



MX45GM2

Intel® Socket P GM45 Chipset supports Intel® 45nm Mobile Core™ 2 Extreme, / Core™ 2 Duo / Celeron processors Mini ITX Motherboard.

User's Manual

Ver. 1.00

BCM Advanced Research, An Industrial Leader Since 1990 in Industrial Motherboards & Systems

7 Marconi, Irvine, CA 92618 USA | www.bcmcom.com | (PH)949.470.1888 | (FAX)949.470.0971

For Tech Support, please visit www.bcmcom.com/bcm_support_legacy/ProductSupport.htm or contact
BCMTechSupport@bcmcom.com

Contents

FCC Statement.....	5
Notice.....	5
Copyright Notice	5
Trademark Acknowledgement	5
Disclaimer	6
Life Support Policy	7
BCM Customer Services.....	6
Product Warranty	7
Manual Objectives	7
Safety Precautions.....	8
Document Amendment istory.....	8
Chapter 1.....	9
MX45GM Specifications.....	10
Block Diagram.....	12
Before you Proceed	13
1. Motherboard Overview.....	14
1.1.1 Placement Direction.....	14
1.1.2 Screw Holes	14
1.1.3 Motherboard Layout.....	15
1.1.4 Layout Content List	16
1.2 Central Processing Unit (CPU).....	18
1.2.1 Installing the CPU	19
1.2.2 Installing the CPU Heatsink and Fan.....	20
1.2.3 Uninstalling the CPU Heatsink and Fan.....	21
1.3 System Memory.....	22
1.3.1 SO-DIMM Sockets Location.....	22
1.3.2 Memory Configurations	22
1.3.3 Installing a DDR2 SO-DIMM	23
1.3.4 Removing a DDR2 SO-DIMM	24
1.4 Expansion Slots.....	25
1.4.1 Installing an Expansion Card	25
1.4.2 Standard Interrupt Assignments	25
1.4.3 PCI Slots	26
1.4.4 PCI Express x1	26
1.4.5 Mini PCI Express x 1.....	26

1.5 Jumpers.....	27
1.5.1 Clear CMOS (CLRTC1).....	27
1.5.2 LCD Panel Brightness Control (CLRTC3).....	27
1.5.3 COM1 RI/+5V/+12V Selection(JCOMPWR3).....	28
1.5.4 COM2 RI/+5V/+12V Selection(JCOMPWR2).....	28
1.6 Connectors.....	29
1.6.1 Rear Panel Connectors.....	29
1.6.2 ATX Power Connector	31
1.6.3 Amplifier Connector (JAMP1).....	31
1.6.4 Serial Port 2-3 Connector (COM2, COM3)	31
1.6.5 Serial Port 4-5 Connector (COM4,COM5)	31
1.6.6 CPU Fan Connector (CPU_FAN1).....	32
1.6.7 System Fan Connector (SYS_FAN1).....	32
1.6.8 System Panel Connector (FPIO1).....	33
1.6.9 Digital I/O Connector	34
1.6.10 LVDS Connector (JLVDS1).....	34
1.6.11 LCD Inverter Connector (JBKL1).....	35
1.6.12 Chassis Intrusion Connector (CHASSIS1)	36
1.6.13 SPI Connector (JSPI1).....	36
1.6.14 Digital Audio Connector (SPDIF_OUT1)	36
1.6.15 Serial SATA Connector (SATA1, SATA2, SATA3, SATA4)	28
1.6.16 USB 2.0 Connector(USB1,USB2).....	28
Chapter 2.....	39
2.1 BIOS setup program.....	40
2.1.1 Legend Box.....	40
2.1.2 List Box.....	41
2.1.3 Sub-menu.....	41
2.2 Main Setup.....	42
2.3 Advanced BIOS Setup	43
2.3.1 CPU Configuration Setting	44
2.3.2 IDE Configuration Setting.....	46
2.3.3 Super I/O Configuration	46
2.3.4 Hardware Health Configuration	48
2.3.5 ACPI Configuration.....	54
2.3.6 AHCI Configuration	57
2.3.7 APM Configuration	59
2.3.8 Intel AMT Configuration.....	60
2.3.9 Intel TXT (LT) Configuration.....	61

2.3.10	Intel VT-d Configuration.....	62
2.3.11	Trusted Computing	63
2.4	Boot Setting Configuration	64
2.4.1	Boot Settings Configuration	64
2.5	Security Setup.....	67
2.5.1	Change Supervisor Password	68
2.5.2	Change User Password	68
2.6	Chipset Setup	69
2.6.1	North Bridge Configuration	70
2.6.2	South Bridge Configuration.....	72
2.7	Exit Menu	74
2.7.1	Save Changes and Exit	75
2.7.2	Discard Changes and Exit	76
2.7.3	Discard Changes.....	77
2.7.4	Load Setup Default	78

FCC Statement



THIS DEVICE SUPPORTS PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

- (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.
- (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

Notice

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

Copyright Notice

Copyright © 2010 BCM Advanced Research, ALL RIGHTS RESERVED.

No part of this document may be reproduced, copied, translated, or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the prior written permission of the original manufacturer.

Trademark Acknowledgement

Brand and product names are trademarks or registered trademarks of their respective owners.

- Intel® and Pentium® are registered trademarks of Intel Corporation.
- AMD, Athlon™, Athlon™ XP, Thoroughbred™, and Duron™ are registered trademarks of AMD Corporation.
- NVIDIA, the NVIDIA logo, DualNet, and nForce are registered trademarks or trade-marks of NVIDIA Corporation in the United States and/or other countries.
- PS/2 and OS® are registered trademarks of International Business Machines Corporation.
- Windows® 98/2000/NT/XP/Vista are registered trademarks of Microsoft Corporation.
- Netware® is a registered trademark of Novell, Inc.
- Award® is a registered trademark of Phoenix Technologies Ltd.
- AMI® is a registered trademark of American Megatrends Inc.

Disclaimer

BCM Advanced Research reserves the right to make changes, without notice, to any product, including circuits and/or software described or contained in this manual in order to improve design and/or performance. BCM Advanced Research assumes no responsibility or liability for the use of the described product(s), conveys no license or title under any patent, copyright, or masks work rights to these products, and makes no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified. Applications that are described in this manual are for illustration purposes only. BCM Advanced Research makes no representation or warranty that such application will be suitable for the specified use without further testing or modification.

Life Support Policy

BCM Advanced Research PRODUCTS ARE NOT FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE PRIOR WRITTEN APPROVAL OF BCM Advanced Research.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into body, or (b) support or sustain life and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

BCM Customer Services

Each and every BCM product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new BCM device is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name BCM has come to be known.

Your satisfaction is our primary concern. Here is a guide to BCM customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

We want you to get the maximum performance from your products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone. So please consult the user's manual first.

To receive the latest version of the user's manual; please visit our Web site at www.bcmcom.com.

If you still cannot find the answer, gather all the information or questions that apply to your problem, and with the product close at hand, call your dealer. Our dealers are well trained and ready to give you the support you need to get the most from your BCM products. In fact, most problems reported are minor and are able to be easily solved over the phone.

In addition, free technical support is available from BCM engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products. Please do not hesitate to call or e-mail us.

BCM Advanced Research
7 Marconi
Irvine, California, 92618 USA
Phone: +1-949-470-1888
Fax: +1-949-470-0971

Website: www.bcmcom.com
E-mail: BCMTechSupport@bcmcom.com

Product Warranty

BCM warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by BCM, or which have been to misuse, abuse, accident or improper installation. BCM assumes no liability under the terms of this warranty as a consequence of such events.

Because of BCM high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If any of BCM products is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details. If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU type and speed, BCM products model name, hardware & BIOS revision number, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your good return more quickly.
4. Carefully pack the defective product, a complete Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.

Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Manual Objectives

This manual describes in detail the BCM MX45GM2 Mini-ITX motherboard.

We strongly recommend that you study this manual carefully before attempting to interface with MX45GM2 or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors concerning this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

Safety Precautions

Warning!



Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Always ground yourself to remove any static charge before touching the motherboard. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

Document Amendment History

Revision	Date	Comment
V1.00	July. 16, 2010	First Release

Chapter 1

This chapter describes the motherboard features and the new technologies it supports.

Product Introduction

MX45GM2 Specifications

System

CPU	Supports Intel® socket P Core™ 2 Duo / Celeron 575/585 mobile CPU with 45nm process technology
FSB	667/800/1066 MHz
BIOS	AMI 32Mb SPI BIOS
System Chipset	Intel GM45/ICH9M-E
I/O Chipset	Winbond W83627DHG-A
Memory	2 x 200-pin SODIMM socket supports up to 4 GB Dual channel DDR2 667/800 SDRAM
Watchdog Timer	Reset: 1 sec.~255 min. and 1 sec. or 1 min./step
H/W Status Monitor	Monitoring CPU temperature, voltage, and cooling fan status. Auto throttling control when CPU overheats
Expansion Slots	1 x PCI slot (PCI Rev.2.2 compliant)
	1 x PCI Express x1 Slot
	1 x Compact Flash Type I/II socket
S3	S3 Support
SmartFan Control	Yes

Display

Chipset	Intel Graphics Media Accelerator 4500MHD
Display Memory	Intel DVMT 5.0 supports 1GB video memory
Resolution	2048 x 1536 @ 32 bpp(@ 60Hz)
Dual Display	CRT + LVDS or CRT + DVI-D or CRT + HDMI
LVDS	Dual-channel 24-bit LVDS
DVI	Chrontel CH7318C DVI transmitter up to 165M pixels/second
HDMI	TI SN75DP139 Display Port to TMDS transmitter

Audio

Audio Codec	Realtek ALC888 Audio Codec
Audio Interface	5.1+2 CH. with two independent audio stream
Audio Amplifier	Mic in, Line in, Line out
	TPA3005D2 Stereo 5 Watt per channel

Ethernet

LAN1	Intel 82567LM Gigabit Ethernet Controller
LAN2	Intel 82574L PCI-E Gigabit Ethernet Controller

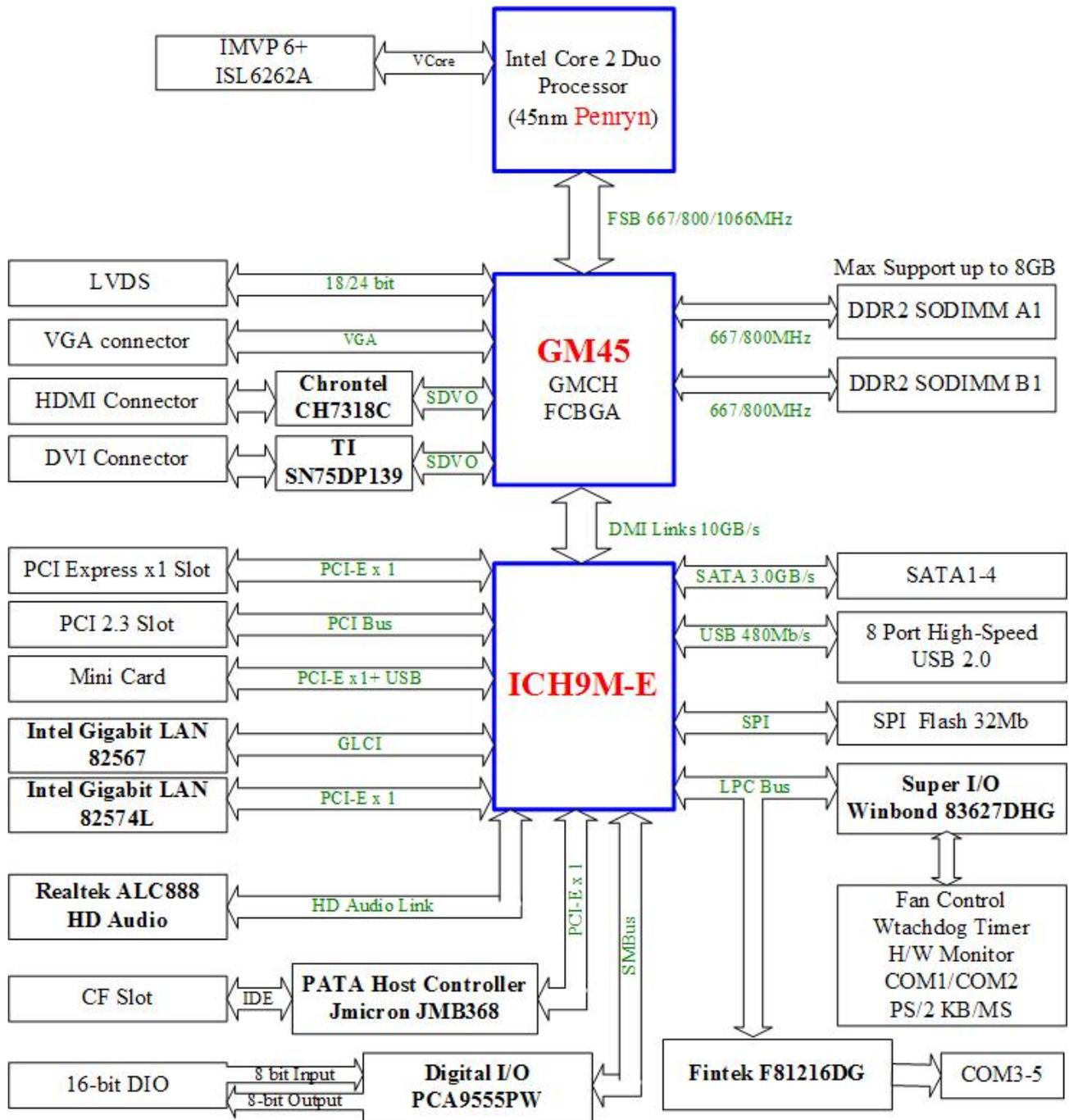
Onboard I/O Headers

SATA	4 x Standard SATA Connectors
COM	2 x RS-232 Headers (4 ports, 1 with Voltage Selection)
USB	2 x USB 2.0 Headers (4 ports)
SPDIF	1 x SPDIF Header
Front Audio Amplifier	1 x Front Audio Header
	1 x Amplifier Header
GPIO	16-bit General Purpose I/O for DI and DO

LVDS	1 x LVDS Connector
Inverter	1 x Inverter Connector
Front Panel	1 x Front Panel Header
Back I/O Panel	
Display	1 x DB15 Connector / 1 x DVI-D Connector / 1 x HDMI Connector
LAN / USB / Audio	2 x Stack up RJ45 and USB Connectors / 1 x 3 Jacks Audio connector
RS	1 x COM Port (with voltage selection) / 1 x DIN 6
Power \ Mechanical \ Environmental	
Power Type	ATX
Operating Temp.	0~60°C (32~140°F)
Operating Humidity	0% – 90% Relative Humidity , Non-Condensing
Form Factor	Mini-ITX
Size (L x W)	6.7" x 6.7" (170mm x 170mm)
Weight	0.88" lbs (0.4 Kg)

Note: Specifications are subject to change without notice.

Block Diagram



Before you Proceed

Take note of the following precautions before you install motherboard components or change any motherboard settings.



-
- Unplug the power cord from the wall socket before touching any component.
 - Use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity
 - Hold components by the edges to avoid touching the ICs on them.
 - Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.
 - Before you install or remove any component, ensure that the power supply is off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.
-

1. Motherboard Overview

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it. Refer to the chassis documentation before installing the motherboard.



Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so can cause you physical injury and damage motherboard components.

1.1.1 Placement Direction

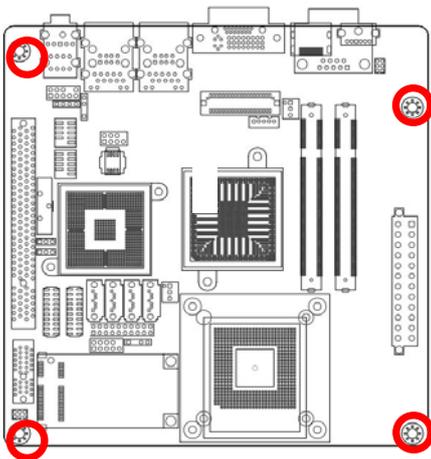
When installing the motherboard, make sure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

1.1.2 Screw Holes

Place four (4) screws into the holes indicated by circles to secure the motherboard to the chassis.

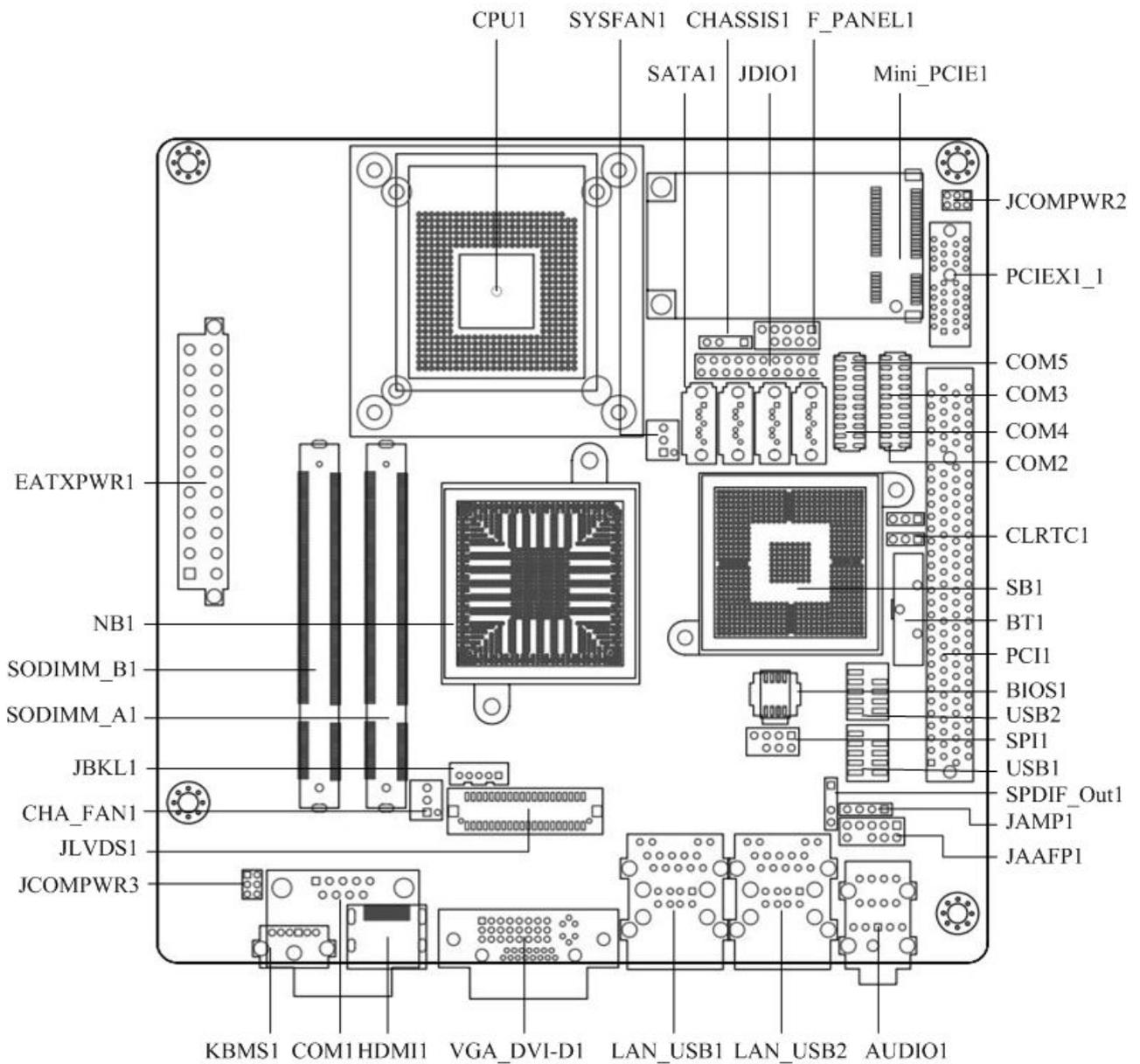


Do not over tighten the screws! Doing so can damage the motherboard.



Place this side towards the rear of the chassis

1.1.3 Motherboard Layout



1.1.4 Layout Content List

Slots			
Label	Function	Note	Page
CF1A	Compact Flash connector	(Rear side)	N/A
SODIMM_A1	200-pin SODIMM slot 1		22
SODIMM_B1	200-pin SODIMM slot 2		22
PCI1	PCI slot		26
MINI_PCIE1	Mini PCI Express slot		26
PCIEX1_1	PCI Express x1 Slot		26

Jumpers			
Label	Function	Note	Page
CLRTC1	Clear CMOS	3 x 1 header, pitch 2.54mm	27
CLRTC3	LCD Backlight Brightness	3 x 1 header, pitch 2.54mm	27
JCOMPWR3	COM 1 RI/+5V/+12V selection	3 x 2 header, pitch 2.00mm	28
JCOMPWR2	COM 2 RI/+5V/+12V selection	3 x 2 header, pitch 2.00mm	28
CHASSIS1	Chassis intrusion	4 x 1 header, pitch 2.54mm	

Rear Panel Connector			
Label	Function	Note	Page
KBMS1	PS/2 keyboard and mouse	6-pin Mini-Din	30
COM1	Serial port connector	D-sub 9-pin, male	29
VGA_DVI-D1	VGA connector DVI connector	D-sub 15-pin, female	29,30
HDMI1	HDMI connector	HDMI 19-pin	30
LAN_USB1	RJ-45 Ethernet connector x 1 USB connector x 2		29,30
LAN_USB2	RJ-45 Ethernet connector x 1 USB connector x 2		29,30
AUDIO1	Line-in port, Line-out port, Microphone port,	5.1 Channel Audio I/O (3 jacks)	30

Internal Connector			
Label	Function	Note	Page
EATXPWR1	ATX power connector	12 x 2 header	
JAMP1	Amplifier connector	4 x 1 header, pitch 2.54mm	31
COM23	Serial port 2 & 3 connector	10 x 2 header, pitch 2.00mm	31
COM45	Serial port 4 & 5 connector	10 x 2 header, pitch 2.00mm	31
CPU_FAN1	CPU fan connector	3 x 1 wafer, pitch 2.54mm	32
SYS_FAN1	System fan connector	3 x 1 wafer, pitch 2.54mm	32
FPIO1	System panel connector	5 x 2 header, pitch 2.54mm	33
JDIO1	Digital I/O connector	10 x 2 header, pitch 2.00m	34
JLVDS1	LVDS connector	HIROSE DF13S-40DP-1.25V	34
JBKL1	LCD Inverter connector	5 x 1 header, pitch 2.00mm	35
CHASSIS1	Chassis Intrusion	4 x 1 header, pitch 2.54mm	35
JSPI1	SPI connector	4 x 2 header, pitch 2.54mm	36
SPDIF_OUT1	Digital Audio connector	4 x 1 header, pitch 2.54mm	36
SATA1,2,3,4	Serial ATA connectors 1,2,3,4	7-pin header	37
USB1,2	USB 2.0 connector	5 x 2 header, pitch 2.54mm	38

1.2 Central Processing Unit (CPU)

The motherboard comes with a surface mount designed for the Intel® socket P Penryn / Core 2 Duo CPU / Celeron processors.

