



USER MANUAL

C6980Z-PE

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Safety Instructions

- 1、 Please read this manual carefully before using this product
- 2、 To ensure safety, please use the factory's original power supply
- 3、 If power damaged, don't repair it by yourself, please look professional man or contact your sales agent.
- 4、 When you connect or remove any device, make sure that all devices have their power cords unplugged before the signal cable is connected.
- 5、 To avoid the risk of electric shock, the ac power supply shall be turned off or the ac power cord shall be removed from the power socket every time the system is unplugged or reconfigured.
- 6、 Before connecting and disconnecting the signal cables on the motherboard, make sure that the power cords of all devices have been unplugged beforehand.
- 7、 Do not pull, bend or place heavy objects on or damage the power cord, which may cause fire or electric shock.
- 8、 Be sure to set the correct power supply voltage, otherwise it may cause personal injury or system damage.
- 9、 To avoid short circuit, keep paper clips, screws, staples and other items away from connectors/interfaces, sockets, sockets and circuits.
- 10、 Please do not use the equipment in damp and dusty environments or in environments where the system or equipment is easily exposed to oil, steam, etc., or it may lead to fire accidents.
- 11、 Make sure the device does not come into contact with water or other liquids, and check whether other objects such as paper clips and pins are left in the system, or they may cause electric shock.
- 12、 To avoid damage to the system or equipment, do not place the equipment on an unsafe surface, or allow the equipment or system to fall or topple under strong impact or impact.
- 13、 Please do not use the equipment or system near the radiator or in a high temperature environment, which may lead to overheating of the system and fire.
- 14、 Do not expose the equipment to direct sunlight.
- 15、 This is a Class A product. In the living environment, this product may cause radio interference. In this case, users may be required to take practical measures against interference.
- 16、 The data and pictures listed in this article are for illustration only and are subject to change without prior notice.

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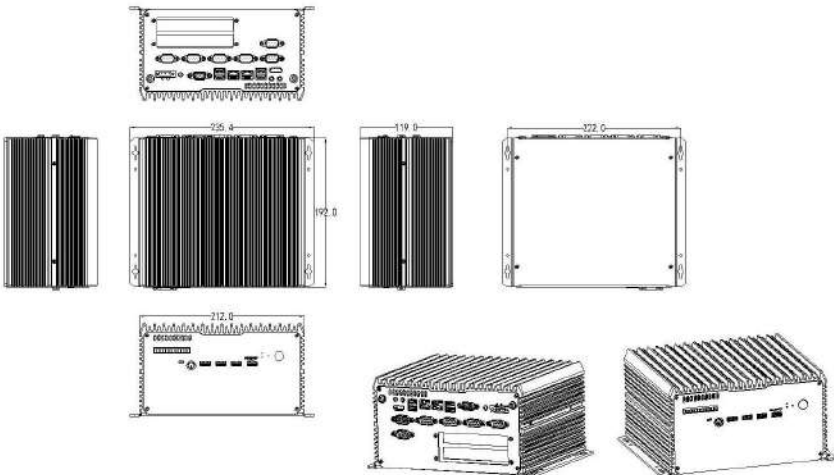
Chapter 1 Product Introduction

1.1 Product Introduction

C6980Z-PE series product is a high performance, fanless design industrial computer, with full aluminum alloy case; 2*DDR4 SODIMM RAM slot, 2133MHz, up to 32GB; support 1*HDMI, 1*VGA dual independent display; 2* WGI211AT Gigabit Ethernet, support Wake On LAN、PXE; 6* DB9 RS232 COM port, COM3~6 support RS232/485 selectable, isolated; 1*12pin phoenix connector, include 4-in 4-out GPIO, +5V, GND signal.

C6980Z-PE series product comes with stable reliable industrial grade performance and low power consumption advantage, can be widely use for media player, digital signage, advertising, large LCD screen, communication control, medical device, traffic control, information system, final equipment, vehicle, digital control, military and various terminal machine, etc.

1.2 Dimension Drawing



1.3 Product Photo



Image 1: C6980Z-PE front IO



Image 2: C6980Z-PE rear IO

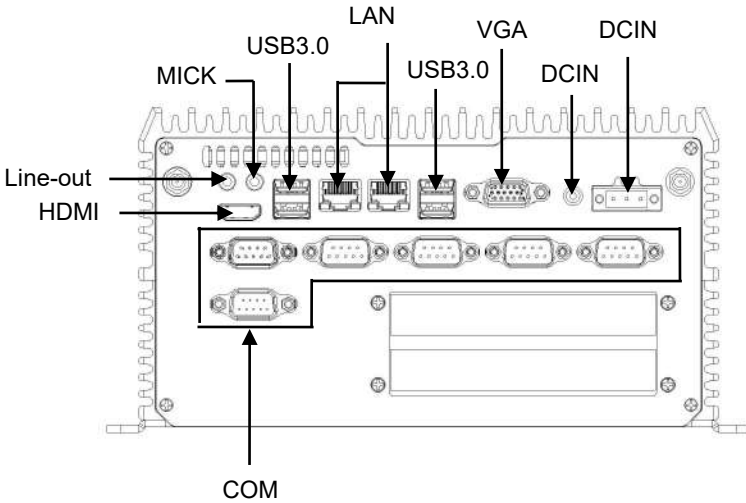
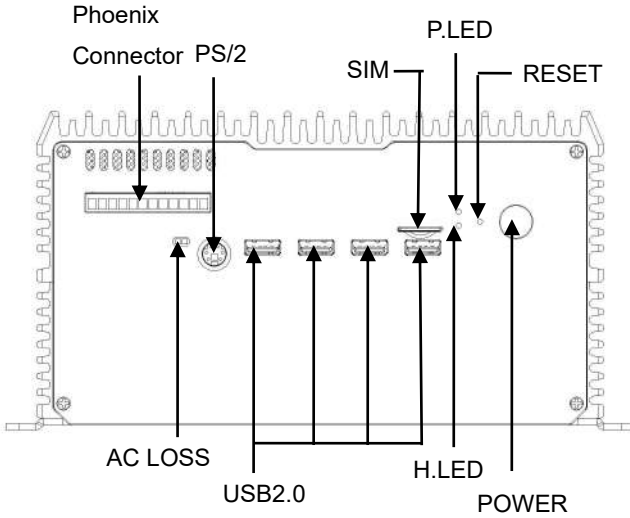
1.4 Specification

