AM2V890-VSTA

User Manual

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

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1. Introduction

Thank you for purchasing ASRock ***AM2V890-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

1 x ASRock ***AM2V890-VSTA*** Motherboard
(ATX Form Factor: 12.0-in x 8.0-in, 30.5 cm x 20.3 cm)
1 x ASRock ***AM2V890-VSTA*** Quick Installation Guide
1 x ASRock ***AM2V890-VSTA*** Support CD
1 x Ultra ATA 66/100/133 IDE Ribbon Cable (80-conductor)
1 x 3.5-in Floppy Drive Ribbon Cable
1 x Serial ATA (SATA) Data Cable (Optional)
1 x Serial ATA (SATA) HDD Power Cable (Optional)
1 x HDMI_SPDIF Cable (Optional)
1 x HD 8CH I/O Shield

1.2 Specifications

Platform	- ATX Form Factor: 12.0-in x 8.0-in, 30.5 cm x 20.3 cm
CPU	- AM2 940-Pin Socket Supporting AMD Athlon™ 64 / 64FX / 64X2 and Sempron™ Processors - Supports AMD's Cool 'n' Quiet™ Technology (see **CAUTION 1**) - FSB 1000 MHz (2.0 GT/s) - Supports Untied Overclocking Technology (see **CAUTION 2**) - Supports Hyper-Transport Technology
Chipset	- Northbridge: VIA® K8T890 chipset - Southbridge: VIA® 8237A
Memory	- Dual Channel DDRII Memory Technology (see **CAUTION 3**) - 4 x DDRII DIMM slots - Support DDRII800/667/533 - Max. capacity: 8GB
Hybrid Booster	- CPU Frequency Stepless Control (see **CAUTION 4**) - ASRock U-COP (see **CAUTION 5**) - Boot Failure Guard (B.F.G.)
Expansion Slot	- 3 x PCI slots - 1 x PCI Express x16 slot - 1 x PCI Express x4 / x1 slot - 1 x PCI Express x1 slot
Audio	- Realtek ALC888 7.1channel CODEC with High Definition Audio
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 - HD Audio Jack: Side Speaker/Rear Speaker/Central/Bass/ Line in/Front Speaker/Microphone (see **CAUTION 6**)

Connector	- 2 x Serial ATA 1.5Gb/s connectors, support RAID (RAID 0, 1, 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 7**)
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™ compliant (see **CAUTION 8**)
Certifications	- FCC, CE, Microsoft® WHQL Certificated

CAUTION!

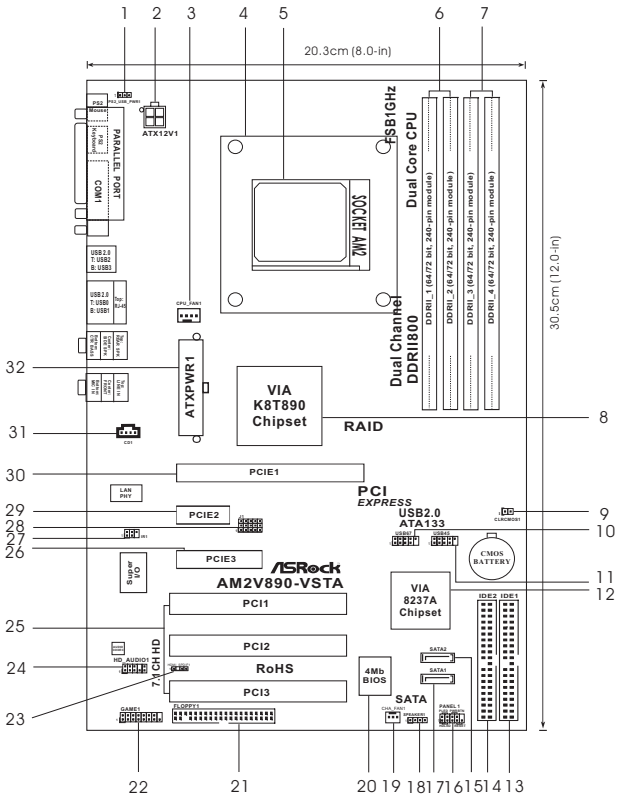
1. For power-saving's sake, it is strongly recommended to enable AMD's Cool 'n' Quiet™ technology under Windows system. See APPENDIX on page 44 to enable AMD's Cool 'n' Quiet™ technology.
2. This motherboard supports Untied Overclocking Technology. Please read "Untied Overclocking Technology" on page 26 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 14 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 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 11 for proper connection.
7. Power Management for USB 2.0 works fine under Microsoft® Windows® Vista™ / XP 64-bit / XP SP1 or SP2 / 2000 SP4.
8. 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 Logo

For system integrators and users who purchase this motherboard and plan to submit Windows® Vista™ Premium and Basic logo, please follow the below table for minimum hardware requirement. Please adopt the CPU, memory, and VGA that we suggest.