Please note the marked corner (with gold triangle) on the CPU. This mark should match a specific corner on the socket to ensure correct installation.



-
- Make sure the power is off before you install the CPU.
 - After installing the CPU, connect the CPU fan cable to the **CPU_FAN1** connector to ensure system stability.
-



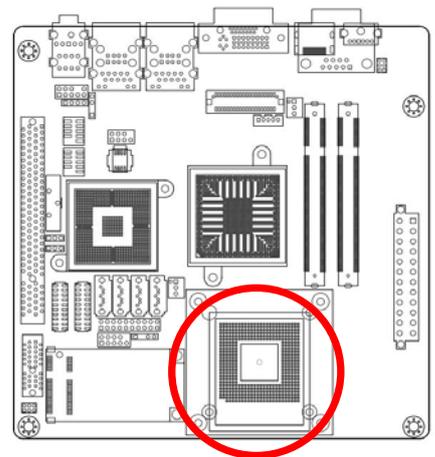
-
- Your boxed Intel® socket P Core 2 Duo CPU with 45nm process package should come with installation instructions for the CPU or heatsink.
 - The product warranty does not cover damage to the socket contacts resulting from incorrect CPU installation/removal.
-

1.2.1 Installing the CPU

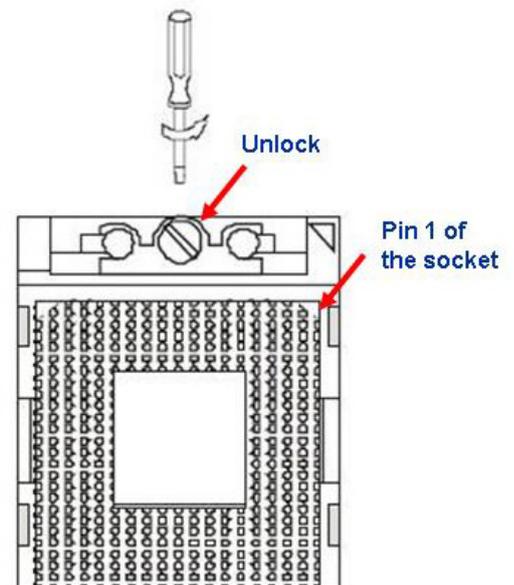
1. Locate the CPU socket on the motherboard.



Before installing the CPU, make sure that the socket box is facing towards you.



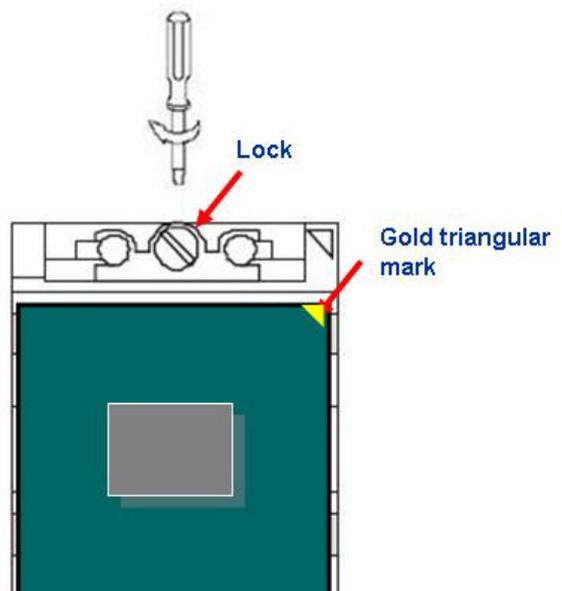
2. The processor socket comes with a screw to secure the processor, please unlock the screw first.



3. Position the CPU above the socket and the gold triangular mark on the CPU must align with pin 1 of the CPU socket.
4. Carefully insert the CPU into the socket until it fits in place 'Gold mark'.
5. Turn the screw to the lock position.



The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU.

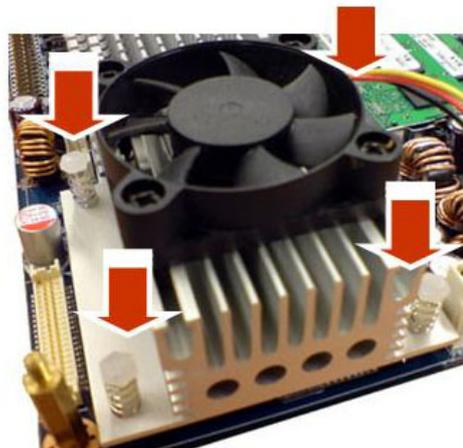
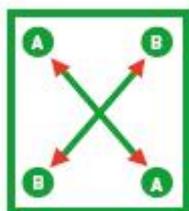




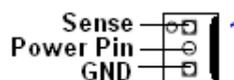
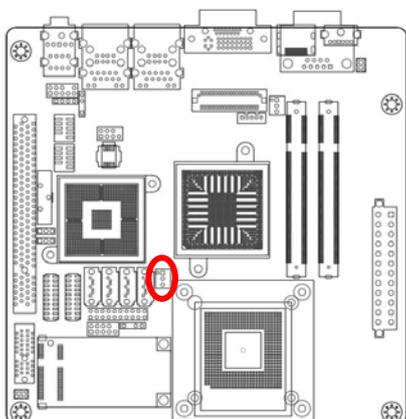
After installation, make sure to plug-in the ATX power cable to the motherboard.

1.2.2 Installing the CPU Heatsink and Fan

1. Screw down two fasteners at a time in a diagonal sequence to secure the heatsink and fan assembly in place.



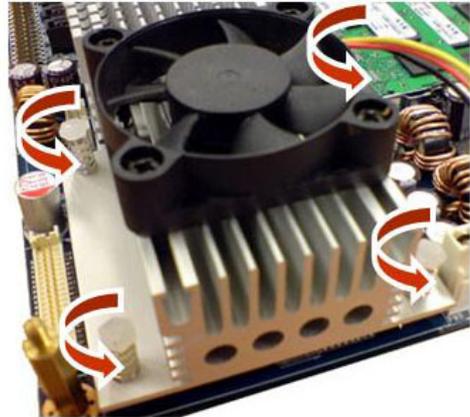
2. Connect the CPU fan cable to the connector on the motherboard labelled **CPU_FAN1**.



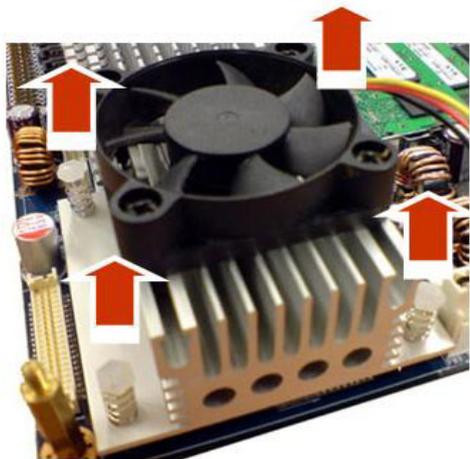
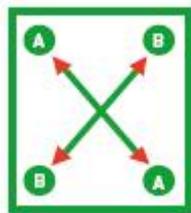
-
- Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components, and hardware monitoring errors can occur if you fail to plug this connector.
 - These are not jumpers! DO NOT place jumper caps on the fan connectors.
-

1.2.3 Uninstalling the CPU Heatsink and Fan

1. Disconnect the CPU fan cable from the connector on the motherboard.
2. Unscrew each fastener counterclockwise.



3. Loosen two fasteners at a time in a diagonal sequence to disengage the heatsink and fan assembly from the motherboard



4. Carefully remove the heatsink and fan assembly from the motherboard.



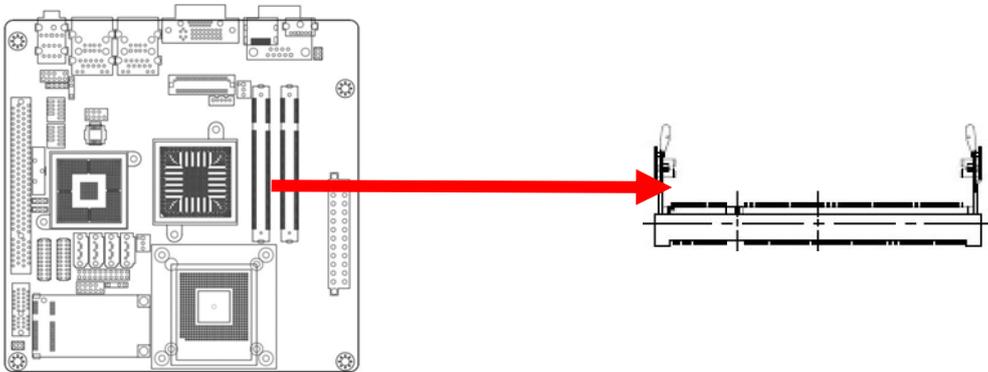
Refer to the documentation in the boxed or stand-alone CPU fan package for detailed information on CPU fan installation.

1.3 System Memory

1.3.1 SO-DIMM Sockets Location

The motherboard comes with two 200-pin Double Data Rate 2 (DDR2) SO-DIMM sockets.

A DDR2 module has the same physical dimensions as a DDR SO-DIMM but has a 200-pin footprint compared to the 184-pin DDR DIMM. DDR2 SO-DIMMs are notched differently to prevent installation on a DDR SO-DIMM socket. The following figure illustrates the location of the sockets:



1.3.2 Memory Configurations

You can install 512 MB, 1GB and 2GB DDR2 SDRAM SO-DIMMs into the SO-DIMM sockets using the memory configurations in this section.



-
- Installing DDR2 SO-DIMM other than the recommended configurations may cause memory sizing error or system boot failure. Use any of the recommended configurations.
 - Always install SO-DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor.
 - Due to chipset resource allocation, the system may detect less than 1 GB system memory when you installed one 1 GB DDR2 memory modules.
 - Make sure that the memory frequency matches the CPU FSB (Front Side Bus). Refer to the Memory frequency/CPU FSB synchronization table.
-



- Memory frequency/CPU FSB synchronization

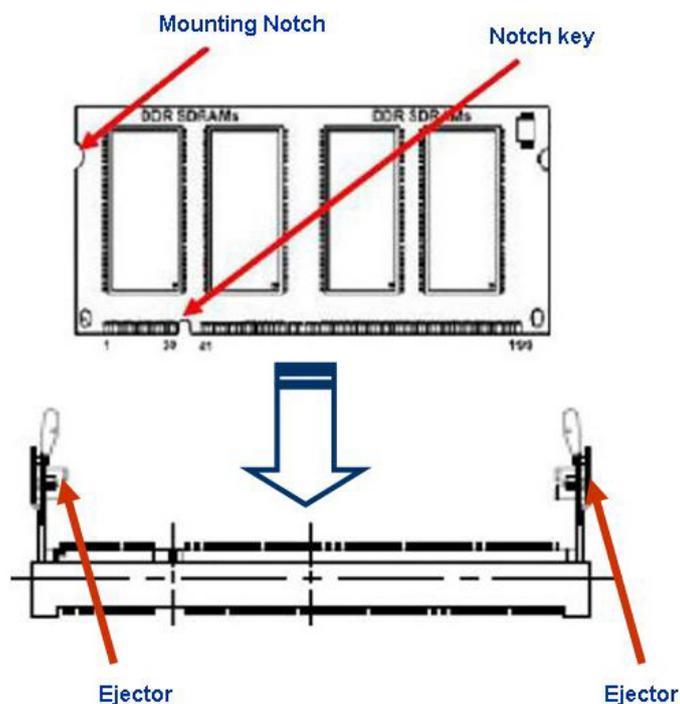
CPU FSB	DDR 2 DIMM Type	Memory Frequency
533/800MHz	DDR2 667	Max clock Freq: 333MHZ; 667Mb/s
	DDR2 800	Max clock Freq: 400MHZ; 800Mb/s

1.3.3 Installing a DDR2 SO-DIMM



Make sure to unplug the power supply before adding or removing SO-DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

1. Locate the SO-DIMM socket on the board.
2. Hold two edges of the SO-DIMM module carefully, and keep away of touching its connectors.
3. Align the notch key on the module with the rib on the slot.
4. Firmly press the modules into the socket automatically snaps into the mounting notch. Do not force the SO-DIMM module in with extra force as the SO-DIMM module only fit in one direction.

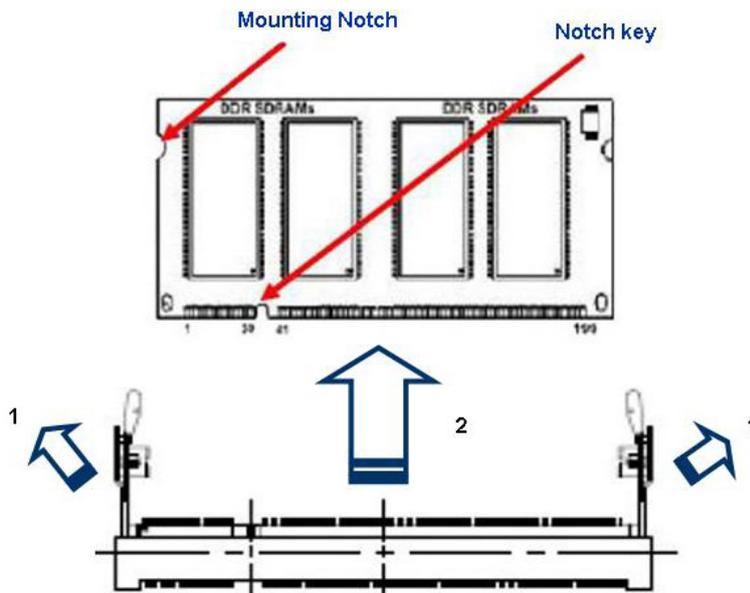




-
- A DDR2 SO-DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a SO-DIMM into a socket to avoid damaging the SO-DIMM.
 - The DDR2 SO-DIMM sockets do not support DDR SO-DIMMs. DO NOT install DDR SO-DIMMs to the DDR2 SO-DIMM socket.
-

1.3.4 Removing a DDR2 SO-DIMM

1. Press the two ejector tabs on the slot outward simultaneously, and then pull out the SO-DIMM module.



Support the SO-DIMM lightly with your fingers when pressing the ejector tabs. The SO-DIMM might get damaged when it flips out with extra force.

1.4 Expansion Slots

In the future, you may need to install expansion cards. The following sub-sections describe the slots and the expansion cards that they support.



Make sure to unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components.

1.4.1 Installing an Expansion Card

1. Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card.
2. Remove the system unit cover (if your motherboard is already installed in a chassis).
3. Remove the bracket opposite the slot that you intend to use. Keep the screw for later use.
4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
5. Secure the card to the chassis with the screw you removed earlier.
6. Replace the system cover.

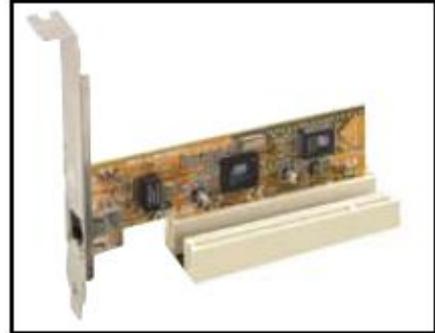
1.4.2 Standard Interrupt Assignments

IRQ	Priority	Standard Function
0	1	System Timer
1	2	Keyboard Controller
2	-	Redirect to IRQ#9
3	11	IRQ holder for PCI steering*
4	12	Communications Port (COM1)*
5	13	IRQ holder for PCI steering*
6	14	Floppy Disk Controller
7	15	Printer Port (LPT)*
8	3	System CMOS/Real Time Clock
9	4	IRQ holder for PCI steering*
10	5	IRQ holder for PCI steering*
11	6	IRQ holder for PCI steering*
12	7	PS/2 Compatible Mouse Port*
13	8	Numeric Data Processor
14	9	Primary IDE Channel
15	10	Secondary IDE Channel

* These IRQs are usually available for ISA or PCI device.

1.4.3 PCI Slots

IX45GM has one PCI slots. The PCI slots support cards such as a LAN card, SCSI card, USB card, and other cards that comply with PCI specifications. The figure shows a LAN card installed on a PCI slot.



1.4.4 PCI Express x1

This motherboard supports PCI Express x1 network cards, SCSI cards and other cards that comply with the PCI Express specifications. The figure shows the type of network card that can be installed on the PCI Express x1 slot.



1.4.5 Mini PCI Express x 1

This motherboard supports Mini PCI Express wireless LAN, and TV tuner device.



1.5 Jumpers

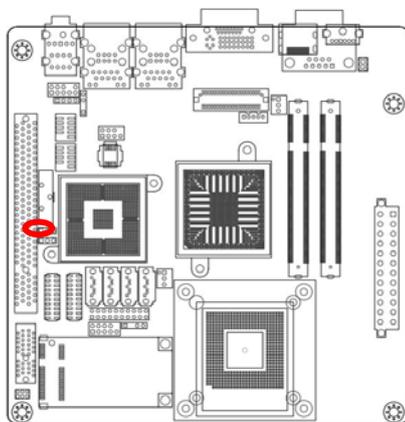
1.5.1 Clear CMOS (CLRTC1)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords. To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the onboard battery.
3. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.
4. Re-install the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the key during the boot process and enter BIOS setup to re-enter data.



Except when clearing the CMOS, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!



Normal (Default)



Clear RTC (CLRTC1)



1.5.2 LCD Backlight Brightness (CLRTC3)

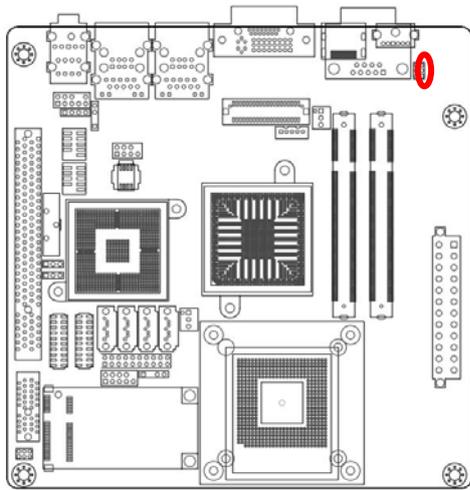
For +5V Panel (Default)



For +3.3V Panel



1.5.3 COM1 RI/+5V/+12V Selection (JCOMPWR3)

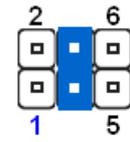
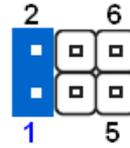
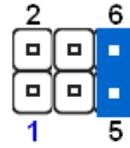


+5V

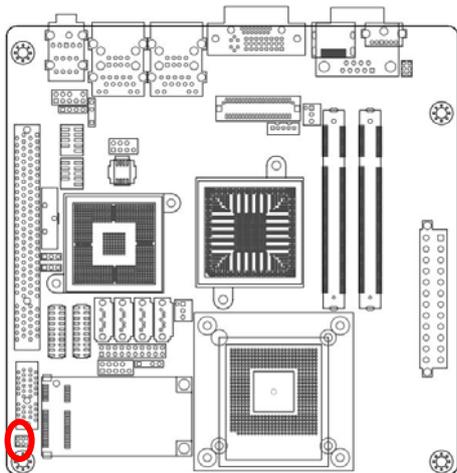
+12V

Ring
(Default)

JCOMPWR3



1.5.4 COM2 RI/+5V/+12V Selection (JCOMPWR2)

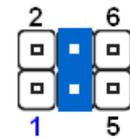
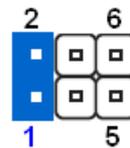
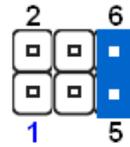


+5V

+12V

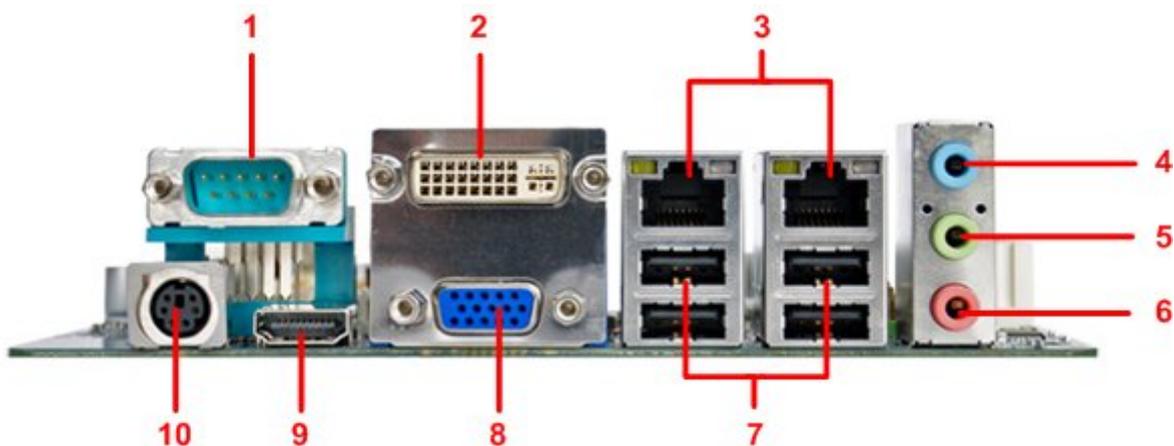
Ring
(Default)

JCOMPWR2



1.6 Connectors

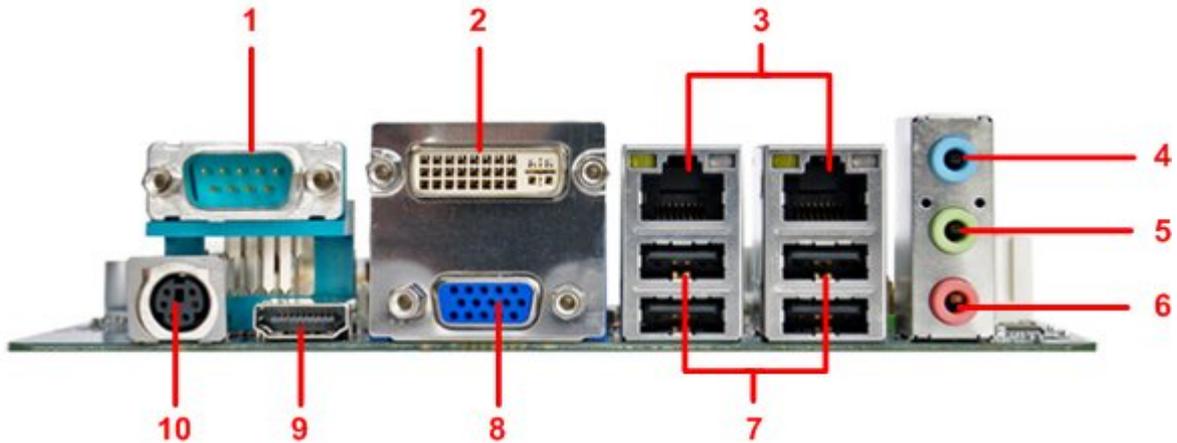
1.6.1 Rear Panel Connectors



No	Label	Function	Description
1	COM1	Serial port connector	D-sub 9-pin, male
2	VGA_DVI-D1	DVI port	Digital Visual Interface connector
3	LAN_USB1, LAN_USB2	LAN (RJ-45) connector	This port allows Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications. The optional 10/100/1000 Mbps LAN controller allows 10/100/1000 Mbps connection to a Local Area Network (LAN) through a network hub.

