# User's Manual

# KMDA-3820


Ver.A1.0

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# Version Note

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## Copyright



## Acknowledgements



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

## Product Warranty (2 years)

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

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

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

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

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

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

## Declaration of Conformity

### CE

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

### FCC Class A

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

## Technical Support and Assistance

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

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

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

# CONTENTS

CHAPTER 1

# General Information

## 1.1 Introduction

KMDA-3820 is an embedded industrial Box Computer of JHCTECH, with aluminum chassis and fanless design. It powered by the Gen. 6th Intel® Skylake-U/Gen. 7th Intel® Kabylake-U CPU. It supports DDR4 2133MHz memory, up to 16GB. It features two PCI or PCIe expansion slots, which can fulfill extensive requirements in various projects.

KMDA-3820 offers 1*HDMI, 1*DP, 1*VGA, 3 displays, 3*GbE LANs, 7*USB (1 inside for dongle), 4*COM, 8-bit DIO, 1*F-Mini PCIe with SIM slot, which supports 4G LTE/Wifi/BT. 1*mSATA, 1*2.5" SATA HDD/SSD are used for storage. It supports various optional expansion slots, including PCIe×4, PCIe×1, PCI. So, users can conveniently select expansion boards based on their requirements. Besides, DC 12~24V wide power input. It is widely used for Industry Automation, Intelligent Transportation (ITS), and Machine Vision.

## 1.2 Features

### Key Features

- Universal aluminum chassis, fanless design
- Intel® Skylake-U/Kabylake-U Celeron/Core I3/I5/I7 CPU
- 1*260-pin SODIMM, DDR4 2133MHz, up to 16GB
- 1*F-mini PCIe with SIM slot, support 4G LTE and Wifi/BT
- Optional 1*PCIe×4+1*PCIE×1 or 2*PCI or 1*PCI+1*PCI×4 expansion
- 1*2.5" SATA HDD/SSD bay, 1*mSATA for storage
- 1*DP, 1*HDMI, 1*VGA, 3 displays
- Realtek ALC662VD controller, 1*LINE OUT, 1*MIC
- 2*Intel I211AT, 1*Intel I219LM, supports Intel vPro technology
- 8-bit DIO, 4*USB3.0, 3*USB2.0(1 inside), 4*COM
- Support TPM 2.0
- 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 12~24V, CPU temperature show in LED
- Have-open L-shaped cover, easy to expand

*(Note: KMDA-3820-T00X has 2*LAN, which do not support VGA or TPM2.0)*

# 1.3 Specifications

## 1.3.1 General

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

**System Memory:** 1*DDR4 2133MHz SODIMM, Up to 16GB

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

**Serial Ports:** 2* RS232/422/485 DB9 male, 2*RS232 DB9 male

**USB:** 4*USB 3.0 Type A ports(front), 2*USB2.0 Type A ports(front), 1*USB 2.0 Type A port (inside)

**Expansion Interface:**

1*Full size Mini PCIe (PCIeX1+USB) with SIM slot

**Storage:**1* mSATA (SATA+USB2.0)

1*2.5" SATA HDD/SSD bay

## 1.3.2 Display

**Chipset:** Gen. 9th Intel® HD Graphics

**Display Memory:** Shared system memory

**Resolution:** HDMI 3940x2160@30Hz; DP 4096x2160@60Hz, VGA 1920x1200@60Hz

## 1.3.3 Ethernet

**Chipset:** 2*Intel® I211AT Ethernet controllers, 1* Intel® I219LM Ethernet controller

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

**Interface:** 3*RJ45

(Note: KMDA-3820-T00X has no Intel I219LM controller which supports 2 LANs)

## 1.3.4 Audio

**Chipset:** Realtek ALC662VD controller

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

## 1.3.5 Power Consumption

**Input Voltage:** DC 12~24V Input

**Power Consumption:** TDP 12/4.88A (I5-7200U CPU, 4GB RAM, 1TB HDD, with expansion card)

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

**Power Requirement:** Minimum power input DC 12V/5A

## 1.4 Environmental Specifications

**Operating temperature:**

-20 ~ 70° C (Fanless, SSD, Airflow)

-10 ~ 50° C (Fanless, HDD, Airflow)

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

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

**Vibration loading during operation:**

With SSD: 5.0 Grms, random, 5 ~ 500 Hz

With HDD:1.0 Grms, random, 5 ~ 500 Hz

**Shock during operation:**

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

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

**EMC:** CE, FCC Class A

## 1.5 3820 Series Specifications

| Model NO. | 3820-S00X | 3820-T00X |
|---|---|---|
| CPU | Intel® Skylake-U/Kabylake-U Celeron/Core I3/I5/I7 CPU | Intel® Skylake-U/Kabylake-U Celeron/Core I3/I5/I7 CPU |
| DDR4 | 1 | 1 |
| LAN | 3 | 2 |
| USB | 4*USB3.0 3*USB2.0 | 4*USB3.0 3*USB2.0 |
| COM | 4 | 4 |
| PS/2 | Keyboard & Mouse | Keyboard & Mouse |
| DIO/bit | 8-bit | 8-bit |
| Display | 1*HDMI, 1*DP, 1*VGA | 1*HDMI, 1*DP |
| Audio | 1*Line Out, 1*MIC | 1*Line Out, 1*MIC |
| Expansion | 1*mini-PCIe, 1*mSATA 2*PCI/1*PCIeX4+1*PCIeX1/1*PCI+1*PCIeX4 slots | 1*mini-PCIe, 1*mSATA 2*PCI/1*PCIeX4+1*PCIeX1/1*PCI+1*PCIeX4 slots |

## 1.6 Mechanical Specifications

The KMDA-3820 new industrial design Box computer of JHCTECH, consists of a JHC SBC(STX-I905), a sub-card (ECD-9050), and an expansion card ECX-238 or ECI-239.

The specific combination is as follows:

| Model No. | KMDA-3820-S00X | KMDA-3820-T00X |
|---|---|---|
| STX-I905-S00X | ✓ | × |
| STX-I905-T001 | × | ✓ |
| ECD-9050 | ✓ | ✓ |
| ECX-238/ECI-239 | ✓ | ✓ |

### Main Board Front (STX-I905)

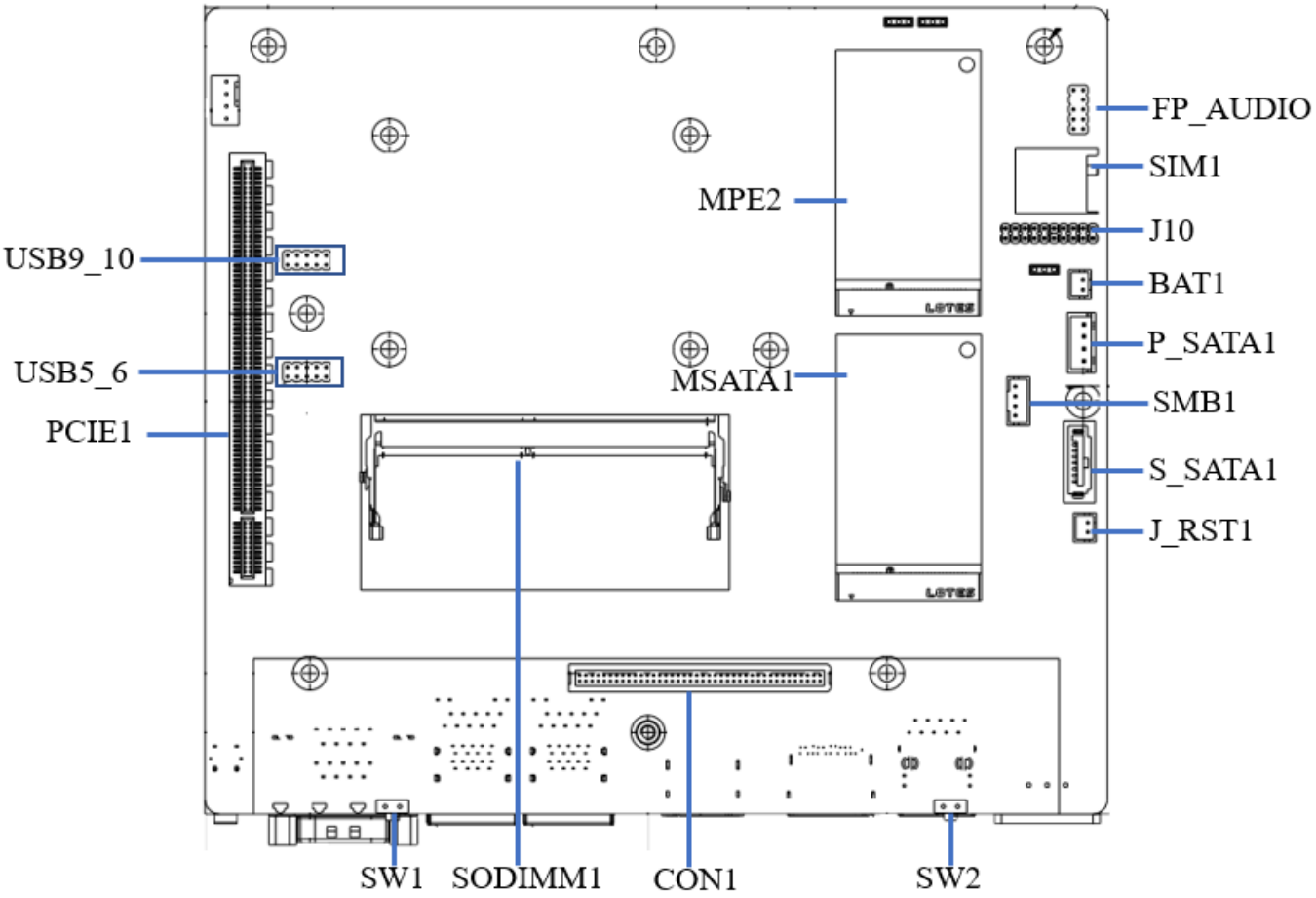



Figure 1.1

## Main Board Rear (STX-I905)

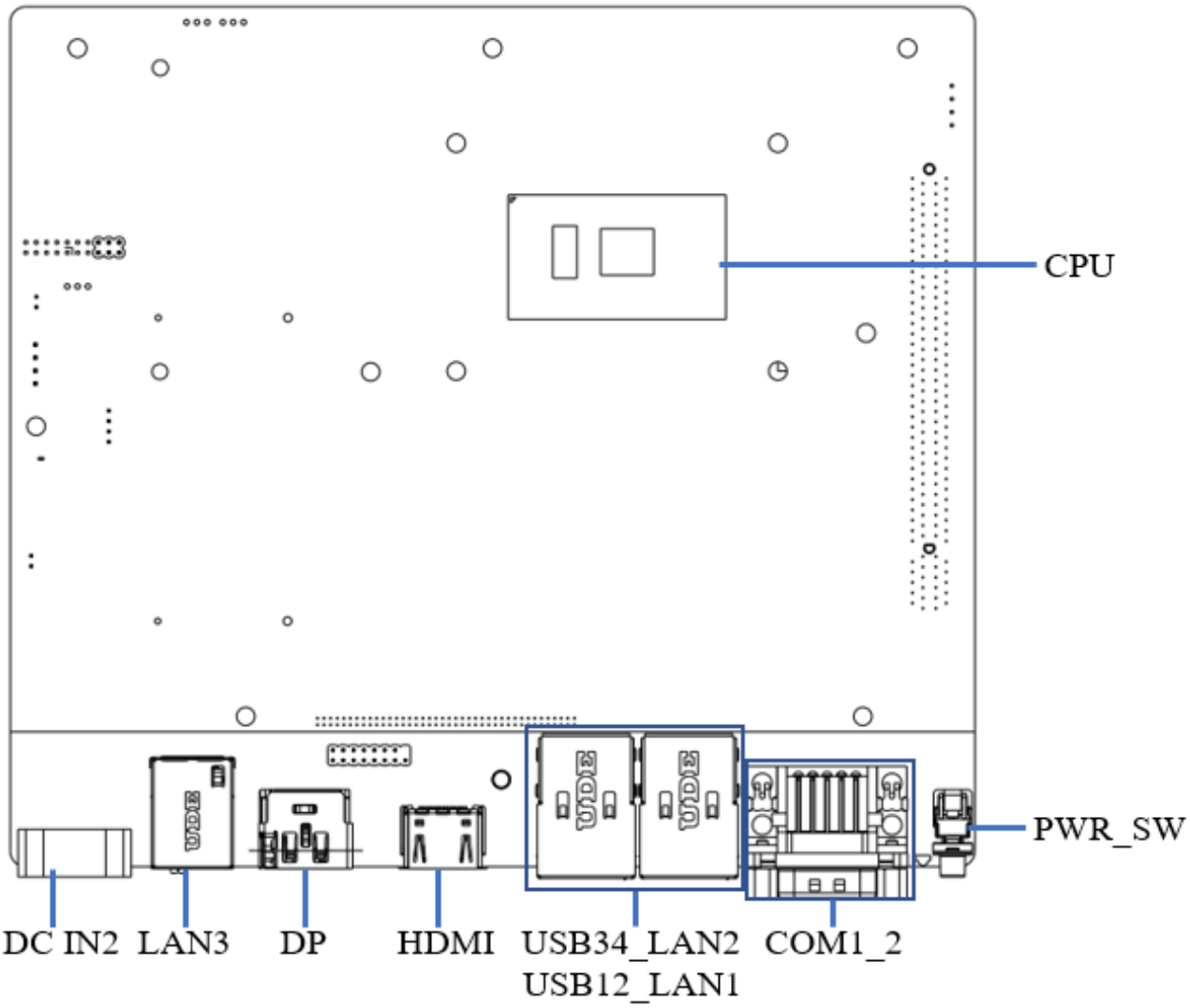



Figure 1.2

## Sub-card (ECD-9050)

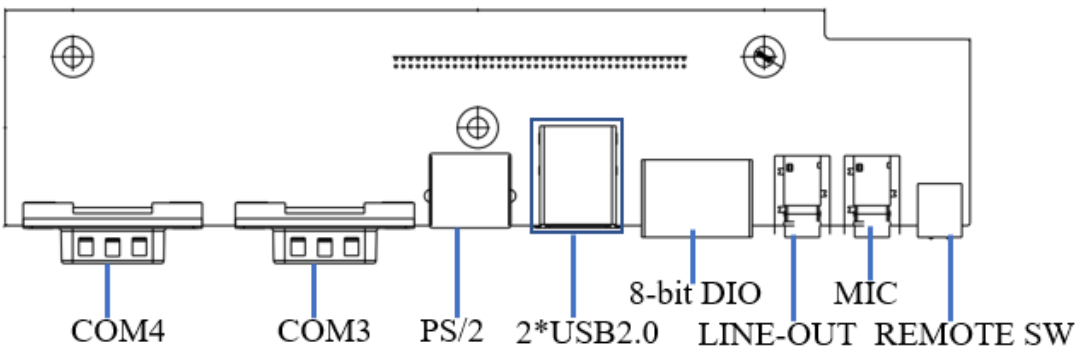



Figure 1.3

## Expansion card (ECX-238)

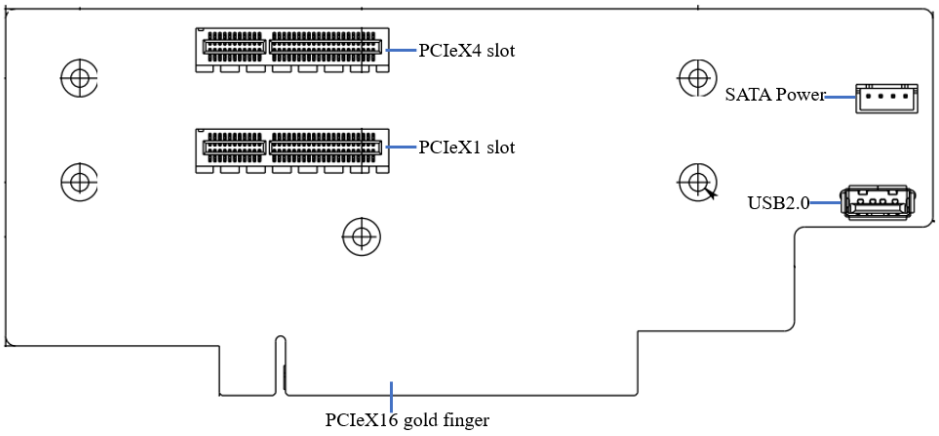



Figure 1.4

## Expansion card (ECI-239)

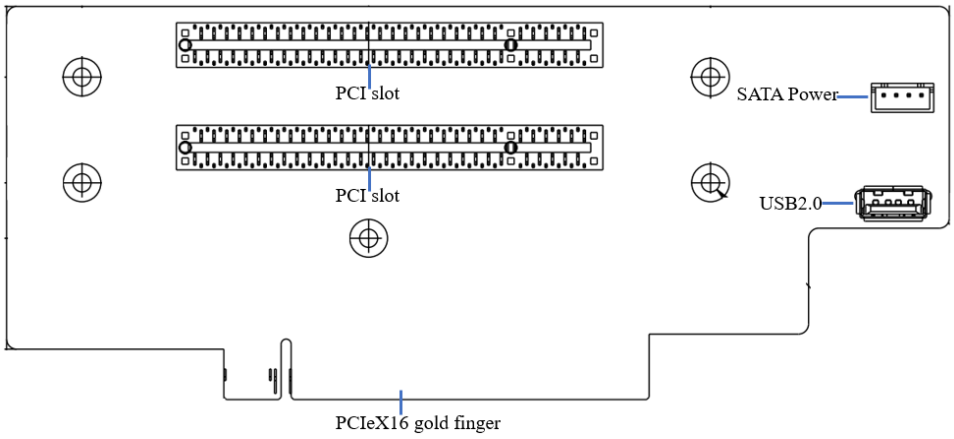



Figure 1.5

**KMDA-3820 Dimension:** **Unit: mm**

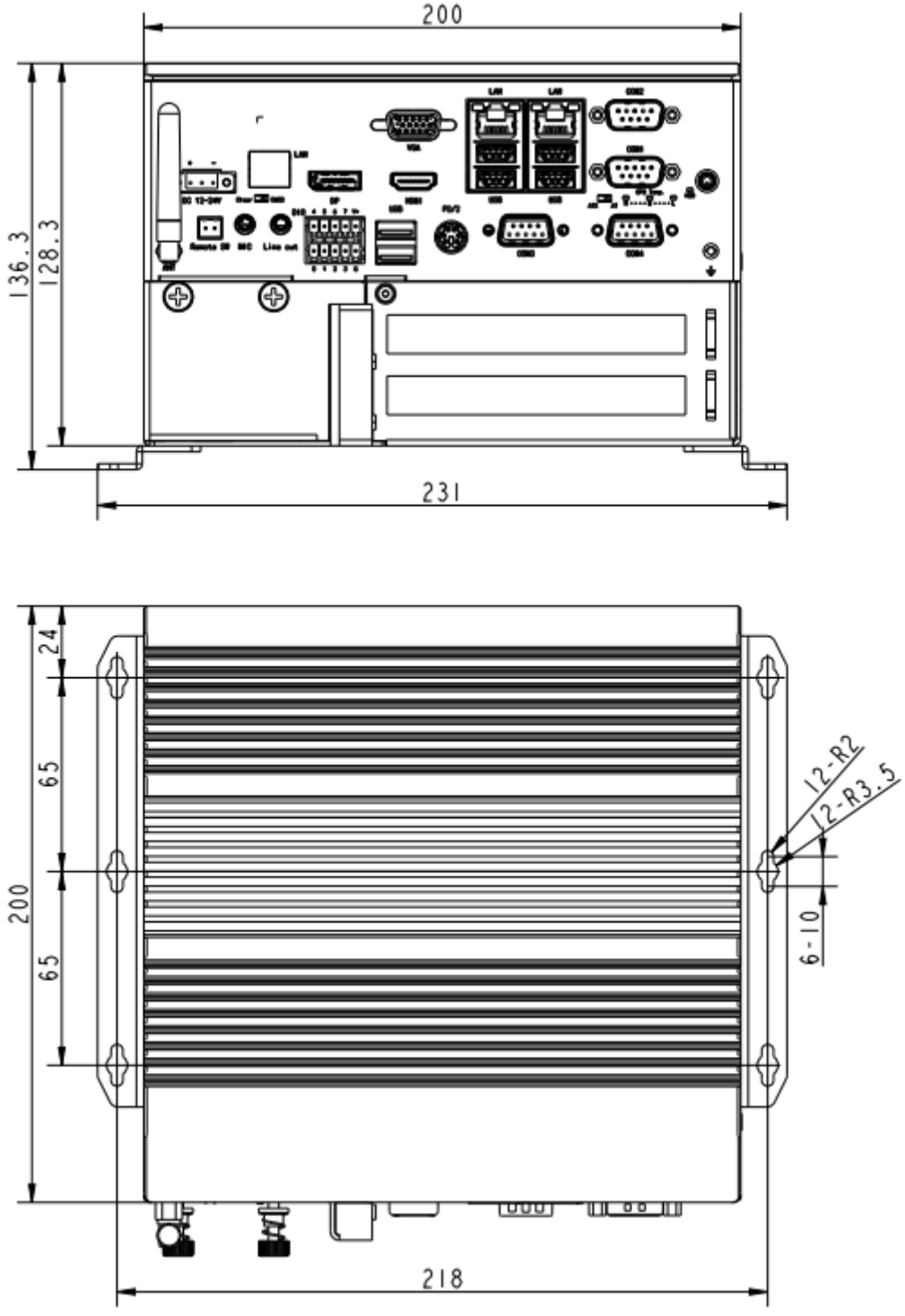



Figure 1.6

CHAPTER 2

# Hardware Installation

## 2.1 Introduction

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

The KMDA-3820 new industrial design Box computer of JHCTECH, consists of a JHC SBC(STX-I905), a sub-card (ECD-9050) and an expansion card ECX-238/ECI-239.

The specific combination is as follows:

| Model No. | KMDA-3820-S00X | KMDA-3820-T00X |
|---|---|---|
| STX-I905-S00X | ✓ | × |
| STX-I905-T001 | × | ✓ |
| ECD-9050 | ✓ | ✓ |
| ECX-238/ECI-239 | ✓ | ✓ |

## 2.2 Jumpers and Connectors

### 2.2.1 Setting Jumpers

You can configure your KMDA-3820 to match the needs of your application by setting the jumpers or switches. A jumper is the simplest kind of electrical switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To —close "a jumper, you connect the pins with the clip". To —open "a jumper you remove the clip". Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either pins 1 and 2 or pins 2 and 3.

