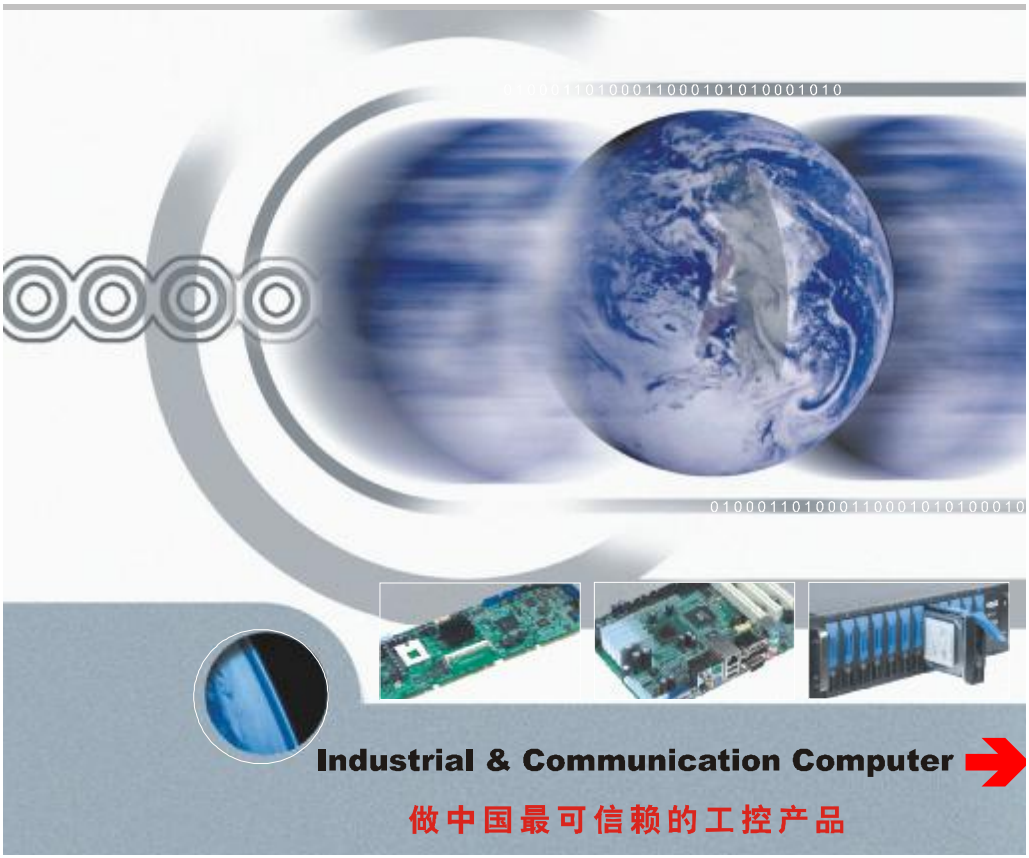
华北工控
NORCO

EMB-3870

Embedded Motherboard

USER' Manual V1.1

用户手册
USER'Manual



Content

Chapter 1. Produc
Introduction

Chapter 1. Product Introduction

1.1 Overview

EMB-3870 is an ultra low-power embedded motherboard, based on Intel Intel ®Pineview-M+ICH8M chipset. Onboard one 200Pin SO-DIMM socket supports DDRII 667MHz system memory up to 2GB. This board is featured by rich I/O: 2×SATAII, 8×USB(including 3 group 2×5Header interfaces and 1×standard double layer USB interface), 6×COM and 2×Intel ®82574L Ethernet ports,1×Audio Interface and 1×Mini-PCIE. Its Intel GMA 3150 integrated graphics card supports VGA/LVDS/TV-out display output.(VGA+LVDS or VGA+TV-out can achieve dual independent display)

EMB-3870 motherboard also support Watchdog Timer, BIOS anti-virus and write protect functions, which improve the system stability in different operating environments.

1.2 Product Specifications

Dimension

●145mm X 102mm（L×W）

Processor

●Intel ® Pineview-M N450

Chipset

●Southbridge：Intel ®ICH8M

System Memory

●1×SO-DIMM Socket

●Support DDR2 667MHz sytem memory up to 2GB

Storage

●2×15+7PIN SATAII interface

●1×CF card socket

●1×MINI-PCIE and SSD card for option

Display

●VGA:1× DB15VGA interface

●LVDS: single channel18bit LVDS supported

●TVOUT: 1×2×5PIN, LVDS and TVOUT for options by LVDS expansion

●Support VGA+LVDS or VGA+TVOUT independent dual-view display output

LAN

● Based on Intel ®82574L

●2× standard RJ45

Audio Interface

●ALC888 supports Speak-out/Mic-in and Line-IN

USB Ports

●8×USB2.0

●Rare panel with1×standard double layer USB interface

●3×2×5Header interface, able to be connected to 6×USB ports

I/0

● Utilize IT8783AX chip

●1*2×4PIN Keyboard and Mouse interface

●6×COM with COM1-5 supporting RS232 mode and COM6 supporting RS232/422/485 mode

Expansion Interface

●1×MINIPCIE

Power Supply

●+12V single power supply

Watchdog Timer

●Support HDD reset function

BIOS

- 8M bit SPI Flash BIOS

Environment

- Operating Temperature: 0-60℃
- Operating Humidity：5%-95% no-condensation

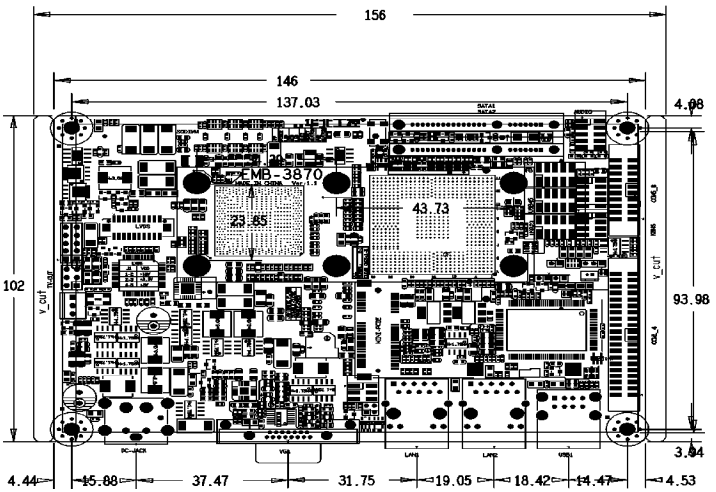
Chapter 2. Installation Instruction

Chapter 2. Installation Instruction

2.1 Interface Position and Dimension Diagram

The chart below shows the interface location and dimension of EMB-3870 board. Improper installation of some components will lead to system malfunction, pls install the devices carefully according to the manual.

Note: Before installation, pls put on antistatic gloves in case of any damage to the components.



EMB-3870 Dimension Diagram and Interface Location

2.2 Installation Steps

Please follow the steps below to assemble your computer:

1. Set all the jumpers on motherboard EMB-3870 according to the manual
2. Install Memory
3. Install expansion cards
4. Connect all signal cale, power cable, panel control cable and power supply unit.
5. Power on the computer and complete BIOS setup.

⚠ **All the key components of this board are integrated circuits, which are easy to be damaged by electrostatic influence. So, before installation, please keep the following precautions in minde:**

1.Hold the motherboard by the edges, don't touch the components or any pins on the board.

2. Use a grounded wrist strap/gloves while getting in touch with integrated circuit components (such as CPU, RAM).

3. When the integrated circuit components are unused, pls put these components in antistatic trays 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 your hareware devices.

Remark: How to identify PIN1 of jumper and 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, that is PIN 1; and PIN1 of all the jumpers has a white arrow beside it.

2.3.1 CMOS Content Clearance/Hold Setting（JCC）

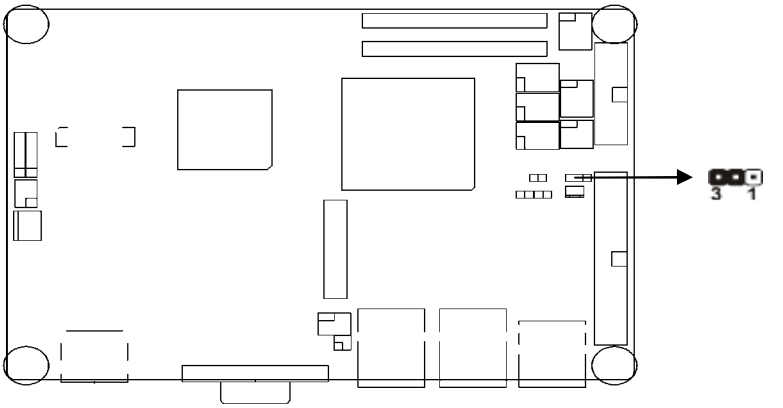
CMOS powered by onboard button battery. Clear CMOS will lead to a permanent elimination of the previous system setting and back to the original (default setting) system setting.

Steps :（1）Turn off the computer, disconnect the power supply

（2）Use jumper cap short JCC Pin 1 and Pin 2 for 5~6 sec，Then restore the default setting of Pin2 and Pin 3.；

（3）Turn on the computer, then press F1 key into the BIOS setting and reload the optimized default value.

（4）Save and exit setting.

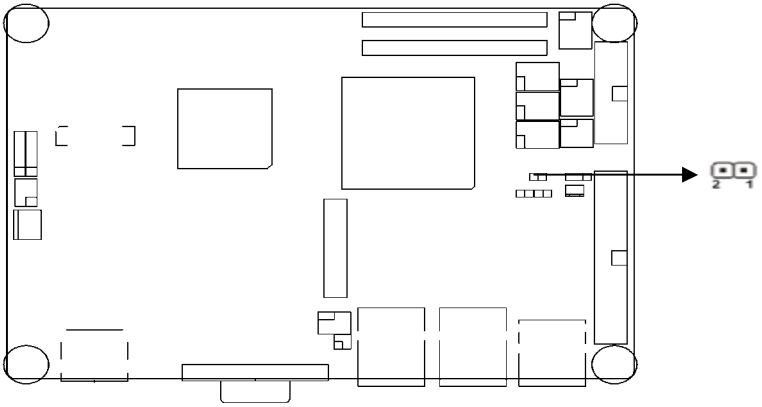


Setting	JCC
1-2	Clear CMOS(BIOS back to initialization)
2-3	Nomal status(default)

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

2.3.2 BIOS-protect Jumper Setting（JAV）

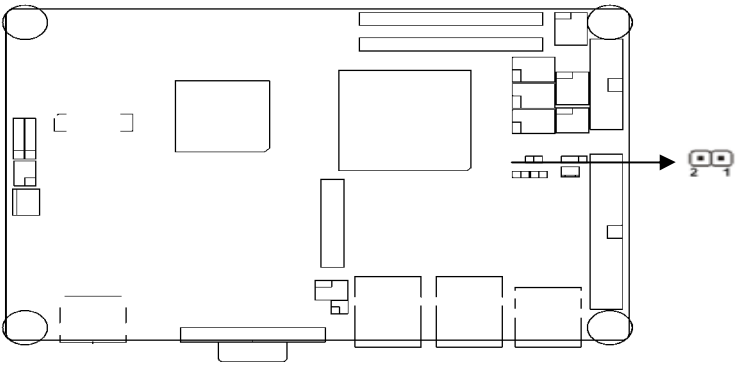
This jumper is used to protect BIOS from virus attack or rewriting. If the jumper JAV is set as dosed, you will be unable to flash the BIOS. However in this status, the system BIOS is protected from being attacked by serious virus such CIH virus. If you want to flash your BIOS, then set jumper JAV open.



