NuPRO-965

Full-Sized PICMG® 1.3 SHB
Intel® Q965/ICH8 Chipset

User's Manual



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Revision History

Version	Release Date	Description of Changes
2.00	2007/05/21	Initial release
2.01	2007/06/13	Updated DDR2 Memory support from 4 GB to 8 GB Corrected FSB MT/s description
2.02	2008/06/06	Correct Package Contents Correct address
2.10	2009/08/11	Add BIOS Chapter; update Block Diagram, Mechanical Drawings
2.11	2009/09/01	Correct LAN, System Fan, IDE, Floppy, LPT, HDD LED pull-up, JP5, JP8 pin def'ns
2.12	2011/09/07	Correct CPU Fan Connector pin definition, BIOS power button mode description, update heatsink/fan installation instructions; remove Mini-DIN PS/2 KB/MS for boards with ordering numbers ending in "xx60" and higher; update addresses

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Preface

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Using this Manual

Audience and Scope

The NuPRO-965 User's Manual is intended for hardware technicians and systems operators with knowledge of installing, configuring and operating industrial grade computer systems.

Manual Organization

This manual is organized as follows:

Chapter 1, Introduction: Introduces the NuPRO-965, its features, specifications, and package contents.

Chapter 2, Hardware Information: Describes the NuPRO-965 board interfaces.

Chapter 3, Getting Started: Describes the installation of components to the NuPRO-965.

Chapter 4, Driver Installation: Provides information on how to install the NuPRO-965 device drivers.

Chapter 5, BIOS Setup: Describes basic navigation for the AMIBIOS®8 BIOS setup utility.

Important Safety Instructions: Presents safety instructions all users must follow for the proper setup, installation and usage of equipment and/or software.

Getting Service: Contact information for ADLINK's worldwide offices.

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Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.


NOTE:

Additional information, aids, and tips that help users perform tasks.


CAUTION:

Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.


WARNING:

Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

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1 Introduction

1.1 Overview

The NuPRO-965 is an SHB Express system host board adopting the PICMG® 1.3 specifications to deliver a powerful platform for a wide-array of high-end computing applications. Featuring a highly-scalable LGA775 socket, the NuPRO-965 backs the latest Intel® Core™2 Quad/Duo processors with a 1066/800 MT/s Front Side Bus, and maintains compatibility with Intel® Pentium® Extreme Edition, Intel® Pentium® D, or Intel® Celeron® D processor with a flexible 1066/800/533 MT/s FSB setting.

The NuPRO-965 delivers a powerful platform with advanced video and graphics capabilities through high-bandwidth interfaces that include a dual-channel DDR2-800 MHz system memory, PCI Express® x16 graphics port, four PCI Express x1 links to an SHB Express backplane, and single or dual PCIe Gigabit Ethernet controller(s).

Providing a highly-reliable computing performance and comprehensive I/O connectivity, the NuPRO-965 is an ideal solution for industrial automation, process control, medical instrumentation, surveillance systems, and network security applications.

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1.2 Specifications

Form Factor	• PCIMG 1.3 Full-sized SHB (Single Host Board) • Dimension: 338 mm (L) x 126 mm (W)
CPU	LGA775 socket supports: • Intel® Core™2 Duo with 4MB/2MB L2 cache and 1066/800 MT/s Front Side Bus • Intel® Pentium® Extreme Edition with 2x 2 MB or 2x 1 MB L2 cache and 1066/800 MT/s Front Side Bus • Intel® Pentium® D with 2x 2MB or 2x 1MB L2 cache and 800/533 MT/s Front Side Bus • Intel® Celeron® D with 512KB/256KB L2 cache and 533 MT/s Front Side Bus
Chipset	• Northbridge: Intel® Q965 • Southbridge: Intel® ICH8
Host Memory	• Dual-channel memory architecture • Four DDR2 DIMM sockets support up to 8 GB of system memory using unbufferred non-ECC 800/667/533 MHz memory modules
Gigabit Ethernet	Integrated Intel® 82573 PCIe network controllers support two Gigabit Ethernet ports on the faceplace (NuPRO-965LV supports 1 GbE port only): • IEEE 802.3x compliant flow control support • IEEE 802.3ab auto-negotiation of speed, duplex, and flow control configuration support • Complete full and half-duplex support
Graphics and Display	• Intel® Graphics Media Accelerator (GMA) 3000 with enhanced 2D/3D graphics acceleration • GMCH analog RGB output on front faceplate. Integrated 350 MHz, 24-bit RAMDAC supports a standard progressive scan analog monitor with pixel resolution of up to 1600 x 1200 at 85 MHz and up to 2048 x 1536 at 75 MHz
Bus	• 1x PCI Express x16 lane to golden finger • 4x PCI Express x1 lanes to golden finger • 1x PCI 32-bit/33 MHz to golden finger supports 4 PCI slots by additional PCI arbiter
Serial ATA	• 2x Serial ATA 3 Gb/s ports (onboard) • 2x Serial ATA Gb/s ports (by golden finger)

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IDE (NuPRO-965LV only)	• Onboard JMicron JMB368 PCIe to IDE controller supports one IDE channel with Ultra ATA 133/100/66 • Compatible with the ATA/ATAPI-6 specification • Supports ANSI proposal PIO modes 01/2/3/4 with flow control, DMA modes 0/1/2, and Ultra DMA modes 0/1/2/3/4/5/6
BIOS	AMIBIOS supports: • BIOS write protection and provides anti-virus capability • Selectable Onboard VGA and Ethernet disable function • DMI BIOS support • System soft power-off (via ATX power supply) • PXE Remote Boot • Boot from USB device
USB Interface	• 1x USB port on faceplate, 2x USB ports onboard, 4x USB ports on the golden finger. • Compliant with USB Specification Rev. 2.0. • Individual over-current protection
Audio	• Intel® High Definition Audio with 5.1-channel audio • Onboard connectors for audio output cables (DB-Audio2)
I/O Controller	• LPC Super I/O Controller (ITE IT8712F) • 2x UART-compatible RS-232 connectors • 1x printer port connector • Monitoring for CPU, system, and DC voltages including CPU core voltages, DDR2 memory, +3.3V, +5V, and +12V • Watchdog timer
External Power Connector	• 1x ATX 12V 4-pin connector
Environment	• Operating temperature: 0°C to 60°C (Intel® Pentium® D processors NOT to exceed +50°C) • Storage temperature: -20°C to 80°C • Humidity: 0% to 90% non-condensing
Supported OS	Windows® XP/XP Embedded, Red Hat Linux Enterprise 3.0, and other operating systems upon request
Certification	• CE • FCC Class A

Table 1-1: NuPRO-965 Specifications

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1.3 Block Diagram

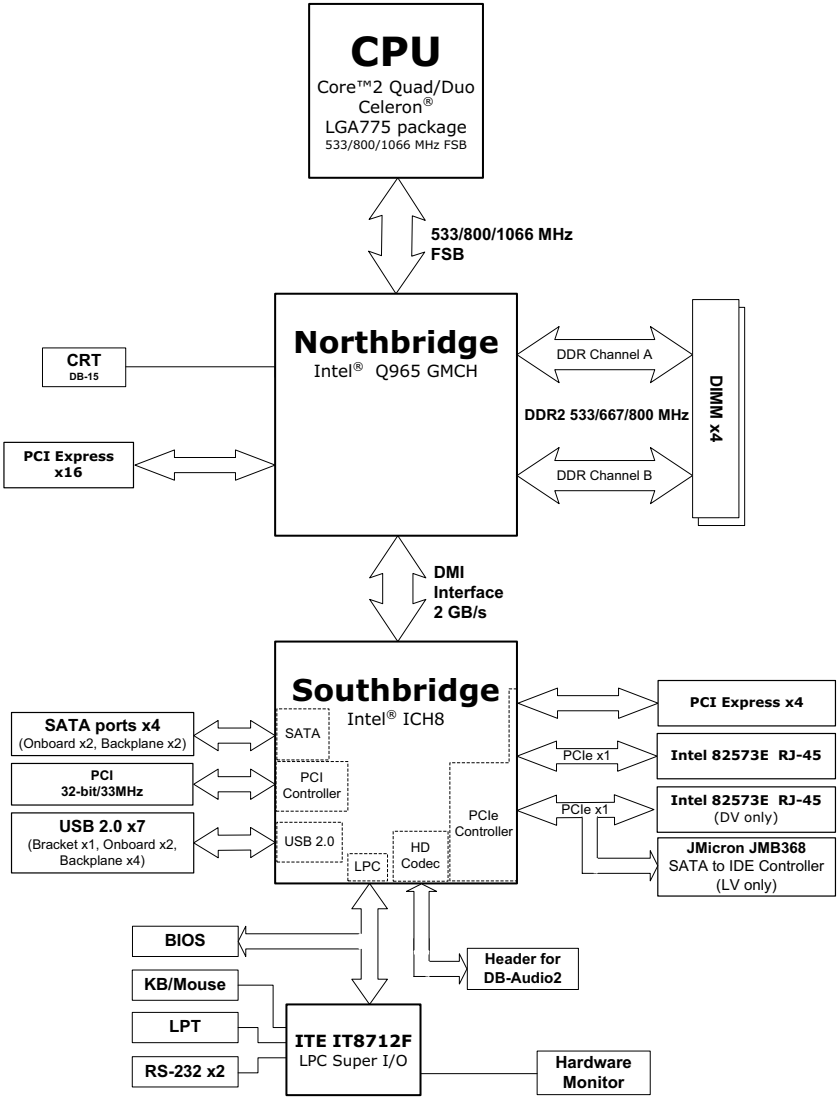


Figure 1-1: NuPRO-965 Block Diagram

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1.4 Functional Description

Advanced Processor Support

The NuPRO-965 comes with an LGA775 socket designed for Intel® Core™2 Quad/Duo processors with a 1066/800 MT/s Front Side Bus, or Intel® Pentium® Extreme Edition, Intel® Pentium® D, or Intel® Celeron® D processor with a flexible 1066/800/533 MT/s FSB setting. Built on Intel's® 65 nm process technology with copper interconnect, the Intel® Core™2 Quad/Duo processor delivers breakthrough quad-/dual-core performance and enhanced multitasking experience with efficient power consumption.

The NuPRO-965 supports quad-/dual-core processing technology when deployed with a CPU containing four/two physical cores and dedicated L2 caches to meet the ever-increasing demands of industrial computing.

Intel® Graphics Media Accelerator 3000

The Intel® Graphics Media Accelerator (GMA) 950 revolutionizes display with new capabilities that significantly increase graphics performance. With support for DirectX 9 hardware acceleration, 400 MHz core clock, and up to 256 MB of video memory, the Intel® GMA 950 provides a cost-effective, high-performance graphics solution for embedded applications. The Intel® GMA comes with the dual-independent display technology, enabling different contents to be displayed on two separate display terminals or a single content stretched across two display devices for a wider view of your workspace.

Intel® Q965 Express Chipset

The Intel® Q965 Express chipset provides the vital interfaces for the SHB. The Intel® Q965 comes with purpose-built capabilities designed specifically to address the key needs of the industrial computing environment and delivers improved system performance and comes with the integrated Intel® Graphics Media Accelerator 3000 engine that promotes advanced 3D, 2D, and video capabilities and cost-effective system building. The chipset also supports high-bandwidth interfaces including as PCI Express, Serial ATA, and USB 2.0, as well as dual-channel DDR2 system memory.

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Dual-channel DDR2 Memory

To meet the requirements of memory-intensive applications, the NuPRO-965 is designed with a dual-channel architecture that supports up to 8 GB of DDR2 800/667/533 MHz system memory. The high-bandwidth memory specification meets the requirements of the latest 3D graphics, multimedia, and network application, and boosts system performance by eliminating bottlenecks.

Compliant with SHB Express Specifications

As parallel bus architecture causes data bottlenecks on high-performance systems equipped with faster processors, chipsets, system buses, and peripheral cards, the SHB Express (PICMG 1.3) specifications replaces the PICMG 1.0 and 1.2 parallel interfaces with serial connectivity while maintaining the same mechanical footprint. The SHB Express accelerates data transfers between the board and the system, supports new-generation PCI Express modules, and features simplified power management and I/O cabling. The NuPRO-965 maintained full support for PCI an PCI-X cards, limited support for ISA, and offers a fast and cost-effective transition to SHB Express.

PCI Express

The NuPRO-965 fully supports PCI Express technology with a PCI Express x16 slot and up to four PCI Express x1 slots linked to the backplane. PCI Express is latest I/O standard that accelerates the PCI bus speed and features smaller connectors for additional board space. PCI Express allows faster data transfers through point-to-point serial interconnections between devices and by carrying data in packets. This high-speed interface is software-compatible with existing PCI specifications.

Dual Port Gigabit Ethernet Controller

The motherboard is equipped with two Intel® 82573E Gigabit Ethernet Controllers for dual port gigabit Ethernet connectivity. The gigabit Ethernet controller utilizes the PCI Express bus to deliver wider bandwidths and achieves up to 1 Gbps of data transfer rate for superior network communications. (NuPRO-965LV supports 1 GbE port only.)

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Serial ATA Technology

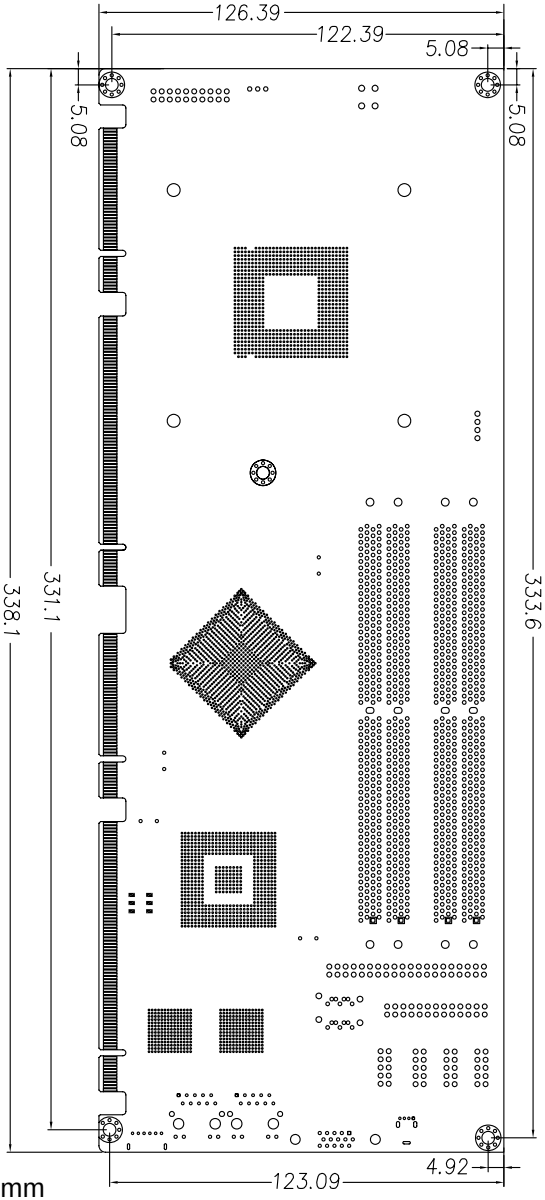
Storage is fast, efficient, and secured with the Serial ATA 3 Gb/s interface. Backed by the Intel® Q965 Express chipset, the NuPRO-965 supports up to four Serial ATA devices capable of reading/writing data at up to 3 Gbps. The SATA specification improves chassis airflow via thinner and more flexible cables with lower pin count and reduces power use.

