4CoreDual-VSTA

User Manual

Version 1.0
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CALIFORNIA, USA ONLY
The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.
"Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"

ASRock Website: http://www.asrock.com

Contents

1. Introduction

Thank you for purchasing ASRock ***4CoreDual-VSTA*** motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this manual, chapter 1 and 2 contain introduction of the motherboard and step-by-step guide to the hardware installation. Chapter 3 and 4 contain the configuration guide to BIOS setup and information of the Support CD.

Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock website without further notice. You may find the latest VGA cards and CPU support lists on ASRock website as well. ASRock website http://www.asrock.com

1.1 Package Contents

ASRock ***4CoreDual-VSTA*** Motherboard
(ATX Form Factor: 12.0-in x 9.6-in, 30.5 cm x 24.4 cm)
ASRock ***4CoreDual-VSTA*** Quick Installation Guide
ASRock ***4CoreDual-VSTA*** Support CD
(including *LGA 775 CPU Installation Live Demo*)
One 80-conductor Ultra ATA 66/100/133 IDE Ribbon Cable
One Ribbon Cable for a 3.5-in Floppy Drive
One Serial ATA (SATA) Cable (Optional)
One Serial ATA (SATA) HDD Power Cable (Optional)
One HDMI_SPDIF Cable (Optional)
One HD 8CH I/O Panel Shield

1.2 Specifications

Platform	- ATX Form Factor: 12.0-in x 9.6-in, 30.5 cm x 24.4 cm
CPU	- LGA 775 for Intel® Core™ 2 Extreme / Core™ 2 Duo / Pentium® XE / Pentium® D / Pentium® 4 / Celeron® D, supporting Quad Core Kentsfield processors - FSB 1066/800/533 MHz - Supports Hyper-Threading Technology (see **CAUTION 1**) - Supports Untied Overclocking Technology (see **CAUTION 2**) - Supports EM64T CPU
Chipset	- Northbridge: VIA® PT880 Ultra - Southbridge: VIA® VT8237A
Memory	- Dual Channel DDR/DDRII Memory Technology (see **CAUTION 3**) - 2 x DDRII DIMM slots - Support DDRII667/533 - Max. capacity: 2GB - 2 x DDR DIMM slots - Support DDR400/333/266 - Max. capacity: 2GB
Hybrid Booster	- CPU Frequency Stepless Control (see **CAUTION 4**) - ASRock U-COP (see **CAUTION 5**) - Boot Failure Guard (B.F.G.)
Expansion Slot	- 4 x PCI slots - 1 x PCI Express Graphics slot (see **CAUTION 6**) - 1 x AGP 8X slot (see **CAUTION 7**)
Audio	- 7.1 CH Windows® Vista™ Premium Level HD Audio (ALC888 Audio Codec)
LAN	- VIA® PHY VT6103 - Speed: 10/100 Ethernet - Supports Wake-On-LAN
Rear Panel I/O	HD 8CH I/O - 1 x PS/2 Mouse Port - 1 x PS/2 Keyboard Port - 1 x Serial Port: COM1 - 1 x Parallel Port (ECP/EPP Support) - 4 x Ready-to-Use USB 2.0 Ports - 1 x RJ-45 Port - Audio Jack: Side Speaker/Rear Speaker/Central Bass/Line in/Front Speaker/Microphone (see **CAUTION 8**)

Connector	- 2 x Serial ATA 1.5Gb/s connectors, support RAID (RAID 0, RAID 1, and JBOD) and “Hot Plug” functions - 2 x ATA133 IDE connectors (support 4 x IDE devices) - 1 x Floppy connector - 1 x IR header - 1 x Game header - 1 x HDMI_SPDIF header - CPU/Chassis FAN connector - 20 pin ATX power connector - 4 pin 12V power connector - CD in header - Front panel audio connector - 2 x USB 2.0 headers (support 4 USB 2.0 ports) (see **CAUTION 9**)
BIOS Feature	- 4Mb AMI BIOS - AMI Legal BIOS - Supports “Plug and Play” - ACPI 1.1 Compliance Wake Up Events - Supports jumperfree - SMBIOS 2.3.1 Support
Support CD	- Drivers, Utilities, AntiVirus Software (Trial Version)
Hardware Monitor	- CPU Temperature Sensing - Chassis Temperature Sensing - CPU Fan Tachometer - Chassis Fan Tachometer - CPU Quiet Fan - Voltage Monitoring: +12V, +5V, +3.3V, Vcore
OS	- Microsoft® Windows® 2000/XP/XP 64-bit/Vista™/ Vista™ 64-bit compliant (see **CAUTION 10**)
Certifications	- FCC, CE, WHQL

CAUTION!

1. About the setting of "Hyper Threading Technology", please check page 32.
2. This motherboard supports Untied Overclocking Technology. Please read "Untied Overclocking Technology" on page 28 for details.
3. This motherboard supports Dual Channel Memory Technology. Before you implement Dual Channel Memory Technology, make sure to read the installation guide of memory modules on page 17 for proper installation.
4. Although this motherboard offers stepless control, it is not recommended to perform over-clocking. Frequencies other than the recommended CPU bus frequencies may cause the instability of the system or damage the CPU.
5. While CPU overheat is detected, the system will automatically shutdown. Before you resume the system, please check if the CPU fan on the motherboard functions properly and unplug the power cord, then plug it back again. To improve heat dissipation, remember to spray thermal grease between the CPU and the heatsink when you install the PC system.
6. For the information of the compatible PCI Express VGA cards, please refer to the "Supported PCI Express VGA Card List for PCI Express Graphics Slot" on page 10. For the proper installation of PCI Express VGA card, please refer to the installation guide on page 19.
7. Do NOT use a 3.3V AGP card on the AGP slot of this motherboard! It may cause permanent damage!
8. For microphone input, this motherboard supports both stereo and mono modes. For audio output, this motherboard supports 2-channel, 4-channel, 6-channel, and 8-channel modes. Please check the table on page 12 for proper connection.
9. Power Management for USB 2.0 works fine under Microsoft® Windows® Vista™ / XP 64-bit / XP SP1 or SP2 / 2000 SP4.
10. Microsoft® Windows® Vista™ driver is not ready yet. We will update it to our website in the future. Please visit our website for Microsoft® Windows® Vista™ driver and related information. ASRock website http://www.asrock.com

1.3 Minimum Hardware Requirement Table for Windows® Vista™ Premium and Basic OS

This motherboard can support all features in Windows® Vista™ Premium. Please follow the below table for minimum hardware requirement.

CPU	Celeron D 326
Memory	512MB Single Channel
VGA	DX9.0 with WDDM Driver
	with 128bit VGA memory (Premium)
	with 64bit VGA memory (Basic)

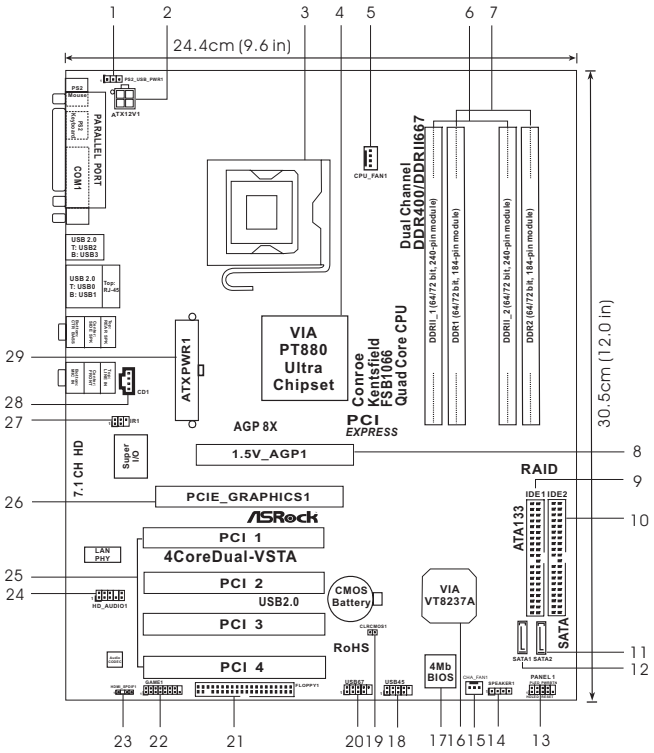
1.4 Supported PCI Express VGA Card List for PCI Express Graphics Slot

(for Windows® 2000/XP/XP 64-bit/Vista™)

Graphics Chip Vendor	Model Name
NVIDIA	ASUS Extreme N6200GE/TD ASUS Extreme N6200TC256/TD ASUS Extreme N6800GT ASUS Extreme N6800/TD ALBATRON PC6600GT GIGABYTE GV-NX66128D Inno3D GeFORCE 6600 LE LEADTEK PX6200 TC/TDH MSI PCX 5750-TD128E SPARKLE GeFORCE 6200TC
ATI	ASUS Extreme AX700PRO/TVD ABIT RX600XT-PCIE GECUBE Radeon X850XT 256M

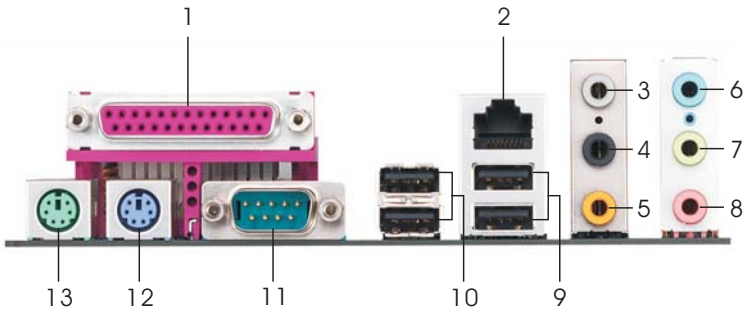
For the latest updates of the supported PCI Express VGA card list for PCI Express Graphics slot, please visit ASRock website for details.
ASRock website: http://www.asrock.com/support/index.htm

1.5 Motherboard Layout



1	PS2_USB_PWR1 Jumper
2	ATX 12V Connector (ATX12V1)
3	775-Pin CPU Socket
4	North Bridge Controller
5	CPU Fan Connector (CPU_FAN1)
6	2 x 240-pin DDRII DIMM Slots (Dual Channel A: DDRII_1, DDRII_2; Yellow)
7	2 x 184-pin DDR DIMM Slots (Dual Channel B: DDR1, DDR2; Blue)
8	AGP Slot (1.5V_AGP1)
9	Primary IDE Connector (IDE1, Blue)
10	Secondary IDE Connector (IDE2, Black)
11	Secondary Serial ATA Connector (SATA2)
12	Primary Serial ATA Connector (SATA1)
13	System Panel Header (PANEL1)
14	Chassis Speaker Header (SPEAKER 1)
15	Chassis Fan Connector (CHA_FAN1)
16	South Bridge Controller
17	Flash Memory
18	USB 2.0 Header (USB45, Blue)
19	Clear CMOS Jumper (CLRCMOS1)
20	USB 2.0 Header (USB67, Blue)
21	Floppy Connector (FLOPPY1)
22	Game Connector (GAME1)
23	HDMI_SPDIF Header (HDMI_SPDIF1)
24	Front Panel Audio Header (HD_AUDIO1)
25	4 x PCI Slots (PCI1- 4)
26	PCI Express Graphics Slot
27	Infrared Module Header (IR1)
28	Internal Audio Connector: CD1 (Black)
29	ATX Power Connector (ATXPWR1)

1.6 HD 8CH I/O Panel



1	Parallel Port	8	Microphone (Pink)
2	RJ-45 Port	9	USB 2.0 Ports (USB01)
3	Side Speaker (Gray)	10	USB 2.0 Ports (USB23)
4	Rear Speaker (Black)	11	Serial Port: COM1
5	Central / Bass (Orange)	12	PS/2 Keyboard Port (Purple)
6	Line In (Light Blue)	13	PS/2 Mouse Port (Green)
*7	Front Speaker (Lime)		

***** If you use 2-channel speaker, please connect the speaker's plug into "Front Speaker Jack". See the table below for connection details in accordance with the type of speaker you use.