Setting	JAV
Close	Disable to flash BIOS(default)
Open	Enable to flash BIOS

2.3.3 CF card function Slave/Master Selection（JCF）

The jumper is used to config CF card’s slave or master disk. When JCF is closed，CF card is Master device. When you remove jumper, it will be slave.



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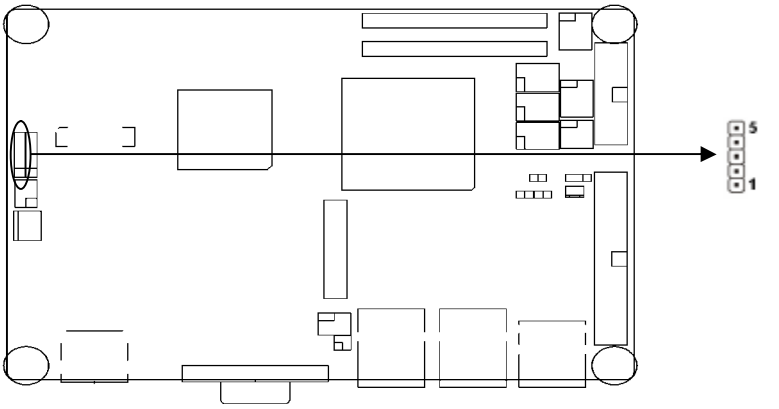
Setting	JCF
Close	Set CF card as master(Default)
Open	Set CF card as slave

2.3.4 LVDS Device Rated Voltage Jumper Setting（J1）

When choosing LVDSdevices, please confirm its rated voltage, then adjust J1 jumper and make it keep the same voltage with LVDS device.



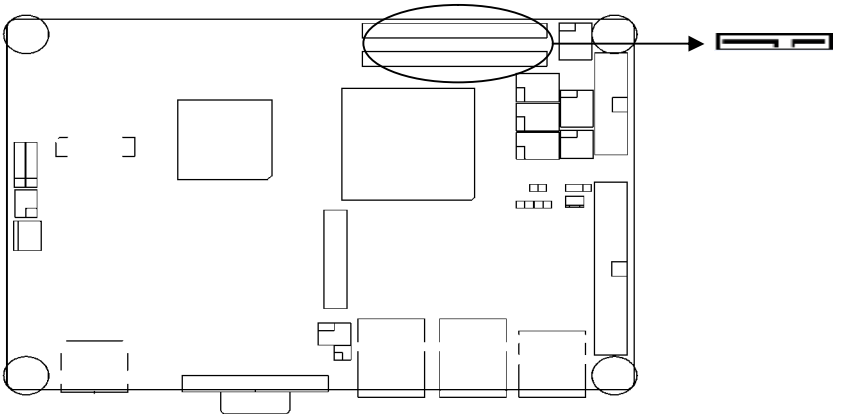
Setting	VDD LVDS
1-2	+12V
2-3	+3.3V
4-5	+5V

2.4 Interface Specification

⚠ Before connecting external connectors, please read this manual carefully, it will protect motherboard from damage

2.4.1 SATA and SATA HDD PWR interface（SATA1, SATA2）

Board provides two 7+15PIN SATA interfaces.



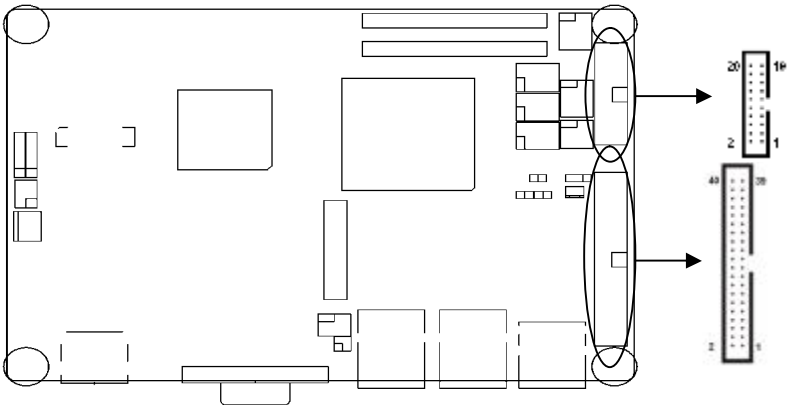
SATA：

Pin	Signal Name	Pin	Signal Name
1	GND	P4	GND
2	TX+	P5	GND
3	TX-	P6	GND
4	GND	P7	VCC
5	RX-	P8	VCC
6	RX+	P9	VCC
7	GND	P10	GND
8	NC	P11	GND
9	GND	P12	GND
10	NC	P13	+12V
P1	VCC3	P14	+12V
P2	VCC3	P15	+12V
P3	VCC3		

2.4.2 Serial Ports（COM1-4, COM5-6）

Motherboard provides 6 serial ports. COM1-COM6 adopt 2×5PIN interface. they can be converted to standard DB9 interface via convert cable, so as to connect external devices. Users can set serial port enabled or disabled in BIOS setup and can select its IRQ and I/O address

COM1-5 can support RS232 mode，COM6 can support RS422/485 mode.



COM1-4：

Signal Name	Pin		Signal Name
HDCD#1	1	2	HDSR#1
HRXD1	3	4	HRTS#1
HTXD1	5	6	HCTS#1
HDTR#1	7	8	HRI#1
GND	9	10	GND
HDCD#2	11	12	HDSR#2
HRXD2	13	14	HRTS#2
HTXD2	15	16	HCTS#2
HDTR#2	17	18	HRI#2
GND	19	20	GND
HDCD#3	21	22	HDSR#3
HRXD3	23	24	HRTS#3
HTXD3	25	26	HCTS#3

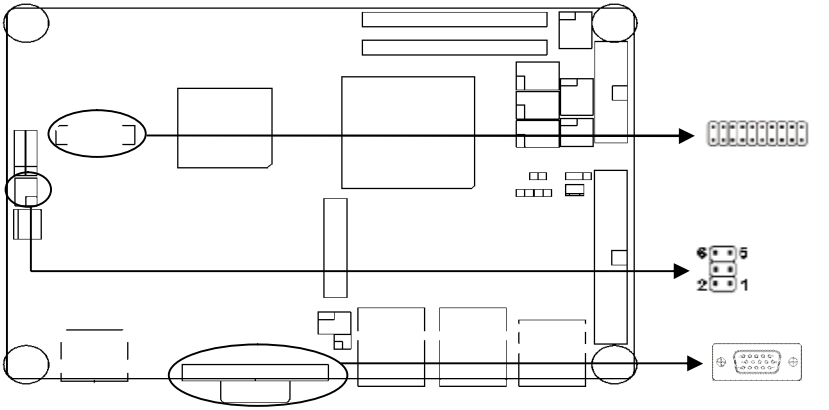
HDTR#3	27	28	HRI#3
GND	29	30	GND
HDCD#4	31	32	HDSR#4
HRXD4	33	34	HRTS#4
HTXD4	35	36	HCTS#4
HDTR#4	37	38	HRI#4
GND	39	40	GND

COM5-6：

Signal Name	Pin		Signal Name
HDCD#5	1	2	HDSR#5
HRXD5	3	4	HRTS#5
HTXD5	5	6	HCTS#5
HDTR#5	7	8	HRI#5
GND	9	10	GND
HDCD#6	11	12	HDSR#6
HRXD6	13	14	HRTS#6
HTXD6	15	16	HCTS#6
HDTR#6	17	18	HRI#6
GND	19	20	GND

2.4.3 Display Interface（VGA, LVDS, TVOUT）

Motherboard provides one standard DB15 VGA interface, one 2×10PIN LVDS interface and one 2×3PIN TVOUT interface with LVDS（TVOUT）for options.



VGA：

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
1	RED	6	GND	11	NC
2	GREEN	7	GND	12	SDA_R
3	BLUE	8	GND	13	HS_R
4	NC	9	VCC	14	VS_R
5	GND	10	GND	15	SCL_R

LVDS：

Signal Name	Pin		信号名称
VCC	1	2	VCC
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

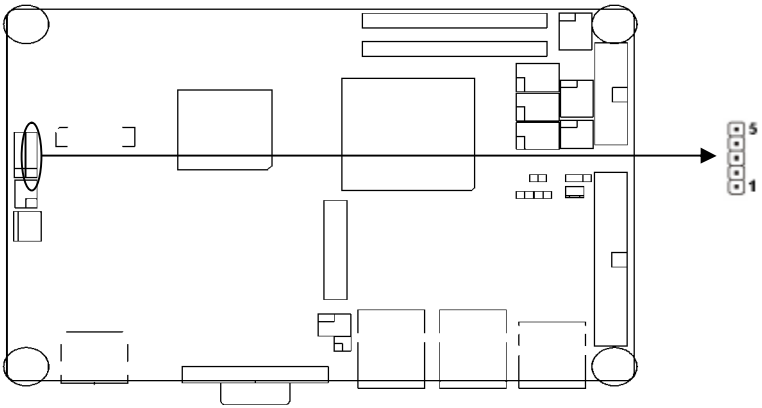
TVOUT：

Pin	Signal Name

1	TV_DACA_OUT
2	GND
3	TV_DACB_OUT
4	GND
5	TV_DACC_OUT
6	GND

2.4.4 LVDS Backlight Control（J2）

J2 is used to provide power for LVDS device baklight panel and adjust the backlight panel brightness.



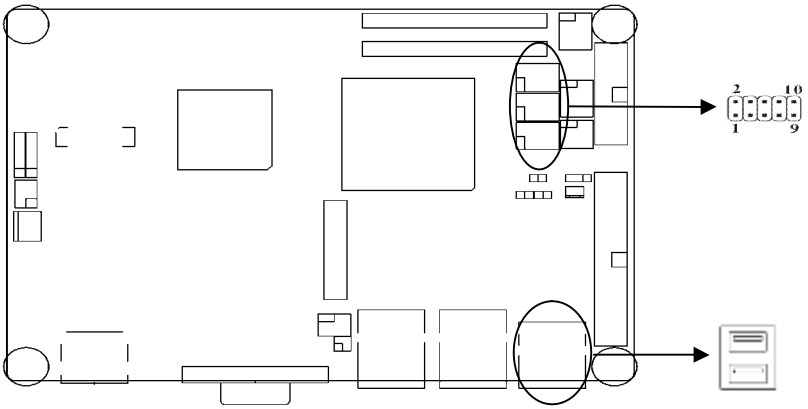
J2：

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

2.4.5 USB Ports（USB1, USB2, USB3）

Board provides 8×USB2.0 interfaces including 3 group of 2×5PIN interfaces and one standard double layer USB interface. When using USB12, USB34, USB910, a convert cable is needed

to transfer the 2×5PIN USB signal to standard USB socket.



USB12, USB34, USB910：

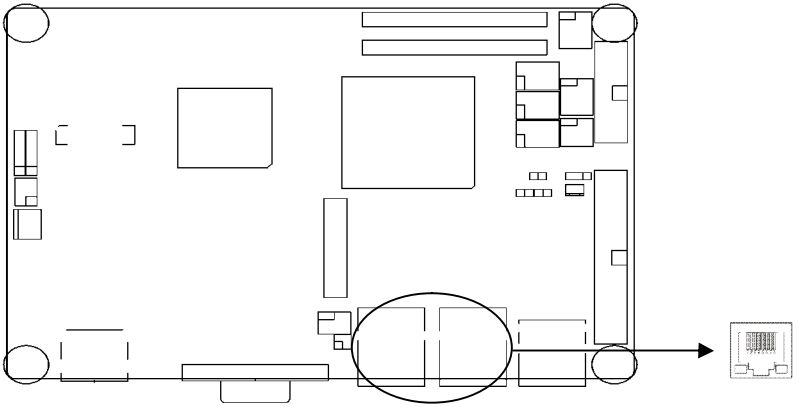
Signal Name	Pin		Signal Name
VCC	1	2	GND
USBD_N0	3	4	GND
USBD_P0	5	6	USBD_P1
GND	7	8	USBD_N1
GND	9	10	VCC

USB56（double layer USB Interface）：

Signal Name	Pin		Signal Name
VCC	1	2	VCC
USBD_N4	3	4	USBD_N5
USBD_P4	5	6	USBD_P5
GND	7	8	GND

2.4.6 Network Interface（LAN1, LAN2, J16）

Board provides 2x standard RJ-45 Ehternet ports with one LED on both sides of each port. The yellow light on the right indicates data transfer status and the green one on the left indicates network connection status. J16 is for connecting the light that indicates network card status.



