USER MANUAL

ZK3530（W）&ZK3550（W）

Version：1.0 Date: November, 2017

Important Claim

Firstly, thank you for purchasing this hybrid-bio terminal. Before using, please read this manual carefully to avoid the unnecessary damage! The company reminds you that the proper use will improve the use affect and authentication speed.

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ⓘDue to the constant renewal of products, the company cannot undertake the actual product in consistence with the information in the document, also any dispute caused by the difference between the actual technical parameters and the information in this document. Please forgive any change without notice.

Safety Instructions

1. Read these instructions carefully. Keep these instructions for future reference.
2. 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.
3. Please keep this equipment from humidity.
4. Lay this equipment on a reliable surface when install. A drop or fall could cause injury.
5. Make sure power cord such a way that people cannot step on it. Do not place anything over the power cord.
6. All cautions and warnings on the equipment should be noted.
7. If the equipment is not used for long time, disconnect the equipment from main to avoid being damaged by transient over voltage.
8. Never pour any liquid into opening; this could cause fire or electrical shock.
9. If one of the following situations arises, get the equipment checked by a service personnel:
10. The power cord or plug is damaged.
11. Liquid has penetrated into the equipment.
12. The equipment has been exposed to moisture.
13. The equipment does not work well or you cannot get it work according to user manual.
14. The equipment has dropped and damaged.
15. Do not leave this equipment in an environment unconditioned, storage temperature below -20°C or above 60°C, it may damage the equipment.
16. Unplug the power cord when doing any service or adding optional kits.

Lithium Battery Caution:

1. 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.
2. 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

1.1. Standard Accessories

a.	b.	a. ZK3530&ZK3550 b. ZK3530W&ZK3550W c. Power Adapter d. Power coad
c.	d.	

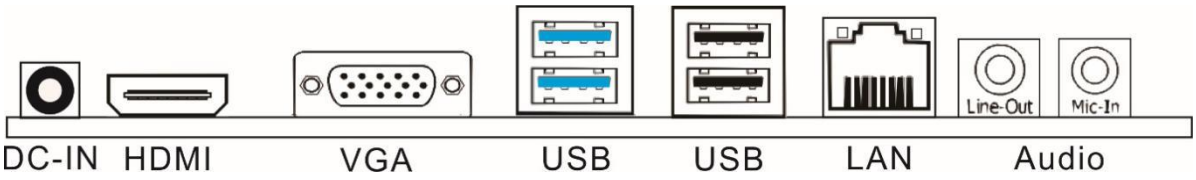
1.2 Optional Accessories

a.	b.	c.

d.	e	f.
	a. Single MSR b. VFD c. 2nd Display d. 1D or 2D Handheld Type Barcode Scanner e. Thermal Printer f. Cash Drawer	

2. System View

2.1. Rear View



☆ Please make sure 12V DC plug in the right direction before plugging in DC jack.

2.2. Back View

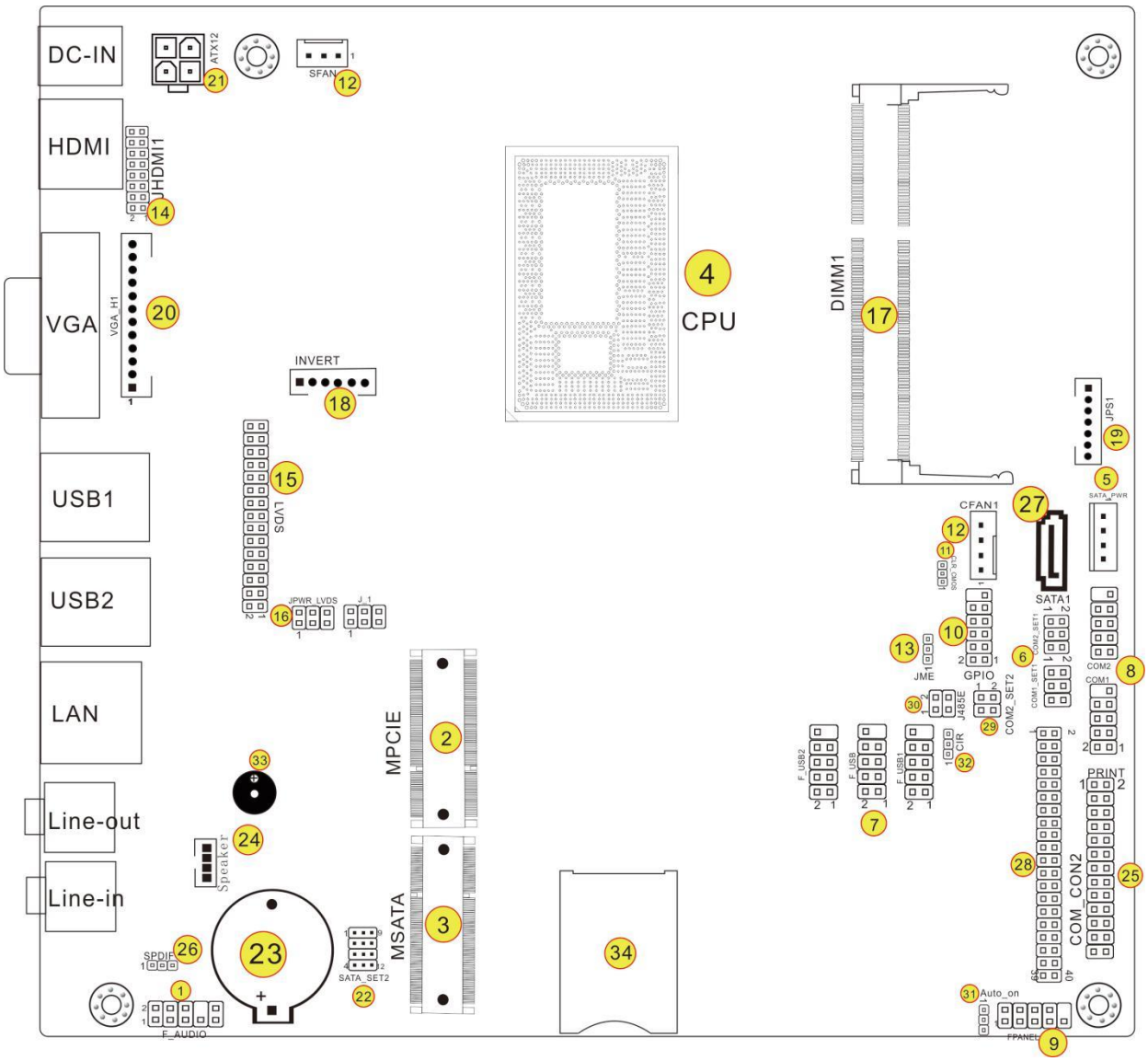
2.3. Specification

Display & Touch	LCD Display Size	15"/ 15.6"TFT LCD
	Max. Resolution	1024x768
	Brightness	250 cd/㎡
	Support Color	16.2M/ 262K colors
	Backlight	LED

	Touch Type		Standard Projected Capacitive
Main Board	Processor		Intel®Core i3-4010U 1.7GHz(ZK3530) Intel®Core i5-4200U 2.6GHz(ZK3550)
	System Memory		One SO-DIMM socket supports DDR3L 1333 up to 8GB
Storage	HDD		MINI SSD x 1
I/O	USB		X 4 (USB 2.0)
			X 2 (USB 3.0)
	Powered COM		X 1
	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(ZK35) 296X288X382mm(ZK35W)
Compliance	Certifications		CE / FCC
	Protection		IP64 on front bezel

2.4. Internal Layout

M/B PCBA



In order to prevail in kind, the above picture is for reference only

No	description	No	description
1	F_Audio	18	LVDS
2	MiniPCIE	19	JPS1，PS/2
3	MSATA	20	VGA
4	CPU	21	ATX12,4pin 12
5	4PinSATA power	22	SATA_SET2
6	COM1、COM2	23	BAT for CMOS
7	F_USB1，USB2.0	24	Speaker
8	JCOM1、JCOM2	25	Print
9	FPANEL	26	SPDIF
10	GPIO	27	SATA HDD
11	Clear COM JBAT	28	COM_CON2
12	CFAN、SFAN	29	COM2_SET2
13	JME	30	J485E
14	JHDMI	31	Auto_On
15	LVDS	32	JPS1，PS/2
16	LVDS_PWR	33	Buzzer
17	SO-DIMM	34	IO

3. Pin Definition

3.1. CPU

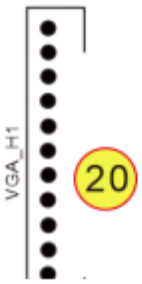
This mainboard uses Intel®Core i3-4010U 1.7GHz(ZK3530)/Intel®Core i5-4200U2.6GHz(ZK3550) CPU

3.2. pin and jumper setting

JVGA

Built-in VGA display interface：**JVGA**

The motherboard provides 1 * 12 Pin VGA connector (spacing: 2.0mm), the pin is defined as follows：



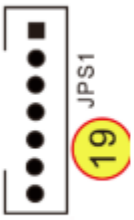
PIN	Definition	PIN	Definition
1	GND	2	VGA_VSYNC
3	VGA_HSYNC	4	GND
5	VGA_RED (red)	6	GND
7	VGA_GRN (green)	8	GND
9	VGA_BLUE (blue)	10	GND
11	DDC_DATA	12	DDC_CLK

JPS2

Built-in PS2 mouse and keyboard interface：**JPS2**

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		

F_AUDIO

Front audio interface **: F_AUDIO**

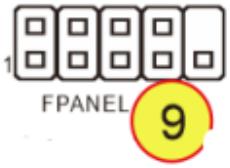
The Motherboard provides 2 * 5 PIN (spacing: 2.54MM) front audio interface, the pin is defined as follows :

PIN	Definition	PIN	Definition
1	FP_MIC_L	2	GND
3	FP_MIC_R		
5	FP_OUT_R	6	NC
7	GND		
9	FP_OUT_L	10	NC

F_PANEL

Front panel switch interface **: 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:

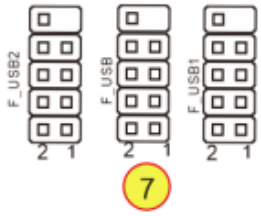


PIN	Definition	PIN	Definition
1	Power LED+	2	HDD LED+
3	Power LED-	4	HDD LED-
5	GND	6	PWR_SW
7	RESET	8	GND
9	GND		GND

F_USB

Built-in USB interface：**F_USB、F_USB1、F_USB2**

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



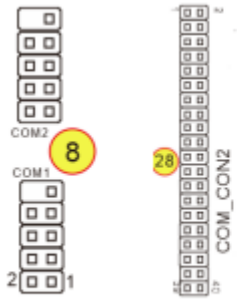
PIN	Definition	PIN	Definition
1	VCC +5V	2	VCC +5V
3	USB1Date-	4	USB2Date-
5	USB1 Date+	6	USB2 Date+
7	GND	8	GND
		10	OC

COM

Built-in serial port：**COM1~COM6**

The motherboard provides a 4-in-one built-in COM_CON (spacing 2.00mm), that is, 4 standard RS232 pin into a pin interface, total of 40 Pins.

