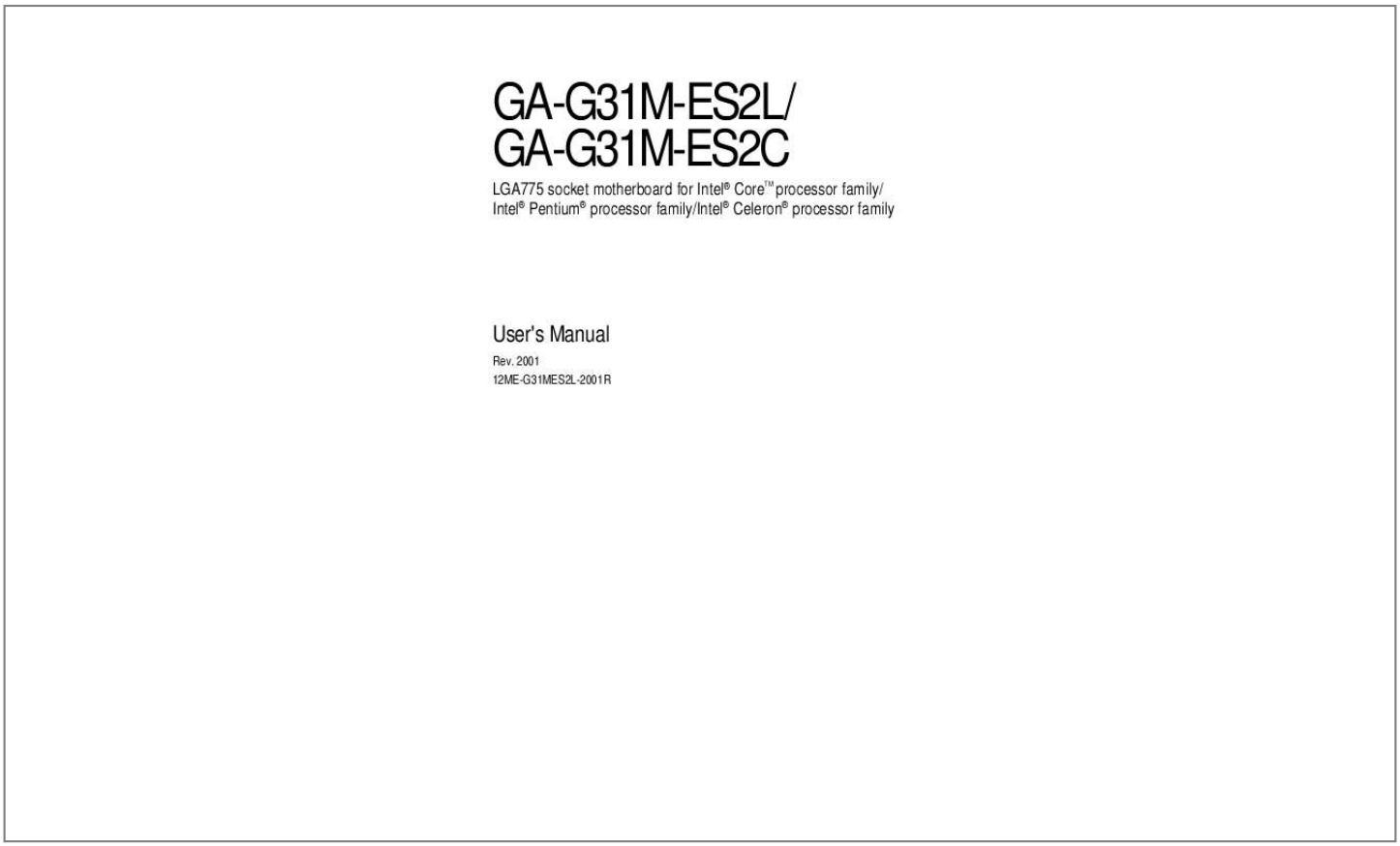

GA-G31M-ES2L/
GA-G31M-ES2C

LGA775 socket motherboard for Intel® Core™ processor family/
Intel® Pentium® processor family/Intel® Celeron® processor family

User's Manual

Rev. 2001
12ME-G31MES2L-2001R

Manual abstract:

@@@@No part of this manual may be reproduced, copied, translated, transmitted, or published in any form or by any means without GIGABYTE's prior written permission. Documentation Classifications In order to assist in the use of this product, GIGABYTE provides the following types of documentations: For detailed product information, carefully read the User's Manual. For instructions on how to use GIGABYTE's unique features, read or download the information on/from the Support&Downloads\Motherboard\Technology Guide page on our website. For product-related information, check on our website at: http://www.gigabyte.com.tw Identifying Your Motherboard Revision The revision number on your motherboard looks like this: "REV: X.X." For example, "REV: 1.0" means the revision of the motherboard is 1.

0. Check your motherboard revision before updating motherboard BIOS, drivers, or when looking for technical information. Example: Table of Contents Box Contents ...

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*. 80 -5- Box Contents GA-G31M-ES2L or GA-G31M-ES2C motherboard Motherboard driver disk User's Manual One IDE cable Two SATA 3Gb/s cables I/O Shield · The box contents above are for reference only and the actual items shall depend on product package you obtain. The box contents are subject to change without notice. · The motherboard image is for reference only. Optional Items Floppy disk drive cable (Part No. 12CF1-1FD001-7*R) 2-port USB 2.0 bracket (Part No. 12CR1-1UB030-5*R) 2-port SATA power cable (Part No. 12CF1-2SERPW-0*R) S/PDIF out cable (Part No. 12CR1-1SPOUT-0*R) -6- GA-G31M-ES2L/GA-G31M-ES2C Motherboard Layout KB_MS ATX_12V CPU_FAN LGA775 COMA LPT GA-G31M-ES2L/GA-G31M-ES2C VGA ATX IDE R_USB USB AUDIO F_AUDIO Intel® G31 LAN DDRII1 PWR_LED DDRII2 BAT PCIE_16 CLR_CMOS AR8131 AR8132 B_BIOS M_BIOS IT8718 PCI1 CODEC SPDIF_O PCI2 Intel ® ICH7 SYS_FAN SATAII3 SATAII2 SATAII1 CD_IN CI FDD F_USB1F_USB2 SATAII0 Only for GA-G31M-ES2L.*
Only for GA-G31M-ES2C. -7- F_PANEL PCIE_1 Block Diagram CPU CLK+/(333/266/200 MHz) PCIe CLK (100 MHz) D-Sub LGA775 CPU Host Interface DDR2 800/667 MHz Dual Channel Memory Intel® G31 PCI Express x16 1 PCI Express x1 GMCH CLK (333/266/200 MHz) LAN RJ45 Dual BIOS ATA-100/66/33 IDE Channel Intel ® ICH7 4 SATA 3Gb/s 8 USB Ports Floppy IT8718 CODEC LPT Port COM Port PCIe CLK (100 MHz) x1 AR8131 AR8132 PCI Express Bus PCI Bus 2 PCI PCI CLK (33 MHz) Only for GA-G31M-ES2L. Only for GA-G31M-ES2C. -8- Surround Speaker Out Center/Subwoofer Speaker Out Side Speaker Out MIC Line Out Line In S/PDIF Out PS/2 KB/Mouse Chapter 1 Hardware Installation 1-1 Installation Precautions The motherboard contains numerous delicate electronic circuits and components which can become damaged as a result of electrostatic discharge (ESD). Prior to installation, carefully read the user's manual and follow these procedures: · Prior to installation, do not remove or break motherboard S/N (Serial Number) sticker or · · · · warranty sticker provided by your dealer. These stickers are required for warranty validation. Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components. When connecting hardware components to the internal connectors on the motherboard, make sure they are connected tightly and securely. When handling the motherboard, avoid touching any metal leads or connectors. It is best to wear an electrostatic discharge (ESD) wrist strap when handling electronic components such as a motherboard, CPU or memory.

