ASRock

A770DE+

User Manual

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Manual abstract:

In no event shall ASRock, its directors, officers, employees, or agents be liable for any indirect, special, incidental, or consequential damages (including damages for loss of profits, loss of business, loss of data, interruption of business and the like), even if ASRock has been advised of the possibility of such damages arising from any defect or error in the manual or product. 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. CALIFORNIA, USA ONLY The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance. "Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate" ASRock Website: http://www.asrock.

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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 If you require technical support related to this motherboard, please visit our website for specific information about the model you are using. www.
asrock.com/support/index.asp 1.1 ackage P ack age Contents 1 x ASRock A770DE+ Motherboard (ATX Form Factor: 12.0-in x 8.2-in, 30.5 cm x 20.8 cm) 1 x ASRock A770DE+ Quick Installation Guide 2 x ASRock A770DE+ Support CD 1 x Ultra ATA 66/100/133 IDE Ribbon Cable (80-conductor) 2 x Serial ATA (SATA) Data Cables (Optional) 1 x Serial ATA (SATA) HDD Power Cable (Optional) 1 x I/O Panel Shield 5 1.2 Specifications - 12.0-in x 8.

2-in, 30.5 cm x 20.8 cm - Support for Socket AM2+ / AM2 processors: AMD PhenomTM FX / Phenom / Athlon 64 FX / Athlon 64 X2 Dual-Core / Athlon X2 Dual-Core / Athlon 64 / Sempron processor - Support for AM3 processors: AMD PhenomTM II X4 / X3 and Athlon II X4 / X3 / X2 processors - Supports AMD OverDriveTM with ACC feature (Advanced Clock Calibration) - Supports CPU up to 140W - AMD LIVE!TM Ready - Supports AMD's Cool 'n' QuietTM Technology - FSB 2600 MHz (5.2 GT/s) - Supports Untied Overclocking Technology (see CAUTION 1) - Supports Hyper-Transport 3.0 (HT 3.0) Technology - Northbridge: AMD 770 - Southbridge: AMD SB710 - Dual Channel DDR2 Memory Technology (see CAUTION 2) - 4 x DDR2 DIMM slots - Support DDR2 1066/800/667/533 non-ECC, un-buffered memory (see CAUTION 3) - Max. capacity of system memory: 16GB (see CAUTION 4) - 2 x PCI Express 2.0 x16 slots (green @ x16 mode, orange @ x4 mode) - 1 x PCI Express 2.0 x1 slot - 3 x PCI slots - Supports ATITM CrossFireXTM - 7.1 CH Windows® VistaTM Premium Level HD Audio (VIA® VT1708S Audio Codec) - PCIE x1 Gigabit LAN 10/100/1000 Mb/s - Realtek RTL8111DL - Supports Wake-On-LAN I/O Panel - 1 x PS/2 Mouse Port - 1 x PS/2 Keyboard Port - 1 x Coaxial SPDIF Out Port - 1 x Optical SPDIF Out Port - 6 x Ready-to-Use USB 2.
0 Ports - 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED) - HD Audio Jack: Side Speaker/Rear Speaker/Central/Bass/ Line in/Front Speaker/Microphone (see CAUTION 5) Platform CPU Chipset Memory Expansion Slot Audio LAN Rear Panel I/O 6 Connector BIOS Feature Support CD Unique Feature Hardware Monitor OS Certifications - 6 x Serial ATAII 3.0Gb/s connectors, support RAID (RAID 0, RAID 1, RAID 10 and JBOD), NCQ, AHCI and "Hot Plug" functions (see CAUTION 6) - 1 x ATA133 IDE connector (supports 2 x IDE devices) - 1 x Floppy connector - 1 x IR header - 1 x COM port header - 1 x HDMI_SPDIF header - CPU/Chassis/Power FAN connector - 24 pin ATX power connector - 8 pin 12V power connector - CD in header - Front panel audio connector - 3 x USB 2.0 headers (support 6 USB 2.0 ports) (see CAUTION 7) - 8Mb AMI BIOS - AMI Legal BIOS - Supports "Plug and Play" - ACPI 1.1 Compliance Wake Up Events - Supports jumperfree - SMBIOS 2.
3.1 Support - CPU, NB, SB, VCCM Voltage Multi-adjustment - Supports Smart BIOS - Drivers, Utilities, AntiVirus Software (Trial Version), AMD OverDriveTM Utility - ASRock OC Tuner (see CAUTION 8) - Intelligent Energy Saver (see CAUTION 9) - Instant Boot - Hybrid Booster: - CPU Frequency Stepless Control (see CAUTION 10) - ASRock U-COP (see CAUTION 11) - Boot Failure Guard (B.

*F.G.) - ASRock AM2 Boost: ASRock Patented Technology to boost memory performance up to 12. 5% (see CAUTION 12) - CPU Temperature Sensing - Chassis Temperature Sensing - CPU/Chassis/Power Fan Tachometer - CPU Quiet Fan - Voltage Monitoring: +12V, +5V, +3.3V, Vcore - Microsoft® Windows® XP / XP Media Center / XP 64-bit / VistaTM / VistaTM 64-bit compliant - FCC, CE, Microsoft® WHQL Certificated 7 * For detailed product information, please visit our website: http://www.asrock.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. CAUTION! 1. 2. This motherboard supports Untied Overclocking Technology.*