The motherboard provides two 2 * 5 PIN COM interface(spacing:2.54mm), standard RS232 pin is defined as follows:

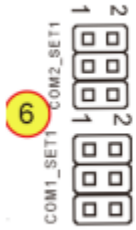


PIN	Definition	PIN	Definition
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

COM SET

JCOM1/JCOM2 jumper：COM1_SET1、COM2_SET1

The motherboard provides two 2 * 3 Pin jumper pins (spacing: 2.54 mm), it can select different voltage by jumper according to the needs.



	JCOM1/JCOM2	Pin 1
COM1_SET1 COM2_SET1	1-2	12V
	3-4	5V
	5-6(Default)	DCD

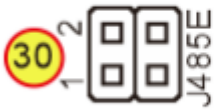
COM2_SET2

The motherboard provides 4 Pin COM2_SET2 jumper (spacing:2.54mm), according to the actual use to choose COM2 or 485

PIN	Definition
1-2(Default)	COM2
2-3	485

J485E

The motherboard provides 4 Pin 485 interface (spacing: 2.54mm), the Pin is defined as follows



PIN	Definition
1	RTX+
2	RTX-
3	GND
4	GND

:

CIR, infrared pin interface

The motherboard reserved 3 PIN infrared pin interface (spacing: 2.54mm), the Pin is defined as follows:

PIN	Definition
1	VCC
2	RX
3	GND

Cooling fan power outlet：CFAN1、SFAN1

The motherboard provides two cooling fan connector (spacing: 2.54mm), the pin is defined as follows:

Pin/Definition	1	2	3	4
CFAN	Ground	+12V	Sense	Control
SFAN	Ground	+12V	Sense	N/A

SATA Power supply interface：JSATA_PWR

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

Pin	1	2	3	4
Definition	+5V	Ground	Ground	+12

SATA_SET2

The motherboard provides 12 Pin SATA_SET2 jumper (spacing: 2.54mm), the jumper is defined as follows:

PIN	Definition
1-5 2-6 3-7 4-8	Mini_PCIE
5-9 6-10 7-11 8-12	MSATA

ME jumper：JME

The motherboard provides 1 * 2 Pin ME jumper (spacing: 2.54mm), the pin is defined as follows：

PIN	Definition
1-2 Shorted	Update ME
Open (Default)	Not update ME

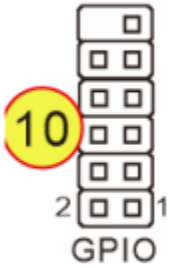
Clear CMOS jumper：JBAT

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

GPIO connector

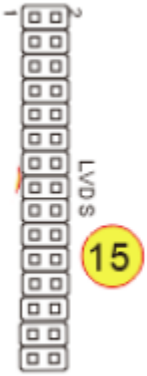
The motherboard provides 9 Pin (spacing 2.00mm) GPIO connector, the pin is defined as follows：



PIN	Definition	PIN	Definition
1	VCC	2	+V12S
3	GPI1	4	GPO5
5	GPI2	6	GPO6
7	GPI3	8	GPO7
9	GPI4	10	GPO8
11	GND	12	GND

LVDS Connector:

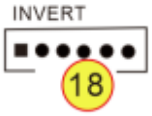
The motherboard provides 2 * 15 Pin LVDS connector (spacing: 2.0mm), the pin is defined as follows:



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+

LVDS Backlight connector：INVERT

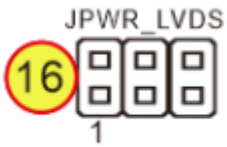
The motherboard provides a 1 * 6PIN INVERT interface, (spacing :2.0mm), the pin is defined as follows:



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

LVDS voltage control connector：JPWR_LVDS1

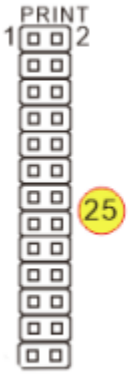
The motherboard provides 2 * 3 pin LVDS-JP interface (spacing: 2.54mm). Jumper is defined as follows:



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

Built-in print port，Print

The motherboard provides 2 * 13 Pin built-in print port(spacing: 2.00mm), the pin is defined as follows:



PIN	Definition	PIN	Definition
1	STB	2	AFD
3	PD0	4	LPT_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	LPT_ACK	20	GND
21	LPT_BUSY	22	GND
23	LPT_PE	24	GND
25	LPT_SLCT	26	none

Hardware control Auto_On

The motherboard provides 1 * 3 Pin (spacing: 2.54mm) Auto_On jumper, when short circuit 2-3pin, the power is turned on automatically

PIN	Definition
1-2(Default)	Normal
2-3	Auto_On

.

Built-in digital high-definition display interface JHDMI

The motherboard provides 2 * 8 Pin JHDMI(pin spacing 2.0mm), supports high-definition display output, the pin is defined as follows：

PIN	Definition	PIN	Definition
1	HDMI_TXD2_P	2	HDMI_DDC_CLK_R
3	HDMI_TXD2_N	4	HDMI_DDC_DATA_R
5	HDMI_TXD1_P	6	NC
7	HDMI_TXD1_N	8	HPD_CONN
9	HDMI_TXD0_P	10	+5V_HDMI
11	HDMI_TXD0_N	12	GND
13	HDMI_TXC0P	14	GND
15	HDMI_TXC0N	16	GND

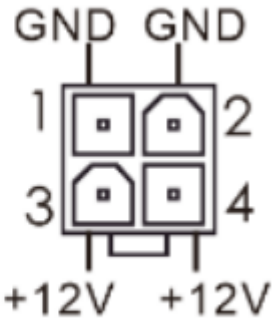
Speaker

The motherboard provides 4 Pin Speaker interface (spacing 2.0mm), the pin is defined as follows：

PIN	Definition
1	AMP_OUT_LN
2	AMP_OUT_LP
3	AMP_OUT_RN
4	AMP_OUT_RP

ATX12 Power input interface

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



4. BIOS Settings

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 bakup.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.

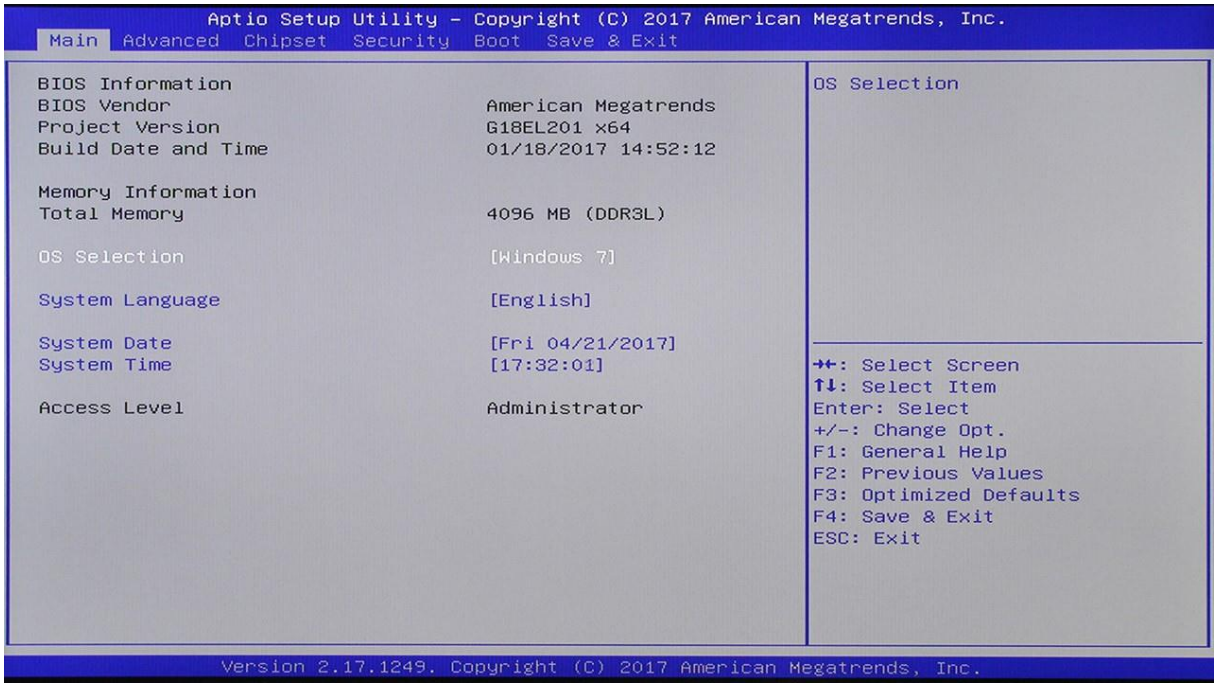
The BIOS information described in this manual is just for your reference, and the actual BIOS information and its settings may differ slightly from the manual.

The contents of this manual are subject to change without notice

4.1. 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"

