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You can read the recommendations in the user guide, the technical guide or the installation guide for ASUS P5L-MX. You'll find the answers to all your questions on the ASUS P5L-MX in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

**User manual ASUS P5L-MX**  
**User guide ASUS P5L-MX**  
**Operating instructions ASUS P5L-MX**  
**Instructions for use ASUS P5L-MX**  
**Instruction manual ASUS P5L-MX**

**P5L-MX**

**ASUS**

**Motherboard**



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Operation is subject to the following two conditions: · This device may not cause harmful interference, and · This device must accept any interference received including interference that may cause undesired operation. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

*This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: · Reorient or relocate the receiving antenna. · Increase the separation between the equipment and receiver. · Connect the equipment to an outlet on a circuit different from that to which the receiver is connected. · Consult the dealer or an experienced radio/TV technician for help. The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations.*

*Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. Canadian Department of Communications Statement This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications. This class B digital apparatus complies with Canadian ICES-003. vi Safety information Electrical safety · To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system. · When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device. · Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged. · Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit. · Make sure that your power supply is set to the correct voltage in your area.*

*If you are not sure about the voltage of the electrical outlet you are using, contact your local power company. · If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer. Operation safety · Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package. · Before using the product, supports: - 1 x IDE connector for up to two Ultra DMA 133/100/66/33 devices -*

*4 x Serial ATA 3Gb/s ports ADI® ADI1986A 6-channel High-Definition audio CODEC Supports Jack-Sensing, Enumeration Technology S/PDIF out interface support Attansic L1 Gigabit LAN controller Supports up to 8 USB 2.*

*0 ports 1 x Parallel port 1 x LAN (RJ-45) port 4 x USB 2.0 ports 1 x VGA port 1 x Serial port 1 x PS/2 keyboard port 1 x PS/2 mouse port 6-channel high-definition audio I/O ports 4 Mb Flash ROM, AMI BIOS, PnP, WfM2.*



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0, DMI2.0, SM BIOS 2.3, ASUS EZ Flash, ASUS CrashFree BIOS 2 Chipset Front Side Bus Memory VGA Expansion slots Storage Audio LAN USB Rear panel BIOS features (continued on the next page) x P5L-MX specifications summary Special features ASUS EZ Flash ASUS CrashFree BIOS 2 ASUS MyLogo™ 2 ASUS C.

P.R. (CPU Parameter Recall) ASUS Q-Fan PCI 2.2, USB 2.0 WfM 2.0, DMI 2.0, WOL by PME, WOR by PME, Chassis Intrusion 2 xginal BIOS data from the support CD in case when the BIOS codes and data are corrupted. This protection eliminates the need to buy a replacement ROM chip. See page 2-6 for details. With the ASUS EZ Flash, you can easily update the system BIOS even before loading the operating system.

No need to use a DOS-based utility or boot from a floppy disk. See page 2-3 for details. ASUS EZ Flash BIOS ASUS MyLogo 2 ASUS My Logo 2 is the new feature present in the motherboard that allows you to personalize and add style to your system with customizable and animated boot logos. See pages 2-35 for details. C.P.R. (CPU Parameter Recall) The C.P.R.

feature of the motherboard BIOS allows automatic re-setting to the BIOS default settings in case the system hangs due to overclocking. When the system hangs due to overclocking, C.P.R. eliminates the need to open the system chassis and clear the RTC data.

Simply shut down and reboot the system, and the BIOS automatically restores the CPU default setting for each parameter. 1-4 Chapter 1: Product introduction 1.4 Before you proceed Take note of the following precautions before you install motherboard components or change any motherboard settings. · Unplug the power cord from the wall socket before touching any component. Use a grounded wrist strap or touch a safely grounded object or to a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity Hold components by the edges to avoid touching the ICs on them.

Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component. Before you install or remove any component, ensure that the ATX power supply 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. · · · Onboard LED The motherboard comes with a standby power LED that lights up to indicate that the system is ON, in sleep mode, or in soft-off mode. This is a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component. The illustration below shows the location of the onboard LED. P5L-MX SB\_PWR ON Standby Power OFF Powered Off R P5L-MX Onboard LED ASUS P5L-MX 1-5 1.5 Motherboard overview 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 can cause you physical injury and damage motherboard components.

1.5.1 Placement direction When installing the motherboard, make sure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below. 1.5.2 Screw holes Placesix(6)screwsintotheholesindicatedbycirclestosecurethe motherboard to the chassis. Do not overtighten the screws! Doing so can damage the motherboard. Place this side towards the rear of the chassis R 1-6 Chapter 1: Product introduction P5L-MX 1.5.

3 Motherboard layout 20.3cm (8in) PS/2KBMS T Mouse : B: Keyboard ATX12V CPU\_FAN Super I/O COM1 DDR2 DIMM\_A1 (64 bit,240-pin module) PARALLEL PORT LGA775 DDR2 DIMM\_B1 (64 bit,240-pin module) CHA\_FAN1 VGA USB12 USBPW1234 FLOPPY LAN\_USB34 ICS PRS552 Intel GMCH945G AUDIO P5L-MX EATXPWR Attansic L1 PCIEX1\_1 CR2032 3V Lithium Cell CMOS Power PCIEX16 USBPW5678 SB\_PWR PCII USB56 Intel ICH7 PANEL AD1986A PCI2 R 4Mb BIOS SATA1 SATA2 SATA3 SATA4 AAFP CD SPDIF\_OUT SPL\_J1 USB78 CLRTC ASUS P5L-MX PRI\_IDE 24.5cm (9.6in) 1-7 1.6 Central Processing Unit (CPU) The motherboard comes with a surface mount LGA775 socket designed for the Intel® Core™2 Extreme/Core™2 Duo/Pentium® D/Pentium® 4 and Celeron® D processors.

· Your boxed Intel® Core™2 Extreme/Core™2 Duo/Pentium® D/ Pentium® 4 or Celeron® D LGA775 processor package should come with installation instructions for the CPU, fan and heatsink assembly. If the instructions in this section do not match the CPU documentation, follow the latter. Upon purchase of the motherboard, make sure that the PnP cap is on the socket and the socket pins are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket pins/motherboard components. ASUS will shoulder the cost of repair only if the damage is shipment/ transit-related.

