用 户 手 册
User Manual

Intel®WhiskeyLake-U/CometLake-U/CoffeLake-U

EPIC-E81 VER:1.0

物 联 网 解 决 方 案 领 航 者
Internet of Things （IOT) Solution Leader

Disclaimer

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Order Information

No	Model	Processor	Frequency	Memory	VGA	HDMI	LVDS	EDP	LAN	USB	COM	RS485	Power
1	EPIC-E81_I526L VER:1.0(8260U)	I5-8260U	1.6G	1* SODDR4	1	1	2ch*24bit	/	2*210AT	7	6	2	DC12V
2	EPIC-E100_I526L VER:1.0(10210U)	I5-10210U	1.6G	1* SODDR4	1	1	2ch*24bit	/	2*210AT	7	6	2	DC12V

Note: CPU Information just for reference, processor can be changed based on requirement

Safety Instructions

1．Please read this manual carefully before using this product.

2．Please put all unused/uninstalled boards and cards in anti-static bags.

3．Please first place your hands on grounding metal object for a while before you go to take out the board from its package, so as to release body electrostatic.

4．Please place the motherboard on a solid plane before using.

5．Please keep the Motherboard dry, heat sink slot is used for ventilation to avoid overheating of the components in the case, do not cover or plug this kind of opening slots.

6．Please first check the power voltage before connecting the motherboard to the power supply.

7．Please put the power cord in the place where it will not be trampled, and don't put any objects on the power cord.

8．Before you want to connect or unplug any equipment, please make sure all power cords are unplugged in advance.

9．In order to avoid the human body by electric shock or product damage, must turn off the ac power or unplug the ac power cord from the power outlet before Plugging the motherboard or reconfiguration.

10．Please note that all the attention and warnings mentioned in the manual.

11．To prevent any unnecessary damage to the products due to frequent power on/off, please wait at least 30 seconds to restart the unit after a shutdown.

12．If any unexpected problems happened during the operation, please seek help from professionals.

13．please do not put or keep the device in the environment that temperature is higher than 70℃, otherwise it will cause damage to the equipment.

Note: It may cause the danger of explosion if replace the battery improperly. Please use the same type of battery or the battery that manufacturer recommend.

Catalog

Chapter 1 Product Introduction

1.1 Product Introduction

EPIC-E81 is a high performance 3.5" embedded motherboard, onboard Intel® 8th Gen I5-8260U 1.6GHz / 10th Gen I5-10210U quad core 8-thread processor; 1* DDR4 SODIMM RAM slot, 2666MHz, up to 32GB; integrated Intel® UHD Graphics, provide VGA/HDMI/LVDS/EDP display output port, support tripe independent display; 2*Intel WGI210AT Gigabit Ethernet; 6*RS232; 2*Mini-PCIE slot, support SSD、WiFi module.

EPIC-E81 with stable reliable industrial grade performance and intelligent digital multimedia player application advantage, can be widely used for advertising, education, media player, LCD screen, traffic control, information system, financial equipment, vehicle, military, etc.

1.2 Specification

➢ Processor

Onboard Intel® 8th Gen I5-8260U 1.6GHz/ 10th Gen I5-10210U quad core 8-thread processor, TDP15W

Compatible with Intel®WhiskeyLake-U/CometLake-U/CoffeLake-U 8th/10th Celeron / Pentium/ I3/I5/I7 processor

➢ Chipset

SOC

➢ Memory

1* DDR4 SODIMM RAM slot, 2666MHz, up to 32GB

➢ Display

Integrated Intel® UHD Graphics, support DirectX 12 OpenGL 4.5, 4K display

1* VGA, support resolution up to：1920X1200@60Hz

1* HDMI1.4, support resolution up to：4096X2304@24Hz

1* EDP port,(same pin port with LVDS)

1* LVDS port, support dual channel 24bit, (LVDS/EDP same pin, default LVDS)

Note: board support 3.3V、5V output voltage for LVDS screen, default is 3.3V, before using LVDS, Before using LVDS, please learn the LCD's rated working voltage.

➢ LAN

2* Intel WGI210AT Gigabit Ethernet, support Wake On LAN、PXE

➢ Audio

Integrated ALC897 7.1+2 channel high definition audio controller, support MIC/Line-out. Line out

Amplifier support 4Ω 3W dual channel

➢ Expansion

1* Mini-PCIE slot, support WiFi/4G module

➢ Storage

1* 7pin SATA3.0 slot, transfer speed up to 6Gbps

1* MSATA SSD slot, transfer speed up to 6Gbps

➢ Rear I/O Port

1* 12V DC_In

1* HDMI

1* VGA

2* USB3.0

1* USB2.0

2* RJ45 Gigabit LAN port

1* Line-out (green)

➢ Internal I/O Port

1* DC power connector, 1*4pin, support 12V input output

1* JVGA port, 1*12pin, same signal with DB15

1* LVDS port, support dual channel 24BIT (LVDS/EDP same pin, default EDP)

1* Screen backlight power supply port, 1*6pin

6* RS232 COM port, COM1 support pin9 charged function, COM2 support RS485/422

4* USB2.0, 2*5pin

1* Front audio port, 2*5pin

1* Amplifier port, 1*4pin

1* SATA power supply port, 1*4pin

1* Front panel function button and LED indicator port, 2*5pin

➢ GPIO Function

Support 4-in 4-out GPIO

➢ Cooling System

1*4pin CPU smart fan connector, 1*3pin system fan connector

➢ BIOS

64Mb Flash ROM

➢ Watchdog

Support hardware reset function (L256, 0~255 seconds)

➢ Power Type

Adopt DC 12V power supply

➢ Dimension、Environment

Dimension：148mm x 102mm

Operating Temp.：-10℃～60℃

Relative Humidity：5～90% relative humidity, non-condensing

Storage Temp.：-20℃～60℃

➢ Product Photo：

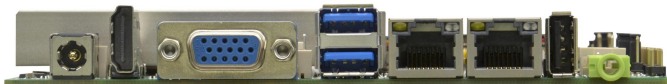Image 1：EPIC-E81 VER:1.0 Front View

Image 2：EPIC-E81 VER:1.0 Rear I/O View

Chapter 2 Installation Instruction

2.1 Motherboard Dimension

Following image is EPIC-E81 dimension drawing and front I/O location image. Please must be careful during installation, for some parts, wrong installation may lead to working abnormal.

Note：**Please wear anti-electrostatic glove during installation, static electricity may cause damage to components.**
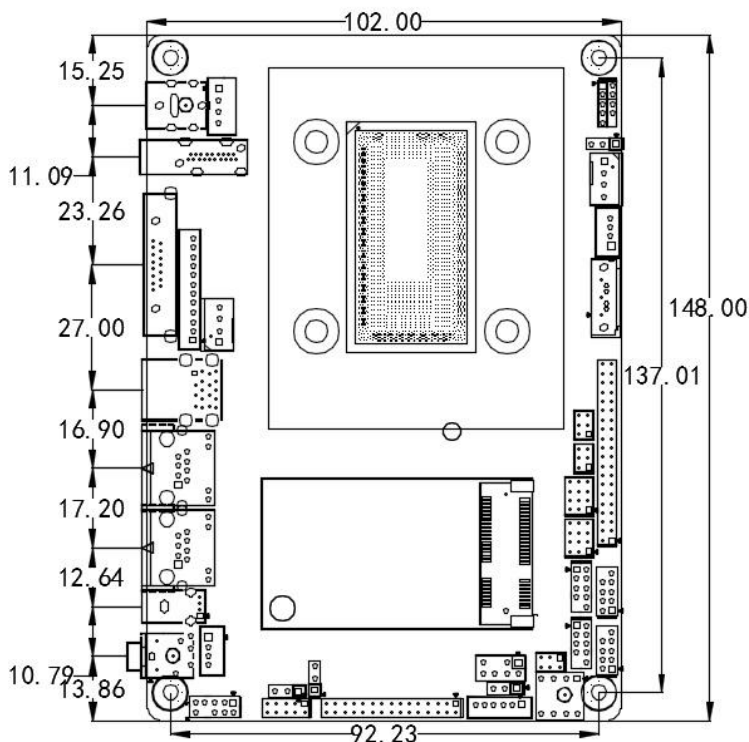
EPIC-E81 VER:1.0 dimension drawing

Tips:

1. Please must use suitable screws and right installation method, otherwise may cause damage to motherboard.

2. How to identify the 1st pin of jumpers and connectors, check the word mark

beside the socket, it is marked with "1" or bold lines or triangular symbols; check the solder pad on the back, the square pan denotes the 1st pin. When connecting external devices or cables, please pay attention to distinguish the 1st pin,otherwise may cause damage to the motherboard.

