USER MANUAL

ZKAIO2000 Series

Version：1.0

Date: June 2018

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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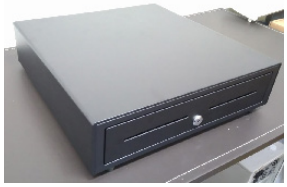
1. Packing List

1.1. Standard Accessories

a.	b.	a. ZKAIO2000 b. Power Adapter c. Power cord
c.		

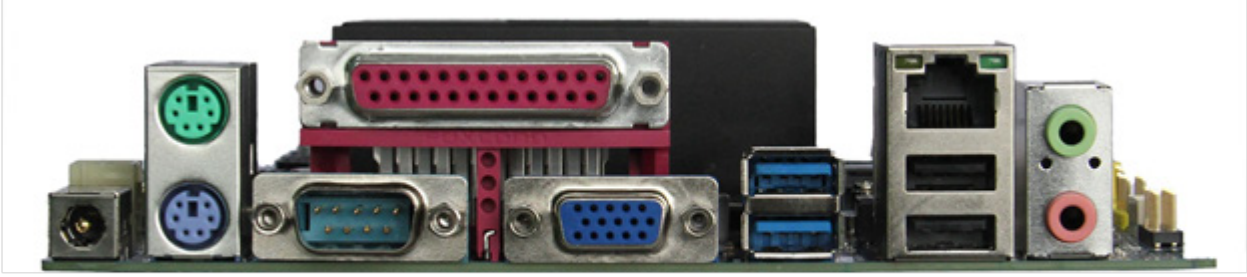
1.2. Optional Accessories

a.	b.	c.

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

2. System View

2.1. Rear View



DC-JACK	PS/2	LPT	COM	VGA	USB	USB+LAN	Audio

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

2.2. Back View

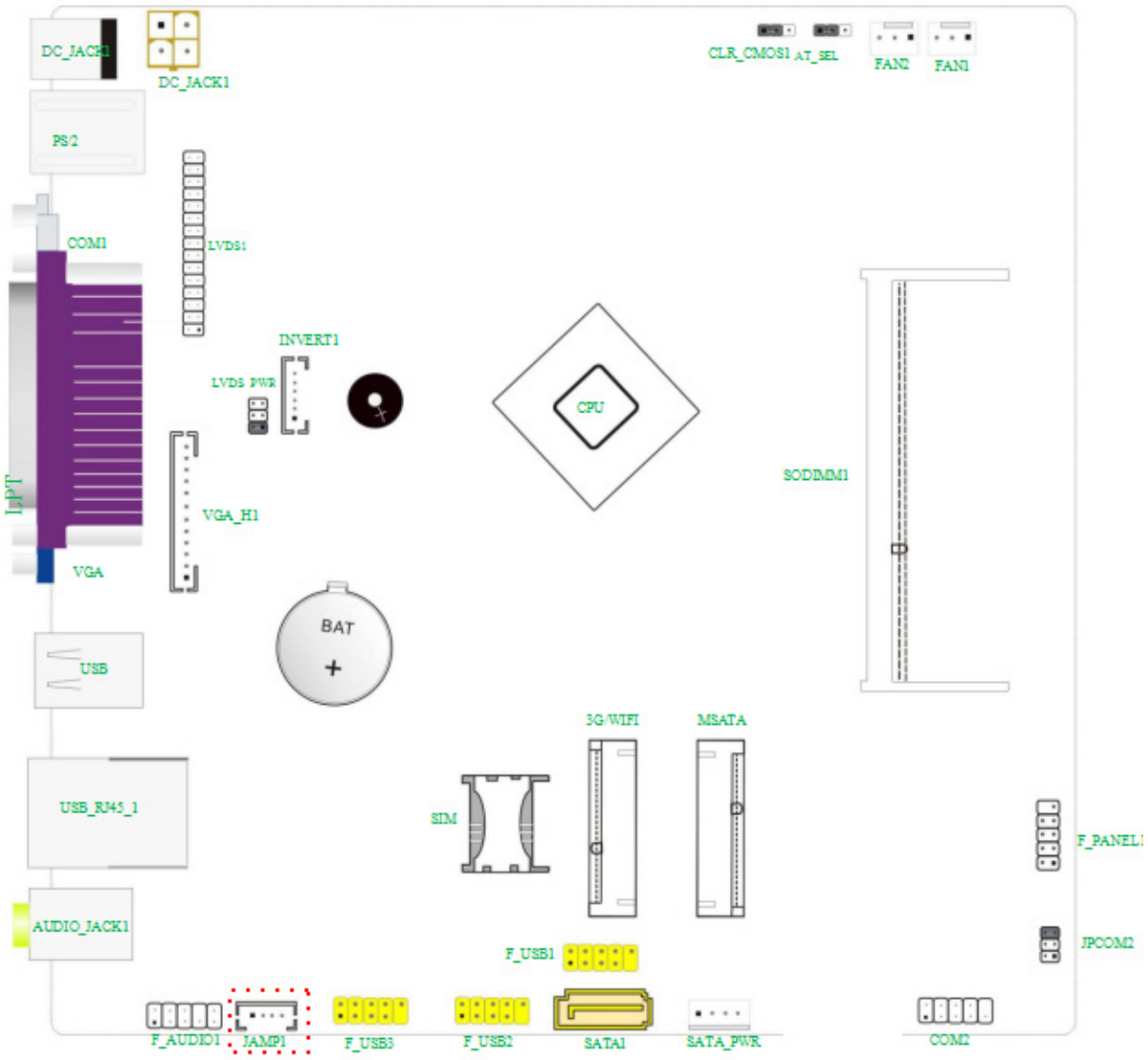
2.3. Specification

Display & Touch	LCD Display Size		15" 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® Celeron J1900 QC 2.0GHz
	System Memory		One SO-DIMM socket supports DDR3L 1333 up to 8GB
Storage	HDD		MINI SSD x 1
I/O	USB		X 5 (USB 2.0)
			X 1 (USB 3.0)
	Powered COM		X 1
	LPT		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			460(W) x490(H) x 315(D) mm(ZK1510) 358(W) x368(H) x 222(D) mm(ZK1515)
Compliance	Certifications		CE / FCC

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

2.4. Internal Layout

M/B PCBA


DC_JACK1
DC_JACK1
CLR_CMOS1
AT_SEL
FAN2
FAN1
PS/2
COM1
LVDS1
INVERT1
LVDS PWR
CPU
SODIMM1
LPT
VGA_H1
VGA
BAT
USB
3G/WIFI
MSATA
USB_RJ45_1
SIM
F_PANEL1
AUDIO_JACK1
JPCOM2
F_USB1
F_AUDIO1
JAMP1
F_USB3
F_USB2
SATA1
SATA_PWR
COM2

3. Pin Definition

3.1. CPU

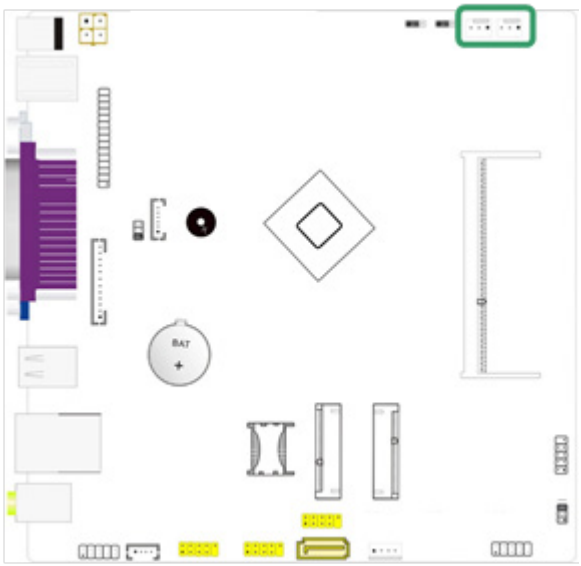
This mainboard uses Intel® Bay Trail J1900 Quad core 2.0GHz CPU, the frequency can be risen to 2.4GHz

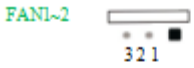
3.2. Fan pin

Fan pin support the connection of system fan and CPU fan for refrigeration, fan power cord and connector may be different from the manufacturer

FAN1: CPU Fan pin

FAN2: System fan pin

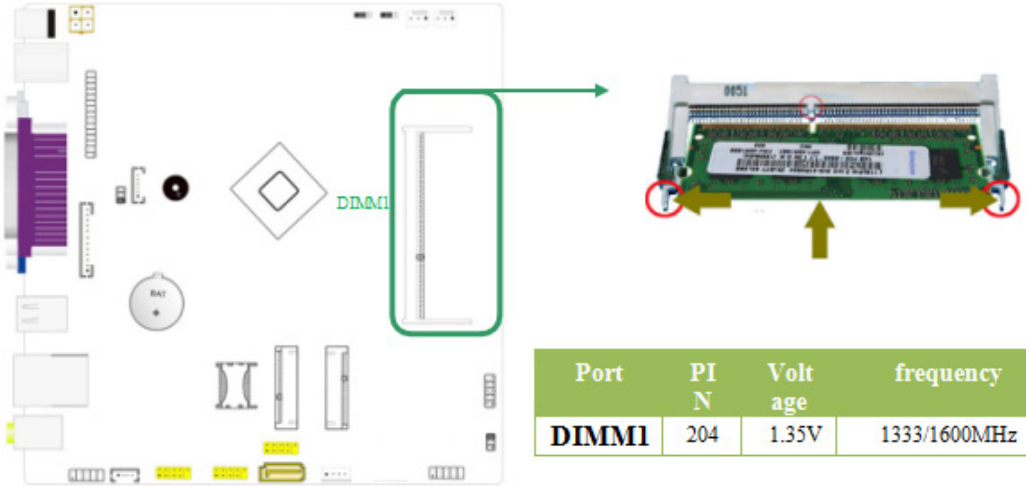




Pin	Definition
1	GND
2	+12V
3	Fan speed detection

3.3. RAM

DIMM1: RAM Port (SO-DIMM)

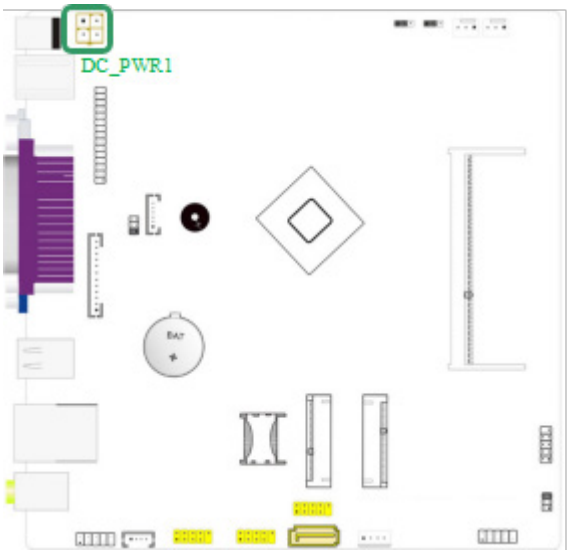


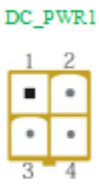
Port	PIN	Voltage	frequency	max. cap
DIMM1	204	1.35V	1333/1600MHz	8GB

Memory Assembly & Disassembly:

1. Install the memory, please use the thumb and index finger gently hold the memory at both ends, align the memory pin and slot on Mistake-Proof point, insert at 30 oblique angle and gently press down until you hear "pa", The memory is plugged in.
2. Remove the memory, with two fingers at both ends of the slot to push out, the memory pops up, and then remove the memory.

