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You can read the recommendations in the user guide, the technical guide or the installation guide for ASROCK P45DE3. You'll find the answers to all your questions on the ASROCK P45DE3 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual ASROCK P45DE3
User guide ASROCK P45DE3
Operating instructions ASROCK P45DE3
Instructions for use ASROCK P45DE3
Instruction manual ASROCK P45DE3



ASRock

P45DE3

User Manual

Version 1.0
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Manual abstract:

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ASRock Website: <http://www.asrock.com>
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4 Chapter 1: Introduction Thank you for purchasing ASRock P45DE3 motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance. In this manual, chapter 1 and 2 contain introduction of the motherboard and step-by-step guide to the hardware installation. Chapter 3 and 4 contain the configuration guide to BIOS setup and information of the Support CD. Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock website without further notice. You may find the latest VGA cards and CPU support lists on ASRock website as well. ASRock website <http://www.asrock.com>.

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 Pack ackage 1.

1 P ack age Contents ASRock P45DE3 Motherboard (ATX Form Factor: 12.0-in x 8.0-in, 30.5 cm x 20.3 cm) ASRock P45DE3 Quick Installation Guide ASRock P45DE3 Support CD One 80-conductor Ultra ATA 66/100/133 IDE Ribbon Cable Two Serial ATA (SATA) Data Cables (Optional) One I/O Panel Shield 5 1.

2 Specifications - ATX Form Factor: 12.0-in x 8.0-in, 30.5 cm x 20.3 cm - LGA 775 for Intel® Core™ 2 Extreme / Core™ 2 Quad / Core™ 2 Duo / Pentium® Dual Core / Celeron® Dual Core / Celeron®, supporting Penryn Quad Core Yorkfield and Dual Core Wolfdale processors - Compatible with FSB2000/1600/1333/1066/800MHz (see CAUTION 1) - Supports Hyper-Threading Technology (see CAUTION 2) - Supports Untied Overclocking Technology (see CAUTION 3) - Supports EM64T CPU - Northbridge: Intel® P45 - Southbridge: Intel® ICH10 - Dual Channel DDR3 Memory Technology (see CAUTION 4) - 4 x DDR3 DIMM slots - Support DDR3 1600/1333/1066/800 non-ECC, un-buffered memory (see CAUTION 5) - Max. capacity of system memory: 16GB (see CAUTION 6) - Supports Intel® Extreme Memory Profile (XMP) - 1 x PCI Express 2.0 x16 slot (blue @ x16 mode) - 3 x PCI Express x1 slots - 2 x PCI slots - 7.1 CH Windows® Vista™ 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 7) - 6 x SATAII 3.0Gb/s connectors, support NCQ, AHCI and "Hot Plug" functions (see CAUTION 8) - 1 x ATA133 IDE connector (supports 2 x IDE devices) - 1 x Floppy connector Platform CPU Chipset Memory Expansion Slot Audio LAN Rear Panel I/O Connector 6 BIOS Feature Support CD Unique Feature Hardware Monitor OS Certifications - 1 x IR header - 1 x COM port header - 1 x HDMI_SPDIF header - 1 x TPM 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 9) - 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, DRAM, GTL REF, NB, NB GTL REF, SB Core, SB 1.1V, VTT, PLL Voltage Multi-adjustment - Supports I. O. T. (Intelligent Overclocking Technology) - Supports Smart BIOS - Drivers, Utilities, AntiVirus Software (Trial Version) - ASRock OC Tuner (see CAUTION 10) - Intelligent Energy Saver (see CAUTION 11) - Instant Boot - ASRock Instant Flash (see CAUTION 12) - Hybrid Booster: - CPU Frequency Stepless Control (see CAUTION 13) - ASRock U-COP (see CAUTION 14) - Boot Failure Guard (B.F. G.) - CPU Temperature Sensing - Chassis Temperature Sensing - CPU/Chassis/Power Fan Tachometer - CPU Quiet Fan - Voltage Monitoring: +12V, +5V, +3.