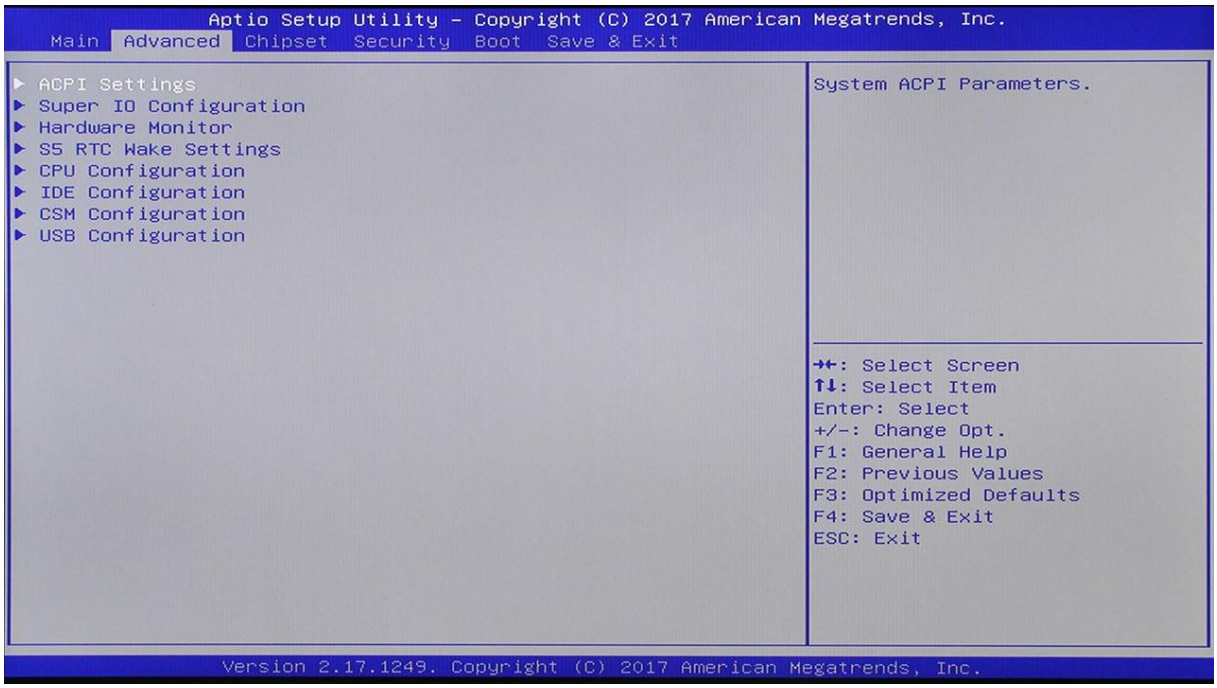
System Time

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

4.2. ADVANCED MENU

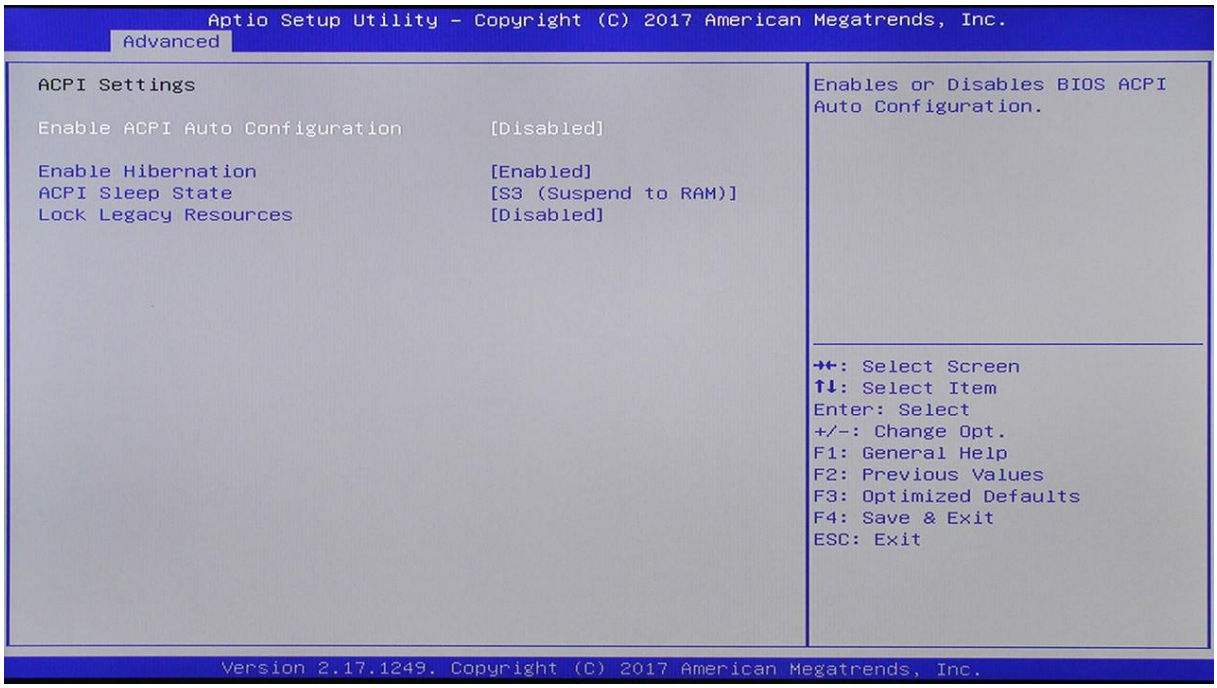
The Advanced menu allows you to set up CPU, Super I / O, Power settings management, and other system devices.

⚠ 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)



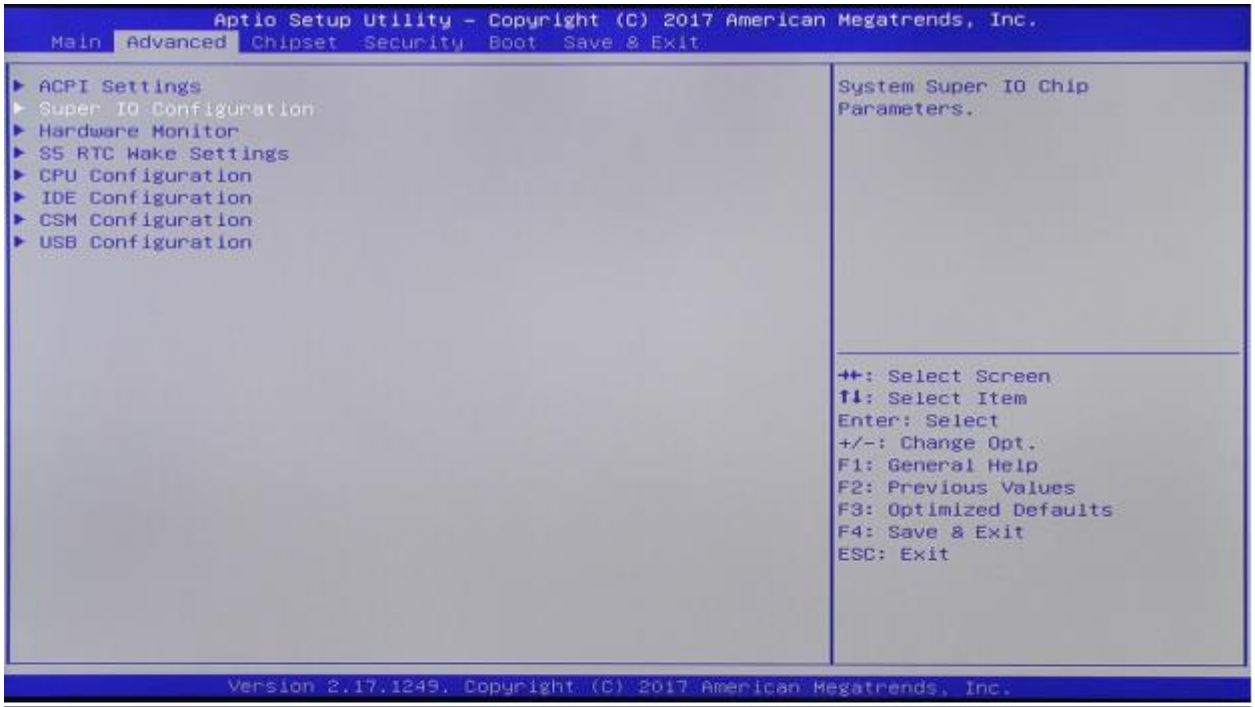
Enable Hibernation

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

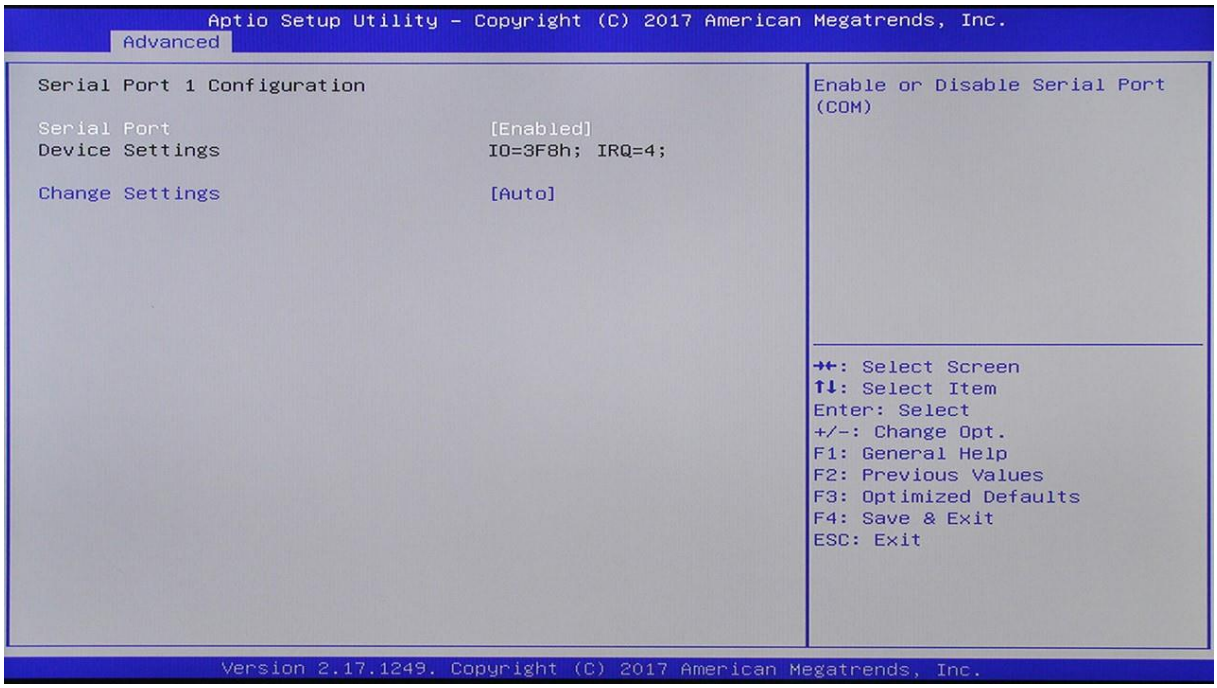
Restore AC Power Loss By IO

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

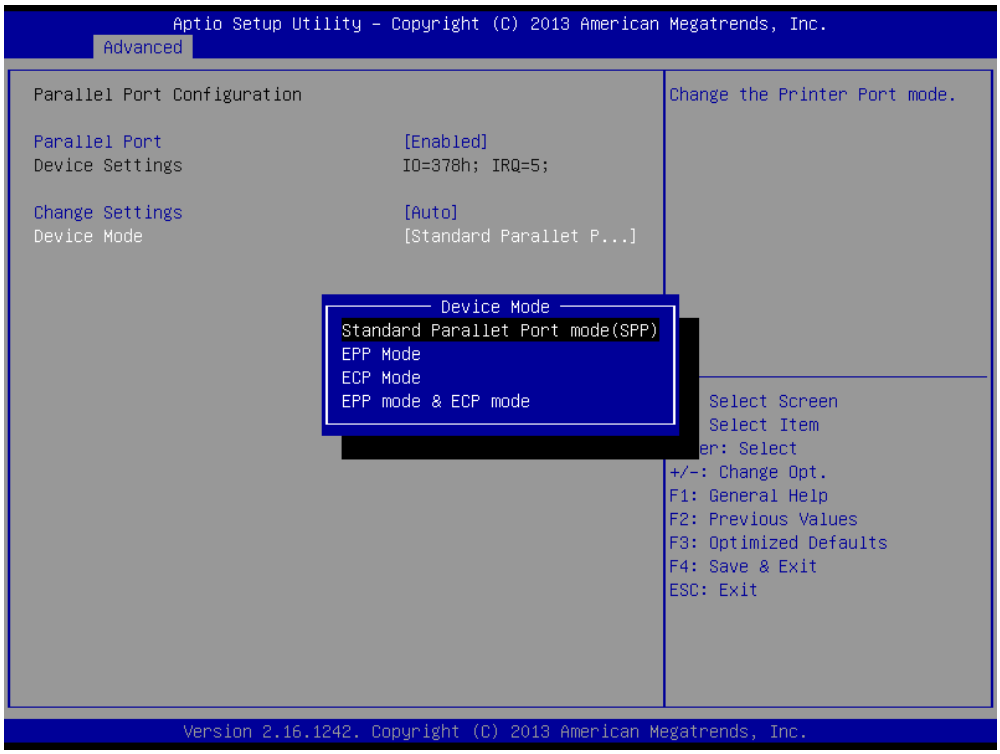
Set the serial port interrupt, interrupt settings [IO=3F8h;IRQ=4]

