# MNJ190I-FH

Intel® J1900/N3826 Processor Motherboards

## User's Manual

Rev. 1001

## Copyright



## Disclaimer



## Documentation Classifications

In order to assist in the use of this product, GIGABYTE provides the following types of documentations:

- For detailed product information, carefully read the User's Manual.

For product-related information, check on our website at:
http://www.gigabyte.com

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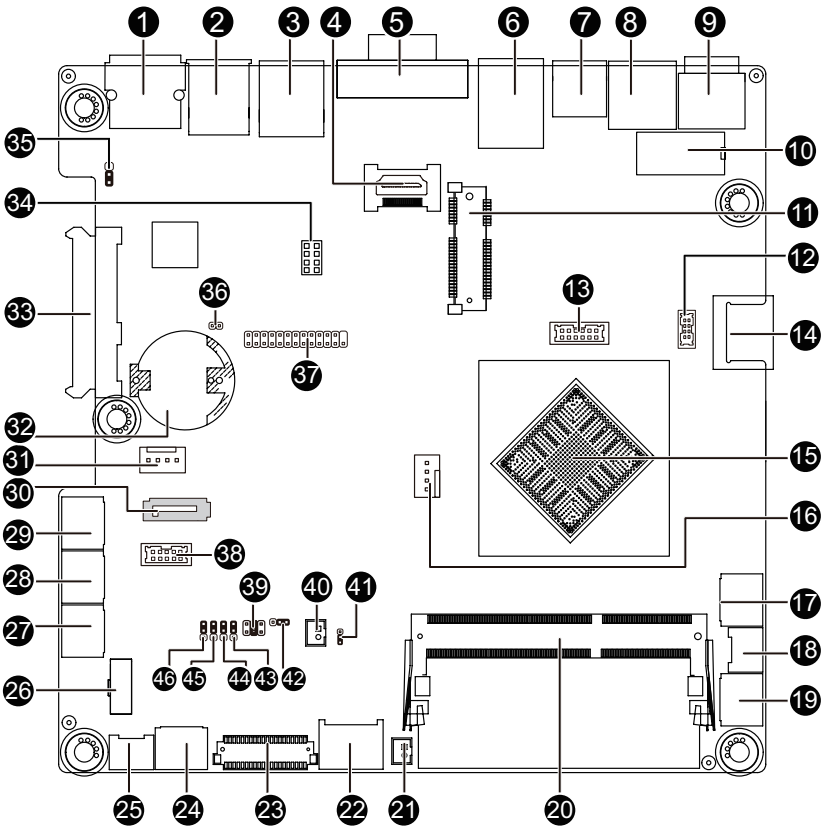


| Item | Code | Description |
|---|---|---|
| 1 | COM1 | Serial port |
| 2 | R_USB30 | USB 2.0 port (top)/USB 3.0 port (buttom) |
| 3 | R_USB1 | USB 2.0 ports |
| 4 | HDMI | HDMI connector |
| 5 | VGA | VGA port |
| 6 | LAN | LAN port |
| 7 | RJ11 | Cash drawer port |
| 8 | J5 | 24V USB power connector |
| 9 | DC_IN | DC jack |
| 10 | DC_OUT | 4 pin power connector |
| 11 | MIN_PCIE | Mini PCI Express slot |
| 12 | F_USB1 | USB 2.0 header |
| 13 | GPIO_CNT | GPIO connector |
| 14 | F_USB3 | USB 2.0 port |
| 15 | U1 | Intel Celeron J1900 processor |
| 16 | CPU_FAN | CPU fan cable connector |
| 17 | F_PANEL | Front panel header |
| 18 | SPK_OUT | Speak out header |
| 19 | F_AUDIO | Front audio header |
| 20 | SODIMM1 | DDR3 SO-DIMM slot |
| 21 | BKLTEN_CON | LVDS backlight enable signal connector |
| 22 | BKL_CN | LVDS backlight control connector |
| 23 | LVDS | LVDS connector |
| 24 | COM6 | Serial port connector #6 |
| 25 | F_USB3 | USB 2.0 header |
| 26 | F_USB2 | USB 2.0 header |
| 27 | COM3 | Serial port connector #3 |
| 28 | COM2 | Serial port connector #2 |
| 29 | COM4 | Serial port connector #4 |
| 30 | SATA1 | SATA 3Gb/s connector |
| 31 | SATAPW_1 | SATA power connector |
| 32 | BAT | Battery socket |
| 33 | SATA0 | SATA 7+15 pins cable connector |
| 34 | SMB_I2C | SMBus connector |
| 35 | CLR_CMOS | Clear CMOS jumper |
| 36 | CASE_OPEN | Chassis intrusion alert header |
| 37 | LPT | Parallel port header |
| 38 | COM5 | COM Power Select jumper |
| 39 | JCOM2 | RS232/RS422/RS485 Select jumper |
| 40 | LCDPWR_CON | LCD power connector |
| 41 | JRS6 | LVDS enable/disable jumper |
| 42 | LVDS_PWR | LVDS power select jumper |
| 43 | JRS1 | JRS1 RS232/RS422/RS484 Select Jumper for COM2 |

| | | |
|---|---|---|
| 44 | JRS2 | RS232/RS422/RS485 Select Jumper for COM2 |
| 45 | JRS3 | JRS3 RS232/RS422/RS484 Select Jumper for COM2 |
| 46 | JRS4 | JRS3 RS232/RS422/RS484 Select Jumper for COM2 |

# Chapter 1 Hardware Installation

## 1-1 Installation Precautions

The motherboard contains numerous delicate electronic circuits and components which can become damaged as a result of electrostatic discharge (ESD). Prior to installation, carefully read the user's manual and follow these procedures:

- Prior to installation, do not remove or break motherboard S/N (Serial Number) sticker or warranty sticker provided by your dealer. These stickers are required for warranty validation.
- Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.
- When connecting hardware components to the internal connectors on the motherboard, make sure they are connected tightly and securely.
- When handling the motherboard, avoid touching any metal leads or connectors.
- It is best to wear an electrostatic discharge (ESD) wrist strap when handling electronic components such as a motherboard, CPU or memory. If you do not have an ESD wrist strap, keep your hands dry and first touch a metal object to eliminate static electricity.
- Prior to installing the motherboard, please have it on top of an antistatic pad or within an electrostatic shielding container.
- Before unplugging the power supply cable from the motherboard, make sure the power supply has been turned off.
- Before turning on the power, make sure the power supply voltage has been set according to the local voltage standard.
- Before using the product, please verify that all cables and power connectors of your hardware components are connected.
- To prevent damage to the motherboard, do not allow screws to come in contact with the motherboard circuit or its components.
- Make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
- Do not place the computer system on an uneven surface.
- Do not place the computer system in a high-temperature environment.
- Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user.
- If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician.

## 1-2 Product Specifications

| | |
|---|---|
| CPU | ◆ Support for Intel® Celeron® J1900 (2.0 GHz) processor<br>◆ TDP 10W<br>◆ L1/L2 cache varies with CPU |
| Memory | ◆ 1 x SO-DIMM slots support 1.35V DDR3L 1333MHz<br>◆ Support up 8GB |
| Audio | ◆ Realtek® ALC262 Codec<br>◆ High Definition Audio<br>◆ 2 channel |
| LAN | ◆ 2 x Realtek RTL8111G GbE controllers supports 10/100/1000 Mbps |
| Expansion Slots | ◆ 1 x Mini PCI Express slot (half size) |
| Onboard Graphics | ◆ Build in Intel® Intel® processor |
| Storage Interface | ◆ 1 x SATA 3Gb/s connector<br>◆ 1 x 7 pin & 15 pin SATA connector |
| USB | ◆ Up to 8 USB 2.0 ports(4 on the back panel, 3 via the USB brackets connected to the internal USB headers, 1 header – F_USB1 co-lay with USB port – S_USB)<br>◆ 1 x USB 3.0 ports |
| Internal Connectors | ◆ 1 x 4 pin ATX 12V power connector<br>◆ 1 x SATA 3Gb/s connector<br>◆ 1 x SATA Power connector<br>◆ 1 x 7 pin & 15 pin SATA connector<br>◆ 1 x CPU fan header<br>◆ 5 x Serial port cable connectors<br>◆ 1 X COM RS232/RS422/RS485 select header<br>◆ 1 x Front panel header<br>◆ 1 x Front Panel Audio header<br>◆ 1 x USB 2.0 header<br>◆ 1 x LVDS connector<br>◆ 1 x Brightness control connector<br>◆ 1 x Parallel port connector<br>◆ 1 x GPIO connector<br>◆ 1 x Speaker out header<br>◆ 1 x SMBus I2C connector<br>◆ 1 x HDMI connector |

| | | |
|---|---|---|
| Back Panel Connectors | ◆ | 1 x USB 3.0 port<br>◆ 3 x USB 2.0 ports<br>◆ 1 x VGA port<br>◆ 1 X USB 24V power connector<br>◆ 1 x RJ11 Cash drawer port<br>◆ 1 x RJ45 LAN port<br>◆ 1 X RJ45 COM port |
| I/O Controller | ◆ | iTE IT8786E-I chip |
| Hardware Monitor | ◆ | System voltage detection<br>◆ CPU/System temperature detection<br>◆ CPU/System fan speed control<br>* Whether the CPU fan speed control function is supported will depend on the CPU/system cooler you install. |
| BIOS | ◆ | AMI BIOS |
| Form Factor | ◆ | Mini ITX Form Factor; 170CM x 170CM |

GIGABYTE reserves the right to make any changes to the product specifications and product-related information without prior notice.

## 1-3 Installing the Memory

Read the following guidelines before you begin to install the memory:

- Make sure that the motherboard supports the memory. It is recommended that memory of the same capacity, brand, speed, and chips be used.
- Always turn off the computer and unplug the power cord from the power outlet before installing the memory to prevent hardware damage.
- Memory modules have a foolproof design. A memory module can be installed in only one direction. If you are unable to insert the memory, switch the direction.

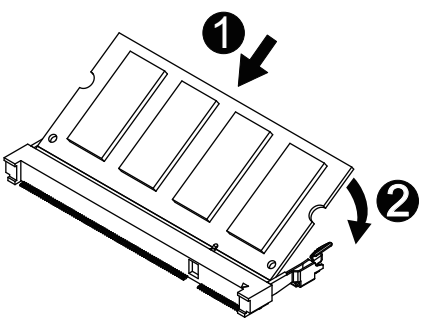
### 1-3-1 Installing a Memory

**Installation Step:**

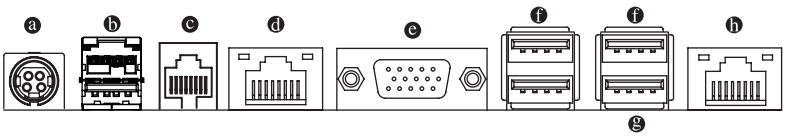
Step 1. Align the memory with the SO-DIMM module and insert the SO-DIMM memory module into the SO-DIMM slot.
Please note that memory module has a foolproof insertion design. A memory module can be installed In only one direction.

Step 2. Push the memory and seat it firmly.

Step 3. Reverse the installation steps when you wish to remove the SO-DIMM module.



## 1-4 Back Panel Connectors




**a DC Power Jack**

Connect the DC power to this port.

**b USB 24V Power Connector**

Connect the USB 24V connector to USB printer.

**c RJ-11 Port**

The RJ-11 (Cash Drawer) port is a physical connector interface most often used for telephone wire terminals.

**d RJ-45 LAN Port**

The Gigabit Ethernet LAN port provides Internet connection at up to 1 Gbps data rate. The following describes the states of the LAN port LEDs.