2.2 I/O Port Location
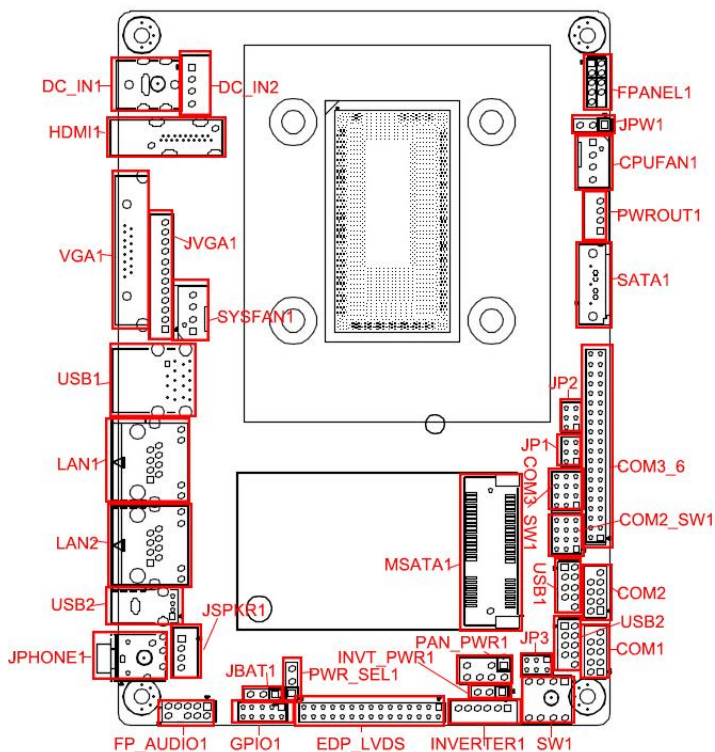
EPIC-E81 VER:1.0 I/O Port Location

Tips:

     LVDS screen working voltage support 3.3V、5V、12V selectable by jumper, defaulted 3.3V. Before using LVDS please must learn the LCD's required rated working voltage to make setting.

How to identify the alarms:(Long beep indicates system memory error; Short beep indicates the computer is power on).

2.3 Installation Steps

Please follow below steps to assemble your computer:

1．Please refer to the manual to set all jumpers on EPIC-E81 correctly.

2．Install other expansion cards.

3．Connect all signal cable, power cables, panel control circuit and power supply.

4．Power on computer, complete BIOS program setting

⚠ **All key components of this motherboard are integrated circuit and these components could be easily damaged by electrostatic influence. So, before installing motherboard, please always keep following precautions in mind：**

1．Hold the board by edge, don't touch any components or the pin of plug & Socket.

2．Wear anti-static gloves/wrist strap while touching the integrated circuit components, such as CPU, RAM etc.

3．Before the integrated circuit components are installed, place the components in an anti-static mat or anti-static bag.

4．After confirming that the power switch is in the off position, plug in the power plug.

2.4 Memory Installation

The board provide 1* SO-DIMM DDR4 slot, please note the following two points when installing the memory card:

1．please align the notch of the memory bank with the alignment mark on the socket and press the memory bank firmly into the socket.

2．Please choose the proper memory bank that matches the motherboard.

2.5 Jumper Function Settings

Please refer to following instructions to adjust jumper setting before installing hardware devices.

Tips：How to identify the 1st pin of jumpers and connectors, check the word mark beside the socket, it is marked with "1" or bold lines or triangular symbols. Check the bonding pad on the back of PCB, the square bonding pad is PIN 1; All the jumpers' PIN1 have a white arrow on the side.

2.5.1 CMOS Clear/ Hold Jumper Settings (JBAT1)

CMOS is powered by onboard button cell. Clear CMOS may lead to permanent elimination of previous system settings and make the system back to the original settings (factory setting).

Steps： (1) Power off computer, unplug power supply.

(2) Use jumper cap short circuit "JBAT1" pin 2-3 5 to 6 seconds, then put back to defaulted setting pin 1-2 shorted;

(3) Power on computer and press "Delete" to enter BIOS setup interface.

(4) Press "F9" ---- "Enter" then reload optimal defaults.

(5) Press "F10", Save and Exit.

JPW1

JBAT1

PWR_SEL1
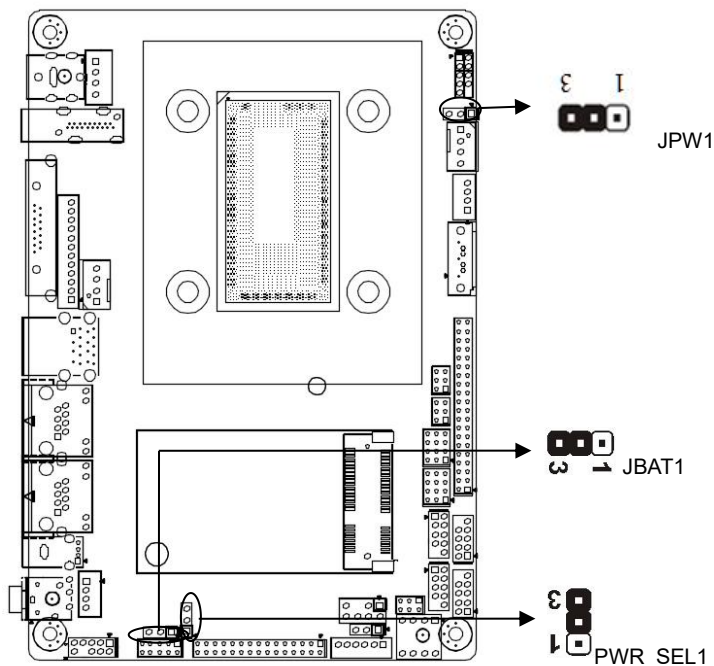
JBAT1 Definition：

Setting	JBAT1
2-3 short	Clear CMOS, all BIOS settings back to factory setting
1-2 short	Normal working status

⚠ **Do not clear COMS when motherboard is connected to electricity, in case**

cause damage to motherboard！

2.5.2 JPW1 Jumper Setting

JPW1 Definition：

Setting	JPW1
1-2 short	Disable Auto Power On
2-3 short	Enable Auto Power On

2.5.3 4G Module Voltage Setting（**PWR_SEL1**）

PWR_SEL1 Definition (reserved)：

Setting	PWR_SEL1
1-2 short	3.3V
2-3 short	3.8V

2.6 Interface Description

⚠ **Please read the following instructions carefully before connecting external devices in case cause damage to the motherboard.**

2.6.1 SATA Port (SATA1、PWROUT1)

1*7Pin SATA3.0 hard disk port, transfer speed up to 6Gbps

1*4pin SATA power supply port
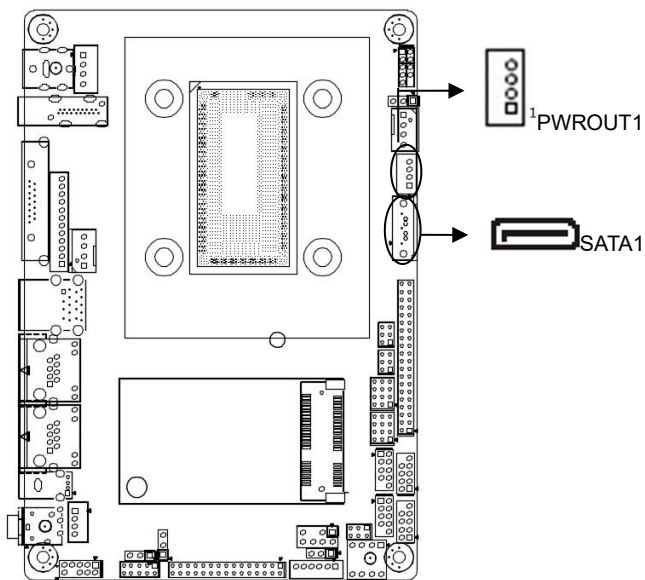
SATA1 Definition

Pin	Signal Name
1	GND
2	SATA_TXP
3	SATA_TXN
4	GND
5	SATA_RXN
6	SATA_RXP
7	GND

PWROUT1 Definition

Pin	Signal Name
1	+12V
2	GND
3	GND
4	+5V

Tips：1、PWROUT1 SATA power supply port, Pin1 is +12V output, Pin4 is +5V output, please use factory SATA power cable, in case burn hard disk

