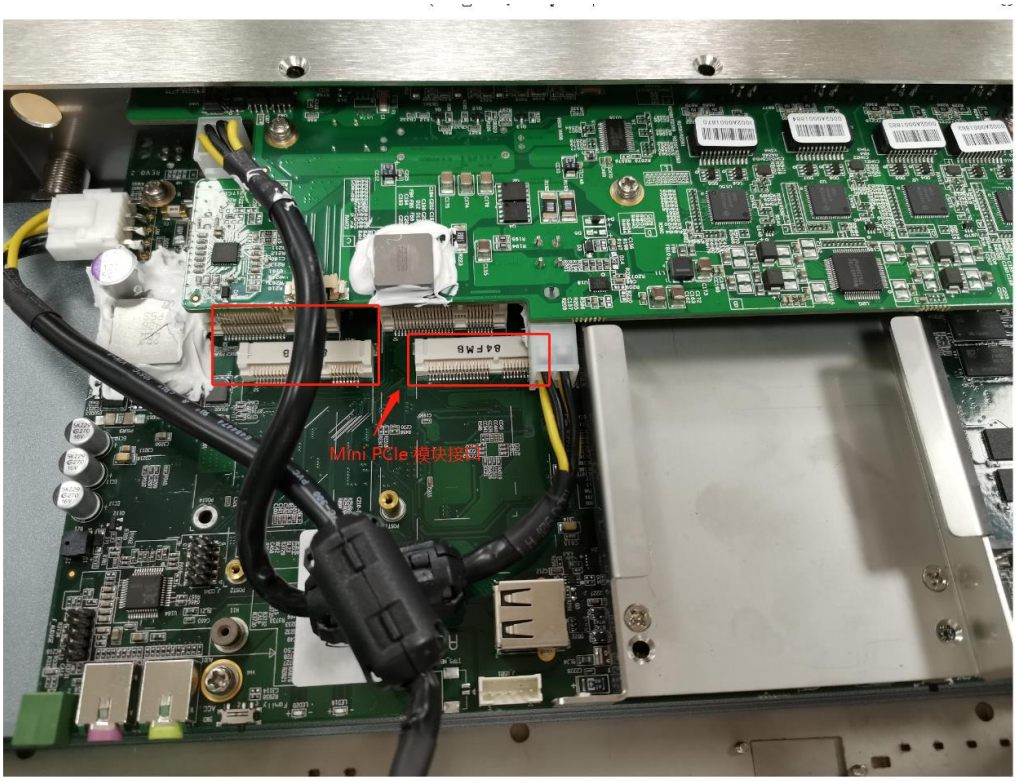
Picture 2.28: mSATA installation（3）



Picture 2.29: mSATA installation（4）

2.4.4 Mini PCIe installation

Step 1: it is consistent with mSATA module installation steps. For details, please refer to "2.4.3 mSATA installation".



Picture 2.30: Mini PCIe installation（1）

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.

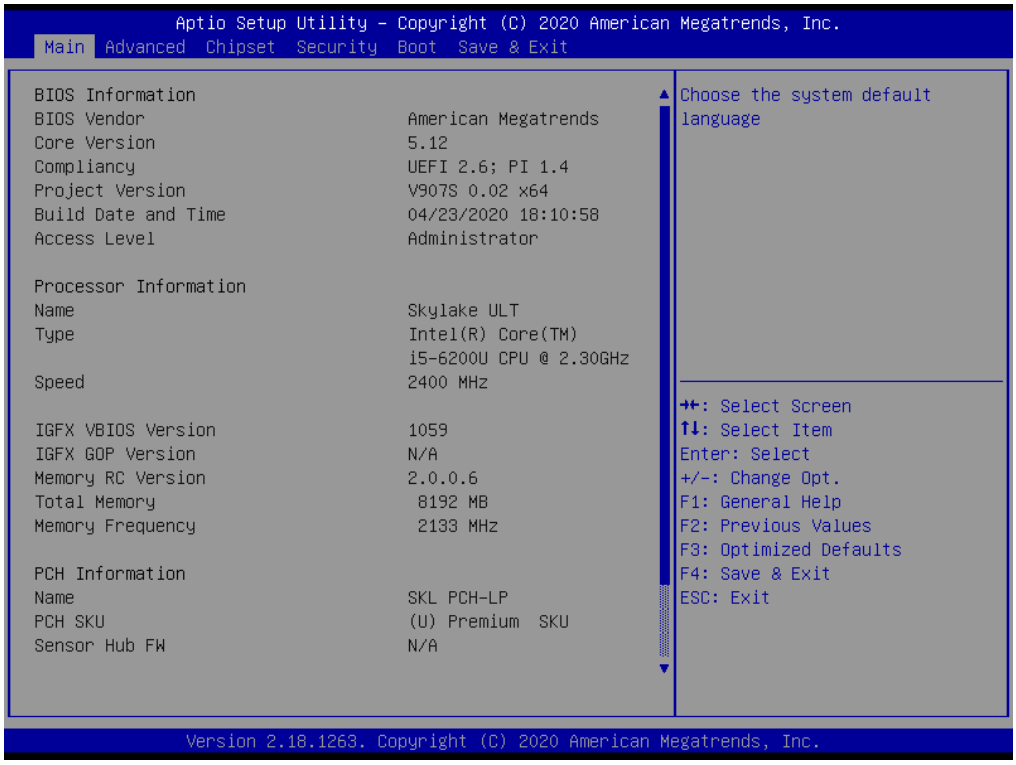
(But in general, customers are not recommended to set it up. In most cases, using the default value is already the best setting.)

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:

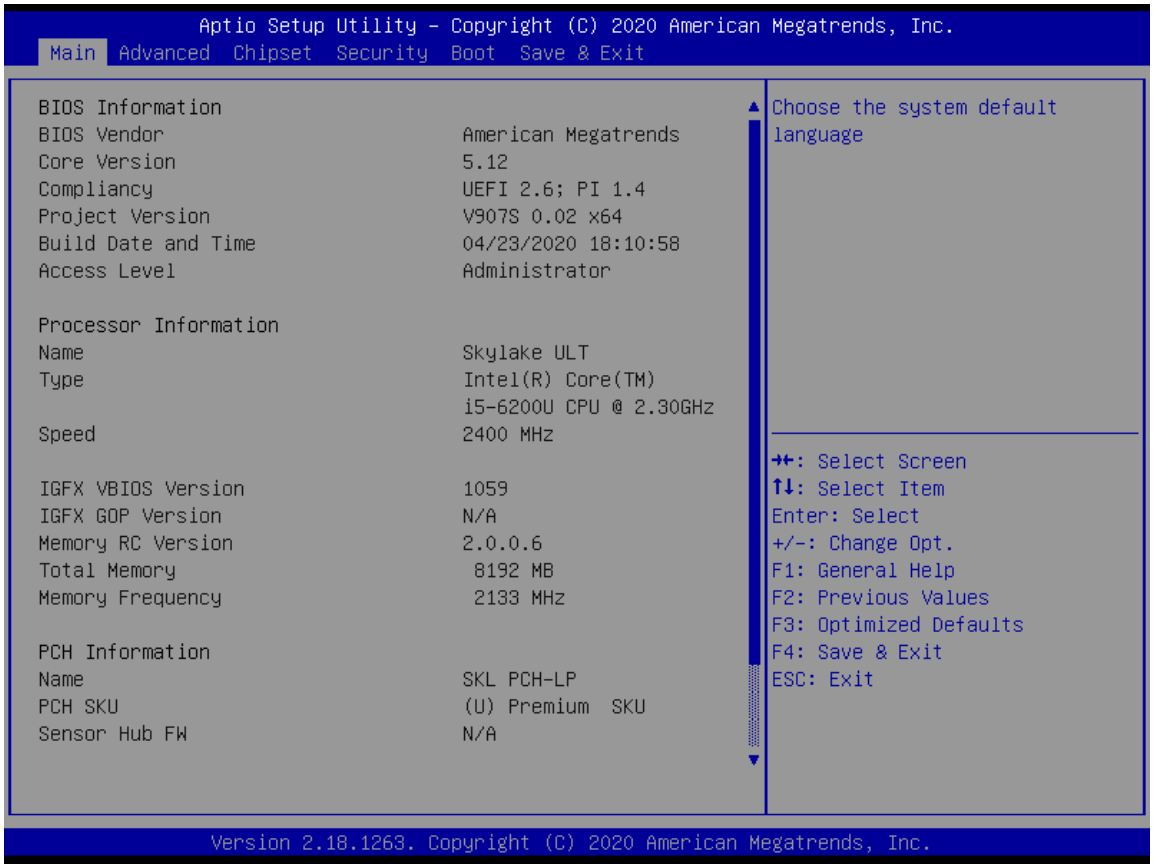
Table 3.1: The BIOS navigation keys

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.


Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
BIOS Information
BIOS Vendor American Megatrends
Core Version 5.12
Compliancy UEFI 2.6; PI 1.4
Project Version V907S 0.02 x64
Build Date and Time 04/23/2020 18:10:58
Access Level Administrator
Processor Information
Name Skylake ULT
Type Intel(R) Core(TM) i5-6200U CPU @ 2.30GHz
Speed 2400 MHz
IGFX VBIOS Version 1059
IGFX GOP Version N/A
Memory RC Version 2.0.0.6
Total Memory 8192 MB
Memory Frequency 2133 MHz
PCH Information
Name SKL PCH-LP
PCH SKU (U) Premium SKU
Sensor Hub FW N/A
Choose the system default language
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.18.1263. Copyright (C) 2020 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
Project Version V907S 0.02 x64
Build Date and Time 04/23/2020 18:10:58
Access Level Administrator
Processor Information
Name Skylake ULT
Type Intel(R) Core(TM) i5-6200U CPU @ 2.30GHz
Speed 2400 MHz
IGFX VBIOS Version 1059
IGFX GOP Version N/A
Memory RC Version 2.0.0.6
Total Memory 8192 MB
Memory Frequency 2133 MHz
PCH Information
Name SKL PCH-LP
PCH SKU (U) Premium SKU
Sensor Hub FW N/A
System Language [English]
System Date [Sat 05/09/2020]
System Time [15:37:57]
Set the Time. Use Tab to switch between Time elements.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.18.1263. Copyright (C) 2020 American Megatrends, Inc.

