



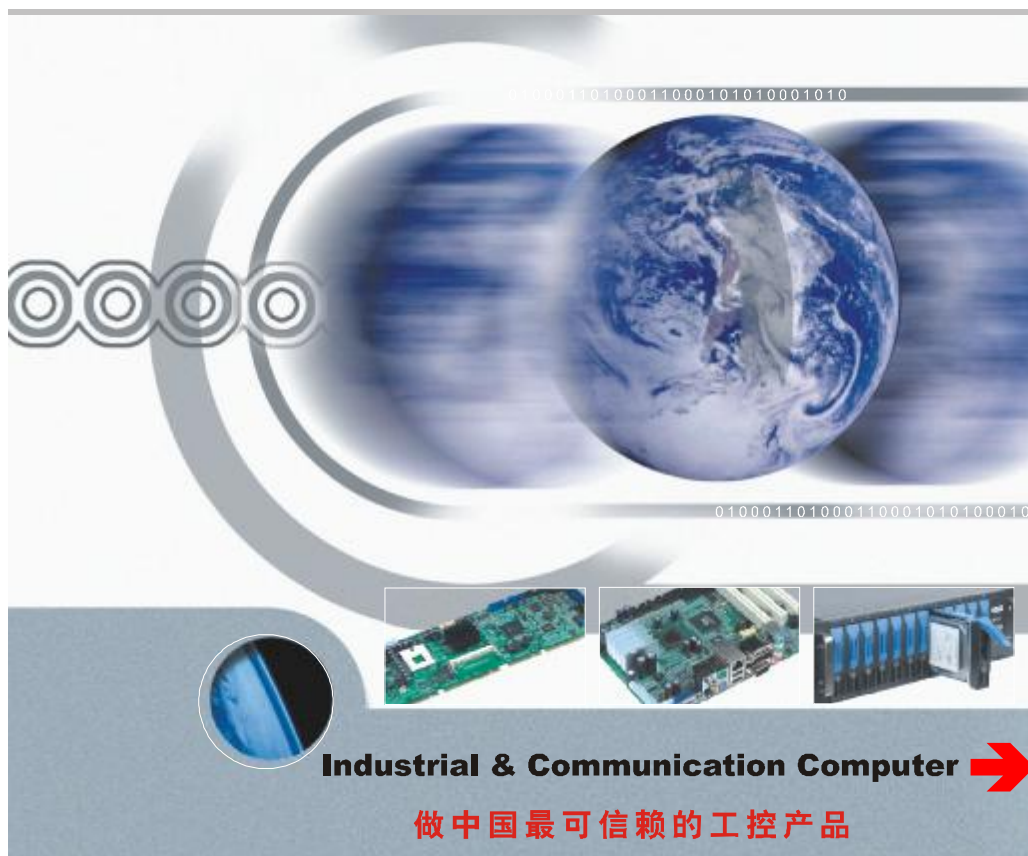
EMB-4870

Embedded Industrial Motherboard

USER' Manual V1.0

用户手册

USER'Manual



Industrial & Communication Computer →

做中国最可信赖的工控产品

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Chapter 1. Product Introduction

Chapter 1 Product Introduction

1.1 Overview

EMB-4870 is a type of embedded motherboard designed for in-car applications. It adopts Intel®Pineview+ICH8M chipset and support 1G DDR2-667 system memory. It provides 2*SATA, 6*USB including 3*2x5Header USB ports. In terms of display, board provides VGA and LVDS. In terms of network, board provides 2*Gigabite Ethernet ports, adopting Intel®82574 chip. Besides, EMB-4870 also provides other interfaces including 10*COM,1*Mini-IDE 1*AUDIO and 1*MINI PCIE. EMB-4870 also provides other advanced functions such as Watchdog Timer and anti-virus BIOS write-protect functions, etc.

1.2 Product Specification

Dimension

- 165mm X 115mm (L×W)

Processor

- Intel® Pineview-M/Pineview-D

Chipset

- North Bridge: Intel®Pineview-M/Pineview-D
- South Bridge: Intel®ICH8M

System Memory

- Onboard 1G DDR2-667MHz memory

Storage

- 2*SATA ,+12V & +5V power supply
- 1*Mini-IDE

Display

- VGA: 3*VGA with one controlled via onboard graphic controller and the other two controlled via SM750
- LVDS: Single channel 18bit LVDS

- VGA & LVDS combination supported

LAN

- Adopt Intel @82574 chip
- 2*Gigabite PCIE_1X LAN Card; 2*standard RJ45 interfaces

Audio

- Adopt ALC262, Speak-out, Mic-in, Line-IN function supported

USB

- 3*2×5Header interfaces, able to be converted to 6*standard USB ports

I/O

- Adopt ITE8783F I/O chip
- 1*2×4PIN keyboard & mouse connector
- 10*COM with COM3-10 supporting RS232 mode and isolated COM1-2 supporting RS232/422/485 mode.

Expansion

- 1*MINIPCIE

Power Supply

- +12V single power supply

Watchdog

- Support HDD reset function

BIOS

- 8Mb SPI Flash BIOS

Environment

- Operating Temperature: -40-80°C
- Operating Humidity: 5%-95%



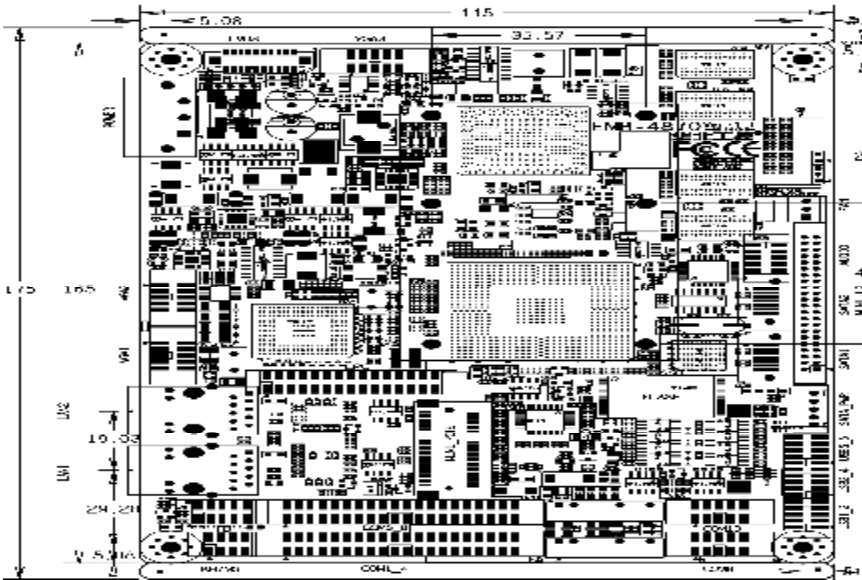
Chapter 2. Installation Instruction

Chapter 2 Installation Instruction

2.1 Interface Location and Dimension Chart

The Chart below shows the interface location and dimension of EMB-4870. During installation, Please follow this chart and read the instructions carefully. Any improper installation of the components will lead to system failure.

Note: When operating, please wear anti-static gloves in case that the static may cause damage to the components.



EMB-4870

2.2 Installation Steps

Please follow the steps below to assemble your computer:

1. Adjust all the jumpers of EMB-4870 according to the manual
2. Install other expansion cards
3. Connect all signal cables, power cables, panel control cable and power supply unit
4. Start the computer and complete the BIOS setup

⚠ All the key components of this board are integrated circuits, which are easy to be damaged by electrostatic influence. So, before installing motherboard, you should

always follow the following precautions:

1. Hold the motherboard by the edge, don't touch the components or any pins on the board.
2. Use a grounded wrist strap while getting in touch with integrated circuit component (such as CPU, RAM).
3. When the integrated circuit components are unused, pls put these components in antistatic tray or bags.
4. Pls make sure the power is disconnected before inserting the power plug.

2.3 Jumper Setting

Please refer to the following jumper setting guide before installing hardware devices

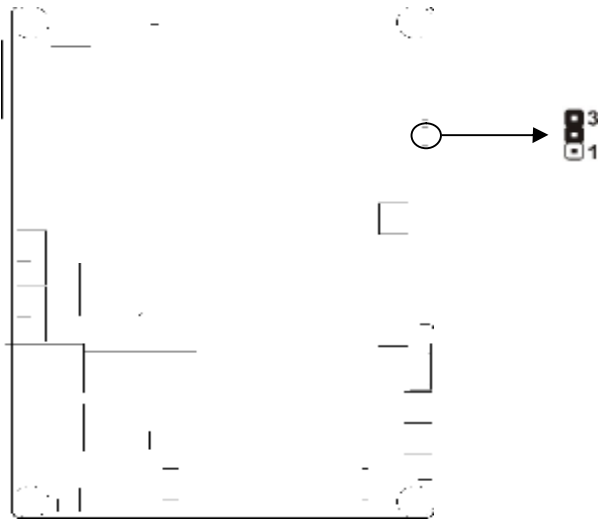
Remark: How to identify jumper and PIN1 of interface: Please observe the word mark of plug socket, it will use "1" or bold line or triangular symbols; and please look at the back of PCB, each interface weld spot has a squar point, which is PIN 1; and all the jumpers' PIN1 has a white arrow on the side.

2.3.1 CMOS Content Clearance/Hold Setting (JCC)

CMOS powered by onboard button battery. Clear CMOS will lead to a permanent elimination of the previous system setting and back to the original setting (system default setting).

Steps:

- (1) Turn off the computer, disconnect the power supply
- (2) Make the Pin 1 and Pin 2 of jumper JCC short for 5–6 seconds, then back to pin2-3
- (3) Start the computer, then press DEL key to enter BIOS setting and reload optimized default value
- (4) Save and exit

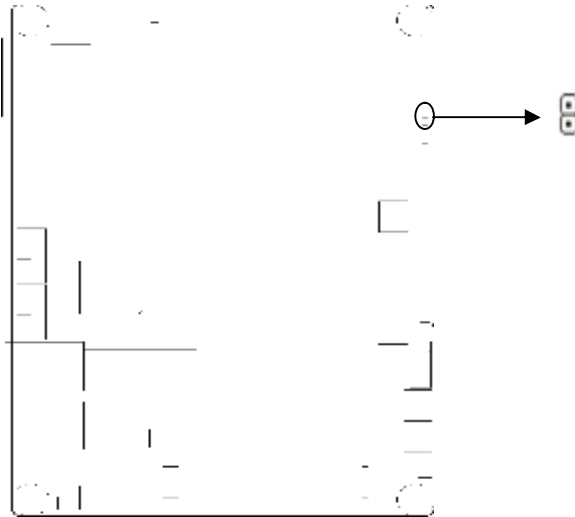


| Setting | JCC |
|---------|--|
| 1-2 | Clear CMOS(BIOS renew to initialization) |
| 2-3 | Nomal status(default) |

⚠ Please do not clear CMOS when computer boot up, it will damage the motherboard

2.3.2 Anti-virus BIOS write-protect Jumper (JAV)

This jumper is used to protect BIOS from virus attack or rewriting. If the jumper JAV is set as closed, you will be unable to flash the BIOS. However in this status, the system BIOS is protected from being attacked by serious virus such CIH virus. If you want to flash your BIOS, pls open this jumper.