Universal Serial Bus (USB) 2.0

The NuPRO-965 incorporates the Universal Serial Bus (USB) 2.0 specification that increases peripheral connection speed from 12 Mbps (USB 1.1) to 480 Mbps. USB 2.0 is backward compatible with USB 1.1. The NuPRO-965 supports up to seven USB 2.0 ports distributed on the faceplate (1), onboard (2), and via the backplane (4).

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1.5 Mechanical Drawing



Dimensions in mm

Figure 1-2: Mechanical Drawing

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1.6 I/O Connectivity Table

I/O	Bracket	Onboard (pin header)	Golden Finger	Remarks
USB1	Y	—	—	2.54 pitch
VGA	Y	—	—	DB-15
GbE1 (RJ-45)	Y (with LED indication)	—	—	Act/Link/Speed
GbE2 (RJ-45) (1)	Y (with LED indication)	—	—	Act/Link/Speed
PS/2 KB/MS (3)	Y	—	—	—
USB2/3	—	Y	—	2.54 pitch
USB4/5/6/7	—	—	Y	—
COM1/2	—	Y	—	2.54 pitch
Printer port	—	Y	—	—
IDE (2)	—	Y	—	—
SATA-300 1/2	—	Y	—	—
SATA-300 3/4	—	—	Y	—
PCI Express x1	—	—	Y	4 lanes
PCI Express x16	—	—	Y	—
PCI 32-bit/33 MHz	—	—	Y	4 slots

Table 1-2: I/O Connectivity Table

Note 1: NuPRO-965DV only

Note 2: NuPRO-965LV only

Note 3: Not supported on boards with ordering numbers ending in “xx60” and higher. See “PS/2 Keyboard/Mouse Port (CN15)” on page 12. for more information.

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1.7 Package Contents

Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from the dealer before returning any product to ADLINK.



The NuPRO-965 SHB must be protected from static discharge and physical shock. Never remove any of the socketed parts except at a static-free workstation. Use the anti-static bag shipped with the product to handle the board. Wear a grounded wrist strap when installing and/or servicing.

Check if the following items are included in the package.

- NuPRO-965DV or NuPRO-965LV SHB
- 2x SATA cable
- 1x SATA power cable
- 1x Print+COM cable with bracket
- 1x COM cable with bracket
- 1x 2 ports USB cable with bracket
- 1x Y-cable for PS/2 keyboard and mouse*
- ADLINK All-in-One Driver CD
- User's manual



An UltraATA 133 IDE connector is NOT available on the NuPRO-965DV (dual GbE version) as the PCIe-to-IDE controller uses the same PCI Express x1 lane as the second GbE controller (LAN 2).

Use a USB/SATA optical and hard disk drive to install Linux operating systems. IDE devices will not be recognized during Linux installation as Linux does not yet support PCIe-to-IDE controllers.



* Not supported on boards with ordering numbers ending in "xx60" and higher. See "PS/2 Keyboard/Mouse Port (CN15)" on page 12. for more information.

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2 Hardware Information

This chapter provides information on the NuPRO-965 board layout, connector pin assignments, and jumper settings.

2.1 Rear Panel I/O Ports

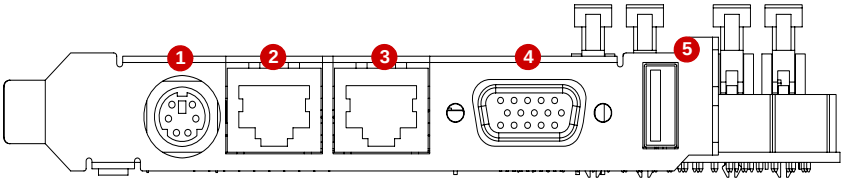
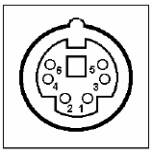


Figure 2-1: Rear Panel I/O Ports

1. **PS/2 Mouse/Keyboard port**. Connects a PS/2 mouse and keyboard (not supported on all SKUs - see note below).
2. **Gigabit LAN port (RJ-45)**. This port allows gigabit connection to a Local Area Network (LAN) using a network hub. The LAN port comes with an activity/link and speed LED. Refer to the table below for the LAN port LED indications (NuPRO-965DV only).
3. **Gigabit LAN port (RJ-45)**. This port allows gigabit connection to a Local Area Network (LAN) using a network hub. The LAN port is equipped with an activity/link and speed LEDs.
4. **VGA port**. This 15-pin port connects to a CRT or LCD monitor.
5. **USB 2.0 port**. This high-speed USB ports is available for connecting USB devices.

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PS/2 Keyboard/Mouse Port (CN15)



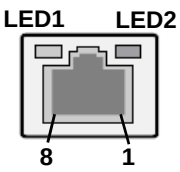
Pin #	Signal	Function
1	KBDAT	Keyboard Data
2	MSDAT	Mouse Data
3	GND	Ground
4	KBMS5V	Power
5	KBCLK	Keyboard Clock
6	MSCLK	Mouse Clock

NOTE:

* Not supported on boards with ordering numbers ending in "xx60" and higher. See "External Keyboard/Mouse Connector (CNY3)" on page 20. for information on how to use a PS/2 cable with bracket.

LAN (RJ-45) Ports (CN11, CN13)

(NuPRO-965LV supports 1 GbE port only)



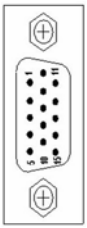
Pin #	10BASE-T/ 100BASE-TX	1000BASE-T
1	TX+	BI_DA+
2	TX-	BI_DA-
3	RX+	BI_DB+
4	--	BI_DC+
5	--	BI_DC-
6	RX-	BI_DB-
7	--	BI_DD+
8	--	BI_DD-

LED1		LED2	
Status	Description	Status	Description
Off	No Link	Off	10 Mb connection
On	Linked	Green	100 Mb connection
Blinking	Data Activity	Amber	1 Gb connection

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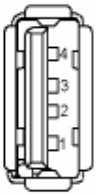
VGA Port (CN9)

Connects a CRT or LCD monitor.



Pin #	Signal
1	Red
2	Green
3	Blue
4	NC
5	Ground
6	Ground
7	Ground
8	Ground
9	+5 V
10	Ground
11	NC
12	DDC DAT
13	HSYNC
14	VSYNC
15	DDC CLK

USB Connector (CN6)



Pin #	Signal Name
1	Vcc
2	Data-
3	Data+
4	GND

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2.2 Board Layout

The illustrations below show the location of connectors, slots, and jumpers on the NuPRO-965.

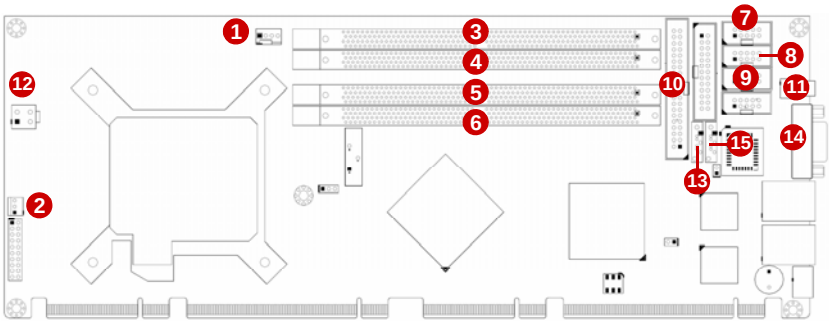


Figure 2-2: Board Layout Pt. 1

	Connector	Description
1	FN1	4-pin CPU fan connector
2	FNY1	3-pin system fan connector
3	J1	240-pin DDR2 DIMM 1
4	J2	240-pin DDR2 DIMM 2
5	J3	240-pin DDR2 DIMM 3
6	J4	240-pin DDR2 DIMM 4
7	CN1	Serial port (COM2) connector
8	CN3	Serial port (COM1) connector
9	CN4	USB port connector
10	CN5	40-pin IDE connector (only on NuPRO-965LV)
11	CN6	USB 2.0 port
12	CN7	4-pin ATX 12V power connector
13	CN8	Serial ATA connector
14	CN9	VGA port
15	CN10	Serial ATA connector

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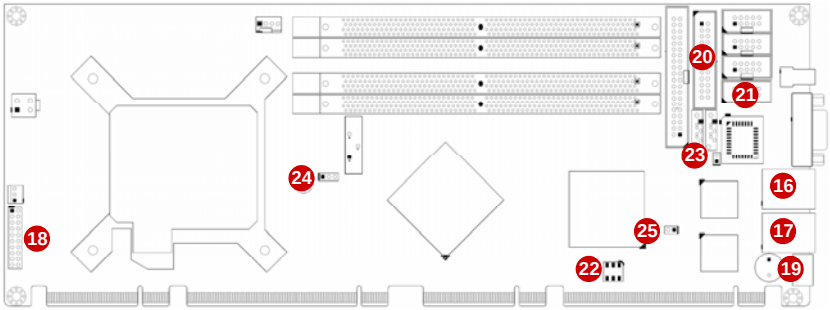


Figure 2-3: Board Layout Pt. 2

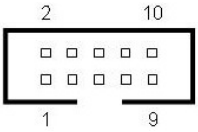
	Connector	Description
16	CN11	LAN port
17	CN13	LAN port (only on NuPRO-965DV)
18	CN14	20-pin system panel connector
19	CN15	PS/2 keyboard/mouse port
20	CNY1	Parallel port connector
21	CNY2	High-definition audio connector (for DB-Audio2)
22	CNY3	External keyboard/mouse connector
23	JP5	Chassis intrusion connector
24	JP7	CMOS Clear jumper
25	JP8	Temperature sensor connector

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2.3 Onboard Connectors

Serial Port (COM) Connector (CN1/CN3)

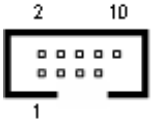
Connects a serial port bracket for an additional COM port.



Pin #	Signal	Functions
1	DCD	Data Carrier Detect
2	DSR	Data Set Ready
3	RXD	Receive Data
4	RTS	Request to Send
5	TXD	Transmit Data
6	CTS	Clear to Send
7	DTR	Data Terminal Ready
8	RI	Ring Indicate
9	GND	Ground
10	NC	No Connect

USB 2.0 Connector (CN4)

Connects a USB port bracket for two additional USB 2.0 ports.

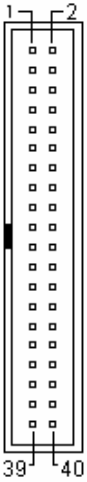


Pin #	Signal	Pin #	Signal
1	+5V	2	+5V
3	Data 1 -	4	Data 2 -
5	Data 1 +	6	Data 2 +
7	GND	8	GND
9	Key	10	NC

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IDE Connector (CN5)

This interface is for the bundled UltraATA 100 cable that connects up to two IDE devices.

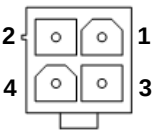


Pin #	Signal	Pin #	Signal
1	Reset IDE	2	Ground
3	Host data 7	4	Host data 8
5	Host data 6	6	Host data 9
7	Host data 5	8	Host data 10
9	Host data 4	10	Host data 11
11	Host data 3	12	Host data 12
13	Host data 2	14	Host data 13
15	Host data 1	16	Host data 14
17	Host data 0	18	Host data 15
19	Ground	20	NC
21	DDREQ	22	Ground
23	Host IOW	24	Ground
25	Host IOR	26	Ground
27	IOCHRDY	28	IDE_DIAG
29	DDACK-L	30	Ground
31	IRQ	32	No connect
33	Address 1	34	PDIAGnA
35	Address 0	36	Address 2
37	Chip select 0	38	Chip select 1
39	Activity	40	Ground

ATX 12V Power Connector (CN7)

Connects the 4-pin power plug from the power supply unit.

IMPORTANT Do not forget to connect the 4-pin power plug to this connector. Otherwise, the system will not turn on.



Pin #	Signal
1	GND
2	GND
3	+12V DC
4	+12V DC

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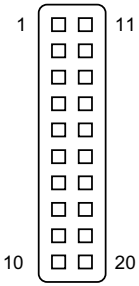
Serial ATA Connectors (CN8, CN10)



Pin #	Signal
1	GND
2	TXP (A +)
3	TXN (A -)
4	GND
5	RXN (B -)
6	RXP (B +)
7	GND

System Panel Connector (CN14)

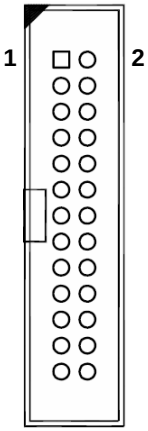
Connects to chassis-mounted buttons, speakers, and LEDs.