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]

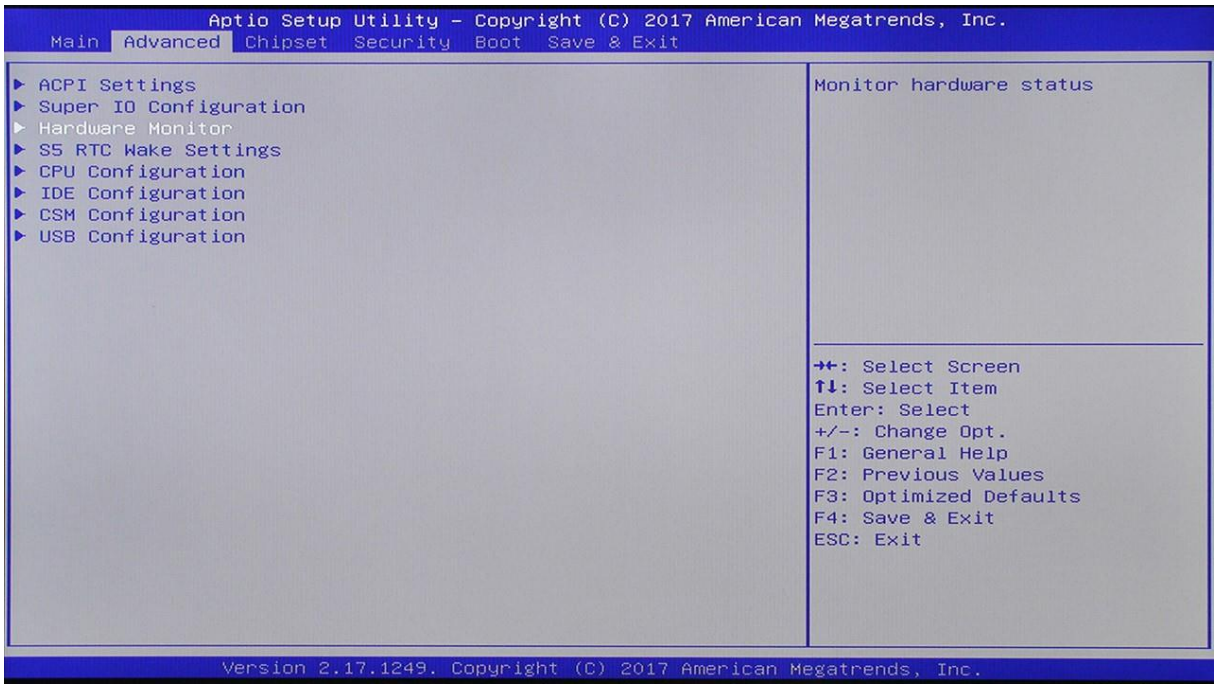
Change Settings

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

Device Mode

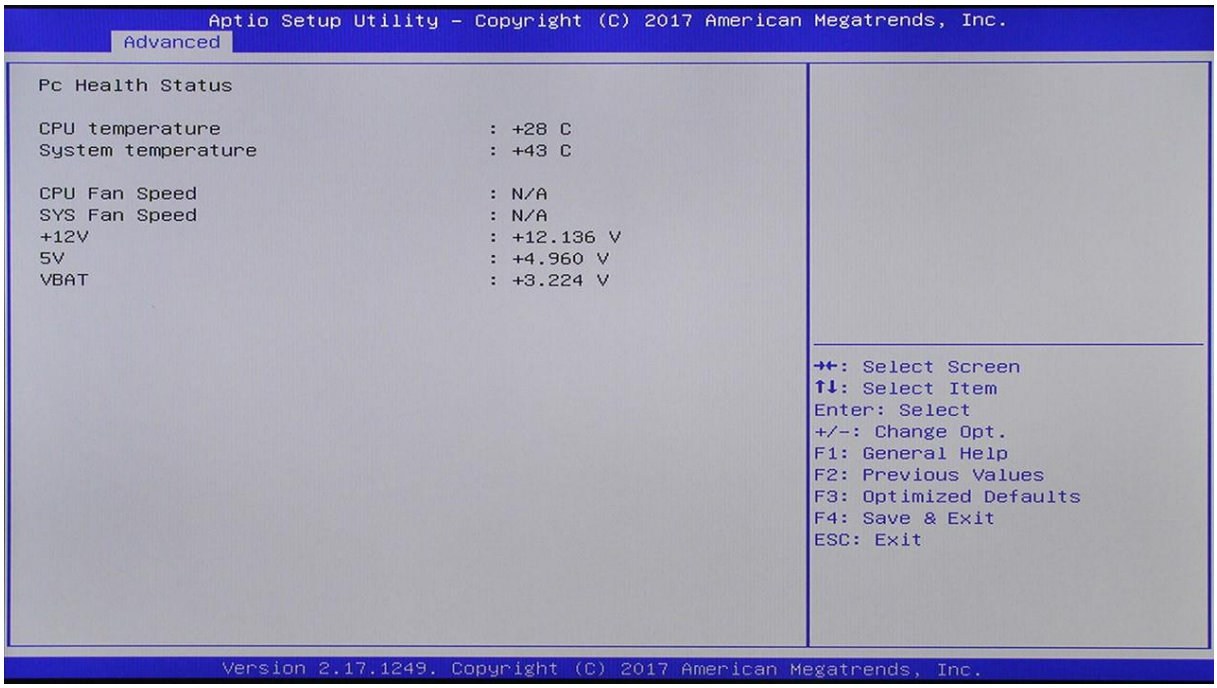
EPP Mode、ECP Mode、EPP mode & ECP Mode

Hardware Monitor



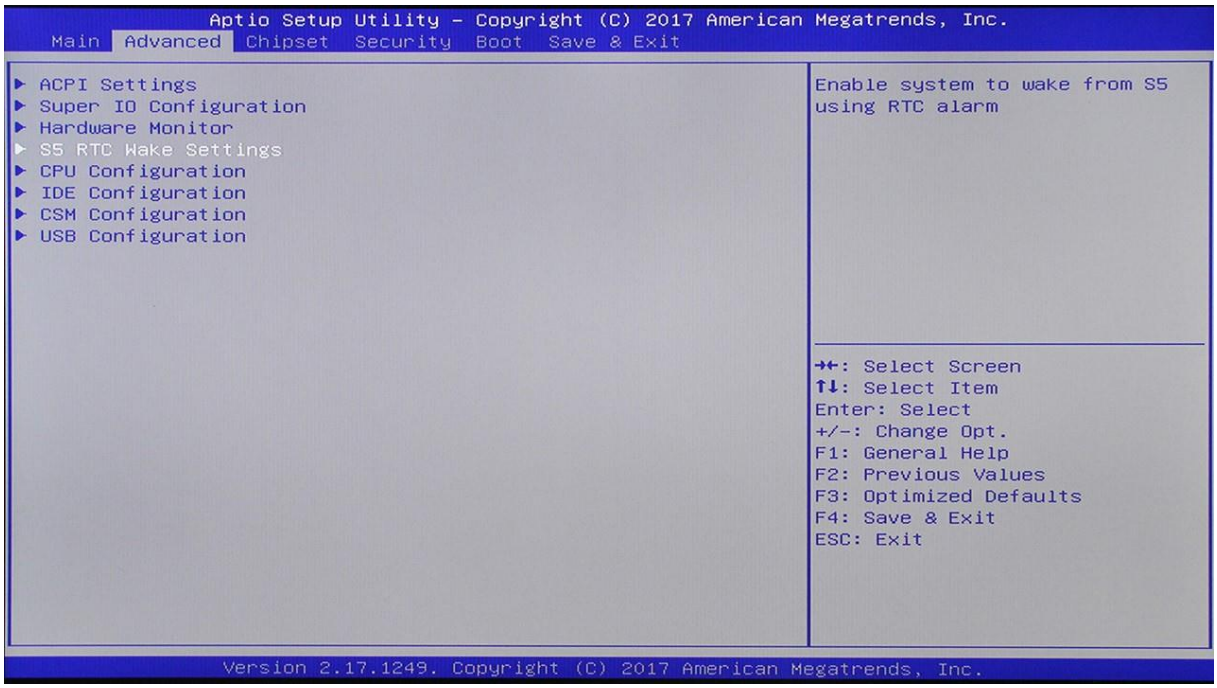
PC Health Status

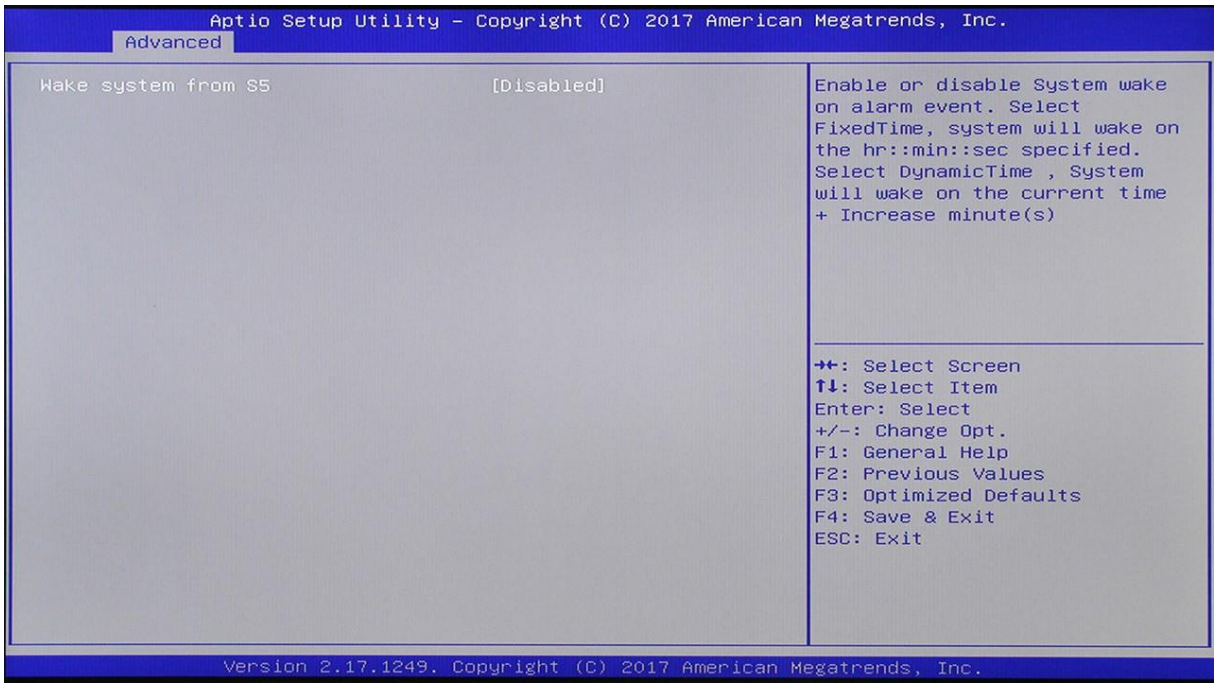
The interface displays information about the health status of the PC hardware, including CPU temperature, system temperature, CPU fan speed, system fan speed, voltage, etc.