LAN port

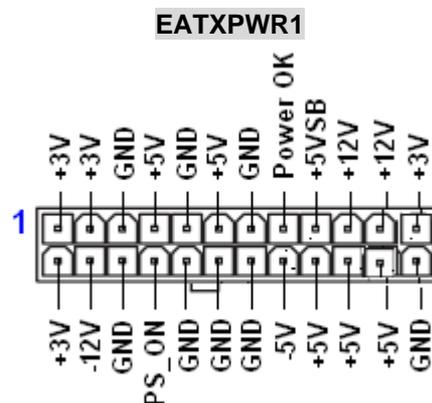
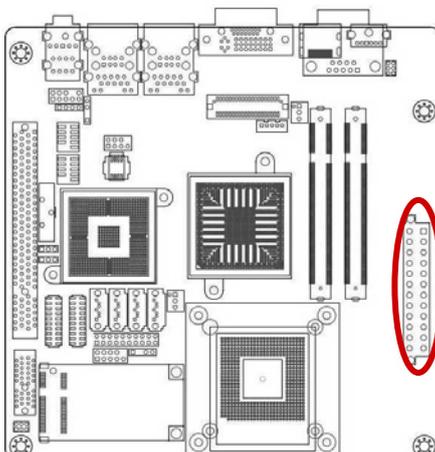
ACT / LINK LED		SPEED LED	
Status	Description	Status	Description
OFF	No link	OFF	10Mbps connection
Orange	Linked	ORANGE	100Mbps connection
Blinking	Data activity	GREEN	1Gbps connection



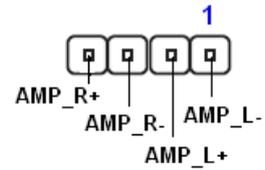
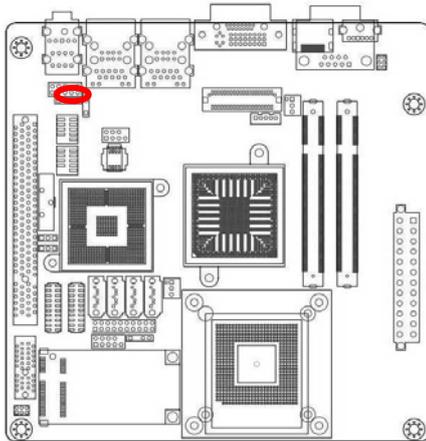
No	Label	Function	Description
4	AUDIO1	Line-In port (Light Blue).	This port connects a tape, CD, DVD player, or other audio sources.
5	AUDIO1	Line-Out port (Lime)	This port connects a headphone or a speaker. In 4-channel, 6-channel, and 8-channel configuration, the function of this port becomes Front Speaker Out.
6	AUDIO1	Microphone port (Pink)	This port connects a microphone.
7	USB1, USB2	USB 2.0 connector	These four 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
8	VGA_DVI-D1	VGA port	D-sub15-pin VGA port connects to a VGA monitor.
9	HDMI1	HDMI connector	High Definition Media Interface 19P connector
10	KBMS1	PS/2 Keyboard/Mouse connector	The standard PS/2 DIN connector is for a PS/2 Keyboard or mouse.

1.6.2 ATX Power Connector (EATXPWR1)

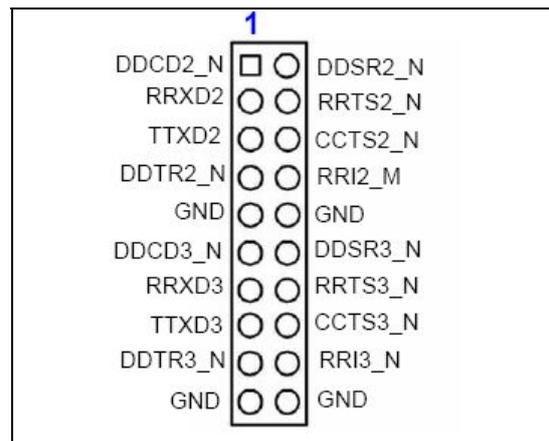
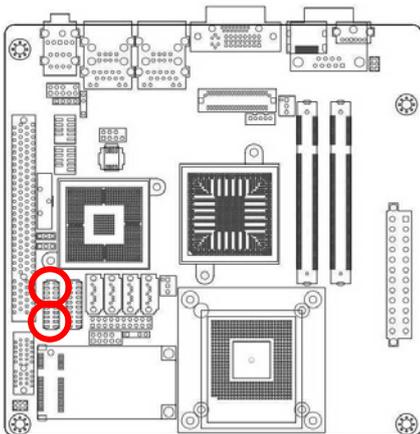
These connectors are for ATX power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.



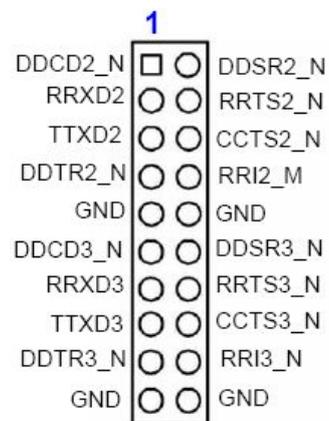
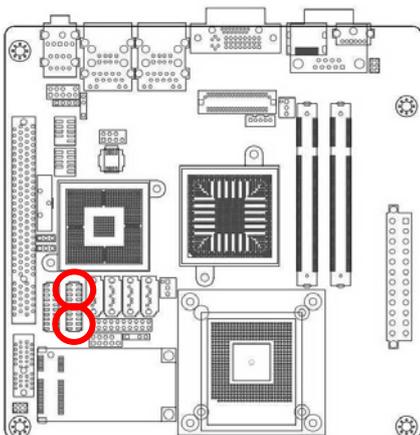
1.6.3 Amplifier Connector (JAMP1)



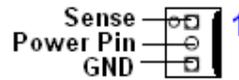
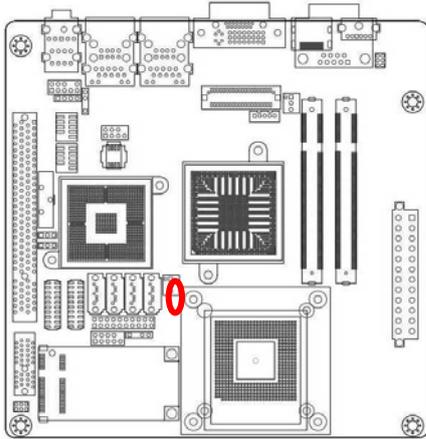
1.6.4 Serial Port 2-3 Connector (COM2,COM3)



1.6.5 Serial Port 4-5 Connector (COM4,COM5)

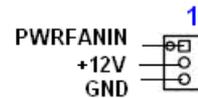
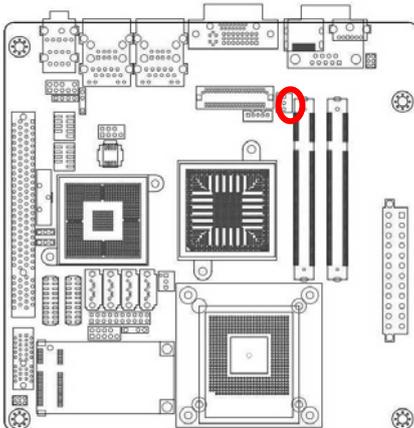


1.6.6 CPU Fan Connector (CPU_FAN1)



- Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components, and hardware monitoring errors can occur if you fail to plug this connector.
- These are not jumpers! DO NOT place jumper caps on the fan connectors.

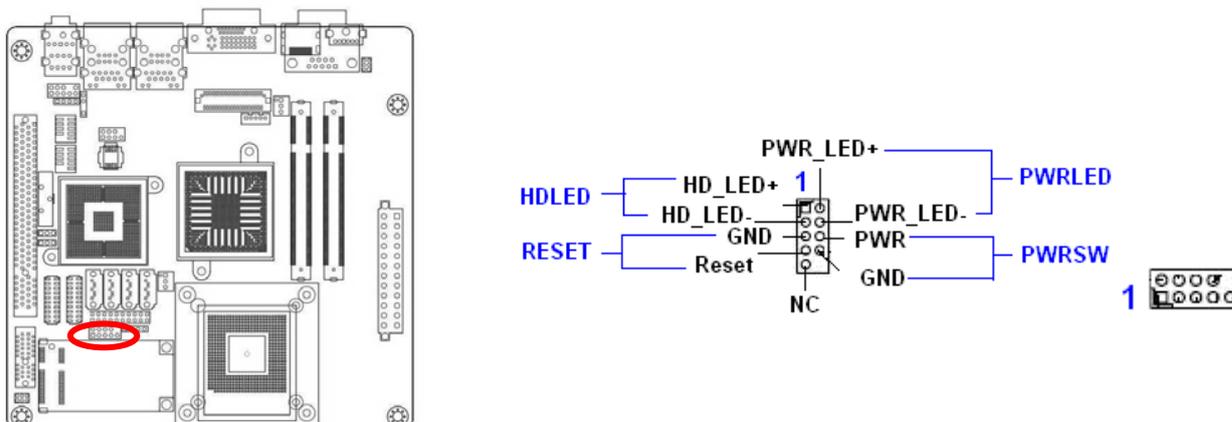
1.6.7 System Fan Connector (SYS_FAN1)



- Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components, and hardware monitoring errors can occur if you fail to plug this connector.
- These are not jumpers! DO NOT place jumper caps on the fan connectors.

1.6.8 System Panel Connector (FPIO1)

This connector supports several chassis-mounted functions.



- **System Status Power LED (2-pin PWRLED)**

This 2-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **Power Button/Soft-off Button (2-pin PWRSW)**

This connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

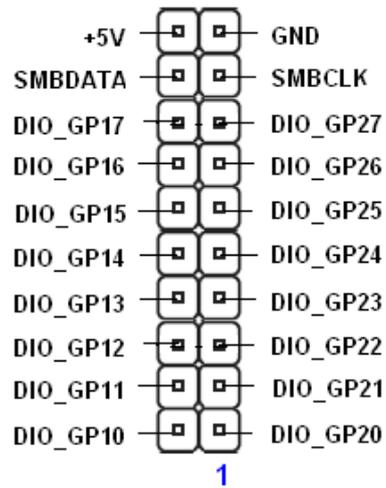
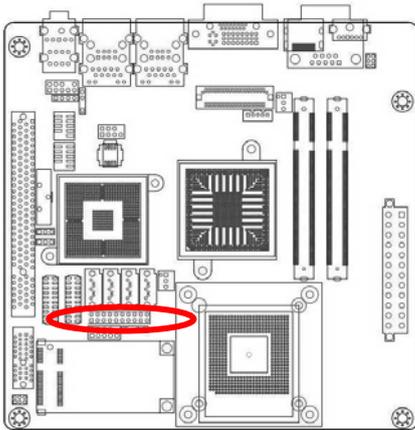
- **Hard Disk Drive Activity LED (2-pin HDLED)**

This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.

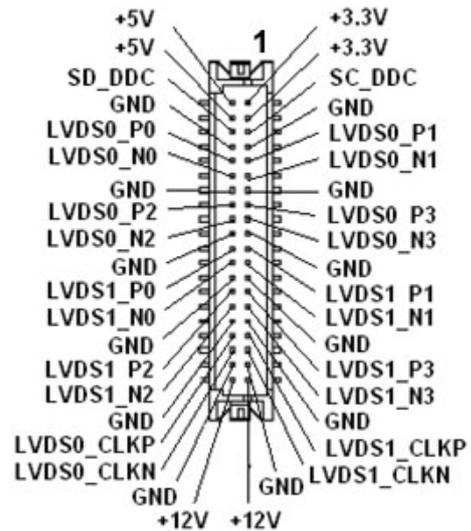
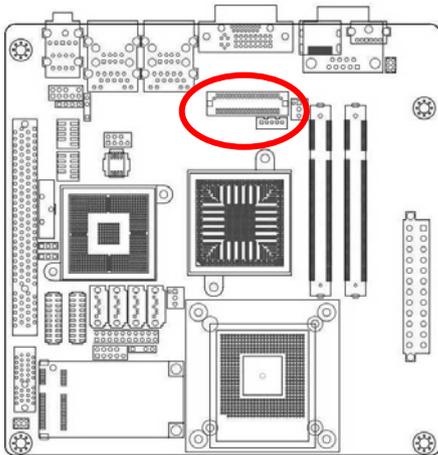
- **Reset Button (2-pin RESET)**

This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

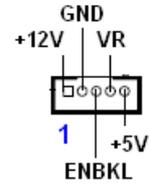
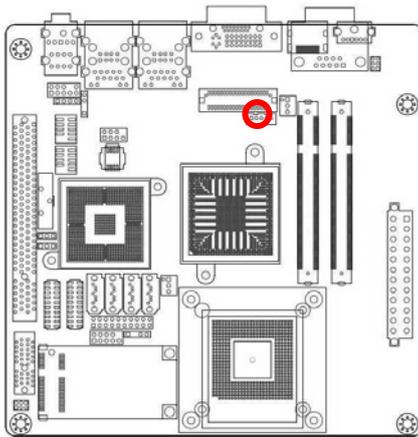
1.6.9 Digital I/O Connector



1.6.10 LVDS Connector (JLVDS1)



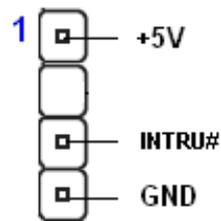
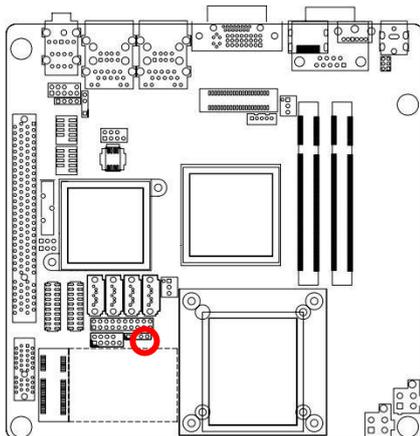
1.6.11 LCD Inverter Connector (JBKL1)



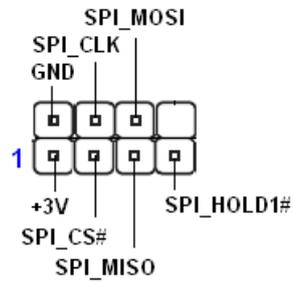
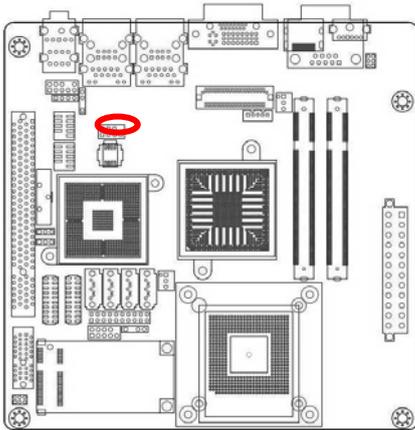
Signal	Signal Description
VR	Bright adjust. $V_{adj}=0.75V \sim 4.25V$ (Recommended: $4.7K\Omega$, $> 1/16W$)
ENBKL	LCD backlight ON/OFF control signal

1.6.12 Chassis Intrusion Connector (CHASSIS1)

LCD Inverter Connector (JBKL1)

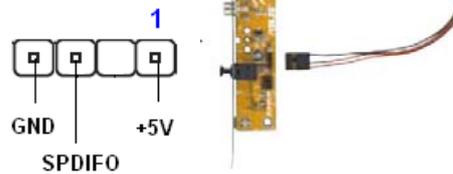
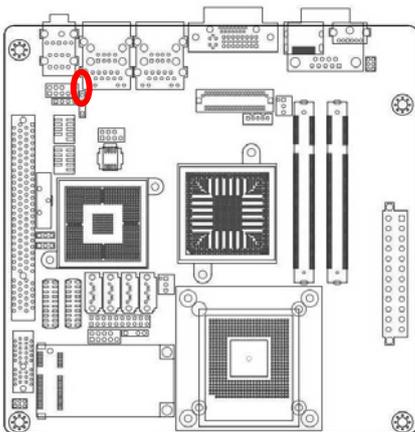


1.6.13 SPI Connector (JSPI1)



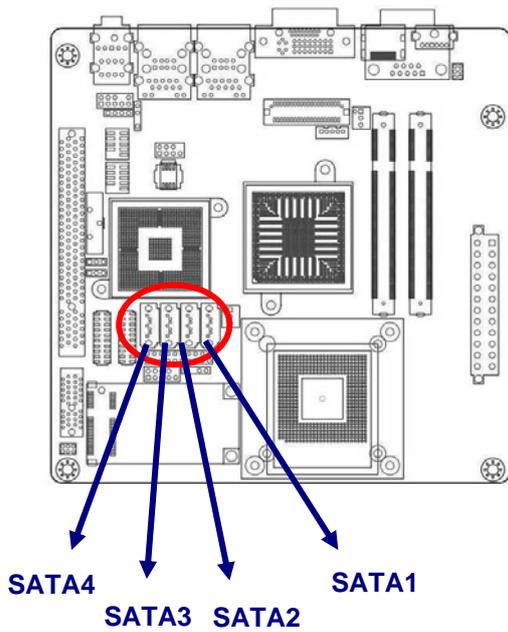
1.6.14 Digital Audio Connector (SPDIF_OUT1)

This connector is for an additional Sony/Philips Digital Interface (S/PDIF) port(s). Connect the S/PDIF module cable to this connector, then install the module to a slot opening at the back of the system chassis.



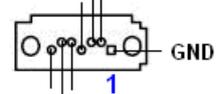
The S/PDIF module is purchased separately.

1.6.15 Serial SATA Connector (SATA1, SATA2, SATA3, SATA4)



SATA1

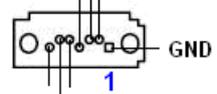
SATA_TXN1
GND | SATA_TXP1



GND | SATA_RXN1
SATA_RXP1

SATA2

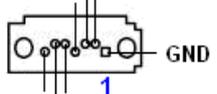
SATA_TXN2
GND | SATA_TXP2



GND | SATA_RXN2
SATA_RXP2

SATA3

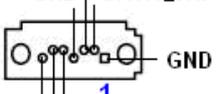
SATA_TXN3
GND | SATA_TXP3



GND | SATA_RXN3
SATA_RXP3

SATA4

SATA_TXN4
GND | SATA_TXP4



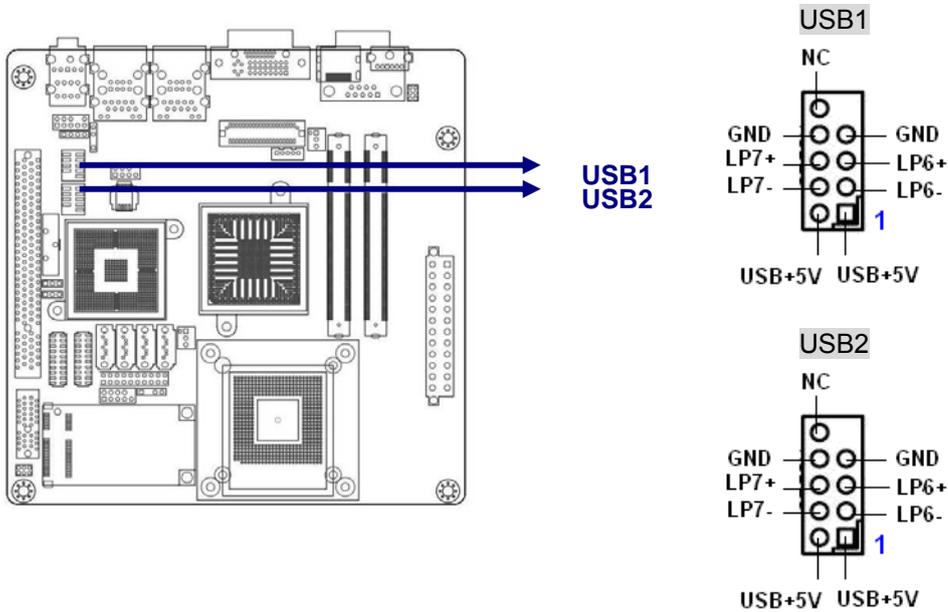
GND | SATA_RXN4
SATA_RXP4



- Install the Windows® 2000 Service Pack 4 or the Windows® XP Service Pack1 before using Serial ATA.
- When using the connectors in Standard IDE mode, connect the primary (boot) hard disk drive to the SATA1 connector.