Pin #	Signal	Function	Pin Group
1	WDSPK	Speaker signal	Chassis Speaker
2	NC		
3	NC		
4	+5V	Power	
5	NC		
6	GND	Ground	Key Lock
7	KEYLOCK	Keyboard lock	
8	PLED	Power LED signal	Power LED
9	NC		
10	+5V	Power LED pull-up	
11	GND	Ground	Reset Button
12	RESETBT	RESET signal	
13	NC		
14	GND	Ground	Power Button
15	POWERBT	Power-on signal	
16	NC		
17	NC		
18	HDDLED	Hard Disk LED signal	HDD LED
19	+3.3V	Hard Disk LED pull-up	
20	NC		

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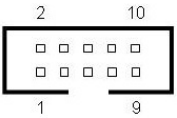
Parallel Port Connector (CNY1)



Pin #	Signal	Pin #	Signal
1	Line Printer Strobe	2	Auto-Feed
3	Parallel Data 0	4	Error
5	Parallel Data 1	6	Initialize
7	Parallel Data 2	8	Select
9	Parallel Data 3	10	Ground
11	Parallel Data 4	12	Ground
13	Parallel Data 5	14	Ground
15	Parallel Data 6	16	Ground
17	Parallel Data 7	18	Ground
19	Acknowledge	20	Ground
21	Busy	22	Ground
23	Paper Empty	24	Ground
25	Select	26	NC

High-definition Audio Connector (CNY2)

For chassis with front panel audio ports, use this connector to attach the front panel audio I/O daughterboard.

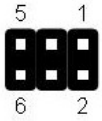


Pin #	Signal	Function
1	GND	Ground
2	AUD_BCLK	Audio Clock
3	GND	Ground
4	ACZ_SDI0	Audio Data Input
5	P5V	+ 5V
6	AUD_SDO	Audio Data Output
7	P5V	+ 5V
8	P3V3_DVDD	3.3V
9	AUD_SYNC	Audio Synchronous
10	AUD_RST-L	Audio Reset

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External Keyboard/Mouse Connector (CNY3)

For use with PS/2 cable with bracket (P/N: 30-01019-2000).

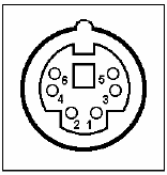


Pin #	Signal	Function
1	KDAT	Keyboard data
2	KCLK	Keyboard clock
3	MDAT	Mouse data
4	MCLK	Mouse data
5	P5V_KM	+5 V
6	GND	Ground

For boards without a Mini-DIN PS/2 KB/MS connector, customers wishing to use a PS/2 type keyboard and mouse may purchase a PS/2 cable with bracket (P/N: 30-01019-2000) which connects to CNY3.

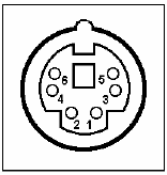


PS/2 Mouse Port on bracket (green)



Pin #	Signal	Function
1	MSDATA	Mouse Data
2	NC	not connected
3	GND	Ground
4	+5V	Power
5	CLK	Clock
6	NC	not connected

PS/2 Keyboard Port on bracket (purple)



Pin #	Signal	Function
1	KBDATA	Keyboard Data
2	NC	not connected
3	GND	Ground
4	+5V	Power
5	CLK	Clock
6	NC	not connected

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CPU Fan Connector (FN1)

This 4-pin header connects the CPU fan.

IMPORTANT Do not forget to connect the CPU fan cable plug to this 4-pin connector



Pin #	Signal
1	GND
2	Fan power (+12V)
3	Fan Tachometer
4	Fan Speed Control

System Fan Connector (FNY1)

This 3-pin header connects the system/chassis fan**)**



Pin #	Signal
1	Fan Sense
2	Fan power (+12V)
3	GND

Chassis Intrusion Connector (JP5)

This header is connected to the chassis limit switch sensor to detect if the case is opened.



Pin #	Signal	Function
1	GND	Ground
2	CASEOPEN#	Case open signal

Temperature Sensor Connector (JP8)

This header is connected to a thermal sensor to monitor the system temperature.



Pin #	Signal	Function
1	TMPIN	Thermal voltage
2	GND	Ground

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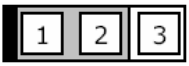
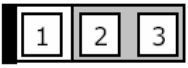
2.4 Jumpers

Clear RTC RAM (JP7)

The JP7 jumper enables you to clear the Real Time Clock (RTC) RAM stored in the CMOS chip. You may clear the CMOS memory of date, time, and system passwords by erasing the CMOS RTC RAM data. The button cell battery on the motherboard powers the RAM data in CMOS, including system setup information such as system passwords.

To erase the RTC RAM using the JP7 jumper:

1. Turn the system off, then unplug the power cord.
2. Remove the onboard cell battery.
3. Remove the jumper cap from pins 1-2 (default), then short pins 2-3 for about 10 seconds.
4. Replace the jumper cap on pins 1-2.
5. Re-install the cell battery, plug the power cord then turn the computer on.
6. Enter the BIOS Setup during the boot sequence to re-enter RTC data such as time, date, etc.

RTC status	Connection	JP7
Normal	1 – 2	
Clear CMOS	2 – 3	

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3 Getting Started

This chapter provides information on how to install components to the NuPRO-965 motherboard. Sections discussing the BIOS setup and operating system installation are also found in this chapter.

3.1 Installing the CPU

The NuPRO-965 supports an Intel® Core™2 Duo, Pentium® Extreme Edition, Pentium® D, and Celeron® D processor via the surface mount LGA775 socket (Socket T).

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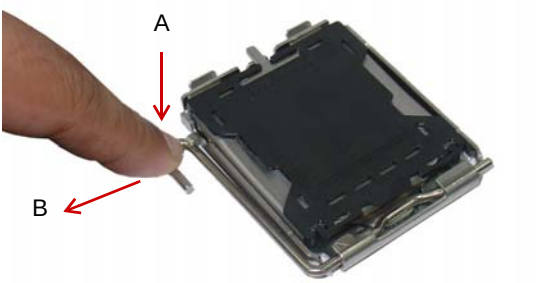
Disconnect all power supply to the board before installing a CPU to prevent damaging the board and CPU.

Do not touch socket contacts. Damaging the contacts voids the product warranty. Follow the installation instructions carefully to avoid damaging SHB components.



To install the CPU:

1. Press the load lever (A), then disengage it from the retention tab (B).



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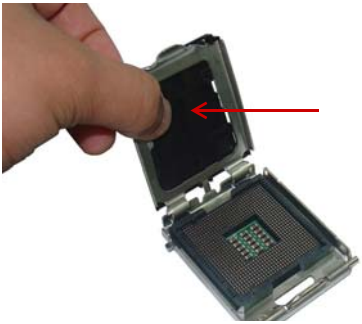
2. Lift and rotate the load lever to a 135° angle.



3. Lift the load plate to a 100° angle using your thumb and forefinger.

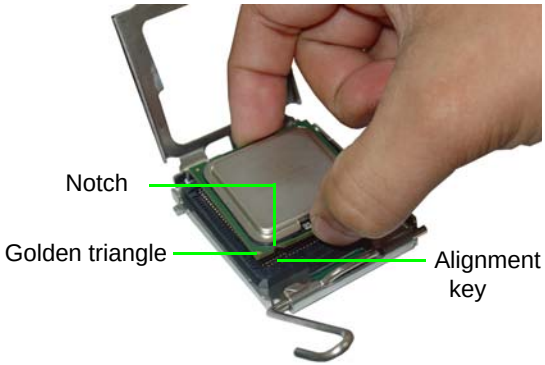


4. Use your thumb to push and remove the protective socket cover (plastic) from the load plate.



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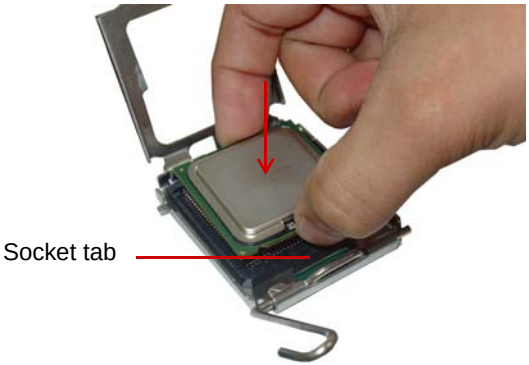
5. Position the CPU over the socket, then match the notches on the CPU side with the alignment keys on the socket. The golden triangle on the CPU must be positioned on the bottom-left corner of the socket.



WARNING:

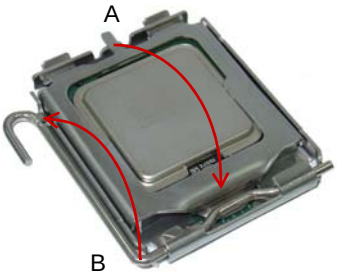
The CPU fits the socket in only one orientation. DO NOT force it into the socket to avoid damaging it.

6. Carefully place the CPU on the socket in a vertical motion. The socket has tabs that accommodate your fingers during installation.



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7. Close the load plate (A), then fasten the load lever on the retention tab (B).



NOTE:

In order to boot up the system with a newly-installed CPU, standby power must not be applied to the board before installation.

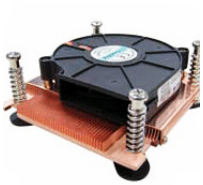
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3.2 Installing the CPU Fan and Heatsink

CAUTION:

The CPU requires a chassis with an airflow inlet and maximum internal ambient temperature of 60° C. A especially-designed CPU fan and heatsink must be installed before using the motherboard. Failure to install a CPU fan and heatsink may damage the system host board and/or the CPU.

The following CPU fan and heatsink assemblies are recommended for use with the NuPRO-965:



1U LGA 775 CPU Cooler
Dimensions:
- Heatsink: 92 x 87.6 x 28 mm
- Fan: 75 x 75 x 15 mm

Heatsink: Copper base + copper skived fin
Fan speed: 5500 RPM
Fan airflow: 10.48 CFM
Noise level: 51 dBA
Part number: 32-20065-0000



2U LGA 775 CPU Cooler
Dimensions:
- Heatsink: 89 x 83 x 68 mm
- Fan: 60 x 60 x 25 mm

Heatsink: Copper base + copper skived fin
Fan speed: 6800 RPM
Fan airflow: 35.3 CFM
Noise level: 46 dBA
Part number: 32-20066-0000



3U LGA 775 CPU Cooler
Dimensions:
- Heatsink: 100 x 100 x 70 mm
- Fan: 90 x 90 x 25 mm

Heatsink: Aluminum extrusion
Fan speed: 4500 RPM
Fan airflow: 57.7 CFM
Noise level: 47.5 dBA
Part number: 32-20058-0000 + 34-30381-0000

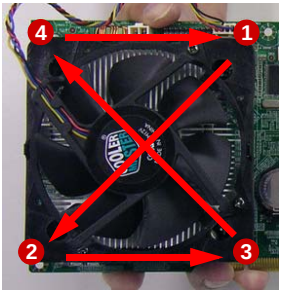
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CPU Fan/Heatsink Installation

When the CPU fan/heatsink installation procedures presented here are inconsistent with the installation procedures included with the CPU fan and heatsink package, follow the latter.

To install the CPU fan/heatsink:

1. Attach the backplate included with the fan/heatsink to the bottom side of the SHB. If necessary, remove the paper strip(s) from the self-adhesive pads to secure the backplate to the SHB.
2. Remove the cover or plastic protector from the CPU-side of the heatsink if necessary. The heatsink may have a thermal interface material pre-applied. If not, a packet of thermal grease will be supplied with the heatsink. Apply thermal grease evenly on top of the installed CPU if required.
3. Carefully lower the CPU fan/heatsink onto the CPU and align the captive screws with the mounting holes of the backplate. Ensure the fan cable is on the side closest to the fan connector. Begin threading each screw into the backplate, then gradually tighten the screws in a criss-cross pattern until they are fully secured (see diagram below).



CAUTION:

Fully tightening a screw at one corner before beginning to tighten the other screws may cause uneven pressure to be applied to the CPU and damage the component and/or SHB.

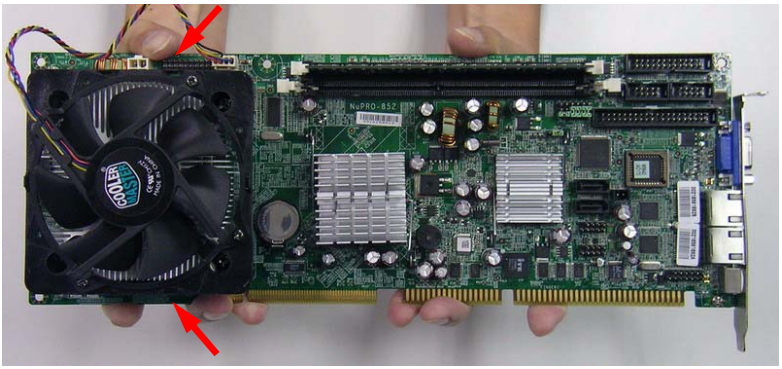
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4. Connect the CPU fan cable to the CPU fan connector on the SHB labeled FN1 (see Board Layout on page 14).

Note: Do not use fan/heatsinks with *push-pin* type attachments. They may exert too much tension on the PCB and cause the board to flex, resulting in damage to the SHB.

Holding the SHB with Fan/Heatsink Installed

When the fan/heatsink is installed, always hold the SHB with two hands by the card edges. Make sure to support the weight of the fan/heatsink to prevent the board from bending, resulting in damage to circuitry and/or components.



CAUTION:

Failure to properly support the weight of the fan/heatsink assembly when installed on the SHB may cause the board to flex and result in damage to circuitry and/or components.

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3.3 Installing the Memory Module

The NuPRO-965 supports up to 4 GB of DDR2 800/667/533 MHz memory modules via four DDR2 DIMM sockets. A DDR2 module has a 240-pin footprint compared to the legacy 184-pin DDR DIMM. DDR2 modules are notched to facilitate correct installation on the DIMM sockets.

Memory Configuration Options

The NuPRO-965 allows you to install 256 MB, 512 MB and 1GB unbuffered non-ECC DDR2 DIMMs into the DIMM sockets following these configuration options:

- Channel A: DIMM1 (J1) and DIMM2 (J2)
  Channel B: DIMM3 (J3) and DIMM4 (J4)
- For dual-channel configuration, the total size of memory module(s) installed per channel must be the same (J1 + J2 = J3 + J4).
- It is recommended that you install DIMMs with the same CAS latency. For maximum compatibility, install memory modules with the same brand, model, and/or rating.