TABLE for Audio Output Connection

Audio Output Channels	Front Speaker (No. 7)	Rear Speaker (No. 4)	Central / Bass (No. 5)	Side Speaker (No. 3)
2	V	--	--	--
4	V	V	--	--
6	V	V	V	--
8	V	V	V	V

***** To enable Multi-Streaming function, you need to connect a front panel audio cable to the front panel audio header. After restarting your computer, you will find "Mixer" tool on your system. Please select "Mixer ToolBox"  , click "Enable playback multi-streaming", and click "ok". Choose "2CH", "4CH", "6CH", or "8CH" and then you are allowed to select "Realtek HDA Primary output" to use Rear Speaker, Central/Bass, and Front Speaker, or select "Realtek HDA Audio 2nd output" to use front panel audio.

Chapter 2 Installation

4CoreDual-VSTA is an ATX form factor (12.0" x 9.6", 30.5 x 24.4 cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.

2.1 Screw Holes

Place screws into the holes indicated by circles to secure the motherboard to the chassis.

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

2.2 Pre-installation Precautions

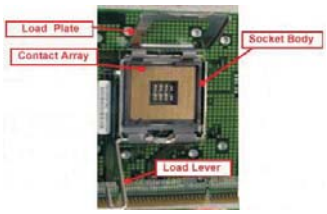
Take note of the following precautions before you install motherboard components or change any motherboard settings.

1. Unplug the power cord from the wall socket before touching any component.
2. To avoid damaging the motherboard components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that comes with the component.

Before you install or remove any component, ensure that the power is switched 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.

2.3 775-LAND CPU Installation

For the installation of Intel 775-LAND CPU, please follow the steps below.



775-Pin Socket Overview

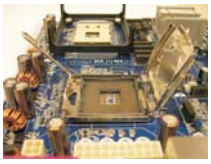
Before you insert the 775-LAND CPU into the socket, please check if the CPU surface is unclean or if there is any bent pin on the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.

Step 1. Open the socket:

Step 1-1. Disengaging the lever by depressing down and out on the hook to clear retention tab.

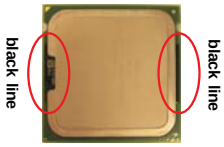
Step 1-2. Rotate the load lever to fully open position at approximately 135 degrees.

Step 1-3. Rotate the load plate to fully open position at approximately 100 degrees.

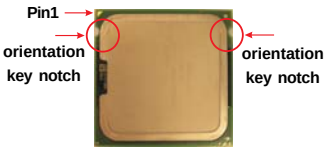


Step 2. Insert the 775-LAND CPU:

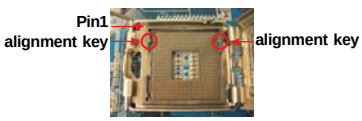
Step 2-1. Hold the CPU by the edges where are marked with black lines.



Step 2-2. Orient the CPU with IHS (Integrated Heat Sink) up. Locate Pin1 and the two orientation key notches.



775-LAND CPU



775-Pin Socket

For proper inserting, please ensure to match the two orientation key notches of the CPU with the two alignment keys of the socket.

Step 2-3. Carefully place the CPU into the socket by using a purely vertical motion.
Step 2-4. Verify that the CPU is within the socket and properly mated to the orient keys.

Step 3. Remove PnP Cap (Pick and Place Cap):
Use your left hand index finger and thumb to support the load plate edge, engage PnP cap with right hand thumb and peel the cap from the socket while pressing on center of PnP cap to assist in removal.

1. It is recommended to use the cap tab to handle and avoid kicking off the PnP cap.
2. This cap must be placed if returning the motherboard for after service.

Step 4. Close the socket:
Step 4-1. Rotate the load plate onto the IHS.
Step 4-2. While pressing down lightly on load plate, engage the load lever.
Step 4-3. Secure load lever with load plate tab under retention tab of load lever.

2.4 Installation of CPU Fan and Heatsink

This motherboard is equipped with 775-Pin socket that supports Intel 775-LAND CPU. Please adopt the type of heatsink and cooling fan compliant with Intel 775-LAND CPU to dissipate heat. Before you installed the heatsink, you need to spray thermal interface material between the CPU and the heatsink to improve heat dissipation. Ensure that the CPU and the heatsink are securely fastened and in good contact with each other. Then connect the CPU fan to the CPU_FAN connector (CPU_FAN1, see page 11, No. 5).

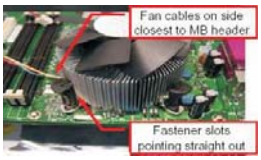
For proper installation, please kindly refer to the instruction manuals of your CPU fan and heatsink.

Below is an example to illustrate the installation of the heatsink for 775-LAND CPU.

Step 1. Apply thermal interface material onto center of IHS on the socket surface.

Step 2. Place the heatsink onto the socket. Ensure fan cables are oriented on side closest to the CPU fan connector on the motherboard (CPU_FAN1, see page 11, No. 5).

Step 3. Align fasteners with the motherboard throughholes.



Step 4. Rotate the fastener clockwise, then press down on fastener caps with thumb to install and lock. Repeat with remaining fasteners.

If you press down the fasteners without rotating them clockwise, the heatsink cannot be secured on the motherboard.

Step 5. Connect fan header with the CPU fan connector on the motherboard.

Step 6. Secure excess cable with tie-wrap to ensure cable does not interfere with fan operation or contact other components.

2.5 Installation of Memory Modules (DIMM)

4CoreDual-VSTA motherboard provides two 184-pin DDR (Double Data Rate) DIMM slots and two 240-pin DDRII DIMM slots, and supports Dual Channel Memory Technology. For dual channel configuration, you always need to install **identical** (the same brand, speed, size and chip-type) DDR / DDRII DIMM pair in the slots of the same color. In other words, you have to install **identical** DDRII DIMM pair in **Dual Channel A** (DDRII_1 and DDRII_2; Yellow slots; see p.11 No.6) or **identical** DDR DIMM pair in **Dual Channel B** (DDR1 and DDR2; Blue slots; see p. 11 No.7), so that Dual Channel Memory Technology can be activated. You may refer to the Dual Channel Memory Configuration Table below.

Dual Channel Memory Configurations

	DDRII_1 (Yellow Slot)	DDR1 (Blue Slot)	DDRII_2 (Yellow Slot)	DDR2 (Blue Slot)
(1)	Populated	-	Populated	-
(2)	-	Populated	-	Populated

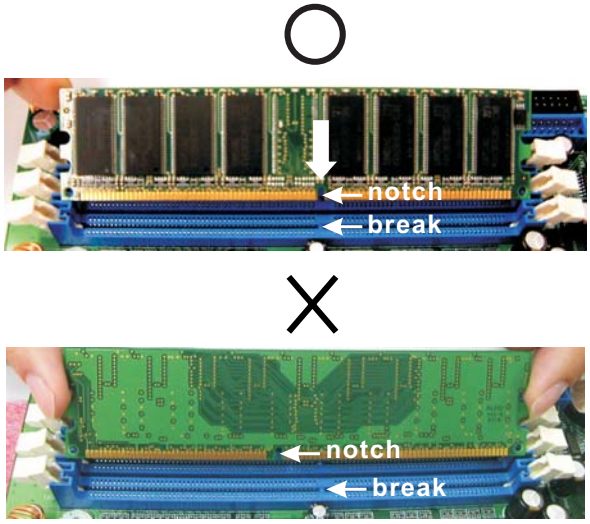
1. It is not allowed to install a DDR memory module into DDRII slot or a DDRII memory module into DDR slot; otherwise, this motherboard and DIMM may be damaged.
2. It is not allowed to install both DDR and DDRII memory modules to this motherboard at the same time; otherwise, this motherboard and DIMM may be damaged.

Installing a DIMM

Please make sure to disconnect power supply before adding or removing DIMMs or the system components.

Step 1. Unlock a DIMM slot by pressing the retaining clips outward.

Step 2. Align a DIMM on the slot such that the notch on the DIMM matches the break on the slot.



The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

Step 3. Firmly insert the DIMM into the slot until the retaining clips at both ends fully snap back in place and the DIMM is properly seated.

2.6 Expansion Slots (PCI, AGP, and PCI Express Graphics Slots)

There are 4 PCI slots, 1 AGP slot, and 1 PCI Express Graphics slot on ***4CoreDual-VSTA*** motherboard.

PCI slots: PCI slots are used to install expansion cards that have the 32-bit PCI interface.

AGP slot: The AGP slot is used to install a graphics card. The ASRock AGP slot has a special design of clasp that can securely fasten the inserted graphics card. AGP slot is used to install AGP expansion cards.

Please do NOT use a 3.3V AGP card on the AGP slot of this motherboard! It may cause permanent damage! For the voltage information of your AGP card, please check with the AGP card vendors.

PCI Express Graphics slot:

PCI Express Graphics slot is used to install PCI Express expansion cards. For the information of the compatible PCI Express VGA cards, please refer to the "Supported PCI Express VGA Card List for PCI Express Graphics Slot" on page 10.

Installing an expansion card

Step 1. Before installing the expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.

Step 2. Remove the system unit cover (if your motherboard is already installed in a chassis).

Step 3. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.

Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.

Step 5. Fasten the card to the chassis with screws.

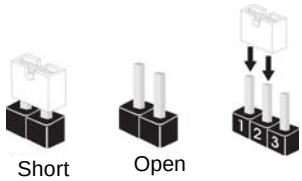
Step 6. Replace the system cover.

2.7 Surround Display Feature

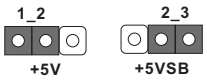
Thanks to ASRock patented PCI Express Graphics Technology, this motherboard supports Surround Display upgrade. With the external add-on AGP VGA card and PCI Express VGA card, you can easily enjoy the benefits of Surround Display feature. For the detailed instruction, please refer to the document at the following path in the Support CD: **..\ Surround Display Information**

2.8 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on pins, the jumper is "Short". If no jumper cap is placed on pins, the jumper is "Open". The illustration shows a 3-pin jumper whose pin1 and pin2 are "Short" when jumper cap is placed on these 2 pins.



Short Open

Jumper	Setting	
PS2_USB_PWR1 (see p.11, No. 1)		Short pin2, pin3 to enable +5VSB (standby) for PS/2 or USB wake up events.

Note: To select +5VSB, it requires 2 Amp and higher standby current provided by power supply.

Clear CMOS (CLRCMOS1, 2-pin jumper) (see p.11, No. 19)	 2-pin jumper

Note: CLRCMOS1 allows you to clear the data in CMOS. The data in CMOS includes system setup information such as system password, date, time, and system setup parameters. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short 2 pins on CLRCMOS1 for 5 seconds.

2.9 Onboard Headers and Connectors

Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage of the motherboard!

FDD Connector
(33-pin FLOPPY1)
(see p.11, No. 21)

Note: Make sure the red-striped side of the cable is plugged into Pin1 side of the connector.

Primary IDE Connector (Blue)
(39-pin IDE1, see p.11, No. 9)

Secondary IDE Connector (Black)
(39-pin IDE2, see p.11, No. 10)

connect the blue end to the motherboard

connect the black end to the IDE devices

80-conductor ATA 66/100/133 cable

Note: If you use only one IDE device on this motherboard, please set the IDE device as “Master”. Please refer to the instruction of your IDE device vendor for the details. Besides, to optimize compatibility and performance, please connect your hard disk drive to the primary IDE connector (IDE1, blue) and CD-ROM to the secondary IDE connector (IDE2, black).

