

# User Manual

ZKAIO6000

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Version: 1.0

Date: April 2019

# Important Statement

Thank you for choosing our product. Before using this product, please read this user manual carefully to avoid risks of danger to the users of this product or those nearby and damaging the device. Follow these instructions to ensure that your product functions properly and completes verifications in a timely manner.

Unless authorized by our company, no group or individual shall take excerpts of or copy all or part of these instructions nor transmit the contents of these instructions by any means.

The products described in this manual may include software that is copyrighted by our company and its possible licensors. No one may copy, publish, edit, take excerpts of, decompile, decode, reverse-engineer, rent, transfer, sublicense, or otherwise infringe upon the software's copyright unless authorized by the copyright holder(s). This is subject to relevant laws prohibiting such restrictions.



As this product is regularly updated, we cannot guarantee exact consistency between the actual product and the written information in this manual. Our company claims no responsibility for any disputes that arise due to differences between the actual technical parameters and the descriptions in this document. The manual is subject to change without prior notice.

# Safety Instructions

- Read these instructions carefully. Keep these instructions for future reference.
- Please disconnect this equipment from AC outlet before cleaning. Don't use liquid or sprayed detergent for cleaning. Use moisture sheet or cloth for cleaning.
- Please keep this equipment from humidity.
- Lay this equipment on a reliable surface when install. A drop or fall could cause injury.
- Make sure power cord such a way that people cannot step on it. Do not place anything over the power cord.
- All cautions and warnings on the equipment should be noted.
- If the equipment is not used for long time, disconnect the equipment from main to avoid being damaged by transient over voltage.
- Never pour any liquid into opening; this could cause fire or electrical shock.
- If one of the following situations arises, get the equipment checked by a service personnel:
  - ✧ The power cord or plug is damaged.
  - ✧ Liquid has penetrated into the equipment.
  - ✧ The equipment has been exposed to moisture.
  - ✧ The equipment does not work well or you cannot get it work according to user manual.
  - ✧ The equipment has dropped and damaged.
- Do not leave this equipment in an environment unconditioned, storage temperature below -20°C or above 60°C, it may damage the equipment.
- Unplug the power cord when doing any service or adding optional kits.
- Lithium Battery Caution:
  - ✧ Danger of explosion can happen if the battery is incorrectly replaced. Replace only the original or equivalent type recommended by the manufacture. Dispose used batteries according to the manufacturer's instructions.
- Do not remove the cover, and ensure no user serviceable components are inside. Take the unit to the service center for service and repair.

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# 1. Packing List

ZKAIO6000(58P)	ZKAIO6000(80P)
	
Power Adapter	Power cord
	

## 2. System View

### 2.1 Rear View



**Note:** Please make sure 12V DC plug in the right direction before plugging in DC jack.

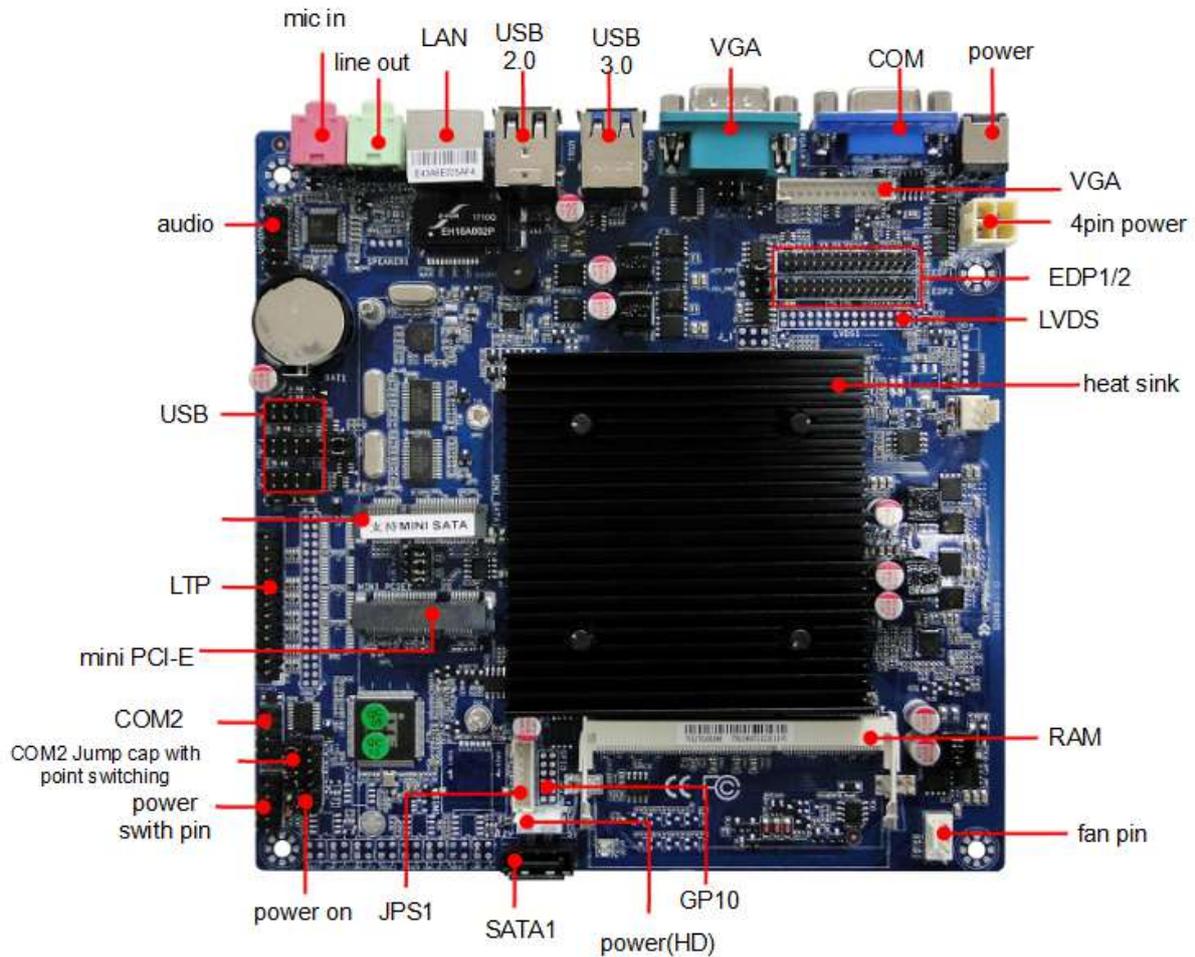
## 2.2 Specification

Display & Touch	LCD Display Size		15 TFT LCD
	Max. Resolution		1024x768
	Brightness		250 cd/m <sup>2</sup>
	Support Color		16.2M/ 262K colors
	Backlight		LED
	Touch Type		Standard Projected Capacitive
Main Board	Processor		Intel® Celeron J1900 QC 2.0GHz
	System Memory		One SO-DIMM socket supports DDR3L up to 8GB
Storage	HDD		MINI SSD x 1
I/O	USB		X 4 (USB 2.0)
			X 2 (USB 3.0)
	Audio Port		x 1 Line-out x1 mic in
Network	LAN		X 1 (RJ45 10/100/1000 Base-T)
Environmental	Temperature	Operation	32° to 104° F (0° to 40° C)
		Storage	-4° to 140° F (-20° to 60° C)
	Relative Humidity		20% to 80% non-condensing
Power Supply			12V 5A power adapter
OS Support			POS Ready 7 / Win 8.1 Industry / Win 10 IoT Enterprise
Dimension			296X288X360mm(ZK3510) 296X288X382mm(ZK3510W)
Compliance	Certifications		CE / FCC

**Note:** Intel® Celeron J1900 CPU does not support POS Ready 2009

## 2.3 Internal Layout

M/B PCBA



## 3. Pin Definition

### 3.1 CPU

This mainboard uses Intel® Bay Trail J1900 Quad-core 2.0GHz CPU, the frequency can be risen to 2.4GHz.

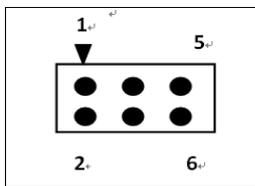
### 3.2 Power output control interface: ATX12

The motherboard provides 4 Pin ATX12V power output interface to meet different customer needs.

PIN	Definition
1	GND
2	GND
3	+12V
4	+12V

### 3.3 LVDS-PWR1

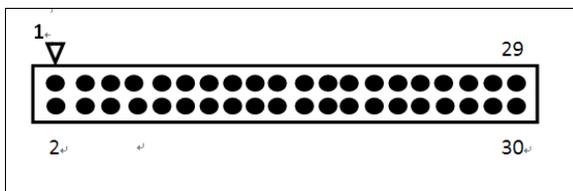
The motherboard provides 2\*3pin LVD-PWR1 connector (spacing: 2.54mm), the pin is defined as follows:



PIN	Definition
1-2	+ 3.3V
3-4	+ 5V
5-6	+ 12V

### 3.4 LVDS

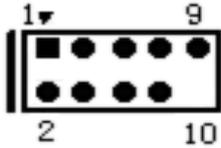
The motherboard provides 2\*15 pin LVDS connector (spacing: 2.0mm), the pin is defined as follows:



PIN	Definition	PIN	Definition	PIN	Definition
1	VCC	2	VCC	3	VCC
4	GND	5	GND	6	GND
7	LVDS_A_DATA0-	8	LVDS_A_DATA0+	9	LVDS_A_DATA1-
10	LVDS_A_DATA1+	11	LVDS_A_DATA2-	12	LVDS_A_DATA2+
13	GND	14	GND	15	LVDS_A_CLK-
16	LVDS_A_CLK+	17	LVDS_A_DATA3-	18	LVDS_A_DATA3+
19	LVDS_B_DATA0-	20	LVDS_B_DATA0+	21	LVDS_B_DATA1-
22	LVDS_B_DATA1+	23	LVDS_B_DATA2-	24	LVDS_B_DATA2+
25	GND	26	GND	27	LVDS_B_CLK-
28	LVDS_B_CLK+	29	LVDS_B_DATA3-	30	LVDS_B_DATA3+

### 3.5 F\_PANEL

The motherboard provides 2 \* 5 Pin F-PANEL interface (spacing: 2.54mm), computer chassis power switch, reset switch, hard drive indicator and power indicator light can be connected to this pin:



PIN	Definition	PIN	Definition
1	HD LED+	2	Power LED+
3	HD LED-	4	Power LED-
5	GND	6	POWER_SW
7	RESET_SW	8	GND
9	GND		

### 3.6 AUTO\_ON

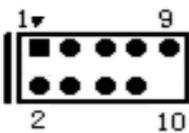
The motherboard provides 1\*3 pin AUTO\_ON connector (spacing: 2.54mm), the pin is defined as follows:



PIN	Definition
1-2(Default)	Normal
2-3	Auto Power on

### 3.7 COM port

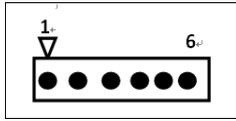
The motherboard provides 2\*5 pin COM connector (spacing: 2.54mm), the pin is defined as follows:



PIN	Definition	PIN	Definition
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

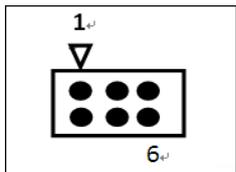
### 3.8 INVET

The motherboard provides 1\*6 pin INVET connector (spacing: 2.0mm), the pin is defined as follows:



PIN	Definition	PIN	Definition
1	+ 12V	2	+12V
3	LVDS_BKL_EN	4	BKL_PWM
5	GND	6	GND

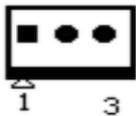
The motherboard provides 2\*3 pin COM2\_SET connector (spacing: 2.54mm), the pin is defined as follows:



PIN	Definition
1-2	Pin1:+12V
3-4	Pin1:+5V
5-6(Default)	Pin1:DCD

### 3.9 CLR\_CMOS

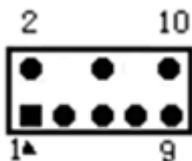
The motherboard provides 1 \* 3 PIN CLR\_CMOS connector, CLR\_CMOS: CMOS clear content / hold settings (spacing: 2.54 mm) , powered by on-board button battery. Clear CMOS will permanently eliminate the previous system configuration and set it to the original (factory setting) system setting. The steps: (1) turn off the computer, disconnect the power; (2)short circuit JBAT2-3 pin about 5 seconds; (3) turn on the computer; (4) start pressing the screen prompts to enter the BIOS settings, reload the default Value; (5) Save and exit settings. the pin is defined as follows:



PIN	Definition
1-2(Default)	Normal
2-3	Clear CMOS

### 3.10 F\_AUDIO

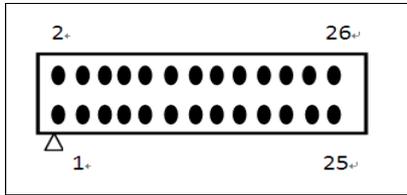
The Motherboard provides 2 \* 5 PIN (spacing: 2.54MM) front audio interface, the pin is defined as follows:



PIN	Definition	PIN	Definition
1	FP-MIC-L	2	GND
3	FP-MIC-R		
5	FP-OUT-R	6	Jack Detect
7	GND		
9	FP-OUT-L	10	Jack Detect

### 3.11 PRINT

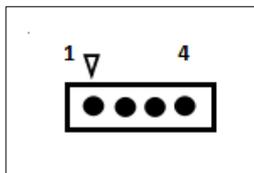
The Motherboard provides 2 \* 13 PIN (spacing: 2.54MM) PRINT interface, the pin is defined as follows:



PIN	Definition	PIN	Definition
1	STB	2	AFD
3	PD0	4	ERR
5	PD1	6	INIT
7	PD2	8	SLIN
9	PD3	10	GND
11	PD4	12	GND
13	PD5	14	GND
15	PD6	16	GND
17	PD7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

### 3.12 Speaker

The Motherboard provides 1\*4 PIN (spacing: 2.0MM) SPEAKER interface, the pin is defined as follows:

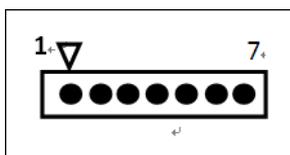


PIN	Definition
1	Left speaker-
2	Left speaker+
3	Right speaker-
4	Right speaker-

### 3.13 PS/2

PS2 interface, which is specific interface for mouse and keyboard, is a 6-pin round interface. However, the mouse uses only one of the 4-pin data transmission and power supply, and the remaining two are empty pin.

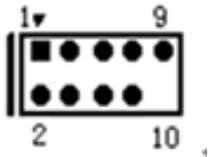
The motherboard provides 1 \* 7 PIN PS / 2 connector (spacing: 2.0mm), the pin is defined as follows:



PIN	Definition	PIN	Definition
1	KB_DATA	2	KB_CLK
3	GND	4	MS_DATA
5	MS_CLK	6	GND
7	+V5S		

## 3.14 F-USB

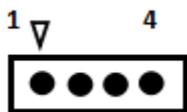
The motherboard provides two 2 \* 5 pin USB interface (spacing: 2.54mm), the pin is defined as follows:



PIN	Definition	PIN	Definition
1	+5V	2	+5V
3	USB1_data-	4	USB2_data+
5	USB1_data-	6	USB2_data+
7	GND	8	GND
9	NA	10	GND

## 3.15 SATA Power

The motherboard provides 1 \* 4 Pin SATA power connector (spacing: 2.54mm), the pin is defined as follows:



PIN	Definition
1	+ 5V
2	GND
3	GND
4	+ 12V

# 4. BIOS Settings

## 4.1 Introduction

The purpose of this section is to introduce the functions of the motherboard AMI BIOS setup menu. BIOS program allows the user to modify and save the basic system configuration. BIOS setup options and modify data, are stored in the CMOS RAM, CMOS RAM power supply is provided by a lithium battery on the motherboard, make sure that the power is cut off, the modified value saved in CMOS RAM will not be lost.

Under normal circumstances, the factory default BIOS is optimize value, no modification, if other causes BIOS data loss, need to re-set the BIOS option.

When you do not understand the BIOS options and settings, please do not arbitrarily modify, if problems happened because the error BIOS value, please restore the BIOS factory settings.

This manual provides some instructions that allow the user to refer to and optimize the BIOS function settings, but there are still some BIOS projects that are not described. Please keep the default settings without having to fully understand their functions.

## ● BIOS Setting

The following contents of this manual will instruct you to set the basic functions of the BIOS program.

When the computer is started, the BIOS enters the POST program. The self-test program is a series of diagnostic programs that are fixed in the BIOS. When the self-test program is executed, if any error, it will display the following information:

## ● Press Delete to BIOS

If you want to enter the BIOS, press <Delete> to enter the BIOS setup program. If this message disappears before you react, you can turn off or press the Reset button, Restart your computer, you can also press <Ctrl + Alt + Delete> to restart the computer.

In the BIOS setup, you will see a description of the options in the upper right corner, which is a brief description of the selected items. The detailed description of Function keys in the lower right corner, you can use these keys to specify options and change settings.

## ● BIOS Function keys

BIOS Function keys	Description
→ ←	Select screen
↑ ↓	Select item
ENTER	Select the item and enter the submenu
+/-	Change the item, add or subtract values
F1	Display help content
F2	Previous setting values
F3	Optimized Defaults
F4	Save changes and Exit
ESC	Exit

## ● BIOS Upgrade

- 1) Please download from the official website or get the latest BIOS file and refresh tool from the supplier.
- 2) Let the computer run in UEFI Shell mode, we provide the AMI BIOS refresh tool is FPT64.efi.
- 3) Run the application to back up the BIOS file. The instruction is FPT64.efi / D backup.BIN.
- 4) Update the BIOS. The instruction is FPT64.efi / F NEWBIOS.BIN.

- 5) Restart the computer, press "Delete" to set the BIOS, press "F3" to select "Load Optimized default ", press "F4" to save the changes and exit.

The default BIOS settings are suitable for most situations, ensuring optimal motherboard performance. If the system becomes unstable when you change the settings, load the default settings to ensure system compatibility and stability.

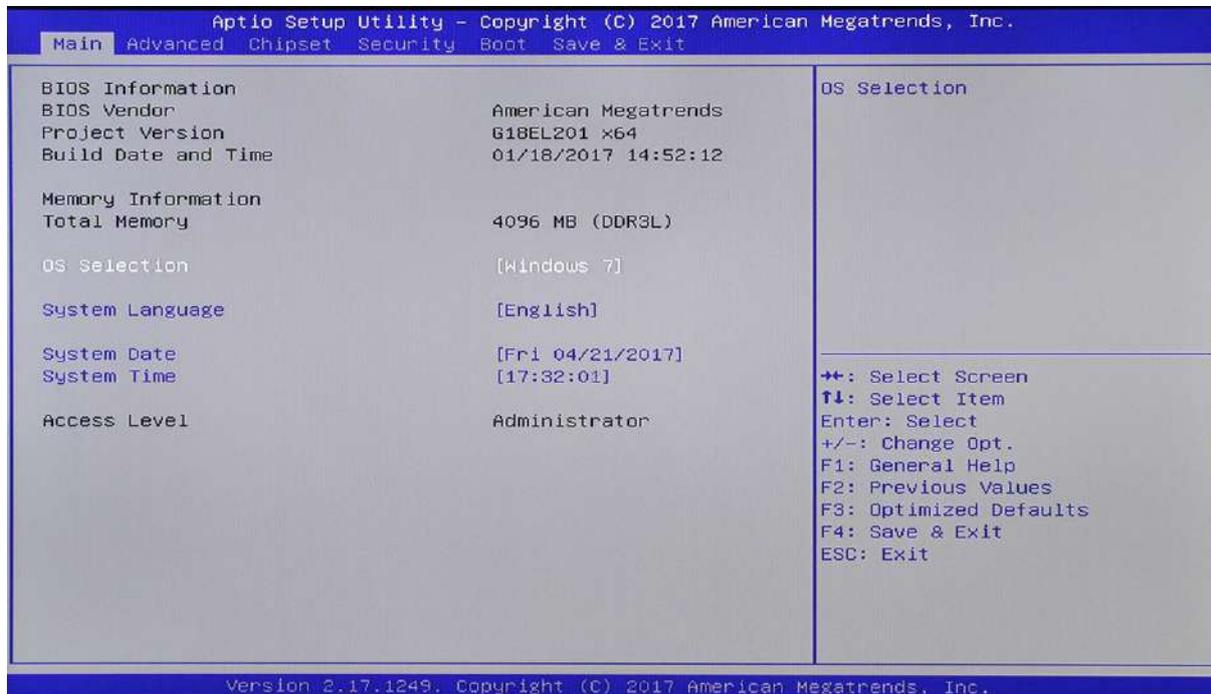
In order to get better system performance, the motherboard's BIOS firmware will be constantly updated.

