

» Kontron User's Guide «





If it's embedded, it's Kontron.

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2. Introduction

Kontron Embedded Computers would like to point out that the information contained in this manual may be subject to technical changes, particularly as a result of continuous upgrades.

The attached documentation does not entail any guarantee on the part of Kontron Embedded Computers with respect to technical processes described in the manual or any product characteristics set out in the manual. Kontron Embedded Computers does not accept any liability for any printing errors or other inaccuracies in the manual unless it can be proven that Kontron Embedded Computers is aware of such errors or inaccuracies or that Kontron Embedded Computers is unaware of these as a result of gross negligence and Kontron Embedded Computers has failed to eliminate these errors or inaccuracies for this reason.

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2.1. Symbols used in this Manual

Symbol

Meaning



This symbol indicates the danger of injury to the user or the risk of damage to the product if the corresponding warning notices are not observed.



This symbol indicates that the product or parts thereof may be damaged if the corresponding warning notices are not observed.



This symbol indicates general information about the product and the user manual.



This symbol indicates detail information about the specific product configuration.



This symbol precedes helpful hints and tips for daily use.

2.2. Trademarks

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- ® Microsoft, MS-DOS, Windows and Windows NT are registered trademarks of the Microsoft Corporation.
- ® IBM, PC-AT, OS/2 and PS/2 are registered trademarks of the International Business Machines Corporation.
- ® Intel and Pentium are registered trademarks of Intel Corporation.
- ® AMI is a registered trademark of American Megatrends, Inc.

Other product names cited in this manual may also be trademarks and are used here solely for identification purposes.

3. Safety Instructions

3.1. Safety Instructions for the Lithium Battery

The PT630-KON board is equipped with a Lithium battery. For the replacing of this battery please observe the instructions described in the section 8.7.11 "Lithium Battery".



Caution!

Danger of explosion when replaced with wrong type of battery. Replace the battery only with UL listed Lithium battery that has the same or equivalent type recommended by Kontron.



Do not dispose of lithium batteries in domestic waste. Dispose of the battery according to the local regulations dealing with the disposal of these special materials (e.g. to the collecting points for the disposal of batteries).

3.2. Basic Safety and EMC Compatibility

The PT630-KON board is a fixed component that shall be installed into a stationary system by applying good engineering practices and respecting the information on the intended use of the components with a view to meeting the protection requirements [refer to (a) and (b)].

The PT630-KON board was designed and manufactured, having regard to the state of the art, as to ensure that:

(a) the electromagnetic disturbance generated does not exceed the level above which radio and telecommunications equipment or other equipment cannot operate as intended;

(b) it has a level of immunity to the electromagnetic disturbance to be expected in its intended use which allows it to operate without unacceptable degradation of its intended use.

The PT630-KON board was designed, manufactured and checked according to the basic safety requirements in the scope of the low-voltage (LVD) directive.

4. Important Instructions

The manufacturer's instructions provide useful information on your PT630-KON board.

4.1. Electrostatic Discharge (ESD)

The components on the board are sensitive to static electricity. Care must therefore be exercised at all times during handling and inspection of the PT630-KON board, in order to ensure the product integrity.

- Do not handle this product while it is outside its protective enclosure, while it is not used for operational purposes, unless it is otherwise anti-static protected.
- Unpack or install this product only at EOS/ESD safe workstations. When safe work station are not guaranteed, it is important for the user to be electrically discharged before touching the PT630-KON board with his/her hands or tools. This is most easily done by touching a metal part of your system housing.
- Only hold the assemblies at the edge.
- Do not touch any connection pins or conductors on the assembly.

4.2. Note on the Warranty

Due to their limited service life, parts which, by their nature, are especially subject to wear (wearing parts) are not included in the guarantee beyond the legal stipulations. This applies to the batteries, for example.

4.3. Exclusion of Accident Liability Obligation

Kontron Embedded Computers shall be exempted from the statutory accident liability obligation if the user fails to observe the safety instructions.

4.4. Liability Limitation / Exemption from the Warranty Obligation

In the event of damage to the device caused by failure to observe the hints in this manual and eventually on the device (especially the safety instructions), Kontron Embedded Computers shall not be required to honor the warranty even during the warranty period and shall be exempted from the statutory accident liability obligation.

4.5. General Instruction on Usage

In order to ensure safe operation, the user must observe the instructions and warnings contained in this manual.

- □ The PT630-KON board must be used in accordance with the instructions for use.
- The PT630-KON board is designed to be built-in to a system, which fulfill all necessary technical and environmental requirements.
- When installing the board into a system, ensure that the system is switched off and the systems power cord is disconnected from the power source. Disconnect all cable connections of peripheral devices from the system.
- **D** Ensure that the DC operating voltages adheres to the specification given in the "Electrical Specifications".
- Only devices and components which fulfill the requirements of a SELV circuit (security extra low voltage) in accordance with IEC / EN 60950-1 may be connected to the interfaces of the PT630-KON board.
- **I** If extensions are made to the PT630-KON board, the legal stipulations and the board specifications must be observed.

5. About the Package

The system board package contains the following items:

- One system board
- One I/O shield
- One DVD-ROM

If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

6. Before Using the System Board

Before using the system board, prepare basic system components. If you are installing the system board in a new system, you will need at least the following internal components.

- 🗖 A CPU
- □ Memory module
- □ Storage devices such as hard disk drive, DVD-ROM-drive, etc.

You will also need external system peripherals you intend to use which will normally include at least a keyboard, a mouse and a video display monitor.

7. Specifications

| Processor | LGA 1156 socket for: |
|-------------------------|---|
| | - Intel® CoreTM i7-860 2.80GHz/8M |
| | - Intel® Core™ i5-750 2.66GHz/8M |
| | - Intel® CoreTM i5-660 3.33GHz/4M |
| | - Intel® CoreTM i3-540 3.06GHz/4M |
| | - Intel® Pentium® G6950 2.80GHz/3M |
| Chipset | Intel® chipset |
| | - Intel® Q57 (Ibex Peak) |
| System Memory | Four 240-pin DDR3 DIMM sockets |
| - J , | Supports DDR3 1066/1333MHz |
| | • Supports maximum memory bandwidth of 21GB/s in dual-channel mode when |
| | USING DURS ISSSMITZ |
| | • Supports dual channel (128-bit wide) memory interface |
| F | Supports up to roob system memory |
| Expansion Slots | • IX PUT Express 2.0 x10 slot |
| | • IX PUL Express 2.0 x4 slot |
| | • 2X PCI EXPress 2.0 XI SIOLS |
| A 11 | 3X PUI 2.3 33MHZ SLOTS |
| Graphics | • Intel Graphics Processing Unit |
| | - Supports 3D, 2D and video capabilities |
| | Note: Both Intel® LoreIM 1/-860 and LoreIM 15-750 LPUS does not support |
| ۸ام | Positek ALC262.2 channel High Definition Audio |
| Αυαιο | • Two 24 bit stores DACs and three 20 bit stores ADCs |
| | IW0 24-Dit stereo DACS and three 20-Dit stereo ADCS C/DDTE input /output intorface |
| 1 A NI | Ope Dealtak DTI 9111DL DCI Everess Graphit controllar |
| LAN | • Une Realter Rilolliul rul express Gigabil controller |
| | - Supports tompys, toompys and teee 902 3ab (16bps) compliant |
| | - IEEE 802.3 (10/100MDPS) and IEEE 802.3au (100PS) computant |
| | • Integrated Intel® W82578DM LAN CONTroller with external First for FCI Express LAN |
| | - IEEE 802.3 |
| | - 10/100/1000 MBps |
| | - Supports Juliubo Italile |
| Senal AIA | • Supports 6 SATA (Serial ATA) interfaces which are compliant with SATA 1.0 specification |
| | • SATA speed up to 3Gb/s (SATA 2.0) |
| | • Supports RAID 0, 1, 5 and 10 |
| INTEL ACTIVE MANAGEMENT | • Supports iAMT6.0 |
| TECHNOLOGY (AMT) | Out-of-band system access |
| | Remote troubleshooting and recovery |
| | Hardware-based agent presence checking |
| | Proactive alerting |
| | Remote hardware and software asset tracking |

| MODULE (optional) Provides software license protection, enforcement and password protection Rear Panel I/O Ports I.x Imini-DIN-6 FS/2 keyboard port I x DVI-I port (DVI-D signal only) I.x VGA port I x DVI-I port (DVI-D signal only) I.x VGA port I x Mic-in, 1x line-in and 1x line-out jacks I I/O Connectors 4.4 connectors for 8 additional external USB 2.0 ports I x Mic-in, 1x line-in and 1x line-out jacks I.x Connectors I x DIO connector 2.4 connectors for 2 external COM ports I x DD connector 2.4 connector I x DD connector 1.5 xGPDI connector I x DD connector 1.4 Script Connector I x DD sonnector 1.4 Script Connector I x DD sit internal audio connector 1.4 Script Connector I x Chass intrusion connector 1.4 Script Sit trusion connector I x BOS Adde Dort Wake-On-EVERt Solord/Mouse Wake-On-Devents include: <hr/> Wake-On-D-SYZ keyboard/Mouse | TPM - TRUSTED PLATFORM | Provides a Trusted PC for secure transactions |
|--|--------------------------|---|
| Rear Panel I/0 Ports 1 x mini-DIN-6 PS/2 mouse port 1 x mini-DIN-6 PS/2 keyboard port 1 x NU-1 port (DV1-D signal only) 1 x V6A port 2 x R045 LAN ports 2 x R045 LAN ports 4 x USB ports 1 x Mic-in, 1 x line-in and 1 x line-out jacks 1/0 Connectors 4 x USB ports 1 x Mic-in, 1 x line-in and 1 x line-out jacks 1/0 Connectors 4 x connectors for 2 external COM ports 1 x Koonector 1 x Kool-in internal audio connector 1 x S/DIC connector 1 x Spin IZV power connector 1 x A z-pin ATX power connector 1 x konsis intrusion connector 1 x kondonictor 2 x fan connectors 3 x fan connectors BIOS AMI BIOS 64Mbit SPI flash memory Eneray Efficient Design | MODULE (optional) | Provides software license protection, enforcement and password protection |
| • 1x mini-DIN-6 PS/2 keyboard port • 1x DVT-1 port (DVI-D signal only) • 1x VK A port • 2x COM ports • 2x COM ports • 2x RD45 LAN ports • 4x USB ports • 1x Mic-in, 1x Line-in and 1x line-out jacks I/O Connectors • 4x connectors for 8 additional external USB 2.0 ports • 2x connectors for 2 external COM ports • 1x DiO connector • 1x CD-in internal audio connector • 1x CD-in internal audio connector • 1x S/PDI C connector • 1x S/PDI C connector • 1x FDD connector • 1x FDD connector • 1x A FDD connector • 1x A SPI TAX power connector • 1x A spin 12V power connector • 1x A fort panel connector • 1x keosis intrusion connector • 1x fort panel connector • 1x fort panel connector • 1x | Rear Panel I/O Ports | • 1x mini-DIN-6 PS/2 mouse port |
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| • 1x VGA port • 2x COM ports • 2x COM ports • 2x RJ45 LAN ports • 4x USB ports • 4x Connectors FOr 8 additional external USB 2.0 ports • 2x connectors for 8 additional external USB 2.0 ports • 1x Mic-in, 1x line-in and 1x line-out jacks • 1x Di connector • 1x front audio connector • 1x S/PDIF connector • 6x Serial ATA ports • 1x FDD connector • 1x S/PDIF connector • 1x S-pin 12V power connector • 1x FDD connector • 1x S-pin 12V power connector • 1x front panel connector • 1x front pa | | • 1x DVI-I port (DVI-D signal only) |
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| 1x Power-on select (JP6) 1x Configuration COM4 to RS232 or RS422 (half duplex) or RS485 (JP8) Power Supply Lithium battery 3.0 V for RTC, Type: CR2032 External: 12V ATX via 8-pin connector | | 3x USB Power select (JP2, JP3 and JP7) |
| Power Supply Lithium battery 3.0 V for RTC, Type: CR2032 External: 12V ATX via 8-pin connector | | 1x Power-on select (JP6) |
| Power Supply Eltinum battery 3.0 v for RTC, Type: Ck2032 External: 12V ATX via 8-pin connector | | 1x configuration com4 to RS232 of RS422 (nati duplex) of RS485 (JP8) |
| | Power Supply | External: 12V ATX via 8-nin connector |
| +3.3 VSB, +5.0 VSB, +12.0 V, +5.0 V, +3.3 V power via 24 pin connector | | +3.3 VSB, +5.0 VSB, +12.0 V, +5.0 V, +3.3 V power via 24 pin connector |

7.1. Features

7.1.1. Watchdog Timer

The Watchdog Timer function allows your application to regularly "clear" the system at the set time interval. If the system hangs or fails to function, it will reset at the set time interval so that your system will continue to operate.

7.1.2. DDR3

DDR3 delivers increased system bandwidth and improved performance. It offers peak data transfer rate of up to 21 Gb/s bandwidth. The advantages of DDR3 are its higher bandwidth and its increase in performance at a lower power than DDR2.

7.1.3. Graphics

The Intel chip comes integrated with the Graphics Processing Unit delivering exceptional 3D, 2D and video capabilities. It supports VGA and DVI interfaces.

7.1.4. PCI Express

PCI Express is a high bandwidth I/O infrastructure that possesses the ability to scale speeds by forming multiple lanes. The x4 PCI Express lane supports transfer rate of 1 Gigabyte per second. The PCI Express architecture also provides a high performance graphics infrastructure by enhancing the capability of a x16 PCI Express lane to provide 4 Gigabytes per second transfer rate.

7.1.5. Intel Active Management Technology (AMT)

Intel Active Management Technology (Intel® AMT) allows remote access and management of networked systems even while PCs are powered off, remotely repair systems after OS failures and has the capability to remotely update all systems with the latest security software.

7.1.6. Audio

The Realtek ALC262 audio codec provides 2-channel High Definition audio output.

7.1.7. S/PDIF

S/PDIF is a standard audio file transfer format that transfers digital audio signals to a device without having to be converted first to an analog format. This prevents the quality of the audio signal from degrading whenever it is converted to analog. S/PDIF is usually found on digital audio equipment such as a DAT machine or audio processing device. The S/PDIF connector on the system board sends surround sound and 3D audio signal outputs to amplifiers and speakers and to digital recording devices like CD recorders.

7.1.8. Serial ATA

Serial ATA is a storage interface that is compliant with SATA 1.0a specification. With speed of up to 3Gbps, it improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s. It supports RAID 0/1/5/10.

7.1.9. Gigabit LAN

The Intel W82578DM PHY and Realtek RTL8111DL PCI Express Gigabit controllers support up to 1Gbps data transmission.

7.1.10. USB

The system board supports USB 2.0 and USB 1.1 ports. The USB 1.1 supports 12Mb/second bandwidth while USB 2.0 supports 480Mb/second bandwidth providing a marked improvement in device transfer speeds between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

7.1.11. Wake-On-LAN

This feature allows the network to remotely wake up a Soft Power Down (Soft-Off) PC. It is supported via the onboard LAN port or via a PCI LAN card that uses the PCI PME (Power Management Event) signal. However, if your system is in the Suspend mode, you can power-on the system only through an IRQ or DMA interrupt.

The 5V_standby power source of your power supply must support \geq 720mA.

7.1.12. Wake-On-PS/2

This function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system.

The 5V_standby power source of your power supply must support \geq 720mA.

7.1.13. Wake-On-USB

This function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state.

If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5V_standby power source of your power supply must support ≥1.5A. For 3 or more USB ports, the 5V_standby power source of your power supply must support ≥2A.

7.1.14. ACPI STR

The system board is designed to meet the ACPI (Advanced Configuration and Power Interface) specification. ACPI has energy saving features that enables PCs to implement Power Management and Plug-and-Play with operating systems that support OS Direct Power Management. ACPI when enabled in the Power Management Setup will allow you to use the Suspend to RAM function.

With the Suspend to RAM function enabled, you can power-off the system at once by pressing the power button or selecting "Standby" when you shut down Windows® without having to go through the sometimes tiresome process of closing files, applications and operating system. This is because the system is capable of storing all programs and data files during the entire operating session into RAM (Random Access Memory) when it powers-off. The operating session will resume exactly where you left off the next time you power-on the system.



The 5V_standby power source of your power supply must support \geq 720mA.

7.1.15. Power Failure Recovery

When power returns after an AC power failure, you may choose to either power-on the system manually or let the system power-on automatically.

8. Hardware Installation

8.1. System Board Layout



Fig. 1: PT630-KON

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Important:

Electrostatic discharge (ESD) can damage your system board, processor, disk drives, add-in boards, and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

8.2. System Memory

Important:

When the Standby Power LED lit red, it indicates that there is power on the system board. Power-off the PC then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.

Fig. 2: Memory channels and stand-by power LED

The four DIMM sockets are divided into 2 channels:

- Channel A DIMM 1 and DIMM 2
- □ Channel B DIMM 3 and DIMM 4

The system board supports the following memory interface.

8.2.1. Single Channel (SC)

Data will be accessed in chunks of 64 bits (8B) from the memory channels.

8.2.2. Dual Channel (DC)

Data will be accessed in chunks of 128 bits from the memory channels. Dual channel provides better system performance because it doubles the data transfer rate.

| Single Channel | DIMMs are on the same channel. DIMMs in a channel can be identical or completely different. However, we highly recommend using identical DIMMs. Not all slots need to be populated. |
|----------------|--|
| Dual Channel | DIMMs of the same memory configuration are on different channels. |

Important:

- □ You can populate either Channel A or Channel B first.
- □ When installing a DIMM in Channel A or Channel B, always populate the socket that is farthest the CPU. This will mean populating DDR3-1 and/or DDR3-3 first.
- □ If you intend to use dual channel, the same rule applies always the socket farthest the CPU. Populate DDR3-1 and/or DDR3-3 first; not DDR3-1 and DDR3-4 and not DDR3-3 and DDR3-2.

