TC-961/962/963/964

Embedded MiniPC

User’s guide

Contents

Packing List

Thank you very much for choosing our products. Please check your package completely as the following item checklist first, if you find any components lost or damaged, please contact your retailer.

■ TC-96x	1pcs
■User's Manual	1pcs
■Drive Disk	1pcs
■Power Cord	1pcs
■Power Adapter	1set
■1 to 4 serial port (optional)	1pcs
■Screw	1bag

Chapter 1

Product Introduction

Chapter 1 Product Introduction

1.1 Brief Introduction

TC-96x is a compact thin client pc based on Intel Menlow platform which combines powerful logical abilities with low power consumption of 5.5W. The various storage modes including SATA, SD and CF card and diverse display terminals provide customers with more choices. Besides, the customized expansion slots make it's an easy-to-expand product.

TC-96x can be effectively applied to digital signage system, high-definition media player, advertising machine, LCD large screen controller, set-top boxes, medical instruments, finance, education and other terminal markets and industrial solutions.

1.2 Features

- Mini-size, ultra-low noise, fanless radiating system

TC-96x is designed with fanless radiating system which makes it possible to reduce the noise to 30db when it operates. It is fixed in 120mm×120mm×40mm---tiny and compact enough to operate in tight space.

- Onboard Intel Atom processor

The onboard Intel Atom Z5XX processor with a lower-power-consumption of 2.5W and high-performance can be effectively combined with the Poulsbo SCH chipset to form an excellent solution for embedded platform.

- Multiple Interfaces

TC-96x I/O ports include : Line-out , Mic-out , USB2.0 port , RJ-45 network ports。TC-96x also provide VGA+S-Video or DVI+4COM output （VGA & DVI is optional）

- Convenient Installation

TC-96x meets VESA MOUNT MIS-D standard which makes it convenient to be installed on the back of liquid crystal equipment or placed on the desk.

1.3 Hardware Specification

System				
Model	TC-961	TC-962	TC-963	TC-964
Motherboard	BPC-7652+AFC-440V	BPC-7652+AFC-340	BPC-7652+AFC-341V	BPC-7652+AFC-450H

Processor	Intel Atom Z510(1.1GHz FSB400MHz)/Z530(1.6GHz FSB400MHz)				
Chipset	Intel poulsbo SCH				
Display	Interface	VGA+ S-VIDEO	DVI	VGA	HDMI
	Controller	Intel Poulsbo Integrated GMA500			
	Memory	Dynamic sharing 256MB as video memory			
System Memory	Onboard 1x200Pin SO-DIMM supports DDRII up to 2GB Remark：SO-DIMM can support 2 Rank,the capacity is 512Mb,1Gb &2Gb，suggest use RAM of x16 memory chips				
Storage	SSD	1x CF slot supports Type II CompactFlash,1x SD socket			
	HDD	1x1.8” HDD tray supports Ultra DMA 100/66/33&SATA II HDD			
I/O	Chip	Winbond W83627DHG			
	PS/2	1x MS/KB			

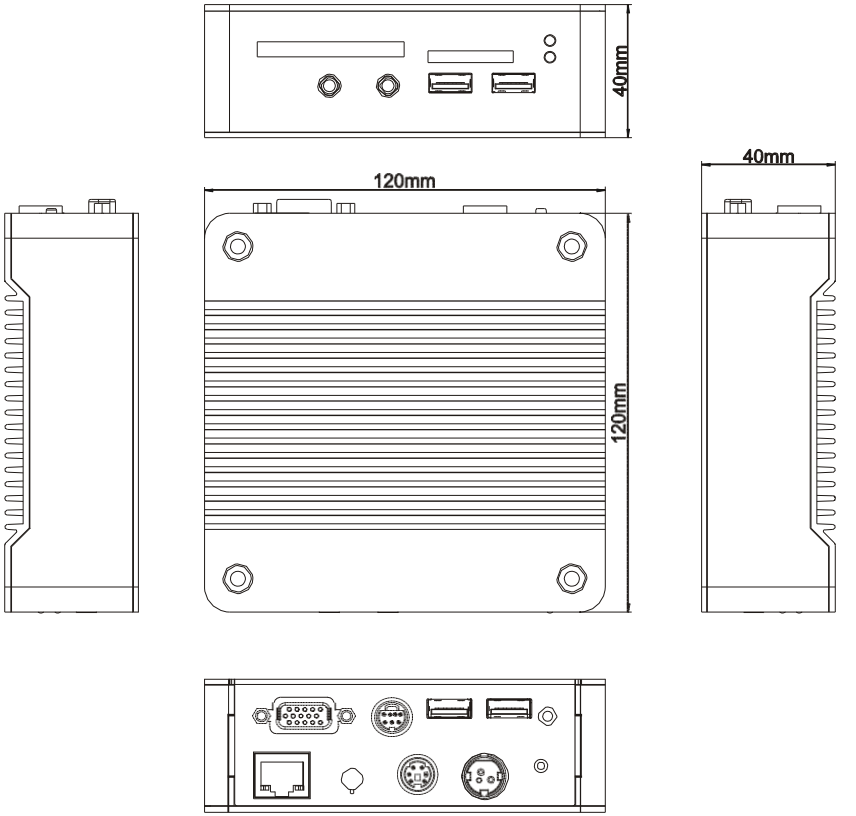
	COM	--	4xCOM	4xCOM	--
	USB	4x USB2.0 (2 on front panel)	2x USB2.0 (front panel)	4x USB2.0(2 on front panel)	5x USB2.0(2 on front panel)
	Audio	1x Mic-in, 1x Line-out			
	LPT	---			
Ethernet	Realtek RTL8111C, 10/100/1000Mbps, 1x RJ45				
WIFI	USB mode				
Extension interface	--				
System Control	Switch Button				

LED Indicator	Power supply , hard disk LED
Power supply	DC +12V
Cooling System	Fanless
OS	Windows Vista/XP/CE/XPE，Linux
Mechanical & Environmental	
Operating Temperature	0℃ ~ 60℃
Storage Temperature	-40℃ ~ 85℃
Relative Humidity	5% ~ 95%, 40℃, no-condensation
Vibration	0.5g rms/5~500Hz/ random assignment
EMC	CE/FCC Class B

Product Dimension	120mm×120mm×40mm (W×D×H)
Package Dimension	275mm×255mm×115mm (W×D×H)
Net Weight	0.7KG
Gross Weight	1.5KG
Material	High-tensile steel
Surface Treatment	Sand blast and oxidation
Installation	Wall-mount or Desktop
Color	Silver gray/Black

1.4 Product Dimension

Dimension：120mmx120mmx40mm (WxDxH)



Chapter 2

Hardware Functions

Chapter 2 Hardware Functions

2.1 External Interface Direction

1：TC-96x Front View

2：TC-96x Back View

TC-961：

TC-962：

2.2 Jumper Setting

Before the hardware installation, please follow the jumper setting guide.

Tips：How to identify jumper, PIN 1 of interface, observation the word mark of plug socket ，will use “1” or bold lines or triangular symbols；Take a look at the back of PAD square pad as the first PIN 1; all of jumper PIN 1 has a white arrow guide.

2.2.1 CMOS Content Clearing and Saving Settings（JCC）

CMOS is powered by onboard button battery. Clean CMOS will lead to a permanent elimination of the previous system setting and restoration of default values.

Steps:

（1）Power off the computer

（2）Use jumper cap short JCC Pin 1 and Pin 2，then restore the default setting of Pin2 and Pin 3.

（3）Start the computer and press Del to enter into BIOS setup interface; you also can use optional load optimized defaults.

（4）Save and exit.

Setting	JCC
1-2	Clear CMOS contents and reset all the

	BIOS values as the default setting.
2-3	Normal working state, the default setting

⚠ Please do not clear CMOS when computer boots up so as not to damage the motherboard.

2.2.2 COM2 Jumper Function Setting (J1、J2、J3)

TC-962 has COM2 jumper which is fixed on the motherboard of AFC-340. J1、J2、J3 are used to set the transmission modes including RS 232/RS 422/RS 485. Users can set the value according to requirements. The default mode is RS232.

COM2 RS232 (default)		COM2 RS422		COM2 RS485	
J1	3-5 4-6	J1	1-3 2-4	J1	1-3 2-4
J2	3-5 4-6	J2	1-3 2-4	J2	1-3 2-4
J3	1-2	J3	3-4	J3	5-6 7-8

2.3 Interface Instruction

2.3.1 CF Card Slot（CF）

TC-961/II provides 1x 50Pin standard CF card slot supports TypeI/II CF card.

2.3.2 SD Reader Slot（SD）

TC-961/II provides 1x SD card slot supports standard SD/MMC card.

2.3.3 USB Port（USB1，USB2，USB3）

The motherboard provides two standard USB ports（USB1,2） and one 4Pin USB port（USB3） which are compatible with USB2.0 specification and support plug and play function. USB3 port can be used for optional WIFI adapter.

USB1，2 interface defination

Pin	Signal
1	VCC
2	USB_D-
3	USB_D+
4	GND
5	GND

6	GND

USB3

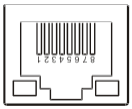
Pin	Signale
1	VCC
2	USB3-
3	USB3+
4	GND

2.3.4 Audio（SPK OUT，MIC）

TC-96x is based on ALC888 Audio decorder chip which supports one audio-out and one MIC jack on the panel.

2.3.5 Ethernet Port（LAN）

TC-96x utilizes the Realtek RTL8111C/D chip supporting one RJ-45 Gigabit Ethernet interface. The Green LILED and Yellow ACTLED show the status of LAN.

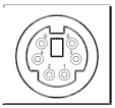


Status Desription of RJ45 LAN LED

LILED(Green)Status		Function	ACTLED(Yellow) Status	Function
Light up	Greeen (100Mbps) Yellow (1000Mbps)	Effective links	Blink	Network has been connected, the ongoing data transmission
Off	Off	No network valid link		
Off	Off	No network connection or no data transfer		

2.3.6 Keyboard & Mouse Interface (Ms/Kb)

TC-96x provides one PS/2 interface for keyboard and mouse connection. Please get it from our accessories box.