2.6.2 VGA1、HDMI1、JVGA1、LVDS/EDP1、INVT_PWR、PAN_PWR1、SW1

Board provide 1*standard VGA port, 1*standard HDMI

Internal provide 1*JVGA port, 1*12pin（JVGA / VGA port same signal）

1*LVDS port, 2*15pin, support dual channel 24BIT; 1*eDP port, 2*15pin

Note: LVDS / EDP same pin port, default LVDS

HDMI1

VGA1

JVGA1

LVDS/ED

INVERTER1

PAN_PWR1

INVT_PWR1

SW1
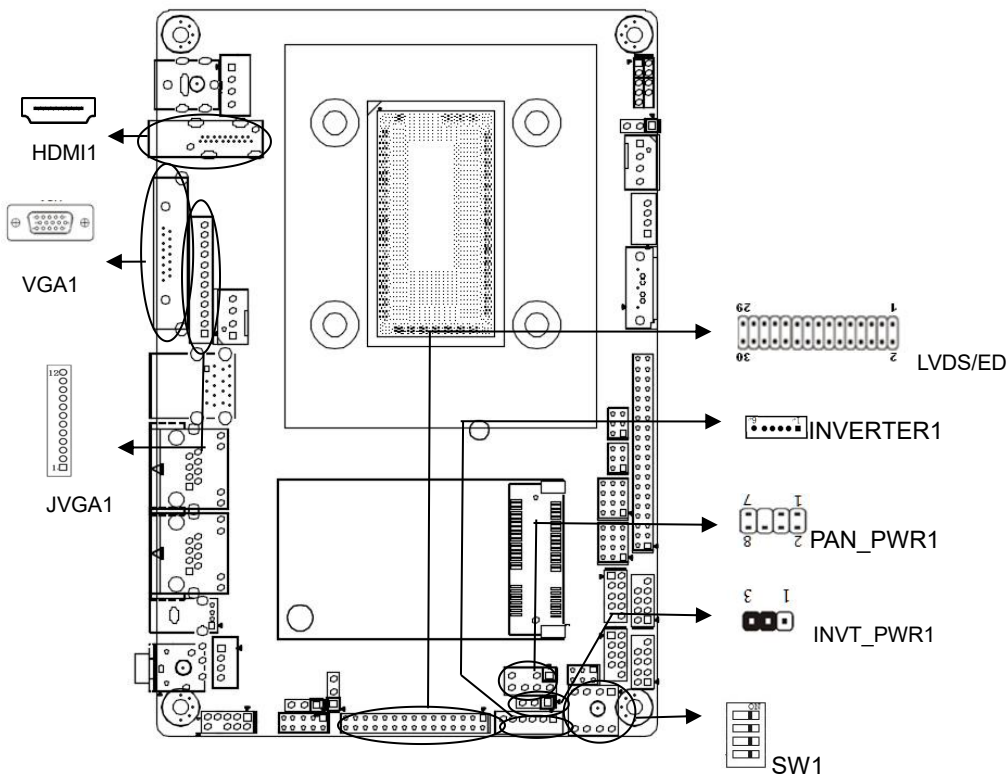
VGA1 Definition：

Pin	Signal Name	Pin	Signal Name
1	Red	2	Green
3	Blue	4	NC
5	GND	6	GND
7	GND	8	GND
9	NC	10	GND
11	NC	12	DDCDATA
13	HSYNC	14	VSYNC
15	DDCCLK		

JVGA1 Definition：

Pin	Signal Name	Pin	Signal Name
1	NC	2	VSYNC

3	HSYNC	4	GND
5	R	6	GND
7	G	8	GND
9	B	10	GND
11	DDC_SDA	12	DDC_SCL

HDMI1 Definition:

Pin	Signal Name	Pin	Signal Name
1	TMDS Data2+	2	TMDS Data2 Shield
3	TMDS Data2-	4	TMDS Data1+
5	TMDS Data1 Shield	6	TMDS Data1-
7	TMDS Data0+	8	TMDS Data0 Shield
9	TMDS Data0-	10	TMDS Clock+
11	TMDS Clock Shield	12	TMDS Clock-
13	Reserved(N.C.)	14	Reserved(N.C.)
15	SCL	16	SDA
17	CEC Ground	18	+5V Power
19	Hot Plug Detect		

LVDS1 Definition:

Pin	Signal Name	Pin	Signal Name
1	LCDVDD	2	LCDVDD
3	LCDVDD	4	NC
5	GND	6	GND
7	LVDS_A0-	8	LVDS_A0+
9	LVDS_A1-	10	LVDS_A1+
11	LVDS_A2-	12	LVDS_A2+
13	GND	14	GND
15	LVDSA_CLK-	16	LVDSA_CLK+
17	LVDS_A3-	18	LVDS_A3+
19	LVDS_B0-	20	LVDS_B0+
21	LVDS_B1-	22	LVDS_B1+
23	LVDS_B2-	24	LVDS_B2+

25	GND	26	GND
27	LVDSB_CLK-	28	LVDSB_CLK+
29	LVDS_B3-	30	LVDS_B3+

J_EDP1 Definition：

Pin	Signal Name	Pin	Signal Name
1	PVDD	2	PVDD
3	PVDD	4	HPD
5	GND	6	GND
7	EDP_TX0-	8	EDP_TX0+
9	EDP_TX1-	10	EDP_TX1+
11	NC	12	NC
13	GND	14	GND
15	EDP_AUX-	16	EDP_AUX+
17	NC	18	NC
19	NC	20	NC
21	NC	22	NC
23	NC	24	NC
25	GND	26	GND
27	NC	28	NC
29	NC	30	NC

Different LCD the screen voltage can be different, the board provide 3.3V,5V,12V three types screen working voltage selection and 5V/12V screen backlight power supply voltage selection. Before using LVDS, please learn the LCD's rated working voltage to make setting. Only when the selected LCD voltage same with the LCD screen voltage, can the LCD screen display normally. Settings as follows：

INVERTER1 (Backlight Power Supply Port) Definition:

Pin	Signal Name
1	12V/5V(JP9 Setting)
2	12V/5V(JP9 Setting)
3	Backlight enable
4	Backlight dimming control

5	GND
6	GND

INVT_PWR1(Screen Backlight Power Supply) Definition:

Setting	INVT_PWR1
1-2 short	12V
2-3 short	5V

PAN_PWR1(Screen Working Voltage) Setting：

Setting	PAN_PWR1
1-2 short	3V
3-4 short	5V
5-6 short	NC
7-8 short	12V

SW1 is used for LVDS resolution setting, details settings as below:
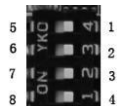
SW1 switch image：

1、2、3、4 represents1，5、6、7、8 represents 0.

For example：1、0011 switch setting：5634，

2、0101 switch setting：5274，

3、1010 switch setting：1638，

4、Factory default switch setting 1234，that is 1111

Switch [4:1]	HA (Pixel)	VA (line)	RR (Hz)	PC (MHz)	CD (bit)	Port	HB (Pixel)	HSO (Pixel)	HSPW (Pixel)	VB (line)	VSO (line)	VSPW (line)
0000	800	600	60	38.25	6	Single	224	32	80	24	3	4
0001	1024	768	60	56.00	6	Single	160	48	32	22	3	4
0010	1280	768	60	68.25	6	Single	160	48	32	22	3	7
0011	1280	800	60	71.00	6	Single	160	48	32	23	3	6
0100	1280	960	60	85.25	6	Single	160	48	32	28	3	4
0101	1280	1024	60	91.00	8	Dual	160	48	32	30	3	7
0110	1366	768	60	72.75	6	Single	160	48	32	23	3	10
0111	1366	768	60	72.25	8	Single	160	48	32	23	3	10
1000	1440	900	60	106.50	8	Dual	464	80	152	34	3	6
1001	1024	600	60	56.00	6	Single	160	48	32	22	3	4
1010	1920	1080	60	138.50	6	Dual 15.6 inch	160	48	32	31	3	5
1011	1920	1080	60	138.50	8	Dual 21.5 inch	160	48	32	31	3	5
1100	1920	1080	60	138.50	8	Dual 42 inch	160	48	32	31	3	5
1101	1920	1200	60	154.00	6	Dual	280	48	32	35	3	6
1110	1920	1200	60	154.00	8	Dual	280	48	32	35	3	6
1111	1024	768	60	56.00	8	Single	160	48	32	22	3	4

2.6.3 USB Port (USB1、USB2、F_USB1、F_USB2)

Board provide 2* standard USB3.0 port, 1* standard USB2.0 port

Internal 4*USB2.0 port（2×5Pin, pin pitch 2.0mm）
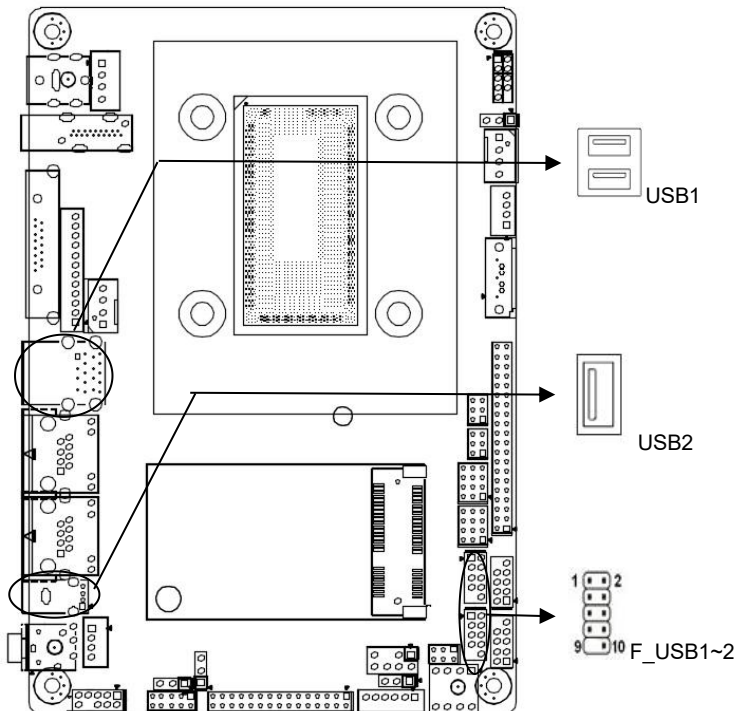
F_USB1、F_USB2 Definition:

Pin	Signal Name	Pin	Signal Name
1	+5V	2	+5V
3	D0-	4	D1-
5	D0+	6	D1+
7	GNG	8	GND
9		10	GND