If you do not have an ESD wrist strap, keep your hands dry and first touch a metal object to eliminate static electricity. Prior to installing the motherboard, please have it on top of an antistatic pad or within an electrostatic shielding container. Before unplugging the power supply cable from the motherboard, make sure the power supply has been turned off. Before turning on the power, make sure the power supply voltage has been set according to the local voltage standard. Before using the product, please verify that all cables and power connectors of your hardware components are connected. To prevent damage to the motherboard, do not allow screws to come in contact with the motherboard circuit or its components. Make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing. Do not place the computer system on an uneven surface. Do not place the computer system in a high-temperature environment. Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user.
If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician. · · · · · · · · · · -9- Hardware Installation 1-2 CPU Product Specifications Support for an Intel® Core 2 Extreme processor/ Intel ® Core 2 Quad processor/Intel ® Core 2 Duo processor/ Intel® Pentium® processor/Intel® Celeron ® processor in the LGA 775 package (Go to GIGABYTE's website for the latest CPU support list.

) L2 cache varies with CPU 1333/1066/800 MHz FSB North Bridge: Intel ® G31 Express Chipset South Bridge: Intel ® ICH7 2 x 1.8V DDR2 DIMM sockets supporting up to 4 GB ofl grease on the surface of the CPU. · Do not turn on the computer if the CPU cooler is not installed, otherwise overheating and damage of the CPU may occur.

· Set the CPU host frequency in accordance with the CPU specifications. It is not recommended that the system bus frequency be set beyond hardware specifications since it does not meet the standard requirements for the peripherals. If you wish to set the frequency beyond the standard specifications, please do so according to your hardware specifications including the CPU, graphics card, memory, hard drive, etc. 1-3-1 Installing the CPU A. Locate the alignment keys on the motherboard CPU socket and the notches on the CPU.

LGA775 CPU Socket Alignment Key Alignment Key Pin One Corner of the CPU Socket LGA 775 CPU Notch Notch Triangle Pin One Marking on the CPU - 13 - Hardware Installation B. Follow the steps below to correctly install the CPU into the motherboard CPU socket. Before installing the CPU, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the CPU. CPU Socket Lever Step 1: Completely raise the CPU socket lever. Step 2: Lift the metal load plate from the CPU socket. (DO NOT touch socket contacts.) Step 3: Remove the protective socket cover from the load plate. (To protect the CPU socket, always replace the protective socket cover when the CPU is not installed.) Step 4: Hold the CPU with your thumb and index fingers. Align the CPU pin one marking (triangle) with the pin one corner of the CPU socket (or you may align the CPU notches with the socket alignment keys) and gently insert the CPU into position.

Step 5: Once the CPU is properly inserted, replace the load plate and push the CPU socket lever back into its locked position. GA-G31M-ES2L/ES2C Motherboard - 14 - 1-3-2 Installing the CPU Cooler Follow the steps below to correctly install the CPU cooler on the motherboard. (The following procedure uses Intel ® boxed cooler as the example cooler.) Male Push Pin Direction of the Arrow Sign on the Male Push Pin The Top of Female Push Pin Female Push Pin Step 1: Apply an even and thin layer of thermal grease on the surface of the installed CPU. Step 2: Before installing the cooler, note the direction of the arrow sign on the male push pin. (Turning the push pin along the direction of arrow is to remove the cooler, on the contrary, is to install.) Step 3: Place the cooler atop the CPU, aligning the four push pins through the pin holes on the motherboard. Push down on the push pins diagonally. Step 4: You should hear a "click" when pushing down each push pin. Check that the Male and Female push pins are joined closely.

(Refer to your CPU cooler installation manual for instructions on installing the cooler.) Step 5: After the installation, check the back of the motherboard. If the push pin is inserted as the picture above, the installation is complete. Step 6: Finally, attach the power connector of the CPU cooler to the CPU fan header (CPU_FAN) on the motherboard. Use extreme care when removing the CPU cooler because the thermal grease/tape between the CPU cooler and CPU may adhere to the CPU.

Inadequately removing the CPU cooler may damage the CPU. - 15 Hardware Installation 1-4 Installing the Memory Read the following guidelines before you begin to install the memory: · Make sure that the motherboard supports the memory. It is recommended that memory of the same capacity, brand, speed, and chips be used. (Go to GIGABYTE's website for the latest memory support list.) · Always turn off the computer and unplug the power cord from the power outlet before installing the memory to prevent hardware damage.

· Memory modules have a foolproof design. A memory module can be installed in only one direction. If you are unable to insert the memory, switch the direction. 1-4-1 Dual Channel Memory Configuration This motherboard provides two DDR2 memory sockets and supports Dual Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory. Enabling Dual Channel memory mode will double the original memory bandwidth. The two DDR2 memory sockets are divided into two channels and each channel has one memory socket as following: Channel 0: DDRII1 Channel 1: DDRII2 DDRII1 Due to chipset limitation, read the following guidelines before installing the memory in Dual Channel mode. 1. Dual Channel mode cannot be enabled if only one DDR2 memory module is installed. 2.

When enabling Dual Channel mode with two memory modules, it is recommended that memory of the same capacity, brand, speed, and chips be used. GA-G31M-ES2L/ES2C Motherboard - 16 - DDRII2 1-4-2 Installing a Memory Before installing a memory module , make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the memory module. DDR2 DIMMs are not compatible to DDR DIMMs. Be sure to install DDR2 DIMMs on this motherboard. Notch DDR2 DIMM A DDR2 memory module has a notch, so it can only fit in one direction. Follow the steps below to correctly install your memory modules in the memory sockets. Step 1: Note the orientation of the memory module. Spread the retaining clips at both ends of the memory socket. Place the memory module on the socket. As indicated in the picture on the left, place your fingers on the top edge of the memory, push down on the memory and insert it vertically into the memory socket.

Step 2: The clips at both ends of the socket will snap into place when the memory module is securely inserted. - 17 - Hardware Installation 1-5 Installing an Expansion Card Read the following guidelines before you begin to install an expansion card: · Make sure the motherboard supports the expansion card. Carefully read the manual that came with your expansion card. · Always turn off the computer and unplug the power cord from the power outlet before installing an expansion card to prevent hardware damage. PCI Express x16 Slot PCI Slot PCI Express x1 Slot Follow the steps below to correctly install your expansion card in the expansion slot.

1. Locate an expansion slot that supports your card. Remove the metal slot cover from the chassis back panel. 2. Align the card with the slot, and press down on the card until it is fully seated in the slot.

3. Make sure the metal contacts on the card are completely inserted into the slot. 4. Secure the card's metal bracket to the chassis back panel with a screw. 5. After installing all expansion cards, replace the chassis cover(s). 6. Turn on your computer. If necessary, go to BIOS Setup to make any required BIOS changes for your expansion card(s). 7.

Install the driver provided with the expansion card in your operating system.