*Please read "Untied Overclocking Technology" on page 36 for details. This motherboard supports Dual Channel Memory Technology. Before you implement Dual Channe1 33 RoHS HT3.0 CMOS BATTERY 30.5cm (12.0-in) 36 Bottom: MIC IN Top: LINE IN Center: FRONT 9 CLRCMOS1 1 10 32 Super I/O PCIE3 A770DE+ PCI1 31 AUDIO CODEC AMD SB710 Chipset SATAII_5 11 RAID SATAII_6 PCI2 8Mb BIOS 12 13 14 15 16 30 29 HDMI_SPDIF1 1 CD1 PCI3 HD_AUDIO1 IR1 1 USB10_11 USB8_9 SATAII_1 CHA_FAN1 SATAII_3 PANEL 1 1 USB6_7 PLED PWRBTN 1 1 COM1 1 FLOPPY1 1 HDLED RESET SATAII_2 1 1 SATAII_4 SPEAKER1 28 27 26 25 24 23 22 21 20 19 18 17 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 PS2_USB_PW1 Jumper ATX 12V Power Connector (ATX12V1) AM2 940-Pin CPU Socket CPU Heatsink Retention Module CPU Fan Connector (CPU_FAN1) 2 x 240-pin DDR2 DIMM Slots (Dual Channel A: DDRII_1, DDRII_2; Yellow) 2 x 240-pin DDR2 DIMM Slots (Dual Channel B: DDRII_3, DDRII_4; Orange) ATX Power Connector (ATXPWR1) Primary IDE Connector (IDE1, Blue) Clear CMOS Jumper (CLRCMOS1) Southbridge Controller Fifth SATAII Connector (SATAII_5, Red) Sixth SATAII Connector (SATAII_6, Red) Primary SATAII Connector (SATAII_1, Red) Third SATAII Connector (SATAII_3, Red) Fourth SATAII Connector (SATAII_4, Red) Chassis Speaker Header (SPEAKER 1, Purple) Secondary SATAII Connector (SATAII_2, Red) 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 Chassis Fan Connector (CHA_FAN1) USB 2.0 Header (USB8_9, Blue) USB 2.0 Header (USB6_7, Blue) USB 2.0 Header (USB10_11, Blue) System Panel Header (PANEL1, Orange) SPI Flash Memory (8Mb) Infrared Module Header (IR1) Floppy Connector (FLOPPY1) Serial Port Connector (COM1) Front Panel Audio Header (HD_AUDIO1, Lime) Internal Audio Connector: CD1 (Black) HDMI_SPDIF Header (HDMI_SPDIF1, Yellow) PCI Slots (PCI1- 3) PCI Express 2.0 x16 Slot (PCIE3; Orange) PCI Express 2. 0 x16 Slot (PCIE2; Green) PCI Express x1 Slot (PCIE1; Green) Power Fan Connector (PWR_FAN1) Northbridge Controller 10 1.4 Panel I/O Panel 1 2 3 4 5 6 7 8 14 13 12 11 10 9 1 *2 3 4 5 6 ** 7 PS/2 Mouse Port (Green) LAN RJ-45 Port (LAN1) Side Speaker (Gray) Rear Speaker (Black) Central / Bass (Orange) Line In (Light Blue) Front Speaker (Lime) 8 9 10 11 12 13 14 Microphone (Pink) USB 2.0 Ports (USB45) USB 2.0 Ports (USB23) USB 2.0 Ports (USB01) Optical SPDIF Out Port Coaxial SPDIF Out Port PS/2 Keyboard Port (Purple) * There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications. LAN Port LED Indications Activity/Link LED Status Description Status SPEED LED Description ACT/LINK SPEED LED LED Off No Activity Blinking Data Activity Off Orange Green 10Mbps connection 100Mbps connection 1Gbps connection LAN Port ** 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 Rear Speaker (No. 7) (No. 4) 2 4 6 8 V V V V -V V V Central / Bass (No. 5) --V V Side Speaker (No. 3) ---V 11 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 "VIA HD Audio Deck" tool on your system. Please follow below instructions according to the OS you install. For Windows® XP / XP 64-bit OS: Please click "VIA HD Audio Deck" icon , and click "Speaker". Then you are allowed to select "2 Channel", "4 Channel", "6 Channel" or "8 Channel". Click "Power" to save your change. For Windows® VistaTM / VistaTM 64-bit OS: Please click "VIA HD Audio Deck" icon , and click "Advanced Options" on the left side on the bottom. In "Advanced Options" screen, select "Independent Headphone", and click "OK" to save your change.*

If you enable Multi-Streaming function, Side Speaker function will be disabled. You can only choose to enable either Multi-Streaming function or Side Speaker function. 12 2. Installation This is an ATX form factor (12.0-in x 8.2-in, 30.5 cm x 20.8 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. 2. 3. 4. 5. Unplug the power cord from the wall socket before touching any component. 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. Hold components by the edges and do not touch the ICs. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that comes with the component. 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. 13 2.1 Step 1. Step 2. Step 3. CPU Installation Unlock the socket by lifting the lever up to a 90 angle. Position the CPU directly above the socket such that the CPU corner with the golden triangle matches the socket corner with a small triangle. 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. o 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.

Lever 90° Up CPU Golden Triangle Socker Corner Small Triangle STEP 1: Lift Up The Socket Lever STEP 2 / STEP 3: Match The CPU Golden Triangle To The Socket Corner Small Triangle 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.
5). For proper installation, please kindly refer to the instruction manuals of the CPU fan and the heatsink. 14 2.3 Installation of Memory Modules (DIMM) This motherboard provides four 240-pin DDR2 (Double Data Rate 2) 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) DDR2 DIMM pair in the slots of the same color.
In other words, you have to install identical DDR2 DIMM pair in Dual Channel A (DDRII_1 and DDRII_2; Yellow slots; see p.10 No.6) or identical DDR2 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 DDR2 DIMMs for dual channel configuration, and please install identical DDR2 DIMMs in all four slots. You may refer to the Dual Channel Memory Configuration Table below. Dual Channel Memory Configurations DDRII_1 DDRII_2 (Yellow Slot) (Yellow Slot) Populated Populated Populated Populated DDRII_3 (Orange Slot) Populated Populated DDRII_4 (Orange Slot) Populated Populated (1) (2) (3) * For the configuration (3), please install identical DDR2 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 DDR2 DIMM slots on this motherboard, it is unable to activate the Dual Channel Memory Technology. 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 4. 5.*

