# 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 Mainboard 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 save the device in the environment that the 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 and the battery is which the manufacturer recommend.

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# Chapter 1 Product Introduction

## 1.1 Product Introduction

ITX-M56 adopts fanless cooling design, no noise, can avoid the problem of dust accumulation on fan. This industrial motherboard is very suitable for harsh industrial environment. Onboard Intel® Celeron J1900/4Cores/2.0GHz Processor, it has strong graphics processing ability and application computing power. Support single channel DDR3L 1333/1066Mhz memory, up to 8GB. Integrated Intel® HD Graphics, support VGA, HDMI, LVDS display output. Provide 1 or 2* Realtek Gigabit Ethernet. Provide 2*Mini-PCIE slot, support SSD, WIFI, 3G module. Provide 1* 2.5 inch notebook hard disk slot, the hard disk can be installed directly no need data line connection, the transfer rate up to 3Gbps. Support 6* serial port, COM3 support RS485/RS422.

ITX-M56 has both stable & reliable performance of industrial grade products and the advantages of intelligent digital multimedia player. It can be widely used in advertising, education, media player, LCD large screen, traffic control, information systems, financial equipment, automotive, military and other industries

## 1.2 Product Specification

- Processor

  Integrated Intel® Celeron J1900/2.0GHz Quad core processor, TDP 10W

  Compatible with Intel® Bay Trail -I/M/D series CPU, flexible choice for customers

- Chipset

  Adopt Intel® Bay trail SOC chipset

- Memory

  1*SODIMM memory slot, 1600/1333MHz DDR3L/1.35V, max up to 8GB

- Display function

  Integrated Intel® HD Graphics

  Support DirectX* 11.1, OpenGL 3.2, support synchronous/asynchronous display

  1*VGA, the highest resolution 2560x1600@60HZ

- 1*HDMI, the highest resolution 1920X1080@60HZ

  1*LVDS support dual channel 24bit, optional with EDP

  1* Embedded display port, optional with LVDS

  Note: LVDS screen voltage can support 12V output, default is 3.3V. Before setting LVDS, please learn about the required rated voltage, so as not to burn the screen.

- LAN

  2* Realtek RTL8111F Gigabit LAN port (USB1 and LAN2 optional,can do 1*LAN)

  Support wake on LAN/PXE

- Audio

  Integrated ALC662 6-Channel audio controller ,support MIC/Line-out.

  Amplifier supports 2Ω/5W speakers

- Expansion Bus

  1* Mini-PCIE slot, support WIFI / 3G module

- Storage

  1* 7pin SATA2.0 hard disk slot (optional with built in 2.5 inch HDD SATA5)

  1* SATA slot support 2.5 inch laptop HDD

  1* MSATA slot support SSD, transmission rate up to 3Gbps

- Rear I/O

  1* HDMI

  1* VGA

  1* USB 2.0, 1* USB3.0

  2* RJ-45 Gigabit Ethernet ports(LAN2 and USB1 optional)

  1* Line out (green), 1* MIC (red)

  1* 12V DC JACK power input connector

- Internal I/O

1* J_HDMI port 2*8pin (the same signal with HDMI)

1* JVGA Port 1*12Pin (the same signal with DB15)

1* LVDS port 2*15pin, support dual channel 24bit

1*Embedded Display Port（Optional with LVDS）

1* LVDS backlight power supply connector 1*6pin

1* 4pin ATX power connector(can do 12V power input/output connector)

1* 2pin blue color DC power input connector (support 12V power input)

4* USB 2.0 ports 2*5Pin

1* USB 2.0 port 1*5Pin

1* PS/2 KB/MS port 1*6Pin (red color)

6* RS232 serial ports (can do 2 or 6*serial ports), COM3 support RS485/RS422

1* LPT parallel port 2*13pin

1* Front audio port 2*5pin

1* Front panel function buttons and indicator port 2*5pin

1* HDD power supply connector 1*4pin

1* Power amplifier connector 1*4pin

1* SIM socket

- GPIO function

  Support 4 way input / output GPIO function

- Cooling system

  Fanless cooling design, 1*4pin CPU intelligent fan connector, 1* 3pin system fan connector

- BIOS

  64Mb Flash ROM

- Watchdog function

  Suport hardware reset function(L256，0~255 second)

- Power feature

  Adopt DC 12V power supply

- Dimension、Environment

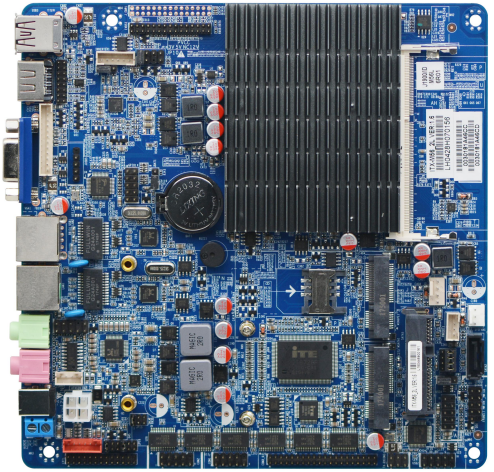
  Dimension：170mm x 170mm

  Operating Temp：-10℃～60℃

  Operating Humidity：5～90%relative humidity, no condensation

  Storage Temp：-20℃～60℃

- Product Photo



ITX-M56_2L front view



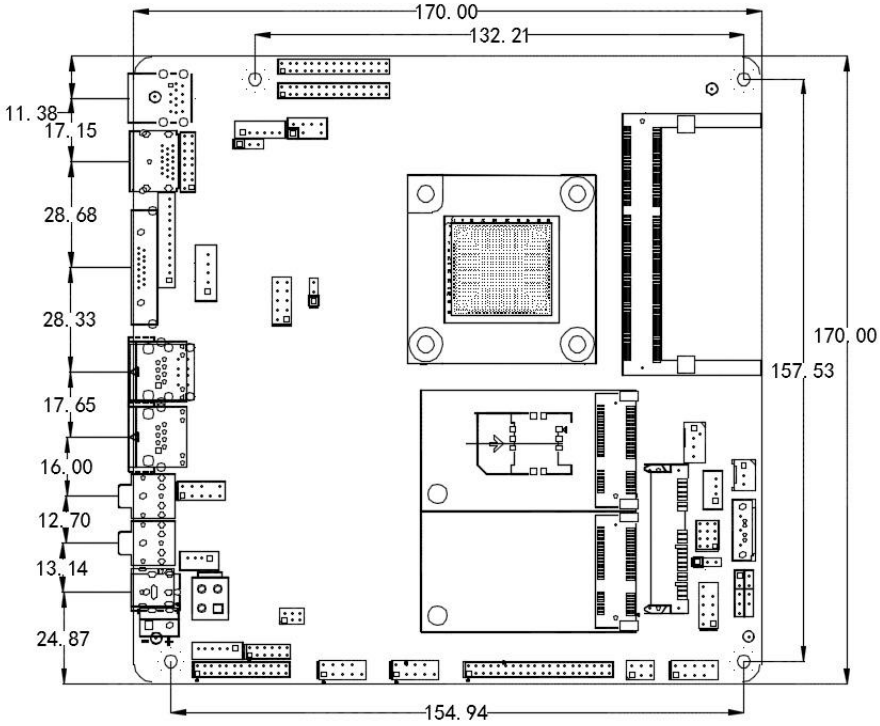
ITX-M56_2L I/O view

# Chapter 2 Hardware Installation Instructions

**2.1 Motherboard Dimension**

Following picture is the front interfaces and dimension of board ITX-M56 Please pay attention to the installation process. Improper installation of some components may lead to system failure.

Note: When installing the board, please wear anti-static gloves in case of any electrostatic damage caused during the installation.



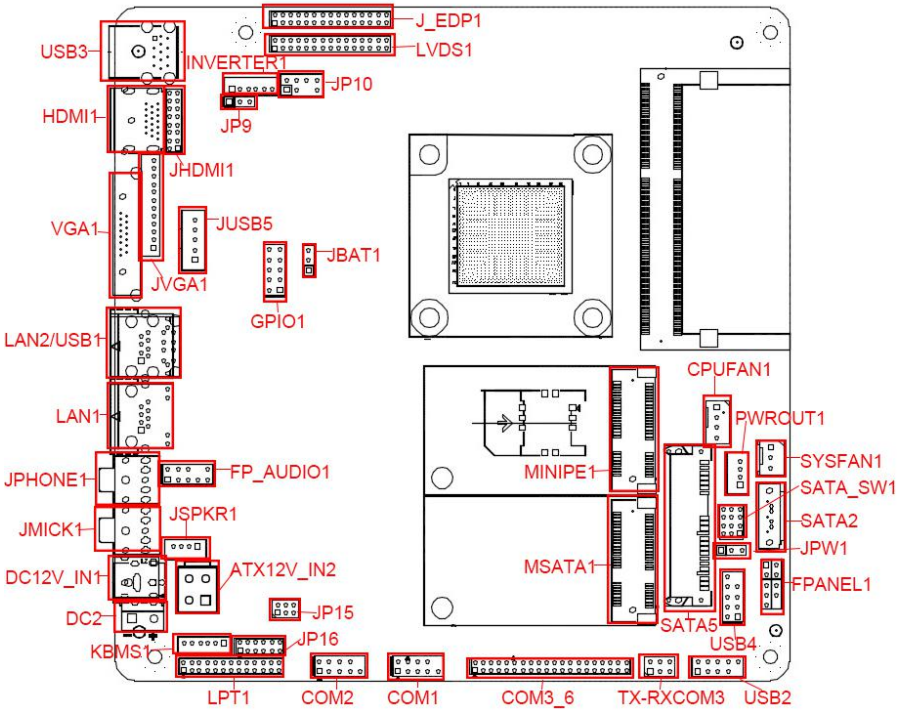

Tips:

1.Please select suitable screw and adopt right installation method, otherwise,

motherboard could be damaged.

2. How to identify the 1st pin of jumpers and connectors : Observe letter beside the socket : It would be marked with "1" or bold lines or triangular symbols; Observe the solder pad on the back: the square pad denotes the 1st pin.When connecting line or device,pay attention to distinguish between the 1st foot ,otherwise it will damage the motherboard.

**2.2 Interfaces Location**




ITX-M56Interfaces Location

**Tips:**

LVDS screen working voltage support 3.3V、5V、12V voltage output, default is 3.3V, Before using LVDS,please understand the requirements of the rated voltage and then set.

**Tips：**

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. Adjust all jumpers onboard ITX-M56 based on user manual.
2. Install other expansion cards.
3. Connect all signal lines,cables,panel control circuit and power adapter.
4. Start up computer and finish BIOS settings.

⚠ **Key components of this motherboard are Integrated circuit and these components could be easily damaged by electrostatic influence. So,before install motherboard,please always keep following precautions in mind.**

1. Hold the board by edges, please don't touch any components or pin of plug & socket.
2. Wear anti-static gloves / wrist strap while touching the integrated circuit components, such as CPU, RAM etc.
3. Put those unused or uninstalled components in static shielding bags or trays.
4. Please first check the power switch is off before connecting the power plug.