Model No.	C6980Z-PE V1.0 (8145U)	
Case	Structure	Full aluminum fanless cooling
	Color	Bright black
	Dimension	L235*W192*H119mm (L*W*H)
	Installation	Desktop/Embedded
Motherboard	CPU	On board Intel®Whiskey Lake-U I3-8145U/2.1GHz dual core
	Chipset	Intel®Whiskey Lake-U SOC
	Graphics	Integrated Intel® UHD Graphics, support DirectX 12 OpenGL 4.5
	RAM	2*DDR4 SODIMM RAM slot, 2400MHz, up to 64GB
Front Panel IO	POWER	1* Power switch, 1*Reset switch
	AC LOSS	1*AC LOSS switch (Electric auto power on switch)
	USB	4* USB2.0
	Phoenix	1*12pin, support 4-in 4-out GPIO, switch, 5V
	PS2	1*PS2 port
	SIM	1* SIM slot, 3G/4G module application
	LED	1* Power LED, 1* HDD LED
Rear Panel I/O	Display Port	1*VGA, 1*HDMI1.4
	LAN	2*Intel® WGI211AT Gigabit Ethernet, support Wake On LAN, PXE
	USB	4* USB3.0
	COM	6* RS232 DB9 COM port. COM1/2 support charged function; COM3~6 support RS232/485 selectable
	Audio	1* Line out, 1* MIC
	Power	1* DC power adaptor port, 1* 3pin power connector, DC 9~36V
Storage	SATA	1*2.5" SATA HDD expansion
	mSATA	1* MSATA SSD, transmission rate up to 6Gbps
Expansion	Mini PCIE	1* Mini PCIE slot, support WiFi/4G module
	PCI	1*PCI, 1*PCIE slot expansion
Software	Microsoft	Windows 10, 64bit(not include OS code)
	Linux	Ubuntu
	Watch Dog	Support hardware reset function (L256, 0~255 seconds)
Power Supply	Power Type	External power adaptor or open power supply
	Voltage Input	DC 9V~36V wide voltage input
	Consumption	36W~180W
Environment	Working Temp.	-10°C ~ 60°C
	Storage Temp.	-20°C ~ 70°C
	Humidity	5%-95% relative humidity, non-condensing
	Working	0.5g rms/5-500HZ/random/operating

Note:C6980Z-P2 2*PCI slot, C6980Z-E2 1*PCIE x4, 1*PCIE x1 slot expansion

Chapter 2 Hardware Installation

2.1 External I/O Port



2.2 Installation Description

2.2.1 Connect Display

C6980Z-PE provide 1*VGA, 1*HDMI dual independent display output

2.2.2 LAN

C6980Z-PE provide 2* Gigabit LAN port.

Connect method: connect one end of the network cable to the LAN port of the device and the other end to the switch or router port on the network.

2.2.3 MB/MS port

C6980Z-PE provide 1*PS/2 KB/MS port

2.2.4 Lineout and MIC port

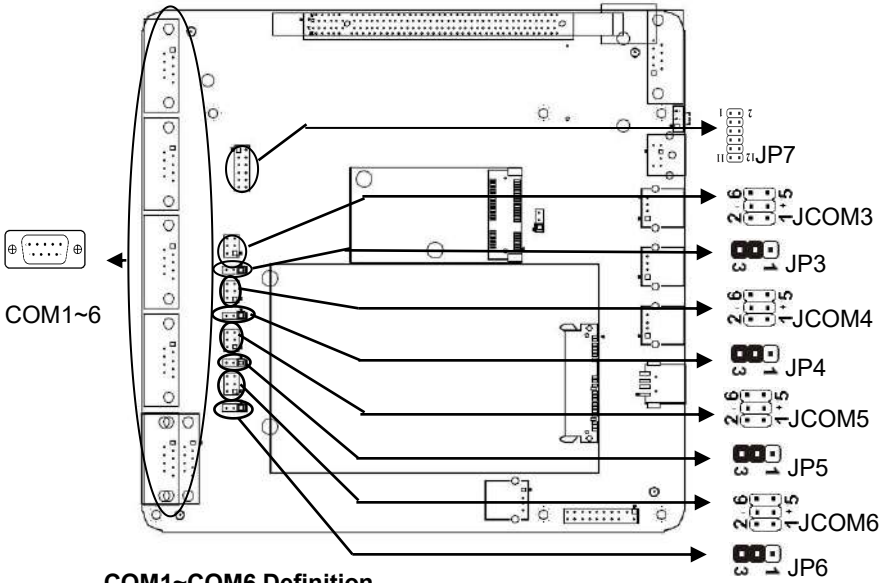
C6980Z-PE provide 1*Line-out, 1*MIC port. Connect speaker to AUDIO (green), connect microphone to MIC (red)

2.2.5 SIM slot

C6980Z-PE provide 1*SIM slot, install SIM card to SIM slot, make sure SIM card direction correct.

2.2.6 Connect COM Device

C6980Z-PE provide 6*DB9 RS232 COM port, COM1/COM2 support 5V/12V charged function, COM3~COM6 support RS485 selectable by jumper on C68-P6 expansion I/O board.



COM1~COM6 Definition

Pin	Signal Name	Pin	Signal Name
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	NC

JP7 (COM1、COM2 Charged Function) Definition:

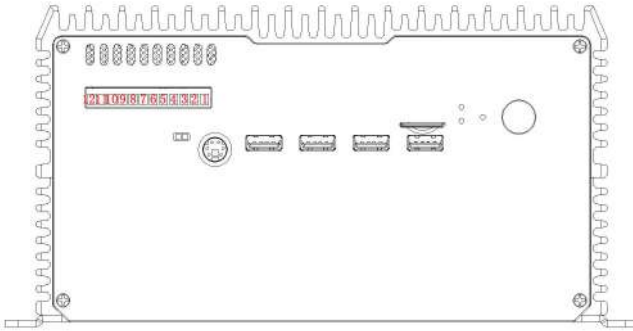
Setting	Function (JP4)	
1-2 shorted	RS232	COM1
3-4 shorted	+5V	
5-6 shorted	+12V	
7-8 shorted	RS232	COM2
9-10 shorted	+5V	
11-12 shorted	+12V	

COM3~COM6 RS485/232 Setting

Setting	JCOM3/45/6	Setting	JP3/4/5/6
3-5 shorted 4-6 shorted	RS485	1-2 shorted	RS485
1-3 shorted 2-4 shorted	RS232	2-3 shorted	RS232

2.2.7 Phoenix Connector

C6980Z-PE series product provide a 1*12pin phoenix connector, include 4-in 4-out GPIO,+5V, switch, GND signal.