Keep the cap after installing the motherboard. ASUS will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA775 socket. The product warranty does not cover damage to the socket pins resulting from incorrect CPU installation/removal, or misplacement/ loss/incorrect removal of the PnP cap. · · · 1.6.1 1. Installing the CPU To install a CPU: Locate the CPU socket on the motherboard. R P5L-MX CPU Socket 775 Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left. 1-8 P5L-MX Chapter 1: Product introduction 2. Press the load lever with your thumb (A) and move it to the left (B) until it is released from the retention tab.

A PnP Cap Retention tab Load lever B This side of the cam box should face you. To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU. 3. Lift the load lever in the direction of the arrow to a 135° angle. 4. Lift the load plate with your thumb and forefinger to a 100° angle (A), then push the PnP cap from the load plate window to remove (B). B A Load plate 5. Position the CPU over the socket, making sure that the gold triangle is on the bottom-left corner of the socket. The socket alignment key should fit into the CPU notch. Alignment key Gold triangle mark ASUS P5L-MX 1-9 6. Close the load plate (A), then push the load lever (B) until it snaps into the retention tab. B A The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU! The motherboard supports Intel® LGA775 processors with the Intel® Enhanced Memory 64 Technology (EM64T), Enhanced Intel SpeedStep® Technology (EIST), and Hyper-Threading Technology.



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If you install a dual-core CPU, make sure to connect the chassis fan cable to CHA\_FAN connector for system stability. 1-10 Chapter 1: Product introduction 1.

6.2 Installing the CPU heatsink and fan The Intel® Core™2 Extreme/Core™2 Duo/Pentium® D/Pentium® 4 and Celeron® D processors require a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance. · Install the motherboard to the chassis before you install the CPU fan and heatsink assembly When you buy a boxed Intel® Core™2 Extreme/Core™2 Duo/ Pentium® D/Pentium® 4 or Celeron® D LGA775 processor, the package includes the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel®-certified multi-directional heatsink and fan. Your Intel® Core™2 Extreme/Core™2 Duo/Pentium® D/Pentium® 4 or Celeron® D LGA775 heatsink and fan assembly comes in a pushpin design and requires no tool to install.

· If you purchased a separate CPU heatsink and fan assembly, make sure that a Thermal Interface Material is properly applied to the CPU heatsink or CPU before you install the heatsink and fan assembly. To install the CPU heatsink and fan: 1. Place the heatsink on top of the installed CPU, making sure that the four fasteners match the holes on the motherboard. Fastener Motherboard hole Make sure each fastener is oriented as shown, with the narrow groove directed outward. ASUS P5L-MX 1-11 2. Push down two fasteners at a time in a diagonal sequence to secure the heatsink and fan assembly in place. A B B A B A B A 3. When the fan and heatsink assembly is in place, connect the CPU fan cable to the connector on the motherboard labeled CPU\_FAN. CPU\_FAN CPU FAN PWM CPU FAN IN CPU FAN PWR GND R P5L-MX CPU Fan Connector Do not forget to connect the CPU fan connector! Hardware monitoring errors can occur if you fail to plug this connector. 1-12 P5L-MX Chapter 1: Product introduction 1.

6.3 1. 2. Uninstalling the CPU heatsink and fan To uninstall the CPU heatsink and fan: Disconnect the CPU fan cable from the connector on the motherboard. Rotate each fastener counterclockwise. 3. Pull up two fasteners at a time in a diagonal sequence to disengage the heatsink and fan assembly from the motherboard. A B B A A B B A ASUS P5L-MX 1-13 4. Remove the heatsink and fan assembly from the motherboard. 5. Rotate each fastener clockwise to reset the orientation. Narrow end of the groove The narrow end of the groove should point outward after resetting. (The photo shows the groove shaded for emphasis.) 1-14 Chapter 1: Product introduction 1.7 1.

7.1 System memory Overview The motherboard comes with four Double Data Rate 2 (DDR2) Dual Inline Memory Modules (DIMM) sockets. A DDR2 module has the same physical dimensions as a DDR DIMM but has a 240-pin footprint compared to the 184-pin DDR DIMM. DDR2 DIMMs are notched differently to prevent installation on a DDR DIMM socket. The figure illustrates the location of the DDR2 DIMM sockets: DIMM\_A1 DIMM\_B1 P5L-MX R P5L-MX 240-pin DDR2 DIMM Sockets Channel Channel A Channel B Sockets DIMM\_A1 DIMM\_B1 1.

7.2 Memory configurations You may install 128MB, 256 MB, 512 MB and 1 GB unbuffered non-ECC DDR2 DIMMs into the DIMM sockets. · For dual-channel configuration, the size of memory module installed per channel must be the same (DIMM\_A1= DIMM\_B1) Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor. Refer to the DDR2 Qualified Vendors List on page 1-17 for details. If you are installing only one DIMM module for a Single-channel configuration, install the module on DIMM\_B1. · ASUS P5L-MX 128 Pins 112 Pins 1-15 Important notice on installing Windows® XP 32-bit version If you install Windows® XP 32-bit version Operating System (OS), the limitation of this OS version is that it may reserve a certain amount of memory space for system devices. We recommend that you install less than 3 GB system memory if you would like to work under Windows® XP 32-bit version OS. The excess memory installation will not cause any usage problem, but it will not give users the benefit of manipulating this excess memory space. Visit the ASUS FAQ site for further explanation: <http://support.asus.com/faq/faq.aspx?SLanguage=en-us> Under General Search, make the selections as shown, then click Search. Click the article titled "4GB memory installed but less memory size detected." You also may check the URLs below for third party comments on this issue: [http://dlsvr01.asus.com/pub/ASUS/mb/4GB\\_Rev1.pdf](http://dlsvr01.asus.com/pub/ASUS/mb/4GB_Rev1.pdf) <http://www.intel.com/support/motherboards/server/sb/cs-016594.htm> 1-16 Chapter 1: Product introduction 1.7.3 DDR2 Qualified Vendors List The following table lists the memory modules that have been tested and qualified for use with this motherboard. Visit the ASUS website ([www.asus.com](http://www.asus.com)) for the latest DDR2 DIMM modules for this motherboard.