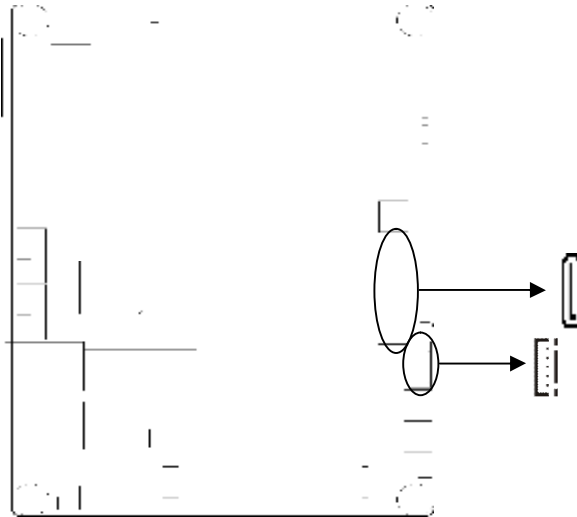
| Setting | JAV |
|---------|--------------------------------|
| Closed | Unable to flash BIOS (default) |
| Open | Able to flash BIOS |

2.4 Interface Specification

⚠ Please read the instructions carefully when connecting external connectors in order to avoid any damage to the motherboard

2.4.1 SATA and SATA PWR Interface (SATA1, SATA2, J15)

Board provides two SATA ports. When using the port, SATA is powered via SATA PWR connector(J15) with an extension cable.



SATA:

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

J15:

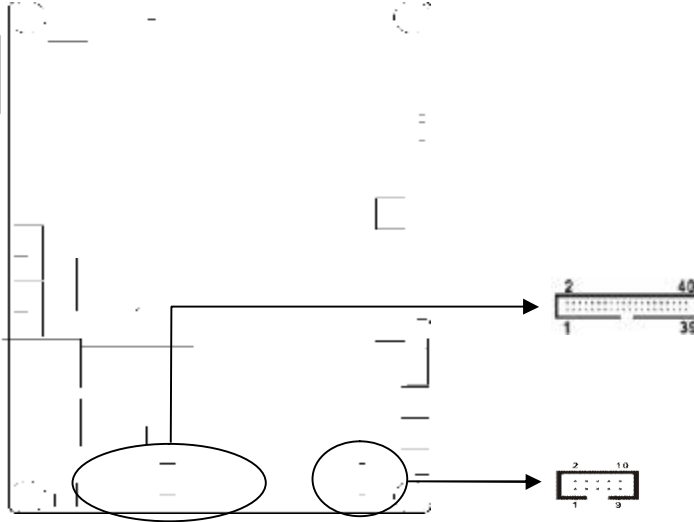
| Pin | Signal Name |
|-----|-------------|
| 1 | +12V |
| 2 | GND |
| 3 | VCC |
| 4 | GND |
| 5 | VCC3 |

2.4.2 Serial Ports (COM1,COM2, COM3-6, COM7-10)

The motherboard provides 10 serial ports. COM1-COM2 adopt 2×5PIN interface. COM3-6 and COM7-10 adopt 2×10PIN interface. Users need to use an extension cable to convert the ports

into standard DB9 interface so as to connect external devices. Users can choose to open or close the serial ports in BIOS setting and can also choose the IRQ and I/O address.

Both COM1 & COM2 support RS232/422/485 mode. COM3-10 support RS232 mode.



COM1-COM2:

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

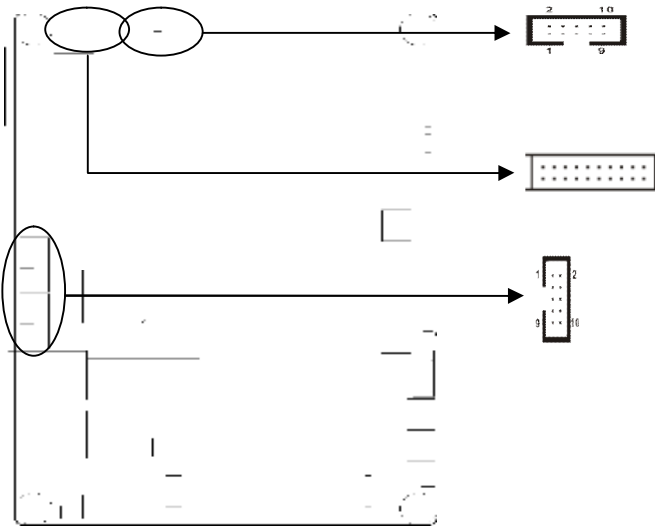
COM3-6, COM7-10:

| Signal Name | Pin | | Signal Name |
|-------------|-----|----|-------------|
| HDCD#3 | 1 | 2 | HDSR#3 |
| HRXD3 | 3 | 4 | HRTS#3 |
| HTXD3 | 5 | 6 | HCTS#3 |
| HDTR#3 | 7 | 8 | HRI#3 |
| GND | 9 | 10 | GND |
| HDCD#4 | 11 | 12 | HDSR#4 |
| HRXD4 | 13 | 14 | HRTS#4 |

| | | | |
|--------|----|----|--------|
| HTXD4 | 15 | 16 | HCTS#4 |
| HDTR#4 | 17 | 18 | HRI#4 |
| GND | 19 | 20 | GND |
| HDCD#5 | 21 | 22 | HDSR#5 |
| HRXD5 | 23 | 24 | HRTS#5 |
| HTXD5 | 25 | 26 | HCTS#5 |
| HDTR#5 | 27 | 28 | HRI#5 |
| GND | 29 | 30 | GND |
| HDCD#6 | 31 | 32 | HDSR#3 |
| HRXD6 | 33 | 34 | HRTS#6 |
| HTXD6 | 35 | 36 | HCTS#6 |
| HDTR#6 | 37 | 38 | HRI#6 |
| GND | 39 | 40 | GND |

2.4.3 Display Interface (VGA, LVDS)

Board provides 3*2x5PIN VGA interfaces and one 2x10PIN LVDS interface



VGA:

| Signal Name | Pin | | Signal Name |
|-------------|-----|---|-------------|
| VGA_R_R | 1 | 2 | GND |

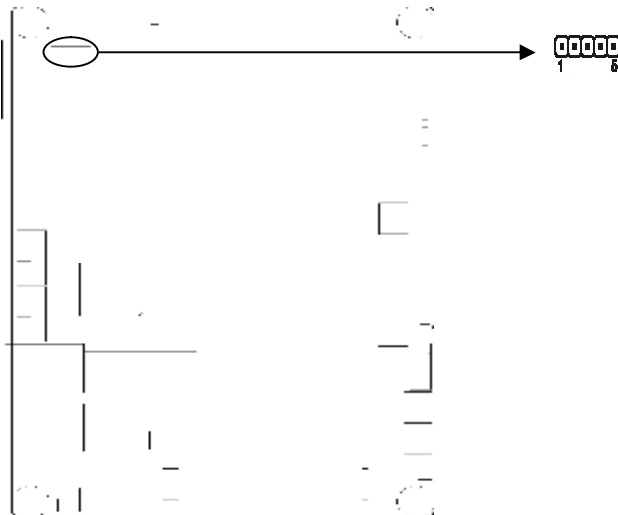
| | | | |
|---------|---|----|-----------|
| VGA_G_R | 3 | 4 | VGA_SDA_R |
| VGA_B_R | 5 | 6 | VGA_HS_R |
| GND | 7 | 8 | VGA_VS_R |
| GND | 9 | 10 | VGA_SCL_R |

LVDS:

| Signal Name | Pin | | Signal Name |
|-------------|-----|----|-------------|
| VCC_LCD | 1 | 2 | VCC_LCD |
| GND | 3 | 4 | GND |
| LA_DATA_N0 | 5 | 6 | L_DDC_DATA |
| LA_DATA_P0 | 7 | 8 | L_DDC_CLK |
| GND | 9 | 10 | GND |
| LA_DATA_N1 | 11 | 12 | LA_CLK_N |
| LA_DATA_P1 | 13 | 14 | LA_CLK_P |
| GND | 15 | 16 | GND |
| LA_DATA_N2 | 17 | 18 | NC |
| LA_DATA_P2 | 19 | 20 | NC |

2.4.4 LVDS Backlight Control (J2)

J2 is used to adjust and control the brightness of LVDS backlight.

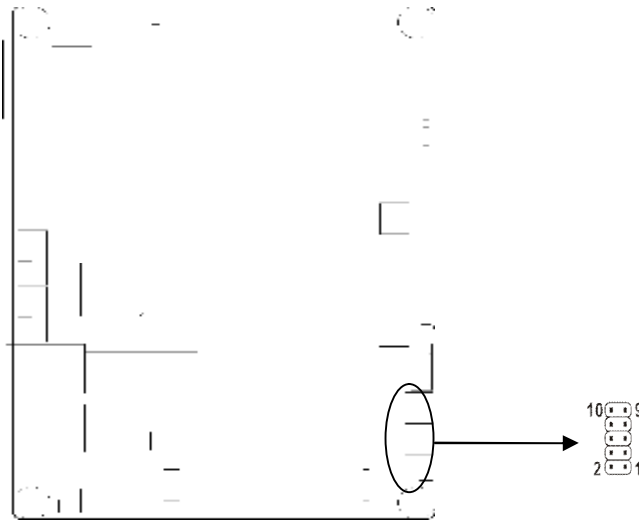


J2:

| Pin | Signal Name |
|-----|-------------|
| 1 | +12V |
| 2 | L_BKLT_EN |
| 3 | GND |
| 4 | L_BKLT_CTL |
| 5 | VCC |

2.4.5 USB Port (USB1, USB2, USB3)

Board provides 6* USB2.0. USB1,USB2, USB3 are needed to converted to standard 2x5Pin USB signal via extension cable so as to connect to the standard USB socket.



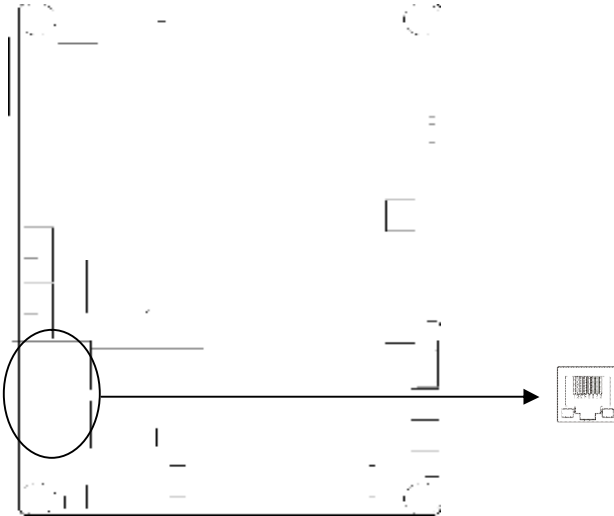
USB1/USB2/USB3:

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

2.4.6 Network Interface (LAN1, LAN2)

Board provides two standard RJ45 Ethernet ports. There are indicator LED on both sides of each port. The Right one indicates data transferring status; The left one indicates network link

status.

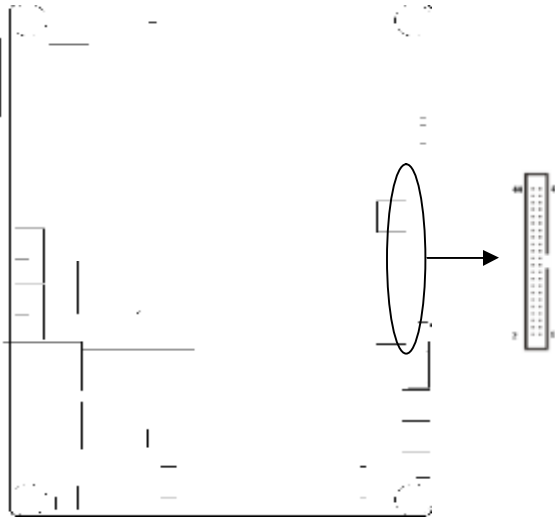


RJ45 PORT LED Status:

| LILED(Green) | Function | ACTLED(Yellow) | Function |
|--------------|------------------------|----------------|-------------------|
| On | Effective link | On | Data transferring |
| Off | Ineffective link/close | Off | No message |

2.4.7 IDE Port

Standard 44Pin Mini-IDE port, able to connect two IDE devices.



