Benutzerhandbuch/ User's Manual

PCI – 951 Board

User's Manual
Version 2.02

Kontron Embedded Computers GmbH

0-0096-2834

kontron

If it's Embedded, it's Kontron.

Contents

Introduction **4**
Symbols used in this Manual 5

Important Instructions **6**
Note on the Warranty 6
Exclusion of Accident Liability Obligation 6
Liability Limitation / Exemption from the Warranty Obligation 6

Safety Instructions **7**
Safety Instruction for the Lithium Battery 8
Electrostatic Discharge (ESD) 8
Electromagnetic Compatibility 9
FCC Statement 9

Scope of Delivery **10**
Optional Parts 10
Product Identification 10

Board Description **11**
Features 12
Extended Functions 14
Functional Diagram 15

Configurations **16**
CPU Installation 16
Memory Installation 17
Jumpers on the PCI-951 18
Jumpers Location on the PCI-951 19
Connectors on the PCI-951 23
External Interfaces 24
On Board Connectors 26
Watchdog Timer Configuration 44

Award BIOS Configuration **45**
BIOS Setup 45
Standard CMOS Setup 47
Advanced BIOS Features 52
Advanced Chipset Features 58
Integrated Peripherals 62
Power Management Setup 67

PNP/PCI Configuration 71
PC Health Status 73
Frequency/ Voltage Control 74
Load Fail-Safe Defaults 75
Load Optimized Defaults.....76
Set Supervisor / User Password 77
Save & Exit Setup 78
Exit Without Saving.....79

AMI BIOS Configuration 80
BIOS Setup 80
Navigation 81
Main 82
System Time / System Date 82
Advanced 83
CPU Configuration 84
IDE Configuration 85
Floppy Configuration 92
Super IO Configuration.....93
Hardware Health Configuration 96
ACPI Settings 97
Event Log Configuration.....100
Remote Access Configuration 101
USB Configuration.....103
PCIPnP 105
Boot.....109
Boot Settings Configuration.....109
Boot Device Priority.....113
Hard Disk Drivers 114
Removable Drives 114
CD/DVD Drives.....115
Security.....116
Supervisor Password.....117
User Password 117
Boot Sector Virus Protection 119
Hard Disk Security.....120
Chipset.....121
Intel Brookdale-G NorthBridge Configuration 121
Intel ICH4 SouthBridge Configuration 123

Exit....127
Save Changes and Exit....127
Discard Changes and Exit....127
Discard Changes....127
Load Optimal Defaults....127
Load Failsafe Defaults....128

Resources....129
I/O Port Address Map....129
Interrupt Request Lines (IRQ)....130

Intel® 845GV Chipset Driver Installation....131
Installing the Intel® 845GV Chipset Driver for Windows 2000, XP....131

VGA Driver Installation....132
Installing VGA Driver for Windows 2000, XP....132

Audio Driver Installation....133
Installing Audio Driver for Windows 2000....134
Installing Audio Driver for Windows XP....137

LAN Driver Installation....138
Installing LAN Driver for Windows 2000....139
Installing LAN Driver for Windows XP....144

USB 2.0 Driver Installation....145
Installing USB 2.0 Driver for Windows 2000....145
Installing USB 2.0 Driver for Windows XP....149

Main Specifications....151
Electrical Specifications....152
Power Specification....153
CE-Directives, Standards and Approvals....153

Technical Support....154
Returning Defective Merchandise....155

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.

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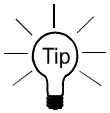
Germany

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 refers to general information on the device and manual.
	This symbol comes before useful information and tips for routine operation.
SYSM	Program names are printed in *italics*.
`format a:`	Commands are printed in `Courier`.

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

Important Instructions

This chapter contains safety instructions which must be observed when using your PCI-951 board. The manufacturer's instructions provide useful information on your PCI-951 board.

Note on the Warranty

Due to their limited service life, parts which by their nature are subject to a particularly high degree of wear (wearing parts) are excluded from the guarantee beyond that provided by law. This applies, for example to the batteries.

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.

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.

Safety Instructions

Please read this section carefully and observe the instructions for your own safety and correct use of the board. Observe the warnings and instructions on the board and in the manual.

The PCI-951 board is built and tested by Kontron Embedded Computers in accordance with IEC / EN60950 and left the works in a perfectly safe condition.

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

Kontron Embedded Computers can only guarantee the safety, reliability and performance of the board if all of the following safety instructions are observed.

- ❑ The PCI-951 board must be used in accordance with the instructions for use.
- ❑ The PCI-951 board is designed to be built into a system. The integration into the system has to be done such, that the system complies with the IEC / EN 60950 safety rules.
- ❑ 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.
- ❑ 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/EN60950 may be connected to the interfaces of the PCI-951 board.
- ❑ Please observe, that all cables attached to the PCI-951board must be duly connected and fixed.
- ❑ If extensions are made to the PCI-951 board, the legal stipulations and the board specifications must be observed.

- ❑ Repairs may only be carried out by a person authorized to do so by Kontron Embedded Computers.
- ❑ It must be assumed that safe operation is no longer possible,
  - if the device has visible damage or
  - if the device no longer functions.

  In these cases the device must be shut down and secured against unintentional operation.

Safety Instruction for the Lithium Battery

The PCI - 951 board is equipped with a lithium battery. The lithium battery should be replaced only in the factory.

Warning

There is a danger of explosion if the wrong type of battery is used for replacement.

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 PCI-951 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 work stations. When safe work station are not guaranteed, it is important for the user to be electrically discharged before touching the PCI-951 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.