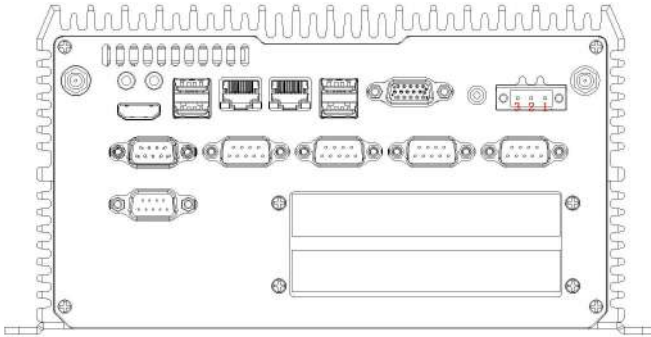


Phoenix Connector

Pin	Signal Name	Pin	Signal Name
1	PWR	2	GND
3	GND	4	+5V
5	GPIO output	6	GPIO output
7	GPIO output	8	GPIO output
9	GPIO input	10	GPIO input
11	GPIO input	12	GPIO input

2.2.8 Power Connector

C6980Z-PE provide a DC 9~36V power adaptor port, 1*3pin DC power connector, support 9~36V power input



DC9~36V IN1 Definition

Pin	Signal Name
1	GND
2	GND
3	9V~36V

Tips : Please use suitable power supply. After confirming that the interface is connected correctly, press the POWER button on the front panel of the computer to turn on the device.

How to identify the alarm sound: (a long beep is system memory error; a short beep" is boot sound).

Chapter 3 BIOS Setting

3.1. BIOS Description

BIOS (Basic Input and Output System), via CMOS chip on motherboard, it recorded parameter settings of each hardware of the system. BIOS contains the BIOS setup program, for users to set system parameters according to their own needs, to make the motherboard work normal or execute specific function.

Through BIOS setup program to modify the settings (except date and time), which are stored in the flash memory of system, the power required to memorize CMOS data are supplied by the battery on board, so when the system power off, the data will not lost, when next time re-open the power, system will read the set data. If needed to restore factory setting at the circumstance when can not enter the Setup interface due to misconduct, please short circuit JBA12,3 pin to clear CMOS data.

Note! BIOS settings directly affect the performance of the computer, wrong set parameters will cause damage to the computer, or even can not boot, please use the

BIOS built-in default values to restore the normal operation of the system.

Due to the company's different product, the interface will be slightly different, the following image for reference only, it may be not exactly the same with your current using BIOS setup program.

3.2 BIOS Basic function settings

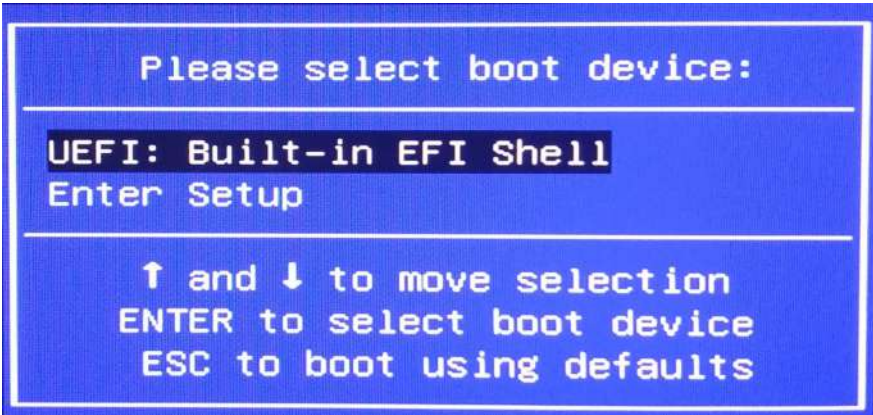
3.2.1 Enter Into BIOS Interface

Following below steps to enter into BIOS interface

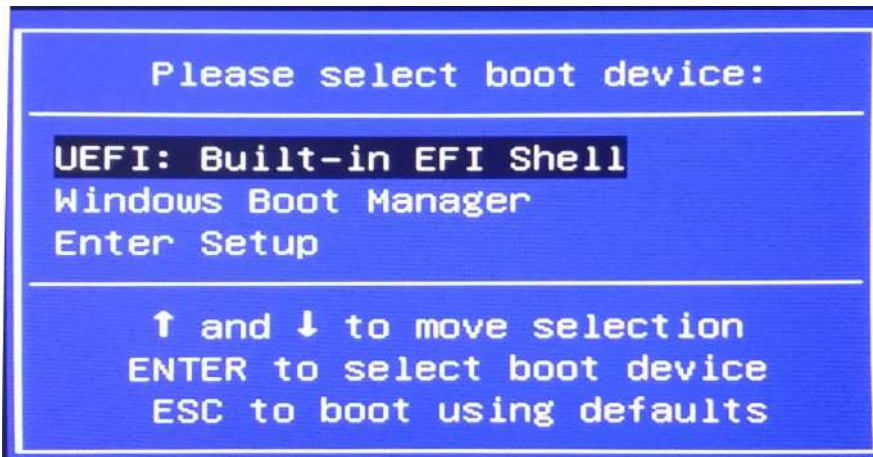
- 1、 Power on, the display screen will appear POST interface.
- 2、 When the screen appears "click or<ESC> to enter setup", please click or <ESC>, and you can enter the BIOS setup program
- 3、 Move the arrow key < ↑ >< ↓ >< ← >< → > to the options which you want to modify, click <Enter>, and you can enter the sub-screen of the option
- 4、 Use the arrow keys and the <Enter> key to modify the value of the selected items, click the Enter key to select BIOS option and modify.