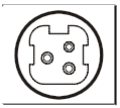


Ms/Kb:

Signal	Pin
KB_DATA	1
MS_DATA	2
GND	3
VCC	4
KB_CLK	5
MS_CLK	6

2.3.7Power Interface (DC 12V)

+12 V single power supply



Pin	Signal
1	+12V
2	GND
3	NC

2.3.8 SATA Port (SATA)

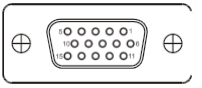
The one SerialATA interface has a transmission rate up to 300MB/s.

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

2.4 TC-961 Expansion board interface

2.4.1 VGA port (VGA)

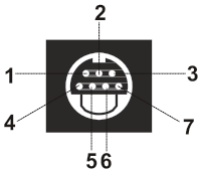
Standard 15Pin VGA port is suitable for all of VGA displays。



Pin	Signal	Pin	Signal	Pin	Signal
1	Red	6	GND	11	NC
2	Green	7	GND	12	SDA
3	Blue	8	GND	13	HSYNC
4	NC	9	+5V	14	VSYNC
5	GND	10	GND	15	SLC

2.4.2 SVIDEO Port (SVIDEO)

TC-961 provides one S-VIDEO port for connecting LCD device, which on the realization of video playback.



Signal	Pin
s_video_y	1
s_video_cvbs	2
GND	3
s_video_pr	4

GND	5
GND	6
GND	7

Remark : It can support TV-OUT , S-VIDEO and Analog HDTV modes , We can provide different types of wire under your needs. The specific allocation is:

TV-OUT====== s_video_cvbs

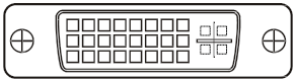
S-VIDEO==== s_video-y, s_video_pr

Analog HDTV======= s_video-y(Y), s_video_cvb (Pb), s_video_pr (Pr)

2.5 TC-962Expansion board interface

2.5.1 DVI interface (DVI)

TC-96xIIProvides a DVI-D interface for connecting LCD displays.



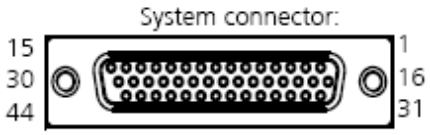
Signal	Pin		Signal
TDC2#	1	2	TDC2

GND	3	4	NC
NC	5	6	SC-DDC
SD-DDC	7	8	NC
TDC1#	9	10	TDC1
GND	11	12	NC
NC	13	14	VCC
GND	15	16	HP-DETECT
TDC0#	17	18	TDC0
GND	19	20	NC
NC	21	22	GND
TLC	23	24	TLC#
GND	25	26	GND
NC	27	28	NC

2.5.2 Serial Port（COM）

TC-962 provides serial port，expansion board of AFC-340 be with one DB44

interface, which can be extented 4 serial ports，There is one adapter of 1 to 4 DB9 COM in the accoreies box



Pin	Controller	Defination	Pin	Controller	Defination
1	A-1	DCD3	23	C-3	TXD5
2	A-2	RXD3	24	C-4	DTR5
3	A-3	TXD3	25	C-5	GND
4	A-4	DTR3	26	C-6	DSR5
5	A-5	GND	27	C-7	RTS5
6	A-6	DSR3	28	C-8	CTS5
7	A-7	RTS3	29	C-9	RI5
8	A-8	CTS3	30	NC	GND
9	A-9	RI3	31	D-1	DCD6
10	NC	GND	32	D-2	RXD6

11	B-1	DCD4	33	D-3	TXD6
12	B-2	RXD4	34	D-4	DTR6
13	B-3	TXD4	35	D-5	GND
14	B-4	DTR4	36	D-6	DSR6
15	B-5	GND	37	D-7	RTS6
16	B-6	DSR4	38	D-8	CTS6
17	B-7	RTS4	39	D-9	RI6
18	B-8	CTS4	40	NC	GND
19	B-9	RI4	41		NC
20	NC	GND	42		NC
21	C-1	DCD5	43		NC
22	C-2	RXD5	44		NC

Chapter 3

Hardware Installation

Chapter 3 Hardware installation

Before the computer installation, we should

Follow the safety principles, which will prevent the computer from potential damage and ensure our personal safety.

1：Make sure the computer is not connected power supply

2：Better to wear anti-static gloves when we contact motherboard or components (such as RAM.)

3：Prepare a small cross screwdriver

3.1 Remove machine upper cover

1：Use a screwdriver to open the bottom of TC-96x

2：Seize the host cover of both sides and force up to mention.Then the lid be removed.

3.2 Memory Module Replacement/Installation

TC-96x provides one 200Pin DDRⅡ SO-DIMM slot， and supports DDRⅡ400 / 533MHz RAM. Max.up to 2GB. You can choose the suitable one. The installation procedure as follows:

1：Open the console lid.

3：Remove the motherboard and expansion board separately.

4：Choose the suitable memory.

5：Make sure the memory into the right SO-DIMM slot.

6：And then push the memory down slowly until you hear the “click” sound.

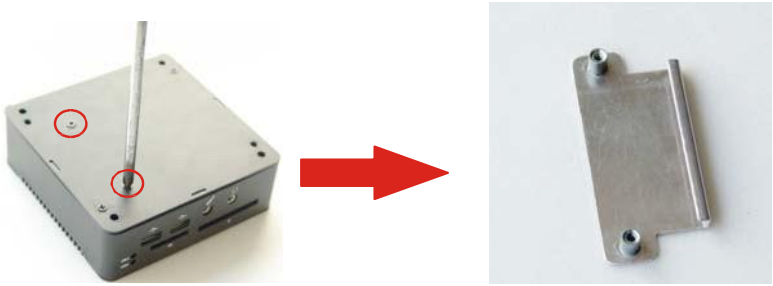
3.3 Hard drive replacement/installation

The machine provide a 1.8” HDD bays, the expension board provides one SATA ports. You can choose the suitable HDD. The steps of installation as follows:

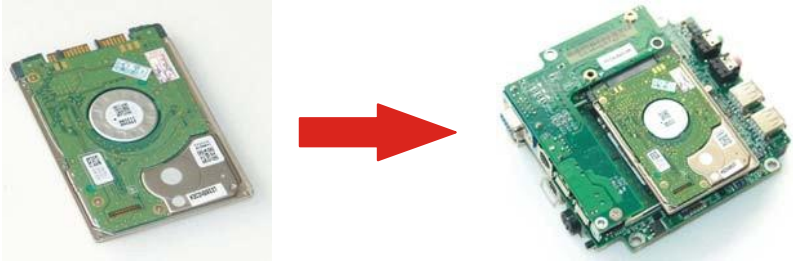
1：Turn off the power, unplug the power cable.

2：Using the screwdriver to open and remove the chassis cover

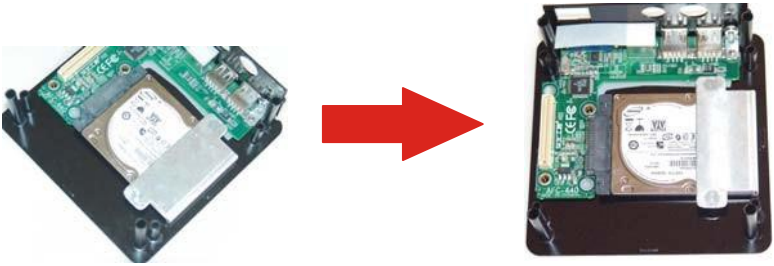
3：Please take down the HDD drive bay.



4：Choose the suitable 1.8” HDD, and inset HDD to the SATA interface of expansion board.



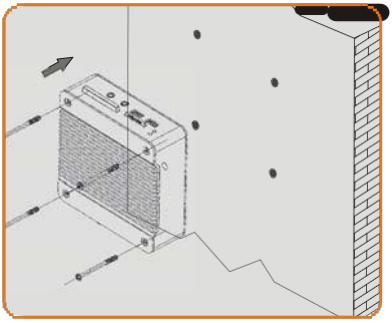
5：Install the finished expansion board into chassis and fix HDD with the drive bays.



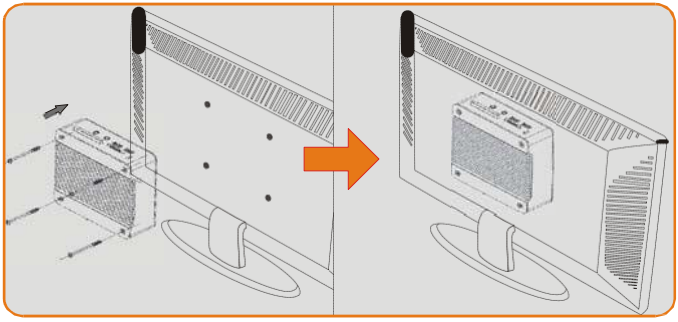
3.4 Wall mounting/Displayer installtion

TC-96x meets *VESA MOUNT 100 specifications* with international standard mounting holes. It can be used for rackmount, wall mounting and matched with LCD and other devices.

1：Diagram below shows the Wallmount of machine in accordance with screw holes



2：The following diagram shows machine of screw holes will be installed hehind the display.



Back panel of displayer installation

3.5 Power Connection

1：Connect the power code to the socket of the back end of the power connector

2：Connect the power cord plug to the 3-slot power supply plug rafts.

Chapter 4
BIOS Setup

Chapter 4 BIOS Setup

AMI BIOS upgrade:

It is true that hardware and software are upgrading all the time. When your IPC can not support the newest processor (for example), you should upgrade the BIOS to try to keep up with the latest technology. Upgrading (or flashing) the BIOS is not an easy attempt. To make sure upgrade succeed, please follow the instruction below:

Set jumper JAV as open

AFUDOS.EXE is the program for BIOS to modify and upgrade，need to be run in DOS mode.

Use boot disk load DOS, run Amiflash.exe and write the newest file:XXXX.ROM into the Flash IC.