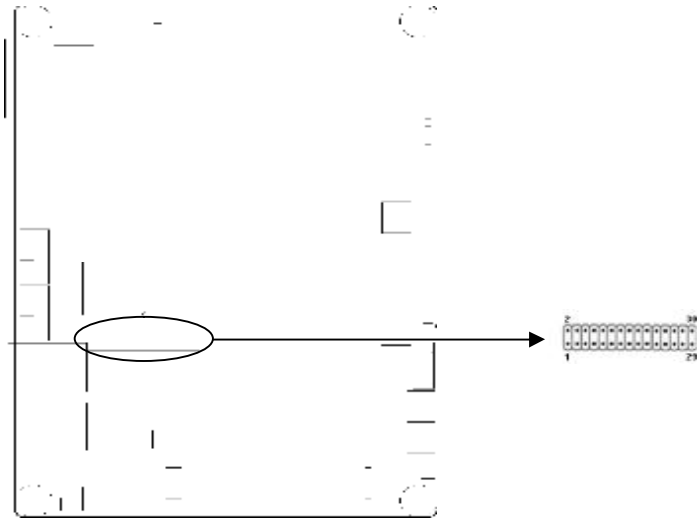
IDE:

| Signal Name | Pin | | Signal Name |
|-------------|-----|----|-------------|
| RESET# | 1 | 2 | GND |
| DDP7 | 3 | 4 | DDP8 |
| DDP6 | 5 | 6 | DDP9 |
| DDP5 | 7 | 8 | DDP10 |
| DDP4 | 9 | 10 | DDP11 |
| DDP3 | 11 | 12 | DDP12 |
| DDP2 | 13 | 14 | DDP13 |
| DDP1 | 15 | 16 | DDP14 |
| DDP0 | 17 | 18 | DDP15 |
| GND | 19 | 20 | NC |
| PDREQ | 21 | 22 | GND |
| PDIOW# | 23 | 24 | GND |
| PDIOR# | 25 | 26 | GND |
| PIORDY | 27 | 28 | CSEL |
| PDMACK# | 29 | 30 | GND |
| IRQ14 | 31 | 32 | NC |
| DAP1 | 33 | 34 | PATADET# |
| DAP0 | 35 | 36 | DAP2 |
| CS1P# | 37 | 38 | CS3P# |

| | | | |
|-------|----|----|-----|
| ACTP# | 39 | 40 | GND |
| VCC | 41 | 42 | VCC |
| GND | 43 | 44 | NC |

2.4.8 JLPC Port (J16)

Board provides one 2×15PIN JLPC (Low Pin Count Interface Specification) port to connect external devices.



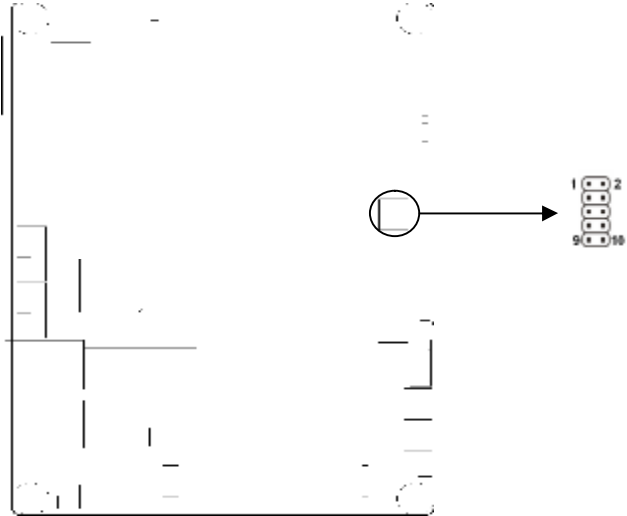
JLPC:

| Signal Name | Pin | | Signal Name |
|--------------|-----|----|---------------|
| DEBUGCLK | 1 | 2 | GND |
| LFRAME_N | 3 | 4 | VCC |
| LDRQ#0 | 5 | 6 | VCC |
| LPC_AD3 | 7 | 8 | GND |
| LPC_AD2 | 9 | 10 | VCC3 |
| LPC_AD1 | 11 | 12 | VCC3 |
| LPC_AD0 | 13 | 14 | GND |
| SIO_SERIRQ | 15 | 16 | SMB_CLK_MAIN |
| GND | 17 | 18 | SMB_DATA_MAIN |
| PM_SUS_STAT# | 19 | 20 | IDE_RST# |
| GND | 21 | 22 | VCC |
| GPIO54 | 23 | 24 | GPIO50 |

| | | | |
|--------|----|----|--------|
| GPIO55 | 25 | 26 | GPIO51 |
| GPIO56 | 27 | 28 | GPIO52 |
| GPIO57 | 29 | 30 | GPIO53 |

2.4.9 Audio Interface (JAUD)

Board provides one 2×5PIN Audio interface. Speak-out, Mic-in, Line-IN function supported.

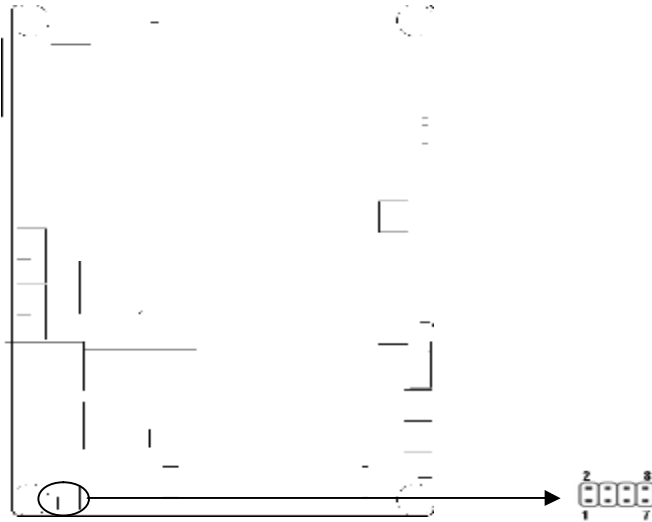


Audio:

| Signal Name | Pin | | Signal Name |
|-------------|-----|----|-------------|
| C_MIC1_L | 1 | 2 | C_MIC1_R |
| C_FRONT_L | 3 | 4 | C_FRONT_R |
| GND | 5 | 6 | GND |
| GND | 7 | 8 | NC |
| C_LINE1_L | 9 | 10 | C_LIN1_R |

2.4.10 Keyboard & Mouse Connector (KMS)

Board provides one 2×4Header and PS/2 keyboard and mouse connector. An extension cable is needed to connect to keyboard and mouse.



KMS:

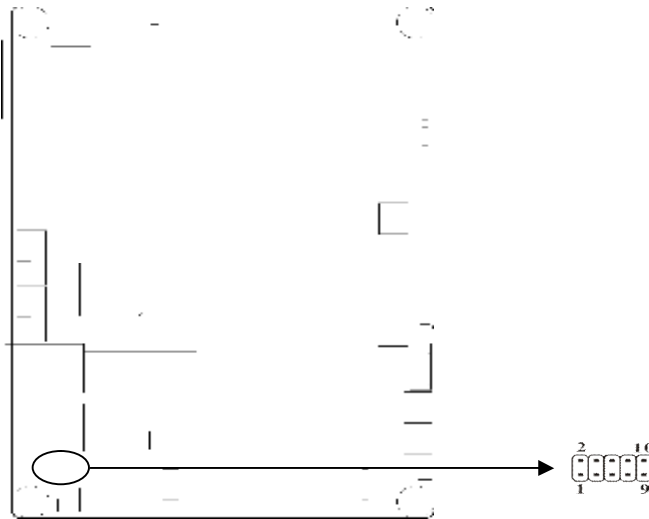
| Signal Name | Pin | | Signal Name |
|-------------|-----|---|-------------|
| VCC | 1 | 2 | MS_CLK |
| GND | 3 | 4 | MS_DATA |
| KB_DATA | 5 | 6 | GND |
| KB_CLK | 7 | 8 | VCC |

2.4.11 MiniPCIE Port (MINI_PCIE)

Board provides one standard MINI_PCIE port. Users can expand the Mini PCIE devices based on actual needs.

2.4.12 Front Panel Connector (JFP)

JFP is used to connect all the function buttons and indicator LED on the front panel.



JFP:

| Signal Name | Pin | | Signal Name |
|-------------|-----|----|-------------|
| VCC | 1 | 2 | GREEN LED- |
| HDD_LED+ | 3 | 4 | HDD_LED- |
| NC | 5 | 6 | NC |
| RSTBTN- | 7 | 8 | GND |
| PAN_SW#_R | 9 | 10 | GND |

Please follow the table below to connect, pay attention to the anode(+)and cathode(-), otherwise , some function can not be realized.

| |
|--------------|
| POWER LED |
| HDD LED |
| |
| RESET BUTTON |
| POWER BUTTON |

1)System Power LED Pins (pin1, pin2 for PWRLED)

Connect system power LED cable with these pins. (pin 1 is LED anode) When system power is switched on, power LED on; when system power is switched off, power LED off.

2) HDD Status Indicator Pins (Pin 3,Pin4 for HDD LED)

Generally, the panel provides one IDE indicator LED. When IDE devices write or read, the LED indicator will flash, to show the device working normally. Connect the LED indicator cable to the pin. (Pin3 is LED anode).

3) Reset Button Pins (Pin 7, Pin 8 for RESET Button)

Connect the reset button cable to these two pins. When system fails, reset button can make the system continue to work and no need to turn on / off the power.

4) Power On/Off Button Pins (pin9, pin10 for Power Button)

Connect these two pin to the spring button on the chassis to connect or disconnect the power supply.



Chapter 3. BIOS SETUP

Chapter 3 BIOS Setup

AMI BIOS Upgrading

BIOS functions as a bridge connecting hardware and operating system. Hardware and software are upgrading all the time, so when your system goes wrong, for example, your system can not support the newest CPU, you need to upgrade BIOS to keep up with the latest technology.

AFUDOS.EXE is the FLASH IC program for BIOS to upgrade, which needs to be run in DOS mode.

Pls use a boot disk to load DOS, then run AFUDOS.EXE to upgrade BIOS (for example: write XXXX.ROM into FLASH IC)

Oder format:

A:\Afudos XXXX.rom

If you need to add other parameters, pls add <space>/? after the order format

Example: Afudos 4870T101.rom /P /B /C /N /X

Remarks:

1. BIOS upgrading is only executed when your system goes wrong.
2. Please use the upgrading program in the CD-ROM provided by us or download the latest version of the upgrading program on-line
3. Please do not power off or reboot the system when upgrading, otherwise, the BIOS maybe be damaged or system may not be able to boot again.
4. Please backup your BIOS before upgrading

AMI BIOS Description

When the computer is power on, BIOS will conduct self-diagnosis to its hardware on motherboard and configure hardware parameter, finally the operating system will take control. BIOS is the communication bridge between hardware and O/S. Correct configuration of BIOS is critical for maintaining system stability and its optimized performance.