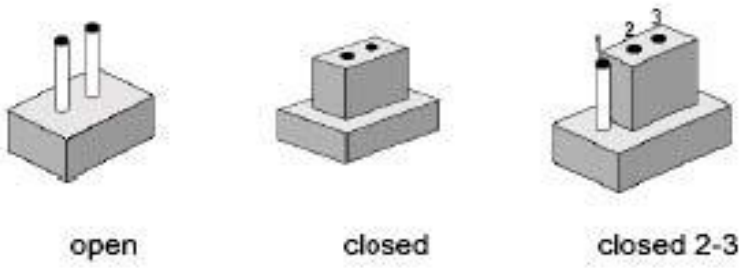



Figure 2. 1

The jumper settings are schematically depicted in this manual as follows:

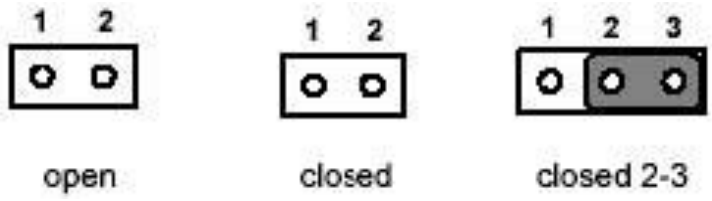



Figure 2. 2

A pair of needle-nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

## 2.3 Jumpers and Switches Location

The KMDA-3820 Box Computer has a number of jumpers or 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 jumpers and Switches:

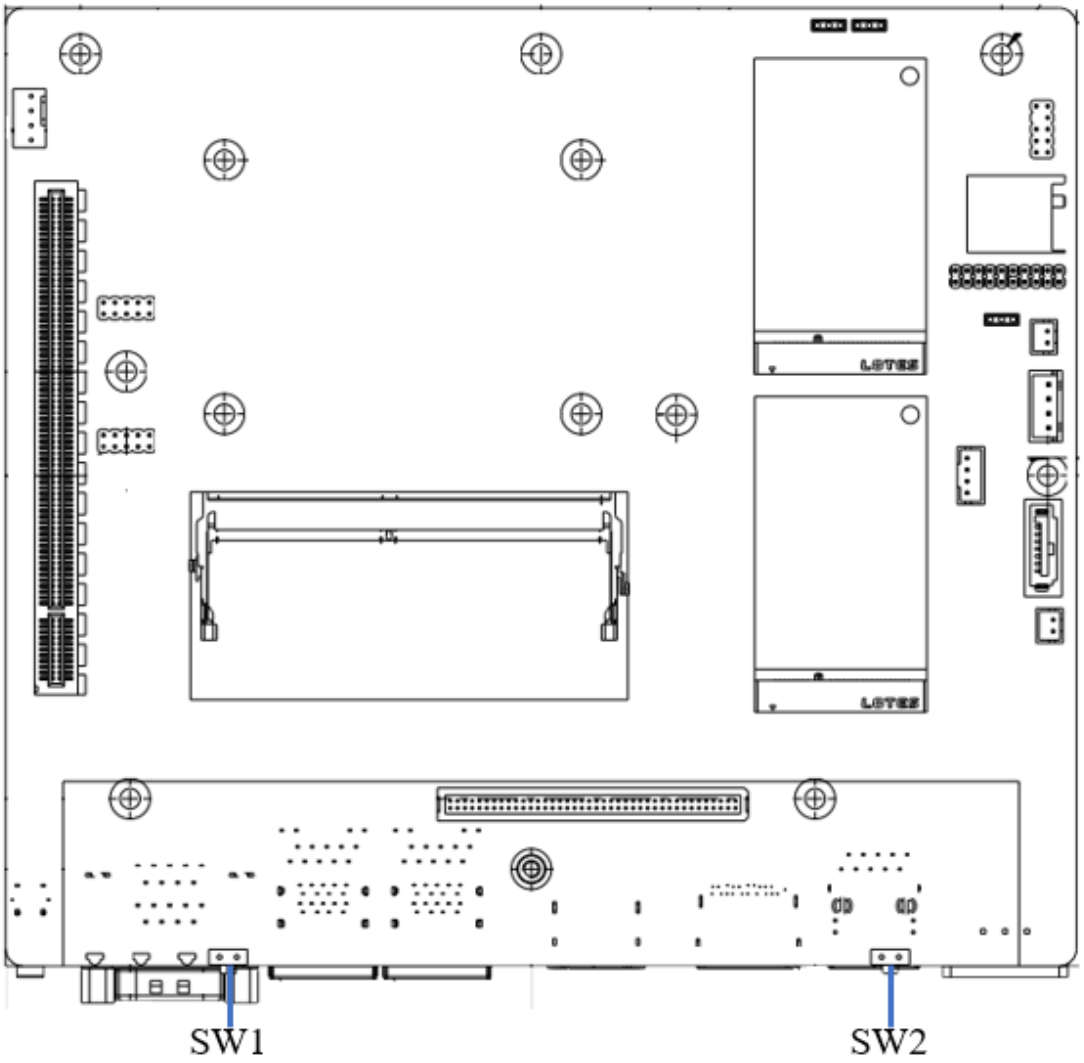



Figure 2. 3

## Jumpers/Switches

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

### 2.3.1 SW2-Clear CMOS Data

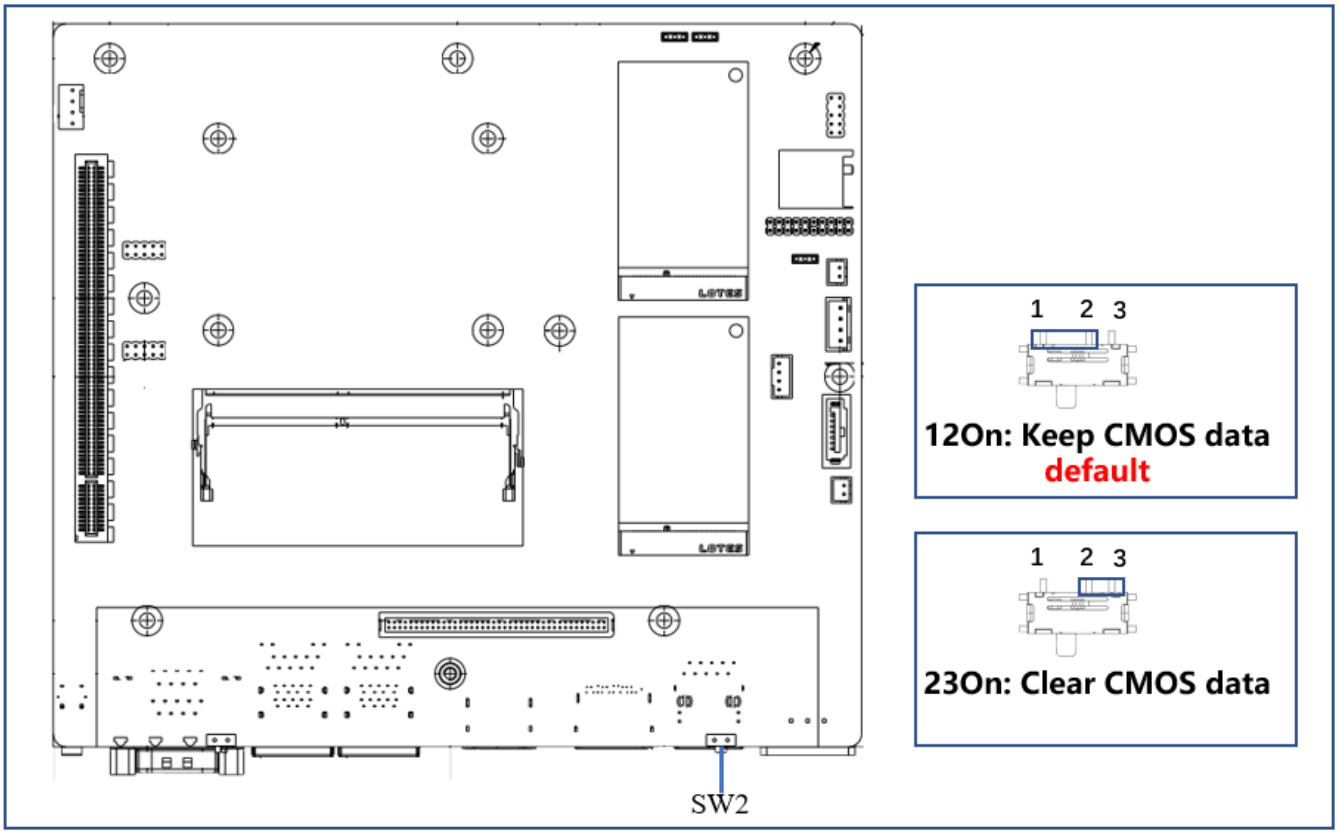



Figure 2. 4

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. Set CMOS pins 2 and 3 to On. Wait for a few seconds and set CMOS back to its default setting, pins 1 and 2 On.

3. Now plug the power cord and power-on the system.

### 2.3.2 SW1- AT/ATX Power on mode selection

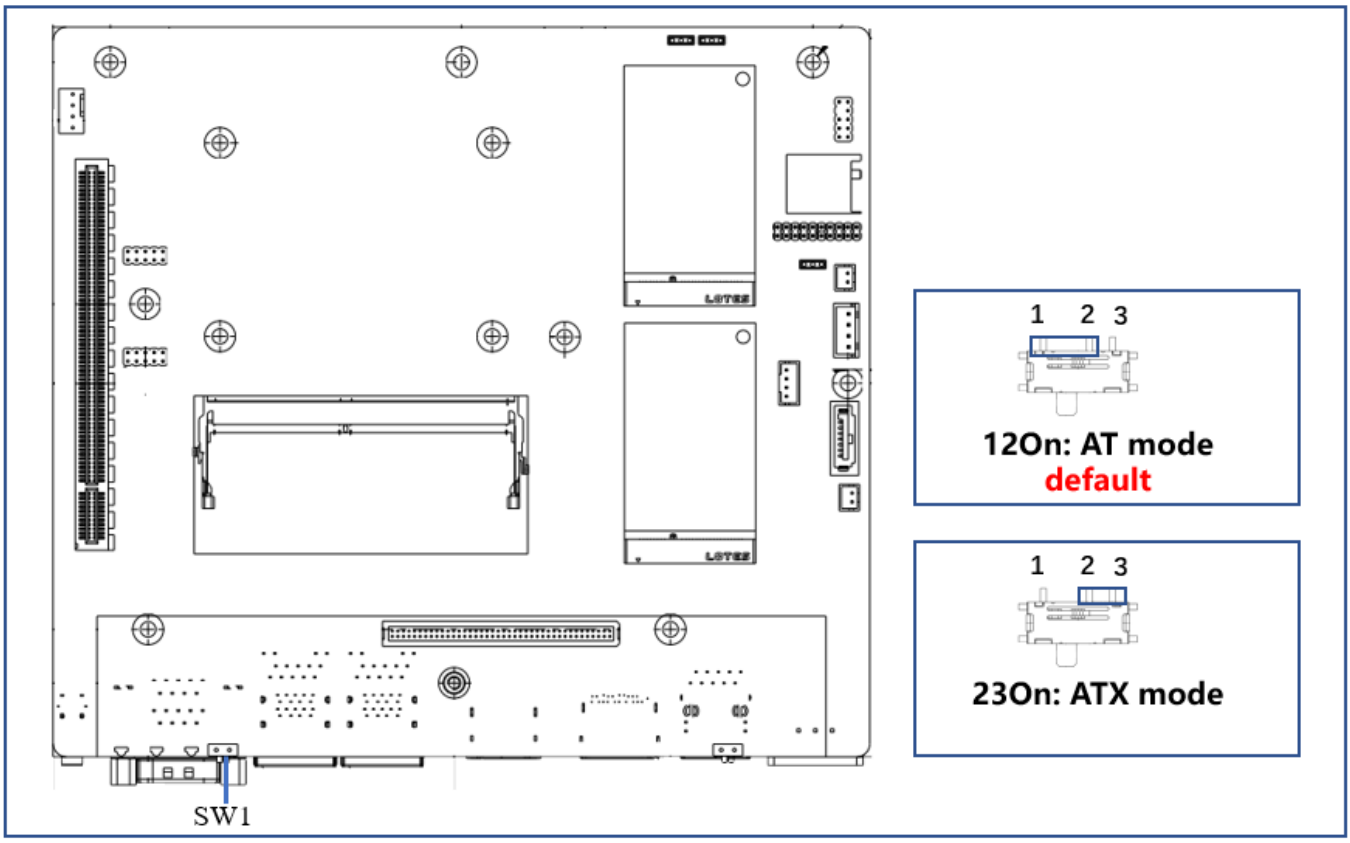



Figure 2. 5

The KMDA-3820 provides a 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.

## 2.4 I/O/Button/LED Indication

NOTE: I/O Indication takes KMDA-3820-S00X for example, Other sub-series products only have different number of interfaces.

Front view:

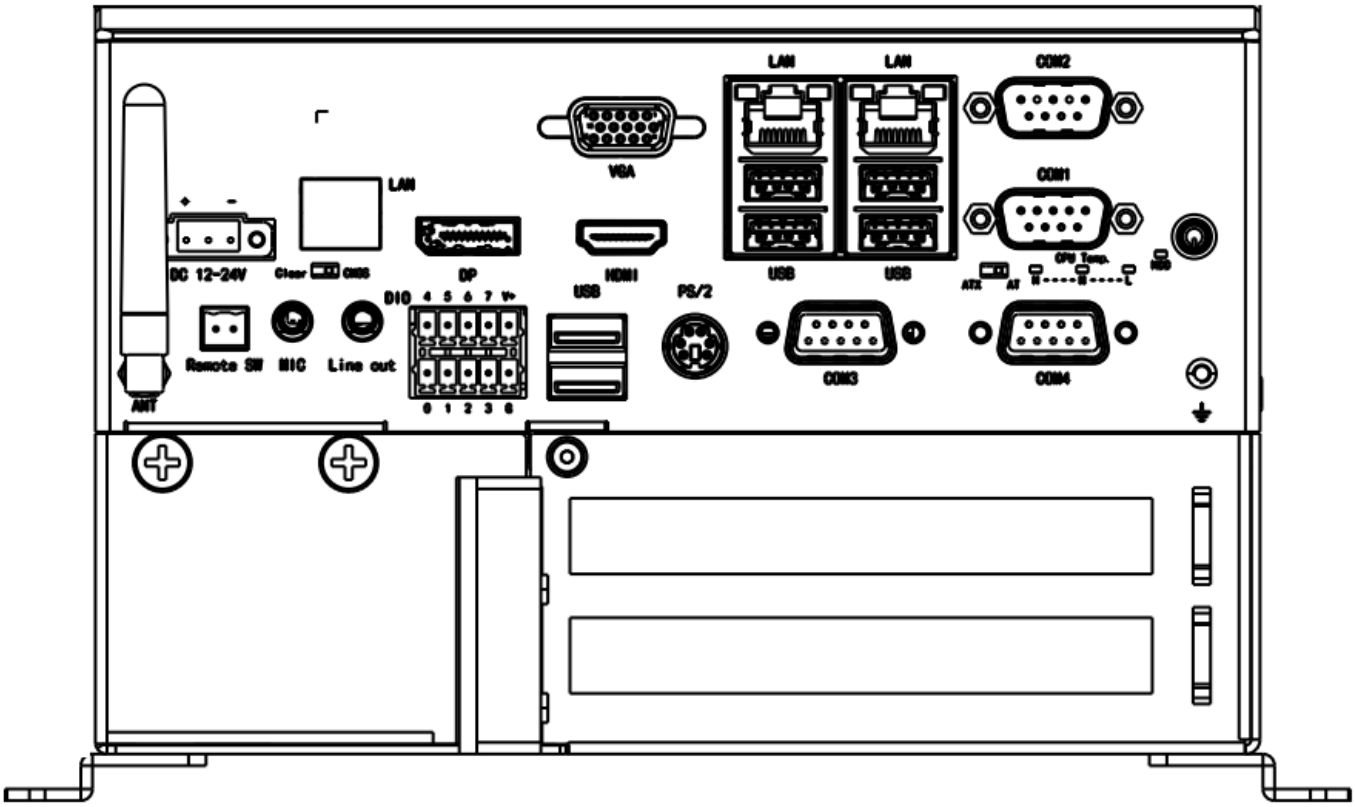



Figure 2. 6

Rear view:

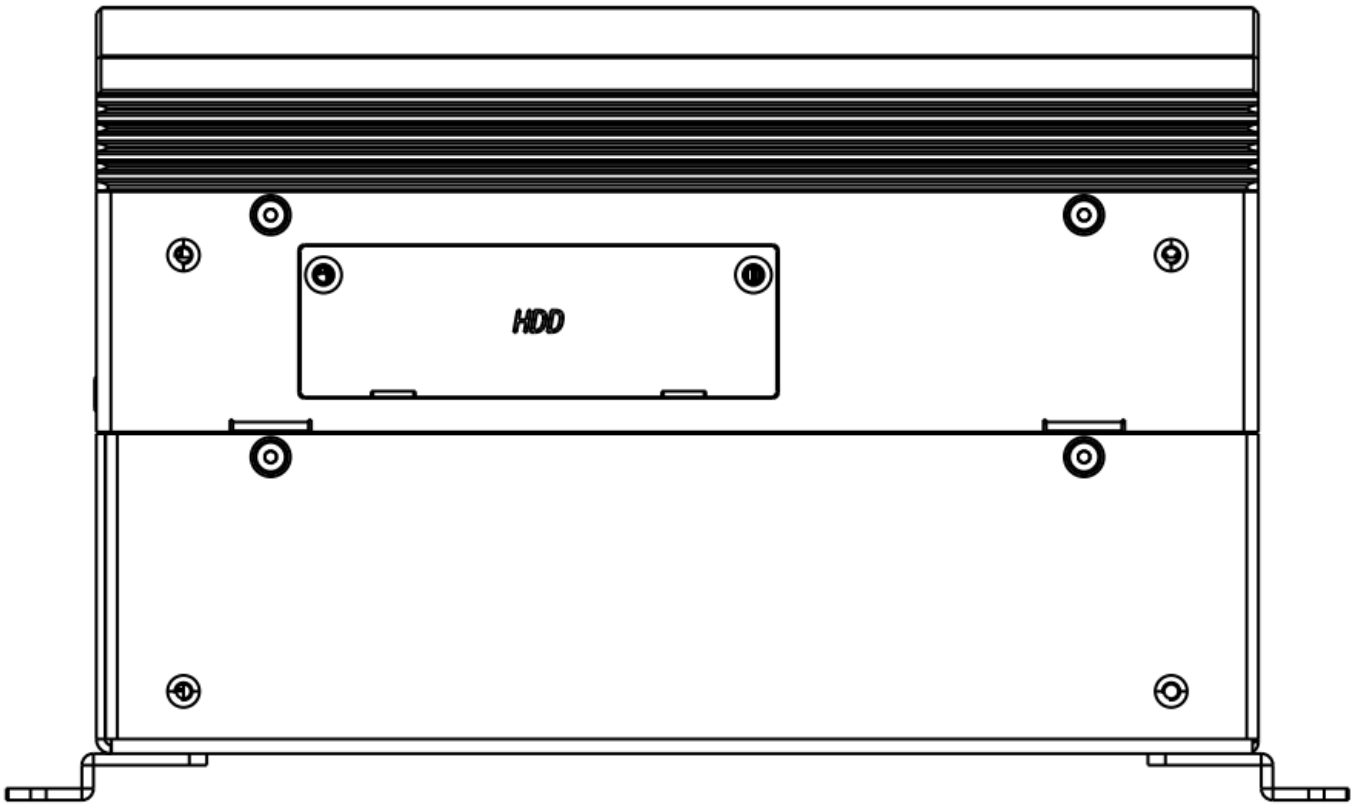



Figure 2. 7

### 2.4.1 Ethernet Connector (LAN)

The KMDA-3820-S00X is equipped with 2 Intel I211AT chips and 1 Intel I219LM for 10/100/1000Mbps Ethernet controllers. The product provides 3*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.

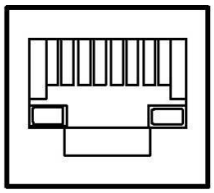


Figure 2. 8

| 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) |

(Note: KMDA-3820-T00X only has 2 Intel I211AT chips which provides 2*RJ45)

### 2.4.2 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-3820 provides 4*USB3.0, 3*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.

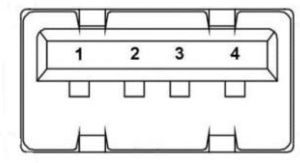



Figure 2. 9

| 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 USB3.0 pin assignments.

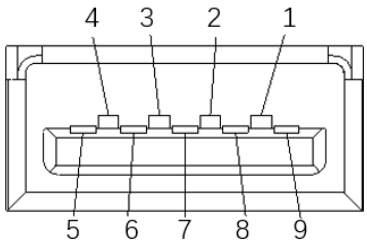



Figure 2. 10

| Table 2.3: USB3.0 Port Pin Assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| 1 | VBUS | 6 | StdA_SSRX+ |
| 2 | D- | 7 | GND_DRAIN |
| 3 | D+ | 8 | StdA_SSTX- |
| 4 | GND | 9 | StdA_SSTX+ |
| 5 | StdA_SSRX- | Shell | Shield |

### 2.4.3 HDMI

The KMDA-3820 provides a high-resolution HDMI display port. They can support the most resolution up to 3940*2160@30Hz.

Table 2.4 for HDMI pin assignments.

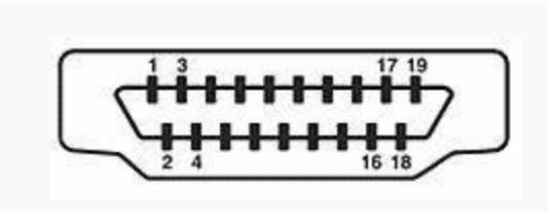



Figure 2. 11

| 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 | | |

## 2.4.4 DP

The KMDA-3820 provides a high-resolution DP ports, it supports the most resolution up to 4096*2160@60Hz.

Table 2.5 for DP pin assignments.

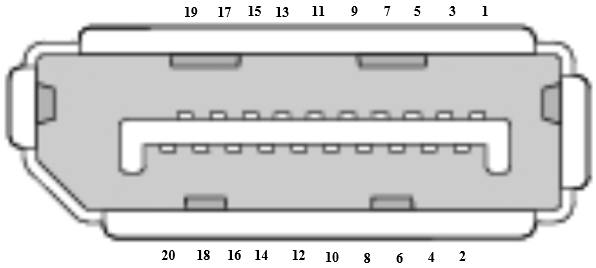



Figure 2. 12

| 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 | | |

## 2.4.5 VGA

The KMDA-3820 provides a VGA ports via a D-sub 15-pin connector, it supports the most resolution up to 1920*1200@60Hz.

Table 2.6 for DP pin assignments.

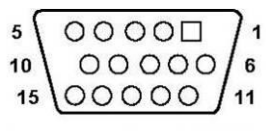



Figure 2. 13

| Table 2.6: VGA port pin assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| 1 | RED | 9 | VCC |
| 2 | GREEN | 10 | GND |
| 3 | BLUE | 11 | NC |
| 4 | NC | 12 | SDA |
| 5 | GND | 13 | HS |
| 6 | GND | 14 | VS |
| 7 | GND | 15 | SCL |
| 8 | GND | | |

## 2.4.6 DIO Connector

The KMDA-3820 provides 8-bit DIO by 2*5Pin 8-bit DIO terminal connector in rear. Table 2.7 for Pin assignments.

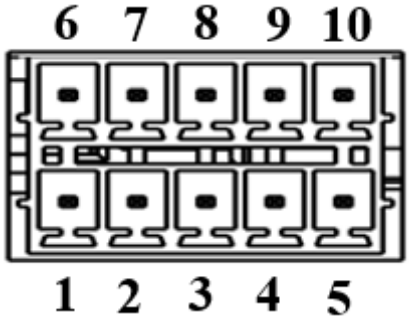



Figure 2. 14

| Table 2.7: 8-bit DIO Pin Assignments | | | |
|---|---|---|---|
| Pine | DIO Signal | Pin | DIO Signal |
| 1 | GP70 | 2 | GP71 |
| 3 | GP72 | 4 | GP73 |
| 5 | GND | 6 | GP74 |
| 7 | GP75 | 8 | GP76 |
| 9 | GP77 | 10 | +5V |

## 2.4.7 Power Input Connector (DC-IN)

The KMDA-3820 provides a wide power input (DC 12~24V) by a 3-pin terminal.

Table 2.8 for pin assignments.

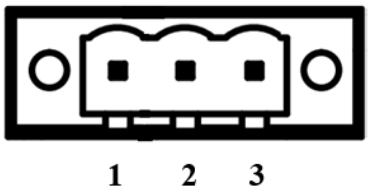



Figure 2. 15

| Table 2.8:DC-IN port pin assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| 1 | 12~24V | 2 | NC |
| 3 | GND | | |

## 2.4.8 COM1/2 Connector

The KMDA-3820 provides 2 serial ports of COM1/2 by 2*D-sub 9-pin connectors. COM1/2 can be configured as RS232、RS422 or RS485 by BIOS setup. Table 2.9 for pin assignments.

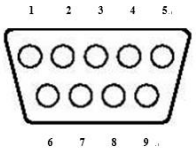



Figure 2. 16

| Table 2.9: COM1/2 Serial Ports Pin Assignments | | | |
|---|---|---|---|
| Pin | RS-232 Signal | RS-422 Signal | RS-485 Signal |
| 1 | DCD | TX- | DATA- |
| 2 | RxD | TX+ | DATA+ |
| 3 | TxD | RX+ | NC |
| 4 | DTR | RX- | NC |
| 5 | GND | GND | GND |
| 6 | DSR | NC | NC |
| 7 | RTS | NC | NC |
| 8 | CTS | NC | NC |
| 9 | RI | NC | NC |

## 2.4.9 COM3/4 Connector

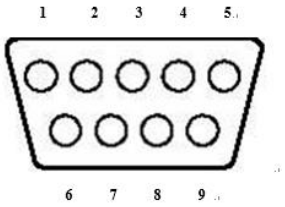



Figure 2. 17

COM3/4 are only for RS232. The Pin assignments are as follows:

| Table 2.10: COM3/4 Serial Port Pin Assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| 1 | DCD | 2 | RxD |
| 3 | TxD | 4 | DTR |
| 5 | GND | 6 | DSR |
| 7 | RTS | 8 | CTS |
| 9 | RI | | |

## 2.4.10 PS/2 Connector

The KMDA-3820 provides a PS/2 connector which is used to connect keyboard or mouse. Table 2.11 for pin assignments.

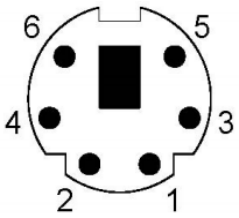



Figure 2. 18

| Table 2.11:PS/2 Pin Assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| 1 | SIO_KDAT | 4 | VCC |
| 2 | SIO_MDAT | 5 | SIO_KCLK |
| 3 | GND | 6 | SIO_MCLK |

## 2.4.11 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 2.12 for pin assignments.

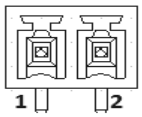



Figure 2. 19

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

## 2.4.12 Serial ATA1 (S_SATA1)


Figure 2. 20

Table 2.13 for pin assignments.

| Table 2.13: Serial ATA1 pin assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| 1 | GND | 5 | RX- |
| 2 | TX+ | 6 | RX+ |
| 3 | TX- | 7 | GND |
| 4 | GND | | |

## 2.4.13 SATA power connector (P_SATA1)


Figure 2. 21

Table 2.14 for pin assignments.

| Table 2.14: SATA power connector |
|---|

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | 5V | 3 | GND |
| 2 | GND | 4 | 12V |

## 2.4.14 mSATA Connector (MSATA1)

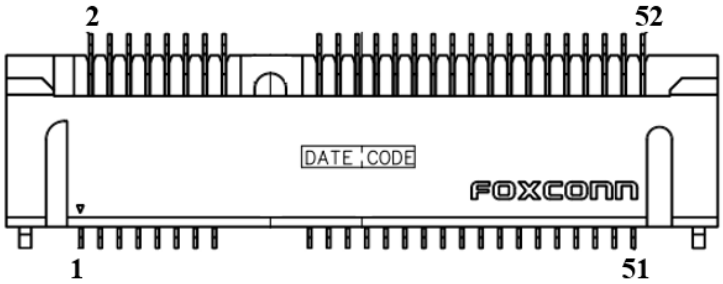



Figure 2. 22

Table 2.15 for Pin assignments.

| Table 2.15: 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 |

## 2.4.15 Mini-PCIe Connector (MPE1)

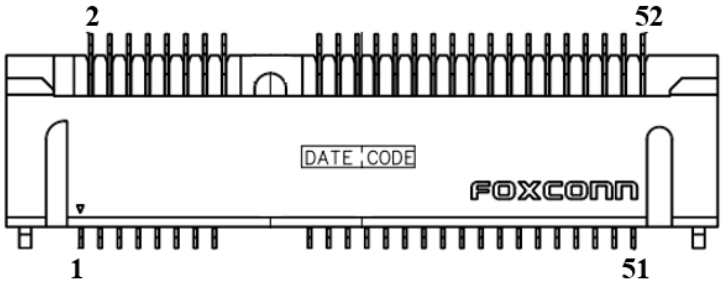



Figure 2. 23

Table 2.16 for Pin assignments.

| Table 2.16: Mini-PCIe Connector 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 |

## 2.4.16 PCI Connector (In Sub-card ECI-239)

KMDA-3820 provides 2*PCI expansion by sub-card ECI-239, Table 2.17 for pin assignments.