2.6.4 COM Port (COM1、COM2、COM3_6、JP1、JP2、JP3、COM2_SW1、COM3_SW1)

The board provide 6*COM ports, COM1/COM2 2*5pin, PH=2.00mm, COM3-6 2*20pin, the COM ports can be enabled or disabled in the BIOS settings, can also choose to interrupt the IRQ and I/O addresses. COM1/2 support pin9 charged function; COM2/COM3 support RS232/485/422 selectable via jumper
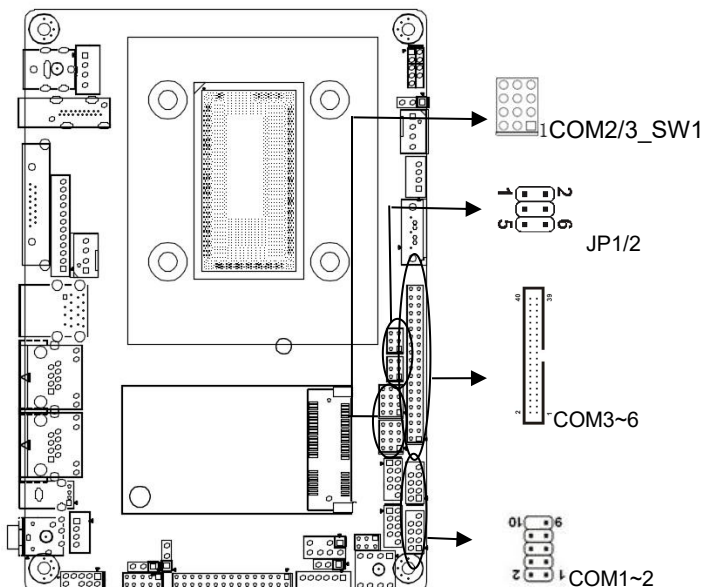
COM1、COM2 Definition:

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

COM3~6 Definition：

Pin	Signal Name	Pin	Signal Name
1	COM3_DCD	2	COM3_RXD

3	COM3_TXD	4	COM3_DTR
5	GND	6	COM3_DSR
7	COM3_RTS	8	COM3_CTS
9	COM3-RI	10	NC
11	COM4_DCD	12	COM4_RXD
13	COM4_TXD	14	COM4_DTR
15	GND	16	COM4_DSR
17	COM4_RTS	18	COM4_CTS
19	COM4-RI	20	NC
21	COM5_DCD	22	COM5_RXD
23	COM5_TXD	24	COM5_DTR
25	GND	26	COM5_DSR
27	COM5_RTS	28	COM5_CTS
29	COM5-RI	30	NC
31	COM6_DCD	32	COM6_RXD
33	COM6_TXD	34	COM6_DTR
35	GND	36	COM6_DSR
37	COM6_RTS	38	COM6_CTS
39	COM6-RI	40	NC

JP3 Setting:

Setting	Function (JP3)	
1-2 short	RS232	
3-4 short	+5V	COM1
5-6 short	+12V	

COM2/3_SW1 (COM2/3 RS485/422) Setting:

Setting	Function
2-3,5-6,8-9,11-12 short	RS232
1-2,4-5,7-8,10-11 short	RS485/422

JP1/2(COM2/3 RS485/422) Selection

Setting	COM2/3
1-2 short	RS232

3-4 short	RS485
5-6 short	RS422

COM2/3 RS485 Definition：

Pin	Signal Name	Pin	Signal Name
1	DATA+	2	DATA-
3	NC	4	NC
5	GND	6	NC
7	NC	8	NC
9	NC	10	NC

COM2/3 RS422 Definition：

Pin	Signal Name	Pin	Signal Name
1	T/R+	2	T/R-
3	RXD+	4	RXD-
5	GND	6	NC
7	NC	8	NC
9	NC	10	NC

2.6.5 Power Connector (DC_IN1、DC_IN2)

Board provide 1*12V power adapter port

1*4pin DC connector, support 12V input output
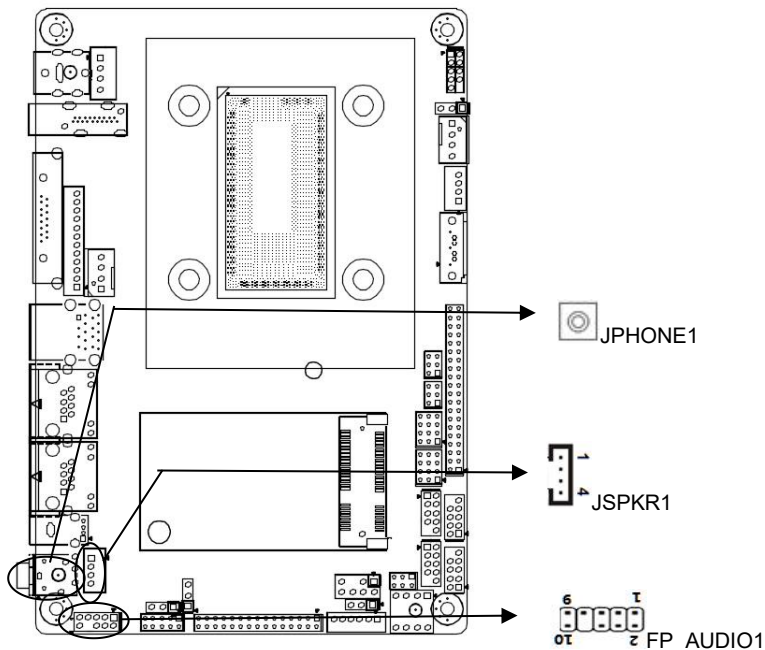

¹DC_IN2

DC_IN1
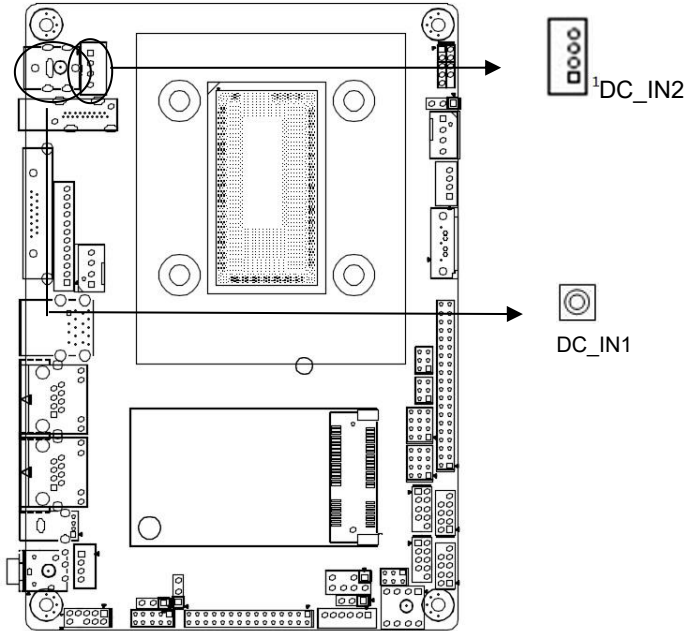
DC_IN2 Definition：

Pin	Signal Name
1	+12V
2	+12V
3	GND
4	GND

2.6.6 Audio Port (JPHONE1、FP_AUDIO1、JSPKR1)

Board provide 1*JPHONE1、JMICK1 standard audio port, support Line-out,

Internal provide 1*audio port 2*5pin, 1*amplifier port 1*4pin

JPHONE1

JSPKR1

FP_AUDIO1

FP_AUDIO1 Definition:

Pin	Signal Name	Pin	Signal Name
1	MIC-L	2	GND
3	MIC-R	4	NC
5	Line out-R	6	Sense Return1
7	Sense-FB	8	NC
9	Line OUT-L	10	Sense Return2

JSPKR1(Amplifier) Definition：

Pin	Signal Name
1	SPKR+
2	SPKR-
3	SPKL-
4	SPKL+

2.6.7 LAN and Fan Port (LAN1、LAN2、CPUFAN1、SYSFAN1)

Board provide 2* standard Gigabit LAN port

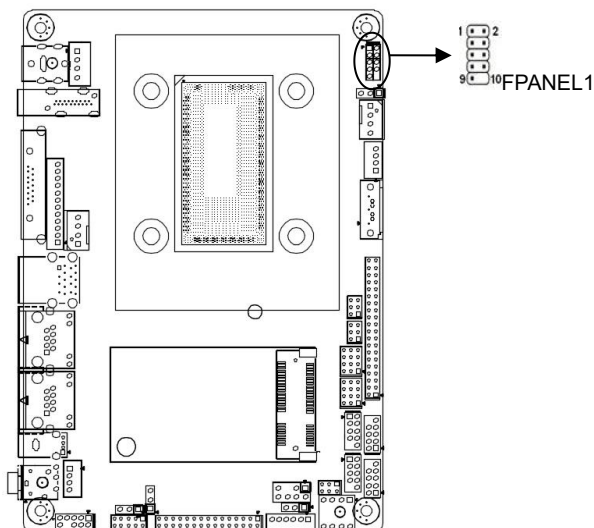Internal provide 1*4pin CPU fan connector, 1*4pin system fan connector
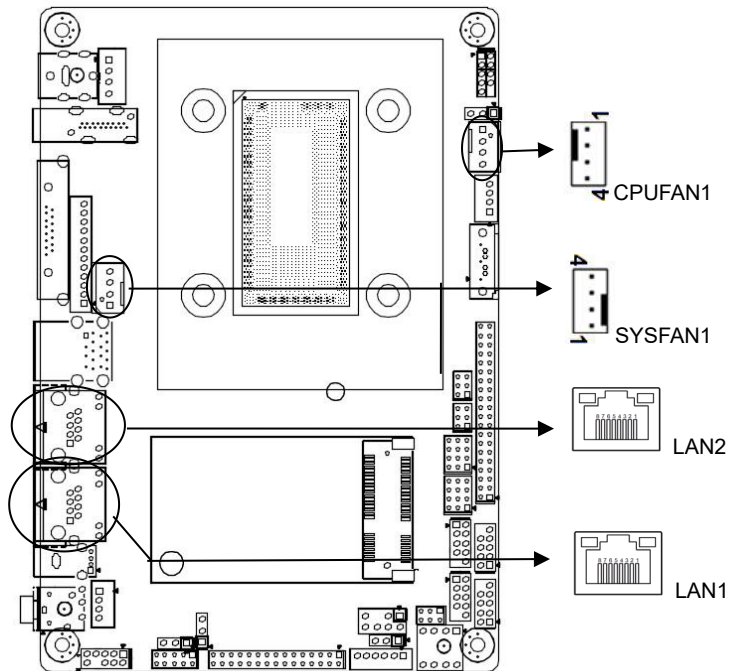
CPUFAN1、SYSFAN1 Definition：

Pin	Signal Name
1	GND
2	+12V
3	DET
4	PWM

Remark：DET：fan speed impulse output；PWM：fan speed PWM control

2.6.8 FPANEL1

Board provide a front panel port, 2*5pin, used for front panel power button and LED.