Electromagnetic Compatibility

This device was developed for use in industrial applications and for business and commercial areas as well as small companies. The EMC guideline 89/336/EWG in the most recent version or the German EMC law shall apply. Insofar as the user makes alterations or extensions to the device (e.g. installation of extension cards) the preconditions for the CE conformity declaration (protection requirements) may no longer be fulfilled.

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Scope of Delivery

Please check that your package is complete, and contains the items below (according to the ordered unit configuration). If you discover damaged or missing items, please contact your dealer.

- ❑ 1x PCI-951 Board PICMG (Full-Size), corresponding to the ordered configuration
- ❑ 1x Safety Instructions

Optional Parts

- ❑ DVI Adapter Card with Slot Bracket (Ordering Number: 0-0074-2334)
- ❑ Accessories Kit: (Ordering Number: 9-9900-0011)

Product Identification

The board is labelled at the rear side with the corresponding Kontron product identification number.

Label	**Product Identification**
2-AXXX-XXXX	PCI-951 Board

The /"XXXX"/ group defines the ordered board configuration.

Board Description

The PCI-951single board computer is a multifunctional full-size PICMG CPU card, designed for use in highly integrated platforms for a wide range of application.
The board integrates a Socket 478 Socket for Intel® Pentium® 4 processors. Adopting the Intel® 845GV in combination with 82801DB (ICH4), the board provides a PSB (processor side bus) of 400MHz or 533MHz by a bandwidth of 4.2 Gbytes/s.
The implemented Intel® 845GV chip set provides up to 2GB GDR SDRAM (double DATA rate) memory.
The Intel® 845GV includes a graphic controller that offers 2D- and 3D graphic acceleration and, supports the use of both (VGA) and digitally (DVI) monitors.
The onboard AC'97 audio CODEC supports stereo sound function. The Mic-In, Line-Out/Line-In, CD Audio-In connectors are available.
The used 82801DB (ICH4) supports Ultra DMA-100 as well as USB 2.0 and offers thereby more flexibility for the configuration of your system.
Other functions consist of dual 10/100 Base-T(X) Ethernet LAN controller (Option: Intel® 82540EM 10/100/1000 Base-T(X) Gigabit Ethernet LAN controller), one 32-bit expansion MiniPCI socket, Watchdog function and IrDA-communication are available.

Fig. 1: PCI - 951 Board

Fig. 2: PCI - 951 Board slot bracket with interfaces

Features

Processor Socket: Intel® Socket 478.

Processor: Intel® Pentium® 4 and / or Celeron® CPU.
The CPU temperature is monitored via an I^2C sensor.

The Intel® Pentium® 4 uses a supply voltage (Vcore), witch is generated from the 12V. It requires the extra 4-pin power header from the PSU in order to function. (See *Fig. 4:* PCI - 951 Jumpers and connectors location)

Processor Side Bus Speed (FSB): 400 / 533MHz

Chipset: Intel® 845GV with Intel® 82801DB (ICH4) Chipset

Memory:

- Two 184-pin non-ECC DDR DIMMs, single-sided and/ or double-sided up to 2GB as DDR200, DDR266 or DDR333.

BIOS: Award BIOS.

- The BIOS provides “Plug &Play” feature, which detects the PnP-compatible peripheral devices and expansion cards automatically.
- ACPI Power management

DMI BIOS Support:

- Desktop Management Interface (DMI) allows users to download system hardware-level information such as CPU type, CPU speed, frequencies and memory size.

LPC I/O: Winbond W83627HF

PCI to ISA Bridge: ITE IT8888F

Parallel Port: One high-speed parallel port, that supports SPP/EPP/ECP mode.

Serial Port: Two 16550 UART compatible ports with:

- COM1 configurable as RS-232 and
- COM2 configurable as RS-232 / RS-422 / RS-485 (selectable by jumper setting).

Enhanced IDE: Support two Bus Mastering IDE mode, up to 4 devices. Two IDE interfaces for up to four devices, support PIO Modes up to 5 or Ultra DMA 33/66/100 IDE Hard Disk and ATAPI CD-ROM.

FDD Interface: supports two floppy drives (1.44MB, 2.88MB)

USB Interface: Two USB pin-header connectors (support 4 interfaces, compliant with USB Specification Rev. 2.0)

Audio: AC'97 2.0 (AD1881A) CODEC compatible with stereo sound function, which contained Mic-In, Audio Line-In / Line-Out.

Watchdog Timer: programmable ca. 1 to 256 sec.

PICMG Compliance: Fully compliant to PICMG 1.0 standards

VGA: Embedded Intel® 845GV with integrated VGA controller

- ❑ Simultaneous CRT display (VGA and DVI)
- ❑ 64-bits memory bus in 2/4/8/16/32 MB DDR SDRAM
- ❑ LCD panel that supports DVI
- ❑ CRT resolution: 1920x 1440 at 85 Hz
- ❑ resolution for digital flat panels: Up to 1280x 1024 at 60 Hz
- ❑ It support fast 2D and 3D graphics performance; enhance 3D feature set; Improves platforms for DVD and Video playback and Enhance Multimedia functionally

Ethernet: Intel® 82562ET / 82801DB

- ❑ The Intel® 82801DB ICH4 supports LAN functions for fast Ethernet (10/100 Mbit/s). In combination with Intel® 82562ET supports 10/100 Base-T connection.
- ❑ The Intel® 82551QM provides a standard IEEE 802.3 Ethernet interface for 10/100 Base-TX applications (802.3, 802.3u, 802.3ab).