DDR2 667 Qualified Vendors List Size 56MB 512MB 512MB 1G 512MB 512MB 1G 256MB 512MB 512MB 1G 512MB 512MB 1G 512MB 512MB 1G 1G 512MB 512MB 512MB 1G 1G 256MB 512MB 512MB 1G 512MB 1G 512MB 512MB 512MB 1G 1G 512MB Vendor Kingston Kingston Kingston Kingston Samsung Samsung Samsung Infineon Infineon Infineon Infineon Corsair HY HY HY Kingmax Kingmax Kingmax Apacer Apacer Apacer Apacer ADATA VDATA VDATA VDATA VDATA VDATA Nanya Nanya AENEON AENEON AENEON AENEON VERITECH VERITECH GEIL Century Century Century KINGBOX Model KVR667D2N5/256 KVR667D2N5/512 KVR667D2E5/512 KVR667D2N5/1G KR M378T6553CZ0-CE6 KR M378T6453FZ0-CE6 KR M378T2953CZ0-CE6 HYS64T32000HU-3S-A HYS64T32000HU-3S-A HYS64T64000HU-3S-A HYS64T128020HU-3S-A VS512MB667D2 HYMP564U64AP8-Y4 AA HYMP564U64AP8-Y5 AA HYMP512U64AP8-Y5 AB KLCC28F-A8EB5 KLCC28F-A8KB5 KLCD48F-A8KB5 78.91092.420 AU512E667C5KBGC 78.01092.

420 AU01GE667C5KBGC M20EL5G3H3160B1C0Z M2GVD5G3H31A411C52 M2YVD5G3H31P411C52 M2GVD5G3I41P611C52 M2GVD5G3I41C411C52 NT256T64UH4A1FY-3C NT512T64U88A1BY-3C AET660UD00-30DA98Z AET760UD00-30DA98Z AET660UD00-30DA98Z AET760UD00-30DA98Z GTP512HLM45EG GTP01GHLTM55EG GX21GB5300DC CENTURY 512MB CENTURY 512MB CENTURY 1G CENTURY 1G 512MB 667MHz; Brand Elpida Kingston Elpida Kingston Samsung Samsung Samsung Infineon Infineon Infineon Infineon Corsair Hynix Hynix Hynix Elpida Kingmax Kingmax Elpida Apacer Elpida Apacer Elpida VDATA VDATA VDATA VDATA VDATA VDATA AENEON AENEON AENEON AENEON VERITECH VERITECH GEIT Nanya Hynix Hynix Nanya KINGBOX Side(s) SS SS SS DS SS DS SS SS SS DS SS Component E2508AB-6E-E D6408TE8WL-27 E5108AE-6E-E D6408TE8WL-3 K4T51083QC K4T56083QF-ZCE6 K4T51083QC-ZCE6 HYB18T512160AF-3SSSS17310 HYB18T512800AF-3SSSS27416 HYB18T512800AF3SFSS05346 HYB18T512800AF3SSSS28104 MIII0052532M8CEC HY5PS12821AFP-Y4 HY5PS12821AFP-Y5 HY5PS12821AFP-Y5 E5108AE-6E-E KKEA88B4LAUG-29DX KKEA88B4LAUG-29DX E5108AE-6E-E AM4B5708MIJS7E0627B E5108AE-6E-E AM4B5708MIJS7E0627B E5108AE-6E-E VD29608A8A-3EC20615 VD29608A8A-3EG20627 VD29608A8A-3EG20627 VD29608A8A-3EC20620 NT5TU32M16AG-3C NT5TU64M8AE-3C AET93F30DA 0552 AET93F30DA8EE47414G 0540 AET93F300A 0606 AET93F30DA 0604 VTD264M8PC6G01A164129621 VTD264M8PC6G01A164129621 Heat-Sink Package NT5TU64M8AE-3C HY5PS12821AFP-Y5 HY5PS12821AFP-Y5 NT5TU64M8AE-3C EPD264082200-4 DIMM support A B ..... ASUS P5L-MX 1-17 DDR2 533 Qualified Vendors List Size 256MB 256MB 512MB 512MB 1G 1G 256MB 512MB 256MB 512MB 512MB 512MB 512MB 1G 512MB 512MB 512MB 512MB 512MB 512MB 1G 1G 2G 512MB 1G Vendor Kingston Kingston Kingston Kingston Kingston Kingston Kingston Samsung Samsung Infineon Infineon Infineon Infineon Micron Micron Corsair Elpida Kingmax Kingmax Kingmax PQI PQI AENEON AENEON AENEON AENEON AENEON AENEON AENEON AENEON AENEON VERITECH VERITECH Model KVR533D2N4/256 KVR533D2N4/256 KVR533D2N4/512 KVR533D2N4/512 KVR533D2N4/1G KVR533D2N4/1G M378T3253FG0-CD5 M378T6553BG0-CD5 HYS64T32000HU-3.



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To erase the RTC RAM: 1.

2. 3. 4. 5. 6.

Turn OFF the computer and unplug the power cord. Remove the onboard battery. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2. Re-install the battery. Plug the power cord and turn ON the computer. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data. Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure! CLRTC 12 Normal (Default) 23 Clear CMOS R P5L-MX Clear RTC RAM You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.

P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so the BIOS can automatically reset parameter settings to default values. ASUS P5L-MX P5L-MX 1-23 2. USB device wake-up (3-pin USBPW1234, USBPW5678) Set these jumpers to +5V to wake up the computer from S1 sleep mode (CPU stopped, DRAM refreshed, system running in low power mode) using the connected USB devices. Set to +5VSB to wake up from S3 and S4 sleep modes (no power to CPU, DRAM in slow refresh, power supply in reduced power mode). The USBPW1234 jumper is for the rear USB ports. The USBPW5678 jumper is for the internal USB connectors that you can connect to additional USB ports. USBPW1234 12 23 +5V (Default) P5L-MX +5VSB USBPW5678 12 R 23 P5L-MX USB Device Wake Up +5V (Default) +5VSB The USB device wake-up feature requires a power supply that can provide 500 mA on the +5VSB lead for each USB port; otherwise, the system would not power up.