3.4. Power supply (motherboard provides DC power supply)





Pin	Definition
1	GND
2	GND
3	12V
4	12V

DC 12V DC input / output interface (4Pin)

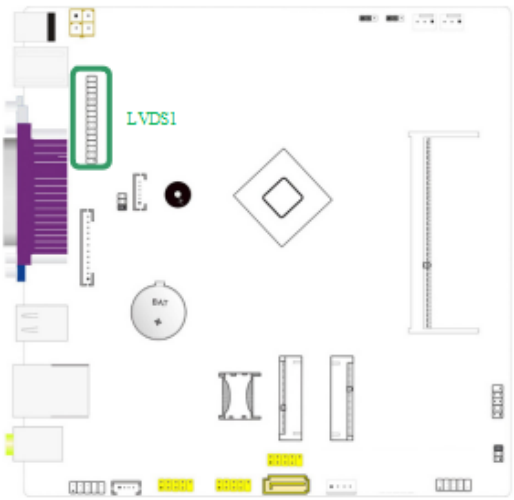
DC_PWR1 and backplane IO DC jack cannot be input simultaneously

3.5. Onboard slot / connector / pin / jumper

3.5.1 Definition of display port pin: LVDS, INVERT, LVDS_PWR, VGA_H1

LVDS1: LVDS Connector

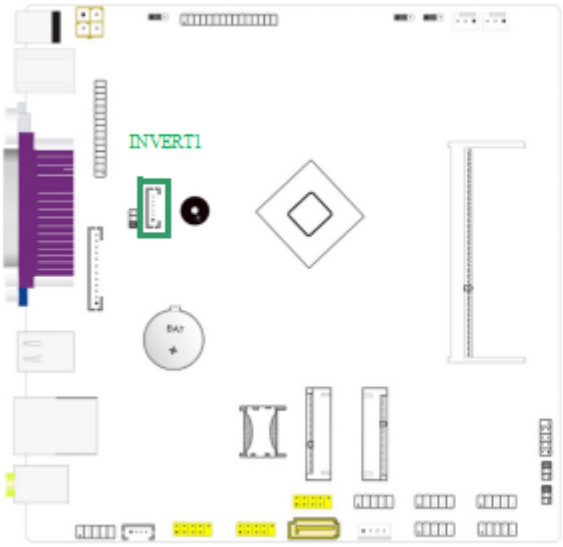
The motherboard provides DuPont encapsulated LVDS connector, support dual-channel 24bit LVDS display port output, can be connected to a single 6 bit, dual 6 bit, single 8 bit ,dual 8 bit LVDS LCD.

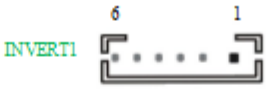


PIN	Definition	PIN	Definition
1	VCC	2	VCC
3	VCC	4	GND
5	GND	6	GND
7	ADO0-	8	ADO0+
9	ADO1-	10	ADO1+
11	ADO2-	12	ADO2+
13	GND	14	GND
15	ACLK-	16	ACLK+
17	AD03-	18	AD03+
19	BDO0-	20	BDO0+
21	BDO1-	22	BDO1+
23	BDO2-	24	BDO2+
25	GND	26	GND
27	BCLK-	28	BCLK+
29	BDO3-	30	BDO3+

INVERT1: LVDS Backlight connector

The motherboard provides a 6 pin INVERT for driving the LVDS LCD backlight panel.

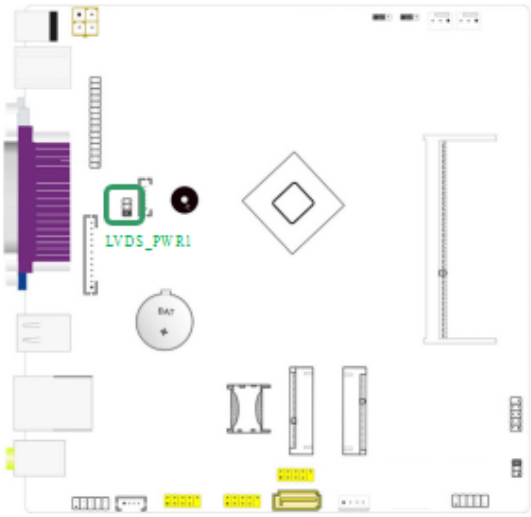


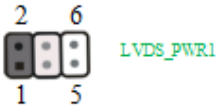


Pin	Definition
1	+12V
2	+12V
3	ENABLE
4	PWM
5	GND
6	GND

LVDS_PWR1: LVDS LCD logic circuit voltage select jumper

Jumper Cap is used to select the voltage of the LVDS LCD logic circuit

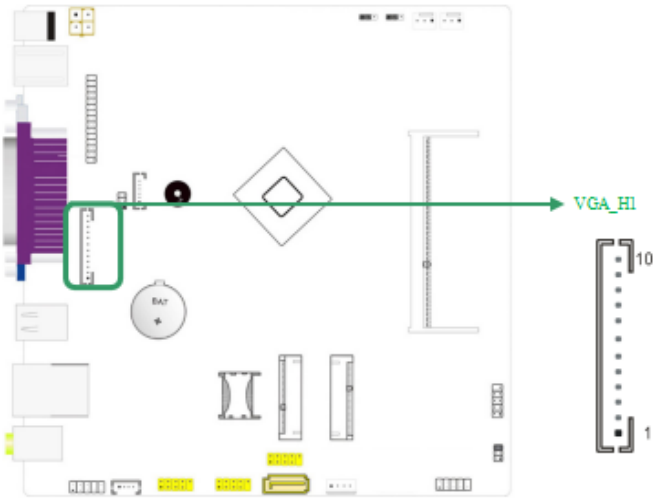




Pin	Definition
1-2	LVDS 3.3V
3-4	LVDS 5V
5-6	LVDS 12V

VGA_H1: VGA Internal pin

The pin and VGA of I/O port is the same display channel, only support dual VGA synchronous display



PIN	Definition	PIN	Definition
1	GND	7	Green
2	VSYNC	8	GND
3	HSYNC	9	Blue
4	GND	10	GND
5	Red	11	DDCDATA
6	GND	12	DDCCLK

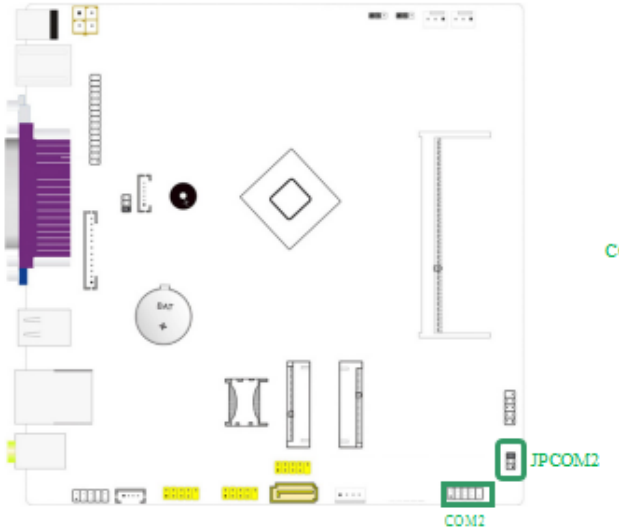
Dual display settings

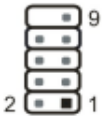
The board provides a standard VGA interface (VGA built a pin), a dual-channel 24bit LVDS interface, various combinations of dual-screen display and dual display function:

Combination mode	Double display function
VGA1 +LVDS	Supports synchronous / asynchronous dual display
VGA_H1+ LVDS	Supports synchronous / asynchronous dual display

3.5.2 Definition of common function port pin

COM2 RS-232





COM

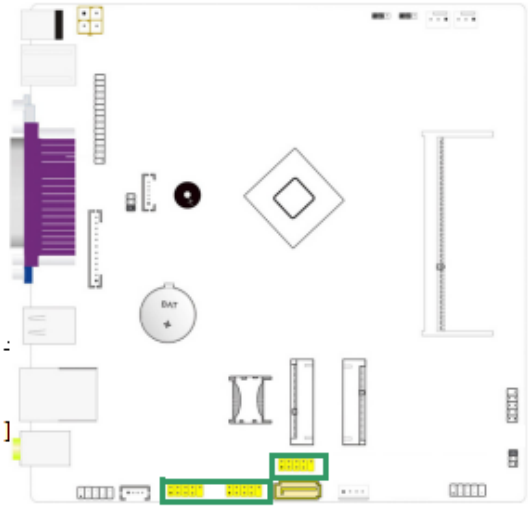
PIN	definition	PI N	definition
1	DCD#	2	RXD
3	TXD	4	DTR#
5	GND	6	DSR#
7	RTS#	8	CTS#
9	RI#	10	NC

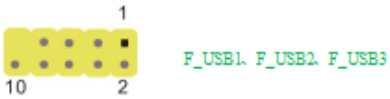
5V/12V power supply（COM2）

The above COM does not support RI wake up

Pin	definition
1-2	RI
3-4	+5V
5-6	+12V

F_USB1,F_USB2，F_USB3(2.0) Extension pin

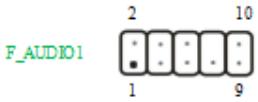




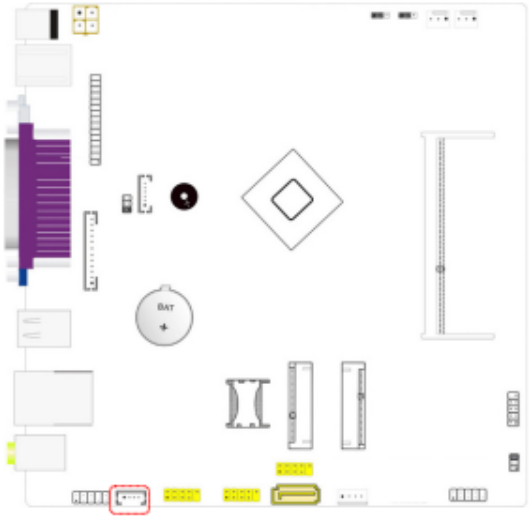
PIN	definition	PIN	definition
1	+5V	2	+5V
3	USB1_Data-	4	USB2_Data-
5	USB1_Data+	6	USB2_Data+
7	GND	8	GND
9		10	GND_CHASSIS

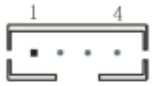
The audio extension cable, can be extended audio input and output ports

PIN	definition	PIN	definition
1	MIC-L	2	GND
3	MIC-R	4	PRESENCE
5	LINEOUT-R	6	MIC SENSE
7	SENSE_SEND	8	
9	LINEOUT-L	10	LINEOUT SENSE



JAMP1 Digital audio output connector (optional)





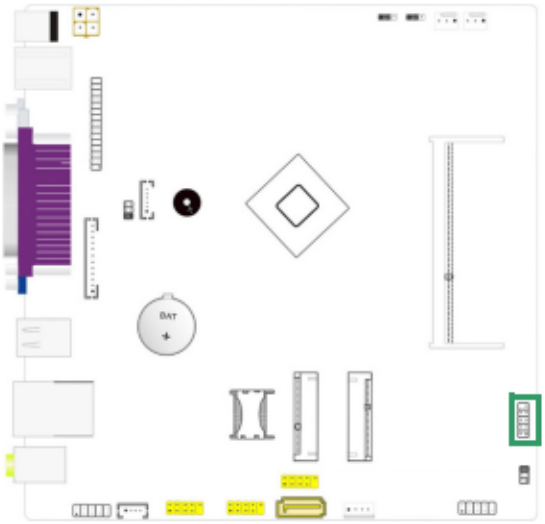
JAMP1

PIN	definition
1	AMP_R-
2	AMP_R+
3	AMP_L+
4	AMP_L-

3.5.3 Other pin definitions: F_PANEL1, CLR_CMOS, AT_SEL

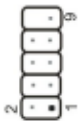
F_PANEL1: Front panel pin

The 10 pin function includes power-on, reset, hard disk indicator, power indicator, allowing the user to connect the system's front panel switch.



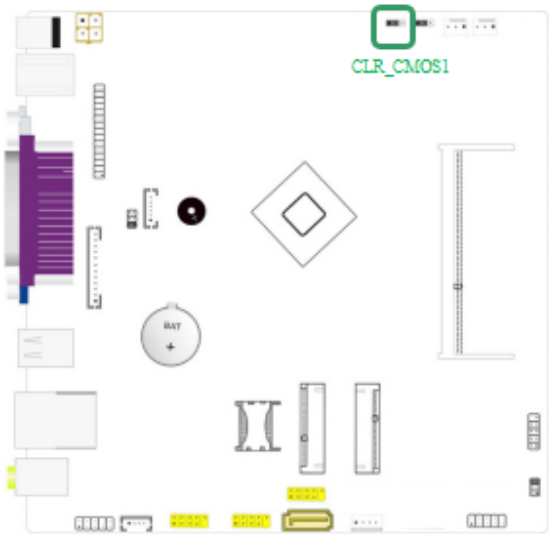
PIN	definition	PIN	definition
1	HDD_LED+	2	PWR_LED+
3	HDD_LED-	4	GND
5	RESET GND	6	PWR_ON GND
7	RESET	8	PWR_ON
9	GND	10	空

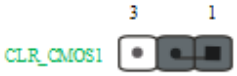
F_PANEL1



CLR_CMOS1: Wipe the COMS, setup jumper

Allow the user to shorten the Pin2-3 of the jumper to restore the BIOS initial security settings. Follow the instructions carefully to avoid damaging the motherboard.