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

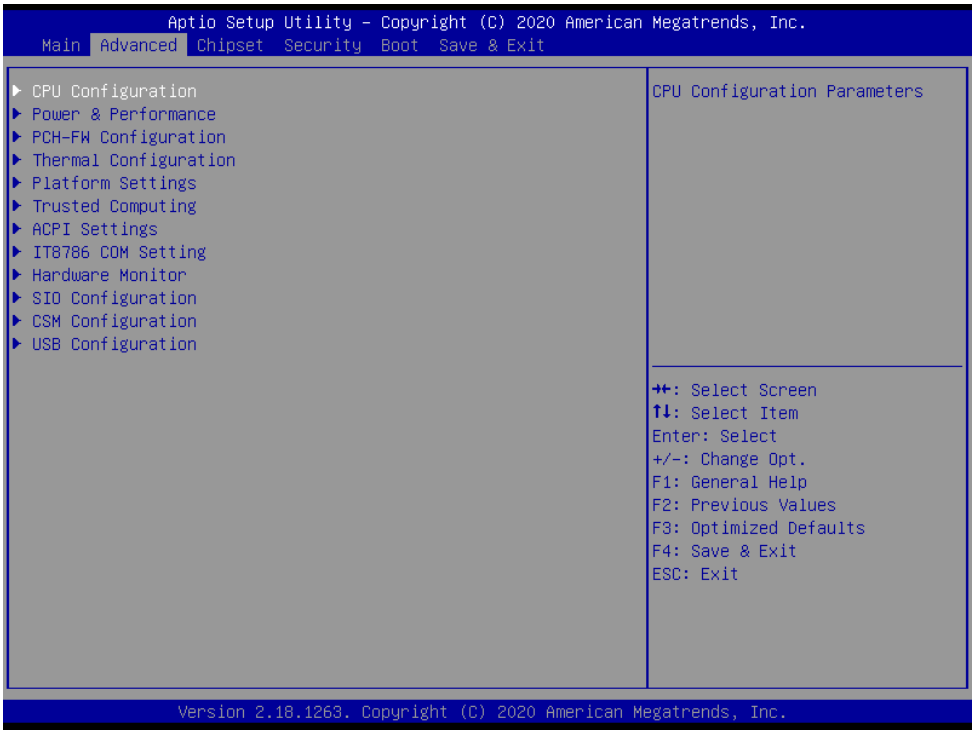
Set the date. The format of the date is <week><month><day><year>.

System Time

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

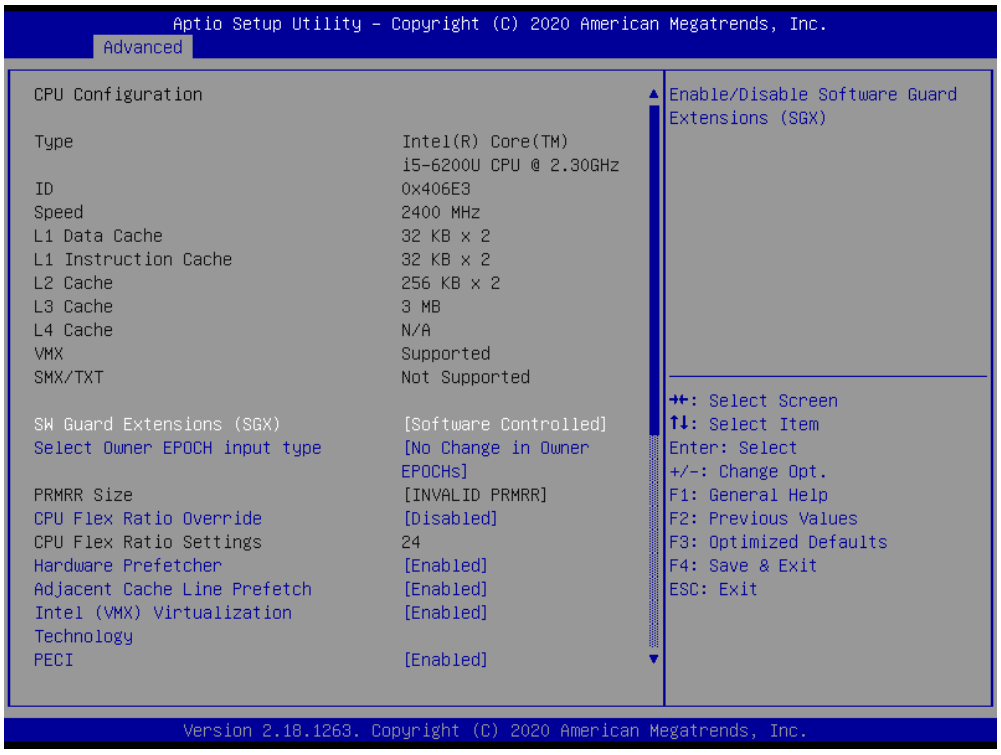
3.2.3 Advanced Menu

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



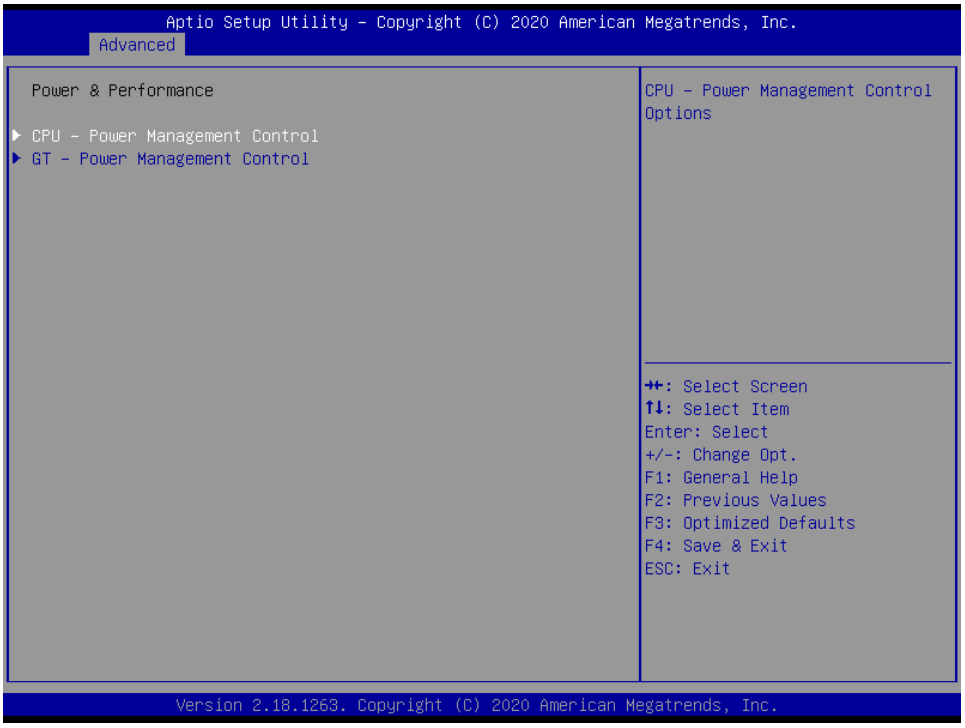
▶CPU Configuration

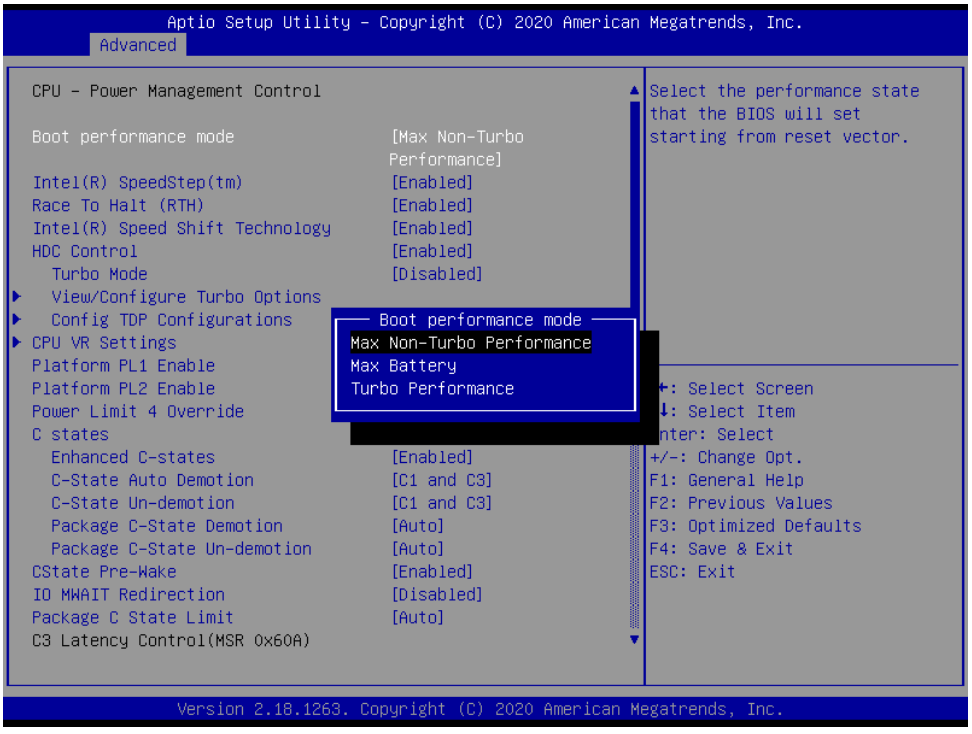
The configuration of the central processor, enter this sub-menu, there will be detailed details of the CPU, as well as various settings of the CPU.