Example: Installing and Removing a PCI Express x16 Graphics Card: · Installing a Graphics Card: Gently push down on the top edge of the card until it is fully inserted into the PCI Express x16 slot. Make sure the card is securely seated in the slot and does not rock. · Removing the Card: Gently push back on the lever on the slot and then lift the card straight out from the slot. GA-G31M-ES2L/ES2C Motherboard - 18 - 1-6 Back Panel Connectors PS/2 Keyboard and PS/2 Mouse Port Use the upper port (green) to connect a PS/2 mouse and the lower port (purple) to connect a PS/2 keyboard. Parallel Port Use the parallel port to connect devices such as a printer, scanner and etc. The parallel port is also called a printer port. Serial Port Use the serial port to connect devices such as a mouse, modem or other peripherals. D-Sub Port The D-Sub port supports a 15-pin D-Sub connector. Connect a monitor that supports D-Sub connection to this port.

USB Port The USB port supports the USB 2.0/1.1 specification. Use this port for USB devices such as an USB keyboard/mouse, USB printer, USB flash drive and etc. RJ-45 LAN Port The Gigabit Ethernet LAN port provides Internet connection at up to 1 Gbps data rate.

The following describes the states of the LAN port LEDs. Connection/ Speed LED Activity LED Connection/Speed LED: State Description Orange 1 Gbps data rate Green 100 Mbps data rate Off 10 Mbps data rate Activity LED: State Blinking Off Description Data transmission or receiving is occurring No data transmission or receiving is occurring LAN Port · When removing the cable connected to a back panel connector, first remove the cable from your device and then remove it from the motherboard. · When removing the cable, pull it straight out from the connector. Do not rock it side to side to prevent an electrical short inside the cable connector. Only for GA-G31M-ES2L.

- 19 Hardware Installation RJ-45 LAN Port The Fast Ethernet LAN port provides Internet connection at up to 100 Mbps data rate. The following describes the states of the LAN port LEDs. Connection/ Speed LED Activity LED Connection/Speed LED: State Description Green 100 Mbps data rate Off 10 Mbps data rate Activity LED: State Blinking Off Description Data transmission or receiving is occurring No data transmission or receiving is occurring LAN Port Line In Jack (Blue) The default line in jack. Use this audio jack for line in devices such as an optical drive, walkman, etc. Line Out Jack (Green) The default line out jack. Use this audio jack for a headphone or 2-channel speaker. This jack can be used to connect front speakers in a 4/5.1-channel audio configuration. Mic In Jack (Pink) The default Mic in jack. Microphones must be connected to this jack.

To configure 7.1-channel audio, you need connect with the port of HD Audio standard via front panel and enable the multi-channel audio feature through the audio driver. Refer to the instructions on setting up a 2/4/5.1/7.1-channel audio configuration in Chapter 5, "Configuring 2/4/5.1/7.1-Channel Audio." Only for GA-G31M-ES2C. GA-G31M-ES2L/ES2C Motherboard - 20 - 1-7 Internal Connectors 1 3 6 2 11 9 15 10 8 12 7 13 5 4 16 14 1) 2) 3) 4) 5) 6) 7) 8) ATX_12V ATX CPU_FAN SYS_FAN FDD IDE SATAII0 / 1 / 2 / 3 PWR_LED 9) 10) 11) 12) 13) 14) 15) 16) BAT F_PANEL F_AUDIO CD_IN SPDIF_O F_USB1 / F_USB2 CLR_CMOS CI Read the following guidelines before connecting external devices: · First make sure your devices are compliant with the connectors you wish to connect. · Before installing the devices, be sure to turn off the devices and your computer.

Unplug the power cord from the power outlet to prevent damage to the devices. · After installing the device and before turning on the computer, make sure the device cable has been securely attached to the connector on the motherboard. - 21 Hardware Installation 1/2) ATX_12V/ATX (2x2 12V Power Connector and 2x12 Main Power Connector) With the use of the power connector, the power supply can supply enough stable power to all the components on the motherboard. Before connecting the power connector, first make sure the power supply is turned off and all devices are properly installed. The power connector possesses a foolproof design.

Connect the power supply cable to the power connector in the correct orientation. The 12V power connector mainly supplies power to the CPU. If the 12V power connector is not connected, the computer will not start. · To meet expansion requirements, it is recommended that a power supply that can withstand high power consumption be used (500W or greater). If a power supply is used that does not provide the required power, the result can lead to an unstable or unbootable system.

· The main power connector is compatible with power supplies with 2x10 power connectors. When using a 2x12 power supply, remove the protective cover from the main power connector on the motherboard. Do not insert the power supply cable into pins under the protective cover when using a 2x10 power supply. ATX_12V : 3 1 ATX_12V 4 2 Pin No. 1 2 3 4 Definition GND GND +12V +12V 12 24 ATX : Pin No. 1 2 3 4 5 6 7 8 9 10 Definition 3.3V 3.3V GND +5V GND +5V GND Power Good 5V SB(stand by +5V) +12V +12V (Only for 2x12-pinATX) 3.3V (Only for 2x12-pinATX) Pin No. 13 14 15 16 17 18 19 20 21 22 23 24 Definition 3.

3V -12V GND PS_ON(soft On/Off) GND GND GND -5V +5V +5V +5V (Only for 2x12-pin ATX) GND (Only for 2x12-pin ATX) 1 13 11 12 ATX GA-G31M-ES2L/ES2C Motherboard - 22 - 3/4) CPU_FAN/SYS_FAN (Fan Headers) The motherboard has a 4-pin CPU fan header (CPU_FAN) and a 3-pin (SYS_FAN) system fan header. Most fan headers possess a foolproof insertion design. When connecting a fan cable, be sure to connect it in the correct orientation (the black connector wire is the ground wire). The motherboard supports CPU fan speed control, which requires the use of a CPU fan with fan speed control design. For optimum heat dissipation, it is recommended that a system fan be installed inside the chassis. CPU_FAN : 1 CPU_FAN Pin No. 1 2 3 4 SYS_FAN : Definition GND +12V/Speed Control Sense Speed Control Definition GND +12V Sense 1 SYS_FAN Pin No. 1 2 3 · Be sure to connect fan cables to the fan headers to prevent your CPU and system from overheating. Overheating may result in damage to the CPU or the system may hang. · These fan headers are not configuration jumper blocks.

Do not place a jumper cap on the headers. 5) FDD (Floppy Disk Drive Connector) This connector is used to connect a floppy disk drive. The types of floppy disk drives supported are: 360 KB, 720 KB, 1.2 MB, 1.44 MB, and 2.

88 MB. Before connecting a floppy disk drive, be sure to locate pin 1 of the connector and the floppy disk drive cable. The pin 1 of the cable is typically designated by a stripe of different color. 33 1 34 2 - 23 - Hardware Installation 6) IDE (IDE Connector) The IDE connector supports up to two IDE devices such as hard drives and optical drives.

Before attaching the IDE cable, locate the foolproof groove on the connector.
If you wish to connect two IDE devices, remember to set the jumpers and the cabling according to the role of the IDE devices (for example, master or slave). (For information about configuring master/slave settings for the IDE devices, read the instructions from the device manufacturers.) 40 39 2 1 7) SATAII0/1/2/3 (SATA 3Gb/s Connectors) The SATA connectors conform to SATA 3Gb/s standard and are compatible with SATA 1.5Gb/s standard. Each SATA connector supports a single SATA device. Pin No. 1 7 SATAII3 7 SATAII2 7 7 SATAII0 1 SATAII1 1 1 1 Definition GND TXP TXN GND RXN RXP GND 2 3 4 5 6 7 Please connect the L-shaped end of the SATA 3Gb/s cable to your SATA hard drive. GA-G31M-ES2L/ES2C Motherboard - 24 - 8) PWR_LED (System Power LED Header) This header can be used to connect a system power LED on the chassis to indicate system power status. The LED is on when the system is operating. The LED keeps blinking when the system is in S1 sleep state.