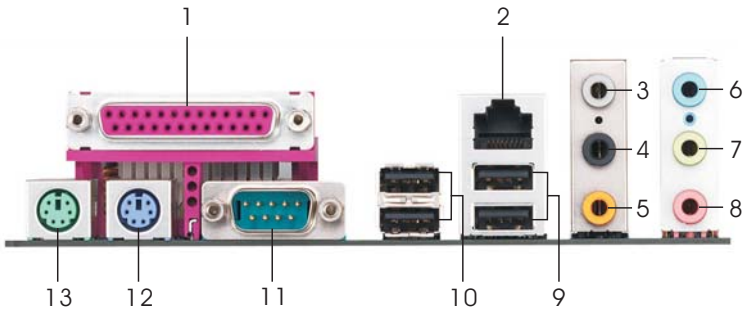
CPU	Sempron 2800+
Memory	512MB Single Channel
VGA	DX9.0 with WDDM Driver
	with 128bit VGA memory (Premium)
	with 64bit VGA memory (Basic)

1.4 Motherboard Layout



1	PS2_USB_PWR1 Jumper	16	System Panel Header (PANEL1)
2	ATX 12V Power Connector (ATX12V1)	17	Primary Serial ATA Connector (SATA1, black)
3	CPU Fan Connector (CPU_FAN1)	18	Chassis Speaker Header (SPEAKER 1)
4	CPU Heatsink Retention Module	19	Chassis Fan Connector (CHA_FAN1)
5	AM2 940-Pin CPU Socket	20	Flash Memory
6	2 x 240-pin DDRII DIMM Slots (Dual Channel A: DDRII_1, DDRII_2; Yellow)	21	Floppy Connector (FLOPPY1)
		22	Game Port Header (GAME1)
7	2 x 240-pin DDRII DIMM Slots (Dual Channel B: DDRII_3, DDRII_4; Orange)	23	HDMI_SPDIF Header (HDMI_SPDIF1)
		24	Front Panel Audio Header (HD_AUDIO1)
8	North Bridge Controller	25	PCI Slots (PCI1- 3)
9	Clear CMOS Jumper (CLRCMOS1)	26	PCI Express x4 / x1 Slot (PCIE3)
10	USB 2.0 Header (USB67, Blue)	27	Infrared Module Header (IR1)
11	USB 2.0 Header (USB45, Blue)	28	J1 Jumper
12	South Bridge Controller	29	PCI Express x1 Slot (PCIE2)
13	Primary IDE Connector (IDE1, Blue)	30	PCI Express x16 Slot (PCIE1)
14	Secondary IDE Connector (IDE2, Black)	31	Internal Audio Connector: CD1 (Black)
15	Secondary Serial ATA Connector (SATA2, black)	32	ATX Power Connector (ATXPWR1)

1.5 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.

2. Installation

AM2V890-VSTA is an ATX form factor (12.0-in x 8.0-in, 30.5 cm x 20.3 cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

Pre-installation Precautions

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

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.

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 anti-static pad or in the bag that comes with the component.
5. When placing screws into the screw holes to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

2.1 CPU Installation

Step 1. Unlock the socket by lifting the lever up to a 90° angle.

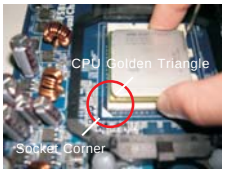
Step 2. Position the CPU directly above the socket such that the CPU corner with the golden triangle matches the socket corner with a small triangle.

Step 3. Carefully insert the CPU into the socket until it fits in place.

The CPU fits only in one correct orientation. DO NOT force the CPU into the socket to avoid bending of the pins.

Step 4. When the CPU is in place, press it firmly on the socket while you push down the socket lever to secure the CPU. The lever clicks on the side tab to indicate that it is locked.

STEP 1:
Lift Up The Socket Lever



STEP 2 / STEP 3:
Match The CPU Golden Triangle To The Socket Corner

STEP 4:
Push Down And Lock The Socket Lever

2.2 Installation of CPU Fan and Heatsink

After you install the CPU into this motherboard, it is necessary to install a larger heatsink and cooling fan to dissipate heat. You also need to spray thermal grease between the CPU and the heatsink to improve heat dissipation. Make sure 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 10, No. 3). For proper installation, please kindly refer to the instruction manuals of the CPU fan and the heatsink.

2.3 Installation of Memory Modules (DIMM)

AM2V890-VSTA motherboard provides four 240-pin DDRII (Double Data Rate II) 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) 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.10 No.6) or **identical** DDRII DIMM pair in **Dual Channel B** (DDRII_3 and DDRII_4; Orange slots; see p.10 No.7), so that Dual Channel Memory Technology can be activated. This motherboard also allows you to install four DDRII DIMMs for dual channel configuration, and please install **identical** DDRII DIMMs in all four slots. You may refer to the Dual Channel Memory Configuration Table below.

Dual Channel Memory Configurations

	DDRII_1 (Yellow Slot)	DDRII_2 (Yellow Slot)	DDRII_3 (Orange Slot)	DDRII_4 (Orange Slot)
(1)	Populated	Populated	-	-
(2)	-	-	Populated	Populated
(3)*	Populated	Populated	Populated	Populated

* For the configuration (3), please install **identical** DDRII DIMMs in all four slots.