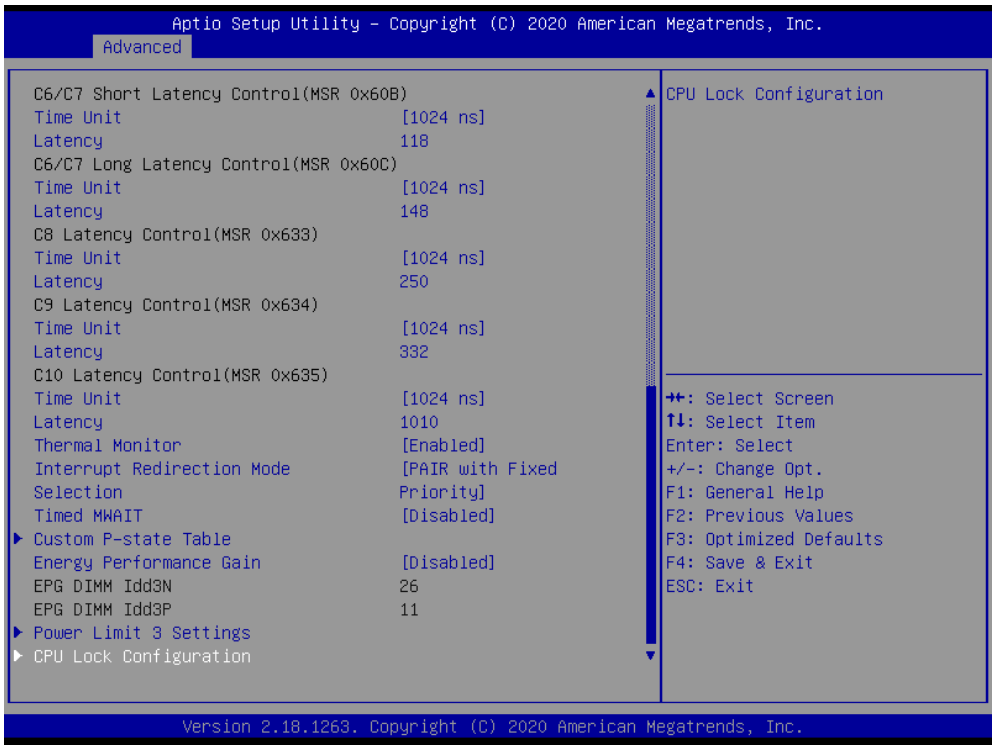


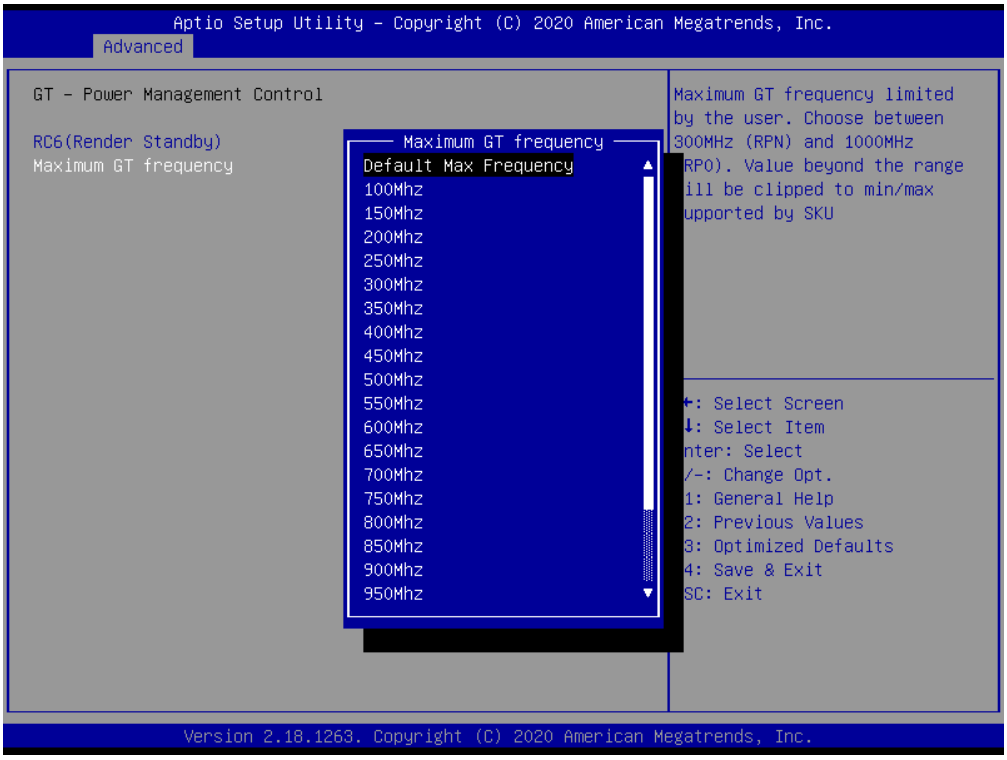
▶Power & Performance

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



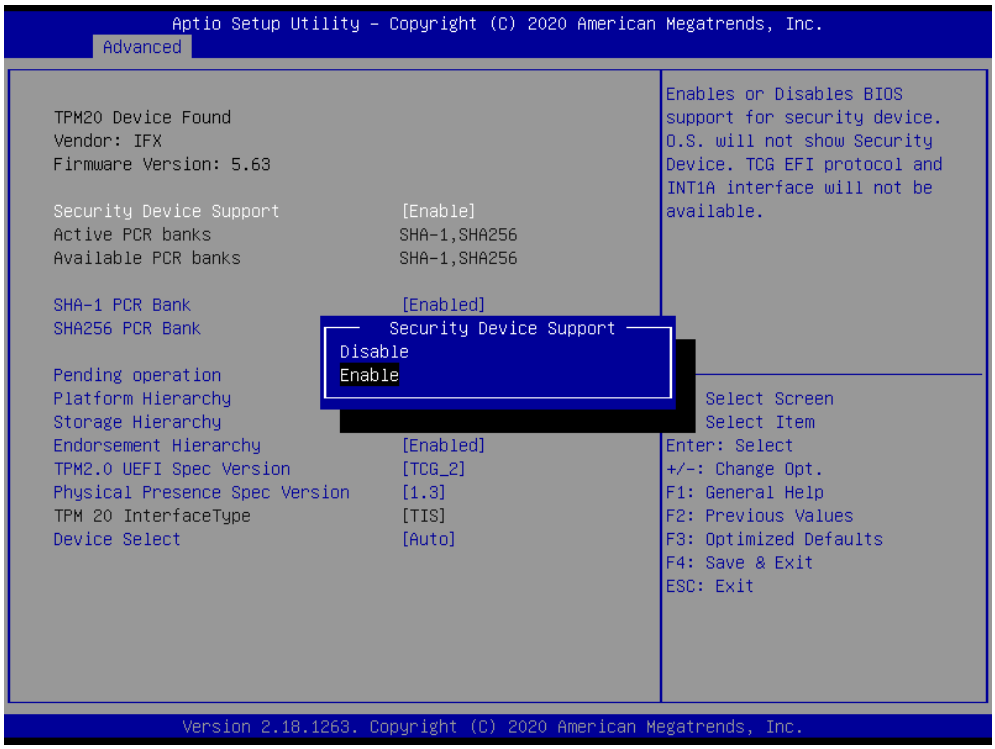






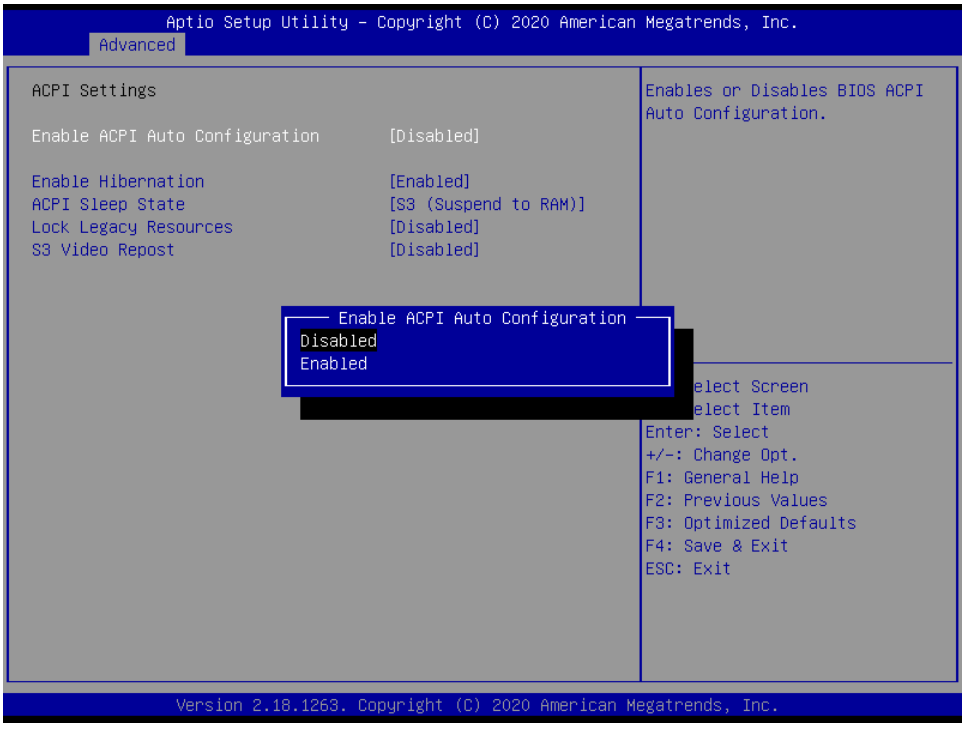
▶Trusted Computing

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.



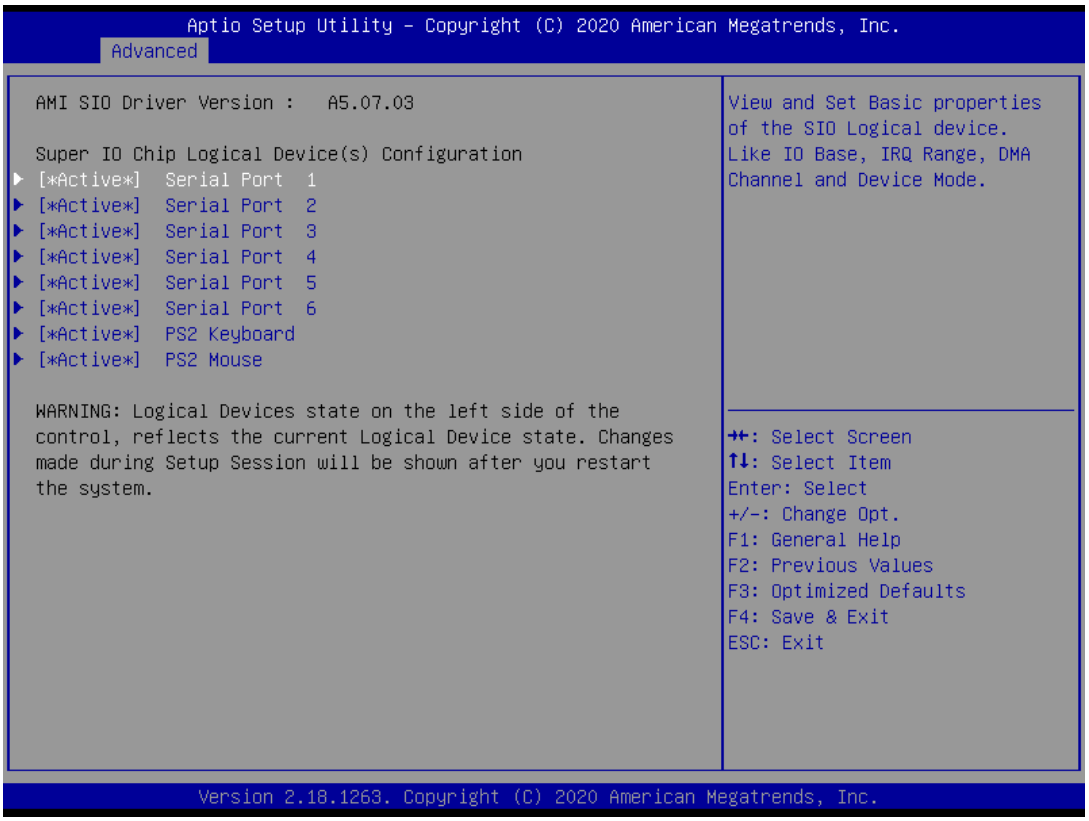
ACPI Sleep State (S3 (Suspend to RAM))