### 2.4 Install Memory

The motherboard provides 1*SODIMM Slot.Please refer to the following steps to install your memory bank:

1. First, please align the notch of the memory bank with the alignment mark on the socket and press the memory bank slowly 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 do jumper settings before installing the

motherboard.

**Remark:** How to identify the 1st pin of all jumpers and interfaces,Please observe the word mark on the side of the plug socket, which will be a "1" or bold line or triangular symbol; And please look at the back of PCB, each with a square shape will be the PIN 1; and all the jumpers'PIN1 have a white arrow on the side.

### 2.5.1 CMOS Clear/ Hold Jumper Settings(JBAT1)

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

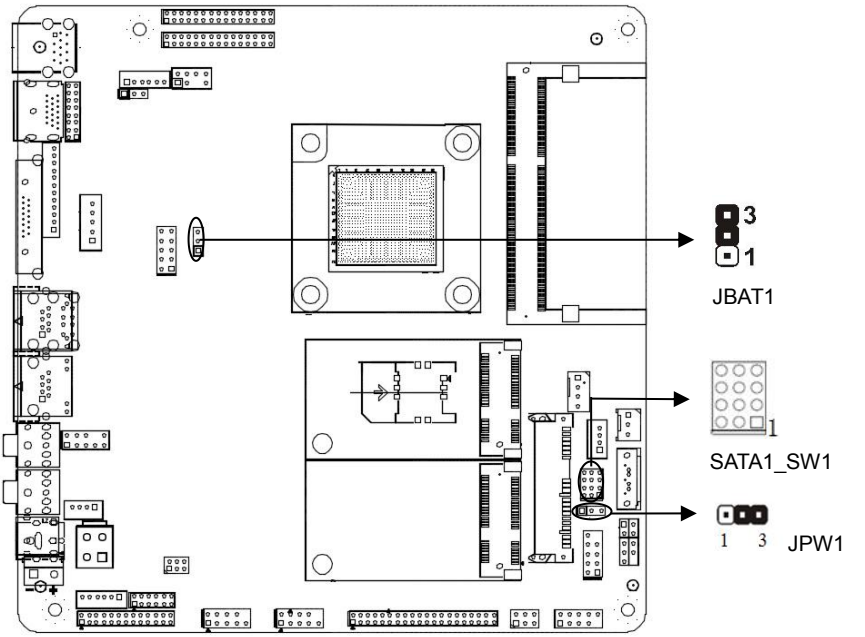
Steps: (1) Shut down the computer and disconnect power supply.

(2) Make the jumper cap "JBAT1" Pin2 and 3 shorted for 5~6 seconds,and make it back to default setting with Pin 1-2 connected ;

(3) Start up computer and press “Delete" to enter BIOS setup.

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

(5) Press “F10 “,Save and Exit.



**JBAT1 definition：**

| Settings | JBAT1 |
|---|---|
| 1-2 shorted | Normal Status, system default setting |
| 2-3 shorted | Clear the CMOS content, all the BIOS settings are returned to the factory value |

⚠ **Do not clear CMOS when the computer is power on, otherwise, it will cause damage to the motherboard !**

### 2.5.2 JPW1jumper settings

**JPW1 definition：**

| Settings | JPW1 |
|---|---|
| 1-2 shorted | Closed Auto Power On(restore on AC Power Loss) |
| 2-3 shorted | Open Auto Power On(restore on AC Power Loss) |

### 2.5.3 SATA2、SATA5 port function settings（SATA1_SW1）

**SATA1_SW1 definition：**

| Setting | SATA1_SW1 |
|---|---|
| shorted | 1-2\4-5\7-8\10-11 shorted defaulted to SATA2 hard disk port |
| shorted | 2-3\5-6\8-9\11-12 shorted defaulted toSATA5 hard disk port |

## 2.6 Interfaces Description

⚠ **Please read the following instructions carefully before you connecting the external connectors in case of any damage caused to the motherboard !**

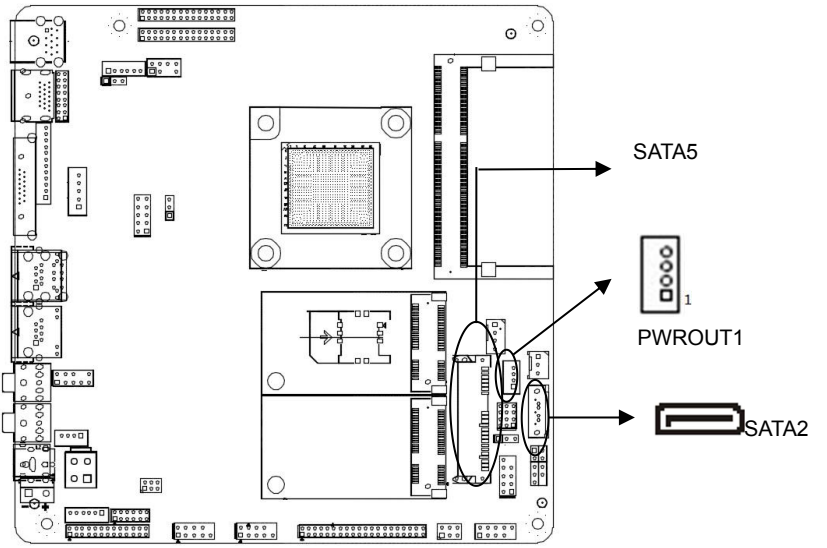
### 2.6.1 SATA interface（SATA2、SATA5、PWROUT1）

Board provide 1* 7 Pin SATA2.0 interface

Provide 1* 2.5 inch SATA HDD slot, can be install HDD directly.

Built in 1* 4Pin HDD power supply connector

Note: 2.5 inch HDD interface and 7pin SATA interface, optional with each other, can adjust by jumper cap.




**SATA2 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 hard disk power supply interface pin 1 is 12V output, pin 4 is + 5V output,please use our standard power line,In order to avoid burning the hard disk.

**SATA5 definition：**

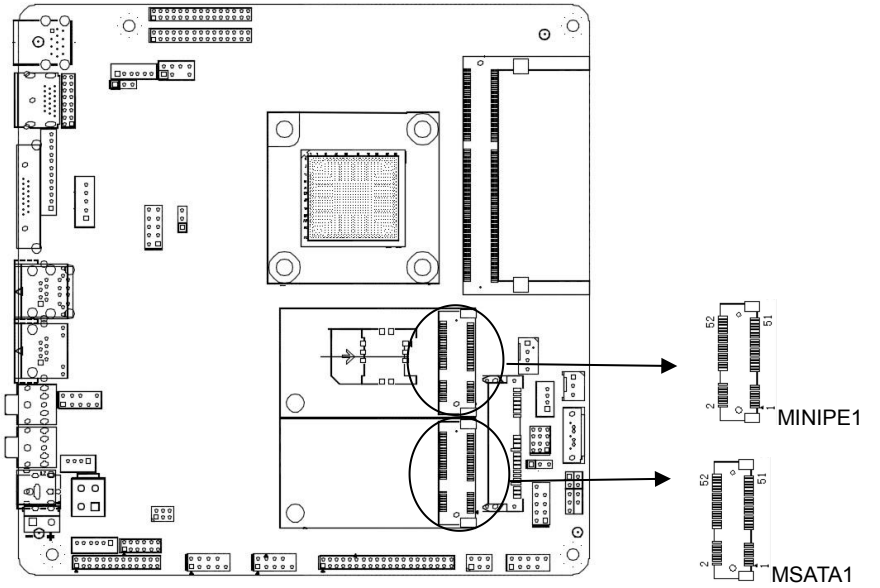
| Pin | Signal name | Pin | Signal name |
|---|---|---|---|
| 1 | GND | 2 | SATA_TXP1 |
| 3 | SATA_TXN1 | 4 | GND |
| 5 | SATA_RXN1 | 6 | SATA_RXP1 |
| 7 | GND | 8 | 3.3V |
| 9 | 3.3V | 10 | 3.3V |
| 11 | GND | 12 | GND |

| | | | |
|---|---|---|---|
| 13 | GND | 14 | 5V-HDD |
| 15 | 5V-HDD | 16 | 5V-HDD |
| 17 | GND | 18 | / |
| 19 | GND | 20 | 12V-HDD |
| 21 | 12V-HDD | 22 | 12V-HDD |

### 2.6.2 Mini-PCIE slot (MINIPE1、MSATA1)

Board built-in 1* Mini-PCIE slot, support WIFI / 3G module.

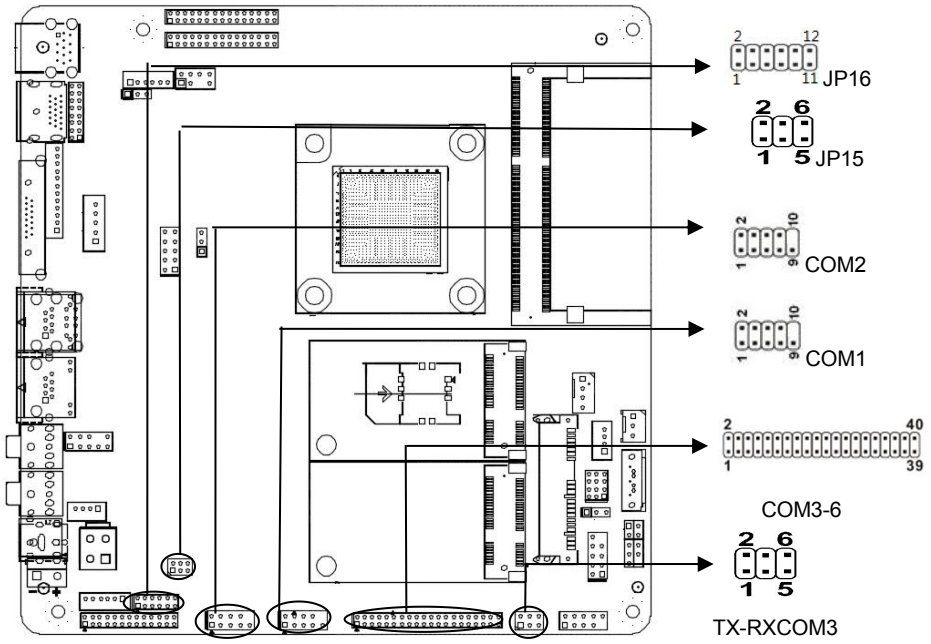
Provide 1* MSATA slot, support Intel protocol SSD, transfer rate up to 6Gbps




### 2.6.3 Serial (COM1、COM2、COM3-6、JP15、JP16、TX-RXCOM3)

Board support maximum 6* RS232 serial ports, COM1/2 are the 2*5pin ,COM3-6 are the 2*20Pin， You can open or close the serial port in the BIOS settings option, and you can choose to interrupt the IRQ and I/O addresses.COM1、COM2 support the 9th pin charged function, COM3 support RS422/RS485 transmission mode,User can select by setting jumpers,Detailed settings refer to JP15, JP16 jumper settings，

RS422、RS485 signal draw from the TX-RXCOM3.