1.6.16 USB 2.0 Connector (USB1, USB2)

These connectors are for USB 2.0 ports. Connect the USB/GAME module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.



Never connect a **1394 cable** to the USB connectors. Doing so will damage the motherboard!



The USB module is purchased separately.

Chapter 2

This chapter tells how to change the system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

BIOS Setup

2.1 BIOS setup program

The main BIOS setup menu is the first screen that you can navigate. Each main BIOS setup menu option is described in this user's guide.

The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured. Options is blue can be.

The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white.

Often a text message will accompany it.



- 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. Select the **Load Default Settings** item under the Exit Menu. See section "2.9 Exit Menu."
- The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
- Visit the Advansus website to download the latest BIOS file for this motherboard.

2.1.1 Legend Box

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.

These keys include <F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, and so on.

The keys in the legend bar allow you to navigate through the various setup menus.

Key(s)	Function Description
←, → Left/Right	The <i>Left and Right</i> <Arrow> keys allow you to select an setup screen. For example: Main screen, Advanced screen, Chipset screen, and so on.
↑, ↓ Up/Down	The <i>Up and Down</i> <Arrow> keys allow you to select an setup item or sub-screen.
+, - Plus/Minus	The <i>Plus and Minus</i> <Arrow> keys allow you to change the field value of a particular setup item. For example: Date and Time.

Tab	The <Tab> key allows you to select setup fields.
F1	The <F1> key allows you to display the <i>General Help screen</i> . Press the <F1> key to open the <i>General Help screen</i> .
F10	The <F10> key allows you to save any changes you have made and exit Setup. Press the <F10> key to save your changes.
ESC	The <Esc> key allows you to discard any changes you have made and exit the Setup. Press the <Esc> key to exit the setup without saving your changes.
Enter	The <Enter> key allows you to display or change the setup option listed for a particular setup item. The <Enter> key can also allow you to display the setup sub- screens.

2.1.2 List Box

This box appears only in the opening screen. The box displays an initial list of configurable items in the menu you selected.

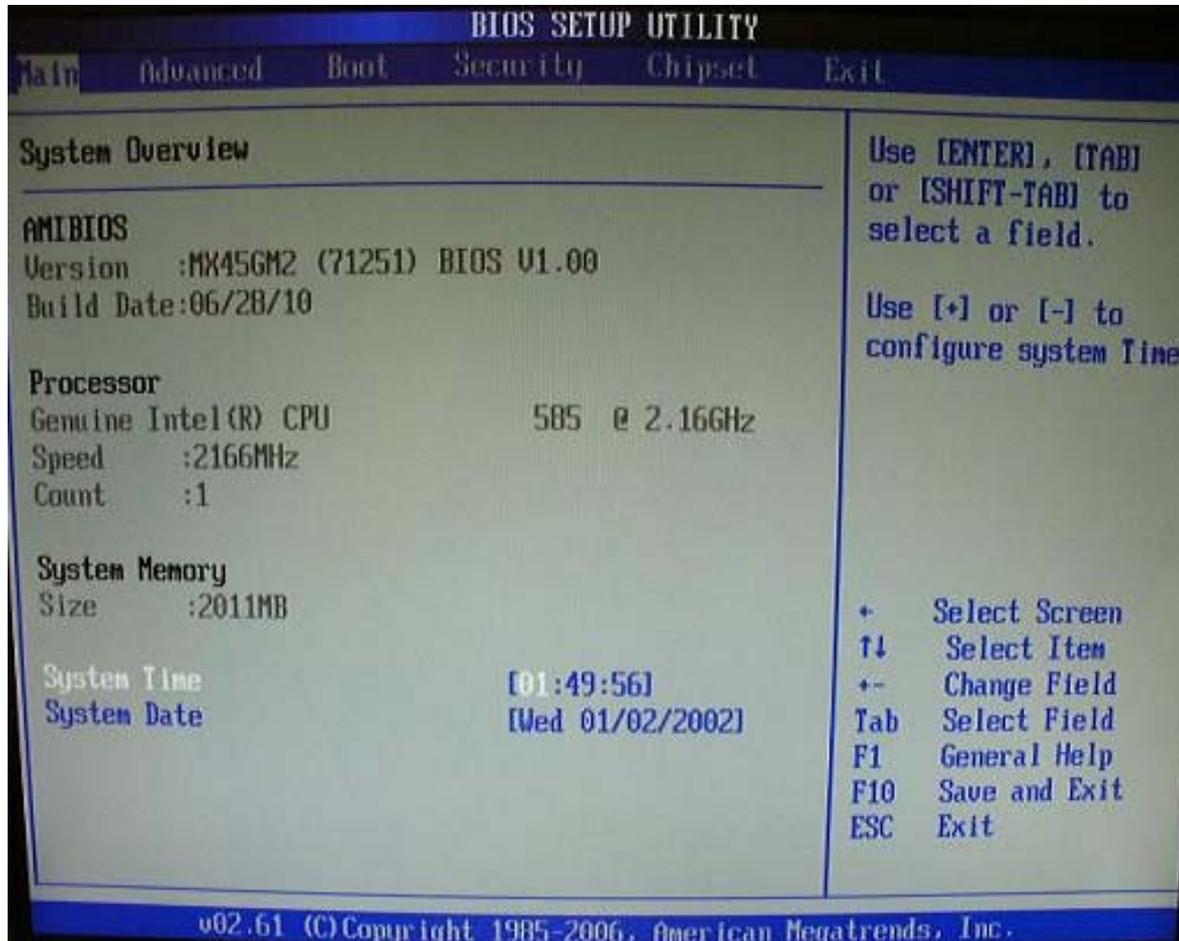
2.1.3 Sub-menu

Note that a right pointer symbol (▶) appears to the left of certain fields. This pointer indicates that you can display a sub-menu from this field. A sub-menu contains additional options for a field parameter. To display a sub-menu, move the highlight to the field and press <Enter>. The sub-menu appears. Use the legend keys to enter values and move from field to field within a sub-menu as you would within a menu. Use the <Esc> key to return to the main menu.

Take some time to familiarize yourself with the legend keys and their corresponding functions. Practice navigating through the various menus and submenus. While moving around through the Setup program, note that explanations appear in the Item Specific Help window located to the right of each menu. This window displays the help text for the currently highlighted field.

2.2 Main Setup

When you first enter the Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the *Main* tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.



- **System Time/System Date**

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30P.M. as 17:30:00.

2.3 Advanced BIOS Setup

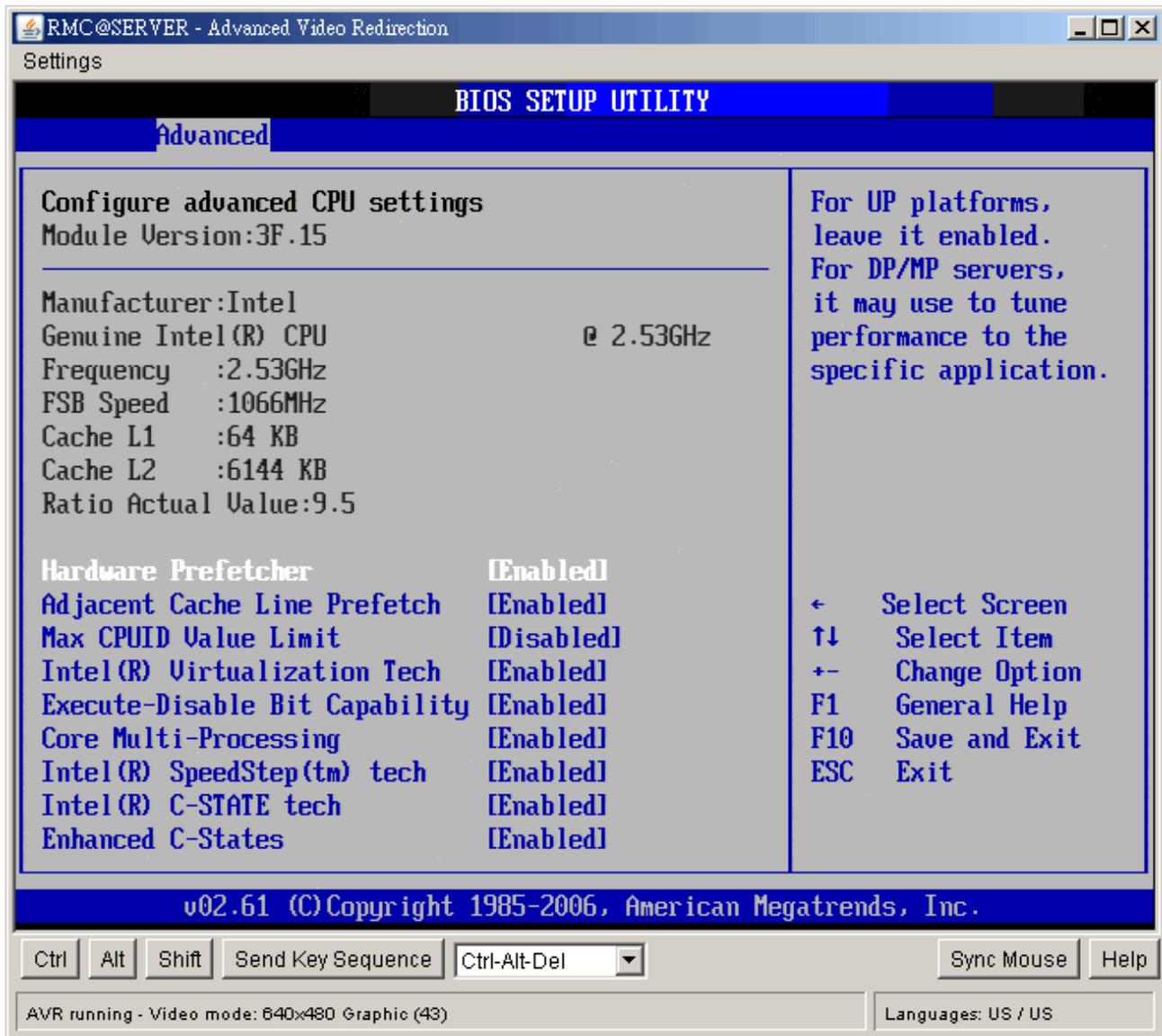
Select the *Advanced* tab from the setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as SuperIO Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown below.

The sub menus are described on the following pages.



2.3.1 CPU Configuration Setting

You can use this screen to select options for the CPU Configuration Settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages.



- **Hardware Prefetcher**

The choices of Hardware Prefetcher which prefetchs data from memory to L2 cache are Enabled (Default) .and Disabled.

- **Adjacent Cache Line Prefetch**

The choices of Adjacement Cache Line Prefetch which automatically fetches an extra 64-byte cache line are Enabled (Default), Disabled.

- **Max CPUID Value Limit**

The choices of Max CPUID Value Limit are Disabled (Default), and Enabled.

- **Intel® Virtualization Tech**

The choices of Intel® Virtualization Tech are Enabled (Default), Disabled.

- **Execute-Disable Bit Capability**

The choices of Execute-Disable Bit Capability are Enabled (Default), Disabled.

- **Core Multi-Processing**

The item is to enable (Default) or disable the Core Multi-processing function.

- **Intel® SpeedStep™ tech**

The choices of Execute-Disable Bit Capability are Enabled (Default), Disabled.

- **Intel® C-State tech**

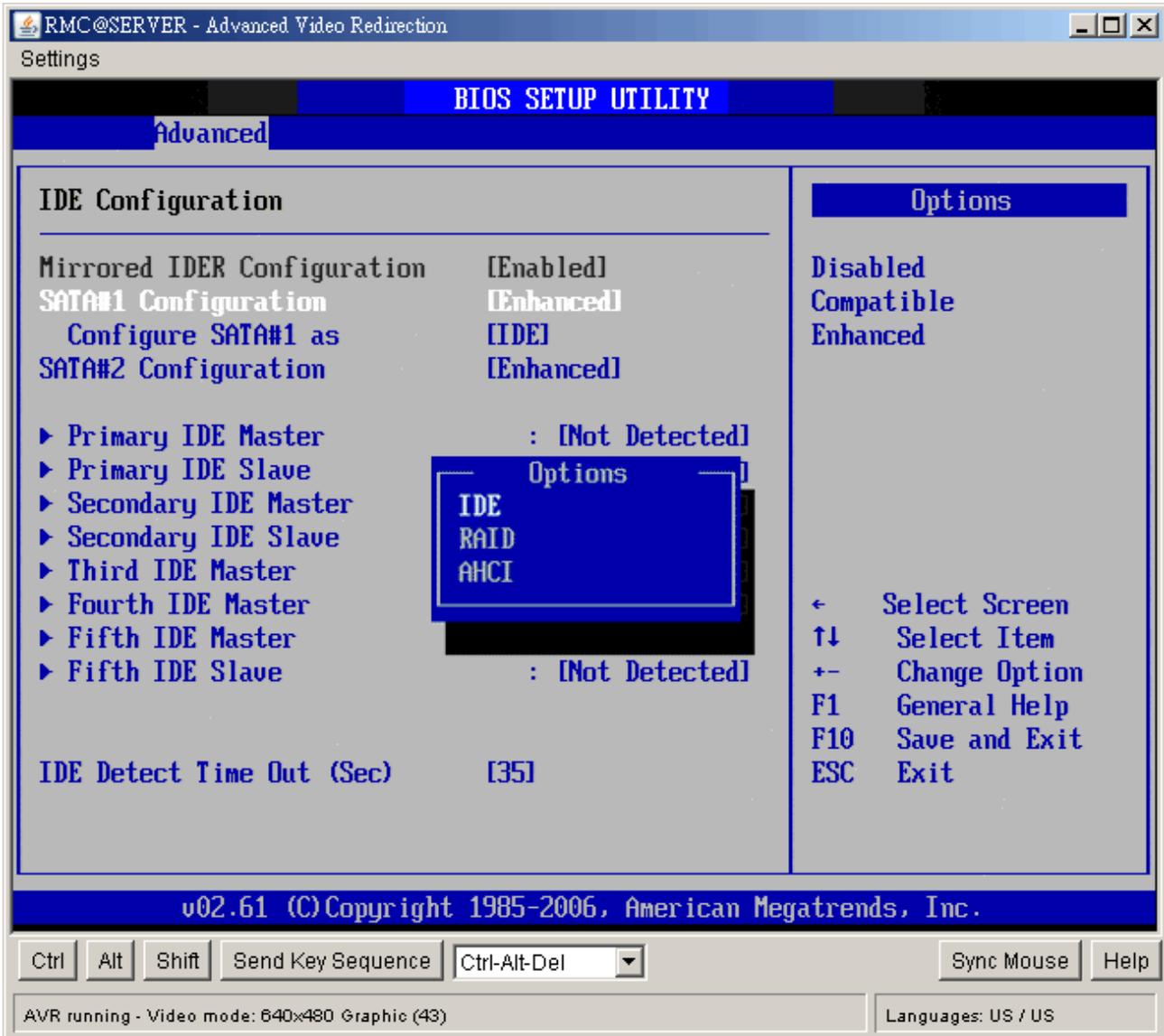
The choices of Execute-Disable Bit Capability are Enabled (Default), Disabled.

- **Enhanced C-States**

The choices of Execute-Disable Bit Capability are Enabled (Default), Disabled.

2.3.2 IDE Configuration Setting

You can use this screen to select options for the IDE Configuration Settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages.



- **SATA#1 Configuration**

The choices of SATA configuration are Disabled, Compatible, and Enhanced (Default).

- **Configure SATA #1 as**

This item allows to configure SATA as IDE (Default), RAID, or AHCI.

- **SATA#2 Configuration**

The choices of SATA configuration are Disabled and Enhanced (Default).

- **Primary/Secondary IDE Master/Slave, Third/Fourth IDE Master, Fifth IDE Master/Slave**

Select one of the hard disk drives to configure it. Press <Enter> to access its the sub menu. The options on the sub menu are described in the following sections.

- **IDE Detect Time Out (Sec)**

Set this option to stop the AMIBIOS from searching for IDE devices within the specified number of seconds. Basically, this allows you to fine-tune the settings to allow for faster boot times. Adjust this setting until a suitable timing that can detect all IDE disk drives attached is found.

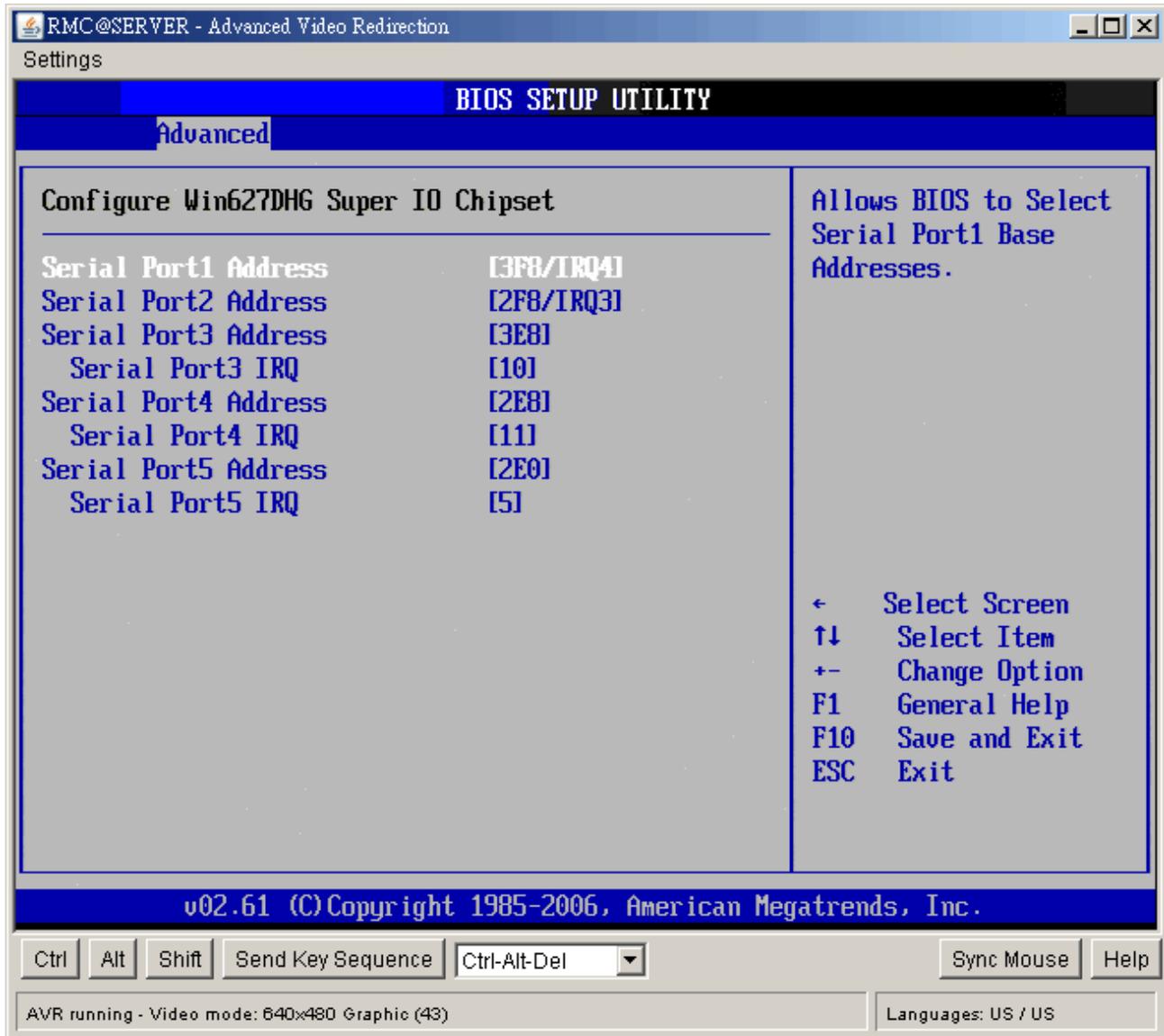
The default setting is 35.

Option	Description
0	This value is the best setting to use if the onboard IDE controllers are set to a specific IDE disk drive in the AMIBIOS.
5	Set this value to stop the AMIBIOS from searching the IDE bus for IDE disk drives in five seconds. A large majority of ultra ATA hard disk drives can be detected well within five seconds.
10	Set this value to stop the AMIBIOS from searching the IDE bus for IDE disk drives in 10 seconds.
15	Set this value to stop the AMIBIOS from searching the IDE bus for IDE disk drives in 15 seconds.
20	Set this value to stop the AMIBIOS from searching the IDE bus for IDE disk drives in 20 seconds.
25	Set this value to stop the AMIBIOS from searching the IDE bus for IDE disk drives in 25 seconds.
30	Set this value to stop the AMIBIOS from searching the IDE bus for IDE disk drives in 30 seconds.
35	35 is the default value. It is the recommended setting when all IDE connectors are set to AUTO in the AMIBIOS setting.

Different IDE disk drives take longer for the BIOS to locate than others do.

2.3.3 Super I/O Configuration

You can use this screen to select options for the Super I/O settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



- **Serial Port1 Address**

This option specifies the base I/O port address and Interrupt Request address of serial port 1. The Optimal setting is *3F8/IRQ4*.

Option	Description
Disabled	Set this value to prevent the serial port from accessing any system resources. When this option is set to <i>Disabled</i> , the serial port physically becomes unavailable.
3F8/IRQ4	Set this value to allow the serial port to use 3F8 as its I/O port address and IRQ4 for the interrupt address. This is the default setting. The majority of serial port 1 or COM1 ports on computer systems use IRQ4 and I/O Port 3F8 as the

	standard setting. The most common serial device connected to this port is a mouse. If the system will not use a serial device, it is best to set this port to Disabled.
--	---

- **Serial Port2 Address**

This option specifies the base I/O port address and Interrupt Request address of serial port 2. The Optimal setting is 2F8/IRQ3.