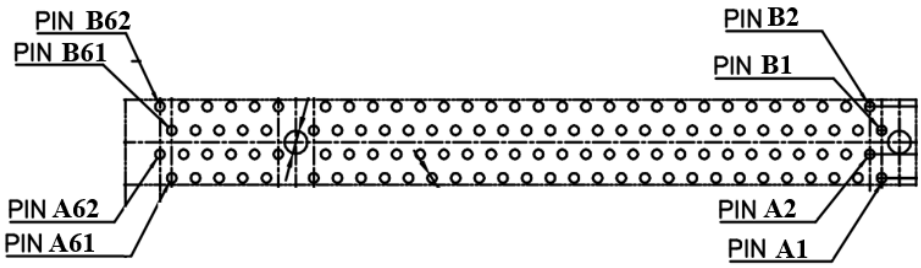



Figure 2. 24

| Table 2.17: PCI Pin Assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| A1 | TRST_PCI- | B1 | -12VD |
| A2 | +12VD | B2 | TCK_PCI |
| A3 | TMS_PCI | B3 | GNDD |
| A4 | TDI_PCI | B4 | NC |
| A5 | +5VD | B5 | +5VD |
| A6 | INTA# | B6 | +5VD |
| A7 | INTC# | B7 | INTB# |
| A8 | +5VD | B8 | INTD# |
| A9 | NC | B9 | NC |
| A10 | +5VD | B10 | NC |
| A11 | NC | B11 | NC |
| A12 | GNDD | B12 | GNDD |

| | | | |
|---|---|---|---|
| A13 | GNDD | B13 | GNDD |
| A14 | 3.3V_AUX | B14 | NC |
| A15 | PCIRST# | B15 | GNDD |
| A16 | +5VD | B16 | PCICLK0 |
| A17 | PGNT0# | B17 | GNDD |
| A18 | GNDD | B18 | PREQ0# |
| A19 | PPME# | B19 | +5VD |
| A20 | PAD30 | B20 | PAD31 |
| A21 | +3.3V | B21 | PAD29 |
| A22 | PAD28 | B22 | GNDD |
| A23 | PAD26 | B23 | PAD27 |
| A24 | GNDD | B24 | PAD25 |
| A25 | PAD24 | B25 | +3.3V |
| A26 | IDSEL | B26 | PCBE3# |
| A27 | +3.3V | B27 | PAD23 |
| A28 | PAD22 | B28 | GNDD |
| A29 | PAD20 | B29 | PAD21 |
| A30 | GNDD | B30 | PAD19 |
| A31 | PAD18 | B31 | +3.3V |
| A32 | PAD16 | B32 | PAD17 |
| A33 | +3.3V | B33 | PCBE2# |
| A34 | PFRAME# | B34 | GNDD |
| A35 | GNDD | B35 | PIRDY# |
| A36 | PTRDY# | B36 | +3.3V |
| A37 | GNDD | B37 | PDVSEL# |
| A38 | PSTOP# | B38 | GNDD |
| A39 | +3.3V | B39 | PLOCK# |
| A40 | SMBCLK | B40 | PPERR# |
| A41 | SMBDAT | B41 | +3.3V |
| A42 | GNDD | B42 | PSERR# |
| A43 | PPAR | B43 | +3.3V |
| A44 | PAD15 | B44 | PCBE1# |
| A45 | +3.3V | B45 | PAD14 |
| A46 | PAD13 | B46 | GNDD |
| A47 | PAD11 | B47 | PAD12 |

| | | | |
|---|---|---|---|
| A48 | GNDD | B48 | PAD10 |
| A49 | PAD9 | B49 | PM66EN |
| A50 | N/A | B50 | N/A |
| A51 | N/A | B51 | N/A |
| A52 | PCBE0# | B52 | PAD8 |
| A53 | +3.3V | B53 | PAD7 |
| A54 | PAD6 | B54 | +3.3V |
| A55 | PAD4 | B55 | PAD5 |
| A56 | GNDD | B56 | PAD3 |
| A57 | PAD2 | B57 | GNDD |
| A58 | PAD0 | B58 | PAD1 |
| A59 | +5VD | B59 | +5VD |
| A60 | REQ64# | B60 | ACK64# |
| A61 | +5VD | B61 | +5VD |
| A62 | +5VD | B62 | +5VD |

## 2.4.17 O-PCIeX4 Connector (In Sub-card ECX-238)

KMDA-3820 provides 1*O-PCIeX4 expansion by sub-card ECX-238, Table 2.18 for pin assignments.

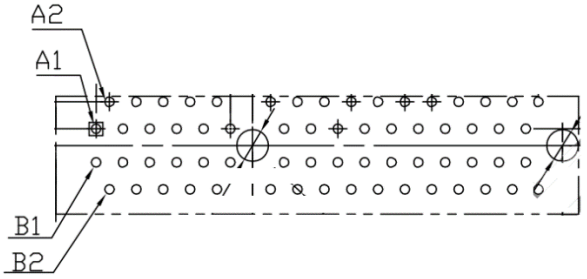



Figure 2. 25

| Table 2.18: PCIeX4 Pin Assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| B1 | +12V | A1 | NC |
| B2 | +12V | A2 | +V12 |
| B3 | +12V | A3 | +V12 |
| B4 | GND | A4 | GND |
| B5 | SMB_SCL | A5 | NC |
| B6 | SMB_SDA | A6 | NC |
| B7 | GND | A7 | NC |

| | | | |
|---|---|---|---|
| B8 | +3.3V | A8 | NC |
| B9 | NC | A9 | +V3.3 |
| B10 | +3.3VSB | A10 | +V3.3 |
| B11 | PCIE_WAKE_N | A11 | PLTRST_R |
| B12 | NC | A12 | GND |
| B13 | GND | A13 | CLK_MIO2_PCIE+ |
| B14 | PCIE_MIO_TX9+ | A14 | CLK_MIO2_PCIE- |
| B15 | PCIE_MIO_TX9- | A15 | GND |
| B16 | GND | A16 | PCIE_MIO_RX9+ |
| B17 | NC | A17 | PCIE_MIO_RX9- |
| B18 | GND | A18 | GND |
| B19 | PCIE_MIO_TX10+ | A19 | NC |
| B20 | PCIE_MIO_TX10- | A20 | GND |
| B21 | GND | A21 | PCIE_MIO_RX10+ |
| B22 | GND | A22 | PCIE_MIO_RX10- |
| B23 | PCIE_MIO_TX11+ | A23 | GND |
| B24 | PCIE_MIO_TX11- | A24 | GND |
| B25 | GND | A25 | PCIE_MIO_RX11+ |
| B26 | GND | A26 | PCIE_MIO_RX11- |
| B27 | PCIE_MIO_TX12+ | A27 | GND |
| B28 | PCIE_MIO_TX12- | A28 | GND |
| B29 | GND | A29 | PCIE_MIO_RX12+ |
| B30 | NC | A30 | PCIE_MIO_RX12- |
| B31 | NC | A31 | GND |
| B32 | GND | A32 | NC |

### 2.4.18 PCIeX1 Connector (In Sub-card ECX-238)

KMDA-3820 provides 1*PCIeX1 expansion by sub-card ECX-238, Table 2.19 for pin assignments.

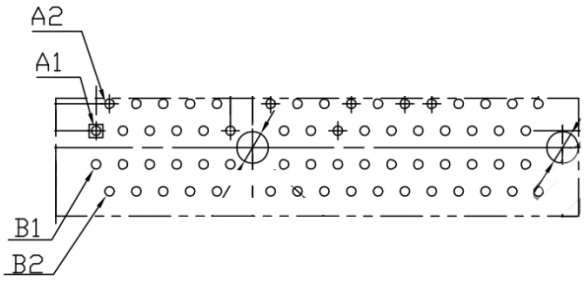



Figure 2. 26

| Table 2.19: PCIeX1 Pin Assignments | | | |
|---|---|---|---|
| Pin | Signal | Pin | Signal |
| B1 | +12V | A1 | NC |
| B2 | +12V | A2 | +V12 |
| B3 | +12V | A3 | +V12 |
| B4 | GND | A4 | GND |
| B5 | SMB_SCL | A5 | NC |
| B6 | SMB_SDA | A6 | NC |
| B7 | GND | A7 | NC |
| B8 | +3.3V | A8 | NC |
| B9 | NC | A9 | +V3.3 |
| B10 | +3.3VSB | A10 | +V3.3 |
| B11 | PCIE_WAKE_N | A11 | PLTRST_R |
| B12 | NC | A12 | GND |
| B13 | GND | A13 | CLK_MIO1_PCIE+ |
| B14 | PCIE_M2_TX1+ | A14 | CLK_MIO1_PCIE- |
| B15 | PCIE_M2_TX1- | A15 | GND |
| B16 | GND | A16 | PCIE_M2_RX1+ |
| B17 | NC | A17 | PCIE_M2_RX1- |
| B18 | GND | A18 | GND |
| B19 | NC | A19 | NC |
| B20 | NC | A20 | GND |
| B21 | GND | A21 | NC |
| B22 | GND | A22 | NC |
| B23 | NC | A23 | GND |
| B24 | NC | A24 | GND |
| B25 | GND | A25 | NC |
| B26 | GND | A26 | NC |

| | | | |
|---|---|---|---|
| B27 | NC | A27 | GND |
| B28 | NC | A28 | GND |
| B29 | GND | A29 | NC |
| B30 | NC | A30 | NC |
| B31 | NC | A31 | GND |
| B32 | GND | A32 | NC |

### 2.4.19 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 2.30 for LEDs state of CPU temperature class.

Table 2.30: LEDs state of CPU temperature class.

| LED | State |
|---|---|
| Red | Warning |
| Yellow | High |
| Green | Normal |

## 2.5 Installation

Here the hardware installation takes KMDA-3820-S00X series for example, and the KMDA-3820-T001 series installation operation is similar.

### 2.5.1 HDD/SSD Installation

Step 1: Unscrew 2 screws on the HDD/SSD cover, remove the HDD/SSD cover;

Step 2: Unscrew 1 screws on HDD/SSD bay, take out the HDD/SSD bay;

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

Step 4: Put the HDD/SSD bay into the HDD/SSD slot as the picture shows;

Step 5: Screw 1 screw on the HDD/SSD bay;

Step 6: Install the HDD/SSD cover, screw 2 screws as the picture shows.

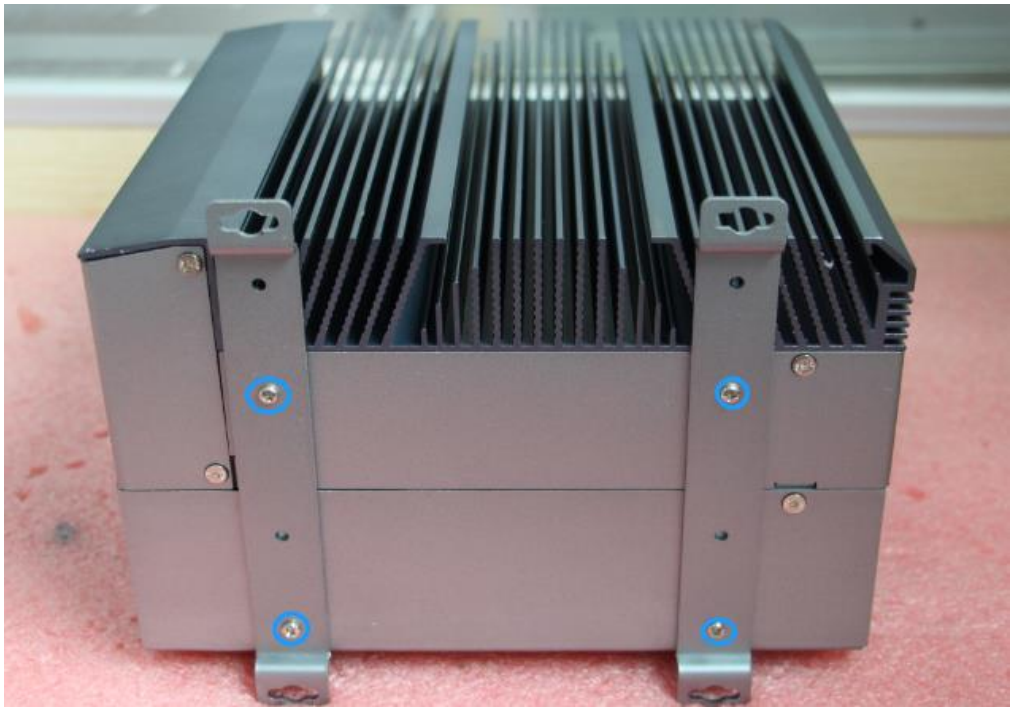


SEAGATE
BARRACUDA


## 2.5.2 Installing mini-PCIe

Step 1: Unscrew screws on the Mounting brackets as picture shows, remove the mounting bracket; (Note: There are two types of mounting brackets, please disassemble according to your actual situation.);

Unscrew the Spring screw and take off the expansion cover;



Step 2: Hold the Mini PCIe module with its notch aligned with the Mini PCIe socket of the board and insert it at a 30 degrees angle into the socket;

Step 3: Screw one screw to the holder;

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

### 2.5.3 Installing MSATA

Step 1: The step here is the same as above chapter "2.5.2 Installing Mini PCIe Module -Step 1", For details, please refer to the above chapter "2.5.2 Installing Mini PCIe Module -Step 1"

Step 2: Hold the MSATA module with its notch aligned with the MSATA socket of the mother 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 3: Screw one screw to the holder as shown in the picture.

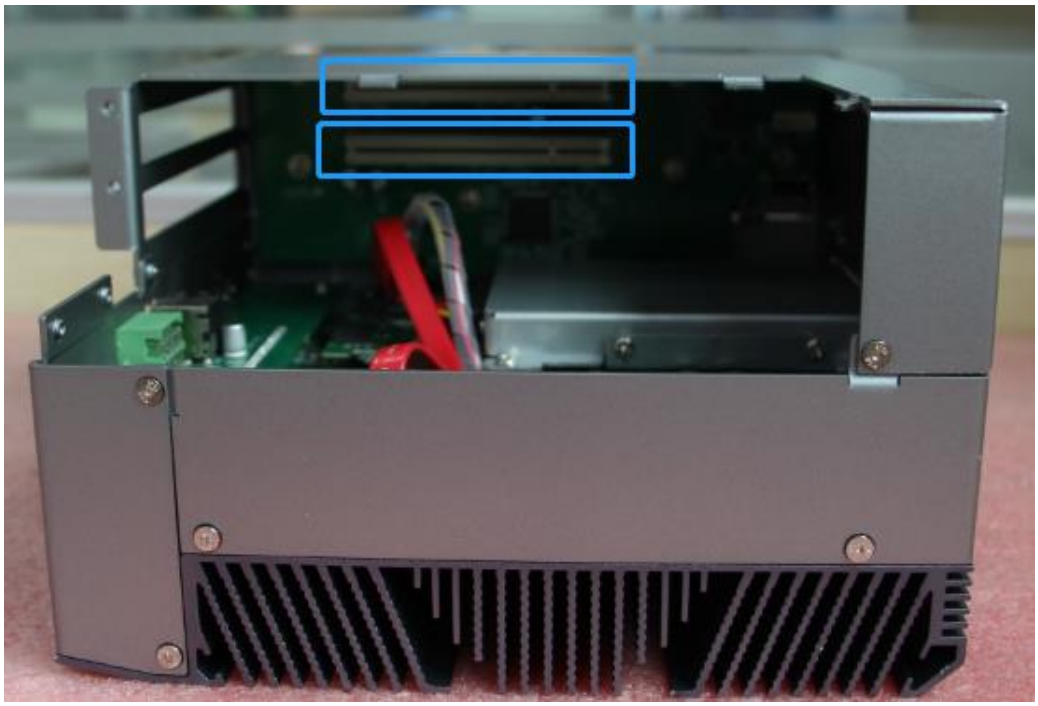
Step 4: Follow the reverse steps of disassembly to complete the product installation.

## 2.5.4 Installing Expansion Functional Module

Step 1: The step here is the same as above chapter "2.5.2 Installing Mini PCIe Module -Step 1", For details, please refer to the above chapter "2.5.2 Installing Mini PCIe Module -Step 1"

Step 2: Unscrew 2 screws on 2 bars, take off 2 bars;

Step 3: Put the functional module into the expansion slot which is on the ECX-238 or ECI-239;



Step 4: 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.

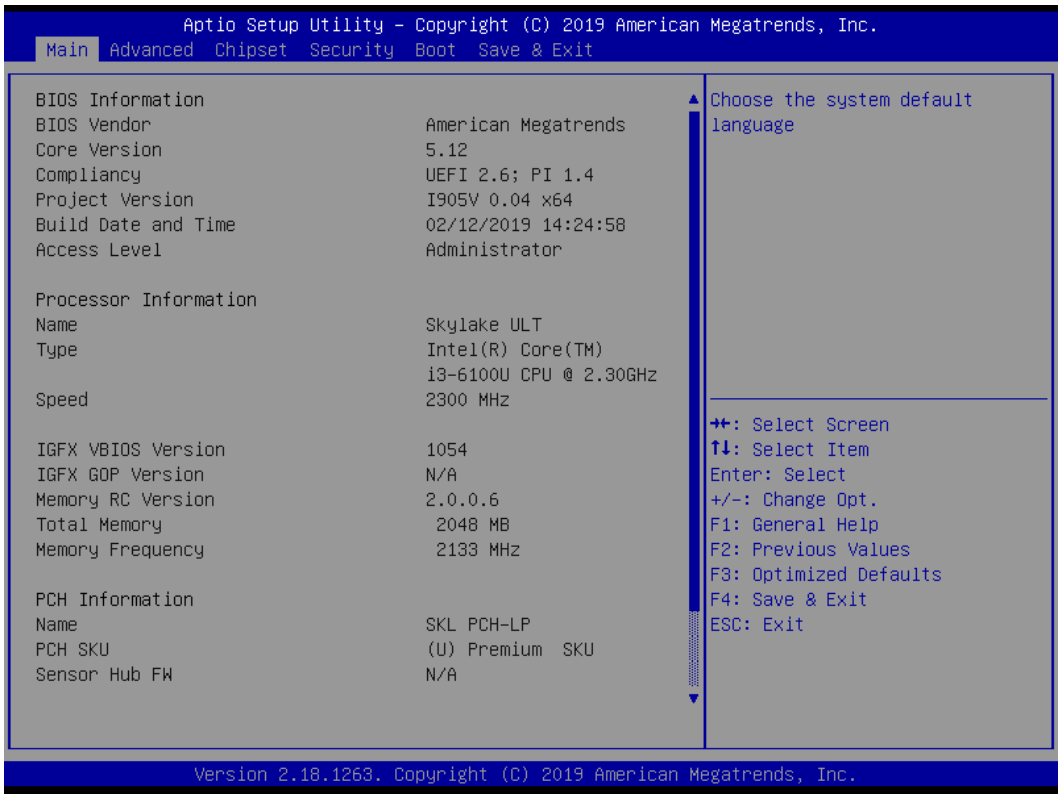
(But in general, customers are not recommended to set it up. In most cases, using the default value is already the best setting.)

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:

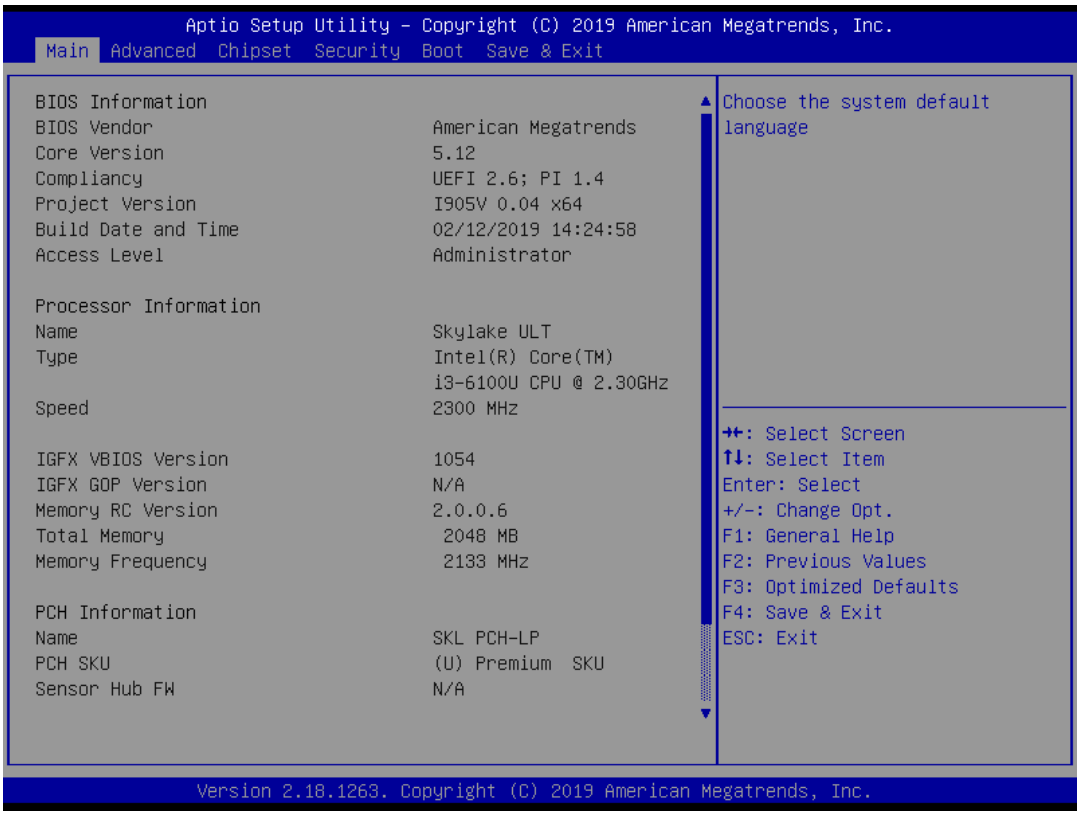
Table 3.1: The BIOS navigation keys

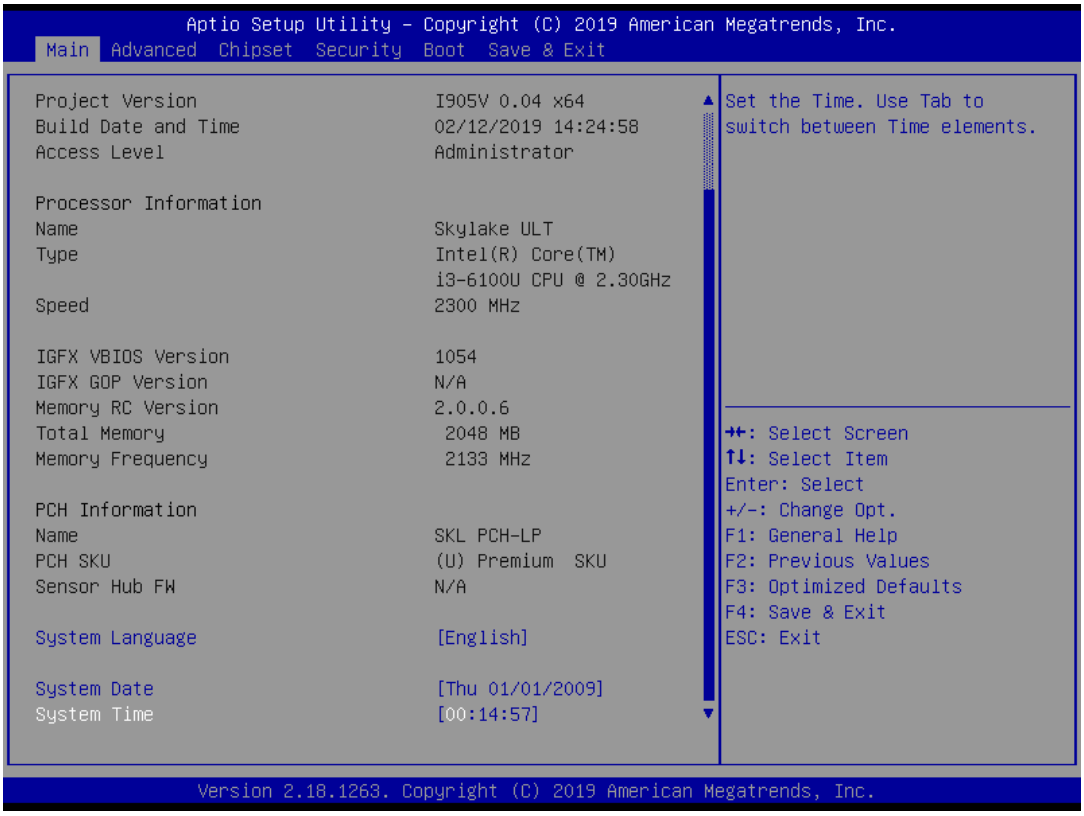
| KEY | FUNCTION |
|---|---|
| ESC | Exit the current menu |
| ↑↓→← | Scrolls through the items on a menu |
| +/- | Change Opt. |
| Enter | Select |
| F1 | General Help |
| F2 | Previous Values |
| F3 | Optimized Defaults |
| F4 | Save & Exit |

### 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 (5.12)

This item shows the information of the Core Version.