FPANEL1 Definition:

Pin	Signal Name	Pin	Signal Name
1	HDDLED+	2	PWRLED+
3	HDDLED-	4	PWRLED-
5	GND	6	PWRBTN#
7	RESETBTN#	8	GND
9	NC	10	

（1）HDD LED (1, 3 , pin1 is positive pole), when hard disk is in the operation of read and write, the LED will flash, means the hard drive is running.

（2）Power LED (2, 4, pin2 is positive pole), when the system connected to the power supply, Power LED on；when the system power supply cut off, power LED off.

（3）Reset button (5, 7), when system go wrong and cannot continue to work, click reset button can resume the system to work again.

（4）Power button (6, 8), these two pins are used for connecting with power button on the front panel of chassis, for connecting or cutting off power supply.

2.6.9 Programmable Input Output Port（GPIO1）

Please write GPIO driver under OS (windows series please refer to the information of related Microsoft Driver; Linux, UNIX, please refer to the related Linux Driver framework model), use GPIO driver to drive GPIO module, the following is called a driver.

GPIO1 is combined with 5 group (10) pin (refer to motherboard)，number 1，2，3，4，5，6，7，8 pin port is Simple GPIO，9 is GND, 10 is VCC，the singular number （1，3，5，7）is signal input pin，even number（2，4，6，8）is signal output pin：
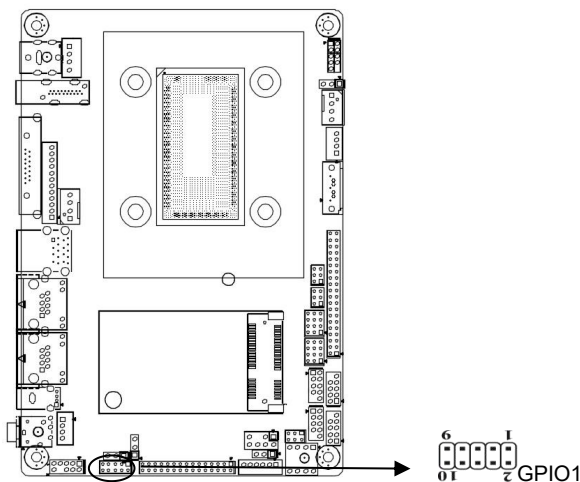

GPIO1 Definition:

Pin	Function	Default Value	Remark
1	Input	High	
2	Output	Low	Depend on BIOS setting
3	Input	High	
4	Output	Low	Depend on BIOS setting
5	Input	High	
6	Output	Low	Depend on BIOS setting
7	Input	High	
8	Output	Low	Depend on BIOS setting
9	GND		
10	+3.3V		

2.6.10 Mini-PCIE Port (MSATA1、MINIPE1)

Board internal provide 1* Mini-PCIE slot, support WiFi module

Internal provide 1*MSATA1 SSD slot, transfer speed up to 6Gbps

MSATA1

MINIPE1
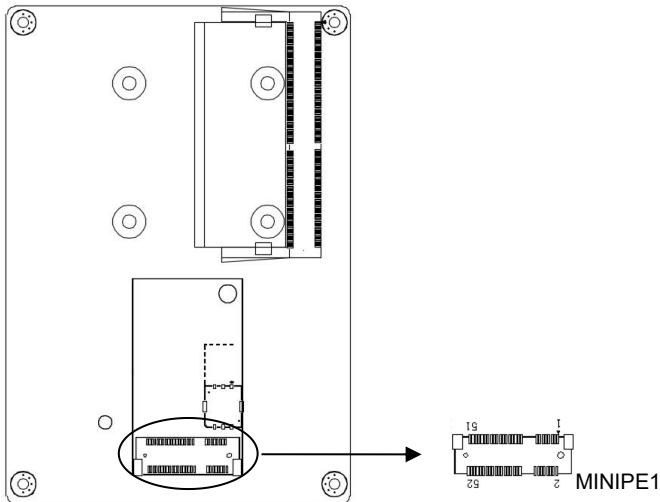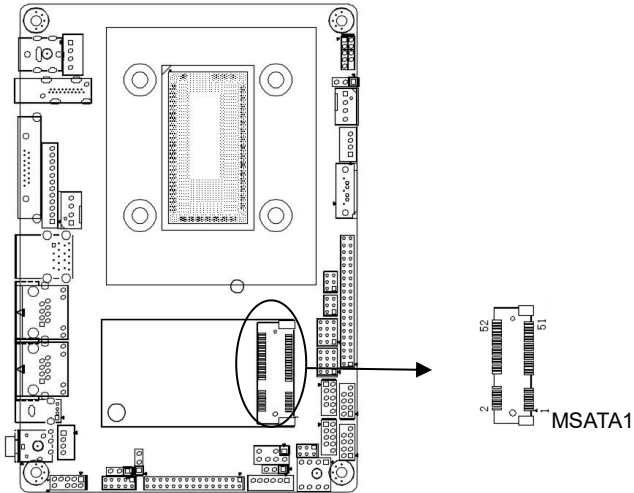
Chapter 3 BIOS Setting

3.1. BIOS Description

BIOS（Basic Input an Output System），through 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 lose, when next time re-open the power, system will read the set data. If needed to restore factory setting at the circumstance when cannot 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 cannot 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 flowing image for reference only, it may be not exactly the same with your current using BIOS setup program.

3.2 BIOS Basic Function Setting

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 displays click <DEL>or<ESC> to enter setup" tips, please click <DEL>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
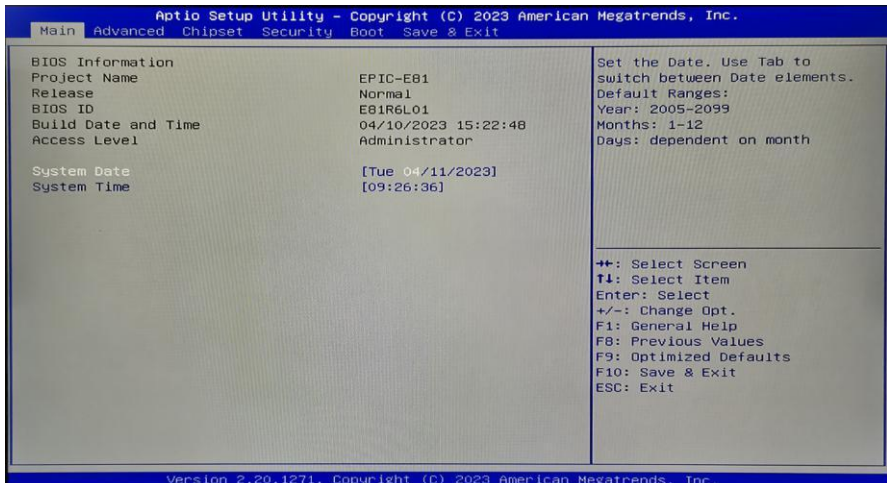
6、 <Page Up/+> Add numeric value or change

<Page Down/-> Reduce numeric value or change

<F1> Set sub menu help

<F9> Set default values (optimize to factory settings)

<F10> Save BIOS settings

3.2.2 Main Menu（BIOS Information and Time/Date）

BIOS Vendor ：American Megatrends

Bios ID ：

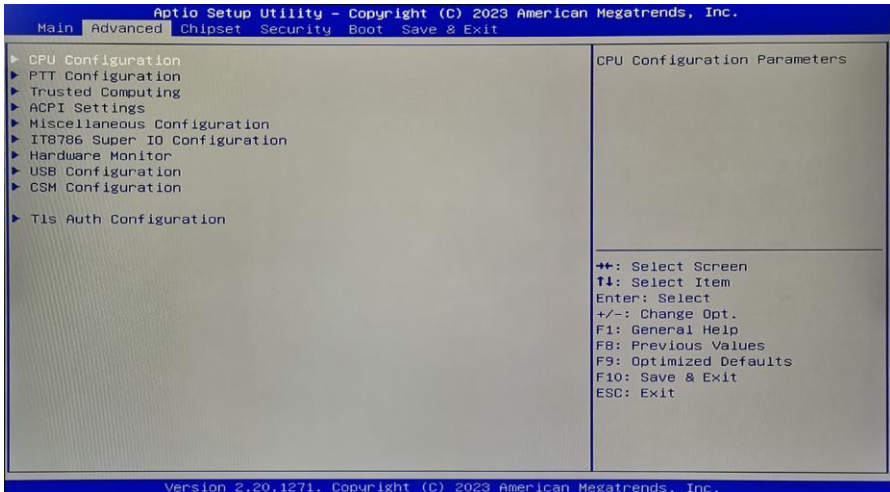Build Date and Time ：

OS　Selection ：

System language：

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.