Keyboard and Mouse Connectors:

- ❑ Combined PS/2 keyboard and mouse connector on the board slot bracket.
- ❑ On board 7-pin header connector that supports an external keyboard and mouse connector.

IrDA Interface: Pin-header connector that allows to connect an external IrDA module.

CompactFlash™ Socket (IDE compatible): allows the operation with a ComapctFlash™ Card (Type I, II).

MiniPCI Socket: allows the extension with a MiniPCI card**.**

Extended Functions

- **Temperature Monitoring and Alert**: The internal CPU temperature is monitored via an I^2C sensor. When the temperature exceeds the safe heat level an acoustical signal alerts the user or the system can be shut down.
- **ATX-Power Control:** Provides functions such as switching off by shutdown of the operating system or Wake UP on LAN
- **Modem Ring-On:** Allows the system to be waked up through an external modem. The system must be connected to the power source and the power switch must be in On position.
- **Wake On LAN:** Allows the system to be waked up by the network. The system must be connected to the power source and the power switch must be in On position. Wake On LAN functions properly only with an ATX power supply.

Functional Diagram

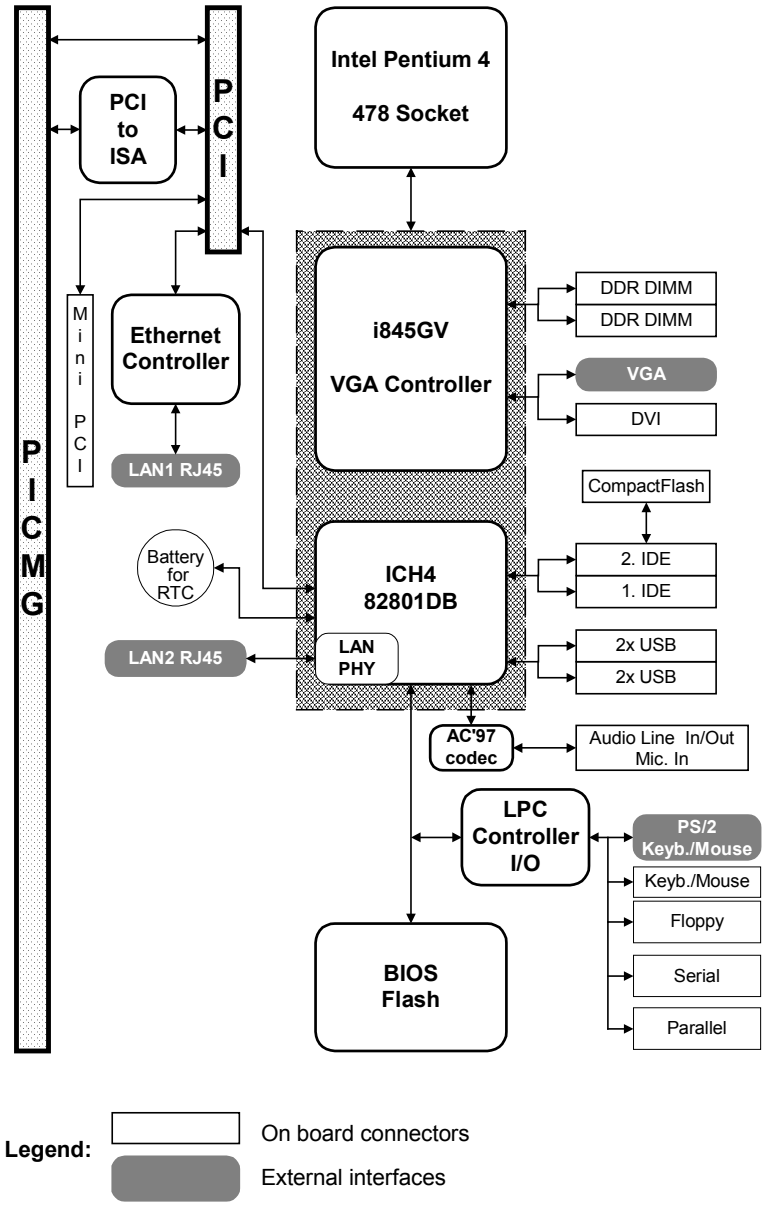


Fig. 3: PCI - 951 Functional diagram

Configurations

This chapter provides information on how to use the jumpers and connectors located on the PCI-951 in order to set up a workable system.

CPU Installation

The PCI-951 provides a 478-pin socket for Intel® Pentium® 4 or Celeron® processors with mPGA form factor.

To install the CPU, insert it to the socket by aligning the notch of the CPU with the one of the mPGA socket. For the CPU fan installation, refer to the installation procedures of the fan manufacturer.

Due to mechanical incompatibility of the fan, we recommend not to install the heat sink supplied with the boxed Intel® Pentium® 4 processor.

Ensure that the contact between the CPU heat sink and the CPU top surface is proper, in order to avoid CPU overheating problem, that would cause your system to hang or be unstable.

Memory Installation

The PCI-951 board supports two 184-pin DDR SDRAM sockets for up to a total memory of 2GB DDR SDRAMs. The memory modules can be user-defined combined in size of 128MB, 256MB, 512MB up to max. 1GB pro DDR SDRAM socket.
Each one of the two sockets can be populated first. (individually also).

To populate the DDR-SDRAM socket, use SDRAM memory modules with the same specification: PC2100 or PC2700.
Our suggest: you should not install the memory modules with PC1600 specification, for availability and cost reasons.