Option	Description
Disabled	Set this value to prevent the serial port from accessing any system resources. When this option is set to <i>Disabled</i> , the serial port physically becomes unavailable.
2F8/IRQ3	Set this value to allow the serial port to use 2F8 as its I/O port address and IRQ 3 for the interrupt address. This is the default setting. The majority of serial port 2 or COM2 ports on computer systems use IRQ3 and I/O Port 2F8 as the standard setting. The most common serial device connected to this port is an external modem. If the system will not use an external modem, set this port to <i>Disabled</i> . Most internal modems require the use of the second COM port and use 3F8 as its I/O port address and IRQ 4 for its interrupt address. This requires that the Serial Port2 Address be set to <i>Disabled</i> or another base I/O port address and Interrupt Request address.

- **Serial Port3 Address**

This option specifies the base I/O port address of serial port 3. The Optimal setting is 3E8.

- **Serial Port3 IRQ**

This option specifies the Interrupt Request address of serial port 3. The Optimal setting is 10.

Option	Description
Disabled	Set this value to prevent the serial port from accessing any system resources. When this option is set to <i>Disabled</i> , the serial port physically becomes unavailable.
3E8/IRQ10	Set this value to allow the serial port to use 3E8 as its I/O port address and IRQ10 for the interrupt address. This is the default setting. If the system will not use a serial device, it is best to set this port to Disabled.

- **Serial Port4 Address**

This option specifies the base I/O port address of serial port 4. The Optimal setting is 2E8.

- **Serial Port4 IRQ**

This option specifies the Interrupt Request address of serial port 4. The Optimal setting is 11.

Option	Description
Disabled	Set this value to prevent the serial port from accessing any system resources. When this option is set to <i>Disabled</i> , the serial port physically becomes unavailable.
2E8/IRQ11	Set this value to allow the serial port to use 2E8 as its I/O port address and IRQ11 for the interrupt address. This is the default setting. If the system will not use a serial device, it is best to set this port to Disabled.

- **Serial Port5 Address**

This option specifies the base I/O port address of serial port 5. The Optimal setting is 2E0.

- **Serial Port5 IRQ**

This option specifies the Interrupt Request address of serial port 5. The Optimal setting is 5.

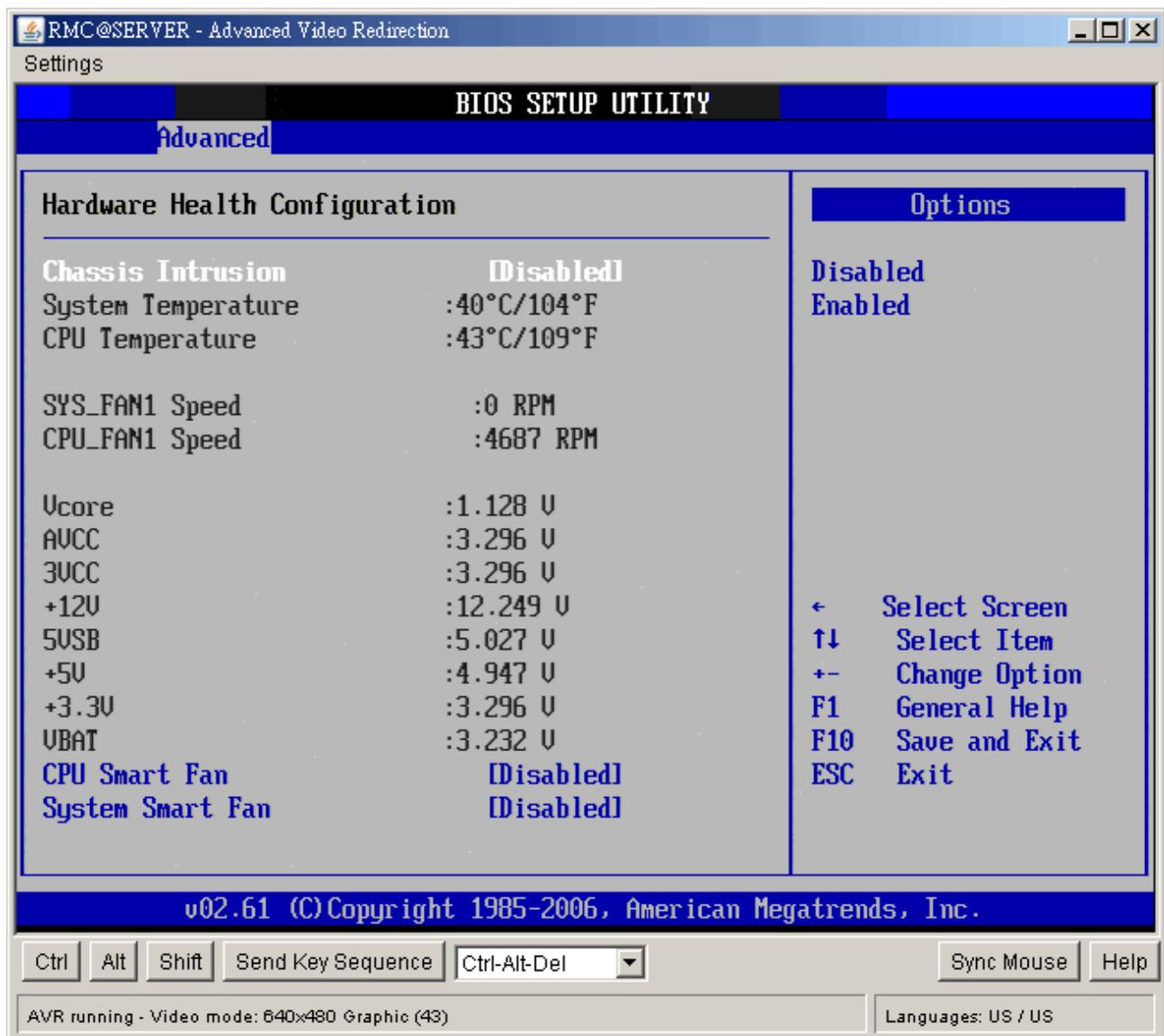
Option	Description
Disabled	Set this value to prevent the serial port from accessing any system resources. When this option is set to <i>Disabled</i> , the serial port physically becomes unavailable.
2E0/IRQ5	Set this value to allow the serial port to use 2E0 as its I/O port address and IRQ5 for the interrupt address. This is the default setting. If the system will not use a serial device, it is best to set this port to Disabled.

- **Watch Dog Timer Control**

This option Enabled / Disabled (Default) Watch Dog Timer.

2.3.4 Hardware Health Configuration

You can use this screen to select options for the Hardware Health settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



- **Chassis Intrusion**
This item selects the chassis intrusion. The choices are Disabled or Enabled.
- **System Temperature**
This shows you the current temperature of system.
- **CPU Temperature**
This shows you the current CPU temperature.
- **SYS_FAN Speed**

This shows the current System FAN operating speed.

- **CPU_FAN Speed**

This shows the current CPU FAN operating speed.

- **Vcore/ 3VCC/ +12V/ +5V/ 5VSB/ 3VSB/ VBAT**

This shows the voltage of VCORE, 3VCC, +12V, +5V, 5VSB(V), 3VSB(V) and VBAT(V).

- **CPUFAN1 Mode Setting, SYSFAN1 Mode Setting**

This item enables or disables the Smart Fan feature. Smart Fan is an excellent feature which will adjust the CPU/system fan speed automatically depending on the current CPU temperature to prevent your system from overheating.

- Available options are: [Manual Mode], [Thermal Cruise Mode], [Speed Cruise Mode].

[Manual Mode] (Default)

- ▶ **CPUFAN1 PWM Control, SYSFAN1 PWM Control**

This setting allows users to control the fan speed by changing the duty cycle of the fan PWM (Pulse-Width Modulation) output.

[Thermal Cruise Mode]

- ▶ **CPUFAN1 TargetTemp Value, SYSFAN1 TargetTemp Value**

Select a temperature setting here, and if the temperature of the CPU climbs up to the selected temperature setting, the system will automatically increase the speed of the CPU/system fan to cool down the overheated CPU.

- ▶ **CPUFAN1 Tolerance Value, SYSFAN1 Tolerance Value**

You can select a fan tolerance value here for the specific range for the "CPUFAN1/SYSFAN1 TargetTemp Value" items. If the current temperatures of the 3 fans reach to the maximum threshold (the temperatures set in the "CPUFAN1/SYSFAN1 TargetTemp Value" plus the tolerance values you set here), the fans will speed up for cooling down. On the contrary, if the current temperatures reach to the minimum threshold (the set temperatures minus the tolerance values), the fans will slow down to keep the temperatures stable.

- ▶ **CPUFAN1/SYSFAN1 StartUp Value, CPUFAN1/SYSFAN1 Stop Value**

Use these settings to select the startup/stop temperature value for the CPUFAN1 &SYSFAN1.

- ▶ **CPUFAN1/SYSFAN1 Stop Time Value**

Use these settings to select the stop time value for the CPUFAN1 & SYSFAN1.

[Speed Cruise Mode]**▶ CPUFAN1 TargetSpeed Value, SYSFAN1 TargetSpeed Value,**

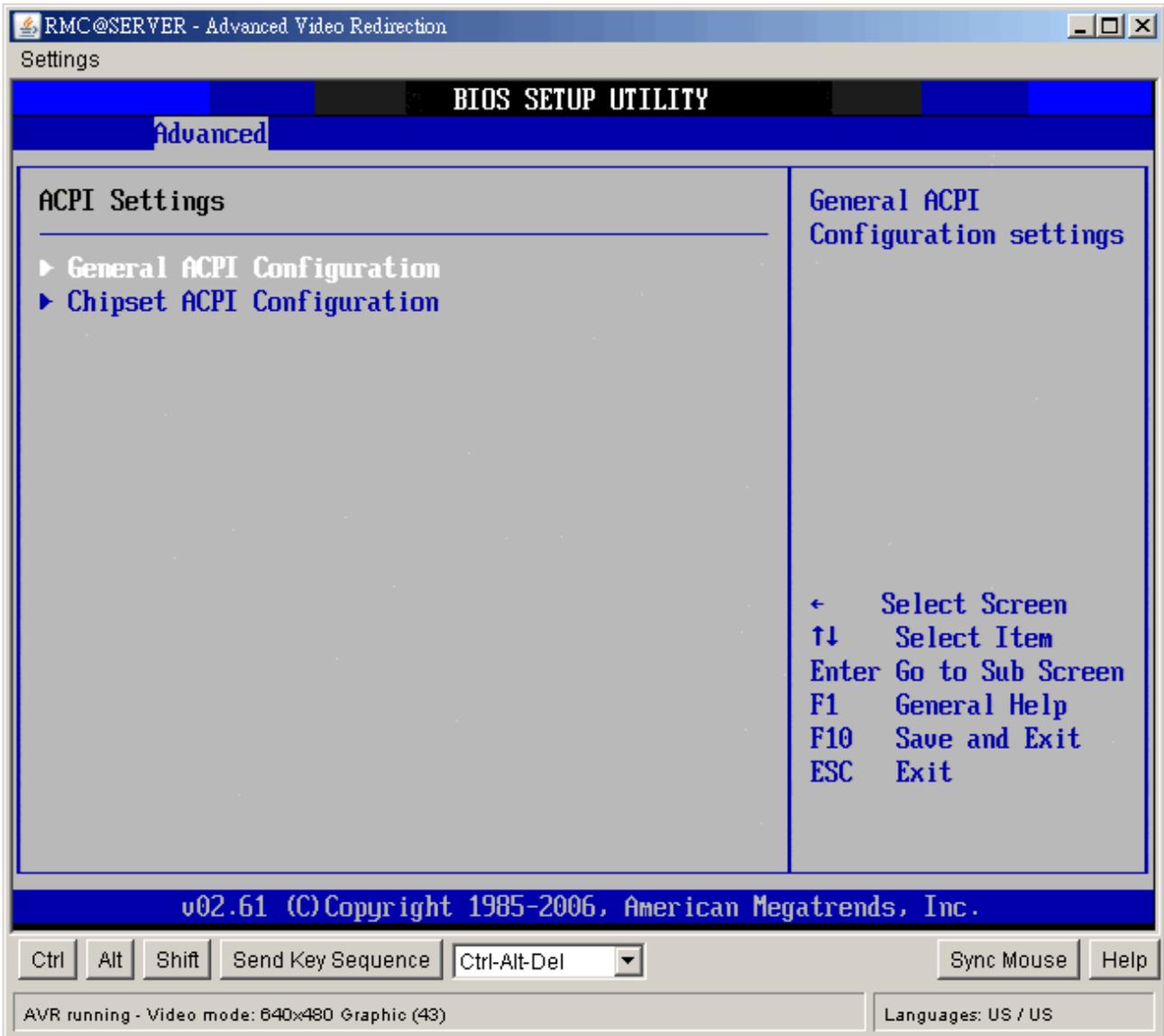
Select a fan speed setting here, and if the fan speed of the CPU/system fans climbs up to the selected fan speed setting, the system will automatically increase the speed of the CPU/system fan to cool down the overheated CPU.

▶ CPUFAN1 Tolerance Value, SYSFAN1 Tolerance Value

You can select a fan tolerance value here for the specific range for the "CPUFAN1/SYSFAN1/SYSFAN2 TargetSpeed Value" items. If the current fan speed reach the maximum threshold (the fan speed set in the "CPUFAN1/SYSFAN1 TargetSpeed Value" plus the tolerance values you set here), the fans will speed up for cooling down. On the contrary, if the current fan speed reach to the minimum threshold (the set fan speeds minus the tolerance values), the fans will slow down to keep the temperatures stable.

2.3.5 ACPI Configuration

You can use this screen to select options for the ACPI settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.

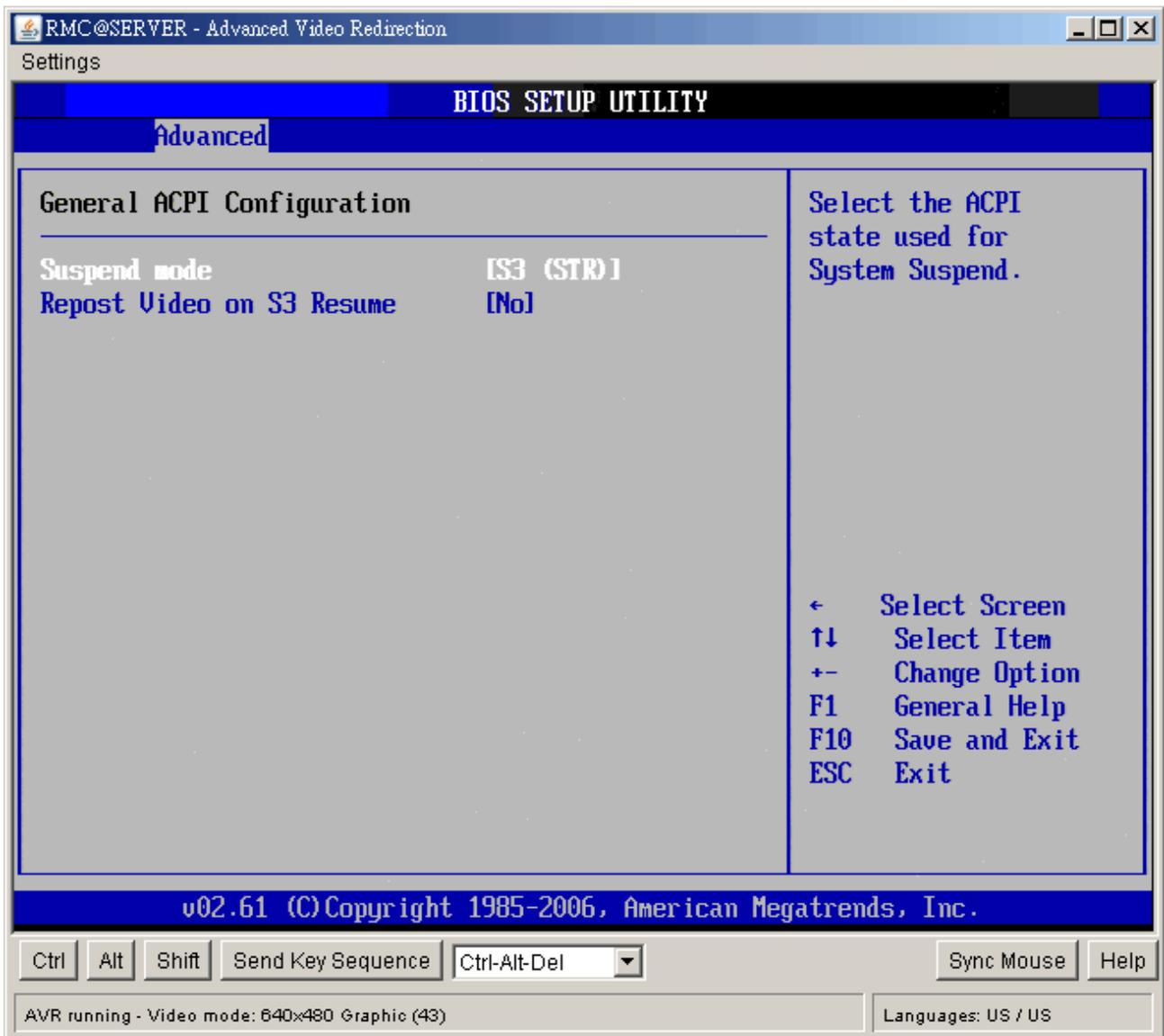


- **General ACPI Configuration**

This item allows you to set general ACPI Configuration.

- **Chipset ACPI Configuration**

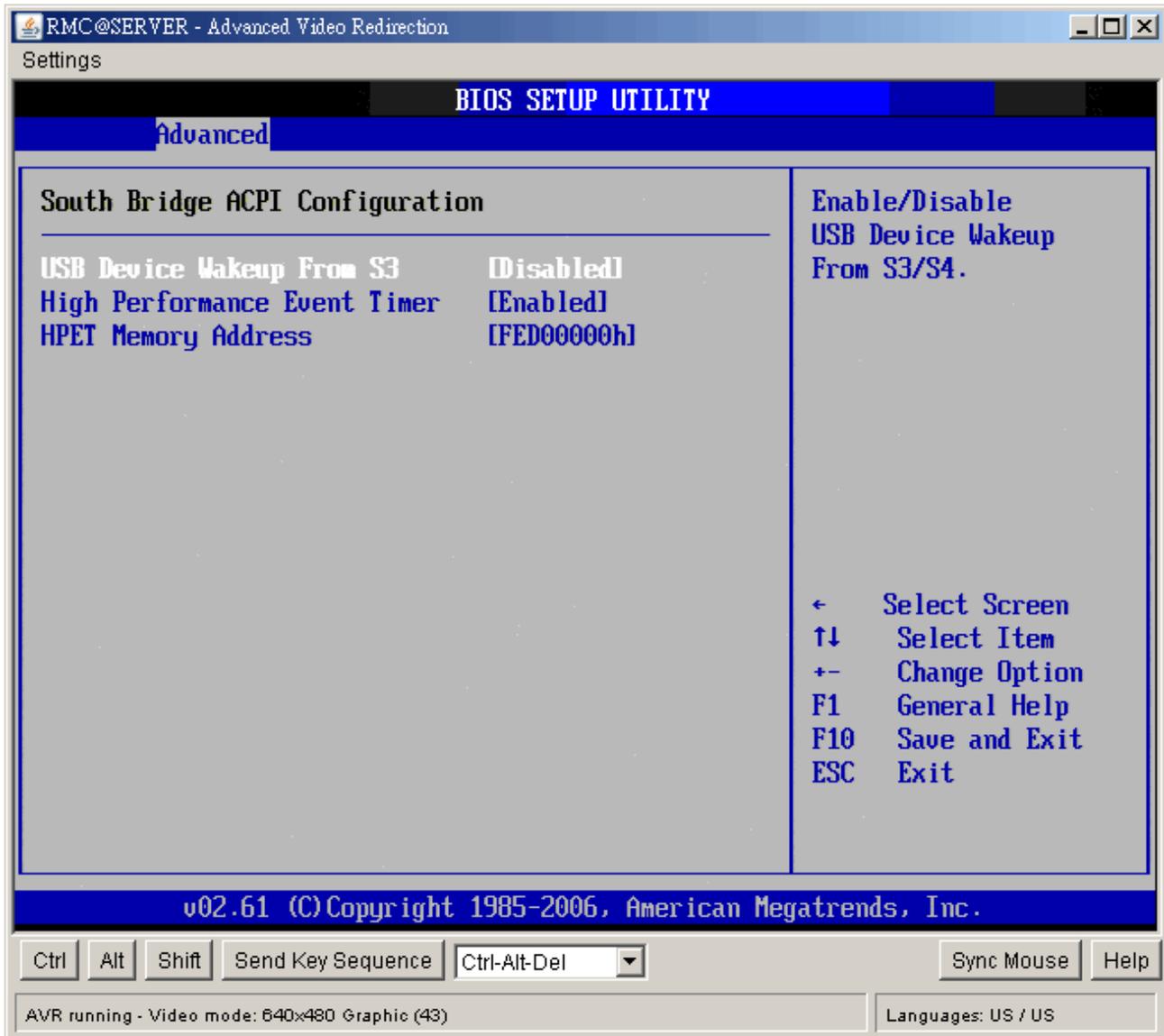
This item allows you to set South Bridge ACPI Configuration.



The item allows you to select the suspend type under the ACPI operating system.