8.3. Installing the DIM Module

The system board used in the following illustrations may not resemble the actual board. These illustrations are for reference only.

- 1. Make sure the PC and all other peripheral devices connected to it has been powered down.
- 2. Disconnect all power cords and cables.
- **3.** Locate the DIMM socket on the system board.
- 4. Push the "ejector tabs" which are at the ends of the socket to the side.

Fig. 3: DIMM sockets

5. Note how the module is keyed to the socket.

Fig. 4: How the module is keyed to the socket

6. Grasping the module by its edges, position the module above the socket with the "notch" in the module aligned with the "key" on the socket. The keying mechanism ensures the module can be plugged into the socket in only one way.

Fig. 5: How to plug-in the module into the socket

7. Seat the module vertically, pressing it down firmly until it is completely seated in the socket.

Fig. 6: Inserting the module into the socket

8. The ejector tabs at the ends of the socket will automatically snap into the locked position to hold the module in place.

Fig. 7: Locking the module into position

8.4. CPU

The system board is equipped with a surface mount LGA 1156 socket. This socket is exclusively designed for installing a LGA 1156 packaged Intel CPU.

Important:

- Before you proceed, make sure (1) the LGA 1156 socket comes with a protective cap, (2) the cap is not damaged and (3) the socket's contact pins are not bent. If the cap is missing or the cap and/or contact pins are damaged, contact your dealer immediately.
- □ Make sure to keep the protective cap. RMA requests will be accepted and processed only if the LGA 1156 socket comes with the protective cap.

Fig. 8: Protective cap of the LGA 1156 socket

8. Hardware Installation

8.4.1. Installing the CPU

- 1. Make sure the PC and all other peripheral devices connected to it has been powered down.
- 2. Disconnect all power cords and cables.
- 3. Locate the LGA 1156 CPU socket on the system board.

Fig. 9: CPU location

The CPU socket must not come in contact with anything other than the CPU. Avoid unnecessary exposure. Remove the protective cap only when you are about to install the CPU.

4. Unlock the socket by pushing the load lever down, moving it sideways until it is released from the retention tab; then lift the load lever up.

5. Lifting the load lever will at the same time lift the load plate. Lift the load lever up to the angle shown on the photo.

Fig. 11: Lifting the load lever and load plate

6. Remove the protective cap from the CPU socket. The cap is used to protect the CPU socket against dust and harmful particles. Remove the protective cap only when you are about to install the CPU.

Fig. 12: Removing the protective cap from the CPU socket.

7. Insert the CPU into the socket. The gold triangular mark on the CPU must align with the corner of the CPU socket shown on the photo. The CPU's notch will at the same time fit into the socket's alignment key.

Fig. 13: Aligne the CPU.

The CPU will fit in only one orientation and can easily be inserted without exerting any force.

8. Close the load plate then push the load lever down. While closing the load plate, make sure the front edge of the load plate slides under the retention knob. Hook the load lever under the retention tab.

Fig. 14: Securing the CPU with the load lever and the tetention tab

8.4.2. Installing the Fan and Heat Sink

The CPU must be kept cool by using a CPU fan with heat sink. Without sufficient air circulation across the CPU and heat sink, the CPU will overheat damaging both the CPU and system board.

A boxed Intel® processor already includes the CPU fan and heat sink assembly. If your CPU was purchased separately, make sure to only use Intel® certified fan and heat sink.

- Before you install the fan / heat sink, you must apply a thermal paste onto the top of the CPU. The thermal paste is
 usually supplied when you purchase the fan / heat sink assembly. Do not spread the paste all over the surface. When
 you later place the heat sink on top of the CPU, the compound will disperse evenly. Some heat sinks come with a patch
 of pre-applied thermal paste. Do not apply thermal paste if the fan / heat sink already has a patch of thermal paste on
 its underside. Peel the strip that covers the paste before you place the fan / heat sink on top of the CPU.
- 2. Place the heat sink on top of the CPU. The 4 push pins around the heat sink, which are used to secure the heat sink onto the system board, must match the 4 mounting holes around the socket.
 - CPU fan connector Mounting hole
- 3. Orient the heat sink such that the CPU fan's cable is nearest the CPU fan connector.

Fig. 15: Mounting holes for the CPU fan and the CPU fan connector

- 4. Rotate each push-pin according to the direction of the arrow shown on top of the pin. Push down two pushpins that are diagonally across the heat sink. Perform the same procedure for the other two push-pins.
- 5. Connect the CPU fan cable to the CPU fan connector on the system board.

8. Hardware Installation

8.5. Jumper Settings

8.5.1. Clear CMOS Data (JP1)

Fig. 16: JP1 jumper "Clear CMOS Data"

If the CMOS data becomes corrupted, or if you have forgotten the supervisor or user password, you can reconfigure the system with the default values stored in the ROM BIOS.

To load the default values stored in the ROM BIOS, please follow the steps below:

- **1.** Power-off the system and unplug the power cord.
- 2. Set JP1 pins 2 and 3 to "On". Wait for a few seconds and set JP1 back to its default setting, pins 1 and 2 "On".
- 3. Now plug the power cord and power-on the system.

8.5.2. PS/2 Power Select (JP4)

JP4 is used to select the power of the PS/2 keyboard/mouse port. Selecting 5V_standby will allow you to use the PS/2 keyboard or PS/2 mouse to wake up the system.

The 5V_standby power source of your power supply must support \geq 720mA.

Fig. 17: JP4 jumper "PS/2 Power Select"

8.5.3. USB Power Select

These jumpers are used to select the power of the USB ports. Selecting 5V_standby will allow you to use a USB device to wake up the system.

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If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5V_standby power source of your power supply must support ≥1.5A. For 3 or more USB ports, the 5V_standby power source of your power supply must support ≥2A.

Fig. 18: JP2, JP3 and JP7 jumpers "USB Power Select"

8.5.4. Power-on Select

Fig. 19: JP6 jumper, "Power On Select"

To power-on via WOL after G3:

- 1. Set JP6 pins 2 and 3 to "On".
- 2. Set the "After G3" field to "Power Off/WOL".
- 3. Set the "GbE Wake Up From S5" to "Enabled".

The BIOS fields are in the "South Bridge Configuration" submenu (Chipset menu) of the AMI BIOS utility.

To power-on via AC Power:

- 4. Set JP6 pins 2 and 3 to "On".
- 5. Set the "After G3" field to "Power On".

8.5.5. COM 4 RS232/RS422/RS485 Select

Fig. 20: JP8 jumper "COM4 RS232/RS422/RS485 Select"

The jumper JP8 is used to configure COM 4 to RS232, RS422 (Half Duplex) or RS485.

The pin function of COM 4 will vary according to the jumper's setting.

Fig. 21: JP8 jumper settings

8.6. Rear Panel I/O Ports

Fig. 22: I/O ports

The rear panel I/O ports consist of the following:

- □ 1x PS/2 mouse port
- □ 1x PS/2 keyboard port
- 2x COM ports
- 1x VGA port
- □ 1x DVI-I port (DVI-D signal only)
- □ 1x LAN port (Intel)
- □ 1x LAN port (Realtek)
- □ 4x USB ports
- □ 1x Mic-in jack
- □ 1x Line-in jack
- □ 1x Line-out jack

8.6.1. PS/2 Mouse and PS/2 Keyboard Ports

Fig. 23: PS/2 Keyboard and PS/2 Mouse

These ports are used to connect a PS/2 mouse and a PS/2 keyboard. The PS/2 mouse port uses IRQ12.

8.6.1.1. Wake-On-PS/2 Keyboard/Mouse

The Wake-On-PS/2 Keyboard/Mouse function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system.

Jumper Setting in order to use this function:

The Jumper JP4 must be set to "2-3 On: 5V_standby". Refer to 8.5.2 "PS/2 Power Select (JP4)" for more information.

The 5V_standby power source of your power supply must support \geq 720mA.

8.6.2. COM (Serial) Ports

Fig. 24: Serial Ports

COM 1, COM 2 and COM 3 are fixed at RS232.

The COM 4 port pin definition will vary according to JP8's settings. Refer to 8.5.5"COM 4 RS232/RS422/RS485 Select" for more information.

The serial ports are asynchronous communication ports with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices.
8.6.2.1. Connecting External Serial Ports

Your COM port may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then insert the serial port cable to the COM connector. Make sure the colored stripe on the ribbon cable is aligned with pin 1 of the COM connector.

8.6.2.2. BIOS Setting

Configure the serial ports in the Advanced menu ("Super IO Configuration" sub-menu) of the BIOS. Refer to 10.2.7 "Secondary Super IO Configuration" for more information.



8.6.3. VGA Port

Fig. 25: VGA Port

The VGA port is used for connecting a VGA monitor. Connect the monitor's 15-pin D-shell cable connector to the VGA port. After you plug the monitor's cable connector into the VGA port, gently tighten the cable screws to hold the connector in place.

8.6.3.1. BIOS Setting

Configure VGA in the Chipset menu ("North Bridge Configuration" submenu) of the BIOS. Refer to the section 10.6.1 "North Bridge Configuration" for more information.

8.6.3.2. Driver Installation

Install the graphics driver. Refer to the section 12.4 "Intel Graphics Drivers" for more information.

8.6.4. DVI-I Port



Fig. 26: DVI Port

The DVI-I port is used to connect an LCD monitor. This port supports DVI-D signal only.

Connect the display device's cable connector to the DVI-I port. After you plug the cable connector into the port, gently tighten the cable screws to hold the connector in place.

8.6.4.1. BIOS Setting

Configure the display device in the Chipset menu ("North Bridge Configuration" submenu) of the BIOS. Refer to the section 10.6.1 "North Bridge Configuration" for more information.

8.6.5. USB Ports



Fig. 27: USB Ports

USB allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals. The system board is equipped with four onboard USB 2.0/1.1 ports. The four 10-pin connectors allow you to connect 8 additional USB 2.0/1.1 ports. The additional USB ports may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then insert the USB port cables to a connector.

8.6.5.1. BIOS Setting

Configure the onboard USB in the Advanced menu ("USB Configuration" section) of the BIOS. Refer to the section 10.2.15 "USB Configuration" for more information.

8.6.5.2. Driver Installation

You may need to install the proper drivers in your operating system to use the USB device. Refer to your operating system's manual or documentation for more information.

8.6.5.3. Wake-On-USB Keyboard/Mouse

The Wake-On-USB Keyboard/Mouse function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state.



Jumper Setting in order to use this function:

JP2, JP3 and/or JP7 must be set to "2-3 On: 5V_standby". Refer to the section 8.5.3 "USB Power Select" for more information.

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Important

If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5V_standby power source of your power supply must support \geq 1.5A. For 3 or more USB ports, the 5V_standby power source of your power supply must support \geq 2A.

8.6.6. RJ45 LAN Ports



Fig. 28: LAN Ports (RJ45()

The LAN ports allow the system board to connect to a local area network by means of a network hub.

8.6.6.1. BIOS Setting

Configure the onboard LAN in the Chipset menu ("South Bridge Configuration" section) of the BIOS. Refer to the section 10.6.2 "South Bridge Configuration" for more information.

8.6.6.2. Driver Installation

Install the LAN drivers. Refer to chapter 12 "Supported Software" for more information.

8.6.7. Audio



Fig. 29: Audio Ports

8.6.7.1. Rear Audio

The system board is equipped with 3 audio jacks. A jack is a one-hole connecting interface for inserting a plug.

- □ Mic-in Jack (Pink): This jack is used to connect an external microphone.
- Line-in Jack (Light Blue): This jack is used to connect any audio devices such as Hi-fi set, CD player, tape player, AM/FM radio tuner, synthesizer, etc.
- Line-out Jack (Lime): This jack is used to connect a headphone or external speakers.

8.6.7.2. Front Audio

The front audio connector allows you to connect to the second Line-out and Mic-in jacks that are at the front panel of your system.

8.6.7.3. BIOS Setting

Configure the onboard audio in the Chipset menu ("South Bridge Configuration" section) of the BIOS. Refer to the section 10.6.2 "South Bridge Configuration" for more information.

8.6.7.4. Driver Installation

Install the audio driver. Refer to chapter 12 "Supported Software" for more information.

8.7. I/O Connectors

8.7.1. CD-in Internal Audio Connector

The CD-in connector is used to receive audio from a CD-ROM drive, TV tuner or MPEG card.



Fig. 30: CD-In Audio Port





Fig. 31: CD-In Audio Port

The S/PDIF connector is used to connect an external S/PDIF port. The SPDIF connector allows digital audio input and output via an adapter cable with slot mounting bracket for coaxial and/or optical fiber connection (not included).

8.7.2. Digital I/O Connector



Fig. 32: Digital I/O connector

The Digital I/O connector provides powering-on function to an external device that is connected to this connector.

| Pins | Function | Pins | Function |
|------|----------|------|------------|
| 1 | GND | 2 | +12V |
| 3 | DIO7 | 4 | +12V |
| 5 | DIO6 | 6 | GND |
| 7 | DIO5 | 8 | VCC |
| 9 | DIO4 | 10 | VCC |
| 11 | DIO3 | 12 | GND |
| 13 | DIO2 | 14 | V_5P0_STBY |
| 15 | DIO1 | 16 | V_5P0_STBY |
| 17 | DIO0 | 18 | GND |
| 19 | GND | | |

Digital I/O Connector

8.7.3. SATA (Serial ATA) Connectors



Fig. 33: SATA connectors

The Serial ATA connectors are used to connect Serial ATA devices. Connect one end of the Serial ATA cable to a SATA connector and the other end to your Serial ATA device.

8.7.3.1. BIOS Setting

Configure the Serial ATA drives in the Advanced menu ("IDE Configuration" section) of the BIOS. Refer to the section 10.2.4 "IDE Configuration" for more information.

8.7.4. FDD (Floppy Disk Drive) Connector



Fig. 34: FDD connector

The FDD connector supports a standard floppy disk drive. The floppy cable can be inserted into this connector only if pin 1 of the cable is aligned with pin 1 of this connector.

8.7.4.1. Connecting the FDD Cable

Insert one end of the FDD cable into the FDD connector and the other end of the cable to the floppy drive. Pin 1 of the cable must align with pin 1 of the FDD connector.

8.7.4.2. BIOS Setting

Enable or disable this function in the Advanced menu ("Floppy Configuration" section) of the BIOS. Refer to section 10.2.5 "Floppy Configuration" for more information.

8.7.5. Cooling Fan Connectors



Fig. 35: Cooling fan connectors

The fan connectors are used to connect cooling fans. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

8.7.5.1. BIOS Setting

The Hardware Health Configuration submenu (in the Advanced menu) of the BIOS will display the current speed of the cooling fans. Refer to the section 10.2.8 "Hardware Health Configuration" for more information.

8.7.6. Chassis Intrusion Connector



Fig. 36: Chassis intrusion connector

The board supports the chassis intrusion detection function. Connect the chassis intrusion sensor cable from the chassis to this connector. When the system's power is on and a chassis intrusion occurred, an alarm will sound. When the system's power is off and a chassis intrusion occurred, the alarm will sound only when the system restarts.

8.7.6.1. MyGuard Hardware Monitor

Install the "MyGuard Hardware Monitor" utility. By default, the chassis intrusion detection function is disabled. When enabled, a warning message will appear when the chassis is open. The utility can also be configured so that a beeping alarm will sound when the chassis is open. Refer to the section 12.9 "MyGuard Hardware Monitor" for more information.

8.7.7. Power Connectors



Fig. 37: Power connectors

Use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1. An ATX12V power supply unit has a standard 24-pin ATX main power connector that must be inserted into the 24-pin connector. The 8-pin +12V power connector enables the delivery of more +12VDC current to the processor's Volt-age Regulator Module (VRM).

The power connectors from the power supply unit are designed to fit the 24-pin and 8-pin connectors in only one orientation. Make sure to find the proper orientation before plugging the connectors.

The system board requires a minimum of 300 Watt power supply to operate. Your system configuration (CPU power, amount of memory, add-in cards, peripherals, etc.) may exceed the minimum power requirement. To ensure that adequate power is provided, we strongly recommend that you use a minimum of 400 Watt (or greater) power supply.



Important

Insufficient power supplied to the system may result in instability or the add-in boards and peripherals not functioning properly. Calculating the system's approximate power usage is important to ensure that the power supply meets the system's consumption requirements.

8.7.8. Standby Power LED



Fig. 38: Power connectors

This LED will lit red when the system is in the standby mode. It indicates that there is power on the system board. Power-off the PC then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.

8.7.9. Front Panel Connectors



Fig. 39: Front panel connectors

8.7.9.1. HDD-LED - HDD LED

This LED will light when the hard drive is being accessed.

8.7.9.2. RESET SW - Reset Switch

This switch allows you to reboot without having to power off the system.

8.7.9.3. PWR-BTN - Power Switch

This switch is used to power on or off the system.

8.7.9.4. PWR-LED - Power/Standby LED

When the system's power is on, this LED will light. When the system is in the S1 (POS - Power On Suspend) state, it will blink every second. When the system is in the S3 (STR - Suspend To RAM) state, it will blink every 4 seconds.

| | Pin | Pin Assignment | | Pin | Pin Assignment |
|----------|--------|----------------------|---------|-------------|----------------------------------|
| N. C. | 1 | N. C. | PWR-LED | 2 4 6 | LED Power LED Power Signal |
| HDD-LED | 3 5 | HDD Power Signal | PWR-BTN | 8 10 | Signal Ground |
| RESET SW | 7 9 | Ground RST Signal | | | |
| N. C. | 11 | N. C. | Кеу | 12 | Key |

8.7.10. Expansion Slots



Fig. 40: Expansion slots

8.7.10.1. PCI Express x16 Slot

Install PCI Express x16 graphics card, that comply to the PCI Express specifications, into the PCI Express x16 slot. To install a graphics card into the x16 slot, align the graphics card above the slot then press it down firmly until it is completely seated in the slot. The retaining clip of the slot will automatically hold the graphics card in place.

8.7.10.2. PCI Express x1/x4 Slots

Install PCI Express cards such as network cards or other cards that comply to the PCI Express specifications into the PCI Express x1/x4 slot.