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3V, CPU Vcore - Microsoft® Windows® 2000 / XP / XP 64-bit / Vista™ / Vista™ 64-bit / Win7 compliant (see CAUTION 15) - FCC, CE, WHQL - EuP Ready (EuP ready power supply is required) (see CAUTION 16) * For detailed product information, please visit our website: <http://www.asrock.com> 7
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.

3. 4. Some CPU you adopt may be overclocked to FSB2000 MHz. About the setting of "Hyper Threading Technology", please check page 47. This motherboard supports Untied Overclocking Technology. Please read "Untied Overclocking Technology" on page 33 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 17 for proper installation. 5. Please check the table below for the CPU FSB frequency and its corresponding memory support frequency.

CPU FSB Frequency 1600 1333 1066 800 6. Memory Support Frequency DDR3 800, DDR3 1066, DDR3 1333, DDR3 1600 DDR3 800, DDR3 1066, DDR3 1333 DDR3 800, DDR3 1066 DDR3 800 Due to the operating system limitation, the actual memory size may be less than 4GB for the reservation for system usage under Windows® XP and Windows® Vista™. For Windows® XP 64-bit and Windows® Vista™ 64-bit with 64-bit CPU, there is no such limitation.

7. For microphone input, this motherboard supports both stereo and mono modes. For audio output, this motherboard supports 2-channel, 4channel, 6-channel, and 8-channel modes. Please check the table on page 11 for proper connection. 8. Before installing SATAII hard disk to SATAII connector, please read the "SATAII Hard Disk Setup Guide" on page 273 (Port 2) 12 13 SATAII_2 (Port 1) 14 15 16 IR1 1 HDMI_SPDIF1 FLOPPY1 COM1 PLED PWRBTN PANEL1 USB6_7 1 1 1 TPM1 1 HDLED RESET 1 1 26 25 24 23 22 21 20 19 SATAII_5 (Port 4) 1 18 17 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 PS2_USB_PWR1 Jumper ATX 12V Connector (ATX12V1) CPU Fan Connector (CPU_FAN1) 775-Pin CPU Socket 2 x 240-pin DDR3 DIMM Slots (Dual Channel: DDR3_A1, DDR3_B1; Blue) 2 x 240-pin DDR3 DIMM Slots (Dual Channel: DDR3_A2, DDR3_B2; White) ATX Power Connector (ATXPWR1) Chassis Fan Connector (CHA_FAN1) IDE1 Connector (IDE1, Blue) Clear CMOS Jumper (CLRCMOS1) SPI BIOS Chip South Bridge Controller Primary SATAII Connector (SATAII_1 (Port 0), Red) Secondary SATAII Connector (SATAII_2 (Port 1), Red) Third SATAII Connector (SATAII_3 (Port 2), Red) Fourth SATAII Connector (SATAII_4 (Port 3), Red) Sixth SATAII Connector (SATAII_6 (Port 5), Red) Fifth SATAII Connector (SATAII_5 (Port 4), Red) USB 2.0 Header (USB6_7, Blue) 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 USB 2.

0 Header (USB8_9, Blue) USB 2.0 Header (USB10_11, Blue) System Panel Header (PANEL1, Orange) Chassis Speaker Header (SPEAKER 1, Purple) TPM Header (TPM1) COM Port Header (COM1) Floppy Connector (FLOPPY1) HDMI_SPDIF Header (HDMI_SPDIF1, Yellow) Infrared Module Header (IR1) PCI Slots (PCI1 - 2) PCI Express x1 Slot (PCIE4) PCI Express 2.0 x16 Slot (PCIE3, Blue) Front Panel Audio Header (HD_AUDIO1, Lime) PCI Express x1 Slot (PCIE2) PCI Express x1 Slot (PCIE1) Internal Audio Connector: CD1 (Black) Power Fan Connector (PWR_FAN1) North Bridge Controller 10 SATAII_6 (Port 5) 27 1 1 1 1 SPEAKER1 1 PCI2 SATAII_4 (Port 3) 29 28 RoHS PCI1 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 Link Blinking Data Activity On Link 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® 2000 / 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® Vista™ / Vista™ 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 Chapter 2: Installation This is an ATX form factor (12.0" x 8.0", 30.5 x 20.3 cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components. 2.1 Screw Holes Place screws into the holes indicated by circles to secure the motherboard to the chassis. Do not over-tighten the screws! Doing so may damage the motherboard.