Pin	definition
1-2	Normal（default）
2-3	Clear CMOS

※ Wipe the COMS：

① disconnect the power supply

② set the jumper to "Pin 2-3 closed"

③ Wait for 5 seconds

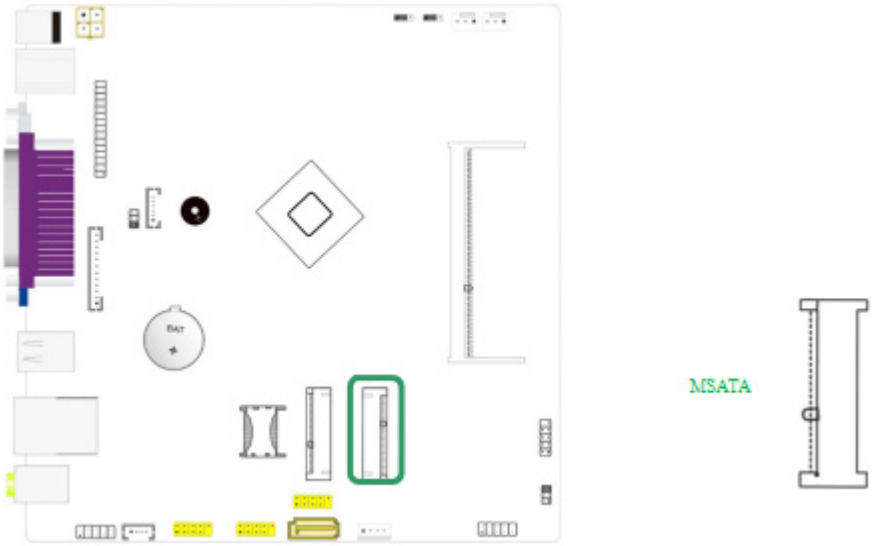
④ then set the jumper to "Pin 1-2 closed"

⑤ power on to reset the password or clear the CMOS data

3.5.4 Slots and connectors:MSATA1,SATA,3G/WIFI,SATA_PWR

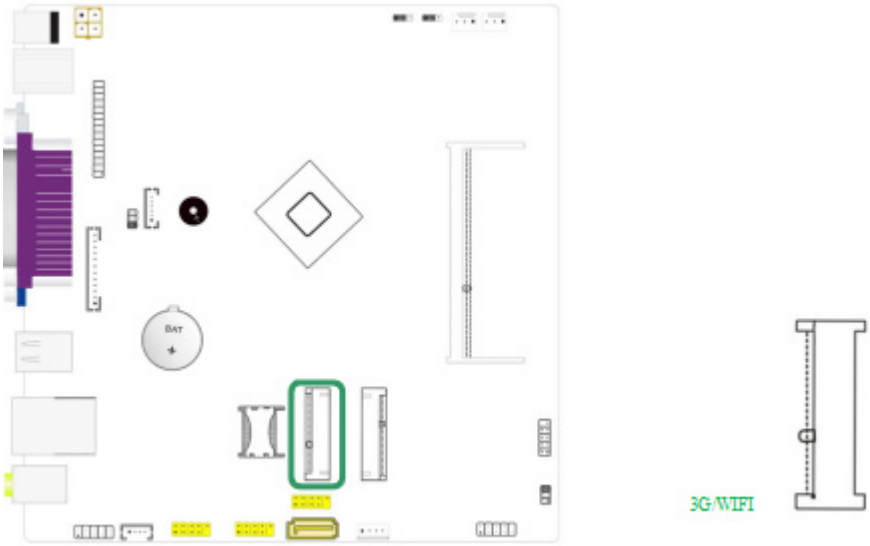
MSATA: mSATA Slot

The slot supports the mSATA SSD installation



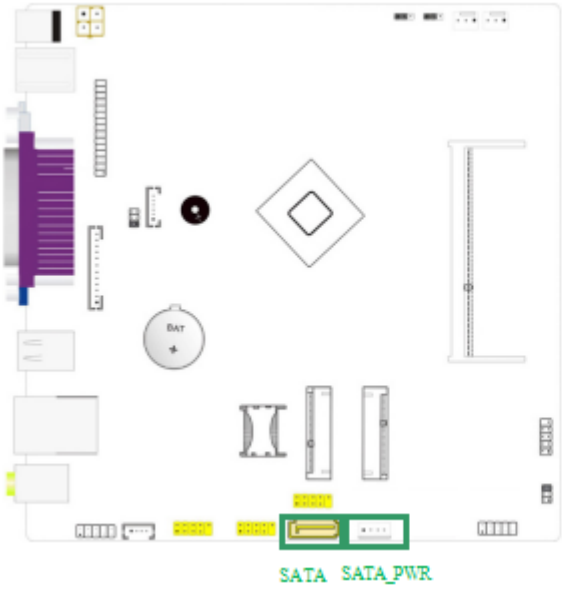
SSD installed, pay attention to tightening screw

3G/WIFI



SATA1: 1×SATA 2.0 Interface

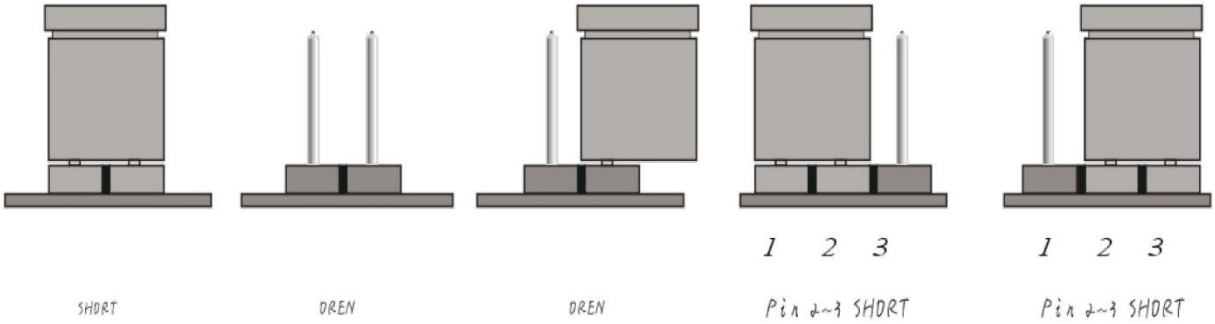
SATA power supply　SATA_PWR1,SATA2.0（yellow）support 3Gb/s transfer rate



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

set jumper

The following figure shows how to set the jumper: When the jumper cap is placed on the pin, the jumper is "closed", indicating that the two pins are connected; otherwise, "open"


1 2 3
1 2 3
SHORT
OREN
OREN
Pin 2~3 SHORT
Pin 2~3 SHORT

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.

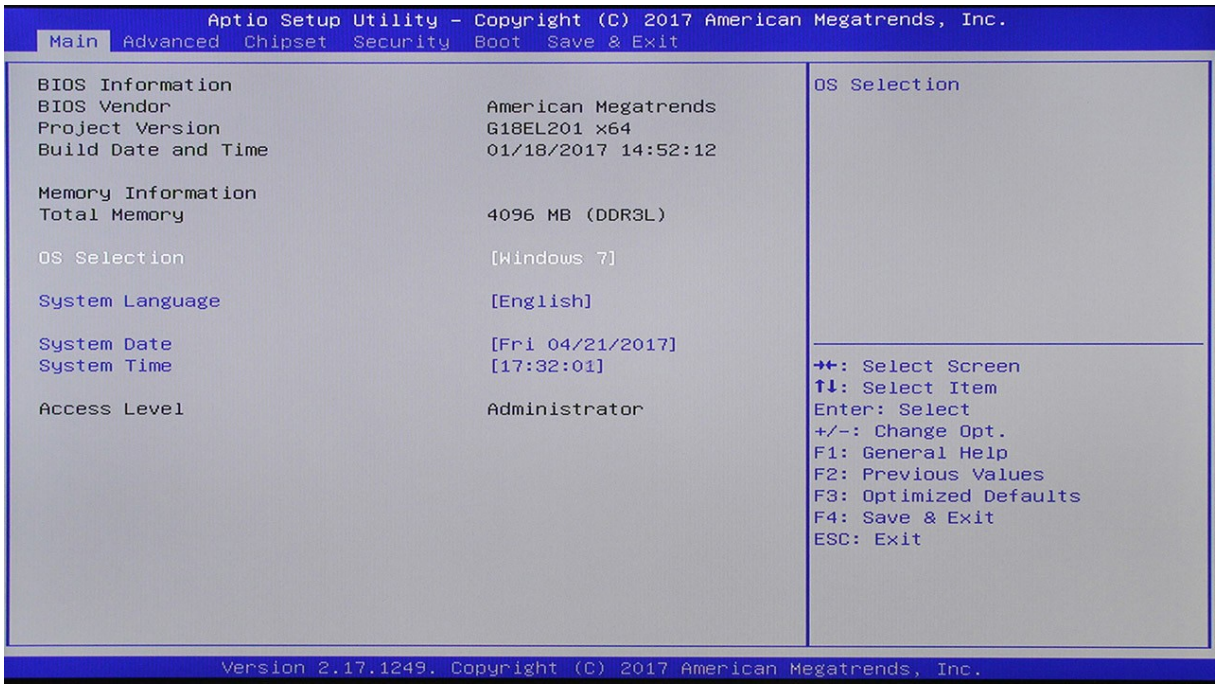
In order to get better system performance, the motherboard's BIOS firmware will be constantly updated.

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"