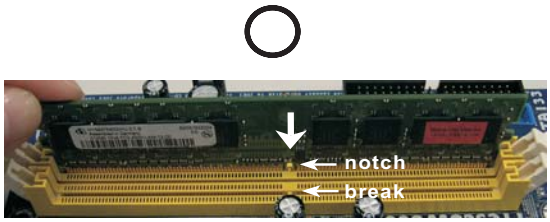
1. If you want to install two memory modules, for optimal compatibility and reliability, it is recommended to install them in the slots of the same color. In other words, install them either in the set of yellow slots (DDRII_1 and DDRII_2), or in the set of orange slots (DDRII_3 and DDRII_4).
2. If only one memory module or three memory modules are installed in the DDRII DIMM slots on this motherboard, it is unable to activate the Dual Channel Memory Technology.
3. If a pair of memory modules is NOT installed in the same Dual Channel, for example, installing a pair of memory modules in DDRII_1 and DDRII_3, it is unable to activate the Dual Channel Memory Technology .
4. It is not allowed to install a DDR memory module into DDRII slot; otherwise, this motherboard and DIMM may be damaged.

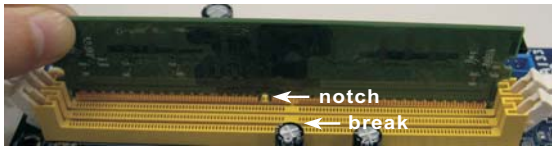
Installing a DIMM

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.

2.4 Expansion Slots (PCI Slots and PCIE Slots)

There are 3 PCI slots and 3 PCI Express slots on ***AM2V890-VSTA*** motherboard.

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

PCIE Slots: PCIE1 (PCIE x16 slot) is used for PCI Express cards with x16 lane width graphics cards.
PCIE2 (PCIE x1 slot) is used for PCI Express cards with x1 lane width graphics cards, such as Gigabit LAN card, SATA2 card, etc. Please check the jumper settings on page 17 for different functions.
PCIE3 (PCIE x4 / x1 slot) is used for PCI Express cards with x4 / x1 lane width graphics cards. Please check the jumper settings on page 17 for different functions.

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.

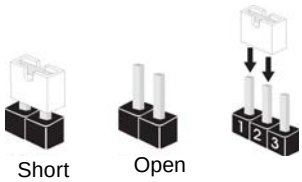
2.5 Dual Graphics Feature

This motherboard supports Dual Graphics Technology. When installing the add-on VGA cards to this motherboard, you are allowed to choose two different ways to decide the function of PCIE2 slot and PCIE3 slot. The default value of this feature is to enable PCIE2 slot (PCI Express x1) and PCIE3 slot (PCI Express x1). You can also adjust the jumpers according to the below table to disable PCIE2 slot and enable PCIE3 slot (PCI Express x4). In other words, you are able to adjust the jumpers to enjoy the benefit of Dual Graphics feature. Please refer to the table below for the correct jumper settings.

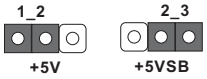
Jumper Settings	PCIE2 Slot	PCIE3 Slot
 J1 (Default)	PCIE x1	PCIE x1
 J1	Disabled	PCIE x4

2.6 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.10, 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.10, No. 9)	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.

2.7 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.10, 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.10, No. 13)

Secondary IDE Connector (Black)
(39-pin IDE2, see p.10, No. 14)

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).

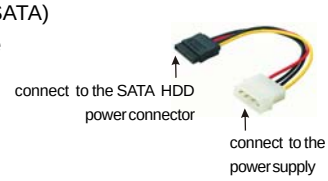
Serial ATA Connectors
(SATA1: see p.10, No. 17)
(SATA2: see p.10, No. 15)

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

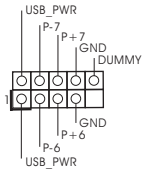
Either end of the SATA data cable can be connected to the SATA hard disk or the SATA connector on the motherboard.

Serial ATA (SATA)
Power Cable
(Optional)



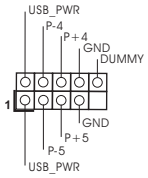
Please connect the black end of SATA power cable to the power connector on the drive. Then connect the white end of SATA power cable to the power connector of the power supply.

USB 2.0 Header
(9-pin USB67)
(see p.10, No. 10)



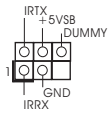
This HD 8CH I/O provides you 4 ready-to-use USB 2.0 ports on the rear panel. If the rear USB ports are not sufficient, this USB 2.0 header is available to support 2 extra USB 2.0 ports.

USB 2.0 Header
(9-pin USB45)
(see p.10, No. 11)



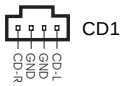
This HD 8CH I/O provides you 4 ready-to-use USB 2.0 ports on the rear panel. If the rear USB ports are not sufficient, this USB 2.0 header is available to support 2 extra USB 2.0 ports.