RJ45 PORT LED State Description：

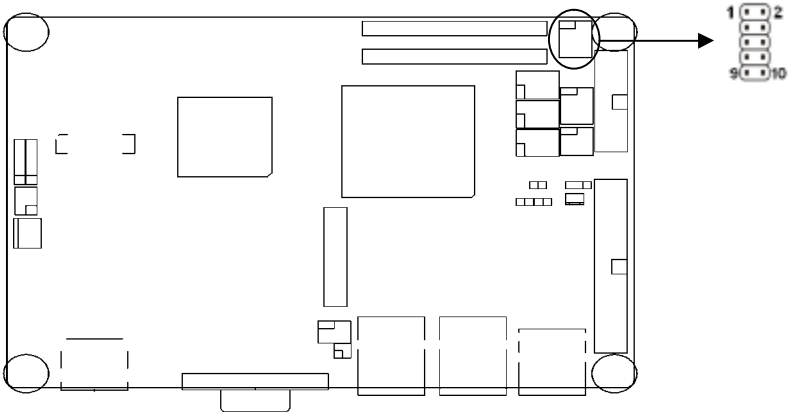
LILED(GREEN)	Network Link Status	ACTLED(YELLOW)	Message Transfer Status
On	Effective	On	Transferring
Off	Ineffective/Close	Off	No Message

J16：

Signal Name	Pin		Signal Name
LAN1_LED_ACTIVE	1	2	LAN1_LED1_LINK
LAN2_LED_ACTIVE	3	4	LAN2_LED1_LINK
GND	5	6	3.3V

2.4.7 Audio Interface（JAUDIO)

Motherboard provides one 2×5PIN Audio interface, supporting Speak-out, Mic-in and Line-IN

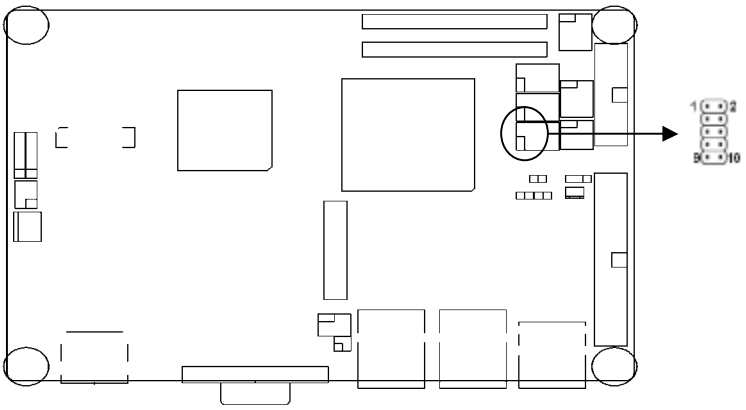


Audio：

Signal Name	Pin		Signal Name
GND	1	2	MIC_IN
SPKOUT_L	3	4	SPKOUT_R
GND	5	6	GND
NC	7	8	NC
LINE_L	9	10	LINE_R

2.4.8 Keyboard and Mouse Interface（KBMS）

Motherboard provides one 2×4Header and PS/2 keyboard and mouse interface. When usting this interface, a convert cable is needed to connect the keyboard and mouse.

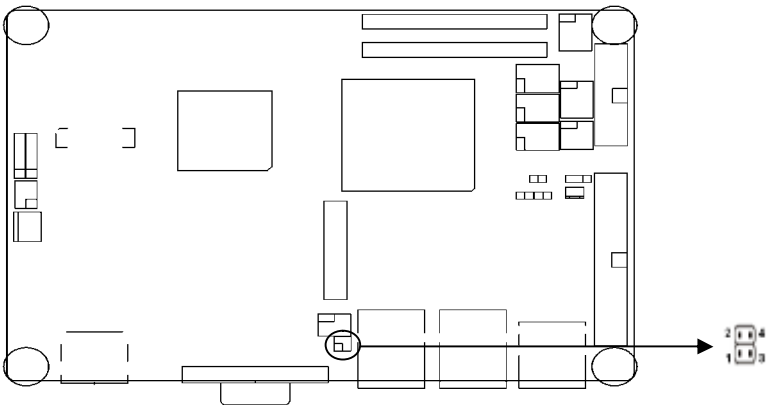


KBMS：

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

2.4.9 MiniPCIE Socket（MINI_PCIE, J4)

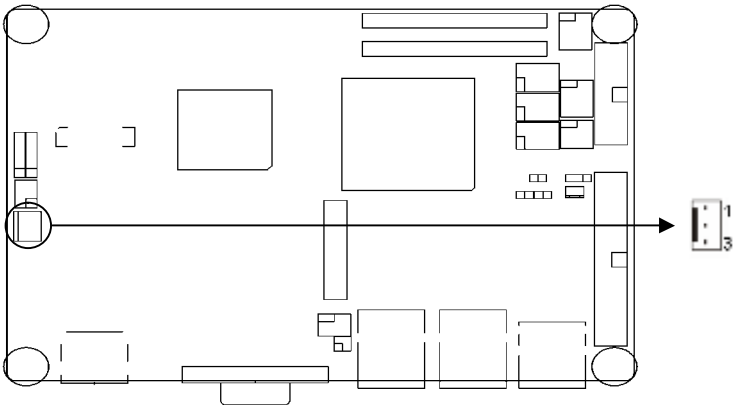
Board provides one standard MINI_PCIE socket. Users can expand the mini PCIE devices based on actual needs. If you use Mini PCIE wireless LAN, the WIFI network card status can be showed by the selected wireless network.



J4：

Signal Name	Pin		Signal Name
LED_WWAN#	1	2	3.3V
LED_WPAN#	3	4	LED_WLAN#

2.4.10 FAN Connector（FAN）



FAN：

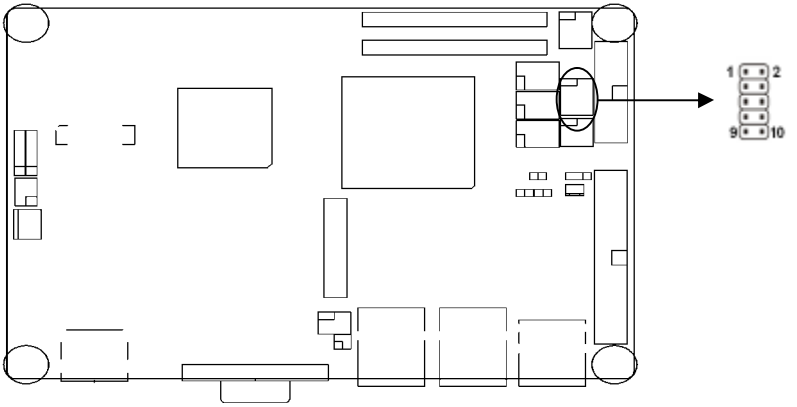
Pin	Signal Name
1	GND
2	+12V
3	Speed detect

2.4.11 CF Card Socket

Board provides one standard Compact Flash card socket

2.4.12 Front-panel Connectors （JFP）

JFP is used to config the function buttons and LED indicators on the front panel.



JFP:

Signal Name	Pin		Signal Name
PWR_LED+	1	2	PWR_LED-
HDD_LED+	3	4	HDD_LED-
SPK+	5	6	SPK-
RST_SW	7	8	GND
PWR_SW	9	10	GND

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.

To make the BIOS upgrade succeed, pls open the Jumper JAV.

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 3870T101.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 may 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.

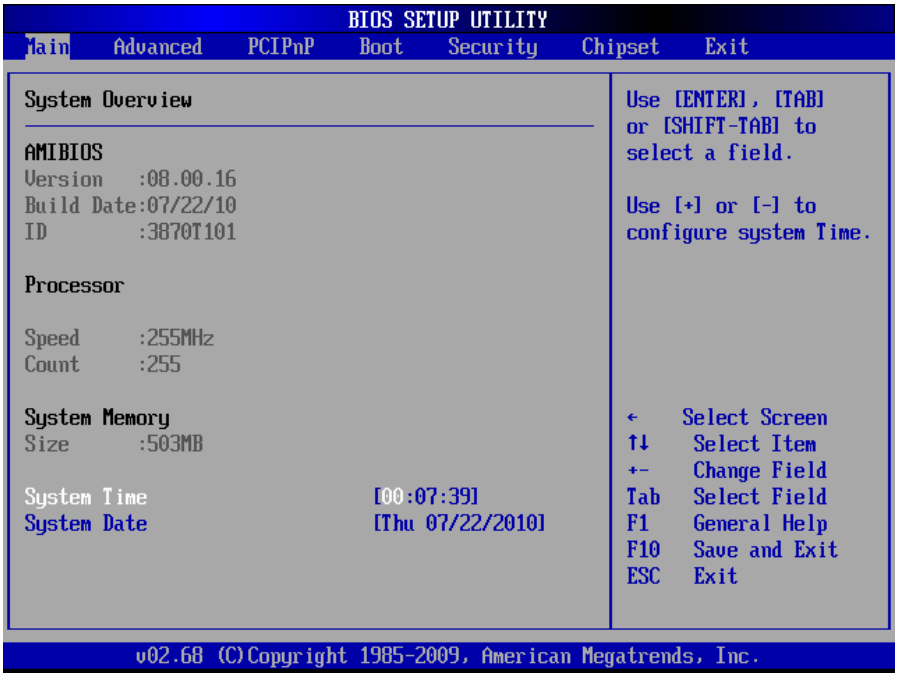
BIOS Parameter Configuration

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

F1->SETUP, pls press F1，then system will enter BIOS setup interface automatically atfer doing the IDE detection:

1. Power on or reset the computer, self-detection information will show:
2. When message shows as "Press <F1> to enter setup"，pls press <F1> to enter into BIOS SETUP Program.
3. Use the "←↑→↓"to choose the option which your want to modify, press <Enter> to go to the sub-menu.
4. Use the "←↑→↓"and <Enter> to modify the value, or use Mouse do this Modification.
5. At any time, press<Esc> can go back to the father-menu.

3.1 Main Menu



AMI BIOS（Read Only）

BIOS information: such as BIOS version, Build date and BIOS ID.

Processor（Read Only）

CPU information, such as the processor speed.