Option	Description
S1 (POS)	Power on Suspend
S3 (STR)	Suspend to RAM (Default)
Auto	POS+STR

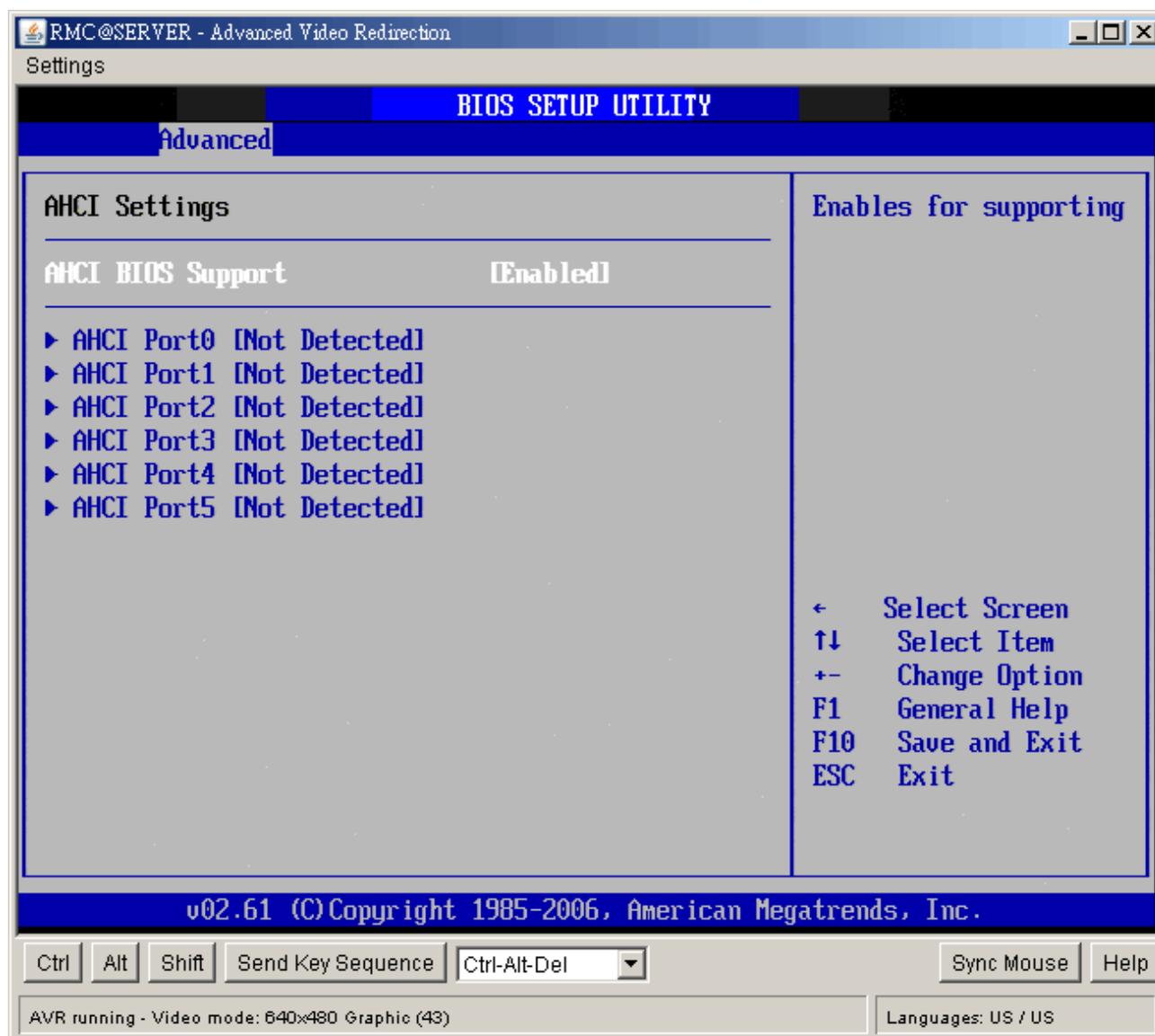
Determines whether to invoke VGA BIOS post on S3/STR resume. The choices are No or Yes.



- USB Device Wakeup From S3**
 This item allows you to enable or disabled (Default) the USB resume from S3/S4 status.
- High Performance Event Timer**
 This item allows you to enable or disable (Default) the High Performance Event Timer.
- HPET Memory Address**
 This item allows you to allot the Event Timer Block Registers Base Address to the memory.

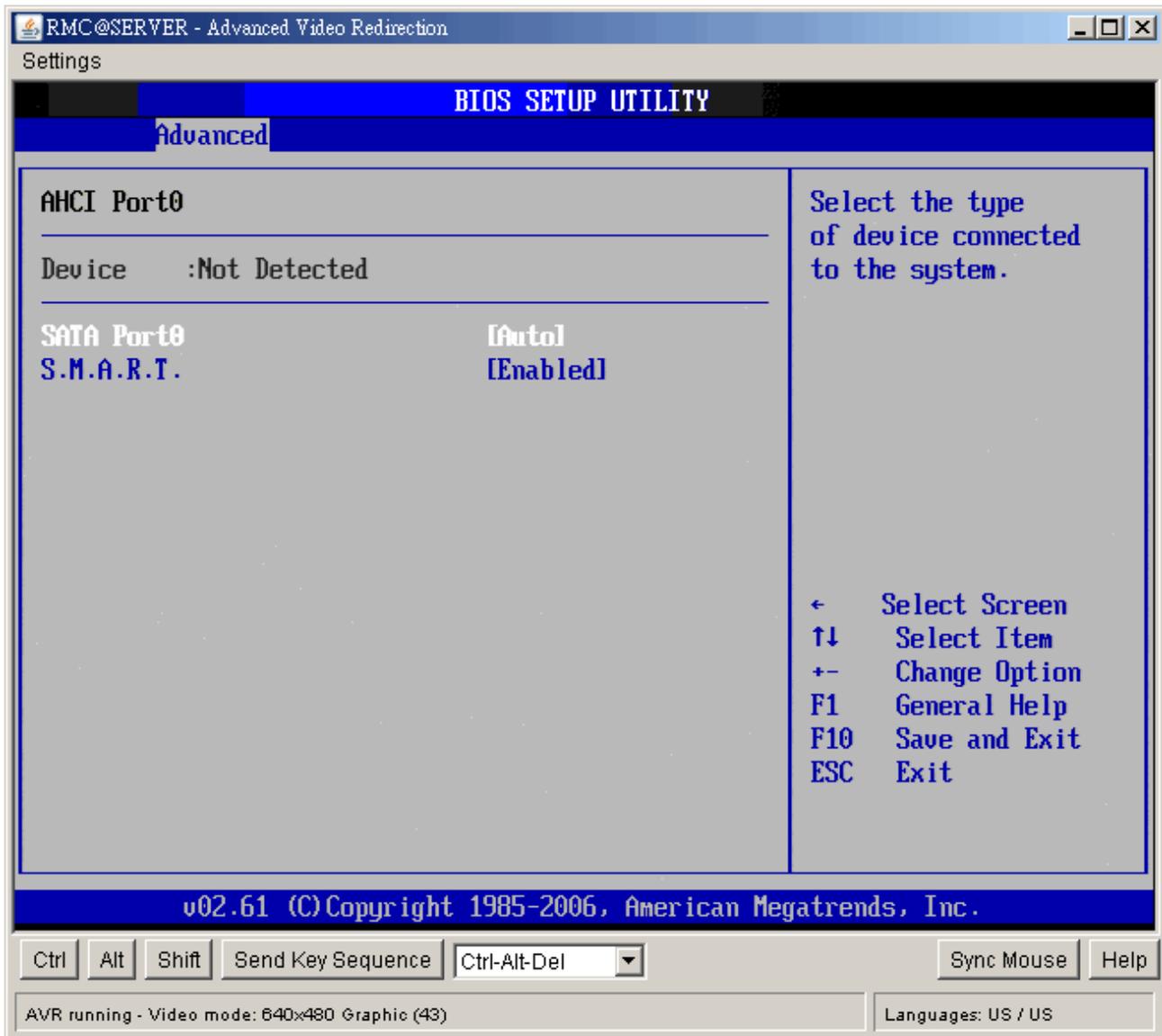
2.3.6 AHCI Configuration

You can use this screen to select options for the AHCI settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



- **AHCI BIOS Support**

This BIOS feature controls the AHCI function of SATA controller. The choice are Enabled (Default) / Disabled



- **Device**

This area shows the detected connected device.

- **SATA Port0/1/2/3/4/5**

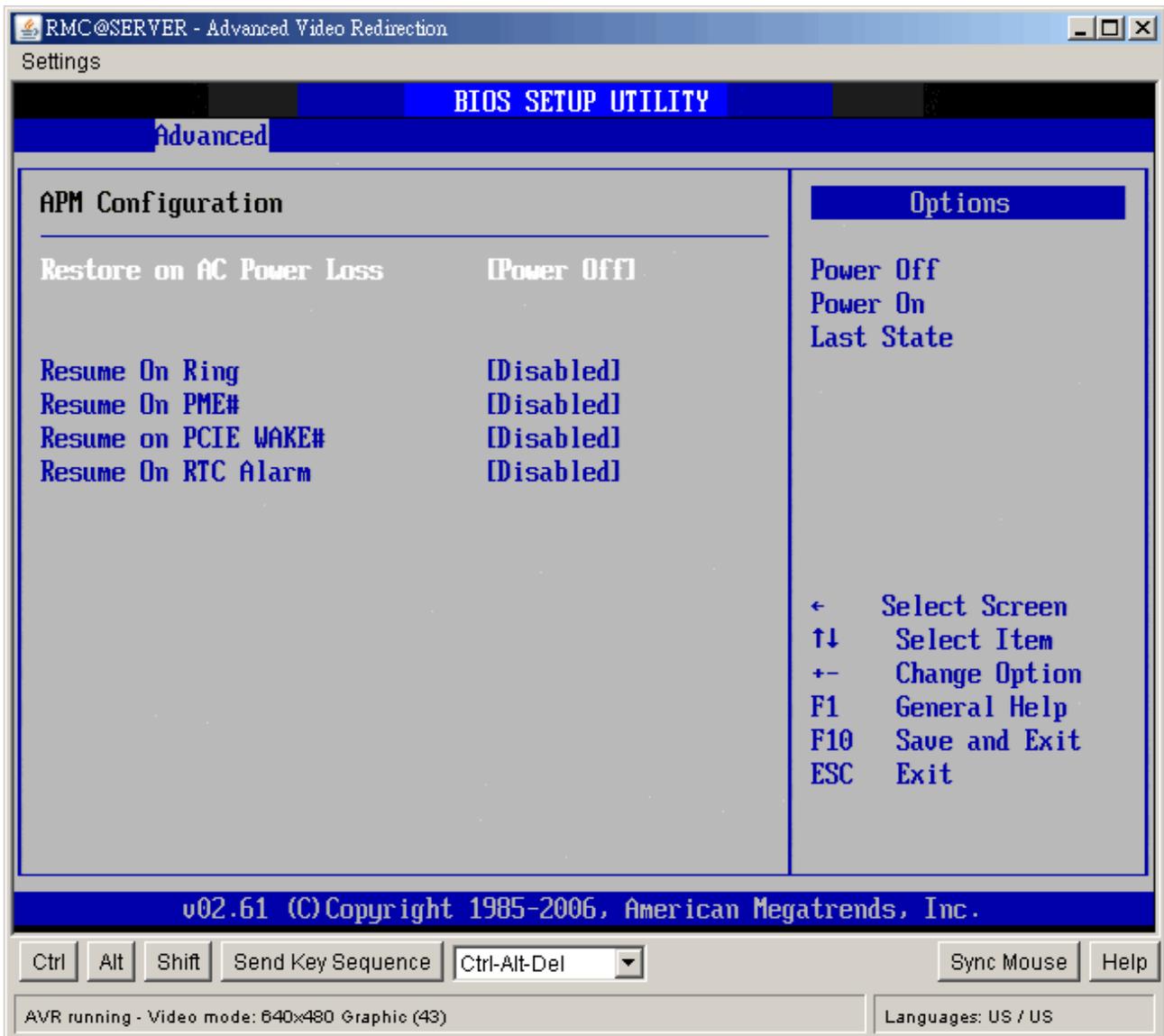
This item allows you to select the connected device type. Options: Auto (Default)

- **S.M.A.R.T.**

This item allows you to control the device S.M.A.R.T function. The options are Enabled (Default) / Disabled

2.3.7 APM Configuration

You can use this screen to select options for the APM settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages.



- **Restore on AC Power Loss**

This item allows you to set AC Power Loss to Power Off (Default), Power On, or Last State.

- **Resume On Ring**

Disable (Default) or Enable RI to generate a wake event.

- **Resume On PME#**

Disable (Default) or Enable PME to generate a wake event.

- **Resume On PCIE WAKE#**

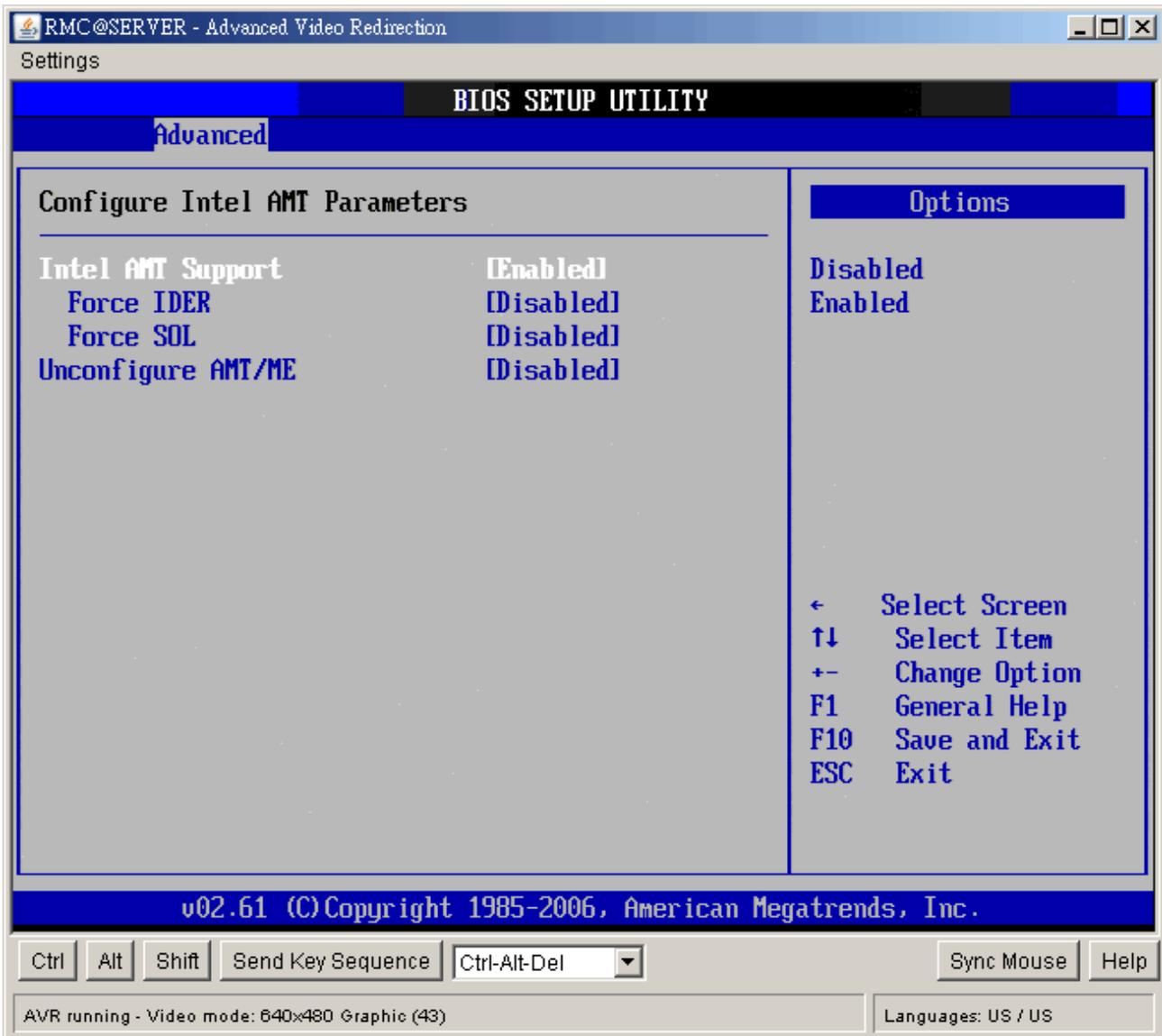
Disable (Default) or Enable PCIE to generate a wake event.

- **Resume RTC Alarm**

Disable (Default) or Enable RTC to generate a wake event.

2.3.8 Intel AMT Configuration

You can use this screen to select options for Intel AMT settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages.



- **Intel AMT Support**

Intel Active Management Technology (AMT) is hardware-based technology for remotely managing and securing PCs out-of-band. The options are Disabled (Default), Enabled

- **Force IDE/Force SOL**

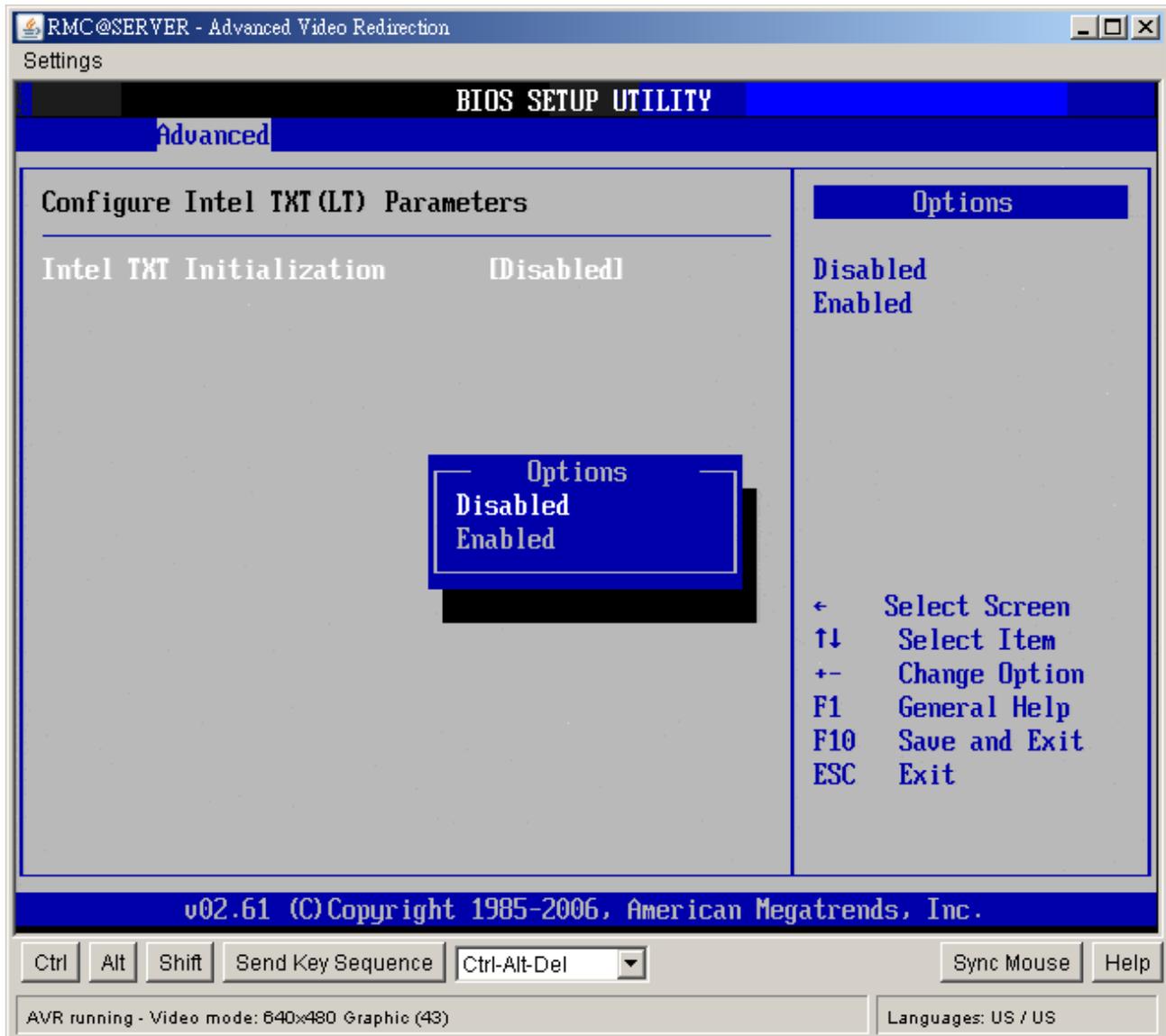
SOL/ IDER (Serial Over LAN/ IDE-Redirection) is a protocol defined for Intel Active Management Technology that allows redirecting the keyboard/text or floppy disk/CD transfers from a local host to a remote workstation.

- **Unconfigure AMT/ME**

To finish the unconfiguration of AMT, set this setting to [Enabled] and the BIOS will unconfigure all of AMT/ME settings and all the passwords are reset.

2.3.9 Intel TXT (LT) Configuration

You can use this screen to select options for the Intel TXT (LT) settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The screen is shown below.