Infrared Module Header
(5-pin IR1)
(see p.10, No. 27)



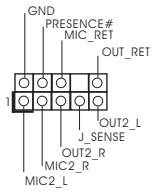
This header supports an optional wireless transmitting and receiving infrared module.

Internal Audio Connector
(4-pin CD1)
(CD1: see p.10, No. 31)



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.10, No. 24)



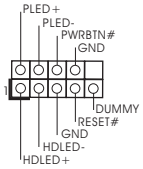
This is an interface for the front panel audio cable that allows convenient connection and control of audio devices.

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.10, No. 16)

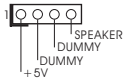


This header accommodates several system front panel functions.

Chassis Speaker Header

(4-pin SPEAKER 1)

(see p.10, No. 18)

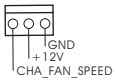


Please connect the chassis speaker to this header.

Chassis Fan Connector

(3-pin CHA_FAN1)

(see p.10, No. 19)

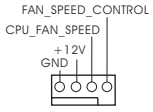


Please connect the chassis fan cable to this connector and match the black wire to the ground pin.

CPU Fan Connector

(4-pin CPU_FAN1)

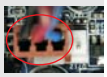
(see p.10, No. 3)



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

ATX Power Connector

(20-pin ATXPWR1)

(see p.10 No. 32)

Please connect an ATX power supply to this connector.

ATX 12V Connector

(4-pin ATX12V1)

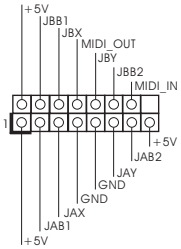
(see p.10 No. 2)

Please connect an ATX 12V power supply to this connector.

Game Port Header

(15-pin GAME1)

(see p.10 No. 22)



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

HDMI_SPDIF Header

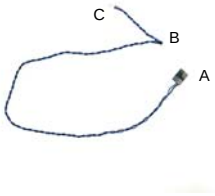
(3-pin HDMI_SPDIF1)

(see p.10 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

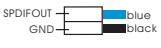
(Optional)



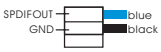
Please connect the black end (A) of HDMI_SPDIF cable to the HDMI_SPDIF header on the motherboard. Then connect the white end (B or C) of HDMI_SPDIF cable to the HDMI_SPDIF connector of HDMI VGA card.

A. black end

B. white end (2-pin)



C. white end (3-pin)



2.8 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 16.

Step 2. Connect the black end (A) of HDMI_SPDIF cable to the HDMI_SPDIF header (HDMI_SPDIF1, yellow, see page 10, 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 22. 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.

2.9 Serial ATA (SATA) Hard Disks Installation

This motherboard adopts VIA® 8237A 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.

2.10 Hot Plug and Hot Swap Functions for SATA HDDs

AM2V890-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.

2.11 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.

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

The installation procedures for Windows Vista™ are subject to change.

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

STEP 1: 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, "Do you want to generate Serial ATA driver diskette [YN]?", press <Y>.

D. Then you will see these messages,

Please insert a diskette into the floppy drive.
WARNING! Formatting the floppy diskette will
lose ALL data in it!
Start to format and copy files [YN]?
Please insert a floppy diskette into the floppy drive, and press <Y>.

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

STEP 2: Use "RAID Installation Guide" to set RAID configuration.

Before you start to configure the RAID function, you need to check the installation guide in the Support CD for proper configuration. Please refer to the document in the Support CD, "Guide to SATA Hard Disks Installation and RAID Configuration", which is located in the folder at the following path: **.. \ RAID Installation Guide**

STEP 3: Install Windows® 2000 / Windows® XP / Windows® XP-64bit OS on your system.

After making a SATA driver diskette and using "RAID Installation Guide" to set RAID configuration, you can start to install Windows® 2000 / Windows® XP / Windows® XP-64bit on your system. At the beginning of Windows® setup, press F6 to install a third-party SCSI or RAID driver. When prompted, insert a floppy disk containing the VIA® RAID driver. After reading the floppy disk, the driver will be presented. Select the driver to install according to the mode you choose and the OS you install.

After the installation of Windows® 2000 / Windows® XP / Windows® XP-64bit OS, if you want to manage RAID functions, you are allowed to use both "RAID Installation Guide" and "VIA RAID Tool Information" for RAID configuration. Please refer to the document in the Support CD, "Guide to SATA Hard Disks Installation and RAID Configuration", which is located in the folder at the following path: **.. **

RAID Installation Guide and the document in the support CD, "Guide to VIA RAID Tool", which is located in the folder at the following path: **.. \ VIA RAID Tool Information**

If you want to use "VIA RAID Tool Information" in Windows® environment, please install SATA drivers from the Support CD again so that "VIA RAID Tool Information" will be installed to your system as well.

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

The installation procedures for Windows Vista™ are subject to change.

If you want to install Windows® 2000 / Windows® XP / Windows® XP-64bit on your SATA HDDs without RAID functions or you want to install Windows® 2000 / Windows® XP / Windows® XP-64bit 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 "Onboard SATA Operation Mode" option from [RAID] to [non-RAID].