- 5、 Use the <ESC> key to return to the last picture
- 6、 <Page Up/+> Add numeric value or change
 - <Page Down/-> Reduce numeric value or change
 - <F1> Set sub menu help
 - <F9> Set default values (optimize to factory settings)
 - <F10> Save BIOS settings

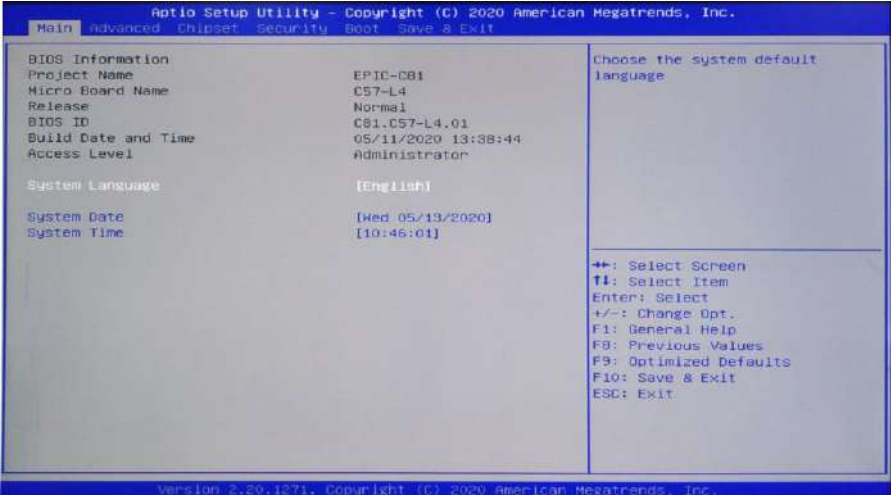
Note: 1、 For the BIOS that support hard disk UEFI mode, the hard disk information cannot be seen in BBS, but the information of the connected hard disk can be viewed in the SATA Configure in the BIOS. As follows



After installing UEFI system, can view the system boot information ex: Windows Boot Manager (hard disk information) in the BBS



3.2.2 Main Manual (BIOS information and time date)



Bios ID :

Build Date and Time :

Access Level:

System language:

System Date :

Set the current date. In the form of month / day / year. The setting range is:

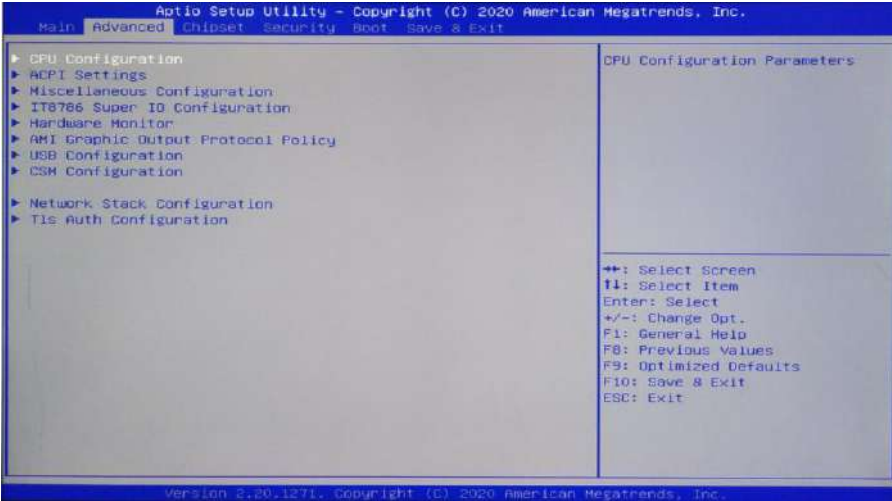
Month (Jan.-Dec.), Date(01-31), Year(Max to 2099), Week(Mon.~Sun.).

System Time :

Set the current time, In the form of time/minute/second, The setting range is: Hour(00-23),

Minute(00-59), Second(00-59).

3.2.3 Advance



ACPI Settings : Advanced configuration and power management interface settings.

IT8786 Super IO Configuration: contains COM port interrupt number and address settings

Hardware Monitor: system monitoring, hardware monitoring, hardware monitor

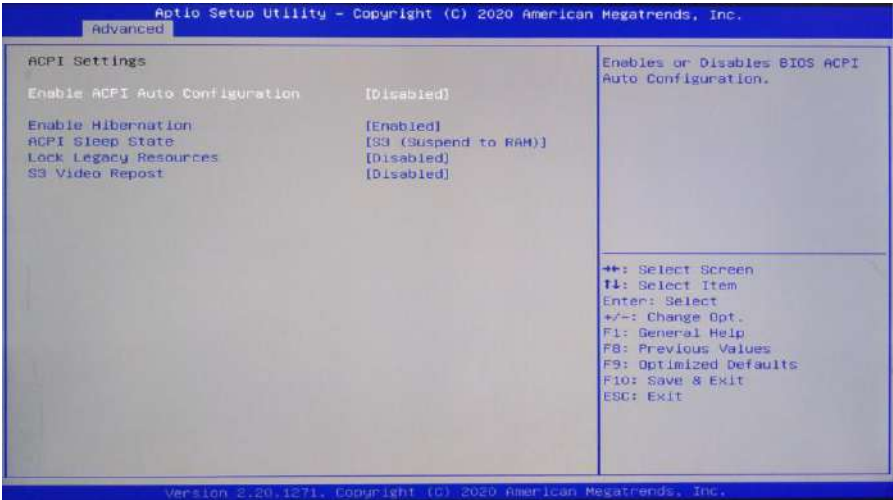
Miscellaneous Configuration: include timing start up, power on auto start-up, watchdog, etc.