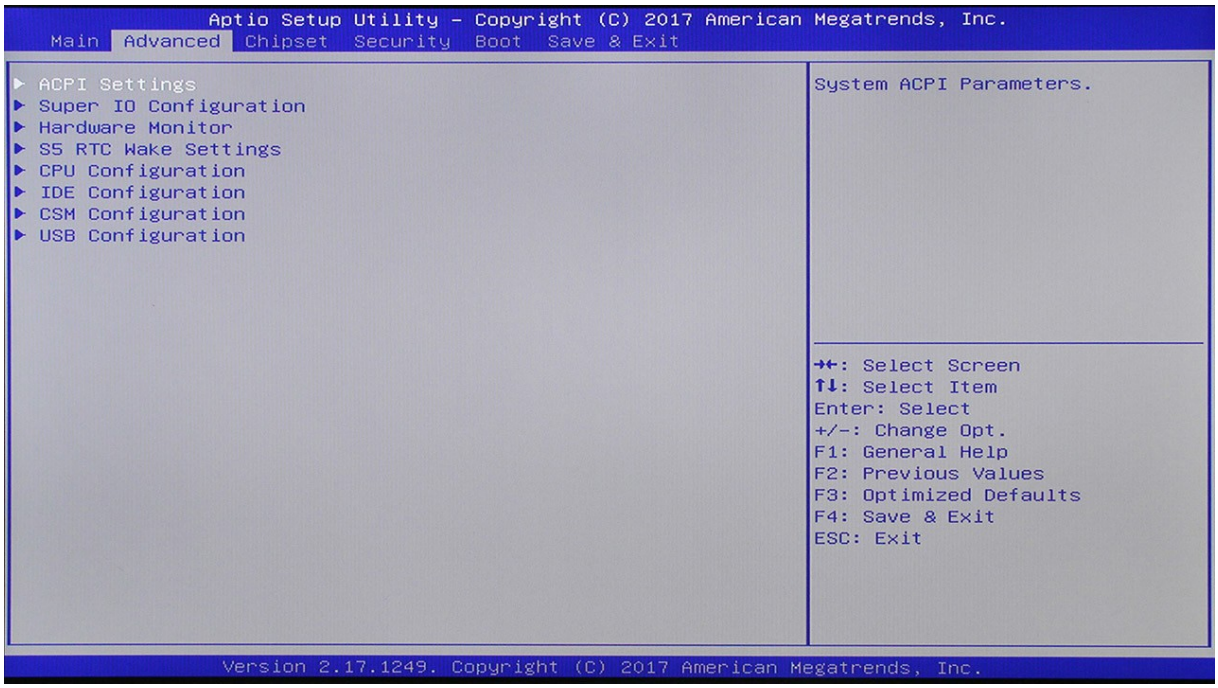
System Time

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

4.2. ADVANCED MENU

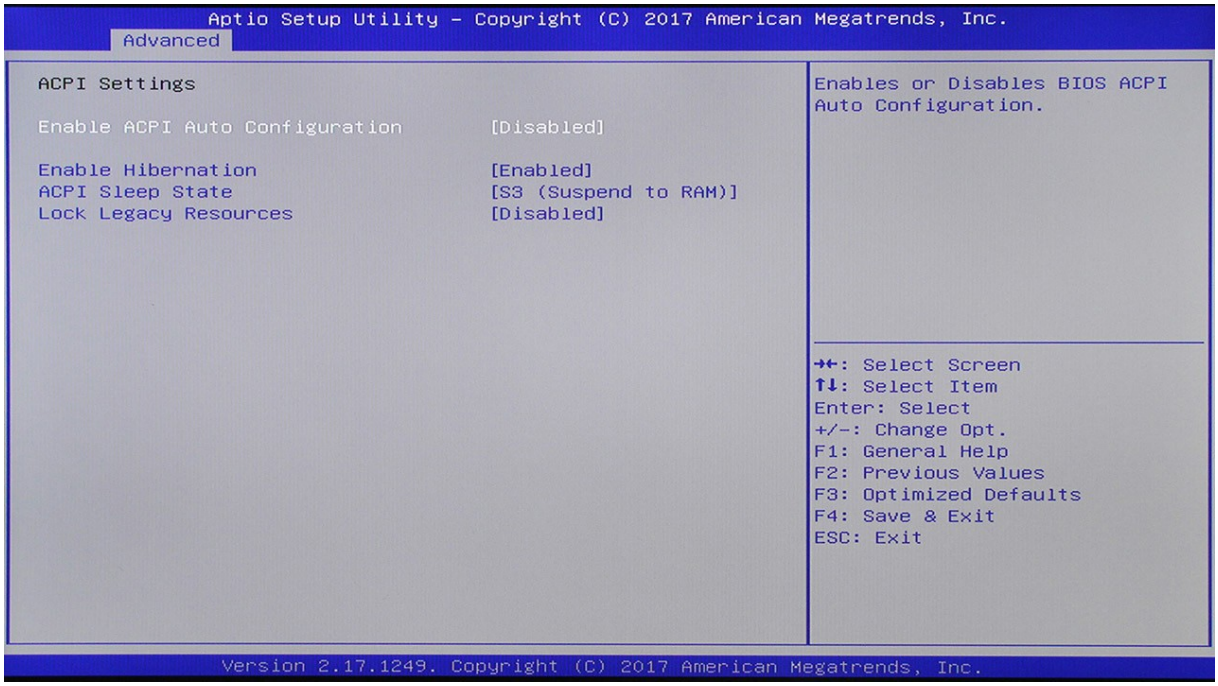
The Advanced menu allows you to set up CPU, Super I / O, Power settings management, and other system devices.

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）



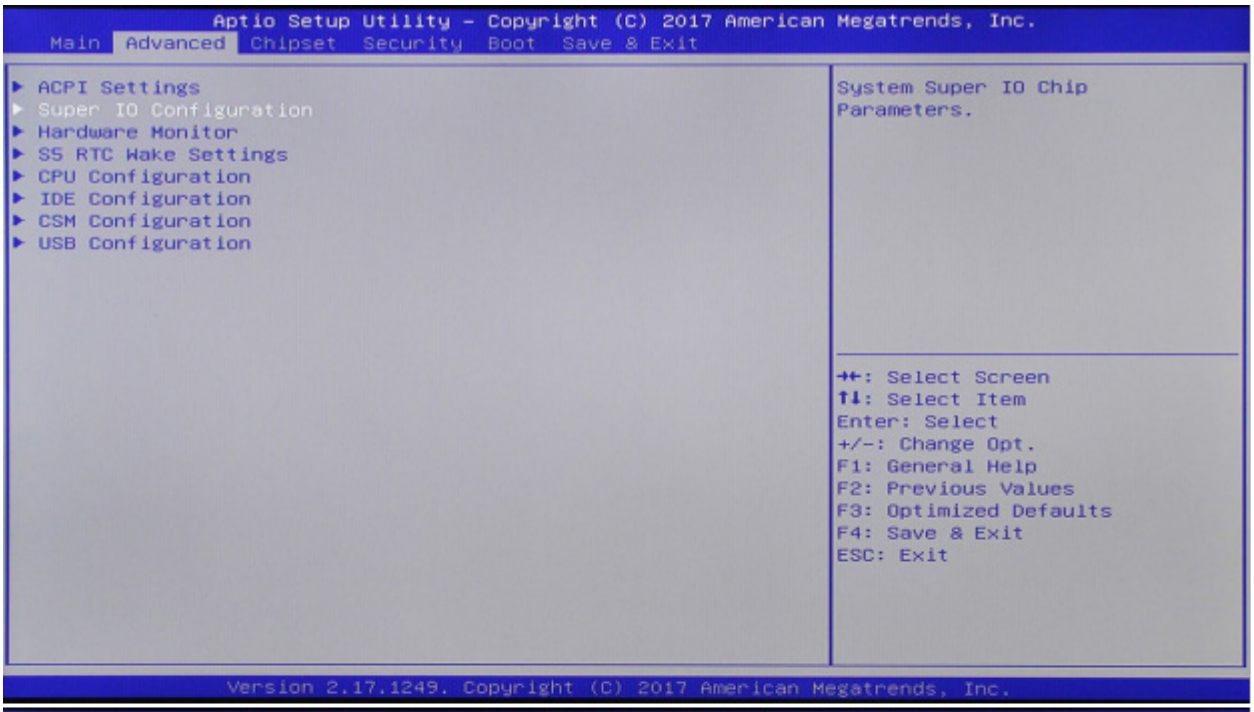
Enable Hibernation

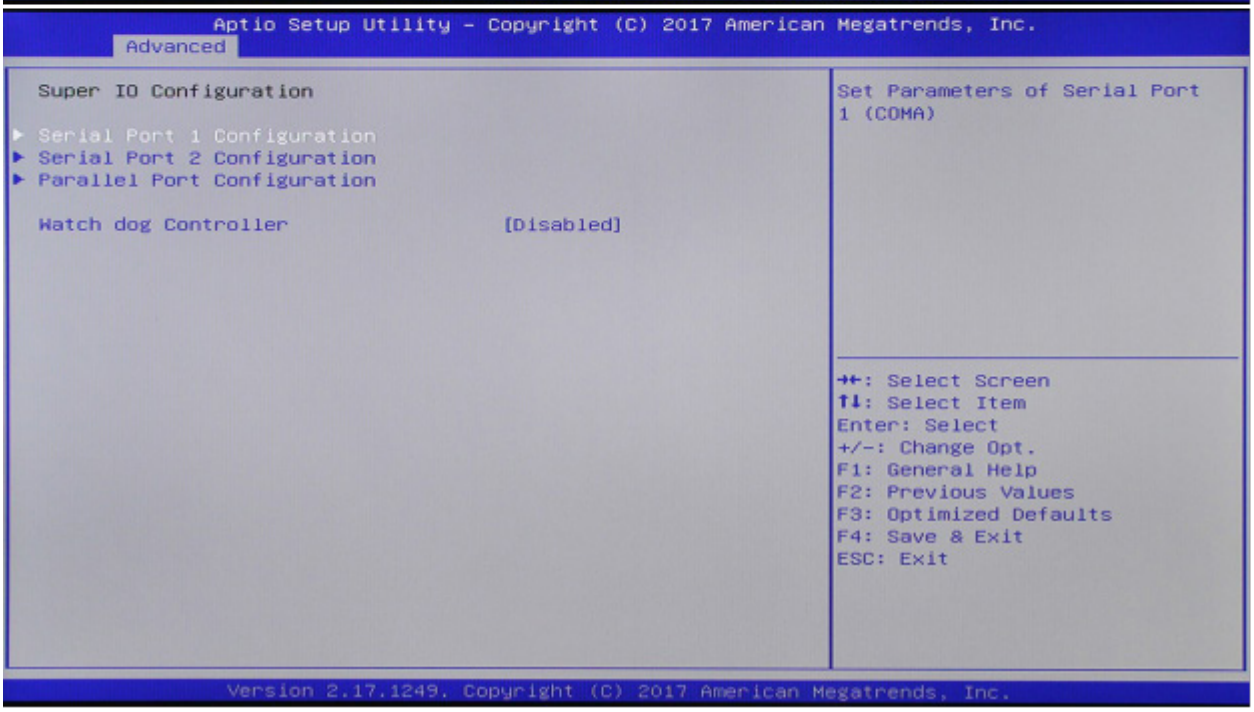
Set the Enable or Disabled system hibernation, the default is "Enabled"

ACPI Sleep State

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

IT8786E Super IO Configuration





Watch dog Controller

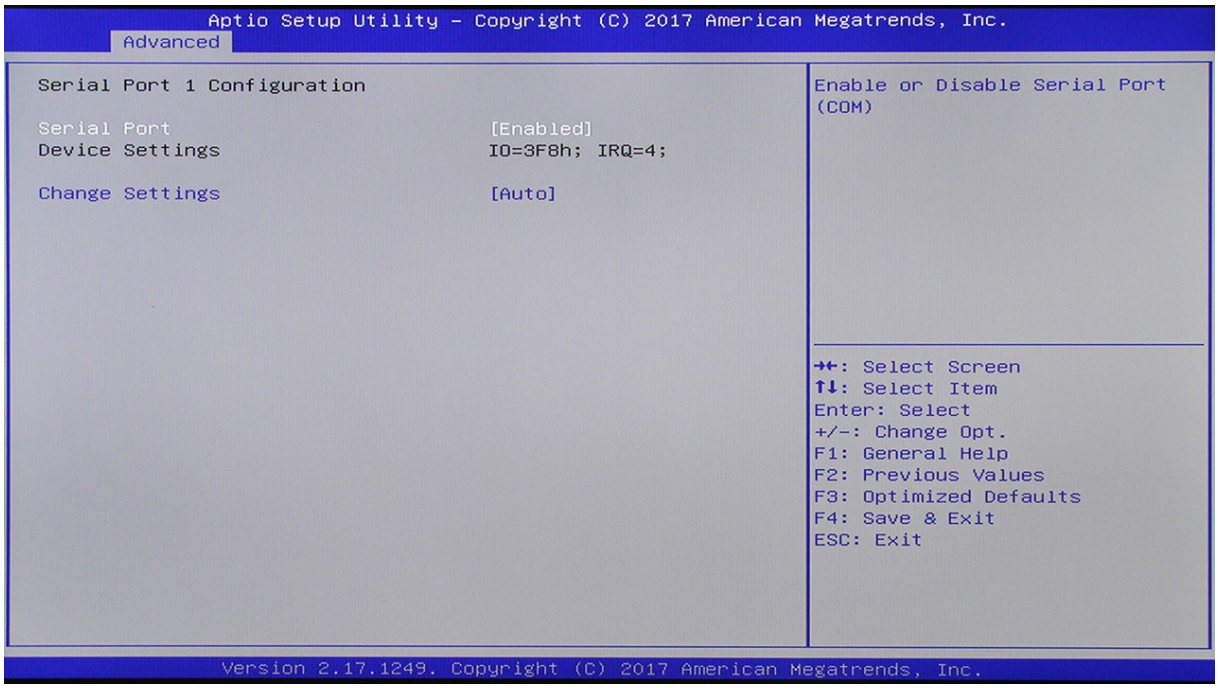
Watch dog Controller，the option is：Disabled(default)、Second、Minute

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

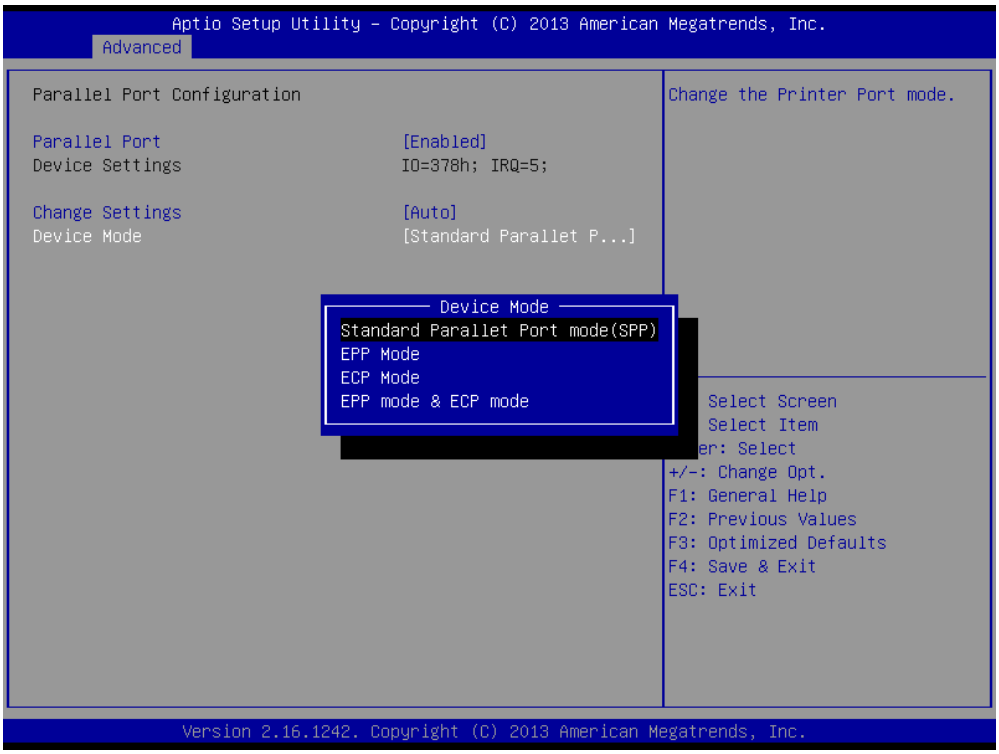
Set the serial port interrupt, interrupt settings [IO=3F8h;IRQ=4]