Advanced S5 RTC Wake Settings

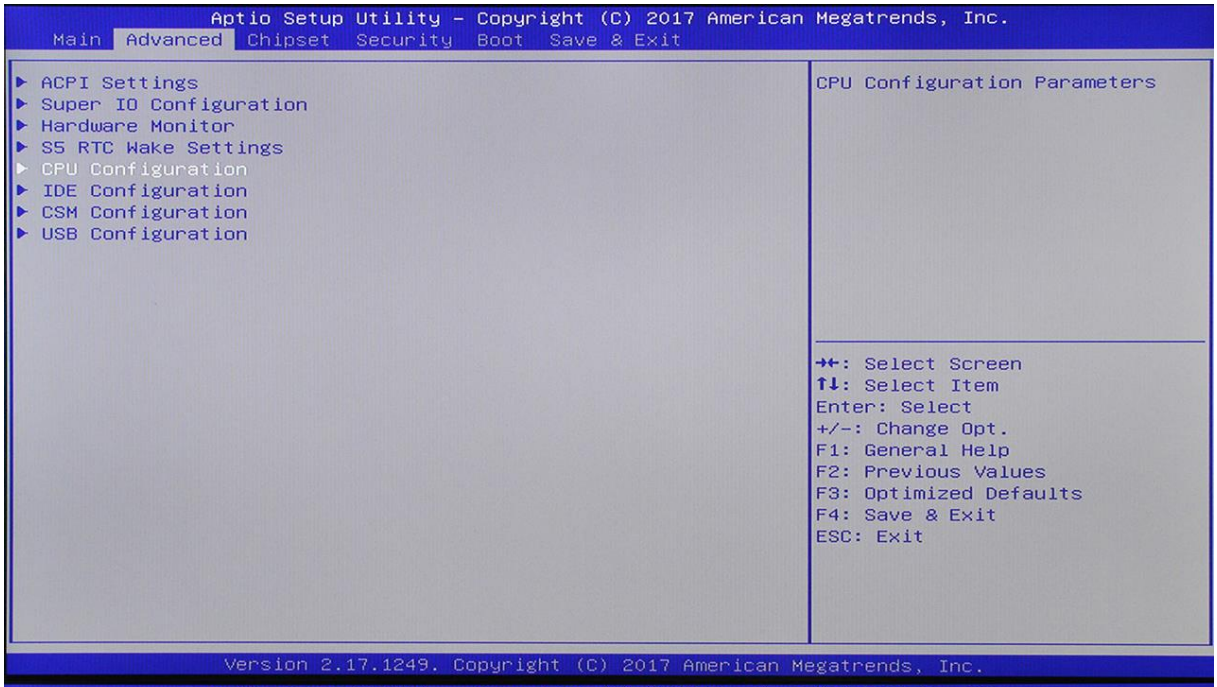
Set the timer switch, setting options: Disabled (default), Enabled. When set to Enabled, you need to set the fixed boot time, format: day (D): Hour (H): minute (M): second (S)

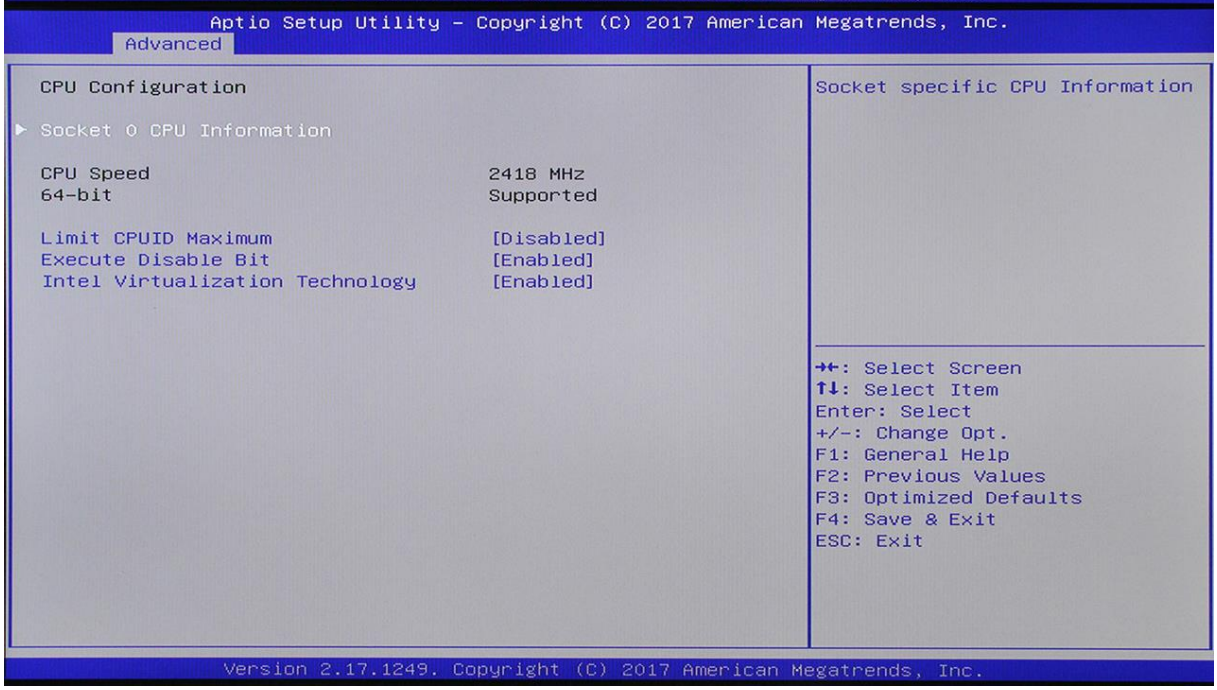




CPU Information

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-Excution 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]

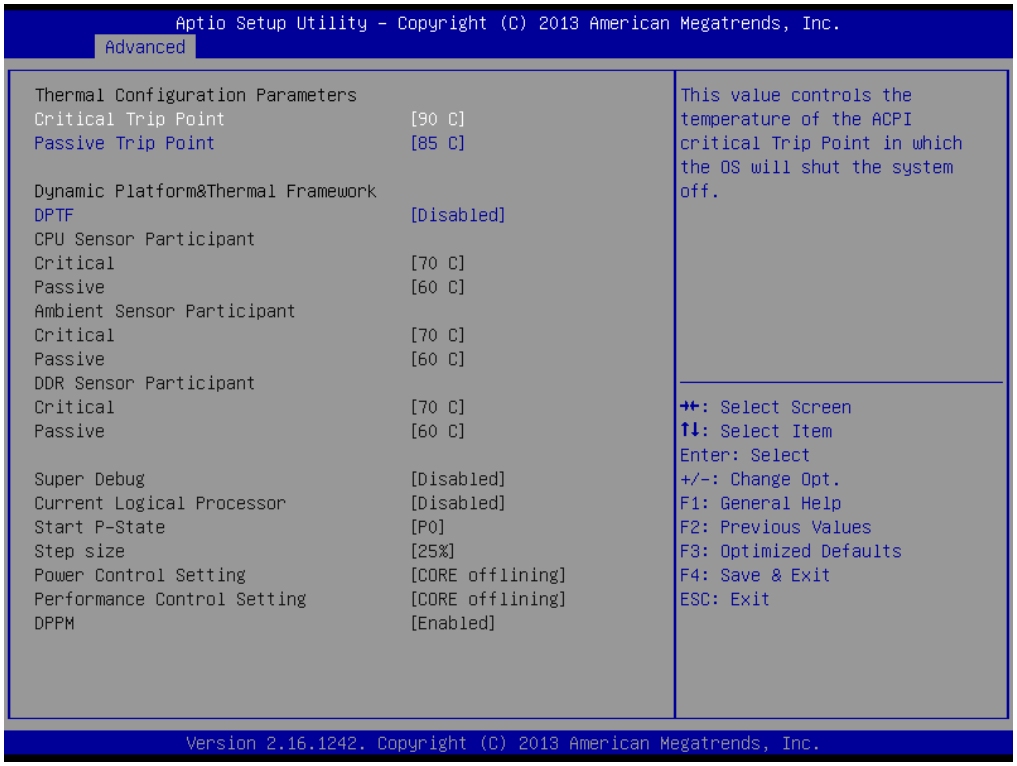
Adjacent Cache Line Prefetch [Enabled]

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]