NCT61X6D Super IO Configuration：include COM port interrupt code and address setting.

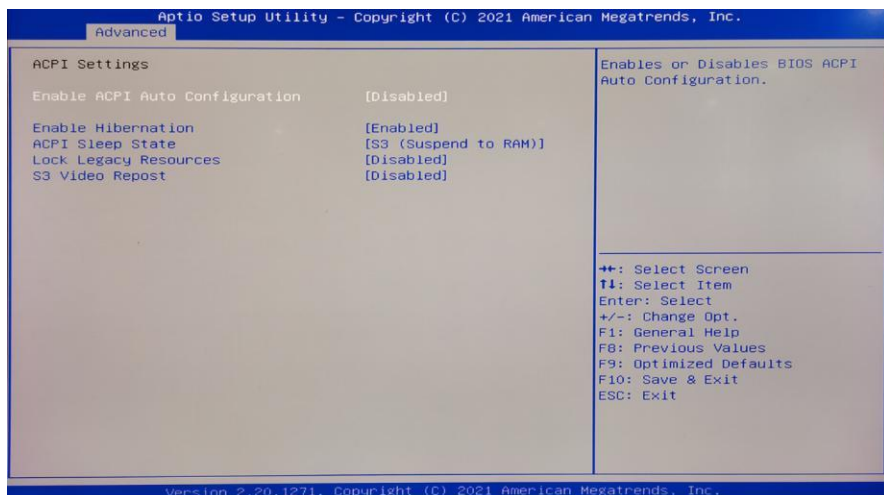HW Monitor：system monitoring, hardware monitoring, hardware monitor

Miscellaneous Configuration： include timing start up, AC power loss (auto power on), etc

CPU Configuration：

CSM Configuration：

USB Configuration：

3.2.4 ACPI Settings


```
Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
Advanced

ACPI Settings                                         Enables or Disables BIOS ACPI
                                                      Auto Configuration.
Enable ACPI Auto Configuration    [Disabled]

Enable Hibernation                [Enabled]
ACPI Sleep State                  [S3 (Suspend to RAM)]
Lock Legacy Resources             [Disabled]
S3 Video Repost                   [Disabled]

                                                      →←: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F8: Previous Values
                                                      F9: Optimized Defaults
                                                      F10: Save & Exit
                                                      ESC: Exit

              Version 2.20.1271. Copyright (C) 2021 American Megatrends, Inc.
```

Enable ACPI Auto Configuration ：This item is ACPI auto configuration, support （Enabled） or （Disabled） BIOS ACPI auto configuration, defaulted （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 item is used to select the power saving mode that the system enters during sleep，If the mode is different, the system power consumption will be different, Suspend Disabled: disable the sleep mode; S1(CPU Stop Clock)：CPU stops working, other devices still supply power normally; S3(Suspend to Ram).

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

3.2.5 Miscellaneous Configuration
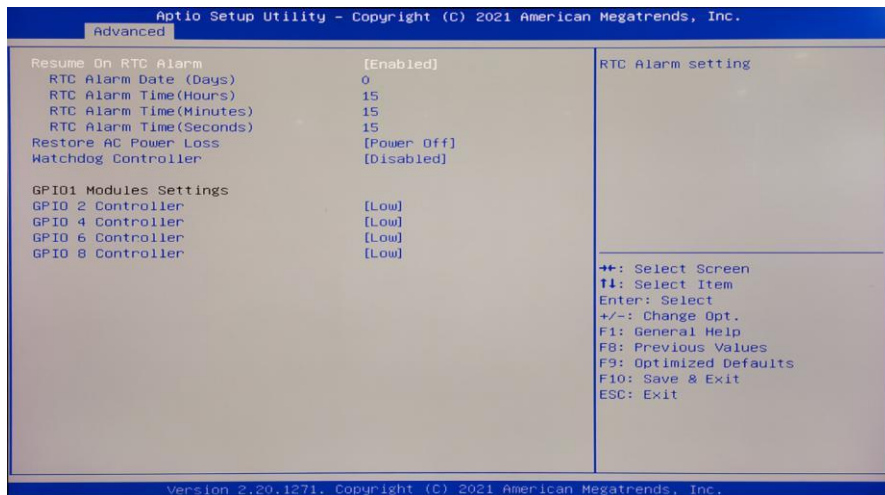
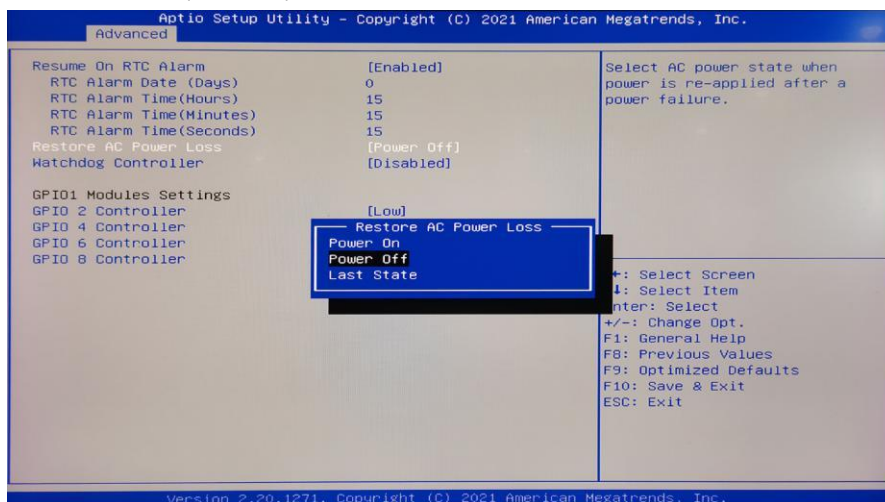Resume On RTC Alarm : Set timing boot, [Enabled]，[Disabled]

RTC Alarm Date(Days）：Set the scheduled auto power on date, "0" means every day

RTC Alarm Time(Hours):

RTC Alarm Time(Minutes):

RTC Alarm Time(Seconds):

Restore AC Power Loss: option used to set the power on condition after connecting

electric. Power Off: need to press power button to power on after connecting to

electric; Power On: Power on directly after connecting to electric; Last State: keep previous state after connecting to electric.

(Note: JPW1 hardware power on / BIOS power on can not use in the same time, recommend to use hardware power on only)
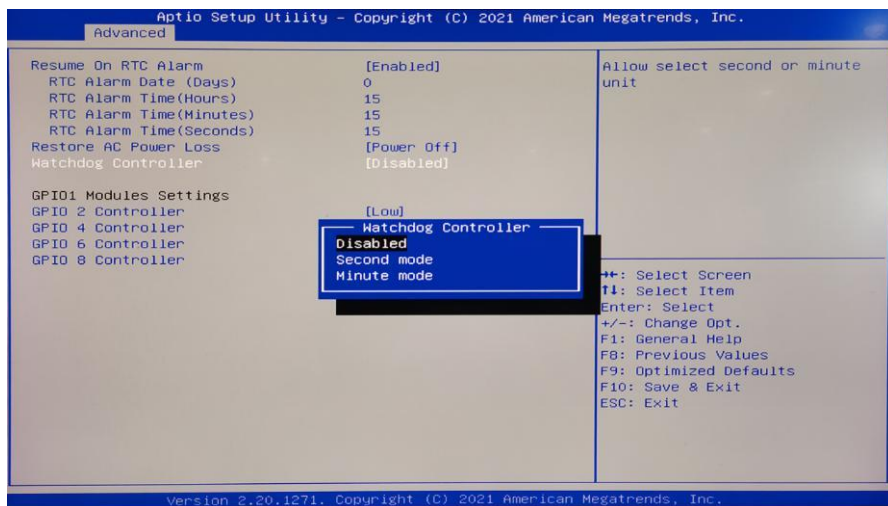
Watch dog Controller: [Disabled]，[Second mode]，[Minute Mode]