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]

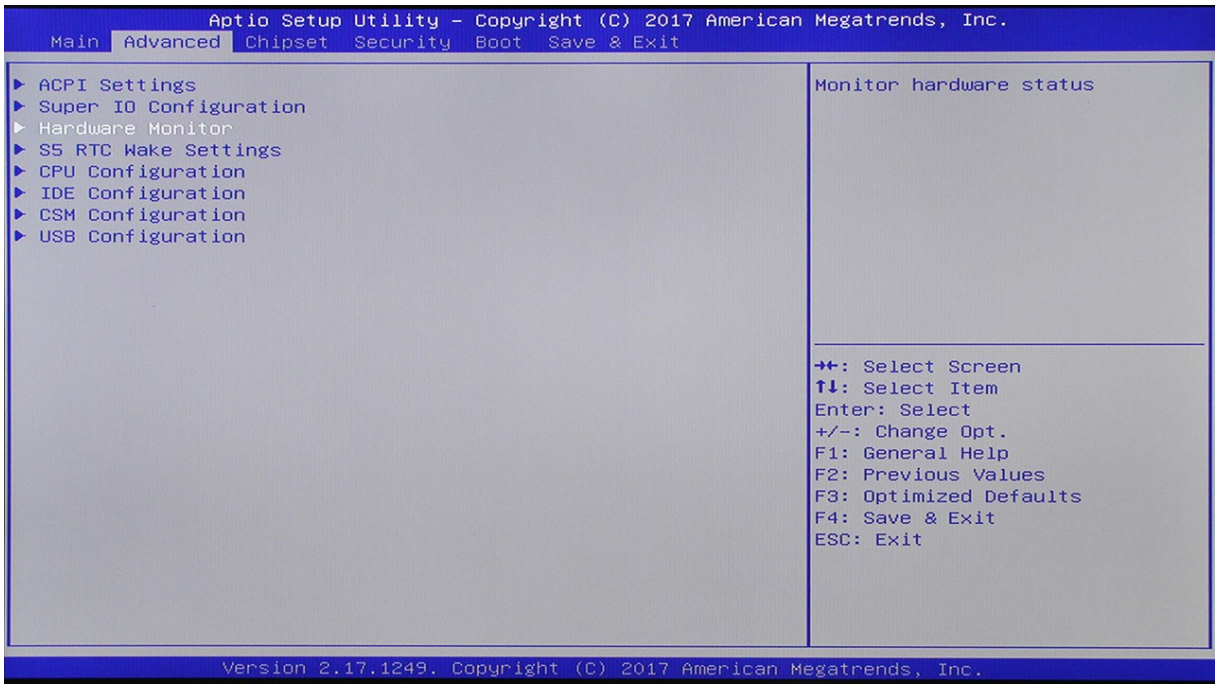
Change Settings

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

Device Mode

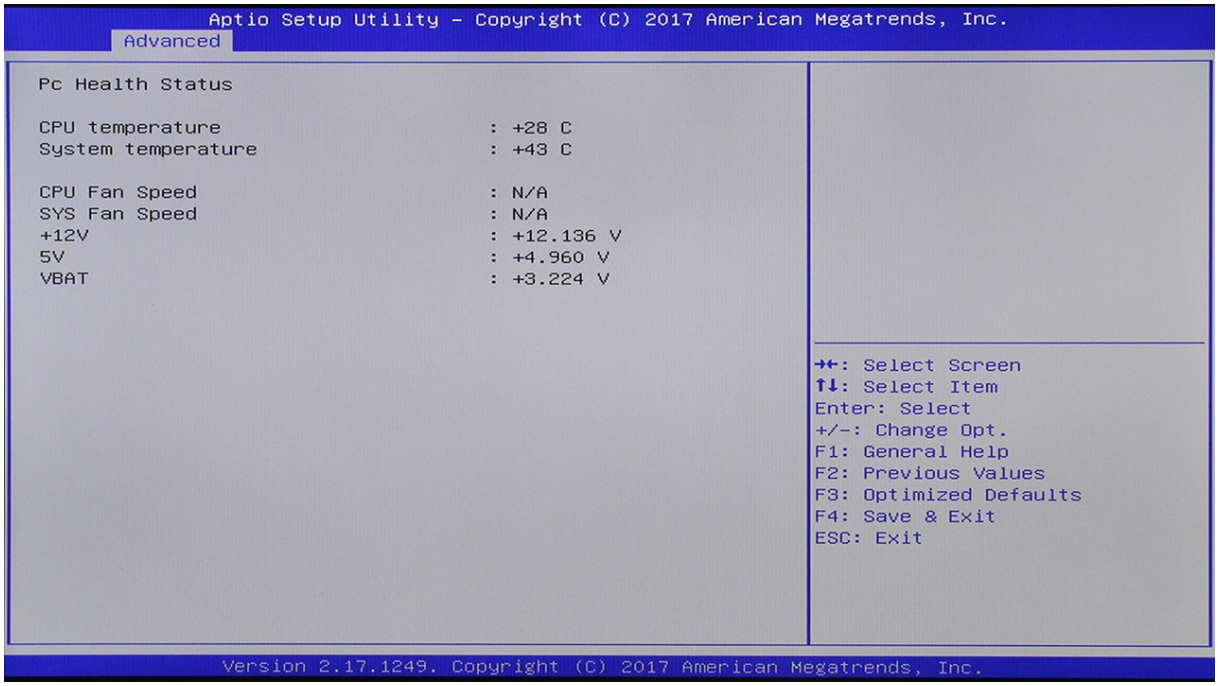
EPP Mode、ECP Mode、EPP mode & ECP Mode

Hardware Monitor



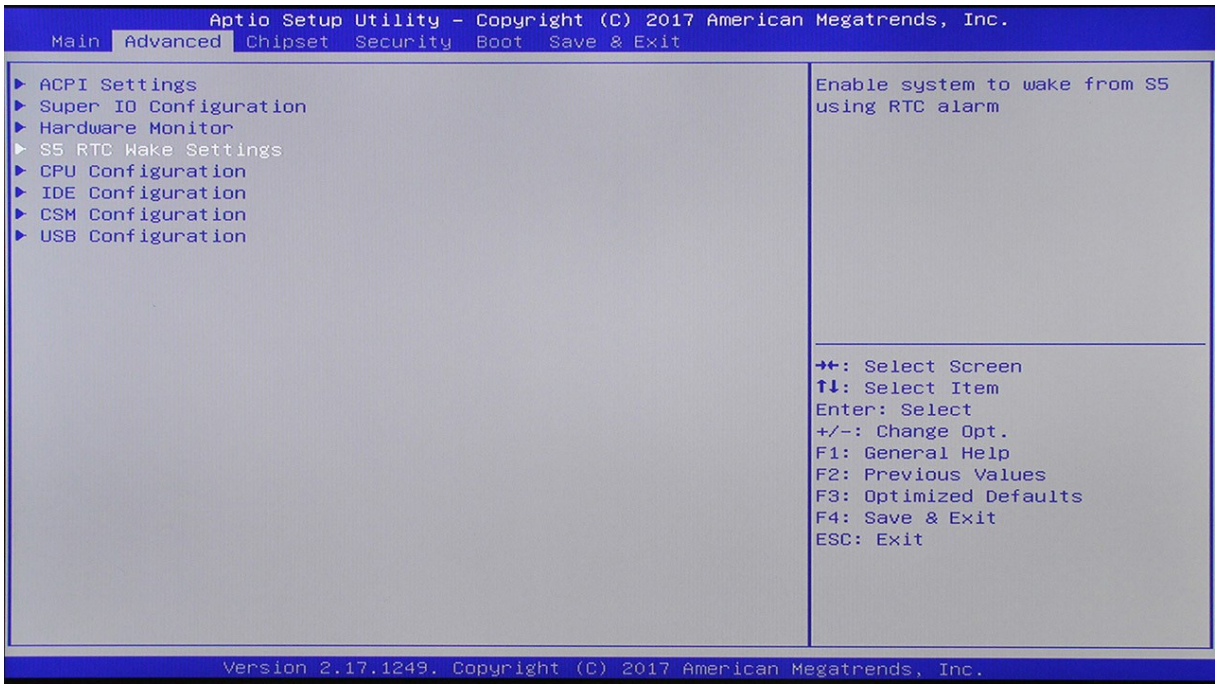
PC Health Status

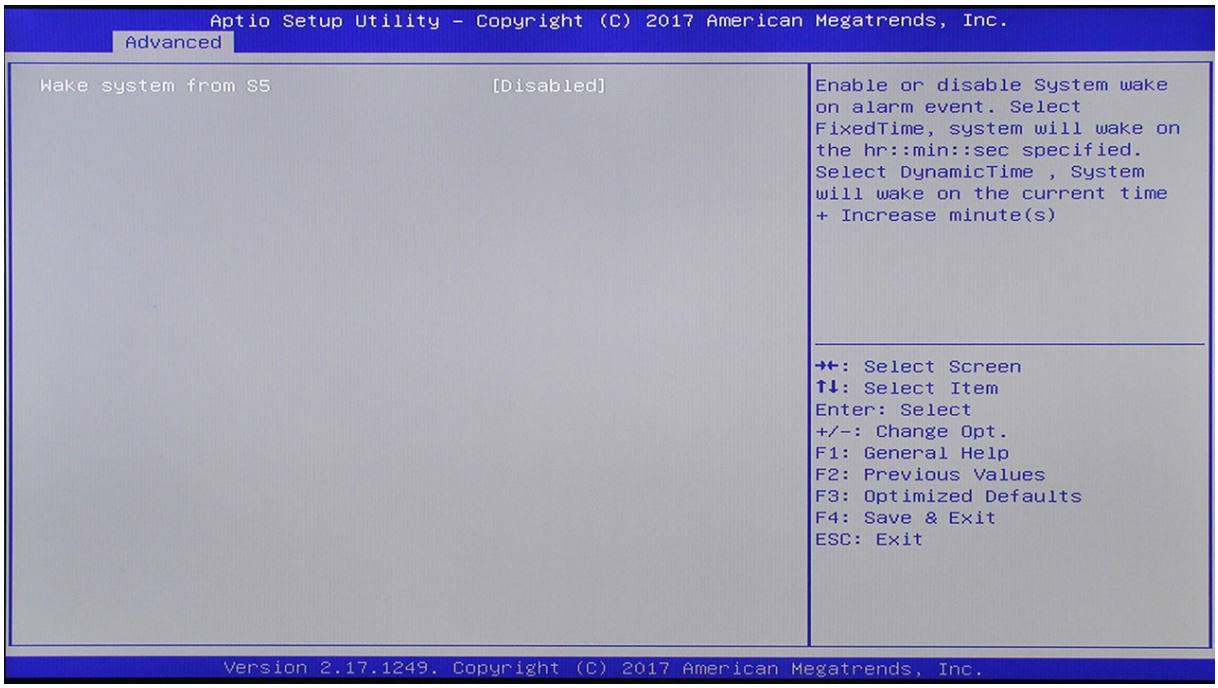
The interface displays information about the health status of the PC hardware, including CPU temperature, system temperature, CPU fan speed, system fan speed, voltage, etc.