Technology . It is not allowed to install a DDR memory module into DDR2 slot; otherwise, this motherboard and DIMM may be damaged. If you adopt DDR2 1066 memory modules on this motherboard, it is recommended to install them on DDRII_3 and DDRII_4 slots. 3. 15 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 2.4 Expansion Slots (PCI and PCI Express Slots) There are 3 PCI slots and 3 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; Green) is used for PCI Express cards with x1 lane width cards, such as Gigabit LAN card and SATA2 card. PCIE2 (PCIE x16 slot; Green) is used for PCI Express x16 lane width graphics cards, or used to install PCI Express graphics cards to support CrossFireTM function. PCIE3 (PCIE x16 slot; Orange) is used for PCI Express x1 lane width cards, such as Gigabit LAN card, SATA2 card, etc., or used to install PCI Express graphics cards to support CrossFireTM function.
1. If you plan to install only one PCI Express VGA card on this motherboard, please install it on PCIE2 slot (Green). 2. For the information of the compatible CrossFireTM Mode PCI Express VGA cards and CrossFireTM setup procedures, please refer to "CrossFireTM Operation Guide" on page 18. 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 system unit cover (if your motherboard is already installed in a chassis). 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. Replace the system cover. Step 2. Step 3. Step 4. Step 5. Step 6. 17 2.5 CrossFire TM Operation Guide This motherboard supports CrossFireTM feature. CrossFireTM technology offers the most advantageous means available of combining multiple high performance Graphics Processing Units (GPU) in a single PC. Combining a range of different operating modes with intelligent software design and an innovative interconnect mechanism, CrossFireTM enables the highest possible level of performance and image quality in any 3D application. Currently CrossFireTM feature is supported with Windows® XP with Service Pack 2 and VistaTM OS. Please check AMD website for ATITM CrossFireTM driver updates. What graphics cards work with CrossFireTM? A complete CrossFireTM system requires a CrossFireTM Ready motherboard, a CrossFireTM Edition graphics card and a compatible standard Radeon (CrossFireTM Ready) graphics card from the same series, or two CrossFireTM Ready cards.
This applies to cards from ATITM or any of its partners. Please refer to below table for CrossFireTM VGA card support list according to the OS you install. For Windows® XP Vendor Chipset ATI Radeon 4850 Radeon 3870 Radeon 3850 Radeon 3650 Model Gecube GC-HD485PG3-E3 POWERCOLOR AX3870 512MD4-H Driver Catalyst 8.9 Catalyst 8.9 Gigabyte GV-RX385256H-B Catalyst 8.
9 POWERCOLOR AX3650 512MD3-XP Catalyst 8.9 Catalyst 8.9 Catalyst 8.9 Radeon HD 2600XT Gigabyte GV-RX26T256HP-B Radeon HD 2600PRO MSI RX2600PRO-T2D256EZ For Windows® Vista Vendor Chipset ATI Radeon 4850 Radeon 3870 Radeon 3870 Radeon 3850 Radeon 3650 Model Gecube GC-HD485PG3-E3 Driver Catalyst 8.9 POWERCOLOR AX3870 512MD4-H Catalyst 8.9 POWERCOLOR AX3870X2 1GBD3-H Catalyst 8.9 Gigabyte GV-RX385256H-B Catalyst 8.9 POWERCOLOR AX3650 512MD3-XP Catalyst 8.9 Catalyst 8.9 Catalyst 8.

9 Radeon HD 2600XT Gigabyte GV-RX26T256HP-B Radeon HD 2600PRO MSI RX2600PRO-T2D256EZ 18 1. If a customer incorrectly configures their system they will not see the performance benefits of CrossFireTM.

All three CrossFireTM components, a CrossFireTM Ready graphics card, a CrossFireTM Ready motherboard and a CrossFireTM Edition co-processor graphics card, must be installed correctly to benefit from the CrossFire TM multi-GPU platform. 2. If you pair a 12-pipe CrossFireTM Edition card with a 16-pipe card, both cards will operate as 12-pipe cards while in CrossFireTM mode. Enjoy the benefit of CrossFire TM Different CrossFire TM cards may require different methods to enable CrossFire TM feature. In below procedures, we use Radeon 2600XT as the example graphics card. For other CrossFireTM cards that ATITM has released or will release in the future, please refer to ATITM graphics card manuals for detailed installation guide. Step 1. Install one Radeon graphics card to PCIE2 slot.

For the proper installation procedures, please refer to section "Expansion Slots". Step 2. Install the other Radeon graphics card to PCIE3 slot. For the proper installation procedures, please refer to section "Expansion Slots". Step 3.

Connect two Radeon graphics cards by installing two CrossFireTM Bridge on CrossFire TM Bridge Interconnects on the top of Radeon graphics cards. (CrossFireTM Bridge is provided with the graphics card you purchase, not bundled with this motherboard. Please refer to your graphics card vendor for details.) 19 CrossFireTM Bridge Step 4. Connect the DVI monitor cable to the DVI connector on the Radeon graphics card on PCIE2 slot.

(You may use the DVI to D-Sub adapter to convert the DVI connector to D-Sub interface, and then connect the D-Sub monitor cable to the DVI to D-Sub adapter.) Step 5. Step 6. Power on your computer and boot into OS. Remove the ATITM driver if you have any VGA driver installed in your system. The Catalyst Uninstaller is an optional download. We recommend using this utility to uninstall any previously installed Catalyst drivers prior to installation. Please check AMD website for ATITM driver updates. Step 7. Step 8.