### Project Version (I905V 0.04 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**

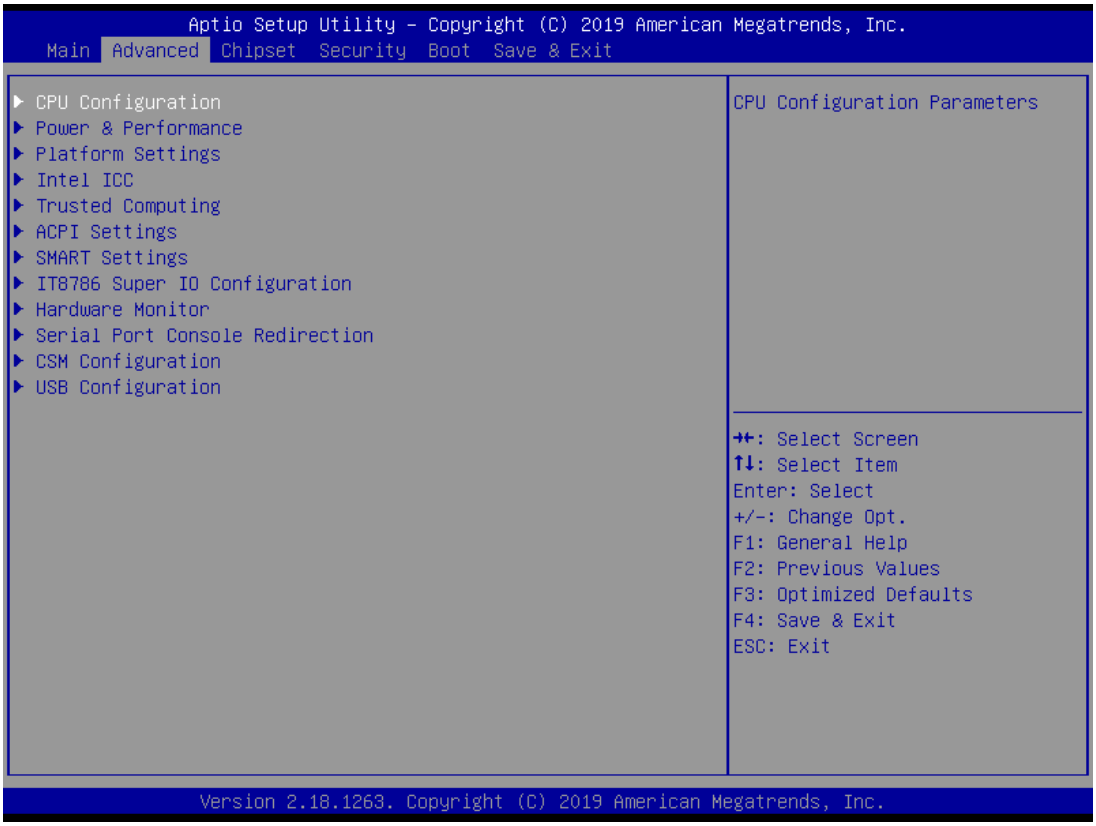
Set the date. The format of the date is <week><month><day><year>.

**System Time**

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

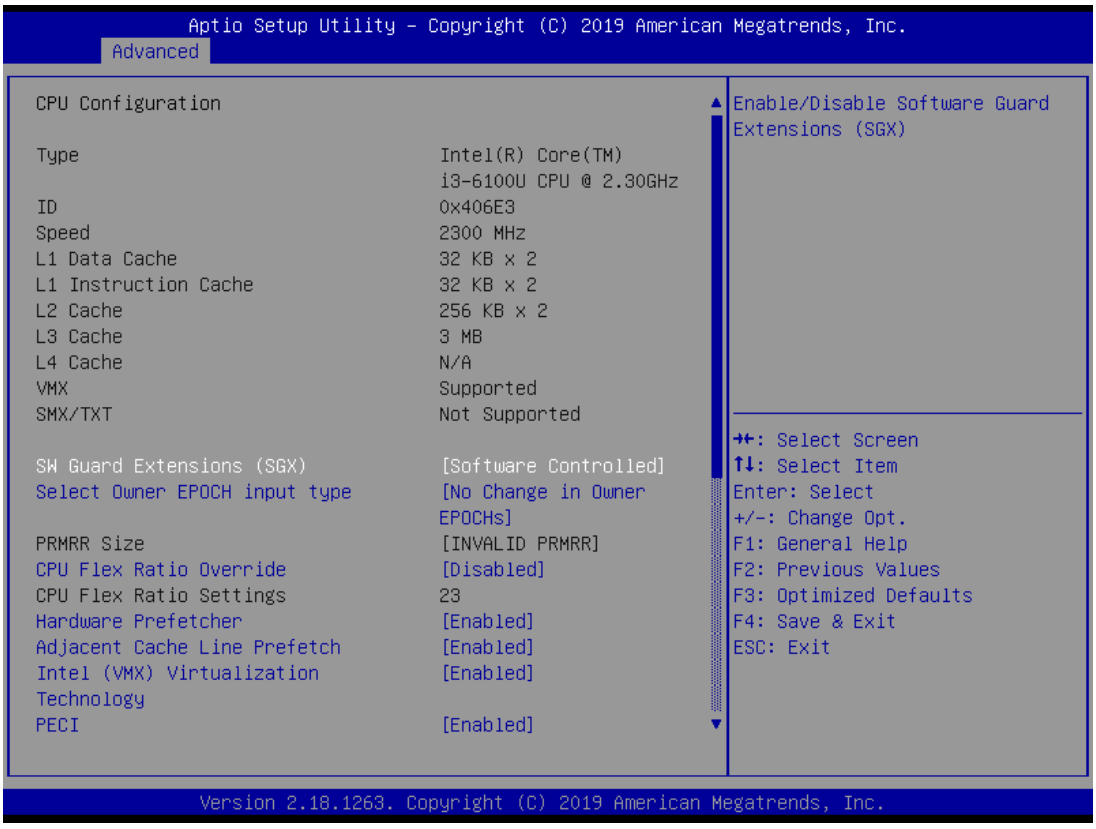
## 3.2.3 Advanced Menu

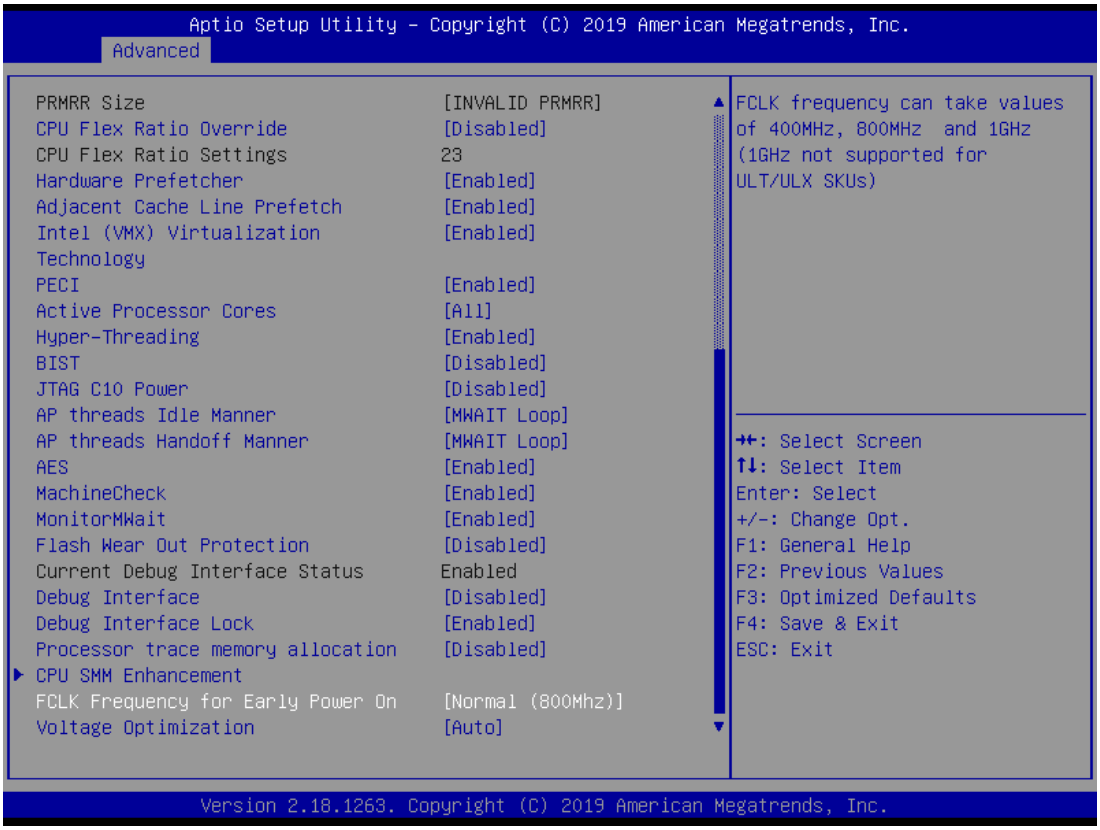
This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.




## ▶CPU Configuration

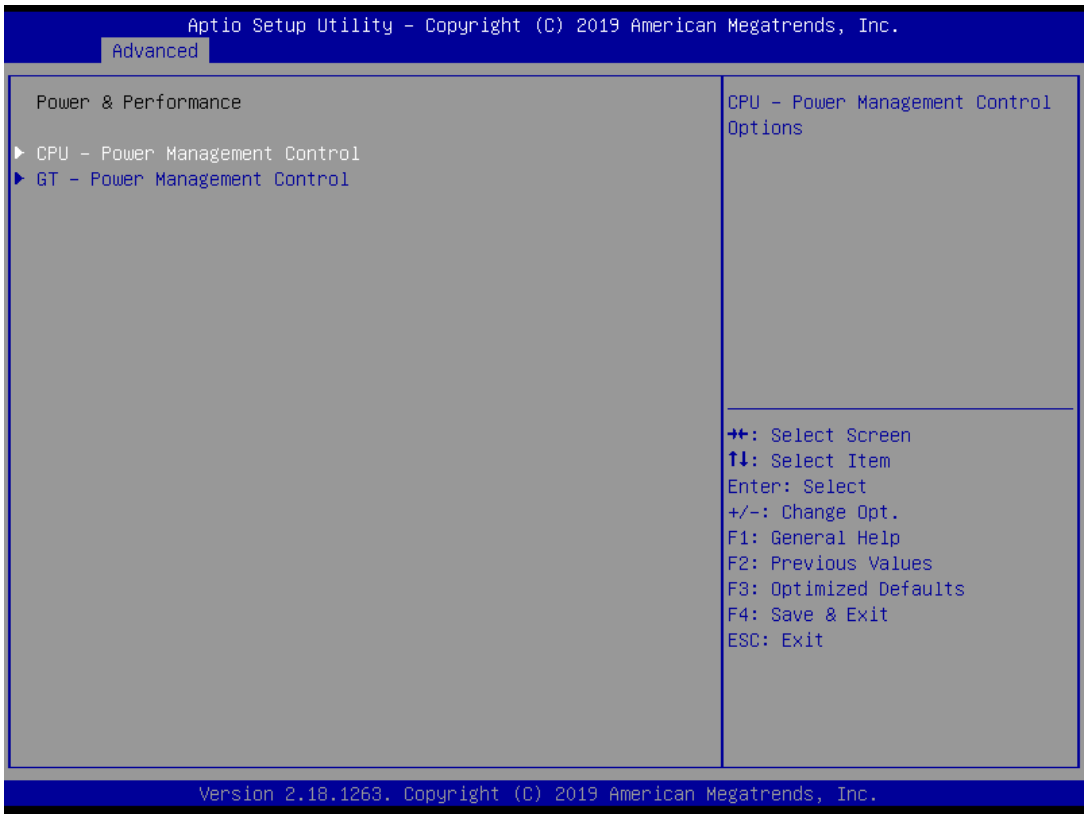
The configuration of the central processor, enter this sub-menu, there will be detailed details of the CPU, as well as various settings of the CPU.

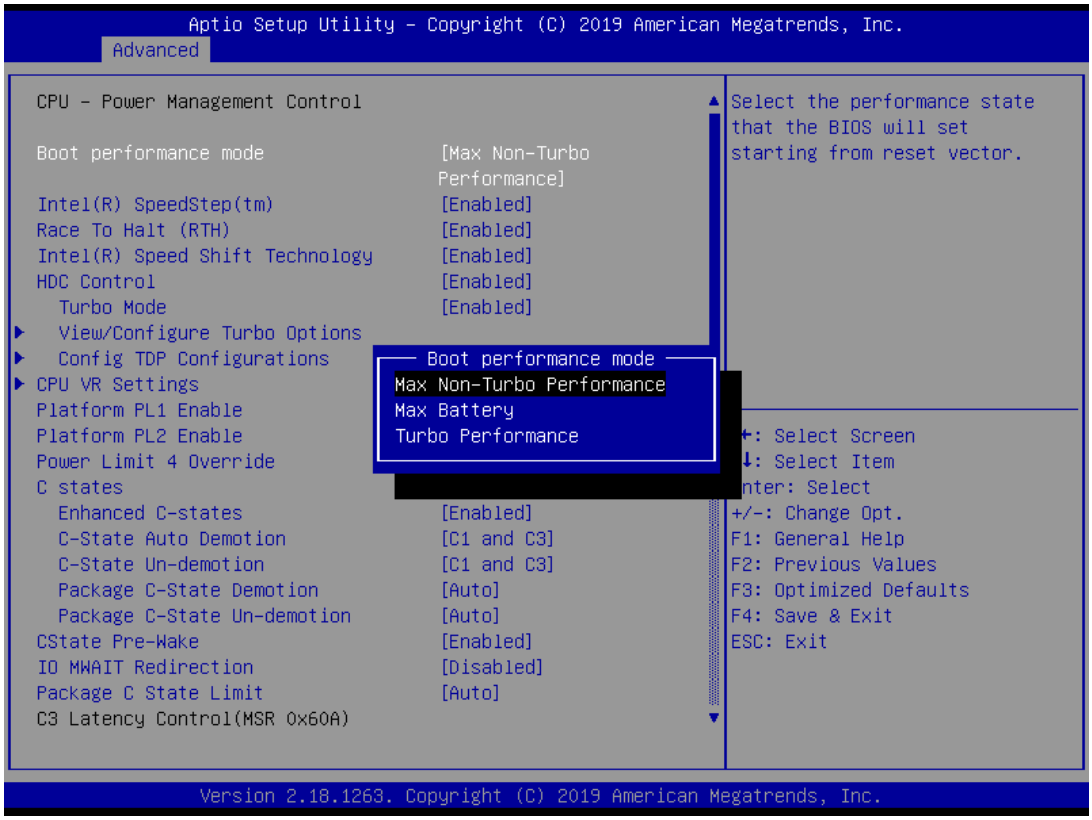


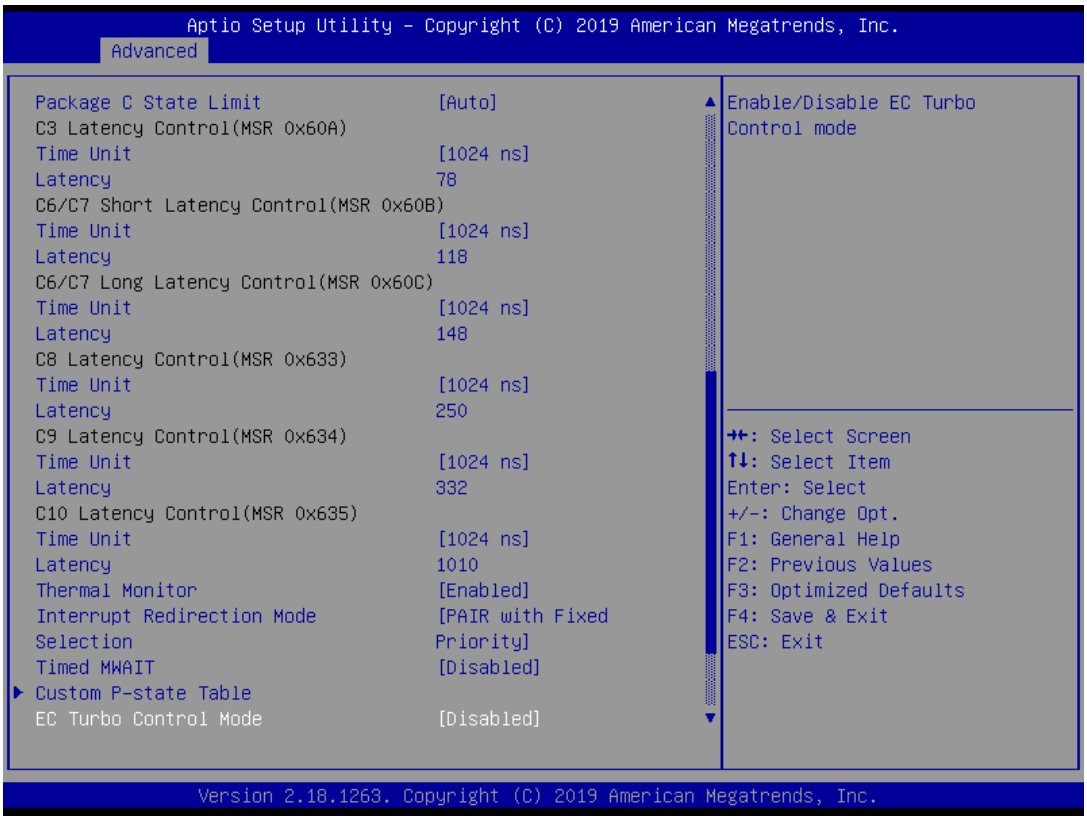


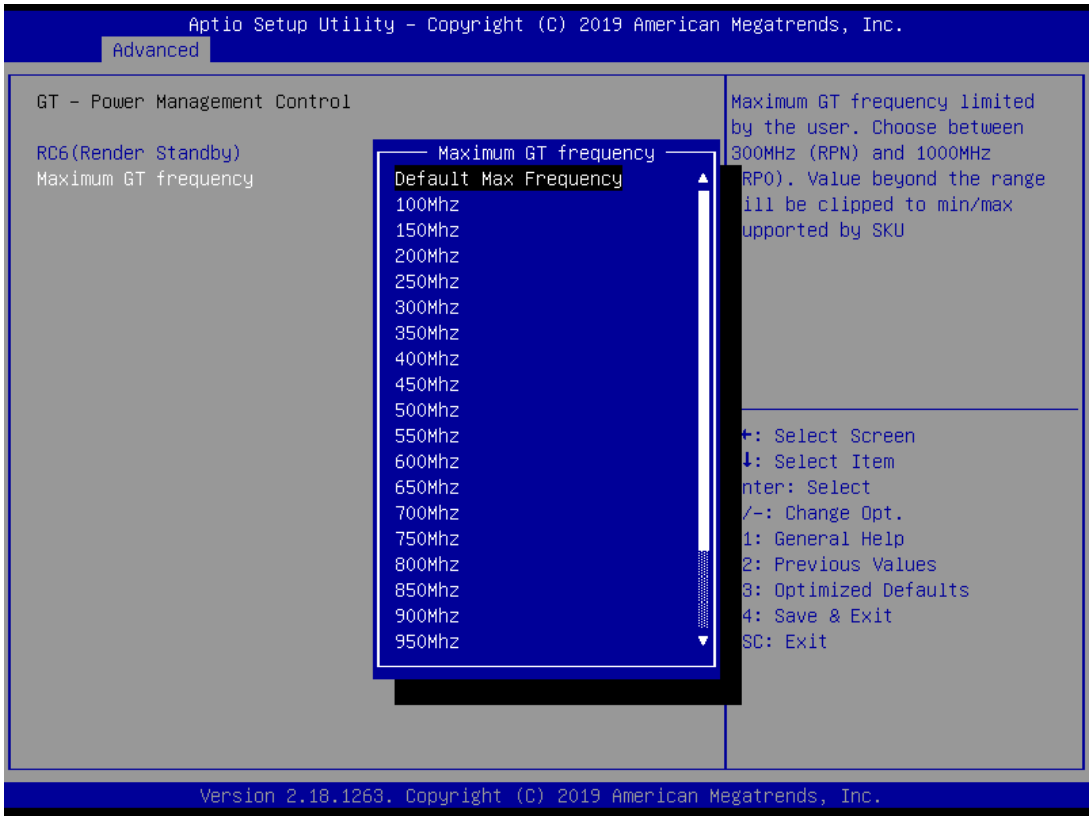

## ▶Power & Performance

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



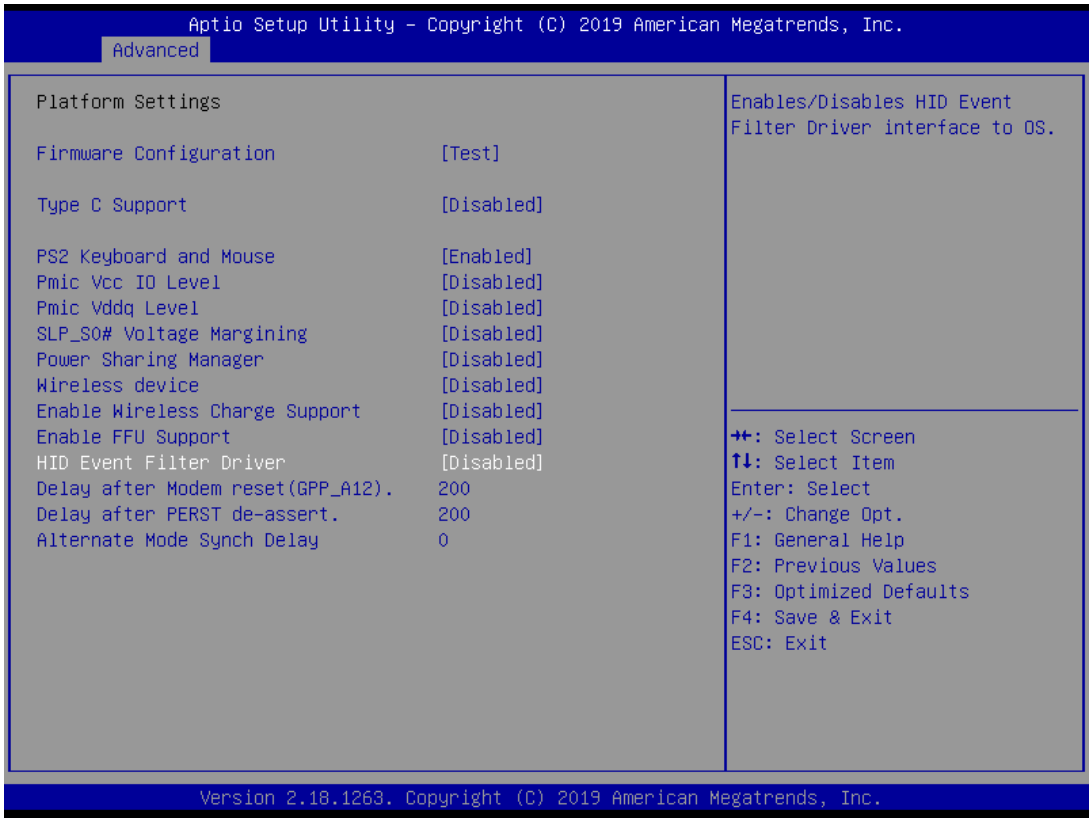

Aptio Setup Utility – Copyright (C) 2019 American Megatrends, Inc.
Advanced
CPU – Power Management Control
Boot performance mode [Max Non-Turbo Performance]
Intel(R) SpeedStep(tm) [Enabled]
Race To Halt (RTH) [Enabled]
Intel(R) Speed Shift Technology [Enabled]
HDC Control [Enabled]
Turbo Mode [Enabled]
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 [Auto]
Package C-State Un-demotion [Auto]
CState Pre-Wake [Enabled]
IO MWAIT Redirection [Disabled]
Package C State Limit [Auto]
C3 Latency Control(MSR 0x60A)
Boot performance mode
Max Non-Turbo Performance
Max Battery
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 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2019 American Megatrends, Inc.
Advanced
Package C State Limit [Auto]
C3 Latency Control(MSR 0x60A)
Time Unit [1024 ns]
Latency 78
C6/C7 Short Latency Control(MSR 0x60B)
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]
Enable/Disable EC Turbo Control mode
→←: 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) 2019 American Megatrends, Inc.