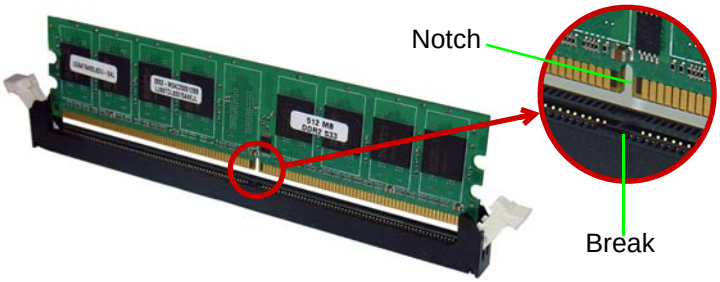
To install a memory module:

1. Locate the DIMM slots on the motherboard (J1, J2, J3, J4).
2. Press the socket's retaining clips outward to unlock.

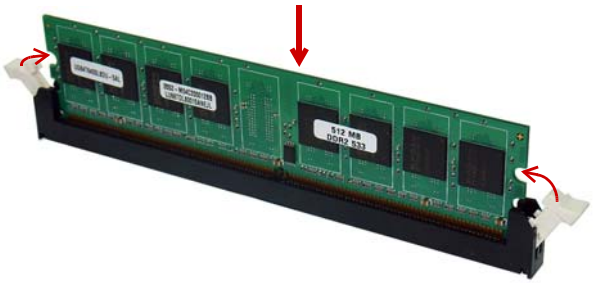


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3. Align the memory module on the socket making sure that the notch matches the break on the socket.



4. Insert the module firmly into the slot until the retaining clips snap back inwards and the module is securely seated.



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4 Driver Installation

This chapter provides information on how to install the NuPRO-965 device drivers under Windows 2000/XP. When installing drivers for non-Windows operating systems, refer to the instructions in the ADLINK All-in-One CD. The device drivers are located in the following ADLINK All-in-One CD directories:

Chipset driver	\Industrial Motherboard\NuPRO-965\Chipset\
Display driver	\Industrial Motherboard\NuPRO-965\VGA\
LAN driver	\Industrial Motherboard\NuPRO-965\Ethernet\
Audio driver	\Industrial Motherboard\NuPRO-965\Audio

4.1 Intel® Q965 Express Chipset Drivers

This section describes the installation of the Intel® Q965 Express chipset driver.

1. Check if your system meets the minimum requirements. Windows 2000/XP OS must be fully installed and running normally on the system before installing the chipset drivers.
2. Close all running applications.
3. Make sure that the files are stored in an integrated application setup program. This program allows the OS to install INF files.
4. Locate the directory **X:\Industrial Motherboard\NuPRO-965\Chipset** from the ADLINK All-in-One CD, select the operating system, then start the installation by double-clicking **Setup.exe**.
5. When the initial installation window appears, click **Next** to display the license agreement. When prompted, click **Yes** to continue. (Clicking **No** on the license agreement window terminates the installation.)
6. Click **Next** on the Readme Information screen to begin installing the INF files.
7. When installation is complete, click **Finish**. Restart the system when prompted.

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8. After restart, follow screen instructions to complete installation. Windows displays a found new hardware window and automatically installs the required drivers. If the **New Hardware Found** dialog box appears and prompts you to locate the location of the drivers, point it to the relevant directory.
9. Restart the system when prompted.

4.2 Display Drivers

This section tells you how to install the Intel® Graphics Media Accelerator (GMA) 3000 drivers.

To install the display drivers:

1. Place the ADLINK All-in-One CD to the optical drive.
2. Locate the display drivers from this directory **X:\Industrial Motherboard\NuPRO-965\VGA**, then double-click on the **win2k_xp1425.exe** file to start installation.
3. Follow screen instructions to complete installation, then restart the system when prompted.

4.3 LAN Drivers

Follow these instructions to install the LAN driver.

1. Place the ADLINK All-in-One CD to the optical drive.
2. Locate the LAN drivers from the directory **X:\Industrial Motherboard\NuPRO-965\Ethernet**, then double-click on the **PRO2KXP.exe** file to start installation.
3. Follow screen instructions to complete installation, then restart the system when prompted.

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4.4 Audio Drivers

Follow these instructions to install the audio driver.

1. Place the ADLINK All-in-One CD to the optical drive.
2. Locate the audio drivers from the directory **X:\Industrial Motherboard\NuPRO-965\Audio**, then double-click on the **SETUP.exe** file to start installation.
3. Follow screen instructions to complete installation, then restart the system when prompted.

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5 BIOS Setup

The following chapter describes basic navigation for the AMIBIOS®8 BIOS setup utility.

NOTE: The BIOS setup screens and descriptions in this chapter are for reference purposes only, and may not exactly match the BIOS version of your system.

5.1 Starting the BIOS

To enter the setup screen, follow these steps:

1. Power on the system
2. Press the < Delete > key on your keyboard when you see the following text prompt:
   < Press DEL to run Setup >
3. After you press the < Delete > key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as Chipset and Power menus.



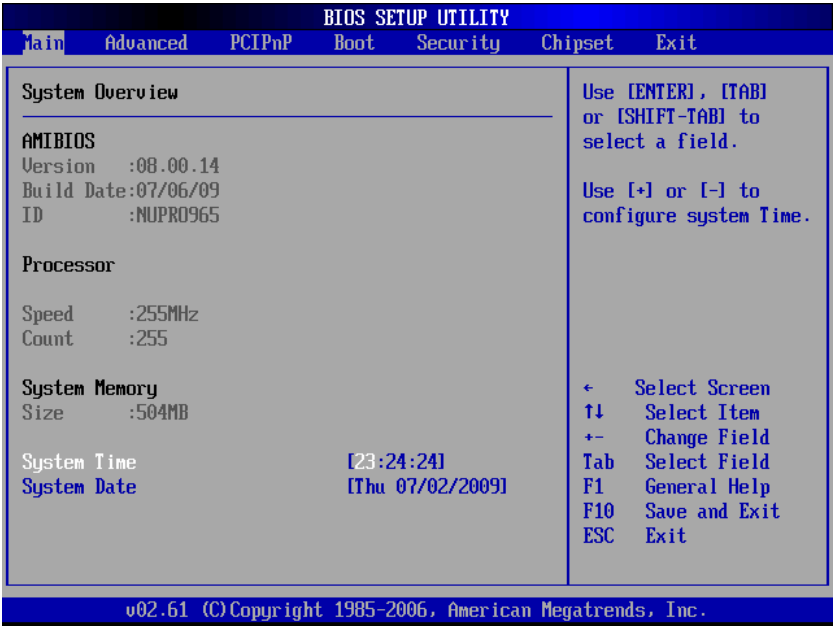
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Setup Menu

The main BIOS setup menu is the first screen that you can navigate. Each main BIOS setup menu option is described in this user's guide.

The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. "Grayed" options cannot be configured, "Blue" options can be.

The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

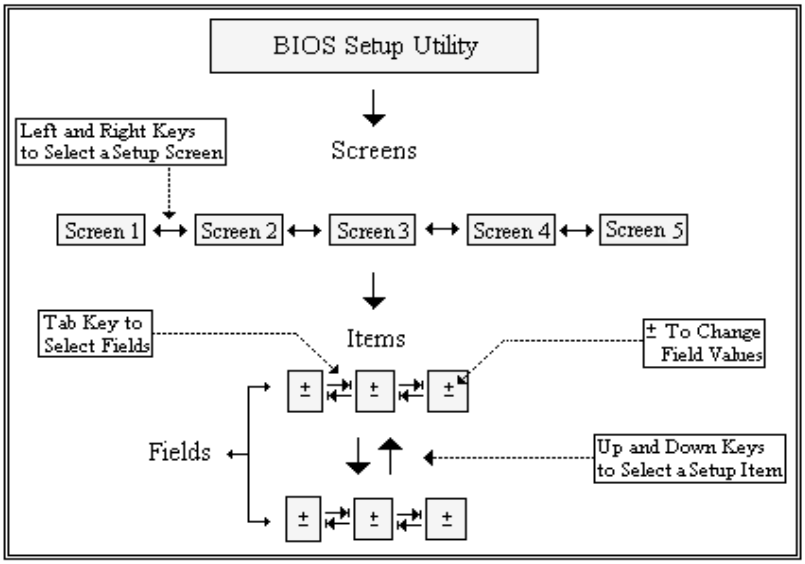


Navigation

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.

These keys include < F1 >, < F10 >, < Enter >, < ESC >, < Arrow > keys, and so on. .

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Note: There is a hot key legend located in the right frame on most setup screens.

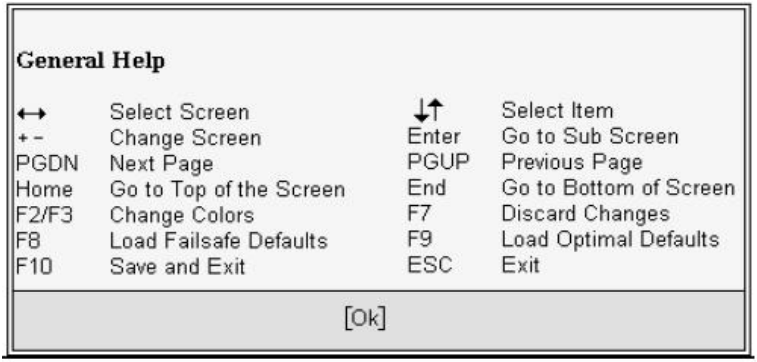
The < F8 > key on your keyboard is the Fail-Safe key. It is not displayed on the key legend by default. To set the Fail-Safe settings of the BIOS, press the < F8 > key on your keyboard. It is located on the upper row of a standard 101 keyboard. The Fail-Safe settings allow the system to boot up with the least amount of options set. This can lessen the probability of conflicting settings.

Hotkey Descriptions

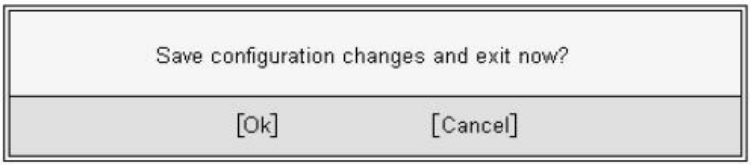
F1 The < F1 > key allows you to display the General Help screen.

Press the < F1 > key to open the General Help screen.

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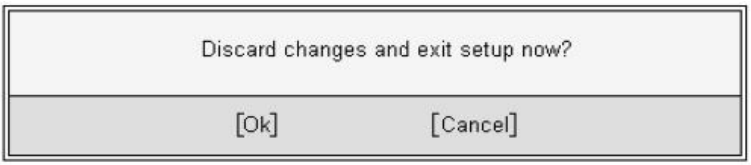


F10 The < F10 > key allows you to save any changes you have made and exit Setup. Press the < F10 > key to save your changes. The following screen will appear:



Press the < Enter > key to save the configuration and exit. You can also use the < Arrow > key to select Cancel and then press the < Enter > key to abort this function and return to the previous screen.

ESC The < Esc > key allows you to discard any changes you have made and exit the Setup. Press the < Esc > key to exit the setup without saving your changes. The following screen will appear:



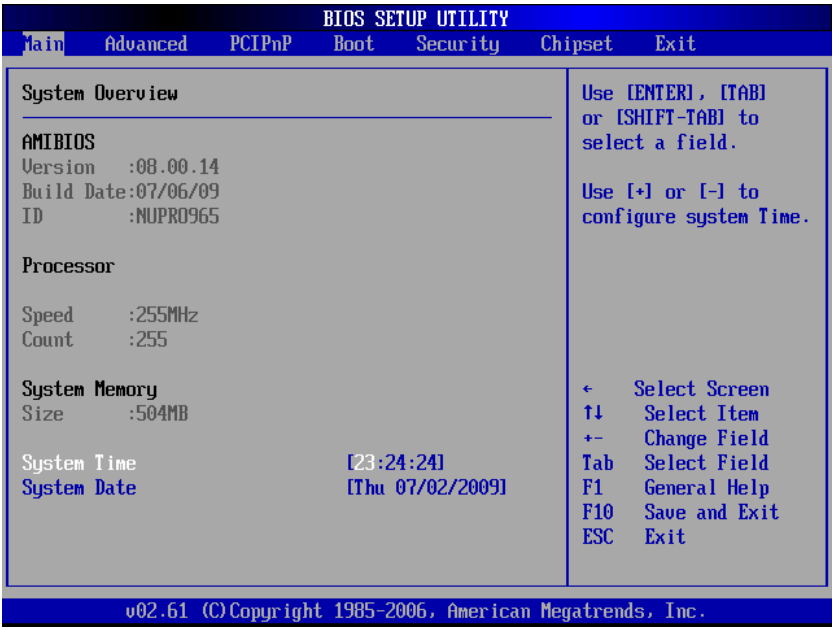
Press the < Enter > key to discard changes and exit. You can also use the < Arrow > key to select Cancel and then press the < Enter > key to abort this function and return to the previous screen.

Enter The < Enter > key allows you to display or change the setup option listed for a particular setup item. The < Enter > key can also allow you to display the setup sub-screens.

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5.2 Main Setup

When you first enter the Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.



System Time/System Date

Use this option to change the system time and date. Highlight System Time or System Date using the < Arrow > keys. Enter new values using the keyboard. Press the < Tab > key or the < Arrow > keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

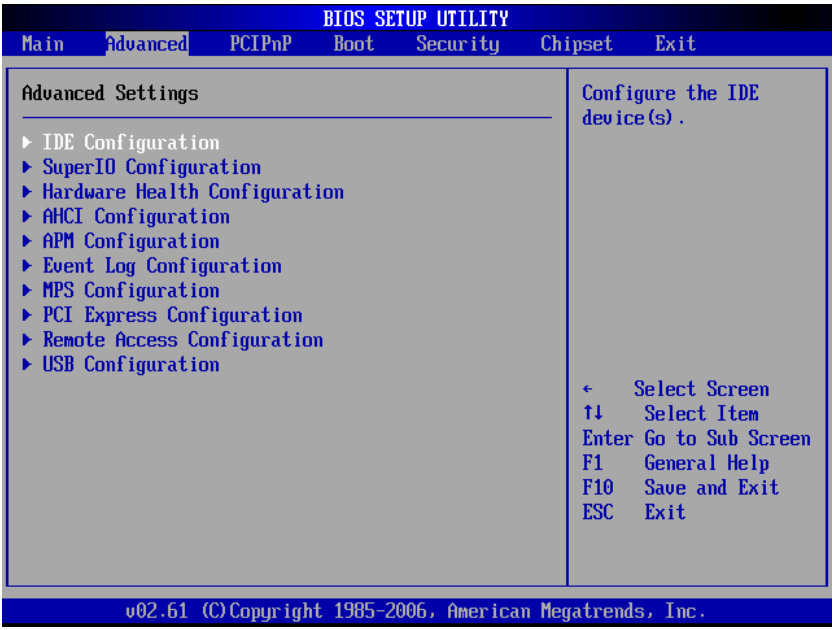
Note: The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

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5.3 Advanced BIOS Setup

Select the Advanced tab from the setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as SuperIO Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the < Arrow > keys. The Advanced BIOS Setup screen is shown below.