**e Video Port**

The video in port allows connect to video in, which can also apply to video loop thru function.

**f USB 2.0 Port**

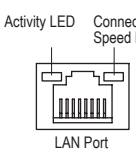
The USB port supports the USB 2.0 specification. Use this port for USB devices such as a USB keyboard/mouse, USB printer, USB flash drive and etc.

**g USB 3.0 Port**

The USB port supports the USB 3.0 specification. Use this port for USB devices such as a USB keyboard/mouse, USB printer, USB flash drive and etc.

**h Serial Port**

Connects to serial-based mouse or data processing devices.

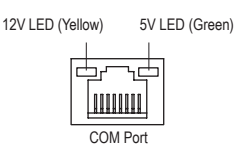



Connection/Speed LED:

| State | Description |
|---|---|
| Orange | 1 Gbps data rate |
| Green | 100 Mbps data rate |
| Off | 10 Mbps data rate |

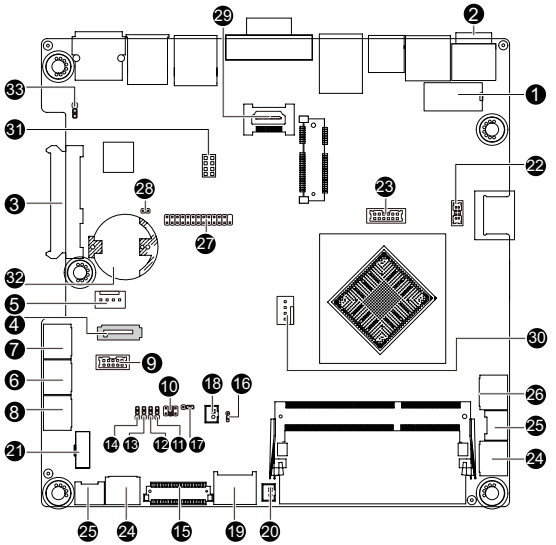
Activity LED:

| State | Description |
|---|---|
| Blinking | Data transmission or receiving is occurring |
| Off | No data transmission or receiving is occurring |




- When removing the cable connected to a back panel connector, first remove the cable from your device and then remove it from the motherboard.
- When removing the cable, pull it straight out from the connector. Do not rock it side to side to prevent an electrical short inside the cable connector.

## 1-5 Internal Connectors



| | | | |
|---|---|---|---|
| 1) | DC_OUT | 18) | LCDPWR_CON |
| 2) | DC_IN | 19) | BKL_CN |
| 3) | SATA0 | 20) | BLKTEN_CON |
| 4) | SATA1 | 21) | F_USB2 |
| 5) | SATAPW_1 | 22) | F_USB1 |
| 6) | COM2 | 23) | GPIO_CNT |
| 7) | COM4 | 24) | F_AUDIO |
| 8) | COM3 | 25) | SPK_OUT |
| 9) | COM5 | 26) | F_PANEL |
| 10) | JCOM2 | 27) | LPT |
| 11) | JRS1 | 28) | CASE_OPEN |
| 12) | JRS2 | 29) | HDMI |
| 13) | JRS3 | 30) | CPU_FAN |
| 14) | JRS4 | 31) | SMB_I2C |
| 15) | LVDS | 32) | BAT |
| 16) | JRS6 | 33) | CLR_CMOS |
| 17) | LVDS_PWR | | |

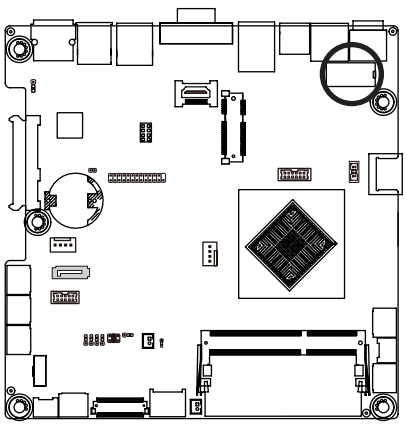
Read the following guidelines before connecting external devices:

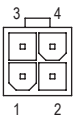
- First make sure your devices are compliant with the connectors you wish to connect.
- Before installing the devices, be sure to turn off the devices and your computer. Unplug the power cord from the power outlet to prevent damage to the devices.
- After installing the device and before turning on the computer, make sure the device cable has been securely attached to the connector on the motherboard.

## 1) DC_OUT (2x4 12V Power Connector)

With the use of the power connector, the power supply can supply enough stable power to all the components on the motherboard. Before connecting the power connector, first make sure the power supply is turned off and all devices are properly installed. The power connector possesses a foolproof design. Connect the power supply cable to the power connector in the correct orientation. The 12V power connector mainly supplies power to the CPU. If the 12V power connector is not connected, the computer will not start.

To meet expansion requirements, it is recommended that a power supply that can withstand high power consumption be used (150W or greater). If a power supply is used that does not provide the required power, the result can lead to an unstable or unbootable system.

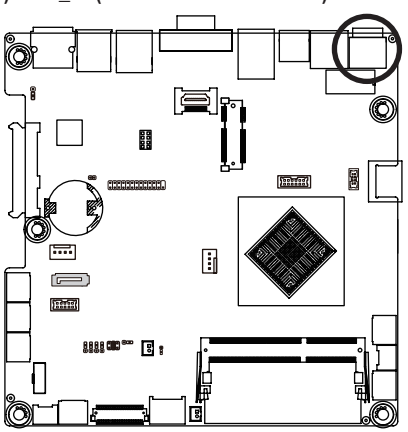


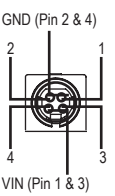



DC_OUT

| Pin No. | Definition |
|---|---|
| 1 | GND |
| 2 | GND |
| 3 | +12V |
| 4 | +12V |

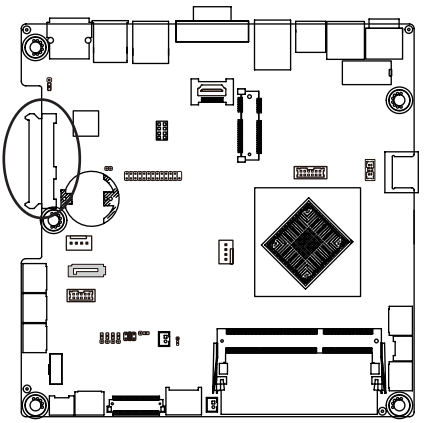
## 2) DC_IN (DC In Power Connector)

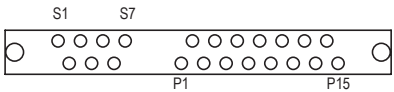





| Pin No. | Definition |
|---|---|
| 1 | DC_IN |
| 2 | GND |
| 3 | DC_IN |
| 4 | GND |

### 3) SATA0 (SATA 7+15 Pins Header)

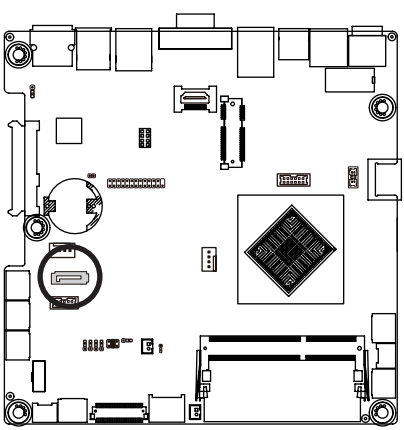


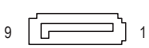



| Pin No. | Definition | Pin No. | Definition |
|---|---|---|---|
| S1 | GND | P1 | +3V |
| S2 | SATA TX+ | P2 | +3V |
| S3 | SATA TX- | P3 | +3V |
| S4 | GND | P4 | GND |
| S5 | SATA RX- | P5 | GND |
| S6 | SATA RX+ | P6 | GND |
| S7 | GND | P7 | +5V |
| | | P8 | +5V |
| | | P9 | +5V |
| | | P10 | GND |
| | | P11 | NC |
| | | P12 | GND |
| | | P13 | NC |
| | | P14 | NC |
| | | P15 | NC |

### 4) SATA1 (SATA 3Gb/s Connector)

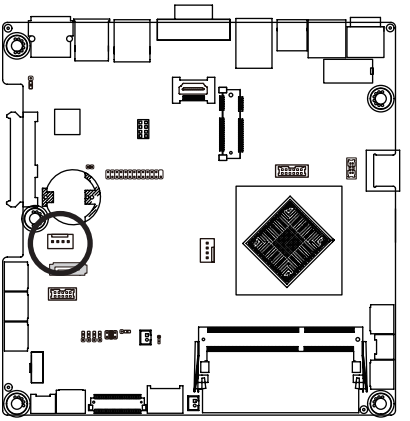
The SATA connectors conform to SATA 3Gb/s standard and are compatible with 1.5Gb/s standard. Each SATA connector supports a single SATA device.

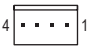





| Pin No. | Definition |
|---|---|
| 1 | GND |
| 2 | TXP |
| 3 | TXN |
| 4 | GND |
| 5 | RXN |
| 6 | RXP |
| 7 | GND |
| 8 | VCC |
| 9 | GND |

### 5) SATAPW_1 (SATA HDD Power Connector)





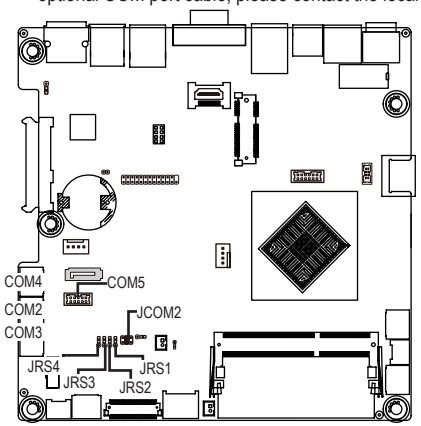

| Pin No. | Definition |
|---|---|
| 1 | +12V |
| 2 | GND |
| 3 | GND |
| 4 | VCC |

### 6/7/8/9) COM2/COM3/COM4/COM5 (Serial Port 2/3/4/5 Cable Connector)

### 10) JCOM2 (COM2 Select RS232/422/485 Jumper)

### 11/12/13/14) RS232/RS422/RS485 Select Jumpers for COM2)

The COM header can provide one serial port via an optional COM port cable. For purchasing the optional COM port cable, please contact the local dealer.