8.7.10.3. PCI Slots

The PCI slot supports expansion cards that comply with PCI specifications.

8.7.11. Lithium Battery



Fig. 41: Lithium battery

The lithium ion battery powers the real-time clock and CMOS memory. It is an auxiliary source of power when the main power is shut off.

8.7.11.1. Safety Measures

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
 Pay attention to the polarity of the battery.
- Dispose of used batteries according to local ordinance.



Caution!

Danger of explosion when replaced with wrong type of battery. Replace the battery only with UL listed Lithium battery that has the same or equivalent type recommended by Kontron.



Do not dispose of lithium batteries in domestic waste. Dispose of the battery according to the local regulations dealing with the disposal of these special materials (e.g. to the collecting points for the disposal of batteries).

9. BIOS Setup

9.1. Overview

The BIOS is a program that takes care of the basic level of communication between the CPU and peripherals. It contains codes for various advanced features found in this system board. The BIOS allows you to configure the system and save the configuration in a battery-backed CMOS so that the data retains even when the power is off. In general, the information stored in the CMOS RAM of the EEPROM will stay unchanged unless a configuration change has been made such as a hard drive replaced or a device added.

It is possible that the CMOS battery will fail causing CMOS data loss. If this happens, you need to install a new CMOS battery and reconfigure the BIOS settings.



The BIOS is constantly updated to improve the performance of the system board; therefore the BIOS screens in this chapter may not appear the same as the actual one. These screens are for reference purpose only.

9.1.1. Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

9.1.2. Entering the BIOS Setup Utility

The BIOS Setup Utility can only be operated from the keyboard and all commands are keyboard commands. The commands are available at the right side of each setup screen.

The BIOS Setup Utility does not require an operating system to run. After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the message "Press DEL to run setup" will appear on the screen. If the message disappears before you respond, restart the system or press the "Reset" button. You may also restart the system by pressing the <Ctrl> <Alt> and keys simultaneously.

9.1.3. Legends

| Keys | Function | |
|-----------------------|--|--|
| Right and Left arrows | Moves the highlight left or right to select a menu. | |
| Up and Down arrows | Moves the highlight up or down between submenus or fields. | |
| <esc></esc> | Exits to the BIOS Setup Utility. | |
| + (plus key) | Scrolls forward through the values or options of the highlighted field. | |
| - (minus key) | Scrolls backward through the values or options of the highlighted field. | |
| Tab | Selects a field. | |
| <f1></f1> | Displays General Help. | |
| <f10></f10> | Saves and exits the Setup program. | |
| <enter></enter> | Press <enter> to enter the high- lighted submenu.</enter> | |

9.1.4. Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields are not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

9.1.5. Submenu

When " **>** " appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press <Enter>.

10. AMI BIOS Setup Utility

10.1. Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

| | | BIOS S | ETUP UTILI | TY | | | |
|--|-------------------------------------|------------------|----------------------|-----------------|--|--|---|
| Main | Advanced | PCIPnP | Boot | Security | Chips | set | Exit |
| System Over | view | | | | Use [E] | NTER], [T | AB] |
| AMIBIOS Version Build Date: ID | :08.00.15 :01/20/10 :1AAAA000 | | | | Use [+] | i field. or [-] to ire system | o Time. |
| Processor Genuine Intel Speed Count | (R) CPU :3066MHz :1 | 000 (|) 3.07GHz | | | | |
| System Mem Size System Time System Date | ory :1784MB | [09:39 [Thu | 9:25] 03/04/2010] | | ← → ↑↓ +- Tab F1 F10 ESC | Select Sc Select Ite Change F Select Fie General I Save and Exit | reen m Field Eld Help Exit |
| | v02.67 (0 | C)Copyright 1985 | -2009. Ameri | can Megatrends. | Inc. | | |

10.1.1. AMI BIOS

Displays the detected BIOS information.

10.1.2. Processor

Displays the detected processor information.

10.1.3. System Memory

Displays the detected system memory information.

10.1.4. System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

10.1.5. System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1994 to 2079.

10.2. Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.



Important

Setting incorrect field values may cause the system to malfunction.

| | - 2 | BIOS S | SETUP UTI | LITY | | |
|--|---|---|-------------|------------------|---|---|
| Main | Advanced | PCIPnP | Boot | Security | Chips | et Exit |
| Advanced Set | tings | | | | Configu | re CPU. |
| WARNING: 1 CPU Confi IDE Config Floppy Co Super IO C Secondary Hardware I ACPI Confi AHCI Confi AHCI Confi AHCI Confi Intel AMT Intel VT-d Remote Ac Trusted Co USB Confi Watchdog Tin Resume by Pl | Setting wrong val may cause system guration unfiguration Configuration Super IO Configuration figuration figuration Configuration Configuration configuration configuration configuration mputing guration ner [] ME [] | ues in below sec 1 to malfunction. uration ion Disabled] Disabled] | tions | | $\begin{array}{c} \leftarrow \rightarrow \\ \uparrow \downarrow \\ Enter \\ F1 \\ F10 \\ ESC \end{array}$ | Select Screen Select Item Go to Sub Screen General Help Save and Exit Exit |
| | v02.67 (| C)Copyright 198 | 5-2009, Ame | erican Megatrend | s, Inc. | |

10.2.1. Watchdog Timer

This field is used to select the time interval of the Watchdog timer. If the system hangs or fails to function, it will reset at the set time interval so that your system will continue to operate.

10.2.2. Resume by PME

Enabled

This field should be set to *Enabled* only if your PCI card such as LAN card or modem card uses the PCI PME (Power Management Event) signal to remotely wake up the system. Access to the LAN card or PCI card will cause the system to wake up. Refer to the card's documentation for more information.

Disabled

The system will not wake up despite access to the PCI card.

10.2.3. CPU Configuration

This section is used to configure the CPU. It will also display detected CPU information.

| AdvancedConfigure Advanced CPU Settings Module Version: 01.08For UP platforms, leave it enabled, For UP/MP servers, it may use to tune performance to the specific application.Manufacturer : Intel Genuine Intel(R) CPU000 @ 3.07GHzFrequency: 3.06GHzBCLK Speed : 133MHz Cache L1: 128 KBCache L2: 512 KBCache L3: 4096 KBRatio Status: Unlocked (Min:09; Max:23)Ratio Status: Unlocked (Min:09; Max:23)Ratio Actual Value: 23EnabledHardware Prefetcher Adjacent Cache Line Prefetch Intel(R) Virtualization Tech Execute-Disable Bit Capability Intel (R) HT Technology Active Processor Cores A20MIntel (R) HT Technology Active Processor CoresA20M | BIC | DS SETUP UTILITY | |
|---|--|--|--|
| Configure Advanced CPU Settings Module Version: 01.08ManufacturerIntelManufacturerIntelGenuine Intel(R) CPU000 @ 3.07GHzFrequency \pm 3.06GHzBCLK Speed133MHzCache L1128 KBCache L2 \pm 512 KBCache L3 \pm 4096 KBRatio Status \pm Unlocked (Min:09; Max:23)Ratio Actual Value:23Hardware Prefetcher[Enabled]Adjacent Cache Line Prefetch[Enabled]Intel(R) Virtualization Tech[Enabled]Execute-Disable Bit Capability[Enabled]Intel (R) HT Technology[Enabled]Active Processor Cores[All]A20M[Disabled] | Advanced | | |
| ManufacturerIntel Genuine Intel(R) CPU000 @ 3.07GHzif may use to the performance to the specific application.BCLK Speed133MHz $3.07GHz$ if may use to the performance to the specific application.BCLK Speed133MHz $3.07GHz$ if may use to the performance to the specific application.Cache L1128 KB $Cache L2$ $512 KB$ Cache L2 $512 KB$ $Cache L3$ $4096 KB$ Ratio Status: Unlocked (Min:09; Max:23) $Actual Value: 23$ Hardware Prefetcher[Enabled] $\uparrow \downarrow$ Select ScreenAdjacent Cache Line Prefetch[Enabled] $\uparrow \downarrow$ Select ItemIntel(R) Virtualization Tech[Enabled] $\uparrow \downarrow$ Select ItemIntel(R) HT Technology[Enabled] $F10$ General HelpActive Processor Cores[All][Disabled]A20M[Disabled]ESC | Configure Advanced CPU Settings Module Version: 01.08 | ► For UP platforms, leave it enabled. | |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$ | Manufacturer: IntelGenuine Intel(R) CPU000 @ 3.0Frequency: 3.06GHzBCLK Speed: 133MHzCache L1: 128 KBCache L2: 512 KBCache L3: 4096 KBRatio Status: Unlocked (Min:09; Max:2Ratio Actual Value:23 | 23) | |
| Intel(R) SpeedStep(1M) tech [Enabled] Intel(R) TurboMode Tech [Enabled] Intel(R) C-STATE tech [Enabled] | Hardware Prefetcher[Enabled]Adjacent Cache Line Prefetch[Enabled]Intel(R) Virtualization Tech[Enabled]Execute-Disable Bit Capability[Enabled]Intel (R) HT Technology[Enabled]Active Processor Cores[All]A20M[Disabled]Intel(R) SpeedStep(TM) tech[Enabled]Intel(R) TurboMode Tech[Enabled]Intel(R) C-STATE tech[Enabled] | ←→ Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit | |

10.2.3.1. Hardware Prefetcher

For UP platforms, leave it Enabled. For DP/MP servers, it may be used to tune performance to the specific application.

10.2.3.2. Adjacent Cache Line Prefetch

Enables or disables the Adjacent Cache Line Prefetch feature.

10.2.3.3. Intel(R) Virtualization Tech

When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

10.2.3.4. Execute Disable Bit Capability

When this field is set to Disabled, it will force the XD feature flag to always return to 0.

10.2.3.5. Intel HT Technology

Enable this field for Windows XP and Linux which are optimized for Hyper-Threading technology. Select disabled for other OSes not optimized for Hyper-Threading technology. When disabled, only one thread per enabled core is enabled

10.2.3.6. Active Processor Cores

This field is used to enter the number of cores to enable in each processor package.

10.2.3.7. A20M

Enable this for legacy operating systems and APs.

10.2.3.8. Intel(R) SpeedStep(tm) Tech

Enables or disables GV3.

10.2.3.9. Intel(R) TurboMode Tech

When Enabled, Turbo mode allows processor cores to run faster than marked frequency in specific condition.

10.2.3.10. Intel(R) C-STATE Tech

When enabled, CPU idle is set to C2/C3/C4.

10.2.4. IDE Configuration

This section is used to configure the IDE drives.

| | BIOS SETUP UTILITY | |
|--|---|--|
| Advanced | | |
| IDE Configuration | | Options |
| Mirrored IDER Configuration Configure SATA as SATA#1 IDE Configuration SATA#2 IDE Configuration Primary IDE Master Primary IDE Slave Secondary IDE Master Secondary IDE Master Fourth IDE Master | [Disabled] [IDE] [Compatible] [Enhanced] : [ATAPI CDROM] : [Not Detected] : [Hard Disk] : [Not Detected] : [Not Detected] : [Not Detected] : [Not Detected] | IDE RAID AHCI Disabled |
| | | $\begin{array}{rcc} \leftarrow \rightarrow & \text{Select Screen} \\ \uparrow \downarrow & \text{Select Item} \\ + & \text{Change Option} \\ F1 & \text{General Help} \\ F10 & \text{Save and Exit} \\ ESC & Exit \end{array}$ |
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10.2.4.1. Mirrored IDER Configuration

Enables or disables the IDER feature.

10.2.4.2. Configure SATA as

IDE

This option configures the Serial ATA drives as Parallel ATA storage devices.

RAID

This option allows you to create RAID or Intel Matrix Storage configuration on Serial ATA devices.

AHCI

This option allows the Serial ATA devices to use AHCI (Advanced Host Controller Interface).

SATA#1 IDE Configuration / SATA#2 IDE Configuration

These fields are used to configure the IDE device mode.

SATA#1 / SATA#2 IDE Configuration

The options are *Compatible* and *Enhanced*.

Compatible

Legacy IDE channels will appear allowing you to configure the devices.

Enhanced

"Configure SATA as" will appear allowing you to configure the devices.

10.2.4.3. Primary IDE Master to Fourth IDE Master

When you enter the BIOS Setup Utility, the BIOS will auto detect the existing IDE devices then displays the status of the detected devices. To configure an IDE drive, move the cursor to a field then press <Enter>.

| | BIOS SETUP UTILITY | |
|--|---|--|
| Advanced | | |
| Primary IDE Master | | Select the type |
| Device:Hard DiskVendor:ST3120023ASSize:120.0GBLBA Mode:SupportedBlock Mode:16SectorsPIO Mode:4Async. DMA:Multiword DMA-2Ultra DMA:Ultra DMA-6S.M.A.R.T:Supported | | to the system. |
| Type LBA/Large Mode Block (Multi-Sector Transfer) PIO Mode DMA Mode S.M.A.R.T. 32Bit Data Transfer | [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Enabled] | $\begin{array}{lll} \leftarrow & \rightarrow & \text{Select Screen} \\ \uparrow \downarrow & \text{Select Item} \\ + & - & \text{Change Option} \\ F1 & \text{General Help} \\ F10 & \text{Save and Exit} \\ \text{ESC} & \text{Exit} \end{array}$ |
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Туре

Selects the type of IDE drive connected to the system.

LBA/Large Mode

Auto

The LBA mode will automatically be enabled, that is, if the LBA mode was not previously disabled.

Disabled Disables the LBA mode.

Block (Multi-Sector Transfer)

Auto

Data transfer to and from the device occur multiple sectors at a time.

Disabled

Data transfer to and from the device occurs one sector at a time.

PIO Mode

Selects the data transfer mode. PIO means Programmed Input/Output. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves. Your system supports five modes, 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode after checking your drive.

Auto

The BIOS will automatically set the system according to your hard disk drive's timing.

Mode 0-4

You can select a mode that matches your hard disk drive's timing. Caution: Do not use the wrong setting or you will have drive errors.

DMA Mode

Selects the DMA mode.

Auto Automatically detects the DMA mode.

SWDMAn SingleWord DMAn.

MWDMAn MultiWord DMAn.

UDMAn Ultra DMAn.

S.M.A.R.T.

The system board supports SMART (Self-Monitoring, Analysis and Reporting Technology) hard drives. SMART is a reliability prediction technology for ATA/IDE and SCSI drives. The drive will provide sufficient notice to the system or user to backup data prior to the drive's failure. SMART is supported in ATA/33 or later hard drives. The options are Auto (default), Enabled and Disabled.

32Bit Data Transfer

Enables or disables 32-bit data transfer.

10.2.5. Floppy Configuration

This section is used to configure the floppy drives.

| | BIOS SETUP UTILITY | |
|----------------------|-------------------------------------|--|
| Advanced | | |
| Floppy Configuration | | Select the type of |
| Floppy A | [1.44MB 3 ¹ /2"] | floppy drive connected to the system. |
| | | $\begin{array}{lll} \leftarrow \rightarrow & \text{Select Screen} \\ \uparrow \downarrow & \text{Select Item} \\ +- & \text{Change Option} \\ F1 & \text{General Help} \\ F10 & \text{Save and Exit} \\ ESC & \text{Exit} \end{array}$ |
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10.2.5.1. Floppy A

This field identifies the type of floppy disk drive installed.

None No floppy drive is installed

360K, 5.25 in. 5-1/4 in. standard drive; 360KB capacity

1.2M, 5.25 in.5-1/4 in. AT-type high-density drive; 1.2MB capacity

720K, 3.5 in. 3-1/2 in. double-sided drive; 720KB capacity

1.44*M*, **3.5** *in*. 3-1/2 in. double-sided drive; 1.44MB capacity

2.88M, 3.5 in. 3-1/2 in. double-sided drive; 2.88MB capacity

10.2.6. Super IO Configuration

This section is used to configure the I/O functions.

| BIOS SETUP UTILITY | |
|---|---|
| Advanced | |
| Configure F71879F Super IO Chipset | Allows BIOS to Enable or |
| Onboard Floppy Controller [Enabled] AC Power Loss [On] Case Open [Disabled] | ← → Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit |
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10.2.6.1. Onboard Floppy Controller

Enabled

Enables the onboard floppy disk controller.

Disabled

Disables the onboard floppy disk controller.

10.2.6.2. AC Power Loss

0n

When power returns after an AC power failure, the system will automatically power-on.

0ff

When power returns after an AC power failure, the system's power is off. You must press the Power button to power-on the system.

Former-Sts

When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns.

10.2.6.3. Case Open

Set this field to *Enabled* to allow the system to alert you of a chassis intrusion event.

10.2.7. Secondary Super IO Configuration

This section is used to configure the I/O functions.

| BIOS SETUP UTILITY | | | |
|--|---|---|--|
| Advanced | | | |
| Serial Port1 Address Serial Port2 Address Serial Port2 IRQ Serial Port3 Address Serial Port3 IRQ Serial Port4 Address Serial Port4 IRQ | [3F8] [3] [2F8] [4] [3E8] [0] [2E8] [11] | Allows BIOS to Select Serial Port1 Base Addresses. ← → Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit | |
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10.2.7.1. Serial Port1 Address and Serial Port4 Address

Auto

The system will automatically select an I/O address for the serial port.

3F8, 2F8, 3E8, 2E8 Allows you to manually select an I/O address for the serial port.

Disabled Disables the serial port.

Serial Port1 IRQ and Serial Port4 IRQ Selects an IRQ for the serial port.