The BIOS information described in this manual is just for your reference, and the actual BIOS information and its settings may differ slightly from the manual.

**Note:** The contents of this manual are subject to change without notice.

## 4.2 MAIN MENU

Once you have entered the AMI BIOS setup menu, the main menu appears on the screen and displays an overview of the basic system information. Select the item you want to change, press the " ↑ ↓ ← → " button to move the navigation bar to the item you want to change and press the <Enter> button. When you move the navigation bar to each item, the top right of the screen will display a Help information to help you better understand the functionality of this item. When an item is selected, the submenu of the item is displayed and the user can adjust the corresponding configuration parameters.



### BIOS Information

Displays BIOS system information, including BIOS version, creation date, etc.

### OS Selection

OS Selection: Windows 7, Windows 8.X

### System Date

Set the current date of the system, the display format is "week \* month / day / year".

### System Time

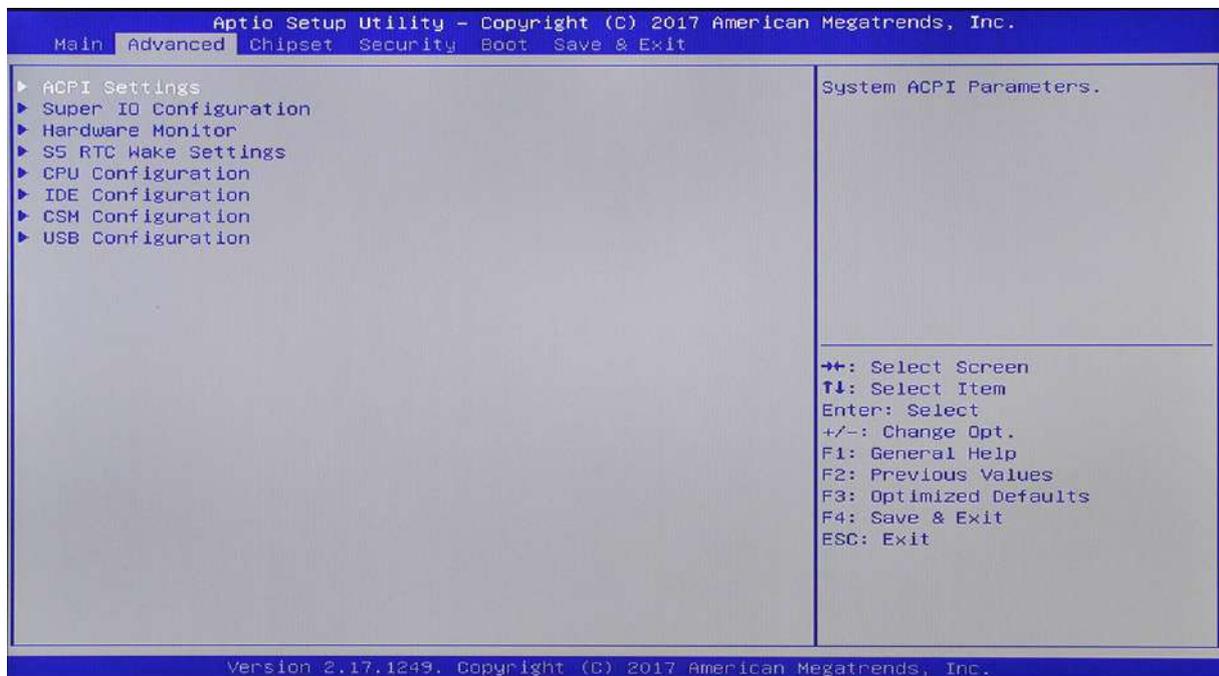
Set the current time of the system, the display format is "hours: minutes: seconds".

## 4.3 ADVANCED MENU

The Advanced menu allows you to set up CPU, Super I / O, Power settings management, and other system devices.



If the value of the item in this menu is set incorrectly, it may cause a system failure.



### ACPI Settings

This item provides the power management information setting (Due to different models of motherboards, some options are different, please choose according to the actual item).



### Enable Hibernation

Set the Enable or Disabled system hibernation, the default is "Enabled".

### ACPI Sleep State

Set the ACPI sleep state, the option is: "Suspend Disabled".

### IT8786E Super IO Configuration





### Watch dog Controller

Watch dog Controller, the option is: Disabled (default), Second, Minute

### Restore AC Power Loss By IO

Restore On AC Power Loss: Power Off (default), Power On, Last State

### Serial Port Configuration

Select an address and the corresponding interrupt to the serial port, enter the settings interface and display:



### Serial PortX

Select the serial port on or off, the set value is: [Enabled], [Disabled]

## Device Settings

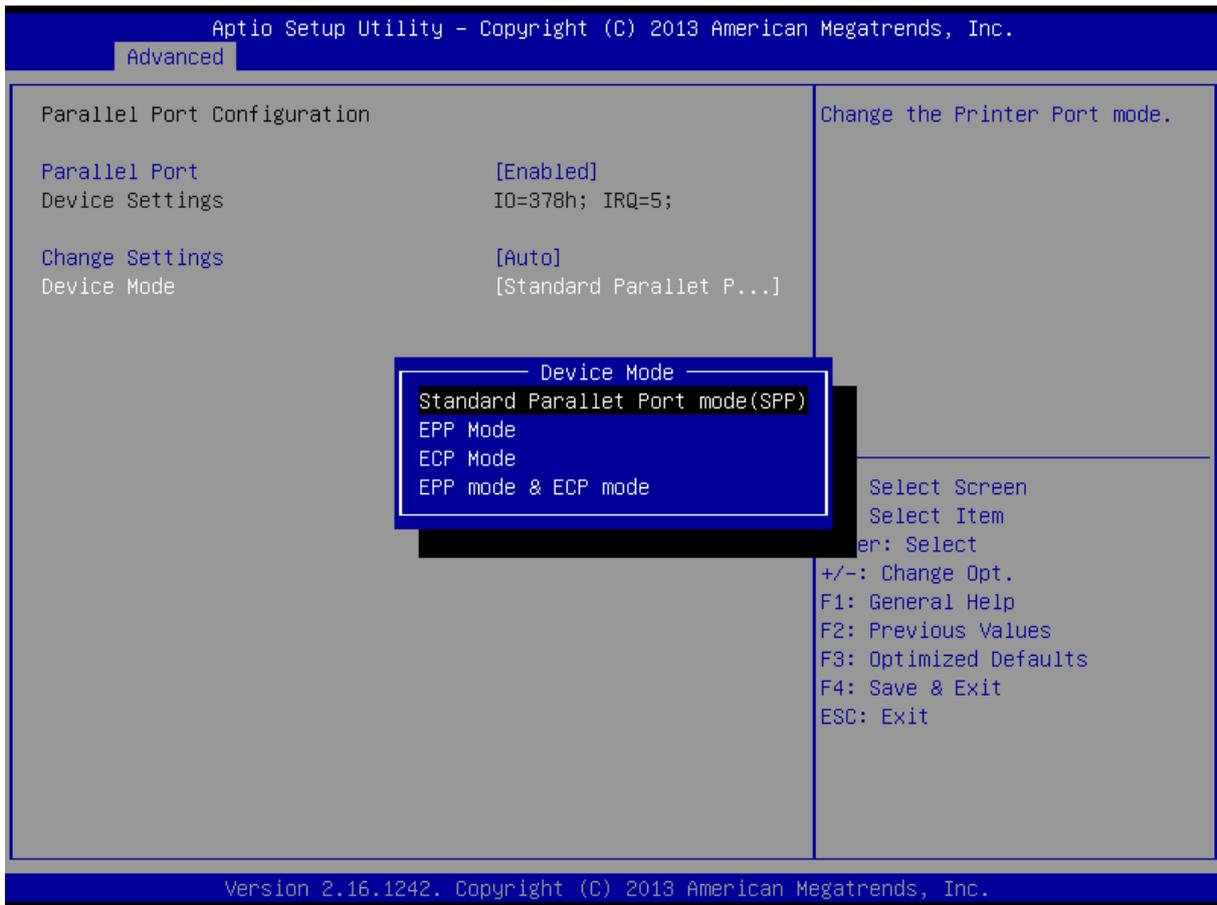
Set the serial port interrupt, interrupt settings [IO=3F8h; IRQ=4].

## Change Settings

The item has six options, the default value is [Auto].

## Parallel Port Configuration

Select an address and the corresponding interrupt to the serial port, enter the settings interface and display:



## Parallel Port

Select the parallel port to on or off, the set value is: [Enabled], [Disabled].

## Device Settings

Set the parallel port interrupt [IO=378h; IRQ=6].