BIOS Parameter Configuration

After finishing the self-diagnosis, following message will show on the screen:

DEL->SETUP, pls press DEL, then system will enter BIOS setup interface automatically after doing the IDE detection:

1. Power on or reboot the computer, self-detection information will show:
2. When message shows as "Press to enter setup", pls press , then enter into BIOS SETUP Program.
3. Use the "←→↓"to choose the option which your want to modify, press <Enter> and then the sub-menu.will show.
4. Use the "←→↓"and <Enter> to modify the value; press"Enter" to modify BIOS options that you choose
5. At any time, press<Esc> can go back to the father-menu.

3.1 Main Menu

| BIOS SETUP UTILITY | |
|---|---|
| Main | Advanced PCIPnP Boot Security Chipset Exit |
| <p>System Overview</p> <hr/> <p>AMIBIOS Version :08.00.16 Build Date:08/12/10 ID :4870T101</p> <p>Processor</p> <p>Speed :255MHz Count :255</p> <p>System Memory Size :1024MB</p> <p>System Time [00:04:53] System Date [Tue 01/01/2002] Flash Write Protection [Disabled]</p> | <p>Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.</p> <p>Use [+] or [-] to configure system Time.</p> <p>← Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit</p> |
| v02.68 (C) Copyright 1985-2009, American Megatrends, Inc. | |

AMI BIOS (Read Only)

BIOS information: BIOS version, build date and BIOS ID.

Processor (Read Only)

This option shows the processor Information: such as the processor speed

System Memory (Read Only)

This option shows the system memory size

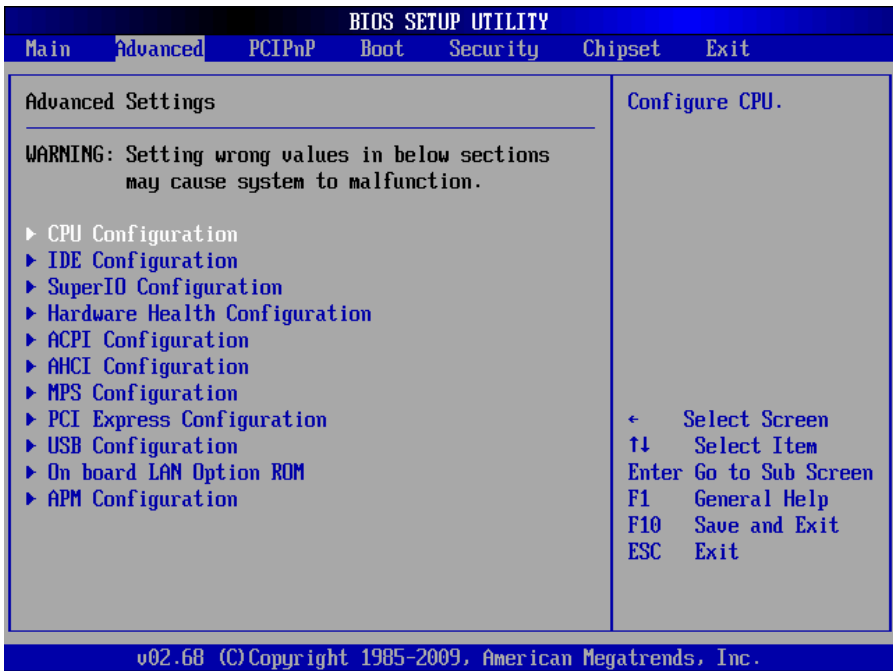
System Time

System Time Format: Hour/Minute/Second

System Date

System Date Format: Week/ Month/ Day/ Year.

3.2 Advanced Menu



Note: The incorrect parameter may lead to your system failure, pls set up this section carefully according to the following instructions.

3.2.1 CPU Configuration



This Read-Only option contains the detailed information of CPU, including CPU manufacturer, type, frequency, L1 cache and L2 cache, ect.

Max CPUID Value Limit

[Enabled]: Support this function

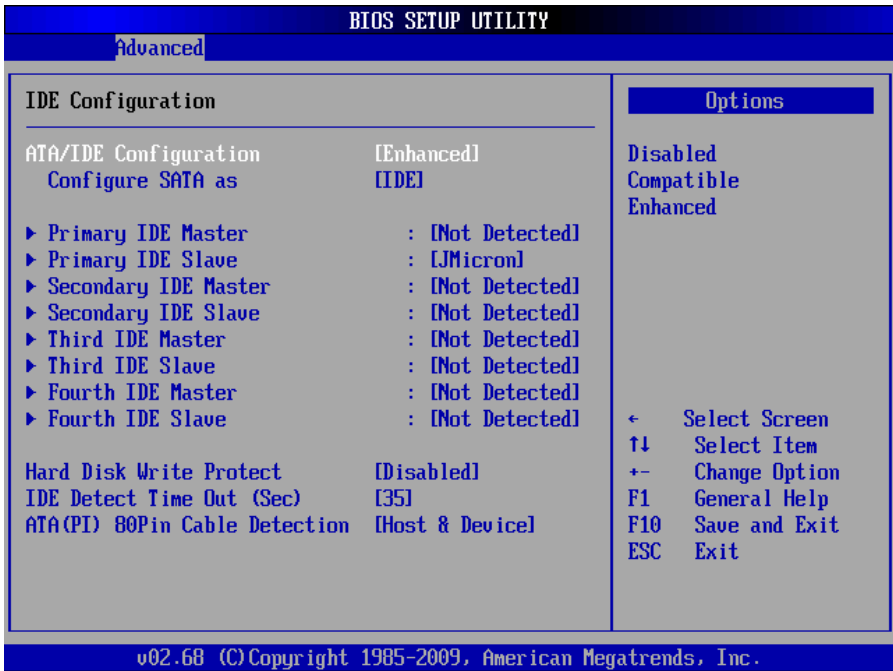
Execute-Disable Bit Capability

Execute Disable Bit (EDB) is a hardware-based security feature that introduced to its new generation CPU by Intel, which can help reduce system exposure to viruses and malicious code. EDB allows the processor to classify areas in memory where application code can or cannot execute. To use Execute Disable Bit you must have Windows XP SP2 operating system to support this function.

Hyper Threading Technology

This option is configured to activate or deactivate the CPU Hyper Threading Technology. Options are [Enabled] and [Disabled].

3.2.2 IDE Configuration



ATA/IDE Configuration

This option is to select ATA/IDE configuration mode. Two options available: [Compatible] mode and [Enhanced] mode

Configure SATA as

SATA Configuration Mode Selection. Three options available:[RAID], [AHCI] and [IDE].

Primary/Secondary /Third/Fourth IDE Master/Slave

These eight options are used to config the IDE interface types. Recommended defaults as [Auto] to let the system automatically setup the devices.

Hard Disk Write Protect

HDD Write Protect function setting:

<Enabled> Write Protect is activated, HDD read only:

<Disabled> HDD can write or read.

IDE Detect Time Out (Sec)

Set BIOS searching IDE device in appointed time (by seconds)

ATA (PI) 80Pin Cable Detection

Setup detecting ATA (PI) 80pin cable. There are three options available.

Select <Host & Device>: it will consult the cable type both IDE controller and IDE disk drive, which is system default; Select<Host> it will use the cable type used by IDE controller; Select <Device> it will use the cable type used by IDE disk drive.

3.2.3 Supper IO Configuration

| BIOS SETUP UTILITY | |
|---|----------|
| Advanced | |
| Configure Ite8783 Super IO Chipset | |
| Serial Port1 Address | [3F8] |
| Serial Port1 IRQ | [4] |
| Serial Port2 Address | [2F8] |
| Serial Port2 IRQ | [4] |
| Serial Port3 Address | [700] |
| Serial Port3 IRQ | [10] |
| Serial Port3 Mode | [Normal] |
| Serial Port4 Address | [708] |
| Serial Port4 IRQ | [10] |
| Serial Port4 Mode | [Normal] |
| Serial Port5 Address | [710] |
| Serial Port5 IRQ | [10] |
| Serial Port5 Mode | [Normal] |
| Serial Port6 Address | [718] |
| Serial Port6 IRQ | [10] |
| Serial Port6 Mode | [Normal] |
| Serial Port7 Address | [720] |
| Serial Port7 IRQ | [5] |
| Allows BIOS to Select Serial Port1 Base Addresses. ← Select Screen ↑↓ Select Item +− Change Option F1 General Help F10 Save and Exit ESC Exit | |
| v02.68 (C) Copyright 1985-2009, American Megatrends, Inc. | |

Serial Port Address

This is used to config the serial port address and interrupt. Options are [3F8/IRQ4 (Default)], [2F8/ IRQ3], [3E8/ IRQ4], [2E8/IRQ3], [Disabled].

Serial Port IRQ

This is used to config the serial port IRQ address. Default set is recommended.

Serial Port Mode

This option is used to define the serial port mode. Options are [Normal (default)], [Bi-Directional], [ECP], [EPP], [ECP&EPP]. Optimized Setting is [Normal].

Parallel Port Address

This option is used to config the parallel port address. Default address is recommended.

Parallel Port Mode

This is used to choose parallel port transmission mode. Default as Normal.

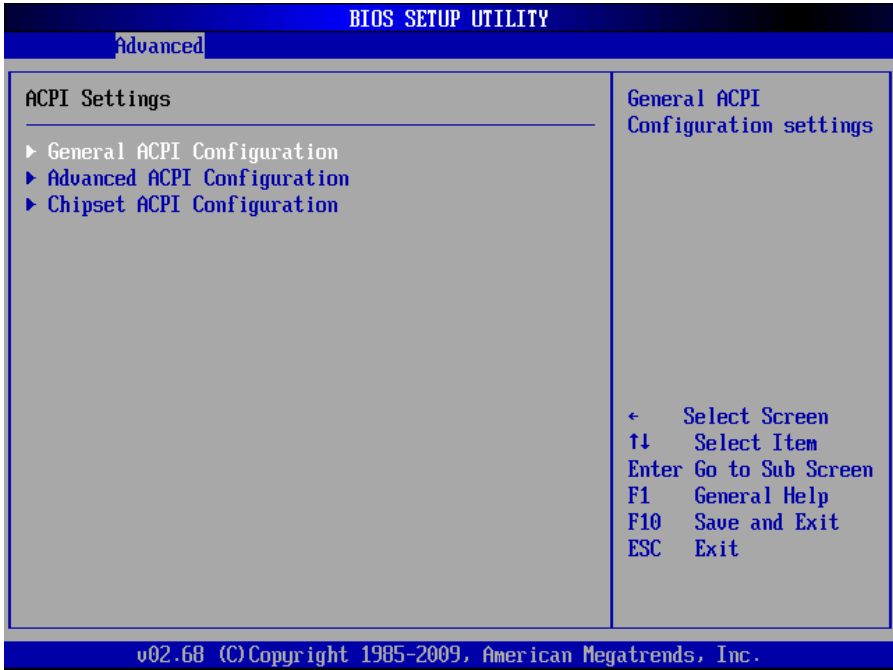
3.2.4 Hardware Health Configuration

| BIOS SETUP UTILITY | |
|---|--------------|
| Advanced | |
| Hardware Health Configuration | |
| H/W Health Function | [Enabled] |
| CPU Temperature | :101°C/213°F |
| System Temperature | :38°C/100°F |
| Fan1 Speed | :N/A |
| Enables Hardware Health Monitoring Device. | |
| ← Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit | |
| v02.6B (C) Copyright 1985-2009, American Megatrends, Inc. | |