System Memory（Read Only）

This section shows the size of the system memory

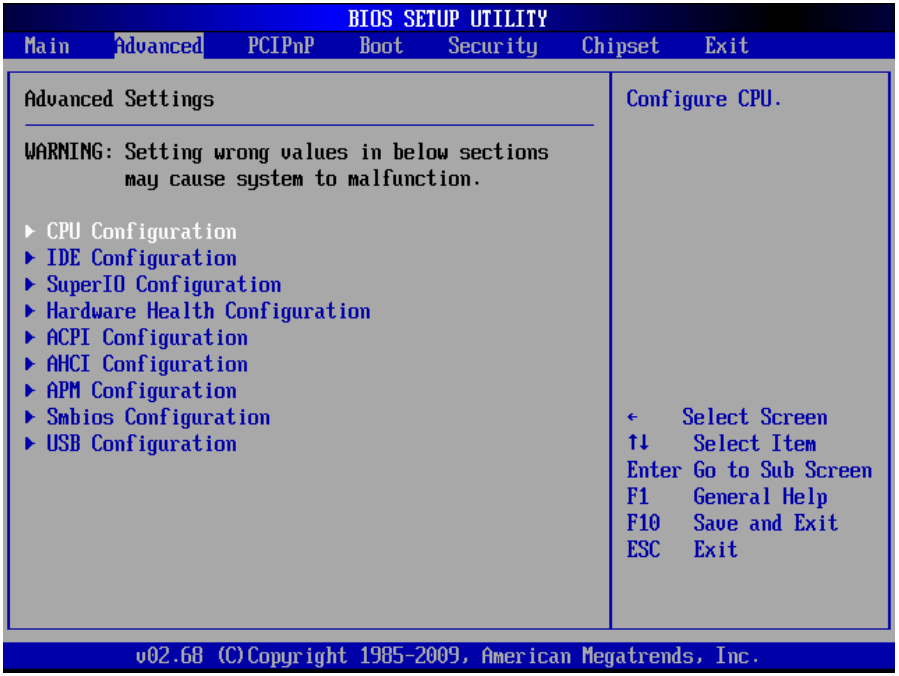
System Time

System time format: Hour/Minute/Second

System Date

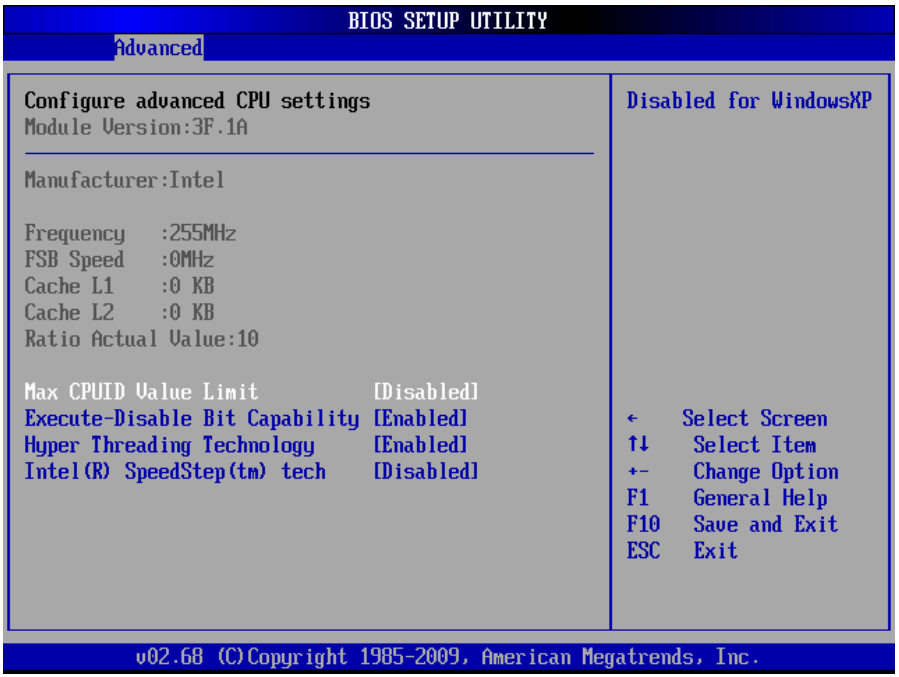
System date format.: Week/Month/Day/Year

3.2 Advanced Menu



Note： The incorrect parameter may lead to system break down, 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

[Disabled]: Disable this function.

Execute-Disable Bit Capability

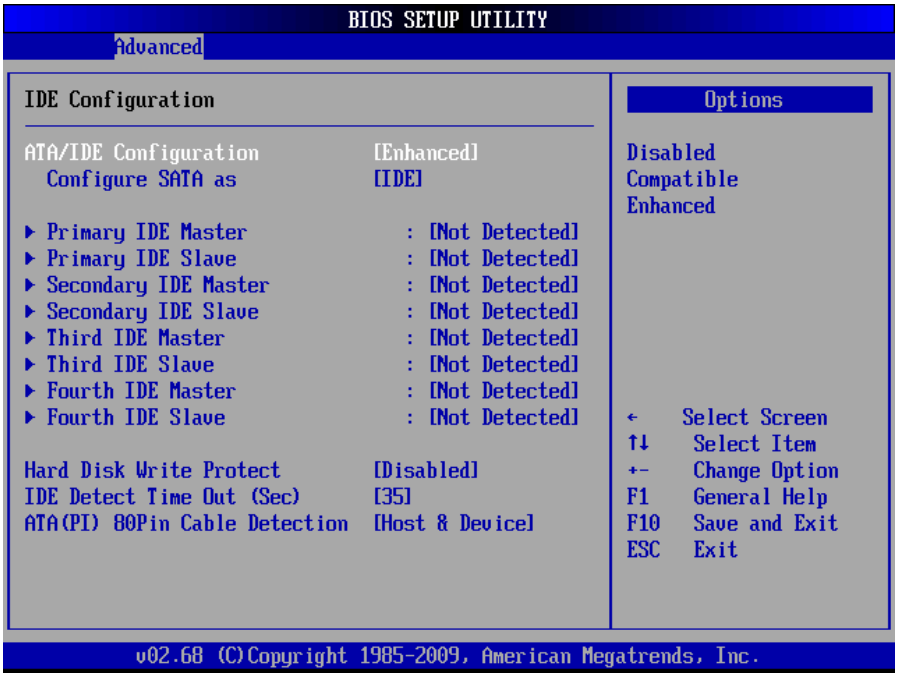
Execute Disable Bit (EDB) is an Intel hardware-based security feature that can help reduce system exposure to viruses and malicious code. EDB allows the processor to classify areas in memory where application code can or cannot execute. To use Execute Disable Bit you must have Windows XP SP2 operating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

Hyper Threading Technology

[Enabled]: Activate and use this hyper threading technology

[Disabled]: Disable this function

3.2.2 IDE Configuration



ATA/IDE Configuration:

This option is to config 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 traditional [IDE].

Primary/Secondary /Third/Fourth IDE Master/Slave

These eight options are used to select 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）

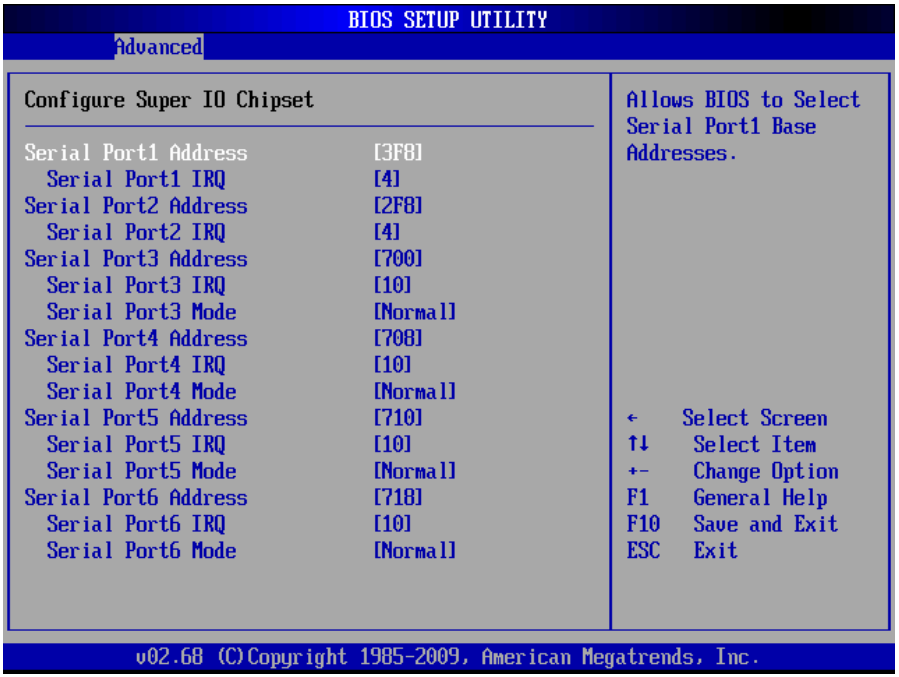
Set BIOS searching IDE device in appointed time (by seconds)

ATA（PI） 80Pin Cable Detection

Setup detecting ATA（PI）80pin cable: 80pin ATA cable is for Ultra ATA/66, Ultra ATA/100 and Ultra ATA/133. There are three options available.

Select <Host & Device>: it will consult the cable type both IDE controller and IDE device, 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 device.

3.2.3 Super IO Configuration



Serial Port Address

This is used to setup Serial Port Interrupts and Address,. Options are [3F8/IRQ4 (default)],[2F8/ IRQ3],[3E8/ IRQ4], [2E8/IRQ3] and [Disabled]. Default set is recommended.

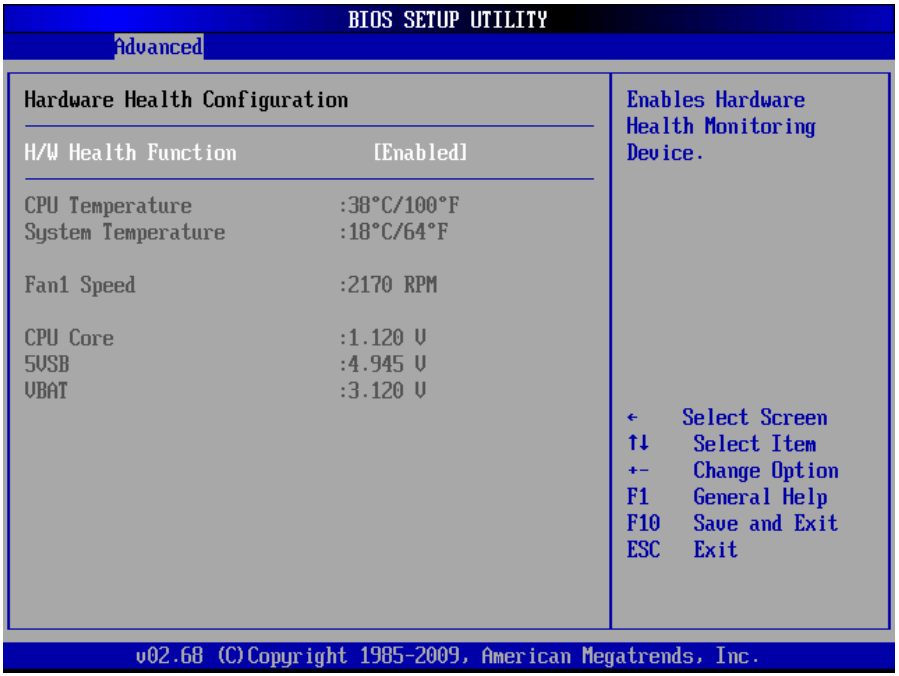
Serial Port IRQ

This is used to setup the IRQ address of serial port. Default address is recommended.

Serial Port Mode

This is used to config the serial port device mode. Options are [Normal (default)],[Bi-Directional],[ECP], [EPP] and [ECP&EPP]. The optimal default set is [Normal].