## ▶Platform Setting

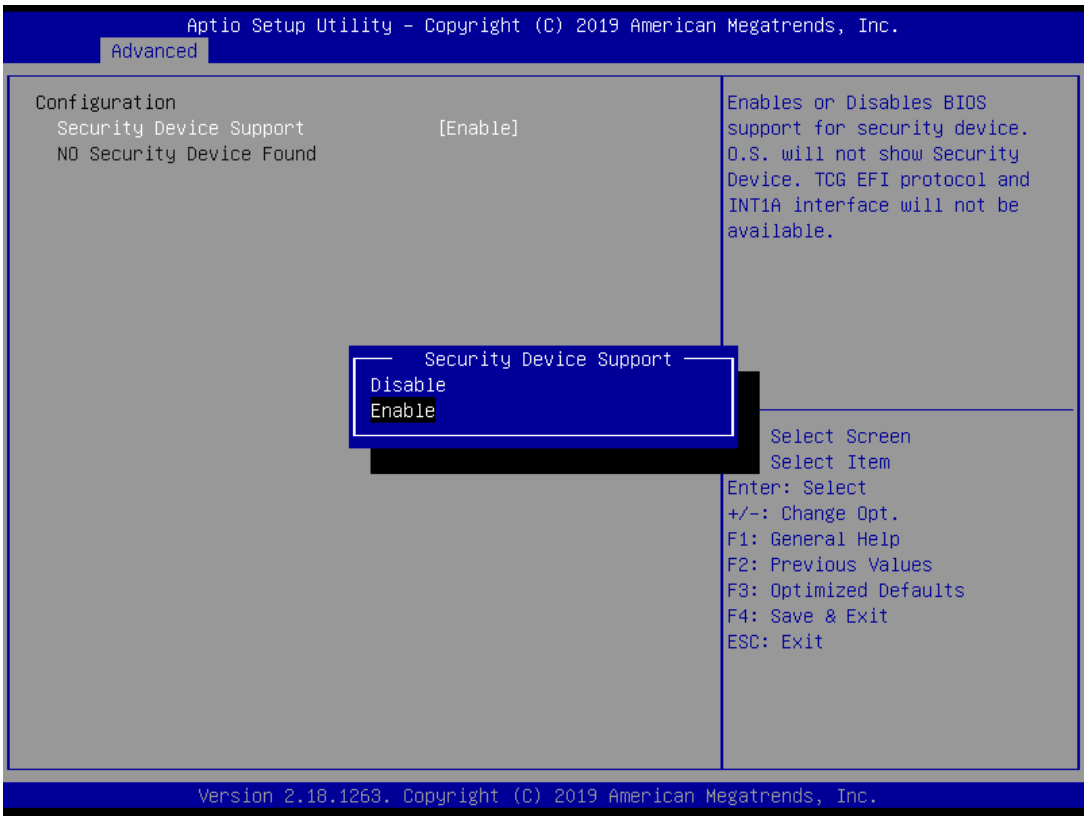
This item in the menu contains the information of the Platform Setting.




## ▶Trusted Computing

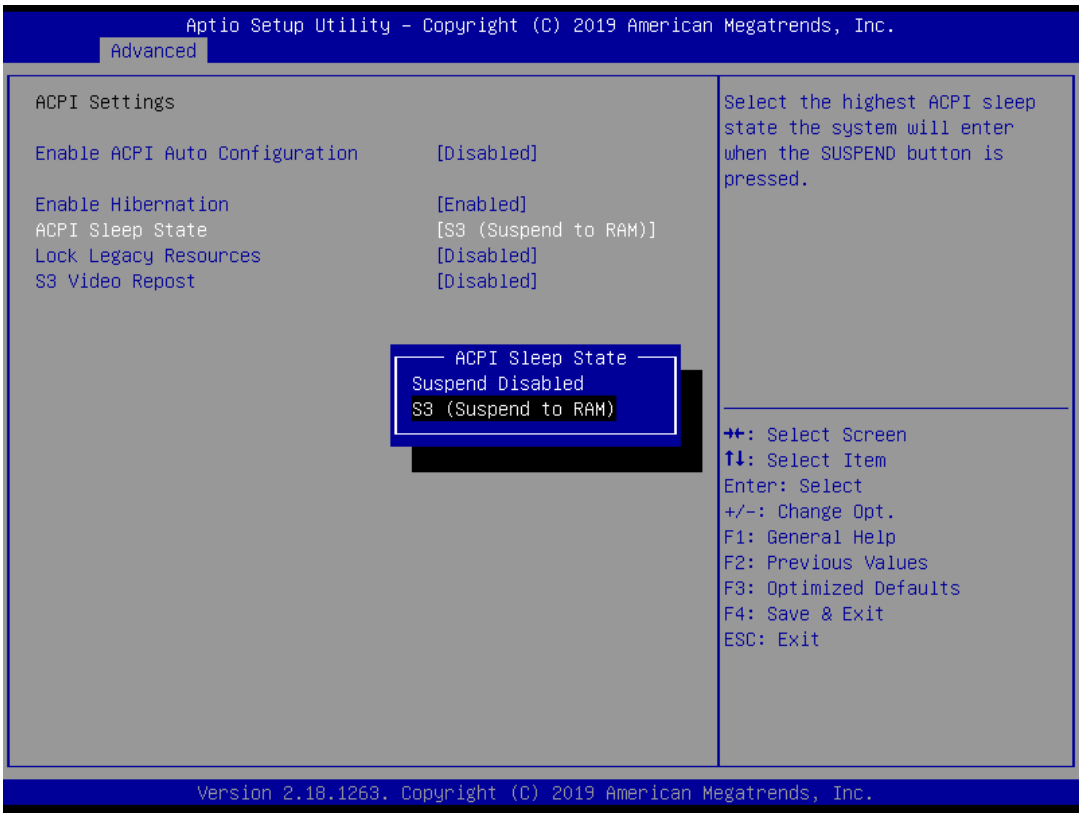
Trusted computing, enter this sub-menu, there will be the setting of the encryption security module (the

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.



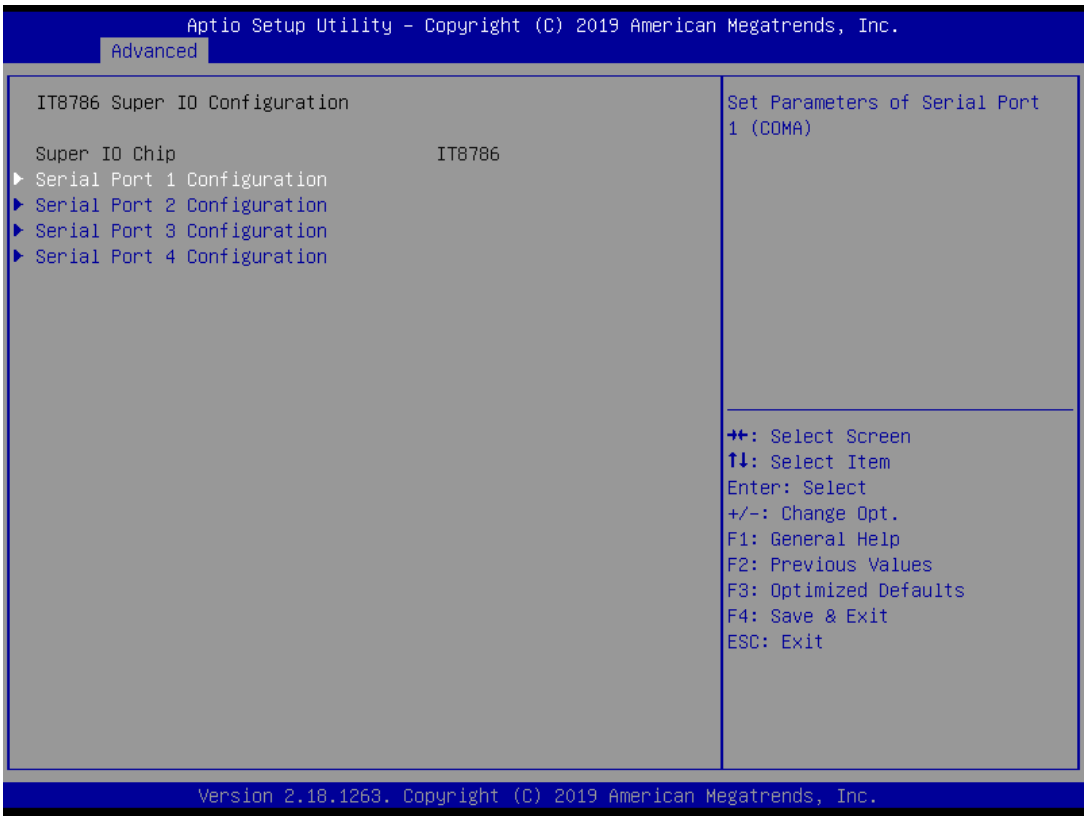
### ACPI Sleep State (S3 (Suspend to RAM))

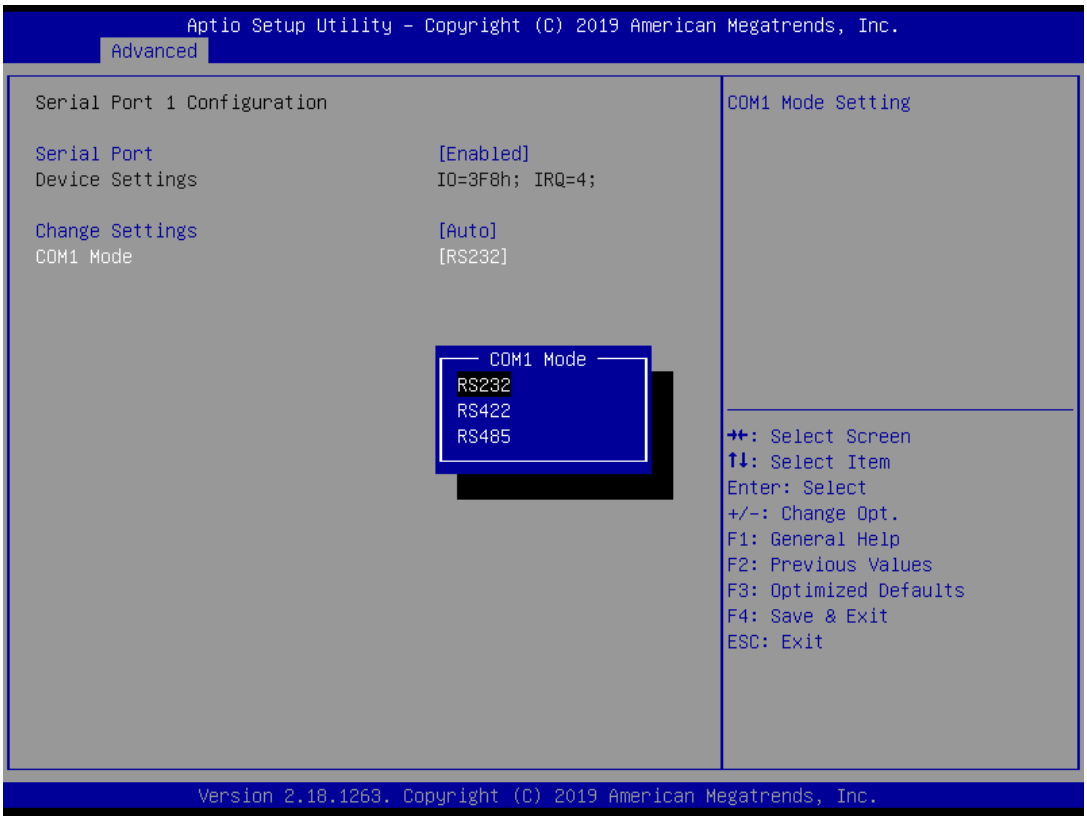
This item allows user to enter the ACPI S3 (Suspend to RAM) Sleep State (default).

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

### ▶IT8786 Super IO Configuration setting

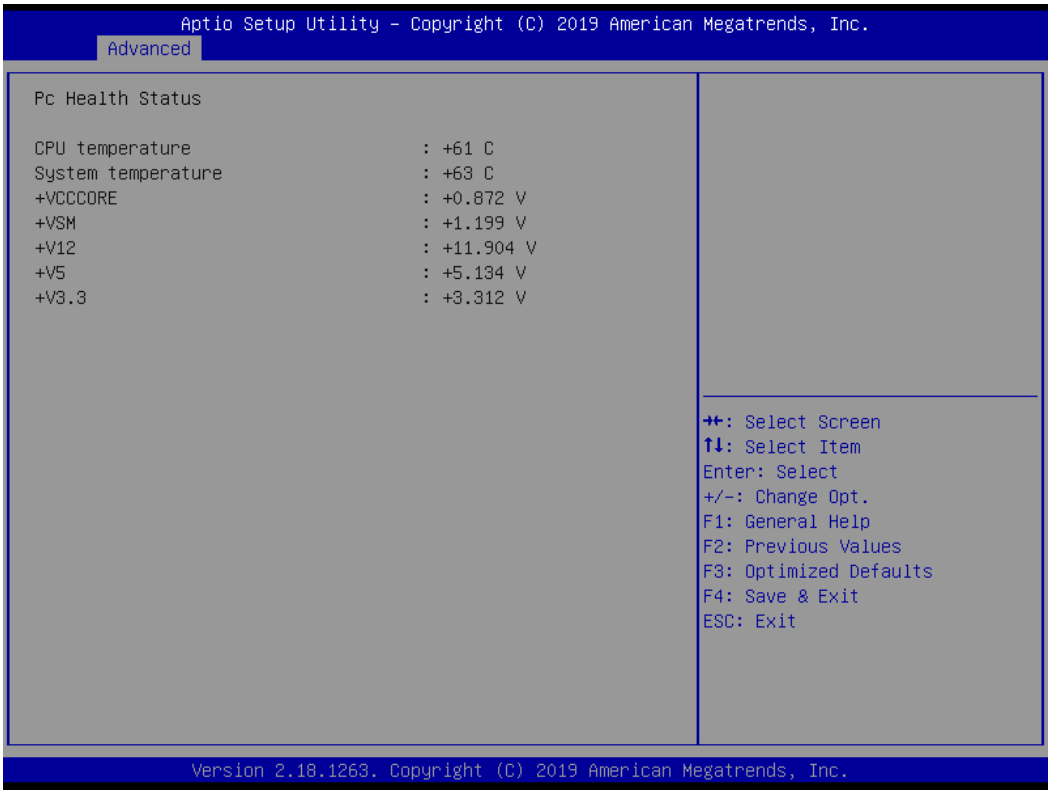
IT8786 Super IO Configuration settings, enter this sub-menu, there will be set COM working mode or disabled the Serial port function. COM1/2 can be set as RS422, RS232 or RS485. COM3/4 only can be RS232.





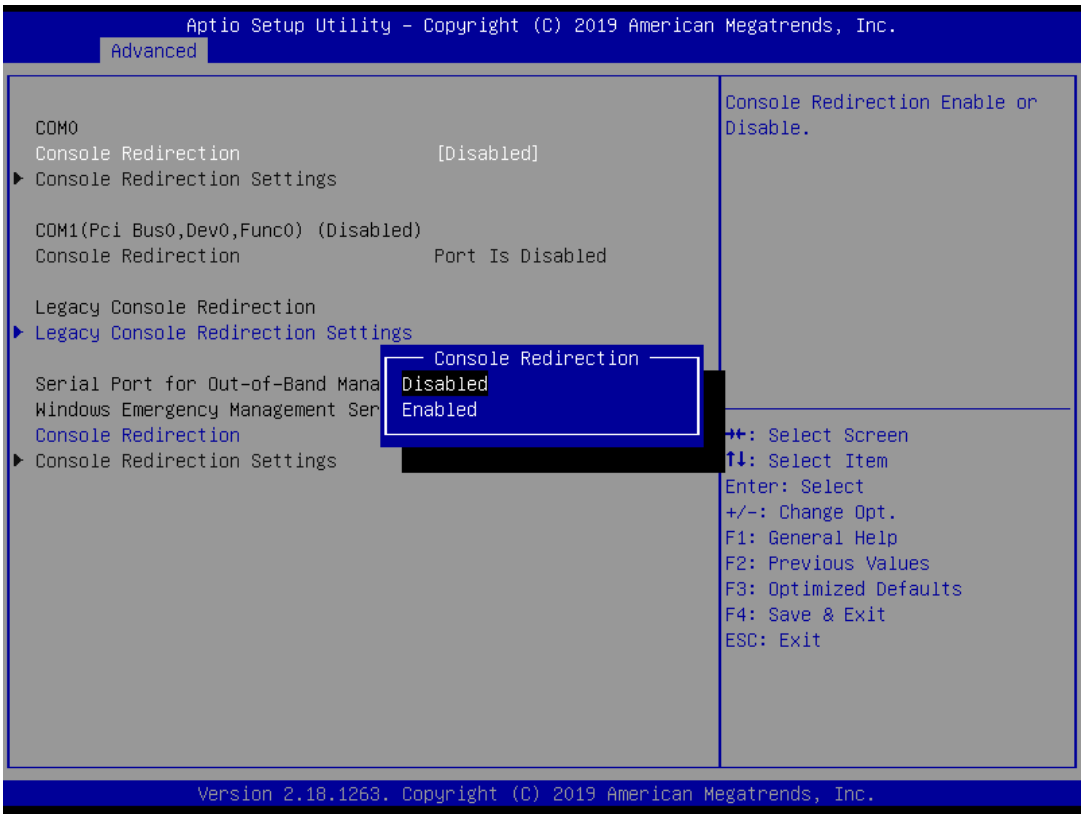

## ▶Hardware Monitor

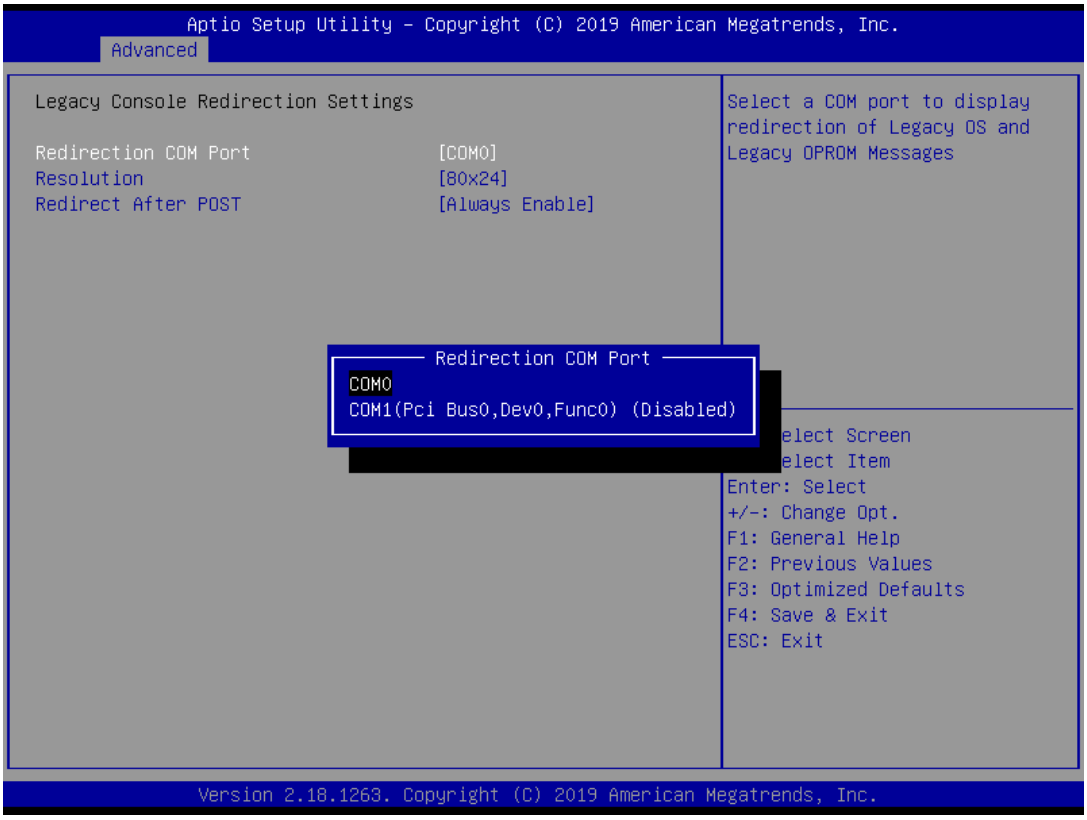
Hardware monitoring, enter this sub-menu, there will be CPU temperature, System temperature, status display of each common working voltage.



## ▶Serial Port Console Redirection

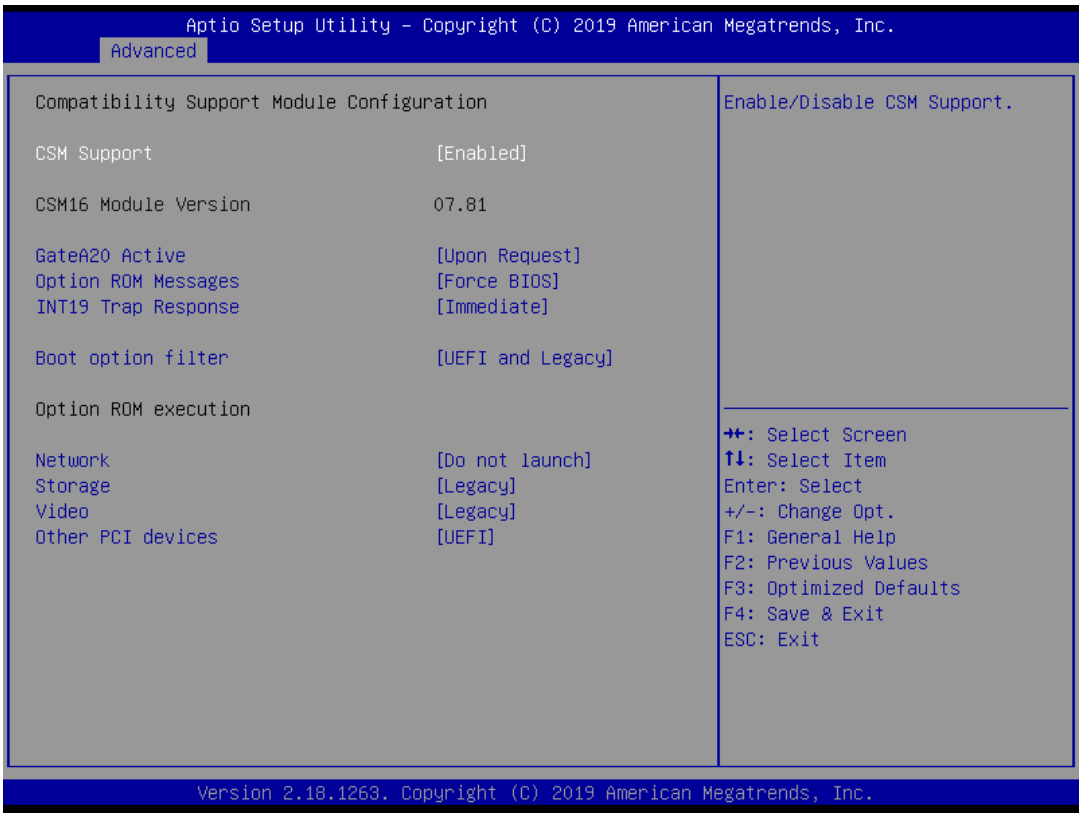
Serial Port Console Redirection, enter this sub-menu, there will be the console Redirection configuration of the serial ports.



## ▶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

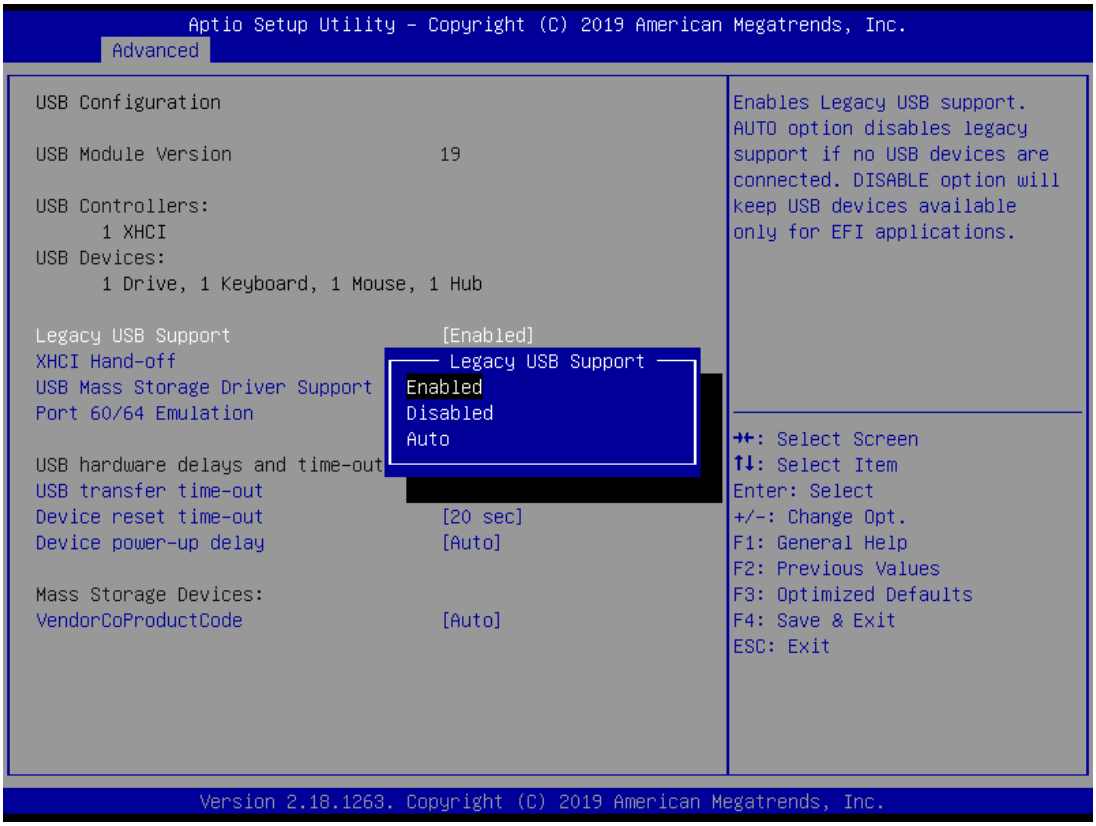
This item is used to set EFI display Option ROM startup or traditional display Option ROM startup.