JRS1/JRS2:


1-2 Close: RS485


2-3 Close: RS232 (Default setting)

JRS3/JRS4:


1-2 Close: RS422


2-3 Close: RS232 (Default setting)

JCOM2:


1-2 Close: RS232


3-4 Close: RS422


5-6 Close: RS485


COM2

| Pin No. | Definition |
|---|---|
| 1 | NDCD2_D- |
| 2 | NDSR2- |
| 3 | NRXD2_D- |
| 4 | NRTS2- |
| 5 | NTXD2_D- |
| 6 | NCTS2- |
| 7 | NDTR2_D- |
| 8 | NRI2- |
| 9 | GND |
| 10 | NRI2- |

COM3

| Pin No. | Definition |
|---|---|
| 1 | NDCD3_D- |
| 2 | NDSR3- |
| 3 | NRXD3_D- |
| 4 | NRTS3- |
| 5 | NTXD3_D- |
| 6 | NCTS3- |
| 7 | NDTR3_D- |
| 8 | NRI3- |
| 9 | GND |
| 10 | NRI3- |

COM4

| Pin No. | Definition |
|---|---|
| 1 | NDCD4_D- |
| 2 | NDSR4- |
| 3 | NRXD4_D- |
| 4 | NRTS4- |
| 5 | NTXD4_D- |
| 6 | NCTS4- |
| 7 | NDTR4_D- |
| 8 | NRI4- |
| 9 | GND |
| 10 | NRI4- |

COM5

| Pin No. | Definition |
|---|---|
| 1 | NDCD5_D- |
| 2 | NDSR5- |
| 3 | NRXD5_D- |
| 4 | NRTS5- |
| 5 | NTXD5_D- |
| 6 | NCTS5- |
| 7 | NDTR5_D- |
| 8 | NRI5- |
| 9 | GND |
| 10 | NRI5- |

JCOM2

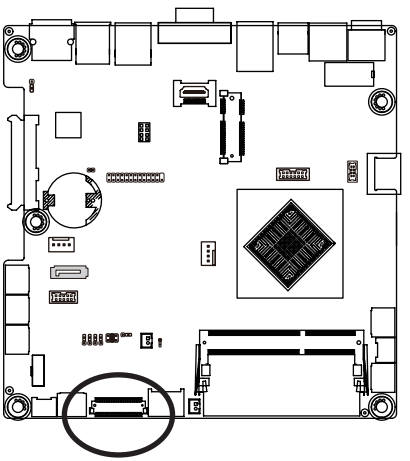
| Pin No. | Definition |
|---|---|
| 1 | RXD232 |
| 2 | RXD1 |
| 3 | RXD422 |
| 4 | RXD1 |
| 5 | RXD485 |
| 6 | RXD1 |

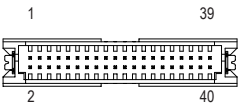
COM6

| Pin No. | Definition |
|---|---|
| 1 | NDCD6_D- |
| 2 | NDSR6- |
| 3 | NRXD6_D- |
| 4 | NRTS6- |
| 5 | NTXD6_D- |
| 6 | NCTS6- |
| 7 | NDTR6_D- |
| 8 | NRI6- |
| 9 | GND |
| 10 | NRI6- |

## 15) LVDS (LVDS Connector)

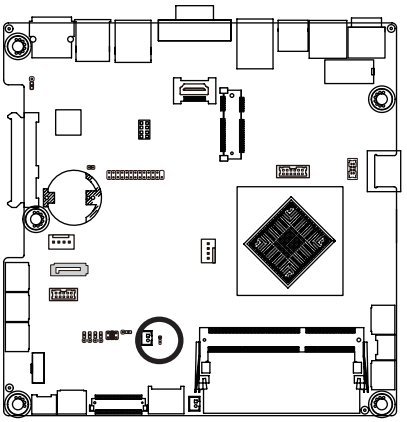
LVDS stands for Low-voltage differential signaling, which uses high-speed analog circuit techniques to provide multigigabit data transfers on copper interconnects and is a generic interface standard for high-speed data transmission.






| Pin No. | Definition | Pin No. | Definition |
|---|---|---|---|
| 1 | PANEL_VCC | 21 | LVDS_DATA5+(EVEN_1+) |
| 2 | PANEL_VCC | 22 | LVDS_DATA1+(ODD_1+) |
| 3 | PANEL_VCC | 23 | GND |
| 4 | PANEL_VCC | 24 | GND |
| 5 | PANEL_VCC | 25 | LVDS_DATA6-(EVEN_2-) |
| 6 | PANEL_VCC | 26 | LVDS_DATA2-(ODD_2-) |
| 7 | GND | 27 | LVDS_DATA6+(EVEN_2+) |
| 8 | GND | 28 | LVDS_DATA2+(ODD_2+) |
| 9 | GND | 29 | GND |
| 10 | GND | 30 | GND |
| 11 | GND | 31 | LVDS_DATA7-(EVEN_3-) |
| 12 | GND | 32 | LVDS_DATA3-(ODD_3-) |
| 13 | LVDS_DATA4-(EVEN_0-) | 33 | LVDS_DATA7+(EVEN_3+) |
| 14 | LVDS_DATA0-(ODD_0-) | 34 | LVDS_DATA3+ (ODD_3+) |
| 15 | LVDS_DATA4+(EVEN_0+) | 35 | GND |
| 16 | LVDS_DATA0+(ODD_0+) | 36 | GND |
| 17 | GND | 37 | LVDS_CLK2-(EVEN_CLK-) |
| 18 | GND | 38 | LVDS_CLK1-(ODD_CLK-) |
| 19 | LVDS_DATA5-(EVEN_1-) | 39 | LVDS_CLK2+(EVEN_CLK+) |
| 20 | LVDS_DATA1-(ODD_1-) | 40 | LVDS_CLK1+(ODD_CLK+) |

### 16) JRS6 (LVDS Enable/Disable Jumper)

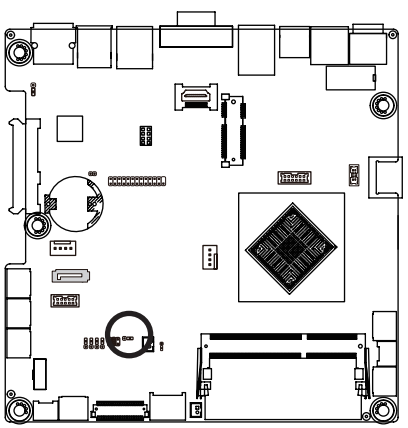


1 1-2 Close: Enable LVDS funciton. (Default setting)

1 2-3 Close: Disable LVDS funciton.

| Pin No. | Definition |
|---|---|
| 1 | NC |
| 2 | LVDS_DISABLE |
| 3 | GND |

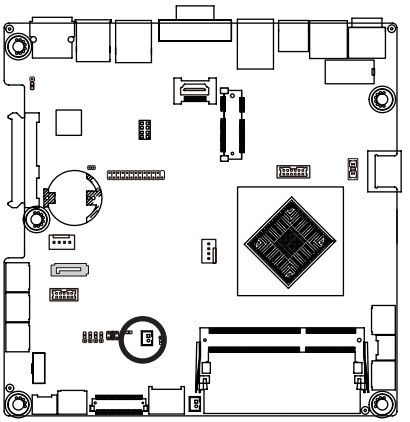
### 17) LVDS_PWR (LVDS 3.3V/5V Select Jumper)



1 1-2 Close: 3.3V

1 2-3 Close: 5V

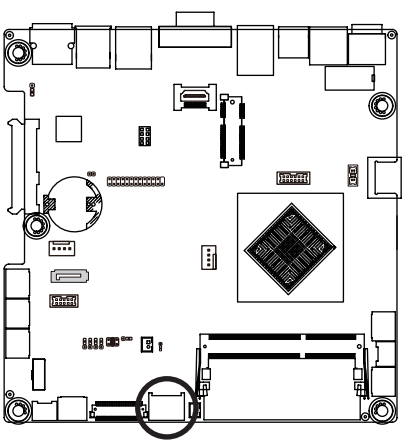
## 18) LCDPWR_CON (LCD Power Control Jumper)




Open: VDD Power Enabled by external control

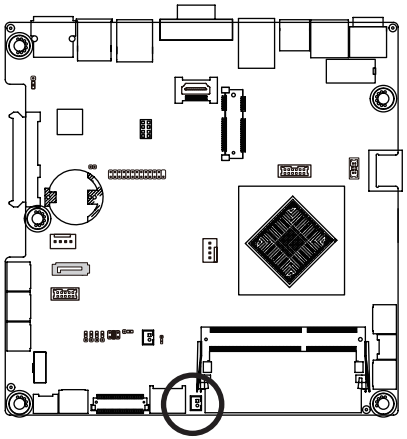

Close: VDD Power Enabled by M/B

## 19) BKL_CN (LVDS Backlight Control Connector)




| Pin No. | Definition |
|---|---|
| 1 | +12V LVDS |
| 2 | +12V LVDS |
| 3 | GND |
| 4 | L_BKLTCTL_INV |
| 5 | L_BKLTEN_INV |

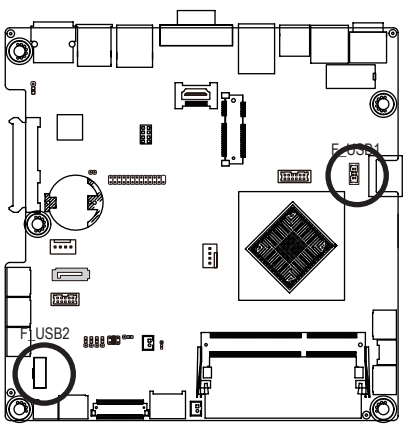
## 20) BKLTEN_CON ( LVDS Backlight Enable Signal Connector)




| Pin No. | Definition |
|---|---|
| 1 | L_BKLTEN_INV |
| 2 | BKL_CN pin5 |

## 21/22) F_USB2/FUSB1 (USB Header)

The headers conform to USB 2.0/1.1 specification. Each USB header can provide two USB ports via an optional USB bracket. For purchasing the optional USB bracket, please contact the local dealer.




F_USB1


| Pin No. | Definition |
|---|---|
| 1 | FUSEVCC_F1 |
| 2 | FUSEVCC_F1 |
| 3 | -FUSBP1_2_C |
| 4 | -FUSBP1_2 |
| 5 | +FUSBP1_2_C |
| 6 | +FUSBP1_2 |
| 7 | GND |
| 8 | GND |

3-4, 5-6 Close: Enable S_USB

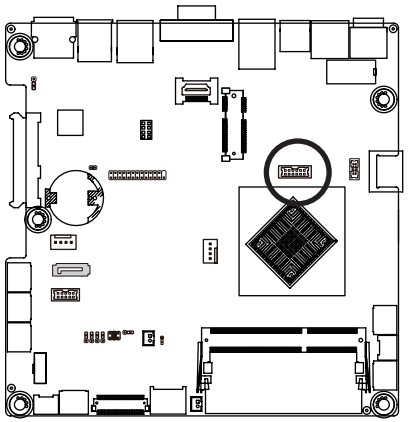
3-4, 5-6 Open: Disable S_USB

**F_USB1 supports 1 port USB2.0 only.**

F_USB2


| Pin No. | Definition |
|---|---|
| 1 | Power (5V) |
| 2 | Power (5V) |
| 3 | USB DX- |
| 4 | USB DY- |
| 5 | USB DX+ |
| 6 | USB DY+ |
| 7 | GND |
| 8 | GND |
| 9 | No Pin |
| 10 | NC |

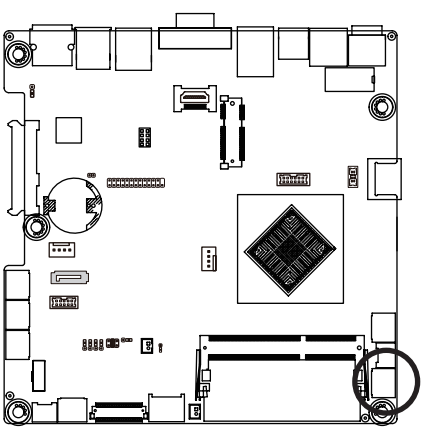
### 23) GPIO_CNT (GPIO connector)




| Pin No. | Definition |
|---|---|
| 1 | VCC |
| 2 | VCC |
| 3 | GPI_1 |
| 4 | GPO_1 |
| 5 | GPI_2 |
| 6 | GPO_2 |
| 7 | GPI_3 |
| 8 | GPO_3 |
| 9 | GPI_4 |
| 10 | GPO_4 |
| 11 | GND |
| 12 | GND |