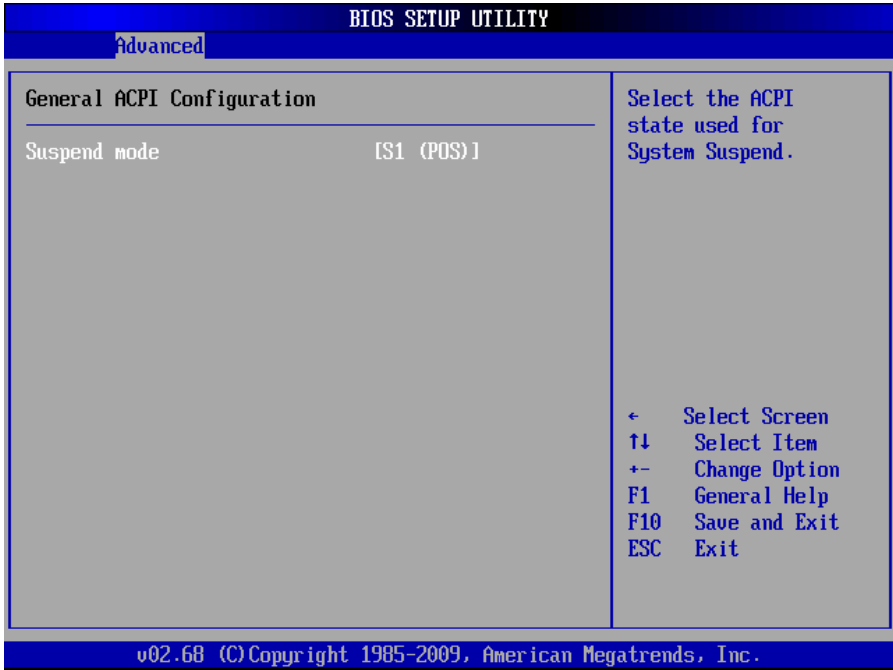
Hardware Health Configuration

This option is used to do hardware health detection. BIOS will show the current system temperature, CPU temperature, FAN rev speed and related voltage.

3.2.5 ACPI Configuration



3.2.5.1 General ACPI Configuration



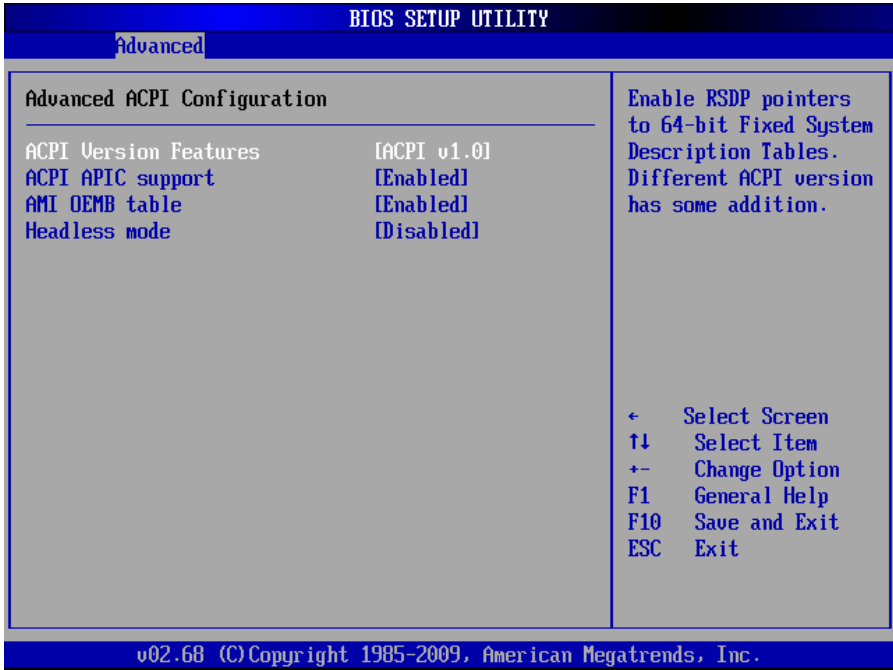
Suspend mode

Suspend mode selection. Different modes with different power consumption.

S1(pos): CPU stops working while other devices are still connected to power supply.

S3(STR): Power is only supplied to system memory.

3.2.5.2 Advanced ACPI Configuration



ACPI Version Features:

ACPI Version Selection. Different versions with different features, generally with downward compatibility.

ACPI APIC support

Select to open or close the APIC, which can manage to expand the system available IPQ resources.

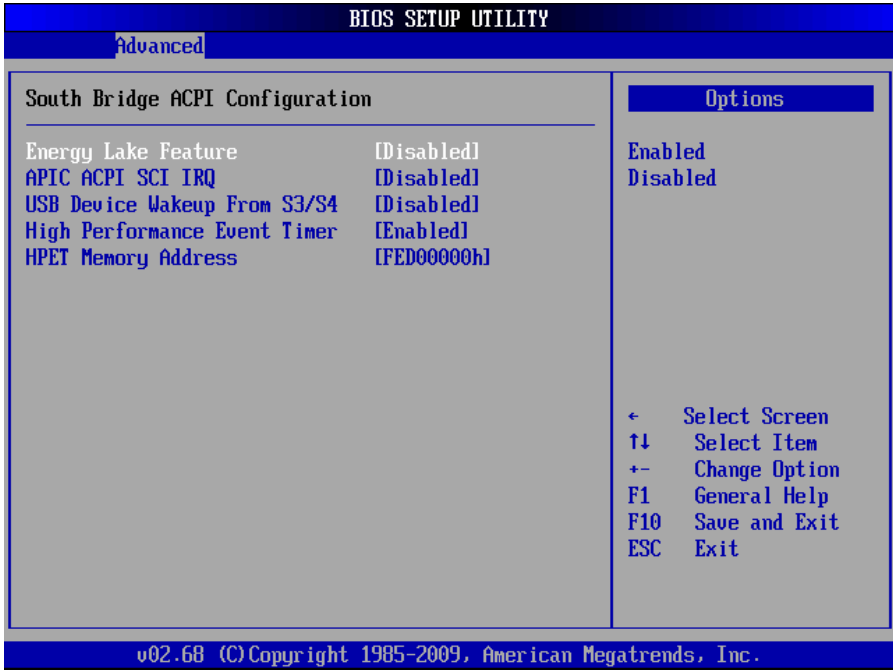
AMI OEMB table

Disable or enable the AMI OEMB table function

Headless mode

System in this mode that no VGA output , no mouse or keyboard input.

3.2.5.3 Chipset ACPI Configuration



Energy Lake Feature

This option is configured to support Energy Lake Feature or not.

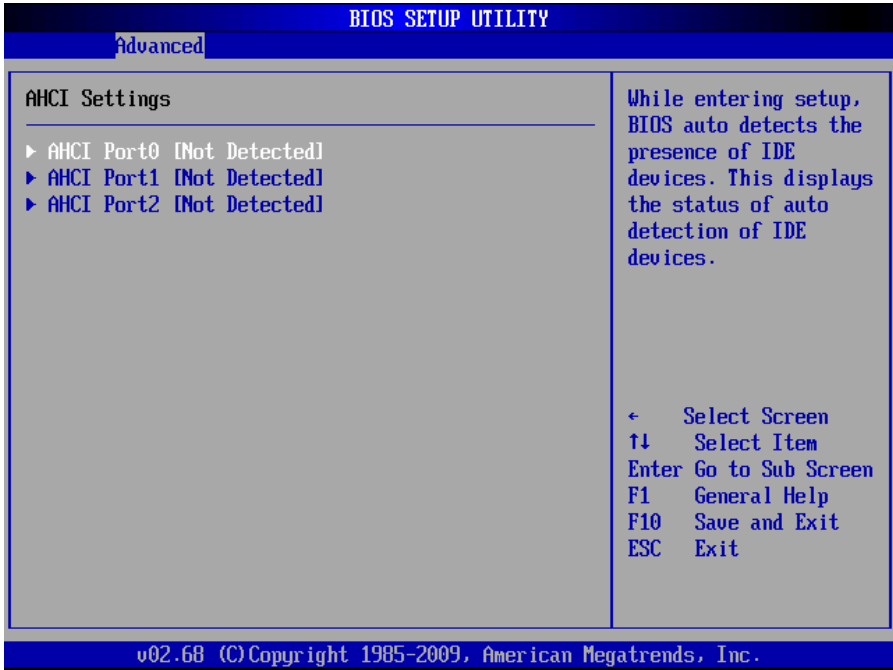
APIC ACPI SCI IRQ

Enable or disable the internal I/O APIC ACPI SCI IRQ.

USB Device Wake up From S3/S4

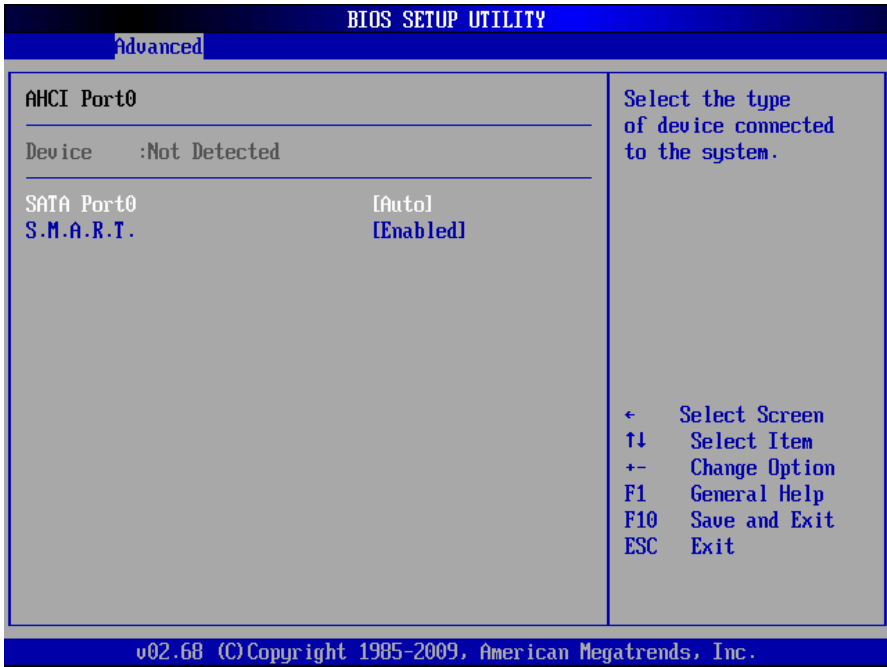
This option is used to allow USB device to wake up from S3/S4.

3.2.6 AHCI Configuration



AHCI Port0

Move the cursor to "AHCI Port0" , then press "Enter" key, the following screen will pop out:



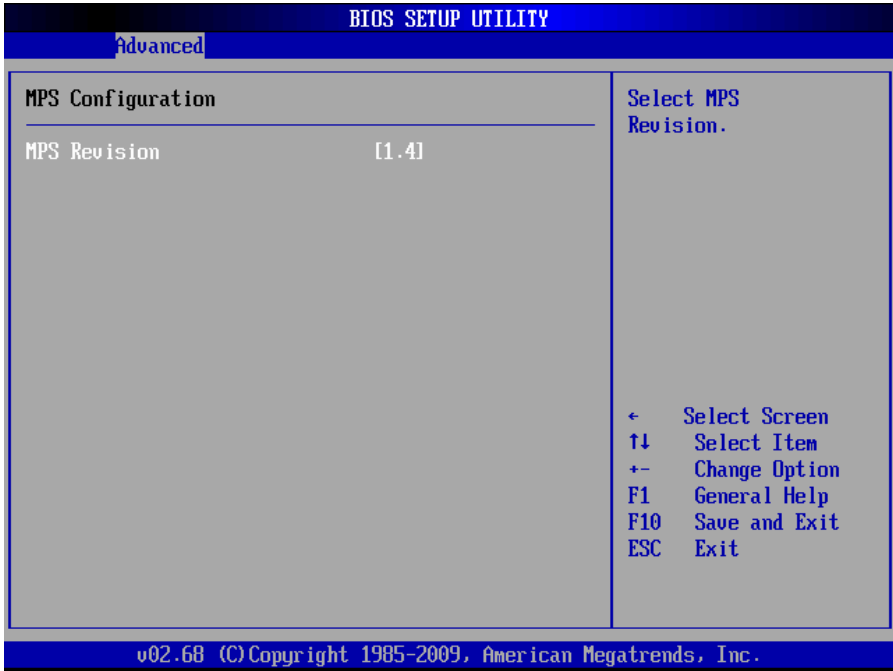
SATA Port0

Options are [Auto], [Enabled], [Disabled]. Default as [Auto].