2.2 Pre-installation Precautions Take note of the following precautions before you install motherboard components or change any motherboard settings. 1. Unplug the power cord from the wall socket before touching any component. 2.

To avoid damaging the motherboard components due to static electricity, NEVER place your motherboard directly on the carpet or the like.



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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. 13 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. Step 1. Open the socket: Step 1-1. Disengaging the lever by depressing down and out on the hook to clear retention tab. Step 1-2. Rotate the load lever to fully open position at approximately 135 degrees. Step 1-3. Rotate the load plate to fully open position at approximately 100 degrees.

Step 2. Insert the 775-LAND CPU: Step 2-1. Hold the CPU by the edges where are marked with black lines. 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 14 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. 15

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.

3). 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.

3). 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. 16 2.

5 Installation of Memory Modules (DIMM) This motherboard provides four 240-pin DDR3 (Double Data Rate 3) DIMM slots, and supports Dual Channel Memory Technology. For dual channel configuration, you always need to install identical (the same brand, speed, size and chiptype) DDR3 DIMM pair in the slots of the same color. In other words, you have to install identical DDR3 DIMM pair in Dual Channel (DDR3_A1 and DDR3_B1; Blue slots; see p.10 No.5) or identical DDR3 DIMM pair in Dual Channel (DDR3_A2 and DDR3_B2; white slots; see p.10 No.6), so that Dual Channel Memory Technology can be activated. This motherboard also allows you to install four DDR3 DIMMs for dual channel configuration, and please install identical DDR3 DIMMs in all four slots. You may refer to the Dual Channel Memory Configuration Table below. Dual Channel Memory Configurations DDR3_A1 (Blue Slot) Populated Populated DDR3_A2 (White Slot) Populated Populated DDR3_B1 (Blue Slot) Populated Populated DDR3_B2 (White Slot) Populated Populated (1) (2) (3)*

* For the configuration (3), please install identical DDR3 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 blue slots (DDR3_A1 and DDR3_B1), or in the set of white slots (DDR3_A2 and DDR3_B2). 2. If only one memory module or three memory modules are installed in the DDR3 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 DDR3_A1 and DDR3_A2, it is unable to activate the Dual Channel 3. 4. 5. Memory Technology. It is not allowed to install a DDR or DDR2 memory module into DDR3 slot; otherwise, this motherboard and DIMM may be damaged.

If you adopt a DDR3 1600 memory module, you can only install it on DDR3_A1 slot. 17 **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.

18 2.6 Expansion Slots (PCI and PCI Express Slots) There are 2 PCI slots and 4 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 / PCIE2 / PCIE4 (PCIE x1 slot; White) is used for PCI Express cards with x1 lane width cards, such as Gigabit LAN card, SATA2 card, etc.



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PCIE3 (PCIE x16 slot; Blue) is used for PCI Express x16 lane width graphics cards. 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. 19 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 Jumper (CLRCMOS1) (see p.10 No.

10) 1_2_2_3 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 clearCMOS action. 20 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. 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.

SATAII_5 (Port 4) SATAII_3 (Port 2) SATAII_1 (Port 0) SATAII_6 (Port 5) SATAII_4 (Port 3) SATAII_2 (Port 1) Serial ATAII Connectors (SATAII_1 (Port 0): see p.10, No. 13) (SATAII_2 (Port 1): see p.10, No. 14) (SATAII_3 (Port 2): see p.