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

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

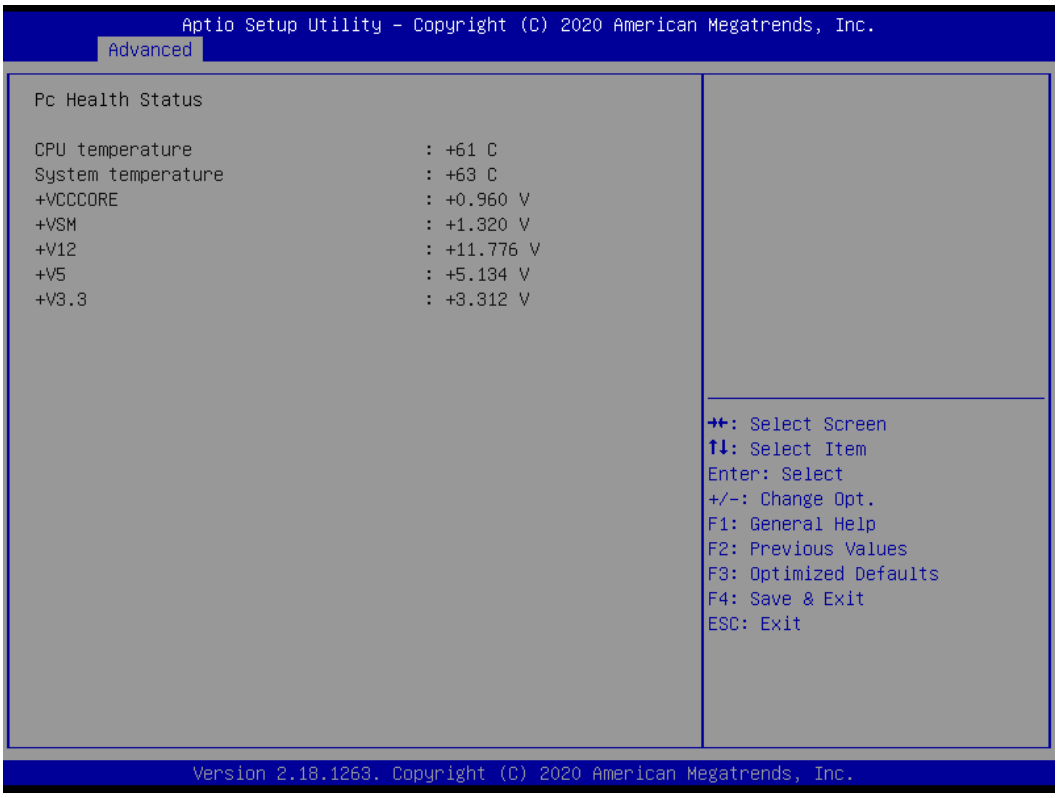
▶SIO Configuration setting

Super IO Configuration settings, enter this sub-menu, there will be set COM working mode or disabled the Serial port function.



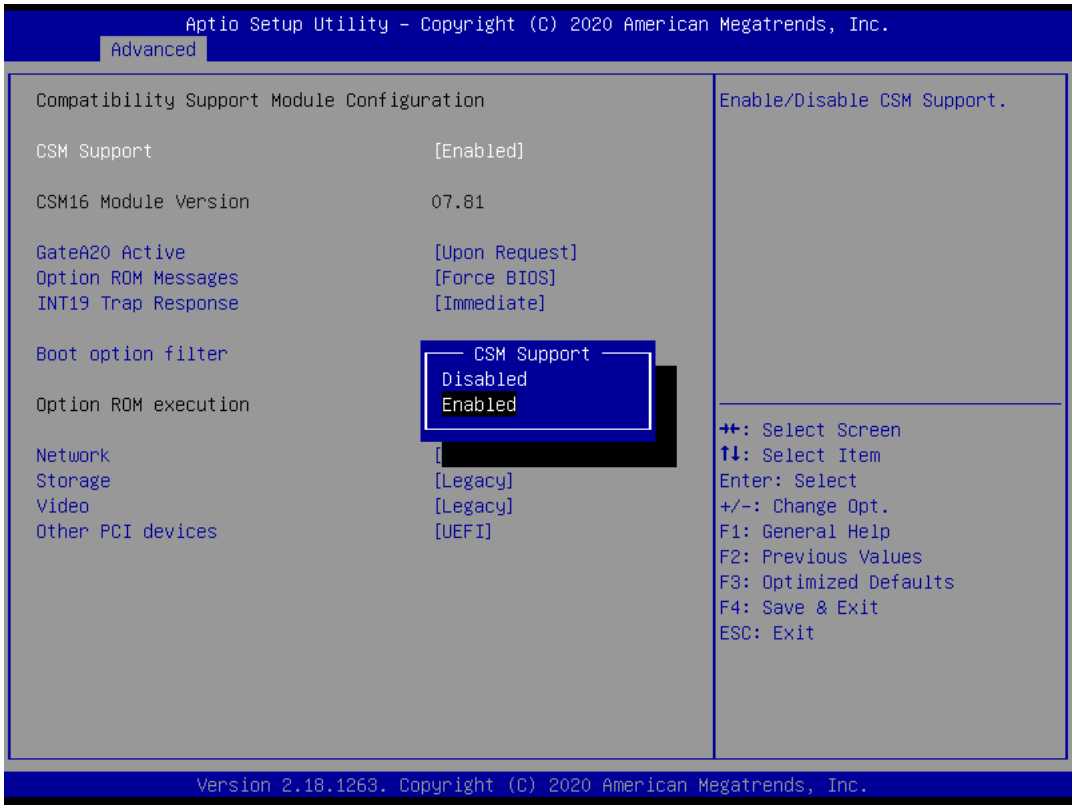
▶Hardware Monitor

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

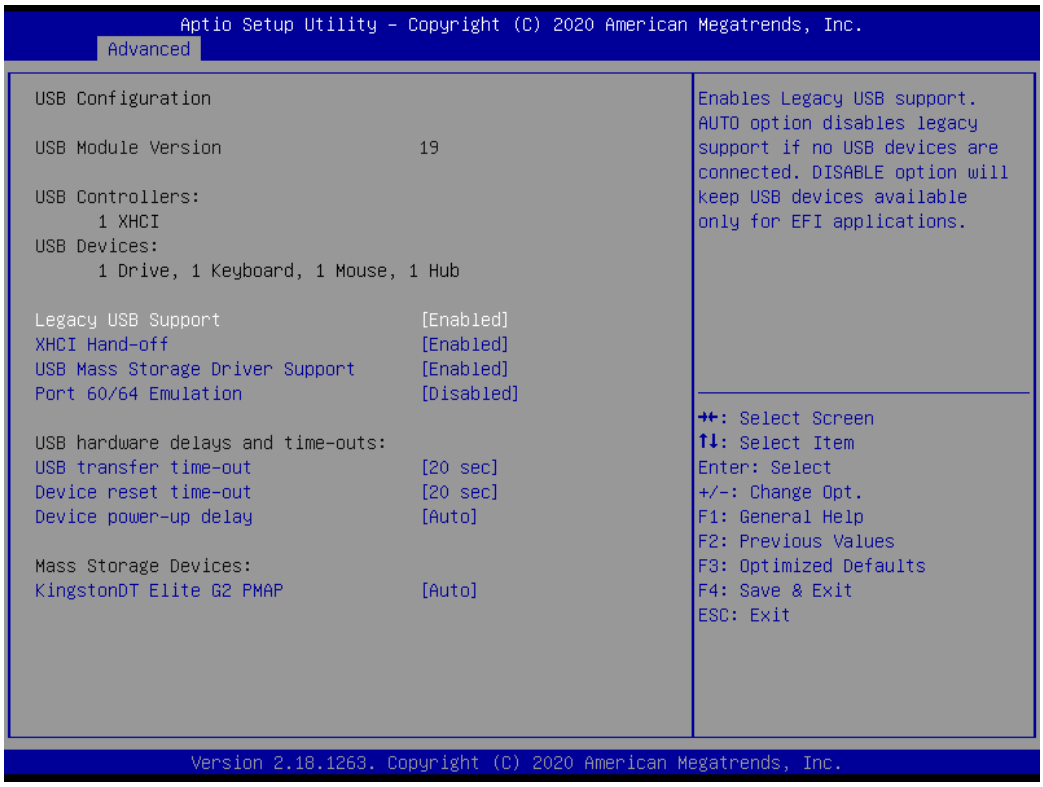
This item is used to set EFI display Option ROM startup or traditional display Option ROM startup.

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

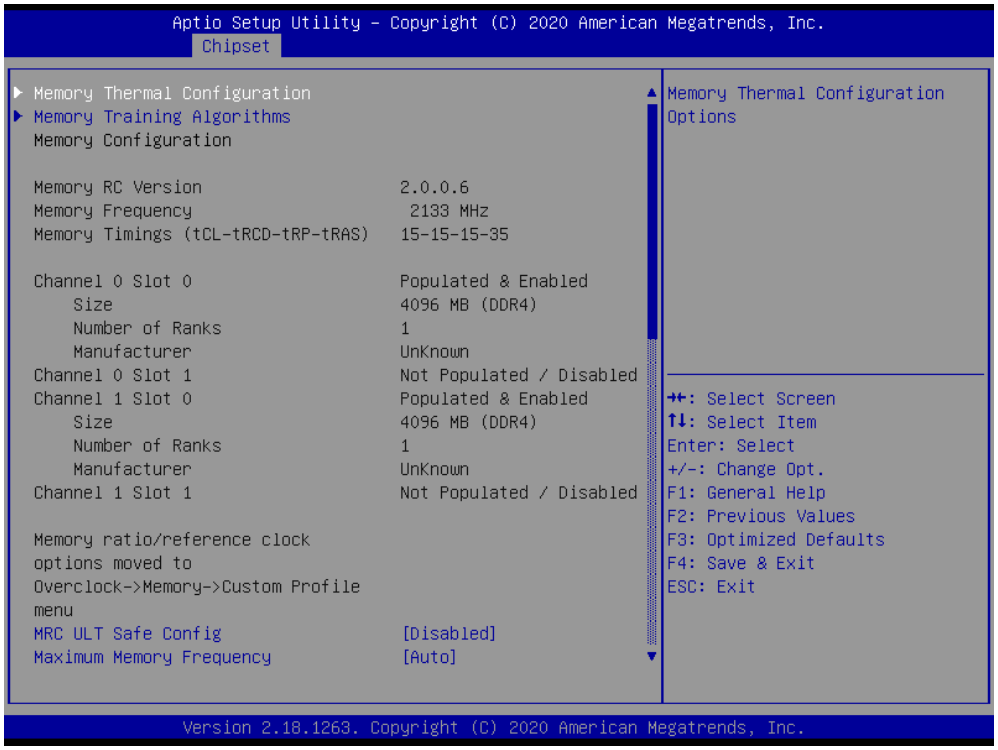
This item sets boot command delay of the large capacity USB disk. The default is Auto.