CPU Configuration:

USB Configuration:

CSM Configuration:

3.2.4 ACPI Settings



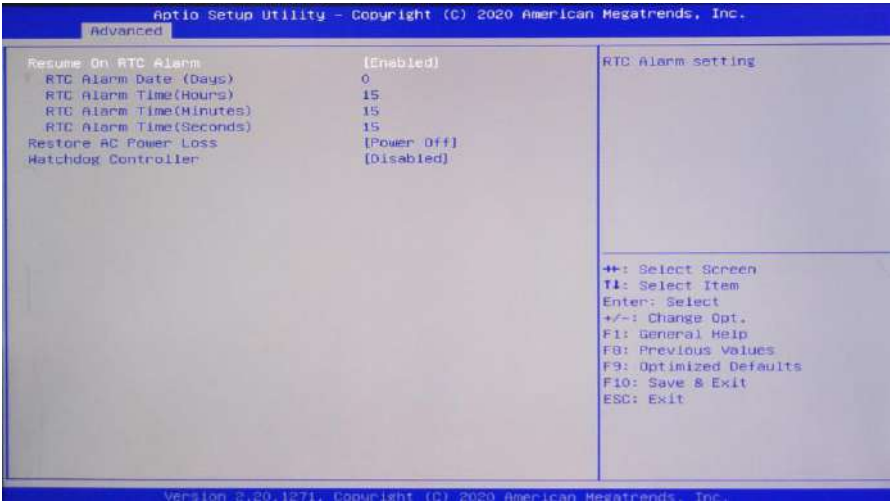
Enable ACPI Auto Configuration : This item is automatically configured for the ACPI, Allow (Enabled) or close (Disabled) BIOS ACPI automatic configuration, default is close (disabled).

Enable Hibernation : Enabled or Disabled system sleep function (OS/S4 sleep state). This option does not take effect under some OS. Default is Enabled.

ACPI Sleep State : This is used to select the system to enter the power system sleep mode, the pattern is not the same, the system power consumption is not the same degree, Suspend Disabled; close the sleep mode, S1(CPU Stop Clock): CPU stops working, other devices are still normal power supply; S3(Suspend to Ram): Hang up to memory.

Lock Legacy Resources : Resource latch, (Enabled) or (Disabled) resource latch function.

3.2.5 Miscellaneous Configuration



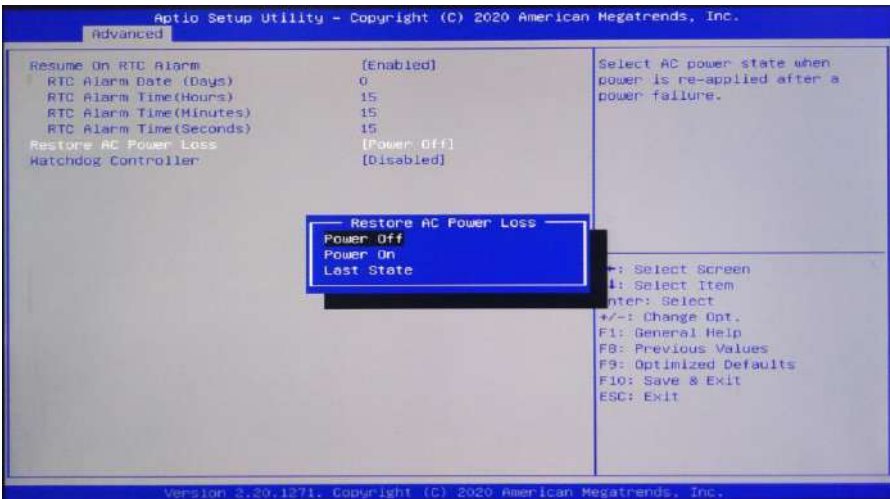
Resume On RTC Alarm :

RTC Alarm Date(Days):

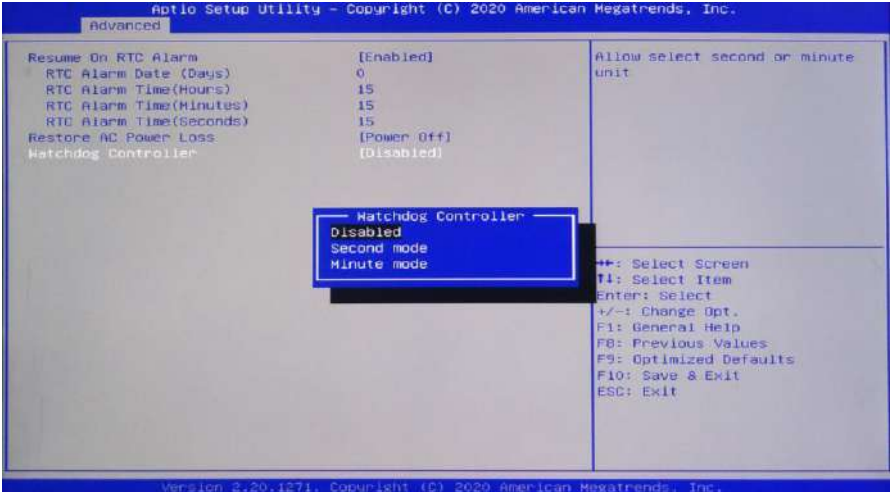
RTC Alarm Time(Hours):

RTC Alarm Time(Minutes):

RTC Alarm Time(Seconds):

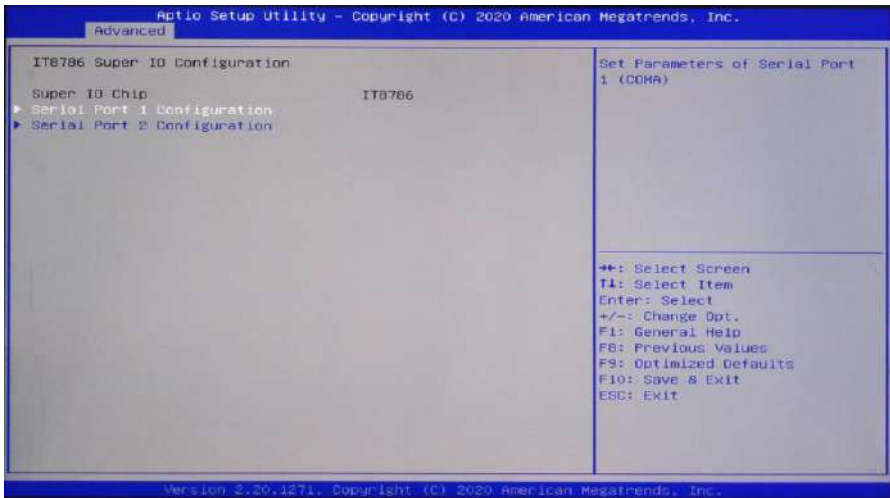


Restore AC Power Loss: this option is used to set the power on condition after connecting to electric. Power Off: need to press power button to power on; Power On: Power on directly after connecting to electric; Last State: keep previous state after connecting to electric.