**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 |

**JP16 settings:**

| Settings | Function (JP16) | |
|---|---|---|
| 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 | |

**JP15 settings:**

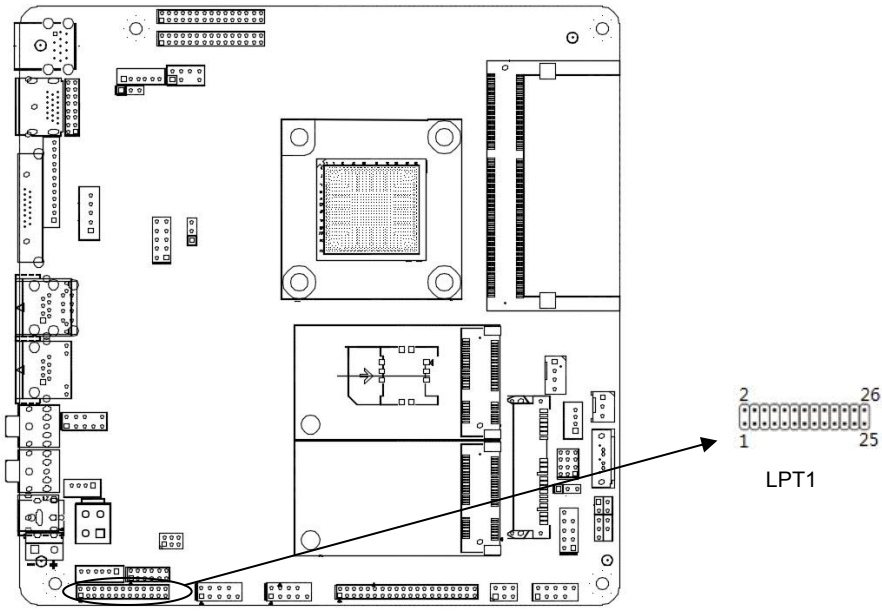
| Settings | Function (JP15) | |
|---|---|---|
| 1-2 shorted | RS232 | COM3 |
| 3-4 shorted | RS485 | |
| 5-6 shorted | RS422 | |

**TX-RXCOM3（COM3 RS485/422) definition:**

| Pin | Pin | Signal name |
|---|---|---|
| 1 | 2 | GND |
| 3 | 4 | TXD3-(B) |
| 5 | 6 | RXD3- |

### 2.6.4 Parallel（LPT1）

Board provide a 2*13Pin printing port。




**LPT1 definition:**

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

### 2.6.5 Display (VGA1、JVGA1、HDMI1、J_HDMI1、LVDS1、J_EDP1、INVERTER1、JP9、JP10)

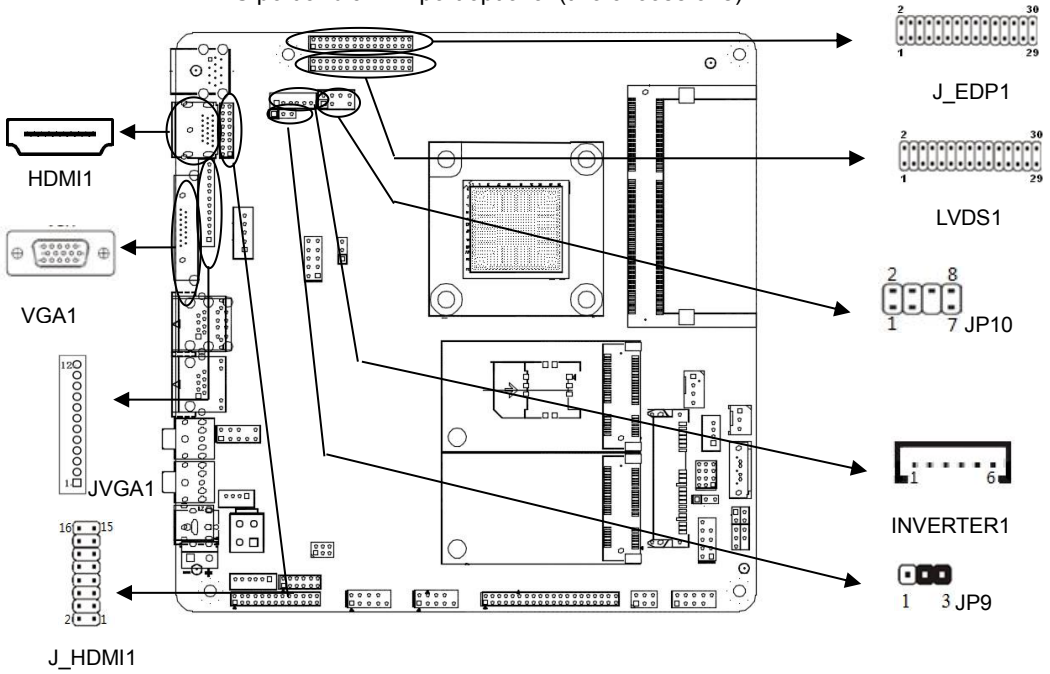
Board provide 1*standard VGA port,1*standard HDMI port

Built in 1*12pin JVGA port; 2*8pin JHDMI port

Provide 2*15pin support dual channel 24bit LVDS port; 2*15pin JEDP port

Note: VGA1 and JVGA1same signal (optional), HDMI1 and J_HDMI1same signal

LVDS port and JEDP port optional (two choose one)




**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 | +5V | 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 | | |

**J_HDMI1 definition：**

| Pin | Signal name | Pin | Signal name |
|---|---|---|---|
| 1 | TMDS Data2+ | 2 | SCL |
| 3 | TMDS Data2- | 4 | SDA |
| 5 | TMDS Data1+ | 6 | NC |
| 7 | TMDS Data1- | 8 | Hot Plug Detect |
| 9 | TMDS Data0+ | 10 | +5V Power |
| 11 | TMDS Data0- | 12 | GND |
| 13 | TMDS Clock+ | 14 | GND |
| 15 | TMDS Clock- | 16 | GND |

**J_EDP1 definition：**

| Pin | Signal name | Pin | Signal name |
|---|---|---|---|
| 1 | PVDD | 2 | PVDD |
| 3 | NC | 4 | NC |
| 5 | EDP_TX0+ | 6 | EDP_TX0- |
| 7 | GND | 8 | GND |
| 9 | EDP_TX1+ | 10 | EDP_TX1- |
| 11 | GND | 12 | GND |
| 13 | EDP_TX2+ | 14 | EDP_TX2- |
| 15 | GND | 16 | GND |
| 17 | EDP_TX3+ | 18 | EDP_TX3- |
| 19 | GND | 20 | GND |
| 21 | EDP_AUX+ | 22 | EDP_AUX- |
| 23 | GND | 24 | HPD_DET |
| 25 | BKLT_PWM<br>backlight brightness control | 26 | BKLT_EN<br>(Backlight enable) |
| 27 | GND | 28 | GND |
| 29 | INVERT_PWR<br>(backlight power) | 30 | INVERT_PWR<br>(backlight power) |

**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+ |

Different LCD screen voltage may be different, Motherboard provide 3.3V,5V,12V three kinds of screen working voltage selection and 5V/12V screen backlight power supply voltage selection,Before using LVDS, please understand the requirements of the rated voltage ,When the selected LCD voltage and the use of the LCD screen voltage consistent, LCD screen can be displayed normally.Settings as follows:

**INVERTER1(backlight power supply connector) definition:**

| Pin | Signal name |
|---|---|
| 1 | 12V/5V(JP9 setting) |
| 2 | 12V/5V(JP9 setting) |
| 3 | Backlight enable |
| 4 | Backlight brightness |
| 5 | GND |
| 6 | GND |

**JP9(screen backlight power supply) settings:**

| Settings | JP9 |
|---|---|
| 1-2 shorted | 12V |
| 2-3 shorted | 5V |

**JP10(screen working voltage) settings：**

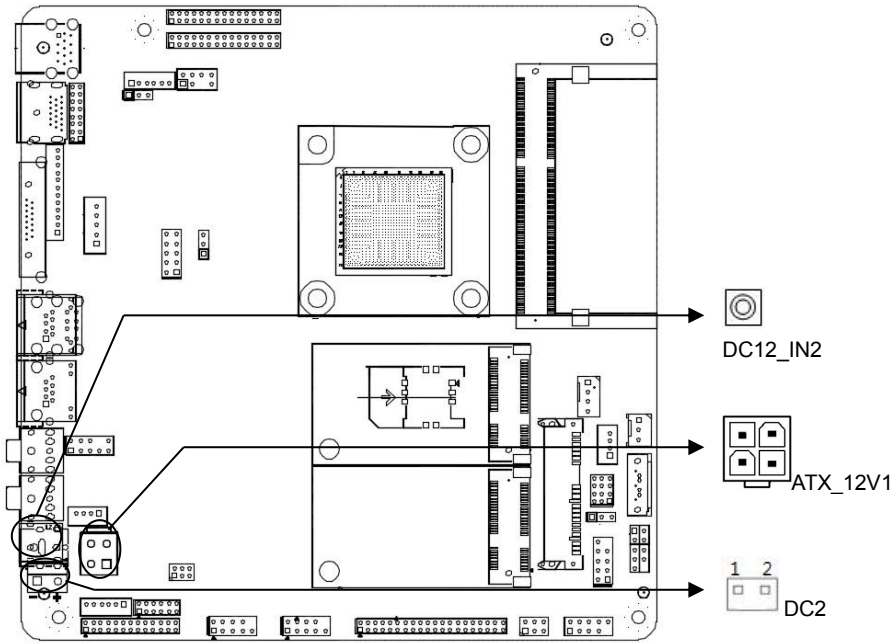
| Settings | JP10 |
|---|---|
| 1-2 shorted | 3V |
| 3-4 shorted | 5V |
| 5-6 shorted | NC |
| 7-8 shorted | 12V |

### 2.6.6 Power connector(DC12V_IN1、ATX_12V1、DC2)

Board provide 1* 4pin ATX power connector, support 12V input/output

Provide 1* DC 12V adapter power connector,support 12V input/output

Provide 1* 2Pin blue power element ,support 12V input/output




**ATX_12V1 definition：**

| Pin | Signal name |
|---|---|
| 1 | GND |
| 2 | GND |
| 3 | 12V |
| 4 | 12V |

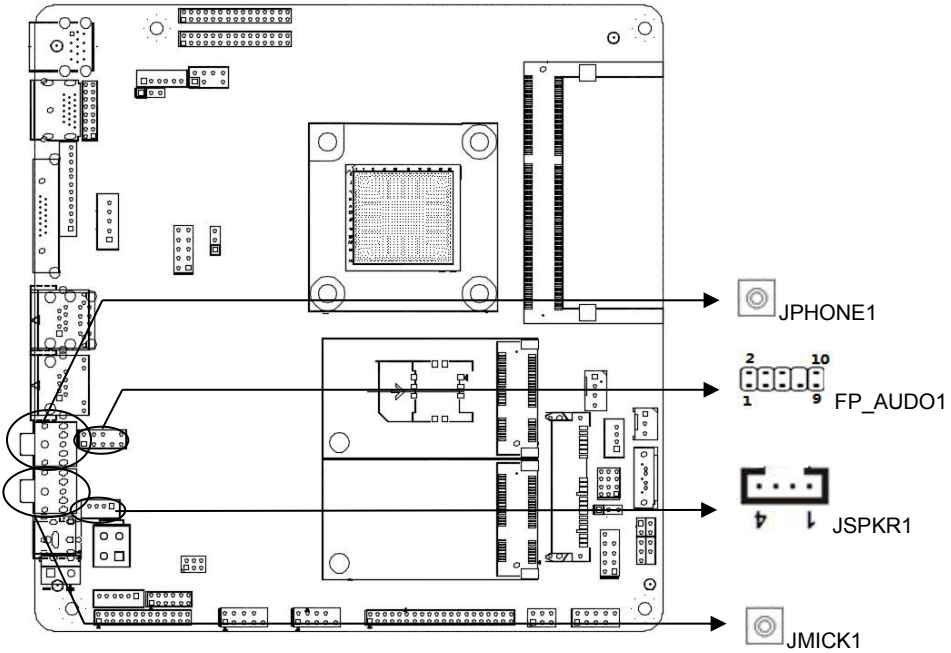
**DC2 Definition：**

| Pin | Signal name |
|---|---|
| 1 | GND |
| 2 | 12V |

### 2.6.7 Audio port (JPHONE1、JMICK1、FP_AUDIO1、JSPKR1)

Board provide 1* JPHONE1 and 1*JMICK1 are the standard audio jack.