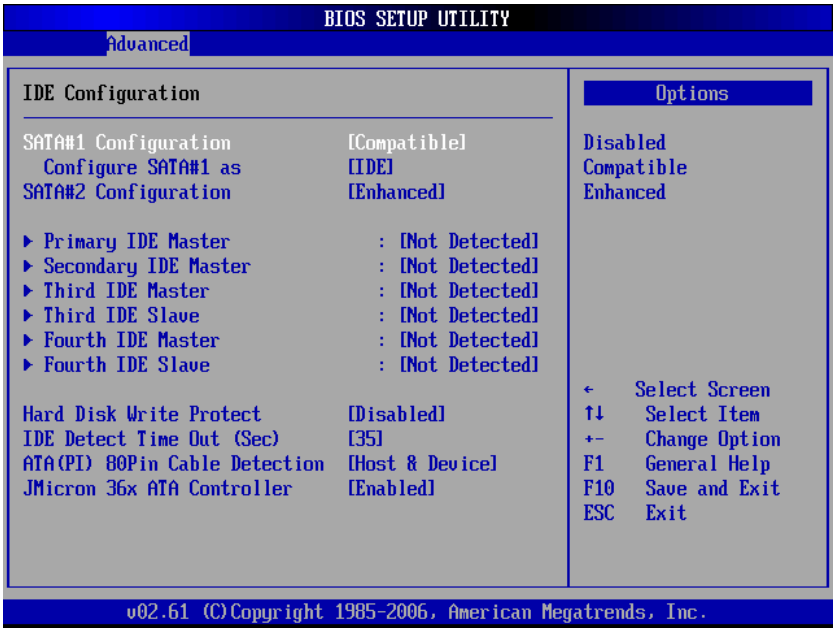
The sub menus are described on the following pages.



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5.3.1 IDE Configuration

You can use this screen to select options for the IDE Configuration Settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. The IDE Configuration screen is shown below.



SATA#1/2 Configuration

This item specifies which mode the SATA channels should be initialized in. The settings are **Disabled**, **Compatible** and **Enhanced**. In Compatible mode, the SATA channel can be configured as a legacy IDE channel. In Enhanced mode, the SATA channel can have its own dedicated IDE channel.

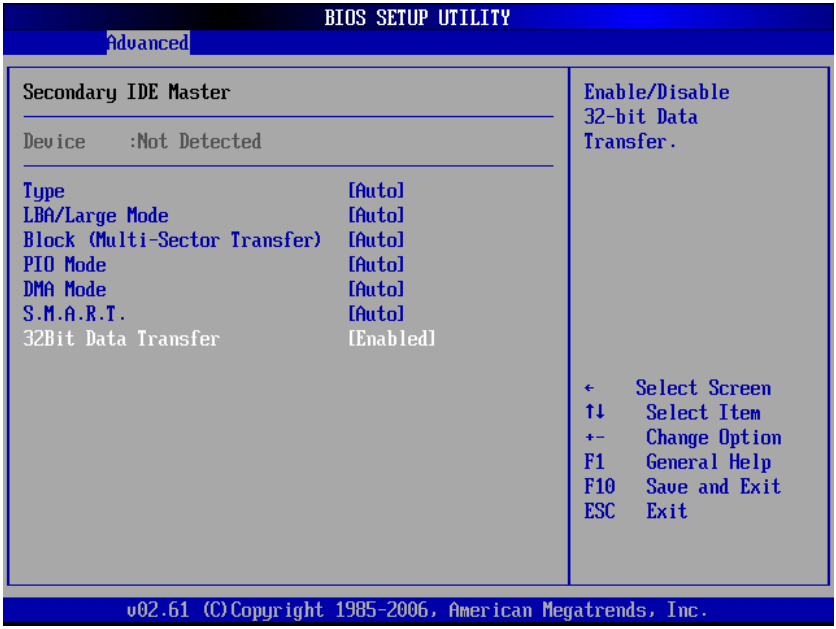
Configuration SATA#1 as

This option allows you to select ‘IDE’ or ‘AHCI’ configuration for SATA devices.

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IDE Master/Slave

Select one of the hard disk drives to configure it. Press < Enter > to access its sub menu.



Type

This option sets the type of device that the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) has completed. Options: Not Installed, Auto, CDROM, ARMD (ATAPI Removable Media Device, e.g. ZIP, LS-120). The Optimal and Fail-Safe default setting is Auto.

LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB. Options: Disabled, Auto. The Optimal and Fail-Safe default setting is Auto.

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Block (Multi-Sector Transfer)

This option sets the block mode multi sector transfers option. Options: Disabled, Auto. The Optimal and Fail-Safe default setting is Auto.

PIO Mode

IDE PIO (Programmable I/O) mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases and the data transfer rate increases. Options: Auto, PIO mode 0 (3.3 MBs), PIO mode 1 (5.2 MBs), PIO mode 2 (8.3 MBs), PIO mode 3 (11.1 MBs), PIO mode 4 (16.6 MBs). The Optimal and Fail-Safe default setting is Auto.

DMA Mode

This setting allows you to adjust the DMA mode options. Options: Auto, SWDMA0, SWDMA1, SWDMA2, MWDMA0, MWDMA1, MWDMA2, UDMA0, UDMA1, UDMA2, UDMA3, UDMA4, UDMA5, UDMA6. The Optimal and Fail-Safe default setting is Auto.

S.M.A.R.T. for Hard disk drives

Self-Monitoring Analysis and Reporting Technology (SMART) feature can help predict impending drive failures. Options: Auto, Disabled, Enabled. The Optimal and Fail-Safe default setting is Auto.

32Bit Data Transfer

This option sets the 32-bit data transfer option. Options: Disabled, Enabled. The Optimal and Fail-Safe default setting is Enabled.

Hard Disk Write Protect

Set this option to protect the hard disk drive from being overwritten. Options: Disabled, Enabled. The Optimal and Fail-Safe default setting is Disabled.

IDE Detect Time Out (Sec)

Set this option to stop the AMIBIOS from searching for IDE devices within the specified number of seconds. This allows

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you to fine-tune the settings to allow for faster boot times. Adjust this setting until a suitable timing that can detect all IDE disk drives attached is found. Options: 0, 5, 10, 15, 20, 25, 30, 35. The Optimal and Fail-Safe default setting is 35.

ATA(PI) 80Pin Cable Detection

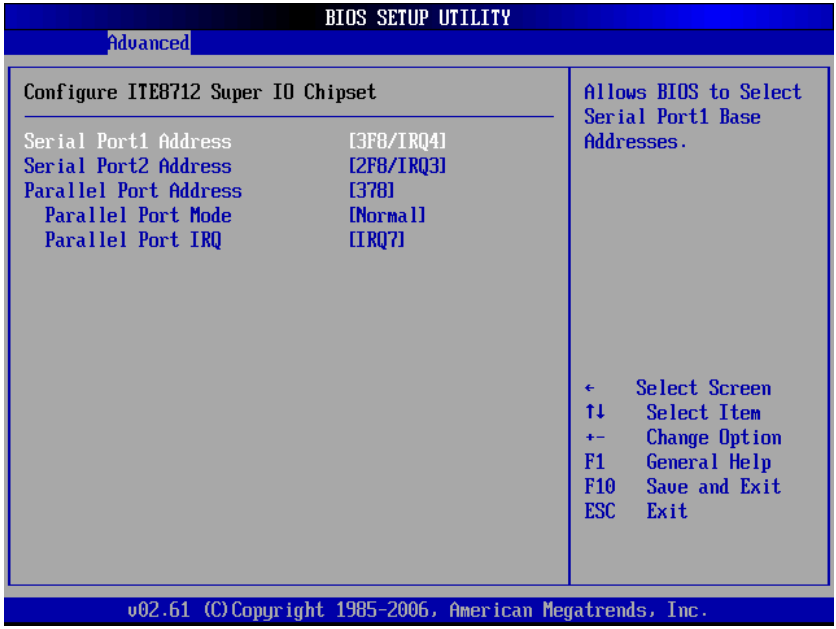
Set this option to select the method used to detect the ATA (PI) 80 pin cable. The Optimal and Fail-Safe setting is Host & Device.

JMicron 36x ATA Controller

Set this option to select Enabled or Disabled JMicrom 36x ATA Controller. The Optimal and Fail-Safe default setting is Enabled.

5.3.2 Super IO Configuration

You can use this screen to select options for the Super IO settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. The screen is shown below.



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Serial Port1 Address

Select an address and a corresponding interrupt for Serial Port1. Options: 3F8/IRQ4, 3E8/IRQ4, 2F8/IRQ3, 2E8/IRQ3, Disabled.

Serial Port2 Address

This option specifies the base I/O port address and Interrupt Request address of Serial Port2. The settings of Serial Port2 are the same as Serial Port1. However, the setting used by Serial Port1 will not be available for Serial Port2. For example, if Serial Port1 uses 3F8/IRQ4, the option, the 3F8/IRQ4 will not appear in the options of Serial Port2.

Parallel Port Address

Selects the I/O address for the parallel port. Options: 378, 278, 3BC, Disabled.

Parallel Port Mode

This option specifies the parallel port mode.

- **Normal**: Set this value to allow the standard parallel port mode to be used.
- **EPP**: The parallel port can be used with devices that adhere to the Enhanced Parallel Port (EPP) specification. EPP uses the existing parallel port signals to provide asymmetric bi-directional data transfer driven by the host device.
- **ECP**: The parallel port can be used with devices that adhere to the Extended Capabilities Port (ECP) specification. ECP uses the DMA protocol to achieve data transfer rates up to 2.5 Megabits per second. ECP provides symmetric Bi-directional communication.
- **EPP+ECP:** Allow the parallel port to support both the ECP and EPP modes simultaneously.

Parallel Port IRQ

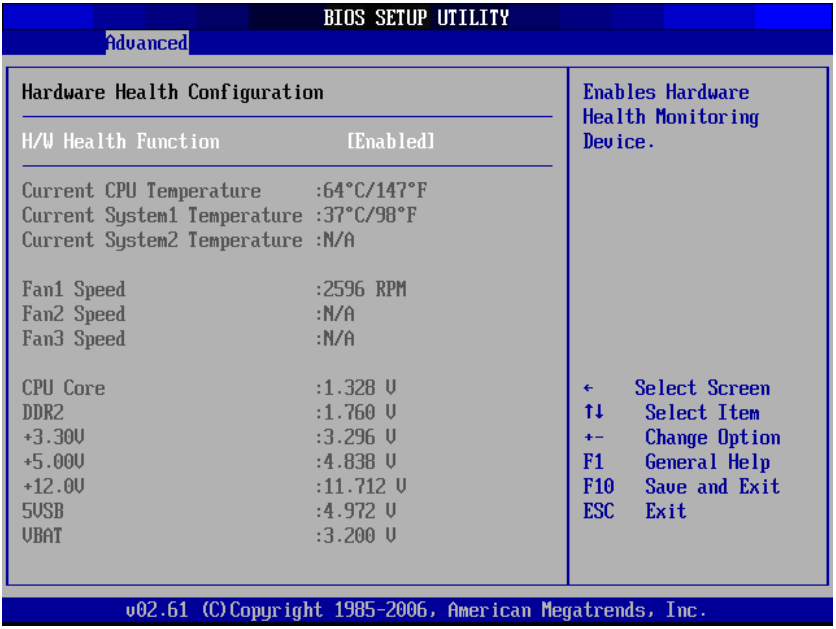
This option specifies the IRQ used by the parallel port.

- **IRQ5:** Set this value to allow the serial port to use Interrupt 5.
- **IRQ7:** Set this value to allow the serial port to use Interrupt 7. The majority of parallel ports on computer systems use IRQ7 and I/O Port 378H as the standard setting.

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5.3.3 Hardware Health Configuration

This option displays the current status of all of the monitored hardware devices / components such as voltages and temperatures.



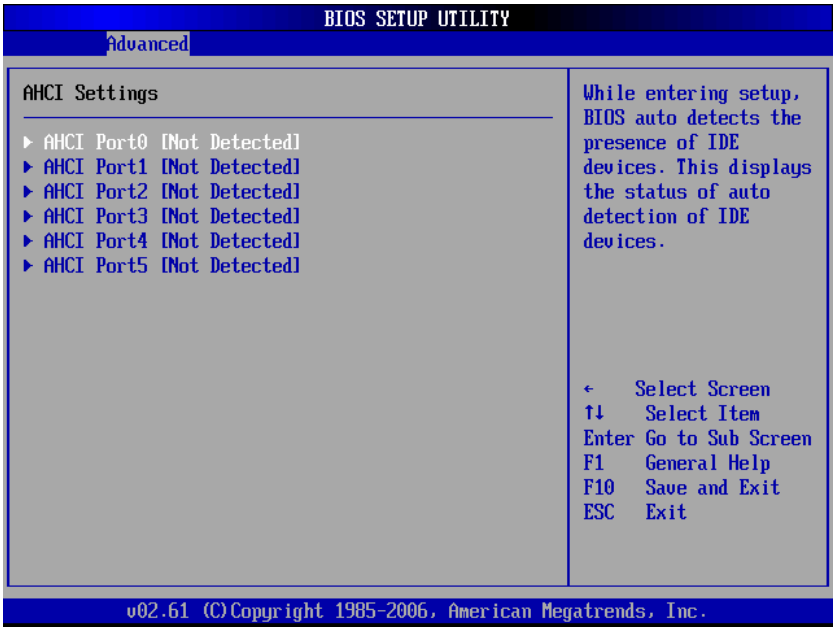
H/W Health Function

Set this option to enable or disable the H/W Health monitoring function.