The LED is off when the system is in S3/S4 sleep state or powered off (S5). Pin No. 1 1 Definition MPD+ MPDMPD- 2 3 System Status LED S0 On S1 S3/S4/S5 Blinking Off 9) BAT (BATTERY) The battery provides power to keep the values (such as BIOS configurations, date, and time information) in the CMOS when the computer is turned off. Replace the battery when the battery voltage drops to a low level, or the CMOS values may not be accurate or may be lost. You may clear the CMOS values by removing the battery: 1. Turn off your computer and unplug the power cord. 2. Gently remove the battery from the battery holder and wait for one minute. (Or use a metal object like a screwdriver to touch the positive and negative terminals of the battery holder, making them short for 5 seconds.) 3.
Replace the battery. 4. Plug in the power cord and restart your computer. · Always turn off your computer and unplug the power cord before replacing the battery. · Replace the battery with an equivalent one.
Danger of explosion if the battery is replaced with an incorrect model. · Contact the place of purchase or local dealer if you are not able to replace the battery by yourself or uncertain about the battery model. · When installing the battery, note the orientation of the positive side (+) and the negative side (-) of the battery (the positive side should face up). · Used batteries must be handled in accordance with local environmental regulations. - 25 Hardware Installation 10) F_PANEL (Front Panel Header) Connect the power switch, reset switch, speaker and system status indicator on the chassis front panel to this header according to the pin assignments below.
Note the positive and negative pins before connecting the cables. 20 19 SPEAKSpeaker Connector SPEAK+ Power Switch Message LED/ Power/ Sleep LED PW+ PW- MSGMSG+ 21 NC RES+ RESHDHD+ Reset Switch IDE Hard Disk Active LED · MSG (Message/Power/Sleep LED): Connects to the power status indicator on the chassis front panel. The System Status LED LED is on when the system is operating. The LED keeps blinking when S0 On S1 Blinking the system is in S1 sleep state. The LED is off when the system is in S3/S4/S5 Off S3/S4 sleep state or powered off (S5). · PW (Power Switch): Connects to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch (refer to Chapter 2, "BIOS Setup," "Power Management Setup," for more information). · SPEAK (Speaker): Connects to the speaker on the chassis front panel. The system reports system startup status by issuing a beep code. One single short beep will be heard if no problem is detected at system startup.

If a problem is detected, the BIOS may issue beeps in different patterns to indicate the problem. Refer to Chapter 5, "Troubleshooting," for information about beep codes. · HD (IDE Hard Drive Activity LED) Connects to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data. · RES (Reset Switch): Connects to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart. · NC: No connection The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly. GA-G31M-ES2L/ES2C Motherboard - 26 - 11) F_AUDIO (Front Panel Audio Header) The front panel audio header supports Intel High Definition audio (HD) and AC'97 audio.
You may connect your chassis front panel audio module to this header. Make sure the wire assignments of the module connector match the pin assignments of the motherboard header. Incorrect connection between the module connector and the motherboard header will make the device unable to work or even damage it. 2 1 10 9 For HD Front Panel Audio: Pin No. Definition 1 2 3 4 5 6 7 8 9 10 MIC2_L GND MIC2_R -ACZ_DET LINE2_R GND FAUDIO_JD No Pin LINE2_L GND For AC'97 Front Panel Audio: Pin No.
Definition 1 MIC 2 3 4 5 6 7 8 9 10 GND MIC Power NC Line Out (R) NC NC No Pin Line Out (L) NC · The front panel audio header supports HD audio by default. If your chassis provides an AC'97 front panel audio module, refer to the instructions on how to activate AC'97 functionality via the audio software in Chapter 5, "Configuring 2/4/5.1-Channel Audio." · Audio signals will be present on both of the front and back panel audio connections simultaneously. If you want to mute the back panel audio (only supported when using an HD front panel audio module), refer to Chapter 5, "Configuring 2/4/5. 1/7.1-Channel Audio." · Some chassis provide a front panel audio module that has separated connectors on each wire instead of a single plug. For information about connecting the front panel audio module that has different wire assignments, please contact the chassis manufacturer. 12) CD_IN (CD In Connector) You may connect the audio cable that came with your optical drive to the header. 1 Pin No. 1 2 3 4 Definition CD-L GND GND CD-R - 27 - Hardware Installation 13) SPDIF_O (S/PDIF Out Header) This header supports digital S/PDIF out. Via an optional S/PDIF out cable, this header can connect to an audio device that supports digital audio in. For purchasing the optional S/PDIF out cable, please contact the local dealer. 1 Pin No.

1 2 3 Definition Power SPDIFO GND Pin 1 (the red wire) of the S/PDIF out cable must align with pin 1 of the SPDIF_O header. Incorrect connection may render the device unusable or even result in damage to the device. 14) F_USB1/F_USB2 (USB Headers) The headers conform to USB 2.

0/1.1 specification. Each USB header can provide two USB ports via an optional USB bracket. For purchasing the optional USB bracket, please contact the local dealer. Pin No. 1 2 3 4 5 6 7 8 9 10 Definition Power (5V) Power (5V) USB DXUSB DYUSB DX+ USB DY+ GND GND No Pin NC 9 10 1 2 · Do not plug the IEEE 1394 bracket (2x5-pin) cable into the USB header. · Prior to installing the USB bracket, be sure to turn off your computer and unplug the power cord from the power outlet to prevent damage to the USB bracket.

GA-G31M-ES2L/ES2C Motherboard - 28 - 15) CLR_CMOS (Clearing CMOS Jumper) Use this jumper to clear the CMOS values (e.g. date information and BIOS configurations) and reset the CMOS values to factory defaults. To clear the CMOS values, place a jumper cap on the two pins to temporarily short the two pins or use a metal object like a screwdriver to touch the two pins for a few seconds. Open: Normal Short: Clear CMOS Values · Always turn off your computer and unplug the power cord from the power outlet before clearing the CMOS values.

· After clearing the CMOS values and before turning on your computer, be sure to remove the jumper cap from the jumper. Failure to do so may cause damage to the motherboard. · After system restart, go to BIOS Setup to load factory defaults (select Load Optimized Defaults) or manually configure the BIOS settings (refer to Chapter 2, "BIOS Setup," for BIOS configurations). 16) CI (Chassis Intrusion Header) This motherboard provides a chassis detection feature that detects if the chassis cover has been removed. This function requires a chassis with chassis intrusion detection design.

Pin No. 1 1 Definition Signal GND 2 - 29 - Hardware Installation GA-G31M-ES2L/ES2C Motherboard - 30 - Chapter 2 BIOS Setup BIOS (Basic Input and Output System) records hardware parameters of the system in the CMOS on the motherboard. Its major functions include conducting the Power-On Self-Test (POST) during system startup, saving system parameters and loading operating system, etc. BIOS includes a BIOS Setup program that allows the user to modify basic system configuration settings or to activate certain system features. When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS to keep the configuration values in the CMOS. To access the BIOS Setup program, press the <Delete> key during the POST when the power is turned on. To see more advanced BIOS Setup menu options, you can press <Ctrl> + <F1> in the main menu of the BIOS Setup program. To upgrade the BIOS, use either the GIGABYTE Q-Flash or @BIOS utility. · Q-Flash allows the user to quickly and easily upgrade or back up BIOS without entering the operating system. · @BIOS is a Windows-based utility that searches and downloads the latest version of BIOS from the Internet and updates the BIOS.