Built in a front panel audio port 2*5Pin, an amplifier port 1*4pin




**FP_AUDIO1（Front audio）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 |

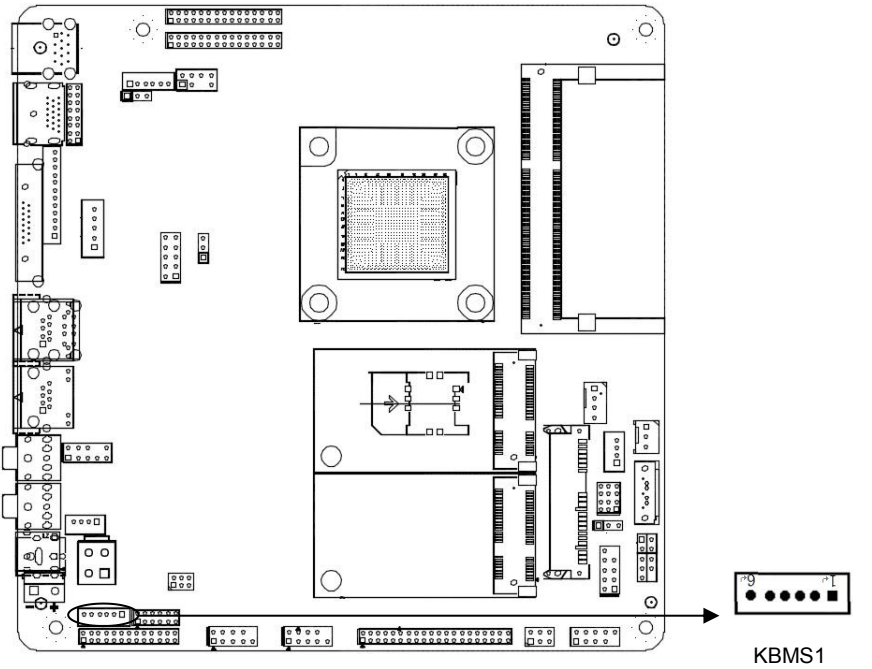
**JSPKR1（Amplifier）definition:**

| Pin | Signal name |
|---|---|
| 1 | SPKR+ |
| 2 | SPKR- |
| 3 | SPKL- |
| 4 | SPKL+ |

### 2.6.8 KM / MS port (KBMS1)

Board provide 1* 1x6pin KB/MS port

Note:When using, need to use switching lines to switch into the PS/2 KB/MS port of the definition.




**KBMS1 port definition:**

| Pin | Signal name |
|---|---|
| 1 | VCC(standby) |
| 2 | KB_DT |
| 3 | KB_CK |
| 4 | MS_DT |
| 5 | MS_CK |
| 6 | GND |

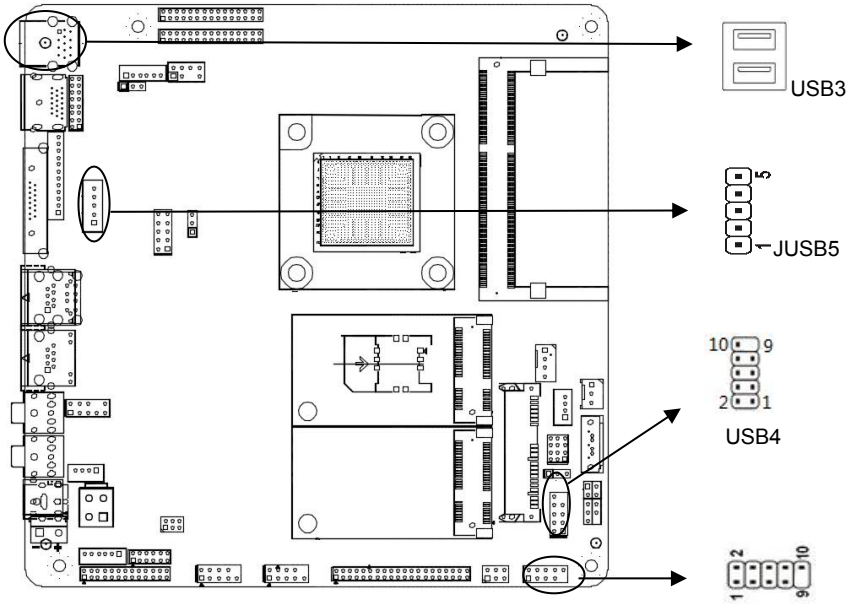
### 2.6.9 USB port (USB2、USB3、USB4、JUSB5)

Provide 1*standard USB2.0 port, 1*standard USB3.0 port

Built in 2* USB2.0 port (2*5pin, pitch: 2.54mm)

Built in 1* USB2.0 port（1*5pin, pitch: 2.54mm）

Note: USB1 and LAN2 optional




**USB2、USB4 definition：**

| Pin | Signal name | Pin | Signal name |
|---|---|---|---|
| 1 | VCC | 2 | VCC |
| 3 | D0- | 4 | D1- |
| 5 | D0+ | 6 | D1+ |
| 7 | GND | 8 | GND |
| 9 | | 10 | GND |

**JUSB5 definition:**

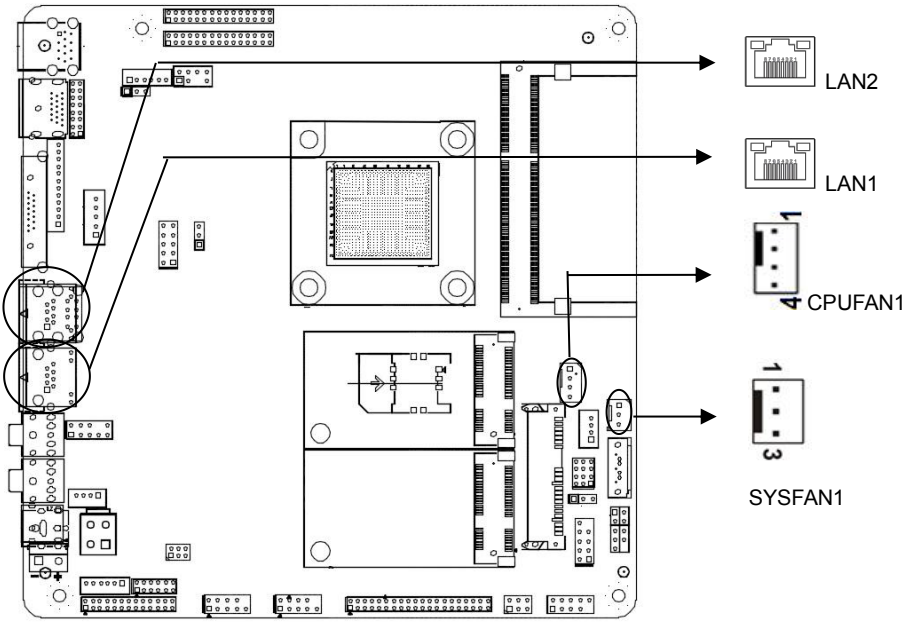
| Pin | Signal name |
|---|---|
| 1 | +5V |
| 2 | D2- |
| 3 | D2+ |
| 4 | GND |
| 5 | NC |

### 2.6.10 LAN ports and fan connector(LAN1、LAN2、CPUFAN1、SYSFAN1)

Provide 2* standard Gigabit Ethernet ports.

Provide 1* 4pin CPU intelligent fan connector,1* 3pin system fan connector.

Note: LAN2 and USB1 is optional




**SYSFAN1 definition：**

| Pin | Signal name |
|---|---|
| 1 | GND |
| 2 | +12V |
| 3 | DET |

**CPUFAN1 definition：**

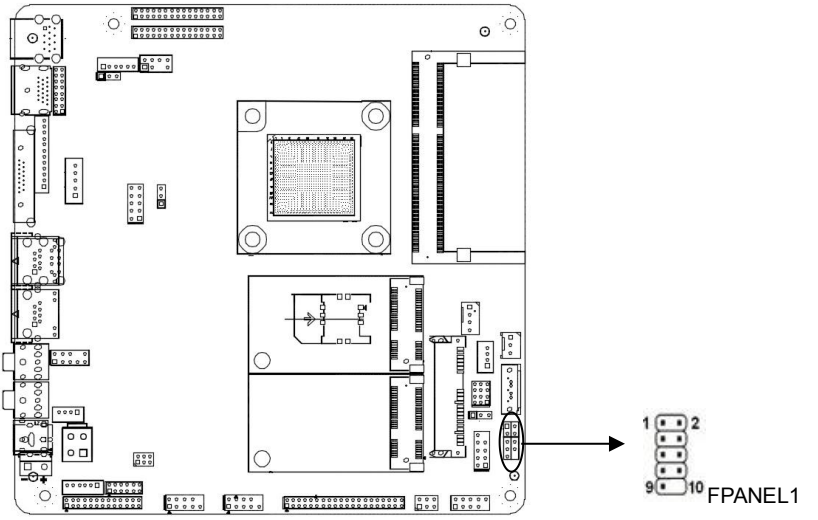
| Pin | Signal name |
|---|---|
| 1 | GND |
| 2 | +12V |
| 3 | DET |
| 4 | PWM |

Note：DET：Fan speed pulse output；PWM：Fan speed PWM control

### 2.6.11 Front panel port (FPANEL1)

Board provide 1* 2×5Pin front panel port

The front panel pin is used to connect the function button and indicator lights on the front panel of chassis




**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) Hard Disk Indicator (The 1st ,3rd HDD LED 1st is LED Positive electrode ). When hard disk is in the operation of read and write, the indicator light will flashes, means the hard drive is running.

(2) Power Indicator (The 2rd,and 4th Pin POWERLED 2rd pin is positive pole of LED, When the system connected to the power supply,Power indicator on；When the system powered down,Power indicator off.