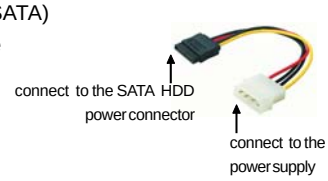
Serial ATA Connectors
(SATA1: see p.11, No. 12)
(SATA2: see p.11, No. 11)

These two Serial ATA (SATA) connectors support SATA data cables for internal storage devices. The current SATA interface allows up to 1.5 Gb/s data transfer rate.

Serial ATA (SATA) Data Cable
(Optional)

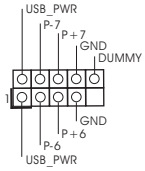
Either end of the SATA data cable can be connected to the SATA hard disk or the SATA connector on the motherboard.

Serial ATA (SATA)
Power Cable
(Optional)



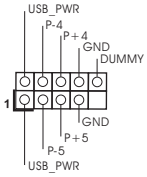
Please connect the black end of SATA power cable to the power connector on the drive. Then connect the white end of SATA power cable to the power connector of the power supply.

USB 2.0 Headers
(9-pin USB67)
(see p.11 No. 20)

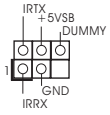


Besides four default USB 2.0 ports on the I/O panel, there are two USB 2.0 headers on this motherboard. Each USB 2.0 header can support two USB 2.0 ports.

(9-pin USB45)
(see p.11 No. 18)



Infrared Module Header
(5-pin IR1)
(see p.11, No. 27)



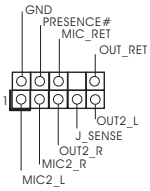
This header supports an optional wireless transmitting and receiving infrared module.

Internal Audio Connector
(4-pin CD1)
(CD1: see p.11, No. 28)

CD1

This connector allows you to receive stereo audio input from sound sources such as a CD-ROM, DVD-ROM, TV tuner card, or MPEG card.

Front Panel Audio Header
(9-pin HD_AUDIO1)
(see p.11, No. 24)



This is an interface for the front panel audio cable that allows convenient connection and control of audio devices.

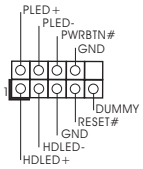
1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instruction in our manual and chassis manual to install your system.

2. If you use AC'97 audio panel, please install it to the front panel audio header as below:
   A. Connect Mic_IN (MIC) to MIC2_L.
   B. Connect Audio_R (RIN) to OUT2_R and Audio_L (LIN) to OUT2_L.
   C. Connect Ground (GND) to Ground (GND).
   D. MIC_RET and OUT_RET are for HD audio panel only. You don't need to connect them for AC'97 audio panel.
   E. Enter BIOS Setup Utility. Enter Advanced Settings, and then select Chipset Configuration. Set the Front Panel Control option from [Auto] to [Enabled].
   F. Enter Windows system. Click the icon on the lower right hand taskbar to enter Realtek HD Audio Manager. Click "Audio I/O", select "Connector Settings"  , choose "Disable front panel jack detection", and save the change by clicking "OK".

System Panel Header

(9-pin PANEL1)

(see p.11, No. 13)

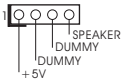


This header accommodates several system front panel functions.

Chassis Speaker Header

(4-pin SPEAKER 1)

(see p.11, No. 14)

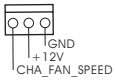


Please connect the chassis speaker to this header.

Chassis Fan Connector

(3-pin CHA_FAN1)

(see p.11, No. 15)

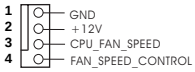


Please connect the chassis fan cable to this connector and match the black wire to the ground pin.

CPU Fan Connector

(4-pin CPU_FAN1)

(see p.11, No. 5)



Please connect the CPU fan cable to this connector and match the black wire to the ground pin.

Though this motherboard provides 4-Pin CPU fan (Quiet Fan) support, the 3-Pin CPU fan still can work successfully even without the fan speed control function. If you plan to connect the 3-Pin CPU fan to the CPU fan connector on this motherboard, please connect it to Pin 1-3.

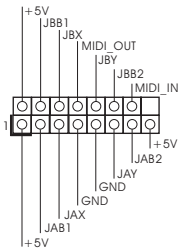
Pin 1-3 Connected

3-Pin Fan Installation

Game Connector

(15-pin GAME1)

(see p.11, No. 22)



Connect a Game cable to this connector if the Game port bracket is installed.

ATX Power Connector

(20-pin ATXPWR1)

(see p.11, No. 29)

Please connect an ATX power supply to this connector.

ATX 12V Connector

(4-pin ATX12V1)

(see p.11, No. 2)

Please note that it is necessary to connect a power supply with ATX 12V plug to this connector so that it can provides sufficient power. Failing to do so will cause the failure to power up.

HDMI_SPDIF Header

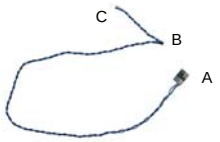
(3-pin HDMI_SPDIF1)

(see p.11 No. 23)

HDMI_SPDIF header, providing SPDIF audio output to HDMI VGA card, allows the system to connect HDMI Digital TV/ projector/LCD devices. Please connect the HDMI_SPDIF connector of HDMI VGA card to this header.

HDMI_SPDIF Cable

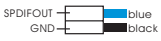
(Optional)



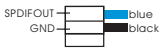
Please connect the black end (A) of HDMI_SPDIF cable to the HDMI_SPDIF header on the motherboard. Then connect the white end (B or C) of HDMI_SPDIF cable to the HDMI_SPDIF connector of HDMI VGA card.

A. black end

B. white end (2-pin)



C. white end (3-pin)



2.10 HDMI_SPDIF Header Connection Guide

HDMI (High-Definition Multi-media Interface) is an all-digital audio/video specification, which provides an interface between any compatible digital audio/video source, such as a set-top box, DVD player, A/V receiver and a compatible digital audio or video monitor, such as a digital television (DTV). A complete HDMI system requires a HDMI VGA card and a HDMI ready motherboard with a HDMI_SPDIF header. This motherboard is equipped with a HDMI_SPDIF header, which provides SPDIF audio output to HDMI VGA card, allows the system to connect HDMI Digital TV/projector/LCD devices. To use HDMI function on this motherboard, please carefully follow the below steps.

Step 1. Install the HDMI VGA card to the PCI Express Graphics slot on this motherboard. For the proper installation of HDMI VGA card, please refer to the installation guide on page 19.

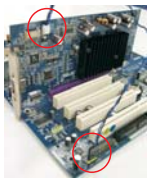
Step 2. Connect the black end (A) of HDMI_SPDIF cable to the HDMI_SPDIF header (HDMI_SPDIF1, yellow, see page 11, No. 23) on the motherboard.

Make sure to correctly connect the HDMI_SPDIF cable to the motherboard and the HDMI VGA card according to the same pin definition. For the pin definition of HDMI_SPDIF header and HDMI_SPDIF cable connectors, please refer to page 24. For the pin definition of HDMI_SPDIF connectors on HDMI VGA card, please refer to the user manual of HDMI VGA card vendor. Incorrect connection may cause permanent damage to this motherboard and the HDMI VGA card.

Step 3. Connect the white end (B or C) of HDMI_SPDIF cable to the HDMI_SPDIF connector of HDMI VGA card. (There are two white ends (2-pin and 3-pin) on HDMI_SPDIF cable. Please choose the appropriate white end according to the HDMI_SPDIF connector of the HDMI VGA card you install.

white end (2-pin) (B)

white end (3-pin) (C)



Please do not connect the white end of HDMI_SPDIF cable to the wrong connector of HDMI VGA card or other VGA card. Otherwise, the motherboard and the VGA card may be damaged. For example, this picture shows the wrong example of connecting HDMI_SPDIF cable to the fan connector of PCI Express VGA card. Please refer to the VGA card user manual for connector usage in advance.

Step 4. Connect the HDMI output connector on HDMI VGA card to HDMI device, such as HDTV. Please refer to the user manual of HDTV and HDMI VGA card vendor for detailed connection procedures.

Step 5. Install HDMI VGA card driver to your system.

2.11 Serial ATA (SATA) Hard Disks Installation

This motherboard adopts VIA® VT8237A southbridge chipset that supports Serial ATA (SATA) hard disks and RAID (RAID 0, RAID 1, and JBOD) functions. You may install SATA hard disks on this motherboard for internal storage devices. This section will guide you to install the SATA hard disks.

STEP 1: Install the SATA hard disks into the drive bays of your chassis.
STEP 2: Connect the SATA power cable to the SATA hard disk.
STEP 3: Connect one end of the SATA data cable to the motherboard's SATA connector.
STEP 4: Connect the other end of the SATA data cable to the SATA hard disk.

2.12 Hot Plug and Hot Swap Functions for SATA HDDs

4CoreDual-VSTA motherboard supports Hot Plug and Hot Swap functions for SATA Devices.

NOTE

What is Hot Plug Function?

If the SATA HDDs are NOT set for RAID configuration, it is called "Hot Plug" for the action to insert and remove the SATA HDDs while the system is still power-on and in working condition.
However, please note that it cannot perform Hot Plug if the OS has been installed into the SATA HDD.

What is Hot Swap Function?

If SATA HDDs are built as RAID1 then it is called "Hot Swap" for the action to insert and remove the SATA HDDs while the system is still power-on and in working condition.

2.13 Driver Installation Guide

To install the drivers to your system, please insert the support CD to your optical drive first. Then, the drivers compatible to your system can be auto-detected and listed on the support CD driver page. Please follow the order from up to bottom side to install those required drivers. Therefore, the drivers you install can work properly.

2.14 Installing Windows® 2000 / XP / XP 64-bit / Vista™ With RAID Functions

RAID functions are still not available for Windows® Vista™ users now. If you install Windows® Vista™ and want to use RAID functions, please visit our website for the updates of Windows® Vista™ driver and related information in the future.

If you want to install Windows® 2000 / Windows® XP / Windows® XP 64-bit OS on your SATA HDDs with RAID functions, please follow the below steps.

STEP 1: Set Up BIOS.

A. Enter BIOS SETUP UTILITY → Advanced screen → IDE Configuration.

B. Set the "SATA Operation Mode" option to [RAID].

STEP 2: Make a SATA Driver Diskette.

A. Insert the ASRock Support CD into your optical drive to boot your system.

B. During POST at the beginning of system boot-up, press <F11> key, and then a window for boot devices selection appears. Please select CD-ROM as the boot device.

C. When you see the message on the screen, "Generate Serial ATA driver diskette [YN]?", press <Y>.

D. Then you will see these messages,

Please insert a blank
formatted diskette into floppy
drive A:
press any key to start

Please insert a floppy diskette into the floppy drive, and press any key.

E. The system will start to format the floppy diskette and copy SATA drivers into the floppy diskette.

STEP 3: Use "RAID Installation Guide" to set RAID configuration.

Before you start to configure RAID function, you need to check the RAID installation guide in the Support CD for proper configuration. Please refer to the BIOS RAID installation guide part of the document in the following path in the Support CD: **.. \ RAID Installation Guide**

STEP 4: Install Windows® 2000 / Windows® XP / Windows® XP 64-bit OS on your system.

After step 1, 2, 3, you can start to install Windows® 2000 / Windows® XP / Windows® XP 64-bit OS on your system. At the beginning of Windows® setup, press F6 to install a third-party RAID driver. When prompted, insert the SATA driver diskette containing the VIA® RAID driver. After reading the floppy disk, the driver will be presented. Select the driver to install according to the OS you install.