For instructions on using the Q-Flash and @BIOS utilities, refer to Chapter 4, "BIOS Update Utilities." · Because BIOS flashing is potentially risky, if you do not encounter problems using the current version of BIOS, it is recommended that you not flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction. · BIOS will emit a beep code during the POST. Refer to Chapter 5, "Troubleshooting," for the beep codes description. · It is recommended that you not alter the default settings (unless you need to) to prevent system instability or other unexpected results. Inadequately altering the settings may result in system's failure to boot. If this occurs, try to clear the CMOS values and reset the board to default values. (Refer to the "Load Optimized Defaults" section in this chapter or introductions of the battery/clearing CMOS jumper in Chapter 1 for how to clear the CMOS values.

) - 31 - BIOS Setup 2-1 Startup Screen Award Modular BIOS v6.00PG, An Energy Star Ally Copyright (C) 1984-2009, Award Software, Inc. The following screen may appear when the computer boots. Motherboard Model BIOS Version G31M-ES2L A02 . .

. . <DEL>: BIOS Setup <F9>: XpressRecovery2 <F12>: Boot Menu <End>: Qflash 05/08/2009-G31-ICH7-6A99OG0JC-00 Function Keys Function Keys: <DEL>: BIOS Setup Press the <Delete> key to enter BIOS Setup or to access the Q-Flash utility in BIOS Setup. <F9>: Xpress Recovery2 If you have ever entered Xpress Recovery2 to back up hard drive data using the motherboard driver disk, the <F9> key can be used for subsequent access to XpressRecovery2 during the POST. For more information, refer to Chapter 4, "Xpress Recovery2.

" <F12>: Boot Menu Boot Menu allows you to set the first boot device without entering BIOS Setup. In Boot Menu, use the up arrow key < > or the down arrow key< > to select the first boot device, then press <Enter> to accept. To exit Boot Menu, press <Esc>. The system will directly boot from the device configured in Boot Menu. Note: The setting in Boot Menu is effective for one time only. After system restart, the device boot order will still be based on BIOS Setup settings. You can access Boot Menu again to change the first boot device setting as needed. <End>: Q-Flash Press the <End> key to access the Q-Flash utility directly without having to enter BIOS Setup first. GA-G31M-ES2L/ES2C Motherboard - 32 - 2-2 The Main Menu Once you enter the BIOS Setup program, the Main Menu (as shown below) appears on the screen. Use arrow keys to move among the items and press <Enter> to accept or enter a sub-menu.

(Sample BIOS Version: GA-G31M-ES2L A02) CMOS Setup Utility-Copyright (C) 1984-2009 Award Software Standard CMOS Features Advanced BIOS Features Integrated Peripherals Power Management Setup PnP/PCI Configurations PC Health Status MB Intelligent Tweaker(M.I.T.) : Select Item F10: Save & Exit Setup Time, Date, Hard Disk Type... Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password Set User Password Save & Exit Setup Exit Without Saving ESC: Quit F8: Q-Flash F11: Save CMOS to BIOS F12: Load CMOS from BIOS BIOS Setup Program Function Keys < >< >< <Enter> <Esc> >< > Move the selection bar to select an item Execute command or enter the submenu Main Menu: Exit the BIOS Setup program Submenus: Exit current submenu Increase the numeric value or make changes Decrease the numeric value or make changes Show descriptions of the function keys Move cursor to the Item Help block on the right (submenus only) Restore the previous BIOS settings for the current submenus Load the Fail-Safe BIOS default settings for the current submenus Load the Optimized BIOS default settings for the current submenus Access the Q-Flash utility Display system information Save all the changes and exit the BIOS Setup program Save CMOS to BIOS Load CMOS from BIOS <Page Up> <Page Down> <F1> <F2> <F5> <F6> <F7> <F8> <F9> <F10> <F11> <F12> Main Menu Help The onscreen description of a highlighted setup option is displayed on the bottom line of the Main Menu.

Submenu Help While in a submenu, press <F1> to display a help screen (General Help) of function keys available for the menu. Press <Esc> to exit the help screen. Help for each item is in the Item Help block on the right side of the submenu.

· If you do not find the settings you want in the Main Menu or a submenu, press <Ctrl>+<F1> to access more advanced options. · When the system is not stable as usual, select the Load Optimized Defaults item to set your system to its defaults. · The BIOS Setup menus described in this chapter are for reference only and may differ by BIOS version. - 33 BIOS Setup The Functions of the <F11> and <F12> keys (For the Main Menu Only) F11: Save CMOS to BIOS This function allows you to save the current BIOS settings to a profile. You can create up to 8 profiles (Profile 1-8) and name each profile.

First enter the profile name (to erase the default profile name, use the SPACE key) and then press <Enter> to complete. F12: Load CMOS from BIOS If your system becomes unstable and you have loaded the BIOS default settings, you can use this function to load the BIOS settings from a profile created before, without the hassles of reconfiguring the BIOS settings. First select the profile you wish to load, then press <Enter> to complete. Standard CMOS Features Use this menu to configure the system time and date, hard drive types, floppy disk drive types, and the type of errors that stop the system boot, etc. Advanced BIOS Features Use this menu to configure the device boot order, advanced features available on the CPU, and the primary display adapter.

Integrated Peripherals Use this menu to configure all peripheral devices, such as IDE, SATA, USB, integrated audio, and integrated LAN, etc. Power Management Setup Use this menu to configure all the power-saving functions. PnP/PCI Configurations Use this menu to configure the system's PCI & PnP resources. PC Health Status Use this menu to see information about autodetected system/CPU temperature, system voltage and fan speed, etc. MB Intelligent Tweaker(M.I.T.) Use this menu to configure the clock, frequency and voltages of your CPU, memory, etc. Load Fail-Safe Defaults Fail-Safe defaults are factory settings for the most stable, minimal-performance system operations. Load Optimized Defaults Optimized defaults are factory settings for optimal-performance system operations.

Set Supervisor Password Change, set, or disable password. It allows you to restrict access to the system and BIOS Setup. A supervisor password allows you to make changes in BIOS Setup. Set User Password Change, set, or disable password. It allows you to restrict access to the system and BIOS Setup. A user password only allows you to view the BIOS settings but not to make changes. Save & Exit Setup Save all the changes made in the BIOS Setup program to the CMOS and exit BIOS Setup. (Pressing <F10> can also carry out this task.) Exit Without Saving Abandon all changes and the previous settings remain in effect. Pressing <Y> to the confirmation message will exit BIOS Setup.

(Pressing <Esc> can also carry out this task.) GA-G31M-ES2L/ES2C Motherboard - 34 - 2-3 Standard CMOS Features CMOS Setup Utility-Copyright (C) 1984-2009 Award Software Standard CMOS Features Date (mm:dd:yy) Time (hh:mm:ss) Fri, May 8 2009 10:31:24 [None] [None] [None] [None] [None] [None] [1.44M, 3.5"] [Disabled] [All, But Keyboard] 640K 510M 512M +/-/PU/PD: Value F6: Fail-Safe Defaults F10: Save ESC: Exit F1: General Help F7: Optimized Defaults Item Help Menu Level IDE Channel 0 Master IDE Channel 0 Slave IDE Channel 2 Master IDE Channel 2 Slave IDE Channel 3 Master IDE Channel 3 Slave Drive A Floppy 3 Mode Support Halt On Base Memory Extended Memory Total Memory : Move Enter: Select F5: Previous Values Date Sets the system date. The date format is week (read-only), month, date and year.

Select the desired field and use the up arrow or down arrow key to set the date. Time Sets the system time. For example, 1 p.m. is 13:0:0.