Step 9. Install the required drivers to your system. For Windows® XP OS: A. ATITM recommends Windows® XP Service Pack 2 or higher to be installed (If you have Windows® XP Service Pack 2 or higher installed in your system, there is no need to download it again): http://www.microsoft.com/windowsxp/sp2/default.mspx B. You must have Microsoft .NET Framework installed prior to downloading and installing the CATALYST Control Center. Please check Microsoft website for details.

For Windows® VistaTM OS: Install the CATALYST Control Center. Please check AMD website for details. Restart your computer. Install the VGA card drivers to your system, and restart your computer. Then you will find "ATI Catalyst Control Center" on your Windows® taskbar.

ATI Catalyst Control Center 20 Step 10. Double-click "ATI Catalyst Control Center". Click "View", and select "Advanced View". Click "CrossFire TM", and then set the option "Enable CrossFire TM" to "Yes". View CrossFireTM Enable CrossFireTM Although you have selected the option "Enable CrossFireTM", the CrossFireTM function may not work actually.

*Your computer will automatically reboot. After restarting your computer, please confirm whether the option "Enable CrossFireTM" in "ATI Catalyst Control Center" is selected or not; if not, please select it again, and then you are able to enjoy the benefit of CrossFireTM feature. Step 11. You can freely enjoy the benefit of CrossFireTM feature. * CrossFireTM appearing here is a registered trademark of ATITM Technologies Inc., and is used only for identification or explanation and to the owners' benefit, without intent to infringe. * For further information of ATITM CrossFireTM technology, please check AMD website for updates and details. 2.6 Surround Display Feature This motherboard supports Surround Display upgrade. With the external add-on PCI Express VGA cards, you can easily enjoy the benefits of Surround Display feature.*

For the detailed instruction, please refer to the document at the following path in the Support CD: ..\ Surround Display Information 21 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 PS2_USB_PW1 (see p.10, No. 1) Setting 1_2 2_3 Short pin2, pin3 to enable +5VSB (standby) for PS/2 or +5V +5VSB USB wake up events.

Note: To select +5VSB, it requires 2 Amp and higher standby current provided by power supply. Clear CMOS Jumper 1_2 2_3 (CLRCMOS1) (see p.10, No. 10) Default Clear CMOS 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 pin2 and pin3 on CLRCMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. 22 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! • Floppy Connector (33-pin FLOPPY1) (see p.10 No. 26) 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. 9) PIN1 IDE1 connect the blue end to the motherboard connect the black end to the IDE devices 80-conductor ATA 66/100/133 cable Note: Please refer to the instruction of your IDE device vendor for the details. Serial ATAII Connectors (SATAII_1: see p.10, No.

14) (SATAII_2: see p.10, No. 18) (SATAII_3: see p.10, No. 15) (SATAII_4: see p.10, No. 16) (SATAII_5: see p.10, No. 12) (SATAII_6: see p.10, No. 13) SATAII_1 SATAII_2 SATAII_3 SATAII_4 SATAII_5 SATAII_6 These six 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. Serial ATA (SATA) Data Cable (Optional) Either end of the SATA data cable can be connected to the SATA / SATAII hard disk or the SATAII connector on this 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 23 USB 2.

0 Headers (9-pin USB10_11) (see p.10 No. 22) 1 USB_PWR P-11 P+11 GND DUMMY GND P+10 P-10 USB_PWR Besides six default USB 2. 0 ports on the I/O panel, there are three USB 2.0 headers on this motherboard. Each USB 2.0 header can support two USB 2.0 ports. (9-pin USB8_9) (see p.10 No. 20) USB_PWR P-9 P+9 GND DUMMY 1 GND P+8 P-8 USB_PWR (9-pin USB6_7) (see p.10 No. 21) USB_PWR P-7 P+7 GND DUMMY 1 GND P+6 P-6 USB_PWR Infrared Module Header (5-pin IR1) (see p.

10 No. 25) 1 IRTX +5V DUMMY GND IRRX This header supports an optional wireless transmitting and receiving infrared module. 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 the front panel audio cable that allows convenient connection and control of audio devices. Internal Audio Connectors (4-pin CD1) (CD1: see p.10 No. 29) CD-L GND GND CD-R CD1 Front Panel Audio Header (9-pin HD_AUDIO1) (see p.10, No. 28) 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. C. Connect Ground (GND) to Ground (GND). 24 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]. System Panel Header (9-pin PANEL1) (see p.10 No. 23) 1 PLED+ PLEDPWRBTN# GND This header accommodates several system front panel functions. DUMMY RESET# GND HDLEDHDLED+ Chassis Speaker Header (4-pin SPEAKER 1) (see p.10 No.