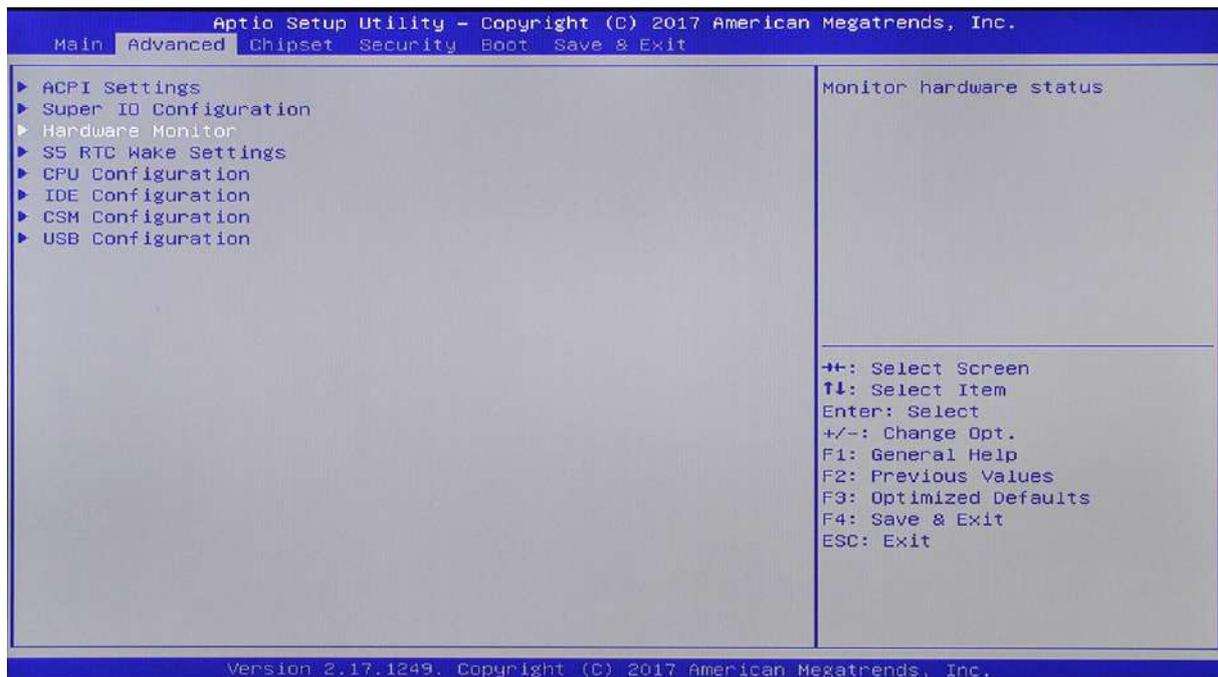
## Change Settings

The item has five options, the default value is [Auto]

## Device Mode

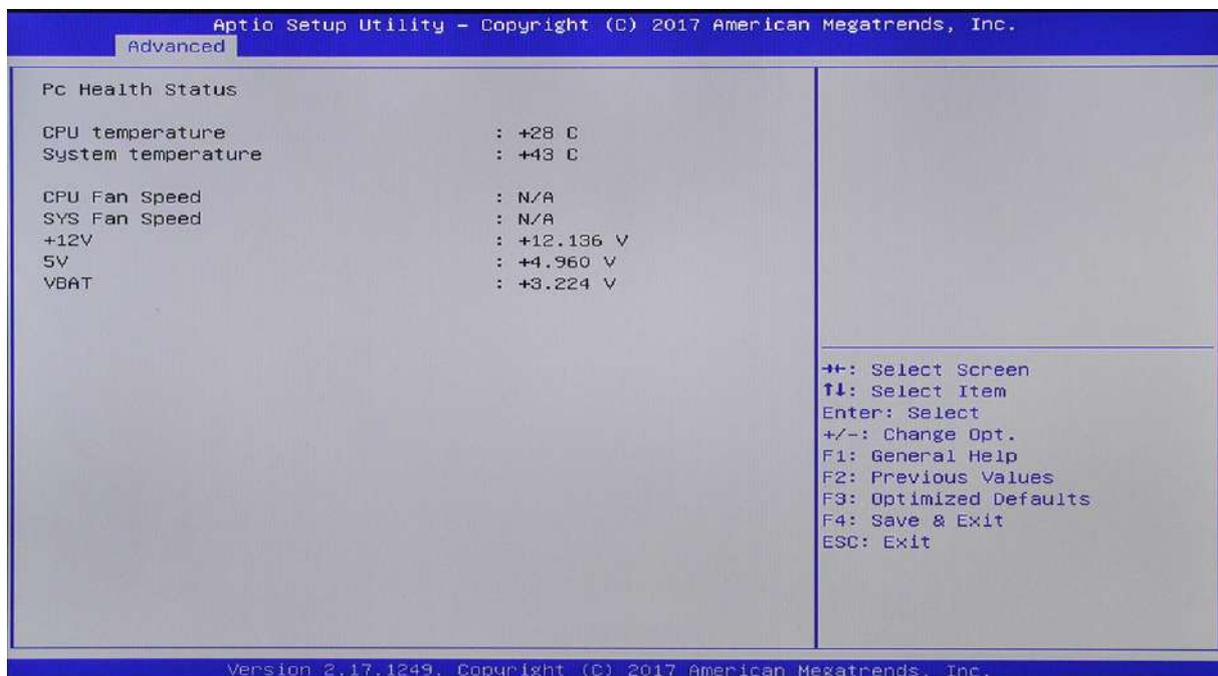
## EPP Mode, ECP Mode, EPP mode & ECP Mode

## Hardware Monitor



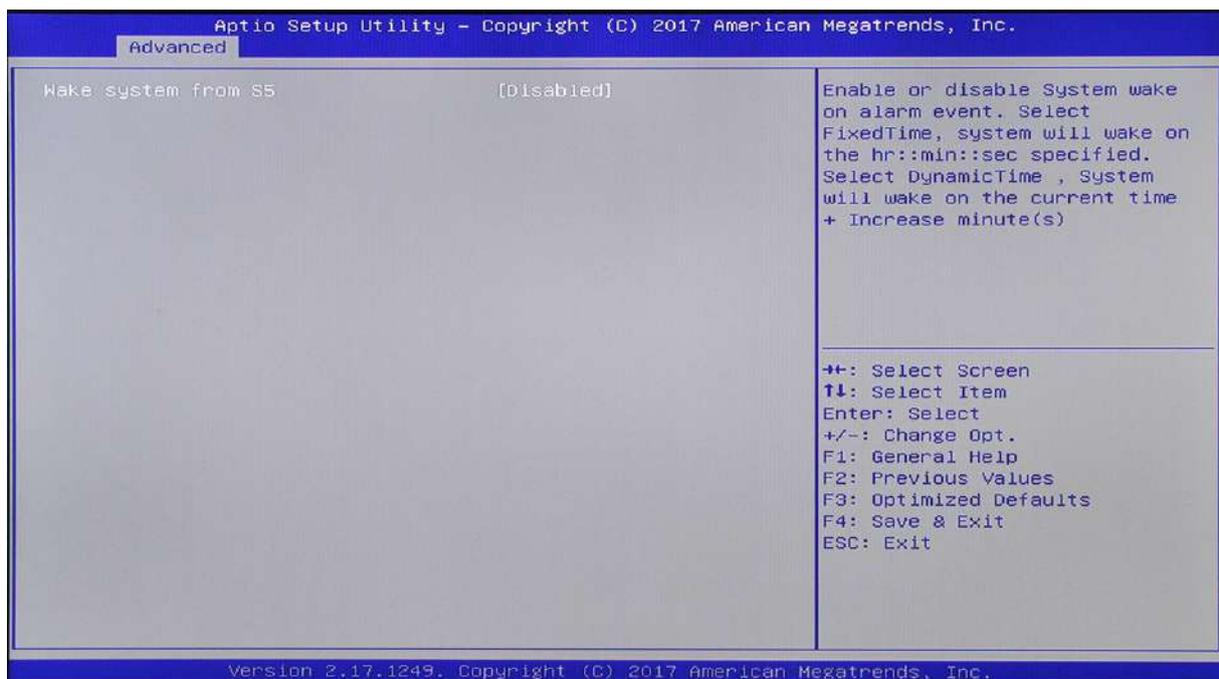
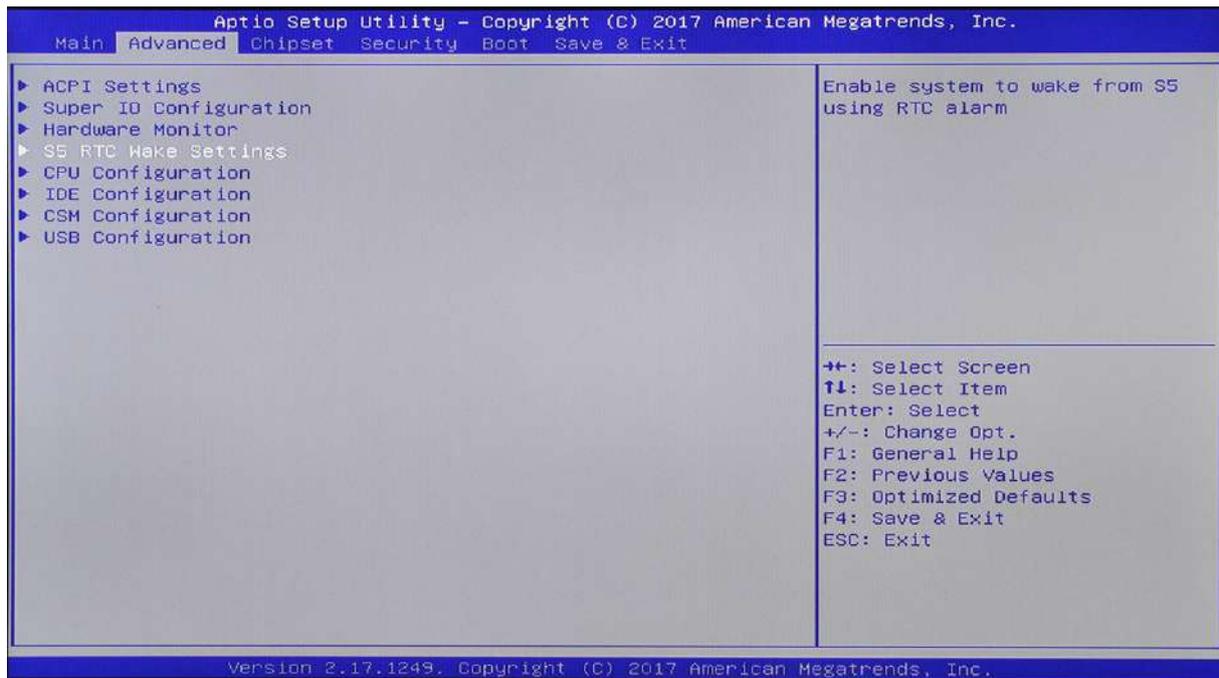
## PC Health Status

The interface displays information about the health status of the PC hardware, including CPU temperature, system temperature, CPU fan speed, system fan speed, voltage, etc.