Order format:A：\Afudos XXXX.rom

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

Example: Afudos 7652I100.rom /P /B /C /N /X

Remarks:

1. Upgrading BISO may cause your system crash, so please operate carefully.
2. Please use the upgrading program in the CD-ROM provided by us
3. Please do not power off or reboot the system when upgrading, otherwise, the BIOS maybe be damaged.
4. Please backup your BIOS before upgrading.

AMI BIOS Description:

AMI BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed memory (CMOS RAM) so that it retains the setup information when the power is turned off

AMI BIOS Setup

Power on your computer, when this information display in your screen: Del->SETUP please press “DEL”, then it will enter BIOS setup interface.

1. Power on or Reset computer.

2. When "Press <Del> to enter setup" in screen, please press <Del>.

3. Use the "←↑→↓"to choose the option which your want to modify, press <Enter> and show the sub-menu.

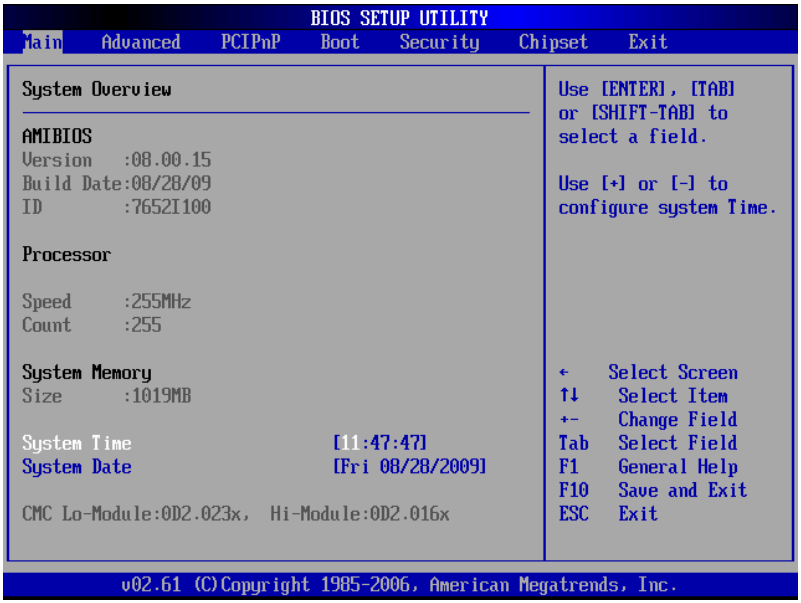
4. Use the "←↑→↓"and <Enter> to modify the value.

5. At any time, press<Esc> can back to the father-menu

Note！ The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability。The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen。

When the SETUP program starts, you can see the CMOS Setup Utility Main screens are as follows:

4.1 Main Menu



AMI BIOS

It displays the BIOS version, update date, identification numbers, which cannot be modified by users, for they are options for reading only.

Processor

It displays the processor CPU types, tempos, quantity you are using, and they are all options for reading only.

System Memory

It displays the memory size. options for reading only.

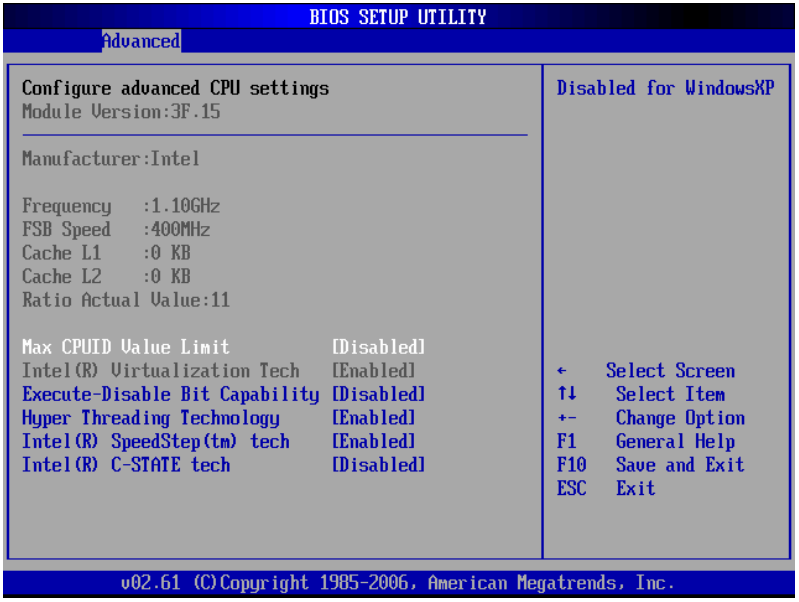
System Time

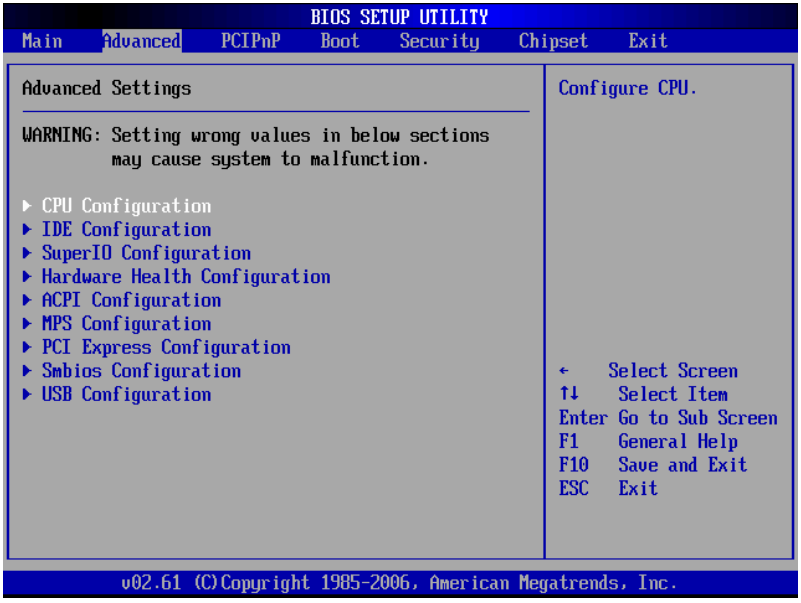
Select this option, and use < + > / < - > to set the current tine. And it represents in a format of hour/minute/second. The rational range of all options is: Hour (00-23), Minute (00-59) and Second (00-59).

System Date

Select this option, and use < + > / < - > to set the current date in a format of month/date/year. The rational range of all options is: Month (Jan - Dec), Date (01-31), Year (to 2099 maximum) and Week (Mon --Sun).

4.2 Advanced





WARNING: Setting wrong values in below sections may cause system to malfunction:

4.2.1 CPU Configuration

This sub menu includes CPU particular information, such as manufacturer, type, frequency, FSB speed, cache L1, and cache L2 etc.

Max CPUID Value Limit

When you are using the operating system which doesn't support extended CPU ID function, please set this project to [Enabled]. The settings are [Disabled] [Enabled]。

Intel(R) Venderpool Technology

VT also named Intel Virtualization Technology, a system imaging technology used in Intel CPU. It can run more than one OS in one PC, one processor runs one OS.

Execute Disable Bit Capability

This item specifies the Execute Disable Bit Feature of new generation of CPU, which enables self-. The settings are Enabled and Disabled. The Optimal and Fail-Safe default setting is Enabled. If Disabled is selected, the BIOS forces the XD feature flag to always return to 0.

Hyper-Threading Technology

That is to open Intel P4-C processor with Hyper-Threading functions, which is based on CPU, chipset. BIOS and OS can support this technology. When you open Hyper Threading, we suggest you use WinXP or Linux 2.4 version。If you use some OS that cannot support Hyper Threading or supporting is not enough good, your system performance will degradation when you open Hyper-Threading Technology.

Intel(R) Speedstep (tm) tech

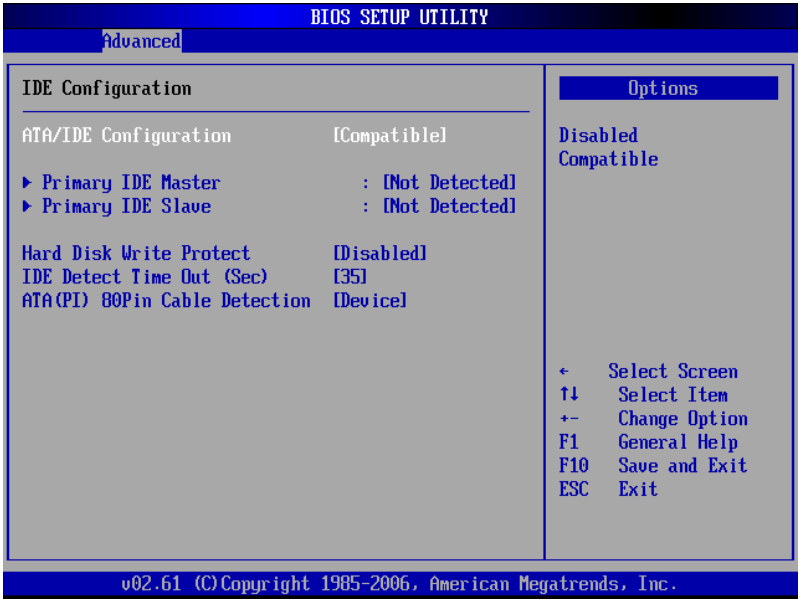
Whether the computer is powered on AC or battery, Intel(R) speedstep allows you to set the performance standards of Microprocessor technology. And it will be achieved after you installed CPU of speedstep technology. Setting option is: [Enabled],[Disabled].

Intel(R) C-State tech

C1 config/Hard C4 Config

CPU C status selection. Options: <Disable(default)>,<C2>,<C3>,<C4>,<Deep C4>，<C6>.

4.2.2 IDE Configuration



ATA/ IDE Configuration

Move the cursor to this option, and press <Enter> key to appear four options: Disabled, P-ATA Only (parallel IDE interface), S-ATA Only (serial IDE interface), P-ATA & S-ATA (parallel and serial hard disk coexisting mode, and either of the modes can be used). The user may select the parallel or serial IDE interface according the configuration of the hard disk.