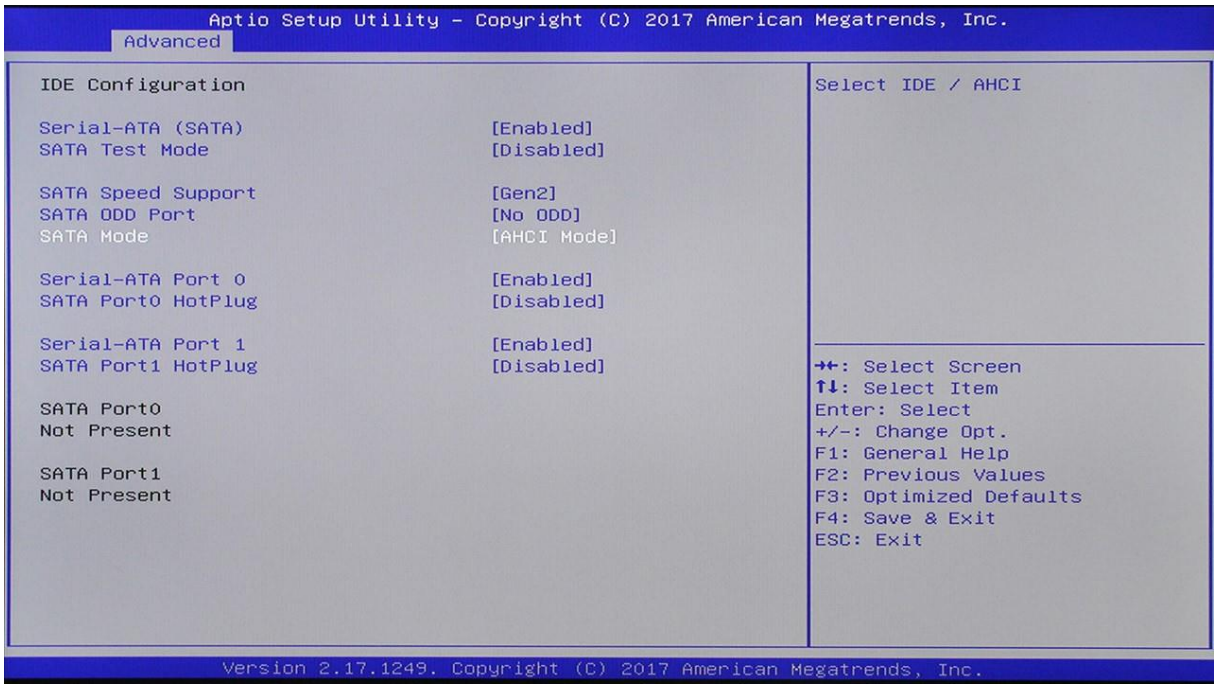
Intel Virtualization Technology [Disabled]

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

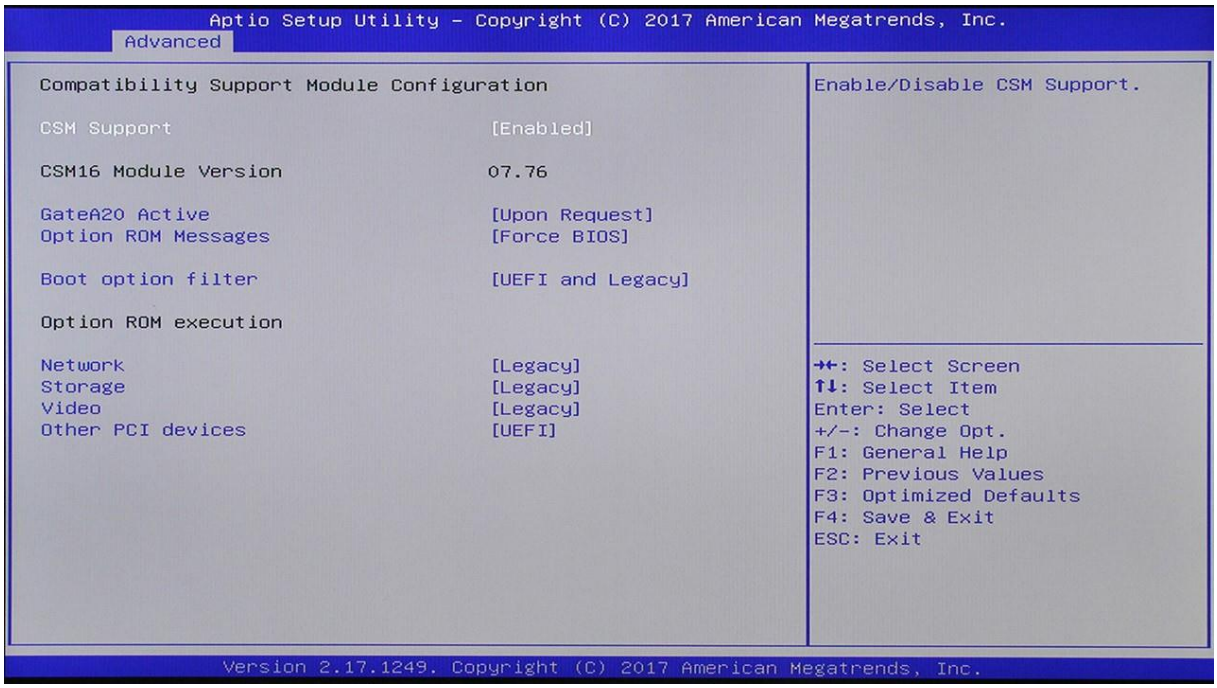
Thermal Configuration



IDE Configuration

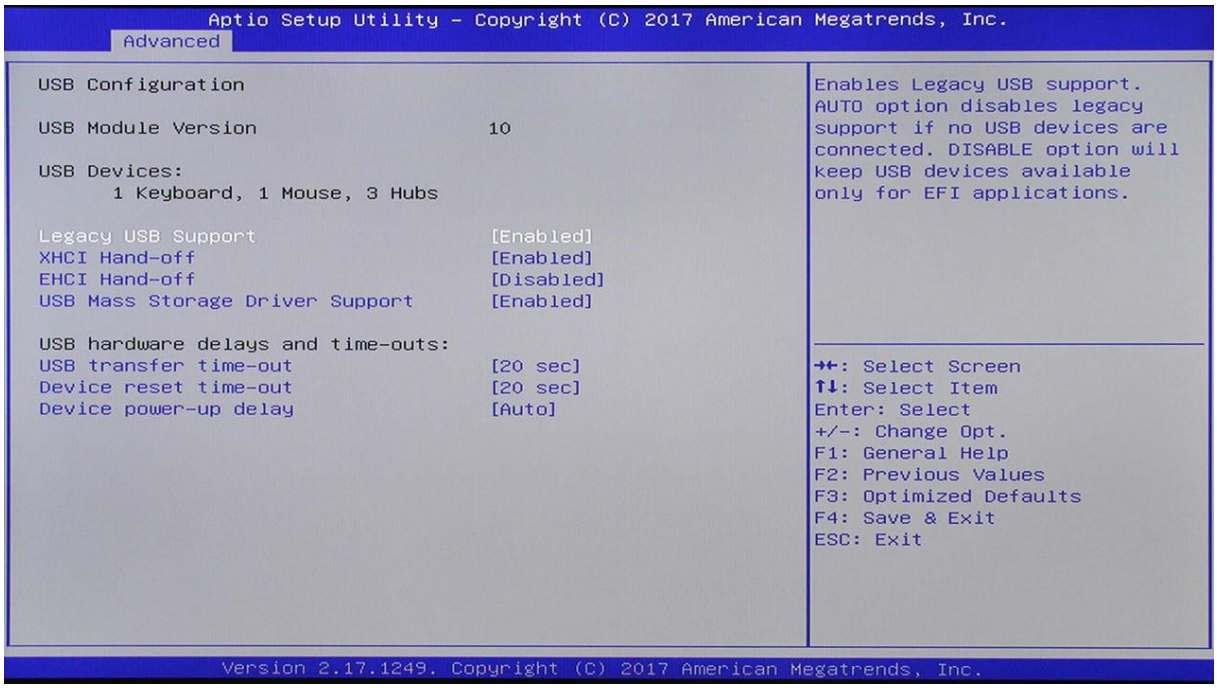


CSM Configuration



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]

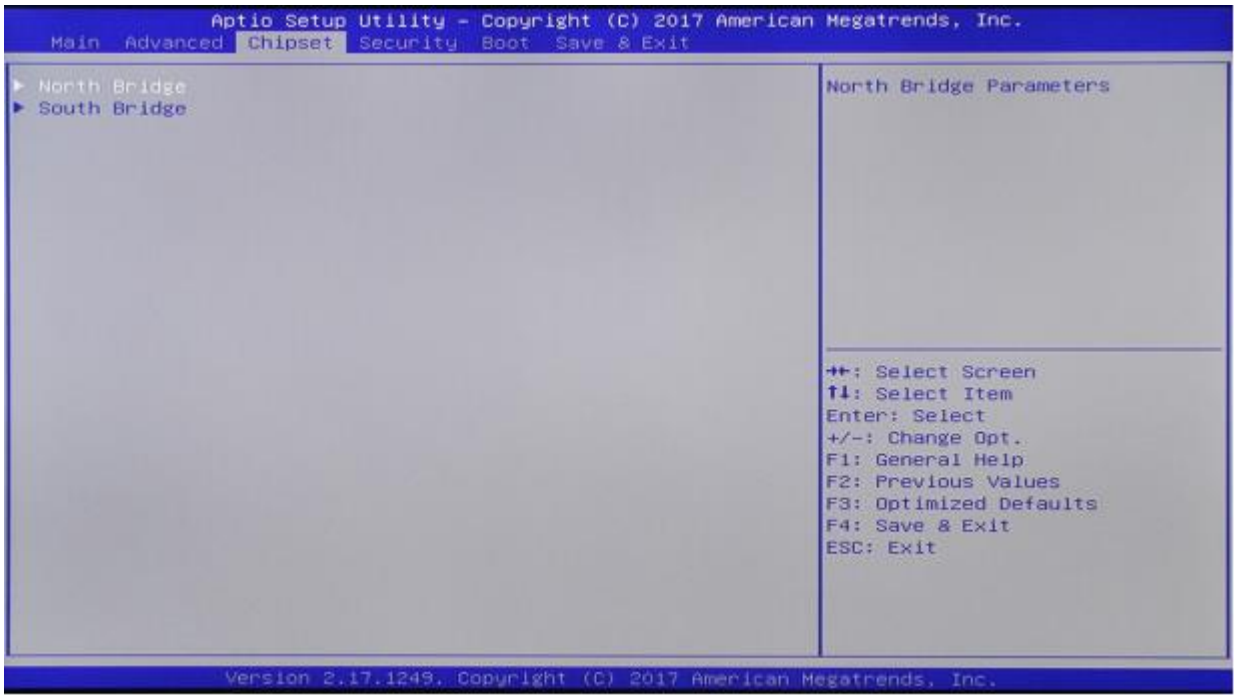
This item sets the maximum time for a data transfer on the USB2.0. If the transmission is not completed within this time, the error is given to the EFI. This setting only works on EFI, no effect to

USB drive on the OS.