Select the desired field and use the up arrow or down arrow key to set the time. IDE Channel 0 Master/Slave IDE HDD Auto-Detection Press <Enter> to autodetect the parameters of the IDE/SATA device on this channel. IDE Channel 0 Master/Slave Configure your IDE/SATA devices by using one of the three methods below: · Auto Lets BIOS automatically detect IDE/SATA devices during the POST. (Default) · None If no IDE/SATA devices are used, set this item to None so the system will skip the detection of the device during the POST for faster system startup. · Manual Allows you to manually enter the specifications of the hard drive when the hard drive access mode is set to CHS. Access Mode Sets the hard drive access mode. Options are: Auto (default), CHS, LBA, Large. IDE Channel 2, 3 Master/Slave IDE Auto-Detection Press <Enter> to autodetect the parameters of the IDE/SATA device on this channel. Extended IDE Drive Configure your IDE/SATA devices by using one of the two methods below: · Auto Lets BIOS automatically detect IDE/SATA devices during the POST. (Default) · None If no IDE/SATA devices are used, set this item to None so the system will skip the detection of the device during the POST for faster system startup.

Access Mode Sets the hard drive access mode. Options are: Auto (default), Large. - 35 BIOS Setup The following fields display your hard drive specifications. If you wish to enter the parameters manually, refer to the information on the hard drive. Capacity Approximate capacity of the currently installed hard drive. Cylinder Head Precomp Landing Zone Sector Number of cylinders. Number of heads. Write precompensation cylinder. Landing zone. Number of sectors. Drive A Allows you to selects the type of floppy disk drive installed in your system. If you do not install a floppy disk drive, set this item to None. Options are: None, 360K/5.25", 1.2M/5.

25", 720K/3.5", 1.44M/3.5", 2.88M/3.

5". Floppy 3 Mode Support Allows you to specify whether the installed floppy disk drive is 3-mode floppy disk drive, a Japanese standard floppy disk drive. Options are: Disabled (default), Drive A. Halt On Allows you to determine whether the system will stop for an error during the POST. No Errors The system boot will not stop for any error. All Errors Whenever the BIOS detects a non-fatal error the system boot will stop. All, But Keyboard The system boot will not stop for a keyboard error but stop for all other errors. (Default) All, But Diskette The system boot will not stop for a floppy disk drive error but stop for all other errors. All, But Disk/Key The system boot will not stop for a keyboard or a floppy disk drive error but it will stop for all other errors. Memory These fields are read-only and are determined by the BIOS POST.

Base Memory Also called conventional memory.

Typically, 640 KB will be reserved for the MS-DOS operating system. Extended Memory The amount of extended memory. Total Memory The total amount of memory installed on the system. GA-G31M-ES2L/ES2C Motherboard - 36 - 2-4 Advanced BIOS Features CMOS Setup Utility-Copyright (C) 1984-2009 Award Software Advanced BIOS Features [Press Enter] [Floppy] [Hard Disk] [CDROM] [Setup] [Disabled] [Enabled] [Disabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [PCI] [Enable If No Ext PEG] [8MB+1~2MB for GTT] Item Help Menu Level Hard Disk Boot Priority First Boot Device Second Boot Device Third Boot Device Password Check HDD S.M.A.R.T. Capability CPU Multi-Threading (Note) Limit CPUID Max. to 3 (Note) No-Execute Memory Protect (Note) CPU Enhanced Halt (C1E) (Note) CPU Thermal Monitor 2(TM2) (Note) CPU EIST Function (Note) Virtualization Technology (Note) Init Display First Onboard VGA On-Chip Frame Buffer Size : Move Enter: Select F5: Previous Values +/-/PU/PD: Value F6: Fail-Safe Defaults F10: Save ESC: Exit F1: General Help F7: Optimized Defaults Hard Disk Boot Priority Specifies the sequence of loading the operating system from the installed hard drives. Use the up or down arrow key to select a hard drive, then press the plus key <+> (or <PageUp>) or the minus key <-> (or <PageDown>) to move it up or down on the list. Press <Esc> to exit this menu when finished. First/Second/Third Boot Device Specifies the boot order from the available devices. Use the up or down arrow key to select a device and press <Enter> to accept. Options are: Floppy, LS120, Hard Disk, CDROM, ZIP, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, LAN, Disabled. Password Check Specifies whether a password is required every time the system boots, or only when you enter BIOS Setup. After configuring this item, set the password(s) under the Set Supervisor/User Password item in the BIOS Main Menu. Setup A password is only required for entering the BIOS Setup program. (Default) System A password is required for booting the system and for entering the BIOS Setup program. HDD S.M.A.R.T. Capability Enables or disables the S.M.A.R.T.

(Self Monitoring and Reporting Technology) capability of your hard drive. This feature allows your system to report read/write errors of the hard drive and to issue warnings when a third party hardware monitor utility is installed. (Default: Disabled) (Note) This item is present only if you install a CPU that supports this feature. For more information about Intel CPUs' unique features, please visit Intel's website. - 37 BIOS Setup CPU Multi-Threading (Note) Allows you to determine whether to enable all CPU cores and multi-threading function when using an Intel ® CPU that supports multi-core technology. This feature only works for operating systems that support multi-processor mode. Enabled Enables all CPU cores and multi-threading capability. (Default) Disabled Enables only one CPU core. Limit CPUID Max. to 3 (Note) Allows you to determine whether to limit CPUID maximum value. Set this item to Disabled for Windows XP operating system; set this item to Enabled for legacy operating system such as Windows NT4.0. (Default: Disabled) No-Execute Memory Protect (Note) Enables or disables Intel ® Execute Disable Bit function. This function may enhance protection for the computer, reducing exposure to viruses and malicious buffer overflow attacks when working with its supporting software and system. (Default: Enabled) CPU Enhanced Halt (C1E) (Note) Enables or disables Intel ® CPU Enhanced Halt (C1E) function, a CPU power-saving function in system halt state. When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption. (Default: Enabled) CPU Thermal Monitor 2 (TM2) (Note) Enables or disables Intel ® CPU Thermal Monitor (TM2) function, a CPU overheating protection function. When enabled, the CPU core frequency and voltage will be reduced when the CPU is overheated. (Default: Enabled) CPU EIST Function (Note) Enables or disables Enhanced Intel SpeedStep Technology (EIST). Depending on CPU loading, Intel ® EIST technology can dynamically and effectively lower the CPU voltage and core frequency to decrease average power consumption and heat production. (Default: Enabled) Virtualization Technology (Note) Enables or disables Intel® Virtualization Technology. Virtualization enhanced by Intel ® Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple virtual systems. (Default: Enabled) (Note) This item is present only if you install a CPU that supports this feature. For more information about Intel CPUs' unique features, please visit Intel's website. - 38 - GA-G31M-ES2L/ES2C Motherboard Init Display First Specifies the first initiation of the monitor display from the installed PCI graphics card, PCI Express graphics card or the onboard VGA. PCI Sets the PCI graphics card as the first display. (Default) Onboard Sets the onboard VGA as the first display. PEG Sets PCI Express graphics card as the first display. Onboard VGA Enables or disables the onboard VGA function.