1. In P-ATA Only: S-ATA Running Enhanced Mode helps open or close serial disk support in P-ATA Only state, in which Yes means support while No means not support. P-ATA Channel Selection is the support for parallel hard disks, Primary is to support two devices of IDE1 channel, Secondary is to support two devices of IDE2 channel, Both is to support four devices of both IDE1 and IDE2. S-ATA Ports Definition is to define which is master and which is slave. Therefore, in this mode, it can support 6 ATA devices maximum.

2. In S-ATA Only: It only supports S-ATA device. Now do not connect the P-ATA device. Otherwise, it may lead to the system misstatement. It can support 2 serial equipment maximum. Similarly, S-ATA Ports Definition is also to select the relationship between the master and the slave.

3. In P-ATA & S-ATA: Combined Mode Option is the selection in a combined manner. When

the 1st channel of P-ATA is selected, IDE1 is the master channel, IDE2 will be mapped as S-ATA channel, and IDE2 will be unable to be used. Instead, it supports two parallel and two serial devices of IDE1. When S-ATA 1st Channel is selected, S-ATA device will be mapped to IDE1. Now, IDE1 cannot be connected to devices, but IDE2 can be used, and it still supports 4ATA devices. The S-ATA Ports Definition is also the selection of relationship between the master and the slave.

Primary/ Secondary IDE Master/ Slave

This four options use to choose IDE device's type etc. include Type, LBA/Large Mode, Block (Multi-Sector Transfer), PIO Mode, DMA Mode, S.M.A.R.T.（Self-Monitoring, Analysis and Reporting Technology）, 32Bit Data Transfer these seven option, we suggest you choose Auto, the system will auto-search devices, if you want Config by yourself, make sure all parameter of the HDD support this mode first.

Hard Disk Write Protect

Setup HDD Write Protect function: <Enabled> Write Protect, HDD read only: <Disabled> HDD can write or read.

IDE Detect Time Out（Sec）

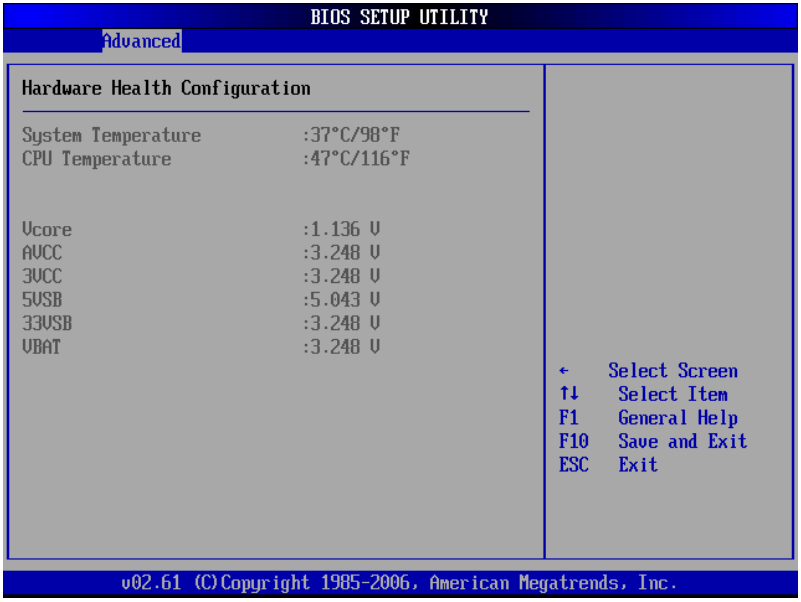
This option for BIOS searching IDE device in appointed time (by seconds).

ATA（PI）80Pin Cable Detection

Setup detect ATA(PI)80pin cable: 80pin ATA cable is for Ultra ATA/66,Ultra ATA/100 and Ultra ATA/133 .Standard cable is 40pin , can not support high transfer rate. These two cables is pin compatible.

<Host & Device> will reference the cable type both IDE controller and IDE device. Also it is default value.<Host> use the cable type used by IDE controller；<Device> use the cable type used by IDE device.

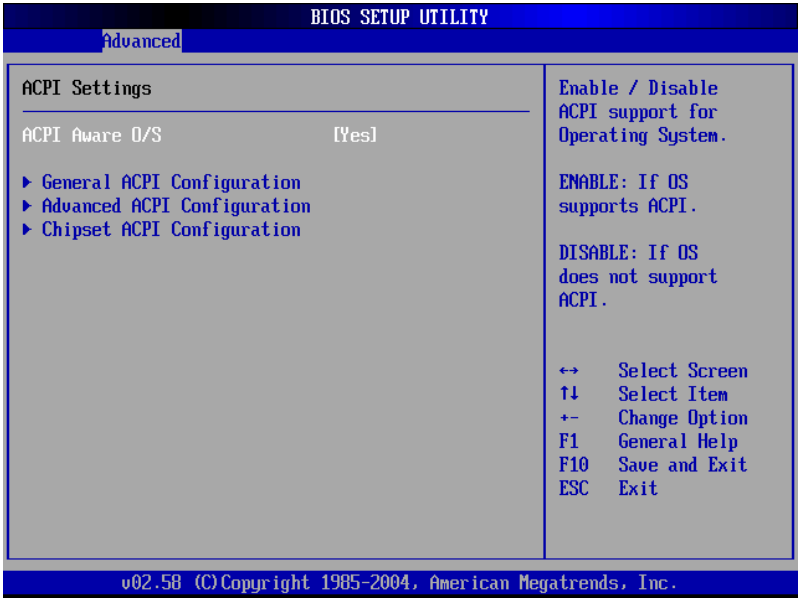
4.2.3 Hardware Health Configuration



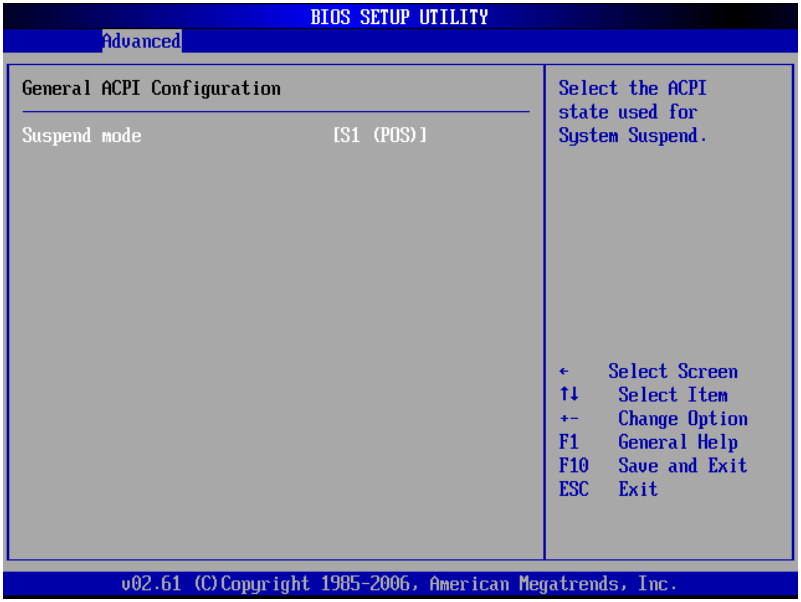
H/W Health Condiguration

Enable/Disable the onboard hardware monitor controller. If this option is enabled, the BIOS and OBS utility can get the system board's health information from hardware monitor controller.

4.2.4 ACPI Configuration



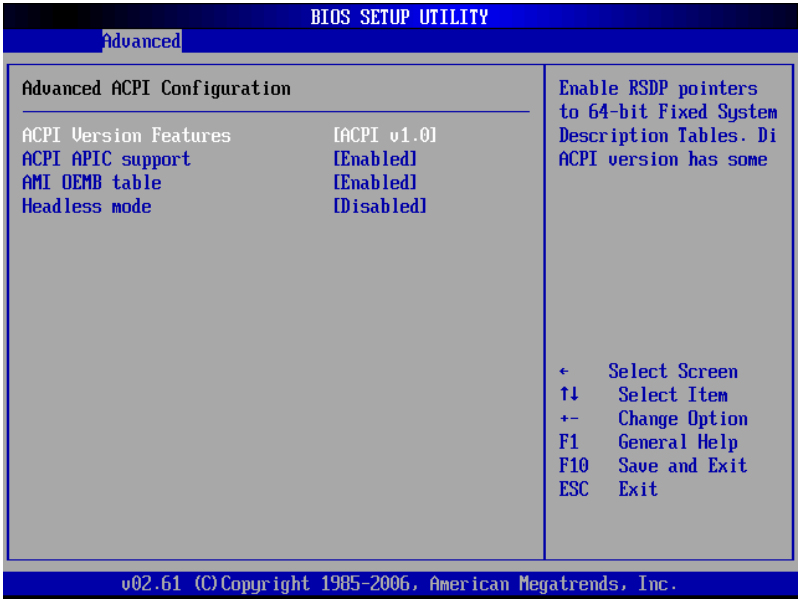
(1) General ACPI Configuration



Suspend mode

Enter into power-saving mode after selecting system into sleep. The model is not the same, nor is the level of system function consumption. S1(pos)：CPU stops working, other devices remain normal power supply.

(2) Advanced ACPI Configuration



ACPI Version Features

Select ACPI version number, different versions support different characteristics, more often downward compatible.