Watch dog controller: [Disabled] disable watchdog, [Second mode] set the watchdog to seconds mode, [Minute Mode], set the watchdog to minute mode.

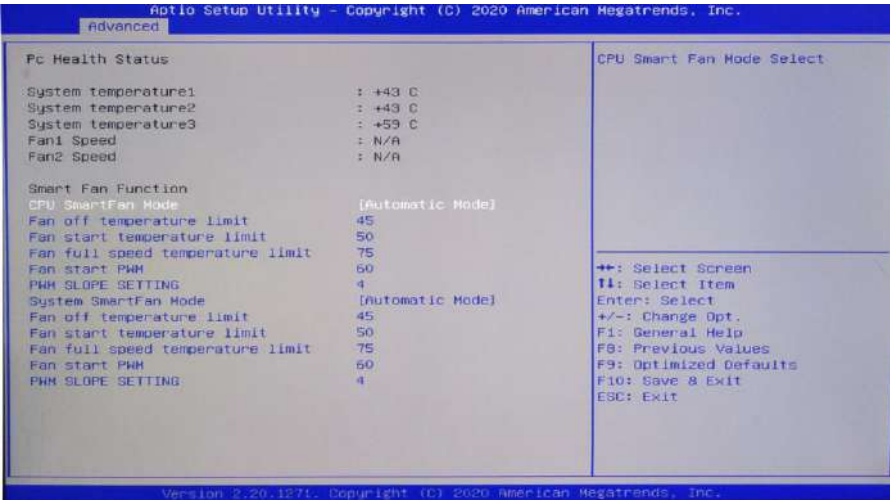
3.2.6 Super IO Configuration



Serial Port 1 Configuration: Super IO configuration information, including COM port interrupt number and address setting.

Serial Port 2 Configuration:

3.2.7 PC Health Status



PC Health Status: shows the current system temperature, CPU temperature, fan speed, and other relevant voltage value. The above parameters have a certain range, system cannot operate beyond the scope.

Smart Fan 1 Mode: This option is whether or not open the CPU automatic fan control function, used to adjust CPU fan speed automatically according to the real-time detected CPU temperature, to achieve the purpose of saving energy.

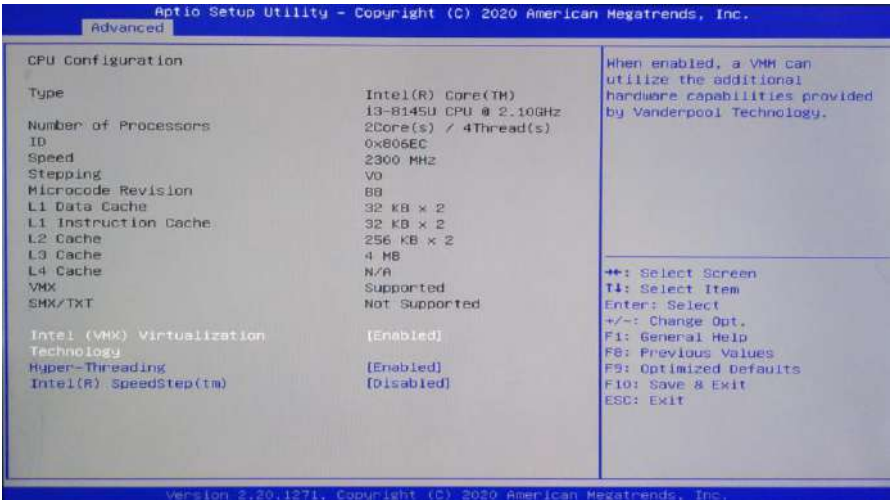
Fan off temperature limit: Fan stop minimum temperature setting.

Fan start temperature limit: Fan start minimum temperature setting.

Fan start PWM: Fan start PWM value setting.

PWM slope setting:

3.2.8 CPU Configuration

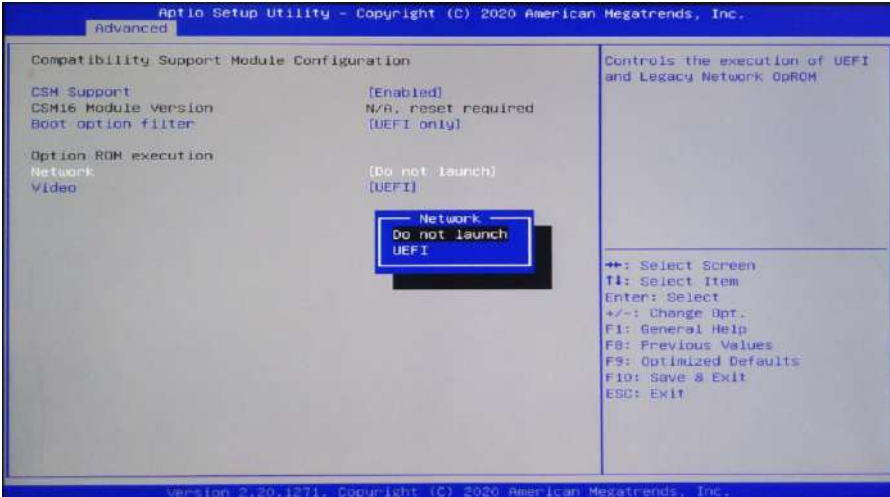


Read only items contain details of the CPU, including the CPU manufacturers, models, frequency, the first level cache size, the second level cache size and other information.