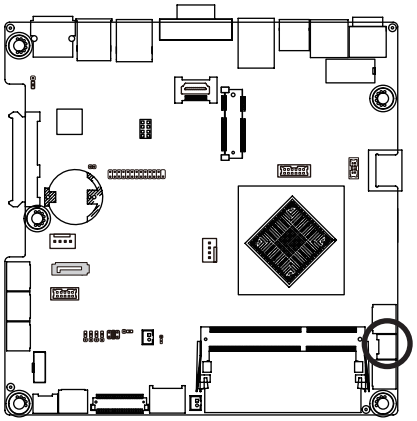
### 24) F_AUDIO (Front Panel Audio Header)

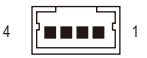
The front panel audio header supports Intel High Definition audio (HD) and AC'97 audio. You may connect your chassis front panel audio module to this header. Make sure the wire assignments of the module connector match the pin assignments of the motherboard header. Incorrect connection between the module connector and the motherboard header will make the device unable to work or even damage it.




| Pin No. | Definition |
|---|---|
| 1 | MIC_L |
| 2 | GND |
| 3 | MIC_R |
| 4 | -ACZ_DET |
| 5 | HPOUT_R |
| 6 | GND |
| 7 | FAUDIO_J |
| 8 | NC |
| 9 | HPOUT_L |
| 10 | GND |

## 25) SPK_OUT (Audio Amplifier Connector)

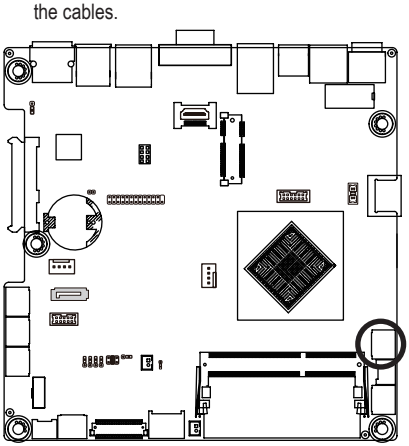





| Pin No. | Definition |
|---|---|
| 1 | OUT_L+ |
| 2 | OUT_L- |
| 3 | OUT_R- |
| 4 | OUT_R+ |

## 26) F_PANEL (Front Panel Header)

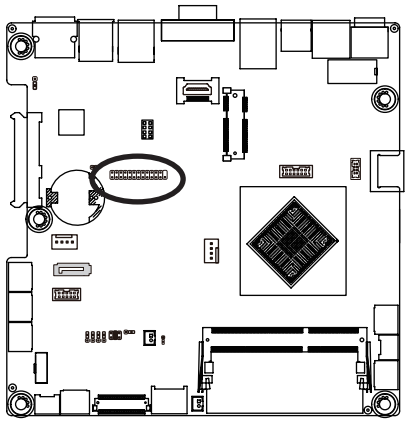
Connect the power switch, reset switch, speaker, and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.




| Pin No. | Signal Name | Definition |
|---|---|---|
| 1 | MPD- | Hard Disk LED Signal cathode(-) |
| 2 | MPD+ | Hard Disk LED Signal anode (+) |
| 3 | PWR_F_BTN# | Power Button |
| 4 | GND | Ground |
| 5 | -ACT_LED | LAN Activity LED cathode(-) |
| 6 | +ACT_LED | LAN Activity LED anode (+) |
| 7 | HD- | Hard Disk LED Signal cathode(-) |
| 8 | HD+ | Hard Disk LED Signal anode (+) |
| 9 | -SYS_RST | Reset button |
| 10 | 5VDUAL | 5V |

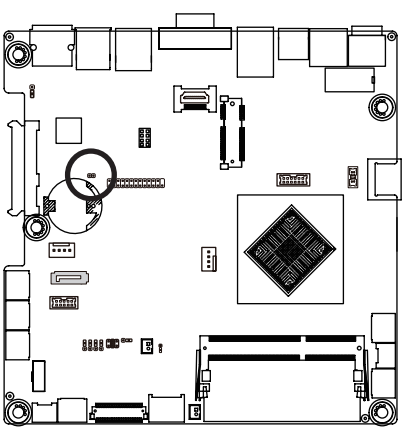
The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

## 27) LPT (Printer Port Cable Connector)




| Pin No. | Definition | Pin No. | Definition |
|---|---|---|---|
| 1 | LPT1 | 14 | GND |
| 2 | LPT14 | 15 | LPT8 |
| 3 | LPT2 | 16 | GND |
| 4 | ERR- | 17 | LPT9 |
| 5 | LPT3 | 18 | GND |
| 6 | LPT16 | 19 | ACK- |
| 7 | LPT4 | 20 | GND |
| 8 | LPT17 | 21 | BUSY |
| 9 | LPT5 | 22 | GND |
| 10 | GND | 23 | PE |
| 11 | LPT6 | 24 | GND |
| 12 | GND | 25 | SLCT |
| 13 | LPT7 | 26 | No Pin |

## 28) CASE_OPEN (Chassis intrusion Alert Header)

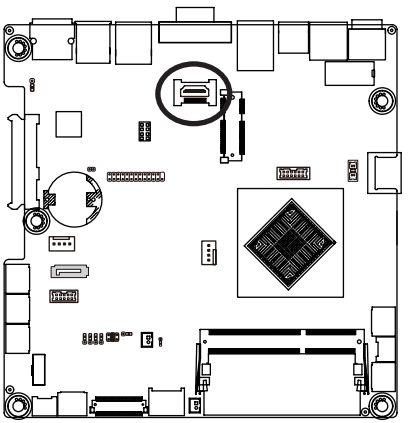


Open: Normal operation (Default setting)

Closed: Enable chassis intrusion alter.

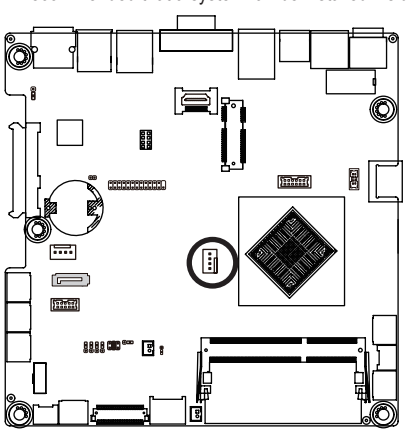
## 29) HDMI (HDMI Connector)

The HDMI port is HDCP compliant. You can use this port to connect your HDMI-supported monitor. The maximum supported resolution is 4096x2160@24Hz or 3840x2160@24Hz/25Hz/30Hz, but the actual resolutions supported are dependent on the monitor being used.



## 30) CPU_FAN (CPU Fan Header)

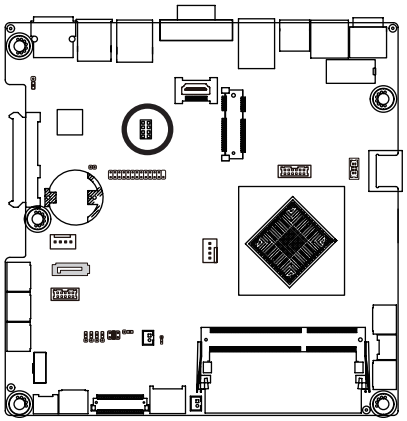
The motherboard has one 4-pin CPU fan header (CPU_FAN) header. Most fan headers possess a foolproof insertion design. When connecting a fan cable, be sure to connect it in the correct orientation (the black connector wire is the ground wire). The motherboard supports CPU fan speed control, which requires the use of a CPU fan with fan speed control design. For optimum heat dissipation, it is recommended that a system fan be installed inside the chassis.




| Pin No. | Definition |
|---|---|
| 1 | GND |
| 2 | +12V |
| 3 | Sense |
| 4 | Speed Control |

- Be sure to connect fan cables to the fan headers to prevent your CPU and system from overheating. Overheating may result in damage to the CPU or the system may hang.
- These fan headers are not configuration jumper blocks. Do not place a jumper cap on the headers.

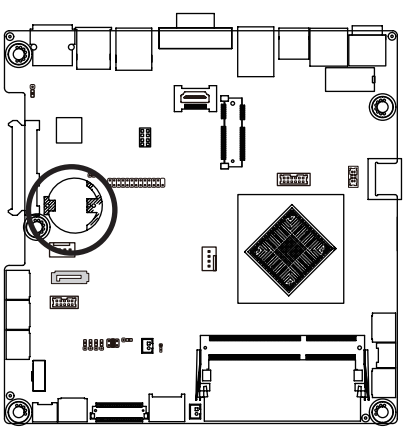
## 31) SMB_I2C (SMBus Connector)

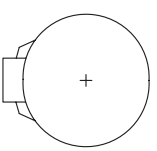



| Pin No. | Definition |
|---|---|
| 1 | 3VDUAL |
| 2 | ATX_PSON# |
| 3 | SMB_CLK1 |
| 4 | I2CCLK |
| 5 | SMB_DATA1 |
| 6 | I2CDAT |
| 7 | GND |
| 8 | GND |

## 32) BAT (Battery Scoket)

The battery provides power to keep the values (such as BIOS configurations, date, and time information) in the CMOS when the computer is turned off. Replace the battery when the battery voltage drops to a low level, or the CMOS values may not be accurate or may be lost.

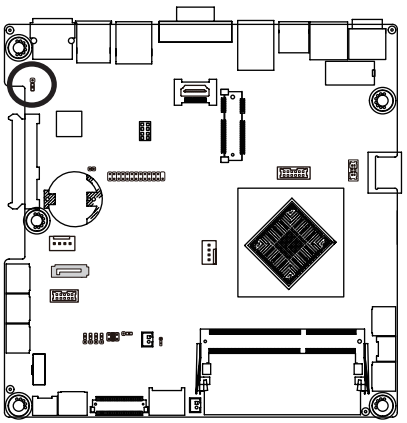




- Always turn off your computer and unplug the power cord before replacing the battery.
- Replace the battery with an equivalent one. Danger of explosion if the battery is replaced with an incorrect model.
- Contact the place of purchase or local dealer if you are not able to replace the battery by yourself or uncertain about the battery model.
- Used batteries must be handled in accordance with local environmental regulations.

## 33) CLR_CMOS (Clearing CMOS Jumper)

Use this jumper to clear the CMOS values (e.g. date information and BIOS configurations) and reset the CMOS values to factory defaults. To clear the CMOS values, place a jumper cap on the two pins to temporarily short the two pins or use a metal object like a screwdriver to touch the two pins for a few seconds.




1-2 Close: Normal operation (Default setting)


2-3 Close: Clear CMOS data

# Chapter 2 BIOS Setup

BIOS (Basic Input and Output System) records hardware parameters of the system in the CMOS on the motherboard. Its major functions include conducting the Power-On Self-Test (POST) during system startup, saving system parameters and loading operating system, etc. BIOS includes a BIOS Setup program that allows the user to modify basic system configuration settings or to activate certain system features. When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS to keep the configuration values in the CMOS.

To access the BIOS Setup program, press the <DEL> key during the POST when the power is turned on.

- BIOS flashing is potentially risky, if you do not encounter problems of using the current BIOS version, it is recommended that you don't flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction.
- It is recommended that you not alter the default settings (unless you need to) to prevent system instability or other unexpected results. Inadequately altering the settings may result in system's failure to boot. If this occurs, try to clear the CMOS values and reset the board to default values. (Refer to the "Restore Defaults" section in this chapter or introductions of the battery/clearing CMOS jumper in Chapter 1 for how to clear the CMOS values.)