ACPI APIC support

Select whether to open ACPI (Advanced programmed Intermit controller） ,enlargeable system can make use of IRQ resource

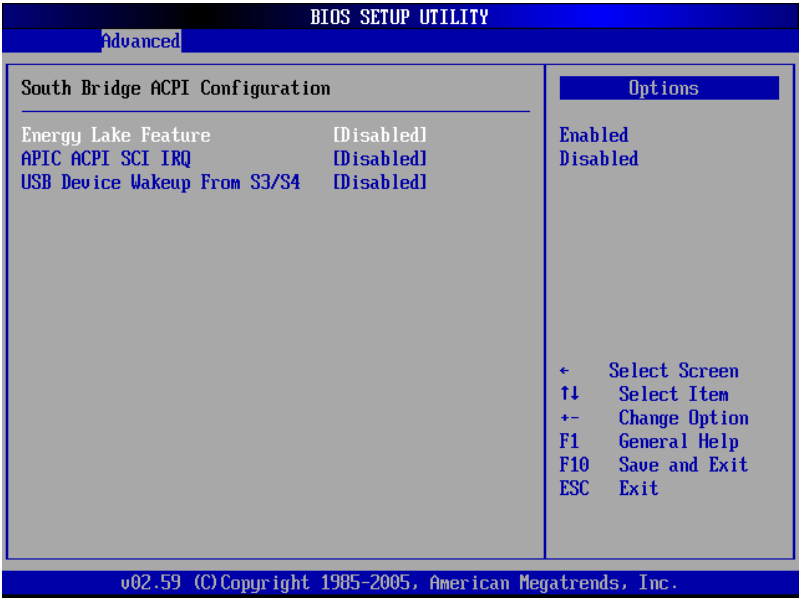
AMI OEMB table

Select whether to support OEMB table, option item: Disabled / Enabled.

Headless mode

Select whether to support Headless (not display facilities, not mouse, not keyboard) mode.

(3) Chipset ACPI Configuration



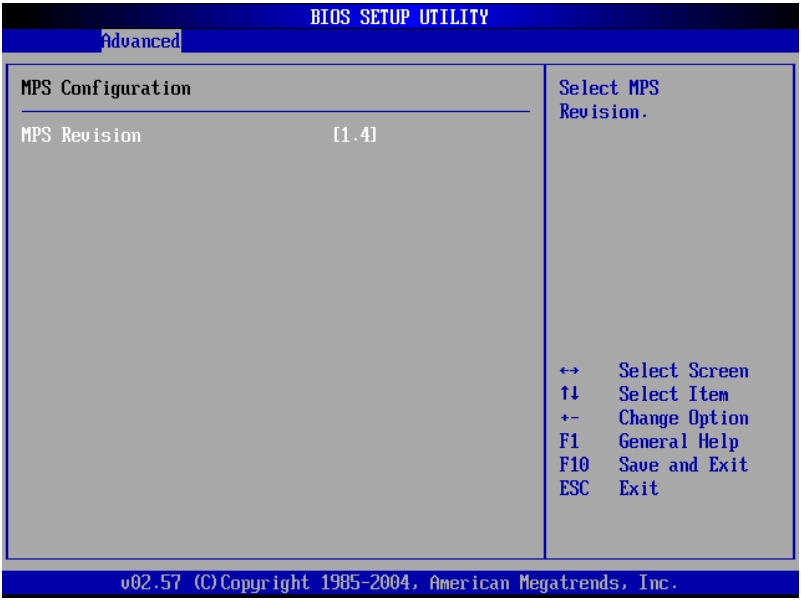
Energy Lake Feature

Whether support energy Lake power-save technology .option item :Disabled / Enabled.

APIC ACPI SCI IRQ

Enabled/Disabled interior I/O APIC（Advanced programmed Intermit controller）and multiprocessor list.

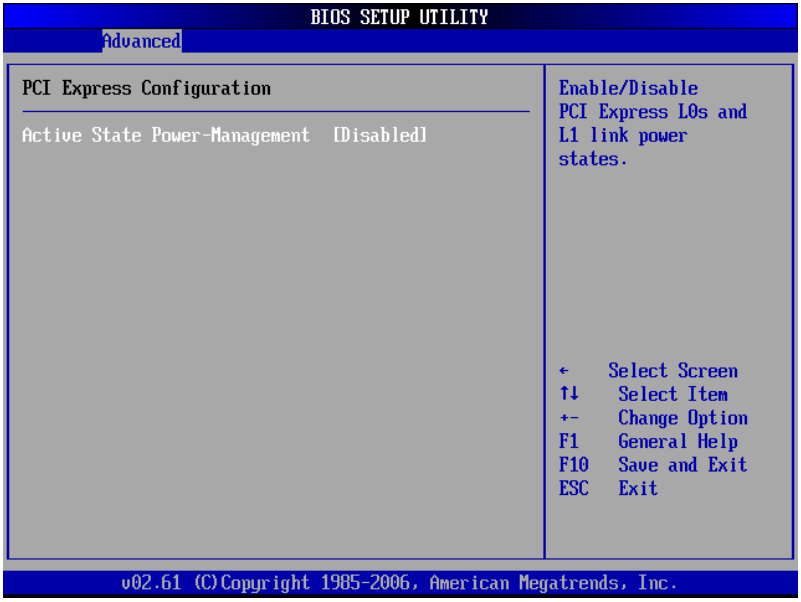
4.2.5 MPS Configuration



MPS Revision

This is a multi-processor standard version option. This option allows the user to select multi-processor standard version according to the operation system being used. And this option can function only when there are two or more than two physical or logical processors.

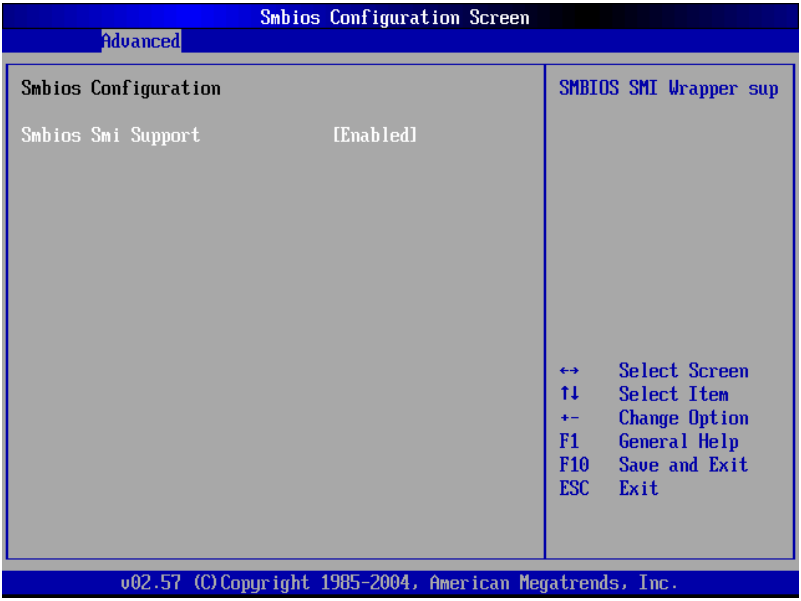
4.2.6 PCI Express Configuration



Active State Power-Management

This option allows you to use/non-use PCI- express 1 and 2 to connect power supply, setting item：[Enabled]，[Disabled].

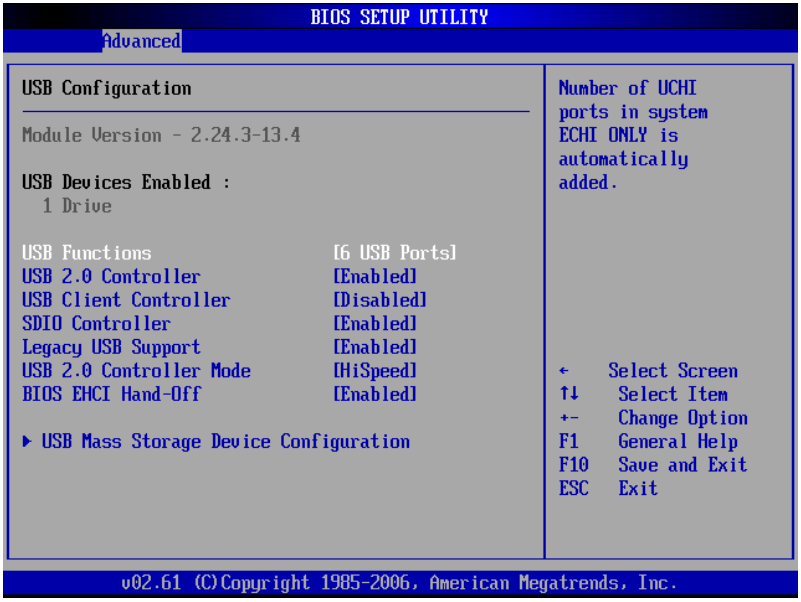
4.2.7 Smbios Configuration



Smbios Smi support

If support SMBIOS PnP Function 50-54h by SMI. Optional:[Enabled：support]，[Disabled：NO-Support]。

4.2.8 USB Configuration



Module Version (Read Only)

This option shows USB module version.

USB Devices Enabled (Read Only)

This option shows USB device which is connected with this board

USB Function

This option uses 4 of them supporting 4 USB devices.

USB2.0 Controller

This entry is used to disable/enable the USB 2.0 controller only. The BIOS itself may or may not have high-speed USB support. If the BIOS has high speed USB support built in, the support will automatically turn on when a high speed device is attached. The choices are <Enabled> or <Disabled>.

USB Client Controller

The USB is used to set whether to open the client program controller, [Enabled] to open, [Disabled] is off.

SDIO Controller

The SDIO interface is used to set it to open, [Enabled] to open, [Disabled] is off.

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 :< disabled>.