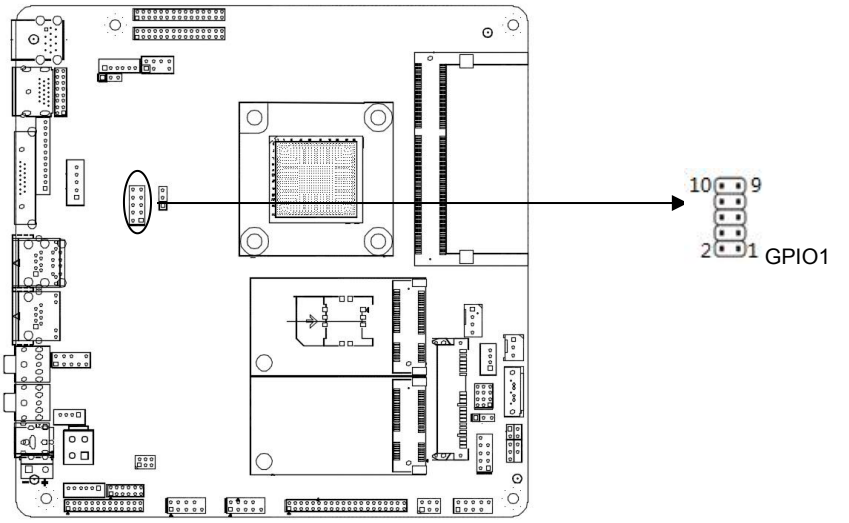
(3) Reset Button the 5,7th Pin RESET BUTTON）When there is some problems with the System that made it cant continue to work,Reset and it can make the system work again.

(4) Power switch control（the 6th,8th POWER BUTTON）The two pin connected to the bounce switch on the front panel of the chassis ,and then it can be used to connect or cut off the power.

### 2.6.12 Programmable input / output port（GPIO1）

Please write normal 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 make GPIO move,The following is called a driver.

GPIO1 Combined with 5 group（10pin）（refer to motherboard）,the 1,2,3,4,5,6,7,8 pin leading Simple GPIO,9th pin is VDD,10th is VCC,and 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 | Remarks |
|---|---|---|---|
| 1 | Input | High | |
| 2 | Output | Low | Set up by BIOS |
| 3 | Input | High | |
| 4 | Output | Low | Set up by BIOS |
| 5 | Input | High | |
| 6 | Output | Low | Set up by BIOS |
| 7 | Input | High | |
| 8 | Output | Low | Set up by BIOS |
| 9 | GND | | |
| 10 | +5V | | |

# Chapter Three BIOS Setting

### 3.1. BIOS description

BIOS（Basic Input an Output System）Through the CMOS chip on the motherboard, a record of the hardware equipment of the system parameter setting.BIOS contains the BIOS Setup program, for the user in accordance with the needs of their own set of system parameters and the motherboard normal work or perform a specific function.

Through BIOS setup program to modify the settings (except the date and time) are stored in the system of flash memory, CMOS memory and data required power is supplied from a battery on the motherboard, so when the power off the system, the data is not lost, when the next time to re open the power supply. The system can read the data set. Due to misoperation can not enter the setup interface, such as the need to restore the factory settings, please short circuit JBAT1 2,3 feet to clear CMOS.

Note! BIOS settings directly affect the performance of the computer, set the wrong 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 products, the interface will be slightly different, the following picture for your reference, it may be with you currently use the BIOS setup program is not exactly the same.

### 3.2 BIOS Basic function settings

#### 3.2.1 Enter the BIOS interface

Follow the steps below to enter the BIOS interface

1. Power on, the display screen will appear POST interface.

2. When the screen appears ”Press<DEL>or<ESC> to enter setup”， please enter<DEL>or <ESC>，you can enter the BIOS setup program。

3. Press< ↑ >< ↓ >< ← >< → >move to the options which you want to modify，Press<Enter>,you can enter the option of the child.

4. Use the arrow keys and the <Enter> key to modify the value of the selected items, press the Enter key to select the BIOS option and modify it.

5. Use the <Esc> key to return to the last picture

6. <Page Up/+> Add numeric value or change

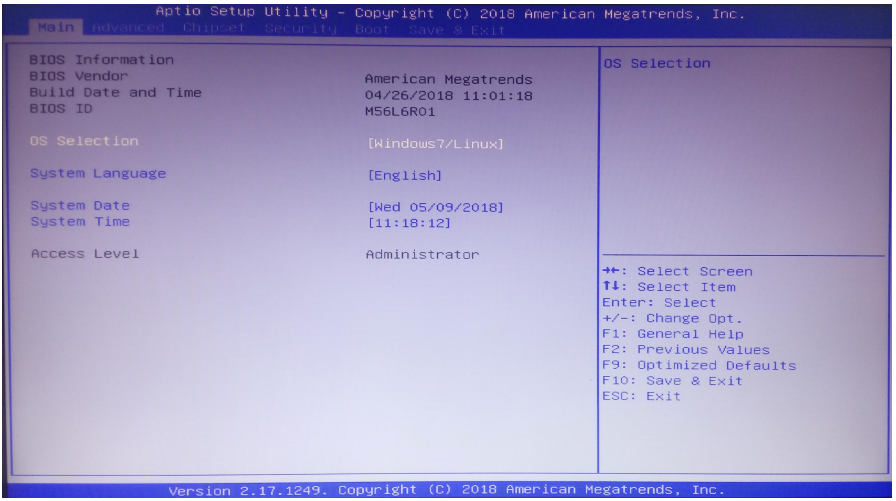
<Page Down/-> Reduce numeric value or change

<F1> Set sub menu help

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

<F10> Save BIOS settings

### 3.2.2 Main Menu（BIOS information and time/date）




BIOS Vendor ： American Megatrends

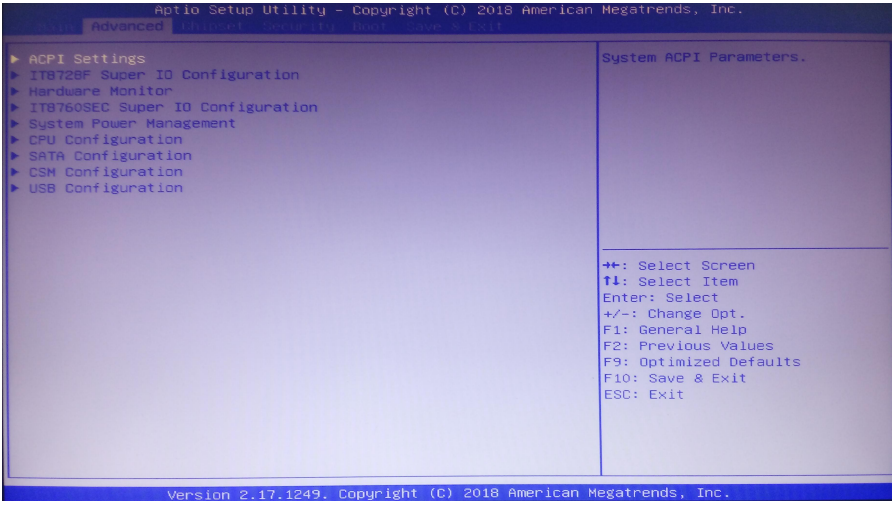
SSystem Date ：

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 settings




ACPI Settings ：Advanced configuration and power management interface settings

ITE8728 Super IO Configuration：Super IO configuration information,contains the COM port interrupt number and address settings.

Hardware monitor：System monitoring, hardware monitoring, hardware monitor

System Power Management: power supply management system, can be configured as hardware power on starting up or software power on starting up.

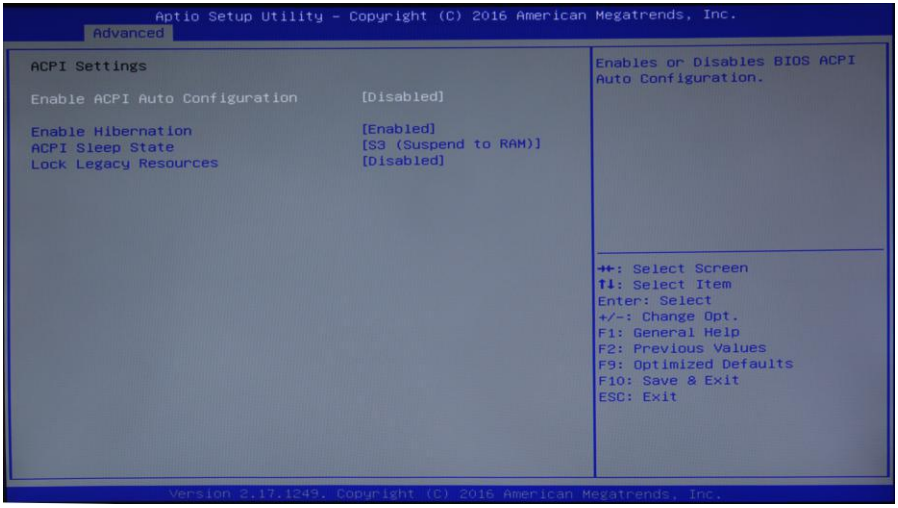
CPU Configuration： CPU parameter information and commonly used settings options

SATA Configuration： Hard disk mode settings and hard disk information.

USB Configuration： USB information and control options.

CSM Configuration: CSM configuration

### 3.2.4 ACPI Settings



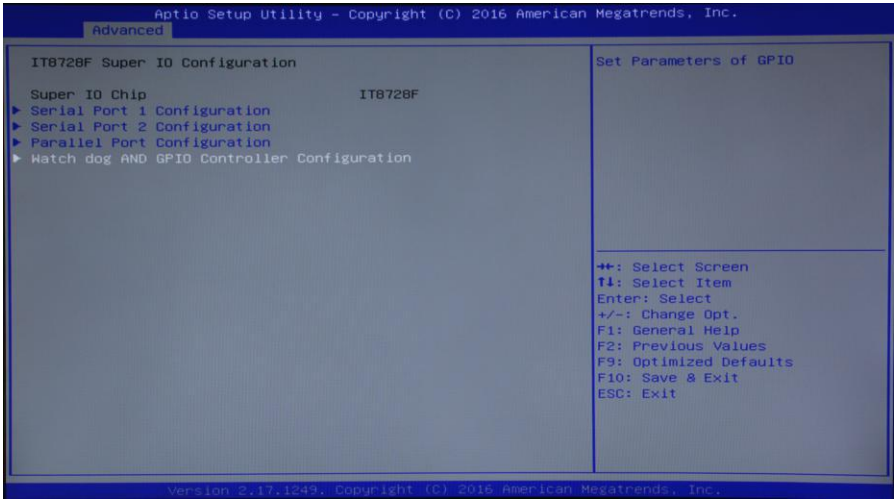

Enable ACPI Auto Configuration： This item is automatically configured for the ACPI,Allow (Enabled) or close (Disabled) BIOS ACPI automatic configuration ,default is close(disabled)

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）

### 3.2.5 Super IO Configuration

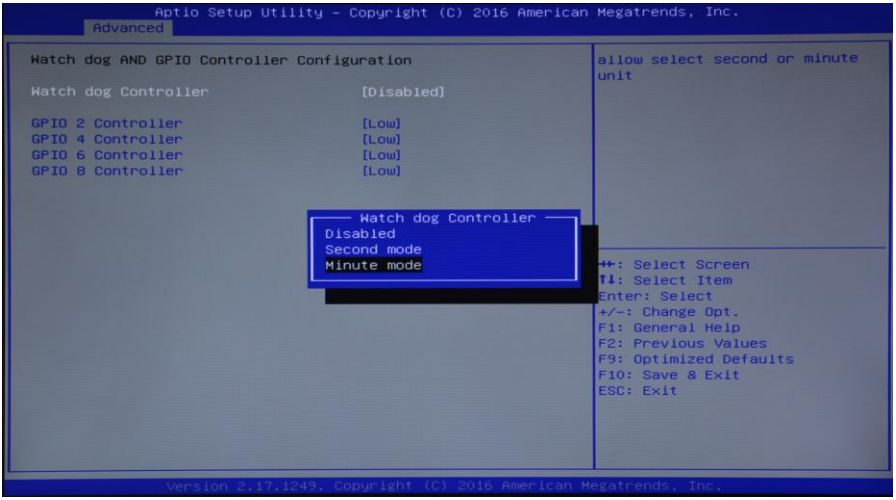



Serial Port 1 Configuration： This is the serial port 1 settings option, IO Super configuration information, including the COM port interrupt number and address settings.