S.M.A.R.T.

S.M.A.R.T.is a monitoring system for computer hard disk drives to detect and report on various indicators of reliability, in the hope of anticipating failures.The default set.is recommended.

3.2.7 MPS Configuration



MPS Revision

Multi-processor revision selection. This option enables users to choose the multi-processor revision according to the OS being used.

3.2.8 PCI Express Configuration

The screenshot shows the BIOS SETUP UTILITY interface. At the top, it says "BIOS SETUP UTILITY" and "Advanced". The main section is titled "PCI Express Configuration" and lists several settings, all of which are currently set to "[Auto]":

- Relaxed Ordering [Auto]
- Maximum Payload Size [Auto]
- Extended Tag Field [Auto]
- No Snoop [Auto]
- Maximum Read Request Size [Auto]
- Active State Power Management [Disabled]
- Extended Synch [Auto]

To the right of these settings, there is a description: "Enables/Disables Pci Express Device Relaxed Ordering." Below the settings, there is a legend for navigation keys:

- ← Select Screen
- ↑↓ Select Item
- + - Change Option
- F1 General Help
- F10 Save and Exit
- ESC Exit

At the bottom of the screen, it says "v02.68 (C) Copyright 1985-2009, American Megatrends, Inc."

This is the PCI Express Configuration Option. Default setting is recommended.

3.2.9 USB Configuration



Module Version (Read Only)

This option shows the version of USB module.

USB Devices Enabled (Read Only)

This option shows the USB devices that are connected with motherboard.

Legacy USB Support

If need support USB device in DOS mode: such as USB Flash Disk, USB keyboard, then select <Enabled> or<Auto>. If not , pls select < Disabled>

USB Function

This option is configured to open or close the USB ports on the motherboard. Default as[Enabled].

USB 2.0 Controller

[Enabled]: Open USB2. 0 Controller

[Disabled]: Close USB2.0 Controller

USB2.0 Controller Mode

This option is to set the transmission speed of USB 2.0 Controller:

<FullSpeed> : USB port is 1.1 spec (12Mbps)。

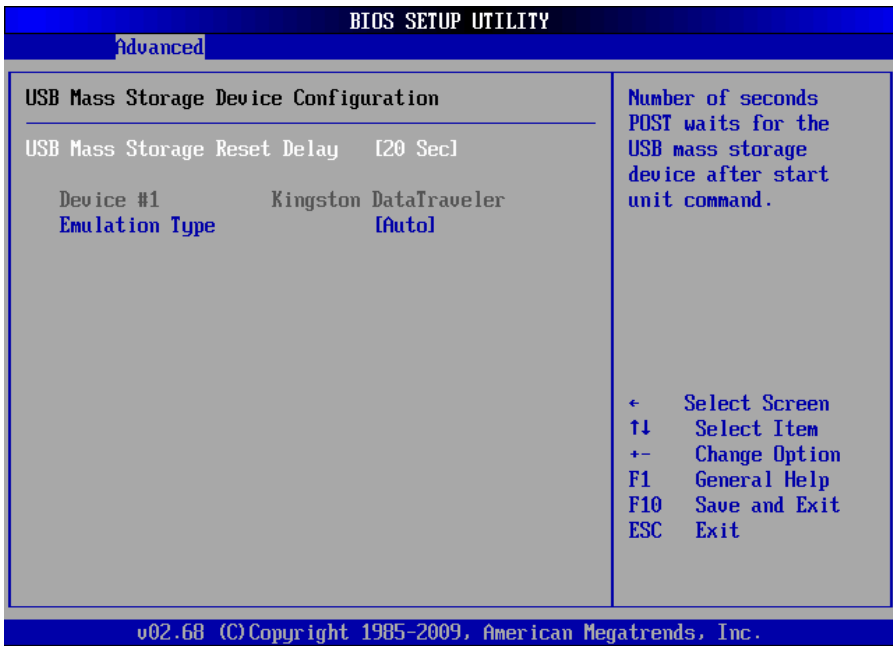
<HiSpeed>: USB port is 2.0 spec (480Mbps)。

BIOS EHCI Hand-off

<Enabled>: When enter OS, BIOS auto close.

<Disabled>: When enter OS, BIOS closed by OS.

3.2.9.1 USB Mass Storage Device Configuration



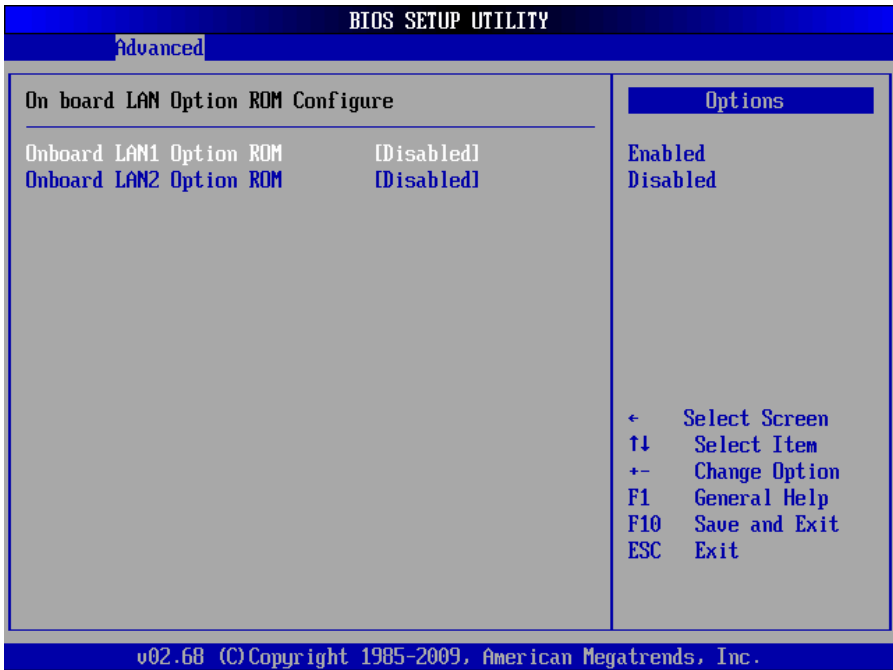
USB Mass Storage Reset Delay

This option is used to config the reset delay for the pluggable USB device. Default as [20Sec].

Emulation Type

This is used to config the USB flash disk emulation type when Udisk booting. Available options are [Floppy], [HDD], [CD-ROM],etc. Default as[Auto].

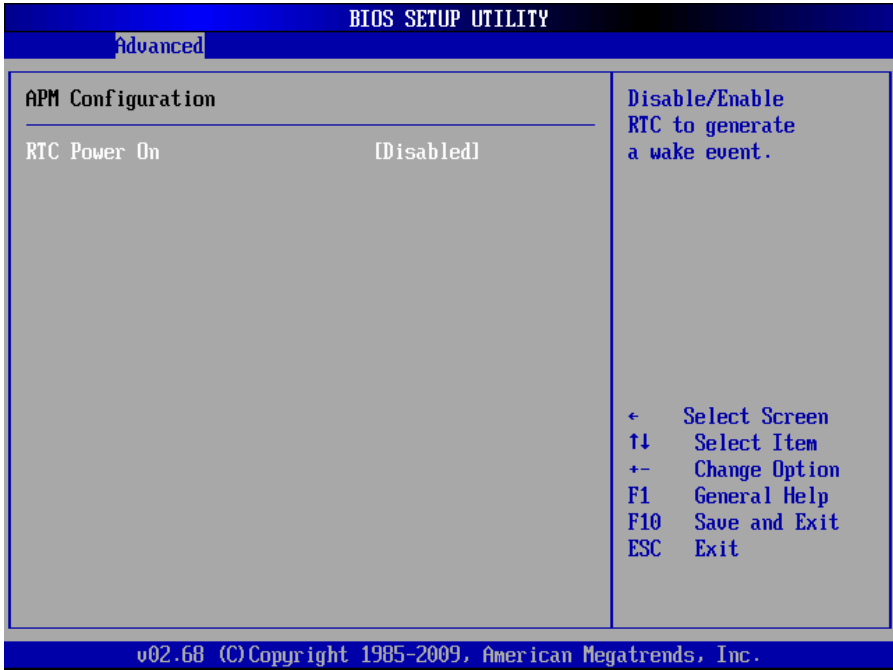
3.2.10 On board LAN Option ROM



Onboard LAN1/2 Option ROM

This option is used to load onboard LAN1/2 boot code. Options are [Enabled] and Disabled].

3.2.11 APM Configuration



RTC Power On

This option is used to setup RTC Power On. Options are [Enabled] & [Disabled].

3.3 PCI PnP Menu



Reminder: Incorrect configuration to the following options will lead to your system malfunction. Thus, please do the configuration carefully according to the manual.

Clear NVRAM

This option is used to clear NVRAM data.

[NO] for keeping the data

[YES] for clearing the data

Plug & Play O/S

This option is configured to allocate the interrupted resource in the peripheral devices via BIOS or PnP O/S . Choose [YES], O/S will automatically allocate the resources If O/S doesn't have the PnP function, pls set this option as [NO].

PCI Latency Timer

All PCI latency timer setting. Unit is PCI clock period. Default as 64

Allocate IRQ to PCI VGA

<Yes>: Allocate IRQ to PCI VGA

<No>: No need to use PCI VGA card.