USB 2.0 Controller Mode

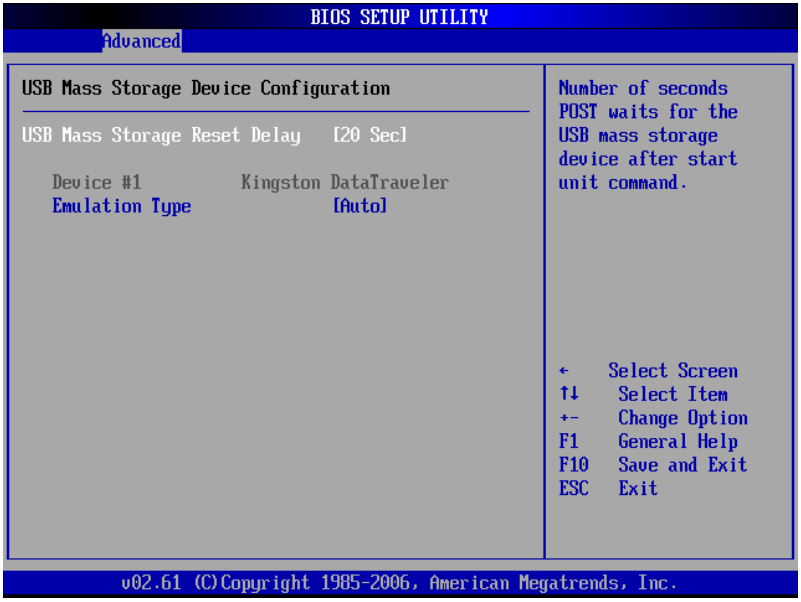
This option for choose USB2.0 port mode, Available after “USB2.0 Controller” -- <Enable>:
<FullSpeed>: USB port 2.0 (480Mbps).
<HiSpeed>: USB port 1.1 (12Mbps).

BIOS EHCI Hand-off

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

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

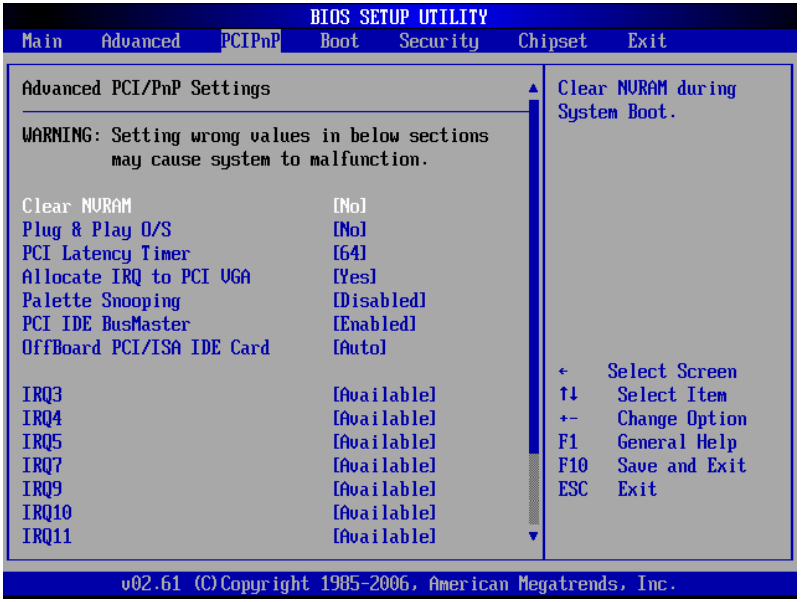
Move the cursor to”USB Mass Storage Device Configuration”, and press <Enter> key to appear the frame as below:



Emulation Type

Emulation Type，setting for [Auto].

4.3 PCI PnP



WARNING: Setting wrong values in below sections may cause system to malfunction:

Clear NVRAM

Set this value to force the BIOS to clear the Non-Volatile Random Access Memory (NVRAM). The Optimal and Fail-Safe default setting is No.

Plug & Play O/S

This option is used to decide whether to select operation system of BIOS or Plug-and-play function to configure the interrupt resources for the system peripheral devices. If this option setting is YES, the operation system will automatically distribute the interrupt resources. If there is no plug-and-play function in your operation system, or in order to prevent resetting interrupt, please set this option as NO.

PCI Latency Timer

This option can be used to select the corresponding setup values to give full play to the optimal performance of PCI.

Allocate IRQ to PCI VGA

Set this value to allow or stop the system from giving the VGA adapter card an interrupt address. The Optimal and Fail-Safe default setting is yes.

PCI IDE BusMaster

The default setup for this option is "Disabled", that is, not to allow the main board to use the Bus Master interface (also called "DMA/33 interface"). If the main board supports PCI IDE Bus Master interface, then this option may be set as "Enabled".

OffBoard PCI/ISA IDE Card

If the PCI/ISA IDE interface on the main board is damaged, you may add another function card to the main board to use the PCI/ISA IDE interface on this card. Now, you will have to set this option as Auto.

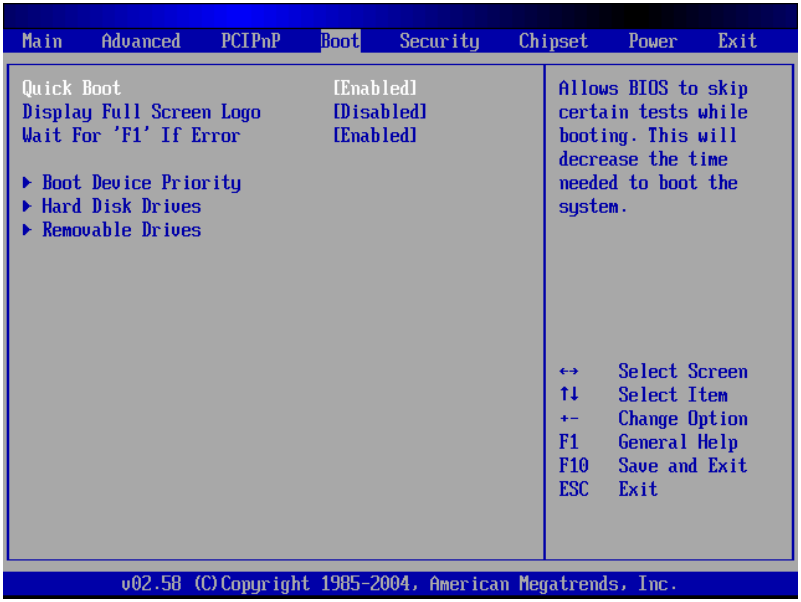
IRQ3-15

This option is used to designate whether the IRQ interrupt can be used or reserved.

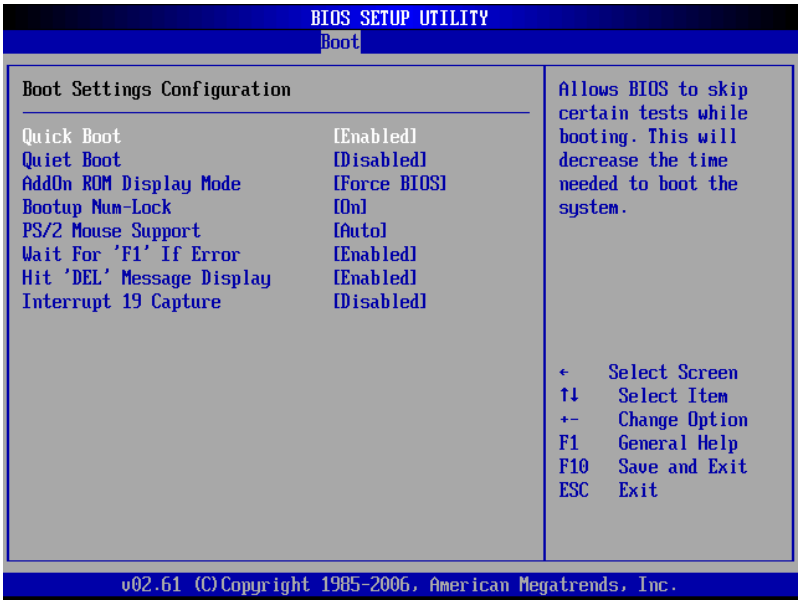
DMA Channel 0-7

This option is used to designate whether the DMA channel is available or reserved.

4.4 Boot



Move the cursor to Boot Settings Configuration, and press <Enter> key to appear the frame as below:



Quick Boot

Allows the BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.

Quiet Boot

If this option is set to Disabled, the BIOS display normal POST messages. If Enabled, an OEM Logo is shown instead of POST messages.

AddOn ROM Display Mode

For choosing Option ROM display mode, Default:[Force BIOS].

Boot Up Num-Lock

Select the Power-on state for Num-lock.

PS/2 Mouse Support

This option is used to enable or disable the operation of PS/2 mouse port.

Wait For "F1" If Error

In the case of any errors found in the system self-detection, it is waiting for the user to press F1 key. While the system is activating self-detection, if the issue found is not fatal (unlikely to cause lockup or gross consequences), then the system will go on operation, but the prompt information such as "Press 'F1' to resume" or "Press 'F1' to Set up" will be displayed. Now, press F1 key to resume operation.

Hit "DEL" Message Display

Displays "Press DEL to run Setup" in POST

Interrupt 19 Capture

If BIOS start-up can be captured by special outside insert card.

<Enabled>: Yes, here BIOS will start-up by inserted card setting in its ROM,

<Disabled>: No, here BIOS start-up by the influence of inserted card.

Boot Device Priority

Press "Enter" will show sub-menu:

1st Boot Device

2nd Boot Device

3rd Boot Device

System will detect device after this priority until find an available boot device then boot from it.

(Boot device support Removable Drive or Hard Disk Drive)

Hard Disk Drives

Boot device set for HDD, if has multi- HDD, must set up priority. The Highest Priority HDD will display in “Boot Device Priority”.

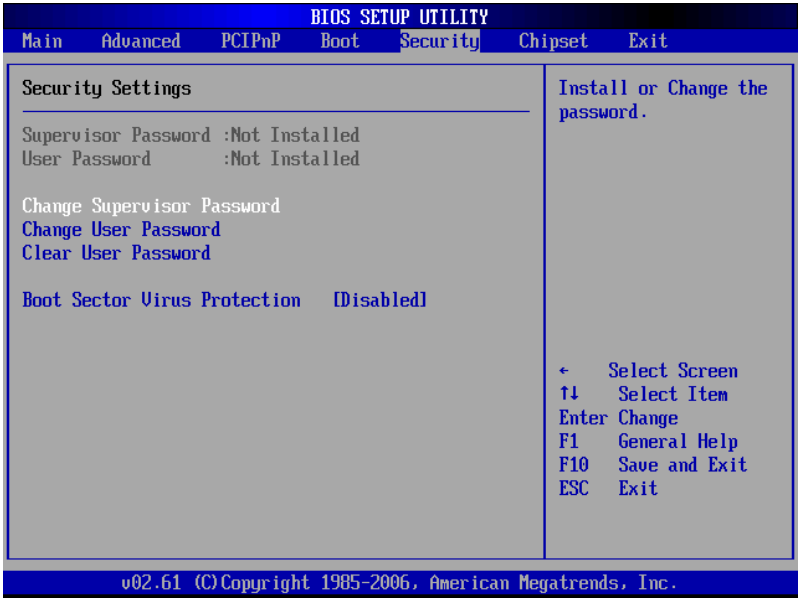
Removable Drives

Boot device set for Removable Drives, If has multi- Removable Drives, must set up priority. The Highest Priority Removable Drives will display in “Boot Device Priority”.