The total current consumed must NOT exceed the power supply capability (+5VSB) whether under normal condition or in sleep mode. · 1-24 Chapter 1:

Product introduction 1.10 Connectors 1.10.1 Rear panel connectors 1 2 3 4 5 6 11 1.

2. 3. 10 9 8 7 PS/2 mouse port (green). This port is for a PS/2 mouse. Parallel port.

This 25-pin port connects a parallel printer, a scanner, or other devices. LAN (RJ-45) port. Supported by Realtek® Gigabit LAN controller, this port allows Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications. LAN port LED indications ACT/LINK LED Status OFF YELLOW (blinking) YELLOW (no blinking) Description No link Data activity Linked Status OFF ORANGE GREEN SPEED LED Description 10 Mbps connection 100 Mbps connection 1 Gbps connection ACT/LINK SPEED LED LED LAN port 4. 5. 6. Line In port (light blue). This port connects the tape, CD, DVD player, or other audio sources. Line Out port (lime).

This port connects a headphone or a speaker. In 4-channel, 6-channel, and 8-channel configuration, the function of this port becomes Front Speaker Out. Microphone port (pink). This port connects a microphone. Refer to the audio configuration table on the next page for the function of the audio ports in 2, 4, or 6-channel configuration. ASUS P5L-MX 1-25 Audio 2, 4, or 6-channel configuration Port Light Blue Lime Pink Headset 2-channel Line In Line Out Mic In 4-channel Rear Speaker Out Front Speaker Out Mic In 6-channel Rear Speaker Out Front Speaker Out Bass/Center 7. 8. 9. USB 2.0 ports 1 and 2.

These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices. USB 2.0 ports 3 and 4. These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.

0 devices. VGA port. This port is for a VGA monitor or other VGA-compatible devices. 10. Serial port.

This port connects a mouse, modem, or other devices that conform with serial specification. 11. PS/2 keyboard port (purple). This port is for a PS/2 keyboard.

1.10.2 Internal connectors 1. Floppy disk drive connector (34-1 pin FLOPPY) This connector is for the provided floppy disk drive (FDD) signal cable. Insert one end of the cable to this connector, then connect the other end to the signal connector at the back of the floppy disk drive. Pin 5 on the connector is removed to prevent incorrect cable connection when using an FDD cable with a covered Pin 5.

FLOPPY P5L-MX R NOTE: Orient the red markings on the floppy ribbon cable to PIN 1. P5L-MX Floppy Disk Drive Connector 1-26 PIN 1 Chapter 1: Product introduction 2. IDE connectors (40-1 pin PRI\_IDE) The onboard IDE connectors are for Ultra DMA 133/100/66 signal cables. There are three connectors on each Ultra DMA 133/100/66 signal cable: blue, black, and gray. Connect the blue connector to the motherboard's IDE connector, then select one of the following modes to configure your device(s). P5L-MX R P5L-MX IDE Connector Drive jumper setting Single device Two devices Cable-Select or Master Cable-Select Master Slave Mode of device(s) Master Slave Master Slave Cable connector Black Black Gray Black or gray · Pin 20 on the IDE connector is removed to match the covered hole on the Ultra DMA cable connector. This prevents incorrect insertion when you connect the IDE cable. Use the 80-conductor IDE cable for Ultra DMA 133/100/66 IDE devices. · If any device jumper is set as "Cable-Select," make sure all other device jumpers have the same setting. ASUS P5L-MX PRI\_IDE 1-27 3.

Serial ATA connectors (7-pin SATA1, SATA2, SATA3, SATA4) These connectors are for the Serial ATA signal cables for Serial ATA hard disk drives. P5L-MX SATA1 GND RSATA\_RXN1 RSATA\_RXP1 GND RSATA\_TXN1 RSATA\_TXP1 GND SATA2 GND RSATA\_RXN2 RSATA\_RXP2 GND RSATA\_TXN2 RSATA\_TXP2 GND SATA3 GND RSATA\_RXN3 RSATA\_RXP3 GND RSATA\_TXN3 RSATA\_TXP3 GND SATA4 GND RSATA\_RXN4 RSATA\_RXP4 GND RSATA\_TXN4 RSATA\_TXP4 GND R P5L-MX SATA Connectors When using the connectors in Standard IDE mode, connect the primary (boot) hard disk drive to the SATA1/2 connector. Refer to the table below for the recommended SATA hard disk drive connections. Serial ATA hard disk drive connection Connector Color Setting Use SATA1/2 SATA3/4 Red Black Master Slave Boot disk Data Disk right angle side Connect the right-angle side of SATA signal cable to SATA device. Or you may connect the right-angle side of SATA cable to the onboard SATA port to avoid mechanical conflict with huge graphics cards.

1-28 Chapter 1: Product introduction 4. CPU, Power and Chassis fan connectors (4-pin CPU\_FAN, 3-pin PWR\_FAN (optional), 3-pin CHA\_FAN) The fan connectors support cooling fans of 350mA~2000mA (24W max.) or a total of 1A~7A (84W max.) at +12V. Connect the fan cables to the fan connectors on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector.

Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! DO NOT place jumper caps on the fan connectors.



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CPU FAN PWM CPU FAN IN CPU FAN PWR GND CPU\_FAN CHA\_FAN P5L-MX GND +12V Rotation R P5L-MX Fan Connectors 5. Digital Audio connector (4-1 pin SPDIF\_OUT) This connector is for the SPDIF audio module to allow digital sound output. Connect one end of the SPDIF audio cable to this connector and the other end to the SPDIF module. R P5L-MX CPU Digital Audio Connector SPDIF\_OUT The SPDIF out module is purchased separately. ASUS P5L-MX +5V SPDIFOUT GND P5L-MX 1-29 6. ATX power connectors (24-pin EATXPWR and 4-pin ATX12V) These connectors are for ATX power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation.

Find the proper orientation and push down firmly until the connectors completely fit. · Do not forget to connect the 4-pin ATX +12 V power plug; otherwise, the system will not boot. Use of a PSU with a higher power output is recommended when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate. Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system. See the table below for details. · EATX12V +12V DC GND EATXPWR Ground +5 Volts +5 Volts +5 Volts -5 Volts Ground Ground PSON# Ground -12 Volts +3 Volts R P5L-MX ATX Power Connector +12V DC +3 Volts GND +12 Volts +12 Volts +5V Standby Power OK Ground +5 Volts Ground +5 Volts Ground +3 Volts +3 Volts 1-30 P5L-MX Chapter 1: Product introduction 7. Optical drive audio connector (4-pin CD) This connector is for the 4-pin audio cable that connects to the audio connector at the back of the optical drive. R CD (black) P5L-MX Internal Audio Connector Enable the CD-IN function in the audio utility when using this connector. 8.