Intel Virtualization Technology :

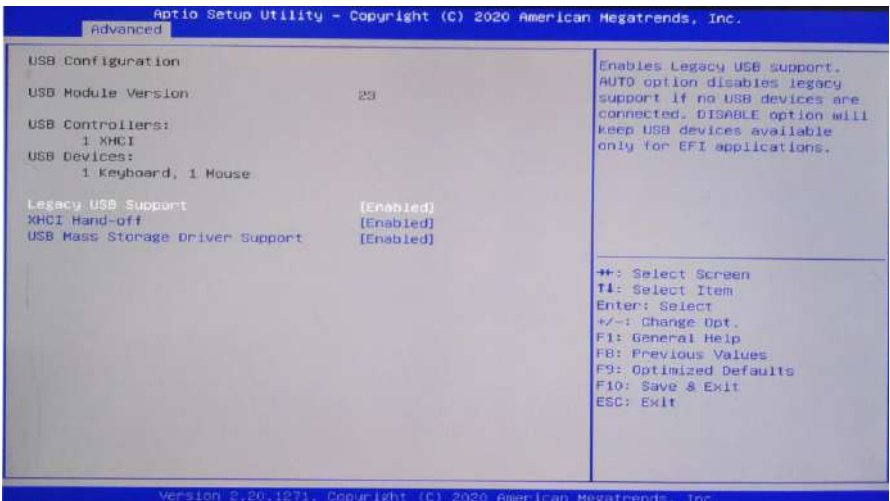
Intel Virtualization Technology Is Intel's CPU in the system of virtual technology. It makes it possible to enable a PC running a plurality of OS, VT technology is in various types of processors, including dual core processor play very important role, this technique allows the processor with and / or virtualization technology, using Vanderpool technology, we can run two operating systems simultaneously on the same machine. In which a processor running an operating system, another processor running another operating system.

3.2.9 CSM Configuration



Launch Network PXE OpRom: set None-Disk boot; Do not launch: close None-disk boot; UEFI: set non-disk boot mode as UEFI; Legacy: set None-Disk boot as Legacy mode.

3.2.10 USB Configuration



Legacy USB Support :

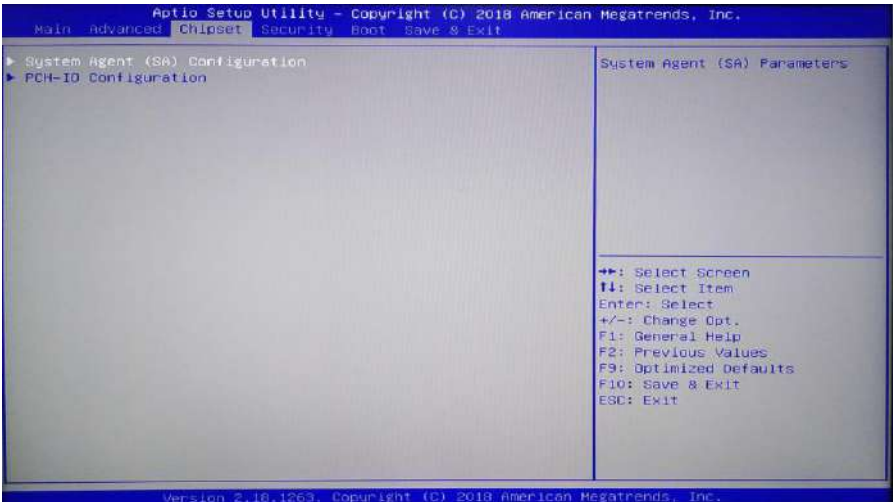
This is used for old version USB setting, if need to support USB devices in DOS, such as U disk, USB keyboard, etc., choose the option [Enabled] or [Auto]. on the contrary, choose [Disabled].

XHCI Hand-off :

When operating system does not support XHCI, whether to allow BIOS to take over XHCI control

USB Mass Storage Driver Support :

3.2.11 Chipset



PCH-IO Configuration :

South bridge configuration option, include audio card, LAN card options, etc.

System Agent (SA) Configuration :

North bridge configuration options, include video memory, display device, LVDS, etc.

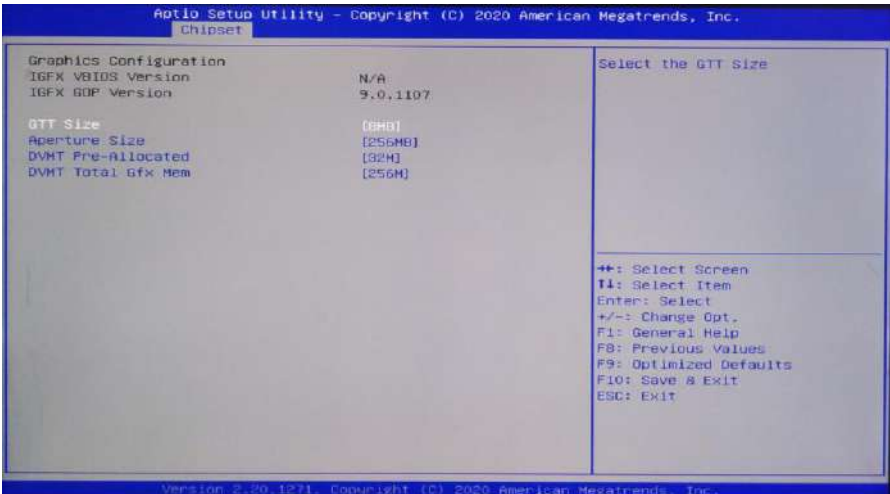


VT-d :

Intel's I/O virtualization technology, need chipset to support it, some chipset support, some don't. The BIOS will show or hide this option according to different chipset. Please enable it when installing virtual computer.

Memory Configuration:

Graphics Configuration:



DVMT Pre-Allocated: Dynamically allocate the value of video memory.

DVMT Total Gfx Mem: Dynamically allocate the value of the total graphics card.

Aperture Size:

GTT Size:

Primary IGFX Boot Display : Vbios selection, Graphics boot configuration.

3.2.12 Boot



Setup Prompt Timeout: click the Setup shortcut key to wait time. If have not click the setup shortcut key in the setup time it will continue to boot.

Quiet Boot: (Disabled or, enabled) .

Fast Boot : (Disabled or, enabled) .

Boot Option Priorities: system will inspect device in accordance with the set procedure, until find a device that can be boot, and then boot from this device. Boot option #1 is the most preferred boot device.