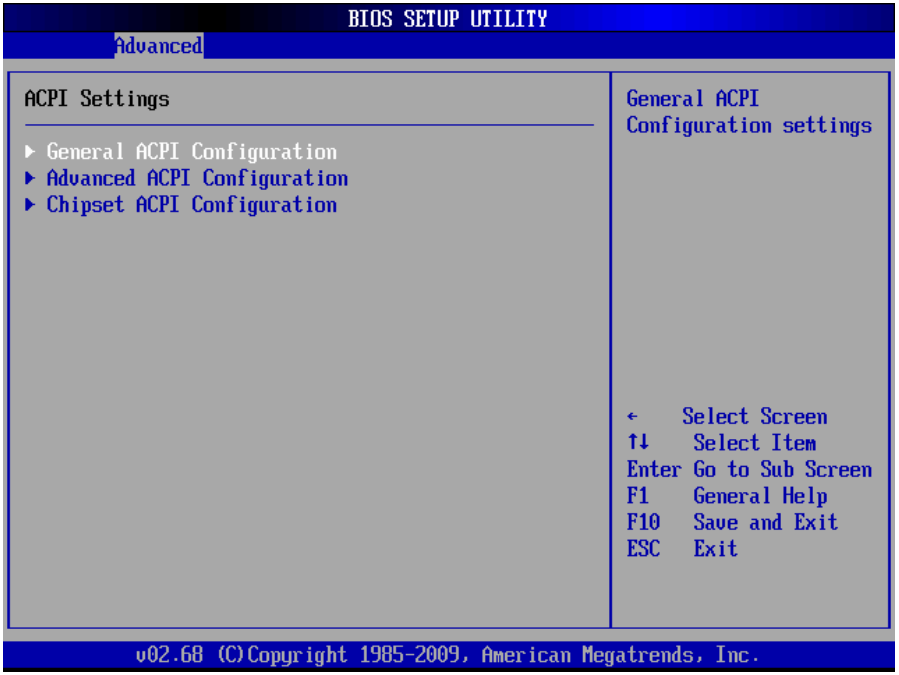
3.2.4 Hardware Health Configuration



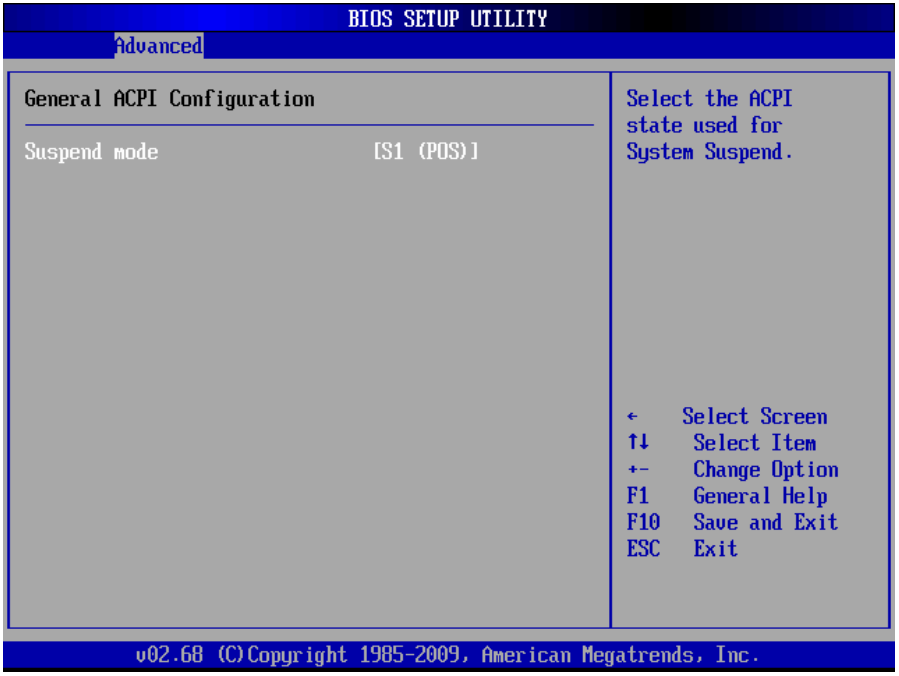
Hardware Health Configuration

This option is for hardware security detection. BIOS will show sysrem current temperature, CPU temperature, the rev of FAN and related voltage.

3.2.5 ACPI Configuration



3.2.5.1 General ACPI Configuration



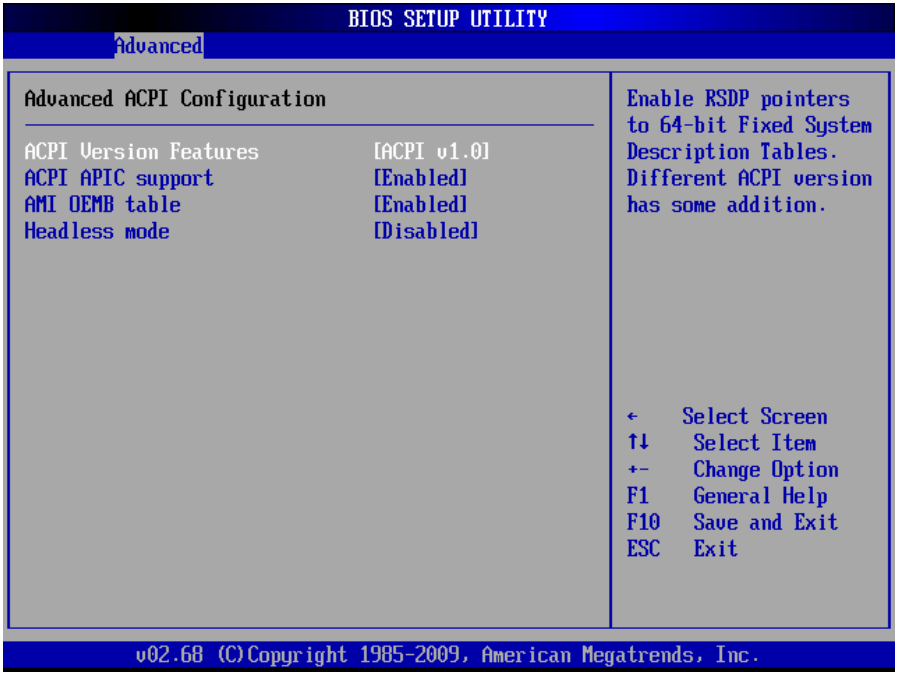
Suspend mode

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.

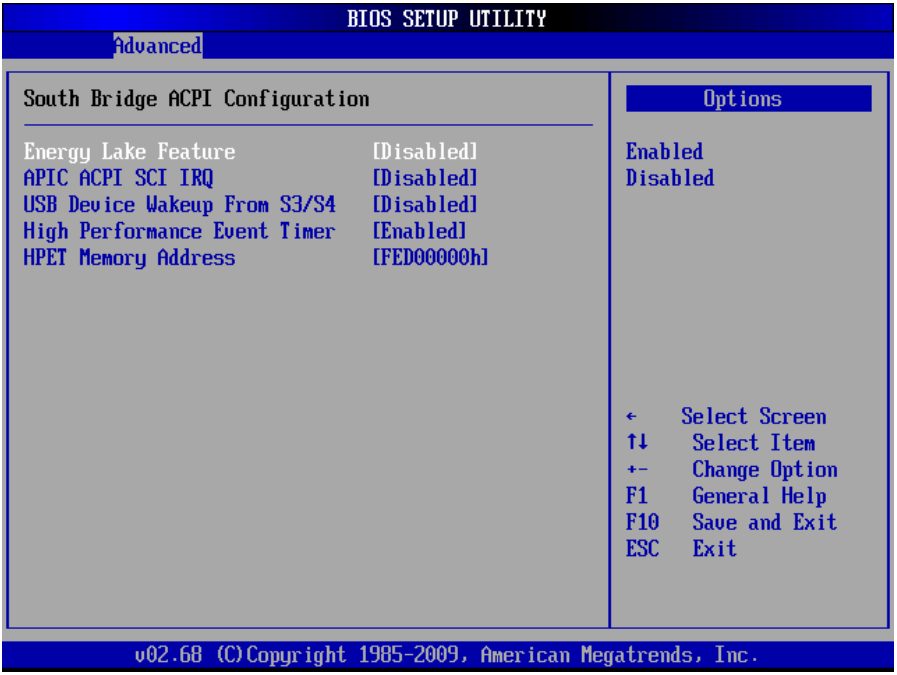
AMI OEMB table

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

Disable or enbale the Energy Lake feature

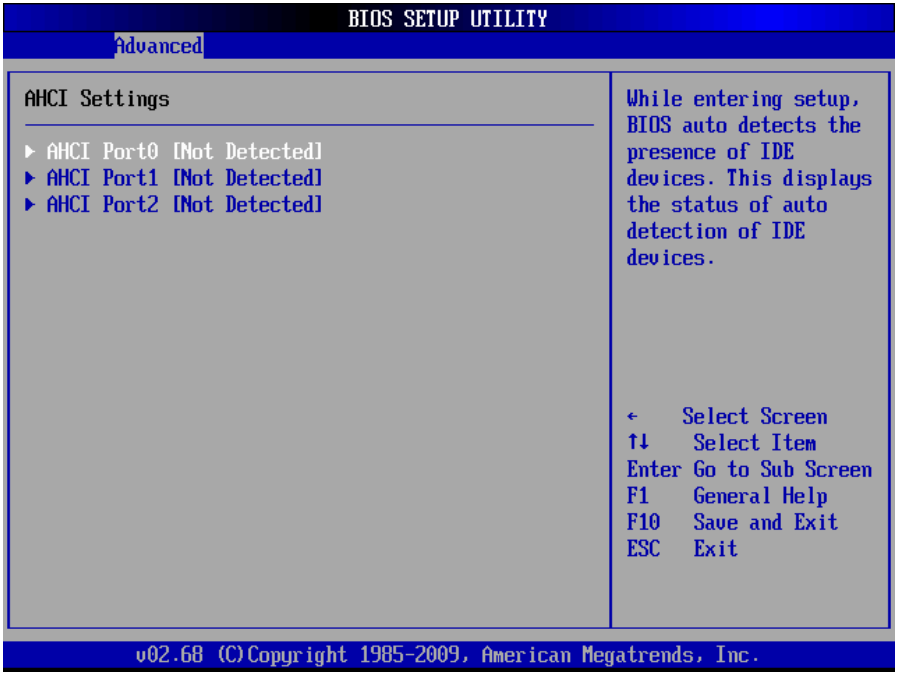
APIC ACPI SCI IRQ

Enable or disable the internal I/O APIC and multiprocessor tables

USB Device Wake up From S3/S4

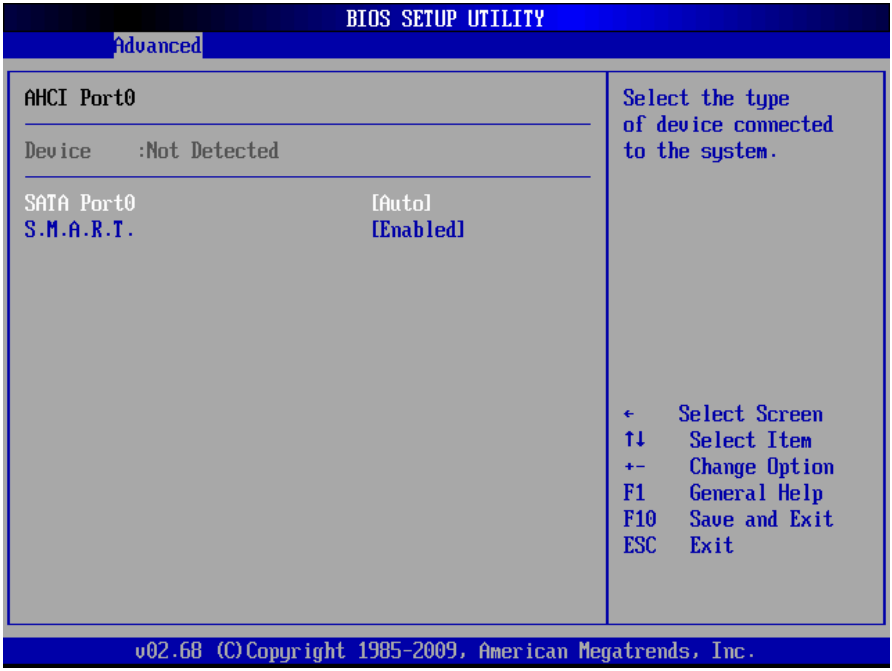
In S3/S4, utilize USB device wakeup, [Enabled]: allow, [Disabled] forbid.