1. If you install Windows® 2000 / Windows® XP / Windows® XP 64-bit on IDE HDDs and want to manage (create, convert, delete, or rebuild) RAID functions on SATA HDDs, please set the RAID configuration by using the Windows RAID installation guide part of the document in the following path in the Support CD:
   .. \ RAID Installation Guide
2. If you want to use "VIA RAID Tool" in Windows® environment, please install SATA drivers from the Support CD again so that "VIA RAID Tool" will be installed to your system as well.

2.15 Installing Windows® 2000 / XP / XP 64-bit / Vista™ Without RAID Functions

The installation procedures for Windows® Vista™ are subject to change. Please visit our website for the updates of Windows® Vista™ driver and related information in the future.

If you want to install Windows® 2000 / Windows® XP / Windows® XP 64-bit on your SATA HDDs without RAID functions or you want to install Windows® 2000 / Windows® XP / Windows® XP 64-bit on your IDE HDDs instead of SATA HDDs, please follow the below steps.

STEP 1: Set Up BIOS.

A. Enter BIOS SETUP UTILITY → Advanced screen → IDE Configuration.

B. Set the "SATA Operation Mode" option to [non-RAID].

STEP 2: Install Windows® 2000 / Windows® XP / Windows® XP 64-bit OS on your system.

After step 1, you can start to install Windows® 2000 / Windows® XP / Windows® XP 64-bit OS on your system.

If you don't want to set up RAID functions, there is no need to make a SATA driver diskette.

2.16 Untied Overclocking Technology

This motherboard supports Untied Overclocking Technology, which means during overclocking, FSB enjoys better margin due to fixed AGP / PCI / PCIE bus. You may set "CPU Host Frequency" option of BIOS setup to [Auto], which will show you the actual CPU host frequency in the following item. Therefore, CPU FSB is untied during overclocking, but AGP / PCI / PCIE bus is in the fixed mode so that FSB can operate under a more stable overclocking environment.

3. BIOS SETUP UTILITY

3.1 Introduction

This section explains how to use the BIOS SETUP UTILITY to configure your system. The Flash Memory on the motherboard stores the BIOS SETUP UTILITY. You may run the BIOS SETUP UTILITY when you start up the computer. Please press <F2> during the Power-On-Self-Test (POST) to enter the BIOS SETUP UTILITY, otherwise, POST will continue with its test routines.

If you wish to enter the BIOS SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

Because the BIOS software is constantly being updated, the following BIOS setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

3.1.1 BIOS Menu Bar

The top of the screen has a menu bar with the following selections:

Main	To set up the system time/date information
Advanced	To set up the advanced BIOS features
H/W Monitor	To display current hardware status
Boot	To set up the default system device to locate and load the Operating System
Security	To set up the security features
Exit	To exit the current screen or the BIOS SETUP UTILITY

Use <← > key or <→ > key to choose among the selections on the menu bar, and then press <Enter> to get into the sub screen.

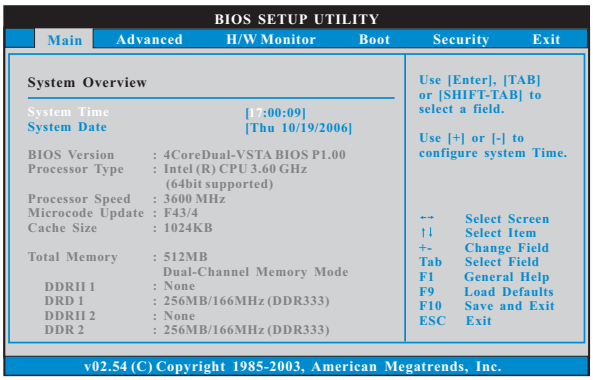
3.1.2 Navigation Keys

Please check the following table for the function description of each navigation key.

Navigation Key(s)	Function Description
←/ →	Moves cursor left or right to select Screens
↑ / ↓	Moves cursor up or down to select items
+ / -	To change option for the selected items
<Enter>	To bring up the selected screen
<F1>	To display the General Help Screen
<F9>	To load optimal default values for all the settings
<F10>	To save changes and exit the BIOS SETUP UTILITY
<ESC>	To jump to the Exit Screen or exit the current screen

3.2 Main Screen

When you enter the BIOS SETUP UTILITY, the Main screen will appear and display the system overview



System Time [Hour:Minute:Second]

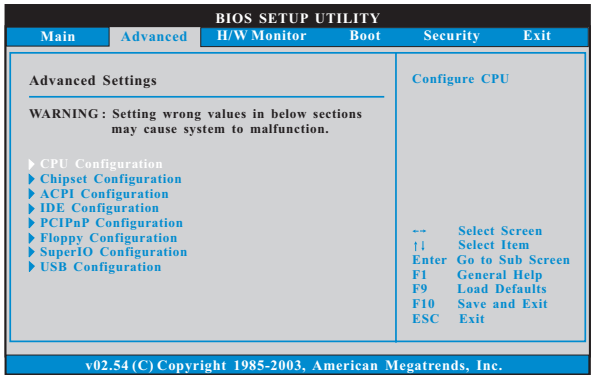
Use this item to specify the system time.

System Date [Day Month/Date/Year]

Use this item to specify the system date.

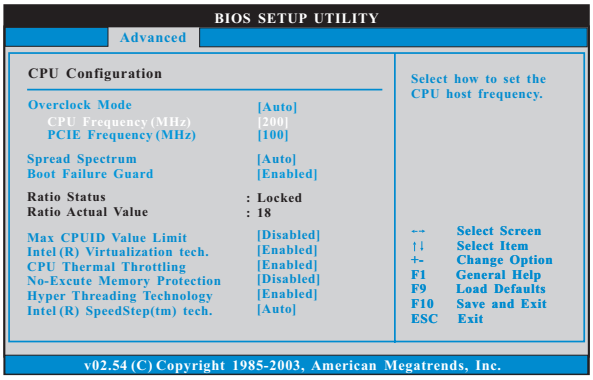
3.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, ACPI Configuration, IDE Configuration, PCIPnP Configuration, Floppy Configuration, SuperIO Configuration, and USB Configuration.



Setting wrong values in this section may cause the system to malfunction.

3.3.1 CPU Configuration



Overclock Mode

When [Auto] is selected, BIOS auto detects the present CPU host frequency of this motherboard. The actual CPU host frequency and PCIE frequency will show in the following items. When [CPU, PCIE, Sync.] is selected, you can set the CPU Frequency (MHz) and PCI Frequency item. When [CPU, PCIE, Async.] is selected, you can set the CPU Frequency (MHz), PCIE Frequency (MHz) and PCI Frequency item.

Spread Spectrum

Select [Auto] for the spread spectrum feature.

Boot Failure Guard

Enable or disable the feature of Boot Failure Guard.

Ratio Status

This is a read-only item, which displays whether the ratio status of this motherboard is “Locked” or “Unlocked”. If it shows “Unlocked”, you will find an item **Ratio Setting** appears to allow you changing the ratio value of this motherboard. If it shows “Locked”, then the item **Ratio Setting** will be hidden. If you use the ratio value to time the CPU frequency, it will be equal to the core speed of the installed processor.

Ratio Actual Value

This is a read-only item, which displays the ratio actual value of this motherboard.

Max CPUID Value Limit

For Prescott CPU only, some OSes (ex. NT4.0) cannot handle the function with disable. This should be enabled in order to boot legacy OSes that cannot support CPUs with extended CPUID functions.

Intel (R) Virtualization tech.

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by Vanderpool Technology. This option will be hidden if the installed CPU does not support Intel (R) Virtualization Technology.

CPU Thermal Throttling

You may select [Enabled] to enable P4 CPU internal thermal control mechanism to keep the CPU from overheated.

No-Excute Memory Protection

No-Execution (NX) Memory Protection Technology is an enhancement to the IA-32 Intel Architecture. An IA-32 processor with “No Execute (NX) Memory Protection” can prevent data pages from being used by malicious software to execute code. This option will be hidden if the current CPU does not support No-Excute Memory Protection.

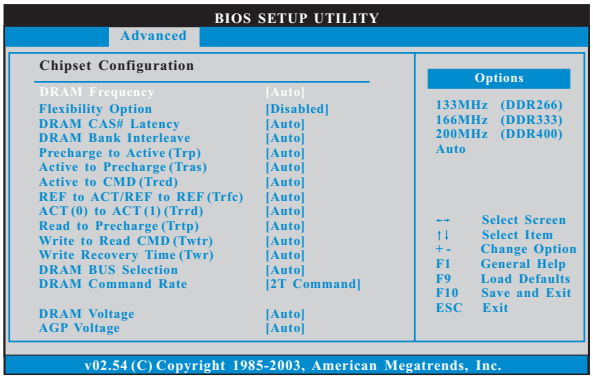
Hyper Threading Technology

To enable this feature, it requires a computer system with an Intel Pentium®4 processor that supports Hyper-Threading technology and an operating system that includes optimization for this technology, such as Microsoft® Windows® XP. Set to [Enabled] if using Microsoft® Windows® XP, or Linux kernel version 2.4.18 or higher. This option will be hidden if the installed CPU does not support Hyper-Threading technology.

Intel (R) SpeedStep(tm) tech.

Intel (R) SpeedStep(tm) tech. is Intel's new power saving technology. Processor can switch between multiple frequency and voltage points to enable power savings. If you select [Auto], you need to set the "Power Schemes" as "Portable/Laptop" to enable this function.

3.3.2 Chipset Configuration



DRAM Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assigns appropriate frequency automatically. You may also select other value as operating frequency: [133MHz (DDR 266)], [166MHz (DDR 333)], [200MHz (DDR 400)] for DDR; [266MHz (DDRII 533)], [333MHz (DDRII 667)] for DDRII.

Flexibility Option

The default value of this option is [Disabled]. It will allow better tolerance for memory compatibility when it is set to [Enabled].

DRAM CAS# Latency

Use this item to adjust the means of memory accessing. Configuration options: [Auto], [2.5], [2], and [3] for DDR; [Auto], [3], [4], [5] for DDRII.

DRAM Bank Interleave

Use this option to select DRAM Bank Interleave. Configuration options: [Auto], [Disabled], [2-Way], [4-Way], and [8-Way]. The default value is set to [Auto] to set the timing by dram SPD.

Precharge to Active (Trp)

Use this option to select Precharge to Active (Trp). Configuration options: [Auto], [2T], [3T], [4T], and [5T]. The default value is set to [Auto] to set the timing by dram SPD.

Active to Precharge (Tras)

Use this option to select Active to Precharge (Tras). Configuration options:

[Auto], [5T], [6T], [7T], [8T], [9T], [10T], [11T], [12T], [13T], [14T], [15T], [16T], [17T], [18T], [19T] and [20T]. The default value is set to [Auto] to set the timing by dram SPD.

Active to CMD (Trcd)

Use this option to select Active to CMD (Trcd). Configuration options: [Auto], [2T], [3T], [4T], and [5T]. The default value is set to [Auto] to set the timing by dram SPD.

REF to ACT / REF to REF (Trfc)

Use this option to select REF to ACT / REF to REF (Trfc). Configuration options: [Auto], [8T] to [71T]. The default value is set to [Auto] to set the timing by dram SPD.

ACT(0) to ACT (1) (Trrd)

Use this option to select ACT(0) to ACT (1) (Trrd). Configuration options: [Auto], [2T], [3T], [4T], and [5T]. The default value is set to [Auto] to set the timing by dram SPD.

Read to Precharge (Trtp)

Use this option to select Read to Precharge (Trtp). Configuration options: [Auto], [2T], [3T]. The default value is set to [Auto] to set the timing by dram SPD.