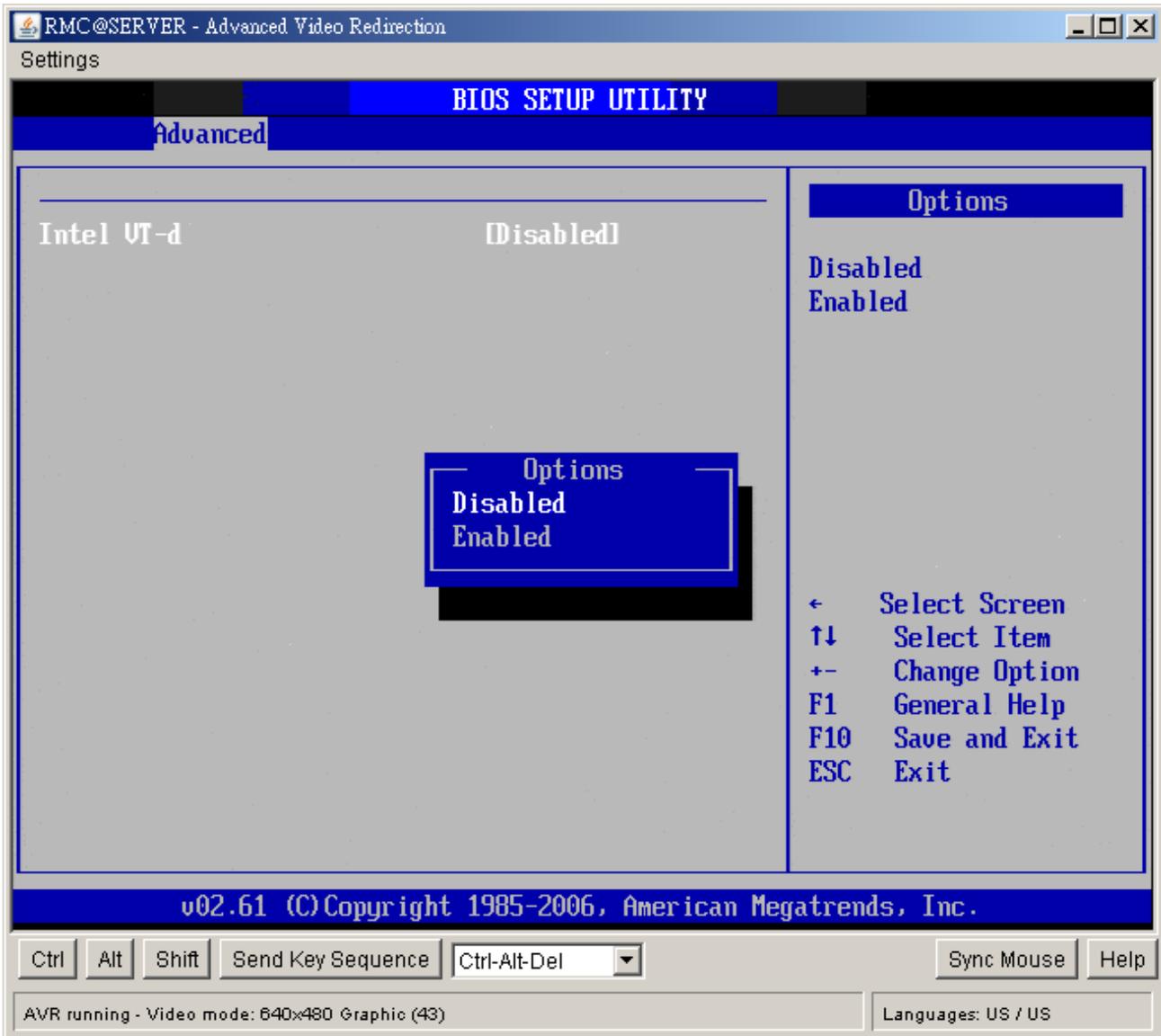


- **Intel TXT Initialization**

The Choices are enabled or disabled (Default) the Intel TXT initialization.

2.3.10 Intel VT-d Configuration

You can use this screen to select options for the Intel VT-d settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The screen is shown below.

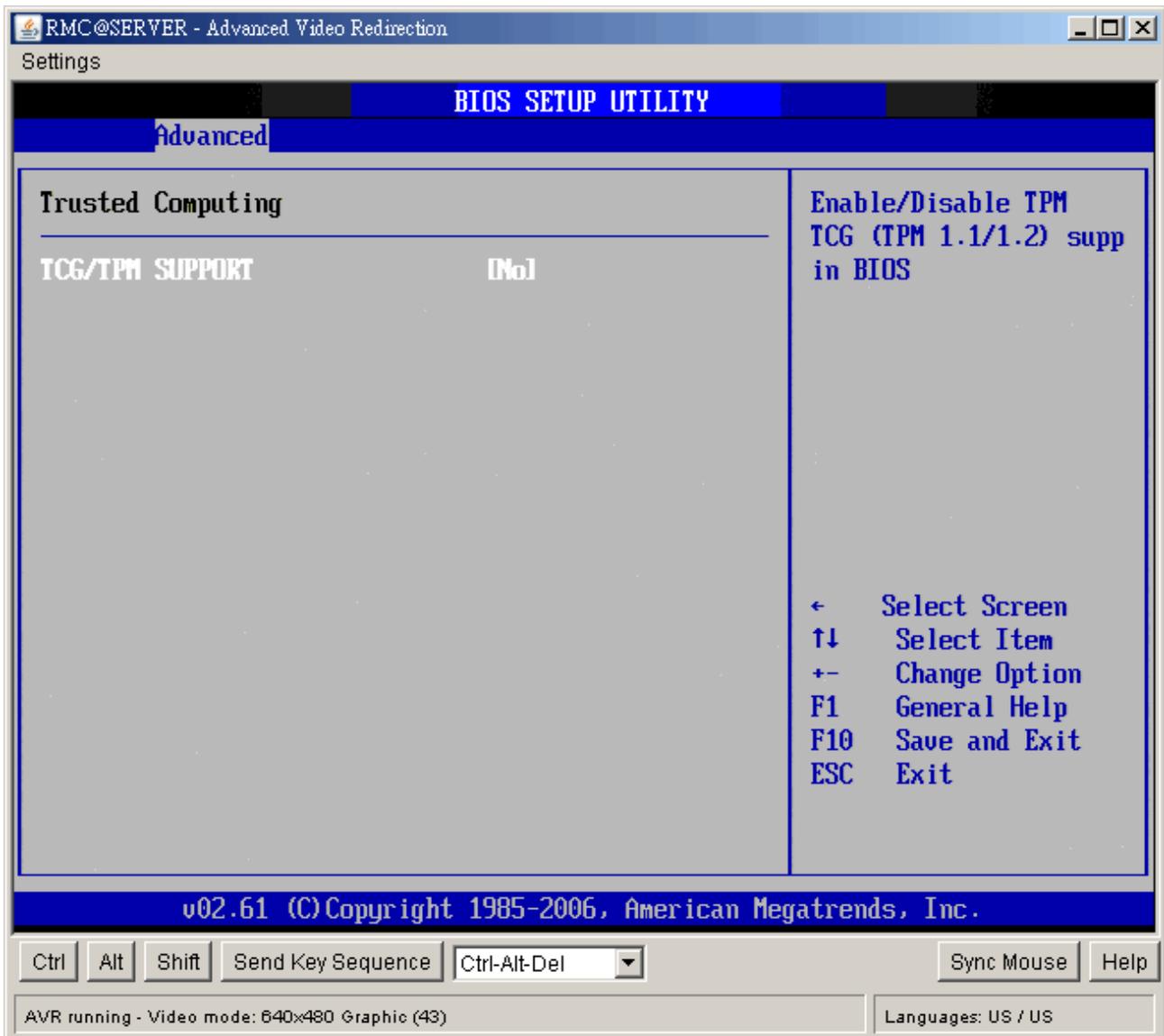


- **Intel VT-d**

The Choices are enabled or disabled (Default) the Intel VT-d.

2.3.11 Trusted Computing

You can use this screen to select options for the Intel Trusted Computing settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The screen is shown below.

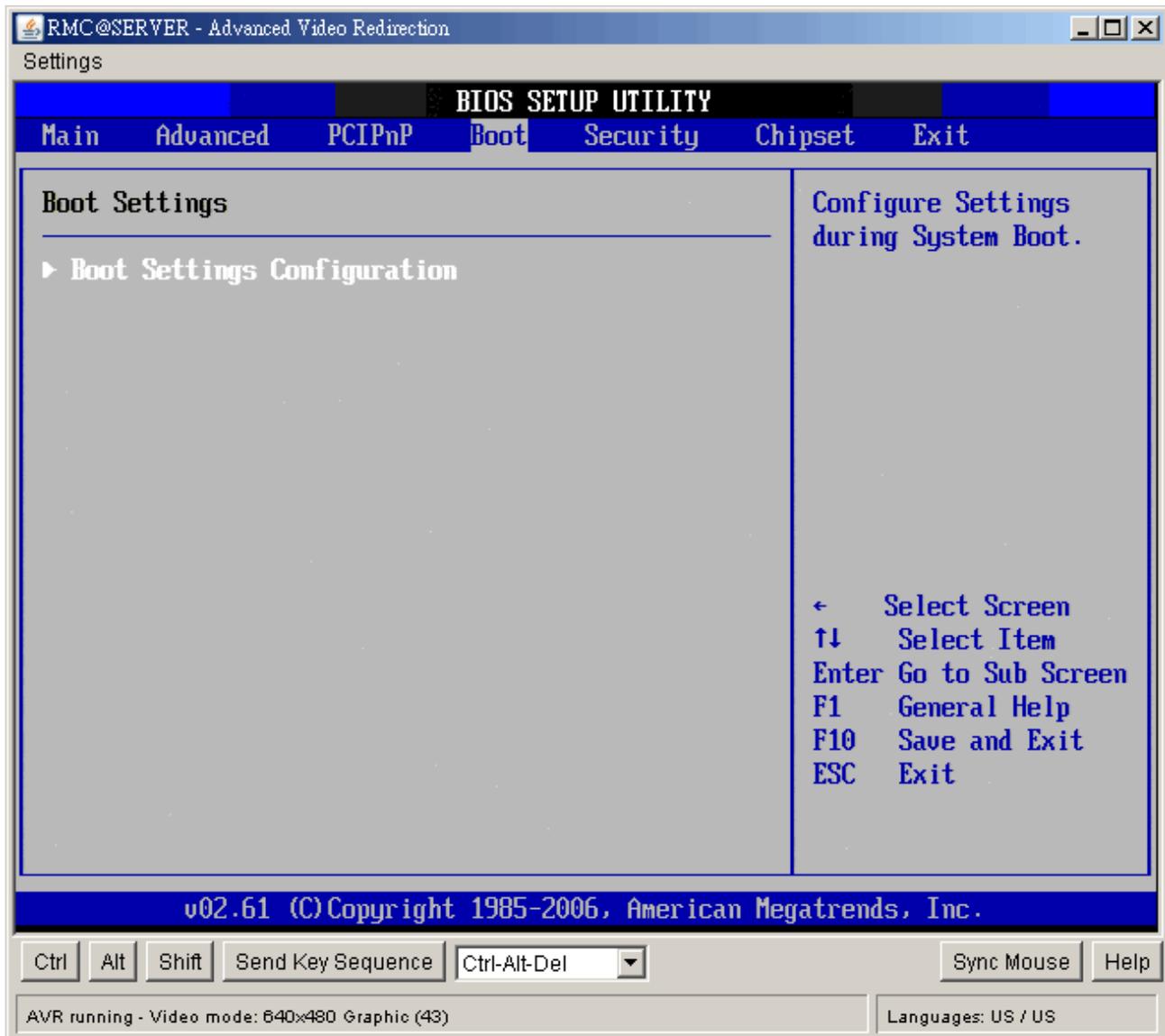


- **TCG/TPM SUPPORT**

Enable or disable (Default) TPM TCG (TPM 1.1/1.2) support in BIOS.

2.4 Boot Setting Configuration

Select the *Boot* tab from the setup screen to enter the Boot Setup screen. You can display a Boot Setup option by highlighting it using the <Arrow> keys. All Boot BIOS Setup options



are described in this section. The Boot BIOS Setup screen is shown below.

2.4.1 Boot Settings Configuration

You can use this screen to select options for the Boot settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



- **Quick Boot**

The default setting is Enabled.

Disabled	Set this value to allow the BIOS to perform all POST tests.
Enabled	Set this value to allow the BIOS to skip certain POST tests to boot faster.

- **Quiet Boot**

Set this value to allow the boot up screen options to be modified between POST messages or OEM logo. The default setting is Disabled.

Disabled	Set this value to allow the computer system to display the POST messages.
Enabled	Set this value to allow the computer system to display the OEM logo. This is the default setting.

- **Bootup Num-Lock**

Set this value to allow the Number Lock setting to be modified during boot up. The default setting is On.

Off	This option does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard will light up when the Number Lock is engaged.
On	Set this value to allow the Number Lock on the keyboard to be enabled automatically when the computer system is boot up. This allows the immediate use of 10-keys numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard will be lit. This is the default setting.

- **Wait For “F1” If Error**

Set this value to allow the Wait for “F1” Error setting to be modified. The default setting is Enabled.

Disabled	This prevents the to wait on an error for user intervention. This setting should be used if there is a known reason for a BIOS error to appear. An example would be a system administrator must remote boot the system. The computer system does not have a keyboard currently attached. If this setting is set, the system will continue to boot up in to the operating system. If “F1” is enabled, the system will wait until the BIOS setup is entered.
Enabled	Set this value to allow the system BIOS to wait for any error. If an error is detected, pressing <F1> will enter Setup and the BIOS setting can be adjusted to fix the problem. This normally happens when upgrading the hardware and not setting the BIOS to recognized it. This is the default setting.

- **Hit “DEL” Message Display**

Set this value to allow the Hit “DEL” to enter Setup Message Display to be modified. The default setting is Enabled.

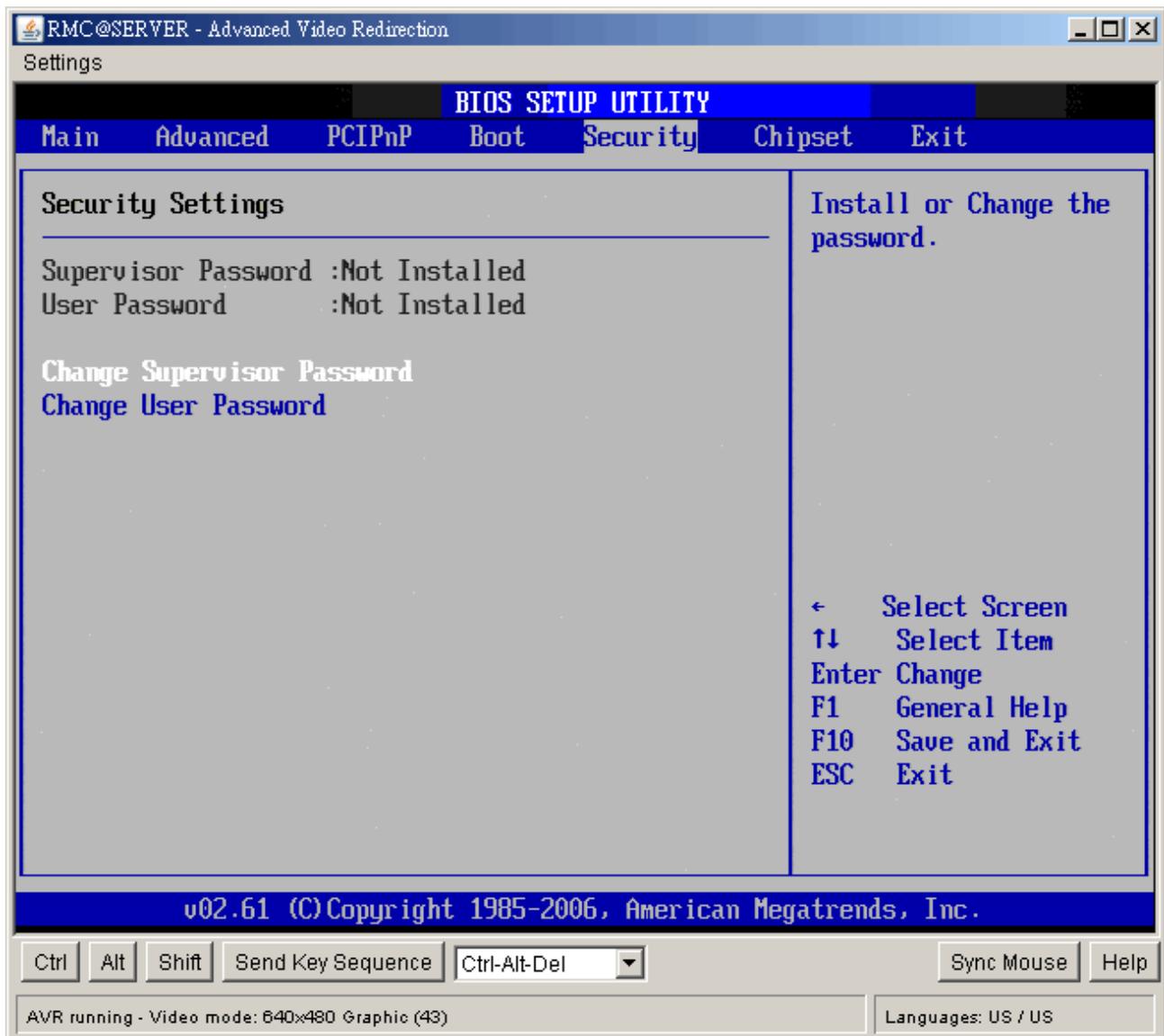
Disabled	This prevents to display “Hit Del to Enter Setup” during memory initialization. If Quiet Boot is enabled, the message will not display.
Enabled	This allows to display “Hit Del to Enter Setup” during memory initialization. This is the default setting.

2.5 Security Setup

Select Security Setup from the Setup main BIOS setup menu. All Security Setup options, such as password protection and virus protection, are described in this section. To access the sub menu for the following items, select the item and press <Enter>:

- Change Supervisor Password

The Security Setup screen is shown below. The sub menus are documented on the following pages.



2.5.1 Change Supervisor Password

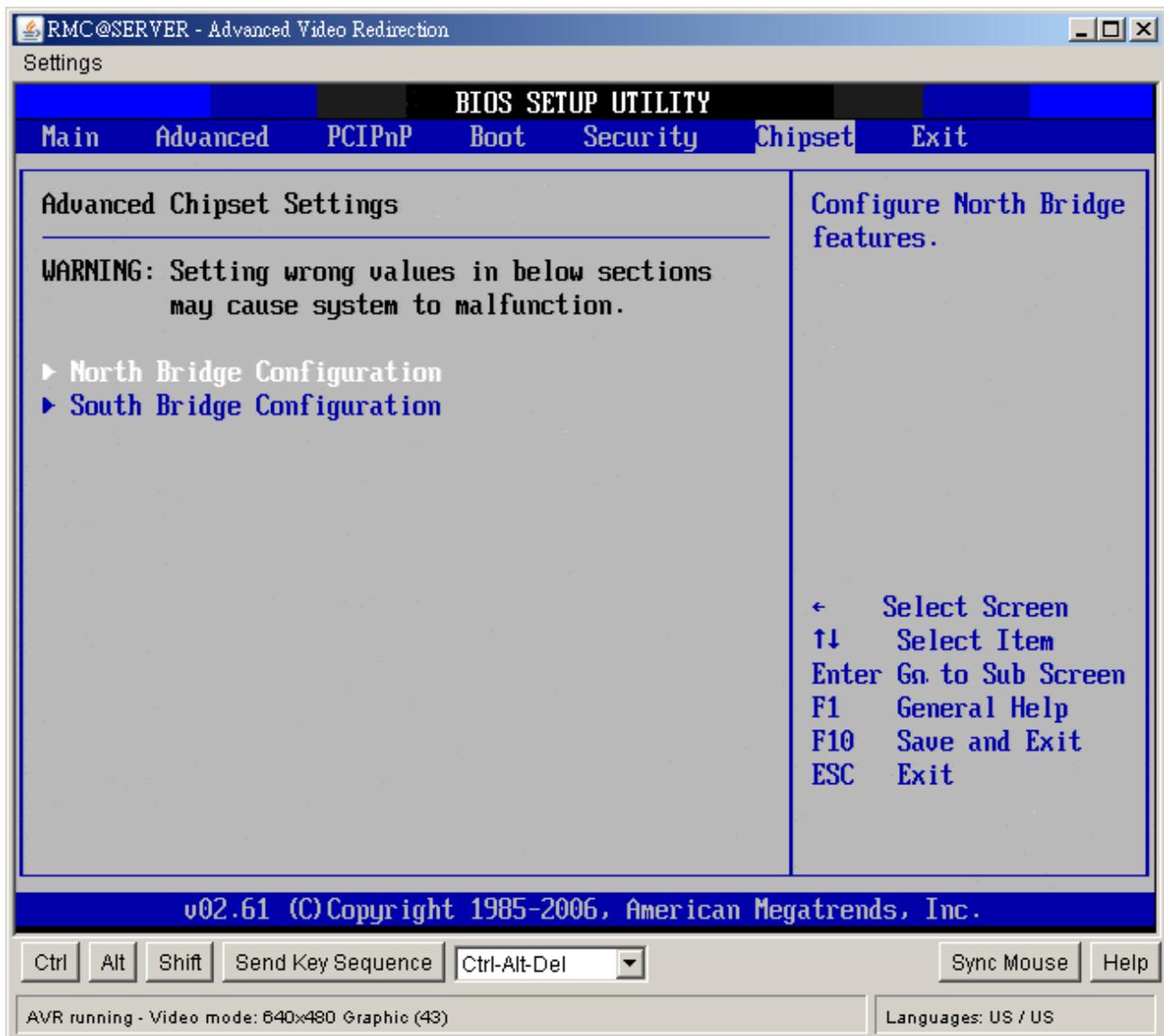
This item indicates whether a supervisor password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

2.5.2 Change User Password

This item indicates whether a user password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

2.6 Chipset Setup

Select the *Chipset* tab from the setup screen to enter the Chipset BIOS Setup screen. You can select any of the items in the left frame of the screen, such as CPU Configuration, to go to the sub menu for that item. You can display a Chipset BIOS Setup option by highlighting it using the <Arrow> keys. All Chipset BIOS Setup options are described in this section. The Chipset BIOS Setup screen is shown below.



2.6.1 North Bridge Configuration

You can use this screen to select options for the North Bridge Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option.