17) 1 SPEAKER DUMMY DUMMY +5V Please connect the chassis speaker to this header. Chassis and Power Fan Connectors (3-pin CHA_FAN1) (see p.10 No. 19) GND +12V CHA_FAN_SPEED Please connect the fan cables to the fan connectors and match the black wire to the ground pin. (3-pin PWR_FAN1) (see p.10 No. 35) PWR_FAN_SPEED +12V GND CPU Fan Connector (4-pin CPU_FAN1) (see p.10 No. 5) FAN_SPEED_CONTROL CPU_FAN_SPEED +12V GND 4 3 2 1 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 (24-pin ATXPWR1) (see p.10 No. 8) 12 24 Please connect an ATX power supply to this connector. 1 13 25 Though this motherboard provides 24-pin ATX power connector, it can still work if you adopt a traditional 20-pin ATX power supply. To use the 20-pin ATX power supply, please plug your power supply along with Pin 1 and Pin 13. 20-Pin ATX Power Supply Installation 12 24 1 13 ATX 12V Power Connector (8-pin ATX12V1) (see p.10 No. 2) 4 8 Please connect an ATX 12V power supply to this connector. 1 6 Though this motherboard provides 8-pin ATX 12V power connector, 4 it can still work if you adopt a traditional 4-pin ATX 12V power supply. To use the 4-pin ATX power supply, please plug your power supply along with Pin 1 and Pin 5. 4-Pin ATX 12V Power Supply Installation 1 8 6 Serial port Header (9-pin COM1) (see p.10 No.27) 1 RRXD1 DDTR#1 DDSR#1 CCTS#1 This COM1 header supports a serial port module. RRI#1 RRTS#1 GND TTXD1 DDCD#1 HDMI_SPDIF Header (3-pin HDMI_SPDIF1) (see p.10 No. 30) 1 GND SPDIFOUT +5V 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. 26 HDMI_SPDIF Cable (Optional) C B A 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.

C. white end (3-pin) SPDIFOUT GND blue black A. black end +5V SPDIFOUT GND blue black B. white end (2-pin) SPDIFOUT GND blue black 27 2.9 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 17. Connect the black end (A) of HDMI_SPDIF cable to the HDMI_SPDIF header (HDMI_SPDIF1, yellow, see page 10, No. 30) 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 26. 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 2. 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. Step 5. 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.

Install HDMI VGA card driver to your system. 28 SAT 2 . 1 0 SATAII Hard Disk Setup Guide Before installing SATAII hard disk to your computer, please carefully read below SATAII hard disk setup guide. Some default setting of SATAII hard disks may not be at SATAII mode, which operate with the best performance.

In order to enable SATAII function, please follow the below instruction with different vendors to correctly adjust your SATAII hard disk to SATAII mode in advance; otherwise, your SATAII hard disk may fail to run at SATAII mode. Western Digital 7 8 5 6 3 4 1 2 If pin 5 and pin 6 are shorted, SATA 1.5Gb/s will be enabled. On the other hand, if you want to enable SATAII 3.0Gb/s, please remove the jumpers from pin 5 and pin 6. SAMSUNG 7 8 5 6 3 4 1 2 If pin 3 and pin 4 are shorted, SATA 1.

5Gb/s will be enabled. On the other hand, if you want to enable SATAII 3.0Gb/s, please remove the jumpers from pin 3 and pin 4. HITACHI Please use the Feature Tool, a DOS-bootable tool, for changing various ATA features. Please visit HITACHI's website for details: http://www. hitachigst.com/hdd/support/download.htm The above examples are just for your reference. 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.

29 AT (SAT AT (SAT 2 . @@@@This section will guide you to install the SATA / SATAII hard disks. @@STEP 2: Connect the SATA power cable to the SATA / SATAII hard disk. @@@@@@@@AHCI also provides usability enhancements such as Hot Plug. @@@@@@@@A. 7-pin SATA data cable B. SATA power cable with SATA 15-pin power connector interface A. SATA data cable (Red) B. @@@@2. @@@@@@@@@@3.

@@@@@@5. @@Step 2 Connect SATA data cable to the motherboard's SATAII connector. SATA power cable 1x4-pin power connector (White) Step 3 Connect SATA 15-pin power cable connector (Black) end to SATA / SATAII HDD. Step 4 Connect SATA data cable to the SATA / SATAII HDD. How to Hot Unplug a SATA / SATAII HDD: Points of attention, before you process the Hot Unplug: Please do follow below instruction sequence to process the Hot Unplug, improper procedure will cause the SATA / SATAII HDD damage and data loss. Step 1 Unplug SATA data cable from SATA / SATAII HDD side. Step 2 Unplug SATA 15-pin power cable connector (Black) from SATA / SATAII HDD side. 32 2 . 1 4 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 5 Installing Windows ® XP / XP 64-bit / Vista TM / With Functions Vista TM 64-bit W ith RAID Functions If you want to install Windows® XP, Windows® XP 64-bit, Windows® VistaTM or Windows® VistaTM 64-bit on a RAID disk composed of 2 or more SATA / SATAII HDDs with RAID functions, please follow below procedures according to the OS you install. 2.

15.1 Installing Windows ® XP / XP 64-bit With RAID Functions Functions If you want to install Windows® XP or Windows® XP 64-bit on a RAID disk composed of 2 or more SATA / SATAII HDDs with RAID functions, please follow below steps. STEP 1: Set up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen IDE Configuration.

B. Set the "SATA Operation Mode" option to [RAID]. STEP 2: Make a SATA / SATAII Driver Diskette. A. Insert the ASRock Support CD into your optical drive to boot your system. (There are two ASRock Support CD in the motherboard gift box pack, please choose the one for Windows® XP / XP 64-bit.) B. During POST at the beginning of system boot-up, press <F11> key, and then a window for boot devices selection appears. Please select CD-ROM as the boot device. C.

When you see the message on the screen, "Generate Serial ATA driver diskette [YN]?", press <Y>. D. Then you will see these messages, Please insert a blank formatted diskette into floppy drive A: press any key to start Please insert a floppy diskette into the floppy drive, and press any key. E. The system will start to format the floppy diskette and copy SATA / SATAII drivers into the floppy diskette. STEP 3: Use "RAID Installation Guide" to set RAID configuration. Before you start to configure RAID function, you need to check the RAID installation guide in the Support CD for proper configuration. Please refer to the BIOS RAID installation guide part of the document in the following path in the Support CD: .. \ RAID Installation Guide 33 STEP 4: Install Windows® XP / Windows® XP 64-bit OS on your system.

