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You can read the recommendations in the user guide, the technical guide or the installation guide for ASROCK 945GCM-S. You'll find the answers to all your questions on the ASROCK 945GCM-S in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual ASROCK 945GCM-S
User guide ASROCK 945GCM-S
Operating instructions ASROCK 945GCM-S
Instructions for use ASROCK 945GCM-S
Instruction manual ASROCK 945GCM-S



ASRock

945GCM-S

User Manual

Version 1.0
Published August 2006
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Manual abstract:

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

com 2 Contents 1 Introduction

.....
.....

.....
.....
.....
.....

. 5 1.1 1.2 1.3 1.4 Package Contents

.....
.....
.....
.....
.....
.....

... Specifications

.....
.....
.....
.....
.....

..... Motherboard Layout ...

.....
.....
.....
.....
.....

. I/O Panel

.....
.....
.....
.....
.....

.... 5 6 10 11 2 Installation .

.....
.....
.....
.....

.....

..... 12 2.1 Screw Holes ..

.....
.....
.....

.....
.....
.....
.....

.....
.....

12 2.2 Pre-installation Precautions

.....
.....
.....
.....

12 2.3 CPU Installation

.....
.....
.....
.....
.....
.....
.....

... 13 2.4 Installation of Heatsink and CPU fan

.....
.....
.....

..... 15 2.5 Installation of Memory Modules (DIMM)

.....
.....
.....

. 16 2.6 Expansion Slots (PCI and PCI Express Slots)

.....
.....

... 17 2.7 Jumpers Setup

.....
.....
.....
.....

.....
.....
.....

..... 18 2.8 Onboard Headers and Connectors ..

.....
.....
.....
.....

.. 19 2.9 SATAII Hard Disk Setup Guide

.....
.....
.....

.....
... 23 2.10 Serial ATA (SATA) / Serial ATAII (SATAII) Hard Disks Installation .

.....
.....

.....
.....
.....
.....

.....
.....
.....

.... 24 2.11 Driver Installation Guide

.....
.....
.....
.....

. 24 2.12 Untied Overclocking Technology ...

.....
.....

.....
.....

... 24 SETUP 3 BIOS S ETUP UTILITY ..

.....
.....
.....
.....
.....

25 3.1 Introduction

.....
.....
.....

.....
.....
.....
.....

3.1.1 BIOS Menu Bar ...

.....
.....

.....
.....
.....
.....

..... 3.1.2 Navigation Keys ...

.....
.....
.....

.....
.....
.....
..... 3.

2 Main Screen

.....

.....
.....

.....
.....
.....
.....

..... 3.3 Smart Screen ..

.....
.....
.....
.....
.....
.....

.. 3.4 Advanced Screen ..

.....
.....
.....
.....
.....

3.4.1 CPU Configuration ...

.....
.....
.....
.....
.....

3.4.2 Chipset Configuration

.....
.....
.....

.....
..... 3.

4.3 ACPI Configuration

.....
.....
.....
.....
.....

... 3.4.4 IDE Configuration

.....
.....
.....

.....
.....
.....

.... 3.4.5 PCIPnP Configuration

.....
.....
.....
.....

..... 3.

4.6 Floppy Configuration

.....
.....

.....
.....
.....

.... 3.4.7 Super IO Configuration

.....
.....
.....
.....

..... 3.4.8 USB Configuration ..

.....
.....
.....

.....
.....
.....

..... 3.5 Hardware Health Event Monitoring Screen

.....
..... 3.

6 Boot Screen

.....
.....
.....
.....
.....

.....
.....
.....

.. 3.6.1 Boot Settings Configuration

.....
.....
.....

..... 3.7 Security Screen .

.....
.....
.....
.....

.....
.....
.....

..... 3.

8 Exit Screen

.....
.....
.....

.....
.....
.....
.....

5-in, 24.4 cm x 19.1 cm) ASRock 945GCM-S Quick Installation Guide ASRock 945GCM-S Support CD One 80-conductor Ultra ATA 66/100 IDE Ribbon Cable (Optional) One Serial ATA (SATA) Data Cable (Optional) One Serial ATA (SATA) HDD Power Cable (Optional) One I/O Panel Shield 5 1.2 Specifications - Micro ATX Form Factor: 9.6-in x 7.