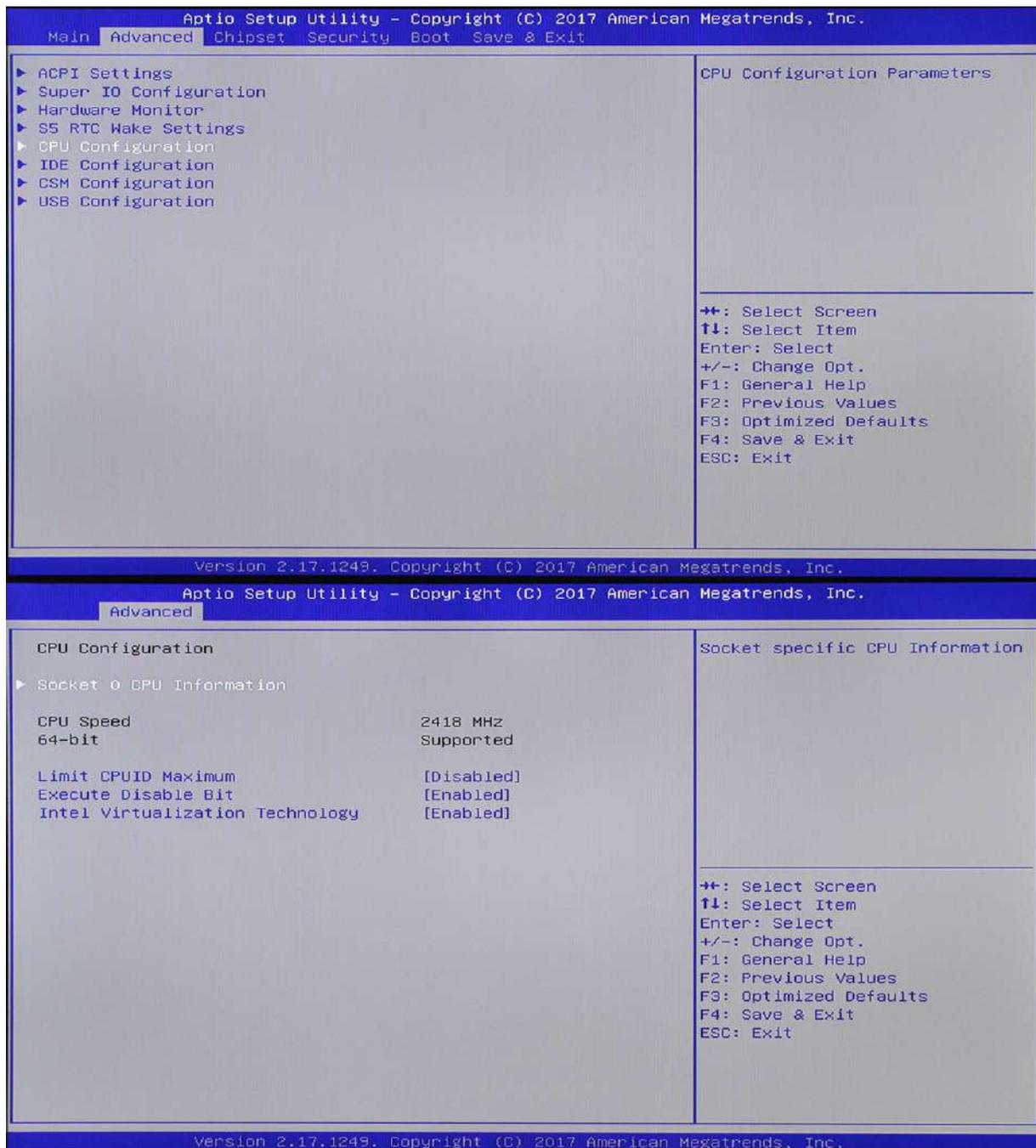
## Advanced S5 RTC Wake Settings

Set the timer switch, setting options: Disabled (default), Enabled. When set to Enabled, you need to set the fixed boot time, format: day (D): Hour (H): minute (M): second (S)



## CPU Information

This displays the information that the BIOS automatically detects.



### Socket 0 CPU Information

Displays CPU detailed information.

### Active Processor Cores [ALL]

Activate the number of processor cores with options ALL, 1.

### Limit CPUID Maximum [Disabled]

Please set this item to [Enabled] when you want to use an operating system that does not support the extended CPUID function. Setting options: [Disabled] [Enabled]

### Execute Disable Bit [Enabled]

This item is used to enable or disable No-Execution Page Protection technology. When set to [Enabled], the

XD function is always forced to 0, setting options: [Disabled] [Enabled].

### Hardware Prefetcher [Enabled]

This item allows you to use or not use the hardware prefetcher function: [Enabled], [Disabled].

### Adjacent Cache Line Prefetch [Enabled]

This item allows you to use or not use prefetcher adjacent cache data mode. When set to [disabled], only one 64-bit line is pre-read from the 128-bit segment (contains the requested data). When set to [enable], both lines will be prefetched, regardless of whether they have the requested data. setting options: [Enabled], [Disabled]

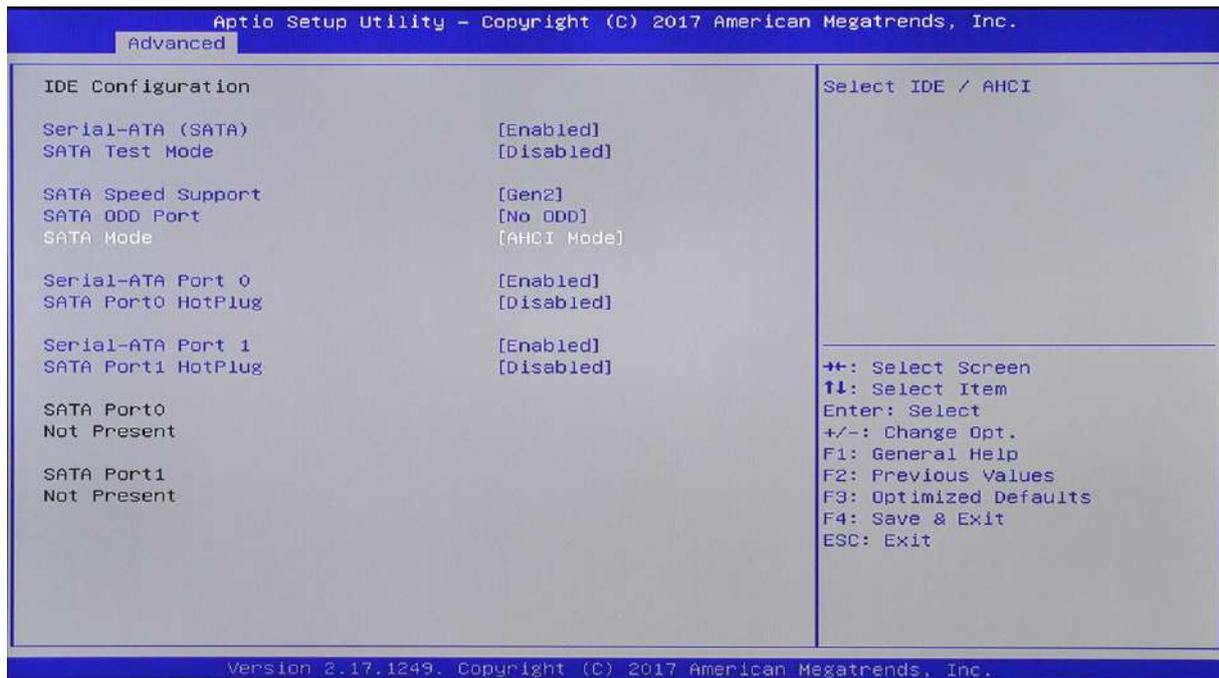
### Intel Virtualization Technology [Disabled]

Intel Virtualization Technology setting options: [Disabled] [Enabled]

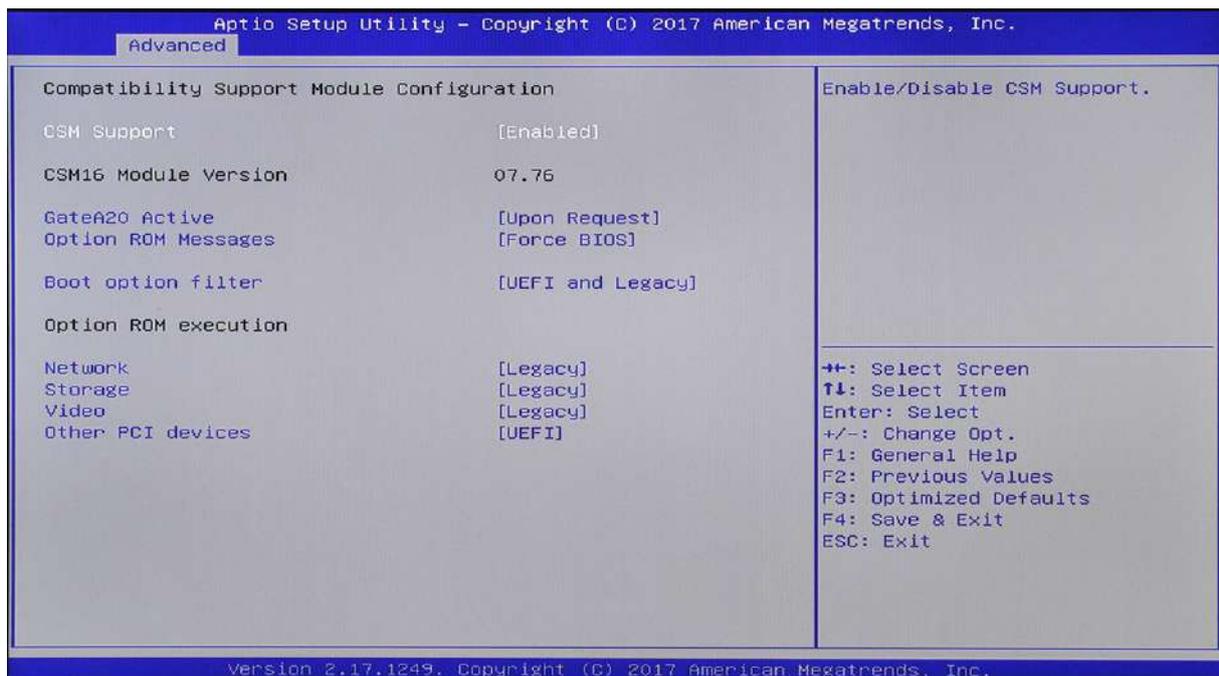
## Thermal Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.	
Advanced	
Thermal Configuration Parameters	
Critical Trip Point	[90 C]
Passive Trip Point	[85 C]
Dynamic Platform&Thermal Framework	
DPTF	[Disabled]
CPU Sensor Participant	
Critical	[70 C]
Passive	[60 C]
Ambient Sensor Participant	
Critical	[70 C]
Passive	[60 C]
DDR Sensor Participant	
Critical	[70 C]
Passive	[60 C]
Super Debug	[Disabled]
Current Logical Processor	[Disabled]
Start P-State	[P0]
Step size	[25%]
Power Control Setting	[CORE offlining]
Performance Control Setting	[CORE offlining]
DPPM	[Enabled]
This value controls the temperature of the ACPI critical Trip Point in which the OS will shut the system off.	
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.	