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

(Select "AMD AHCI Compatible RAID Controllerx86 platform" for Windows® XP, or "AMD AHCI Compatible RAID Controller-x64 platform" for Windows® XP 64-bit.) NOTE. If you install Windows® XP / Windows® XP 64-bit on IDE HDDs and want to manage (create, convert, delete, or rebuild) RAID functions on SATA / SATAII HDDs, you still need to set up "SATA Operation Mode" to [RAID] first. Then, please set the RAID configuration by using the Windows RAID installation guide in the following path in the Support CD: ..

\ RAID Installation Guide 2.15.2 Installing Windows ® Vista TM / Vista TM 64-bit With Functions RAID Functions If you want to install Windows® VistaTM or Windows® VistaTM 64-bit on a RAID disk composed of 2 or more SATA / SATAII HDDs with RAID functions, please follow below steps. STEP 1: Set up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen IDE Configuration. B. Set the "SATA Operation Mode" option to [RAID]. STEP 2: Use "RAID Installation Guide" to set RAID configuration. Before you start to configure RAID function, you need to check the RAID installation guide in the Support CD for proper configuration.

Please refer to the BIOS RAID installation guide part of the document in the following path in the Support CD: .. \ RAID Installation Guide STEP 3: Install Windows® VistaTM / VistaTM 64-bit OS on your system. Insert the Windows® VistaTM / Windows® VistaTM 64-bit optical disk into the optical drive to boot your system, and follow the instruction to install Windows® VistaTM / Windows® VistaTM 64-bit OS on your system. When you see "Where do you want to install Windows? " page, please insert the ASRock Support CD into your optical drive, and click the "Load Driver" button on the left on the bottom to load the AMD RAID drivers. AMD RAID drivers are in the following path in our Support CD: (There are two ASRock Support CD in the motherboard gift box pack, please choose the one for Windows® VistaTM / VistaTM 64-bit.) .. \ I386 (For Windows® VistaTM OS) ..

\ AMD64 (For Windows® VistaTM 64-bit OS) After that, please insert Windows® VistaTM / Windows® VistaTM 64-bit optical disk into the optical drive again to continue the installation.

34 NOTE1. If you install Windows® VistaTM / Windows® VistaTM 64-bit on IDE HDDs and want to manage (create, convert, delete, or rebuild) RAID functions on SATA / SATAII HDDs, you still need to set up "SATA Operation Mode" to [RAID] in BIOS first. Then, please set the RAID configuration by using the Windows RAID installation guide in the following path in the Support CD: .. \ RAID Installation Guide NOTE2. Currently, if you install Windows® VistaTM / Windows® VistaTM 64-bit on IDE HDDs and there are no SATA / SATAII device used, please set up "SATA Operation Mode" to [IDE] in BIOS. 2 . 1 6 Installing Windows ® XP / XP 64-bit / Vista TM / Without Functions Vista TM 64-bit W ithout RAID Functions If you want to install Windows® XP, Windows® XP 64-bit, Windows® VistaTM or Windows® VistaTM 64-bit OS on your SATA / SATAII HDDs without RAID functions, please follow below procedures according to the OS you install. 2. 16.1 Installing Windows ® XP / XP 64-bit Without RAID Functions Functions If you want to install Windows® XP or Windows® XP 64-bit on your SATA / SATAII HDDs without RAID functions, please follow below steps. Using SATA / SATAII HDDs with NCQ and Hot Plug functions STEP 1: Set Up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen IDE Configuration. B. Set the "SATA Operation Mode" option to [IDE]. STEP 2: Make a SATA / SATAII driver diskette. Make a SATA / SATAII driver diskette by following section 2.15.

1 step 2 on page 33. STEP 3: Set Up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen IDE Configuration. B. Set the "SATA Operation Mode" option to [AHCI]. STEP 4: Install Windows® XP / Windows® XP 64-bit OS on your system. You can start to install Windows® XP / Windows® XP 64-bit OS on your system. At the beginning of Windows® setup, press F6 to install a third-party AHCI driver. When prompted, insert the SATA / SATAII driver diskette containing the AMD AHCI driver. After reading the floppy disk, the driver will be presented. Select the driver to install according to the OS you install. (Select "AMD AHCI Compatible RAID Controller-x86 platform" for Windows® XP, or "AMD AHCI Compatible RAID Controller-x64 platform" for Windows® XP 64-bit.) Using SATA / SATAII HDDs without NCQ and Hot Plug functions 35 STEP 1: Set up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen IDE Configuration. B. Set the "SATA Operation Mode" option to [IDE]. STEP 2: Install Windows® XP / Windows® XP 64-bit OS on your system. 2. 16.2 Installing Windows ® Vista TM / Vista TM 64-bit Without Functions RAID Functions If you want to install Windows® VistaTM or Windows® VistaTM 64-bit on your SATA / SATAII HDDs without RAID functions, please follow below steps. Using SATA / SATAII HDDs with NCQ and Hot Plug functions STEP 1: Set Up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen B. Set the "SATA Operation Mode" option to [AHCI]. IDE Configuration. STEP 2: Install Windows® Vista TM / VistaTM 64-bit OS on your system. Insert the Windows® VistaTM / Windows® VistaTM 64-bit optical disk into the optical drive to boot your system, and follow the instruction to install Windows® VistaTM / Windows® VistaTM 64-bit OS on your system. When you see "Where do you want to install Windows? " page, please insert the ASRock Support CD into your optical drive, and click the "Load Driver" button on the left on the bottom to load the AMD AHCI drivers.