Serial Port 2 Configuration： This is the serial port 2 settings option, IO Super configuration information, including the COM port interrupt number and address settings.

Parallel Port Configuration：This is the parallel port settings option

Watch dog and GPIO Controller Configuration:




Watch dog Controller:Watch dog settings， [Disabled] or [Second mode] the watchdog is set to the second mode ,[Minute Mode],the watchdog is set to the minute mode.

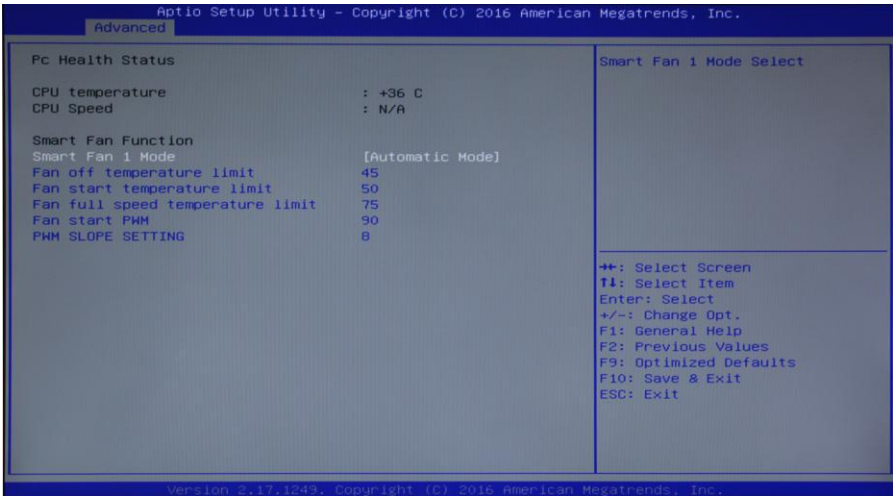
GPIO 2 Controller： GPIO 2 output mode（low or high）

GPIO 4 Controller： GPIO 4 output mode（low or high）

GPIO 6 Controller： GPIO 6 output mode（low or high）

GPIO 8 Controller： GPIO 8 output mode（low or high）

### 3.2.6 PC Health Status




PC Health Status ：

the current system temperature, CPU temperature, fan speed, and other relevant voltage value. The above parameters have a certain range, the system can not exceed the scope of the operation.

Smart Fan 1 Mode:This option is to open the CPU automatic fan control function, used to automatically adjust the CPU fan speed according to the real-time detection of the CPU temperature, so as to achieve the purpose of saving energy.

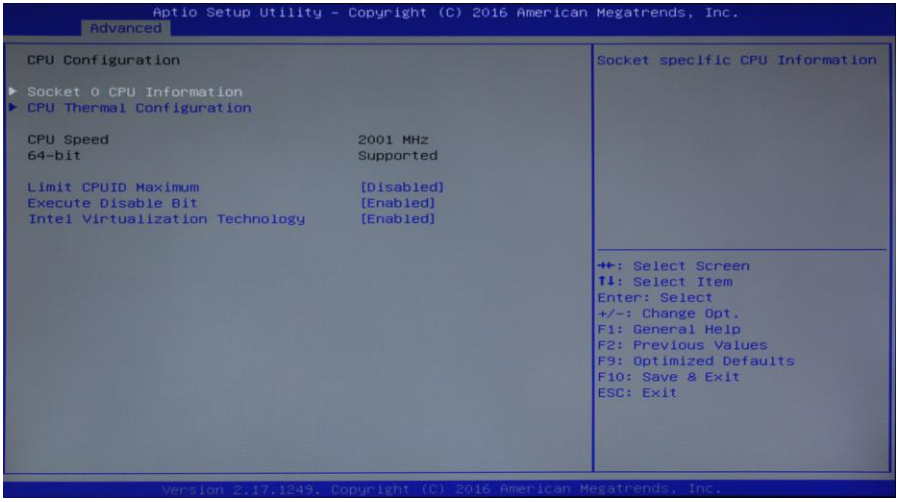
Fan off temperature limit：Fan off minimum temperature setting.

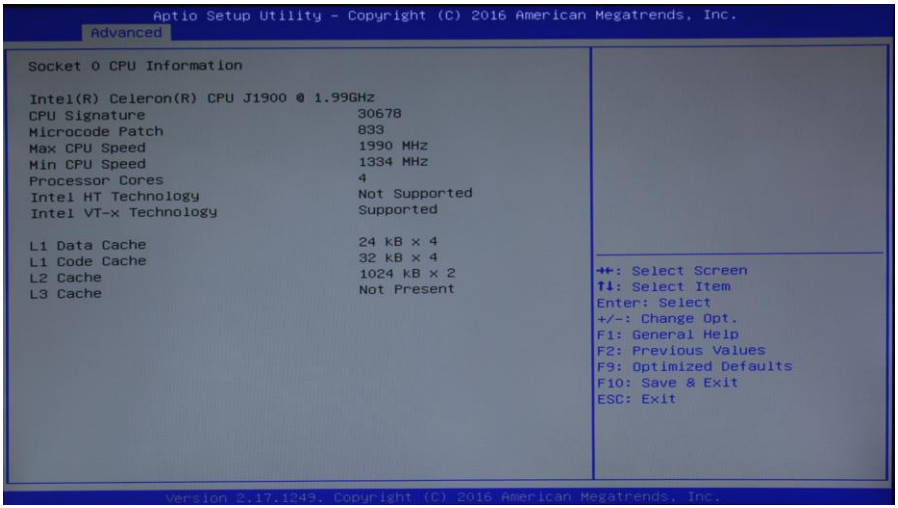
Fan start temperature limit ：Fan on minimum temperature setting。

Fan start PWM：The settings of the Fan start PWM。

Pwm slope setting：

### 3.2.7 CPU Configuration




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

Limit CPUID Maximum: Limit execute CPUID order return value.

Execute Disable Bit: Hardware anti-virus technology

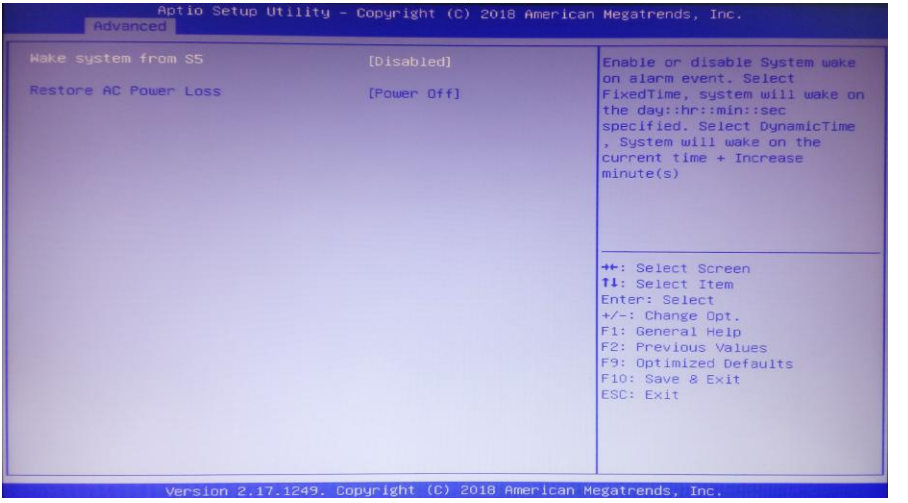
Intel Virtualization Technology ：

Intel Virtualization Technology Is Intel's CPU in the system of virtual technology. It makes it possible to be in 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.