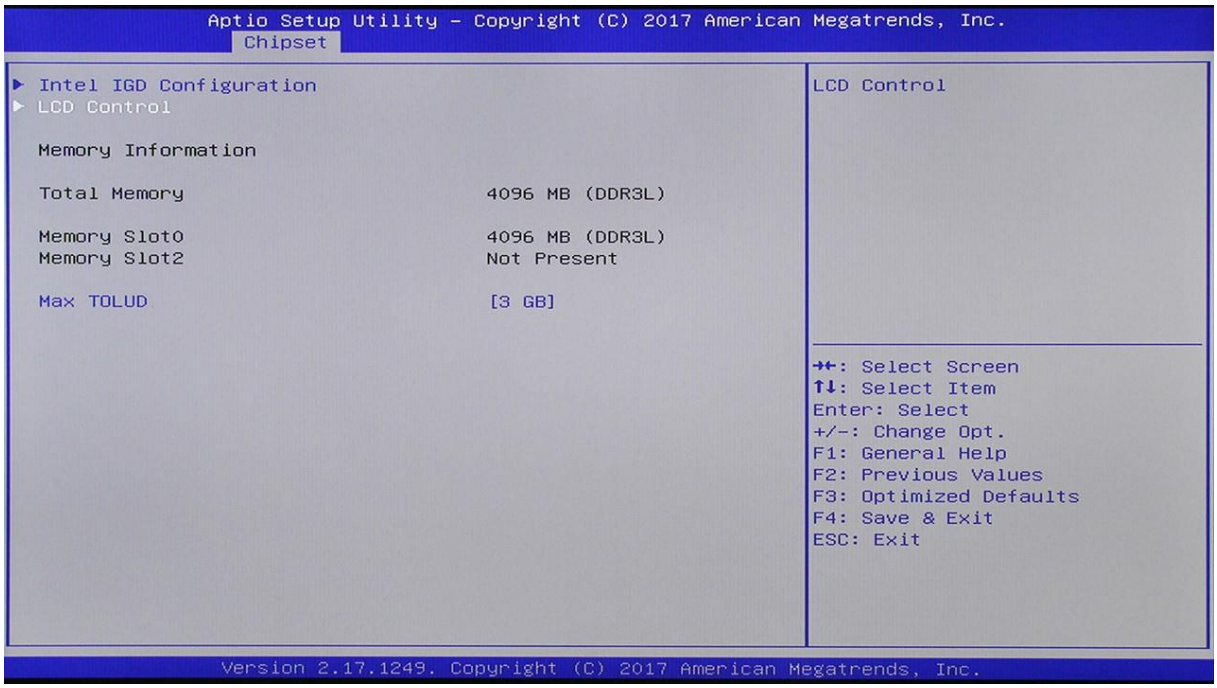
Device reset time-out [20sec]

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.

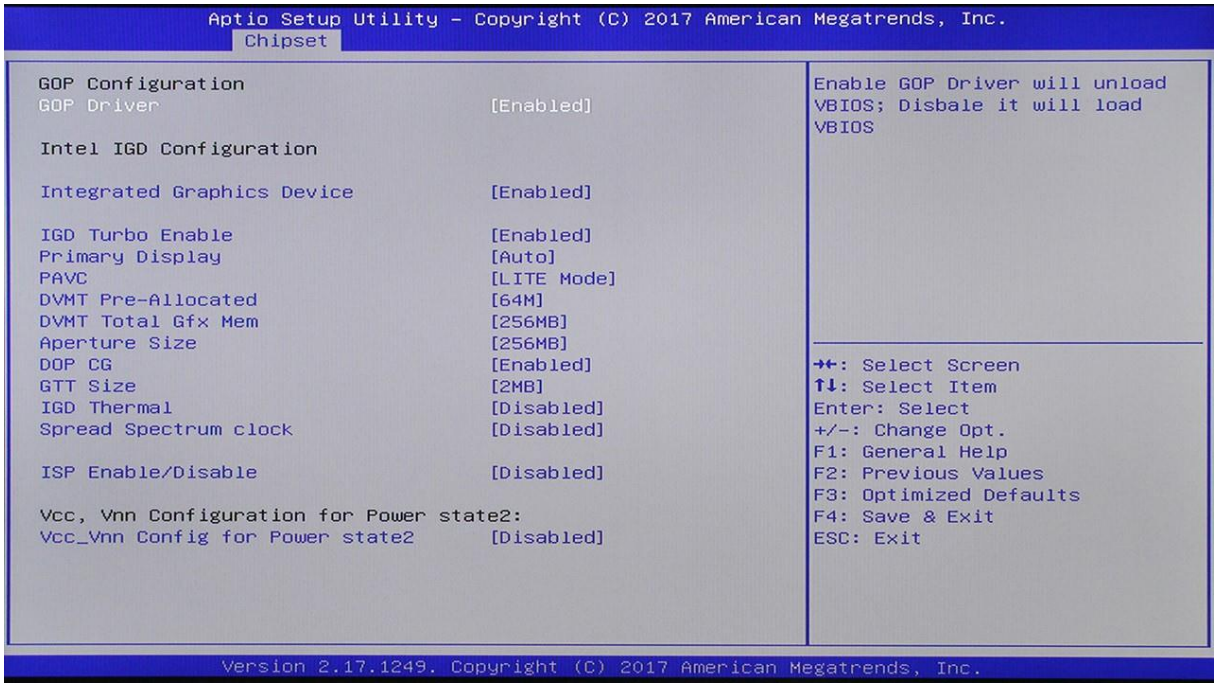
4.3. Chipset MENU



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]