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5.3.4 AHCI Configuration

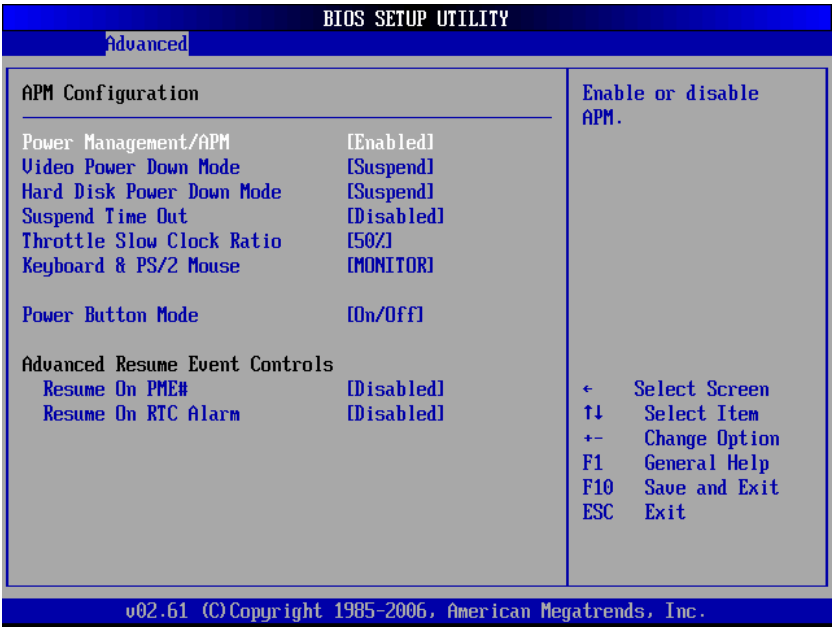
This option is reserved for OEM applications.



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5.3.5 APM Configuration

Select the Advanced tab from the setup screen to enter the APM Configuration Setup screen. You can display the APM Setup options by highlighting it using the < Arrow > keys.



Power Management/APM

Set this option to allow Power Management/APM support. The Optimal and Fail-Safe default setting is Enabled.

Video Power Down Mode

This option specifies the Power State that the video subsystem enters when the BIOS places it in a power saving state after the specified period of display inactivity has expired. Options: Suspend, Disabled. The Optimal setting is Suspend and Fail-Safe setting is Disabled.

Hard Disk Power Down Mode

This option specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactiv-

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ity has expired. The Optimal setting is Suspend and Fail-Safe setting is Disabled.

Suspend Time Out

This option specifies the length of time the system waits before it enters suspend mode. Options: Disabled, 1 min., 2 min., 4 min., 8 min., 10 min., 20 min., 30 min., 40 min., 50 min., 60 min.. The Optimal and Fail-Safe default setting is Disabled.

Throttle Slow Clock Ratio

In a power management state, the BIOS can throttle the CPU clock to reduce power consumption. For example, a throttle ratio of 50% means the clock is turned off half of its normal operational time. Options: 87.5%, 75.0%, 62.5%, 50%, 37.5%, 25%, 12.5%. The Optimal and Fail-Safe default setting is 50%.

Power Button Mode

This option specifies the effect when the power button pressed.

- **On/Off:** The system is powered down immediately if the power button is pressed.
- **Suspend:** The system is powered down if the power button is pressed for more than four seconds. Pressing the button momentarily (for less than 4 seconds) will put the system in "suspend" mode.

Resume On PME#

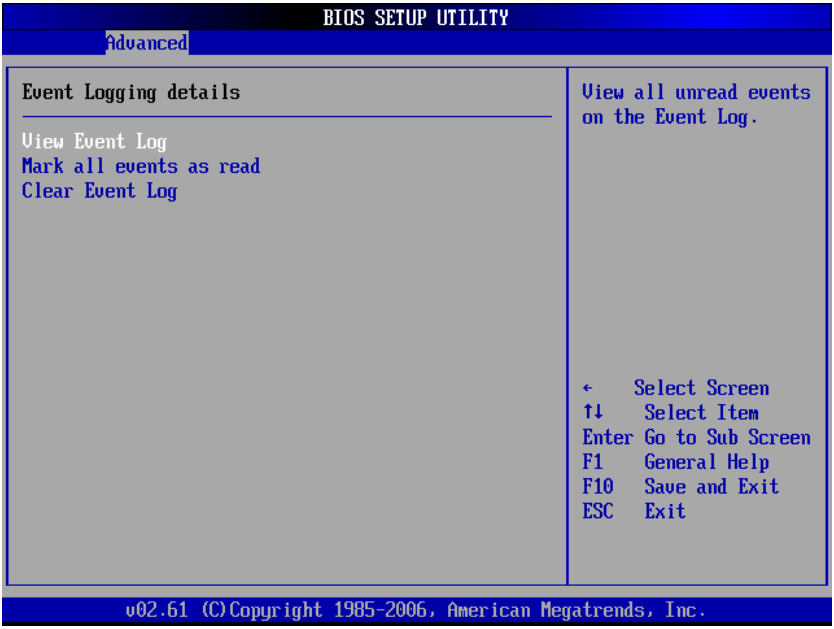
Set this option to allow system to be awaked via PME#. The Optimal and Fail-Safe default setting is Disabled.

Resume On RTC Alarm

Set this option to enable or disable the feature of booting up the system on a scheduled date/time.

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5.3.6 Event Log Configuration



View Event Log

Press <Enter> to view the event log.

Mark all events as read

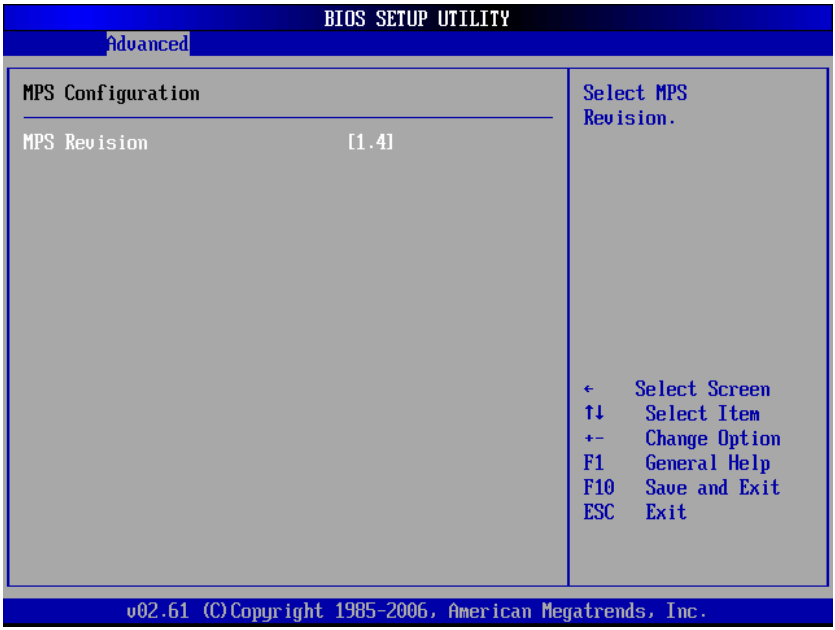
This option allows you to designate that all comments in the CMOS have been read even though they have not.

Clear Event Log

This option allows you to clear all event logs.

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5.3.7 PCI Express Configuration



Active State Power-Management

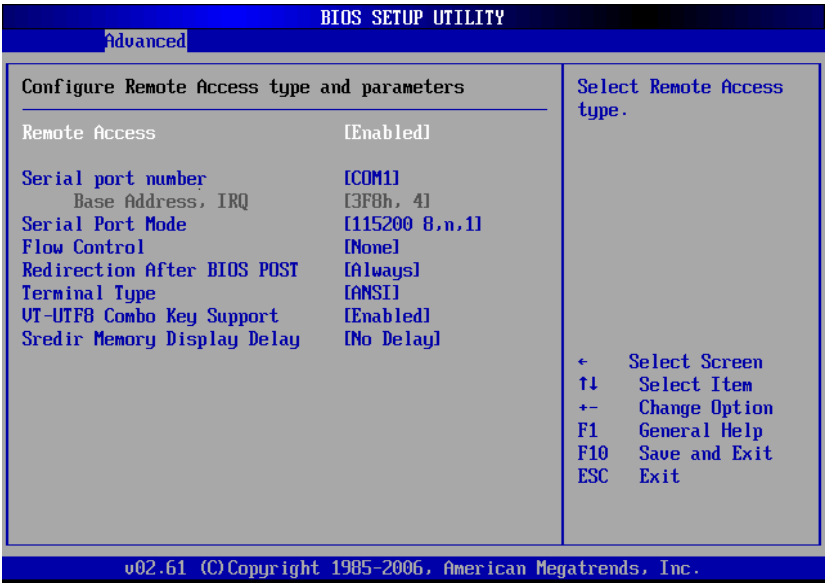
This option allows you to enable/disable PCI Express L0s and L1 Link power states.

ASPM is the hardware-based capability to power-manage the PCI Express link. Only L0s and L1 are used during ASPM.

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5.3.8 Remote Access Configuration

Remote access configuration provides the settings to allow remote access by another computer to get POST messages and send commands through serial port access.



Remote Access

Select this option to Enable or Disable the BIOS remote access feature.

Note: Enabling Remote Access requires a dedicated serial port connection. Once both serial ports are configured to disabled, you should set this value to Disabled or it may cause abnormal boot.

Serial Port Number

Select the serial port you want to use for the remote access interface. You can set the value for this option to COM1 or COM2.

Note: If you have changed the resource assignment of the serial ports in Advanced> SuperIO Configuration, you must Save Changes and Exit, reboot the system, and enter the setup menu again in order to see those changes reflected in the available Remote Access options.

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Serial Port Mode

Select the baud rate you want the serial port to use for console redirection. The options are 115200 8,n,1; 57600 8,n,1; 19200 8,n,1; and 09600 8,n,1.

Flow Control

Set this option to select Flow Control for console redirection. The settings for this value are None, Hardware, or Software.

Redirection After BIOS POST

This option allows you to set Redirection configuration after BIOS POST. The settings for this value are Disabled, Boot Loader, or Always.

- **Disabled:** Set this value to turn off the redirection after POST
- **Boot Loader:** Set this value to allow the redirection to be active during POST and Boot Loader.
- **Always:** Set this value to allow the redirection to be always active.

Terminal Type

This option is used to select either VT100/VT-UTF8 or ANSI terminal type. The settings for this value are ANSI, VT100, or VT-UTF8.

VT-UTF8 Combo Key Support

This option enables VT-UTF8 Combination Key Support for ANSI/VT100 terminals. The settings for this value are Enabled or Disabled.

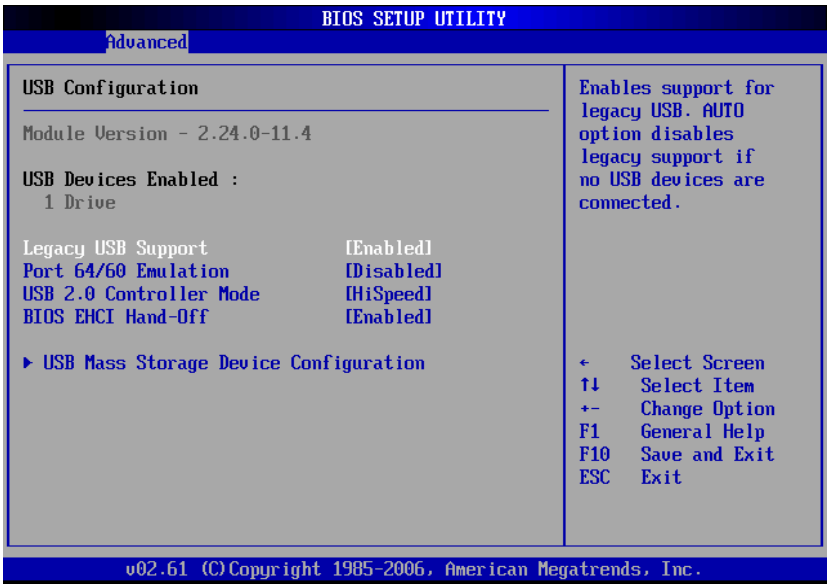
Sredir Memory Display Delay

This option gives the delay in seconds to display memory information. The options for this value are No Delay, Delay 1 Sec, Delay 2 Sec, or Delay 4 Sec.

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5.3.9 USB Configuration

You can use this screen to select options for the USB Configuration. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



Legacy USB Support

Legacy USB Support refers to USB mouse and keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard will not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when

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there are no USB drivers loaded on the system. Set this value to enable or disable the Legacy USB Support.

- **Disabled:** Set this value to prevent the use of any USB device in DOS or during system boot.
- **Enabled:** Set this value to allow the use of USB devices during boot and while using DOS.
- **Auto:** This option auto detects USB Keyboards or Mice and if found, allows them to be utilized during boot and while using DOS.

Port 64/60 Emulation

This option uses USB to receive the IO port 64/60 trap to emulate the legacy keyboard controller.

USB 2.0 Controller Mode

The USB 2.0 Controller Mode configures the data rate of the USB port. The options are FullSpeed (12 Mbps) and HiSpeed (480 Mbps).

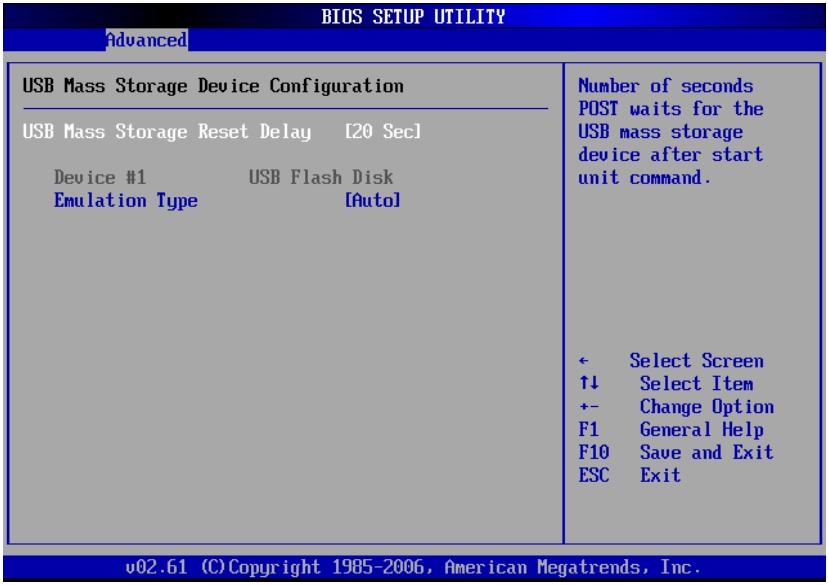
BIOS EHCI hand-off

This option provides a workaround for operating systems without ECHI hand-off support. The EHCI ownership change should claim by EHCI driver.