3.2.13 Security

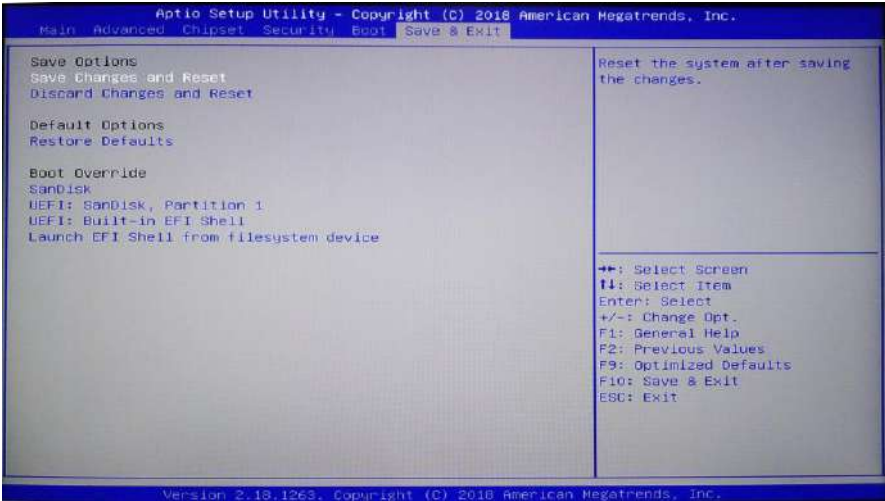


Password character length hint: the minimum length is 3, the maximum length is 20.

Administrator Password :

The option is used to set the super user password.

3.2.14 Save&Exit



Save Changes and Reset : Save the BIOS settings, and exit the settings interface, continue to start the computer

Discard Changes and Reset : Discard changes and exit setup interface, restart the computer.

Restore Defaults: Load optimization settings, if choose this, the system will be set according to the factory’s optimal value.

Boot Override : Select the specified Boot devices, such as SATA hard disk, U disk, Shell EFI, PXE and so on, direct Boot, do not save and exit, press F11 to select the specified device Boot.

Appendix

Appendix one: Glossary of terms

ACPI

Advanced configuration and power management. The ACPI specification allows the operating system to control most of the power of the computer and its additional equipment.

BIOS

Basic input / output system. It's a software that contains all the input/output control code interface in PC. When the system starts, it carries out the hardware detection., began to the operation of the operating system, between the operating system and hardware to provide an interface. BIOS is stored in a read-only memory chip.

BUS

In a computer system, the exchange of data between the different parts of the channel, is a set of hardware lines. We refer to the BUS is usually CPU and main memory components within the local circuit.

Chipset

Chipset is designed to perform one or more functions integrated chip. We refer to is composed of South Bridge and North Bridge System on chip group, It determines the structure and main function of the motherboard.

CMOS

Complementary metal oxide semiconductor. Is a widely used semiconductor type. It has the characteristics of high-speed, low power consumption. We refer to CMOS is on the motherboard CMOS ram reserved space, used to save the date, time, system information and system parameter setting information.

COM

Serial port, a universal serial communication interface, generally use the standard DB9 common interface connection mode.

DIMM

Dual in-line memory module. A memory chip group of small circuit board. The

memory bus width of 64bit.

DRAM

Dynamic random access memory. A normal computer general memory types. A transistor and a capacitor is usually used to store a single bit. With the development of technology, type and specification of DRAM has in computer application becomes

more and more diverse. For example, are now commonly used are: SDRAM, DDR SDRAM and RDRAM.

LAN

Local area network interface. A small region mutual association of computer is composed of a computer network is generally in a business unit or building. LAN is generally by the server, workstations, some communication links, a terminal can anywhere through the wire access to data and equipment. Many users can be expensive equipment and resource sharing.

LED

Light emitting diode, a semiconductor device, when the current flows through it will be lit, usually used to represent the information very intuitive, such as the power supply has been turned on or the hard drive is working.

PnP

Plug and play. Allows the PC external devices to be automatically configured, users can not manually operate the system can work on their own specifications. To achieve this feature, BIOS support PnP and a PnP expansion cards are required.

POST

During the start up system, BIOS will perform a continuous testing on the system, including the detection of RAM, keyboard, hard drives, etc., to see whether they are properly connected and whether the normal work.

PS/2

The IBM development of a keyboard and mouse interface specification. PS/2 is a DIN only 6PIN interface can also be used to connect to other devices such as a modem.

USB

Universal serial bus. A suitable for low-speed peripherals hardware interface, typically used to connect the keyboard, mouse, and so on. A PC up to 127 USB

devices connected to provide a 12mbit / s transmission bandwidth; USB support hot swap and multiple data stream function, namely in the system can plug in a USB device, the system can automatically identify and allow the insertion of the device normal.

Appendix Two: Common issue analysis and solution

Common Faults	Check Points
No start up after connecting power	<ol style="list-style-type: none">1. Make sure the power cable is connected properly2. Please confirm all the power supply can meet the requirements of the motherboard3. Try to re-plug the memory4. Try to change the memory5. Try to clear the CMOS according to motherboard manual6. Please confirm whether there is an external card, remove the card and check again
VGA no display after power on	<ol style="list-style-type: none">1 To check whether the monitor is open2 Check whether the power cable is properly connected to the monitor and system unit3 Check whether the display cable is properly connected to the system unit and the display4 Check whether the display brightness control is set to the dark state, can improve brightness through the brightness control.5 Display in the "power save" mode, press any key on the keyboard
BIOS Setup can not be saved	<ol style="list-style-type: none">1. Please check whether the CMOS battery voltage is lower than 2.8V, if so, please replace a new battery, set again and save2. BIOS settings are not correct, according to the boot screen prompt button (DEL), adjust the time and date in the Setup BIOS
Prompt message cannot find bootable device	<ol style="list-style-type: none">1. Please check whether the hard drive power cord, data cable is connected normally2. Please check whether the hard disk has physical damage

	<p>3. Please check whether the operating system is normally installed on the hard disk</p>
<p>Blue screen or crash when enter into OS</p>	<p>1. Please check whether the memory card and the card is loose 2. Try to remove the newly installed hardware, uninstall the driver or software 3. Try to replace the memory</p>
<p>Slow speed to enter into OS</p>	<p>1. Try to use third party software to check whether the hard disk has bad sectors 2. Please check whether the hard disk remaining space is too small for operating system. 3. Please check whether the CPU cooling fan is rotating normally</p>
<p>System restart automatically</p>	<p>1. Please check whether the CPU cooling fan is rotating normally 2. Please check whether triggered reset button wrongly 3. Please use anti-virus software to confirm whether the system is infected with the virus 4. Please check whether the memory card and the card is loose 5. Please confirm that the power capacity is sufficient, can try to replace the power supply</p>
<p>Can not detect USB device</p>	<p>1. Please check whether the USB device needs separate power supply 2. Please check whether the USB interface has bad contact 3. Please check whether the USB controller is open in BIOS Setup</p>