10.2.8. Hardware Health Configuration

This section is used to configure the hardware monitor function.

| | BIOS SETUP UTILITY | |
|--|---|--|
| Advanced | | |
| Hardware Health Configuration H/W Health Function | [Enabled] | Lowest Speed Value |
| CPU Temperature System Temperature | :18°C :32°C | Max=100 Please input Dec number: |
| CPUFAN Speed SystemFAN Speed | :2008 RPM :N/A | |
| Vcore 5V +12V V DIMM 5VSB 3.3V VBAT CPU FAN Mode Setting-Smart FAN Highest CPU Temperature Limit 2nd CPU Temperature Limit ard CPU Temperature Limit Lowest CPU Temperature Limit CPU Fan Highest Setting CPU Fan Highest Setting CPU Fan Third Setting CPU Fan Third Setting CPU Fan Lowest Setting | :1.224 V :4.978 V :12.056V :1.520 V :4.978V :3.392V :3.328V [Auto Mode] [080] [065] [050] [033] [100] [080] [070] [060] [050] | ←→ Select Screen ↑↓ Select Item Enter Update F1 General Help F10 Save and Exit ESC Exit |

10.2.8.1. H/W Health Function

Enables or disables the hardware monitoring function.

10.2.8.2. CPU Temperature to VBAT

These fields will show the temperature, fan speed and output voltage of the monitored devices or components.

10.2.8.3. CPU Fan Mode Setting-Smart Fan

Selects the fan configuration mode. The options are Auto Mode and Manual Mode.

10.2.8.4. Highest CPU Temperature Limit to Lowest CPU Temperature Limit

Sets the CPU's highest, 2nd, 3rd and lowest temperature limit.

10.2.8.5. CPU Fan Highest Setting to CPU Fan Lowest Setting

Sets the CPU fan's highest, 2nd, 3rd, 4th and lowest fan speed value.

10.2.9. ACPI Configuration

This section is used to configure ACPI.

| BIOS SETUP UTII | JITY |
|--|--|
| Advanced ACPI Settings • General ACPI Configuration • Advanced ACPI Configuration • Chipset ACPI Configuration | General ACPI configuration settings |
| | $\begin{array}{lll} \leftarrow \rightarrow & \text{Select Screen} \\ \uparrow \downarrow & \text{Select Item} \\ \text{Enter} & \text{Go to Sub Screen} \\ \text{F1} & \text{General Help} \\ \text{F10} & \text{Save and Exit} \\ \text{ESC} & \text{Exit} \end{array}$ |
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10.2.9.1. General ACPI Configuration

Configures the general ACPI settings.

| | BIOS SETUP UTILITY | |
|----------------------------|--------------------------------|---|
| Advanced | | |
| General ACPI Configuration | | Select the ACPI |
| Suspend mode | [S1 (POS)] | state used for System Suspend. System Suspend. ↓ Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit |
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Suspend Mode

This field is used to select the type of Suspend mode.

S1(POS)

Enables the Power On Suspend function.

S3(STR) Enables the Suspend to RAM function.

10.2.9.2. Advanced ACPI Configuration

Configures additional ACPI functions.

| | BIOS SETUP UTILITY | |
|--|--------------------|---|
| Advanced | | |
| Advanced ACPI Configuration | | Enable RSDP pointers |
| ACPI Version Features | [ACPI v1.0] | to 64-bit Fixed System Description Tables. Different ACPI version has some addition. ← → Select Screen ↑↓ Select Item + Change Option F1 General Help F10 Save and Exit ESC Exit |
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ACPI Version Features

Selects the ACPI version. The options are ACPI v1.0 and ACPI v2.0.

10.2.9.3. Chipset ACPI Configuration

Configures relevant chipset ACPI functions.

| | BIOS SETUP UTILITY | |
|---------------------------------|---------------------------------|---|
| Advanced | | |
| South Bridge ACPI Configuration | | Enable/Disable APIC |
| APIC ACPI SCI IRQ | [Disabled] | ACPI SCI IRQ. ← → Select Screen ↑↓ Select Item + Change Option F1 General Help F10 Save and Exit ESC Exit |
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APIC ACPI SCI IRQ

Enables or disables the APIC ACPI SCI IRQ.

10.2.10. AHCI Configuration

This section is used to configure AHCI.

| | BIOS SETUP UTILITY | |
|---|--------------------------------|--|
| Advanced | | |
| AHCI Settings | | Enables for supporting |
| AHCI BIOS Support AHCI Port0 [Not Detected] AHCI Port1 [Not Detected] AHCI Port2 [Not Detected] AHCI Port3 [Not Detected] AHCI Port4 [Not Detected] AHCI Port4 [Not Detected] | [Enabled] | BIOS control otherwise operates in IDE mode. |
| | | ← → Select Screen ↑↓ Select Item + Change Option F1 General Help F10 Save and Exit ESC Exit |
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AHCI BIOS Support

Enable this field to allow the AHCI controller to operate in AHCI mode during BIOS control otherwise it will operate in IDE mode.

AHCI PortO to AHCI Port5

When entering the setup utility, the BIOS auto detects the presence of any IDE devices. It displays the status of the auto detected IDE devices.

| | BIOS SETUP UTILITY | |
|--------------------------|--------------------------------------|---|
| Advanced | | |
| AHCI Port0 | | Select the type |
| Device :Not Detected | | to the system. |
| SATA Port0 S.M.A.R.T. | [Auto] [Enabled] | |
| | | ← → Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit |
| v02.6 | 7 (C)Copyright 1985-2009, American M | Aegatrends, Inc. |

SATA Port0

Selects the type of device connected to the system.

S.M.A.R.T.

The system board supports SMART (Self-Monitoring, Analysis and Reporting Technology) hard drives. SMART is a reliability prediction technology for ATA/IDE and SCSI drives. The drive will provide sufficient notice to the system or user to backup data prior to the drive's failure. The default is Disabled. If you are using hard drives that support S.M.A.R.T., set this field to Enabled. SMART is supported in ATA/33 or later hard drives. The options are Auto, Enabled and Disabled.

10.2.11. Intel AMT Configuration

This section is used to configure AMT.

| BIOS SETUP UTILITY | |
|--|---|
| Advanced | |
| Configure Intel AMT Parameters | Options |
| Intel AMT Support [Enabled] Force IDER [Disabled] Force SOL [Disabled] Unconfigure AMT/ME [Disabled] Activate Remote Assistance [Disabled] MEBx Ctrl+P Delay (Seconds) [0] | Disabled Enabled ←→ Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit |
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10.2.11.1. Intel AMT Support

Enables or disables Intel's AMT (Active Management Technology) function.

Force IDER

The options are: Disabled; IDER Pri. Master; IDER Pri. Slave; IDER Sec. Master; IDER Sec. Slave

Force SOL

The options are *Enabled* and **Disabled**.

10.2.11.2. Unconfigure AMT/ME

The options are *Enabled* and **Disabled**.

10.2.11.3. Activate Remote Assistance

The options are *Enabled* and **Disabled**.

10.2.11.4. MEBx Ctrl+P Delay (Seconds)

Enters the delay time of MEBx.

10.2.12. Intel VT-d Configuration

| BIOS SETUP UTILITY | |
|--|---|
| Sectored International Sectored Sectored | 1 |
| | Options |
| [Disabled] | Disabled Enabled |
| | ← → Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit |
| | [Disabled] |

Intel VT-d

The options are *Enabled* and **Disabled**.

10.2.13. Remote Access Configuration

This section is used to configure the remote access.

| 10.0 00.0 | BIOS SETUP UTILITY | |
|--|---|---|
| Advanced | | |
| Configure Remote Access Type and Pa | rameters | Select Remote Access |
| Remote Access Serial Port Number Base Address, IRQ Serial Port Mode Flow Control Redirection After BIOS POST Terminal Type | [Enabled] [COM3] [D000h, 5] [115200 8, n, 1] [None] [Always] [ANS1] | type. |
| VT-UTF8 Combo Key Support Sredir Memory Display Delay | [Enabled] [No Delay] | ← → Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit |
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10.2.13.1. Remote Access

Enables or disables the remote access feature.

10.2.13.2. Serial Port Number

Selects the serial port.

10.2.13.3. Base Address, IRQ

Selects an IRQ for the serial port.

10.2.13.4. Serial Port Mode

Selects a mode for the serial port.

10.2.13.5. Flow Control

Selects the flow control for console redirection.

10.2.13.6. Redirection After BIOS POST

Always: Redirection is always active. Some OSes may not work when this field is set to Always.

Boot Loader: Redirection is active during POST and during Boot Loader.

Disable: Turns off the redirection after POST.

10.2.13.7. Terminal Type

Selects the target terminal type.

10.2.13.8. VT-UTF8 Combo Key Support

Enables or disables VT-UTF8 combination key support for ANSI/VT100 terminals.

10.2.13.9. Sredir Memory Display Delay

Selects the delay time (in seconds) before displaying the memory information.

10.2.14. Trusted Computing (optional)

This section configures settings relevant to Trusted Computing innovations.

| | BIOS SETUP UTILITY | |
|-------------------|------------------------------|---|
| Advanced | | |
| Trusted Computing | | Enable/Disable TPM |
| TCG/TPM Support | [No] | TCG (TPM 1.1/1.2) support in BIOS ←→ Select Screen ↑↓ Select Item +- Change Option F1 General Help |
| | | F10 Save and Exit ESC Exit |
| v02 67 (C | Convright 1985-2009 American | Megatrends Inc |

10.2.14.1. TCG/TPM Support

Enables or disables TPM TCG. The options are Yes and No.

If you selected Yes, additional fields will appear.

| | BIOS SETUP UTILITY | |
|---|---|---|
| Advanced | | |
| Trusted Computing | | Enable/Disable TPM |
| TCG/TPM Support Execute TPM Command Clearing the TPM TPM Enable/Disable Status TPM Owner Status | [Yes] [Don't change] [Press Enter] [Disabled] [UnOwned] | TCG (TPM 1.1/1.2) support in BIOS ↓ Select Screen ↑↓ Select Item +- Change Option F1 General Help |
| | | ESC Exit |
| v02.67 (C)Copy | right 1985-2009, American Meg | atrends, Inc. |
Execute TPM Command

Enables (activates) or disables (deactivates) command to TPM.

Clearing the TPM

This field allows you to clear the user information saved in the TPM security chip. When you press <Enter>, a warning message will appear to ask if you want to clear the user information in the security chip. Use the left / right arrow key to select between [OK] and [Cancel], then press <Enter> to confirm your choice.

TPM Enable/Disable Status

Enables or disables the TPM status.

TPM Owner Status

Enables or disables the TPM owner's status.

10.2.15. USB Configuration

This section is used to configure USB devices.



10.2.15.1. Legacy USB Support

Enabled: Enables Legacy USB.

Auto: Disables support for Legacy when no USB devices are connected.

Disabled: Keeps USB devices available only for EFI applications.

10.2.15.2. USB 2.0 Controller Mode

Configures the USB 2.0 controller in HiSpeed (480Mbps) or FullSpeed (12Mbps).

10.2.15.3. BIOS EHCI Hand-Off

This is a workaround for OSes that does not support EHCI hand-off. The EHCI ownership change should be claimed by the EHCI driver.

10.3. PCIPnP

The PCIPnP menu is used to configure PCI Plug and Play devices.

Important Important

Setting incorrect field values may cause the system to malfunction.

| | | BIOS | SETUP UTIL | ЛТҮ | | | |
|--|---------------------------------------|------------------------------------|--|---|-------------------------------------|---|------------------------------------|
| Main | Advanced | PCIPnP | Boot | Security | Chip | set | Exit |
| Advanced PCI | /PnP Settings | | | | Clear N | VRAM du | ring |
| WARNING: S | etting wrong valu nay cause system | es in below sec to malfunction. | tions | | System | Door. | |
| Clear NVRAM Plug & Play C PCI Latency T | f //S 'imer | | [No] [No] [64] | | | | |
| IRQ3 IRQ4 IRQ5 IRQ7 IRQ9 IRQ10 IRQ10 IRQ11 IRQ14 | | | [Ava [Ava [Ava [Ava [Ava [Ava [Ava | ulable] ulable] ulable] ulable] ulable] ulable] ulable] | | | |
| IRQ15 | | | [Av: | ilable] | ← → ↑↓ +- F1 F10 ESC | Select Sci Select Ite Change C General H Save and Exit | reen m ption Ielp Exit |
| | v02.67 (C |)Copyright 198 | 5-2009, Ame | rican Megatrend | ls, Inc. | | |

10.3.1. Clear NVRAM

This field allows clearing the NVRAM during system boot.

10.3.2. Plug & Play 0/S

Yes: The operating system configures Plug and Play (PnP) devices that are not required to boot in a Plug and Play supported operating system.

No: The BIOS configures all the devices in the system.

10.3.3. PCI Latency Timer

This feature is used to select the length of time each PCI device will control the bus before another takes over. The larger the value, the longer the PCI device can retain control of the bus. Since each access to the bus comes with an initial delay before any transaction can be made, low values for the PCI Latency Timer will reduce the effectiveness of the PCI bandwidth while higher values will improve it.

10.3.4. IRQ3 to IRQ15

Available: The specified IRQ is available for PCI/PnP devices.

Reserved: The specified IRQ is reserved for Legacy ISA devices.

10.4. Boot

| | | BIOS | SETUP UTII | LITY | | | |
|---|--|-----------------|--------------|-----------------|---|---|---|
| Main | Advanced | PCIPnP | Boot | Security | Chip | oset | Exit |
| Boot Setting Boot Sett Boot Det Hard Dis Removab CD/DVD | gs tings Configuration vice Priority k Drives ole Drives O Drives | | | | Config during ↑↓ Enter F1 F10 ESC | Select Select Select Go to S Genera Save a Exit | ngs boot. Screen Item Sub Screen I Help nd Exit |
| | v02.67 (| C)Copyright 198 | 85-2009, Ame | rican Megatreno | ls, Inc. | | |

10.4.1. Boot Settings Configuration

This section is used to configure settings during system boot.

| | BIOS SETUP UTIL | ПҮ |
|-------------------------------|----------------------------------|---|
| | Boot | |
| Boot Settings Configuration | on | Allows BIOS to skip |
| Quiet Boot Bootup Num-Lock | [Disabled] [On] | Certain tests while booting. This will decrease the time needed to boot the system. |
| v02 | .67 (C)Copyright 1985-2009, Amer | ican Megatrends, Inc. |

10.4.1.1. Quick Boot

When Enabled, the BIOS will shorten or skip some check items during POST. This will decrease the time needed to boot the system.

10.4.1.2. Bootup Num-Lock

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

10.4.2. Boot Device Priority

| | BIOS SETUP UTILITY | | | | | |
|---|--|---|--|--|--|--|
| Boot | | | | | | |
| Boot Device Priority | Boot Device Priority | | | | | |
| 1st Boot Device 2nd Boot Device 3rd Boot Device | [SATA:SM-Maxtor 6L1] [CD/DVD:PM-ATAPI iH] [Disabled] | A device enclosed in parenthesis has been disabled in the corre- sponding type menu. | | | | |
| | | ← → Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit | | | | |
| v02. | 67 (C)Copyright 1985-2009, American Me | gatrends. Inc. | | | | |

This section is used to select the boot priority sequence of all available devices.

10.4.2.1. 1st Boot Device to 3rd Boot Device

Select the drive to boot 1st, 2nd and 3rd in the "1st Boot Device", "2nd Boot Device" and "3rd Boot Device" fields respectively. The BIOS will boot the operating system according to the sequence of the drive selected.

10.4.3. Hard Disk Drives

This section is used to select the boot priority sequence of the hard drives.

| BIOS SETUP UTILITY Boot | | | | |
|--|---|--|--|--|
| Hard Disk Drives | Specifies the boot | | | |
| 1st Drive [SATA:SM-Maxtor 6L1] | sequence from the available devices. ↔→ Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit | | | |
| v02.67 (C)Copyright 1985-2009. Americ: | an Megatrends. Inc. | | | |

10.4.4. Removable Drives

This section is used to select the boot priority sequence of the removable devices.

| | BIOS SETUP UTILITY Boot | |
|------------------|--|---|
| Removable Drives | | Specifies the boot |
| 1st Drive | [1st FLOPPY DRIVE] | sequence from the available devices. ↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit |
| v | 02.67 (C)Copyright 1985-2009, American M | egatrends, Inc. |

10.4.5. CD/DVD Drives

This section is used to select the boot priority sequence of the optical devices.

| | BIOS SETUP UTILITY | |
|---------------|--|---|
| | Boot | |
| CD/DVD Drives | | Specifies the boot |
| 1st Drive | [CD/DVD:PM-ATAPI iH] | sequence from the available devices. ↔→ Select Screen ↑↓ Select Item +- Change Option |
| | v02.67 (C)Copyright 1985-2009. American Me | F1 General Help F10 Save and Exit ESC Exit |

10.5. Security

| | | BIOS SE | TUP UTI | LITY | | |
|-----------------------------|--------------------------------|------------------------------------|------------|------------------|---|--|
| Main | Advanced | PCIPnP | Boot | Security | Chipset | Exit |
| Security Set | tings | | | | Install or Change the password. | |
| Supervisor I User Passwo | Password ord | : Not Installed : Not Installed | | | | |
| Change Sup Change Use | ervisor Password r Password | | | | | |
| | | | | | $\leftarrow \rightarrow$ Sele $\uparrow \downarrow$ Sele Enter Cha: F1 Gen F10 Save ESC Exit | ct Screen ct Item nge eral Help e and Exit |
| | v02.67 (| C)Copyright 1985 | -2009, Ame | erican Megatrend | ls, Inc. | |

10.5.1. Change Supervisor Password

This field is used to set or change the supervisor password. To set a new password:

- 1. Select the Change Supervisor Password field then press <Enter>.
- 2. Type your password in the dialog box then press <Enter>. You are limited to eight letters/numbers.

| BIOS SETUP UTILITY | | | | | | |
|-----------------------------|--------------------------------|------------------------------------|--------|----------|----------------|-----------|
| Main | Advanced | PCIPnP | Boot | Security | Chipset | Exit |
| Security Set | tings | | | | Install or Cha | ange the |
| Supervisor H User Passwo | assword ord | : Not Installed : Not Installed | d d | | password. | |
| Change Sup Change Use | ervisor Password r Password | | | | | |
| Boot Sector | Virus Prote E | nter New Passwo | rd | | | |
| | | | | | ←→ Sele | ct Screen |

- 3. Press <Enter> to confirm the new password.
- 4. When the Password Installed dialog box appears, select OK.

To change the password, repeat the same steps above.