AMD AHCI drivers are in the following path in our Support CD: (There are two ASRock Support CD in the motherboard gift box pack, please choose the one for Windows® VistaTM / VistaTM 64-bit.) .. \ I386 (For Windows® VistaTM OS) .. \ AMD64 (For Windows® VistaTM 64-bit OS) After that, please insert Windows® VistaTM / Windows® VistaTM 64-bit optical disk into the optical drive again to continue the installation. Using SATA / SATAII HDDs without NCQ and Hot Plug functions STEP 1: Set up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen IDE Configuration. B. Set the "SATA Operation Mode" option to [IDE]. STEP 2: Install Windows® VistaTM / VistaTM 64-bit OS on your system. Technology 2.17 Untied Overclocking 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 8 for the possible overclocking risk before you apply Untied Overclocking Technology. 36 3. BIOS SETUP UTILITY 3. 1 Introduction This section explains how to use the BIOS SETUP UTILITY to configure your system. The SPI 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 Main Smart Advanced H/W Monitor Boot screen has a menu bar with the following selections: To set up the system time/date information To load the BIOS according to your requirements To set up the advanced BIOS features To display current hardware status 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.

37 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.

BIOS SETUP UTILITY Advanced H/W Monitor Boot Main Smart Security Exit System Overview System Time System Date BIOS Version Processor Type [17:00:09] [Wed 04/08/2009] Use [Enter], [TAB] or [SHIFT-TAB] to select a field. Use [+] or [-] to configure system Time. : A770DE+ P1.0 : AMD Phenom(tm) II X3 720 Processor (64bit) Processor Speed : 2800MHz Microcode Update : 100F42/1000086 L1 Cache Size : 384KB L2 Cache Size : 1536KB L3 Cache Size : 6144KB Total Memory DDRII_A1 DDRII_A2 DDRII_B1 DDRII_B2 : 2048MB Single-Channel Memory Mode : 2048MB/400MHz (DDR2 800) : None : None : None +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. 38 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 Load Load Load Load BIOS Defaults Performance Setup Default (IDE/SATA) Performance Setup AHCI Mode Performance Setup RAID Mode 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 Performance Setup AHCI Mode This performance setup AHCI mode may not be compatible with all system configurations. If system boot failure occurs after loading, please resume optimal default settings. F3 key can be used for this operation. Load Performance Setup RAID Mode This performance setup RAID mode may not be compatible with all system configurations. If system boot failure occurs after loading, please resume optimal default settings. F4 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. 39 3.4 Advanced Screen In this section, you may set the configurations for the following items: CPU Configuration, Memory 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 Memory 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) Spread Spectrum Boot Failure Guard Cool' n' Quiet Secure Virtual Machine Enhanced Halt State L3 Cache Allocation Advanced Clock Calibration [Auto] [200] [100] [Auto] [Enabled] [Auto] [Enabled] [Disabled] [Auto] [Disabled] Processor Maximum Frequency x10.5 2100 MHZ North Bridge Maximum Frequency x9.0 18 00 MHz Processor Maximum Voltage 1.2500 V [Auto] Multiplier/Voltage Change [Auto] [Auto] Select the over clock mode. HT Bus Speed HT Bus Width +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. AM2 Boost This option appears only when you adopt AM2 CPU. If you set this option to [Enabled], you will enable ASRock AM2 Boost function, which will improve the memory performance. The default value is [Disabled]. Please refer to caution 12 on page 9 for details.

40 Overclock Mode Use this to select Overclock Mode. The default value is [Auto]. Configuration 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. Spread Spectrum This item should always be [Auto] for better system stability. 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' QuietTM technology.

The default value is [Auto]. Configuration options: [Auto], [Enabled] and [Disabled]. If you install Windows® VistaTM and want to enable this function, please set this item to [Enabled]. Please note that enabling this function may reduce CPU voltage and memory frequency, and lead to system stability or compatibility issue with some memory modules or power supplies. Please set this item to [Disable] if above issue occurs. Secure Virtual Machine When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by AMD-V. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. Enhance Halt State This option appears only when you adopt Phenom CPU. 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. L3 Cache Allocation This option appears only when you adopt Phenom CPU. The default value is [Auto]. Configuration options: [Auto], [BSP Only] and [All Cores].

Advanced Clock Calibration This allows you to adjust Advanced Clock Calibration feature. The default value is [Disabled]. Configuration options: [Disabled], [Auto], [All Cores] and [Per Core]. If you select [All Cores], you will see the option "Value (All Cores)". Configuration options: [+12%] to [-12%].

If you select [Per Core], you will see the options "Value (Core 0)", "Value (Core 1)", "Value (Core 2) "and "Value (Core 3)". Configuration options: [+12%] to [-12%]. Processor Maximum Frequency It will display Processor Maximum Frequency for reference. 41 North Bridge Maximum Frequency This option appears only when you adopt Phenom CPU.

It will display North Bridge Maximum Frequency 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 Frequency and Processor Voltage. However, it is recommended to keep the default value for system stability. BIOS SETUP UTILITY Advanced CPU Configuration Overclock Mode CPU Frequency (MHz) PCIE Frequency (MHz) Spread Spectrum Boot Failure Guard Cool' n' Quiet Secure Virtual Machine Enhanced Halt State L3 Cache Allocation Advanced Clock Calibration [Auto] [200] [100] [Auto] [Enabled] [Auto] [Enabled] [Disabled] [Auto] [Disabled] Processor Maximum Frequency x10.