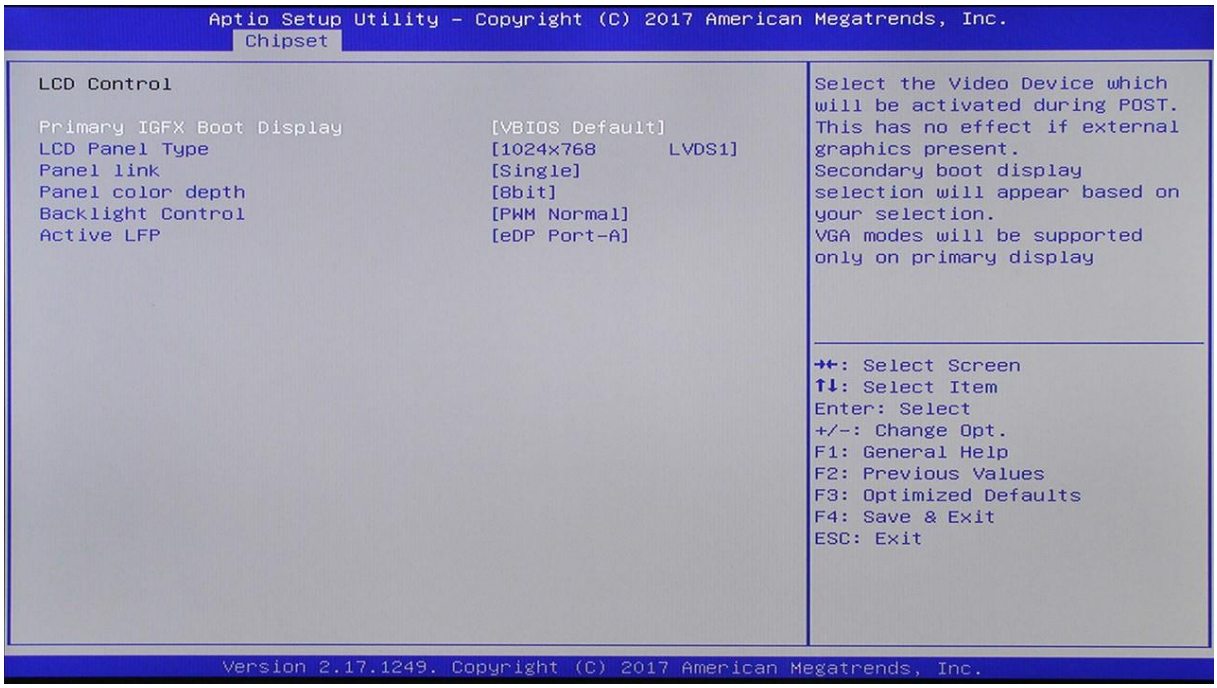
DVMT Pre-Allocate

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 depht

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

Panel link

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

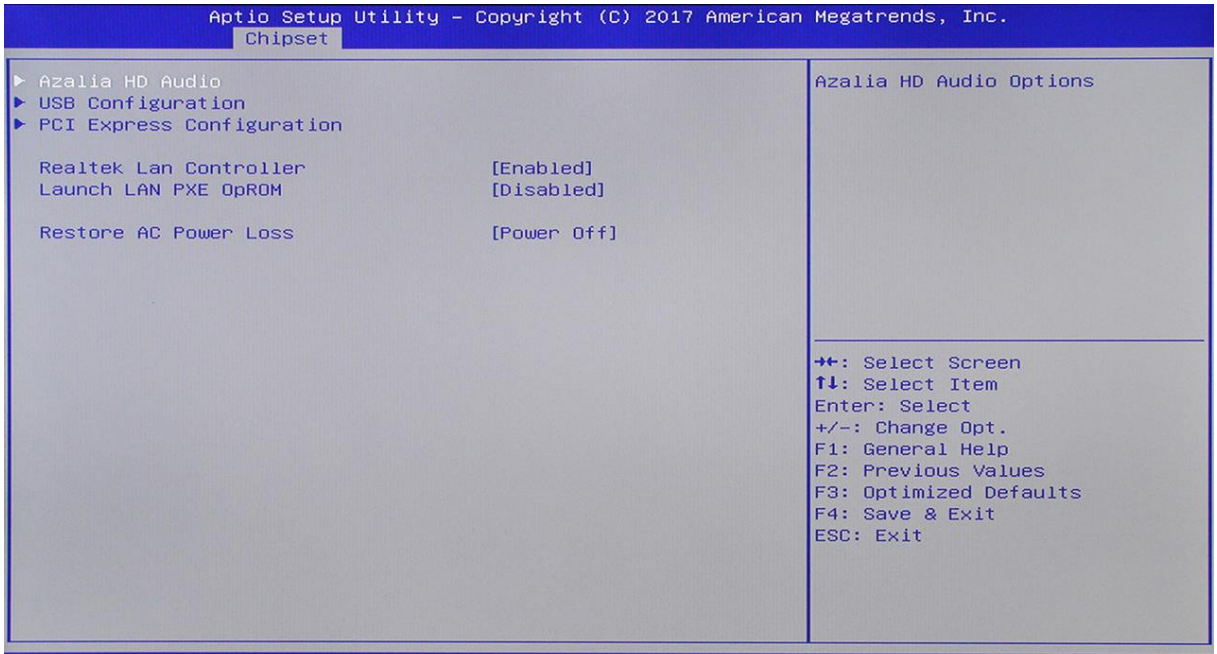
Back light control

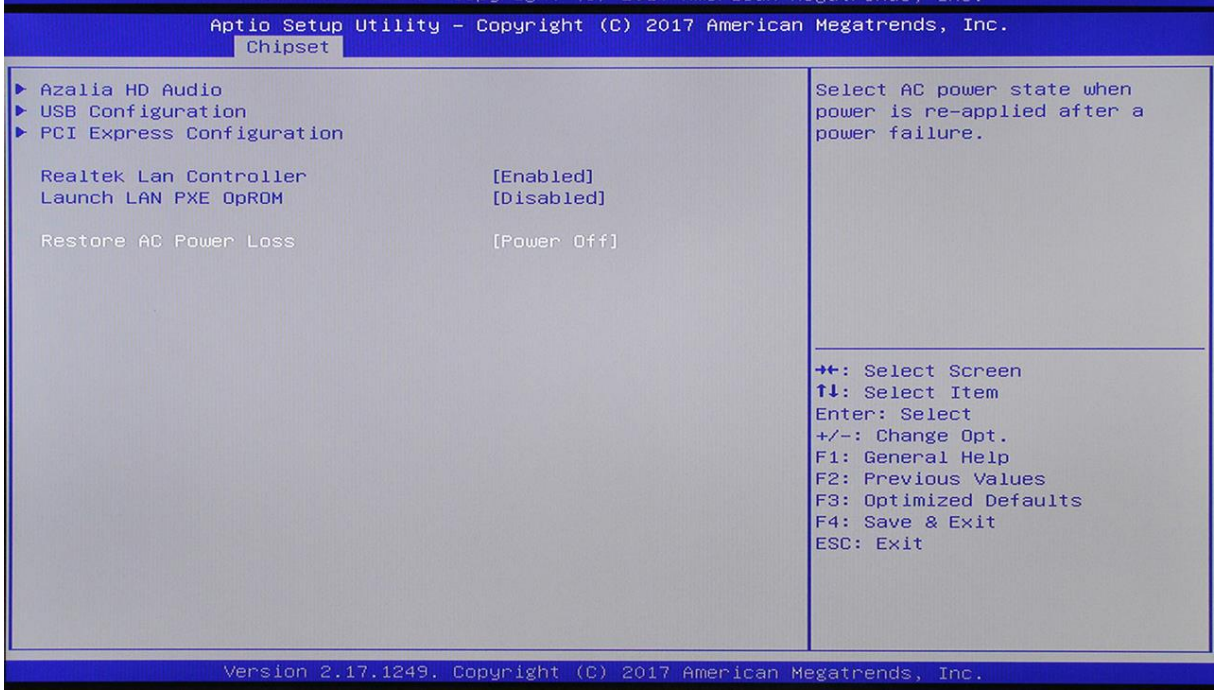
Set the resolution of LVDS, the default is Single 8 1024X768

Act ive 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]

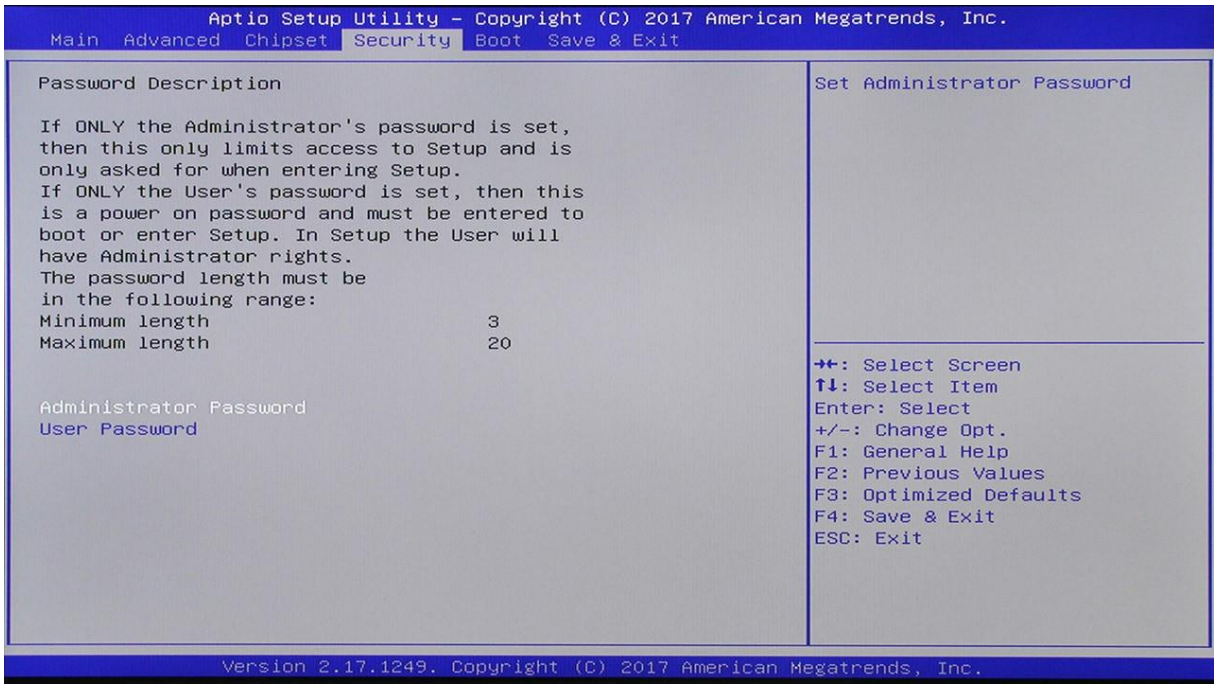
Restore AC Power Loss, setting options：[Power Off] [Power On] [Last State]

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

4.4. Security MENU



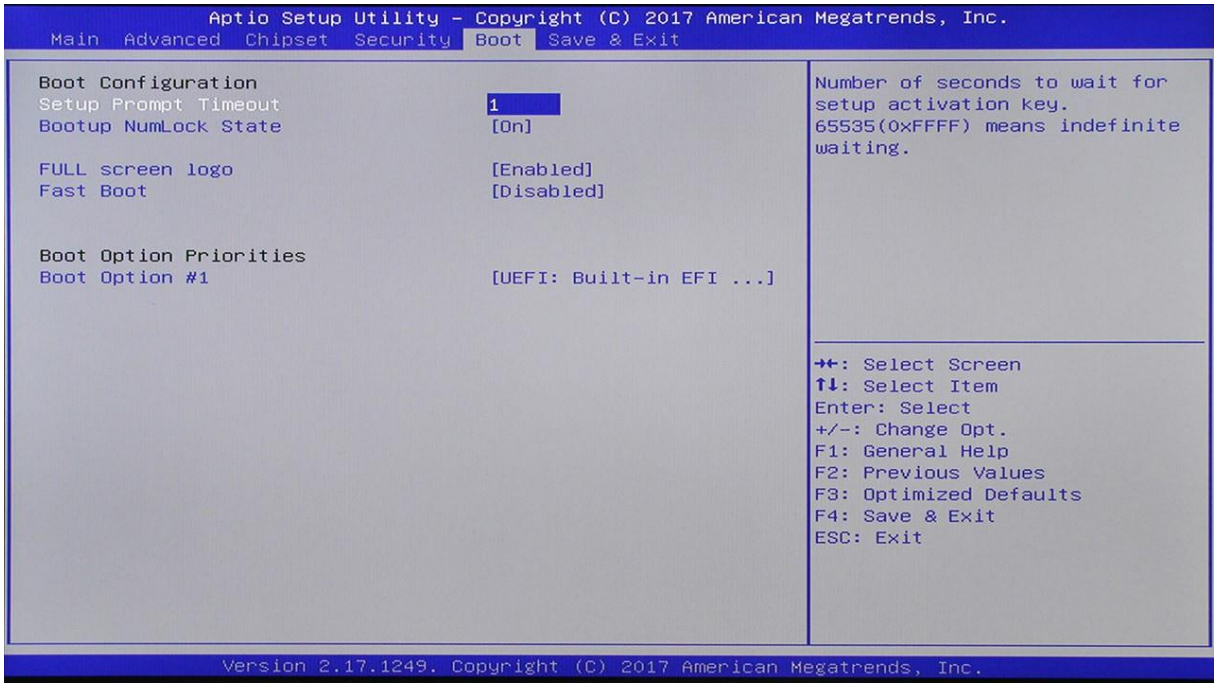
Administrator Password

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.

4.5. 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]

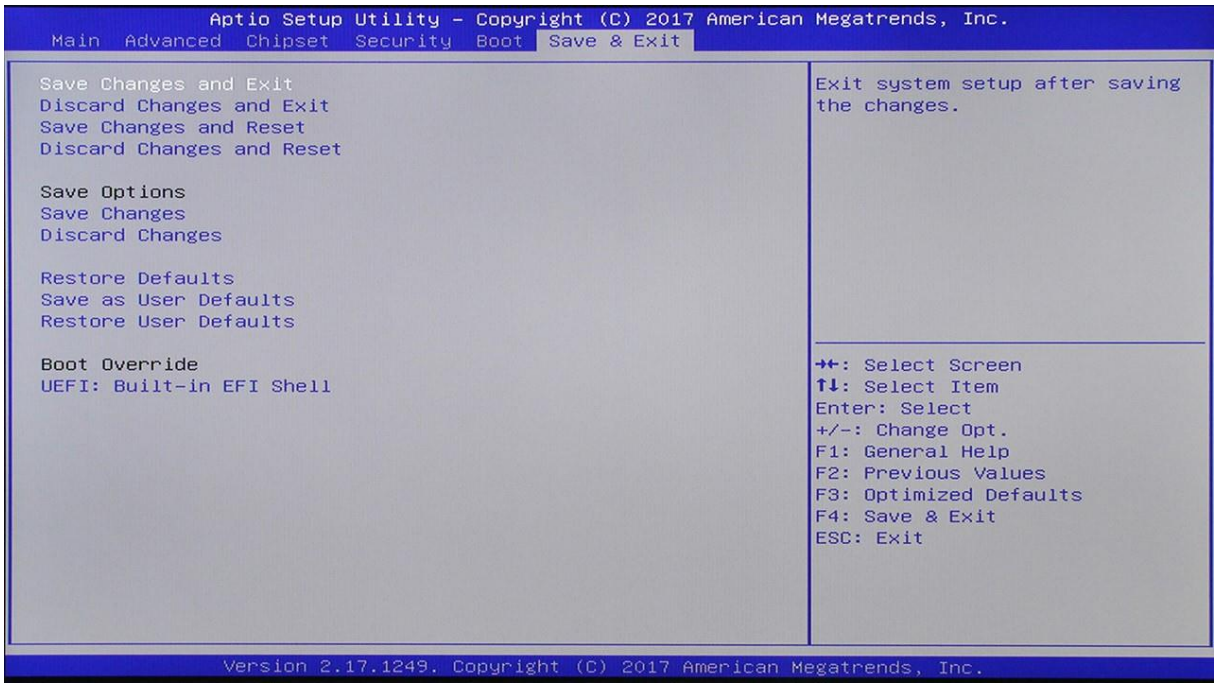
Fast Boot [Disabled]

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

4.6. 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.

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