5-in, 24.4 cm x 19.1 cm - LGA 775 for Intel® Dual Core Core™ 2 Extreme / Core™ 2 Duo / Pentium® Dual Core / Celeron®, supporting Dual Core Wolfdale processors - Compatible with all FSB1333/1066/800/533MHz CPUs except Quad Core (see CAUTION 1) - Supports Hyper-Threading Technology (see CAUTION 2) - Supports Untied Overclocking Technology (see CAUTION 3) - Supports EM64T CPU - Northbridge: Intel® 945GC - Southbridge: Intel® ICH7 - Dual Channel DDR2 Memory Technology (see CAUTION 4) - 2 x DDR2 DIMM slots - Supports DDR2 667/533 non-ECC, un-buffered memory (see CAUTION 5) - Max. capacity of system memory: 4GB (see CAUTION 6) - 1 x PCI Express x16 slot - 1 x PCI Express x1 slot - 2 x PCI slots - Intel® Graphics Media Accelerator 950 - Pixel Shader 2.0, DirectX 9.0 - Max. shared memory 224MB (see CAUTION 7) - 5.1 CH Windows® Vista™ Premium Level HD Audio (Realtek ALC662 Audio Codec) - Realtek PCIE x1 LAN 8102EL - Speed: 10/100 Ethernet - Supports Wake-On-LAN I/O Panel - 1 x PS/2 Mouse Port - 1 x PS/2 Keyboard Port - 1 x Serial Port: COM1 - 1 x VGA Port - 4 x Ready-to-Use USB 2.0 Ports - 1 x RJ-45 LAN Port - HD Audio Jack: Line in / Front Speaker / Microphone - 4 x SATAII 3.0 Gb/s connectors (No Support for RAID and "Hot Plug" functions) (see CAUTION 8) - 1 x ATA100 IDE connector (supports 2 x IDE devices) - 1 x Floppy connector Platform CPU Chipset Memory Expansion Slot Graphics Audio LAN Rear Panel I/O Connector 6 BIOS Feature Support CD Unique Feature Hardware Monitor OS Certifications - 1 x Print port header - CPU/Chassis FAN connector - 24 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) - 4Mb AMI BIOS - AMI Legal BIOS - Supports "Plug and Play" - ACPI 1.1 Compliance Wake Up Events - Supports jumperfree - AMBIOS 2.3.1 Support - Supports Smart BIOS - Drivers, Utilities, AntiVirus Software (Trial Version) - Intelligent Energy Saver (see CAUTION 10) - Hybrid Booster: - CPU Frequency Stepless Control (see CAUTION 11) - ASRock U-COP (see CAUTION 12) - Boot Failure Guard (B.F.G.) - CPU Temperature Sensing - Chassis Temperature Sensing - CPU Fan Tachometer - Chassis Fan Tachometer - CPU Quiet Fan - Voltage Monitoring: +12V, +5V, +3.3V, Vcore - Microsoft® Windows® 2000 / XP / XP 64-bit / Vista™ / Vista™ 64-bit compliant - FCC, CE * For detailed product information, please visit our website: <http://www.asrock.com>.

com WARNING Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using the thirdparty overclocking tools. Overclocking may affect your system stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking. 7 CAUTION! 1.

FSB1333-CPU will operate in overclocking mode.



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Under this situation, PCIE frequency will also be overclocked to 115MHz. Besides, if you want to overclock the CPU you adopt from FSB800 to FSB1066, you need to adjust the jumpers. Please refer to page 18 for proper jumper settings. 2.

3. 4. About the setting of "Hyper Threading Technology", please check page 30. This motherboard supports Untied Overclocking Technology. Please read "Untied Overclocking Technology" on page 24 for details. 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 16 for proper installation. 5. Please check the table below for the CPU FSB frequency and its corresponding memory support frequency. CPU FSB Frequency 1333 1066 800 Memory Support Frequency DDR2 533*, DDR2 667 DDR2 533, DDR2 667 DDR2 400, DDR2 533, DDR2 667 533 DDR2 400, DDR2 533 * When you use a FSB1333-CPU on this motherboard, it will run at 6.

DDR2 500 if you adopt a DDR2 533 memory module. Due to the chipset limitation, the actual memory size may be less than 4GB for the reservation for system usage under Windows® XP, Windows® XP 64-bit, Windows® Vista™ and Windows® Vista™ 64-bit. 7. 8. The maximum shared memory size is defined by the chipset vendor and is subject to change. Please check Intel® website for the latest information. Before installing SATAII hard disk to SATAII connector, please read the "SATAII Hard Disk Setup Guide" on page 23 to adjust your SATAII hard disk drive to SATAII mode. You can also connect SATA hard disk to SATAII connector directly. 9. Power Management for USB 2.