Examples to configure the memory:

DDR DIMM1	DDR DIMM2	Total Memory
128MB	--------	128MB
256MB	--------	256MB
512MB	--------	512MB
1GB	--------	1GB
128MB	128MB	256MB
128MB	256MB	384MB
128MB	512MB	640MB
256MB	128MB	384MB
256MB	256MB	512MB
256MB	512MB	768MB
256MB	1GB	1280MB
512MB	128MB	640MB
512MB	256MB	768MB
512MB	512MB	1GB
512MB	1GB	1536MB
1GB	1GB	2GB

Jumpers on the PCI-951

The jumpers on the PCI-951 allow you to configure your CPU card according to the needs of your applications.

☞ In order to change a jumper setting, turn off the computer by use of the ATX-power supply switch. Otherwise, the board could be damaged.

The following examples show the conventions used in this section.

1 2	Jumper Open
1 2	Jumper Closed

Jumpers Location on the PCI-951

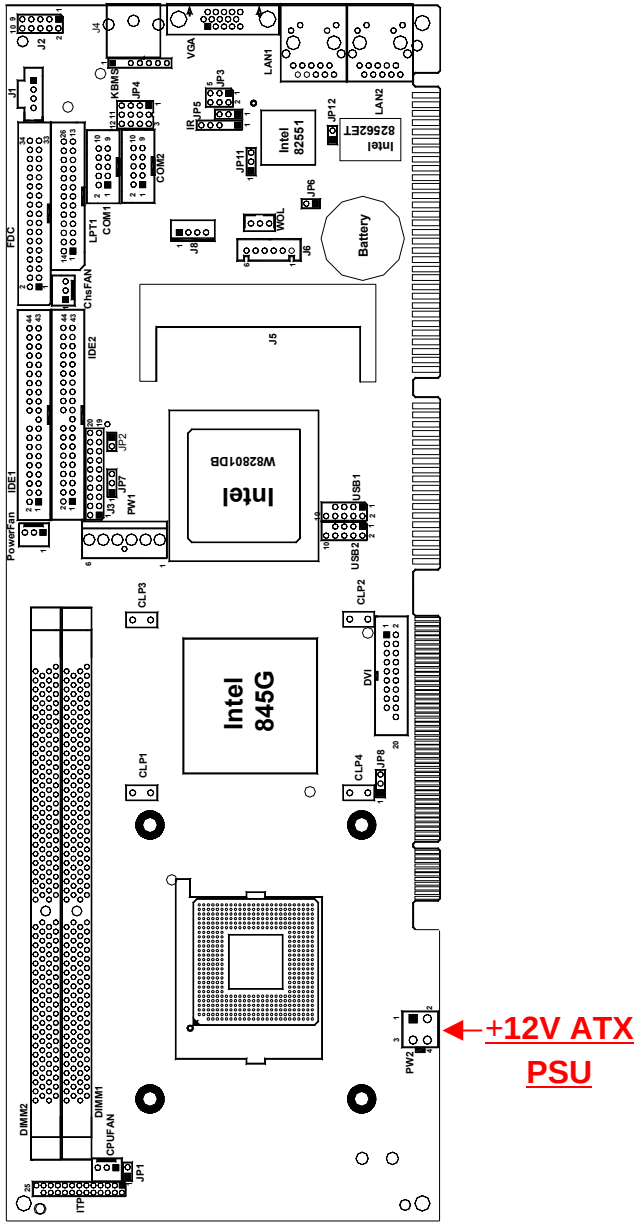


Fig. 4: PCI - 951 Jumpers and connectors location

JP2: CompactFlash™ Card, Master/Slave Select

This jumper is used to select if the CompactFlash™ is master or slave device to the secondary IDE.

JP2: Pin Header; DIP 2-pin	Setting	Function
1 2	Pin 1-2 Closed	Mastered
1 2	Pin 1-2 Open	Slave (Default)

While using CompactFlash™-cards, only one device could be used on secondary IDE.

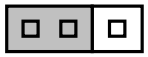
JP3, JP4: RS232/422/485 (COM1, 2) Selection

COM1 is configured as RS-232 only.
COM2 is selectable for RS232, RS-422 and RS-485 configuration. The following table describes the jumper settings to configure the COM2 interface.

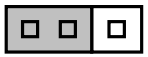
COM2 Function	RS-232	RS-422	RS-485
JP3: Pin Header; DIP 6-pin	6 5 2 1	6 5 2 1	6 5 2 1
JP4 : Pin Header; DIP 12-pin Jumper Setting (pin closed)	11-10 8-7 5-4 2-1 3-2-1	12-11 9-8 6-5 3-2 3-2-1	12-11 9-8 6-5 3-2 3-2-1

RS485- and RS422-Mode:
The (RTS–) signal is used to activate the transmitter.

JP5: LAN1 Function

JP5: Pin Header; DIP 3-pin	**Setting**	**Function**
1  3	Pin 1-2 (Short/Closed)	*Enable* (Default)
1 3	Pin 2-3 (Short/Closed)	*Disable*

JP7: Clear CMOS Content

JP7: Pin Header; DIP 3-pin	**Setting**	**Function**
1 3	Pin 2-3 Closed	Clear CMOS Content
1  3	Pin 1-2 Short/Closed	Normal Operation (Default)

For clearing of content, please wait 10 sec.

JP11: ON/OFF Button Configuration

JP11: Pin Header; DIP 3-pin	**Setting**	**Function**
1 3	Pin 1-2 Short/Closed	The ON/OFF-button switches the system ON or OFF. (ATX Power Mode)
1 3	Pin 2-3 Closed	The function of the ON/OFF-button is ignored. System behaviour: like an AT-system.