3.2.4 Chipset Menu

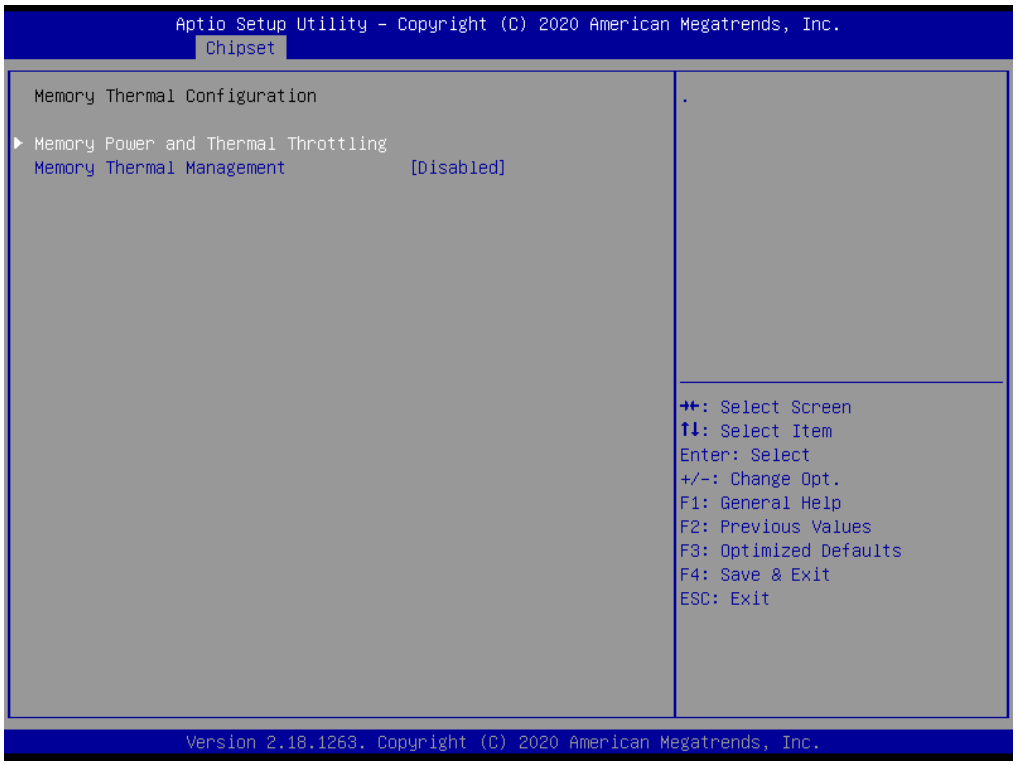
The chipset menu items allow you to change the settings for the North Bridge chipset, South Bridge chipset and other system.

▶Memory Configuration

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



▶Memory Thermal Configuration



Memory Power and Thermal Throttling

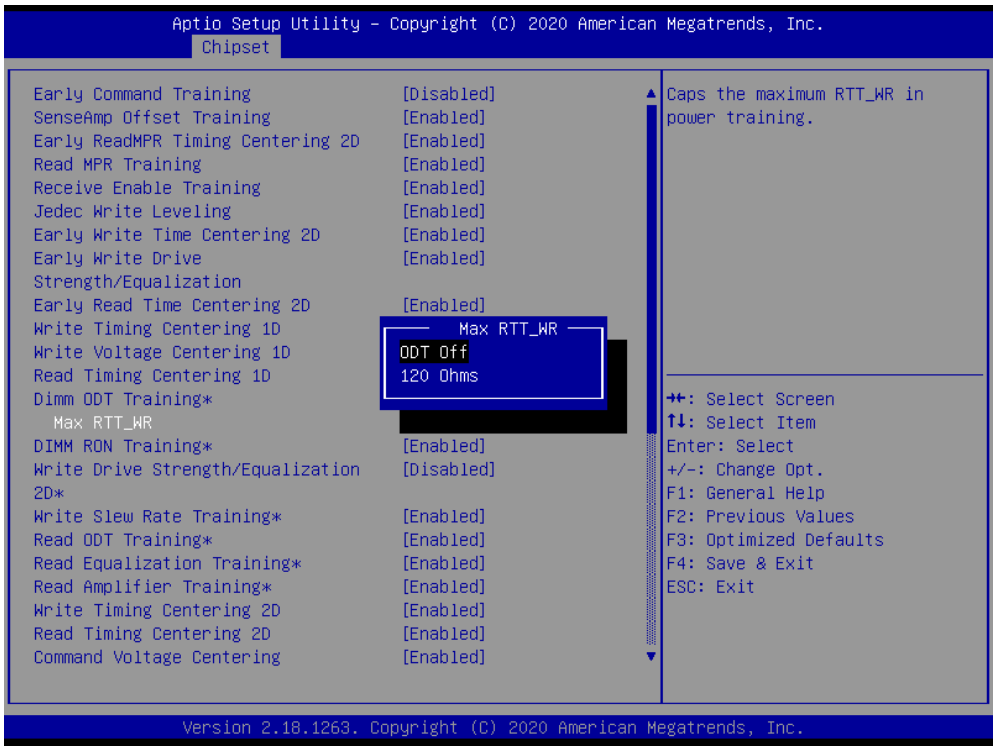
This item contains the configuration of the Memory Power and Thermal Throttling.

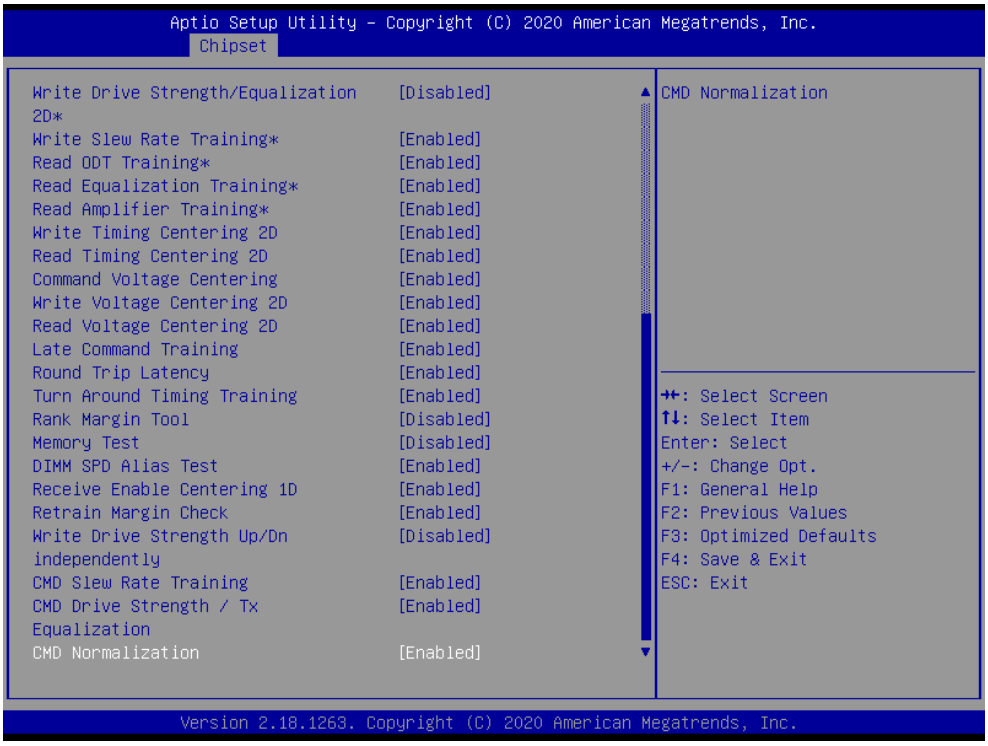
Memory Thermal Management

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

▶Memory Training Algorithms

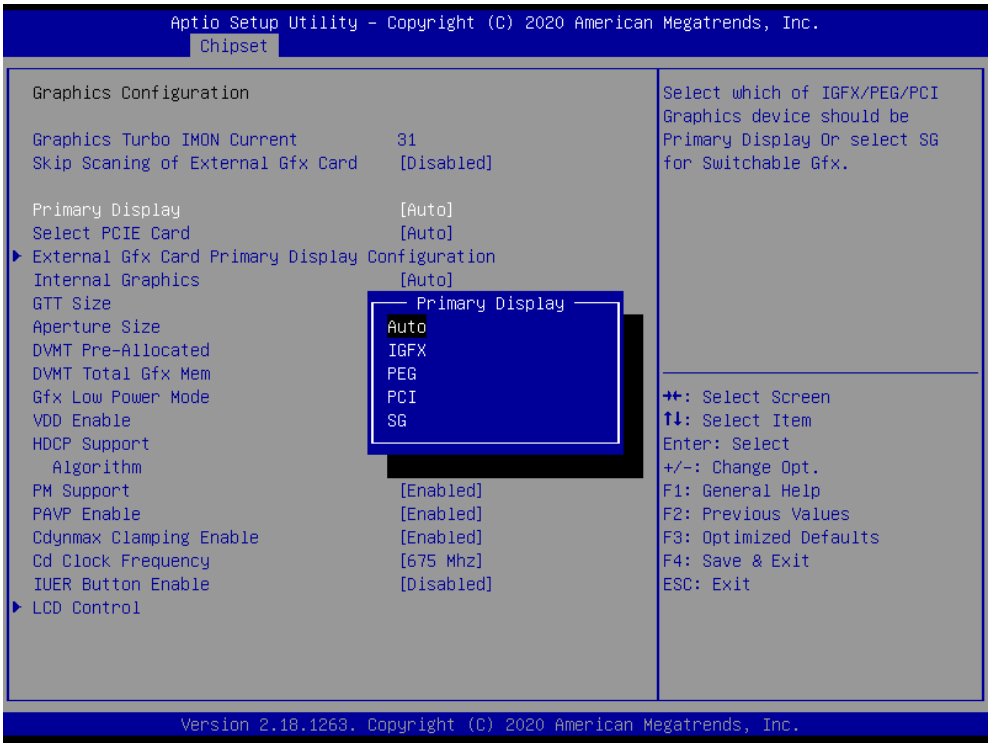
This item shows the information of the Memory Training Algorithms.