USB connectors (10-1 pin USB56, USB78) These connectors are for USB 2.0 ports. Connect the optional USB module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.

USB+5V USB\_P6USB\_P6+ GND NC Right Audio Channel Ground Ground Left Audio Channel P5L-MX P5L-MX USB56 USB78 1 USB+5V USB\_P5USB\_P5+ GND 1 USB+5V USB\_P7USB\_P7+ GND R P5L-MX USB 2.0 Connectors Never connect a 1394 cable to the USB connectors. Doing so will damage the motherboard! ASUS P5L-MX USB+5V USB\_P8USB\_P8+ GND NC 1-31 9. Front panel audio connector (10-1 pin AAFP) This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC'97 audio standard. Azalia-compliant pindefinition MIC2\_JD PRESENSE# AGND Legacy AC'97-compliant pindefinition HP\_HD NC NC AGND NC P5L-MX AAFP Line out\_L NC Line out\_R MIC2\_R MIC2\_L HP\_L Jack\_Sense HP\_R MIC2\_R MIC2\_L R P5L-MX Front Panel Audio Connector It is recommended that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high-definition audio capability.

1-32 Chapter 1: Product introduction 10. System panel connector (10-1 pin F\_PANEL) This connector supports several chassis-mounted functions. PA NEL SPEAKER Ground Reset Ground PWR P5L-MX PLED PLEDPLED+ IDE\_LEDIDE\_LED+ R P5L-MX System Panel Connector \*Requires an ATX power supply · System power LED (2-pin PLED) This 2-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode. · Hard disk drive activity LED (2-pin IDE\_LED) This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD. · System warning speaker (4-pin SPEAKER) This 4-pin connector is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.

· ATX power button/soft-off button (2-pin PWRSW) This connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF. · Reset button (2-pin RESET) This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power. ASUS P5L-MX IDE\_LED PWRSW Speaker Ground Ground +5V RESET 1-33 1-34 Chapter 1: Product introduction This chapter tells how to change the system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided. BIOS setup 2 2.1 Managing and updating your BIOS The following utilities allow you to manage and update the motherboard Basic Input/Output System (BIOS) setup. 1. 2.

3. 4. ASUS EZ Flash (Updates the BIOS using a floppy disk or the motherboard support CD during POST.) ASUS AFUDOS (Updates the BIOS in DOS mode using a bootable floppy disk.) ASUS CrashFree BIOS 2 (Updates the BIOS using a bootable floppy, or the motherboard support CD when the BIOS file fails or gets corrupted.

) ASUS Update (Updates the BIOS in Windows® environment.) Refer to the corresponding sections for details on these utilities. Save a copy of the original motherboard BIOS file to a bootable floppy disk in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the ASUS Update or AFUDOS utilities. 2.

1.1 1. Creating a bootable floppy disk Do either one of the following to create a bootable floppy disk. DOS environment a. Insert a 1.44MB floppy disk into the drive. b. At the DOS prompt, type formatA:/S then press <Enter>. Windows® XP environment a. Insert a 1.

44 MB floppy disk to the floppy disk drive. b. Click Start from the Windows® desktop, then select My Computer. c. Select the 3 1/2 Floppy Drive icon. d. Click File from the menu, then select Format. A Format 3 1/2 Floppy Disk window appears. e. Select Create an MS-DOS startup disk from the format options field, then click Start.

Windows® 2000 environment To create a set of boot disks for Windows® 2000: a. Insert a formatted, high density 1.44 MB floppy disk into the drive. b. Insert the Windows® 2000 CD to the optical drive.

c. Click Start, then select Run. d. @ @ @ @ @ To update the BIOS using EZ Flash: 1.

2. 3. @ @ Save the BIOS file to a floppy disk, then restart the system. @ @ @ @ Floppy found! Reading file "P5LMX.ROM". Completed. Start erasing...

... Start programming... Flashed successfully. @ @ @ @ @ Make sure that you rename the BIOS file to P5LMX.ROM. @ @ @ @ This utility also allows you to copy the current BIOS file that you can use as backup when the BIOS fails or gets corrupted during the updating process.



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Copying the current BIOS To copy the current BIOS file using the AFUDOS utility: · · Make sure that the floppy disk is not write-protected and has at least 1024KB free space to save the file. The succeeding BIOS screens are for reference only. The actual BIOS screen displays may not be same as shown. 1. 2. Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable floppy disk you created earlier. Boot the system in DOS mode, then at the prompt type: afudos /o[filename] where the [filename] is any user-assigned filename not more than eight alphanumeric characters for the main filename and three alphanumeric characters for the extension name. A:\>afudos /oOLDBIOS1.rom Main filename Extension name 3. Press <Enter>. The utility copies the current BIOS file to the floppy disk. A:\>afudos /oOLDBIOS1.rom AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB)) Copyright (C) 2002 American Megatrends, Inc. All rights reserved. Reading flash .

.... done Write to file.....

@@@@@ You need to type the exact BIOS filename at the DOS prompt. 2. @@@@All rights reserved. WARNING!! Do not turn off power during flash BIOS Reading file ..

.....

done Reading flash ..... done Advance Check ....

.. Erasing flash ..... done Writing flash ..

.... @@@@All rights reserved.

WARNING!! Do not turn off power during flash BIOS Reading file .....

.. done Reading flash ..... done Advance Check ..

.... Erasing flash .....

done Writing flash .....

. done Verifying flash ....

@@@@@2. 3. Turn on the system. @@@@Starting BIOS recovery... @@Starting BIOS recovery... Checking for floppy.

.. Floppy found! Reading file "P5LMX.ROM". Completed. @@@@2. 3. @@Insert the support CD to the optical drive. @@Starting BIOS recovery..

. @@The utility then updates the corrupted BIOS file. Bad BIOS checksum. Starting BIOS recovery..