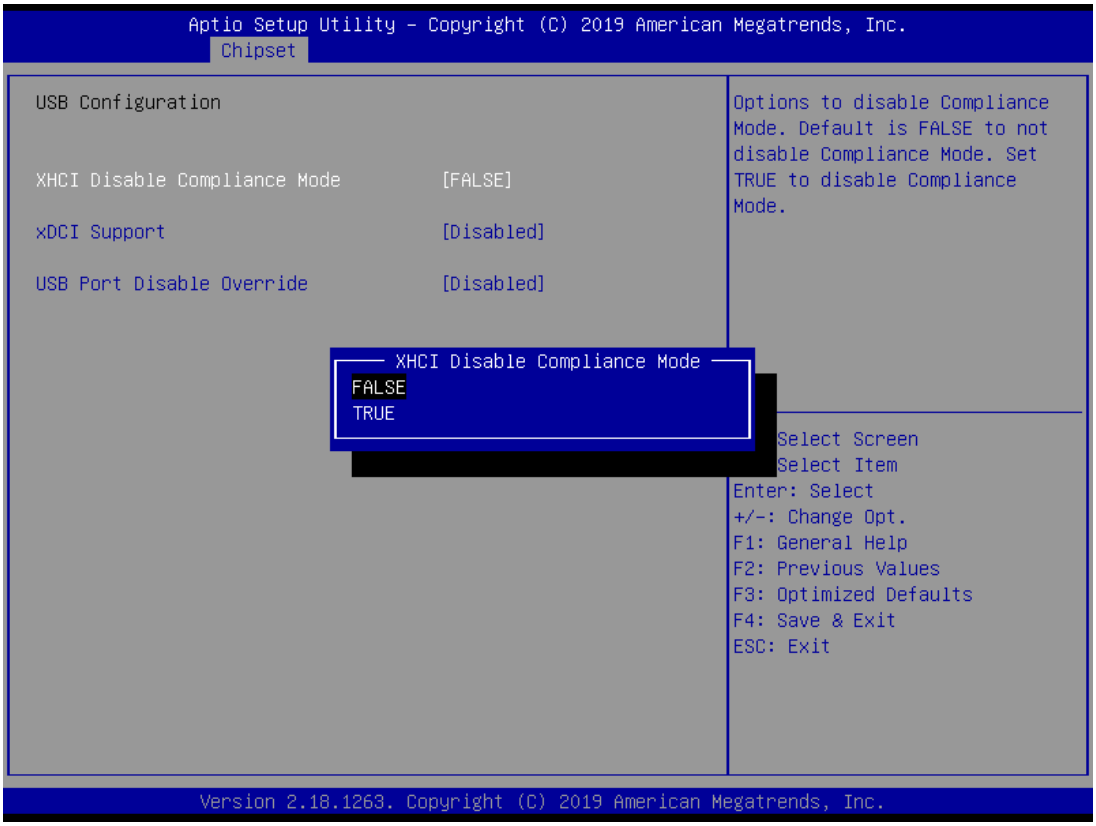
### Other PCI devices

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

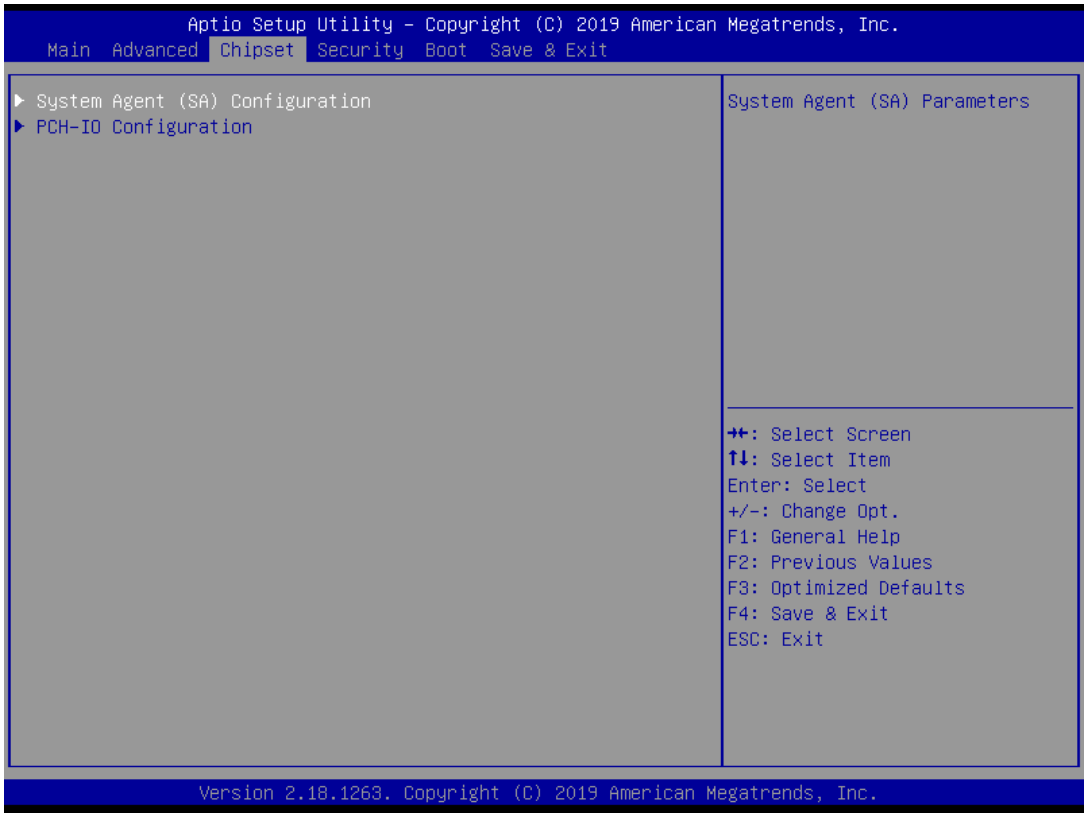
This item sets boot command timeout of the large capacity USB disk. The default is 20 seconds.

### Device power-up delay

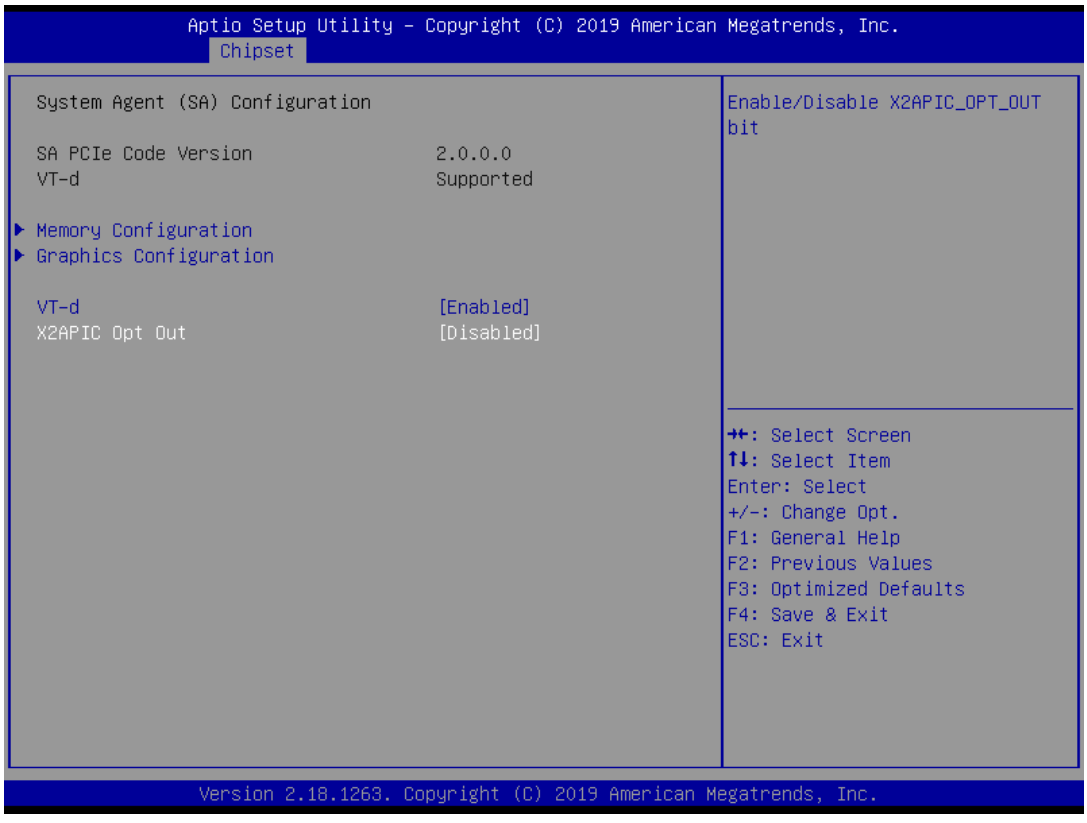
This item sets boot command delay of the large capacity USB disk. The default is Auto.

## 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.

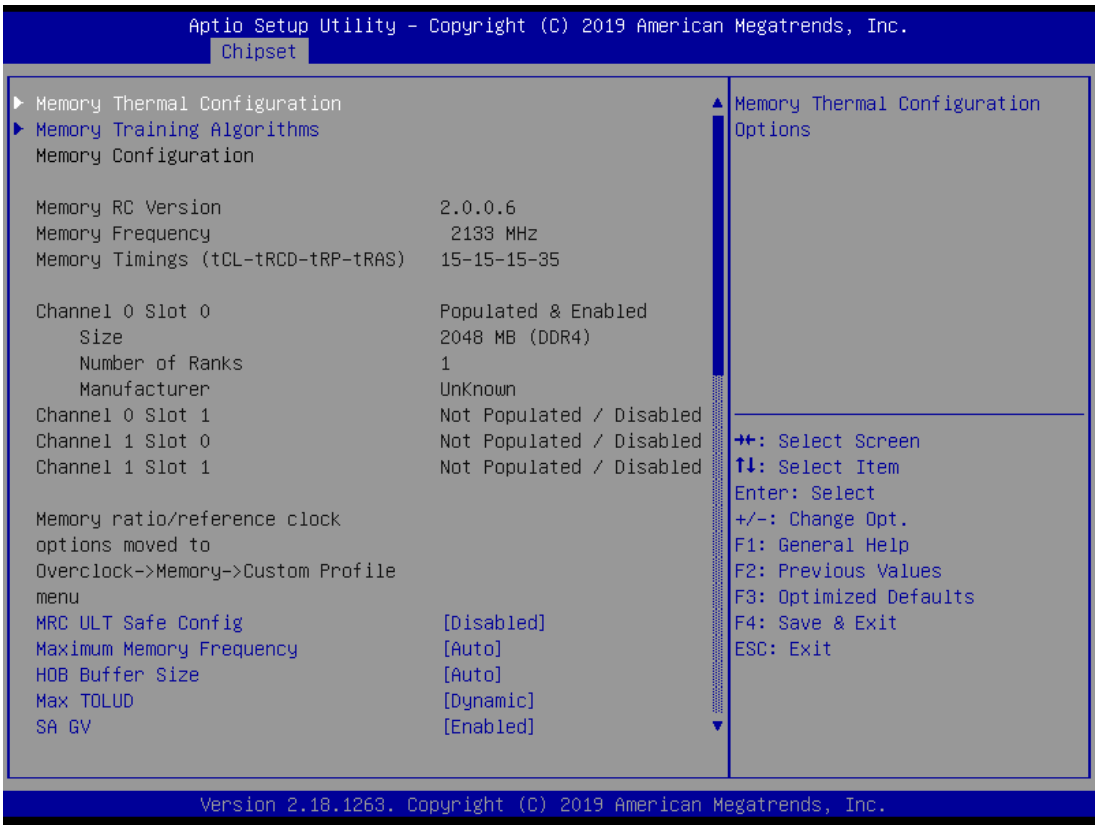



## ▶System Agent (SA) Configuration

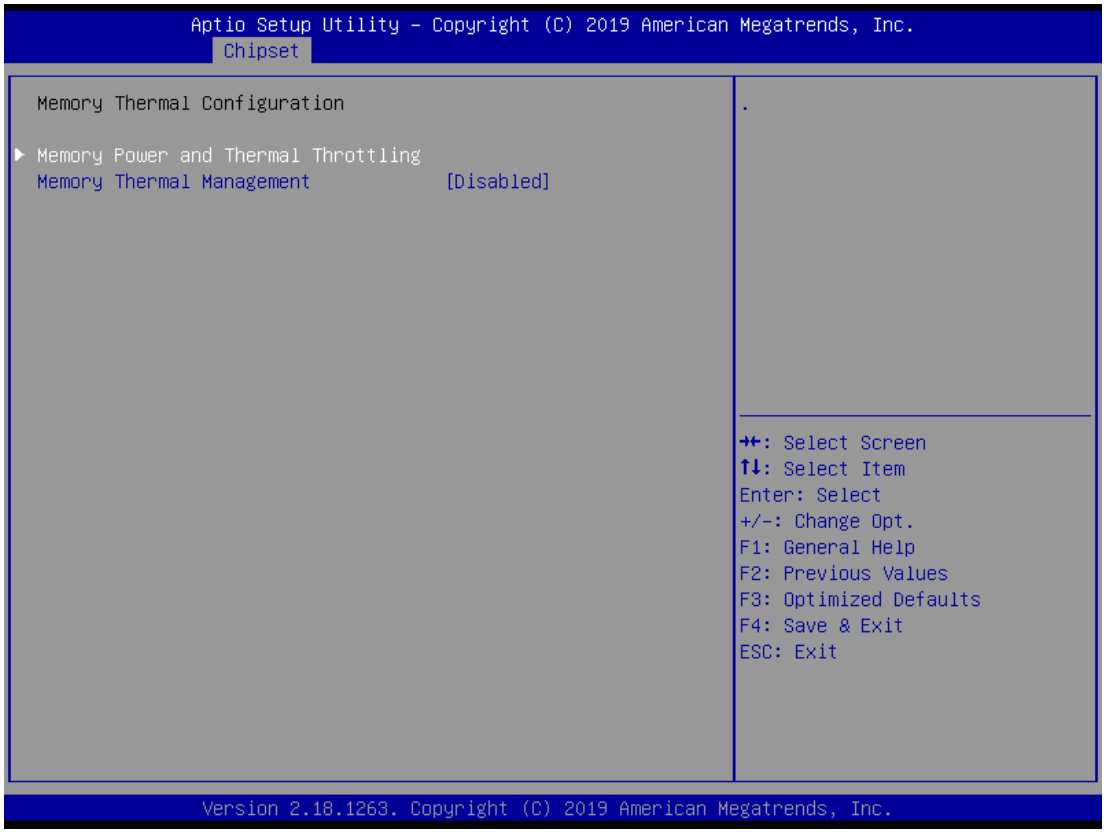



## ▶Memory Configuration

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




## ▶Memory Thermal Configuration




**Memory Power and Thermal Throttling**

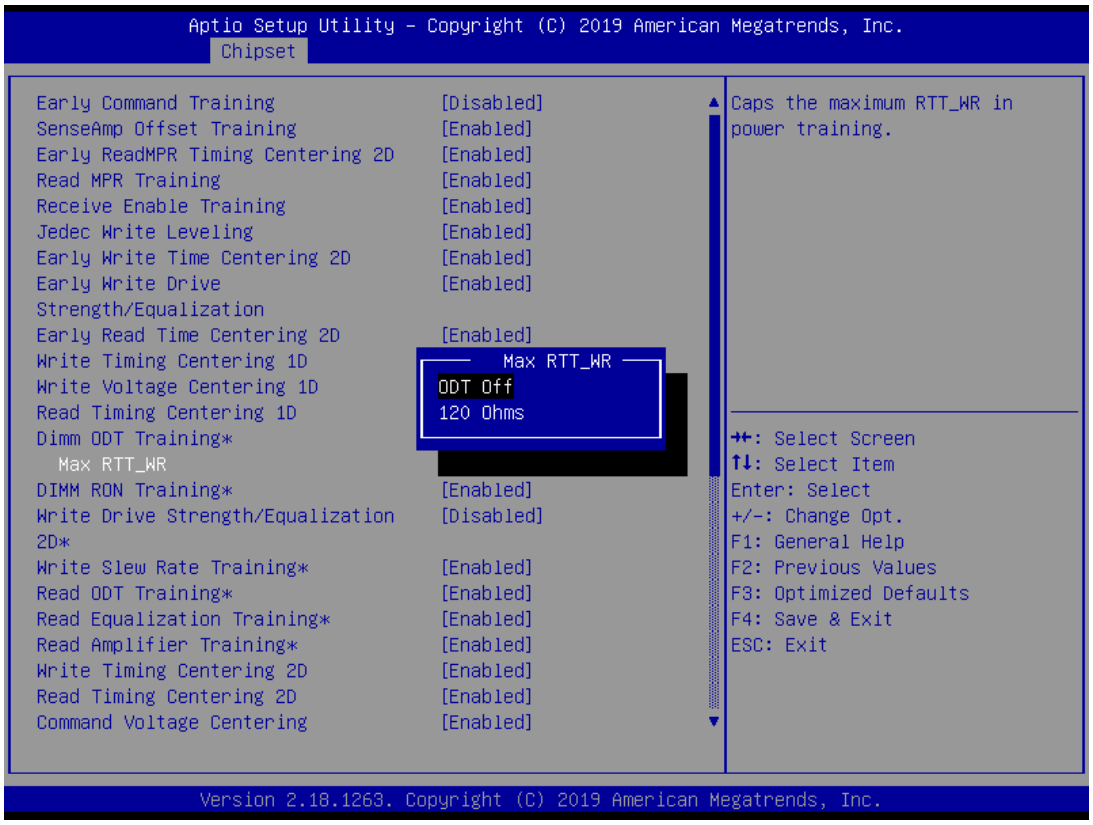
This item contains the configuration of the Memory Power and Thermal Throttling.

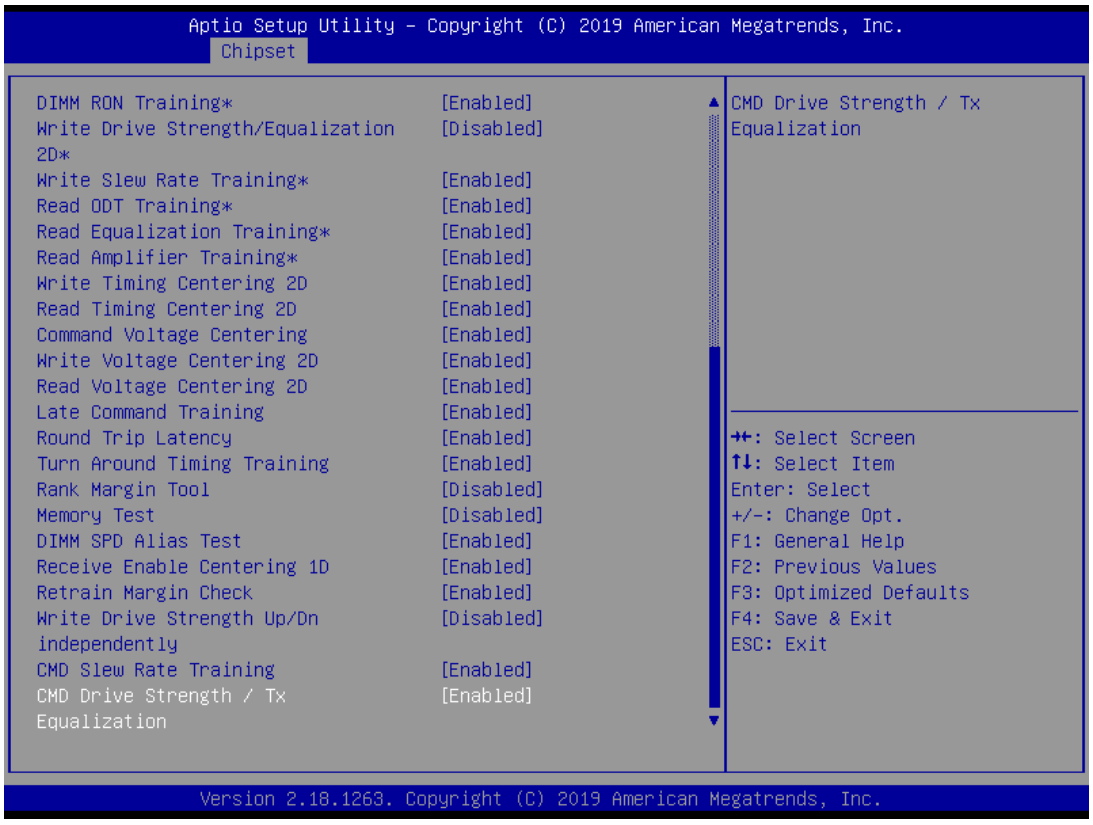
**Memory Thermal Management**

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

### ▶Memory Training Algorithms

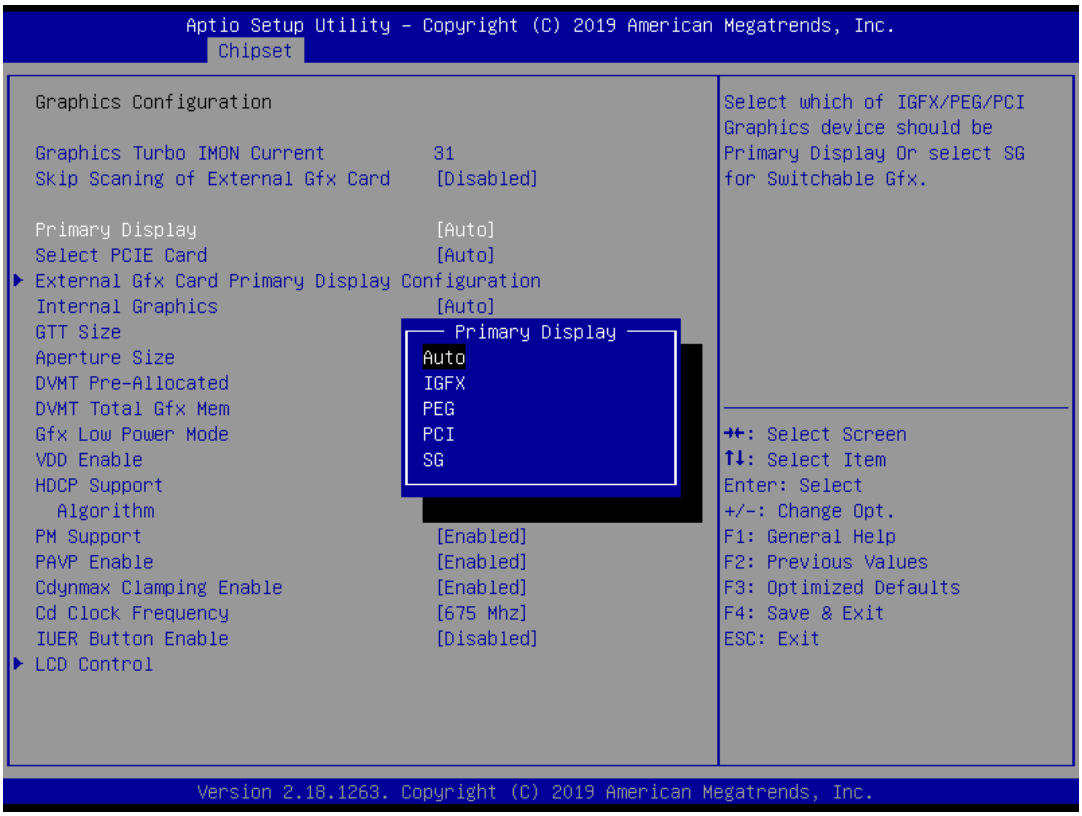
This item shows the information of the Memory Training Algorithms.