10, No. 15) (SATAII_4 (Port 3): see p.10, No. 16) (SATAII_5 (Port 4): see p.10, No. 18) (SATAII_6 (Port 5): see p.10, No. 17) These six Serial ATAII (SATAII) connectors support SATA data cables 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. 21 USB 2.0 Headers (9-pin USB10_11) (see p.10 No. 21) 1 USB_PWR P-11 P+11 GND DUMMY GND P+10 P-10 USB_PWR (9-pin USB8_9) (see p.10 No. 20) 1 USB_PWR P-9 P+9 GND DUMMY 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 USB6_7) (see p.10 No. 19) GND P+8 P-8 USB_PWR USB_PWR P-7 P+7 GND DUMMY 1 GND P+6 P-6 USB_PWR NC NC (see p.

10 No. 24) 1 PCIRST# PWRDWN PCICLK FRAME +3VSB LAD3 +3V LAD0 NC GND Infrared Module Header (5-pin IRI1) (see p.10 No. 28) 1 NC (19-pin TPM1) CLKRUN SERIRQ TPM Header LAD2 LAD1 GND GND This connector supports a Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

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. IRTX +5V DUMMY GND IRRX Internal Audio Connectors (4-pin CD1) (see p.10 No. 35) CD-L GND GND CD-R CD1 22 Front Panel Audio Header (9-pin HD_AUDIO1) (see p.10 No. 32) 1 GND PRESENCE# MIC_RET OUT_RET OUT2_L J_SENSE OUT2_R MIC2_R MIC2_L This is an interface for front panel audio cable that allows convenient connection and control of audio devices.

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

2. If you use AC'97 audio panel, please install it to the front panel audio header as below: A. Connect Mic_IN (MIC) to MIC2_L. B. Connect Audio_R (RIN) to OUT2_R and Audio_L (LIN) to OUT2_L. C. Connect Ground (GND) to Ground (GND). D. MIC_RET and OUT_RET are for HD audio panel only. You don't need to connect them for AC'97 audio panel.

E. Enter BIOS Setup Utility. Enter Advanced Settings, and then select Chipset Configuration. Set the Front Panel Control option from [Auto] to [Enabled]. System Panel Header (9-pin PANEL1) (see p.

10 No. 22) 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. 23) 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. 8) (3-pin PWR_FAN1) (see p.10 No. 36) GND +12V CHA_FAN_SPEED Please connect the fan cables to the fan connectors and match the black wire to the ground pin. PWR_FAN_SPEED +12V GND 23 CPU Fan Connector (4-pin CPU_FAN1) (see p.10, No. 3) 1234 Please connect a 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. 7) 12 24 Please connect an ATX power supply to this connector. 1 13 24 Though this motherboard provides 24-pin ATX power connector, 12 it can still work if you adopt a traditional 20-pin ATX power supply.



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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 1 13 ATX 12V Power Connector (8-pin ATX12V1) (see p.10 No. 2) 8 4 5 1 Please connect an ATX 12V power supply to this connector. Though this motherboard provides 8-pin ATX 12V power connector, it can still work if you adopt a traditional 4-pin ATX 12V power supply. To use the 4-pin 8 ATX power supply, please plug your power supply along with Pin 1 and Pin 5.

4-Pin ATX 12V Power Supply Installation 4 5 1 Serial port Header (9-pin COM1) (see p.10 No. 25) 1 RRXD1 DDTR#1 DDSR#1 CCTS#1 This COM1 header supports a serial port module. RRI#1 RRTS#1 GND TTXD1 DDCD#1 24 HDMI_SPDIF Header (3-pin HDMI_SPDIF1) (see p.10 No.

27) 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. 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 HDMI_SPDIF Cable (Optional) C B A A. black end +5V SPDIFOUT GND blue black B. white end (2-pin) SPDIFOUT GND blue black 25 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 19.

Connect the black end (A) of HDMI_SPDIF cable to the HDMI_SPDIF header (HDMI_SPDIF1, yellow, see page 10, No. 27) 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 25. 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.