. Checking for floppy... Floppy not found! Checking for CD-ROM.

.. CD-ROM found! Reading file "P5LMX.ROM". Completed. @@@@2. 3. Place the support CD in the optical drive. The Drivers menu appears.

Click the Utilities tab, then click Install ASUS Update.

See page 5-3 for the Utilities screen menu. The ASUS Update utility is copied to your system. Quit all Windows® applications before you update the BIOS using this utility. 2-8 Chapter 2: BIOS setup Updating the BIOS through the Internet To update the BIOS through the Internet: 1. Launch the ASUS Update utility from the Windows® desktop by clicking Start > Programs > ASUS > ASUSUpdate > ASUSUpdate. The ASUS Update main window appears. 2. Select Update BIOS from the Internet option from the drop-down menu, then click Next. 3. Select the ASUS FTP site nearest you to avoid network traffic, or click Auto Select.

Click Next. ASUS P5L-MX 2-9 4. 5. From the FTP site, select the BIOS version that you wish to download. Click Next.

Follow the screen instructions to complete the update process. The ASUS Update utility is capable of updating itself through the Internet. Always update the utility to avail all its features. Updating the BIOS through a BIOS file To update the BIOS through a BIOS file: 1. 2.

Launch the ASUS Update utility from the Windows® desktop by clicking Start > Programs > ASUS > ASUSUpdate > ASUSUpdate. The ASUS Update main window appears. Select Update BIOS from a file option from the drop-down menu, then click Next. 3. 4. Locate the BIOS file from the Open window, then click Open. Follow the screen instructions to complete the update process. 2-10 Chapter 2: BIOS setup 2.2 BIOS setup program This motherboard supports a programmable firmware chip that you can update using the provided utility described in section "2.1 Managing and updating your BIOS.

" Use the BIOS Setup program when you are installing a motherboard, reconfiguring your system, or prompted to "Run Setup". This section explains how to configure your system using this utility. Even if you are not prompted to use the Setup program, you can change the configuration of your computer in the future. For example, you can enable the security password feature or change the power management settings. This requires you to reconfigure your system using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM of the firmware hub. The firmware hub on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press <Del> during the Power-On-Self-Test (POST) to enter the Setup utility; otherwise, POST continues with its test routines. If you wish to enter Setup after POST, restart the system by pressing <Ctrl+Alt+Delete>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on.

Do this last option only if the first two failed. The Setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various sub-menus and make your selections from the available options using the navigation keys. · The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability.

Select the Load Default Settings item under the Exit Menu. @@@@ For example, selecting Main shows the Main menu items. @@@@ You cannot select an item that is not user-configurable. @@@@ Configure DRAM Timing by SPD Memory Acceleration Mode DRAM Idle Timer DRAM Refresh Rate Graphic Adapter Priority Graphics Aperture Size Spread Spectrum ICH Delayed Transaction MPS Revision [Enabled] [Auto] [Auto] [Auto] [AGP/PCI] [ 64 MB] [Enabled] [Enabled] [1.4] +F1 F10 ESC A scroll bar appears on the right side of a menu screen when there are items that do not fit on the screen.

Press the Up/Down arrow keys or <Page Up> /<Page Down> keys to display the other items on the screen. Select Screen Select Item Change Option General Help Save and Exit Exit 2.2.9 General help Pop-up window Scroll bar At the top right corner of the menu screen is a brief description of the selected item. ASUS P5L-MX 2-13 2.3 Main menu When you enter the BIOS Setup program, the Main menu screen appears, giving you an overview of the basic system information. Refer to section "2.2.1 BIOS menu screen" for information on the menu screen items and how to navigate through them. System Time System Date Legacy Diskette A Primary IDE Master Primary IDE Slave Third IDE Master Third IDE Slave Fourth IDE Master Fourth IDE Slave IDE Configuration System Information [11:51:19] [Thu 05/07/2004] [1.

44M, 3.5 in] :[ST320413A] :[Not Detected] :[Not Detected] :[Not Detected] :[Not Detected] :[Not Detected] Use [ENTER], [TAB] or [SHIFT-TAB] to select a field. Use [+] or [-] to configure system time. 2.3.1 2.3.2 2.3.3 System Time [xx:xx:xx] System Date [Day xx/xx/xxxx] Legacy Diskette A [1.



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44M, 3.5 in.] Allows you to set the system time. Allows you to set the system date. Sets the type of floppy drive installed.

Configuration options: [Disabled] [360K, 5.25 in.] [1.2M, 5.25 in.]

] [720K, 3.5 in.] [1.44M, 3.5 in.] [2.88M, 3.5 in.] 2-14 Chapter 2: BIOS setup 2.3.

4 Primary, Third and Fourth IDE Master/Slave While entering Setup, the BIOS automatically detects the presence of IDE devices. There is a separate sub-menu for each IDE device. Select a device item then press <Enter> to display the IDE device information. Primary IDE Master Device : Hard Disk Vendor : ST320413A Size : 20.0GB LBA Mode : Supported Block Mode : 16 Sectors PIO Mode : Supported Async DMA : MultiWord DMA-2 Ultra DMA : Ultra DMA-5 SMART Monitoring: Supported Type LBA/Large Mode Block(Multi-sector Transfer) PIO Mode DMA Mode Smart Monitoring 32Bit Data Transfer [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Disabled] The BIOS automatically detects the values opposite the dimmed items (Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA, and SMART monitoring). These values are not user-configurable. These items show N/A if no IDE device is installed in the system. Type [Auto] Selects the type of IDE drive. Setting to Auto allows automatic selection of the appropriate IDE device type.

Select CDROM if you are specifically configuring a CD-ROM drive.

Select ARMD (ATAPI Removable Media Device) if your device is either a ZIP, LS-120, or MO drive. Configuration options: [Not Installed] [Auto] [CDROM] [ARMD] LBA/Large Mode [Auto] Enables or disables the LBA mode. Setting to Auto enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Configuration options: [Disabled] [Auto] Block (Multi-sector Transfer) [Auto] Enables or disables data multi-sectors transfers. When set to Auto, the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature.