**BIOS Setup Program Function Keys**

| | |
|---|---|
| <↑><↓> | Move the selection bar to select an item |
| <←><→> | Move the selection bar to select the screen |
| <Enter> | Execute command or enter the submenu |
| <Esc> | Main Menu: Exit the BIOS Setup program<br>Submenus: Exit current submenu |
| <+> | Increase the numeric value or make changes |
| <-> | Decrease the numeric value or make changes |
| <F1> | General Help |
| <F2> | Restore the previous BIOS settings for the current submenus |
| <F3> | Load the Optimized BIOS default settings for the current submenus |
| <F4> | Save all the changes and exit the BIOS Setup program |

- **Main**
  This setup page includes all the items in standard compatible BIOS
- **Advanced**
  This setup page includes all the items of AMI BIOS special enhanced features.
  (ex: Auto detect fan and temperature status, automatically configure hard disk parameters.)
- **Chipset**
  Northbridge and Southbridge additional features configuration.
- **Boot**
  This setup page provides items for configuration of boot sequence.
- **Security**
  Change, set, or disable supervisor and user password. Configuration supervisor password allows you to restrict access to the system and BIOS Setup.
  A supervisor password allows you to make changes in BIOS Setup.
  A user password only allows you to view the BIOS settings but not to make changes.
- **Save & Exit**
  Save all the changes made in the BIOS Setup program to the CMOS and exit BIOS Setup.
  Abandon all changes and the previous settings remain in effect. Pressing <Y> to the confirmation message will exit BIOS Setup. (Pressing <Esc> can also carry out this task.)

# 2-1 The Main Menu

Once you enter the BIOS Setup program, the Main Menu (as shown below) appears on the screen. Use arrow keys to move among the items and press <Enter> to accept or enter other sub-menu.

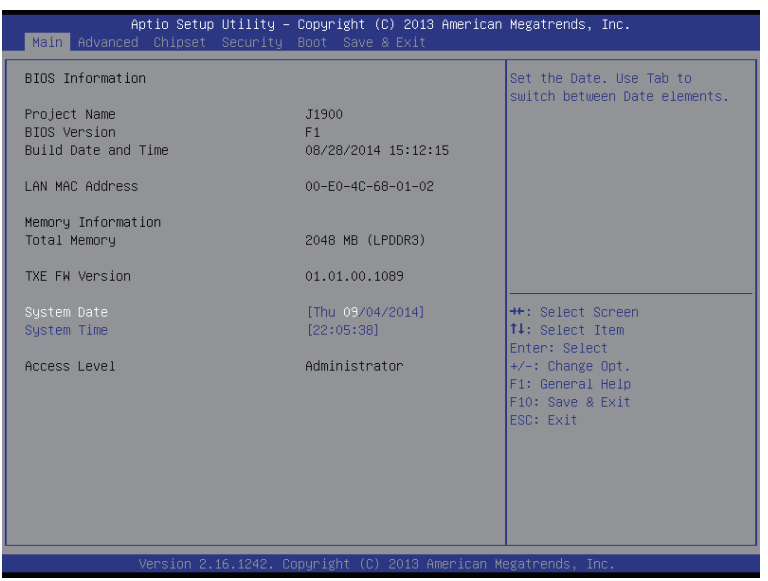
**Main Menu Help**

The on-screen description of a highlighted setup option is displayed on the bottom line of the Main Menu.

**Submenu Help**

While in a submenu, press <F1> to display a help screen (General Help) of function keys available for the menu. Press <Esc> to exit the help screen. Help for each item is in the Item Help block on the right side of the submenu.

- When the system is not stable as usual, select the **Restore Defaults** item to set your system to its defaults.
- The BIOS Setup menus described in this chapter are for reference only and may differ by BIOS version.



☞ **BIOS Information**

☞ **Project Name**

Display name of the project.

☞ **BIOS Version**

Display version number of the BIOS.

☞ **BIOS Build Date and Time**

Displays the date and time when the BIOS setup utility was created.

☞ **LAN MAC Address**

Displays the LAN MAC address information.

☞ **Memory Information**

☞ **Total Memory**

Display the total memory size of the installed memory.

☞ **TXE FW Version**

Display the TXE firmware version.

☞ **System Date**

Set the date following the weekday-month-day- year format.

☞ **System Time**

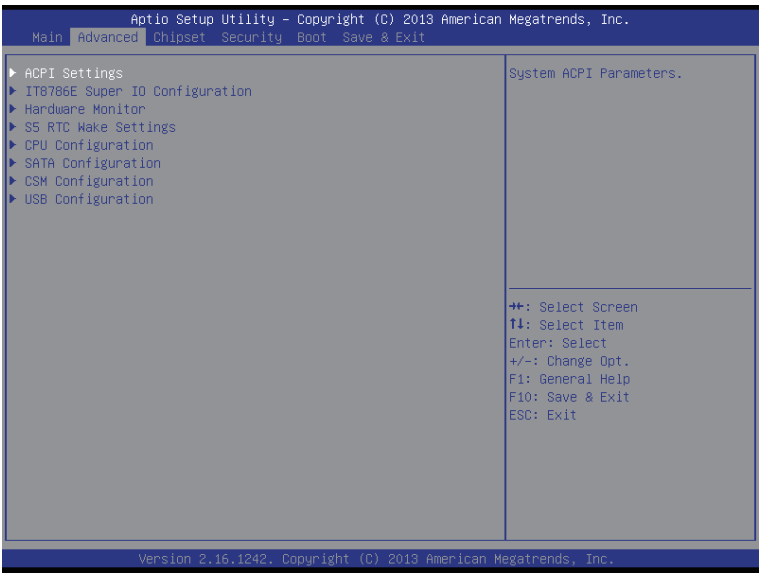
Set the system time following the hour-minute- second format.

☞ **Access Level**

Display the privilege access information .

## 2-2 Advanced Menu

The Advanced menu display submenu options for configuring the function of various hardware components. Select a submenu item, then press Enter to access the related submenu screen.



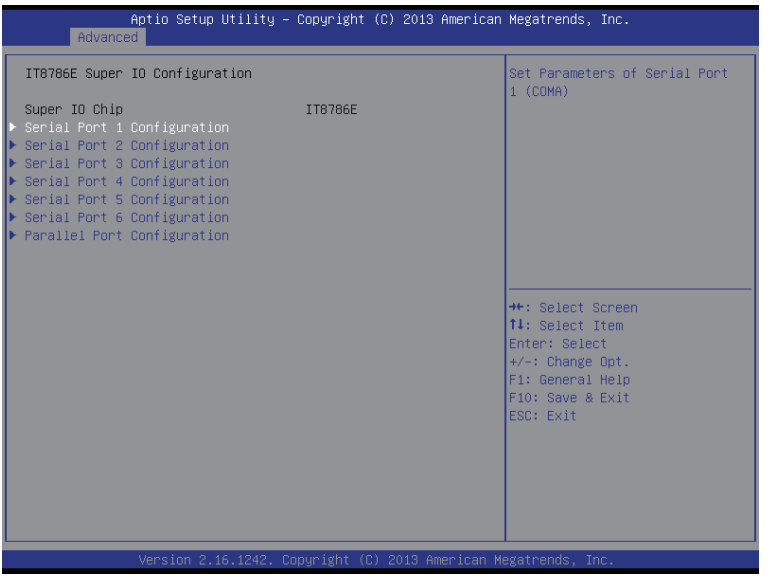
## 2-2-1 ACPI Settings

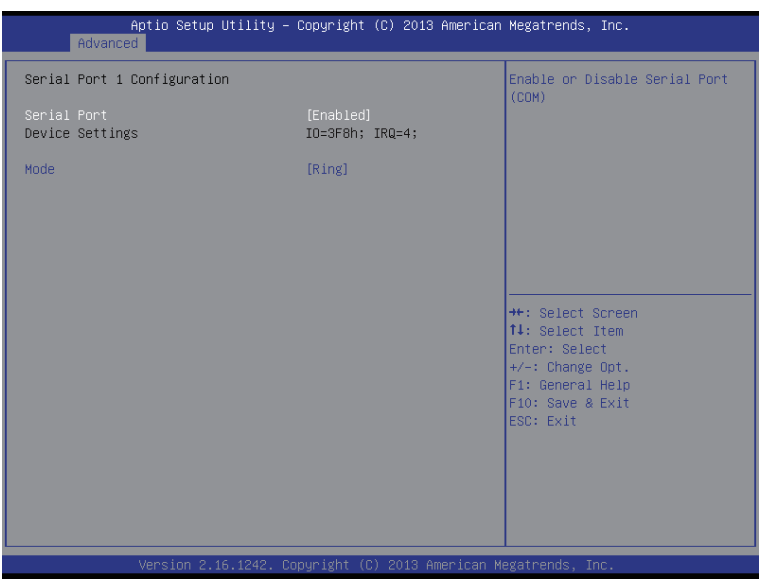

☞ **ACPI Settings**

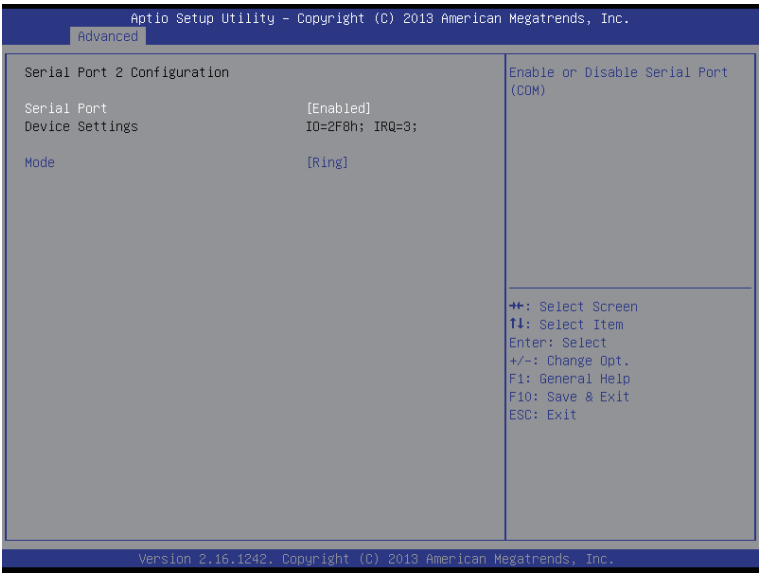
☞ **ACPI Sleep State**

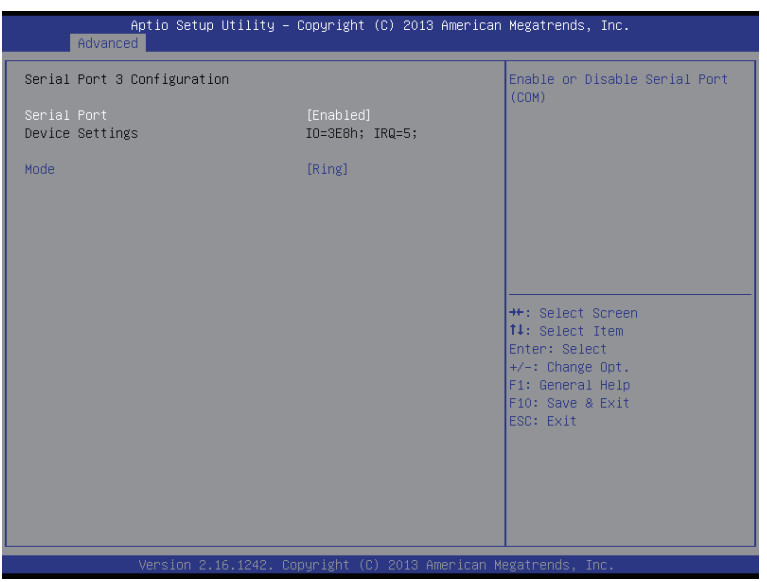
Display the ACPI Sleep status information. This item is not configuable.