3.2.6 AHCI Configuration



AHCI Port0

Move the mouse cursor to “AHCI Port0” and press”Enter”, then following screen will show:



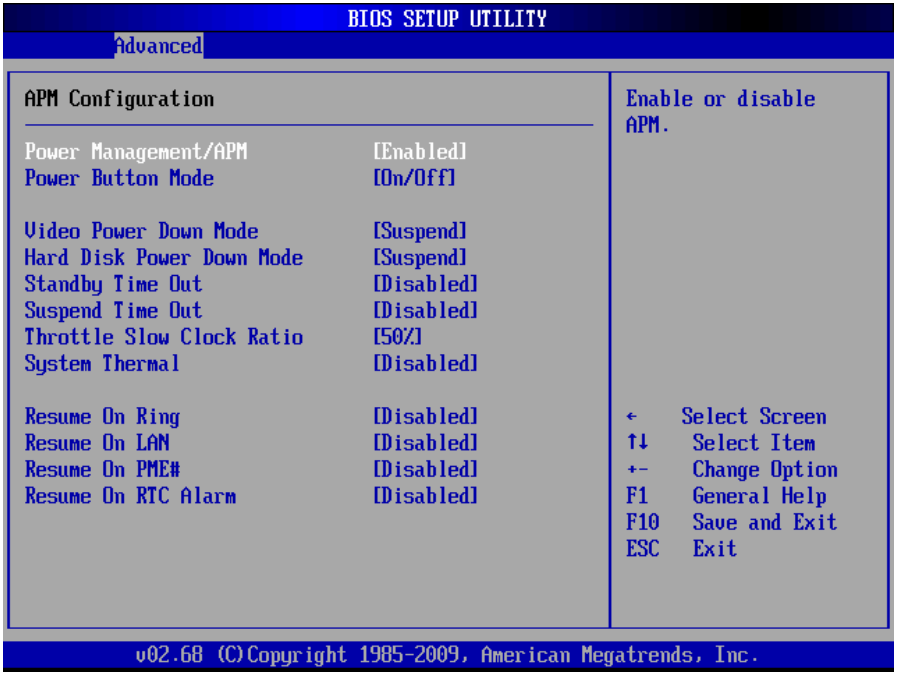
SATA Port0

Set this function as [Auto]，[Enabled] or [Disabled]. System default set is [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 in advance.The default set.is recommended.

3.2.7 APM Configuration



Power Management/APM

Disable or enable the Power Management/APM function

Power Button Mode

[On/Off] Press ATX button for less than 4 sec, system will consider this button as the ordinary system off button.

[Suspen]Press ATX button for less than 4 sec, system will enter into a suspend mode.

If press the ATX button for more than 4 sec, the system will power off.

Video Power Down Mode

Video Power Down Mode Setting. Three options available:[Disable] or [Stand By] mode or [Suspend] mode

Hard DIsk Power Down Mode

Hard Disk Power Down Mode Setting. Three options available:[Disable] or [Stand By] mode or

[Suspend] mode

Standby Time Out

Set the suspend timeout (1 minute~60 minute). System enters into suspend mode after the appointed time period.

Suspend Time Out

Set the timeout to enter into the standby mode (by minute). If no signal received during the appointed time, system will change into Standby Mode/Suspend Mode in due order.

Throttle Slow Clock Ratio

This is used to set the ratio of the throttle slow clock.

System Thermal

CPU will automatically speed up/down the frequency according to system thermal, so as to secure the stable operation of the system.

Resume On Ring

[Enable] for activating the function of wake-on-external modem

[Disable] for closing this function

Resume On LAN

[Enable] for activating wake-on-lan function

[Disable] for closing this function

Resume On PME#

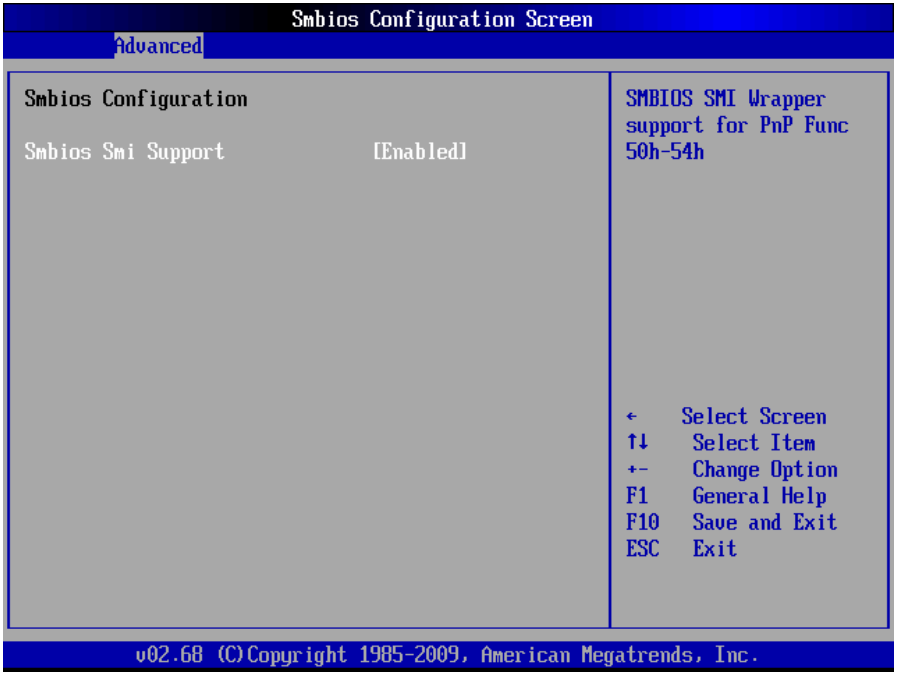
[Enable] for activating the function of Resume On PME#

[Disable] for closing this function

Resume On RTC Alarm

When Enabled, users can set the date and time at which the RTC (real time clock) alarm awakens the system from Suspend mode. The choices :< Enabled>, <Disabled (default)>.

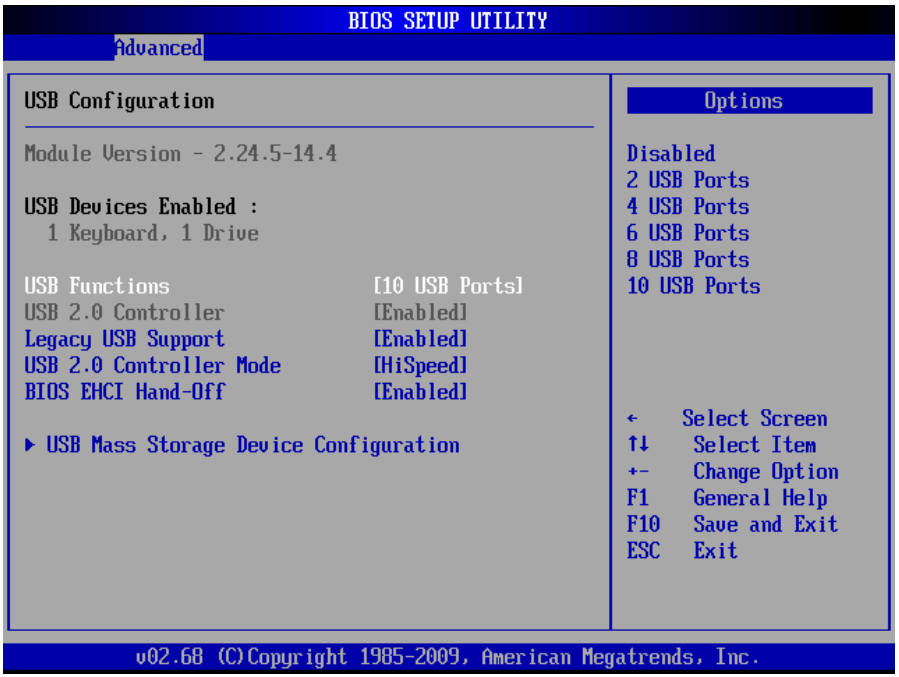
3.2.8 Smbios Configuration



Smbios Smi Support

Users can enable or disable this function. Recommend the default set.

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 the motherboard.

USB Function

This option is to set open or close the USB port. System defaults as [Enabled].

USB 2.0 Controller

[Enabled]: Open USB2.0 controller

[Disabled]: Close USB2.0 controller

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>

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)

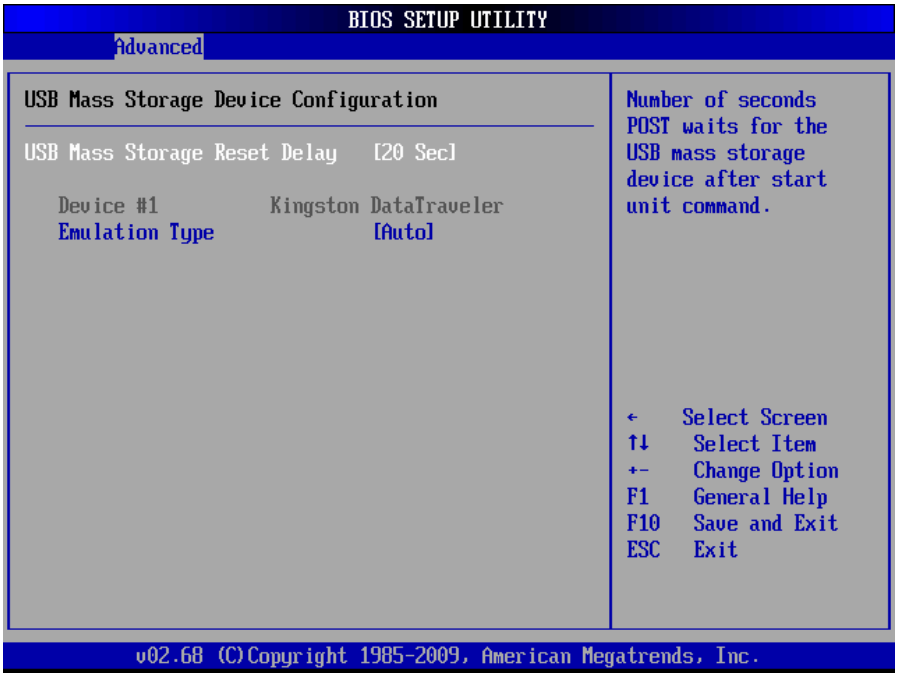
<HiSpeed>: USB port is 2.0 spec (480Mbps)

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



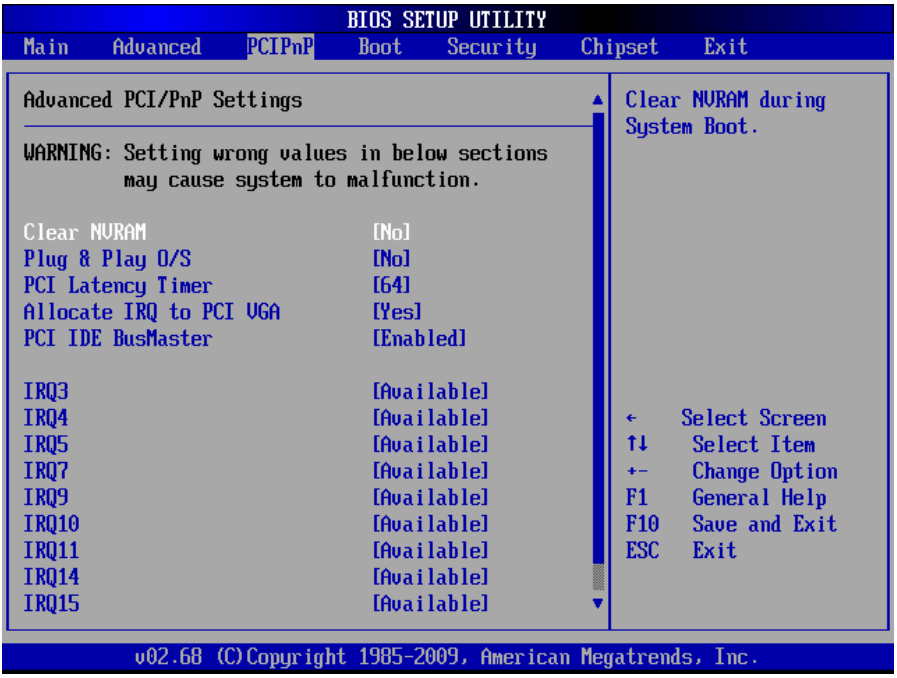
USB Mass Storage Reset Delay

This option for setting the delay time to reset the USB devices. System defaults as [20Sec]

Emulation Type

This option is to set the emulation type of the USB flash disk when it is activated. There are three selections: floppy, HDD or CD-ROM. System defaults as [Auto]。

3.3 PCI PnP Menu



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

Clear NVRAM

This option is for clearing NVRAM data

[NO] for keeping the data

[YES] for clearing the data

Plug & Play O/S

This option is for selecting BIOS or PnP O/S to allocate the interrupted resource in the peripheral devices.