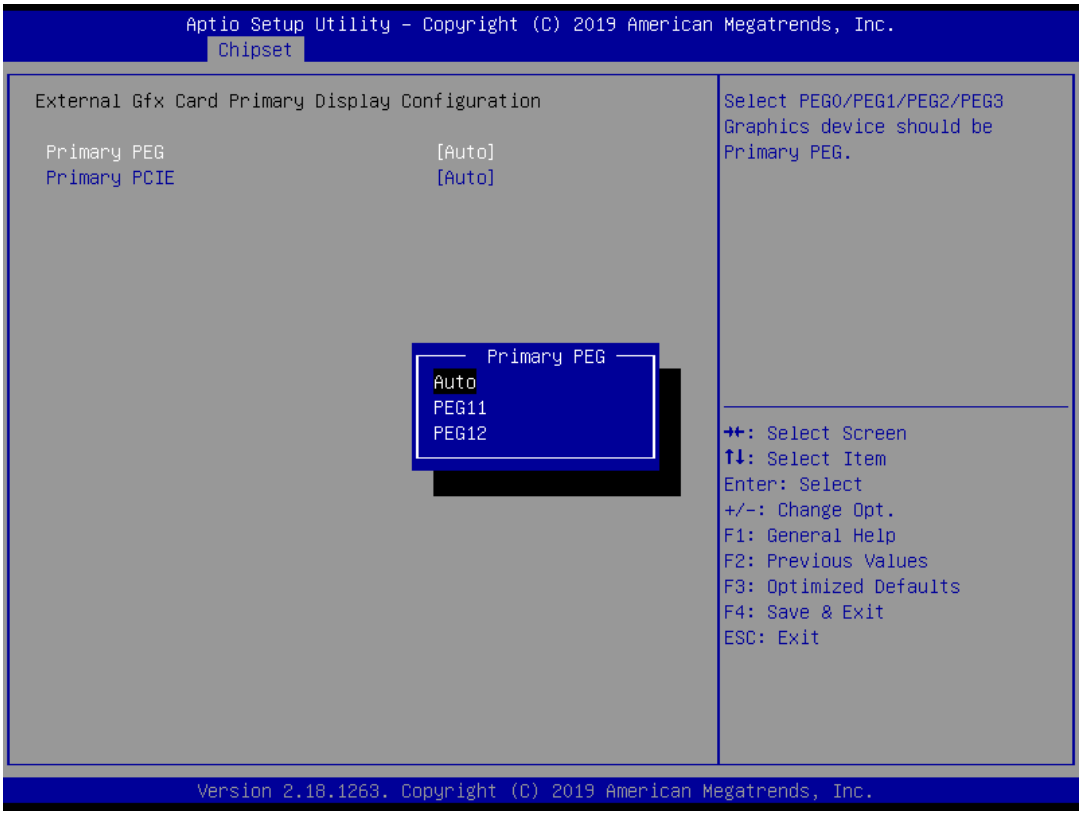



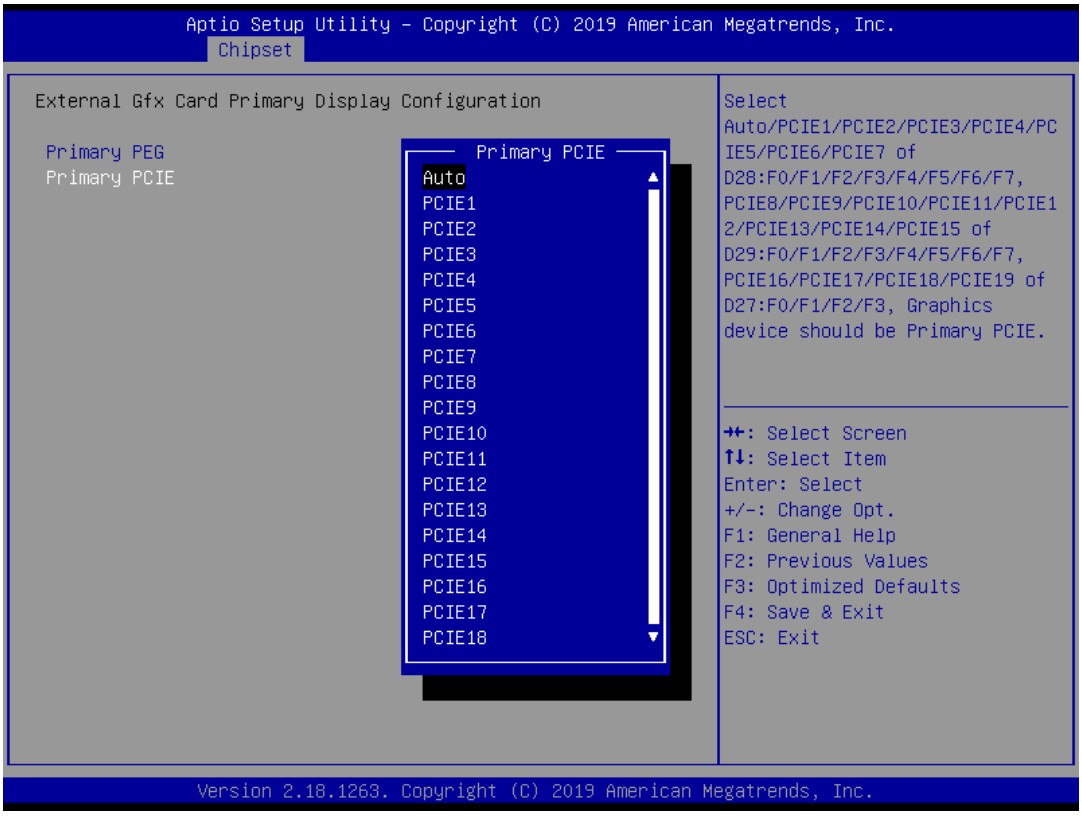
## ▶Graphics Configuration

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

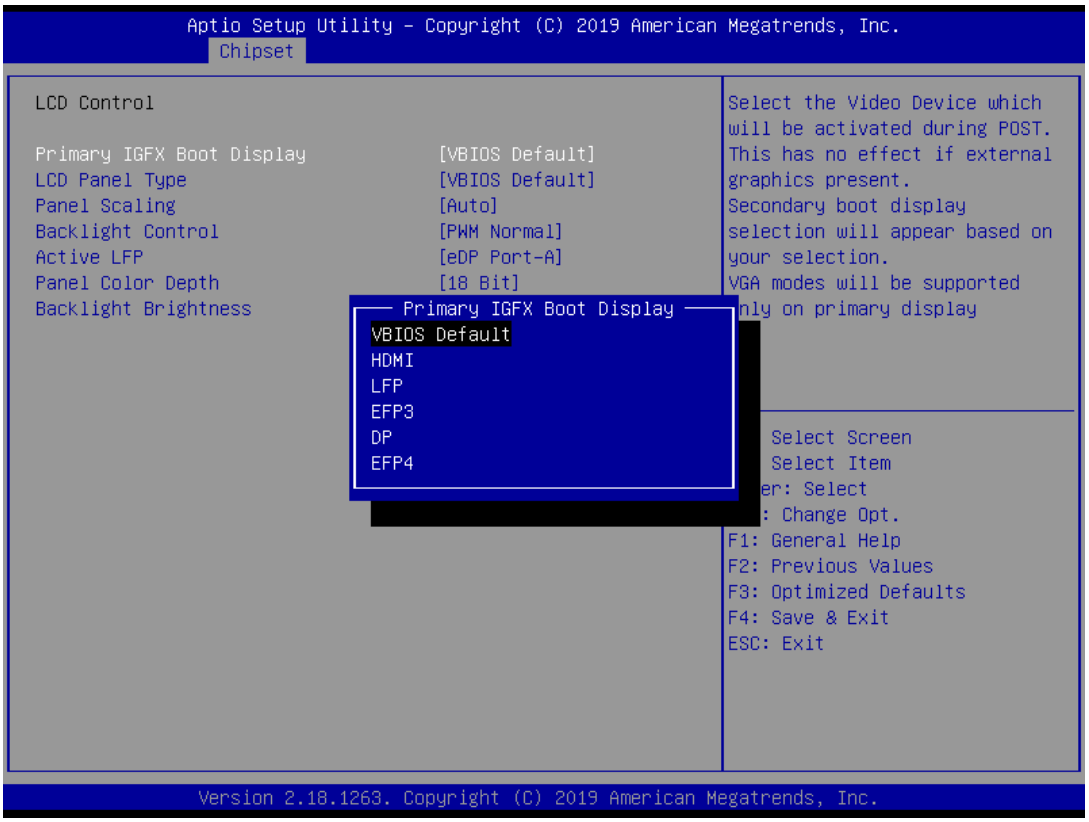



## ▶External Gfx Card Primary Display Configuration






## ▶LCD Control

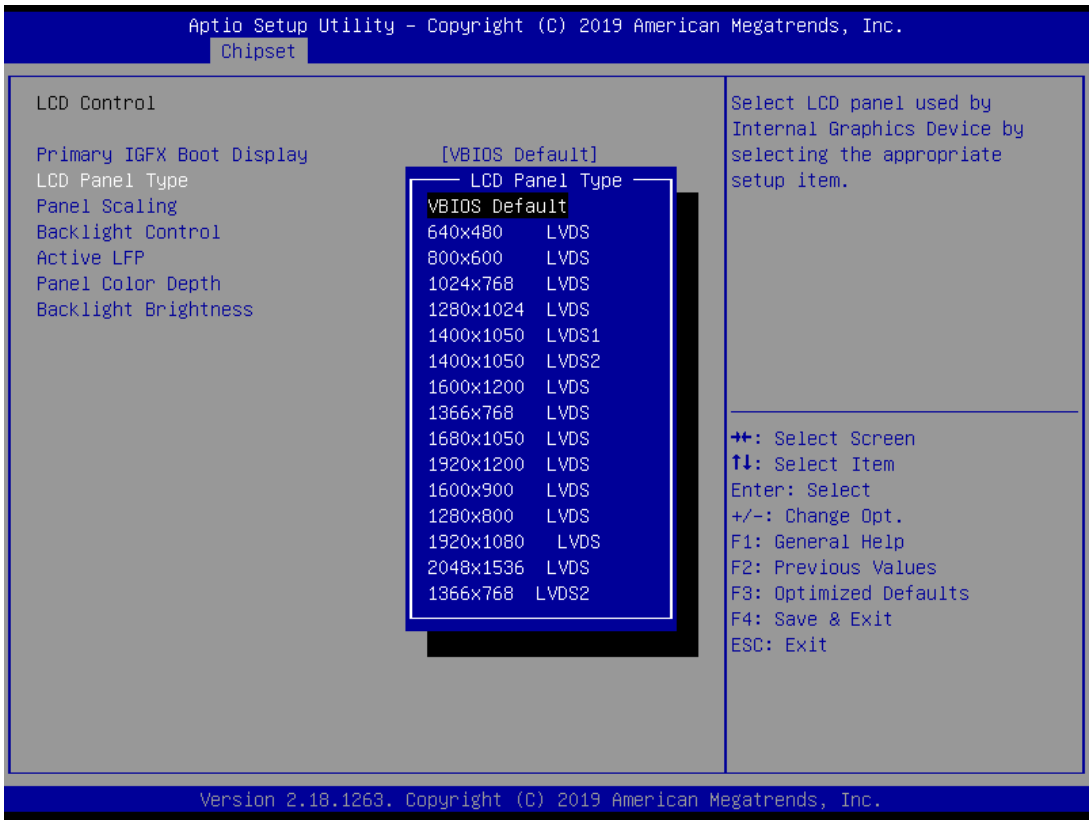



### Primary IGFX Boot Display

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

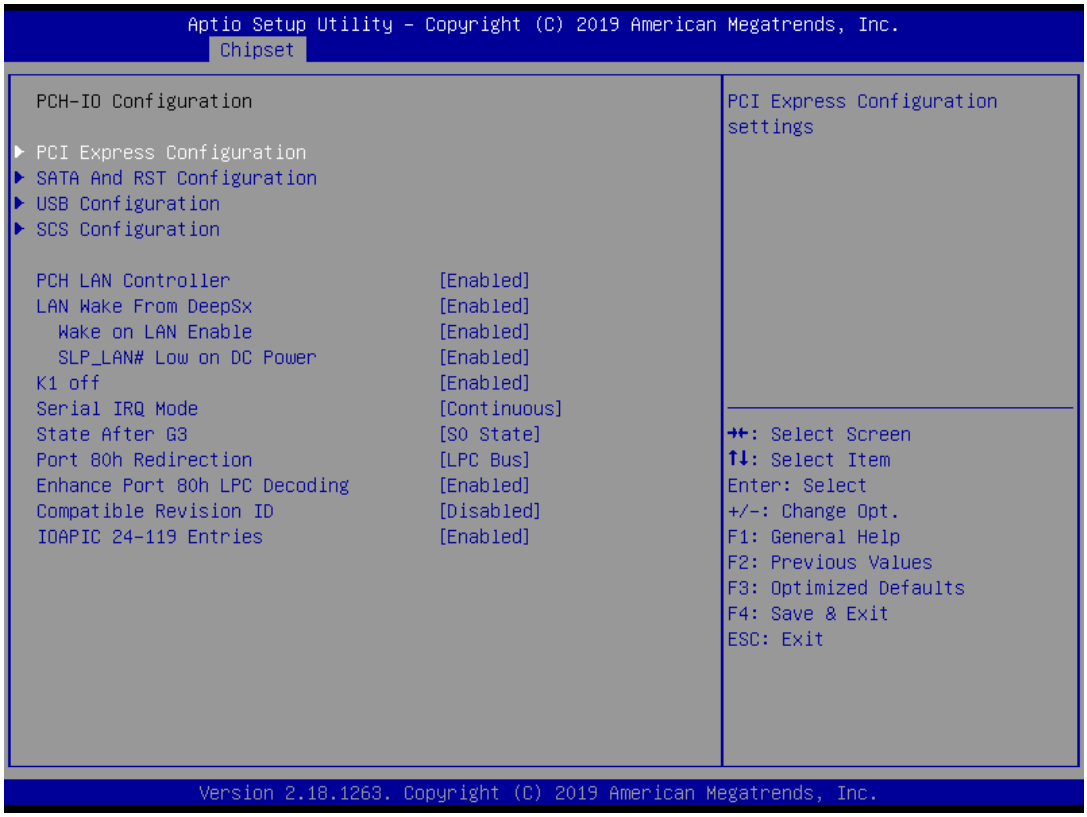
This item sets resolution of the motherboard LVDS screen. It defaults by VBIOS.



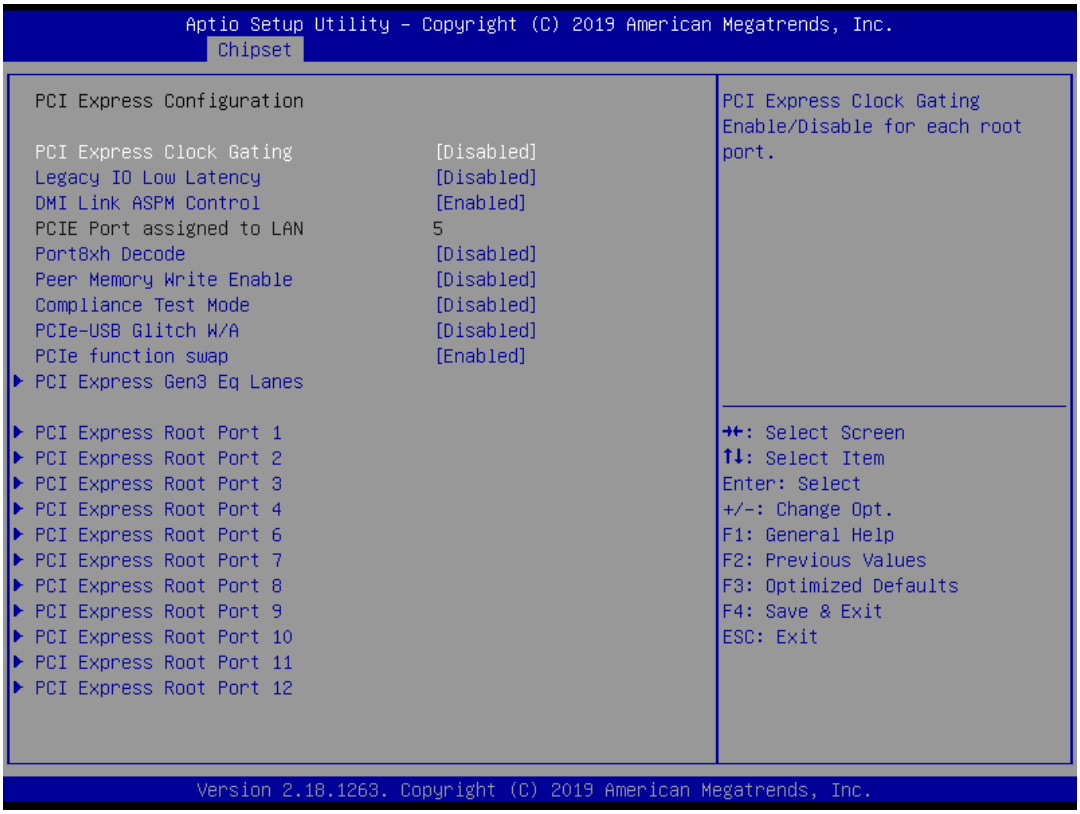

## VT-d

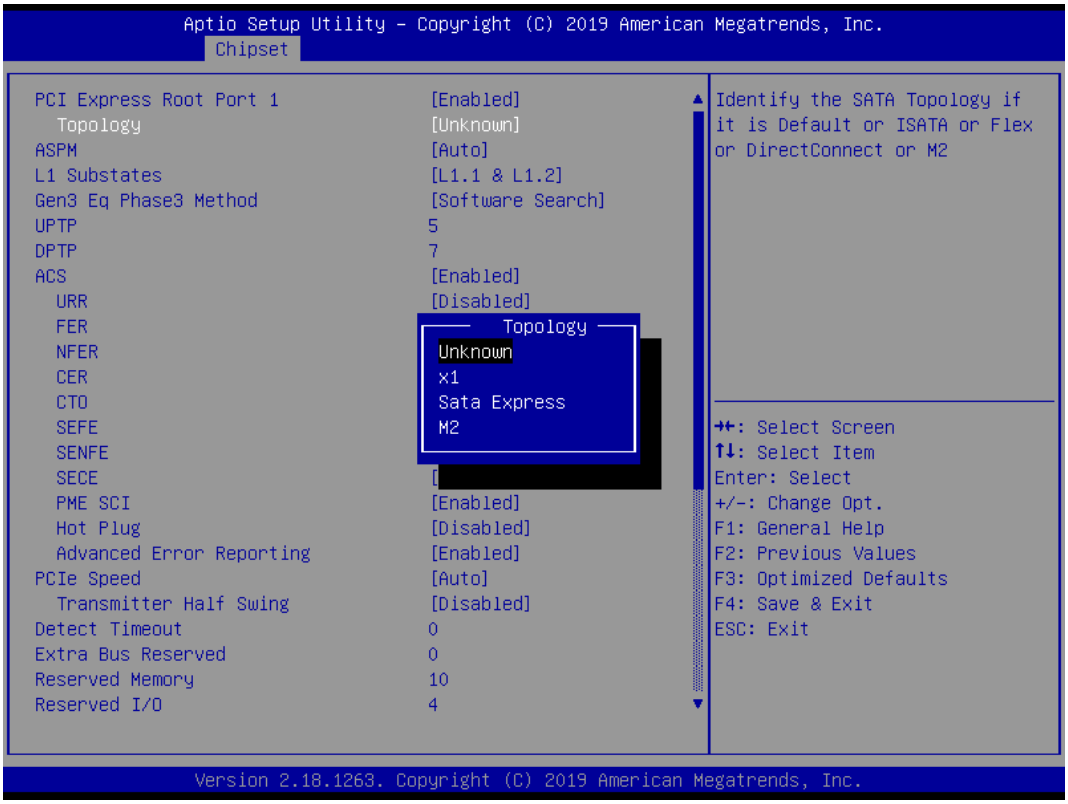
This item sets the VT-d technology to open or close. The default is Enabled.

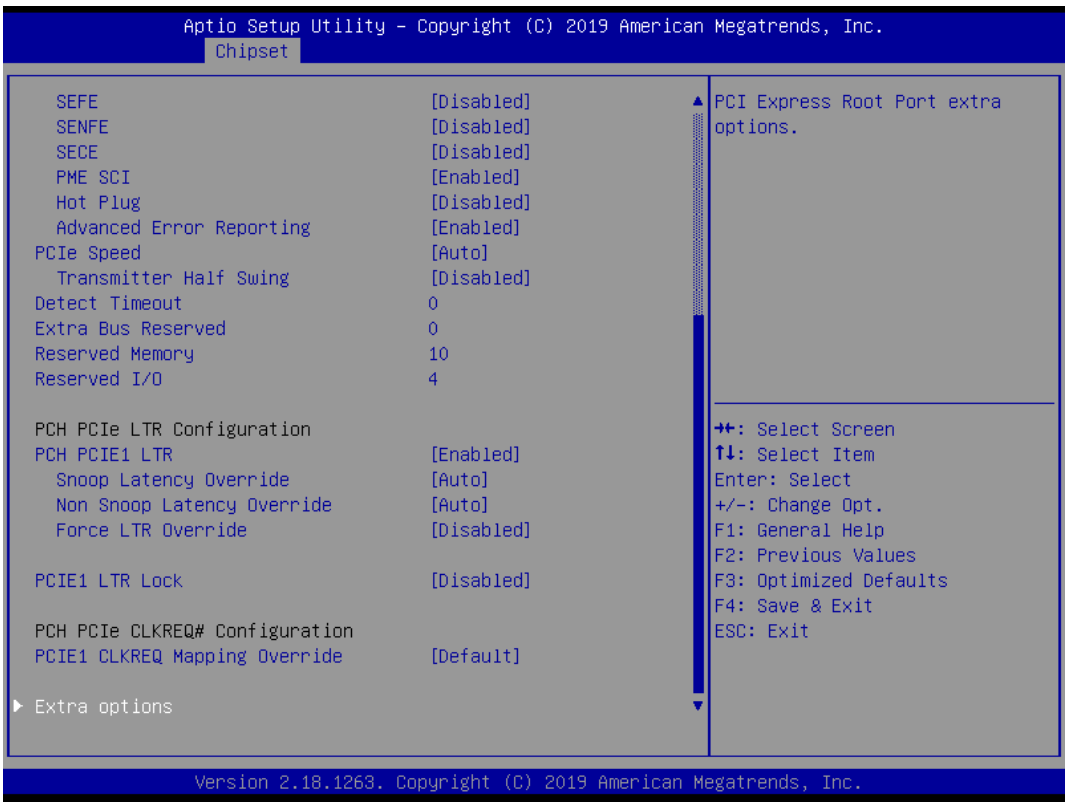
## PCH-IO Configuration (South Bridge Configuration)