CD/DVD Drives

Boot device set for CD/DVD Drives, If has multi- CD/DVD Drives, must set up priority. The Highest Priority CD/DVD Drives will display in “Boot Device Priority”.

4.5 Security



Supervisor Password

This item is used to note the user whether the supervisor password has been set or not. The options are [Installed] and [Not Installed].

User Password

This item is used to note the user whether the user password has been set or not. The options are [Installed] and [Not Installed].

Change Supervisor Password

This item is used to change the supervisor password. Select this item and press Enter and load into the menu to change the supervisor password.

Change User Password

This item is used to change the user password. Select this item and press Enter and load into the menu to change the user password.

Clear User Password

This item is used to clear user password. Select this item and press Enter and load into the menu to clear the user password.

Boot Sector Virus Protection

This item is used to operate the anti-virus function of BIOS. Select Enabled to activate boot sector protection. In this state, BIOS warns when formatting of writing command emerges.

eg. When write into the boot sector, the following information will be displayed. To skip it, press N.

Boot Sector Write!

Possible VIRUS: Continue (Y/N)? _

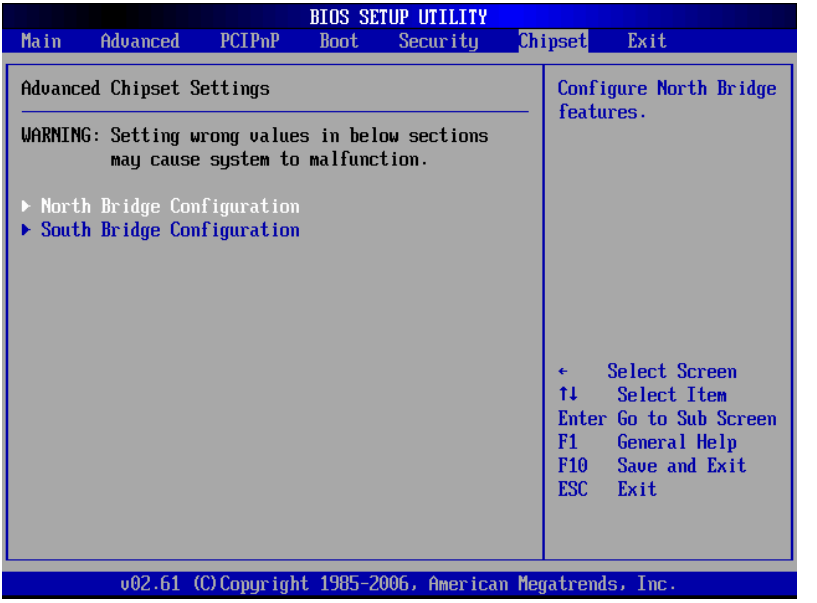
When format hard disk through BIOS INT13, the following information will be displayed.

Format!!!

Possible VIRUS: Continue (Y/N)? _

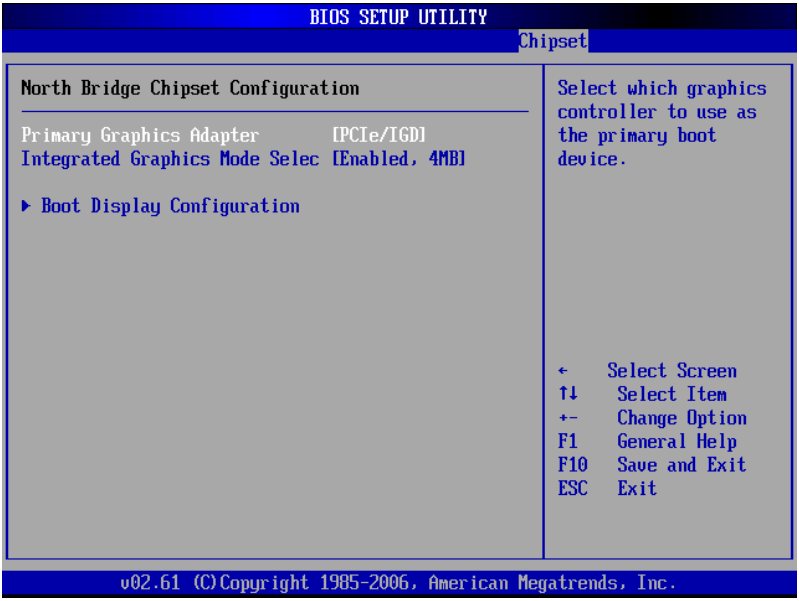
Select Disabled to forbid the command.

4.6 Chipset



4.6.1 North Bridge Configuration

Move the cursor to NorthBridge Configuration and press <Enter>, and the following interface will appear:



Initate Graphic Adapter

This item is used to select preffered graphic. Options includes

1.PEG PCI Express Graphics, PCIE,

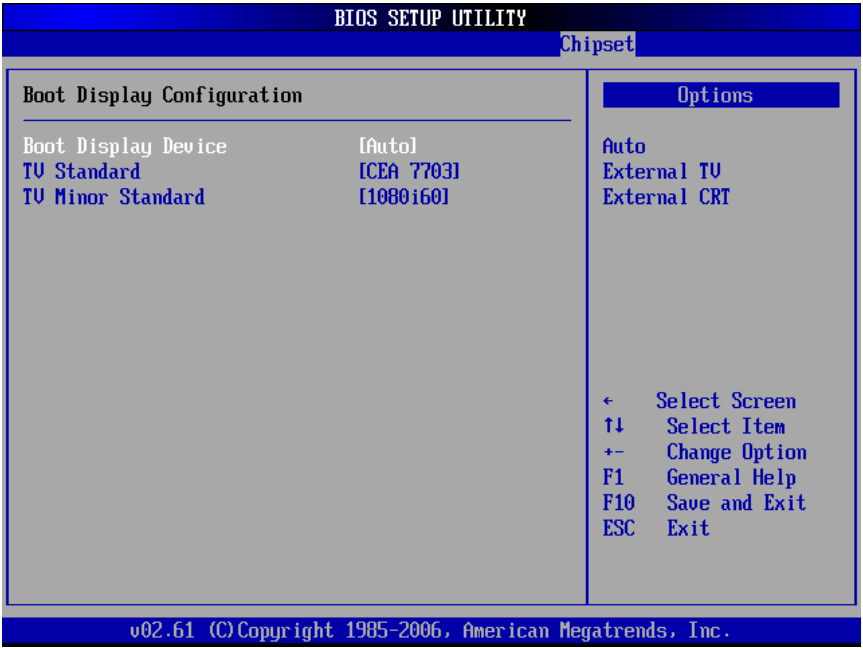
2. IGD Integrated Graphics Device,

3. PCI.

Internal Graphics Mode Select

This part is used to set graphic apertures. The small pore us one part of the PCI address range used for graphic memory address space. The main cycle within the pore range needs no conversion to AGP. You may select 4M, 8M, 16M, 32M, 64M or

128M. The default value is 64M.



Boot Display Device

This item allows the user to decide that display mode. The options includ

[Auto(default)]、[LCD]、CRT] and [Both(CRT+LVDS)].

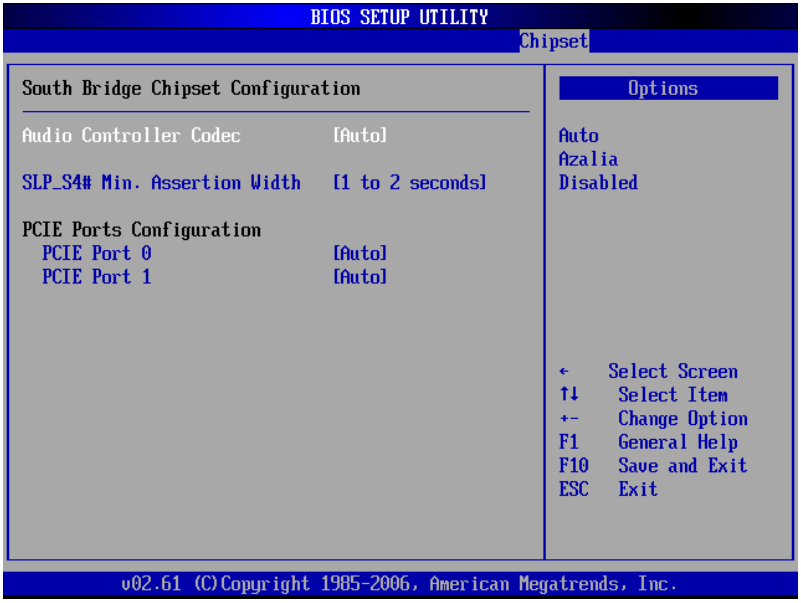
TV Standard

TV output format options settings.

4.6.2 South Bridge Configuration

Move the cursor to SouthBridge Configuration and press <Enter> ; the following

interface will emerge.



AC'97 Controller Codec

Select <Disabled> if you do not want to operate AC-97 audio. The choices: <Auto> <Disabled>.