26 SAT 2.10 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. @@@@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. @@@@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. Please follow below instructions step by step to reduce the risk of HDD crash or data loss. 29 How to Hot Plug a SATA / SATAII HDD:

Points of attention, before you process the Hot Plug: Please do follow below instruction sequence to process the Hot Plug, improper procedure will cause the SATA / SATAII HDD damage and data loss. Step 1 Please connect SATA power cable 1x4-pin end (White) to the power supply 1x4-pin cable. 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. 30 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 ® 2000 / XP / XP 64-bit / Vista TM / Without Functions Vista TM 64-bit W ithout RAID Functions If you want to install Windows® 2000 / XP / XP 64-bit / VistaTM / VistaTM 64-bit OS on your SATA / SATAII HDDs without RAID functions, please follow below procedures according to the OS you install.



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Since Windows® 2000 AHCI driver is not provided by the chipset vendor, AHCI function is not supported under Windows® 2000. 2.15.1 Installing Windows® 2000 / XP / XP 64-bit Without Functions Without RAID Functions If you want to install Windows® 2000 / XP / XP 64-bit OS on your SATA / SATAII HDDs without RAID functions, please follow below steps. Using SATA / SATAII HDDs with NCQ function STEP 1: Set Up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen Storage Configuration. B.

Set "SATAII Configuration" to [Enhanced], and then in the option "Configure SATAII as", please set the option to [AHCI]. STEP 2: Make a SATA / SATAII driver diskette. A. Insert the Support CD into your optical drive to boot your system. B.

During POST at the beginning of system boot-up, press <F11> key, and then a window for boot devices selection appears. Please select CD-ROM as the boot device. C. When you see the message on the screen, "Do you want to generate Serial ATA driver diskette [YN]?", press <Y>. D.

Then you will see these messages, Please insert a diskette into the floppy drive. WARNING! Formatting the floppy diskette will lose ALL data in it! Start to format and copy files [YN]? Please insert a floppy diskette into the floppy drive, and press <Y>. E. The system will start to format the floppy diskette and copy SATA / SATAII drivers into the floppy diskette. 31 STEP 3: Install Windows® XP / XP 64-bit OS on your system. (Windows® 2000 is not supported.) After making a SATA / SATAII driver diskette, you can start to install Windows® XP / XP 64-bit on your system. At the beginning of Windows® setup, press F6 to install a thirdparty AHCI driver. When prompted, insert the SATA / SATAII driver diskette containing the Intel® AHCI driver. After reading the floppy disk, the driver will be presented.

Select the driver to install according to the mode you choose and the OS you install. You may select: "Intel(R) ICH10 SATA AHCI Controller (Desktop - Windows XP)" for Windows® XP or "Intel(R) ICH10 SATA AHCI Controller (Desktop - Windows XP64)" for Windows® XP 64-bit. Using SATA / SATAII HDDs without NCQ function STEP 1: Set up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen Storage Configuration. B. Set "SATAII Configuration" to [Enhanced], and then in the option "Configure SATAII as", please set the option to [IDE]. STEP 2: Install Windows® 2000 / XP / XP 64-bit OS on your system. 2.15.

2 Installing Windows® Vista™ / Vista™ 64-bit Without Functions Without RAID Functions If you want to install Windows® Vista™ / Vista™ 64-bit OS on your SATA / SATAII HDDs without RAID functions, please follow below steps. Using SATA / SATAII HDDs with NCQ function STEP 1: Set Up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen Storage Configuration. B.

Set "SATAII Configuration" to [Enhanced], and then in the option "Configure SATAII as", please set the option to [AHCI]. STEP 2: Install Windows® Vista™ / Vista™ 64-bit OS on your system. Insert the Windows® Vista™ / Vista™ 64-bit optical disk into the optical drive to boot your system, and follow the instruction to install Windows® Vista™ / Vista™ 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 Intel® AHCI drivers. Intel® AHCI drivers are in the following path in our Support CD: .