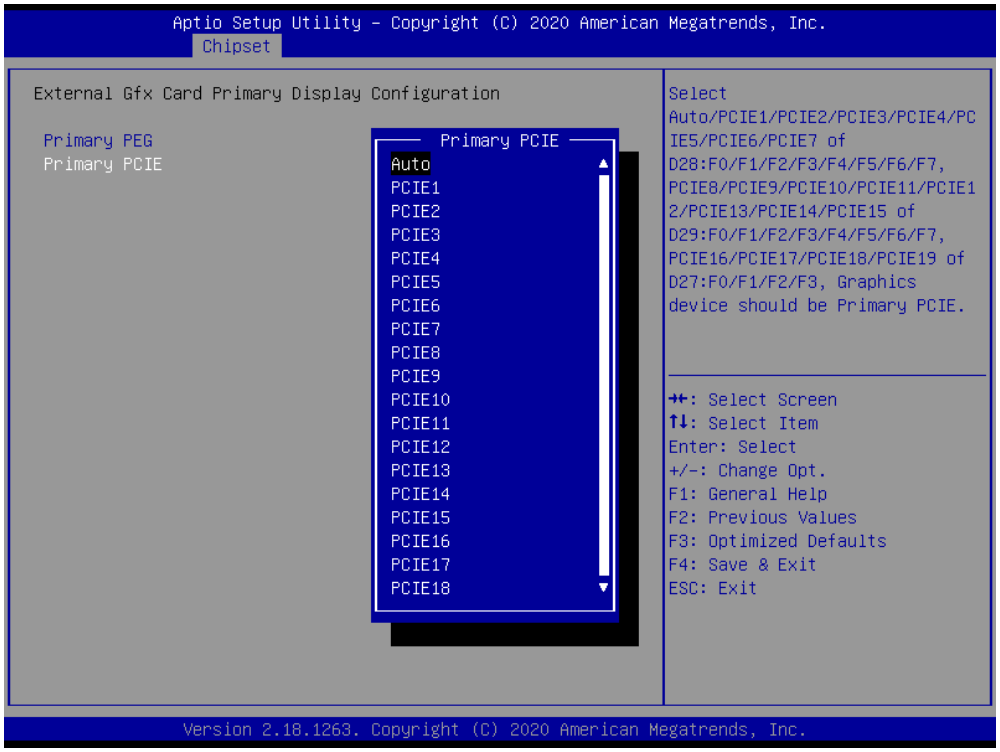


▶Graphics Configuration

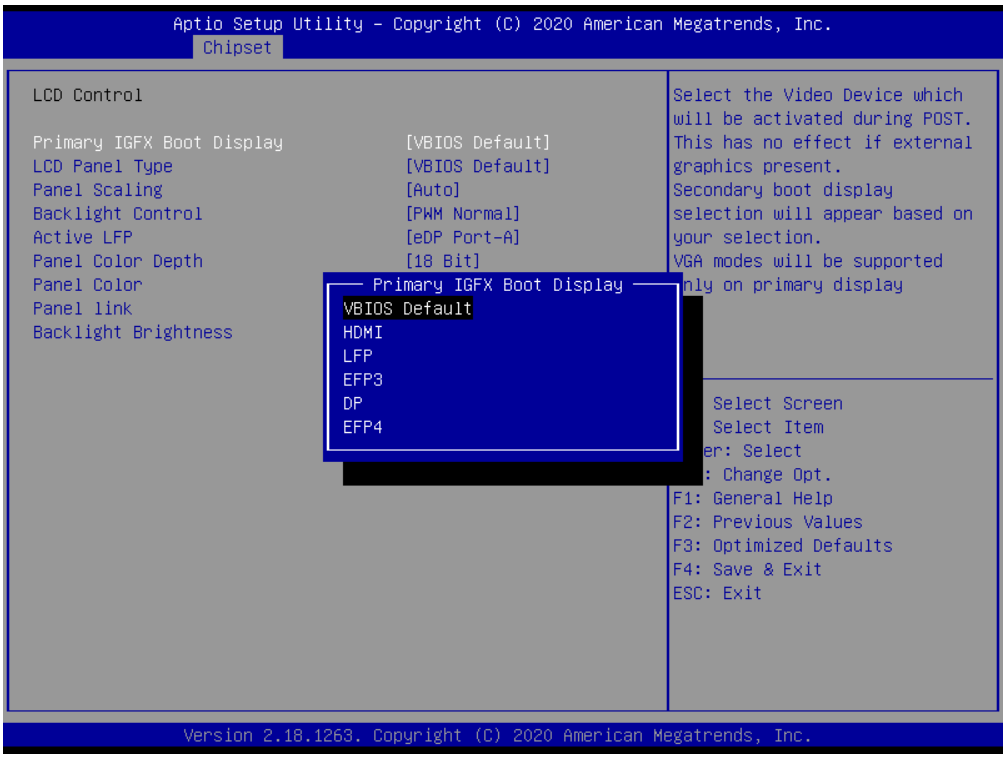
Image processing configuration, enter this sub-menu, there will be CPU-integrated graphics related settings.



▶External Gfx Card Primary Display Configuration



▶LCD Control

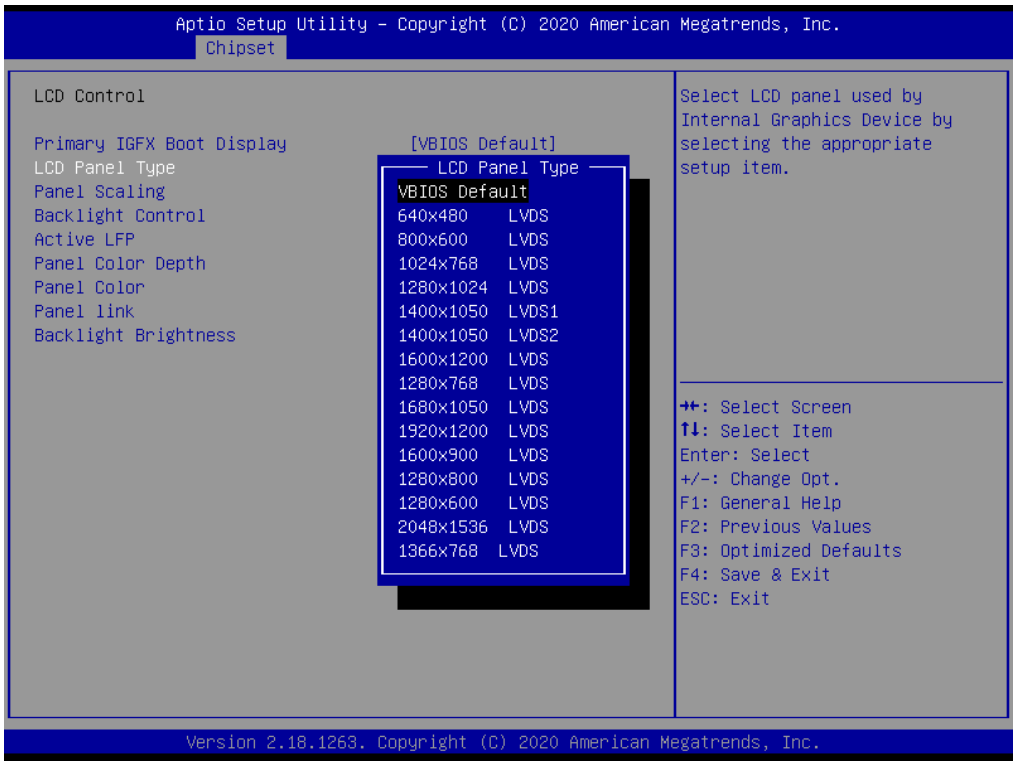


Primary IGFX Boot Display

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.

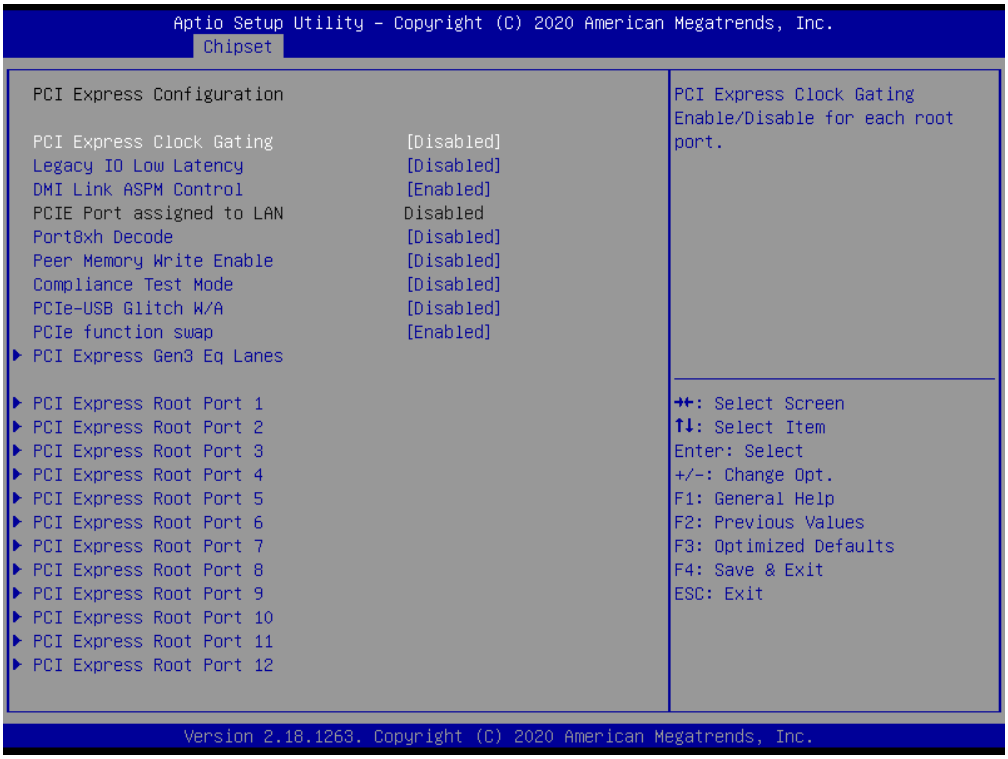


VT-d

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

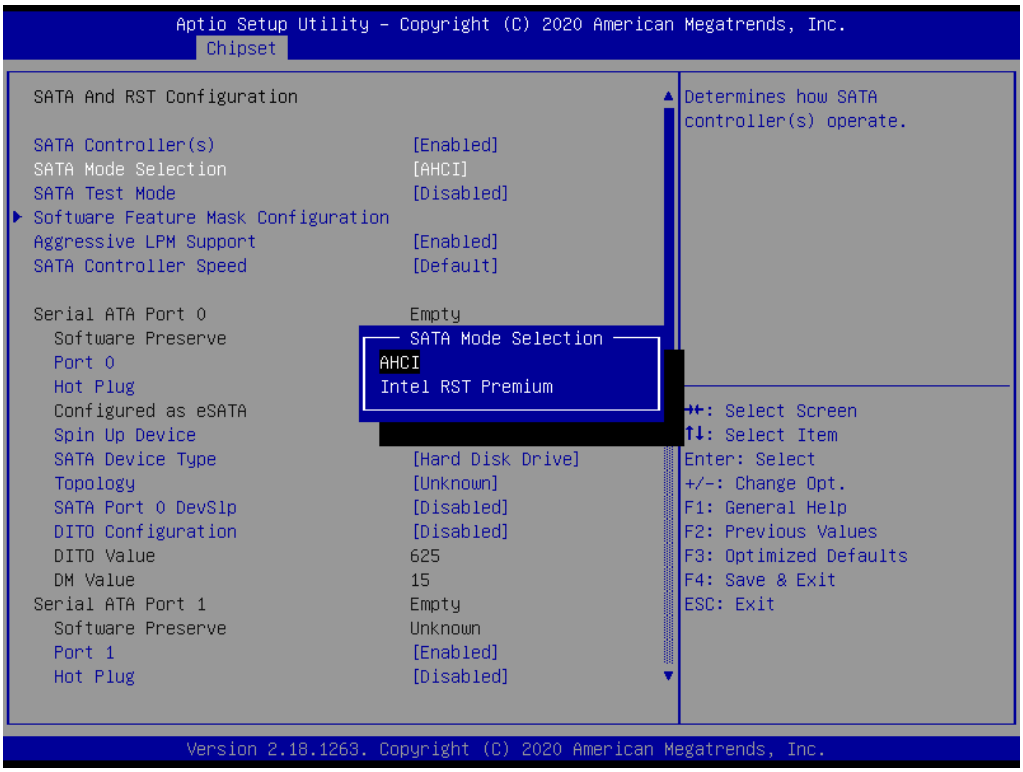
PCH-IO Configuration (South Bridge Configuration)