Enable If No Ext PEG Activates the onboard VGA only if no PCI Express VGA card is installed. @@@MS-DOS, for example, will use only this memory for display. @@@@Disabled Disables the integrated SATA controller. Auto Lets BIOS set SATA devices to Combined or Enhanced mode. @@(Default) Combined Sets all SATA devices to operate in PATA mode. @@Enhanced Sets all SATA devices to operate in SATA mode. @@Ch.0 Master/Slave Sets the IDE channels to Ch. 0 Master/Slave. (Default) Ch. 1 Master/Slave Sets the IDE channels to Ch. 1 Master/Slave. @@When PATA IDE Set to is configured to Ch. 1 Master/Slave, this option will be automatically set to Ch. @@When PATA IDE Set to is configured to Ch. 0 Master/Slave, this option will be automatically set to Ch. @@@@@@@@@@@@@@@@@@@@@@@@@@@Pair1-2 Status = Open Pair3-6 Status = Open Pair4-5 Status = Open Pair7-8 Status = Open / / / / Length Length Length Length = = = = 20m 20m 20m 20m GA-G31M-ES2C-Start detecting at Port.... . Pair1-2 Status = Open Pair3-6 Status = Open / Length / Length = = 20m 20m Length Displays the approximate length of the attached LAN cable. Note: The Gigabit hub will only operate at a speed of 10/100Mbps in MS-DOS mode; it will operate at a normal speed of 10/100/1000Mbps in Windows mode or when the LAN Boot ROM is activated. When a Cable Problem Occurs... If a cable problem occurs on a specified pair of wires, the Status field will show Short and thenlength shown will be the approximate distance to the fault or short. Example: Pair1-2 Status = Short / Length = 2m Explanation: A fault or short might occur at about 2m on Pair 1-2. Onboard LAN Boot ROM Allows you to decide whether to activate the boot ROM integrated with the onboard LAN chip.

(Default: Disabled) Onboard Serial Port 1 Enables or disables the first serial port and specifies its base I/O address and corresponding interrupt.

Options are: Auto, 3F8/IRQ4 (default), 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Disabled. Onboard Parallel Port Enables or disables the onboard parallel port (LPT) and specifies its base I/O address and corresponding interrupt. Options are: 378/IRQ7 (default), 278/IRQ5, 3BC/IRQ7, Disabled. Parallel Port Mode Selects an operating mode for the onboard parallel (LPT) port. Options are: SPP (Standard Parallel Port)(default), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port), ECP+EPP. GA-G31M-ES2L/ES2C Motherboard - 42 - 2-6 Power Management Setup CMOS Setup Utility-Copyright (C) 1984-2009 Award Software Power Management Setup [S3(STR)] [Instant-Off] [Enabled] [Enabled] [Disabled] Everyday 0:0:0 [Enabled] [32-bit mode] [Disabled] [Disabled] Enter [Soft-Off] [Disabled] Item Help Menu Level ACPI Suspend Type Soft-Off by PWR-BTTN PME Event Wake Up Power On by Ring Resume by Alarm x Date (of Month) Alarm x Time (hh:mm:ss) Alarm HPET Support (Note) HPET Mode (Note) Power On By Mouse Power On By Keyboard x KB Power ON Password AC Back Function Energy Using Products(EUP) : Move Enter: Select F5: Previous Values +/-/PU/PD: Value F6: Fail-Safe Defaults F10: Save ESC: Exit F1: General Help F7: Optimized Defaults ACPI Suspend Type Specifies the ACPI sleep state when the system enters suspend. S1(POS) Enables the system to enter the ACPI S1 (Power on Suspend) sleep state. In S1 sleep state, the system appears suspended and stays in a low power mode. The system can be resumed at any time. S3(STR) Enables the system to enter the ACPI S3 (Suspend to RAM) sleep state (default).
In S3 sleep state, the system appears to be off and consumes less power than in the S1 state. When signaled by a wake-up device or event, the system resumes to its working state exactly where it was left off. Soft-Off by PWR-BTTN Configures the way to turn off the computer in MS-DOS mode using the power button. Instant-Off Press the power button and then the system will be turned off instantly. (Default) Delay 4 Sec.
Press and hold the power button for 4 seconds to turn off the system. If the power button is pressed for less than 4 seconds, the system will enter suspend mode. PME Event Wake Up Allows the system to be awakened from an ACPI sleep state by a wake-up signal from a PCI or PCIe device. Note: To use this function, you need an ATX power supply providing at least 1A on the 5VSB lead. (Default: Enabled) Power On by Ring Allows the system to be awakened from an ACPI sleep state by a wake-up signal from a modem that supports wake-up function.
(Default: Enabled) (Note) Supported on Windows® Vista ® operating system only. - 43 BIOS Setup Resume by Alarm Determines whether to power on the system at a desired time. (Default: Disabled) If enabled, set the date and time as following: Date (of Month) Alarm : Turn on the system at a specific time on each day or on a specific day in a month. Time (hh: mm: ss) Alarm : Set the time at which the system will be powered on automatically. Note: When using this function, avoid inadequate shutdown from the operating system or removal of the AC power, or the settings may not be effective. HPET Support (Note) Enables or disables High Precision Event Timer (HPET) for Windows ® Vista ® operating system. (Default: Enabled) HPET Mode (Note) Allows you to select the HPET mode for your Windows ® Vista ® operating system. Select 32-bit mode when you install 32-bit Windows ® Vista ® ; select 64-bit mode when you install 64-bit Windows ® Vista ® . (Default: 32-bit mode) Power On By Mouse Allows the system to be turned on by a PS/2 mouse wake-up event. Note: To use this function, you need an ATX power supply providing at least 1A on the 5VSB lead.

Disabled Disables this function. (Default) Double Click Double click on left button on the PS/2 mouse to turn on the system. Power On By Keyboard Allows the system to be turned on by a PS/2 keyboard wake-up event. Note: you need an ATX power supply providing at least 1A on the 5VSB lead. Disabled Disables this function. (Default) Password Set a password with 1~5 characters to turn on the system. Keyboard 98 Press POWER button on the Windows 98 keyboard to turn on the system. KB Power ON Password Set the password when Power On by Keyboard is set to Password. Press <Enter> on this item and set a password with up to 5 characters and then press <Enter> to accept. To turn on the system, enter the password and press <Enter>.
Note: To cancel the password, press <Enter> on this item. When prompted for the password, press <Enter> again without entering the password to clear the password settings. AC Back Function Determines the state of the system after the return of power from an AC power loss. Soft-Off The system stays off upon the return of the AC power. (Default) Full-On The system is turned on upon the return of the AC power.
Memory The system returns to its last known awake state upon the return of the AC power. Energy Using Products (EUP) Determines whether to let the system consume less than 1W power in S5 (shutdown) state. (Default: Disabled) Note: When this item is set to Enabled, the following four functions will become unavailable: PME event wake up, power on by mouse, power on by keyboard, and wake on LAN. (Note) Supported on Windows® Vista ® operating system only. - 44 - GA-G31M-ES2L/ES2C Motherboard 2-7 PnP/PCI Configurations CMOS Setup Utility-Copyright (C) 1984-2009 Award Software PnP/PCI Configurations PCI1 IRQ Assignment PCI2 IRQ Assignment [Auto] [Auto] Item Help Menu Level : Move Enter: Select F5: Previous Values +/-/PU/PD: Value F6: Fail-Safe Defaults F10: Save ESC: Exit F1: General Help F7: Optimized Defaults PCI1 IRQ Assignment Auto 3,4,5,7,9,10,11,12,14,15 BIOS auto-assigns IRQ to the first PCI slot.
(Default) Assigns IRQ 3,4,5,7,9,10,11,12,14,15 to the first PCI slot. BIOS auto-assigns IRQ to the second PCI slot. (Default) Assigns IRQ 3,4,5,7,9,10,11,12,14,15 to the second PCI slot. PCI2 IRQ Assignment Auto 3,4,5,7,9,10,11,12,14,15 - 45 - BIOS Setup 2-8 PC Health Status CMOS Setup Utility-Copyright (C) 1984-2009 Award Software PC Health Status Reset Case Open Status Case Opened Vcore DDR18V +3.3V +12V Current CPU Temperature Current CPU FAN Speed Current SYSTEM FAN Speed CPU Warning Temperature CPU FAN Fail Warning SYSTEM FAN Fail Warning CPU Smart FAN Control [Disabled] No 1.268V 1.840V 3.424V 12.239V 47 oC 3375 RPM 0 RPM [Disabled] [Disabled] [Disabled] [Enabled] Item Help Menu Level : Move Enter: Select F5: Previous Values +/-/PU/PD: Value F6: Fail-Safe Defaults F10: Save ESC: Exit F1: General Help F7: Optimized Defaults Reset Case Open Status Keeps or clears the record of previous chassis intrusion status.