## IDE Configuration

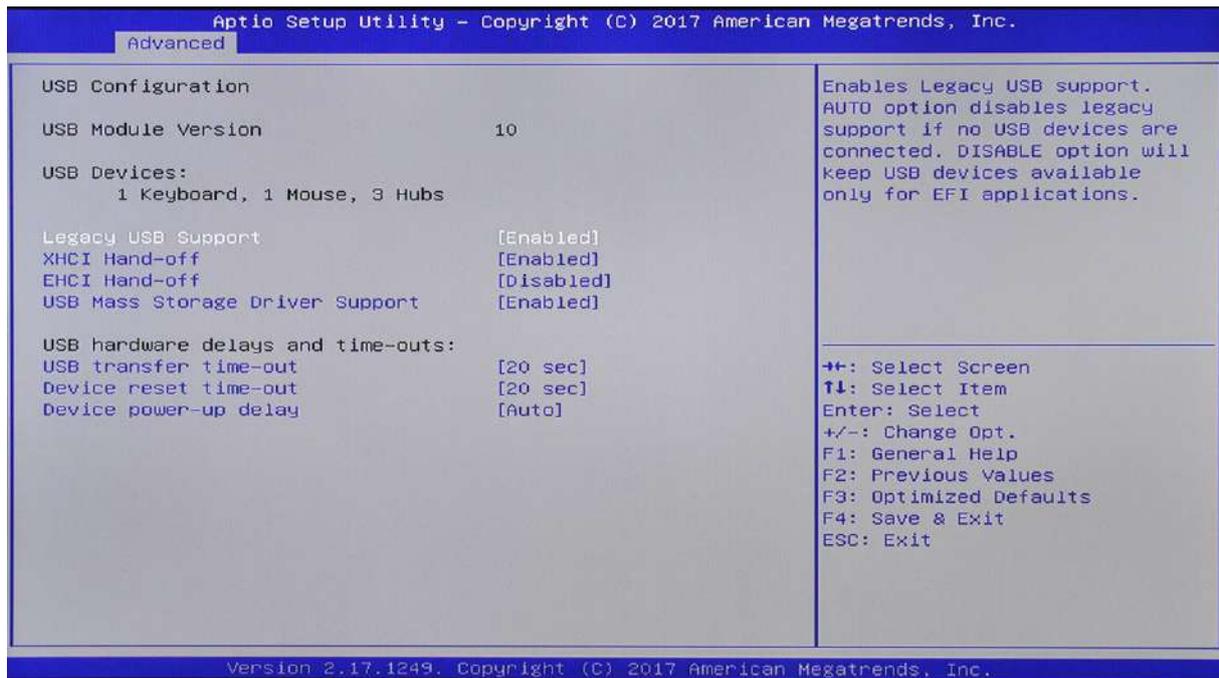


### CSM Configuration



### USB Configuration

The auto-detected values or devices are displayed in the USB Devices project. If no device is connected, showing None.



### Legacy USB Support [Enabled]

This item is used to enable or disable USB device. When set to the default value [Auto], the system can automatically detect whether there is a USB device exists, if so, then start the USB controller; otherwise it will not start. However, if you set this item to [Disabled], the USB controller in the system is turned off regardless of the presence or absence of the USB device. Setting options: [Disabled] [Enabled] [Auto]

### XHCI HAND-OFF [Enabled]

This item and EHCI HAND-OFF, are used to select whether EFI releases control of the USB controller before the OS loads the USB driver. If you select Enabled, EFI closes XHCI (USB2.0) when entering OS.

### EHCI Hand-off [Disabled]

This item is used to start an operating system that does not support the EHCI hand-off function. Setting options: [Disabled] [Enabled]. If you select Enabled, EFI closes EHCI (USB2.0) when entering OS.

### USB Mass Storage Driver Support [Enabled]

USB Mass Storage Driver, setting options: [Disabled] [Enabled].

### USB Transfer time-out [20sec]

This item sets the maximum time for a data transfer on the USB2.0. If the transmission is not completed within this time, the error is given to the EFI. This setting only works on EFI, no effect to USB drive on the OS.

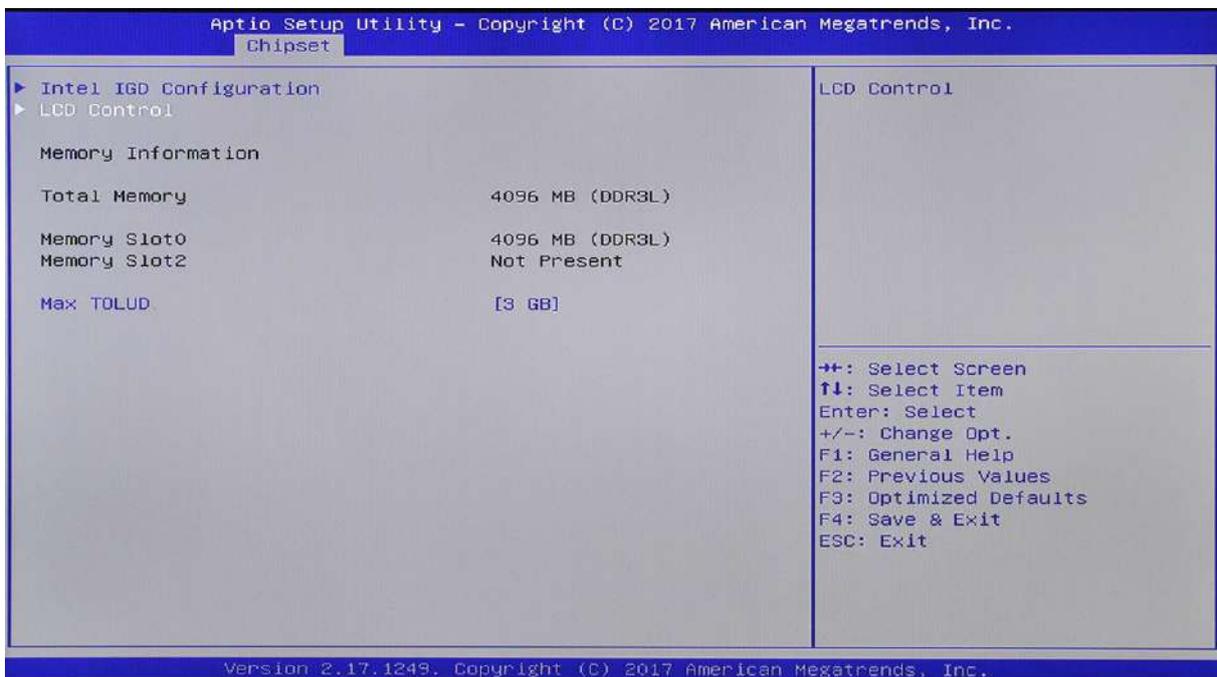
### Device reset time-out [20sec]

This item sets the maximum time required for the storage device reset on the USB2.0. During the time, EFI checks whether the storage device can accept instructions. If the timeout occurs, the storage device is considered to be faulty.

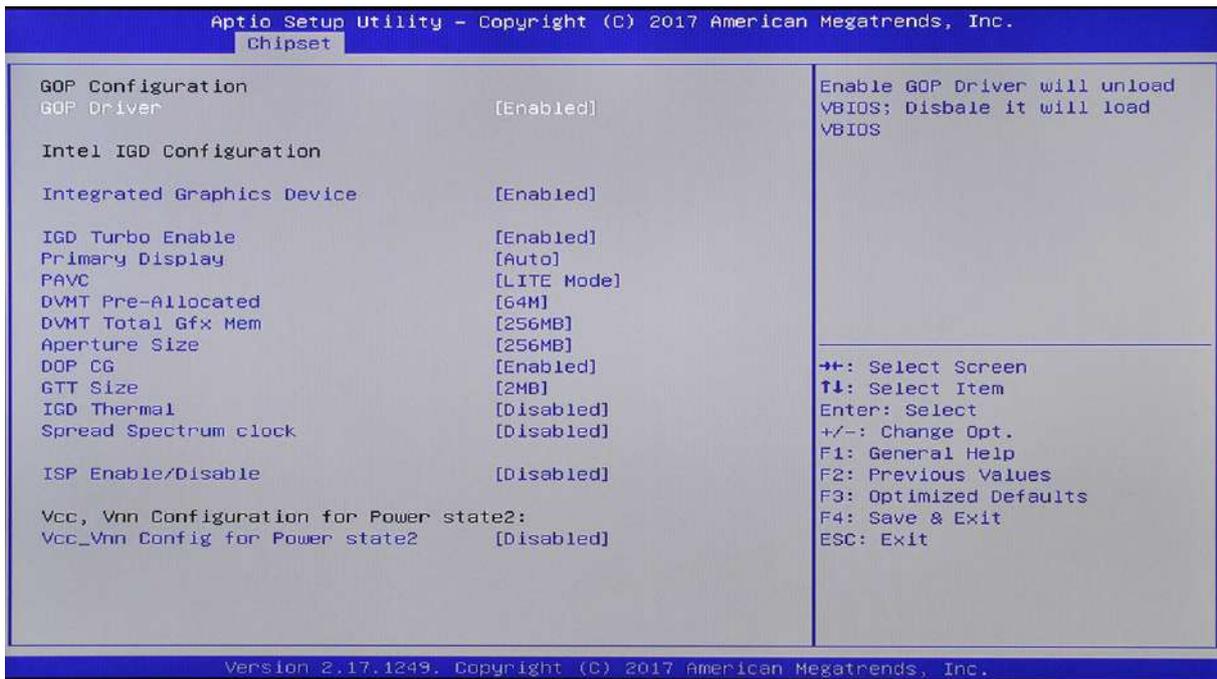
## 4.4 Chipset MENU



### North Bridge



## Intel ICD Configuration



### **GOP Driver**

GOP Driver, setting options: Enabled (default), Disabled

### **Integrated Graphics Device**

Integrated Graphics Device, setting options: Enabled (default), Disabled

### **Primary Display**

Primary Display, setting options: Auto, IGD (default), PCI, SG

### **PAVC**

PAVC, setting options: [SERPENT Mode], [LITE Mode]