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USB Mass Storage Device Configuration

This is a submenu for configuring the USB Mass Storage Class Devices when BIOS finds they are in use on USB ports. Emulation Type can be set according to the type of attached USB mass storage device(s). If set to Auto, USB devices less than 530MB will be emulated as Floppy and those greater than 530MB will remain as hard drive. The Forced FDD option can be used to force a hard disk type drive (such as a Zip drive) to boot as FDD.



USB Mass Storage Reset Delay

This option allows you to set number of seconds POST waiting for the USB mass storage device after start unit command is sent.

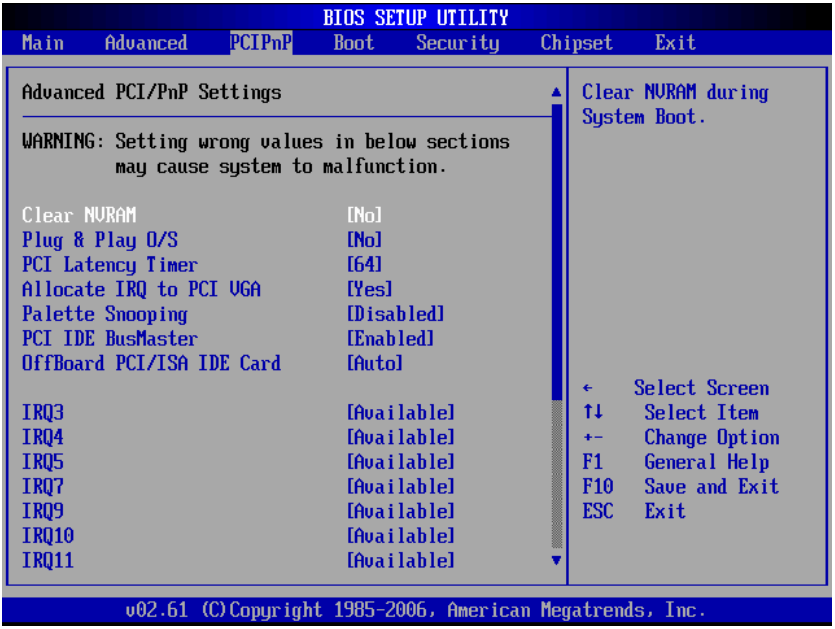
Emulation Type

Options: Auto, Floppy, Forced FDD, Hard Disk, CDROM

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5.4 Advanced PCI/PnP Settings

Select the PCI/PnP tab from the setup screen to enter the Plug and Play BIOS Setup screen. You can display a Plug and Play BIOS Setup option by highlighting it using the < Arrow > keys. The Plug and Play BIOS Setup screen is shown below.



Clear NVRAM

Set this to enable/disable Clear NVRAM during system boot

Plug & Play O/S

- **No:** Let the BIOS configure all the devices in the system.
- **Yes:** Let the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.

PCI Latency Timer

Value in units of PCI clocks for the PCI device latency timer register.

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Allocate IRQ to PCI VGA

Set this option to allow or restrict the system from giving the VGA adapter card an interrupt address.

Palette Snooping

Set this option to allow the system to modify the Palette Snooping settings. Options: Enabled or Disabled.

PCI IDE BusMaster

Set this option to allow or prevent the use of PCI IDE bus mastering. Options: Enabled or Disabled.

OffBoard PCI/ISA IDE Card

Set this option to allow the OffBoard PCI/ISA IDE Card to be selected.

IRQ/DMA

Set this value to allow the IRQ settings to be modified.

- **Available** – This setting allows the specified IRQ/DMA to be used by a PCI/PnP device.
- **Reserved** – This setting allows the specified IRQ/DMA to be used by a legacy ISA device.

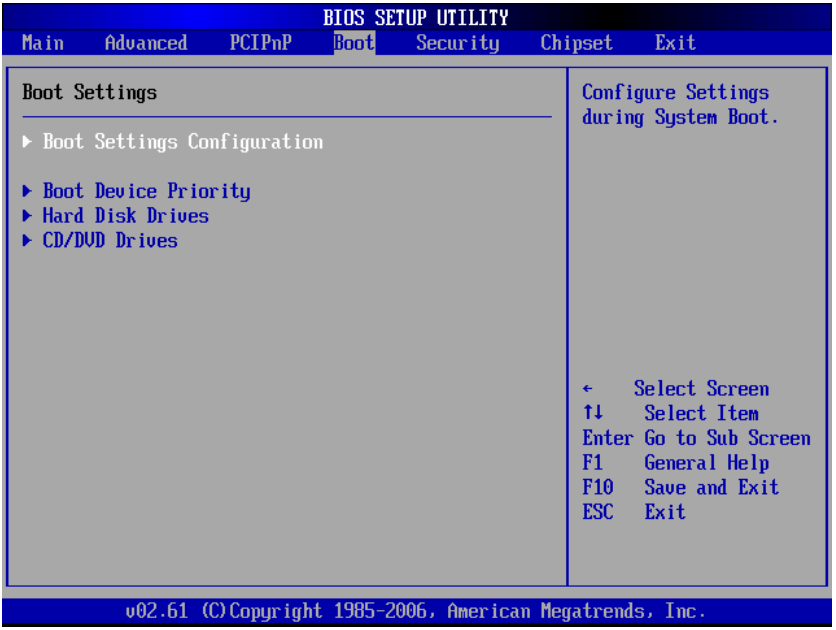
Reserved Memory Size

Set this option to allow the system to reserve memory that is used by ISA devices.

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5.5 Boot Settings

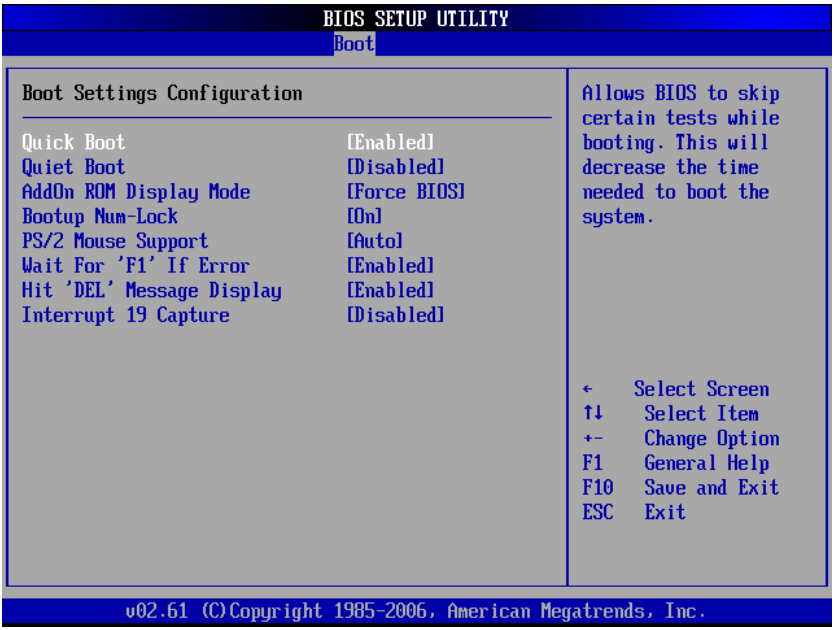
Select the Boot tab from the setup screen to enter the Boot BIOS Setup screen. You can select any of the items in the left frame of the screen, such as Boot Device Priority, to go to the sub menu for that item. You can display a Boot BIOS Setup option by highlighting it using the < Arrow > keys. The Boot Settings screen is shown below:



5.5.1 Boot Settings Configuration

Use this screen to select options for the Boot Settings Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.

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Quick Boot

Enabling this setting will cause the BIOS power-on self test routine to skip some of its tests during bootup for faster system boot.

Quiet Boot

When this feature is enabled, the BIOS will display the full-screen logo during the boot-up sequence, hiding normal POST messages.

When it is disabled, the BIOS will display the normal POST messages, instead of the full-screen logo.

AddOn ROM Display Mode

This option allows you to set display mode for Option ROM. Options: Force BIOS, Keep Current.

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Bootup Num-Lock

This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad.

PS/2 Mouse Support

Set this value to allow the PS/2 mouse support to be adjusted. Options: Disabled, Enabled, Auto.

Wait For 'F1' If Error

Set this value to allow the Wait for 'F1' Error setting to be modified. Options: Disabled, Enabled.

Hit 'DEL' Message Display

Set this value to allow the Hit "DEL" to enter Setup Message Display to be modified. Options: Disabled, Enabled.

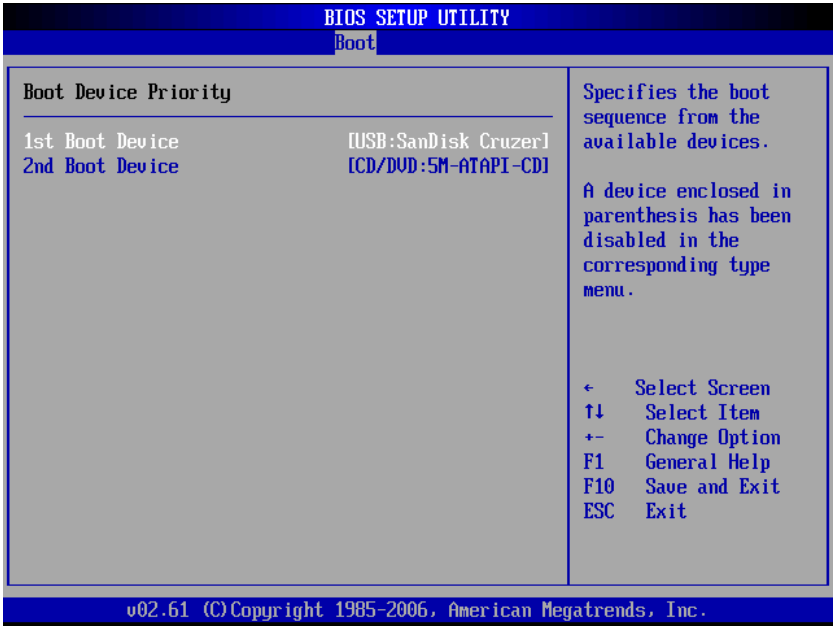
Interrupt 19 Capture

Set this value to allow option ROMs such as network controllers to trap BIOS interrupt 19. Options: Disabled, Enabled.

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5.5.2 Boot Device Priority

The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system. First press <Enter> to enter the sub-menu. Then you may use the arrow keys to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list.

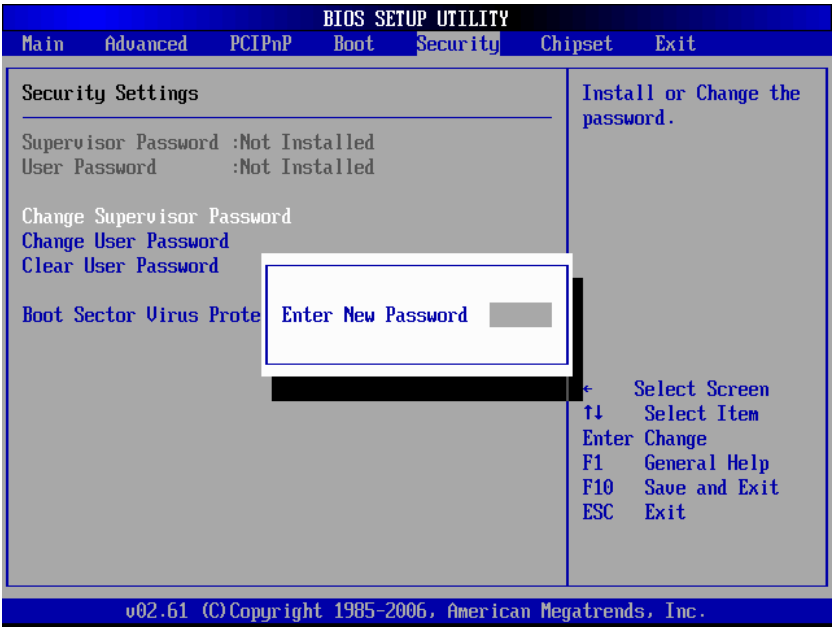


5.5.3 Boot Device Groups

The Boot devices are listed in groups by device type. First press <Enter> to enter the sub-menu. Then you may use the arrow keys to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list. Only the first device in each device group will be available for selection in the Boot Device Priority option.

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5.6 Security Setup



Password Support

Two Levels of Password Protection

Provides both a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.

The system can be configured so that all users must enter a password every time the system boots or when Setup is executed, using either or either the Supervisor password or User password.

The Supervisor and User passwords activate two different levels of password security. If you select password support, you are prompted for a one to six character password. Type the password on the keyboard. The password does not appear on the screen when typed. Make sure you write it down. If you forget it, you must drain NVRAM and re-configure.

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Remember the Password

Keep a record of the new password when the password is changed. If you forget the password, you must erase the system configuration information in NVRAM.

To access the sub menu for the following items, select the item and press < Enter >:

- Change Supervisor Password
- Change User Password
- Clear User Password

Supervisor Password

Indicates whether a supervisor password has been set.

User Password

Indicates whether a user password has been set.

Change Supervisor Password

Select this option and press < Enter > to access the sub menu. You can use the sub menu to change the supervisor password.

Change User Password

Select this option and press < Enter > to access the sub menu. You can use the sub menu to change the user password.

Clear User Password

Select this option and press < Enter > to access the sub menu. You can use the sub menu to clear the user password.

Change Supervisor Password

Select Change Supervisor Password from the Security Setup menu and press < Enter >.

Enter New Password:

Type the password and press < Enter >. The screen does not display the characters entered. Retype the password as prompted

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and press < Enter >. If the password confirmation is incorrect, an error message appears. The password is stored in NVRAM after completes.

Change User Password

Select Change User Password from the Security Setup menu and press < Enter >.

Enter New Password:

Type the password and press < Enter >. The screen does not display the characters entered. Retype the password as prompted and press < Enter >. If the password confirmation is incorrect, an error message appears. The password is stored in NVRAM after completion.