## ▶PCI Express Configuration

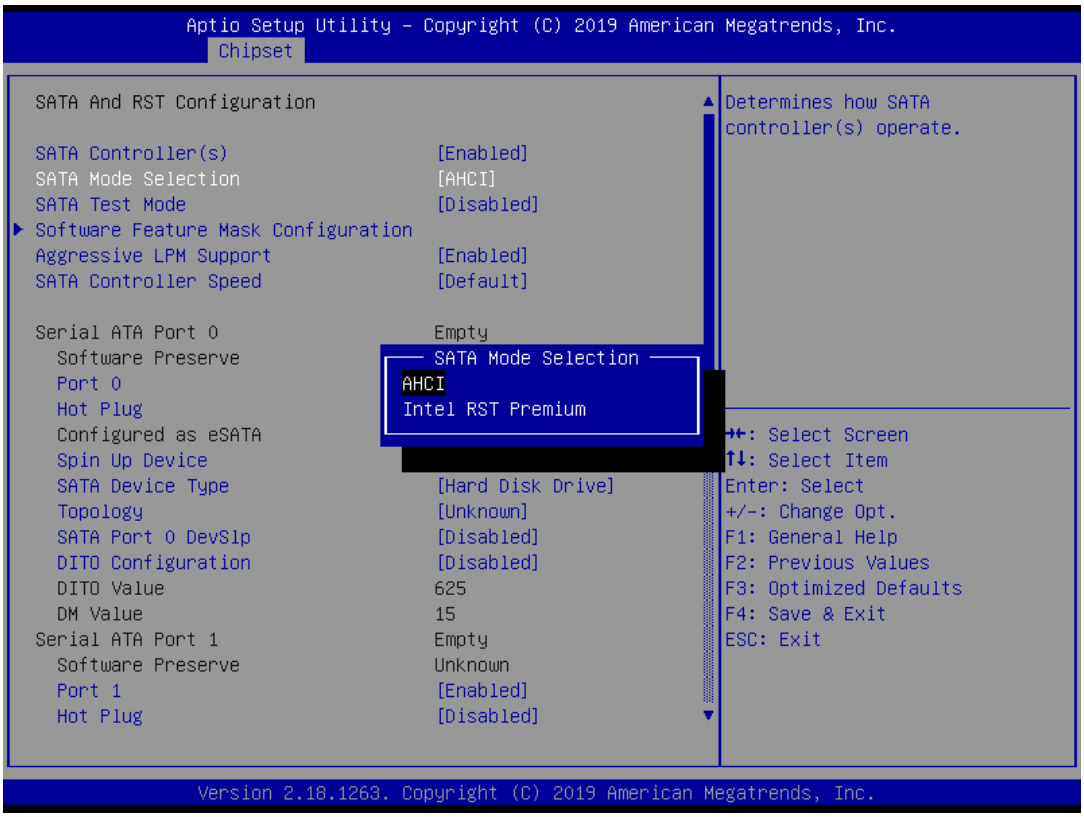


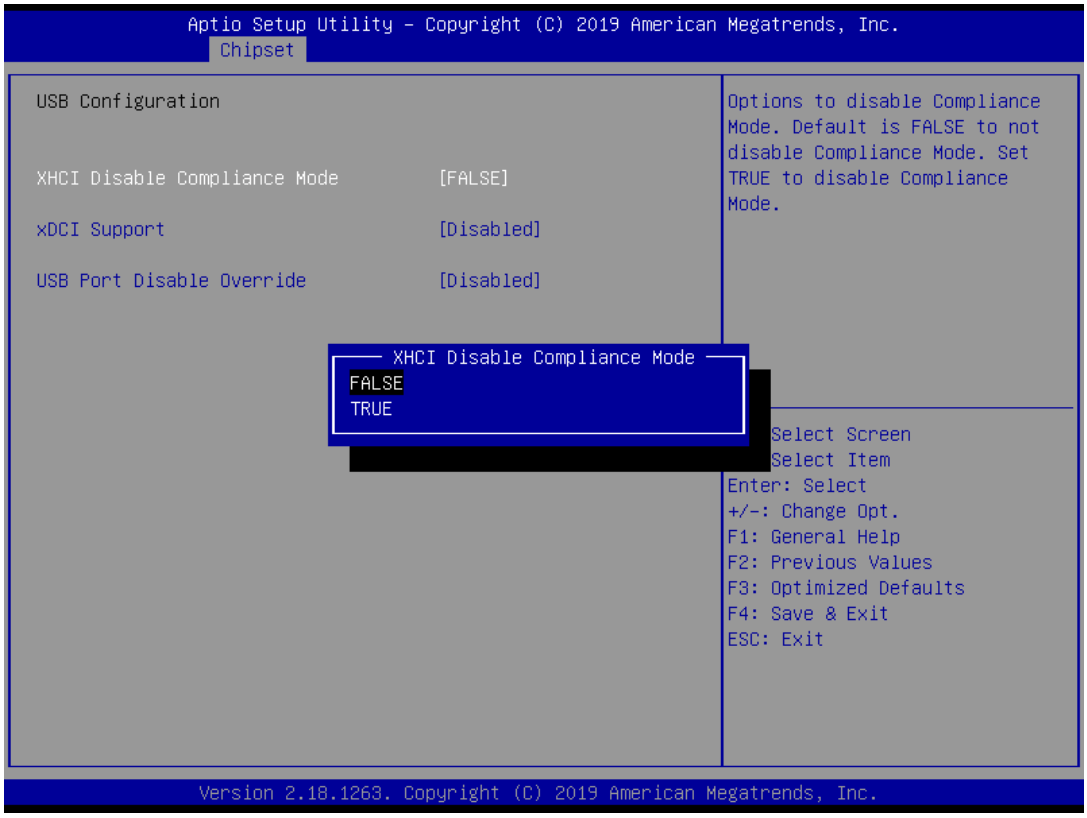



## ▶SATA And RST Configuration

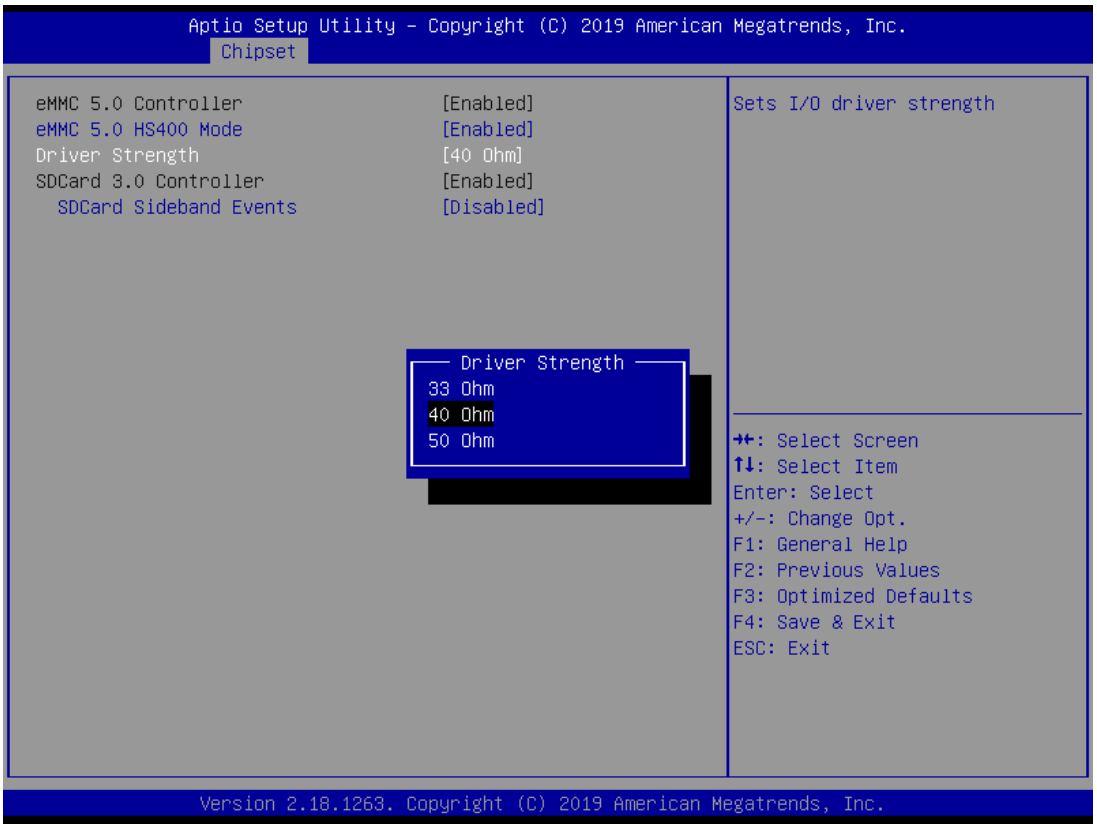
SATA hard disk and fast storage configuration, enter this sub-menu, there will be related settings of the hard disk.



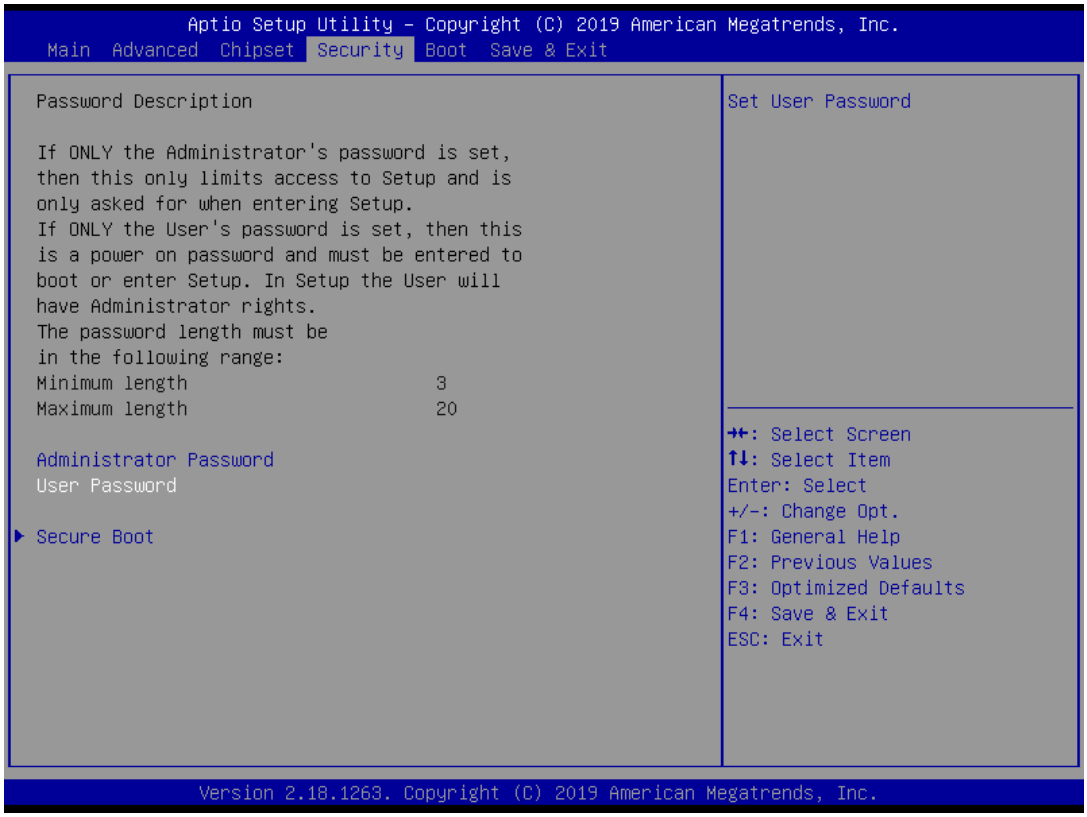

## ▶USB Configuration




## ▶SCS Configuration



## 3.2.5 Security menu



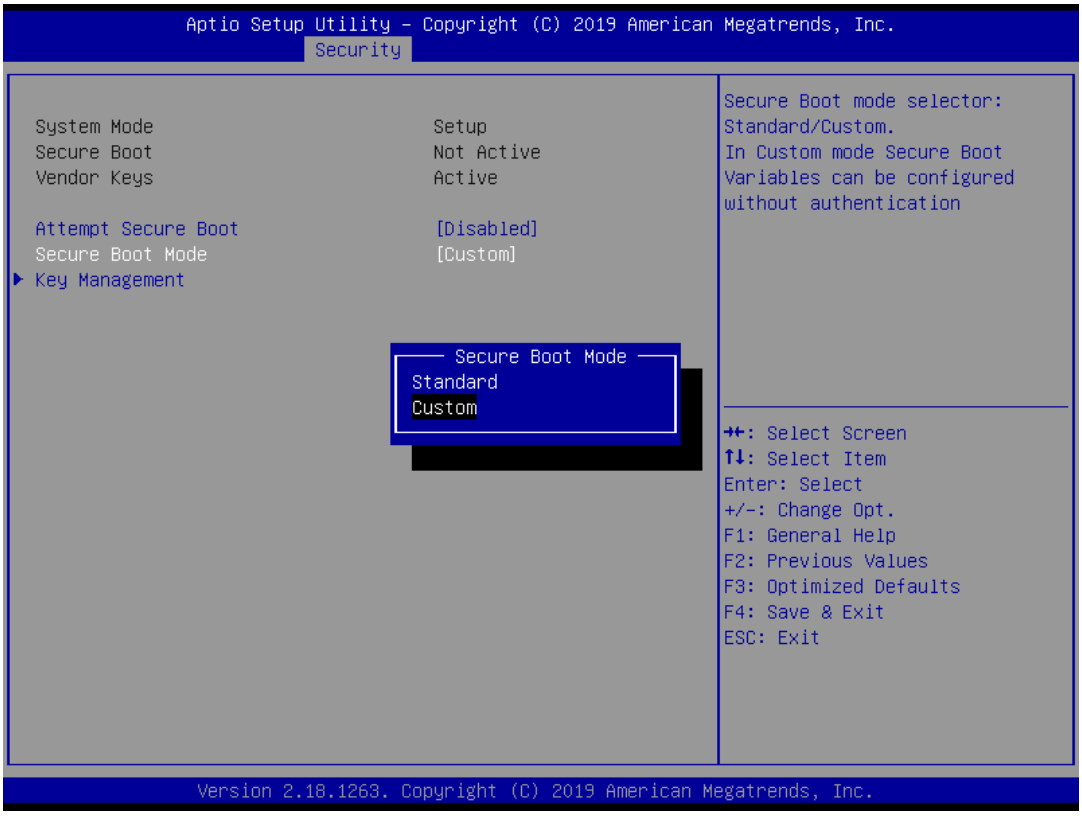

### Administrator Password

This item sets the information of the administrator password.

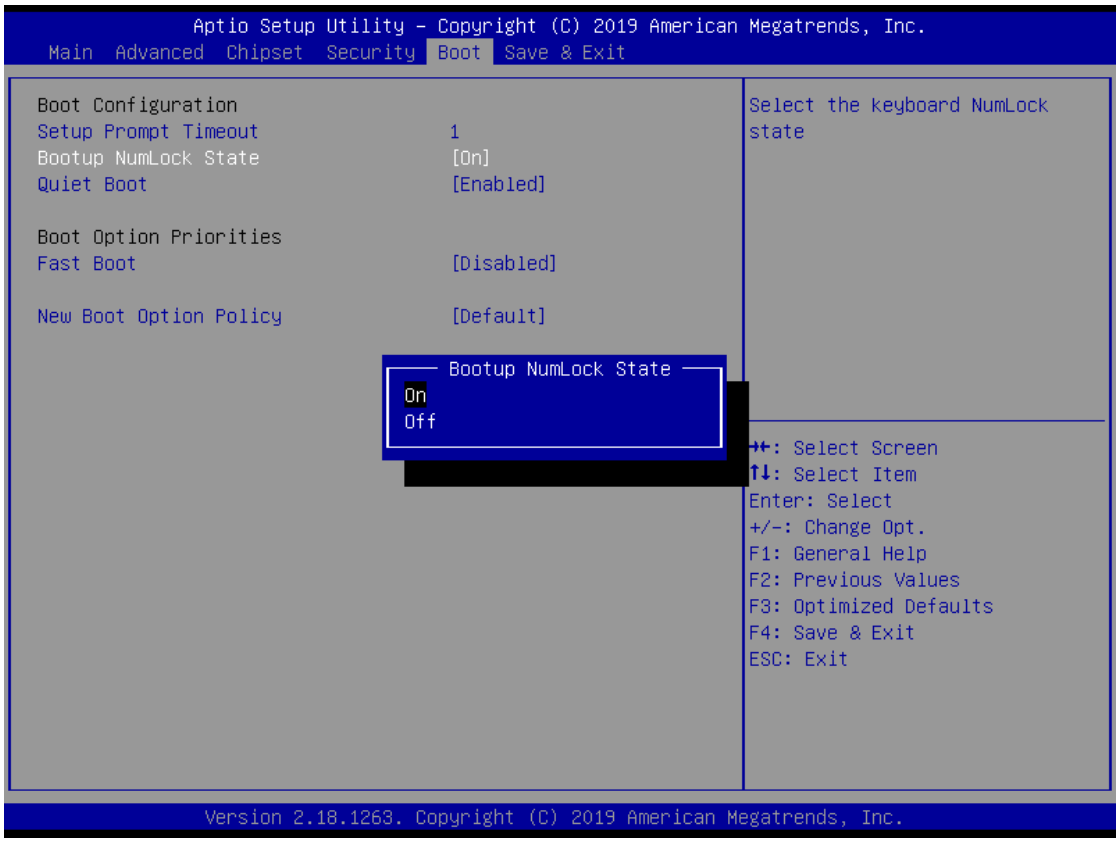
### User Password

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.

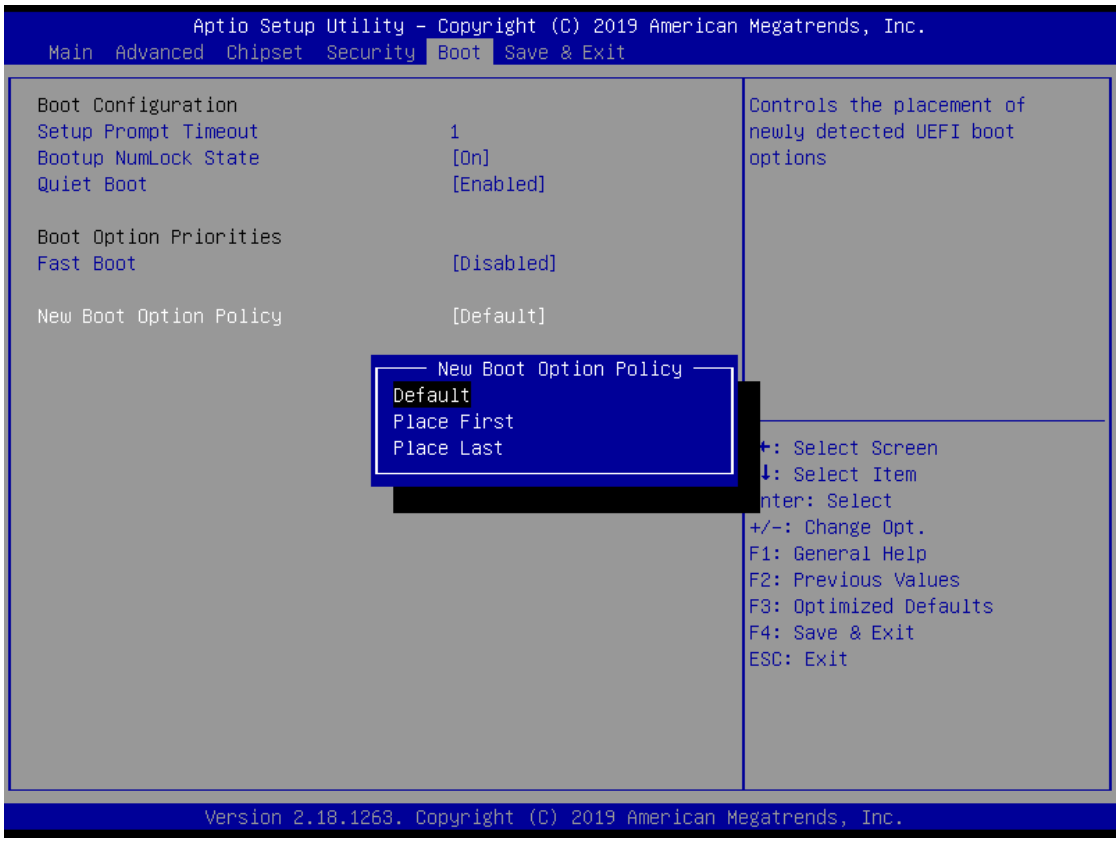
### Quiet Boot

Switch full screen logo control

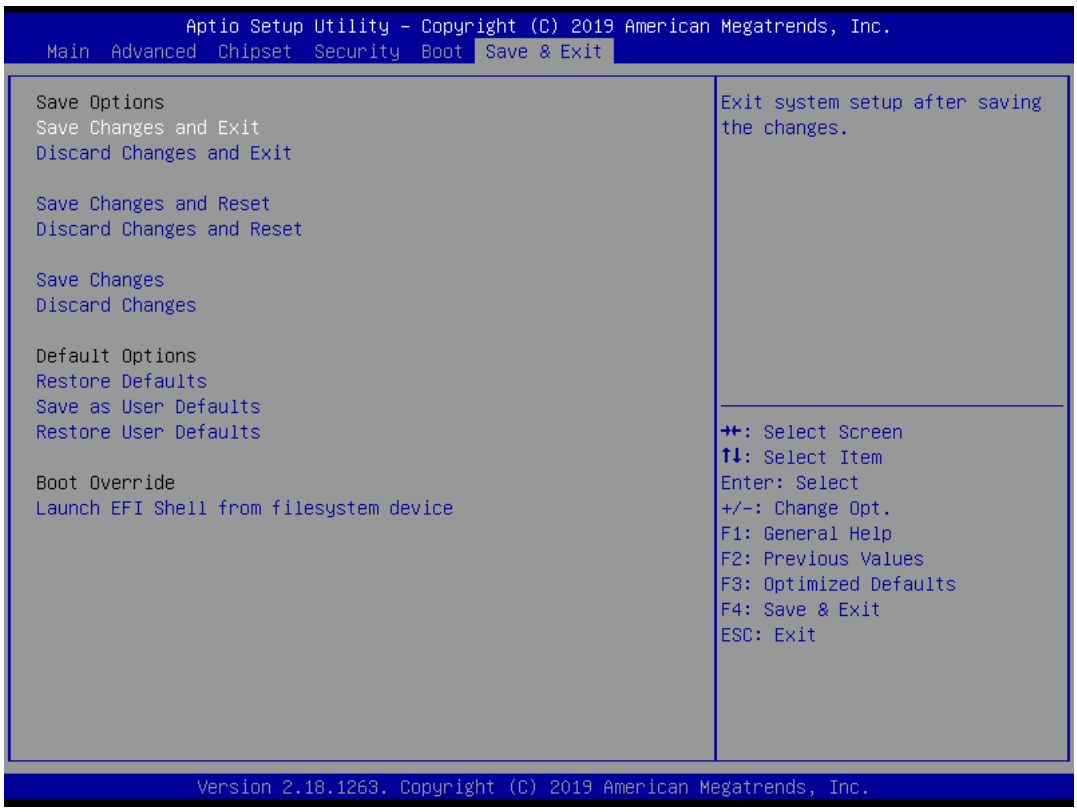
### Fast Boot

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-3820 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:

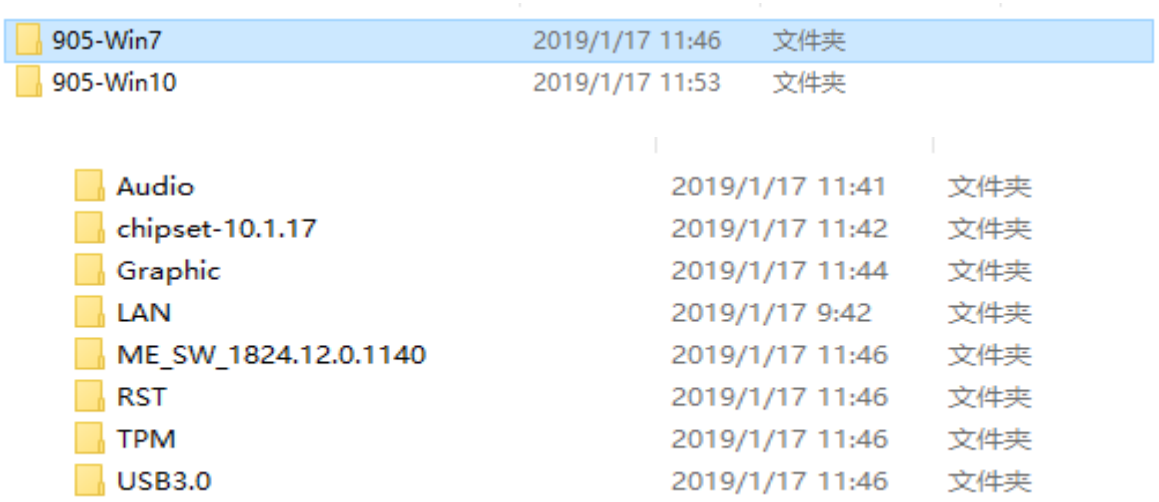



Figure 5.1 win7 drivers

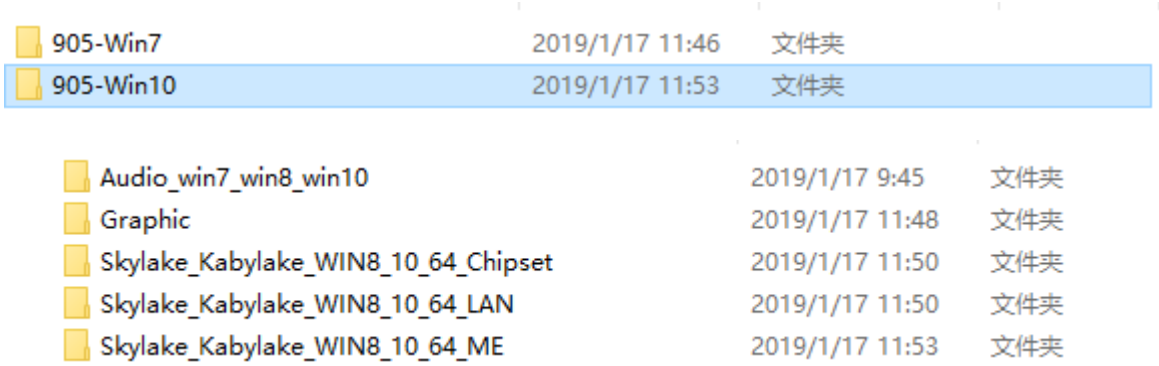



Figure 5.2 win10 drivers

Step 1 – Install Display Driver
Step 2 – Install Audio Driver
Step 3 – Install Chipset Driver
Step 4 – Install LAN Driver
Step 5 – Install ME Driver
Step 6 – Install USB3.0 Driver

Please read instructions below for further detailed installations.

## 4.2 Installation:

Insert the STX-I905 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

Step 6 –Install USB3.0 Driver
1. Double click on the USB3.0 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 7 –Install RST Driver
1. Double click on the RST 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 8 –Install TPM Driver
1. Double click on the TPM 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-I905 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.

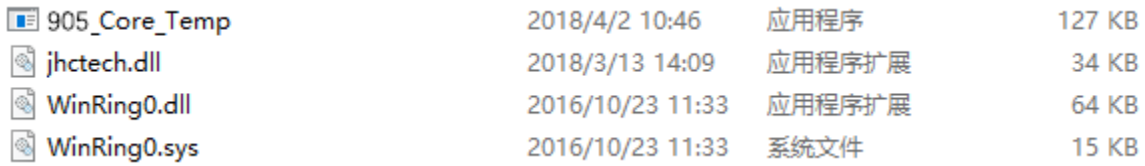



Figure 5.3

## 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

| 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*==========*/

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

1 * void Second_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, 1 or 2

Mode 8 bit of a bit, each bit controls the input and output mode of a GPIO pin,

Bit =1, the corresponding pin is used as the input port.

Bit =0, the corresponding pin is used as an output port.

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

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

4 * creation date：

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

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

2 * void Second_gpio_output(int port, int level);

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

3 * parameter description:

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

Level 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

| Level | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|---|

| GPIO pin | PIN8 | PIN7 | PIN6 | PIN5 | PIN4 | PIN3 | PIN2 | PIN1 |
|---|---|---|---|---|---|---|---|---|

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

4 * creation date：

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

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

1 * int Second_gpio_input(int port);

2 * function description： read the motherboard GPIO input level

3 * parameter description：

Return value： return a byte (8 bit), each bit of 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: The read value is valid only when the pin is in input mode

4 * creation date：

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

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