0 works fine under Microsoft® Windows® Vista™ 64-bit / Vista™ / XP 64-bit / XP SP1 or SP2 / 2000 SP4. 10. Featuring an advanced proprietary hardware and software design, Intelligent Energy Saver is a revolutionary technology that delivers unparalleled power savings. In other words, it is able to provide exceptional power saving and improve power efficiency without sacrificing computing performance. Please visit our website for the operation procedures of Intelligent Energy Saver.

ASRock website: <http://www.asrock.com> 11. 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.

8 12. While CPU overhrboard 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. 12 2.3 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. CPU Marked Corner Step 1. Open the socket: Step 1-1.

Disengaging the lever by depressing Lift Lever Up to 90° down and out on the Socket Marked Corner 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. black line black line Step 2-2. Orient the CPU with IHS (Integrated Heat Sink) up. Locate Pin1 and the two orientation key notches. Pin1 orientation key notch orientation key notch Pin1 alignment key alignment key 775-Pin Socket 775-LAND CPU 13 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. 14 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 10, No.

4). 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. Step 3. Step 4. 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 10, No.

4). Align fasteners with the motherboard throughholes. 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. Step 6. Connect fan header with the CPU fan connector on the motherboard. Secure excess cable with tie-wrap to ensure cable does not interfere with fan operation or contact other components.



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5 Installation of Memory Modules (DIMM) 945GCM-S motherboard provides two 240-pin DDR2 (Double Data Rate 2) DIMM slots, and supports Dual Channel Memory Technology. For dual channel configuration, you always need to install two identical (the same brand, speed, size and chip-type) memory modules in the DDR2 DIMM slots to activate Dual Channel Memory Technology. Otherwise, it will operate at single channel mode. 1. 2.

It is not allowed to install a DDR memory module into DDR2 slot; otherwise, this motherboard and DIMM may be damaged. If you install only one memory module or two non-identical memory modules, it is unable to activate the Dual Channel Memory Technology. Installing a DIMM Please make sure to disconnect power supply before adding or removing DIMMs or the system components. Step 1. Step 2.

Unlock a DIMM slot by pressing the retaining clips outward. Align a DIMM on the slot such that the notch on the DIMM matches the break on the slot. notch break notch break 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. 16 2.6 Expansion Slots (PCI and PCI Express Slots) There are 2 PCI slots and 2 PCI Express slots on this motherboard. PCI slots: PCI slots are used to install expansion cards that have the 32-bit PCI interface. PCIE slots: PCIE1 (PCIE x1 slot) is used for PCI Express cards with x1 lane width cards, such as Gigabit LAN card, SATA2 card, etc.

PCIE2 (PCIE x16 slot) is used for PCI Express cards with x16 lane width graphics cards. If you install the add-on PCI Express VGA card to PCIE2 (PCIE x16 slot), the onboard VGA will be disabled. If you install the add-on PCI Express VGA card to PCIE2 (PCIE x16 slot) and adjust the "Internal Graphics Mode Select" BIOS option to [Enabled], the onboard VGA will be enabled, and the primary screen will be onboard VGA. 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. Remove the bracket facing the slot that you intend to use. Keep the screws for later use. Align the card connector with the slot and press firmly until the card is completely seated on the slot. Fasten the card to the chassis with screws.

Step 2. Step 3. Step 4. 17 2.7 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. Jumper Setting PS2_USB_PWR1 2_3 1_2 Description Short pin2, pin3 to enable (see p.10 No.

1) +5VSB (standby) for PS/2 +5V +5VSB 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. 8) 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. OC 800 Jumper (OC 800, 3-pin jumper, see p.10 No.

27) 1_2 Default Note: If you want to overclock the FSB800-CPU (e.g. Cel400, E1000, E2000, E4000, E5000, E6000 series CPU) to FSB1066 on this motherboard, you need to adjust the jumpers. Please short pin2, pin3. Otherwise, the CPU may not work properly on this motherboard. Please refer to below jumper settings. 2_3 18 2.8 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. 20) Pin1 FLOPPY1 the red-striped side to Pin1 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. 7) PIN1 IDE1 connect the black end connect the blue end to the IDE devices to the motherboard 80-conductor ATA 66/100 cable Note: Please refer to the instruction of your IDE device vendor for the details.

SATAII_3 SATAII_4 Serial ATAII Connectors (SATAII_1: see p.10, No. 13) (SATAII_2: see p.10, No. 12) (SATAII_3: see p.