Advanced S5 RTC Wake Settings

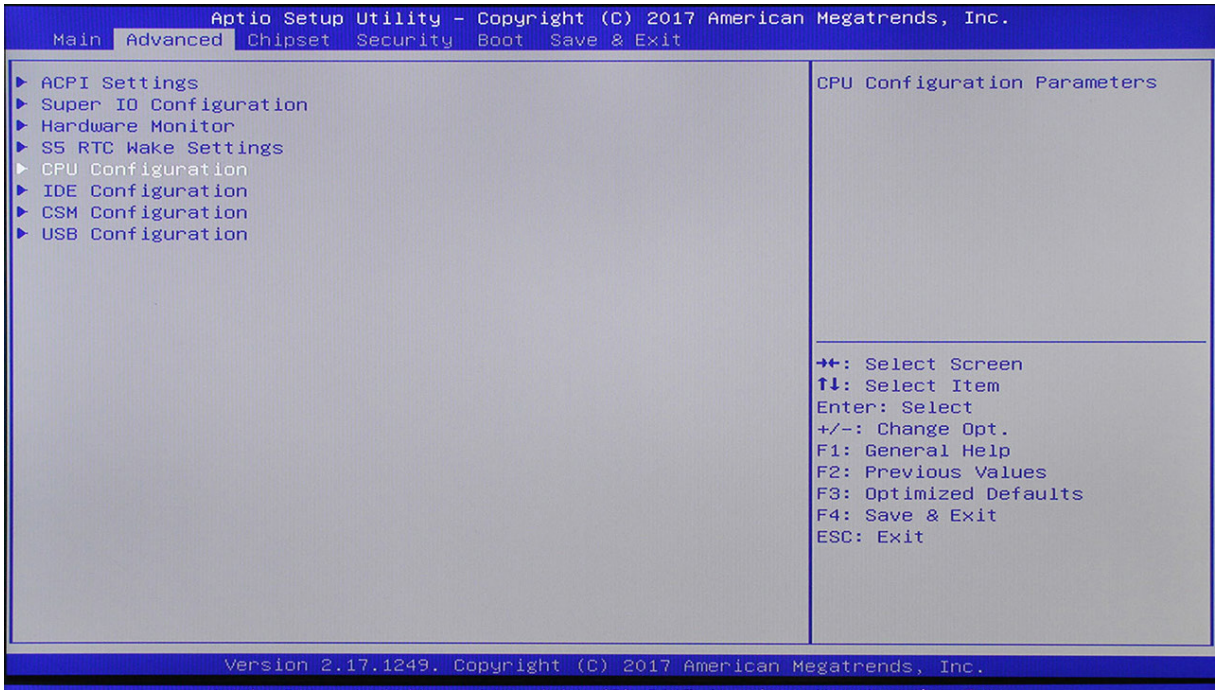
Set the timer switch, setting options: Disabled (default), Enabled. When set to Enabled, you need to set the fixed boot time, format: day (D): Hour (H): minute (M): second (S)

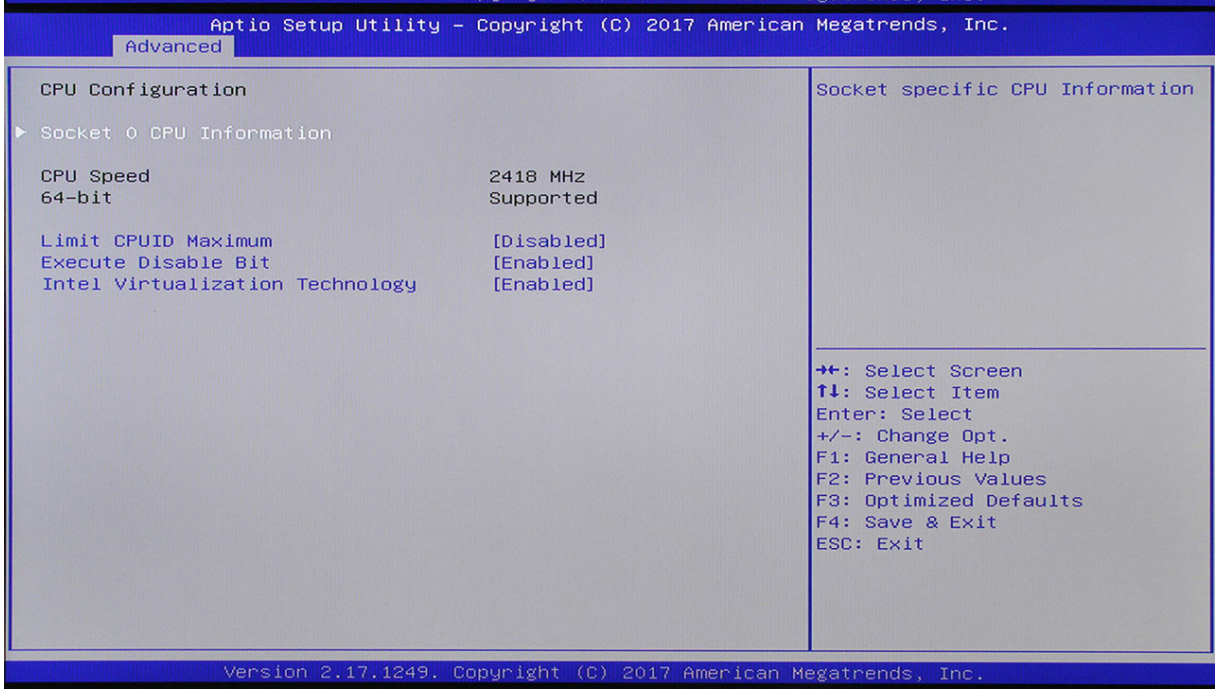




CPU Information

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]

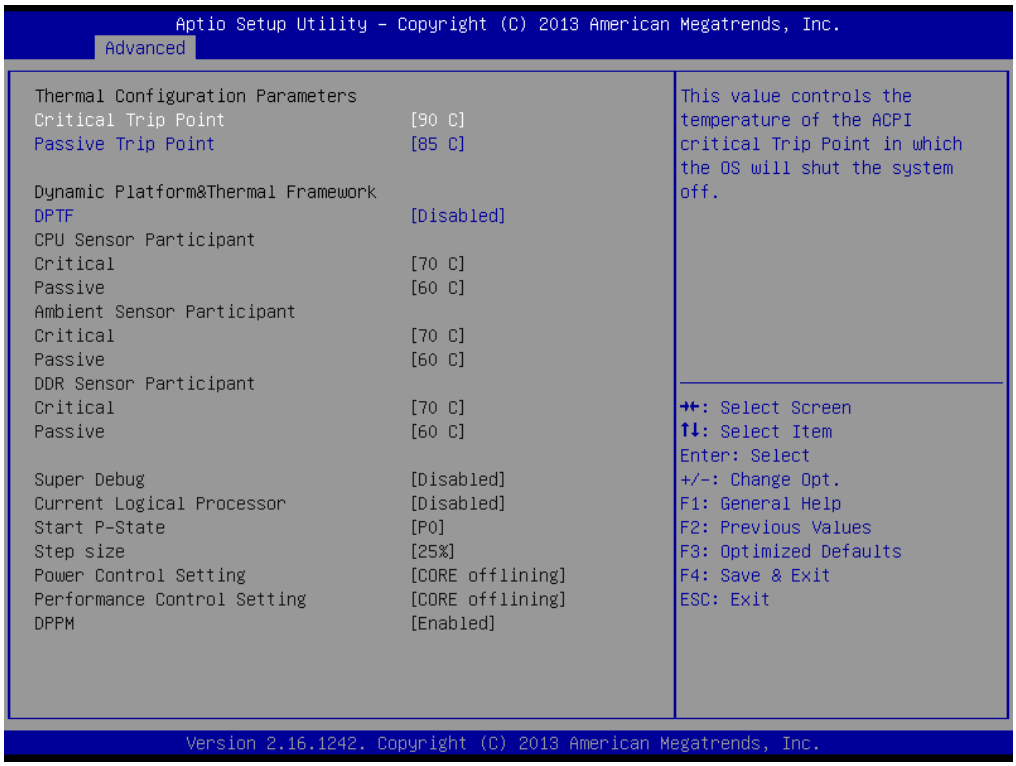
Adjacent Cache Line Prefetch [Enabled]

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]

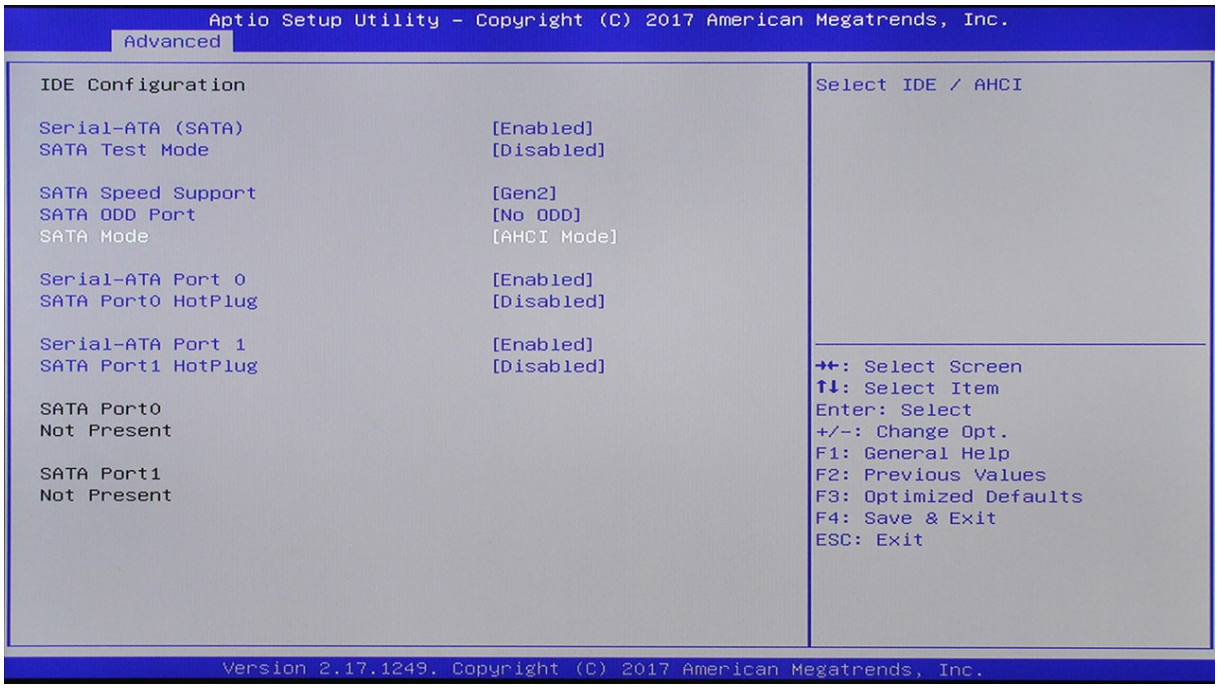
Intel Virtualization Technology [Disabled]