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

After setting up BIOS, you can start to install Windows® 2000 / Windows® XP / Windows® XP-64bit on your system.

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

2.14 Untied Overclocking Technology

This motherboard supports Untied Overclocking Technology, which means during overclocking, FSB enjoys better margin due to fixed PCI / PCIE buses. 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 PCI / PCIE buses are 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.

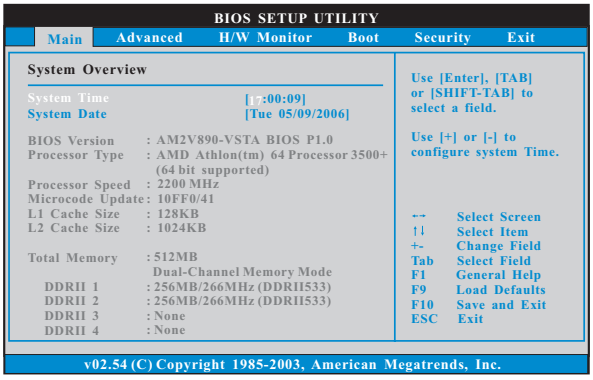
3.1.2 Navigation Keys

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]

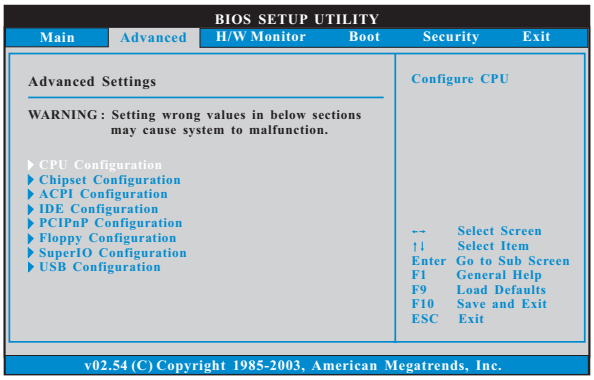
Use this item to specify the system time.

System Date [Day Month/Date/Year]

Use this item to specify the system date.

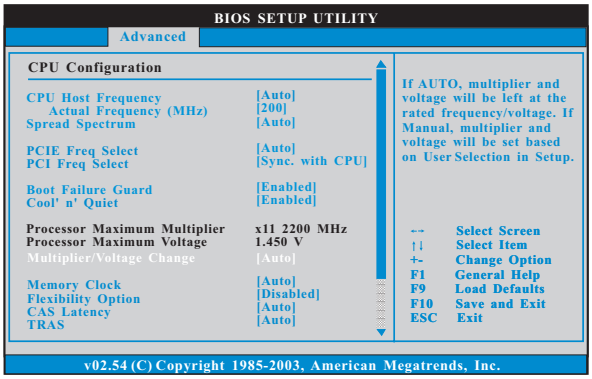
3.3 Advanced Screen

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



CPU Host Frequency

Use this item to select CPU Host Frequency Mode. The default value is [Auto].

Actual Frequency (MHz)

When you set CPU Host Frequency to Manual mode, you can use this setup item to adjust CPU Host Frequency.

Spread Spectrum

This feature will be set to [Auto] as default.

PCIE Freq Select

Use this item to adjust PCIE frequency.

PCI Freq Select

Use this item to adjust PCI frequency.

Boot Failure Guard

Enable or disable the feature of Boot Failure Guard.

Cool 'n' Quiet

Use this item to enable or disable AMD's Cool 'n' Quiet™ technology.

Processor Maximum Multiplier

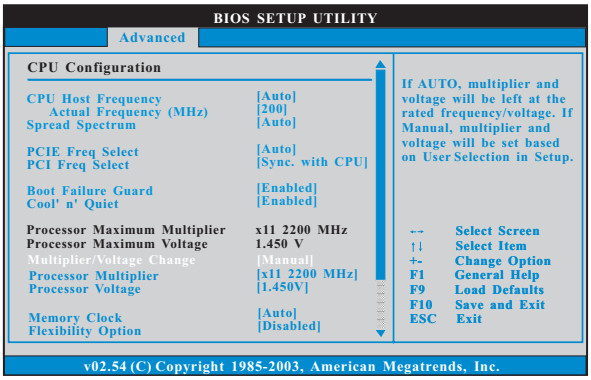
It will display Processor Maximum Multiplier for reference.

Processor Maximum Voltage

It will display Processor Maximum Voltage for reference.

Multiplier/Voltage Change

This item is set to [Auto] by default. If it is set to [Manual], you may adjust the value of Processor Multiplier and Processor Voltage. However, it is recommended to keep the default value for system stability.



Processor Multiplier

This item will show when "Multiplier/Voltage Change" is set to [Manual]; otherwise, it will be hidden. You may set the value from [x8 1600 MHz] up to [x25 5000 MHz] but no higher than the value of "Processor Maximum Multiplier". For example, if the value of "Processor Maximum Multiplier" is [x11 2200 MHz], the actual value of multiplier will be [x11 2200 MHz] even if you set this item to a value higher than [x11 2200 MHz]. However, for system stability, it is not recommended to adjust the value of this item.