To clear the password, select Change Supervisor Password then press <Enter>. The Password Uninstalled dialog box will appear.

If you forgot the password, you can clear the password by erasing the CMOS RTC (Real Time Clock) RAM using the Clear CMOS jumper. Refer to the section 8.5.1 "Clear CMOS Data (JP1)" for more information.

After you have set the supervisor password, the User Access Level field will appear.

| | | BIOS SH | TUP UTI | LITY | | | |
|--|---|--|------------|------------------|--|---|---|
| Main | Advanced | PCIPnP | Boot | Security | Chij | pset | Exit |
| Security Set | tings | | | | Limite | d: only | limited |
| Supervisor I User Passwo Change Sup User Access Change Use Password C | Password ord • Level • Level • Password heck | : Installed : Not Installed [Full Access] [Setup] | | | No Ac access View (cess bu not be Full: a except passwo | cess: pr Setup U Only: al ut the fid changed llow ch Superv ord. | anged. event user Jtility. low ac- elds can d. ange isor |
| | | | | | $\begin{array}{c} \leftarrow \rightarrow \\ \uparrow \downarrow \\ +- \\ F1 \\ F10 \\ ESC \end{array}$ | Select Select Chan Gener Save Exit | t Screen t Item ge Option ral Help and Exit |
| _ | v02.61 (| C)Copyright 1985 | -2006. Ame | erican Megatrend | ESC s. Inc. | Exit | |

10.5.2. User Access Level

Selects the access level to the fields in the Setup utility.

Limited: Allows you to change settings to some fields such as Date and Time.

No Access: Prevents access to the Setup utility.

View Only: Allows you to view the settings but does not allow you to change the settings.

Full Access: Allows you to change settings to all the fields in the utility.

10.5.3. Change User Password

This field is used to set or change the user password. To set a new password:

- 1. Select the Change User Password field then press <Enter>.
- 2. Type your password in the dialog box then press <Enter>. You are limited to six letters/numbers.
- 3. Press <Enter> to confirm the new password.
- 4. When the Password Installed dialog box appears, select OK.

To change the password, repeat the same steps above.

After you have set the user password, the Clear User Password and Password Check fields will appear.

10.5.4. Clear User Password

To clear the password, select Clear User Password then press <Enter>. The Password Uninstalled dialog box will appear.

10.5.5. Password Check

Setup: The BIOS checks for the user password whenever accessing the Setup utility.

Always: The BIOS checks for the user password when accessing the Setup utility and booting the system.

10.6. Chipset

This section is used to configure the system based on the specific features of the chipset.

B

Important

Setting incorrect field values may cause the system to malfunction.

| | | BIOS | SETUP UTII | ITY | | |
|---|--|------------------------------------|-------------|-----------------|--|---|
| Main | Advanced | PCIPnP | Boot | Security | Chips | set Exit |
| Advanced O | Thipset Settings | | | | Configu | ure North Bridge |
| WARNING North Br South Br ME Subs | : Setting wrong valu may cause system i idge Configuration idge Configuration system Configuration | es in below sec to malfunction. | tions | | teanires ← → ↑↓ Enter F1 F10 ESC | Select Screen Select Item Go to Sub Screen General Help Save and Exit Exit |
| | v02.67 (C |)Copyright 198 | 5-2009, Ame | rican Megatrend | s, Inc. | |

10.6.1. North Bridge Configuration

| | | Chipset |
|--|---|---|
| North Bridge Chipset Configuration IMC Type : *Dale Family IMC Memory Remap Feature PCI MMIO Allocation: 4GB to 3 DRAM Frequency Initiate Graphic Adapter IGD Graphics Mode Select IGD GIT Graphics Memory Size | [Enabled] 3072MB [Auto] [PEG/PCI] [Enabled, 128MB] [No VT mode, 2MB] | ENABLE: Allow remapping of overlapped PCI memory above the total physical memory. DISABLE: Do not allow remapping of memory. |
| NB PCIE Configuration PEG Port PEG Force GEN1 • Video Function Configuration | [Auto] [Disabled] | ← → Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit |

10.6.1.1. Memory Remap Feature

Enabled: Allows remapping of overlapped PCI memory above the total physical memory.

Disabled: Does not allow remapping of memory.

10.6.1.2. DRAM Frequency

Selects the frequency of the DRAM.

10.6.1.3. Initiate Graphic Adapter

Selects the graphics controller to use as the primary boot device.

10.6.1.4. IGD Graphics Mode Select

Selects the amount of system memory used by the internal graphics device.

10.6.1.5. PEG Port

The options are *Auto* and *Disabled*.

10.6.1.6. PEG Force GEN1

Some PCIE graphics devices do not comply to the PCIE specification and may incorrectly report their Gen capability or link width. Select Enabled to force the graphics device in Gen 1 mode.

10.6.1.7. Video Function Configuration

| | BIOS SETUP UTILITY | |
|---|----------------------------------|--|
| | | Chipset |
| Video Function Configuration | | Options |
| DVMT Mode Select [DVMT Mode] DVMT/FIXED Memory [256MB] PAVP Mode [Lite] | | DVMT Mode |
| | | N→ Select Item N→ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit |
| v02.67 (C |)Copyright 1985-2009, American I | Megatrends, Inc. |

DVMT Mode Select

DVMT Mode: Memory that is dynamically allocated based on memory requests made by an application and are released back to the system once the requesting application has been terminated.

Fixed Mode: Non-contiguous pagelocked memory allocated during driver initialization to provide a static amount of memory.

DVMT/FIXED Memory

Selects the graphics memory size used by the DVMT/Fixed mode.

PAVP Mode

The options are Disabled, Lite and Paranoid.

10.6.2. South Bridge Configuration

| | BIOS SETUP UTILITY | Y |
|---|---|---|
| | | Chipset |
| South Bridge Chipset Configura | tion | Enable/Disable USB |
| USB Function EHCI Controller#1 EHCI Controller#2 GbE Controller GbE LAN Boot GbE Wake Up From S5 HDA Controller After G3 | [Enabled] [Enabled] [Enabled] [Disabled] [Disabled] [Enabled] [Enabled] [Power On] | controller in system. |
| PCIE Ports Configuration On Board LAN2 On Board LAN3 On Board LAN4 | [Auto] [Auto] [Auto] | ← → Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit |
| v02.67 (C | Copyright 1985-2009, America | n Megatrends, Inc. |

10.6.2.1. USB Function

Enables or disables the USB controller.

EHCI Controller#1 and EHCI Controller#2

This field is used to enable or disable the Enhanced Host Controller Interface (USB 2.0).

10.6.2.2. GbE Controller

Enables or disables the Gigabit LAN controller.

GbE LAN Boot

Enable this field if you want to use the boot ROM (instead of a disk drive) to boot-up the system and access the local area network directly. If you want to change the boot ROM's settings, type the <Shift> and <F10> keys simultaneous-ly when prompted during boot-up. Take note: you will be able to access the boot ROM's program (by typing <Shift> + <F10>) only when this field is enabled.

GbE Wake Up From S5

When enabled, it allows the network LAN to wake up the system from S5.

10.6.2.3. HDA Controller

Enables or disables the High Definition Audio controller.

10. AMI BIOS Setup Utility

10.6.2.4. After G3

Power Off / WOL: Power-on the system via WOL after G3.

Power On: Power-on the system after G3.

10.6.2.5. PCIE Ports Configuration

On Board LAN2 to On Board LAN4

Enables or disables the LAN controller.

10.6.3. ME Subsystem Configuration

| BIOS SETUP U | TILITY |
|--|---|
| | Chipset |
| ME Subsystem Configuration | Options |
| BootBlock HECI Message [Disabled] HECI Message [Enabled] End Of Post S5 HECI Message [Enabled] ME HECI Configuration [Enabled] ME-HECI [Enabled] ME-HECI [Enabled] ME-KT [Enabled] Management Engine Version: 6.0.3.1195 | Disabled Enabled |
| | ← → Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit |

10.6.3.1. BootBlock HECI Message

Enables or disables the bootblock HECI message.

10.6.3.2. HECI Message

Enables or disables the HECI message.

10.6.3.3. End of Post S5 HECI Message

Enables or disables the end of post S5 HECI message.

10.6.3.4. ME HECI Configuration

Configures the ME-HECI, ME-IDER and ME-KT.

10.7. Exit

| | | BIOS | SETUP UTII | JTY | | | |
|--|--|-----------------|--------------|-----------------|--|---|---|
| Main | Advanced | PCIPnP | Boot | Security | Chij | pset | Exit |
| Exit Options Save Change Discard Cha Discard Cha Load Optima Load Failsaf | es and Exit nges and Exit nges al Defaults de Defaults | | | | Exit sy after s change F10 ke for thi C↓ Enter F10 ESC | ystem sett aving the es. ey can be s operation Select I Go to S General Save an Exit | used n. terneen tem ub Screen Help d Exit |
| | v02.67 (| C)Copyright 198 | 35-2009, Ame | rican Megatrend | s, Inc. | | |

10.7.1. Save Changes and Exit

To save the changes and exit the Setup utility, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK.

You can also press <F10> to save and exit Setup.

| | | BIOS S | SETUP UTII | LITY | | |
|--|--|-------------------|--------------|-----------------|---------------------------------|--|
| Main | Advanced | PCIPnP | Boot | Security | Chips | et Exit |
| Exit Options | (| | | | Exit syst | tem setup |
| Save Change Discard Cha Discard Cha Load Optima Load Failsaf | es and Exit nges and Exit nges al D | | | | F10 key for this | can be used operation. |
| | | Save configuratio | n changes an | d exit setup? | | |
| | | [Ok] | [C | ancel] | | Select Screen |
| | | | | | T↓ Enter F1 F10 ESC | Select Item Go to Sub Screen General Help Save and Exit Exit |
| | v02.61 (| (C)Copyright 198 | 5-2006, Ame | rican Megatrend | ls, Inc. | |

10.7.2. Discard Changes and Exit

To exit the Setup utility without saving the changes, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK.

You can also press <ESC> to exit without saving the changes.

| | | BIOS | SETUP UTII | LITY | | 10 C |
|---|--|---------------------|---------------------|--------------------|---|---|
| Main | Advanced | PCIPnP | Boot | Security | Chipset | Exit |
| Exit Option | s | | | | Exit syste | m setup |
| Save Chang Discard Cha Discard Cha Load Optim Load Failsa | es and Exit inges and Exit inges al Defaul fe Defaul | Discard cha [Ok] | anges and exi [C | t setup? ance1] | For this of the second | elect Screen elect Screen elect Item o to Sub Screen eneral Help ave and Exit xit |
| | v02.61 (| C)Copyright 198 | 35-2006, Ame | rican Megatrend | ls, Inc. | |

10.7.3. Discard Changes

To discard the changes, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK to discard all changes made and restore the previously saved settings.

You can also press <F7> to discard the changes.

| | | BIOS S | SETUP UTIL | JTY | | | |
|--|--|-----------------|----------------------|----------------|---|--|--|
| Main | Advanced | PCIPnP | Boot | Security | Chi | pset | Exit |
| Exit Options | i | | | | Discar | ds chang | ges |
| Save Chang Discard Cha Discard Cha Load Optim Load Failsat | es and Exit nges and Exit nges al Defaults fe Defaults | Discard [Ok] | Changes? [Cancel] | | done s the set F7 key for thi $\uparrow\downarrow$ Enter F1 F10 ESC | so far to sup quest y can be s operation Select Go to Genera Save a Exit | any of ions. used on. Screen Item Sub Screen il Help nd Exit |
| | v02.61 (0 | C)Copyright 198 | 5-2006, Ame | ican Megatrend | s, Inc. | | |

10.7.4. Load Optimal Defaults

To load optimal default values from the BIOS ROM, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK.

You can also press <F9> to load optimal default values.

| | | BIOS | SETUP UTIL | ITY | | | | |
|----------------------------|----------------------------|-----------------|---------------------------|----------------|---|---|--|--|
| Main | Advanced | PCIPnP | Boot | Security | Chij | pset | Exit | |
| Exit Option | s es and Exit | | | | Load Optimal Default values for all the | | | |
| Discard Cha Discard Cha | anges and Exit | _ | | | F9 key for thi | / can be s operati | used on. | |
| Load Optim Load Failsa: | al Defaults fe Defaults | Load Optin | mal Defaults? [Cancel] | | $\begin{array}{c} \leftarrow \rightarrow \\ \uparrow \downarrow \\ Enter \\ F1 \\ F10 \\ ESC \end{array}$ | Select Select Go to Genera Save a Exit | Screen Item Sub Screer al Help nd Exit | |
| | v02.61 (| C)Copyright 198 | 35-2006. Amer | ican Megatrend | s. Inc. | | | |

10.7.5. Load Failsafe Defaults

To load the fail-safe default values from the BIOS ROM, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK.

You can also press <F8> to load the fail-safe default values.

| | | BIOS S | SETUP UTILI | ITY | | | |
|--|--|-----------------|---------------------------|---------------|--|--|---|
| Main | Advanced | PCIPnP | Boot | Security | Chi | pset | Exit |
| Exit Options | s | | | a | Load I values | Failsafe I for all th | Default 1e |
| Save Chang Discard Cha Discard Cha Load Optim Load Failsat | es and Exit anges and Exit anges al Defaults fe Defaults | Load Fails | afe Defaults? [Cancel] | | \leftarrow → \uparrow ↓ Enter F1 F10 | Select Select Select Go to 2 Genera Save ar | screen Screen Item Sub Screen 1 Help nd Exit |
| - | v02.61 (| C)Convright 198 | 5-2006 Ameri | can Megatrend | ESC s. Inc | Exit | |

11. Updating the BIOS

To update the BIOS, you will need the new BIOS file and a flash utility, AFUDOS.EXE. Please contact technical support or your sales representative for the files.

To execute the utility, type:

A:> AFUDOS BIOS_File_Name /b /n /c /p

then press <Enter>.

C:\>AFUDOS.EXE filename /P /B /N /C

AMI Firmware Update Utility Ver. 4.14 Copyright (C) 2007 American Megatrends Inc. All Rights Reserved.

- Bootblock checksum ok
- Module checksums ok - Erasing flash done - Writing flash done - Verifying flash done - Erasing NVRAM done Writing NVRAM done Verifying NVRAM done
- Erasing Bootblock done

- CMOS checksum destroyed
- Program ended normally

C:\>

12. Supported Software

The CD that came with the system board contains drivers, utilities and software applications required to enhance the performance of the system board.

Insert the CD into a CD-ROM drive. The autorun screen (Mainboard Utility CD) will appear. If after inserting the CD, "Autorun" did not automatically start (which is, the Mainboard Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Setup".





12.1. Intel Chipset Software Installation Utility

The Intel Chipset Software Installation Utility is used for updating Windows[®] INF files so that the Intel chipset can be recognized and configured properly in the system.

To install the utility, click "Intel Chipset Software Installation Utility" on the main menu.

1. Setup is now ready to install the utility. Click Next.



2. Read the license agreement then click Yes.



12. Supported Software

3. Go through the readme document for system requirements and installation tips then click Next.

| tel® Chipset Device Software | | | | |
|--|--|--|---|--------------|
| tel® Chipsel adme File Info | Device So mation | ftware | | intel |
| er to the Readme file b so the Page Down key Product: Int. Release: Pro Version: 9.0 Target Chips Date: May 01 | elow to view the sy to view the rest of t (R) Chinsen Auction Vers 0.1008 et#: Intel(R) 2008 | stem requirements; ************************************ | and installation i ********** tware hipset | information. |
| | | | | 2 |
| | | < Back | Next > | Cancel |
| | | | Intel® Instal | lation Fran |

4. Setup is now installing the driver. Click Next to continue.



5. Click "Yes, I want to restart this computer now" then click Finish.

Restarting the system will allow the new software installation to take effect.



Y

12.2. Microsoft DirectX 9.0C Driver

To install the utility, click "Microsoft DirectX 9.0C Driver" on the main menu.

1. Click "I accept the agreement" then click Next.



2. To start installation, click Next.

| Installing Microsoft(R) DirectX(R) | |
|--|---|
| DirectX Setup Install DirectX runtime components | |
| DirectX Runtime Install: This install package will search for update and update as necessary. It may take a fe | ed DirectX Runtime Components w minutes. |
| To start installation, please click Next. | |
| | |
| | |
| | |
| | |
| | <back next=""> Cancel</back> |

3. Click Finish. Reboot the system for DirectX to take effect.



12.3. Microsoft .NET Framework 3.5



Note:

Before installing Microsoft .NET Framework 3.5, make sure you have updated your Windows XP operating system to Service Pack 3.

To install the driver, click "Microsoft .NET Framework 3.5" on the main menu.

1. Read the license agreement carefully.

Click "I have read and accept the terms of the License Agreement" then click Install.



2. Setup is now installing the driver.



3. Click Exit.



12.4. Intel Graphics Drivers

To install the driver, click "Intel Graphics Drivers" on the main menu.

1. To start installation, click Next.



2. Read the license agreement then click Yes.



 Go through the readme document for system requirements and installation tips then click Next.



4. Setup is now installing the driver. Click Next to continue.



5. Click "Yes, I want to restart this computer now" then click Finish.

Restarting the system will allow the new software installation to take effect.



12.5. Audio Drivers

To install the driver, click "Audio Drivers" on the main menu.

- 1. Setup is now ready to install the audio driver. Click Next.
- 2. Follow the remainder of the steps on the screen; clicking "Next" each time you finish a step.



3. Click "Yes, I want to restart my computer now" then click Finish.

Restarting the system will allow the new software installation to take effect.



12.6. Realtek LAN Drivers

To install the driver, click "Realtek LAN Drivers" on the main menu.

1. Setup is ready to install the driver. Click Next.



2. Click Install to begin the installation.

| Ready to Install the Program The wizard is ready to begin ins | i Kalation. |
|--|--|
| | Click Install to begin the installation. If you, want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard. |
| InstallShield | K Back Install Cancel |

3. After completing installation, click Finish.



then click "Next".

12.7. Intel LAN Drivers

To install the driver, click "Intel LAN Drivers" on the main menu.