10, No. 10) (SATAII_4: see p.10, No. 11) SATAII_1 Serial ATA (SATA) Data Cable (Optional) SATAII_2 These Serial ATAII (SATAII) connectors support SATAII or SATA hard disk for internal storage devices. The current SATAII interface allows up to 3.0 Gb/s data transfer rate. Either end of the SATA data cable can be connected to the SATA / SATAII hard disk or the SATAII connector on the motherboard. Please connect the black end of SATA power cable to the power connector on each drive. Then connect the white end of SATA power cable to the power connector of the power supply. Serial ATA (SATA) Power Cable (Optional) connect to the SATA HDD power connector connect to the power supply 19 USB 2.

0 Headers (9-pin USB6_7) (see p.10 No. 15) 1 USB_PWR P-7 P+7 GND DUMMY GND P+6 P-6 USB_PWR 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 USB4_5) (see p.10 No.

16) USB_PWR P-5 P+5 GND DUMMY 1 GND P+4 P-4 USB_PWR Print Port Header (25-pin LPT1) (see p.10 No. 26) 1 AFD# ERROR# PINIT# SLIN# GND This is an interface for print port cable that allows convenient connection of printer devices. SPD7 SPD6 ACK# SPD5 BUSY SPD4 PE SPD3 SLCT SPD2 SPD1 SPD0 STB# Internal Audio Connector (4-pin CD1) (CD1: see p.10 No.

23) CD-L GND GND CD-R 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. This is an interface for front panel audio cable that allows convenient connection and control of audio devices. Front Panel Audio Header (9-pin HD_AUDIO1) (see p.10 No. 21) 1 GND PRESENCE# MIC_RET OUT_RET OUT2_L J_SENSE OUT2_R MIC2_R MIC2_L 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.



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C. Connect Ground (GND) to Ground (GND). 20 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. For Windows® 2000 / XP / XP 64-bit OS: Click "Audio I/O", select "Connector Settings", choose "Disable front panel jack detection", and save the change by clicking "OK".

For Windows® Vista™ / Vista™ 64-bit OS: Click the right-top "Folder" icon, choose "Disable front panel jack detection", and save the change by clicking "OK". G. To activate the front mic. @@@@ For different SATAII hard disk products of different vendors, the jumper pin setting methods may not be the same. Please visit the vendors' website for the updates.

23 AT (SAT AT (SAT 2 . 1 0 Serial ATA (SATA) / Serial ATAII (SATAII) Hard Disks Installation This motherboard adopts Intel® ICH7 south bridge chipset that supports Serial ATA (SATA) / Serial ATAII (SATAII) hard disks. You may install SATA / SATAII hard disks on this motherboard for internal storage devices. This section will guide you to install the SATA / SATAII hard disks. STEP 1: Install the SATA / SATAII hard disks into the drive bays of your chassis.

STEP 2: Connect the SATA power cable to the SATA / SATAII hard disk. STEP 3: Connect one end of the SATA data cable to the motherboard's SATAII connector. STEP 4: Connect the other end of the SATA data cable to the SATA / SATAII hard disk. 2 . 1 1 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 . 1 2 Untied Overclocking Technology Technology This motherboard supports Untied Overclocking Technology, which means during overclocking, FSB enjoys better margin due to fixed PCI / PCIE buses.

Before you enable Untied Overclocking function, please enter "Overclock Mode" option of BIOS setup to set the selection from [Auto] to [CPU, PCIE, Async.]. 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. Please refer to the warning on page 7 for the possible overclocking risk before you apply Untied Overclocking Technology. 24 Chapter 3 BIOS SETUP UTILITY 3.1 Introduction This section explains how to use the BIOS SETUP UTILITY to configure your system. The BIOS FWH chip 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 Main Advanced PCIPnP Boot screen has a menu bar with the following selections: To set up the system time/date information To set up the advanced BIOS features To set up the PCI features To set up the default system device to locate and load the Operating System Security To set up the security features Chipset To set up the chipset 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.

25 3.1.2 Navigation Keys Please check the following table for the function description of each navigation key. Navigation Key(s) // +/<Enter> <F1> <F9> <F10> <ESC> 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 To bring up the selected screen To display the General Help Screen To load optimal default values for all the settings To save changes and exit the BIOS SETUP UTILITY 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 Smart BIOS SETUP UTILITY Advanced H/W Monitor Boot Security Exit Main System Overview System Time System Date BIOS Version Processor Type [14:00:09] [Thu 07/31/2008] Use [Enter], [TAB] or [SHIFT-TAB] to select a field.