SLP_S4# Assertion Width

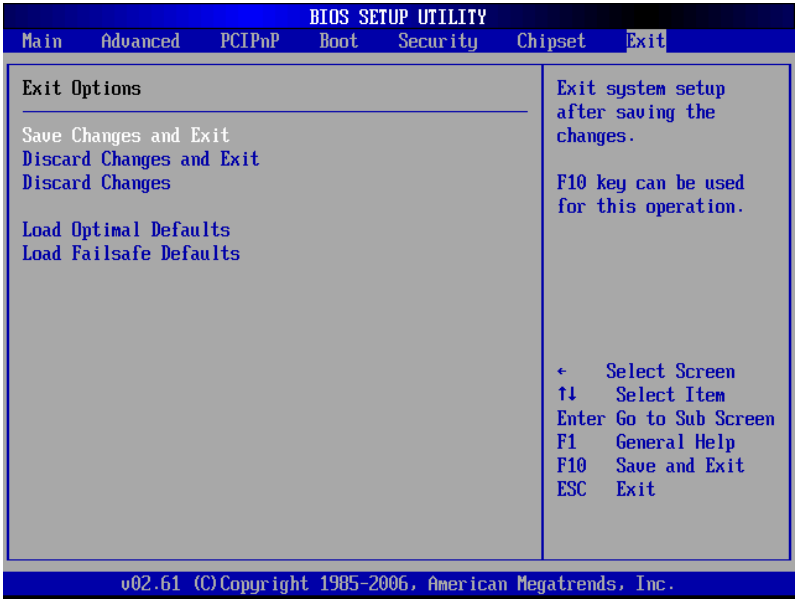
This item allows user to set the SLP_S4# Assertion Width. The choices：<4---5 Sec(default)>,<3 to 4 Sec>,<2 to 3 Sec>,<1 to 2Sec>。

PCIE Ports Configuration

PCIE Port1-2

Set whether use PCI-E 1-2 port. The choices :< Auto (default)>,<Disabled>,<Enabled>.

4.7 Exit



Save Changes and Exit

Press <Enter> two times and save BIOS change and reboot system.

Discard Changes and Exit

Press <Enter> two times to quit BIOS change and reboot system.

Discard Changes

Press <Enter> two times and stay at BIOS setting interface to continue BIOS

setting.

Load Optimal Defaults

Selecting this item before BIOS setting is preferable for this could ensure system to effectively operate. User can revise the items according to requirements.

Load Failsafe Defaults

This item is effective when malfunction happens

Appendix

Appendix

Appendix 1: Driver Installation

Please install the driver as the following steps:

Plug programmed disk into CD-ROM and install the driver automatically or manually.

The manually installation instructions are given as below:

1) Multiple manual installation modes are available in Device Manager.

2) Click right mouse button to operate “my computer ", select "management", and enter into “Device Manager"

3) Right click "display controller” in the menu of graphic card, select “Properties " and click “Driver", then select “update driver".

4) Select “Show the list of all drivers which are designated locations so the choices can be made from it ", then select "next."

5) Select the location of display driver, click “ok"

6) Restart on implementing the installation.

Proceed with the installation of other drivers after restarting the system, till all

installations are implemented. The user can check the device in Device Manager

Appendix 2: Embed SATA HDD Drivers into Windows XP Installation Disc

1. Software Preparation

(1). nLite : nLite can integrate Service Pack and Windows Security Update for customized Windows installation files. Besides, it can integrate normal application software(DirectX、.Net Framework、software integration package、desktop themes and driver etc.), support Windows unattended installation and create Bootable ISO CD image etc. Download link : http://dl.21tx.com/2005/11/07/10756.html

2. SATA driver : It could be downloaded it from the Hard Driver manufacture's official website or here

ftp://ftpdrivers@ftp.asm.cz/XtendLan/TC-961,962,963,964/Drivers/3132_x86_1.0.22.0xl.zip

3. WindowsXP System installation disk.

2. Embeding Procedure

1. Uppack SATA driver file 3132_x86_1.0.22.0_logo.zip to "d:\SATADriver" directory.

Remark: User can unpack multiple different SATA HDD drivers to d:\SATADriver directory to enable the installation disk to be suitable for different SATA HDD.

2. Insert Windows XP installation disk into CD-ROM and creat folder "XpSp3" at D

disk. Bootup nLite driver , select “English” langaue and enter into next step. Click “Browse” when the “ Please select the WINDOWS installation files location” interface emerges ,and select the letter of CD in. On the tips of the chart 1 emerges, choose the folder“d:\ XpSp3” and enter into system copy phase; then enter into the next stage after the complementation of copy.

3. Don’t set “Default” value and directly enter into the “ Task selection” phase, then select” Driver” and “Bootable ISO image” and click “Forward” to enter into the next step.

4. Click”Insert” button in the “Integrated the driver to install the file” interface. Then select”single driver”in the pop-up list. And then select and unfold file “SI3132.inf” from d:\SATADriver” , At this point will appear” Driver integration Optionsl” interface , and select” Text- mode driver” key , then select “Sil 3132 controller on Windows XP/Server 2003” in the list. Click” ok”

5. Click “Forward” and select “Yes” when the tip “application to change it?” emerges and then enter into the ISO image process.

6.Insert a blank CD burner, select” Direct Burn” in the “bootable ISO image” interface

of the “Mode” drop down list.Click” Burn” button to start burning. In order to ensure recording quality, and recommend you select” Create inagamge” and then make a boot disk under the image.

7. After finish CD-ROM burning, it can be used as a system installation disk, and has SATA HDD drivers.

Appendix 3: Watchdog Programing Instruction

Watchdog Reference Code（ASM）

Under the command of DEBUG, the port which could be controlled by written data can control the watchdog.

Port instruction：

2EH： Address Port

2FH： Data Port

Example：Set Watchdog Timer for 30 Seconds;

Set DEBUG in DOS

C:\>debug

-o 2e 87

-o 2e 87 ; Unlock

-o 2e 2d

-o 2f 20 ; bit0=0, set pin as watchdog func

-o 2e 07

-o 2f 08 ; Choose logical devices

-o 2e 30

-o 2f 01 ; Activate logical devices

-o 2e f5

-o 2f 00 ; Set timer units as second / (set as min: o 2f 08)

-o 2e f6

-o 2f 30 ; Set the Timer Count 30h=48sec

-o 2e aa ; locked register

-q

C:\>

The system will automatically restart after 48sec on inputting the last line.

==========

watchdog reference code(c++ language) :

```
outputb (0x2e, 0x87)

outputb (0x2e, 0x87)        // Open SUPER IO register

outputb (0x2e, 0x2B)

outputb (0x2f, 0xE0) //bit4=0 ,set pin as watchdog func

outputb (0x2E, 0x07)

outputb (0x2F, 0x08)//select logical device

outputb (0x2e, 0x30)

outputb (0x2f, 0x01)  //active the device

outputb (0x2e, 0xF5)

outputb (0x2f, 0x00)  // Set timer units as second /( Set timer units as minute: outputb

(0x2f, 0x08) )

outputb (0x2e, 0xF6)

outputb (0x2f, 0xIE)  // Set Timer Count to 30 sec

outputb (0x2E, 0xAA)        // locked register

//------- code end ---------------------------------
```

Appendix 4: Glossary

ACPI

ACPI (Advanced Configuration and Power Management Interface) is a kind of specification allowing the OS to control power of computer and devices.

ATX

AT extended, a motherboard layout according with modern standard replaced BabyAT. It changes disposal of many components, and do some new high efficiency design, so it is widely used now.

ATX is a modern motherboard layout which has replaced the Baby AT structure. It has improved the arrangement of components and has been widely applied.

BIOS

BIO (Basic Input/Output System) is software installed in a ROM chip for input/output code control. It tests hardware state and starts OS in the process of system booting.

BUS

BUS is a set of hardware lines for data exchange among devices in computer system. BUS here means local lines of CPU and host memory.

Chipset

Chipset is the integrated chips for executing function. The computer chipset of system level is constructed with Southbridge & Northbridge; it's the core of motherboard's structure and main functions.

CMOS

CMOS (Complementary Metal-Oxide Semiconductor) has been widely used for its high speed and low power consumption. The computer COMS is space for data saving, ie date, time, system information and parameter setting.COM

COM (Computer-Output Microfilm) is the universal serial communication interface which connects devices with the DB 9 standard

DRAM

DRAM (Dynamic Random Access Memory) is a universal memory mode storing 1 bit with 1 transistor and 1 capacitance. With the development of the technology, more and more mode of DRAM emerges. Nowadays, the SDRAM, DDR SDRAM and RDRAM are the common modes.

IDE:

It is a driver specification for integrated device electronics,for connecting HDD / CD-ROM device.

IRDA:

IRDA is the abbreviation of Infrared Data Association. It here means infrared transmit interface connecting infrared transmit devices. This sort of device transmits data by infrared light-wave without connecting any cables .It have been developed a standard now.

LAN

LAN is a type of network interface. Usually, the local area network is buildup by sever, workstation, some communications links, 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, as a rule. Terminals can access data and devices anywhere through cables, so, many users can share costly device and resource.

LED

POST is the abbreviation of power-on self-check. During the booting phase, the BIOS initializes and identifies system devices such as the RAM, video display card, keyboard and mouse, hard disk, CD/DVD drive and other hardware

LPT

Line print terminal.The denomination reserved by DOS, is used to denote universal parallel interface, and connect printer in a general way.

POST

POST is the abbreviation of power-on self-check. During the booting phase, the BIOS initializes and identifies system devices such as the RAM, video display card, keyboard and mouse, hard disk, CD/DVD drive and other hardware

PS/2

The PS/2 is a keyboard & mouse connective interface specification developed by IBM. The interface fitting the PS/2 is a DIN interface with only 6PIN. Except for keyboard & mouse, it can connect other devices like modem.

USB

USB is the abbreviation of Universal Serial Bus. It’s a type of a hardware interface adapting to low speed external devices such as keyboard, mouse etc. A PC can connect up to 127 USB devices with a transmit bandwidth of 12Mbit/s; The USB supports multi-data stream and hot swap which allows user to plug USB devices while system is running. At the same time, the system can automatically detect the plugged USB devices and drive it to operate.