JP12: LAN2 Function

JP12: Pin Header; DIP 2-pin	Setting	Function
1 2	Pin 1-2 Short/Closed	*Enable* (Default)
1 2	Pin 1-2 Open	*Disable*

Connectors on the PCI-951

The connectors on the PCI-951 allow you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on PCI-951 and their respective functions.

External interfaces	
LAN1, LAN2	RJ45 Connectors
VGA	VGA Connector
J4	Combined PS/2 Keyboard and Mouse Connector
On board connectors	
J1	CD-Audio-In Connector
J2	Audio Connector
J3	Multifunctional Connector
J5	MiniPCI Socket
J6	External ATX Power Control Connector (+5VSB, PS_ON)
J8	Negative Voltages Power Connector (–5V, –12V)
KBMS	Keyboard/ Mouse External Connector
USB1	USB Header (Port 1, 2) Connectors
USB2	USB Header (Port 3, 4) Connectors
DVI	Connector for DVI Extension
IDE1, IDE2	IDE Connectors
FDC	Floppy Drive BOX Header Connector
PW1	Positive Voltage Power Connector (+3,3V, +5V)
PW2	ATX +12V Power Connector
IR	IrDA Connector
WOL	Wake On LAN Connector
LPT1	Parallel Port Connector
COM1, COM2	Serial Ports
CPU Fan	CPU Fan Power Connector
CHS Fan	Chassis Fan Power Connector
PWR Fan	Chassis Fan Power Connector
CF	CompactFlash™ Disk Connector (rear side)

External Interfaces

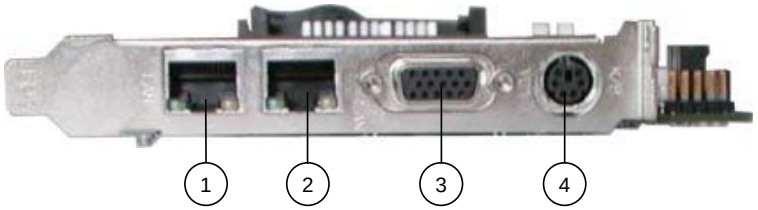


Fig. 5: PCI-951 – User interface

2 LAN2 connector

3 LAN1 connector

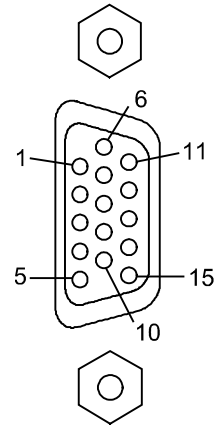
4 VGA connector

5 PS/2 keyboard and mouse connector

LAN1, LAN2 Ethernet Connectors

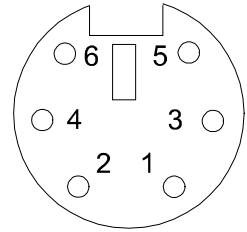
PIN#	LAN1 or LAN2 10/100 Signal Name	Only LAN1 10/100/1000 (Option:82540EM) Signal Name	RJ45 (female)
1	TX+	MDI0+	
2	TX-	MDI0-	
3	RX+	MDI1+	
4	NC	MDI2+	
5	NC	MDI2-	
6	RX-	MDI1-	
7	NC	MDI3+	
8	NC	MDI3-	
LEFT LED	LINK / ACTIVE	LINK / ACTIVE	
RIGHT LED	100/10	1000/100	

VGA-Interface - Connector

Pin	Signal name	15-pin D-SUB socket (female)
1	red	
2	green	
3	blue	
4	pulled to VCC	
5, 6, 7,8,10	GND	
9	+5 V fused *	
11	pulled to VCC	
12	DDC-SDA *	
13	HSYNC	
14	VSYNC	
15	DDC-SCL *	

*** used for DDC**

PS/2 Keyboard and Mouse - Connector

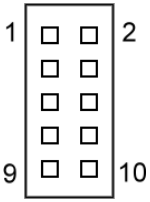
Pin	Signal name	6 pin Mini-DIN socket (female)
1	Keyboard data	
2	Mouse data	
3	GND	
4	+5 V fused	
5	Keyboard clock	
6	Mouse clock	

On Board Connectors

J1: CD-Audio-In Connector

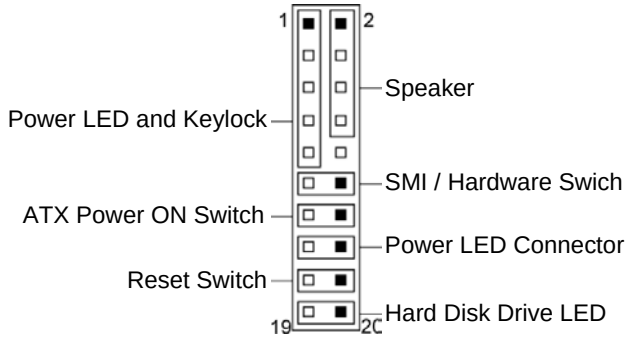
J1: MINI Base; DIP 4-pin	Pin #	Signal Name
4 3 2 1	1	Left
	2	GND
	3	GND
	4	Right

J2: Audio Connector

J2: Pin Header; DIP 10-pin	Signal Name	Pin #	Pin #	Signal Name
	LineOut-R	1	2	LineOut-L
	GND	3	4	GND
	LineIn-R	5	6	LineIn-L
	GND	7	8	GND
	Mic-In	9	10	VREF

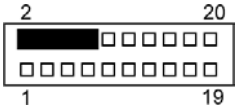
J3: Multifunctional Connector

A system chassis can be equipped with components, that provide acoustical or/and light indication of the computer activities, and switches to change the computer status. J3 is a 20-pin header that provides following connections.