1. Setup is ready to install the driver. Click Next.



3. Select the program featuers you want installed

| ntel(R) Network Connections | |
|---|------------|
| Setup Options Select the program features you want installed. | (intel) |
| Install: | |
| Drivers Drivers Intel(R) PROSet for Windows* Device Manager Advanced Network Services Intel(R) Network Connections SNMF Agent | |
| - Feature Description | |
| < Back Nex | t > Cancel |

then click Next.

4. Click Install to begin the installation.

| 😸 Intel(R) Network Connections - InstallShield Wizard | × |
|--|----------|
| Ready to Install the Program The wizard is ready to begin installation. | (intel) |
| Click Install to begin the installation. If you want to review or change any of your installation settings, click Back. Click C exit the wizard. | ancel to |
| InstallShield | Cancel |

5. After completing installation, click Finish.

| 🙀 Intel(R) Network Connections - InstallShield Wizard | X |
|---|---------|
| InstallShield Wizard Completed | (intel) |
| To access new features, open Device Manager, and view the properties of the network adapters. | |
| InstallShield | Cancel |

12.8. Intel Management Engine Interface

To install the driver, click "Intel Management Engine Interface" on the main menu.

1. Setup is ready to install the driver. Click Next.



2. Read the license agreement then click Yes.

3. Go through the readme document for more installation tips then click Next.

| lea | dme File | Informat | tion | | L. A. | Y |
|---------------|-----------------------|-------------------|----------------|------------------|------------------|--------------|
| Refer | to the Readme | e file below to v | iew the system | n requirements (| and installation | information. |
| * * * | ********* Copyrigh | ********** | *********** | | * n. All ri | ghts |
| res * * | erved. Intel(R) | Manageme | nt Engine | e Interfac | e | |
| *** | ****** | ****** | ******* | ******* | * | |

Intel® Installation Fran

4. Setup is currently installing the driver. After installation has completed, click Next.



5. After completing installation, click Finish.



12.9. MyGuard Hardware Monitor

- **1.** Locate for the MyGuard folder in the provided disc.
- 2. In the MyGuard folder, right-click on the "setup" file.
- 3. Select Run As Administrator.
- 4. Double-click Setup.

R²

Important:

Perform steps 1-3 only when using Windows 7 or Windows Vista.

| Urganize 👻 🧾 Open | New folder | | | | •••••••••••••••••••••••••••••••••••••• |
|--|---|---|--|---|---|
| Favorites Favorites Desktop Desktop Desminads Recent Places Ubraries Ubraries Pictures Videos Computer Network Network | Name data1 data1 data2 engine32 layout.bin 27 setup setup setup setup | Copen Run as administrator Troublehoot compatibility Restore previous venions Send to Cut Copy Create shortcut Delete Rename | Date modified 12/2/2009 7-20 PM 12/2/2009 7-20 PM 12/2/2009 7-20 PM 10/21/2004 12:16 - 12/2/2009 7:20 PM 10/21/2004 12:16 - 2009 7:20 PM (2009 7:20 PM (2009 7:20 PM (2009 7:20 PM | Type Cabinet File HOR File Cabinet File Cabinet File BIN File Application . BIN File Configuration sett RXi File ESN File | Size 519 KB 53 KB 3,51 KB 16 KB 16 KB 16 KB 20 KB 63 KB |

5. Setup is ready to install the utility. Click Next.

| MyGuard - InstallShield Wizar | a | |
|-------------------------------|--|--|
| | Welcome to the InstallShield Wizard for MyGuard The InstallShieldR W/zard will install MyGuard on your computer. To continue, click Next. | |
| InstallShield | Cancel | |

6. Click Install to begin installation.



7. Setup is currently installing the utility.



8. After completing installation, click Finish to exit setup.



12.10. Adobe Acrobat Reader 9.3

To install the reader, click "Adobe Acrobat Reader 9.3" on the main menu.

1. Click Next to install or click Change Destination Folder to select another folder.



2. Click Install to begin installation.



3. Click Finish to exit installation.

| H Adobe Reader 9.3 - Setup | x |
|--|-----|
| \nearrow | |
| Setup Completed | |
| Setup has successfully installed Adobe Reader 9.3. Click Finish to exit setup. | |
| | |
| | |
| | |
| Adobe | |
| < Back Finish Cano | .el |
12.11. Infineon TPM Driver and Tool (optional)

To install the driver, click "Infineon TPM Driver and Tool" on the main menu.

 TPM requires installing the Microsoft Visual C++ package prior to installing the driver. Click Install.

| InstallShield Wizard |
|---|
| Infineon TPM Professional Package requires the following items to be installed on your computer. Click Install to begin installing these requirements. |
| Status Requirement |
| Pending Microsoft Visual C++ 2005 SP1 Redistributable Package |
| Install Cancel |

2. The setup program is preparing to install the driver.

| InstallShield Wizard | |
|----------------------|---|
| 4 | Preparing to Install |
| 0 | Infineon TPM Professional Package Setup is preparing the InstallShield Wizard, which will guide you through the program setup process. Please wait. |
| | Configuring Windows Installer |
| | |
| | Cancel |

3. The setup program is ready to install the driver. Click Next.



4. Click "I accept the terms in the license agreement" and then click "Next".

| Infineon TPM Professional Package - InstallShield Wizard |
|--|
| License Agreement Please read the following license agreement carefully. |
| Software Setup End User License Conditions for the Infineon TPM |
| 1. Attention |
| This software contains copyright protected content (e.g. codes and structures) and confidential content (e.g. algorithms, ideas and concepts) of Infineon Technologies AG and Microsoft Corporation (Microsoft patterns & practices Enterprise Library © Microsoft Corporation). |
| I accept the terms in the license agreement |
| I do not accept the terms in the license agreement |
| InstallShield |
| < Back Next> Cancel |

5. Enter the necessary information and then click Next.

| 记 Infineon TPM Professional Package - InstallShield Wizard | |
|--|--------|
| Customer Information | |
| Please enter your information. | |
| User Name: | |
| jm | |
| Organization: | |
| | |
| | |
| | |
| | |
| | |
| | |
| Teach-Ifchield | |
| <pre>A Back Next ></pre> | Cancel |

6. Select a setup type and then click Next.

| 🛃 Infineon TPM | Professional Package - InstallShield Wizard |
|------------------------------|--|
| Setup Type Choose the set | up type that best suits your needs. |
| Please select a | setup type. |
| Unplete | All program features will be installed. (Requires the most disk space.) |
| Custom | Choose which program features you want installed and where they will be installed. Recommended for advanced users. |
| Install5hield | < Back Next > Cancel |

7. Click Install.



8. The setup program is currently installing the driver.

| 🔀 Infineor | 1 TPM Professional Package - InstallShield Wizard 📃 🔲 🔀 |
|------------------------|---|
| Installing The prog | Infineon TPM Professional Package ram features you selected are being installed. |
| 1 1 17 | Please wait while the InstallShield Wizard installs Infineon TPM Professional Package. This may take several minutes. Status: |
| InstaliShield — | < Back Next > Cancel |

9. Click Finish.



10.Click Yes to restart the system. Restarting the system will allow the new software installation to take effect.

Infineon TPM Professional Package Installer Info... You must restart your system for the configuration



13. RAID

The Intel Q57 chip allows configuring RAID on Serial ATA drives. It supports RAID 0, RAID 1, RAID 5 and RAID 10.

13.1. RAID Levels

13.1.1. RAID 0 (Striped Disk Array without Fault Tolerance)

RAID 0 uses two new identical hard disk drives to read and write data in parallel, interleaved stacks. Data is divided into stripes and each stripe is written alternately between two disk drives. This improves the I/O performance of the drives at different channel; however it is not fault tolerant. A failed disk will result in data loss in the disk array.

13.1.2. RAID 1 (Mirroring Disk Array with Fault Tolerance)

RAID 1 copies and maintains an identical image of the data from one drive to the other drive. If a drive fails to function, the disk array management software directs all applications to the other drive since it contains a complete copy of the drive's data. This enhances data protection and increases fault tolerance to the entire system. Use two new drives or an existing drive and a new drive but the size of the new drive must be the same or larger than the existing drive.

13.1.3. RAID 5

RAID 5 stripes data and parity information across hard drives. It is fault tolerant and provides better hard drive performance and more storage capacity.

13.1.4. RAID 10 (Mirroring and Striping)

RAID 10 is a combination of data striping and data mirroring providing the benefits of both RAID 0 and RAID 1. Use four new drives or an existing drive and three new drives for this configuration.

13.2. Settings

To enable the RAID function, the following settings are required.

- 1. Connect the Serial ATA drives.
- 2. Configure Serial ATA in the AMI BIOS.
- 3. Configure RAID in the RAID BIOS.
- 4. Install the RAID driver during OS installation.
- 5. Install the Intel Matrix Storage Manager for RAID/AHCI.

13.2.1. Step 1: Connect the Serial ATA Drives

Refer to the chapter 8 "Hardware Installation" for details on connecting the Serial ATA drives.

Important:

1. Make sure you have installed the Serial ATA drives and connected the data cables otherwise you won't be able to enter the RAID BIOS utility.

2. Treat the cables with extreme caution especially while creating RAID. A damaged cable will ruin the entire installation process and operating system. The system will not boot and you will lost all data in the hard drives. Please give special attention to this warning because there is no way of recovering back the data.

13.2.2. Step 2: Configure Serial ATA in the AMI BIOS

- 1. Power-on the system then press to enter the main menu of the AMI BIOS.
- 2. Configure Serial ATA in the appropriate fields.
- 3. Save the changes in the Save & Exit menu.
- 4. Reboot the system.

13.2.3. Step 3: Configure RAID in the RAID BIOS

When the system powers-up and all drives have been detected, the Intel RAID BIOS status message screen will appear. Press the <Ctrl> and <I> keys simultaneously to enter the utility. The utility allows you to build a RAID system on Serial ATA drives.

13.2.4. Step 4: Install the RAID Driver During OS Installation

The RAID driver must be installed during the Windows® XP or Windows® 2000 installation using the F6 installation method. This is required in order to install the operating system onto a hard drive or RAID volume when in RAID mode or onto a hard drive when in AHCI mode.

- 1. Start Windows Setup by booting from the installation CD.
- 2. Press <F6> when prompted in the status line with the 'Press F6 if you need to install a third party SCSI or RAID driver' message.
- 3. Press <S> to "Specify Additional Device".
- 4. At this point you will be prompted to insert a floppy disk containing the RAID driver. Insert the RAID driver diskette.
- 5. Locate for the drive where you inserted the diskette then select RAID or AHCI controller that corresponds to your BIOS setup. Press <Enter> to confirm.

You have successfully installed the driver. However you must continue installing the OS. Leave the floppy disk in the floppy drive until the system reboots itself because Windows setup will need to copy the files again from the floppy disk to the Windows installation folders. After Windows setup has copied these files again, remove the floppy diskette so that Windows setup can reboot as needed.

13.2.5. Step 5: Install the Intel Matrix Storage Manager for RAID/AHCI

The Intel Matrix Storage Manager can be installed from within Windows. It allows RAID volume management (create, delete, migrate) from within the operating system. It will also display useful SATA device and RAID volume information. The user interface, tray icon service and monitor service allow you to monitor the current status of the RAID volume and/or SATA drives. It enables enhanced performance and power management for the storage subsystem.

- 1. Insert the provided CD into an optical drive.
- 2. Click "Intel Matrix Storage Manager for RAID/AHCI" on the main menu.
- 3. Setup is ready to install the utility. Click Next.



4. Read the warning carefully then click Next.



5. Read the license agreement then click Yes.

| (R) Matrix Storage Manager 7.5.0.1017 | | | |
|---------------------------------------|--|--|--|
| | License Agreement | | |
| (intel) | Please read the following license agreement carefully. Press the Page Down key to view the rest of the agreement. | | |
| | INTEL SOFTWARE LICENSE AGREEMENT (CEM / IHV / ISV Distribution & Single User) | | |
| | IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING. Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software. | | |
| | Please Also Note: " If you are an Original Equipment Manufacturer (OEM), Independent Haidware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies; | | |
| | You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms? | | |
| | < Back Yes No | | |
| | Intel(R) Installation Frameworks | | |

6. Go through the readme document to view system requirements and installation information then click Next.

| Intel(R) Matrix Store | ge Manager | 7.5.0.1017 |
|-----------------------|------------|------------|
|-----------------------|------------|------------|

l mi

| * nstallation Read * Refer to the syst system support * This document r * nete. There are * may be used, ar * others. Please r * others. Please r | dme for Intel(R) tem requiremented by Intel(R) makes references some restriction and what inform and the Disclai t, and contact you would like |) Matrix Storage matrix Storage Matrix Storage ces to produc: ns on how the ation may be of mer section a your Intel field a more informa | exerces exercises taking Manager. s developed by see products fisclosed to the bottom tion. exerces exerces | A |
|--|---|---|---|----------|
| | | < Back | Next> | Cancel |

7. Click "Yes, I want to restart my computer now" then click Finish.

| Intel(R) Matrix Storage Manager 7.5.0.1017 | | |
|--|--|--|
| (intel) | The setup for the Intel(R) Matrix Storage Manager is complete. | |
| | You must restart this computer for the changes :o take effect. Would you like to restart the computer now? | |
| | Yes, I want to restart my computer now. No, I will restart my computer later. | |
| | Clck Finish, then remove any installation media from the drives. | |
| | <back finish<="" th=""></back> | |

14. Intel AMT Settings

14.1. Overview

Intel Active Management Technology (Intel® AMT) combines hardware and software solution to provide maximum system defense and protection to networked systems.

The hardware and software information are stored in non-volatile memory. With its built-in manageability and latest security applications, Intel® AMT provides the following functions:

| Functions | Description |
|-----------|---|
| Discover | Allows remote access and management of networked systems even while PCs are powered off; significantly reducing desk-side visits. |
| Repair | Remotely repair systems after OS failures. Alerting and event logging help detect problems quickly to reduce downtime. |
| Protect | Intel AMT's System Defense capability remotely updates all systems with the latest security software. It protects the network from threats at the source by proactively blocking incoming threats, reactively containing infected clients before they impact the network, and proactively alerting when critical software agents are removed. |

14.2. Enable Intel[®] AMT in the AMI BIOS

- 1. Power-on the system then press to enter the main menu of the AMI BIOS.
- 2. In the Advanced menu, select Intel AMT Configuration then press <Enter>.

| BIOS SETUP UTILITY | | | | |
|--|---|--|--|--|
| Main Advanced PCIPnP Boot S | ecurity Chipset Exit | | | |
| Advanced Settings | Configure CPU. | | | |
| WARNING: Setting wrong values in below sections may cause system to malfunction. CPU Configuration IDE Configuration Floppy Configuration Super IO Configuration Hardware Health Configuration ACPI Configuration ACPI Configuration AHCI Configuration Intel AMT Configuration Intel AMT Configuration Intel AMT Configuration Intel VT-d Configuration Remote Access Configuration Trusted Computing USB Configuration Case Open [Disabled] AC Power Loss [ON] Watchdog Timer [Disabled] | $\leftarrow \rightarrow$ Select Screen $\uparrow \downarrow$ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit | | | |

3. In the Intel AMT Support field, select *Enabled*.

| BIOS SETUP UTILITY | |
|---|---|
| Advanced | |
| Configure Intel AMT Parameters | Options |
| Intel AMT Support[Enabled]Force IDER[Disabled]Force SOL[Disabled]Unconfigure AMT/ME[Disabled]Activate Remote Assistance[Disabled]MEBx Ctrl+P Delay (Seconds)[0] | Disabled Enabled ←→ Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit |
| v02.67 (C)Copyright 1985-2009, American | Megatrends, Inc. |

4. In the Chipset menu, select ME Subsystem Configuration then press <Enter>.

| | | BIOS | SETUP UTII | LITY | | |
|---|---|--|-------------|-----------------|---|---|
| Main | Advanced | PCIPnP | Boot | Security | Chips | et Exit |
| Advanced C | hipset Settings | | | | Configu | re North Bridge |
| WARNING: North Br South Br ME Subs | Setting wrong val may cause system idge Configuration idge Configuration ystem Configuratio | ues in below sec 1 to malfunction. n | tions | | teatures. ← → ↑↓ Enter F1 F10 ESC | Select Screen Select Item Go to Sub Screen General Help Save and Exit Exit |
| | v02.67 (| C)Copyright 198 | 5-2009, Ame | rican Megatrend | ls, Inc. | |

5. Configure the fields in the **ME Subsystem Configuration** submenu.

| BIOS SETUP UTILITY | Chipset |
|---|---|
| ME Subsystem Configuration | Options |
| BootBlock HECI Message [Enabled] HECI Message [Enabled] End Of Post S5 HECI Message [Enabled] ME HECI Configuration [Enabled] ME-HECI [Enabled] ME-IDER [Enabled] ME-KT [Enabled] Management Engine Version: 6.0.3.1195 | Disabled Enabled ←→ Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit |
| v02.67 (C)Copyright 1985-2009, American | Megatrends, Inc. |

6. In the Exit menu, select Save Changes and Exit then select OK.

| | | BIOS S | SETUP UTII | JTY | | | |
|--|--|-----------------|-------------|-----------------|---|---|--|
| Main | Advanced | PCIPnP | Boot | Security | Chi | pset | Exit |
| Exit Options | 3 2 | | | | Exit sy | ystem set | up |
| Save Chang Discard Cha Discard Cha Load Optim Load Failsaf | es and Exit nges and Exit nges al Defaults de Defaults | | | | after s change F10 kd for thi ↑↓ Enter F1 F10 ESC | select Select Select Go to S Genera Save a Exit | s used on. Screen Item Sub Screen I Help Id Exit |
| | v02.67 (| C)Copyright 198 | 5-2009, Ame | rican Megatrend | s, Inc. | | |

14.3. Enable Intel[®] AMT in the Intel® Management Engine BIOS Extension (MEBX) Screen

1. When the system reboots, the following message will be displayed. Press **<Ctrl-P>** as soon as the message is displayed; as this message will be displayed for only a few seconds.