. \I386 (For Windows® Vista™ OS) .. \AMD64 (For Windows® Vista™ 64-bit OS) After that, please insert Windows® Vista™ / Vista™ 64-bit optical disk into the optical drive again to continue the installation. 32 Using SATA / SATAII HDDs without NCQ function STEP 1: Set up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen Storage Configuration. B. Set "SATAII Configuration" to [Enhanced], and then in the option "Configure SATAII as", please set the option to [IDE]. STEP 2: Install Windows® Vista™ / Vista™ 64-bit OS on your system.

Technology 2 . 1 6 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 [Manual]. 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. 33 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> or 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 OC Tweaker Advanced H/W Monitor Boot screen has a menu bar with the following selections: To set up the system time/date information To set up overclocking features 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. 34 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. Main OC Tweaker System Overview System Time System Date BIOS Version Processor Type : [14:00:09] [Wed 07/29/2009] P45DE3 P1.



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00 Intel (R) Core (TM) 2 Duo CPU E8400 @ 3.00GHz (64bit) 4400MHz 1067A/A07 6144KB BIOS SETUP UTILITY Advanced H/W Monitor Boot Security Exit Use [Enter], [TAB] or [SHIFT-TAB] to select a field. Use [+] or [-] to configure system Time. Processor Speed : Microcode Update : Cache Size : Total Memory DDR3_A1 DDR3_A2 DDR3_B1 DDR3_B2 : 2048MB Single-Channel Memory Mode : 2048MB/550MHz (DDR3 1100) : 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. 35 Tweak weaker 3.

3 OC Tweaker Screen In the OC Tweaker screen, you can set up overclocking features. BIOS SETUP UTILITY Advanced H/W Monitor Boot Main OC Tweaker OC Tweaker Settings Security Exit Load CPU EZ OC Setting Overclock Mode CPU Frequency (MHz) PCIE Frequency (MHz) Strap FSB to MCH Boot Failure Guard Spread Spectrum Ratio Actual Value Ratio CMOS Setting [Press Enter] [Auto] [133] [100] [Auto] [Enabled] [Auto] [8] [9] Overclocking may cause damage to your CPU and motherboard. It should be done at your own risk and expense. [Auto] DRAM Frequency [Auto] DRAM Command Rate DRAM Timing Configuration DRAM RCOMP and tRD Configuration DRAM DLL SKEW Configuration Voltage Configuration [With VDrop] ASRock VDrop Control 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. Load CPU EZ OC Setting You can use this option to load CPU EZ overclocking setting. Configuration options: [CPU 3.00GHz], [CPU 3.20GHz], [CPU 3.40GHz], [CPU 3.60GHz], [CPU 3.80GHz], [CPU 4.00GHz], [CPU 4.20GHz] and [CPU 4.40GHz].

Please note that overclocing may cause damage to your CPU and motherboard. It should be done at your own risk and expense. Overclock Mode Use this to select Overclock Mode. Configuration options: [Auto], [Manual], [I.O.T.] and [Optimized]. The default value is [Auto]. If you select [Manual], Untied Overclocking function is enabled. Please refer to page 33 for the details of Untied Overclocking Technology. Therefore, you are allowed to adjust the Host frequency and PCIE frequency in the following two items. If you select [I.O.T.] (Intelligent Overclocking Technology), the system will automatically enable the overclocking function when your CPU is heavily loaded.

CPU Frequency (MHz) Use this option to adjust CPU frequency. PCIE Frequency (MHz) Use this option to adjust PCIE frequency. Strap FSB to MCH Use this item to strap FSB to MCH. Configuration options: [Auto], [800], [1066], [1333] and [1600]. Boot Failure Guard Enable or disable the feature of Boot Failure Guard. Spread Spectrum This item should always be [Auto] for better system stability. 36 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. DRAM Frequency If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assigns appropriate frequency automatically. You may select [Auto], [533MHz (DDR3 1066)], [667MHz (DDR3 1333)] or [800MHz (DDR3 1600)].