Palette Snooping

This option will change the setting of system palette. System defaults as [Disabled]

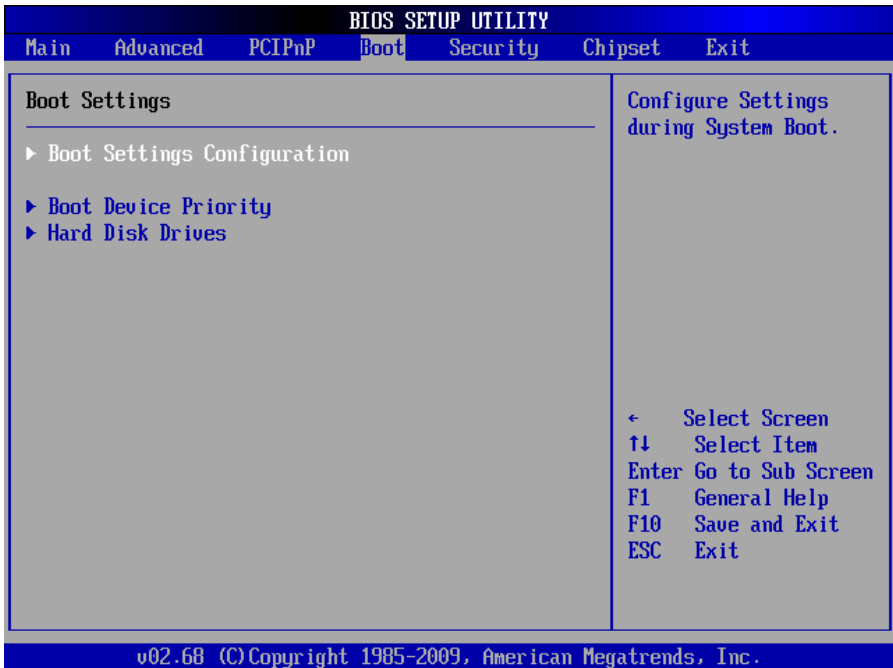
PCI IDE BusMaster

This option is configured to allow or forbid the use of PCI IDE Bus Master. Bus Mastering can accelerate the speed of PCI IDE . System defaults as [Disabled]

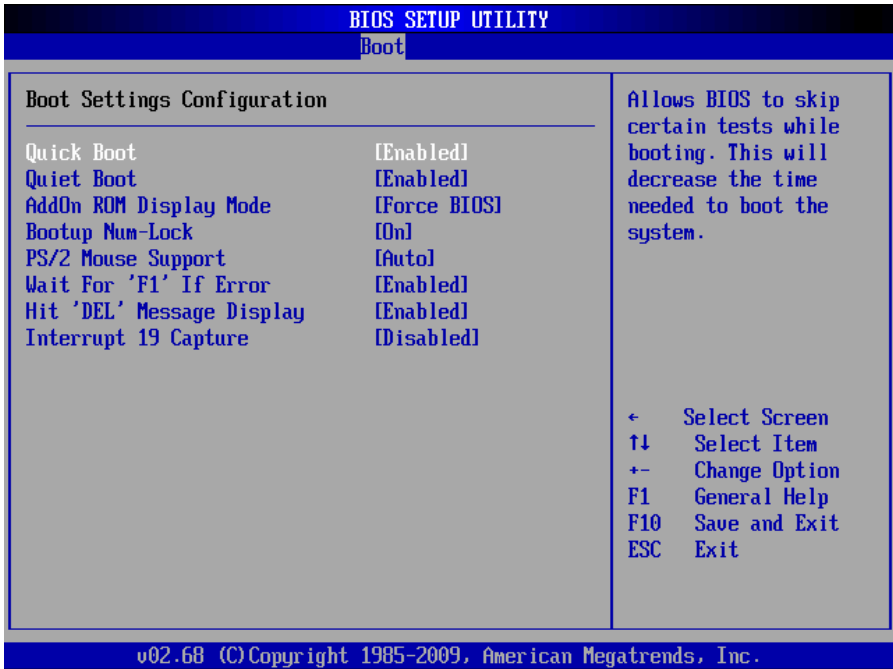
OffBoard PCI/ISA IDE Card

This option is used to config the offboard PCI/ISA IDE card. Choose" AUTO", system will conduct self-detect, or users can choose the specific slot for this card by themselves.

3.4 Boot Menu



3.4.1 Boot Setting Configuration



Quick Boot

<Enabled>: BIOS will skip self-detection and accelerate POST

<Disabled>: After BIOS detect load Windows O/S..

Quiet Boot

This option is configured to show Logo on the screen picture when booting the computer.

<Disabled> for close and <Enabled> for open. The system defaults as <Enabled>.

AddOn ROM Display Mode

This option is used to config the display mode of graphic card software and default as [Force BIOS].

Boot Up Num-Lock

This option is configured to activate the Num-lock after booting the DOS system. [ON] for

unlocking the number lock and [OFF] for locking the number key.

PS/2 Mouse Support

This option is configured to open or close the PS/2 Mouse Interface.

Wait For “F1” If Error

If error occurs , wait for “F1”. When the error doesn't lead to power down, then following messages will show: “Press ‘F1’ to resume” or “Press‘ F1’ to Setup”, users can press F1 to make the system go on working.

Hit “DEL” Message Display

[Enabled]: when boot the system, following message will show:

Hit “DEL” if you want to run Setup

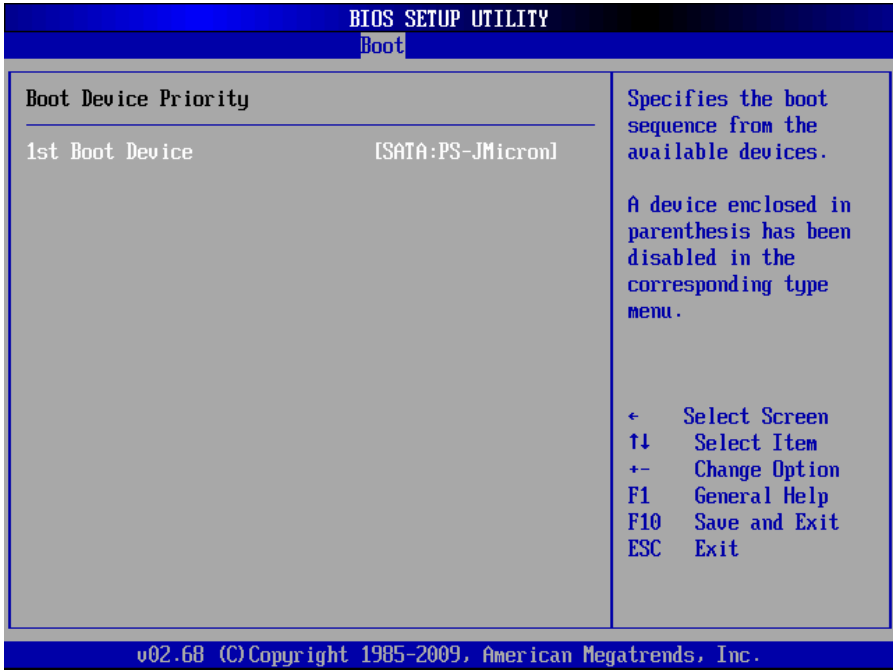
[Disabled]: No message will show, system generally defaults as [Enabled].

Interrupt 19 Capture

[Enabled]: Capture function is activated. BIOS will function according to the add-in cards configurations in ROM

[Disabled]: BIOS will not be effected by add-in cards

3.4.2 Boot Device Priority



Press "Enter", then the following sub-menu will show:

1st Boot Device

System will detect devices by this priority until it finds an available boot device.

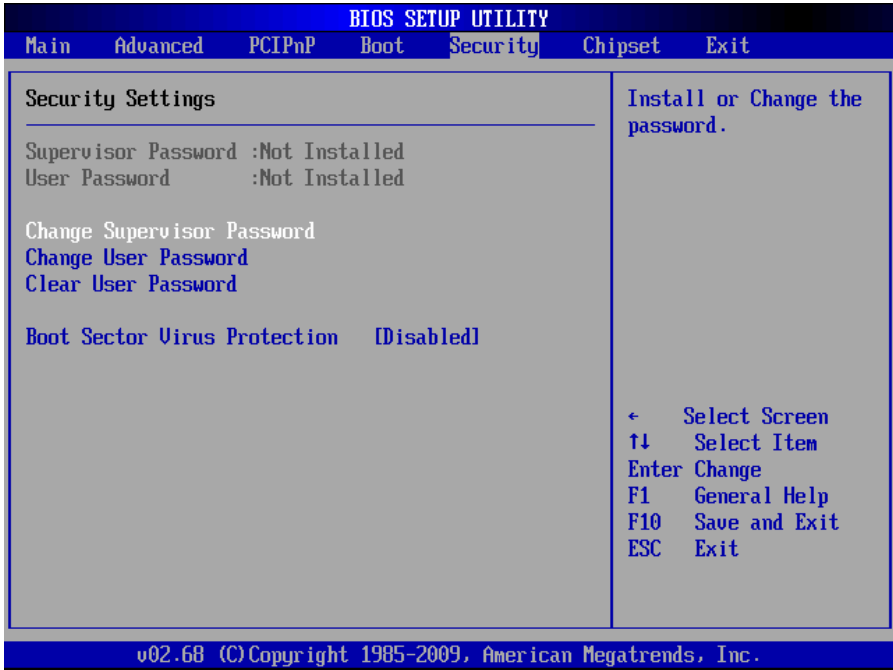
(Boot device can be the Removable Drive or the Hard Disk Drive)

3.4.3 Hard Disk Drives



This option contains multiple hard disks to be used as boot devices. If multi-HDD connected, user must set up their priority. The HDD of the highest priority will display in “ Boot Device Priority”.

3.5 Security Menu



Supervisor Password

If you set up the supervisor password, it will display “Installed”

If not, it will display “Not Installed”

User Password

If you set up the user password, it will display “Installed”

If not, it will display “Not Installed”

Change Supervisor Password

Press ‘Enter ‘ under this option, then enter sub-menu to change the password.

Change User Password

This option is used to change the users’ password. Press ‘Enter ‘ under this option, then enter sub-menu to change the password.

Clear User Password

This option is used to clear users' password. Press 'Enter ' under this option and select "yes" and press"Enter" then you can change the password.

Boot Sector Virus Protection

<Enabled> the bootable sections protection will be available. If you execute disk format or write the bootable section instruction, BIOS will send a warning.

Example as below:

Boot Sector Write!

Possible VIRUS: Continue (Y/N)? _

(Must press much 'N' and skip up)

Format!!!

Possible VIRUS: Continue (Y/N)? _

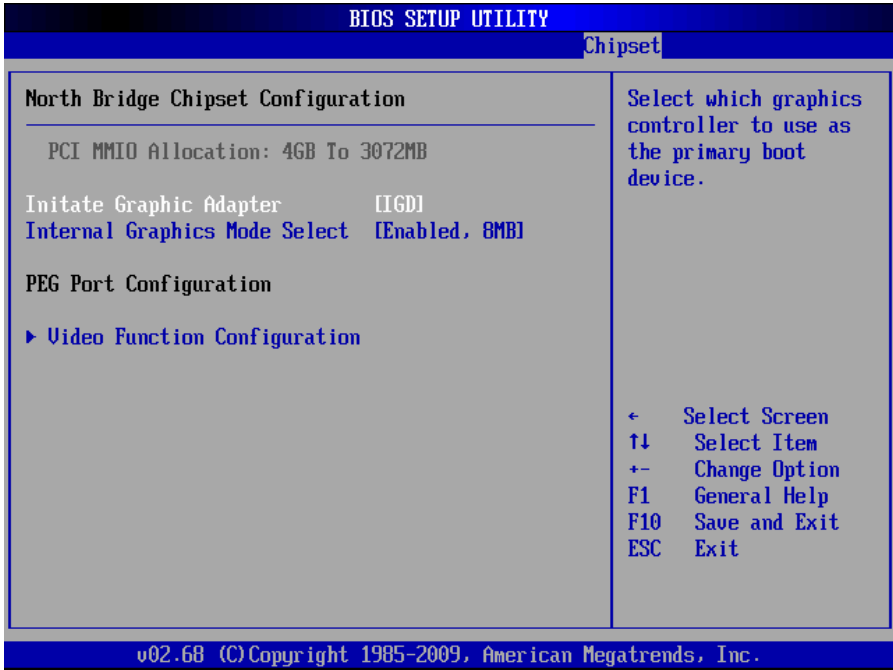
(Must press much 'N' and skip up)

<Disabled>: close this function.