2. You will be prompted for a password. The default password is "admin". Enter the default password in the space provided under Intel(R) ME Password then press Enter.



14. Intel AMT Settings

- 3. Enter a new password in the space provided under Intel(R) ME New Password then press Enter. The password must include:
- 8-32 characters
- □ Strong 7-bit ASCII characters excluding {: , and "} characters
- □ At least one digit character (0, 1, ...9)
- □ At least one 7-bit ASCII non alpha-numeric character, above 0x20, (e.g. !, \$, ;)
- □ Both lower case and upper case characters

Note:

'_' (underscore) and '' (space) are valid password characters but are not used in the determination of complexity.

| Intel(R) Managemer Copyright((| t Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184 C) 2003-09 Intel Corporation. All Rights Reserved. [MAIN MENU] Intel(R) ME General Settings ► Intel(R) AMT Configuration ► Exit |
|-----------------------------------|--|
| | Intel(R) ME New Password |

4. You will be asked to verify the password. Enter the same new password in the space provided under Verify Password then press Enter.

| Intel(R) Management Engine B Copyright(C) 2003-09 [Intel(R) Intel(R) Exit | IOS Extension v6.0.3.0014/Intel(R) Intel Corporation. All Rights Re MANNAL ME General Settings AMT Configuration | ME v6.0.0.1184 eserved. |
|---|--|----------------------------|
| | Verify Password | |
| [ESC] : Exit | [ENTER] : | Submit |

5. Select Intel(R) ME General Settings then press Enter.



6. Select Intel(R) ME State Control then press Enter.

| Intel(R) Management H Copyright(C) | Engine BIOS Extension v6. 2003-09 Intel Corporatio | 0.3.0014/Intel(R) ME v6.0.0.1184 on. All Rights Reserved. |
|--|--|--|
| [Intel Char Pass Netw Acti Unco Rem FW | (R) ME State Control age ME Password word Policy work Setup wate Network Access onfigure Network Access ote Setup and Configura Update Settings | tion |
| [ESC] : Exit | [↑↓] : Select | [ENTER] : Access |
| | | |

7. Select *Enabled* then press Enter.



8. Select Change ME Password then press Enter.

You will be prompted for a password. The default password is "admin". Enter the default password in the space provided under Intel(R) ME Password then press Enter.

- 8-32 characters
- □ Strong 7-bit ASCII characters excluding {:, and "} characters
- □ At least one digit character (0, 1, ...9)
- □ At least one 7-bit ASCII non alpha-numeric character, above 0x20, (e.g. !, \$, ;)
- □ Both lower case and upper case characters

Note:

'_' (underscore) and '' (space) are valid password characters but are not used in the determination of complexity.

| Intel(R) Management Copyright(C | Engine BIOS Extension v6.0.3.0) 2003-09 Intel Corporation. A | 014/Intel(R) ME v6.0.0.1184 11 Rights Reserved. |
|---|--|--|
| Inte Cha Pas Net Act Un Ret FW | (R) ME PLATFORM CON el(R) ME State Control ange ME Password sword Policy twork Setup tivate Network Access configure Network Access note Setup and Configuration Update Settings | ICURATION |
| [ESC] : Exit | [↑↓] : Select | [ENTER] : Access |
| | Intel(R) ME Password | |

9. Select Password Policy then press Enter.

You may choose to use a password only during setup and configuration or to use a password anytime the system is being accessed.

| Intel(R) Management Er Copyright(C) 2 | ngine BIOS Extension vo 003-09 Intel Corporati | 6.0.3.0014/Intel(R) ME v6.0.0.1184 ion. All Rights Reserved. |
|---|---|---|
| [Intel() Chang Passw Netwo Active Uncon Remo FW U | R) ME State Control ge ME Password rord Policy ork Setup ate Network Access afigure Network Access te Setup and Configur update Settings | configuration |
| [ESC] : Exit | [↑↓] : Select | [ENTER] : Access |
| [*] DEF4 [] DUR [] ANY | AULT PASSWORD O ING SETUP AND CO TIME | NLY ONFIGURATION |

10. Select Network Setup then press Enter.



11. In the Intel(R) Network Setup menu, select Intel(R) ME Network Name Settings then press Enter.



12. In the Intel(R) ME Network Name Settings menu, select Host Name then press Enter.

| Image: Image | Intel(R) Management Er Copyright(C) 2 | ngine BIOS Extension v6 003-09 Intel Corporation | 0.3.0014/Intel(R) ME v6.0.0.1184 on. All Rights Reserved. |
|--|--|--|--|
| [ESC] : Exit [↑↓] : Select [ENTER] : Access | Host N Domain Shared Dynam Previou | ame n Name /Dedicated FQDN ic DNS Update ns Menu | AME SETTINGS] |
| | [ESC] : Exit | [↑↓] : Select | [ENTER] : Access |
| | | | |

13. Enter the computer's host name then press Enter.

| Intel(R) Management Copyright(C Hos Don Shar Dyn Prev | Engine BIOS Extension v6.0.3. 2003-09 Intel Corporation. A Name nain Name red/Dedicated FQDN amic DNS Update ious Menu | 0014/Intel(R) ME v6.0.0.1184 All Rights Reserved. ESETTINGS] |
|---|--|---|
| [ESC] : Exit | [↑↓] : Select | [ENTER] : Access |
| | Computer host name | |

14. Select Domain Name then press Enter. Enter the domain name then press Enter.

| [INTEL(R) ME NETWORK NAME SETTINGS] = Host Name Domain Name Shared/Dedicated FQDN Dynamic DNS Update Previous Menu |
|---|
| |
| [ESC] : Exit [↑↓] : Select [ENTER] : Access |
| Computer Domain name |

15. Select **Shared/Dedicated FQDN** then press Enter. Select Shared or Dedicated then press Enter.

| Intel(R) Management E Copyright(C) 2 Host N Doma Shared Dynar Previo | ngine BIOS Extension vo 2003-09 Intel Corporati Name in Name //Dedicated FQDN nic DNS Update us Menu | 6.0.3.0014/Intel(R) ME v6.0.0.1184 ion. All Rights Reserved. |
|--|--|---|
| [ESC] : Exit | [↑↓] : Select | [ENTER] : Access |
| [] D [*] SI | EDICATED HARED | |

16. Select Dynamic DNS Update then press Enter. Select Enabled or Disabled then press Enter.

| Intel(R) Management E Copyright(C) 2 | ngine BIOS Extension v6 2003-09 Intel Corporati | 0.3.0014/Intel(R) ME v6.0. on. All Rights Reserved. | 0.1184 |
|--|---|--|--------|
| [Host M Domai Shared Dynan Previo | Name In Name VDedicated FQDN nic DNS Update us Menu | GAME SETTINGS] | |
| [ESC] : Exit | [↑↓] : Select | [ENTER] : Access | |
| [*] D [] E | ISABLED NABLED | | |

17. Select Previous Menu until you return to the Network Setup menu. Select TCP/IP Settings then press Enter.

| Intel(R) Management En Copyright(C) 20 | gine BIOS Extension v6 003-09 Intel Corporati | 0.3.0014/Intel(R) ME v6.0.0.1184 on. All Rights Reserved. | |
|---|--|--|--|
| | INTEL(R) NETWO | RK SETUP] | |
| Intel(R) | Intel(R) ME Network Name Settings | | |
| Previous Menu | | | |
| | | | |
| [ESC] : Exit | [↑↓] : Select | [ENTER] : Access | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

18. In the TCP/IP Settings menu, select Wired LAN IPV4 Configuration then press Enter.

| Intel(R) Management Copyright(C) | Engine BIOS Extension v6 2003-09 Intel Corporation [TCP/IPSETTIN | 0.3.0014/Intel(R) ME v6.0.0.1184 on. All Rights Reserved. |
|-------------------------------------|---|--|
| T T E | Vired LAN IPV4 Configu Vired LAN IPV6 Configu Previous Menu | uration |
| [ESC] : Exit | [î↓] : Select | [ENTER] : Access |
| | | |
| | | |
| | | |

19. In the Wired LAN IPV4 Configuration menu, select DHCP Mode then press Enter. Select Enabled then press Enter.



20. A list of options in the Wired LAN IPV4 Configuration menu will appear.

| Intel(R) Managem Copyrigh | ent Engine BIOS Extension v6.0.3. t(C) 2003-09 Intel Corporation. | .0014/Intel(R) ME v6.0.0.1184 All Rights Reserved. |
|------------------------------|---|---|
| | DHCP Mode IPV4 Address Subnet Mask Address Default Gateway Addres Preferred DNS Address Alternate DNS Address Previous Menu | ess s |
| [ESC] : Ex | it [↑↓] : Select | [ENTER] : Access |
| | [] DISABLED [*] ENABLED | |

21. Select **IPV4 Address** then press Enter. Enter an IP Address then press Enter.



22. Select Subnet Mask Address then press Enter. Enter the subnet mask address then press Enter.



23. Select Default Gateway Address then press Enter. Enter the default gateway address then press Enter.



24. Select Preferred DNS Address then press Enter. Enter the preferred DNS address then press Enter.



25. Select Alternate DNS Address then press Enter. Enter the alternate DNS address then press Enter.



26. Select Previous Menu until you return to the **TCP/IP Settings** menu. Select **Wired LAN IPV6 Configuration** then press Enter.

| Intel(R) Managemen Copyright(C | t Engine BIOS Extension v C) 2003-09 Intel Corporat | 76.0.3.0014/Intel(R) ME v6.0.0.1184 tion. All Rights Reserved. |
|-----------------------------------|---|---|
| | [TCP/IP SET Wired LAN IPV4 Config Wired LAN IPV6 Config Previous Menu | guration > |
| [ESC] : Exit | [↑↓] : Select | [ENTER] : Access |
| | | |

27. In the Wired LAN IPV6 Configuration menu, select IPV6 Feature Selection then press Enter. Select Enabled then press Enter.



28. A list of options in the Wired LAN IPV6 Configuration menu will appear.



29. Select IPV6 Interface ID Type then press Enter. Select the ID type then press Enter.



30. Select IPV6 Address then press Enter. Enter the IPV6 address then press Enter.



31. Select IPV6 Default Router then press Enter. Enter the IPV6 default router address then press Enter.



32. Select Preferred DNS IPV6 Address then press Enter. Enter the preferred DNS IPV6 address then press Enter.



33. Select Alternate DNS IPV6 Address then press Enter. Enter the alternate DNS IPV6 address then press Enter.



34. Select Previous Menu until you return to the Intel(R) ME Platform Configuration menu. Select Activate Network Access then press Enter. Type Y, then press Enter.

| Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.11 Copyright(C) 2003-09 Intel Corporation. All Rights Reserved. | | |
|---|--|--|
| Intel(R) ME State Control Change ME Password Password Policy Network Setup Activate Network Access Unconfigure Network Access Remote Setup and Configuration FW Update Settings | | |
| [ESC] : Exit [↑↓] : Select [ENTER] : Access | | |
| [Caution] Activates the current network settings and opens the ME network interface Continue: (Y/N) | | |

35. In the **Intel(R) ME Platform Configuration** menu, select **Unconfigure Network Access** then press Enter. Type Y, then press Enter.



36. In the Intel(R) ME Platform Configuration menu, select Remote Setup and Configuration then press Enter.

| Intel(R) Management En Copyright(C) 20 | gine BIOS Extension v6 003-09 Intel Corporati | 5.0.3.0014/Intel(R) ME v6.0.0.1184 on. All Rights Reserved. |
|--|---|--|
| [IN USLO Intel(F Chang Passwo Netwo Activa Uncon Remot FW U | A) ME State Control e ME Password ord Policy rk Setup te Network Access figure Network Access e Setup and Configura pdate Settings | s ation |
| [ESC] : Exit | [↑↓] : Select | [ENTER] : Access |
| | | |

37. Select Previous Menu until you return to the **Intel(R) ME Platform Configuration** menu. Select **FW Update Settings** then press Enter.

| Intel(R) Management En Copyright(C) 20 | gine BIOS Extension vé 003-09 Intel Corporati | 5.0.3.0014/Intel(R) ME v6.0.0.1184 ion. All Rights Reserved. |
|---|--|---|
| Intel(F Intel(F Chang Passw Netwo Activa Uncon Remot | A) ME State Control e ME Password ord Policy ork Setup of Network Access figure Network Access the Setup and Configura pdate Settings | ss ation |
| [ESC] : Exit | [↑↓] : Select | [ENTER] : Access |
| | | |

38. In the FW Update Settings menu, select Local FW Update then press Enter. Select Enabled then press Enter.



 Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184

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 Image: Im

[*] ENABLED

39. In the FW Update Settings menu, select Secure FW Update then press Enter. Select Enabled then press Enter.

40. Select Previous Menu until you return to the **Intel(R) ME Platform Configuration** menu. Select **Set PRTC** then press Enter.

** - may cause Intel(R) AMT partial unprovision

| Intel(R) Management En Copyright(C) 2 | gine BIOS Extension v6 003-09 Intel Corporati | 5.0.3.0014/Intel(R) ME v6.0.0.1184 on. All Rights Reserved. |
|--|---|--|
| Passw Netwo Activa Uncor Remo FW U Set PF Power | ord Policy ork Setup ate Network Access afigure Network Access te Setup and Configura pdate Settings RTC Control | s ation |
| [ESC] : Exit | [↑↓] : Select | [ENTER] : Access |
| | | |
41. Enter the PRTC in GMT(UTC) format.



42. In the Intel(R) ME Platform Configuration menu, select Power Control then press Enter.



43. In the **Intel(R) ME Power Control** menu, select Intel(R) ME ON in Host Sleep States then press Enter. Select an option then press Enter.

| Intel(R) Management En Copyright(C) 20 [IN <u>Intel</u> Idle Prev | gine BIOS Extension vé 003-09 Intel Corporati TEL(R) ME POWI (R) ME ON in Host S Timeout ious Menu | 5.0.3.0014/Intel(R) ME v6.0.0.1184 on. All Rights Reserved. R CONTROL] |
|---|---|---|
| [ESC]=Exit | [↑↓]=Select | [ENTER]=Access |
| [] Desktop: ON in [*] Desktop: ON in | SO, ME Wake in S3, 1 | <mark>84-5</mark> |

44. In the Intel(R) ME Power Control menu, select Idle Timeout then press Enter. Enter the timeout value.

| Intel(R) Management Engine BI Copyright(C) 2003-09 | OS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184 Intel Corporation. All Rights Reserved. |
|---|---|
| [INTEL(| R) ME POWER CONTROL] |
| Intel(R) MH Idle Timeou Previous M | E ON in Host Sleep States at enu |
| | |
| Tin | neout Value (1-65534) |
| [ESC]=Exit | [ENTER]=Submit |

45. Select Previous Menu until you return to the Main Menu. Select Intel(R) AMT Configuration.

| Intel(R) Management E Copyright(C) 2 | ngine BIOS Extension v6. 2003-09 Intel Corporatio | 0.3.0014/Intel(R) ME v6.0.0.1184 on. All Rights Reserved. |
|---|--|--|
| L L E | mtel(R) ME General Sett ntel(R) AMT Configurat | tings ion |
| [ESC]=Exit | [↑↓]=Select | [ENTER]=Access |
| Update ne | twork settings in the Ge | meral Settings menu |

46. In the Intel(R) AMT Configuration menu, select Manageability Feature Selection then press Enter.

| Intel(R) Management F Copyright(C) [] Ma SO KV Pre | Engine BIOS Extension vo 2003-09 Intel Corporation NTEL(R) ANT CONF nageability Feature Sele L/IDER M Configuration vious Menu | 5.0.3.0014/Intel(R) ME v6.0.0.1184 ion. All Rights Reserved. TIGURATION] |
|---|--|---|
| [ESC]=Exit | [↑↓]=Select | [ENTER]=Access |
| | | |

47. Type **Y** then press Enter.



48. In the Intel(R) AMT Configuration menu, select SOL/IDER then press Enter.

| Intel(R) Management En Copyright(C) 2 | gine BIOS Extension vo 003-09 Intel Corporati | 5.0.3.0014/Intel(R) ME v6.0.0.1184 ion. All Rights Reserved. |
|--|--|---|
| [IN Man SOL KVN Prev | TEL(R) AMT CON ageability Feature Sel ADER A Configuration ious Menu | ection |
| [ESC]=Exit | [↑↓]=Select | [ENTER]=Access |
| | | |

49. In the SOL/IDER menu, select Username & Password then press Enter. Select Enabled then press Enter.



50. In the SOL/IDER menu, select SOL then press Enter. Select Enabled then press Enter.



51. In the SOL/IDER menu, select IDER then press Enter. Select Enabled then press Enter.



52. In the SOL/IDER menu, select Legacy Redirection Mode then press Enter.



53. Select Previous Menu until you return to the **Intel(R) AMT Configuration** menu. Select **KVM Configuration** then press Enter.

| Intel(R) Management Eng Copyright(C) 20 | gine BIOS Extension ve 003-09 Intel Corporati | 5.0.3.0014/Intel(R) ME v6.0.0.1184 ion. All Rights Reserved. |
|--|--|---|
| | | IGURATION] |
| Mana SOL/ | igeability Feature Sele IDER | ection |
| KVM Previ | l Configuration ous Menu | |
| | | |
| | | |
| [ESC]=Exit | [↑↓]=Select | [ENTER]=Access |
| | | |
| | | |
| | | |
| | | |
| | | |

54. In the KVM Configuration menu, select KVM Feature Selection then press Enter. Select Enabled then press Enter.



55. In the **KVM Configuration** menu, select **User Opt-in** then press Enter. Select **User Consent is required for KVM Session** then press Enter.

| Intel(R) Management Er Copyright(C) 2 | ngine BIOS Extension v 003-09 Intel Corporat KVM Feature Selec User Opt-in Opt-in Configurable Previous Menu | 6.0.3.0014/Intel(R) ME v6.0.0.1184 ion. All Rights Reserved. RATION] tion from remote IT |
|--|---|---|
| [ESC]=Exit | [↑↓]=Select | [ENTER]=Access |
| [] User ([*] User (| Consent is not required Consent is required for | l for KVM Session KVM Session |

56. In the KVM Configuration menu, select Opt-in Configurable from Remote IT then press Enter. Select Enable Remote Control of KVM Opt-in Policy then press Enter.