Write to Read CMD (Twtr)

Use this option to select Write to Read CMD (Twtr). Configuration options: [Auto], [1T], [2T] for DDRI; [Auto], [2T], [3T] for DDRII. The default value is set to [Auto] to set the timing by dram SPD.

Write Recovery Time (Twr)

Use this option to select Write Recovery Time (Twr). Configuration options: [Auto], [2T], [3T], [4T], and [5T]. The default value is set to [Auto] to set the timing by dram SPD.

DRAM Bus Selection

The default value is [Auto], which will automatically select the proper access mode for the system. You may select between [Single Channel] and [Dual Channel] if you have properly set the dual channel memory configuration.

DRAM Command Rate

Use this to select among [2T Command] and [1T Command] for DRAM Command Rate. The default value is [2T Command].

DRAM Voltage

Use this to select among [Auto], [High], [Normal] and [Low] for DRAM Voltage. The default value is [Auto].

AGP Voltage

Use this to select among [Auto], [Normal] and [High] for AGP Voltage. The default value is [Auto].

Primary Graphics Adapter

This allows you to select [PCI], [AGP], or [PCI Express Gfx.] as the primary graphics adapter. The default vaule is [PCI].

AGP Mode

The default value of this feature is set to [Auto]. If you install an 8X-AGP card on this motherboard, you may select [Auto], [8X] or [4X] as the AGP mode. If the installed AGP card is a 4X-AGP card, then you may set the AGP mode as [Auto], [4X], [2X], or [1X].

AGP Fast Write

This allows you to enable or disable the feature of AGP fast write protocol support.

AGP Aperture Size

It refers to a section of the PCI memory address range used for graphics memory. It is recommended to leave this field at the default value unless the installed AGP card's specifications requires other sizes.

AGP Straggered Delay

Use this option to select AGP straggered delay. Configuration options: [Auto], [None], [Delay 1ns]. The default value is [Auto].

AGP GADSTB Output Delay

Use this option to select AGP GASSTB output delay. Configuration options: [Auto], [None], [Delay 150 psec], [Delay 300 psec], and [Delay 450 psec]. The default value is [Auto].

V-Link Speed

This allows you to set the North Bridge and South Bridge V-Link Speed of VIA chipset. configuration options: [Normal], [Fast]. The default value is [Normal].

PCI Delay Transaction

Enable PCI Delay Transaction feature will free the PCI Bus when the CPU is accessing 8-bit ISA cards. Disable this feature when using ISA cards that are not PCI 2.1 compliant.

IDE Drive Strength

This allows you to set the drive strength of the onboard IDE controller. Configuration options: [Lowset], [Low], [Normal], and [Highest]. The default value is [Low].

PCIE Downstream Pipeline

This allows you to enable or disable the feature of PCIE Downstream Pipeline. The default value is [Auto].

OnBoard LAN

This allows you to enable or disable the onboard LAN feature.

OnBoard HD Audio

Select [Auto], [Enabled] or [Disabled] for the onboard HD Audio feature. If you select [Auto], the onboard HD Audio will be disabled when PCI Sound

Card is plugged.

Front Panel Control

Select [Auto], [Enabled] or [Disabled] for the onboard HD Audio Front Panel.

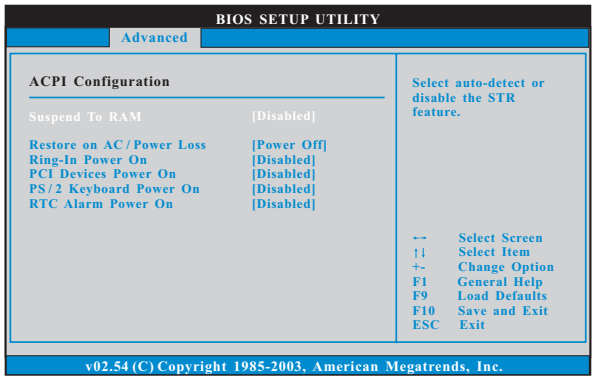
CD-In

Use this item to enable or disable CD-In of OnBoard HD Audio.

Bus No.

Use this item to select OnBoard HD Audio's PCI Bus number. Configuration options: [02h], [80h]. The default value is [80h]. If you want to test HCT under Windows® XP, please set this item to [02h].

3.3.3 ACPI Configuration



Suspend to RAM

This field allows you to select whether to auto-detect or disable the Sus pend-to-RAM feature. Select [Auto] will enable this feature if the system supports it.

Restore on AC/Power Loss

This allows you to set the power state after an unexpected AC/ Power loss. If [Power Off] is selected, the AC/Power remains off when the power recovers. If [Power On] is selected, the AC/Power resumes and the system starts to boot up when the power recovers.

Ring-In Power On

Use this item to enable or disable Ring-In signals to turn on the system from the power-soft-off mode.

PCI Devices Power On

Use this item to enable or disable PCI devices to turn on the system from the power-soft-off mode.

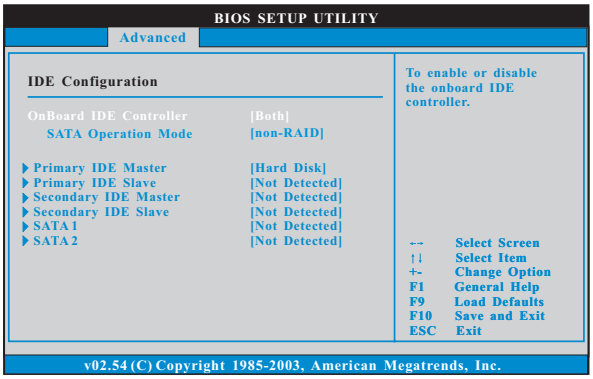
PS/2 Keyboard Power On

Use this item to enable or disable PS/2 keyboard to turn on the system from the power-soft-off mode.

RTC Alarm Power On

Use this item to enable or disable RTC (Real Time Clock) to power on the system.

3.3.4 IDE Configuration



OnBoard IDE Controller

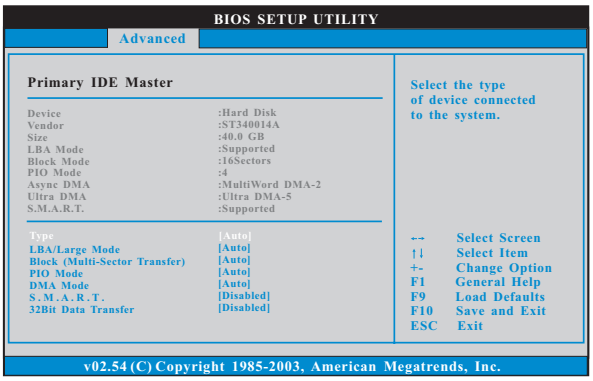
Use this item to enable or disable the onboard IDE controller.

SATA Operation Mode

Use this item to adjust SATA Operation Mode. The default value of this option is [non-RAID]. If you want to operate RAID function on SATA HDDs, please select [RAID].

IDE Device Configuration

You may set the IDE configuration for the device that you specify. We will use the “Primary IDE Master” as the example in the following instruction, which can be applied to the configurations of “Primary IDE Slave”, “Secondary IDE Master”, and “Secondary IDE Slave” as well.



TYPE

Use this item to configure the type of the IDE device that you specify. Configuration options: [Not Installed], [Auto], [CD/DVD], and [ARMD].

[Not Installed]: Select [Not Installed] to disable the use of IDE device.

[Auto]: Select [Auto] to automatically detect the hard disk drive.

After selecting the hard disk information into BIOS, use a disk utility, such as FDISK, to partition and format the new IDE hard disk drives. This is necessary so that you can write or read data from the hard disk. Make sure to set the partition of the Primary IDE hard disk drives to active.

[CD/DVD]: This is used for IDE CD/DVD drives.

[ARMD]: This is used for IDE ARMD (ATAPI Removable Media Device), such as MO.

LBA/Large Mode

Use this item to select the LBA/Large mode for a hard disk > 512 MB under DOS and Windows; for Netware and UNIX user, select [Disabled] to disable the LBA/Large mode.

Block (Multi-Sector Transfer)

The default value of this item is [Auto]. If this feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer.

PIO Mode

Use this item to set the PIO mode to enhance hard disk performance by optimizing the hard disk timing.

DMA Mode

DMA capability allows the improved transfer-speed and data-integrity for compatible IDE devices.

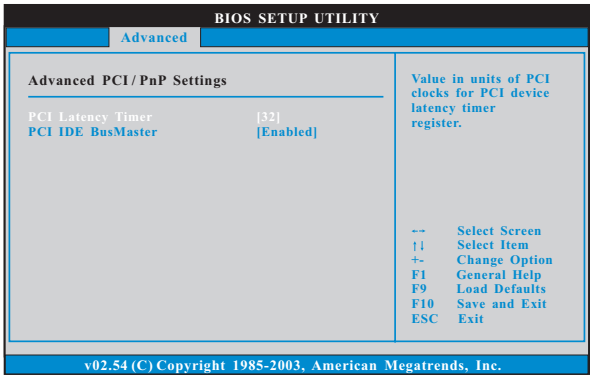
S.M.A.R.T.

Use this item to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) feature. Configuration options: [Disabled], [Auto], [Enabled].

32-Bit Data Transfer

Use this item to enable 32-bit access to maximize the IDE hard disk data transfer rate.

3.3.5 PCIPnP Configuration



PCI Latency Timer

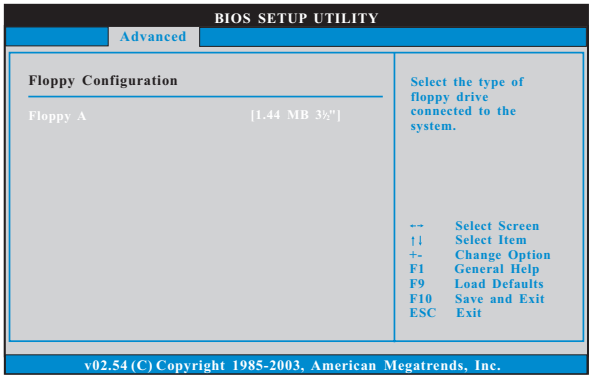
The default value is 32. It is recommended to keep the default value unless the installed PCI expansion cards' specifications require other settings.

PCI IDE BusMaster

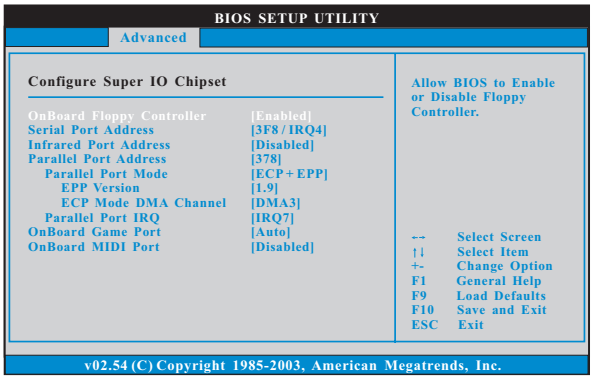
Use this item to enable or disable the PCI IDE BusMaster feature.

3.3.6 Floppy Configuration

In this section, you may configure the type of your floppy drive.



3.3.7 Super IO Configuration



OnBoard Floppy Controller

Use this item to enable or disable floppy drive controller.

Serial Port Address

Use this item to set the address for the onboard serial port or disable it. Configuration options: [Disabled], [3F8 / IRQ4], [2F8 / IRQ3], [3E8 / IRQ4], [2E8 / IRQ3].

Infrared Port Address

Use this item to set the address for the onboard infrared port or disable it. Configuration options: [Disabled], [2F8 / IRQ3], and [2E8 / IRQ3].

Parallel Port Address

Use this item to set the address for the onboard parallel port or disable it. Configuration options: [Disabled], [378], and [278].