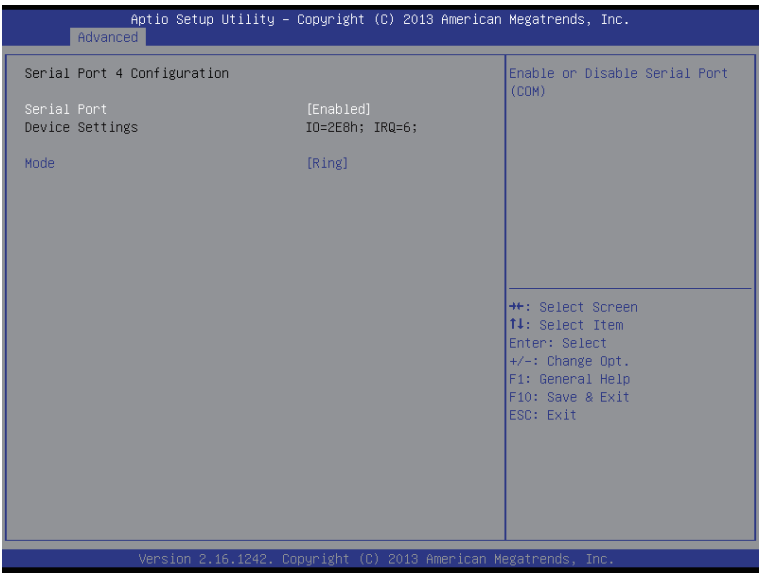
## 2-2-2 IT8786E Super IO Configuration

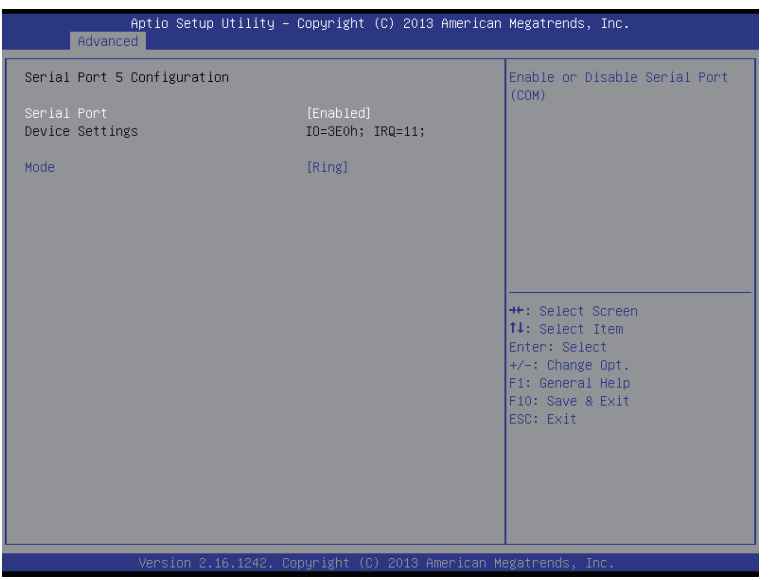


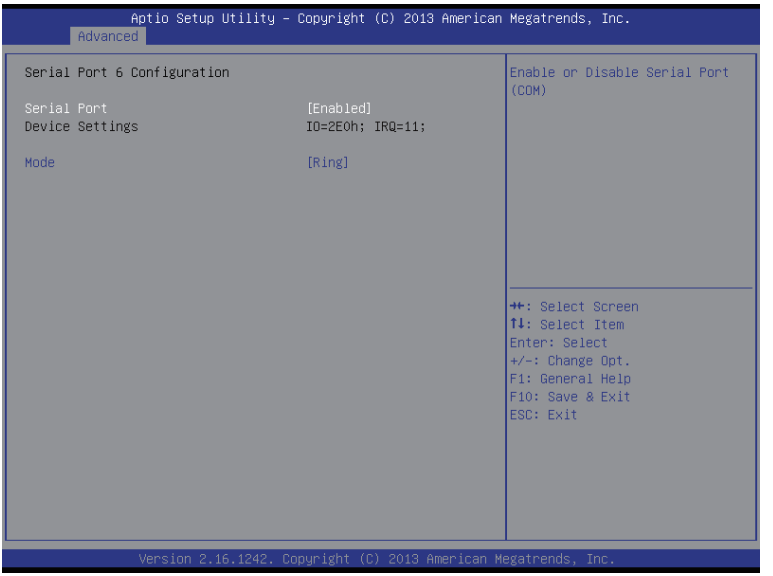



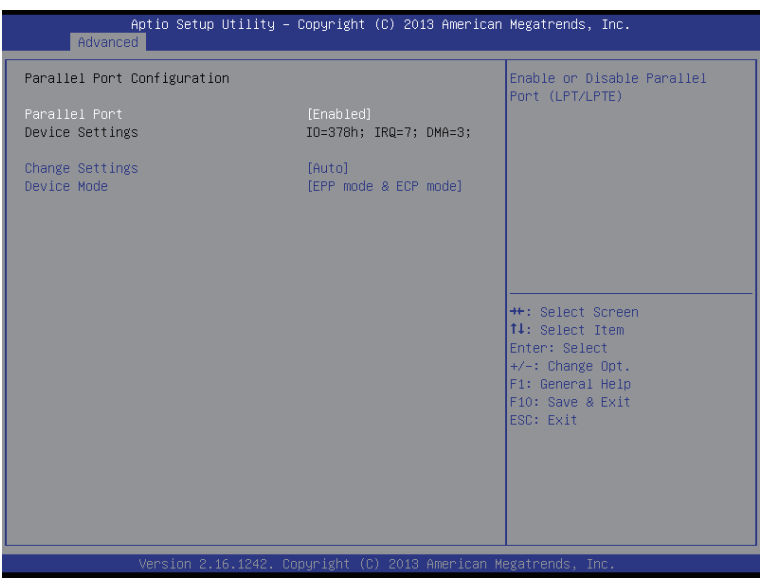

Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Advanced
Serial Port 2 Configuration
Serial Port [Enabled]
Device Settings IO=2F8h; IRQ=3;
Mode [Ring]
Enable or Disable Serial Port (COM)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F10: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Advanced
Serial Port 3 Configuration
Serial Port [Enabled]
Device Settings IO=3E8h; IRQ=5;
Mode [Ring]
Enable or Disable Serial Port (COM)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F10: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Advanced
Serial Port 4 Configuration
Serial Port [Enabled]
Device Settings IO=2E8h; IRQ=6;
Mode [Ring]
Enable or Disable Serial Port (COM)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F10: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Advanced
Serial Port 5 Configuration
Serial Port [Enabled]
Device Settings IO=3E0h; IRQ=11;
Mode [Ring]
Enable or Disable Serial Port (COM)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F10: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Advanced
Serial Port 6 Configuration
Serial Port [Enabled]
Device Settings IO=2E0h; IRQ=11;
Mode [Ring]
Enable or Disable Serial Port (COM)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F10: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Advanced
Parallel Port Configuration
Parallel Port [Enabled]
Device Settings IO=378h; IRQ=7; DMA=3;
Change Settings [Auto]
Device Mode [EPP mode & ECP mode]
Enable or Disable Parallel Port (LPT/LPTE)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F10: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

### ☞ IT8786E Super IO Configuration

### ☞ Super IO Chip

Display the model name of Super IO chip.

### ☞ Serial Port 1/2/3/4/5/6 Configuration

Press [Enter] for confuguration of advanced items.

### ☞ Parallel Port Configuration

Press [Enter] for confuguration of advanced items.

### ☞ Serial Port #1/#2/#3/#4/#5/#6

When enabled allows you to configure the serial port settings. When set to Disabled, displays no configuration for the serial port.

Options available: Enabled/Disabled. Default setting is **Enabled**.

### ☞ Device Settings

Display the specified Serial Port base I/O addressand IRQ.

### ☞ Mode

Option available: Ring/12V/5V. Default setting is **Ring**.

### ☞ Parallel Port

When enabled allows you to configure the parallel settings.

Options available: Enabled/Disabled. Default setting is **Enabled**.

### ☞ Device Settings

Display the specified Parallel port base I/O addressand IRQ.

### ☞ Change Settings

Change Paralle port device settings. When set to Auto allows the server's BIOS or OS to select a configuration.

Options available: Auto/IO=378h;IRQ=5/IO=378h;IRQ=5,6,7,9,110,11,12/
IO=278h;IRQ=5,6,7,9,110,11,12/ IO=3BCh;IRQ=5,6,7,9,110,11,12
Default setting is **Auto**.

### ☞ Device Mode

Configure parallel port mode.

Standard Parallet Port mode (SPP): Standard Parallet Port mode is the same as SPP Mode. SPP stands for Standard Parallel Port. Set this item to Normal Mode, system will transfer protocol for the parallel port. It works all parallel devices.

EPP Mode: The Extended Capabilities Port transfer mode uses DMA protocol to achieve data transfer rates of up tp 2MB/s and provides symmetric bidirectional communication.

ECP Mode: Enhanced Parallel Port using existing parallel port signals to provide a asymmetric bidirectional communication. It's offering transfer rates of up tp 2MB/s.

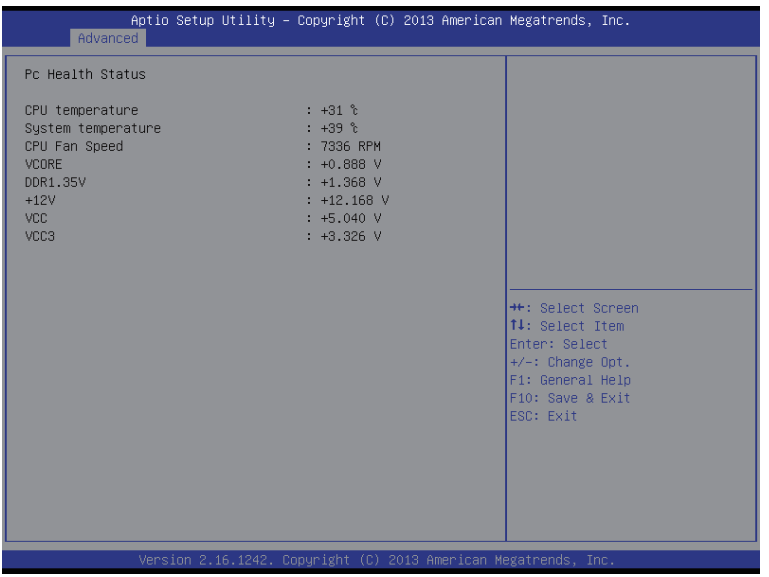
ECP & EPP Mode: Enable EPP and ECP Mode.

Options available: Standard Parallet Port mode (SPP)/EPP Mode/ECP Mode/EPP+ECP Mode.

Default setting is **Standard Parallet Port mode (SPP)**.

## 2-2-3 Hardware Monitor

Press Enter to view the Hardware Monitor screen which displays a real-time record of the CPU/system temperature, and fan speed, Items on this window are non-configurable.




☞ **PC Health Status**

☞ **CPU Temperature/System Temperature**

Displays current CPU and System temperature.

☞ **CPU Fan Speed (RPM)**

Displays current CPU fan speed information.

☞ **VCORE/DDR1.35/+12V/VCC/VCC3**

Displays current CPU and system voltage status.

## 2-2-4 S5 RTC Wake Settings


☞ **Wake system from S5**

Enable or disable System wake on alarm event. When enabled, System will wake on the hr:min:sec specified. Default setting is **Disabled**.

☞ **Wake up hour**(Note)

Press <+> and <-> to define the wake up hour.