DRAM Command Rate Use this item to adjust DRAM Command Rate. Configuration options : [1N], [2N] and [Auto]. 37 DRAM Timing Configuration BIOS SETUP UTILITY OC Tweaker Standard Memory Settings XMP Technology [Auto] Profile 1 : DDR3 2000 7-8-7-20 1.65V Standard Memory Settings : 7-8-7-20-78-10-8-7-8 [Auto] DRAM tCL [Auto] DRAM tRCD [Auto] DRAM tRP [Auto] DRAM tRAS [Auto] DRAM tRFC [Auto] DRAM tWR [Auto] DRAM tWTR [Auto] DRAM tRRD [Auto] DRAM tRTP Options Auto Profile 1 +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.

XMP Technology Use this option to adjust XMP memory. Configuration options: [Auto] and [Profile 1]. The default value is [Auto]. DRAM tCL This controls the number of DRAM clocks for TCL. Min: 5.

Max: 10. The default value is [Auto]. DRAM tRCD This controls the number of DRAM clocks for TRCD. Min: 3. Max: 10. The default value is [Auto]. DRAM tRP This controls the number of DRAM clocks for TRP. Min: 3. Max: 10. The default value is [Auto].

DRAM tRAS This controls the number of DRAM clocks for TRAS. Min: 9. Max: 28. The default value is [Auto]. DRAM tRFC This controls the number of DRAM clocks for TRFC. Min: 15. Max: 78. The default value is [Auto]. DRAM tWR This controls the number of DRAM clocks for TWR. Min: 3. Max: 15. The default value is [Auto]. DRAM tWTR This controls the number of DRAM clocks for TWTR. Min: 2. Max: 15.

The default value is [Auto]. DRAM tRRD This controls the number of DRAM clocks for TRRD. Min: 2. Max: 15. The default value is [Auto]. 38 DRAM tRTP This controls the number of DRAM clocks for TRTP. Min: 2. Max: 13. The default value is [Auto]. 39 DRAM RCOMP and tRD Configuration BIOS SETUP UTILITY OC Tweaker DRAM RCOMP Settings DRAM DRAM DRAM DRAM DRAM DRAM DRAM DRAM DRAM DRAM DRAM DRAM DRAM DRAM DRAM DRAM CH0 CH0 CH0 CH0 CH0 CH0 CH0 CH0 CH1 CH1 CH1 CH1 CH1 CH1 CH1 RCOMP Settings : 54-0-11-6-6-6-6 RCOMP ODT [Auto] [Auto] G0 (Data) [Auto] G1 (Command) [Auto] G2 (Control1) [Auto] G3 (Control2) [Auto] G4 (Clocks1) [Auto] G5 (Clocks2) RCOMP Settings : 54-0-8-8-0-8-0 [Auto] RCOMP ODT [Auto] G0 (Data) [Auto] G1 (Command) [Auto] G2 (Control1) [Auto] G3 (Control2) [Auto] G4 (Clocks1) [Auto] G5 (Clocks2) DRAM CH0 RCOMP ODT Value Min = 1 Max = 63 +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. DRAM CH0 RCOMP ODT This controls the number of DRAM CH0 RCOMP ODT. Min: 1. Max: 63. The default value is [Auto].

DRAM CH0 G0 (Data) This controls the number of DRAM CH0 G0 (Data). Min: 1. Max: 15. The default value is [Auto]. DRAM CH0 G1 (Command) This controls the number of DRAM CH0 G1 (Command). Min: 1. Max: 15. The default value is [Auto]. DRAM CH0 G2 (Control1) This controls the number of DRAM CH0 G2 (Control1). Min: 1.