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

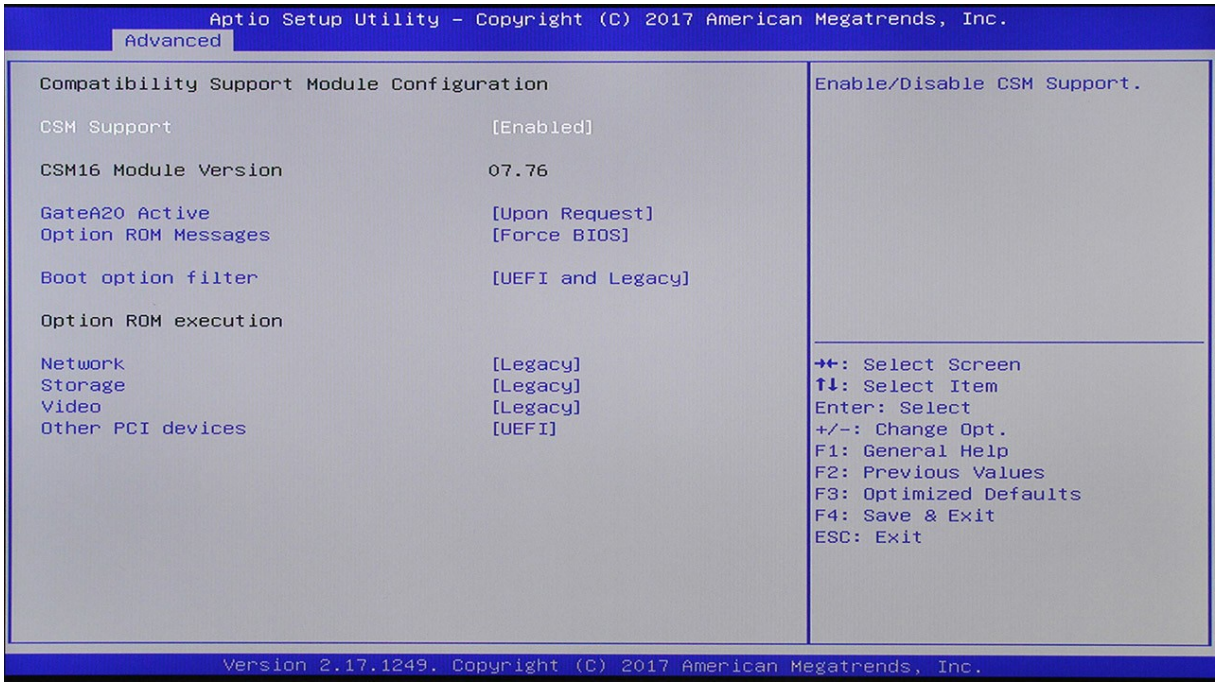
Thermal Configuration



IDE Configuration

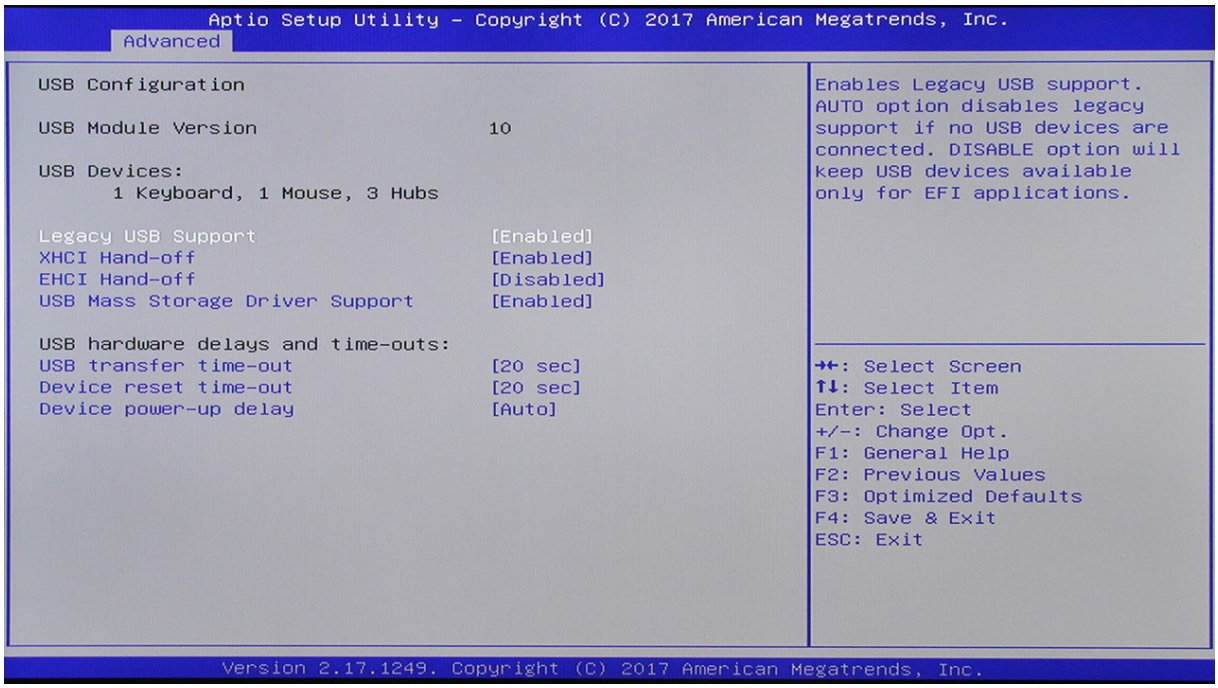


CSM Configuration



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.

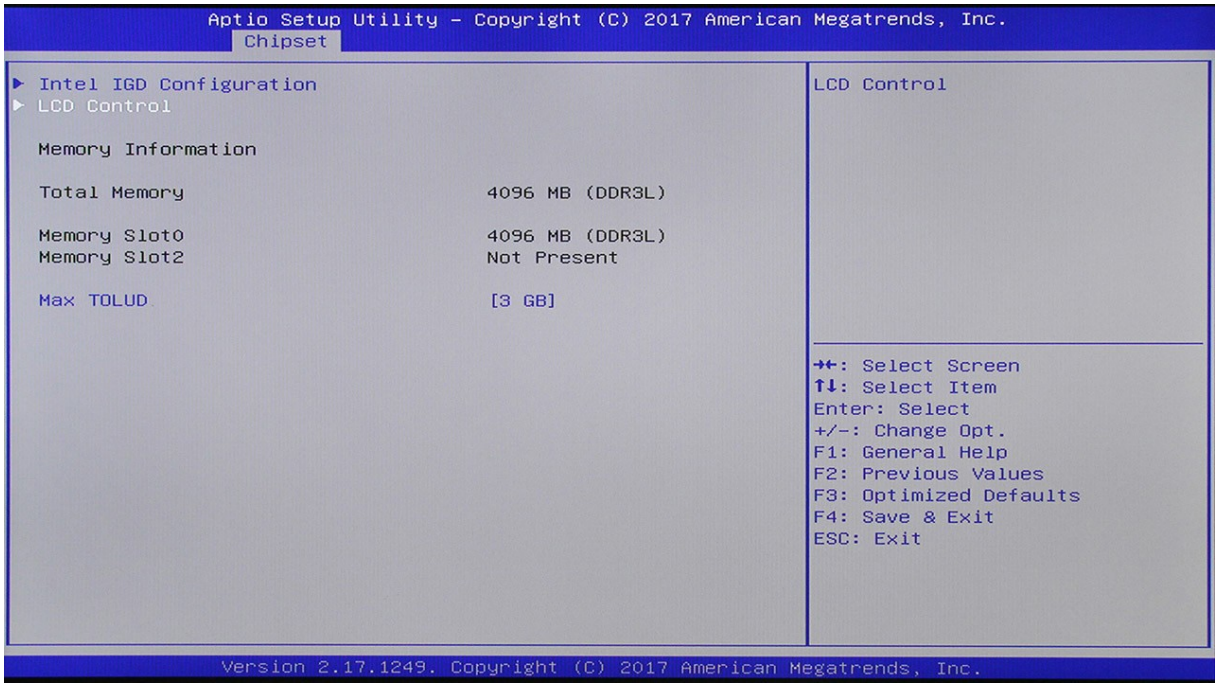
Device reset time-out [20sec]

This item sets the maximum time required for the storage device reset on the USB2.0. During the time,

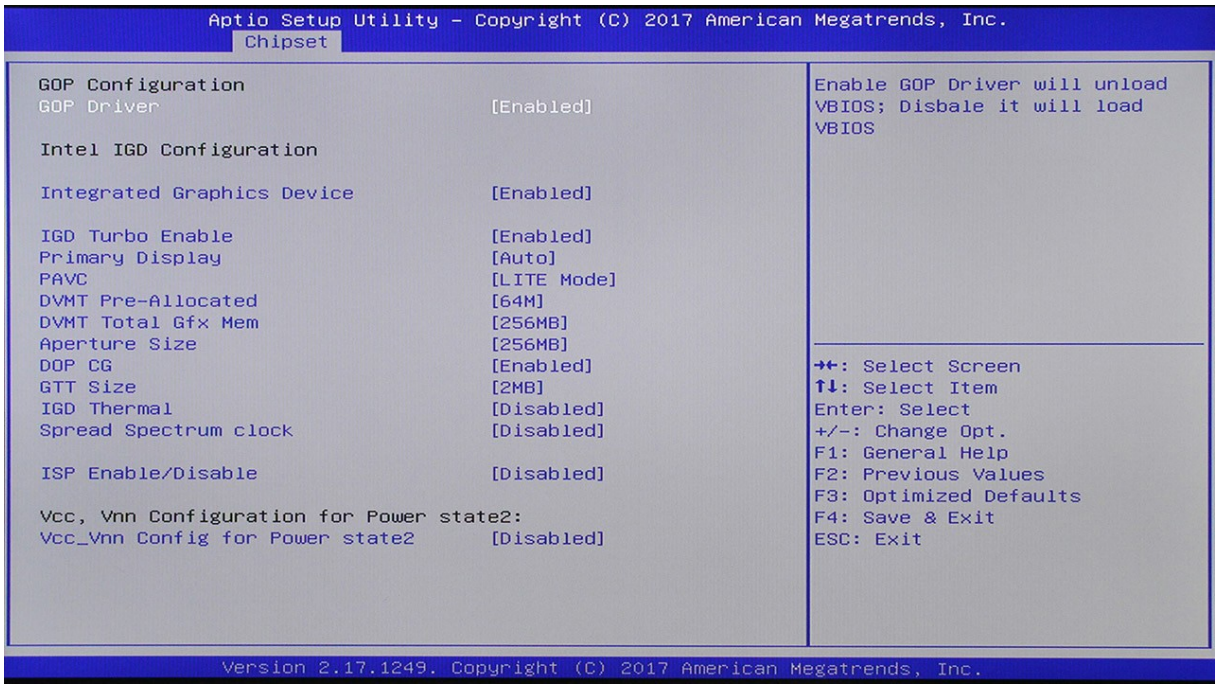
EFI checks whether the storage device can accept instructions. If the timeout occurs, the storage device is considered to be faulty.

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]