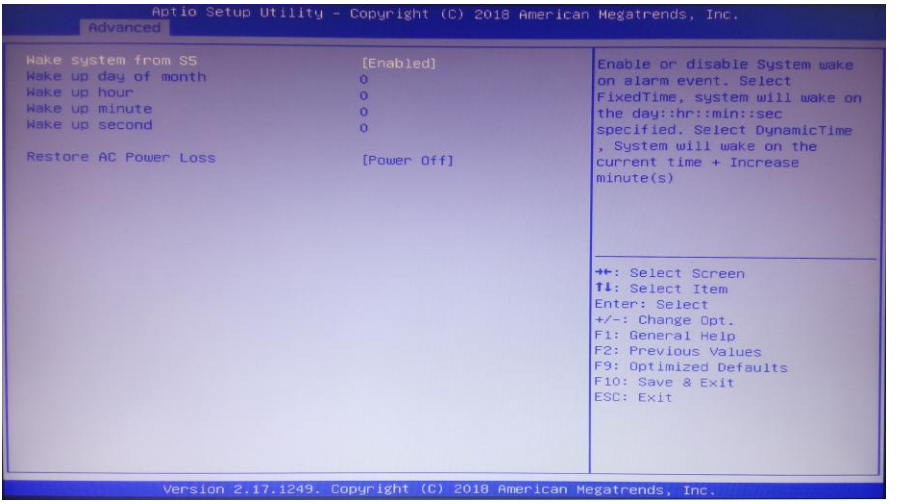
EIST

This is an enhanced Intel energy saving technology

### 3.2.8 System Power Management




Wake syatem from S5： the options can be set to close, static time to wake up,



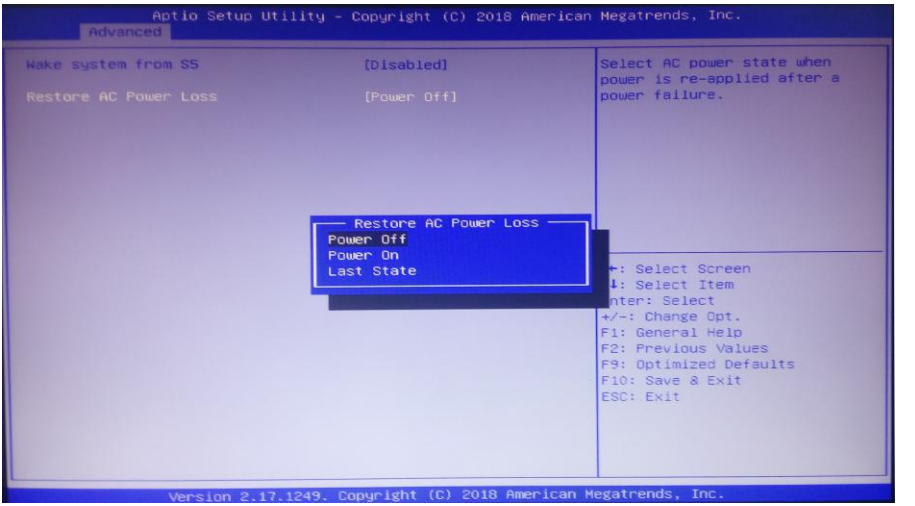

Wake system from S5 [Enabled]:Static sate wake up

Wake up day of month：wake up time unit date, when set to 0 indicating daily

Wake up hour： wake up time unit hour

Wake up minute：wake up time unit minute

Wake up second ：wake up time unit second

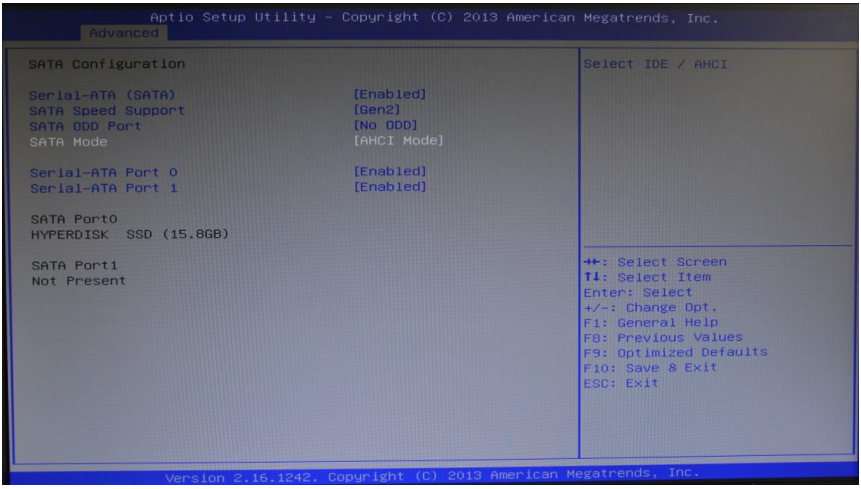



Restore on AC Power loss：

This option is used to set up the Power on (Restore on AC Power loss), choose

Power off means need to press the power button to boot when power on,choose Power on means it's direct boot when power on, choose Last State means it\s accorded the value of the last set to decide whether to power on

### 3.2.9 SATA Configuration




Serial-ATA (SATA) ： enabled or disabled。

SATA Speed Suport ： Serial interface support speed.

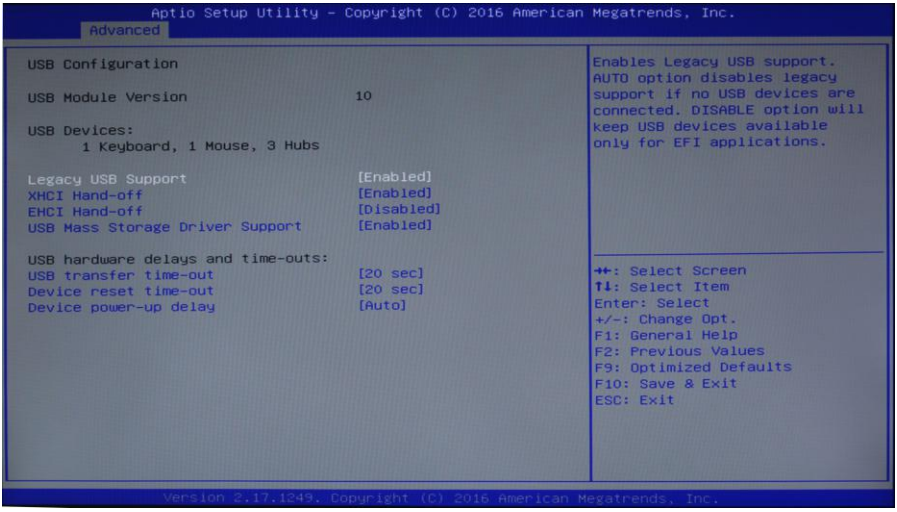
SATA ODD Port ： Configure serial remote transmission ports.

SATA Mode： AHCI or IDE.

Serial-ATA Port 0: enabled or disabled。

Serial-ATA Port 1: enabled or disabled。

### 3.2.10 USB Configuration




Legacy USB Support ： The old version of the USB settings, if you need to support USB devices in DOS, such as U disk, USB keyboard, etc., will be set to [Enabled] or [Auto]. on the contrary, the choice of [Disabled].

XHCI Hand-off ： When the operating system does not support XHCI, whether to allow the XHCI to take over BIOS control

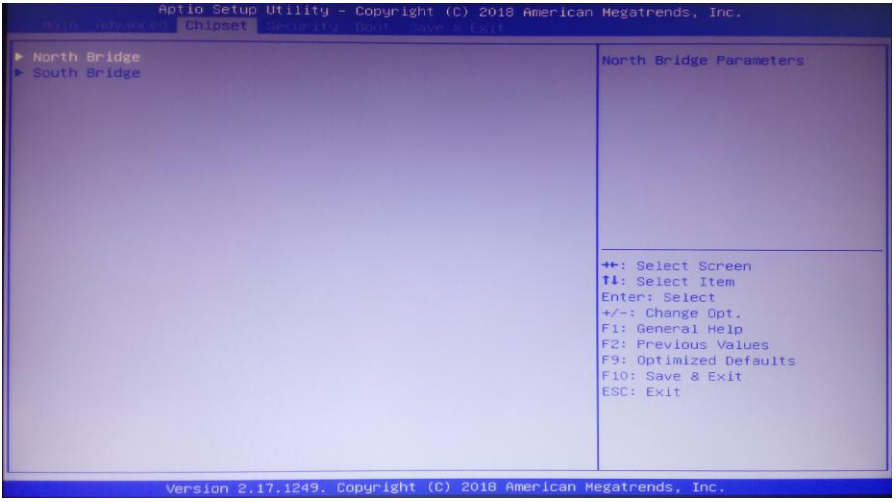
USB Mass Storage Driver Support ： USB large capacity storage device support switch.

USB Transfer time-out ： USB transmission timeout: set control, bulk, interrupt transfer timeout. Default is 20 seconds.

Device reset time-out ： Device reset timeout: set the bulk USB disk boot command timeout. Default is 20 seconds.

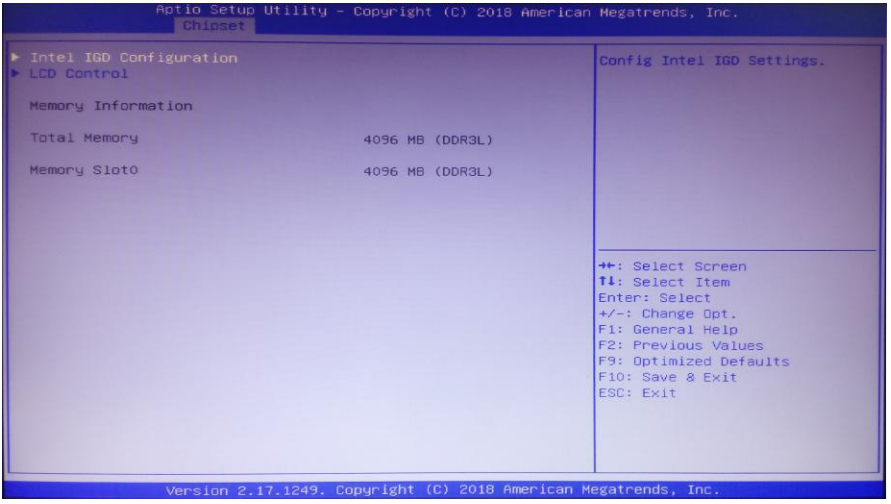
Device Power-up Delay ： Equipment power delay: set the USB device to the main controller to report the maximum delay time.

### 3.2.11 Chipset Menu



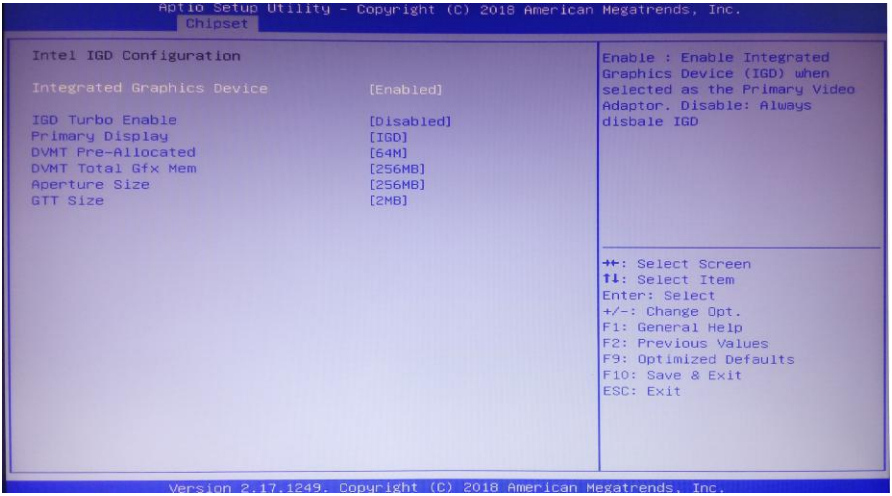

North Bridge configuration options: Including the memory,graphics,LVDS and other options

South Bridge configuration options, Including the sound card,network card and other options.