3.6 Chipset Menu

| BIOS SETUP UTILITY | | | | | | |
|---|----------|----------------------------------|------|----------|---------|------|
| Main | Advanced | PCIPnP | Boot | Security | Chipset | Exit |
| Advanced Chipset Settings | | Configure North Bridge features. | | | | |
| WARNING: Setting wrong values in below sections may cause system to malfunction. | | | | | | |
| ▶ North Bridge Configuration | | | | | | |
| ▶ South Bridge Configuration | | | | | | |
| | | ← Select Screen | | | | |
| | | ↑↓ Select Item | | | | |
| | | Enter Go to Sub Screen | | | | |
| | | F1 General Help | | | | |
| | | F10 Save and Exit | | | | |
| | | ESC Exit | | | | |
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3.6.1 North Bridge Configuration



Initate Graphic Adapter

This option is to config the device as the prior Graphic Adapter

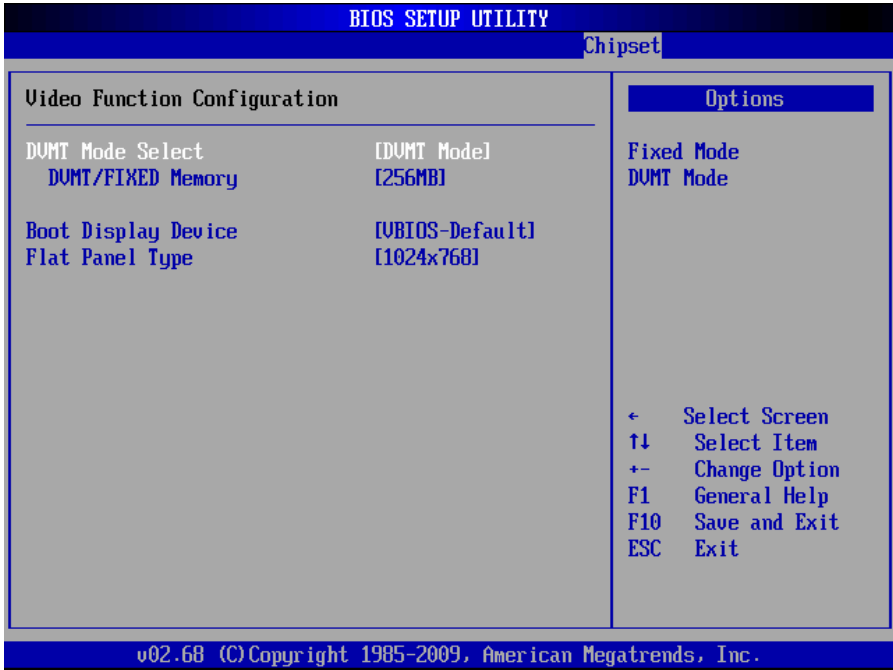
Internal Graphics Mode Select

The graphic memory size setting for the motherboard graphic card. It will share the vedio memory before installing the drive; after intalling the drive, system will allocate the memory size according to DVMT

PEG Port Configuration

This option is to open or close the interface for PCI Express Graphics

3.6.1.1 Video Function Select



DVMT Mode Select

Integrated graphic card shared memory choice.

[DVMT]: Dynamic shared memory size. Driver will allocate the shared memory according to system memory.

[FIXED]: Fixed shared memory size. Driver will allocate the shared memory according to the BIOS setting.

DVMT/FIXED Memory

This is used to show the DVMT/FIXED Memory Size.

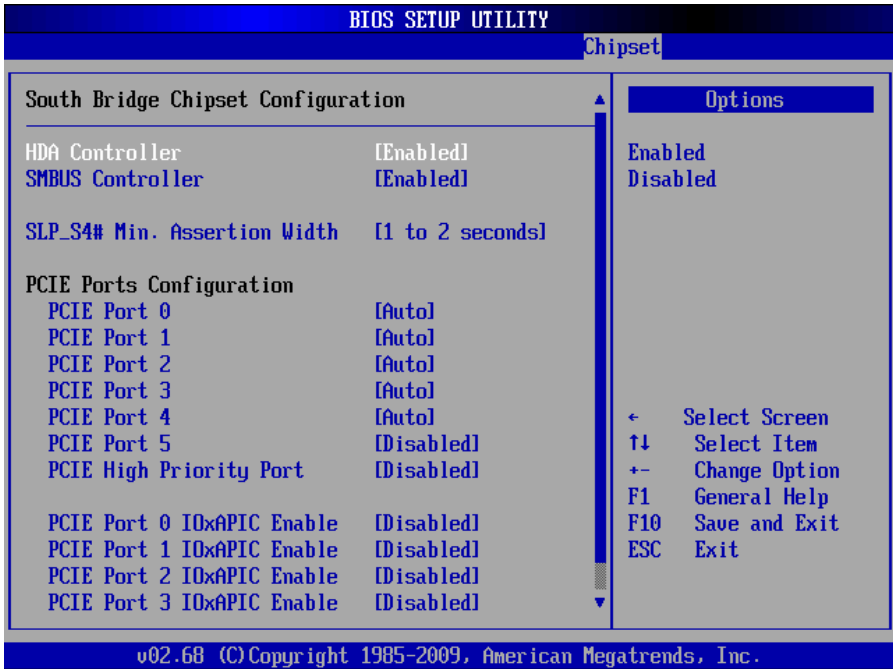
Boot Display Type

This option can be configured as Vbios-Default CRT, LVDS or LVDS + CRT.

Flat Panel Type

This is used to config the resolution fo LCD devices.

3.6.2 South Bridge Chipset Configuration



SMBUS Controller

This option is for setting SMBUS Controller, [Enable] for open, [Disable] for close. Default as [Enabled].

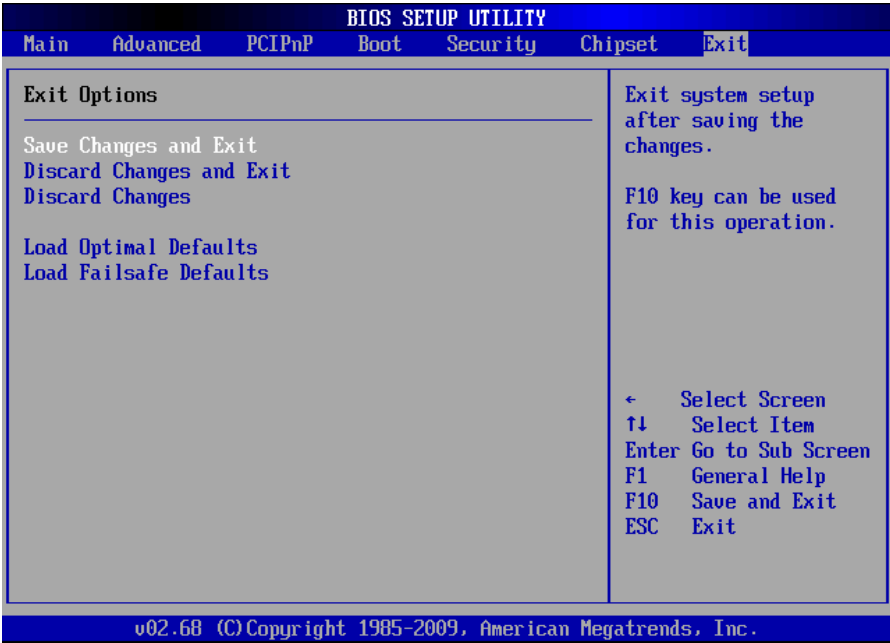
SLP_S4# Min. Assertion Width

This option is set as default [1 to 2 seconds].

PCIE Ports Configuration

This option can be set as [Auto]/[Enabled]/[Disabled], The system defaults as [Auto]

3.7 Exit Menu



Save Changes and Exit

Press <Enter> and <Enter> under this option, to save BIOS change and reboot system.

Discard Changes and Exit

Press <Enter> and <Enter> under this option to discard the BIOS changes and exit the current interface.

Discard Changes

Press <Enter> and <Enter> under this option to discard all the changes but still continue to set BIOS

Load Optimal Defaults

Recommend users first to select his option before BIOS configurations.

Load Failsafe Defaults

Recommend users to select this option in case of system failure.



Appendix

Appendix

Appendix 1. Watchdog Programming Guide

watchdog reference code (ASM)

Set the port under DEBUG order to realize the various functions of Watchdog Timer

Port Instruction:

2EH: Address register

2FH: Data register

Example: Set Watchdog Timer for 30 seconds, DEBUG in DOS:

```
c:\>debug
-o 2e 87
-o 2e 01
-o 2e 55
-o 2e 55 ; unlock
-o 2e 07
-o 2f 07 ; select logical device

-o 2e 72
-o 2f 90 ; ( 90 for second,10 for minute)
-o 2e 73
-o 2f 1e ;(0x1E=30)
-q
```

Press "Enter" after inputing the last line of the instruction, system will reboot automatically after 30 seconds

Appendix 2. Glossary

ACPI

Advanced Configuration and Power Management. ACPI specifications allow O/S to control most power of the computer and its add-ons

BIOS

Basic input/output system. It is a kind of software including all in/out control code interface in PC. It will do hardware testing while system is booting, and then the O/S runs. BIOS provides a interface between O/S and hardware and is stored in a ROM chip.

BUS

In a computer system, it is the channel among different parts for exchanging data; it is also a set of hardware lines. BUS here refers to part lines inside CPU and the main components of system memory.

Chipset

Chipset is a Integrated set of chips for executing one or more related functions. Here it refers to a system level chipset structured by Southbridge & Northbridge; It decides the structure and main functions of motherboard.

CMOS

Complementary Metal-Oxide Semiconductor, which is a widely used semiconductor with the characteristics of high-speed and low-power. COMS here refers to part of space on-board CMOS RAM for saving date, time, system information and system parameter,ect.

COM

Computer-Output Microfilmer.A universal serial communication interface, usually adopts normative DB 9 connector.

DIMM

Dual-Inline-Memory-Modules. It is a small circuit board with memory chipset providing 64 bit memory bus width.

DRAM

Dynamic Random Access Memorizer.It's a normal type of memory often with a transistor and a capacitance to store 1 bit. With the development of the technology, more and more types of DRAM with different specifications exist in computer applications. For example: SDRAM/DDR SDRAM/RDRAM.

I2C

Inter—Integrated Circuit , generically referred to as "two-wire interface", is a multi-master serial single-ended computer bus invented by Philips that is used to attach low-speed peripherals to a motherboard, embedded system, or cellphone.

LAN

Network interface.Network grouped by correlative computers in a small area, generally in a company or a building. Local area network is buildup by sever, workstation, some communications links. Terminals can access data and devices anywhere through cables, which enables users to share costly devices and resource.

LED

Light-Emitting Diode.A semiconductor device that shines when power supply is connected, It is often used to denote information directly, for example, to denote power on or HDD working normally.

PnP

Plug-and-Play. It is a specification that allows PC to configure its external devices automatically and can work independently without the manual operation by its user . To achieve this function, its BIOS should be able to support PnP and a PnP expansion card

POST

Self-test when power on. While the system is booting, BIOS will do an uninterrupted testing to the system, including RAM, keyboard, hard disk driver etc.to check if all the components are in normal situation and work well.

PS/2

A keyboard & mouse connective interface specification developed by IBM. PS/2 is a DIN interface with only 6PIN; it also can connect other devices, like modem

USB

It's Universal Serial Bus for short. A hardware interface adapts to low speed peripherals, and is always used to connect keyboard, mouse etc. One PC can connect maximum 127 USB devices, providing 12Mbit/s transmit bandwidth USB supports hot swap and multi- data stream, namely, you can plug USB devices while system is running, system can auto-detect and makes it work on.



敬请参阅

<http://www.norco.com.cn>

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