▶PCI Express Configuration

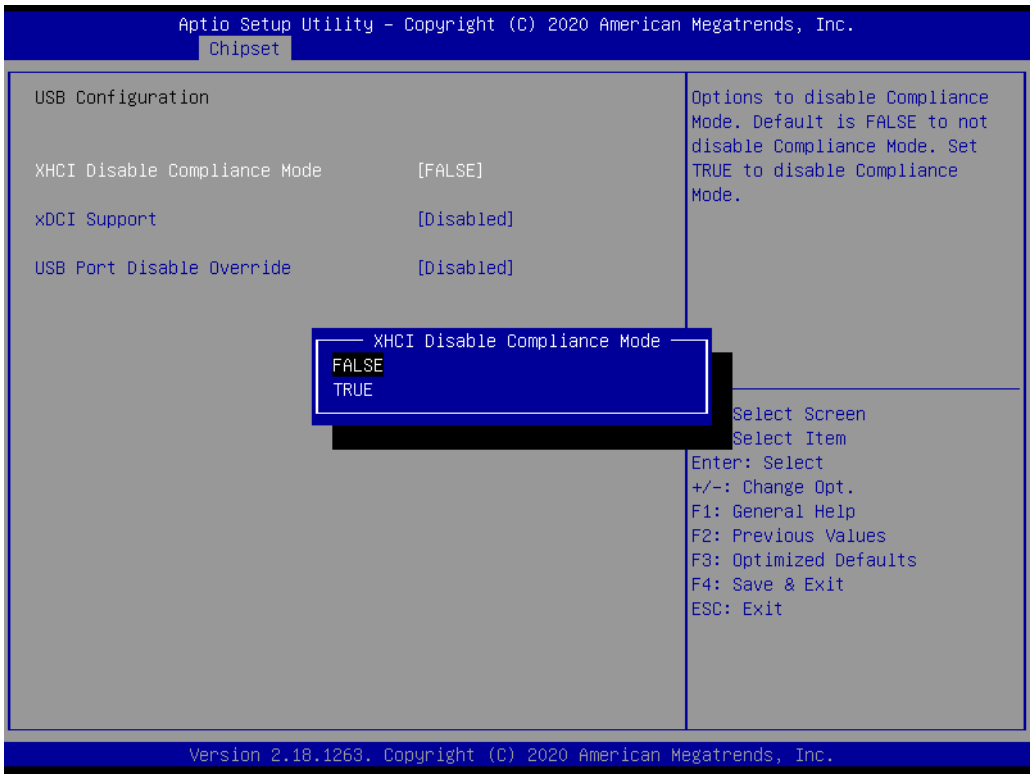


▶SATA And RST Configuration

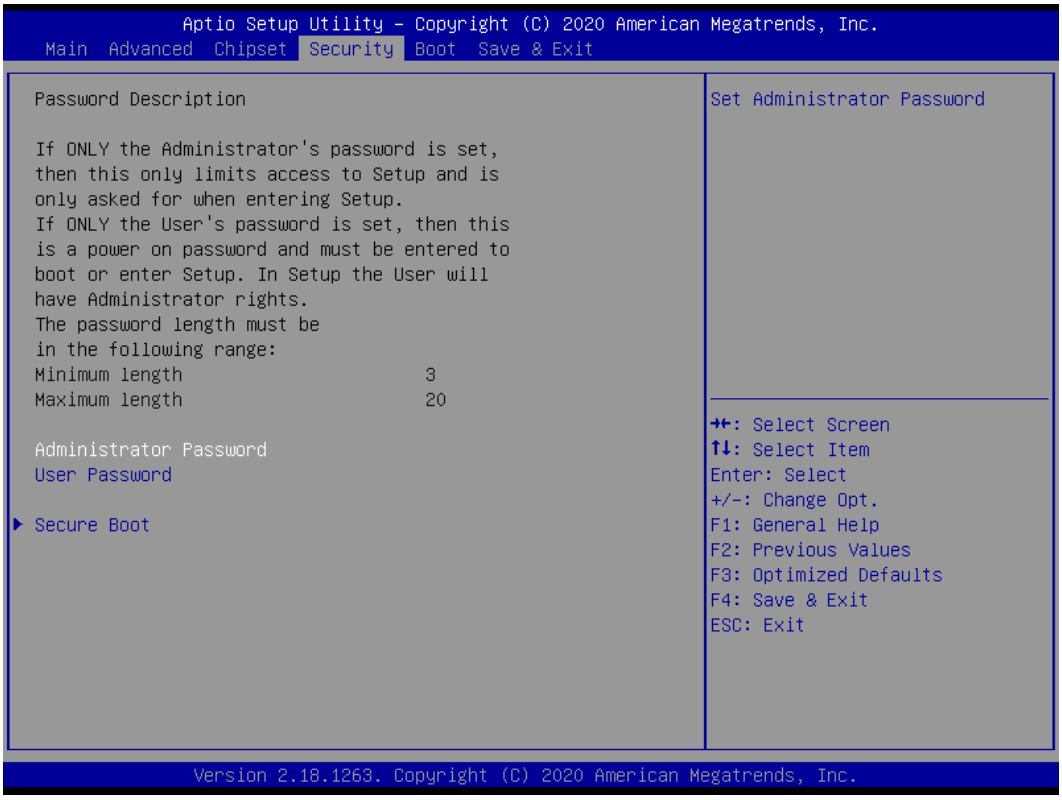
SATA hard disk and fast storage configuration, enter this sub-menu, there will be related settings of the hard disk.



▶USB Configuration



3.2.5 Security menu



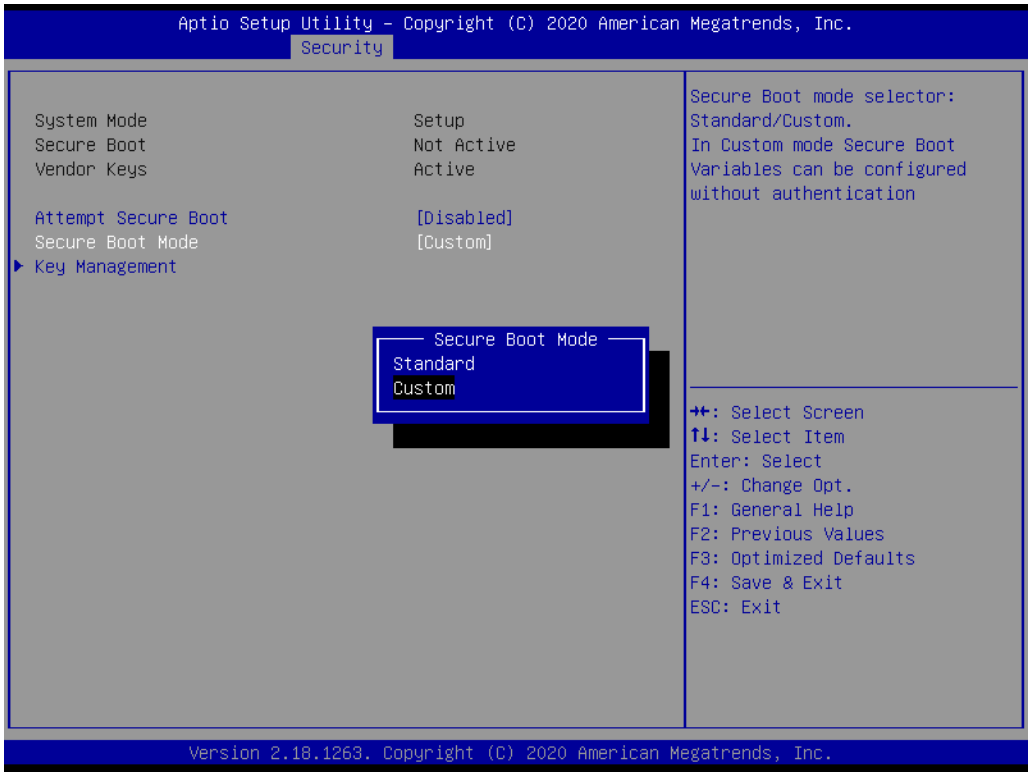
Administrator Password

This item sets the information of the administrator password.

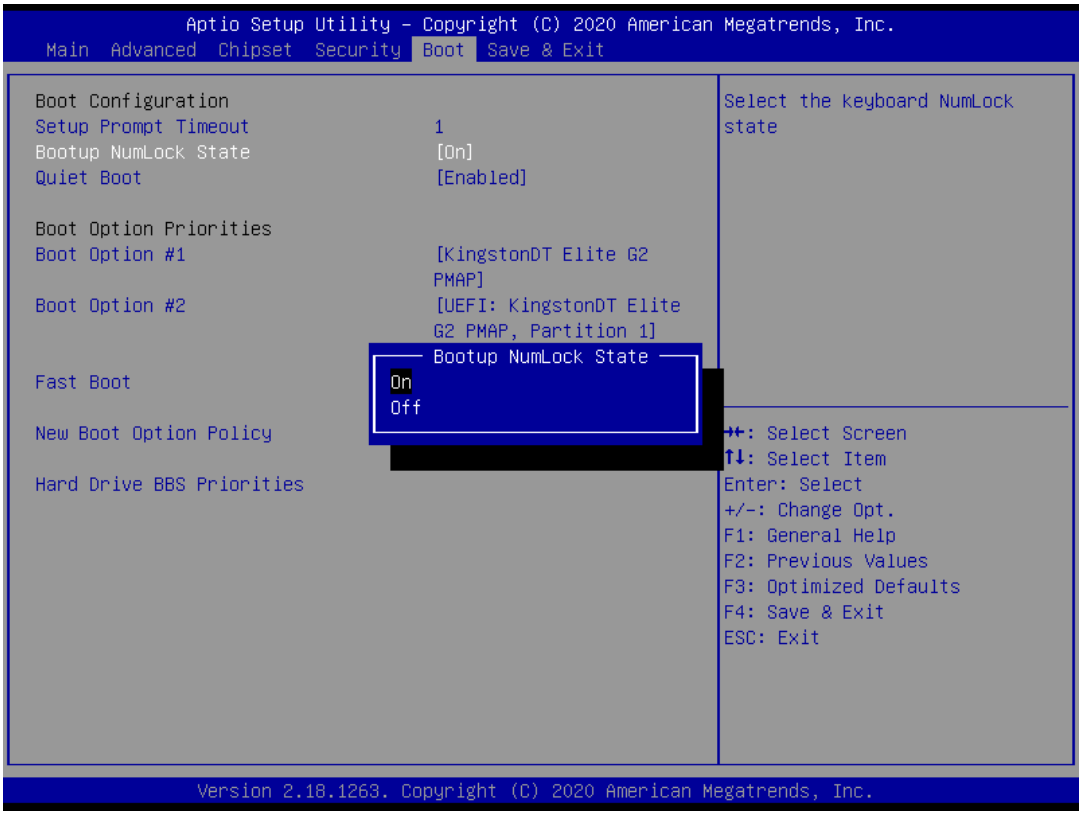
User Password

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.