☞ **Wake up minute**(Note)

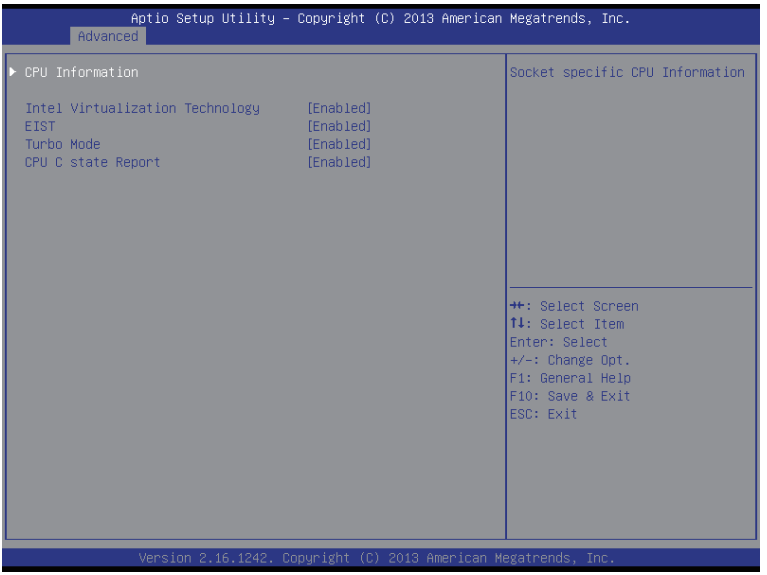
Press <+> and <-> to define the wake up minute.

☞ **Wake up second**(Note)

Press <+> and <-> to define the wake up second.

(Note) This item appears when **Wake system from S5** is set to **Fixed time**.

## 2-2-5 CPU Configuration




### ☞ CPU Information

Press [Enter] to view the installed CPUinformation.

### ☞ Intel Virtualization Technology

Select whether to enable the Intel Virtualization Technology function. VT allows a single platform to run multiple operating systems in independent partitions.

Options available: Enabled/Disabled. Default setting is **Enabled**.

### ☞ EIST (Enhanced Intel SpeedStep Technology)

Conventional Intel SpeedStep Technology switches both voltage and frequency in tandem between high and low levels in response to processor load.

Options available: Enabled/Disabled. Default setting is **Enabled**.

### ☞ Turbo Mode

When this feature is enabled, the processor can dynamically overclock one or two of its four processing cores to improve performance with applications that are not multi-threaded or optimized for quad-core processors.

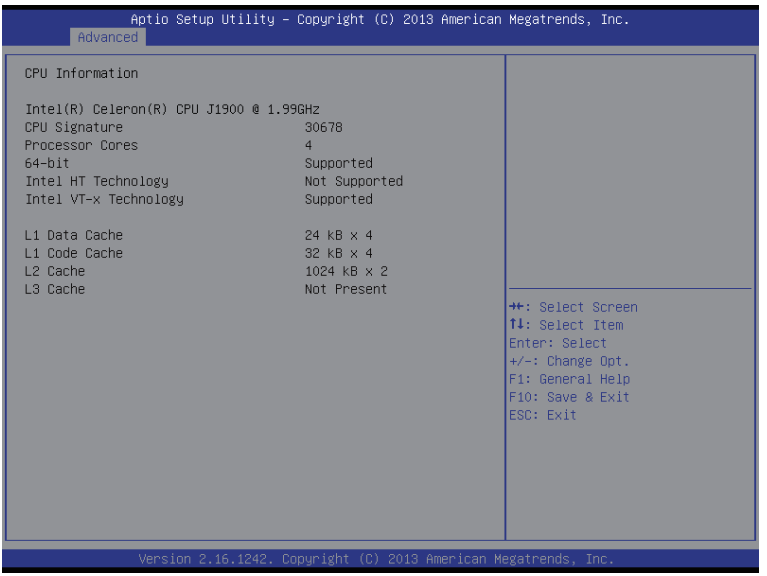
Options available: Enabled/Disabled. Default setting is **Enabled**.

### ☞ CPU C State Report

Enable/Disable CPU C State report function.

Options available: Enabled/Disabled. Default setting is **Enabled**.

## 2-2-5-1 CPU Information




☞ **CPU Type/Signature/Processor Cores/64-bit/Intel HT Technology/ Intel VT-x Technology**

Displays the technical specifications for the installed processor.

☞ **Cache Information**

☞ **L1 Data Cache / L1 Code Cache / L2 Cache / L3 Cache**

Displays the technical specifications for the installed processor.

## 2-2-6 SATA Configuration


### ☞ SATA Mode Selection

Select the on chip SATA type.

IDE Mode: When set to IDE, the SATA controller disables its AHCI function and runs in the IDE emulation mode.

AHCI Mode: When set to AHCI, the SATA controller enables its AHCI functionality.

Options available: IDE/AHCI. Default setting is **AHCI Mode**.

### ☞ Serial ATA Port 0/1

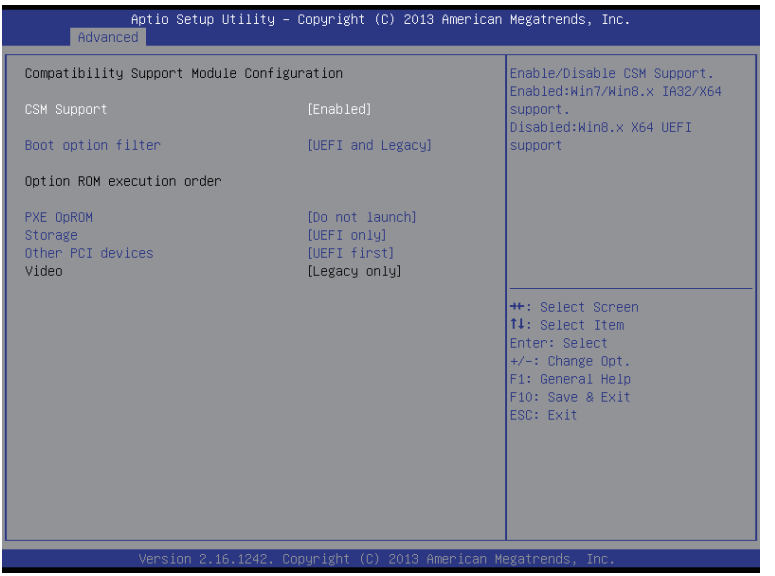
The category identifies Serial ATA type of hard disk that are installed in the computer.

System will automatically detect HDD type.

Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category.

Hard drive information should be labeled on the outside device casing. Enter the appropriate option based on this information.

## 2-2-7 CSM Configuration




### ☞ Compatibility Support Module Configuration

Press Enter to configure the advanced items.

### ☞ CSM Support

Enable/Disable Compatibility Support Module (CSM) support function.

Options available: Enabled/Disabled. Default setting is **Disabled**.

- The following five items appears and configurable when the **Launch CSM** is set to **Enabled**.
- If the **Launch CSM** is set to **Disabled,** the following five items will not be able to support Legacy mode.

### ☞ Boot option filter

Determines which devices system will boot to.

Options available: UEFI and Legacy/Legacy only/UEFI only. Default setting is **UEFI and Legacy**.

### ☞ Option ROM execution order

### ☞ PXE OpROM

Controls the execution UEFI and Legacy PXE OpROM.

Options available: Do not launch/UEFI/Legacy. Default setting is **Legacy**.

### ☞ Storage

Controls the execution UEFI and Legacy Storage OpROM.

Options available: Do not launch/UEFI only/Legacy only/Legacy first/UEFI first.

Default setting is **Legacy only.**

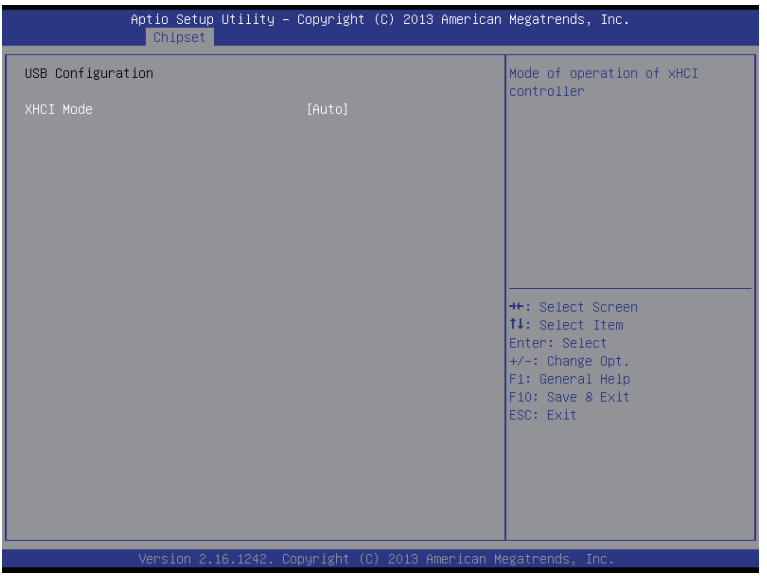
### ☞ Other PCI devices

Determines OpROM execution policy for devices other than network, Storage, or Video.
Options available: Do not launch/UEFI only/Legacy only/Legacy first/UEFI first.
Default setting is **UEFI first**.

### ☞ Video

Controls the execution UEFI and Legacy Video OpROM.
Options available: Do not launch/UEFI only/Legacy only/Legacy first/UEFI first.
Default setting is **Legacy only.**

## 2-2-8 USB Configuration




☞ **USB Configuration**

☞ **XHCI mode**

Enable/Disable XHCI (USB 3.0) Hand-off support.
Options available: Auto/Disabled. Default setting is **Auto**.

## 2-3 Chipset Menu


### ☞ Onboard LAN

Enable/Disable onboard LAN controller.

Options available: Enabled/Disabled. Default setting is **Enabled**.

### ☞ Azalia HDMI Codec

Enable/Disable onboard audio controller.

Options available: Enabled/Disabled. Default setting is **Enabled**.

### ☞ Restore AC Power Loss

This option provides user to set the mode of operation if an AC / power loss occurs.

**Power On**: System power state when AC cord is re-plugged.

**Power Off**: Do not power on system when AC power is back.

**Last State**: Set system to the last sate when AC power is removed.

Options available: Power On/Power Off/Last State. Default setting is **Power Off**.

### ☞ OS Selection

Options available: Windows 7. Default setting is **Windows 7**.

### ☞ Wake on LAN and Wake on Ring

Enable/Disable Wake on LAN and Wake on Ring function.

Options available: Enabled/Disabled. Default setting is **Enabled**.

### ☞ Primary IGFX Boot Display

### ☞ LCD Panel Type

Selecting by Internal Graphics Device by selecting appropriate setup item.

Options available: 800x600 (18 bit)/1024x768 (18 bit).

☞ **Backlight brightness**

Configure the backlight brightness.

Options available: 5%/25%/50%/75%/100%. Default setting is **100%**.