Use [+] or [-] to configure system Time. : 945GCM-S P1.00 : Intel (R) CPU 3.40 GHz (64bit) : 3400 MHz Processor Speed Microcode Update : F34/17 : 1024KB Cache Size Total Memory DDRIII DDRII2 : 512MB with 8MB shared memory Dual-Channel Memory Mode : 256MB/266MHz (DDRII533) : 256MB/266MHz (DDRII533) +Tab F1 F9 F10 ESC Select Screen Select Item Change Field Select Field General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2005, American Megatrends, Inc. 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. 26 3.3 Smart Screen In the Smart screen, you can load the BIOS setup according to your requirements. BIOS SETUP UTILITY H/W Monitor Boot Main Smart Advanced Security Exit Smart Settings Save Changes and Exit Load BIOS Defaults Load Performance Setup Default (IDE/SATA) Load Power Saving Setup Default Exit system setup after saving the changes.

F10 key can be used for this operation. Enter F1 F9 F10 ESC Select Screen Select Item Go to Sub Screen General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2005, American Megatrends, Inc. 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. Load BIOS Defaults Load BIOS default values for all the setup questions. F9 key can be used for this operation. Load Performance Setup Default (IDE/SATA) This performance setup default may not be compatible with all system configurations. If system boot failure occurs after loading, please resume optimal default settings. F5 key can be used for this operation. Load Power Saving Setup Default Load power saving setup default.

F6 key can be used for this operation.



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27 3.4 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. BIOS SETUP UTILITY H/W Monitor Boot Main Smart Advanced Security Exit Options for CPU Advanced Settings WARNING : Setting wrong values in below sections may cause system to malfunction. CPU Configuration Chipset Configuration ACPI Configuration IDE Configuration PCIPnP Configuration Floppy Configuration SuperIO Configuration USB Configuration Enter F1 F9 F10 ESC Select Screen Select Item Go to Sub Screen General Help Load Defaults Save and Exit Exit v02.

54 (C) Copyright 1985-2005, American Megatrends, Inc. Setting wrong values in this section may cause the system to malfunction. 3.4.1 CPU Configuration BIOS SETUP UTILITY Advanced CPU Configuration Overclock Mode CPU Frequency (MHz) PCIE Frequency (MHz) Boot Failure Guard Spread Spectrum Ratio Actual Value Enhance Halt State Max CPUID Value Limit Intel (R) Virtualization tech.

CPU Thermal Throttling No-Excute Memory Protection Hyper Threading Technology Intel (R) SpeedStep(tm) tech. [Auto] [133] [100] [Enabled] [Auto] 9 [Disabled] [Disabled] [Enabled] [Enabled] [Disabled] [Enabled] [Auto] Select Screen Select Item Change Option General Help Load Defaults Save and Exit Exit Select the over clock mode. +F1 F9 F10 ESC v02.54 (C) Copyright 1985-2005, American Megatrends, Inc. Overclock Mode Use this to select Overclock Mode. The default value is [Auto]. Cnfiguration options: [Auto], [CPU, PCIE, Sync.], [CPU, PCIE, Async.] and [Optimized]. CPU Frequency (MHz) Use this option to adjust CPU frequency.

PCIE Frequency (MHz) Use this option to adjust PCIE frequency. 28 Boot Failure Guard Enable or disable the feature of Boot Failure Guard. Spread Spectrum This item should always be [Auto] for better system stability. 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 CMOS Setting appears to allow you changing the ratio value of this motherboard. Ratio Actual Value This is a read-only item, which displays the ratio actual value of this motherboard. Ratio CMOS Setting If the ratio status is unlocked, you will find this item appear to allow you changing the ratio value of this motherboard. If the CPU you adopt supports EIST (Intel (R) SpeedStep(tm) tech.), and you plan to adjust the ratio value, please disable the option " Intel (R) SpeedStep(tm) tech." in advance.

Enhance Halt State All processors support the Halt State (C1). The C1 state is supported through the native processor instructions HLT and MWAIT and requires no hardware support from the chipset. In the C1 power state, the processor maintains the context of the system caches. 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. This option will be hidden if the current CPU does not support CPU Thermal Throttling. 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. 29 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. The default value is [Auto]. Configuration options: [Auto], [Enabled] and [Disabled]. If you install Windows® XP and select [Auto], you need to set the "Power Schemes" as "Portable/Laptop" to enable this function. If you install Windows® Vista™ and want to enable this function, please set this item to [Enabled]. This item will be hidden if the current CPU does not support Intel (R) SpeedStep(tm) tech..