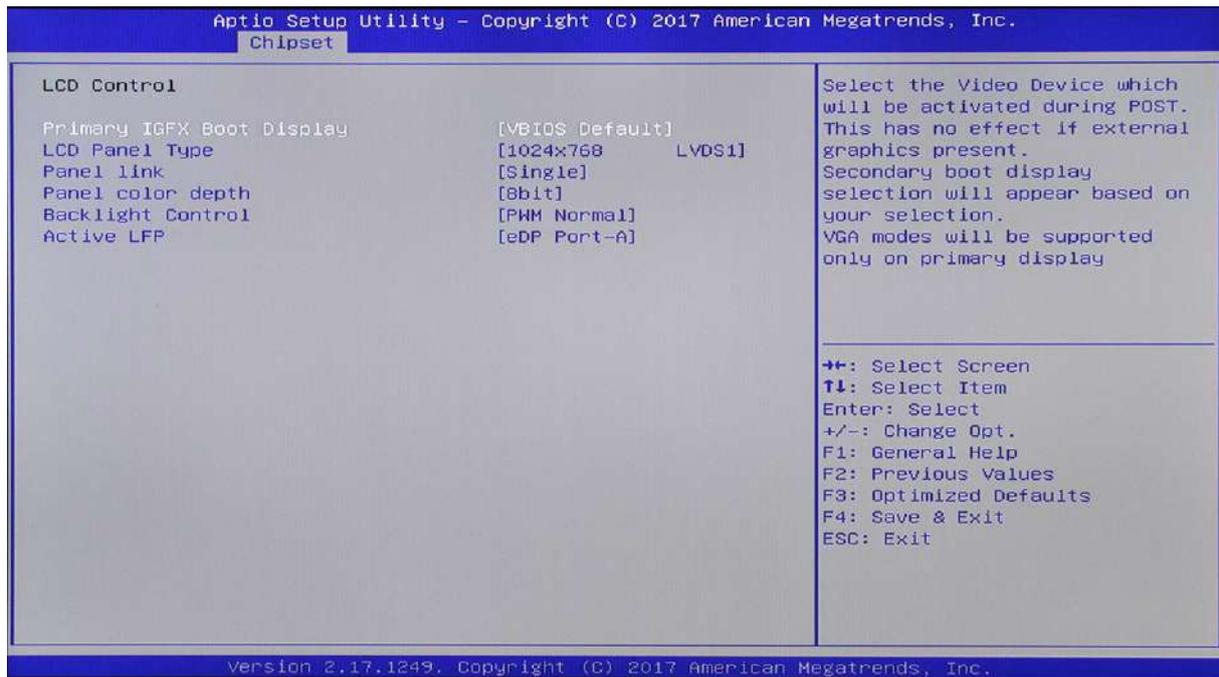
### **DVMT Pre-Allocate**

Set the DVMT Pre-Allocate, the default is 64MB

### **DVMT Total Gfx Mem**

DVMT Total Gfx Mem, the default is 256MB

## LCD Control



### Primary IGFX Boot Display

Primary Display, setting options: Auto(default), VGA&VGA\_H1, VGA\_H2, LVDS

### LCD Panel Type

#### Panel link

Set the resolution of LVDS, the default is Single 8 1024X768

#### Panel color depth

Set the resolution of LVDS, the default is Single 8 1024X768

#### Panel link

Set the resolution of LVDS, the default is Single 8 1024X768

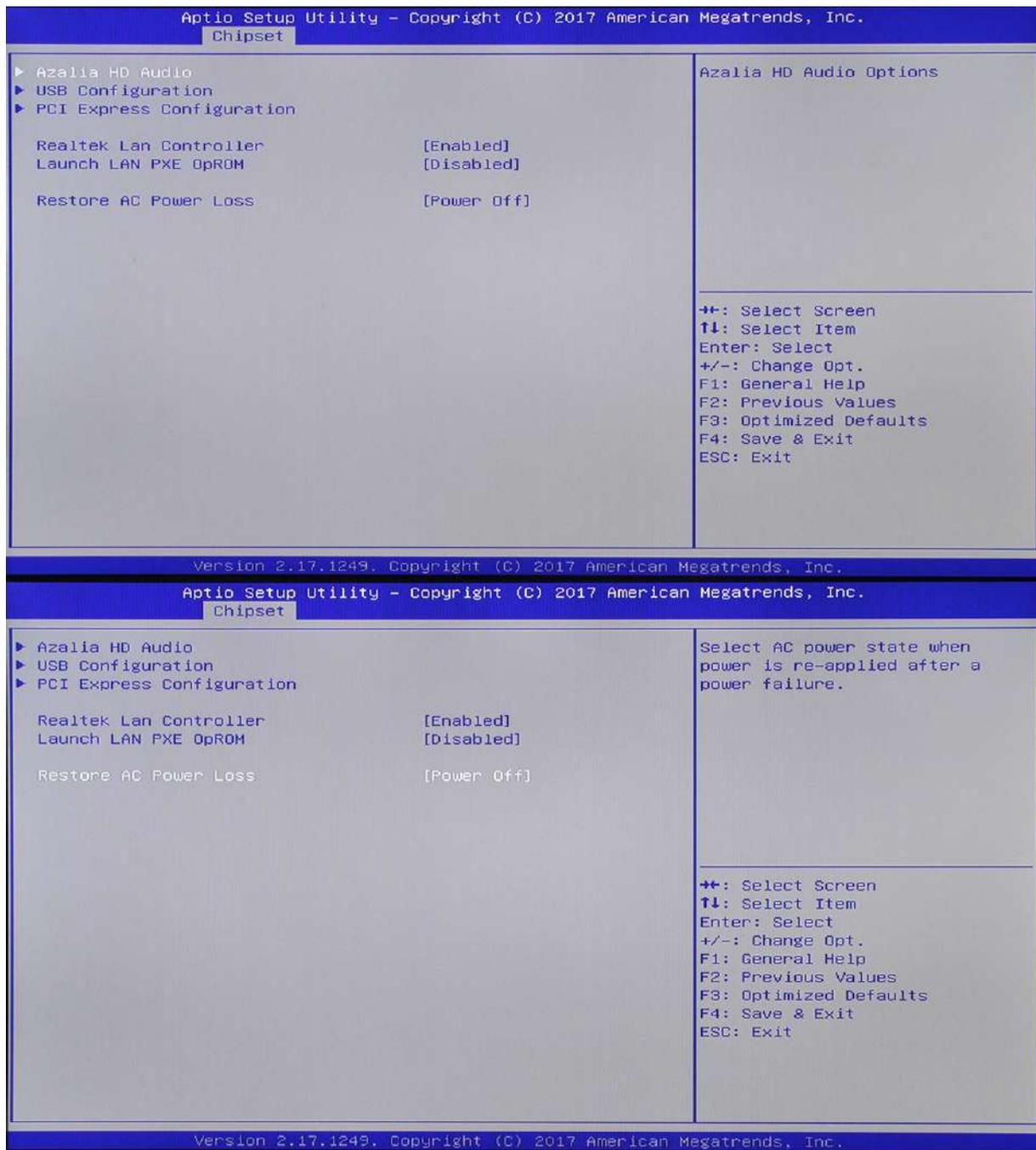
#### Back light control

Set the resolution of LVDS, the default is Single 8 1024X768

#### Active LFP

Set the resolution of LVDS, the default is Single 8 1024X768

### South Bridge



## Azalia HD Audio

### Azalia HDMI codec Port [Enabled]

on/off HDMI Port audio output

### USB Configuration

set USB port on/off

### Lan Controller [Enabled]

This item is used to turn on or off the Lan controller, the default is on

### Lan PXE OpROM Boot [Do not launch]

This item is used to turn on or off Lan PXE OpROM Boot, setting options: [Do not launch] [UEFI only]