5 2100 MHZ North Bridge Maximum Frequency x9.0 1800 MHz Processor Maximum Voltage 1.2500 V [Manual] Multiplier/Voltage Change Processor Target Frequency x10.5 2100 MHZ North Bridge Target Frequency x9.0 1800 MHz Select the over clock mode. +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. Processor Frequency This option appears only when you adopt AM2 CPU. This item will show when "Multiplier/Voltage Change" is set to [Manual]; otherwise, it will be hidden. The range of the value depends on the CPU you adopt on this motherboard.
However, for system stability, it is not recommended to adjust the value of this item. Processor Voltage This option appears only when you adopt AM2 CPU. This item will show when "Multiplier/Voltage Change" is set to [Manual]; otherwise, it will be hidden. The range of the value depends on the CPU you adopt on this motherboard. However, for safety and system stability, it is not recommended to adjust the value of this item.
CPU Frequency Multiplier This option appears only when you adopt Phenom CPU. However, for safety and system stability, it is not recommended to adjust the value of this item. CPU Voltage This option appears only when you adopt Phenom CPU. It allows you to adjust the value of CPU voltage. However, for safety and system stability, it is not recommended to adjust the value of this item.
42 NB Frequency Multiplier This option appears only when you adopt Phenom CPU. However, for safety and system stability, it is not recommended to adjust the value of this item. NB Voltage This option appears only when you adopt Phenom CPU. It allows you to adjust the value of NB voltage. However, for safety and system stability, it is not recommended to adjust the value of this item. HT Bus Speed This feature allows you selecting Hyper-Transport bus speed. Configuration options: [Auto],[x1 200 MHz] to [x5 1000 MHz]. If you adopt Phenom CPU, the configuration options are: [Auto], [x1 200 MHz] to [x13 2600 MHz]. The configuration options depend on the CPU you adopt. HT Bus Width This feature allows you selecting Hyper-Transport bus width.

Configuration options: [Auto], [8 Bit] and [16 Bit]. 3.4.2 Memory Configuration BIOS SETUP UTILITY Advanced Memory Configuration Memory Clock Flexibility Option Memory Controller Mode Power Down Enable Bank Interleaving Channel Interleaving Timing : 4-4-4-12 CAS Latency (CL) TRCD TRP TRAS Timing : 2-2-2-4-16 TRTP TRRD TWTR TWR [Auto] [Disabled] [Unganged] [Enabled] [Auto] [XOR of Address bit] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] +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. Memory Clock This item can be set by the code using [Auto]. You can set one of the standard values as listed: [200 MHz (DDR2 400)], [266 MHz (DDR2 533)], [333 MHz (DDR2 667)] and [400MHz (DDR2 800)]. If you adopt Phenom CPU, there is one more option: [533MHz (DDR2 1066)] Flexibility Option The default value of this option is [Disabled]. It will allow better tolerance for memory compatibility when it is set to [Enabled]. Memory Controller Mode This option appears only when you adopt Phenom CPU.
It allows you to adjust the memory controller mode. Configuration options: [Unganged] and [Ganged]. The default value is [Unganged]. 43 Power Down Enable Use this item to enable or disable DDR power down mode. Bank Interleaving Interleaving allows memory accesses to be spread out over banks on the same node, or accross nodes, decreasing access contention.
Channel Interleaving This option appears only when you adopt Phenom CPU. It allows you to enable Channel Memory Interleaving. Configuration options: [Disabled], [XOR of Address bit [20:16, 6]], [XOR of Address bit [20:16, 9]], [Address bits 6] and [Address bits 12]. The default value is [XOR of Address bit [20:16, 6]]. CAS Latency (CL) Use this item to adjust the means of memory accessing.
Configuration options: [Auto] to [7CLK]. The default value is [Auto]. TRCD Use this to adjust TRCD values. Configuration options: [Auto], [3CLK] to [6CLK]. The default value is [Auto]. TRP Use this to adjust TRP values. Configuration options: [Auto], [3CLK] to [6CLK]. The default value is [Auto]. TRAS Use this to adjust TRAS values. Configuration options: [Auto], [5CLK] to [18CLK].

The default value is [Auto]. TRTP Use this to adjust TRTP values. Configuration options: [Auto], [2-4 CLK] and [3-5 CLK]. The default value is [Auto]. TRRD Use this to adjust TRRD values. Configuration options: [Auto], [2CLK] to [5CLK]. The default value is [Auto]. TWTR Use this to adjust TWTR values. Configuration options: [Auto], [1CLK] to [3CLK]. The default value is [Auto].
TWR Use this to adjust TWR values. Configuration options: [Auto], [3CLK] to [6CLK]. The default value is [Auto]. TRC Use this to adjust TRC values. Configuration options: [Auto], [11CLK] to [26CLK].
The default value is [Auto]. TRWTWB Use this to adjust TRWTWB values. Configuration options: [Auto], [3CLK] to [10CLK]. The default value is [Auto]. 44 TRWTTO Use this to adjust TRWTTD values.
Configuration options: [Auto], [3CLK] to [17CLK]. The default value is [Auto]. TWRRD Use this to adjust TWRRD values. Configuration options: [Auto], [1CLK] to [4CLK]. The default value is [Auto]. TWRWR Use this to adjust TWRWR values. Configuration options: [Auto], [1CLK] to [4CLK]. The default value is [Auto]. TRDRD Use this to adjust TRWTTD values. Configuration options: [Auto], [3CLK] to [5CLK].

The default value is [Auto]. TRFC0 Use this to adjust TRFC0 values. Configuration options: [Auto], [75ns], [105ns], [127.5ns], [195ns] and [327.5ns]. The default value is [Auto]. TRFC1 Use this to adjust TRFC1 values. Configuration options: [Auto], [90ns], [110ns], [160ns], [300ns] and [350ns]. The default value is [Auto]. TRFC2 Use this to adjust TRFC2 values.
Configuration options: [Auto], [90ns], [110ns], [160ns], [300ns] and [350ns]. The default value is [Auto]. TRFC3 Use this to adjust TRFC3 values. Configuration options: [Auto], [90ns], [110ns], [160ns], [300ns] and [350ns]. The default value is [Auto].
MA Timing Use this to adjust values for MA timing. Configuration options: [Auto], [2T], [1T].