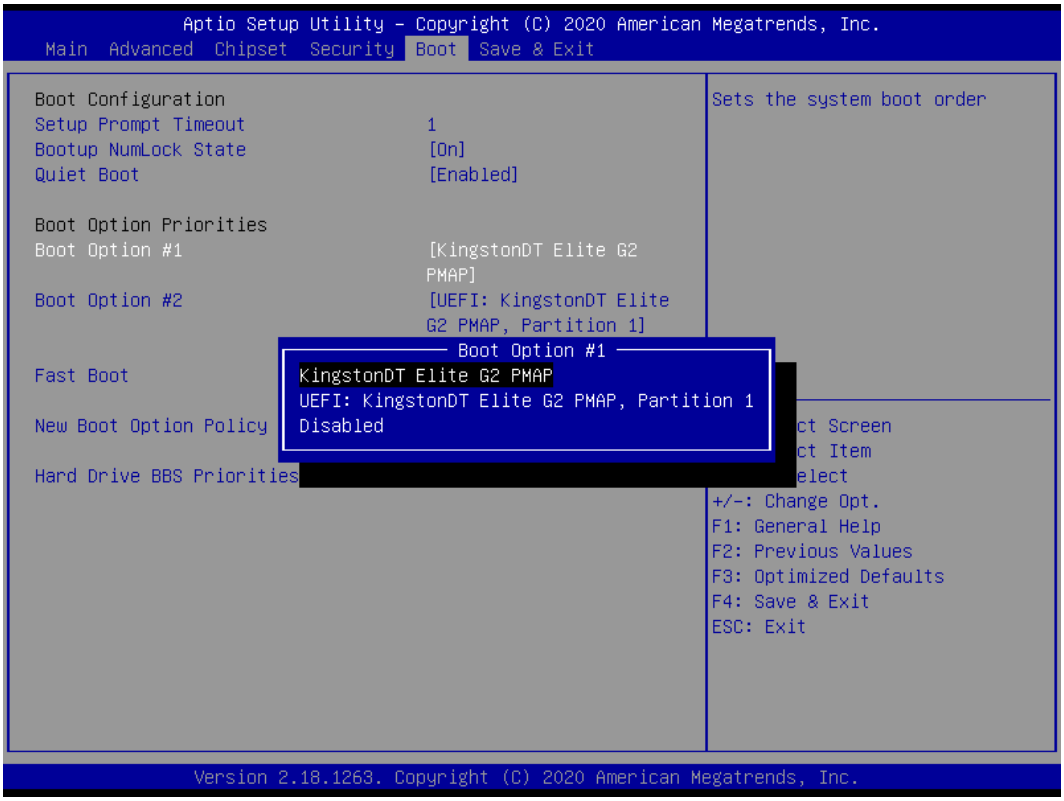
Quiet Boot

Switch full screen logo control

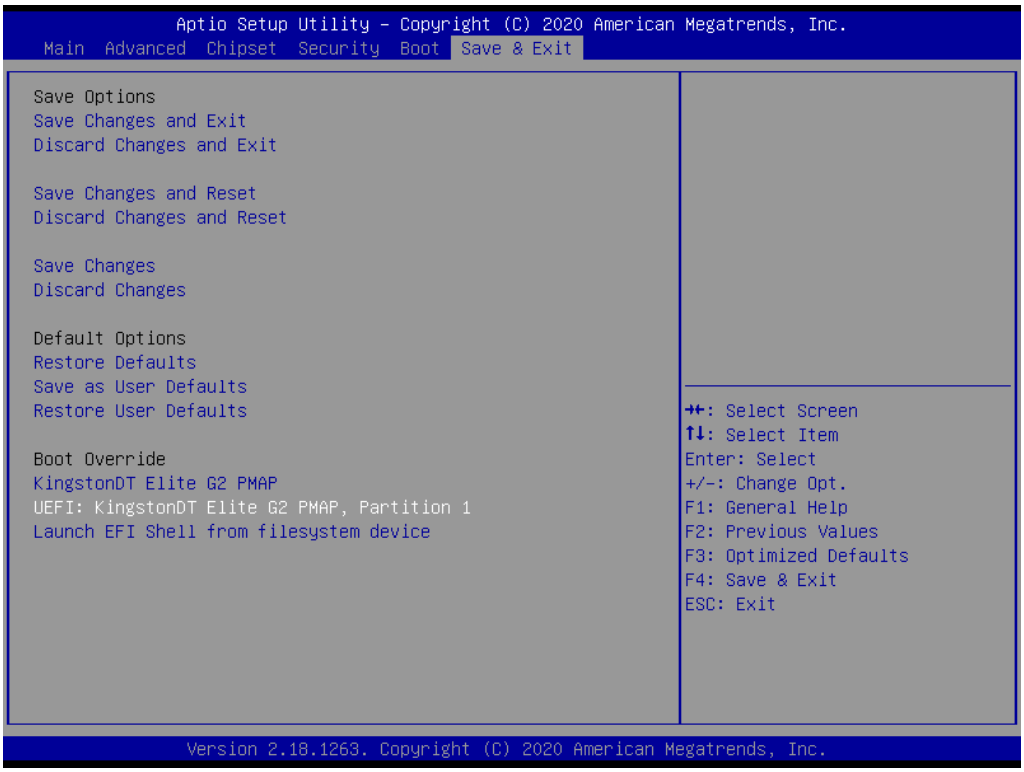
Fast Boot

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 ECN-A K92618 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 win7 drivers

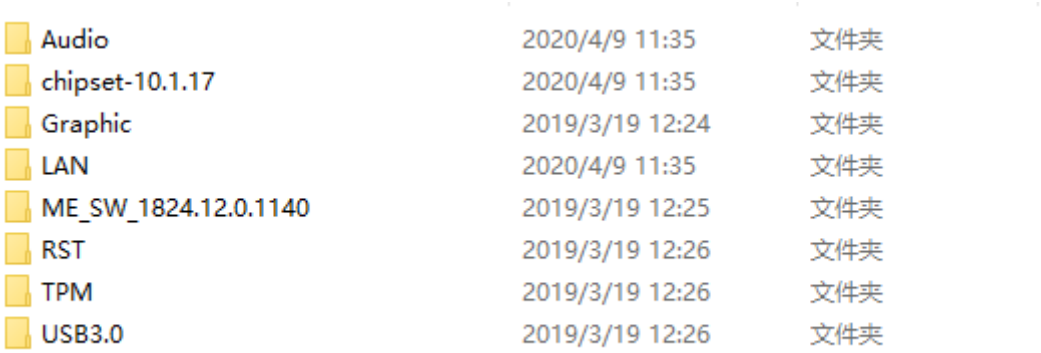


Figure 5.1 win7 drivers

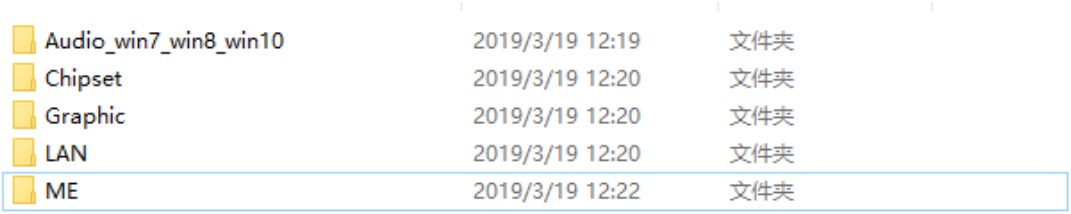


Figure 5.2 win10 drivers

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 STX-I907 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 STX-I907 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.

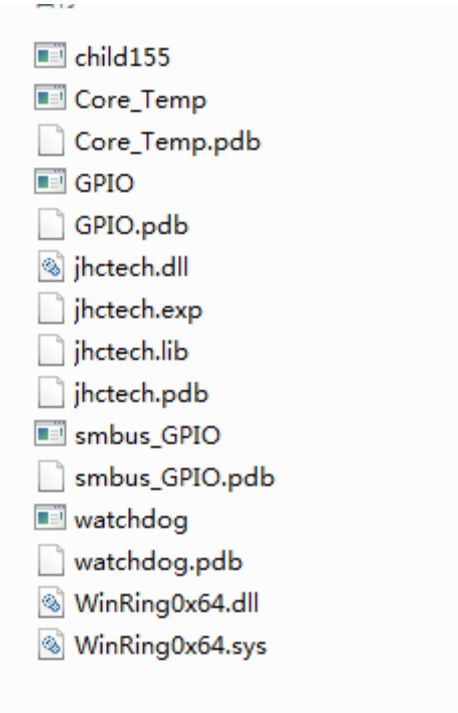


Figure 5.3

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

Note:

4 *

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

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*==*/

/*==

1 * voidSecond_gpio_mode(int port,int mode);

2 *function description:Subcard input and output mode settings

3 *parameter description:

Parameter:port fill in subcard GPIO number, 1or 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 pinis in output mode.

4*creation date：

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

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

2* voidSecond_gpio_output(int port,int level);

2* function description： high and low levelsoutput of thesubcard

3*parameter description:

Parameter:port fill in subcard GPIO number, 1 or 2

Level 8 bit of aByte, 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 whenthe pin is in output mode.

4*creation date：

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

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

1* intSecond_gpio_input(int port);

2 * function description： read the motherboard GPIO input level

3 * parameter description：

Return value： return a byte (8 bit), eachbit 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 subcard GPIO number, 1 or 2

Note:Thereadvalue is valid only when the pin is ininput mode

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.