When set to [Disabled], the data transfer from and to the device occurs one sector at a time. Configuration options: [Disabled] [Auto] ASUS P5L-MX 2-15 PIO Mode [Auto] Selects the PIO mode. Configuration options: [Auto] [0] [1] [2] [3] [4] DMA Mode [Auto] Selects the DMA mode. Configuration options: [Auto] [SWDMA0] [SWDMA1] [SWDMA2] [MWDMA0] [MWDMA1] [MWDMA2] [UDMA0] [UDMA1] [UDMA2] [UDMA3] [UDMA4] [UDMA5] SMART Monitoring [Auto] Sets the Smart Monitoring, Analysis, and Reporting Technology. Configuration options: [Auto] [Disabled] [Enabled] 32Bit Data Transfer [Disabled] Enables or disables 32-bit data transfer.

Configuration options: [Disabled] [Enabled] 2.3.5 IDE Configuration The items in this menu allow you to set or change the configurations for the IDE devices installed in the system. Select an item then press <Enter> if you wish to configure the item. IDE Configuration Onboard IDE Operate Mode Enhanced Mode Support On IDE Detect Time Out (Sec) [Enhanced Mode] [S-ATA] [35] Onboard IDE Operate Mode [Enhanced Mode] Disables or allows selection of the IDE operation mode depending on the operating system (OS) that you installed. Set to Enhanced Mode if you are using native OS, such as Windows® 2000/XP/2003 Server. Configuration options: [Disabled] [Compatible Mode] [Enhanced Mode] 2-16 Chapter 2: BIOS setup Enhanced Mode Support On [S-ATA] The default setting S-ATA allows you to use native OS on Serial ATA and Parallel ATA ports. We recommend that you do not change the default setting for better OS compatibility. In this setting, you may use legacy OS on the Parallel ATA ports only if you did not install any Serial ATA device. The P-ATA+S-ATA and P-ATA options are for advanced users only.

If you set to any of these options and encounter problems, revert to the default setting S-ATA. Configuration options: [P-ATA+S-ATA] [S-ATA] [P-ATA] IDE Detect Time Out [35] Selects the time out value for detecting ATA/ATAPI devices. Configuration options: [0] [5] [10] [15] [20] [25] [30] [35] 2.3.6 System Information This menu gives you an overview of the general system specifications. The BIOS automatically detects the items in this menu. AMIBIOS Version : 0115 Build Date : 07/27/06 Processor Type Speed Count : Genuine Intel(R) CPU 2.80GHz : 2800 MHz :2 System Memory Size : 512MB Appropriated : 0MB Available : 504MB AMI BIOS Displays the auto-detected BIOS information Processor Displays the auto-detected CPU specification System Memory Displays the auto-detected system memory ASUS P5L-MX 2-17 2.4 Advanced menu The Advanced menu items allow you to change the settings for the CPU and other system devices. Take caution when changing the settings of the Advanced menu items.

Incorrect field values can cause the system to malfunction. JumperFree Configuration USB Configuration CPU Configuration Chipset Onboard Devices Configuration PCI PnP Configure CPU. Enter F1 F10 ESC Select Screen Select Item Go to Sub-screen General Help Save and Exit Exit 2.4.1 JumperFree Configuration Select the target CPU frequency, and the relevant parameters will be auto-adjusted.

Frequencies higher than CPU manufacturer recommends are not guaranteed to be stable. If the system Configure System Frequency/Voltage AI Overclocking [Auto] AI Overclocking [Auto] Allows selection of CPU overclocking options to achieve desired CPU internal frequency. Select either one of the preset overclocking configuration options: Manual - allows you to individually set overclocking parameters. Auto - loads the optimal settings for the system.

Overclock Profile - loads overclocking profiles with optimal parameters for stability when overclocking.

2-18 Chapter 2: BIOS setup The following item appears only when you set the AI Overclocking item to [Manual]. CPU Frequency [200] Displays the frequency sent by the clock generator to the system bus and PCI bus. The value of this item is auto-detected by the BIOS. Use the <+> and <-> keys to adjust the CPU frequency. You can also type the desired CPU frequency using the numeric keypad. The values range from 100 to 450. Refer to the table below for the correct Front Side Bus and CPU External Frequency settings. FSB/CPU External Frequency Synchronization Front Side Bus FSB 1066 FSB 800 FSB 533 CPU External Frequency 266 MHz 200 MHz 133 MHz DRAM Frequency [Auto] Allows you to set the DDR2 operating frequency. Configuration options: [Auto] [DDR2-400MHz] [DDR2-533MHz] [DDR2-600MHz] [DDR2-667MHz] [DDR2-800MHz] Selecting a very high DRAM frequency may cause the system to become unstable! If this happens, revert to the default setting. PCI Express Frequency [Auto] Allows you to set the PCI Express frequency.

This item is set to [Auto] by default. Configuration options: [Auto] [90]...[150] CPU Clock Spread Spectrum [Enabled] Allows you to enable or disable the CPU clock spread spectrum. Configuration options: [Enabled] [Disabled] PCIE Clock Spread Spectrum [Disabled] Allows you to enable or disable the PCIE clock spread spectrum.



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Configuration options: [Enabled] [Disabled] Memory Voltage [Auto] Allows you to select the DDR2 reference voltage. Configuration options: [Auto] [1.80V] [1.90V] [1.

95V] [2.00V] Refer to the DDR2 documentation before adjusting the memory voltage. Setting a very high memory voltage may damage the memory module(s)! ASUS P5L-MX 2-19 FSB Termination Voltage [Auto] Allows you to select the FSB termination voltage. Configuration options: [Auto] [1.20V] [1.30V] MCH Chipset Voltage [Auto] Allows you to select the memory controller hub (MCH) voltage. Configuration options: [Auto] [1.50V] [1.55V] [1.60V] [1.

65V] The following item appears only when the AI Overclocking item is set to [Overclock Profile]. Overclock Options [Overclock 5%] Allows you to overclock the CPU speed through the available preset values. Configuration options: [Overclock 5%] [Overclock 10%] [Overclock 15%] [Overclock 20%] [Overclock 30%] [FSB888/DDR2-667] [FSB960/DDR2-800] [FSB1280/DDR2-800] [FSB1333/DDR2-667] [FSB1333/DDR2-834] 2-20 Chapter 2: BIOS setup 2.4.2 USB Configuration The items in this menu allows you to change the USB-related features. Select an item then press <Enter> to display the configuration options. USB Configuration Module Version - 2.23.0-F.4 USB Devices Enabled: None USB Function Legacy USB Support USB 2.