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 card

<No>: Don't need to allocate IRQ to the PCI /VGA card

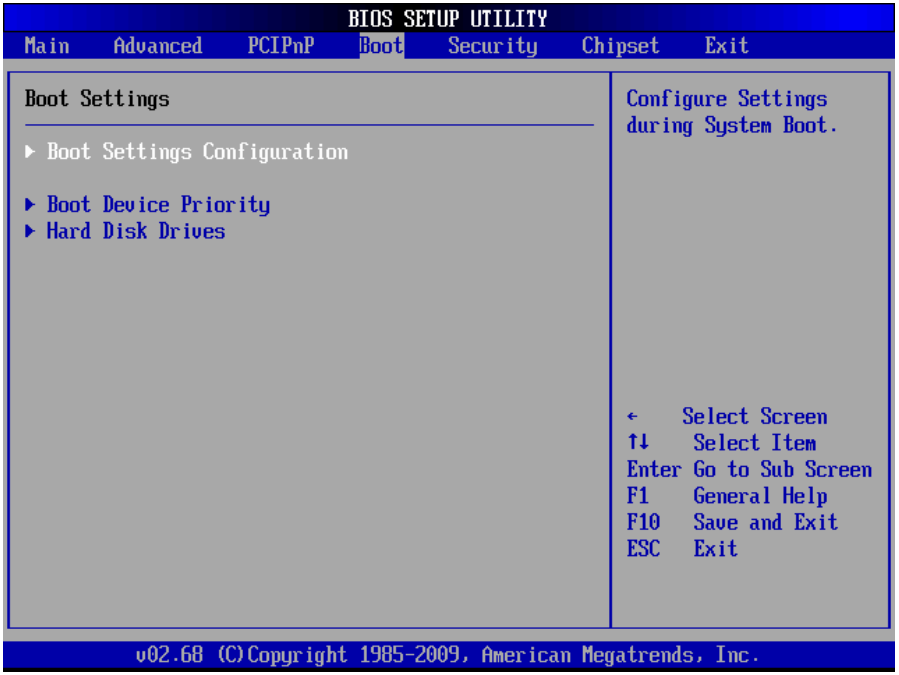
Palette Snooping

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

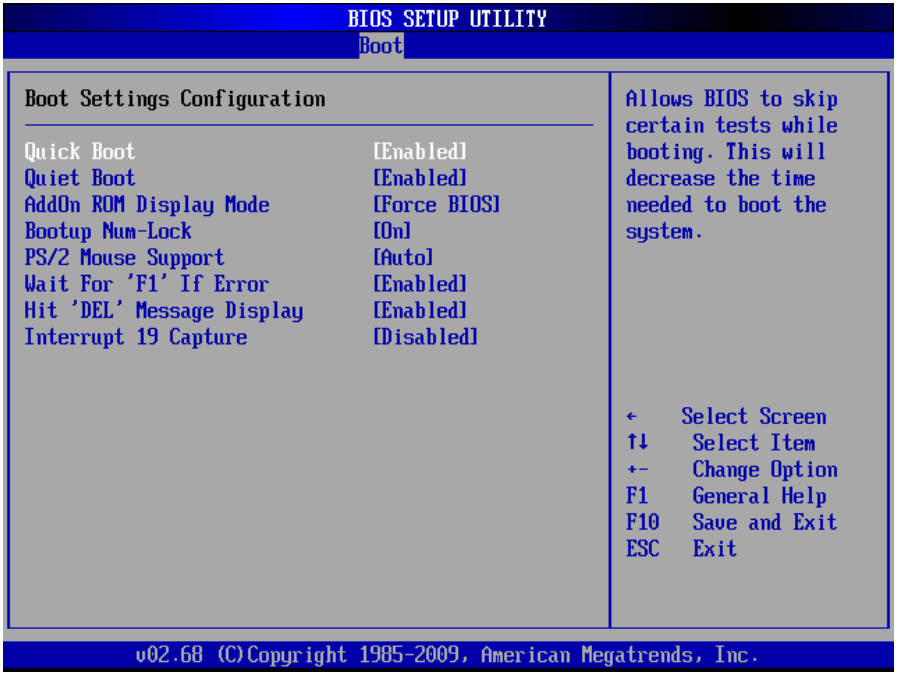
PCI IDE BusMaster

This option is for allowing or fordidding the use of PCI IDE Bus Mastering。Bus Mastering can accelerate the speed of PCI IDE . System defaults as [Disabled]

3.4 Boot Menu


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Boot Settings
Boot Settings Configuration
Boot Device Priority
Hard Disk Drives
Configure Settings during System Boot.
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
v02.68 (C)Copyright 1985-2009, American Megatrends, Inc.

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 for showing Logo on the screen picture when booting the computer. <Disabled> for close and <Enabled> for open. The system defauts as <Enabled>.

AddOn ROM Display Mode

This option is for setting the display mode of graphic card softweare and default as[Force BIOS]。

Boot Up Num-Lock

This option is for activating the Num-lock after booting the DOS system. <ON> for uncloking the number key and <OFF> for locking the number key.

PS/2 Mouse Support

This option is for openning or closing 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

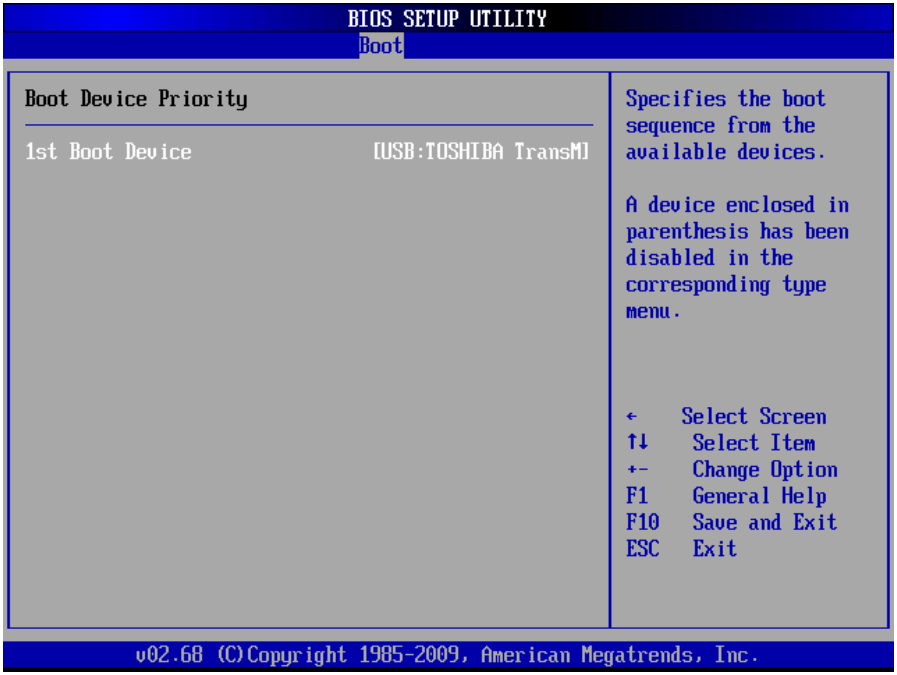
[Disabled]: No message will show, system generally defaults as [Enabled].

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



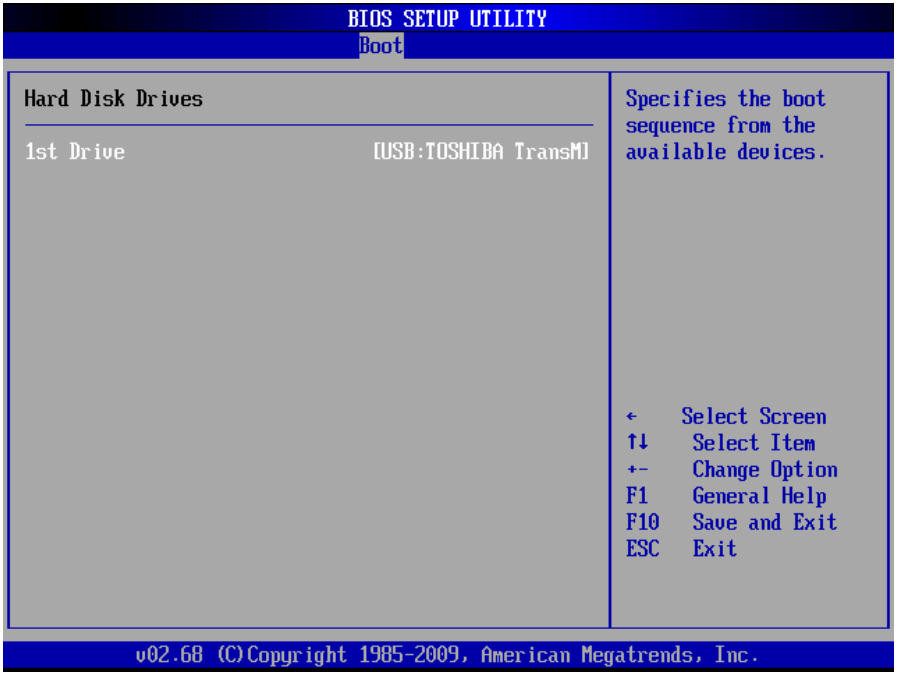
Press “Enter” , then the following sub-menu will show:

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)

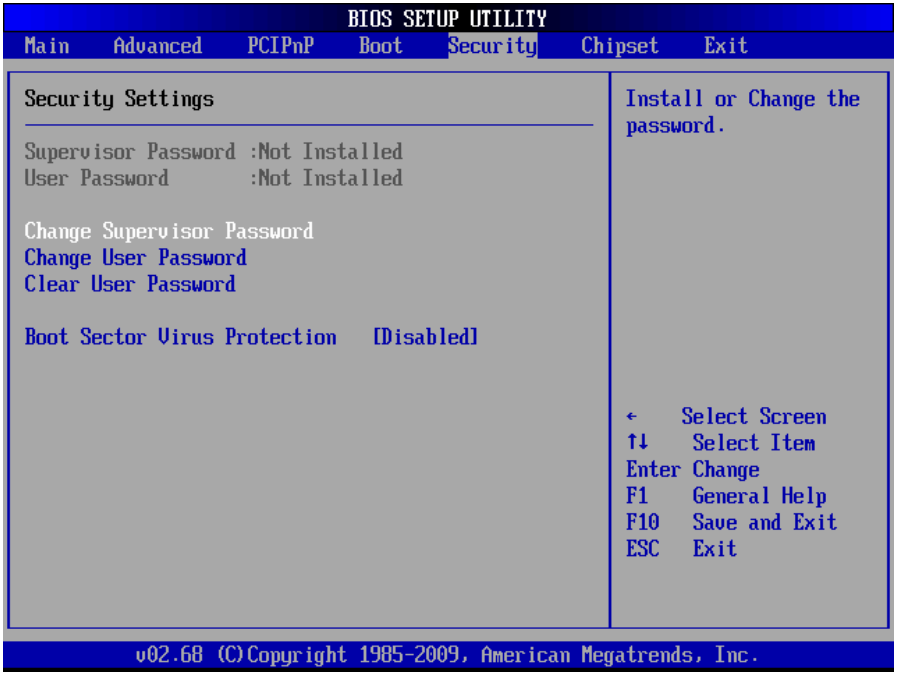
3.4.3 Hard Disk Drives



Boot device set for HDD.