57. Select Previous Menu until you return to the Main Menu. Select Exit then press Enter.



58. The following message will be displayed on the screen.

[CONFIRM EXIT]

Are you sure you want to exit? (Y/N):

Press Y.



15. Appendix A - NLITE and AHCI Installation Guide

15.1. nLite

nLite is an application program that allows you to customize your XP installation disc by integrating the RAID/AHCI drivers into the disc. By using nLite, the F6 function key usually required during installation is no longer needed.



Note:

The installation steps below are based on nLite version 1.4.9. Installation procedures may slightly vary if you're using another version of the program.

- 1. Download the program from nLite's official website: <u>http://www.nliteos.com/download.html</u>.
- 2. Install nLite.



Important:

Due to it's coding with Visual.Net, you may need to first install .NET Framework prior to installing nLite.

3. Download relevant RAID/AHCI driver files from Intel's website. The drivers you choose will depend on the operating system and chipset used by your computer.

The downloaded driver files should include iaahci.cat, iaAHCI.inf, iastor.cat, iaStor.inf, IaStor.sys, license.txt and TXTSETUP.OEM.



- 4. Insert the XP installation disc into an optical drive.
- 5. Launch nLite. The Welcome screen will appear. Click Next.



6. Click Next to temporarily save the Windows installation files to the designated default folder.

If you want to save them in another folder, click **Browse**, select the folder and then click **Next**.

| 7/6 aLite | |
|--|--------------------------------|
| Locating the Windows installation Locate the Windows installation files to customize. | \sim |
| Conting the Windows installation | |
| - Profest name: Language: Service Pack: Veritor: Path: State: | C DUVR |
| a Tay | Back Mext Cancel X |

15. Appendix A - NLITE and AHCI Installation Guide

7. Click Next.



8. In the Task Selection dialog box, click **Drivers** and **Bootable ISO**. Click **Next**.

| 1 | Service Pack |
|---------|------------------------------------|
| Integra | Hotfixes, Add-ons and Update Packs |
| | Drivers |
| Remov | Components |
| | Unstitended |
| Setup | Options |
| | Tweaks |
| Create | Bootable ISO |

9. Click Insert and then select Multiple driver folder to select the drivers you will integrate. Click Next.



10. Select only the drivers appropriate for the Windows version that you are using and then click **OK**.

Integrating 64-bit drivers into 32-bit Windows or vice versa will cause file load errors and failed installation.

| Select multiple drivers to integrate | X |
|---|---|
| C.\AHCI | |
| | |
| | |
| | |
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| | |
| Careful! Be sure to select only appropriate drivers for your Wi you integrate 64bit textmode drivers into 32bit Windows there installation will fail. | ndows version. For example if will be file load errors and |
| | |
| | |
| | |
| All | OK <u>Cancel</u> |
| | |

11. If you are uncertain of the southbridge chip used on your motherboard, select all RAID/AHCI controllers and then click OK.

Driver folder
C-VAHCI
Mode
Regular PNP driver
Textmode driver
Textmode integration options
Intel(R) ESE2 SATA AHCI Controller
Intel(R) ESE2 SATA AHCI Controller
Intel(R) ICHIOZON SATA AHCI Controller
Intel(R) ICHI

🔜 Driver Integration Options

Storage Device Textmode Driver

Choose the exact type of hardware and OS if listed

| 12.Click | Next. |
|----------|-------|
|----------|-------|

| Provider | Mode | Туре | Version | Date | Path |
|----------|-------|------|------------|------------|---------|
| Intel | TXT | hdc | 8.9.0.1023 | 06/04/2009 | C:\AHCI |
| Intel | TXT | hdc | 8.9.0.1023 | 06/04/2009 | C:\AHCI |
| Intel | TXT | hdc | 8.9.0.1023 | 06/04/2009 | C:\AHCI |
| Intel | TXT | hdc | 8.9.0.1023 | 06/04/2009 | C:\AHCI |
| Intel | TXT | hdc | 8.9.0.1023 | 06/04/2009 | C:\AHCI |
| Intel | TXT | hdc | 8.9.0.1023 | 06/04/2009 | C:\AHCI |
| Intel | TXT | hdc | 8.9.0.1023 | 06/04/2009 | C:\AHCI |
| Intel | IXI | hdc | 8.9.0.1023 | 06/04/2009 | CARHCI |
| Intel | 1X1 | hdc | 8.9.0.1023 | 06/04/2009 | CAHCI |
| Intel | 121 | nac | 8.9.0.1023 | 06/04/2009 | CARHCI |
| Intel | TX1 | hdo | 0.0.0.1022 | 06/04/2009 | CAAHCI |
| Intel | TVT | hate | 0.0.1023 | 00/04/2009 | CAAHCI |
| Intel | TYT | bde | 9 0 0 1022 | 06/04/2009 | CANNEL |
| Intel | TYT. | hde | 8 9 0 1023 | 06/04/2009 | CAAHCI |
| Intel | TYT | bde | 8 9 0 1023 | 06/04/2009 | CAAHCI |
| Intel | TXT - | bdc | 8901023 | 06/04/2009 | CAAHCI |
| | | | | | |
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| | | | | | |

13.The program is currently integrating the drivers and applying changes to the installation.

| Yocessing Applying changes to initaliation | | 2 |
|---|--|---|
| | Preparing selected tasks | |
| | Integrating hotfixes, packs and themes | |
| | Removing components | |
| · · · · · · · · · · · · · · · · · · · | Processing setup files | |
| | Integrating drivers | |
| | Timentering | |
| | | |
| | Normal | |
| | | |
| | | |

14. When the program is finished applying the changes, click **Next.**

| 74 nLite | | | |
|-------------------------------|----------------------------------|-----------------|----------|
| Processing Applying change | s to installation. | | 22 |
| | | | |
| | Preparing sele | ected tasks | |
| | Integrating hotfixes, p | acks and themes | |
| | Removing co | mponents | |
| | Processing setup files | | |
| | Integrating | drivers | |
| | Finaliz | ing | |
| | | | |
| | Finished! Total size is 657.77MB | | 1 |
| | Integrated drivers: 0.18MB | | |
| | The installation grew by 0.54MB. | Normal - | |
| 1 | | | |
| | | | |
| | | | 1.0 M |
| 🍰 Tray | | C Back Next | Qancel X |

15.To create an image, select the **Create Image** mode under the General section and then click **Next**.

| 🎢 nLite | | |
|---|---|----------|
| Bootable ISO Create a bootable ISO to burn o | on CD/DVD or for testing. | 1 |
| | | |
| General Mode | Device | |
| Create Image 💌 | 0 | 8 |
| Label | Burn speed Media | |
| WinLite | × | 8 |
| Advanced ISO Engine | Boot sector | |
| Default | 🥹 Default 👻 🌒 🗌 Verify 🗌 Test write | |
| Progress | | |
| | Click here to start -> Make IS | |
| Information If you want to include additio before starting, or just click n | onal files on your CD/DVD, copy them to the working directory ext if you want to make the ISO later. | |
| 🚰 Tray | C Back Next O | Qancel 🗙 |

16.Or you can choose to burn it directly to a disc by selecting the **Direct Burn** mode under the General section.

Select the optical device and all other necessary settings and then click

| General | | | |
|---|--|--|---|
| Mode | | Device | |
| Direct Burn | • • | 1:1:0,F: PIONEER DVD-RW DVR-111D 1.23 | 4 |
| Label | | Burn speed Media | |
| WinLite | | Maximum 🔽 No media | 2 |
| Advanced | | | |
| ISO Engine | | Boot sector Quick erase | |
| Default | V | Default 🥑 🥝 🗌 Verify 🗌 Test write | |
| Progress | | | |
| | | | |
| | | Click here to start -> Burn | |
| Information | | | |
| If you want to include the fore starting or a | ude additional file: just click pext if w | s on your CD/DVD, copy them to the working directory | |
| bororo otta ang, or j | | Explore | |
| | | | |

17.You have finished customizing the Windows XP installation disc. Click Finish.

Enter the BIOS utility to configure the SATA controller to RAID/AHCI. You can now install Windows XP.



15.2. AHCI

The installation steps below will guide you in configuring your SATA drive to AHCI mode.

- 1. Enter the BIOS utility and configure the SATA controller to IDE mode.
- 2. Install Windows XP but do not press F6.
- 3. Download relevant RAID/AHCI driver files supported by the motherboard chipset from Intel's website.

Transfer the downloaded driver files to C:\AHCI.



4. Open Device Manager and right click on one of the Intel Serial ATA Storage Controllers, then select Update Driver.

If the controller you selected did not work, try selecting another one.



5. In the Hardware Update Wizard dialog box, select "No, not this time" then click Next.



 Select "Install from a list or specific location (Advanced)" and then click Next.

| Hardware Update Wizard |
|--|
| This wizard helps you install software for: Intel(R) 5 Series/3400 Series Chipset Family 4 port Serial ATA Storage Controller - 3B20 If your hardware came with an installation CD or floppy disk, insert it now. What do you want the wizard to do? Install from a list or specific location (Advanced) Click Next to continue. |
| < Back Next > Cancel |

 Select "Don't search. I will choose the driver to install" and then click Next.



8. Click "Have Disk".



9. Select C:\AHCI\iaAHCI.inf and then click **Open**.



10.Select the appropriate AHCI Controller of your hardware device and then click **Next**.



11. A warning message appeared because the selected SATA controller did not match your hardware device.

Ignore the warning and click **Yes** to proceed.

12.Click Finish.



- 13. The system's settings have been changed. Windows XP requires that you restart the computer. Click Yes.
- 14. Enter the BIOS utility and modify the SATA controller from IDE to AHCI. By doing so, Windows will work normally with the SATA controller that is in AHCI mode.





16. Appendix B - Watchdog Sample Code

;Software programming example:

| : | | |
|-------------------|-------------------|---|
| ;(1) Ent | ter Super IO Cor | nfiguration mode |
| MOV | DX.2FH | |
| MOV | AL.87H | |
| OUT | DX.AL | |
| OUT | DX,AL | |
| ; | | |
| ;(2) Co timer) | onfiguration Logi | ical Device 7, register CRF5/CRF6 (WDT Control /WD1 |
| , MOV | DX,2EH | |
| MOV | AL,07H | ;Ready to Program Logical Device |
| OUT | DX,AL | |
| MOV | DX,2FH | |
| MOV | AL,07H | ;Select Logical Device 7 |
| OUT | DX,AL | |
| MOV | DX,2EH | |
| MOV | AL, F6H | ;Select watchdog timer register |
| OUT | DX,AL | |
| MOV | DX,2FH | |
| MOV | AL,10H | ;Set watchdog timer value |
| OUT | DX,AL | |
| MOV | DX,2EH | |
| MOV | AL, F5H | ;Select watchdog Control Register |
| OUT | DX,AL | |
| MOV | DX,2FH | |
| MOV | AL,61H | ;Set Watchdog Control Value |
| OUT | DX,AL | |
| ; ;(1) Exi | t extended funct | tion mode |
| ; | | |
| MOV | DX,2EH | |
| MOV | AL,AAH | |
| OUT | DX,AL | |

16.1. Troubleshooting Checklist

This chapter of the manual is designed to help you with problems that you may encounter with your personal computer. To efficiently troubleshoot your system, treat each problem individually. This is to ensure an accurate diagnosis of the problem in case a problem has multiple causes.

Some of the most common things to check when you encounter problems while using your system are listed below.

- **1.** The power switch of each peripheral device is turned on.
- 2. All cables and power cords are tightly connected.
- 3. The electrical outlet to which your peripheral devices are connected is working. Test the outlet by plugging in a lamp or other electrical device.
- **4.** The monitor is turned on.
- 5. The display's brightness and contrast controls are adjusted properly.
- 6. All add-in boards in the expansion slots are seated securely.
- 7. Any add-in board you have installed is designed for your system and is set up correctly.

16.2. Monitor/Display

16.2.1. If the display screen remains dark after the system is turned on

- 1. Make sure that the monitor's power switch is on.
- 2. Check that one end of the monitor's power cord is properly attached to the monitor and the other end is plugged into a working AC outlet. If necessary, try another outlet.
- 3. Check that the video input cable is properly attached to the monitor and the system's display adapter.
- 4. Adjust the brightness of the display by turning the monitor's brightness control knob.

16.2.2. The picture seems to be constantly moving

- 1. The monitor has lost its vertical sync. Adjust the monitor's vertical sync.
- 2. Move away any objects, such as another monitor or fan, that may be creating a magnetic field around the display.
- 3. Make sure your video card's output frequencies are supported by this monitor.

16.2.3. The screen seems to be constantly wavering

1. If the monitor is close to another monitor, the adjacent monitor may need to be turned off. Fluorescent lights adjacent to the monitor may also cause screen wavering.

16.3. Power Supply

16.3.1. When the computer is turned on, nothing happens.

- 1. Check that one end of the AC power cord is plugged into a live outlet and the other end properly plugged into the back of the system.
- 2. Make sure that the voltage selection switch on the back panel is set for the correct type of voltage you are using.
- 3. The power cord may have a "short" or "open". Inspect the cord and install a new one if necessary.

16.4. Floppy Drive

16.4.1. The computer cannot access the floppy drive

- 1. The floppy diskette may not be formatted. Format the diskette and try again.
- 2. The diskette may be write-protected. Use a diskette that is not write-protected.
- 3. You may be writing to the wrong drive. Check the path statement to make sure you are writing to the targeted drive.
- 4. There is not enough space left on the diskette. Use another diskette with adequate storage space.

16.5. Hard Drive

16.5.1. Hard disk failure

- 1. Make sure the correct drive type for the hard disk drive has been entered in the BIOS.
- 2. If the system is configured with two hard drives, make sure the bootable (first) hard drive is configured as Master and the second hard drive is configured as Slave. The master hard drive must have an active/bootable partition.

16.5.1.1. Excessively long formatting period

If your hard drive takes an excessively long period of time to format, it is likely a cable connection problem. However, if your hard drive has a large capacity, it will take a longer time to format.

16.6. Serial Port

16.6.1. The serial device (modem, printer) doesn't output anything or is outputting garbled characters

- 1. Make sure that the serial device's power is turned on and that the device is on-line.
- 2. Verify that the device is plugged into the correct serial port on the rear of the computer.
- 3. Verify that the attached serial device works by attaching it to a serial port that is working and configured correctly. If the serial device does not work, either the cable or the serial device has a problem. If the serial device works, the problem may be due to the onboard I/O or the address setting.
- 4. Make sure the COM settings and I/O address are configured correctly.

16.7. Keyboard

16.7.1. Nothing happens when a key on the keyboard was pressed.

- 1. Make sure the keyboard is properly connected.
- 2. Make sure there are no objects resting on the keyboard and that no keys are pressed during the booting process.

16.8. System Board

- 1. Make sure the add-in card is seated securely in the expansion slot. If the add-in card is loose, power off the system, re-install the card and power up the system.
- 2. Check the jumper settings to ensure that the jumpers are properly set.
- 3. Verify that all memory modules are seated securely into the memory sockets.
- 4. Make sure the memory modules are in the correct locations.
- 5. If the board fails to function, place the board on a flat surface and seat all socketed components. Gently press each component into the socket.
- 6. If you made changes to the BIOS settings, re-enter setup and load the BIOS defaults.

17. Electrical, Mechanical, Environmental Specifications; CE-Directives

17.1. Electrical Specifications

| Board Version | Type of the external PSU | Inputs via | |
|------------------|--------------------------|---------------------------------------|--|
| PT630-KON | ATX PSU | On-board ATX power connector (24-pin) | +3.3 VSB, +5 VSB, +3.3 V, +5.0 V, +12.0 V |
| | | On-board ATX power connector (8-pin) | +12V |

17.2. Mechanical Specifications

| Dimensions | 305mm (12") x 244mm (9.6") |
|--------------------------|----------------------------|
| Weight (without CPU fan) | 0.725 kg (1.598 lbs.) |

17.3. Environmental Specifications

| Operating Temperature | 0 °C to 60 °C (32 °F to 140 °F) |
|-----------------------|---------------------------------|
| Relative Humidity | 10 % to 90 % (non-condensing) |

17.4. CE Directives

| CE Directives | | |
|--|--|--|
| Electrical Safety | General Product Safety Directive (GPSD) 2001/95/EC Low Voltage Directive (LVD) 2006/95/EC | |
| ElectroMagnetic Compatibility (EMC) | EMC Directive 2004/108/EC | |

18. Technical Support

For technical support, please contact our Technical Support department.

 German headquarter Hotline:

 TEL:
 (+49) 8165-77 112

 FAX:
 (+49) 8165-77 110

 E-mail:
 support@kontron.com

Make sure you have the following on hand when you call:

- the unit part id number (P/No #),
- and the serial number (S/No #) of the unit (provide the serial number found on the label, placed on the rear side of the board).

Be ready to explain the nature of your problem to the service technician.

If you have any questions about Kontron Embedded Computers or our products and services, you may reach us at the aforementioned numbers, or at: www.kontron.com or by writing to:

Kontron Embedded Computers GmbH Oskar von Miller-Str. 1

85386 Eching Germany

18.1. Returning Defective Merchandise

Before returning any merchandise please:

- Contact our Service and request an RMA number (Return Material Authorization) by: Fax: (+49) 8165-77 412 E-mail: <u>service@kontron.com</u>
- 2. Make sure to receive an RMA number from Kontron Embedded Computers-Service before returning any merchandise. Clearly write or mark this number on the outside of the package you are returning.
- 3. Describe the device failure behavior as precisely as possible.
- 4. When returning goods, include the name and telephone number of a person whom we can contact for further explanations if necessary. Where applicable, always include all duty papers and invoice(s) associated with the item(s) in question.
- 5. When returning a unit:
 - Ensure that the unit is properly packed in the original box,
 - include a copy of the RMA form.