0 Controller USB 2.0 Controller Mode BIOS EHCI Hand-Off [Enabled] [Auto] [Enabled] [HiSpeed] [Disabled] The Module Version and USB Devices Enabled items show the auto-detected values. If no USB device is detected, the item shows None. USB Function [Enabled] Allows you to enable or disable the USB function. Configuration options: [Disabled] [Enabled] Legacy USB Support [Auto] Allows you to enable or disable support for USB devices on legacy operating systems (OS). Setting to Auto allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled. Configuration options: [Disabled] [Enabled] [Auto] USB 2.0 Controller [Enabled] Allows you to enable or disable the USB 2.

0 controller. Configuration options: [Disabled] [Enabled] USB 2.0 Controller Mode [HiSpeed] Allows you to configure the USB 2.0 controller in HiSpeed (480 Mbps) or Full Speed (12 Mbps). Configuration options: [HiSpeed] [Full Speed] BIOS EHCI Hand-off [Disabled] Allows you to enable support for operating systems without an EHCI hand-off feature.

Configuration options: [Enabled] [Disabled] Do not disable the BIOS EHCI Hand-Off option if you are running a Windows® operating system with USB device. ASUS P5L-MX 2-21 2.4.3 CPU Configuration The items in this menu show the CPU-related information that the BIOS automatically detects.

Configure Advanced CPU settings Manufacturer: Brand String: Frequency : FSB Speed : Cache L1 Cache L2 Cache L3 Intel Genuine Intel(R) CPU 2.80GHz 2800 MHz 800 MHz Sets the ratio between CPU Core Clock and the FSB Frequency. NOTE: If an invalid ratio is set in CMOS then actual and setpoint values may differ. : 32 KB : 2048 KB : 0 KB Min:14) [ 6] [ 62] [Enabled] [Disabled] [Disabled] [Auto] Ratio Status: Unlocked (Max:14, Ratio Actual Value : 14 Ratio CMOS Setting: VID CMOS Setting: Microcode Updation Max CPUID Value Limit Execute Disable Fuction CPU Internal Thermal Control +F1 F10 ESC Select Screen Select Item Change Option General Help Save and Exit Exit Ratio CMOS Setting [ 6] Sets the ratio between the CPU Core Clock and the Front Side Bus frequency. The default value of this item is auto-detected by BIOS. Use the <+> or <-> keys to adjust the values. VID CMOS Setting [ 62] Allows you to set the VID CMOS setting at which the processor is to run. The BIOS auto-detects the default value of this item. Use the <+> or <-> keys to adjust the values. Microcode Updation [Enabled] Allows you to enable or disable the microcode updation. Configuration options: [Disabled] [Enabled] Max CPUID Value Limit [Disabled] Enable this item to boot legacy operating systems that cannot support CPUs with extended CPUID functions.

Configuration options: [Disabled] [Enabled] Execute Disable Function [Disabled] Enables or disables the Execute Disable function. This item appears only when you install a processor with the Execute Disable function. Configuration options: [Disabled] [Enabled] CPU Internal Thermal Control [Auto] Disables or sets the CPU internal thermal control. Configuration options: [Disabled] [Auto] 2-22 Chapter 2: BIOS setup 2.4.4 Chipset The Chipset menu allows you to change the advanced chipset settings. Select an item then press <Enter> to display the sub-menu. Advanced Chipset Settings Configure DRAM Timing by SPD Hyper Path 3 DRAM Throttling Threshold Booting Graphic Adapter Priori Internal Graphics Mode Select Graphics memory type Boot Display Device Flat Panel Type Local Flat Panel Scaling TV Connector HDTV Output TV Standard PEG Buffer Length Link Latency PEG Root Control Slot Power High Priority Port Select [Enabled] [Auto] [Auto] [PCI Express/Int-VG] [Enabled, 8MB] [Auto] [Auto] [Type 1] [Auto] [Auto] [Auto] [VBIOS-Default] [Auto] [Auto] [Auto] [Auto] [Disabled] +F1 F10 ESC +F1 F10 ESC Select Screen Select Item Change Option General Help Save and Exit Exit Select Screen Select Item Change Option General Help Save and Exit Exit Configure DRAM Timing by SPD [Enabled] When this item is enabled, the DRAM timing parameters are set according to the DRAM SPD (Serial Presence Detect). When disabled, you can manually set the DRAM timing parameters through the DRAM sub-items. The following sub-items appear when this item is Disabled.

Configuration options: [Disabled] [Enabled] DRAM CAS# Latency [5 Clocks] Controls the latency between the SDRAM read command and the time the data actually becomes available. Configuration options: [6 Clocks] [5 Clocks] [4 Clocks] [3 Clocks] DRAM RAS# Precharge [4 Clocks] Controls the idle clocks after issuing a precharge command to the DDR SDRAM. Configuration options: [2 Clocks] [3 Clocks] [4 Clocks] [5 Clocks] [6 Clocks] DRAM RAS# to CAS# Delay [4 Clocks] Controls the latency between the DDR SDRAM active command and the read/write command. Configuration options: [2 Clocks] [3 Clocks] [4 Clocks] [5 Clocks] [6 Clocks] DRAM RAS# Activate to Precharge [15 Clocks] Sets the RAS Activate timing to Precharge timing. Configuration options: [4 Clock] [5 Clocks] ~ [18 Clocks] ASUS P5L-MX 2-23 DRAM Write Recovery Time [4 Clocks] Sets the DRAM Write Recover Time. Configuration options: [2 Clocks] [3 Clocks] [4 Clocks] [5 Clocks] [6 Clocks] Hyper Path 3 [Auto] Set this item to enabled to reduce bottlenecks of memory bandwidth. Set it to disabled for safe mode. Configuration options: [Auto] [Disabled] [Enabled] DRAM Throttling Threshold [Auto] Allows you to enable DRAM Thermal Throttling to make your system more stable. Configuration options: [Disabled] [Auto] Hyper Path 3 [Auto] Set this item to enabled to reduce bottlenecks of memory bandwidth.



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