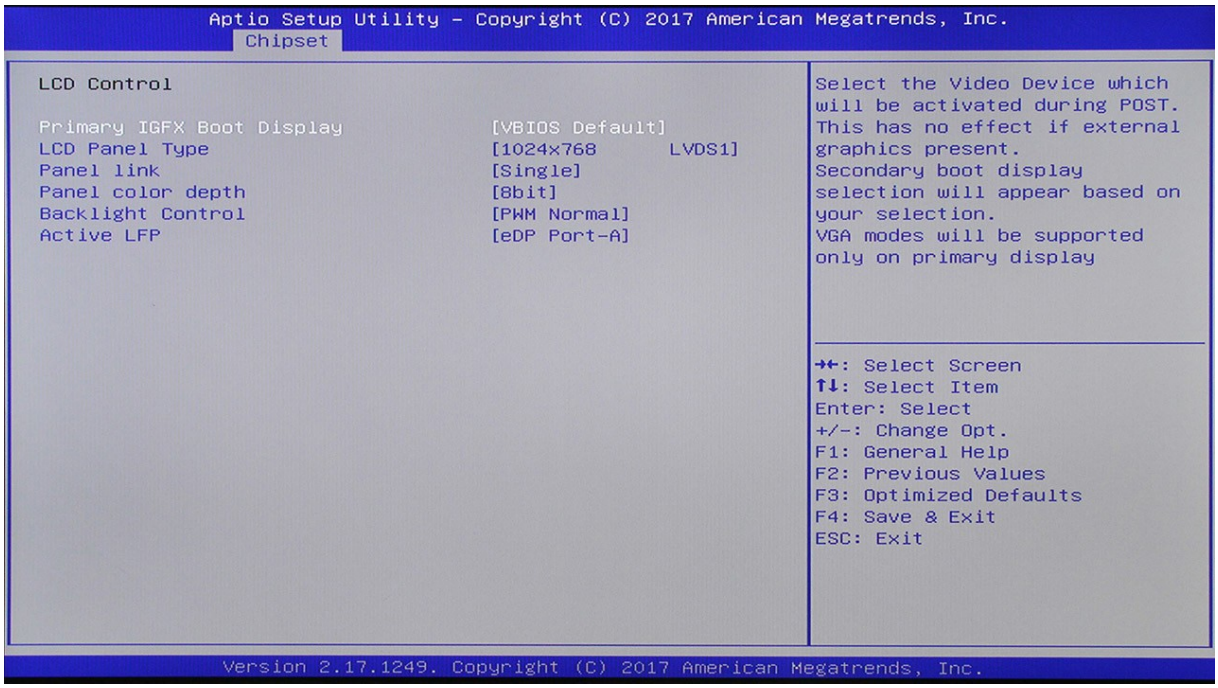
DVMT Pre-Allocate

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

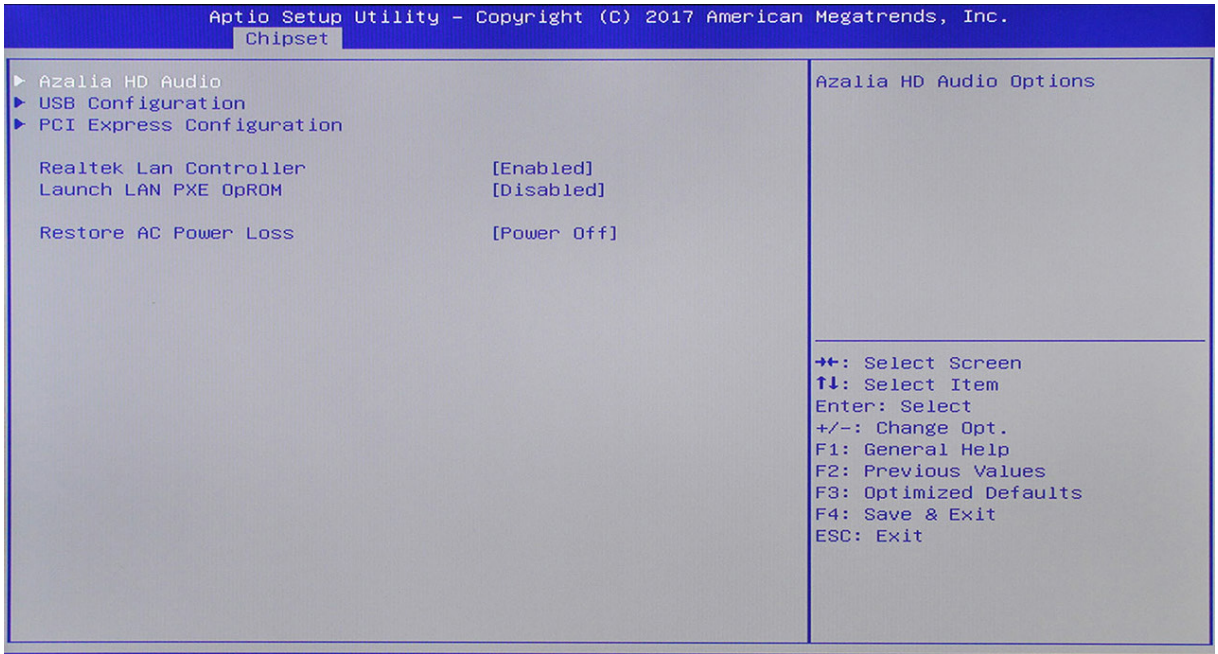
Back light control

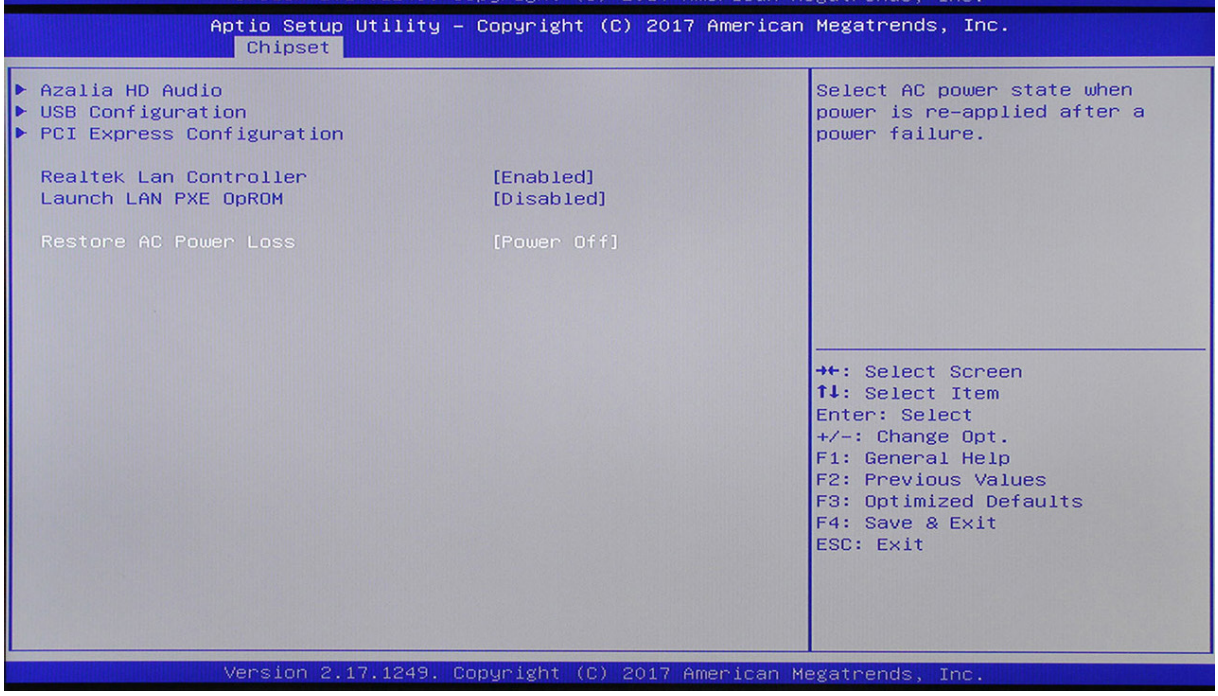
Set the resolution of LVDS, the default is Single 8 1024X768

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]

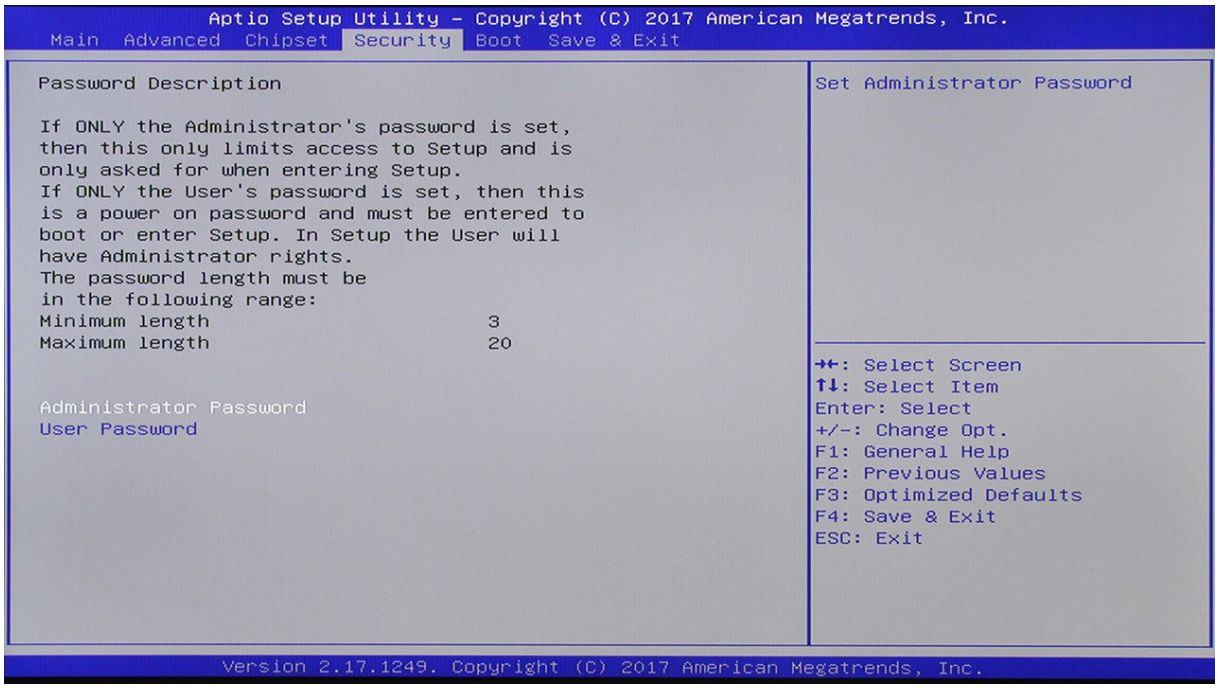
Restore AC Power Loss, setting options：[Power Off] [Power On] [Last State]

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



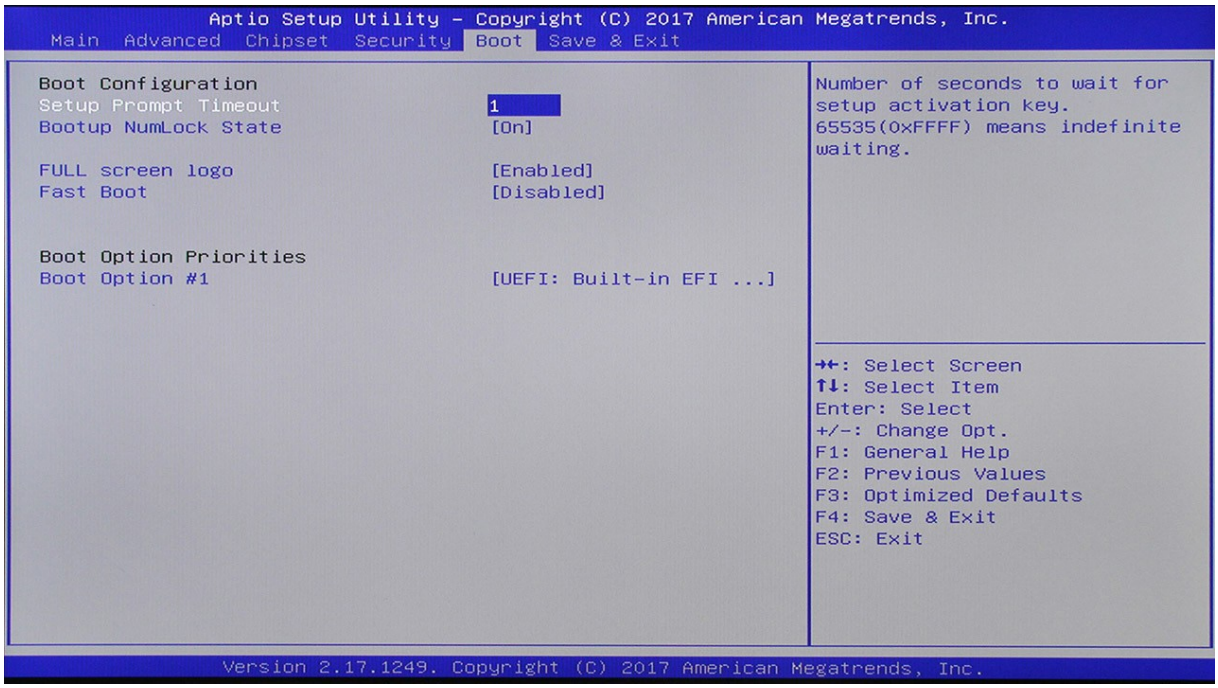
Administrator Password

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]

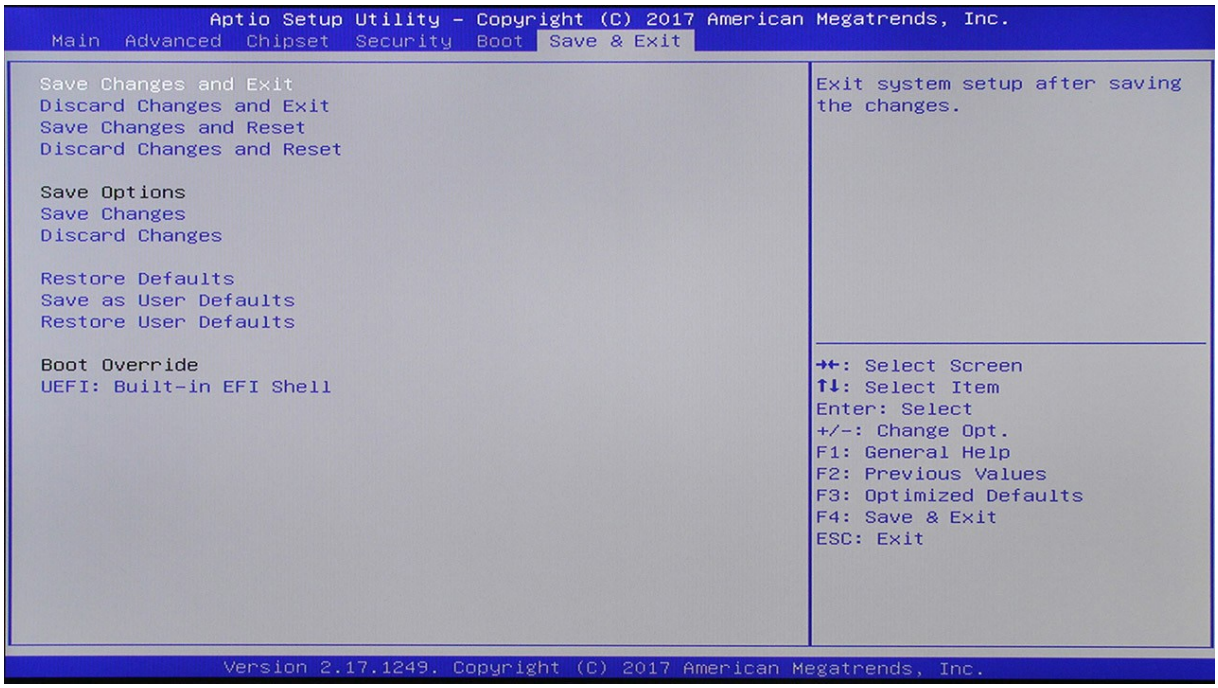
Fast Boot [Disabled]

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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