Processor Voltage

This item will show when "Multiplier/Voltage Change" is set to [Manual]; otherwise, it will be hidden. For safety and system stability, it is not recommended to adjust the value of this item.

Memory Clock

This item can be set by the code using [Auto]. You can set one of the standard values as listed: [200MHz (DDRII 400)], [266MHz (DDRII 533)], [333MHz (DDRII 667)], and [400MHz (DDRII 800)].

Flexibility Option

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

CAS Latency

Use this item to adjust the means of memory accessing. Configuration options: [Auto], [3T], [4T], and [5T].

TRAS

Use this to adjust TRAS values. Configuration options: [Auto], [5T], [6T], [7T], [8T], [9T], [10T], [11T], [12T], [13T], [14T], [15T], [16T], [17T], [18T].

TRP

Use this to adjust TRP values. Configuration options: [Auto], [3CLK], [4CLK], [5CLK], and [6CLK].

TRCD

Use this to adjust TRCD values. Configuration options: [Auto], [3CLK], [4CLK], [5CLK], and [6CLK].

TRRD

Use this to adjust TRRD values. the default value is [Auto].

TRC

Use this to adjust TRC values. The default value is [Auto].

MA Timing

Use this to adjust values for MA timing. Configuration options: [Auto], [2T], [1T]. The default value is [Auto].

Burst Length

Burst length can be set to 8 or 4 beats.

Bank Interleaving

Interleaving allows memory accesses to be spread out over banks on the same node, or accross nodes, decreasing access contention.

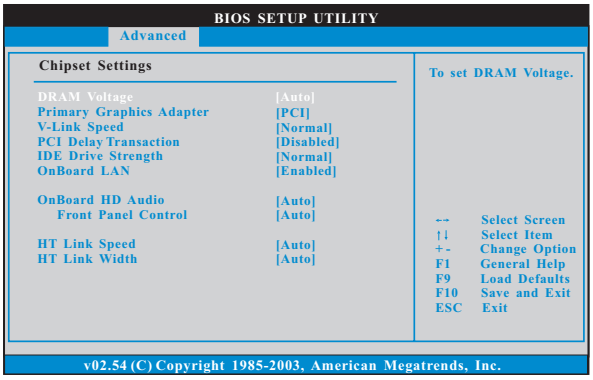
Memory Hole

Use this to enable or disable memory hole. The default value is [Disabled].

DDRII Initialization Mode

Configuration options: [Auto] and [Compatible]. The default value is [Auto].

3.3.2 Chipset Configuration



DRAM Voltage

Use this to select DRAM voltage. Configuration options are [Auto], [Low], [Normal], [High], and [Ultra High]. The default value is [Auto].

Primary Graphics Adapter

This item will switch the PCI Bus scanning order while searching for video card. It allows you to select the type of Primary VGA in case of multiple video controllers.

V-Link Speed

Use this to select the speed of V-Link Bus. Configuration options are [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 Driving Strength

Use this item to select drive strength of the onboard IDE controller. Configuration options: [Low], [Normal], [High] or [Ultra High]. The default value is [Normal].

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.

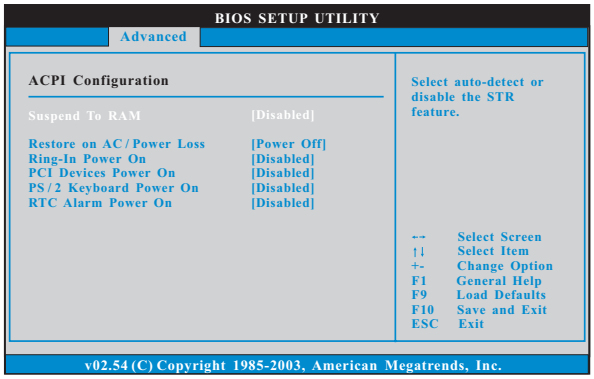
HT Link Speed

You may set the HyperTransport speed as [Auto], [200 MHz], [400 MHz], [600 MHz], [800 MHz], or [1000 MHz]. The default value is [Auto].

HT Link Width

You may set the HyperTransport width as [8 bit], [16 bit] or [Auto]. The default value is [Auto].

3.3.3 ACPI Configuration



Suspend to RAM

Use this item to select whether to auto-detect or disable the Suspend-to-RAM feature. Select [Auto] will enable this feature if the OS supports it. If you set this item to [Disabled], the function "Repost Video on STR Resume" will be hidden.

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.

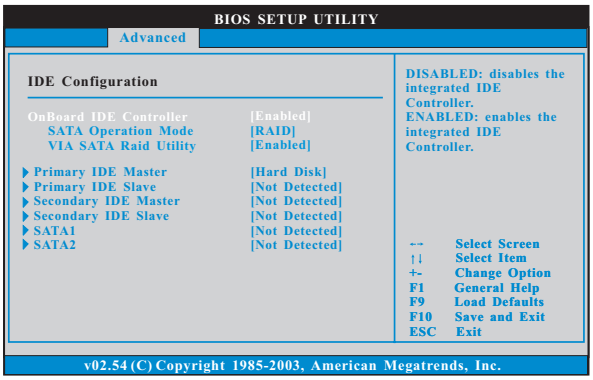
PS/2 Keyboard Power On

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

You may enable or disable the IDE controller. Configuration options are [Enabled] and [Disabled].