Enabled clears the record of previous chassis intrusion status and the Case Opened field will show "No" at next boot.

(Default: Disabled) Case Opened Displays the detection status of the chassis intrusion detection device attached to the motherboard CI header. If the system chassis cover is removed, this field will show "Yes", otherwise it will show "No". To clear the chassis intrusion status record, set Reset Case Open Status to Enabled, save the settings to CMOS, and then restart your system. Current Voltage(V) Vcore/DDR18V/+3.3V/+12V Displays the current system voltages. Current CPU Temperature Displays current CPU temperature. Current CPU/SYSTEM FAN Speed (RPM) Displays current CPU/system fan speed. CPU Warning Temperature Sets the warning threshold for CPU temperature. When CPU temperature exceeds the threshold, BIOS will emit warning sound. Options are: Disabled (default), 60 o C/140 o F, 70 oC/158 oF, 80 o C/ 176 o F, 90 o C/194 o F.

CPU/SYSTEM FAN Fail Warning Allows the system to emit warning sound if the CPU/system fan is not connected or fails. Check the fan condition or fan connection when this occurs. (Default: Disabled) CPU Smart FAN Control Enables or disables the CPU fan speed control function. Enabled allows the CPU fan to run at different speed according to the CPU temperature. You can adjust the fan speed with EasyTune based on system requirements.

If disabled, CPU fan runs at full speed. (Default: Enabled) GA-G31M-ES2L/ES2C Motherboard - 46 - 2-9 MB Intelligent Tweaker(M.I.T.) CMOS Setup Utility-Copyright (C) 1984-2009 Award Software MB Intelligent Tweaker(M.

*I.T.) [Auto] [12X] 2.40GHz(200x12) [Disabled] 200 [Auto] [Standard] [Auto] 667 ******** [Manual] [Normal] [Normal] [Normal] 1.32500V Item Help Menu Level Robust Graphics Booster CPU Clock Ratio (Note) CPU Frequency CPU Host Clock Control x CPU Host Frequency (Mhz) PCI Express Frequency (Mhz) Performance Enhance System Memory Multiplier (SPD) Memory Frequency (Mhz) 667 ******** System Voltage Optimized System Voltage Control DDR2 OverVoltage Control FSB OverVoltage Control CPU Voltage Control Normal CPU Vcore : Move Enter: Select F5: Previous Values +/-/PU/PD: Value F6: Fail-Safe Defaults F10: Save ESC: Exit F1: General Help F7: Optimized Defaults · Whether the system will work stably with the overclock/overvoltage settings you made is dependent on your overall system configurations. Incorrectly doing overclock/overvoltage may result in damage to CPU, chipset, or memory and reduce the useful life of these components. This page is for advanced users only and we recommend you not to alter the default settings to prevent system instability or other unexpected results. (Inadequately altering the settings may result in system's failure to boot. If this occurs, clear the CMOS values and reset the board to default values.) · When the System Voltage Optimized item blinks in red, it is recommended that you set the System Voltage Control item to Auto to optimize the system voltage settings.*

Robust Graphics Booster Robust Graphics Booster (R.G.B.) helps to enhance the performance of the graphics chip and memory. Auto allows the BIOS to automatically set the R.G.B. mode based on system configurations. Options are: Auto (default), Fast, Turbo. CPU Clock Ratio (Note) Allows you to alter the clock ratio for the installed CPU.

The item is present only if a CPU with unlocked clock ratio is installed. CPU Frequency Displays the current operating CPU frequency. CPU Host Clock Control Enables or disables the control of CPU host clock. Enabled will allow the CPU Host Frequency item below to be configurable. Note: If your system fails to boot after overclocking, please wait for 20 seconds to allow for automated system reboot, or clear the CMOS values to reset the board to default values.

(Default: Disabled) (Note) This item appears only if you install a CPU that supports this feature. - 47 BIOS Setup CPU Host Frequency (Mhz) Allows you to manually set the CPU host frequency. This item is configurable only if the CPU Host Clock Control option is enabled. The adjustable range is from 100 MHz to 700 MHz. For an 800 MHz FSB CPU, set this item to 200 MHz.

For a 1066 MHz FSB CPU, set this item to 266 MHz. For a 1333 MHz FSB CPU, set this item to 333 MHz. Important It is highly recommended that the CPU frequency be set in accordance with the CPU specifications. PCI Express Frequency (Mhz) Allows you to manually set the PCIe clock frequency. The adjustable range is from 90 MHz to 150 MHz. Auto sets the PCIe clock frequency to standard 100 MHz. (Default: Auto) Performance Enhance Allows the system to operate at three different performance levels. Standard Lets the system operate at its basic performance level. (Default) Turbo Lets the system operate at its good performance level. Extreme Lets the system operate at its best performance level.

System Memory Multiplier (SPD) Allows you to set the system memory multiplier. Options are dependent on CPU FSB. Auto sets memory multiplier according to memory SPD data. (Default: Auto) Memory Frequency (Mhz) The first memory frequency value is the normal operating frequency of the memory being used; the second is the memory frequency that is automatically adjusted according to the CPU Host Frequency (Mhz) and System Memory Multiplier settings. System Voltage Control Determines whether to manually set the system voltages. Auto lets BIOS automatically set the system voltages as required. Manual allows all voltage control items below to be configurable. (Default: Manual) DDR2 OverVoltage Control Allows you to set memory voltage. Normal Supplies the memory voltage as required. (Default) +0.

1V ~ +0.4V Increases memory voltage by 0.1V to 0.4V at 0.1V increment.

Note: Increasing memory voltage may result in damage to the memory. GA-G31M-ES2L/ES2C Motherboard - 48 - FSB OverVoltage Control Allows you to set the Front Side Bus voltage. Normal Supplies the FSB voltage as required. (Default) +0.1V ~ +0.

3V Increases FSB voltage by 0.1V to 0.3V at 0.1V increment. CPU Voltage Control Allows you to set the CPU voltage. Normal sets the CPU voltage as required. The adjustable range is dependent on the CPU being installed. (Default: Normal) Note: Increasing CPU voltage may result in damage to your CPU or reduce the useful life of the CPU. Normal CPU Vcore Displays the normal operating voltage of your CPU. - 49 - BIOS Setup 2-10 Load Fail-Safe Defaults CMOS Setup Utility-Copyright (C) 1984-2009 Award Software Standard CMOS Features Advanced BIOS Features Integrated Peripherals Power Management Setup PnP/PCI Configurations PC Health Status MB Intelligent Tweaker(M.

I.T.) : Select Item F10: Save & Exit Setup Load Fail-Safe Defaults Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password Set User Password Load Fail-Safe DefaultsSave & Exit Setup (Y/N)? N Exit Without Saving ESC: Quit F8: Q-Flash F11: Save CMOS to BIOS F12: Load CMOS from BIOS Press <Enter> on this item and then press the <Y> key to load the safest BIOS default settings.