Please note that enabling this function may reduce CPU voltage and lead to system stability or compatibility issue with some power supplies. Please set this item to [Disable] if above issue occurs. 3.4.2 Chipset Configuration BIOS SETUP UTILITY Advanced Chipset Configuration DRAM Frequency Flexibility

Option DRAM tCL DRAM tRCD DRAM tRP DRAM tRAS Advanced DRAM Configuration Primary Graphics Adapter Internal Graphics Mode Select DVMT Mode Select DVMT/FIXED Memory OnBoard HD Audio Front Panel OnBoard Lan [Auto] [Disabled] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [PCI] [Auto] [DVMT Mode] [Maximum DVMT] [Auto] [Auto] [Enabled] Select Screen Select Item Change Option General Help Load Defaults Save and Exit Exit Options Auto 200MHz (DDRII400) 266MHz (DDRII533) 333MHz (DDRII667) +F1 F9 F10 ESC v02.

54 (C) Copyright 1985-2005, American Megatrends, Inc. 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: [200MHz (DDRII 400)], [266MHz (DDRII 533)], [333MHz (DDRII 667)]. The configuration options may change according to the corresponding FSB frequency of the CPU you adopt. 30 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 tCL Use this item to adjust the means of memory accessing.

Configuration options are [6], [5], [4], [3] and [Auto]. DRAM tRCD This controls the latency between the DRAM active command and the read / write command. Configuration options: [2 DRAM Clocks], [3 DRAM Clocks], [4 DRAM Clocks], [5 DRAM Clocks], [6 DRAM Clocks] and [Auto]. DRAM tRP This controls the idle clocks after a precharge command is issued. Configuration options: [2 DRAM Clocks], [3 DRAM Clocks], [4 DRAM Clocks], [5 DRAM Clocks], [6 DRAM Clocks] and [Auto].



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DRAM tRAS This controls the number of DRAM clocks for TRAS. Configuration options: [4 DRAM Clocks], [5 DRAM Clocks], [6 DRAM Clocks], [7 DRAM Clocks], [8 DRAM Clocks], [9 DRAM Clocks], [10 DRAM Clocks], [11 DRAM Clocks], [12 DRAM Clocks], [13 DRAM Clocks], [14 DRAM Clocks], [15 DRAM Clocks] and [Auto]. **Advanced DRAM Configuration** This item allows you to adjust advanced DRAM configuration.

The default value is [Auto]. Configuration options: [Auto] and [Manual]. **Primary Graphics Adapter** This item shows the primary graphics adapter. The default value is [PCI]. Configuration options: [Onboard], [PCI] and [PCI Express]. **Internal Graphics Mode Select** If you select [Auto], the onboard VGA will be automatically disabled when you install VGA card; the onboard VGA will be enabled without the installation of any add-on VGA card. If you select [Enabled, 8MB] or [Enabled, 1MB], the onboard VGA will be enabled. **DVMT Mode Select** Use this option to adjust DVMT mode. Configuration options: [Fixed Mode], [DVMT Mode] and [Fixed+DVMT Mode]. The default value is [DVMT Mode].

DVMT (Dynamic Video Memory Technology) is an architecture that offers breakthrough performance for the motherboard through efficient memory utilization. In Fixed mode, a fixed-size fragment of the system memory is allocated to the graphics core. In DVMT mode, the graphics driver allocates memory as needed for running graphics applications and is cooperatively using this memory with other system components. In Fixed+DVMT mode, the graphics processor gets a fixed-size chunk of 64MB of memory and up to 64MB of dynamically-allotted memory. This mode guarantees that at least 31 64MB of memory is available to the graphics core, with a possibility to increase this amount to 128MB, if necessary.

This item will not be used under Windows® Vista™ OS because the driver will intelligently detect physical memory available and allocate necessary video memory. **DVMT/FIXED Memory** You are allowed to adjust the shared memory size in this item if you set DVMT Mode Select as [DVMT Mode].

Configuration options: [64MB], [128MB] and [Maximum DVMT]. **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 Select** [Auto], [Enabled] or [Disabled] for the onboard HD Audio Front Panel. **OnBoard Lan** This allows you to enable or disable the "OnBoard Lan" feature. **PCI Fix Function** This allows you to enable or disable PCI Fix Function. The default value is [Enabled]. If this item is set to [Enabled], PCI frequency can be fixed at 33.3 MHz. If this item is set to [Disabled], PCI clock can be synchronized to PCIE clock. **DRAM Voltage** Use this to select DRAM Voltage. Configuration options: [Auto], [1.794V], [1.

851V], [1.908V], [1.965V], [2.029V], [2.086V], [2.144V] and [2.201V]. The default value of this feature is [Auto]. **NB Core Voltage** Use this to select NB core Voltage. Configuration options: [Auto], [1.

494V], [1.543V], [1.594V] and [1.643V]. The default value of this feature is [Auto].