Intel IGD Configuration:

LCD Control：




Integrated Graphics Device:

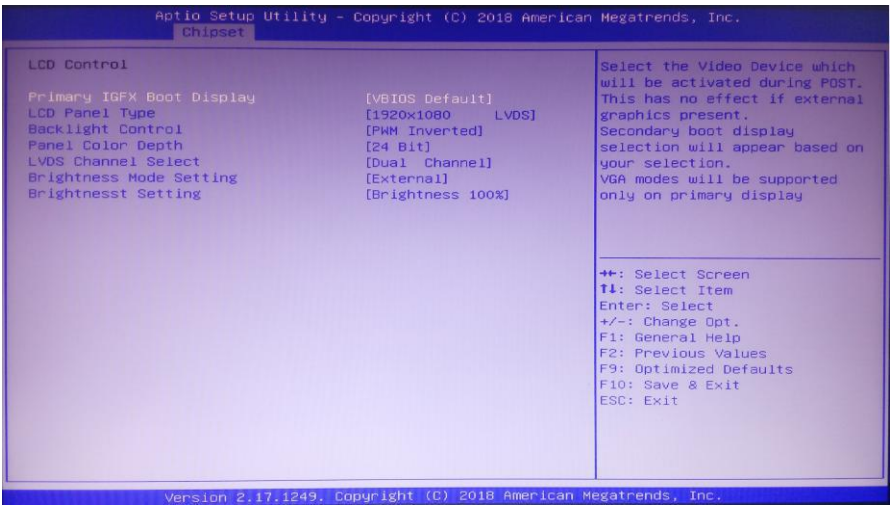
Primary Display ：

DVMT Pre-Allocated：

DVMT Total Gfx Mem：

Aperture Size：

GTT Size:




Primary IGFx Boot Display:

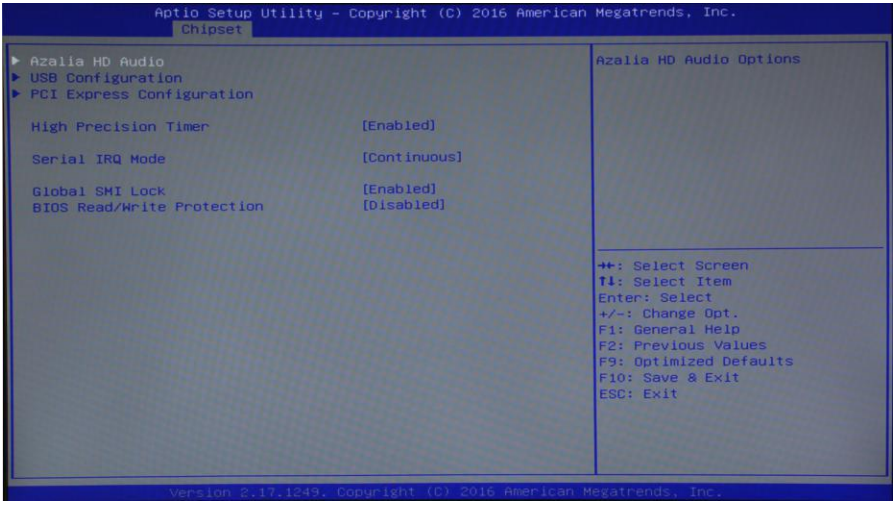
LCD Panel Type:

Backlight Control:

Panel Color Depth:

LVDS Channel Select:

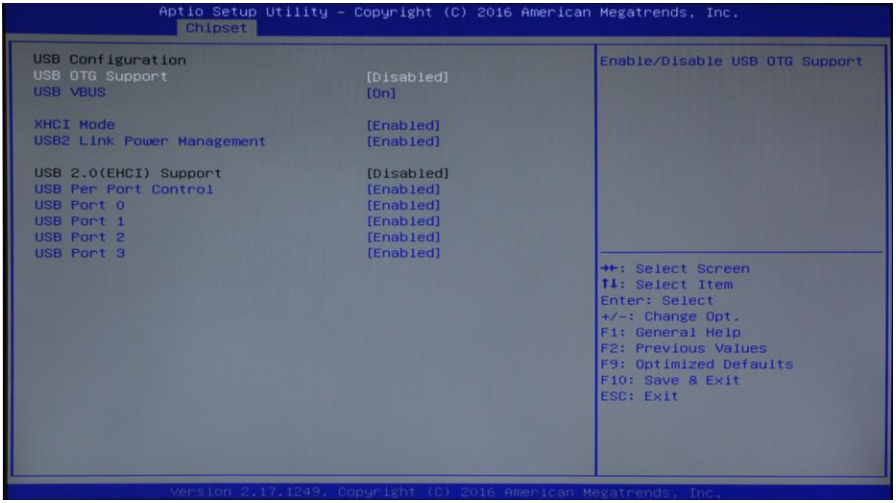
Brightness Mode Settings:




Azalia HD Audio:

USB configuration ：

PCI Express Configuration ：



XHCI Mode：

USB XHCI Mode Enabled or not

USB OTG Support：

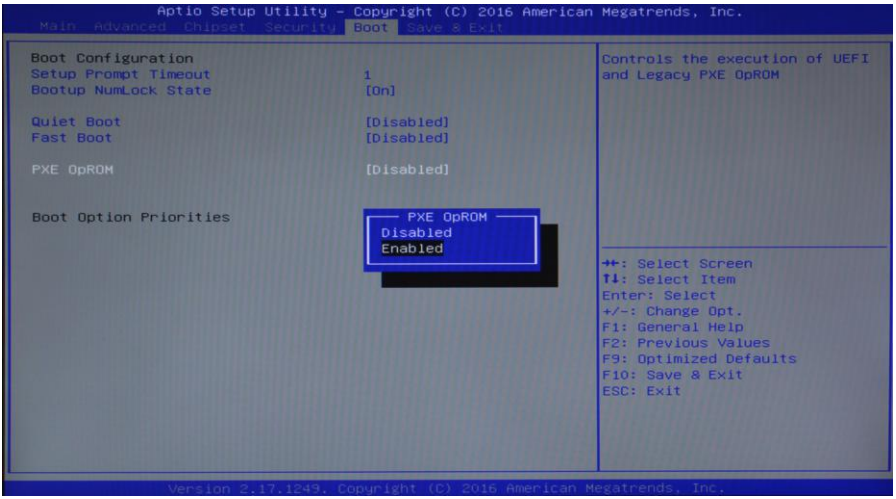
USB OTG device support function，options include Disabled(defaulted)，Enabled

USB VBUS: open USB bus

USB Per-Port Control ：

Set USB port forbidden function

### 3.2.12 Boot




Setup Prompt Timeout：Set the prompt timeout, press the Setup shortcut key to wait time. If you have not press the Setup shortcut key in the setup time it will continue to start.

Bootup Numlock State ：This feature allows the system to power to the DOS system after the activation of the keypad of the digital lock function. The default value is On, that is, when the system is in a digital lock open. Set to Off, the small keyboard at the start of the cursor control state.

Quiet Boot：Disabled or ,enable

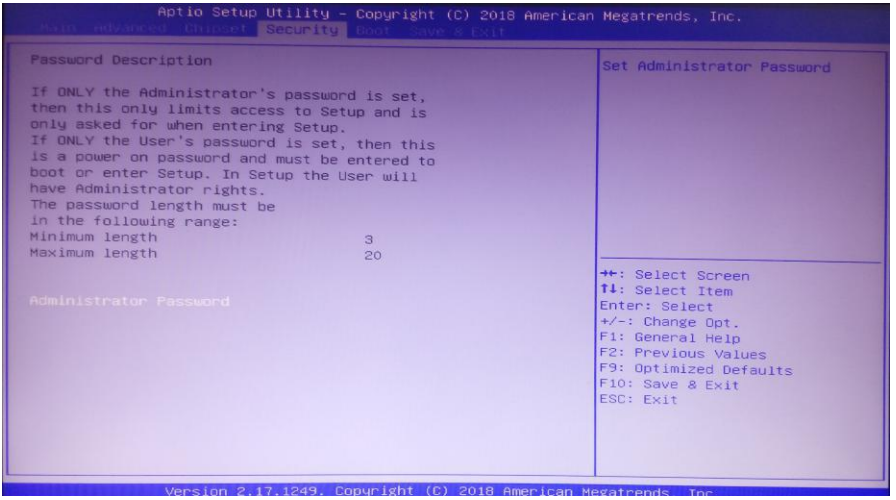
Fast Boot ：Disabled or ,enable

PXE OpROM ： Pre boot execution environment（Disabled or enable ）。

Boot Option Priorities：System will be in accordance with the set of good order to

detect equipment, until it find a device that can be boot, and then from the device to boot. The startup options in the #1 is the most preferred starting equipment.

### 3.2.13 Security

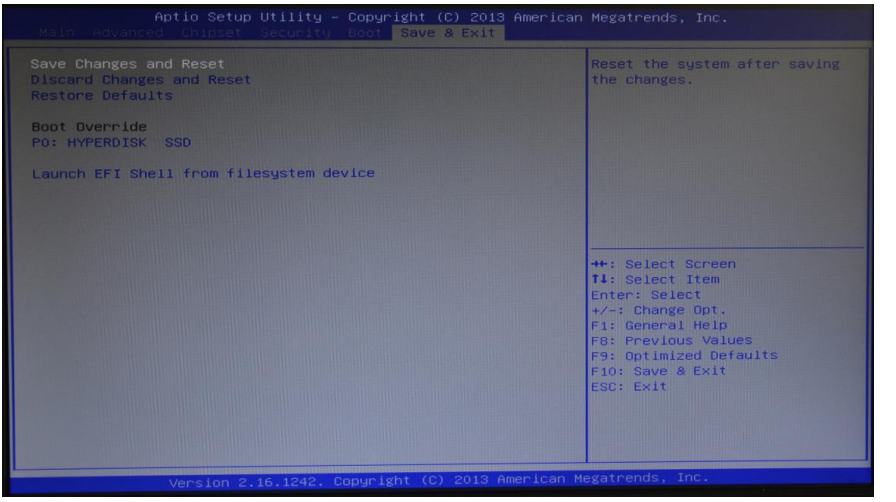



Password character length hint: the minimum length is 3, the maximum length is 20

Administrator Password ：

The option is used to set the super user password

### 3.2.14 Save&Exit




Save Changes and Exit ： 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 you 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 trouble analysis and solution**

| Common faults | Checkpoint |
|---|---|
| After the power on is not boot | 1.Make sure the power cable is connected properly<br>2. Please confirm whether the power supply to meet the requirements of the motherboard<br>3. Try to re plug the memory<br>4. Try to change the memory<br>5. Try to clear the CMOS<br>6. Please confirm whether there is an external card, remove the card is normal or not |
| VGA not display | 1 To see whether the display is open<br>2 Check that the power cord is properly connected to the monitor and system unit<br>3 Check whether the display cable is properly connected to the |

| | |
|---|---|
| | system unit and the display<br>4 To see whether the display brightness control is set to the dark state, can improve brightness through the brightness control.<br>5 Display in the "power" mode, press any key on the keyboard can be |
| BIOS Setup can not be saved | 1. Please confirm whether the CMOS battery voltage is lower than 2.8V, if less than 2.8V, please replace the new battery, re set to save<br>2. BIOS settings are not correct, according to the boot screen prompt button (DEL), adjust the time and date in the Setup BIOS |
| Could not find the boot device | 1. Please confirm the hard drive power cord, the data line is connected to normal<br>2.Please confirm whether the hard disk has physical damage<br>3.Please confirm whether the operating system is normally installed on the hard disk |
| Into the blue screen or crash in the process | 1. Please confirm whether the memory card and the card is loose<br>2. Try to remove the newly installed hardware, uninstall the driver or software<br>3. Try to replace the memory |
| Enter the operating system slowly | 1. Try to use third party software to check whether the hard disk has bad sectors<br>2. Please confirm whether the system is too small to partition the remaining space<br>3. Please confirm whether the CPU cooling fan is normally rotating |
| System automatic restart | 1. Please confirm whether the CPU cooling fan is normally rotating<br>2. Please confirm whether or not to trigger the reset button<br>3. Please use anti-virus software to confirm whether the system is infected with the virus<br>4. Please confirm whether the memory card and the card is loose<br>5. Please confirm that the power carrying capacity is sufficient, you can try to replace the power supply |
| Could not detect USB device | 1. Please make sure that the USB device is powered separately<br>2. Please make sure that the USB interface is not in contact<br>3. Please confirm whether the USB controller is open in Setup BIOS |