SATA Operation Mode

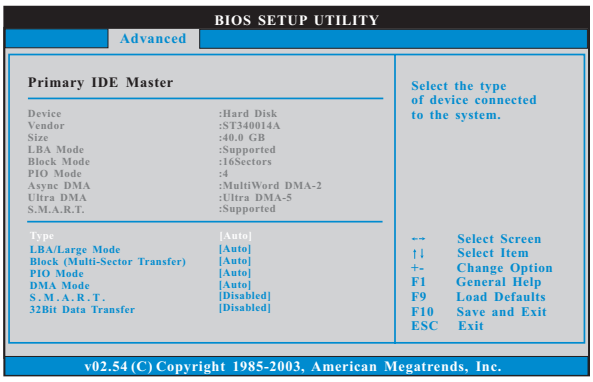
Use this item to adjust SATA Operation Mode. The default value of this option is [RAID]. If you don't want to operate RAID function on SATA HDDs, please select [non-RAID].

VIA SATA Raid Utility

Use this to enable or disable VIA 8237A SATA Raid BIOS Utility during POST.

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.

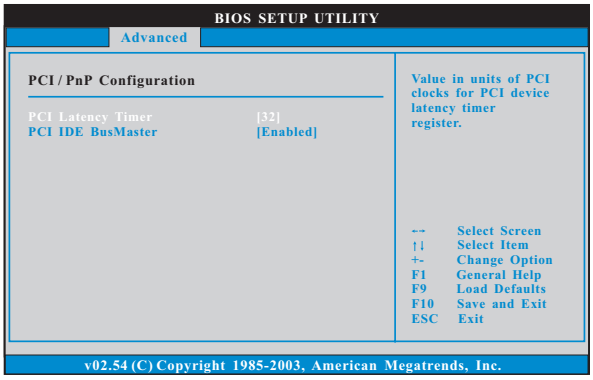
S.M.A.R.T.

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

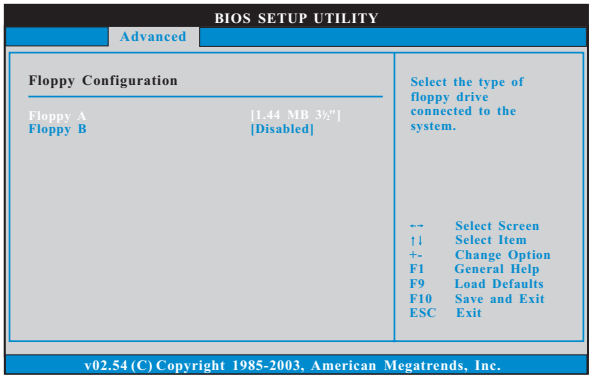
The default value is 32. It is recommended to keep the default value unless the installed PCI expansion cards' specifications require other settings.

PCI IDE BusMaster

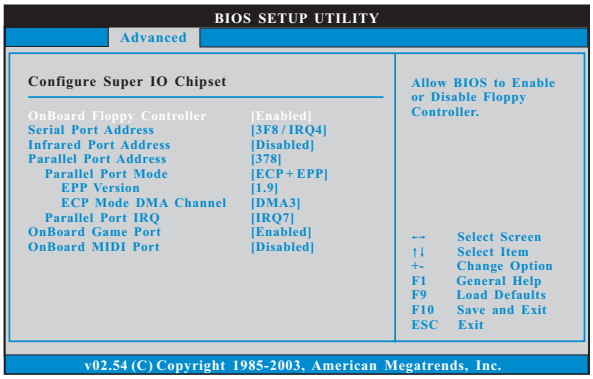
Use this item to enable or disable the PCI IDE BusMaster feature.

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].

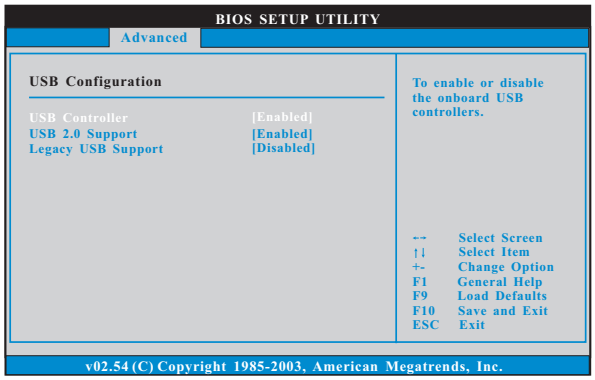
OnBoard Game Port

Use this item to enable the Game Port or disable it.