Speaker: Pins 2, 4, 6, 8

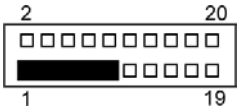
This connector provides an interface to connect a speaker for audio tone generation. An 8-ohm speaker is recommended.



Pin #	Signal Name
2	Speaker out
4	NC
6	VCC
8	GND

Power LED and Keylock: Pins 1, 3, 5, 7, 9

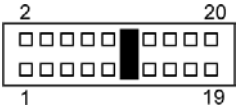
The power LED shows, that your system is ready for use.
If the keylock is active, no keyboard entry is possible.



Pin #	Signal Name
1	Power LED
3	NC
5	GND
7	Keylock
9	GND

SMI/Hardware Switch: Pins 11 and 12

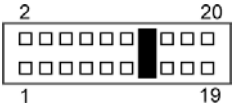
This interface supports the "Green switch" of a system. If the switch is pressed, the system will be switched into the power-saving mode immediately (in a forced manner).



Pin #	Signal Name
12	Ext. SMI (depending on BIOS settings)
11	GND

Power Button: Pins 14 and 13

This 2-pin connector allows to connect an “ATX Power Supply On/Off Button”. When pressing this button, the system will be powered on. When pressing again, the system will be powered off, or will be put into a power-saving mode, depending on the BIOS settings.

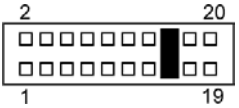


Pin #	Signal Name
14	PWRBTN
13	Pulled up to VSB

It is supported only if the ATX function and a corresponding power supply is used.

Alternative Connector for Power LED: Pins 15 and 16

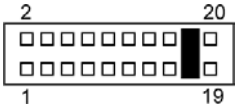
These pins can be used as an alternative port for a power LED.



Pin #	Signal Name
16	Power LED
15	GND

Reset Switch: Pins 17 and 18

The reset switch allows to restart the system without turning the main power switch off and then on again.

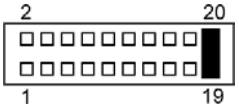


Pin #	Signal Name
18	Reset
17	GND

Depending on the software and operating system, some data may be lost.

Hard Disk Drive LED Connector: Pins 19 and 20

This connector allows to connect a hard drive activity LED. This LED will flash when the HDD is being accessed.



Pin #	Signal Name
20	HDD-LED
19	Pulled up to VCC

J4: PS/2 Keyboard and PS/2 Mouse Connectors

See chapter “External Interfaces”.

J5: MiniPCI Socket

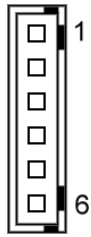
The pin assignments of the J5 MiniPCI Socket are as follows:

SMD PCI Slot, 124-pin, **Pin Assignments**					
Pin Name		**Pin Name**		**Pin Name**	
1	X	51	AD21	101	GND
2	X	52	AD22	102	GND
3	X	53	AD19	103	X
4	X	54	AD20	104	X
5	X	55	GND	105	X
6	X	56	PAR	106	X
7	X	57	AD17	107	X
8	X	58	AD18	108	X
9	X	59	-CEB2	109	X
10	X	60	AD16	110	X
11	X	61	-IRDY	111	X
12	X	62	GND	112	X
13	X	63	VCC3	113	X
14	X	64	-FRAME	114	GND
15	X	65	-CLKRUN	115	X
16	X	66	-TRDY	116	X
17	-INTB	67	-SERR	117	X
18	VCC	68	-STOP	118	X
19	VCC3	69	GND	119	X
20	-INTA	70	VCC3	120	X
21	X	71	-PERR	121	X
22	X	72	-DEVSEL	122	-MPCIACT
23	GND	73	-CBE1	123	X
24	V3.3Aux	74	GND	124	3.3VAUX
25	CLK	75	AD14		
26	-RST	76	AD15		
27	GND	77	GND		
28	VCC3	78	AD13		
29	-REQ	79	AD12		
30	-GNT	80	AD11		
31	VCC3	81	AD10		
32	GND	82	GND		

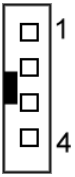
The table continued on the following page.

33	AD31	83	GND		
34	-PME	84	AD9		
35	AD29	85	AD8		
36	X	86	-CBE0		
37	GND	87	AD7		
38	AD30	88	ACC3		
39	AD27	89	ACC3		
40	VCC3	90	AD6		
41	AD25	91	AD5		
42	AD28	92	AD4		
43	RESV	93	X		
44	AD26	94	AD2		
45	-CBE3	95	AD3		
46	AD24	96	AD0		
47	AD23	97	VCC		
48	IDSEL	98	X		
49	GND	99	AD1		
50	GND	100	R-WIP		

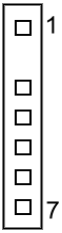
J6: External ATX Power Control Connector

J6: Boxheader, (shrouded), DIP 6-pin	Pin #	Signal Name
	1	PWRBTN
	2	GND
	3	PWRBTN
	4	GND
	5	PS-ON (soft on/off)
	6	5V SB (standby +5V)

J8: Negative Voltages Power Connector (–5V, –12V)

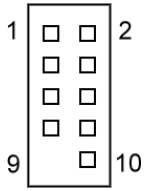
J8: MINI Base DIP 4-pin	Pin #	Signal Name
	1	GND
	2	-5V
	3	GND
	4	-12V

KBMS: Keyboard / Mouse External Connector

KBMS: Pin Header; DIP 7-pin	Pin #	Signal Name
	1	KB DAT
	2	KEY
	3	MS DAT
	4	GND
	5	VCC fused
	6	KB-CLK
KBMS	7	MS-CLK

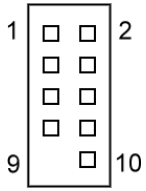
USB1 and USB2:

USB1 Header (Port 1, 2): the onboard USB1 pin-header supports two ports (Port 1 and Port 2).