VTT Voltage Use this to select VTT Voltage. Configuration options: [Auto], [1.21V], [1.32V], [1.40V] and [1.

51V]. The default value of this feature is [Auto]. **Intelligent Energy Saver** Intelligent Energy Saver is a revolutionary technology that delivers unparalleled power savings. The default value is [Auto]. Configuration options: [Auto], [Enabled] and [Disabled]. If you want to enable this function, please set this item to [Enabled]. Besides the BIOS option, you can also choose our Intelligent Energy Saver utility to enable this function.

3.2.3.3 **ACPI Configuration BIOS SETUP UTILITY Advanced ACPI Configuration Suspend To RAM Restore on AC/Power Loss Ring-In Power On PCI Devices Power On PS/2 Keyboard Power On RTC Alarm Power On ACPI HPET Table** [Disabled] [Power Off] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] +F1 F9 F10 ESC Select Screen Select Item Change Option General Help Load Defaults Save and Exit Exit Select auto-detect or disable the STR feature.

v02.54 (C) Copyright 1985-2005, American Megatrends, Inc. **Suspend to RAM** This field allows you to select whether to auto-detect or disable the Suspend-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. **ACPI HPET Table** Use this item to enable or disable ACPI HPET Table. The default value is [Disabled]. Please set this option to [Enabled] if you plan to use this motherboard to submit Windows® Vista™ certification. 3.3.

4.4 **IDE Configuration BIOS SETUP UTILITY Advanced IDE Configuration ATA/IDE Configuration SATAII 1 SATAII 2 SATAII 3 SATAII 4 IDE1 Master IDE1 Slave** [Enhanced] [Hard Disk] [Not Detected] [Not Detected] [Not Detected] [ATAPI CDROM] [Not Detected] Set [Compatible] when Legacy OS (MS-DOS, Win NT) device is used. Set [Enhanced] when Native OS (Win2000 / XP) is used. +F1 F9 F10 ESC Select Screen Select Item Change Option General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2005, American Megatrends, Inc.

ATA/IDE Configuration Please select [Compatible] when you install legacy OS (Windows NT). If native OS (Windows 2000 / XP) is installed, please select [Enhanced]. When [Compatible] is selected **Combined Option** It allows you to select between [SATA 1, SATA 2, SATA 3, SATA 4], [SATA 1, SATA 3, IDE 1], and [IDE 1, SATA 2, SATA 4]. If it is set to [SATA 1, SATA 3, IDE 1], then SATAII_2, SATAII_4 will not work. Likewise, if it is set to [IDE 1, SATA 2, SATA 4], then SATAII_1, SATAII_3 will not work. Because Intel® ICH7 south bridge only supports four IDE devices under legacy OS (Windows NT), you have to choose [SATA 1, SATA 2, SATA 3, SATA 4], [SATA 1, SATA 3, IDE 1], or [IDE 1, SATA 2, SATA 4] when the installed device is used with legacy OS. [SATA 1, SATA 2, SATA 3, SATA 4] Master Slave SATAII 1, SATAII 2 SATAII 3, SATAII 4 [SATA 1, SATA 3, IDE 1] SATAII 1 SATAII 3 [IDE 1, SATA 2, SATA 4] SATAII 2 SATAII 4 **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. 3.4 **BIOS SETUP UTILITY Advanced Primary IDE Master Device Vendor Size LBA Mode Block Mode PIO Mode Async DMA Ultra DMA S.**



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M.

A.R.T. Type LBA/Large Mode Block (Multi-Sector Transfer) PIO Mode DMA Mode S.M.A.R.T. 32Bit Data Transfer :Hard Disk :ST340014A :40.0 GB :Supported :16Sectors :4 :MultiWord DMA-2 :Ultra DMA-5 :Supported [Auto] [Auto] [Auto] [Auto] [Auto] [Disabled] [Enabled] Select the type of device connected to the system.

+F1 F9 F10 ESC Select Screen Select Item Change Option General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2005, American Megatrends, Inc. 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. 35 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.

4.5 PCIPnP Configuration BIOS SETUP UTILITY Advanced Advanced PCI / PnP Settings PCI Latency Timer PCI IDE BusMaster [32] [Enabled] Value in units of PCI clocks for PCI device latency timer register. +F1 F9 F10 ESC Select Screen Select Item Change Option General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2005, American Megatrends, Inc. 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. 36 3.4.6 Floppy Configuration In this section, you may configure the type of your floppy drive.