Parallel Port Mode

Use this item to set the operation mode of the parallel port. The default value is [ECP+EPP]. If this option is set to [ECP+EPP], it will show the EPP version in the following item, "EPP Version". Configuration options: [Normal], [Bi-Directional], and [ECP+EPP].

EPP Version

Use this item to set the EPP version. Configuration options: [1.9] and [1.7].

ECP Mode DMA Channel

Use this item to set the ECP mode DMA channel. Configuration options: [DMA0], [DMA1], and [DMA3].

Parallel Port IRQ

Use this item to set the IRQ for the parallel port. Configuration options: [IRQ5] and [IRQ7].

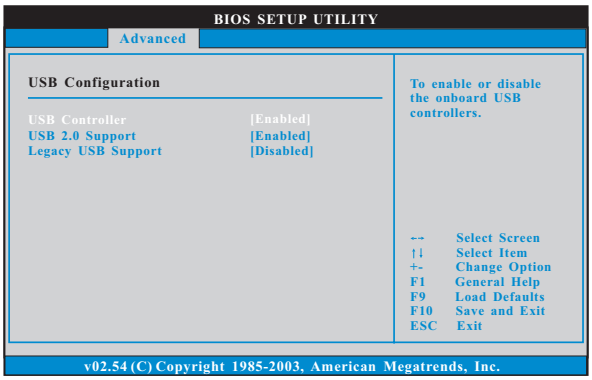
OnBoard Game Port

Use this item to enable the Game Port or disable it. The default value is [Auto].

OnBoard MIDI Port

Use this itme to select the address for the MIDI Port or disable it. Configuration options: [Disabled], [300], and [330].

3.3.8 USB Configuration



USB Controller

Use this item to enable or disable the use of USB controller.

USB 2.0 Support

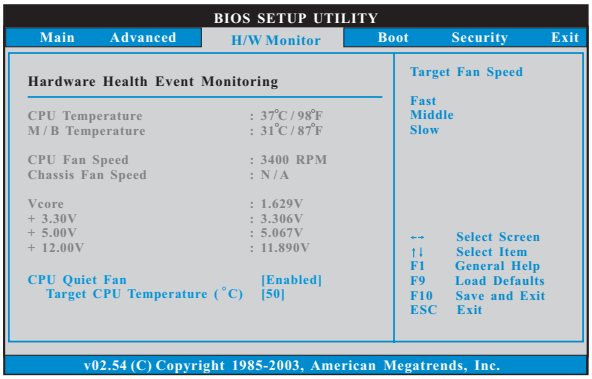
Use this item to enable or disable the USB 2.0 support.

Legacy USB Support

Use this item to enable or disable the support to emulate legacy I/O devices such as mouse, keyboard,... etc. Or you may select [Auto] so that the system will start to auto-detect; if there is no USB device connected, "Auto" option will disable the legacy USB support.

3.4 Hardware Health Event Monitoring Screen

In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.



CPU Quiet Fan

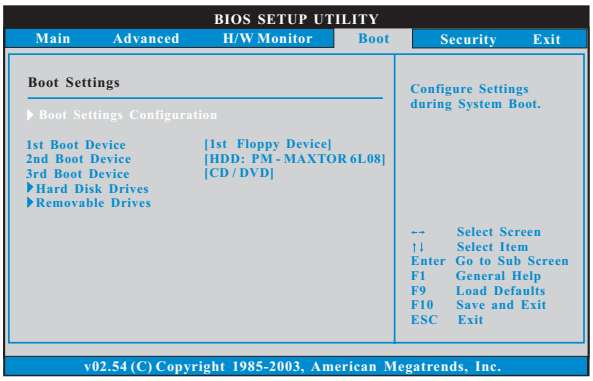
This item allows you to identify the temperature of CPU fan. If you set this option as [Disabled], the CPU fan will operate in full speed. If you set this option as [Enabled], you will find the item "Target CPU Temperature (°C)" appear to allow you adjusting it. The default value is [Disabled]. You are allowed to enable this function only when you install 4-pin CPU fan.

Target CPU Temperature (°C)

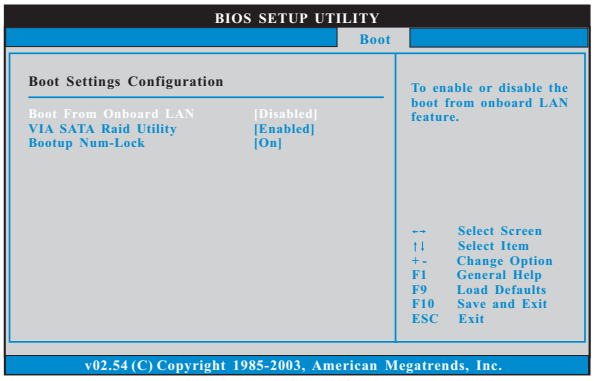
The target temperature will be between 45°C and 65°C. The default value is [50].

3.5 Boot Screen

In this section, it will display the available devices on your system for you to configure the boot settings and the boot priority.



3.5.1 Boot Settings Configuration



Boot From Onboard LAN

Use this item to enable or disable the Boot From Onboard LAN feature.

VIA SATA Raid Utility

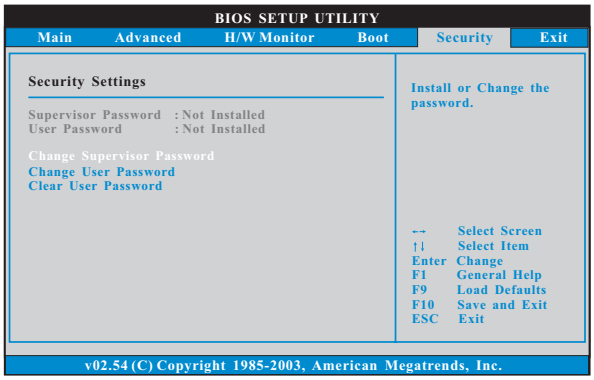
Use this to enable or disable VIA® VT8237A SATA Raid BIOS Utility during POST.

Boot Up Num-Lock

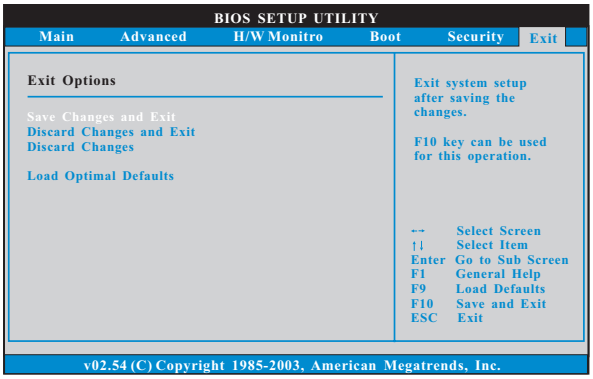
If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

3.6 Security Screen

In this section, you may set or change the supervisor/user password for the system. For the user password, you may also clear it.



3.7 Exit Screen



Save Changes and Exit

When you select this option, it will pop-out the following message, "Save configuration changes and exit setup?" Select [OK] to save the changes and exit the BIOS SETUP UTILITY.

Discard Changes and Exit

When you select this option, it will pop-out the following message, "Discard changes and exit setup?" Select [OK] to exit the BIOS SETUP UTILITY without saving any changes.

Discard Changes

When you select this option, it will pop-out the following message, "Discard changes?" Select [OK] to discard all changes.

Load Optimal Defaults

When you select this option, it will pop-out the following message, "Load optimal defaults?" Select [OK] to load the default values for all the setup configurations.

Chapter 4 Software Support

4.1 Install Operating System

This motherboard supports various Microsoft® Windows® operating systems: 2000 / XP / XP 64-bit / Vista™ / Vista™ 64-bit. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer to your OS documentation for more information.

4.2 Support CD Information

The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard features.

4.2.1 Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu did not appear automatically, locate and double click on the file "ASSETUP.EXE" from the BIN folder in the Support CD to display the menus.

4.2.2 Drivers Menu

The Drivers Menu shows the available devices drivers if the system detects installed devices. Please install the necessary drivers to activate the devices.

4.2.3 Utilities Menu

The Utilities Menu shows the applications software that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

4.2.4 "LGA 775 CPU Installation Live Demo" Program

This motherboard is equipped with Intel LGA 775 socket, which is a new CPU socket interface that Intel has released. Since it has several tiny pins, whcih are easily to be damaged by improper handling, ASRock sincerely presents you a clear installation guide through this "LGA 775 CPU Installation Live Demo". We hope you may check this live demo program before you start the installation of LGA 775 CPU in order to reduce the risks of CPU and motherboard damages caused by any improper handling. To see this Live Demo, you can run Microsoft® Media Player® to play the file. You may find this Live Demo in the motherboard's Support CD through the following path:

..\ Live Demo \ PC DIY \ LGA775INST_English.dat

4.2.5 Contact Information

If you need to contact ASRock or want to know more about ASRock, welcome to visit ASRock's website at http://www.asrock.com; or you may contact your dealer for further information.

VIA RAID Installation Guide

1 VIA BIOS RAID Installation Guide

You are allowed to configure RAID functions under BIOS environment.

1.1 Introduction of RAID

VIA VT8237A south bridge chipset integrates RAID controller supporting RAID 0, RAID 1, and JBOD functions with two independent SATA channels. This section will introduce the basic knowledge of RAID.

RAID

The term “RAID” stands for “Redundant Array of Independent Disks”, which is a method combining two or more hard disk drives into one logical unit. For optimal performance, please install identical drives of the same model and capacity when creating a RAID set.

RAID 0 (Data Striping)

RAID 0 is called data striping that optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. It will improve data access and storage since it will double the data transfer rate of a single disk alone while the two hard disks perform the same work as a single drive but at a sustained data transfer rate.

WARNING!

Although RAID 0 function can improve the access performance, it does not provide any fault tolerance. Hot-Plug any HDDs of the RAID 0 Disk will cause data damage or data loss.

RAID 1 (Data Mirroring)

RAID 1 is called data mirroring that copies and maintains an identical image of data from one drive to a second drive. It provides data protection and increases fault tolerance to the entire system since the disk array management software will direct all applications to the surviving drive as it contains a complete copy of the data in the other drive if one drive fails.

JBOD (Spanning)

A spanning disk array is equal to the sum of all drives. Spanning stores data onto a drive until it is full then proceeds to store files onto the next drive in the array. When any member disk fails, it will affect the entire array. JBOD is not really a RAID, and it does not support fault tolerance.

1. 2 RAID Configurations Precautions

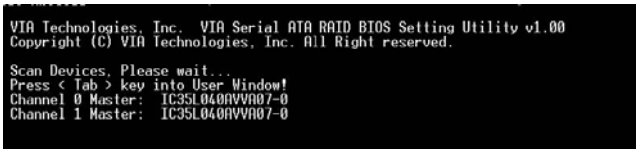
Please use two new drives if you are creating a RAID 0 (striping) array for performance. It is recommended to use two SATA drives of the same size. If you use two drives of different sizes, the smaller capacity hard disk will be the base storage size for each drive. For example, if one hard disk has an 80GB storage capacity and the other hard disk has 60GB, the maximum storage capacity for the 80GB-drive becomes 60GB, and the total storage capacity for this RAID 0 set is 120GB.

1. You may use two new drives, or use an existing drive and a new drive to create a RAID 1 (mirroring) array for data protection (the new drive must be of the same size or larger than the existing drive). If you use two drives of different sizes, the smaller capacity hard disk will be the base storage size. For example, if one hard disk has an 80GB storage capacity and the other hard disk has 60GB, the maximum storage capacity for the RAID 1 set is 60GB.
2. Please verify the status of your hard disks before you set up your new RAID array.