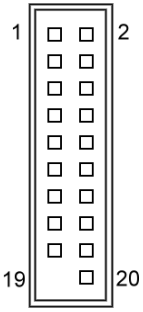
USB1: Pin Header; DIP 10-pin	USB1: Port 1		USB1: Port 2	
	Pin #	**Signal Name**	**Pin #**	**Signal Name**
	1	VCC fused	2	VCC fused
	3	D1-	4	D2-
	5	D1+	6	D2+
	7	GND	8	GND
	9	Key	10	NC

USB2: USB Header (Port 2, 4)

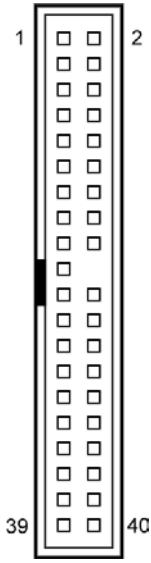
USB2 Header (Port 3, 4): the onboard USB2 pin-header supports two ports (Port 3 and Port 4).

USB2: Pin Header; DIP 10-pin	USB2: Port 3		USB2: Port 4	
	Pin #	**Signal Name**	**Pin #**	**Signal Name**
	1	VCC fused	2	VCC fused
	3	D3-	4	D4-
	5	D3+	6	D4+
	7	GND	8	GND
	9	Key	10	NC

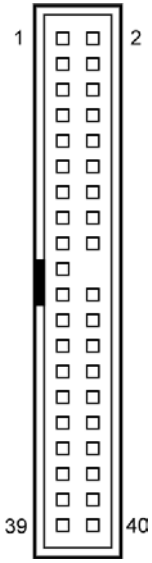
DVI: Connector for DVI Extension

DVI: Pin Header; DIP 20-pin	Signal Name	Pin #	Pin #	Signal Name
 **DVI**	T.M.D.S Data 1+	1	2	T.M.D.S Data 2+
	T.M.D.S Data 1-	3	4	T.M.D.S Data 2-
	GND	5	6	GND
	GND	7	8	GND
	T.M.D.S CLK+	9	10	T.M.D.S Data 0+
	T.M.D.S CLK–	11	12	T.M.D.S Data 0-
	GND	13	14	GND
	Power (fused)	15	16	Hot Plug Detect
	GND	17	18	DDC DATA
	KEY	19	20	DDC CLK

IDE1: Primary IDE Connector

IDE1: Boxheader, (shrouded), DIP 40-pin	Signal Name	Pin #	Pin #	Signal Name
	Reset IDE	1	2	GND
	Host data 7	3	4	Host data 8
	Host data 6	5	6	Host data 9
	Host data 5	7	8	Host data 10
	Host data 4	9	10	Host data 11
	Host data 3	11	12	Host data 12
	Host data 2	13	14	Host data 13
	Host data 1	15	16	Host data 14
	Host data 0	17	18	Host data 15
	GND	19	20	Key
	DRQ0	21	22	GND
	Host IOW	23	24	GND
	Host IOR	25	26	GND
	IOCHRDY	27	28	GND permanent
	DACK0	29	30	GND
	IRQ14	31	32	NC
	Address 1	33	34	80 pos. Cable detection
	Address 0	35	36	Address 2
	Chip select 0	37	38	Chip select 1
	Activity	39	40	GND

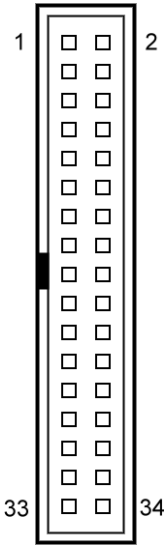
IDE2: Secondary IDE Connector

IDE2: Boxheader, (shrouded), DIP 40-pin	Signal Name	Pin #	Pin #	Signal Name
	Reset IDE	1	2	GND
	Host data 7	3	4	Host data 8
	Host data 6	5	6	Host data 9
	Host data 5	7	8	Host data 10
	Host data 4	9	10	Host data 11
	Host data 3	11	12	Host data 12
	Host data 2	13	14	Host data 13
	Host data 1	15	16	Host data 14
	Host data 0	17	18	Host data 15
	GND	19	20	Key
	DRQ0	21	22	GND
	Host IOW	23	24	GND
	Host IOR	25	26	GND
	IOCHRDY	27	28	GND permanent
	DACK0	29	30	GND
	IRQ14	31	32	NC
	Address 1	33	34	80 pos. Cable detection
	Address 0	35	36	Address 2
	Chip select 0	37	38	Chip select 1
	Activity	39	40	GND

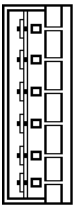
LAN1, LAN2: RJ45 Connectors

LAN1, LAN2: These connections support Ethernet data transfer of 10/100 Mbps.
The port LAN1 offers optionally also 10/100/1000 Mbps.
See chapter “External Interfaces”.