Clear User Password

Select this option and press <Enter> to access the sub menu. You can use the sub menu to clear the user password.

Boot Sector Virus Protection

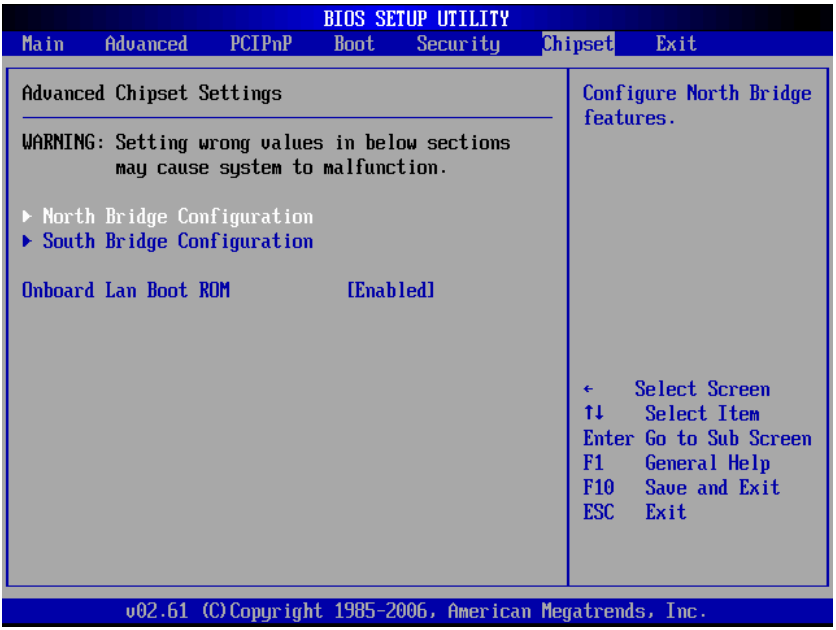
This option enables/disables boot sector virus protection. The BIOS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. If enabled, the following appears when a write is attempted to the boot sector. You may have to type N several times to prevent the boot sector write.

```
Boot Sector Write!
Possible VIRUS: Continue (Y/N)? _
The following appears after any attempt to format
     any cylinder, head, or sector of any hard
     disk drive via the BIOS INT 13 Hard disk
     drive Service:
Format!!!
Possible VIRUS: Continue (Y/N)? _
```

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5.7 Chipset Setup

Select the Chipset tab from the setup screen to enter the Chipset BIOS Setup screen. You can select any of the items in the left frame of the screen to go to the sub menu for that item. The Chipset BIOS Setup screen is shown below.

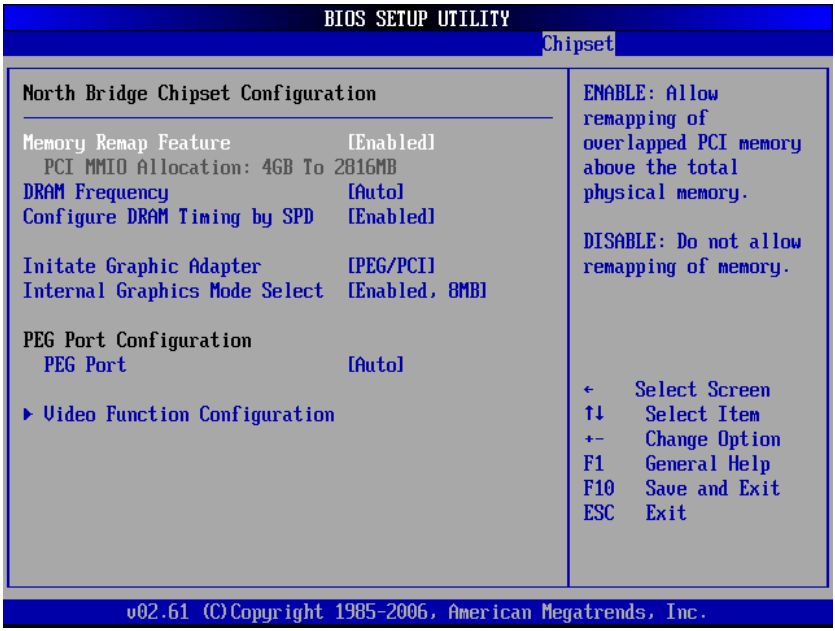


Onboard Lan Boot ROM

Set this option to allow or prevent the BIOS from invoking Onboard Lan Boot ROM. Options: Enabled, Disabled.

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5.7.1 North Bridge Configuration



Memory Remap Feature

Allow or prevent remapping of overlapped PCI memory above the total physical memory. The Optimal and Fail-Safe default setting is Enabled.

DRAM Frequency

When Auto is selected, the DRAM Frequency will be set according to DRAM SPD ROM recorded, otherwise the DRAM Frequency will be set to the frequency that you selected. The Optimal and Fail-Safe default setting is Auto.

Configure DRAM Timing by SPD

When Enabled is selected, the DRAM timing will be set according to DRAM SPD ROM recorded, otherwise the DRAM timing will be set depending on *DRAM CAS# Latency*, *DRAM RAS# to CAS# Delay*, *DRAM RAS# Precharge*, and *DRAM RAS# Activate to Precha* item value that you selected.

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Initial Graphics Adapter

Set this option to decide which graphic controller to use as the primary boot device.

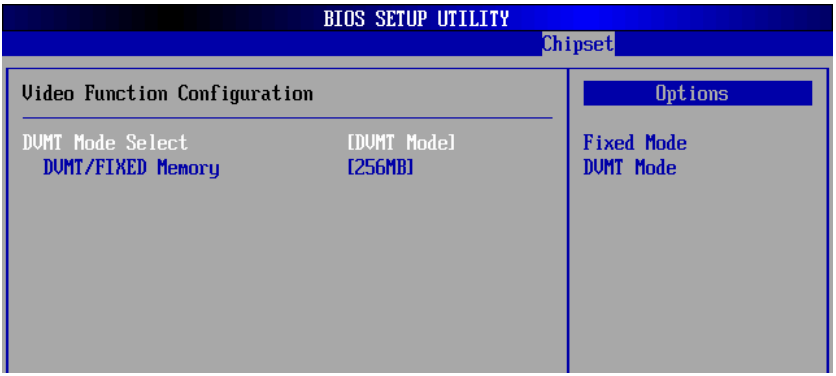
Internal Graphics Mode Select

This option allows you to select the amount of system memory used by the internal graphics device.

PEG Port Configuration

When the 'Auto' option is selected, the PEG Port will be enabled depending on the existence of a PEG VGA card, otherwise the PEG Port will be disabled.

Video Function Configuration



DVMT Mode Select

Dynamic Video Memory Technology (DVMT) is an enhancement of the Unified Memory Architecture (UMA) concept, wherein the optimum amount of memory is allocated for balanced graphics and system performance. Options: Fixed Mode, DVMT Mode.

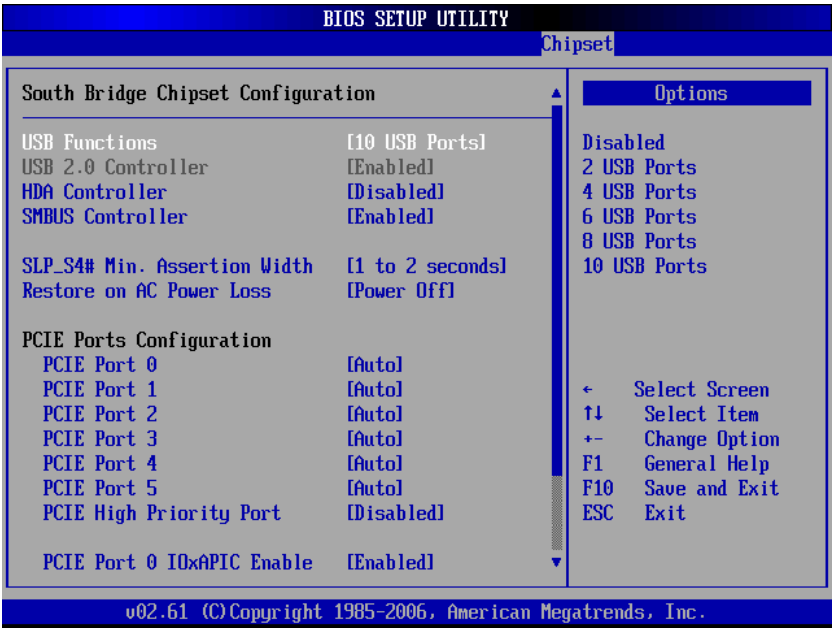
DVMT/FIXED Memory

This option allows you to set the amount of video memory utilized by DVMT or FIXED mode.

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5.7.2 South Bridge Configuration

You can use this screen to select options for the South Bridge Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option.



USB Functions

Set this option to enable/disable USB ports.

HDA Controller

Set this value to Enable/Disable the HDA Controller.

SMBUS Controller

Set this option to enable/disable SMBUS Controller.

SLP_S4# Min. Assertion Width

This option controls the minimum assertion width of the SLP_S4# signal to assure that the DRAMs have been safely power-cycled.

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Restore on AC Power Loss

Determines which state the computer enters when AC power is restored after a power loss. The options for this value are Last State, Power On and Power Off.

- **Power Off:** Set this value to always power off the system while AC power is restored.
- **Power On:** Set this value to always power on the system while AC power is restored.
- **Last State:** Set this value to power off/on the system depending on the last system power state while AC power is restored.

PCIE Port 0/1/2/3/4/5

Set this value to enable/disable the PCIE Port. Options: Auto, Enabled, Disabled.

PCIE High Priority Port

This option controls which port is enabled for high priority.

PCIE Port 0/1/2/3/4/5 IOxAPIC Enable

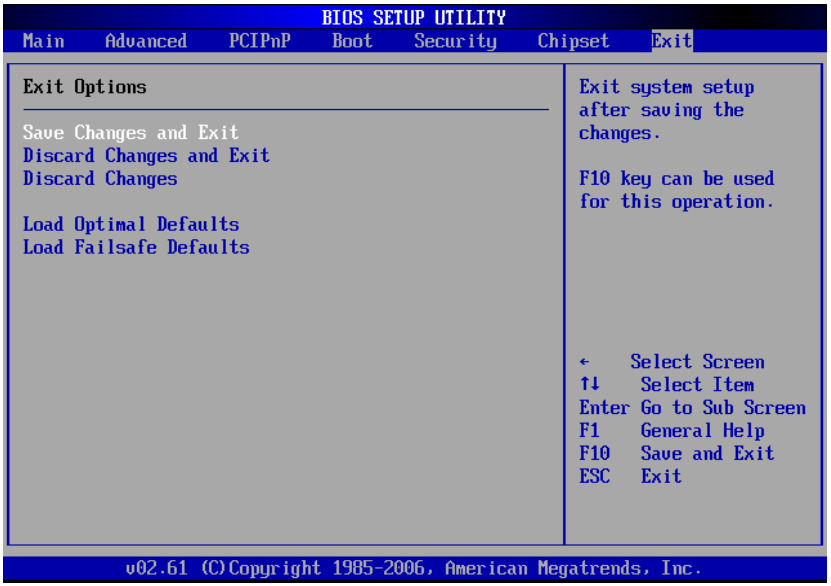
This option controls a range which is opened through the bridge for the following memory addresses:

Port0:	FEC1_0000h – FEC1_7FFFh
Port1:	FEC1_8000h – FEC1_FFFFh
Port2:	FEC2_0000h – FEC2_7FFFh
Port3:	FEC2_8000h – FEC2_FFFFh
Port4:	FEC3_0000h – FEC3_7FFFh
Port5:	FEC3_8000h – FEC3_FFFFh

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5.8 Exit Menu

Select the Exit tab from the setup screen to enter the Exit BIOS Setup screen. You can display an Exit BIOS Setup option by high-lighting it using the < Arrow > keys. The Exit BIOS Setup screen is shown below.



Save Changes and Exit

When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect.

Save Configuration Changes and Exit Now?

[Ok] [Cancel]

appears in the window. Select Ok to save changes and exit.

Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration.

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Discard Changes and Exit Setup Now?

[Ok] [Cancel]

appears in the window. Select Ok to discard changes and exit.

Discard Changes

Select Discard Changes from the Exit menu and press < Enter >.

Select Ok to discard changes.

Load Optimal Defaults

Automatically sets all Setup options to a complete set of default settings when you select this option. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Setup options if your computer is experiencing system configuration problems.

Select Load Optimal Defaults from the Exit menu and press < Enter >.

Select Ok to load optimal defaults.

Load Failsafe Defaults

Automatically sets all Setup options to a complete set of default settings when you select this option. The Failsafe settings are designed for maximum system stability, but not maximum performance. Select the FailSafe Setup options if your computer is experiencing system configuration problems.

Select Load Fail-Safe Defaults from the Exit menu and press < Enter >.

Load FailSafe Defaults?

[Ok] [Cancel]

appears in the window. Select Ok to load FailSafe defaults.

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Important Safety Instructions

For user safety, please read and follow all **instructions**, **WARNINGS**, **CAUTIONS,** and **NOTES** marked in this manual and on the associated equipment before handling/operating the equipment.

- Read these safety instructions carefully.
- Keep this user's manual for future reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment:
  - Turn off power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
  - Keep equipment away from water or liquid sources;
  - Keep equipment away from high heat or high humidity;
  - Keep equipment properly ventilated (do not block or cover ventilation openings);
  - Make sure to use recommended voltage and power source settings;
  - Always install and operate equipment near an easily accessible electrical socket-outlet;
  - Secure the power cord (do not place any object on/over the power cord);
  - Only install/attach and operate equipment on stable surfaces and/or recommended mountings; and,
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.

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- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.

A Lithium-type battery may be provided for uninterrupted, backup or emergency power.



Risk of explosion if battery is replaced with one of an incorrect type. Dispose of used batteries appropriately.

- Equipment must be serviced by authorized technicians when:
  - The power cord or plug is damaged;
  - Liquid has penetrated the equipment;
  - It has been exposed to high humidity/moisture;
  - It is not functioning or does not function according to the user's manual;
  - It has been dropped and/or damaged; and/or,
  - It has an obvious sign of breakage.

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Getting Service

Contact us should you require any service or assistance.

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