### [Legacy only]

#### Restore AC Power Loss [Power Off]

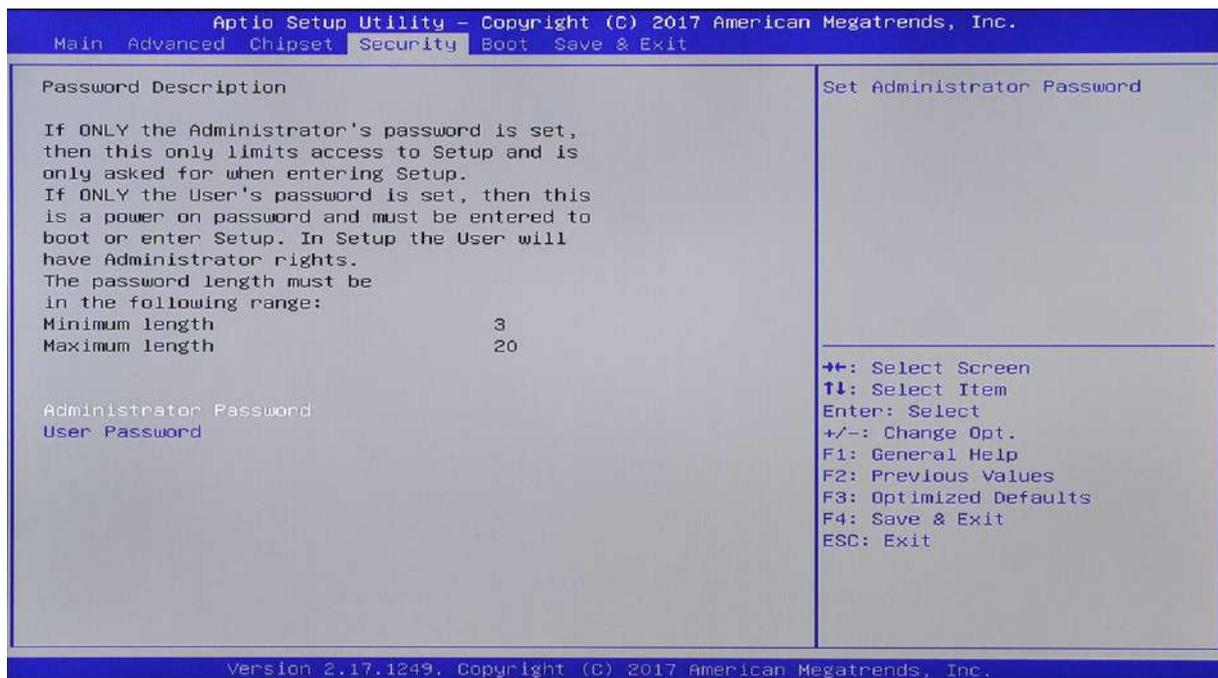
Restore AC Power Loss, setting options: [Power Off] [Power On] [Last State]

When set to [Power Off], plug the power, you need to press the power switch to boot.

When set to [Power On], plug the power, regardless whether press the power switch or not, the host will boot up directly.

When set to [Last State], plug the power, it will be restored to the state before the system power off, if the system work on when the power off, it will automatically boot, if it shutdown before the state, it still on the shutdown status. PCI Express Configuration.

## 4.5 Security MENU



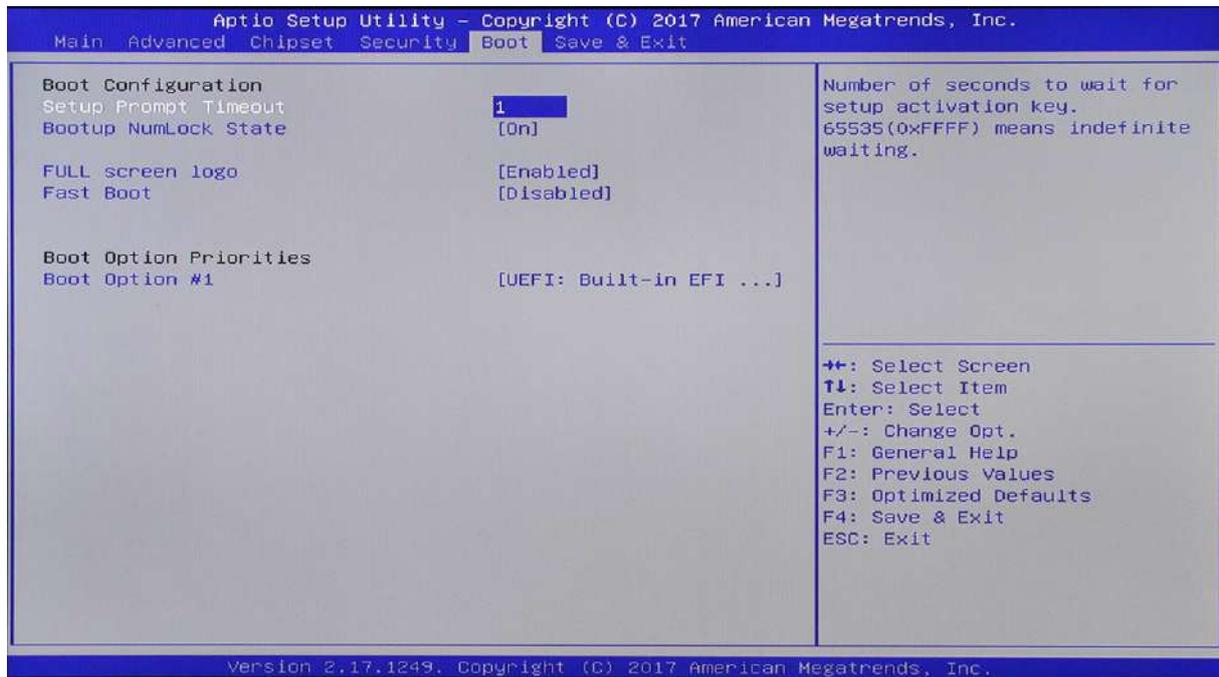
#### Administrator Password

This item is used to set the BIOS system administrator password, which is required to enter the BIOS settings, In this item, press the <Enter> key, pop-up password input box, type the password, and then type again to check it.

#### User Password

This item is used to set the BIOS user password. The user password is to enter the system password, In this item, press the <Enter> key, pop-up password input box, type the password, and then type again to check it.

## 4.6 BOOT MENU



### Setup Prompt Timeout [1]

Set the screen prompt waiting time to start, you need to type the number of seconds.

### Bootup NumLock State [On]

Set the numeric keypad on after the start, setting options: [On] [Off]

### Full Screen Logo [Disabled]

Set the full-screen LOGO display on/off, settings options: [Enabled] [Disabled]

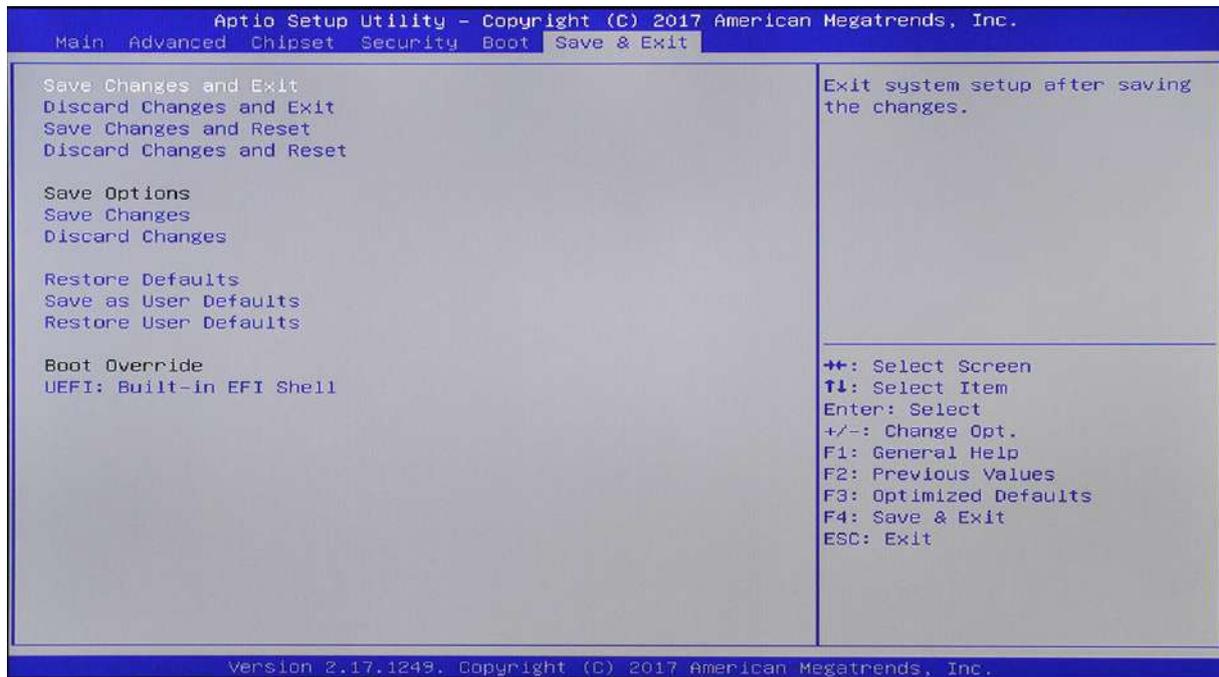
### Fast Boot [Disabled]

Set Fast Boot function, the so-called fast boot is the minimum initialization device can start, setting options: [Enabled] [Disabled]

### Boot Option Priorities

Set the priority of the startup options

## 4.7 Save & Exit MENU



Save Changes and Exit

Discard Changes and Exit

Launch EFI Shell From filesystem device

## 5. LCD Surface Cleaning

### 1. How to clean the LCD surface properly?

- ✧ Do not spray any liquids on the LCD screen directly, and do not use paper towels, this can cause the LCD screen to become scratched.
- ✧ Always apply the solution to your cloth first, not directly to the parts you are cleaning. You want to avoid dripping the solution directly into your computer or laptop.
- ✧ Stroke the cloth across the display in one direction, moving from the top of the display to the bottom.

### 2. What are some of the basic supplies needed to clean an LCD screen?

- ✧ A soft cotton cloth. When cleaning the LCD screen it is important to use a soft cotton cloth, rather than an old rag. Some materials, such as paper towels, could cause scratches and damage the LCD screen.
- ✧ Solution of water and isopropyl alcohol. This solution can be used along with the soft cotton cloth.
- ✧ Computer wipes. Only use these if they specifically state on the package they are designed for LCD laptop screens. Computer wipes can come in handy for fast clean-ups or when you want to avoid mixing up a cleaning solution yourself.

### 3. What types of cleaners are acceptable?

- ✧ Water
- ✧ Vinegar (mixed with water)
- ✧ Isopropyl Alcohol

**NOTICE:** The following cleaners are unacceptable:

- ✧ Acetone
- ✧ Ethyl alcohol
- ✧ Ethyl acid
- ✧ Ammonia
- ✧ Methyl chloride

## CE Notice

This device complies with the requirements of the CE directive.

## FCC Notice

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 in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

Shielded interface cables must be used in order to comply with emission limits.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## WEEE Notice

This appliance is labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.



FOR HOME OR OFFICE USE

ZK Building, Wuhe Road, Gangtou, Bantian, Buji Town,  
Longgang District, Shenzhen China 518129

Tel: +86 755-89602345

Fax: +86 755-89602394

[www.zkteco.com](http://www.zkteco.com)