If multi- HDD be 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 set up the supervisor password, it will display “Not Installed”

User Password

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

If not set up, it will display “Not Installed”

Change Supervisor Password

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

Change User Password

This option is for changing the users’ password. Press ‘Enter “ to enter the sub-menu and you can change the password.

Clear User Password

This option is for clearing users' passwor. Press 'Enter ' under this option and select "yes" 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!!!

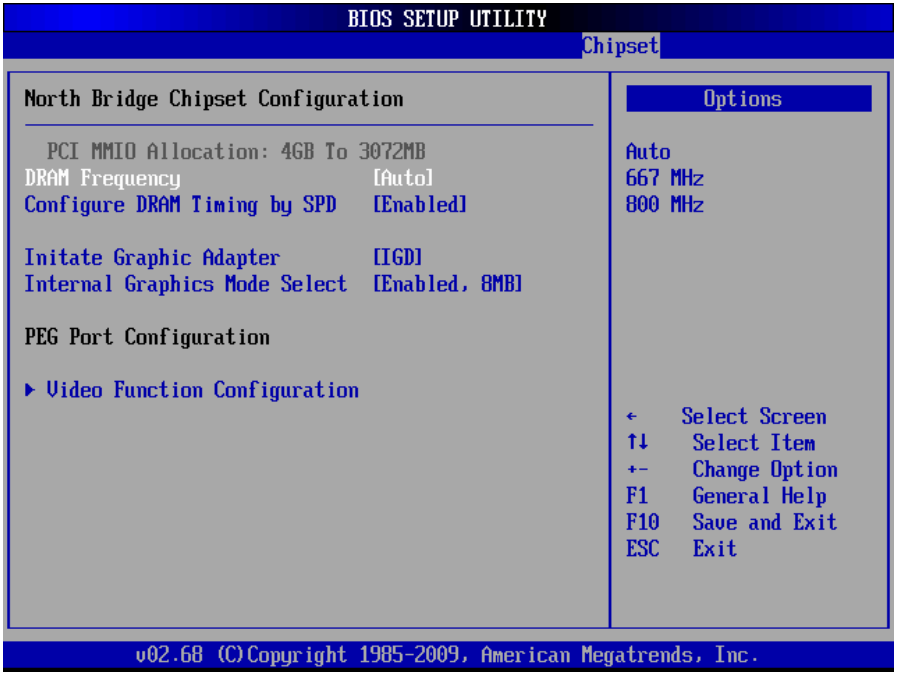
Possible VIRUS: Continue (Y/N)? _

(Must press much 'N' and skip up)

<Disabled>: close this function.

3.6 Chipset Menu

3.6.1 North Bridge Configuration



DRAM Frequency

Set the dynamic random memory frequency and default [Auto].

Configure DRAM Timing by SPD

<Enabled> system auto-setting memory parameter by SPD

<Disabled>: Manual setting memory parameter by entering submenu.

Initate Graphic Adapter

This option for configure graphic adapter priority。

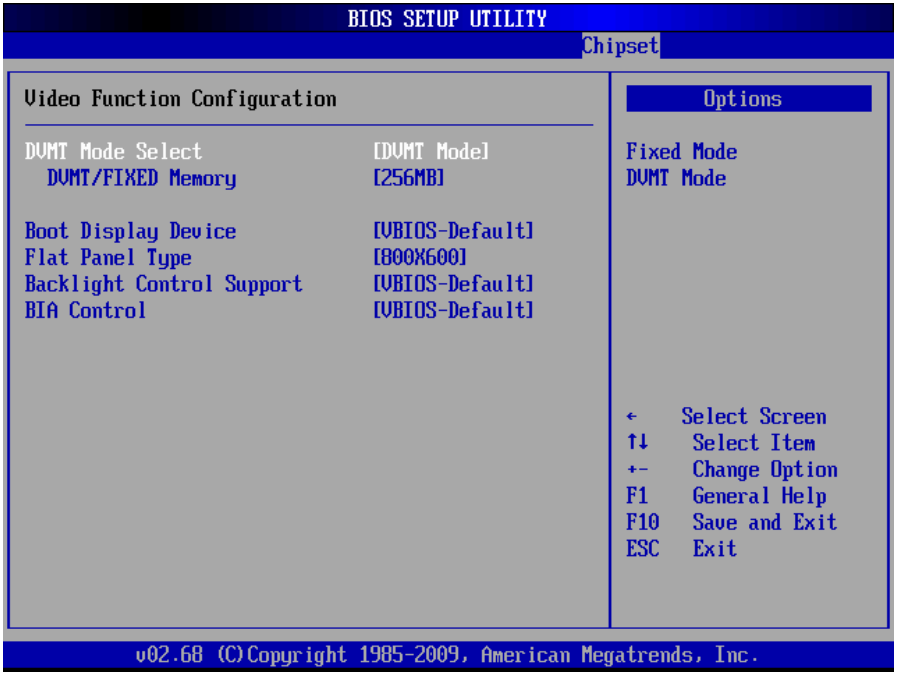
Internal Graphics Mode Select

Internal graphic mode and its memory size selection

PEG Port Configuration

Close or open the PCI Express Graphics interface

3.6.1.1 Video Function Select



DVMT Mode Select

Shared graphic memory mode selection

[DVMT]：dynamic shared graphic memory size, driver will dynamic distribute system memory size to it

[FIXED]：fixed shared memory, driver will distribute system memory size according to BIOS setting

DVMT/FIXED Memory

This option is to select the size of DVMT/FIXED memory

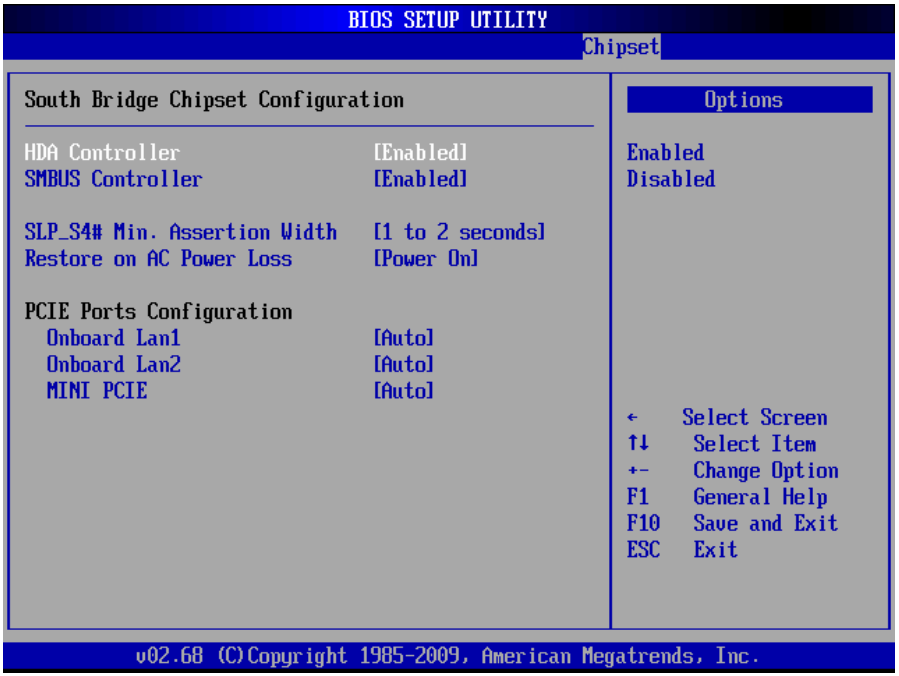
Boot Display Type

This option is for setting Vbios-Default CRT, LVDS, LVDS + CRT to support various display devices.

Flat Panel Type

This option is to setup LCD resolution.

3.6.2 South Bridge Chipset Configuration



SMBUS Controller

SMBUS Controller selection. [Enable] for open, [Disable] for close and system defaults as [Enabled]

SLP_S4# Min. Assertion Width

SLP_S4# of memory Min. assertion width setting, default as:1 to 2 seconds

Restore on AC Power Loss

This option is for setting the system status while connecting the power again after the AC Power Loss

<Power Off>: boot system after press power button while power supply

connected

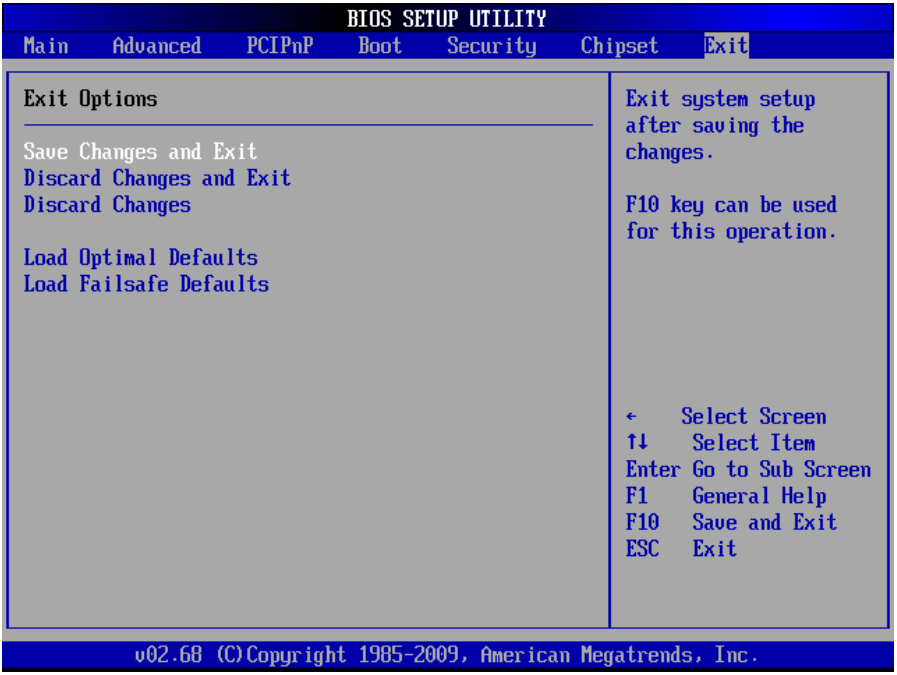
<Power On>: boot system straightway while power supply connected

<Last State>: according to the setting by last time.

PCIE Ports Configuration

This option can be set as [Auto]/[Enabled]/[Disabled] . The system defauts 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, will discard BIOS change and reboot System.

Discard Changes

Press <Enter> and <Enter> under this option, will discard the changes and continue to set up

BIOS.

Load Optimal Defaults

Recommend users first to select his option before BIOS configuration.

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 key after finishing setting and the system will reboot automatically within 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 in/out 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 OB 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 is the Universal Serial Bus for short. A hardware interface adapts to low speed external devices, 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.

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