1.3 BIOS Configuration Utility

1.3.1 Enter BIOS Configuration Utility

After the system powers on, the following information will appear on the screen. Press 'Tab' key to enter BIOS configuration utility.



The main interface of BIOS configuration utility is as below:

1.3.2 Create Disk Array

1. Within the main interface, use the up and down arrow key to highlight the Create Array command and press <Enter> to call out the list of creation steps.
2. Highlight the Array Mode and press <Enter>, then a list of array modes will appear. Just highlight the target array mode that you want to create, and press <Enter> to confirm the selection.

3. There are two methods to create a disk array. One method is “Auto Setup”, and another is “Select Disk Drives”. Select “Auto Setup” to allow BIOS to select the disk drives and create array automatically. Select “Select Disk Drives” to let user select the array drives manually. When using Select Disk Drives method, the channel column will be activated. Just highlight the target drives that you want to use and press <Enter> to select them respectively. When all drives have been selected, press <Esc> to go back to the creation steps menu.

Create RAID 0

If RAID 0 array is selected in step 2, user can also select a block size for the array. Use the arrow key to highlight the “Block Size” and press <Enter>. Then the list of available block size will popup. The block size can be selected from 4K to 64K Bytes.

Use the arrow key to highlight the Start Create Process and press <Enter>, then a warning message will appear. Press Y to finish the creation, or press N to cancel the creation. Please note that the content of the hard drive will be destroyed after array creation.

Create RAID 1

The data on disk drives will be destroyed if user uses “Auto Setup” to create RAID 1. But you can reserve the data on source drive if you use “Select Disk Drives” to select the source and the mirror drive.

Press “y” to copy data of source to mirror drive. There is a limitation when using this feature. The capacity of mirror drive must be greater or equal to the source drive; otherwise the RAID 1 can’t be created and a error message will appear: “Error: mirror’s size is smaller than source!!! Press ESC return”. If user does not want to duplicate data, the data on the source and the mirror drive will be destroyed.

Create JBOD

The data on disk drives will be destroyed if user uses “Auto Setup” to create a JBOD. However, you can reserve the data on the first disk drive of a JBOD array if you use “Select Disk Drives” to select disk drives

The data on the first disk drive will be reserved and the other disk drives in JBOD will be expanded behind the first disk drive and become free space. Expand Span (JBOD) Array function is not available if VT8237A only supports 2 SATA ports.

1.3.3 Delete Disk Array

User can delete a specific RAID that has been created. Following are the steps to delete a created disk array.

1. Use arrow key to highlight Delete Array item in main menu interface, and press <Enter>. The channel column will be activated.
2. Use arrow key to highlight the target disk drive and press <Enter>. A warning message will appear. Press Y to delete a specific array or press N to cancel.

Delete a disk array will destroy all the data on the disk array except RAID 1. When a RAID 1 is deleted, the data on these two hard disk drives will be reserved and become two normal disks.

1.3.4 Select Boot Array

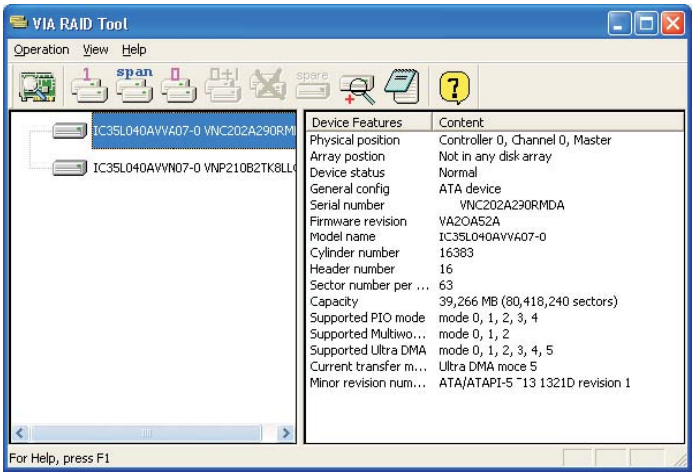
User can select a disk array as boot device if user wants to boot operating system from an array. Boot disk array may not be selected if user does not boot the Operating System from the disk array. Use the arrow key to highlight the “Select Boot Disk” item then press <Enter>. The channel column will be activated. Just use arrow key to highlight the target disk array then press <Enter>. If you select a disk array that has a boot mark and press <Enter>, then its boot setting will be canceled.

2 VIA Windows RAID Installation Guide

You are allowed to configure RAID functions under Windows environment. The “RAID Software” is a Windows-based software utility with graphical user interface and provides user an easy-operation tool to configure and manage disk drives or disk arrays connected to VT8237 SATA controller.

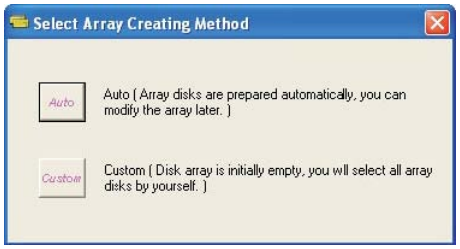
After GUI software is installed, it will automatically start every time when your Windows OS is started. An icon  will appear in the system tray of the tool bar to indicate that GUI software is currently running.

Just double click on the small icon to call out the main interface of the software.



2.1 Create Disk Array

1. You may click on one of the three buttons to create different types of disk array–  RAID 1,  Span, and  RAID 0. Then a "Select Array Creating Method" will be prompted.



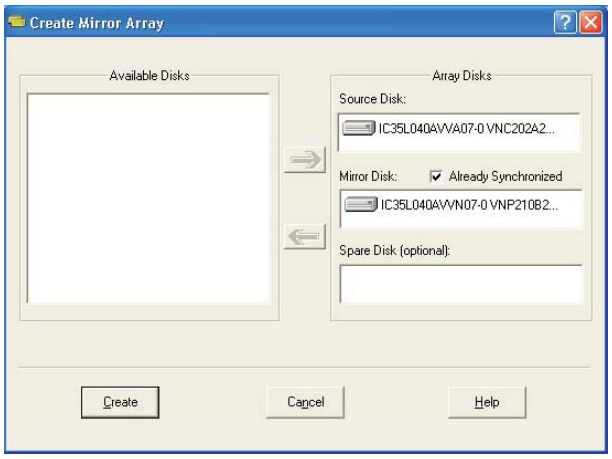
Auto:

The software will configure the available hard disk drives to be a disk array. User can modify the hard disk drives later. It is strongly recommended to use this method.

Custom:

Disk array is arranged by user.

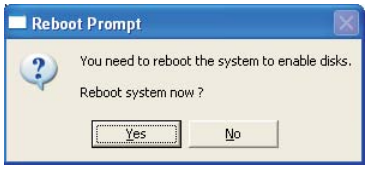
2. Click "Auto" button. The "Creating Array" window will pop up. If you select "Custom", the "Available Disks" window will list the available disk drives for array-creating. Select a disk drive and click right arrow button to add the specific disk drive to array. After adding a disk drive, user can also remove the selected disk drive from array. Click the disk drive in "Array Disks" windows, then click left arrow button to remove the selected disk drive.



Press "Create" button to create or "Cancel" button to cancel it.

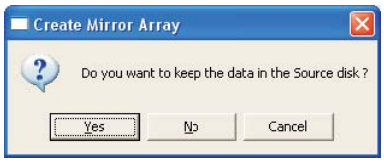
After you pressed the "Create" button, a warning message will pop up. Click "Yes" to finish the creation of disk array, or "No" to cancel.

3. A message box will pop up to prompt user that the disk array has been created successfully and ask user whether to restart the computer. Click “Yes” to restart the computer or click “No” to skip restarting. New disk array setting will take effect only after restarting.



Create RAID 1

You can reserve the data on the source drive after clicking “Create” button when you create a RAID 1 array.

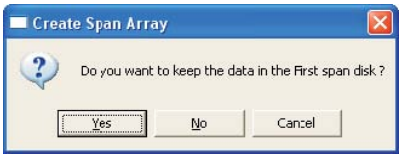


There is a limitation if user wants to keep the data on the source drive the capacity of the mirror drive must be greater or equal to the source drive, otherwise the RAID 1 can’t be created.

If user wants to keep data in the source drive, RAID tool will ask user to synchronize the mirror drive after the system’s rebooting.

Create JBOD

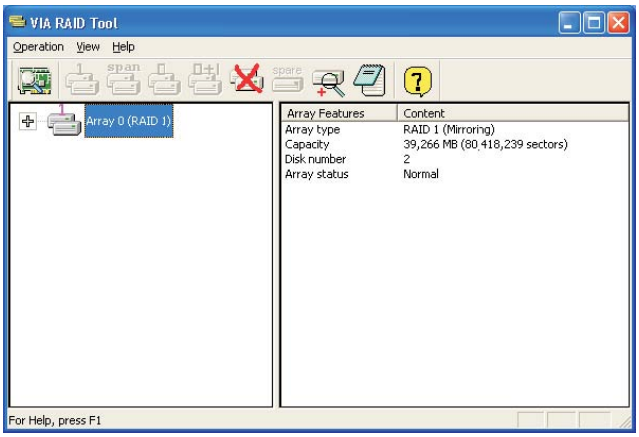
The data in the first disk drive of JBOD array can be reserved when a JBOD array is created.



The data on the first disk drive will be reserved and the other disk drives in JBOD will be expanded behind the first disk drive and become free space.

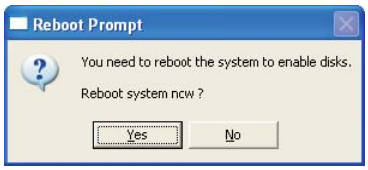
2.2 Delete Disk Array

1. Select the disk array that you want to delete from the left  window. Click “Remove Array” button , then a warning message will pop up.



2. Click “Yes” to delete the specific disk array or click “No” to cancel.

3. A message box will pop up to prompt user that the disk array has been deleted successfully and ask user whether to restart the computer. Click “Yes” to restart the computer or click “No” to skip the restarting. New setting will take effect only after restarting.



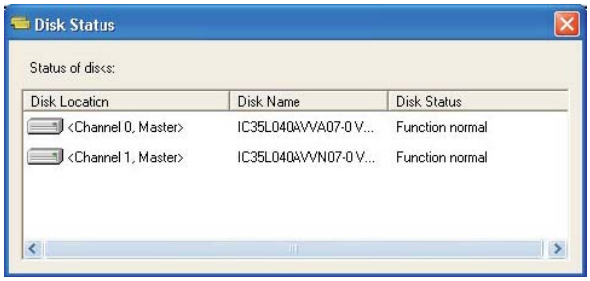
Warning:

Deleting a disk array will destroy all the data on the disk array except RAID 1. When a RAID is deleted, the data on these two hard disk drives will be reserved.

2.3 Check All Disks

You can check if all the disk drives work normally by clicking button. After you complete the checking, a dialog window will pop up to show each disk’s current status as following picture.

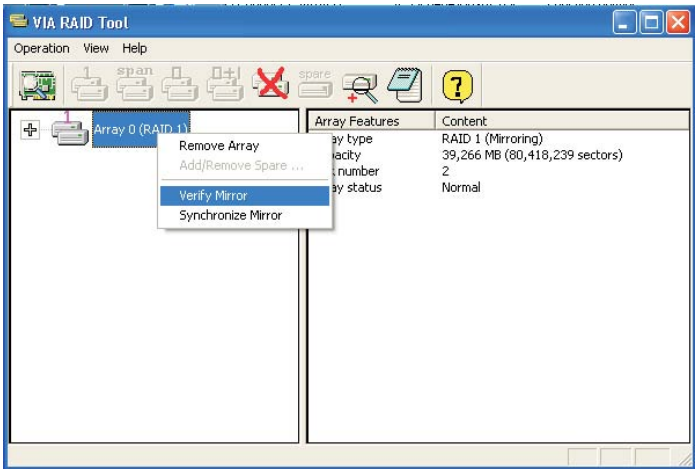
Your hard disk drive must be compatible with ATA/ATAPI-5 specifications and support SMART commands; otherwise the checking will fail.