☞ **Cash Drawer Power**

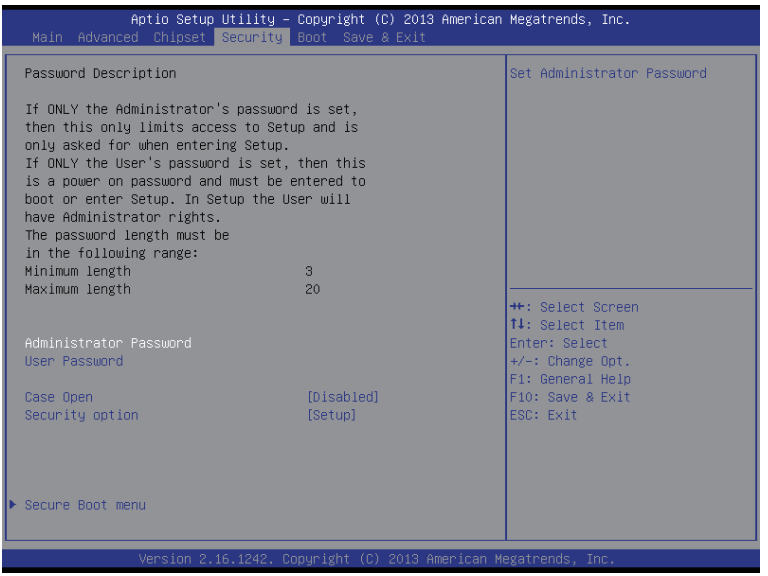
Options available: 12V/24V. Default setting is **12V**.

☞ **Watchdog time value**

Options available: 8 seconds. Default setting is **8 seconds**.

## 2-4 Security Menu

The Security menu allows you to safeguard and protect the system from unauthorized use by setting up access passwords.




There are two types of passwords that you can set:

- Adminstrator Password
  Entering this password will allow the user to access and change all settings in the Setup Utility.
- User Password
  Entering this password will restrict a user's access to the Setup menus. To enable or disable this field, a Administrator Password must first be set. A user can only access and modify the System Time, System Date, and Set User Password fields.

### ☞ AdministratorPassword

Press Enter to configure the Administrator password.

### ☞ User Password

Press Enter to configure the user password.

### ☞ Case Open

Enable/Disable chassis intrusion alert function.

Options available: Enabled/Disabled. Default setting is **Disabled**.

### ☞ Security Option

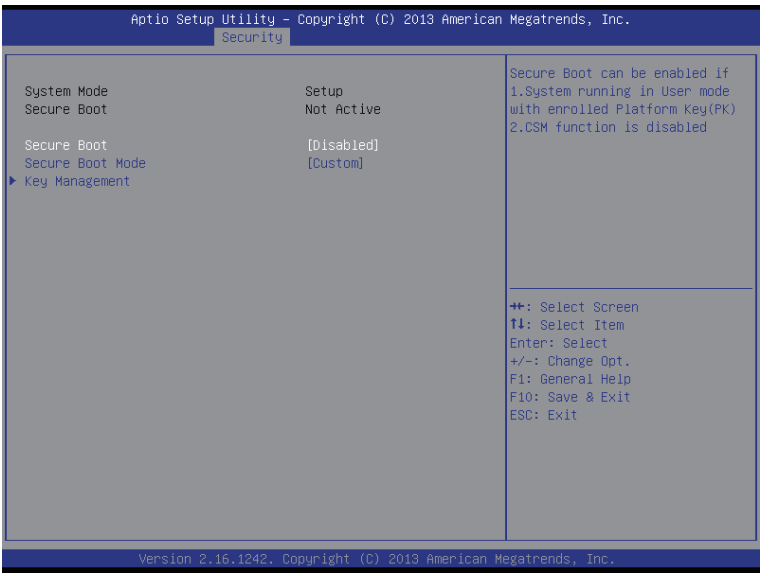
Select whether the password is required every time when the system boots or only when user enterthe setup.

Options available: Setup/System. Default setting is **Setup**.

### ☞ Secure Boot menu

Press [Enter] for configuration of advanced items.

## 2-4-1 Secure Boot menu




☞ **System Mode**

Display the System Mode state.

☞ **Secure Boot**

Display the System Mode State.

☞ **Secure Boot**

Secure Boot requires all the applications that are running during the booting process to be pre-signed with valid digital certificates. This way, the system knows all the files being loaded before Windows 8 loads and gets to the login screen have not been tampered with.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Secure Boot Mode**(Note)

Define the Secure Boot Mode. Set this item to **Custom** to advanced items configuration.

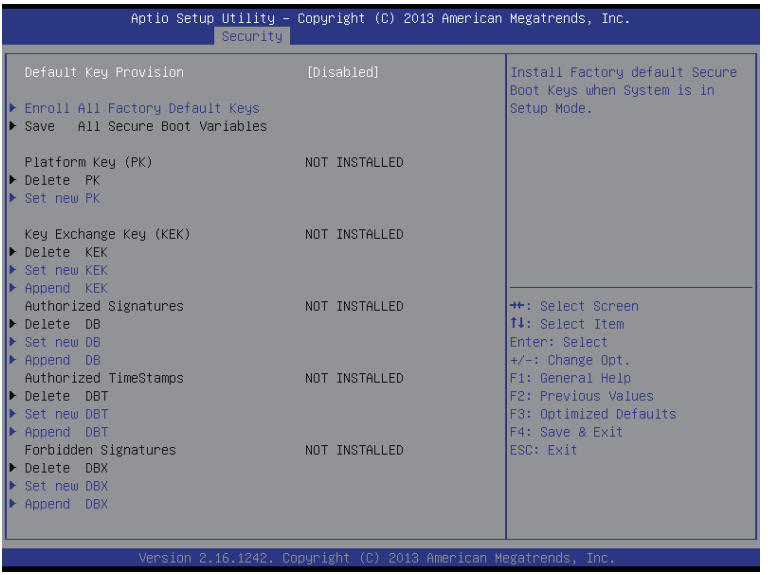
Option available: Standard/Custom. Default setting is **Custom**.

☞ **Key Management**

Press Enter to configure the advanced items.

(Note) Advanced items prompt when this item is set to **Cutom**.

## 2-4-1-1 Key Management




### ☞ Key Management

This item appears only when the **Secure Boot Mode** is set to **Custom**.

### ☞ Default Key Provisioning

Force the system to Setup Mode. This will clear all Secure Boot Variables such as Platform Key (PK), Key-exchange Key (KEK), Authorized Signature Database (db), and Forbidden Signaures Database (dbx).

Options available: Enabled/Disabled. Default setting is **Disabled**.

### ☞ Enroll All Factory Default Keys

Press [Enter] to install all factory default keys.

### ☞ Save All Secure Boot Variables

Press [Enter] to save all Secure Boot Variables.

### ☞ Platform Key (PK)

Display the status of Platform Key.

### ☞ Delete the PK

Press [Enter] to delete the existed PK. Once the PK is deleted, all the system's Secure Boot keys will not be activated.

### ☞ Set new PK File

Press [Enter] to configure a new PK.

### ☞ Key Exchange Key Database (KEK)

Display the status of Platform Key.

### ☞ Delete KEK

Press [Enter] to delete the KEK from your system.

☞ **Set new KEK**

Press [Enter] to configure a new KEK.

☞ **Append Var to KEK**

Press [Enter] to load additional KEK from a storage devices for an additional db and dbx management.

☞ **Authorized Signature Database (DB)**

Display the status of Authorized Signature Database.

☞ **Delete DB**

Press [Enter] to delete the db from your system.

☞ **Set new DB**

Press [Enter] to configure a new db.

☞ **Append aVar to DB**

Press [Enter] to load additional db from a storage devices.

☞ **Forbidden Signature Database (DBX)**

Display the status of Forbidden Signature Database.

☞ **Delete the DBX**

Press [Enter] to delete the dbx from your system.

☞ **Set DBX from File**

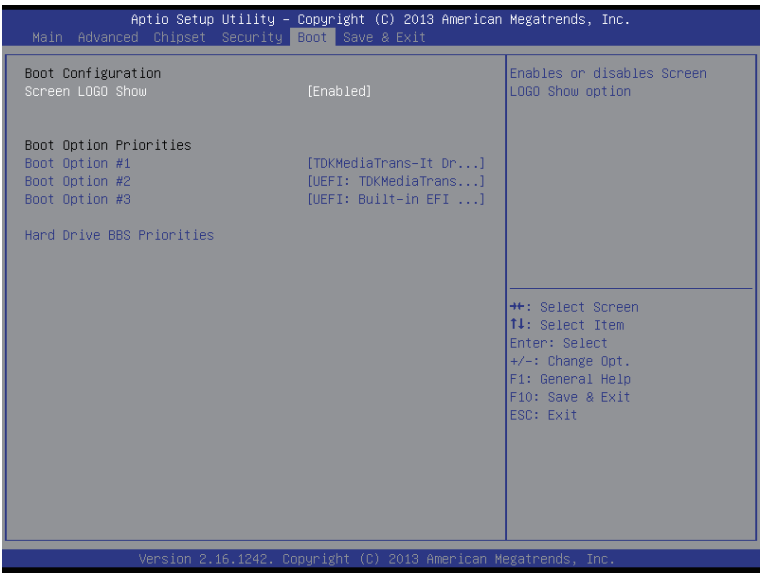
Press [Enter] to configure a new dbx.

☞ **Append Var to DBX**

Press [Enter] to load additional db from a storage devices.

## 2-5 Boot Menu

The Boot menu allows you to set the drive priority during system boot-up. BIOS setup will display an error message if the drive(s) specified is not bootable.




☞ **Boot Configuration**

☞ **Screen LOGO Show**

When this item is enabled, the BIOS will display the full-screen logo during the boot-up sequence. Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Boot Option Priorities**

☞ **Boot Option #1/#2/#3/#4**

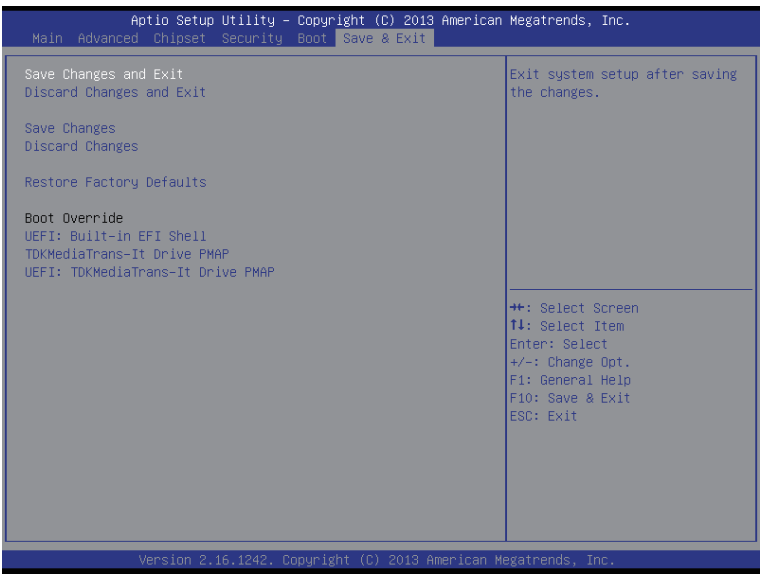
Press Enter to configure the boot priority.

☞ **Hard Drive BBS Priorities**

Press Enter to configure the boot priority.

## 2-6 Save & Exit Menu

The Exit menu displays the various options to quit from the BIOS setup. Highlight any of the exit options then press **Enter**.




### ☞ Save Changes and Exit

Saves changes made and close the BIOS setup.

Options available: Yes/No.

### ☞ Discard Changes and Exit

Discards changes made and close the BIOS setup.

Options available: Yes/No.

### ☞ Save Changes

Active this option to save all the changes.

### ☞ Discard Changes

Discards changes made and close the BIOS setup.

### ☞ Restore Factory Defaults

Loads the default settings for all BIOS setup parameters. Setup Defaults are quite demanding in terms of resources consumption. If you are using low-speed memory chips or other kinds of low-performance components and you choose to load these settings, the system might not function properly.

Options available: Yes/No.

### ☞ Boot Override

Press Enter to configure the device as the boot-up drive.

### ☞ UEFI: Built-in EFI Shell

Press <Enter> on this item to Launch EFI Shell from filesystem device.