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

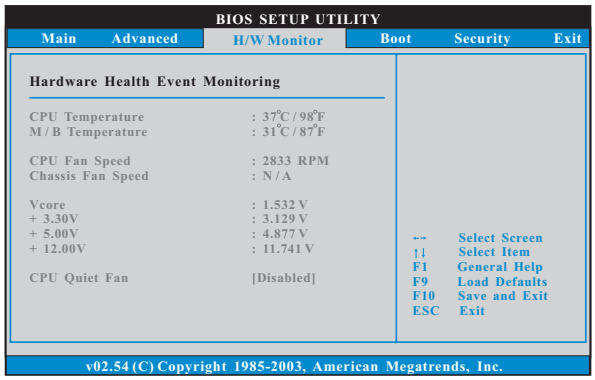
Use this item to enable or disable the USB 2.0 support.

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.

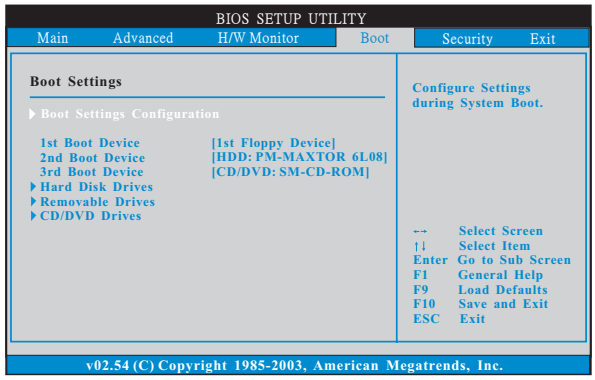


CPU Quiet Fan

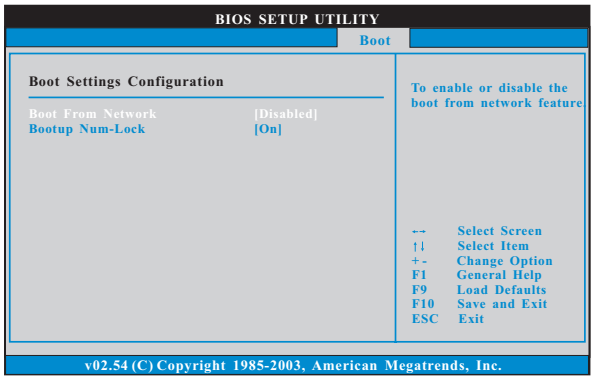
This item allows you to identify the temperature of CPU fan.Configuration options: [Disabled] and [Enabled]. The default value is [Disabled].

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 Network

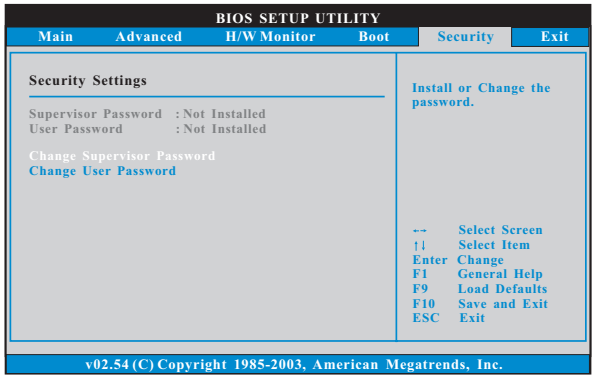
Use this item to enable or disable the Boot From Network feature.

Boot Up Num-Lock

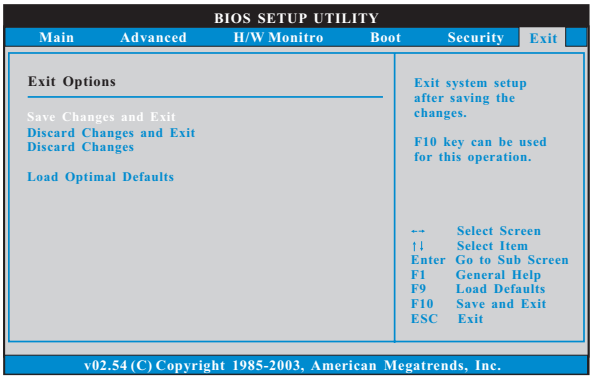
If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

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.

4. Software Support

4.1 Install Operating System

This motherboard supports various Microsoft® Windows® operating systems: 2000 / XP / XP 64-bit / Vista™. 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 including ASRock Express GbL PCI Express LAN card driver if the system detects the 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 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.

APPENDIX:
AMD's Cool 'n' Quiet™ Technology

For power-saving sake, it is strongly recommended to enable AMD's Cool 'n' Quiet™ technology under Windows® system. When using this feature, please make sure to install "AMD Processor Driver" from the "Support CD" first.

If you are using Windows® 2000/XP operating system, please follow the instruction below to enable AMD's Cool 'n' Quiet™ technology:

1. From the Windows® 2000/XP operating system, click the Start button. Select Settings, then Control Panel.
2. Switch to Classic View. (for Windows® XP only)
3. Double-click the Display icon in the Control Panel then select the Screen Saver tab.
4. Click the "Power…" button. The following dialog box appears.
5. From the Power schemes combo list box, select **Minimal Power Management**.
6. Click OK to implement settings.