2.4 Verify Mirror Disk

Data on the mirror disk must be the same as its corresponding source disk to provide fault tolerance for RAID 1.

1. Select a RAID 1. Right-click the selected RAID, and then a shortcut menu will appear. Click “Verify Mirror” to verify whether the source and the mirror disks are identical.



2. After executing “verify mirror” command, a dialog will show the verifying process. You can pause or cancel this process at any time. The process may take a long time if the capacity of RAID is large.

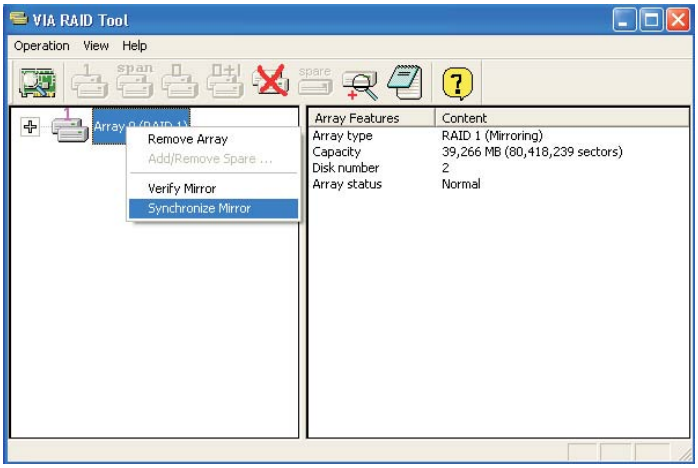
3 When the mirror disk is not identical with the corresponding source disk, the mirror disk will be marked with a “need-sync” icon:  . A

"need-sync" mirror disk should be synchronized as soon as possible.

2.5 Synchronize Mirror Disk

For RAID 1, it must be synchronized when data on the mirror disk is not identical with its corresponding source disk. Sometimes the data on the mirror disk may be newer than the source disk. For example, the source disk is absent and the mirror disk runs in the tolerance mode. So the exact meaning of "Synchronize Mirror" is to keep the data on a pair of the source and the mirror disks identical. RAID software always marks the mirror disk with a "need-sync" icon  even though the mirror disk may have the correct data.

1. Select RAID 1. Right-click the selected RAID, then a shortcut menu will appear. Click "Synchronize Mirror" to synchronize the source and the mirror disks.



2. When synchronization starts, a dialog will show the process. You can pause or cancel this process at any time.

3. A message will pop up when synchronization is finished.

2.6 Disk Error Detection

RAID will pop up an error message when the failure or absence of a disk drive is detected.

2.7 Duplicate Critical RAID 1 Array

If, during the system-booting, the software detects the inconsistence between the source and the mirror disks of RAID 1, the disk array will be marked as critical status, and the software will automatically prompt user to duplicate the RAID 1 to make the mirror disk consist with the corresponding source disk again.

You may click “Yes” to synchronize now or click “No” to synchronize later.

When the synchronization starts, a dialog will show the process. You can pause or cancel this process at any time. If you cancel the synchronization process, the RAID is on “need-sync” condition. You should synchronize again to guarantee the data are identical between the source and the mirror disk drives. A message will pop up when synchronization is finished.

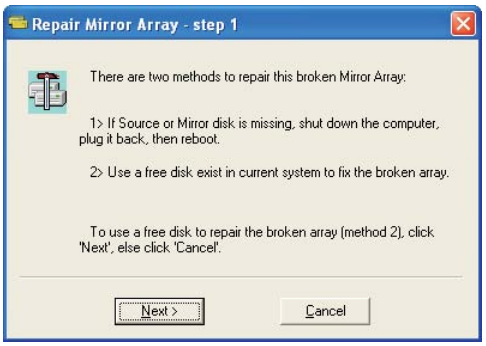
2.8 Rebuild Broken RAID 1 array

If, during the system-booting, the failure or absence of any member disk of RAID is detected, the array will be marked as broken status. If broken

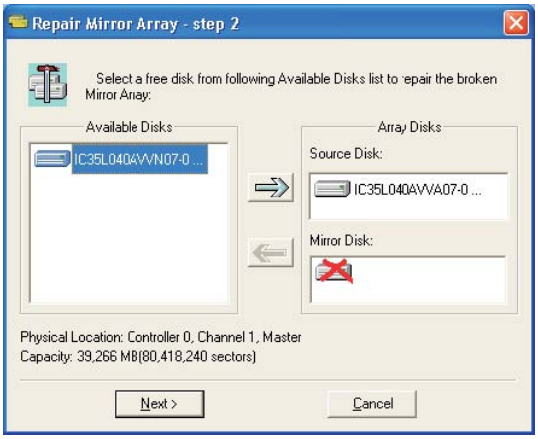
RAID 1 array is detected by the RAID software, it will indicate a serial steps to repair this problem.

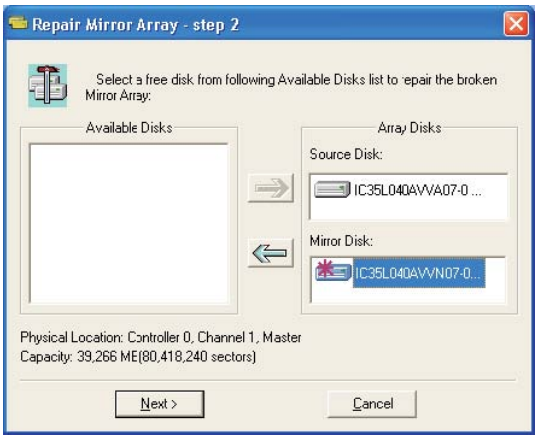
1. A dialog box will pop up to indicate the RAID is broken. Click Yes.

2. Then another dialog box will pop up. If the source or the mirror disk drive is unplugged only, click “Cancel” to stop rebuilding step. Shut down the system. Plug the absent disk drive, and then reboot the system. If the original disk drive is broken-down, you may plug a new disk drive then reboot the system. Click “Next” to the next step.



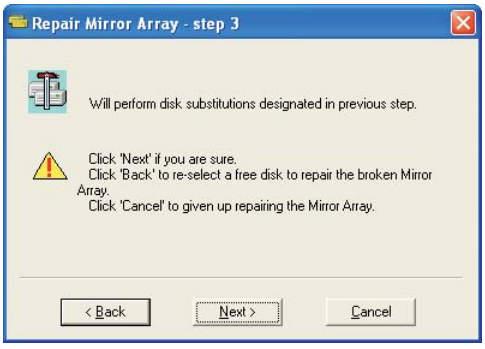
3. Select a disk drive from “Available Disks” and click  button to replace the broken-down one, and then click “Next”.





4. A warning message will pop up. If you want to rebuild the RAID by using the disk drive that you selected in the previous step, click “Next”.

   Warning: The data on the selected disk drive will be lost.



5. Reboot the system.

6. This RAID is marked as a critical RAID. The RAID software will do the “Duplicating Critical RAID 1” process.

AGP Slot and PCI Express Graphics Slot (PCI Express x 4) Installation Guide (for Windows XP)

This installation guide will lead you to install AGP VGA card into AGP slot and PCI Express VGA card into PCI Express Graphics slot (PCI Express x 4) properly. Please carefully follow the procedures below according to the current condition of your PC system.

Demo VGA card devices:
1. WinFast A340TDH + ASUS-EN5750

STEP1: Install the AGP card into the AGP slot. Please follow the procedures below

If you want to install more than one graphics cards to this motherboard, please follow the priority: AGP VGA card, PCI Express card ,and then PCI card. Please do not install more than one graphics cards at the same time!

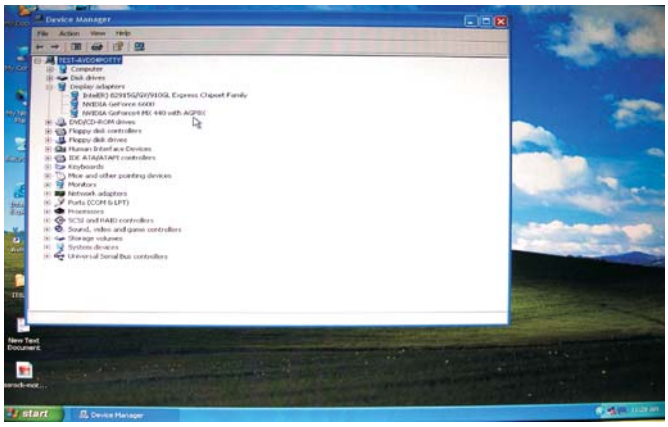
1. Before installing the expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.
2. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.
3. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
4. Fasten the card to the chassis with screws.

If you want to install more than one graphics cards to this motherboard, please make sure that the AGP heatsink is not too thick to collide with PCI Express card.

STEP2: Install the OS (Operating System) and drivers ofthis motherboard

STEP3: Install the AGP VGA card drivers

Install the drives and any related software which are provided by the graphics card vender. Please make sure the drivers are successfully installed to your computer.



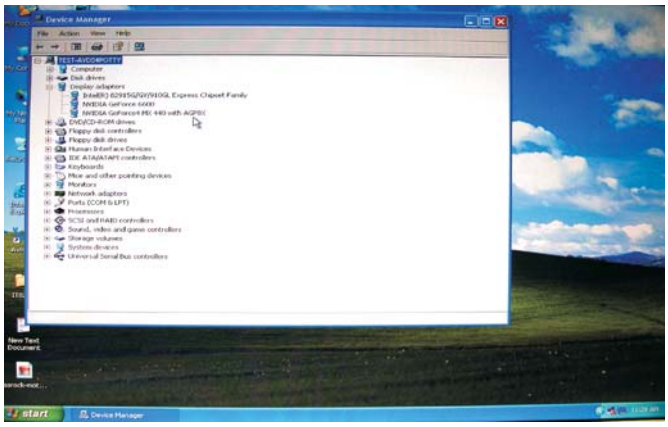
STEP4: Restart your computer

STEP5: Install the PCI Express VGA card into the PCI Express Graphics slot (PCI Express x 4), please follow the instructions below

1. Before installing the expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.
2. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.
3. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
4. Fasten the card to the chassis with screws.

STEP6: Install the PCI Express VGA card drivers

Install the drives and any related software which are provided by the graphics card vender. Please make sure the drivers are successfully installed to your computer.



STEP7: Restart your computer

STEP8: Set up a multi-monitor display

Right click the desktop, choose “Properties”, and select the “Settings” tab so that you can adjust the parameters of the multi-monitor according to the steps below.

1. Click the “Identify” button to display a large number on each monitor.
2. Right-click the display icon in the Display Properties dialog that you wish to be your primary monitor, and then select “Primary”. When you use multiple monitors with your card, one monitor will always be Primary, and all additional monitors will be designated as Secondary.

3. Select the display icon identified by the number 2.
4. Click “Extend my Windows desktop onto this monitor”.
5. Right-click the display icon and select “Attached”, if necessary.
6. Set the “Screen Resolution” and “Color Quality” as appropriate for the second monitor. Click “Apply” or “OK” to apply these new values.
7. Repeat steps 3 through 5 for the diaplay icon identified by the number three, and four.

STEP9: Use Surround Display

Click and drag the display icons to positions representing the physical setup of your monitors that you wwould like to use. The placement of display icons determines how you move items from one monitor to another.

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