Max: 15. The default value is [Auto]. DRAM CH0 G3 (Control2) This controls the number of DRAM CH0 G3 (Control2). Min: 1. Max: 15. The default value is [Auto]. DRAM CH0 G4 (Clocks1) This controls the number of DRAM CH0 G4 (Clocks1). Min: 1. Max: 15. The default value is [Auto]. DRAM CH0 G5 (Clocks2) This controls the number of DRAM CH0 G5 (Clocks2). Min: 1. Max: 15. The default value is [Auto]. DRAM CH1 RCOMP ODT This controls the number of DRAM CH1 RCOMP ODT. Min: 1. Max: 63. The default value is [Auto]. DRAM CH1 G0 (Data) This controls the number of DRAM CH1 G0 (Data). Min: 1.

Max: 15. The default value is [Auto]. 40 DRAM CH1 G1 (Command) This controls the number of DRAM CH1 G1 (Command).



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Select the proper BIOS file to update your BIOS, and reboot your system after BIOS update process completes. 46 3.

4.1 CPU Configuration BIOS SETUP UTILITY Advanced CPU Configuration Enhanced Halt State Intel (R) Virtualization tech. CPU Thermal Throttling No-Execute Memory Protection Intel (R) SpeedStep (tm) tech. Intel (R) C-STATE tech [Disabled] [Enabled] [Enabled] [Disabled] [Auto] [Disabled] This should be enabled in order to enable or disable the "Enhanced Halt State". +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. 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. Intel (R) Virtualization tech.

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by Vanderpool Technology. This option will be hidden if the installed CPU does not support Intel (R) Virtualization Technology. CPU Thermal Throttling You may select [Enabled] to enable P4 CPU internal thermal control mechanism to keep the CPU from overheated. No-Execute 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-Execute Memory Protection. Hyper Threading Technology To enable this feature, it requires a computer system with an Intel Pentium® 4 processor that supports Hyper-Threading technology and an operating system that includes optimization for this technology, such as Microsoft® Windows® XP or Vista™. Set to [Enabled] if using Microsoft® Windows® XP, Vista™, or Linux kernel version 2.4.18 or higher.

This option will be hidden if the installed CPU does not support Hyper-Threading technology. 47 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. Intel (R) C-STATE tech. Intel (R) C-STATE tech. is achieved by making the power and thermal control unit part of the core logic and not part of the chipset as before. Migration of the power and thermal management flow into the processor allows us to use a hardware coordination mechanism in which each core can request any C-state it wishes, thus allowing for individual core savings to be maximized. The CPU C-state is determined and entered based on the lowest common denominator of both cores' requests, portraying a single CPU entity to the chipset power management hardware and flows. Thus, software can manage each core independently, while the actual power management adheres to the platform and CPU shared resource restrictions. Configuration options are: [C2], [C3], [C4] and [Disabled].

The default value is [Disabled]. 48 3.4.2 Chipset Configuration BIOS SETUP UTILITY Advanced Chipset Settings Intelligent Energy Saver Primary Graphics Adapter Onboard HD Audio Front Panel OnBoard Lan CIR10 Field 1 [Disabled] [PCI] [Auto] [Enabled] [Enabled] [Enabled] Options Disabled Enabled +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. Intelligent Energy Saver Intelligent Energy Saver is a revolutionary technology that delivers unparalleled power savings. The default value is [Disabled]. 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.

Primary Graphics Adapter This allows you to select [PCI] or [PCI Express] as the boot graphic adapter priority. The default value is [PCI]. 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. CIR10 Field 1 Use this to enable or disable CIR10 Field 1. The default value of this feature is [Enabled]. 49 3.4.

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 EUP Support ACPI HPET Table [Disabled] [Power Off] [Disabled] [Disabled] [Disabled] [Disabled] [Auto] [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 Use this item to select whether to auto-detect or disable the Suspend-toRAM feature. Select [Auto] will enable this feature if the OS supports it. If you set this item to [Disabled], the function "Repost Video on STR Resume" will be hidden. Repost Video on STR Resume This feature allows you to repost video on STR resume. (STR refers to suspend to RAM.) Check Ready Bit Use this item to enable or disable the feature Check Ready Bit. 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. 50 EUP Support Use this item to enable or disable EuP.



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