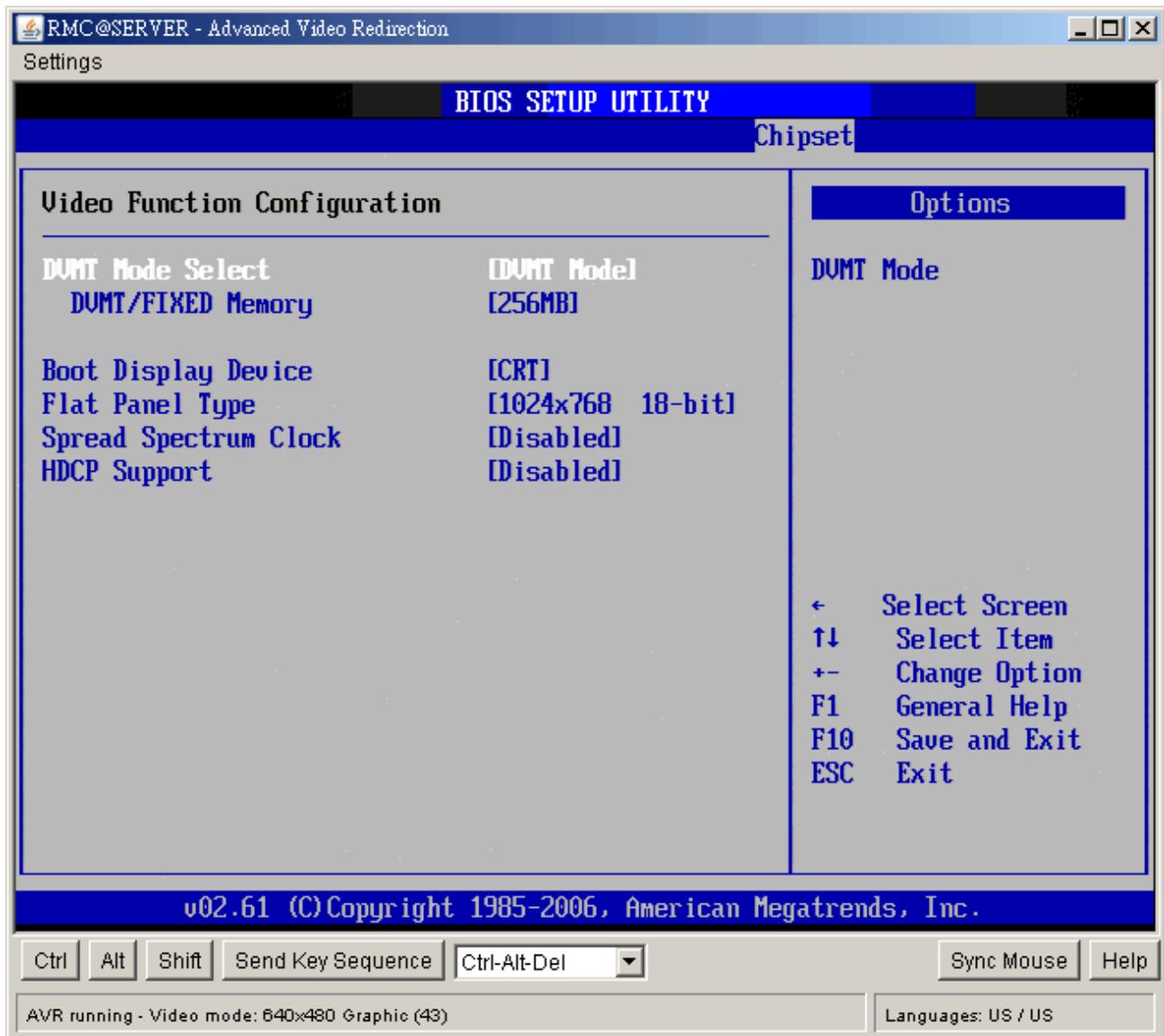
Note: The North Bridge Configuration setup screen varies depending on the supported North Bridge chipset.

- **Boots Graphics Adaptor Priority**

This item selects which graphics controller to use as the primary boot device. The options are IGD, PCI/IGD, PCI/PEG, PEG/IGD, PEG/PCI. The default setting is PEG/PCI.

- **Internal Graphics Mode Select**

This item selects the amount of system memory used by the internal graphics device. The choices are Disabled, Enabled 32MB, Enabled 64MB, and Enabled 128MB.



- **DVMT Mode Select**

Use this field to select the memory to allocate for video memory. The choice is "DVMT".

- **DVMT/Fixed Memory Size**

Specify the size of DVMT/system memory to allocate for video memory. The options are 128MB, 256MB and Maximum DVMT.

- **Boot Display Device**

Use the field to select the type of device you want to use as the display(s) of the system.

- **Flat Panel Type**

This setting allows you to set your preferences for the boot display device.

- **Panel Backlight Control**

This setting allows you to set LCD backlight brightness display from 0%, 25%, 50%, 75%, and 100%. 0% is brightest, 100% is dimmest. Default setting is 0%.

- **Spread Spectrum**

This setting allows you to reduce EMI by modulating the signals the CPU generates so that the spikes are reduced to flatter curves. This is achieved by varying the frequency slightly so that the signal does not use any particular frequency for more than a moment. The options: Disabled and Enabled.

- **HDCP Support**

HDCP(High-Bandwidth Digital Content Protection) is a copy protection protocol that was designed by Intel to prevent copying protected media as it travels across data lines. The choice are Disabled and Enabled

2.6.2 South Bridge Configuration

You can use this screen to select options for the South Bridge Configuration. South Bridge is a chipset on the motherboard that controls the basic I/O functions, USB ports, audio functions, modem functions, IDE channels, and PCI slots. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option.



- **USB Functions**

Set this value to allow the system to enable or disable the onboard USB ports. The choices are Disabled, 2 USB Ports, 4 USB Ports, 6 USB Ports, 8 USB Ports, 10 USB Ports, 12 USB Ports.

- **GbE Controller**

Options are "Enabled" and "Disabled". Select "Disabled" if you don't want to use onboard LAN controller.

- **GbE LAN Boot**

When [Enabled], the BIOS attempts to boot from a LAN boot image before it attempts to boot from a local storage device.

- **GbE Wake up From S5**

This field specifies whether the system will be awakened from the S5 power saving mode when activity or input signal of onboard LAN is detected.

- **OnBoard LAN Boot ROM**

Options are "Enabled" and "Disabled". Select "Disabled" if you don't want to use onboard LAN Boot Rom.

- **HDA Controller**

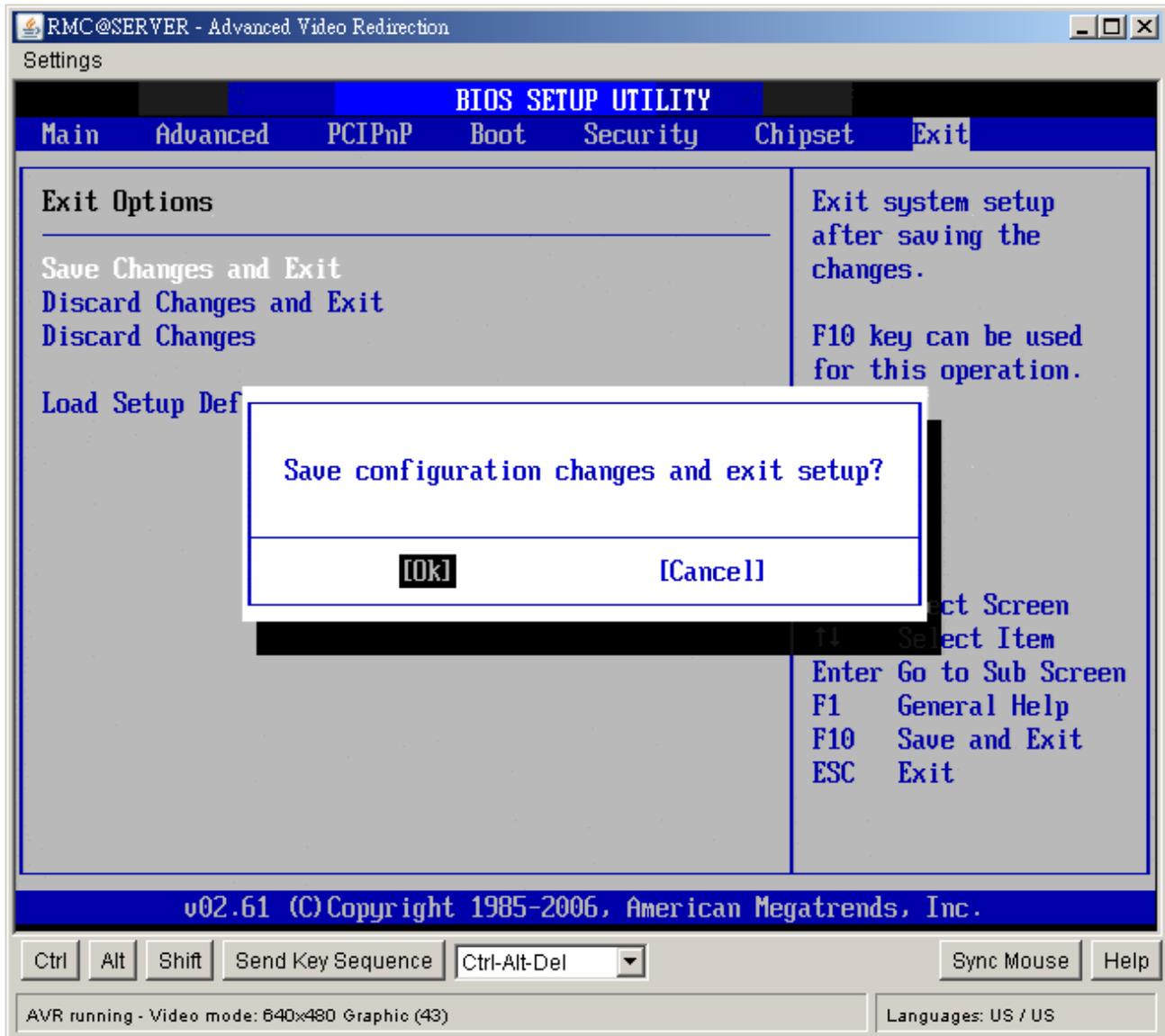
Options are "Enabled" and "Disabled". Select "Disabled" if you don't want to use HDA controller.

- **Amplifier Gain Control (dB)**

Options are 18.3(default), 21.3, 28.3, 31.8.

2.7 Exit Menu

Select the **Exit** tab from the setup screen to enter the Exit BIOS Setup screen. You can display an Exit BIOS Setup option by highlighting it using the <Arrow> keys. All Exit BIOS Setup options are described in this section. The Exit BIOS Setup screen is shown below.



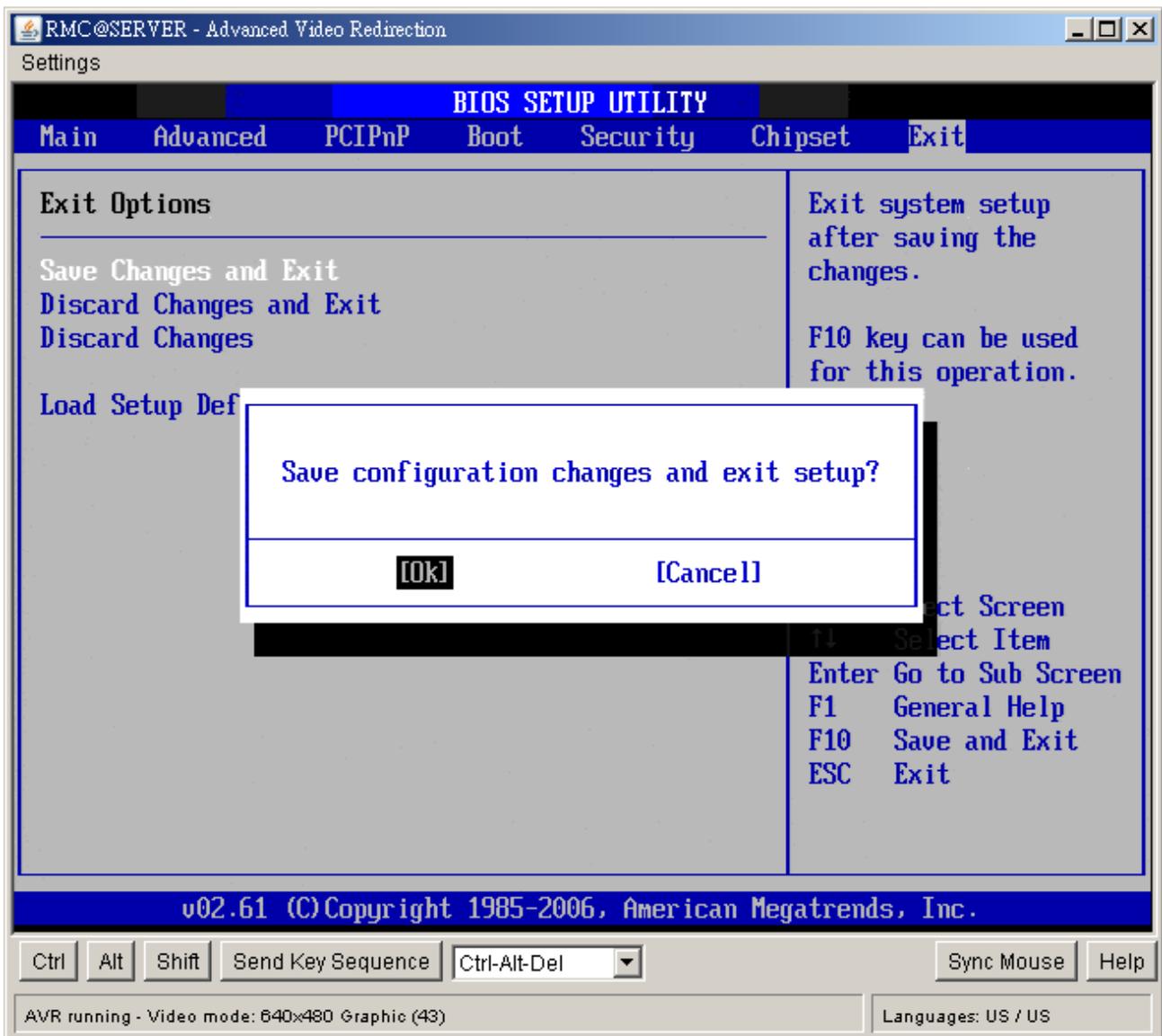
2.7.1 Save Changes and Exit

When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select Exit Saving Changes from the Exit menu and press <Enter>.

Save Configuration Changes and Exit Now?

[Ok] [Cancel]

appears in the window. Select Ok to save changes and exit.



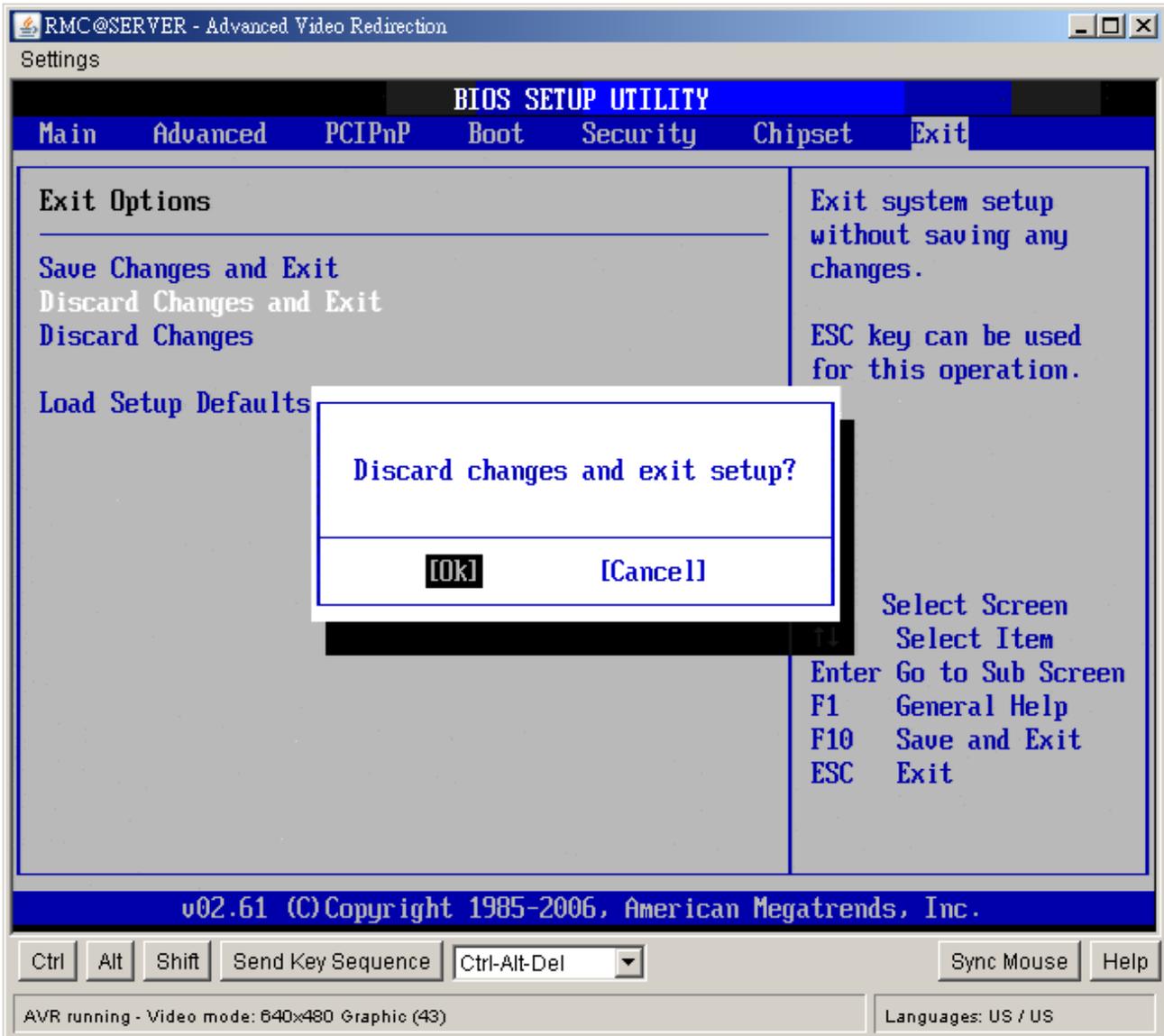
2.7.2 Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration. Select Exit Discarding Changes from the Exit menu and press <Enter>.

Discard Changes and Exit Setup Now?

[Ok] [Cancel]

appears in the window. Select *Ok* to discard changes and exit.



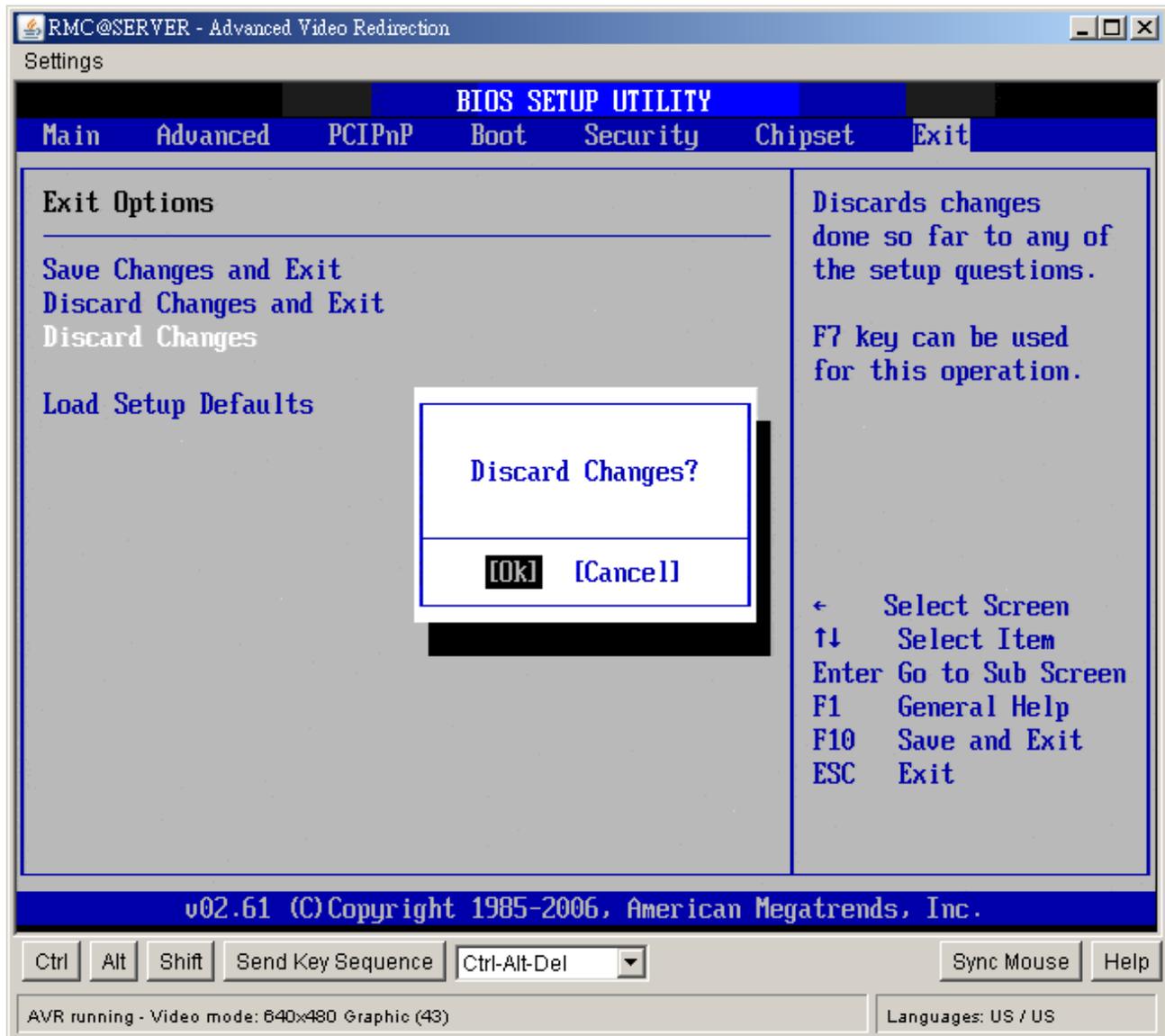
2.7.3 Discard Changes

Select Discard Changes from the Exit menu and press <Enter>.

Discard Changes ?

[Ok] [Cancel]

appears in the window. Select *Ok* to discard changes.



2.7.4 Load Setup Default

Automatically sets all Setup options to a complete set of default settings when you Select this option. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Setup options if your computer is experiencing system configuration problems. Select Load Setup Defaults from the Exit menu and press <Enter>. Select **Ok** to load optimal defaults.