3.2.6 Super IO Configuration
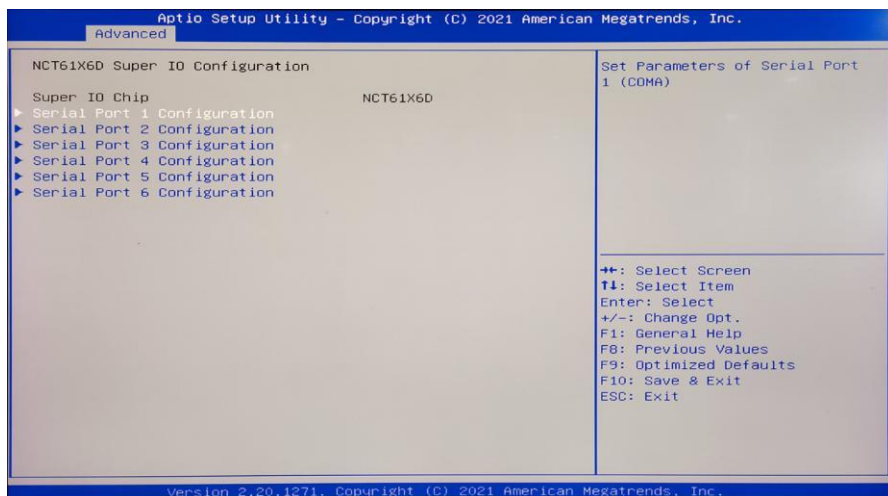
Serial Port 1 Configuration： include COM port interrupt code and address setting
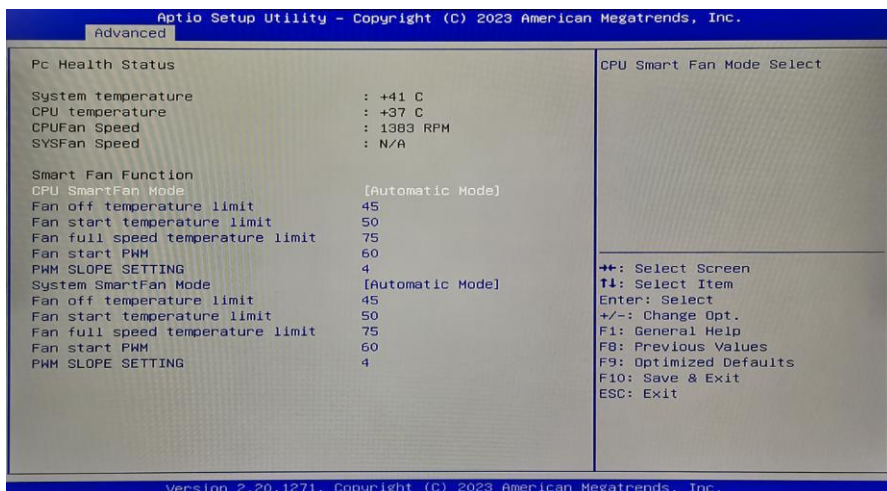
Serial Port 2 Configuration：

Serial Port 3 Configuration：

Serial Port 4 Configuration：

Serial Port 5 Configuration：

Serial Port 6 Configuration：

3.2.7 PC Health Status

PC Health Status ：

displays 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 for 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.
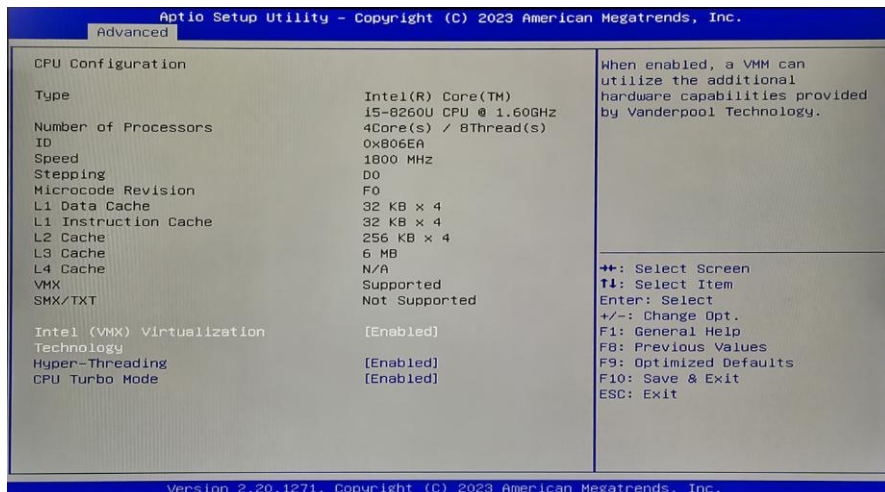
Fan off temperature limit：

Fan start temperature limit ：

Fan start PWM：

Pwm slope setting：

3.2.8 CPU Configuration

```
          Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
   Advanced

 CPU Configuration                                         When enabled, a VMM can
                                                           utilize the additional
 Type                          Intel(R) Core(TM)           hardware capabilities provided
                               i5-8260U CPU @ 1.60GHz      by Vanderpool Technology.
 Number of Processors          4Core(s) / 8Thread(s)
 ID                            0x806EA
 Speed                         1800 MHz
 Stepping                      D0
 Microcode Revision            F0
 L1 Data Cache                 32 KB x 4
 L1 Instruction Cache          32 KB x 4
 L2 Cache                      256 KB x 4
 L3 Cache                      6 MB
 L4 Cache                      N/A                         →←: Select Screen
 VMX                           Supported                   ↑↓: Select Item
 SMX/TXT                       Not Supported               Enter: Select
                                                           +/-: Change Opt.
 Intel (VMX) Virtualization    [Enabled]                   F1: General Help
 Technology                                                F8: Previous Values
 Hyper-Threading               [Enabled]                   F9: Optimized Defaults
 CPU Turbo Mode                [Enabled]                   F10: Save & Exit
                                                           ESC: Exit



          Version 2.20.1271. Copyright (C) 2023 American Megatrends, Inc.
```

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
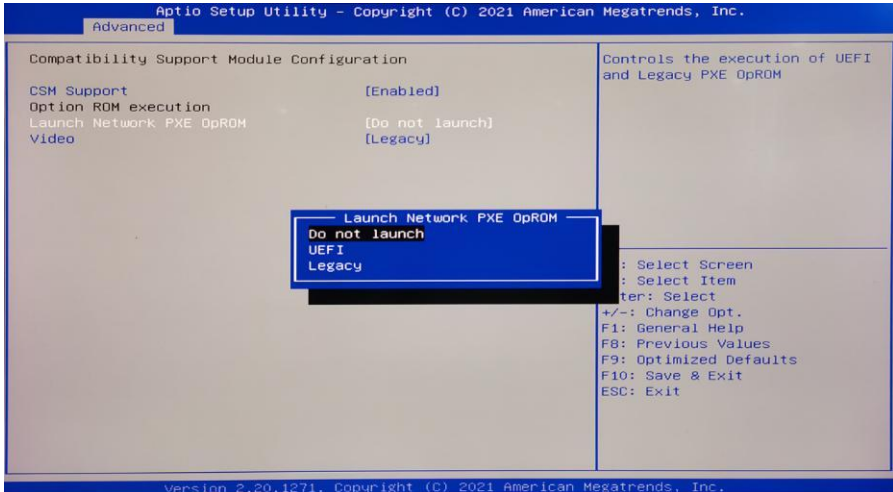
Network: set diskless boot, [Do not launch], [UEFI], [Legacy]

3.2.10 USB Configuration
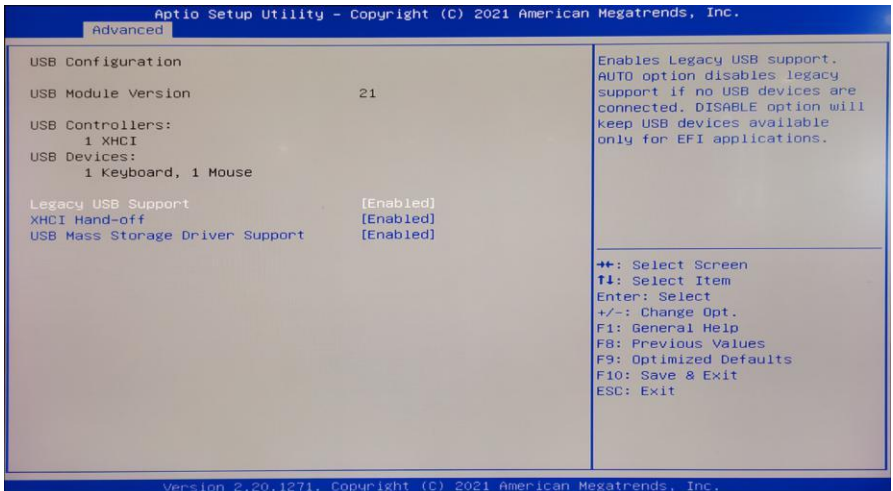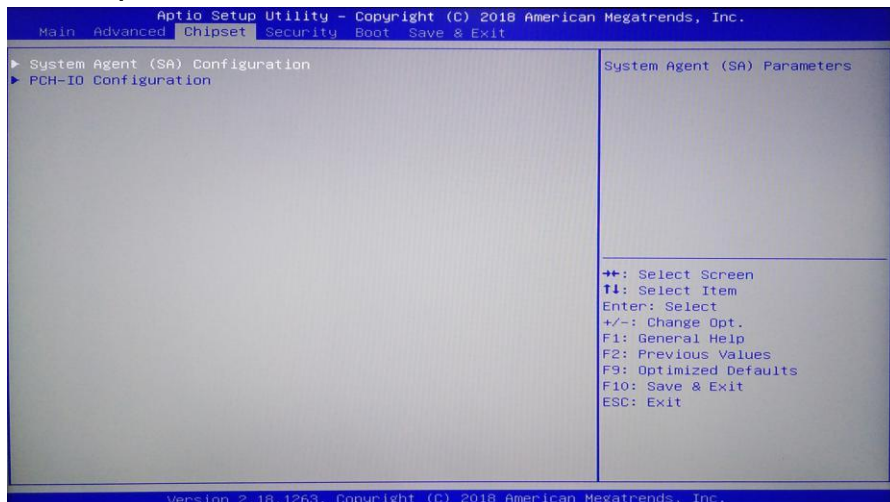

Legacy USB Support ：

This is used for old version USB setting, if need to support USB devices in DOS,

such as U disk, USB keyboard, etc. set this option as [Enabled] or [Auto]. Otherwise,

choose [Disabled].