BIOS SETUP UTILITY Advanced Floppy Configuration Floppy A [1.44 MB 31 2"] Select the type of floppy drive connected to the system. +F1 F9 F10 ESC Select Screen Select Item Change Option General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2005, American Megatrends, Inc. 3.4.7 Super IO Configuration BIOS SETUP UTILITY Advanced Configure Super IO Chipset OnBoard Floppy Controller Serial Port Address Parallel Port Address Parallel Port Mode EPP Version ECP Mode DMA Channel Parallel Port IRQ [Enabled] [3F8 / IRQ4] [378] [ECP + EPP] [1.9] [DMA3] [IRQ7] Allow BIOS to Enable or Disable Floppy Controller. +F1 F9 F10 ESC Select Screen Select Item Change Option General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2003, American Megatrends, Inc.

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]. Parallel Port Address Use this item to set the address for the onboard parallel port or disable it. Configuration options: [Disabled], [378], and [278]. 37 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]. 3.4.8 USB Configuration BIOS SETUP UTILITY Advanced USB Configuration USB Controller USB 2.

0 Support Legacy USB Support [Enabled] [Enabled] [BIOS Setup Only] To enable or disable the onboard USB controllers. +F1 F9 F10 ESC Select Screen Select Item Change Option General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2005, American Megatrends, Inc. 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 option to select legacy support for USB devices. There are four configuration options: [Enabled], [Auto], [Disabled] and [BIOS Setup Only]. The default value is [BIOS Setup Only].

Please refer to below descriptions for the details of these four options: [Enabled] - Enables support for legacy USB. [Auto] - Enables legacy support if USB devices are connected. 38 [Disabled] - USB devices are not allowed to use under legacy OS and BIOS setup when [Disabled] is selected. If you have USB compatibility issue, it is recommended to select [Disabled] to enter OS. [BIOS Setup Only] - USB devices are allowed to use only under BIOS setup and Windows / Linux OS. 3.5 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. BIOS SETUP UTILITY Advanced H/W Monitor Boot Main Smart Security Exit Hardware Health Event Monitoring CPU Temperature M / B Temperature CPU Fan Speed Chassis Fan Speed Vcore + 3.30V + 5.00V + 12.

00V CPU Quiet Fan : 37 C / 98 F : 31 C / 87 F : 3400 RPM : N/A : : : 1.629V 3.306V 5.067V 11.890V [Disabled] Enable/Disable CPU Quiet Fan Function. F1 F9 F10 ESC Select Screen Select Item General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2003, American Megatrends, Inc. 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 items "Target CPU Temperature" and "Target Fan Speed" appear to allow you adjusting them. The default value is [Disabled]. @@@@The default value is [50 C/122 F]. Target Fan Speed Use this option to set the target fan speed.



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@@The default value is [Fast]. @@Enabled: Displays OEM Logo instead of POST messages. +F1 F9 F10 ESC Select Screen Select Item Change Option General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2003, American Megatrends, Inc. Full Screen Logo Use this item to enable or disable OEM Logo. The default value is [Enabled]. AddOn ROM Display Use this option to adjust AddOn ROM Display.

If you enable the option "Full Screen Logo" but you want to see the AddOn ROM information when the system boots, please select [Enabled]. Configuration options: [Enabled] and [Disabled]. The default value is [Enabled]. 40 Boot From Onboard LAN Use this item to enable or disable the Boot From Onboard LAN feature. Boot Up Num-Lock If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up. 3.7 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. BIOS SETUP UTILITY Advanced H/W Monitor Boot Main Smart Security Exit Security Settings Supervisor Password User Password : Not Installed : Not Installed Install or Change the password. Change Supervisor Password Change User Password Enter F1 F9 F10 ESC Select Screen Select Item Change General Help Load Defaults Save and Exit Exit v02.

54 (C) Copyright 1985-2005, American Megatrends, Inc. 41 3.8 Exit Screen Main Smart BIOS SETUP UTILITY Advanced H/W Monitor Boot Security Exit Exit Options Save Changes and Exit Discard Changes and Exit Discard Changes Would you like to save current setting user defaults ? Save 1st User Defaults Load 1st User Defaults Save 2nd User Defaults Load 2nd User Defaults Save 3rd User Defaults Load 3rd User Defaults Exit system setup after saving the changes. F10 key can be used for this operation. Enter F1 F9 F10 ESC Select Screen Select Item Go to Sub Screen General Help Load Defaults Save and Exit Exit v02.

54 (C) Copyright 1985-2005, American Megatrends, Inc. 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. Would you like to save current setting user defaults? In this option, you are allowed to load and save three user defaults according to your own requirements.

42 Software Support 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 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.

43 .



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