XHCI Hand-off ： When operating system does not support XHCI, whether allow BIOS to take over XHCI control
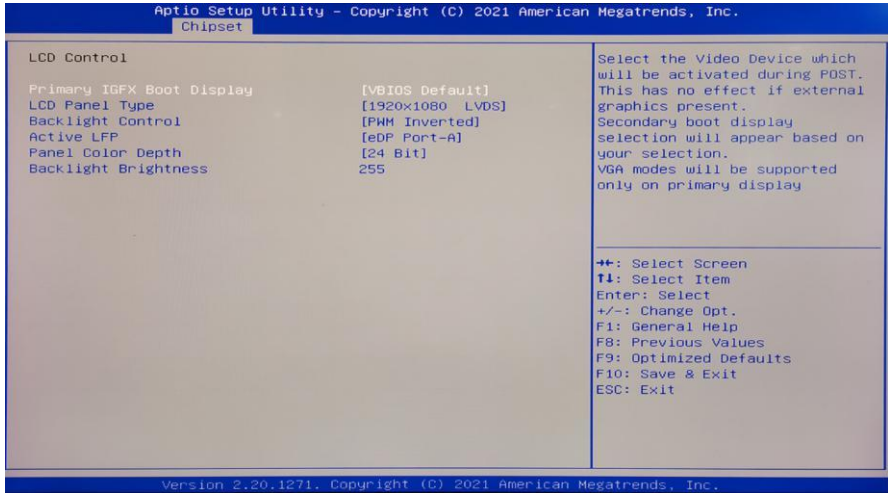
USB Mass Storage Driver Support ：

3.2.11 Chipset

PCH-IO Configuration：South Bridge configuration, Include audio card, Ethernet, etc

System Agent (SA) Configuration ： North bridge configuration option, include video memory, LVDS, etc.
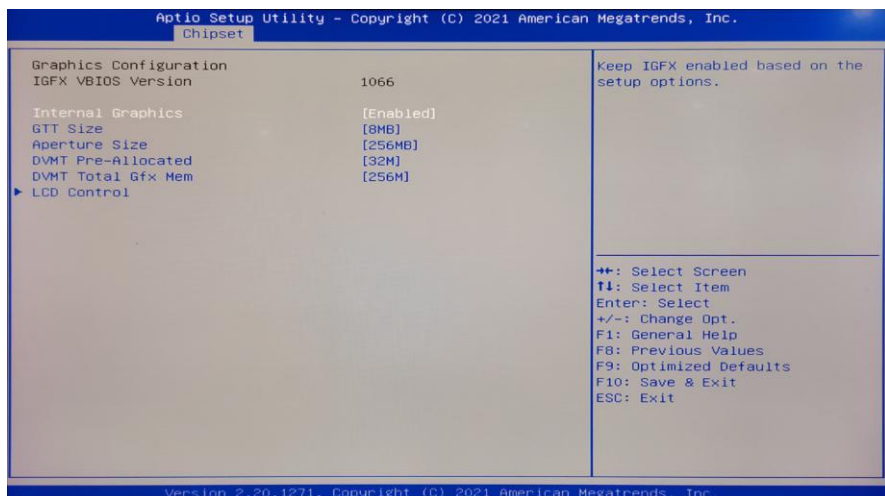
Graphics Configuration:

Aperture Size: Set video memory capacity

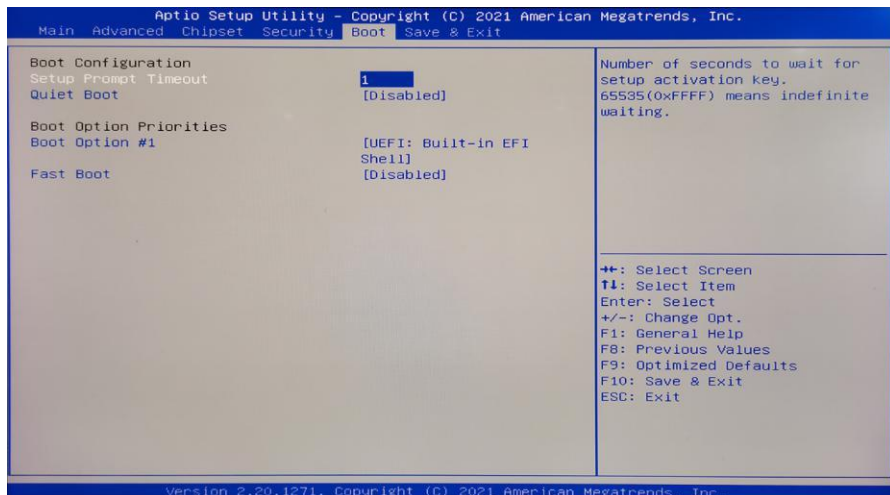Primary IGFX Boot Display：Vbios selection, Graphics card boot option setting

LCD Panel Type：

Backlight Control：

Panel Color Depth：(18bit, 24bit)

Backlight Brightness：

3.2.12 Boot

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

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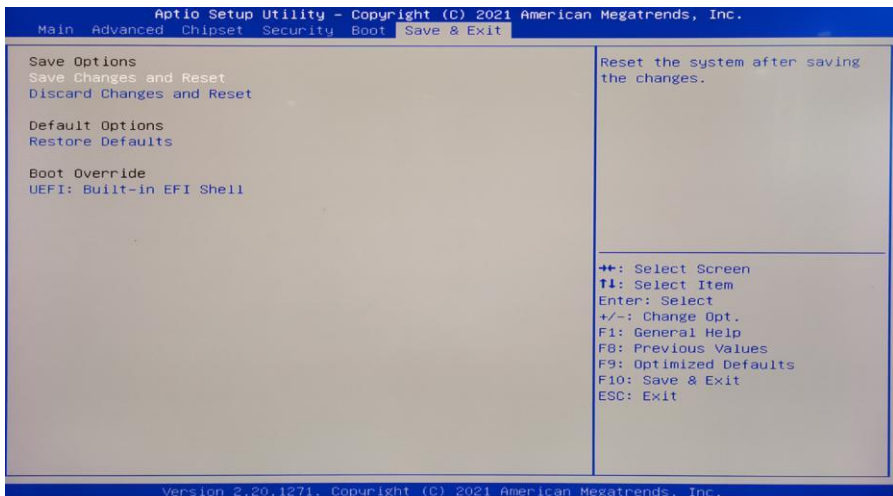
3.2.13 Security
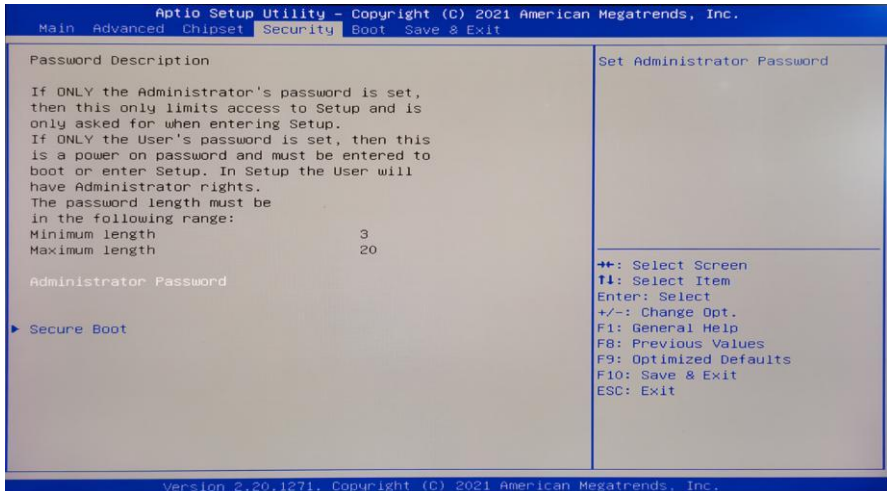
Password character length: the minimum length is 3, the maximum length is 20.

Administrator Password ：used for setting the supervisor 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 device, 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 general-purpose memory type for a normal computer. Typically, a transistor and a capacitor are used to store a bit. With the development of technology, the types and specifications of DRAM have become increasingly diverse in computer applications. For example, the commonly used ones now include SDRAM, DDR SDRAM, and RDRAM.

LAN

Local area network interface. A computer network composed of interconnected computers in a small area, typically in an enterprise or a building. A LAN is generally composed of servers, workstations, and communication links. A terminal can access data and devices anywhere through wires, and many users can share expensive devices and resources.

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 cannot manually operate the system can work on their own specifications. To achieve this feature, BIOS support PnP and a PnP expansion card are required.

POST

During the power on of OS, 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	1. Make sure the power cable is connected properly 2. Please confirm all the power supply can meet the requirements of the motherboard 3. Try to re-plug the memory 4. Try to change the memory 5. Try to clear the CMOS according to motherboard manual 6. Please confirm whether there is an external card, remove the card and check again
VGA no display after power on	1 To check whether the monitor is open 2 Check whether the power cable is properly connected to the monitor and system unit 3 Check whether the display cable is properly connected to the system unit and the display 4 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	1. Please check whether the CMOS battery voltage is lower than 2.8V, if so, please replace a new battery, set again and save 2. 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	1. Please check whether the hard drive power cord, data cable is connected normally 2. Please check whether the hard disk has physical damage 3. Please check whether the operating system is normally installed on the hard disk
Blue screen or crash when enter into OS	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
Slow speed to enter into OS	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
System restart automatically	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
Can not detect USB device	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