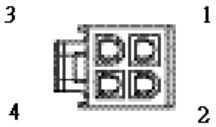
FDC: Floppy Drive Boxheader Connector

FDC: Boxheader, (shrouded), DIP 34-pin	Signal Name	Pin #	Pin #	Signal Name
 **FDC**	GND	1	2	RM/LC
	GND	3	4	NC
	GND	5	6	NC
	GND	7	8	Index
	GND	9	10	Motor enable 0
	GND	11	12	Drive select 1
	GND	13	14	Drive select 0
	GND	15	16	Motor enable 1
	GND	17	18	Direction
	GND	19	20	Step
	GND	21	22	Write data
	GND	23	24	Write gate
	GND	25	26	Track 00
	GND	27	28	Write protect
	NC	29	30	Read data
	GND	31	32	Side 1 select
	NC	33	34	Diskette change

PW1: Positive Voltage Power Connector (+3,3V, +5V)

PW1: Connector, P/B, 6P-M 180D	Pin #	Signal Name
	1	GND
	2	GND
	3	GND
	4	+3.3V
	5	+3.3V
	6	+5V

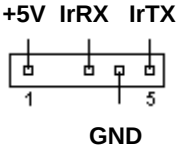
PW2: ATX +12V Power Connector

PW2: Connector, 4-pin-	Pin #	Signal Name
	1	GND
	2	GND
	3	+12V
	4	+12V

IR: IrDA Connector

This connector supports the IrDA interface for wireless communication.

If wireless communication by IrDA is used, please set `UART Mode Select` in BIOS, *INTEGRATED PERIPHERIAL* to *IrDA*.

IR: Pin Header, DIP 4-pin	Pin #	Signal Name
	1	+5V
	2	N/A
	3	IrRX
	4	GND
	5	IrTX

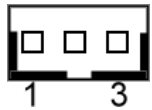
VGA: VGA Connector

See chapter “External Interfaces”.

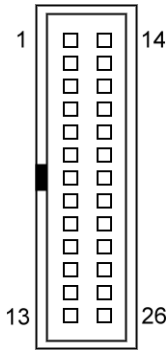
WOL: Wake On LAN Connector

WOL: is a 3-pin header for the Wake On LAN function of the CPU card.

Wake On LAN will function properly only with an ATX power supply that provides 200mA standby current for the +5VSB voltage.

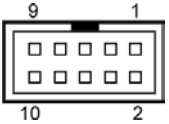
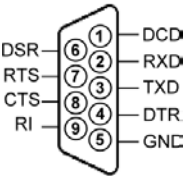
WOL: Boxheader, (shrouded), 3-pin	Pin #	Signal Name
	1	+5VSB
	2	GND
	3	Wake on LAN

LPT1: Parallel Port Connector

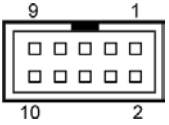
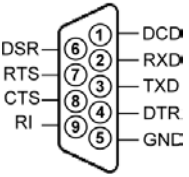
LPT1: Boxheader, (shrouded), DIP 26-pin	Signal Name	Pin #	Pin #	Signal Name
 **LPT1**	–Strobe	1	14	–AutoFeed
	PD0, Data 0	2	15	–Error
	PD1, Data 1	3	16	–Initialize
	PD2, Data 2	4	17	–Select
	PD3, Data 3	5	18	GND
	PD4, Data 4	6	19	GND
	PD5, Data 5	7	20	GND
	PD6, Data 6	8	21	GND
	PD7, Data 7	9	22	GND
	–Acknowledge	10	23	GND
	Busy	11	24	GND
	Paper empty	12	25	GND
	–Select	13	26	NC

COM1, COM2 Serial Ports

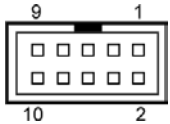
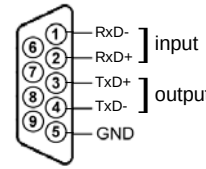
COM1: the 10-pin boxheader is to be used with the supplied serial cable.
Pin assignment RS232:

COM1: Boxheader, (shrouded), **DIP 10-pin**	**RS232**		
 **COM1**	**Pin #**	**Signal Name**	Pinning on the supplied cable connector:
	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 indicator	
	9	GND, ground	
	10	NC	

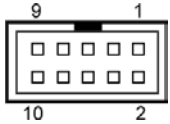
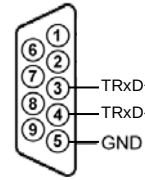
COM2: the 10-pin boxheader is to be used with the supplied serial cable. The interface can be configured as RS232, RS422 or RS485.
Pin assignment as RS232:

COM2: Boxheader, (shrouded), **DIP 10-pin**	**RS232**		
 **COM2**	**Pin #**	**Signal Name**	Pinning on the supplied cable connector:
	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 indicator	
	9	GND, ground	
	10	NC	

Pin assignment as RS422 (see the hint below):

COM2: Boxheader, (shrouded), **DIP 10-pin**	**RS422**		
 **COM2**	**Pin #**	**Signal Name**	Pinning on the standard cable connector:
	1	RxD–, Receive data	
	3	RxD+, Receive data	
	5	TxD+, Transmit data	
	7	TxD–, Transmit data	
	9	GND, ground	

Pin assignment as RS485 (see the hint below):

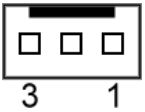
COM2: Boxheader, (shrouded), **DIP 10-pin**	**RS485**		
 **COM2**	**Pin #**	**Signal Name**	Pinning on the standard cable connector:
	1		
	3		
	5	TRxD+, Transmit/Receive data	
	7	TRxD–, Transmit/Receive data	
	9	GND, ground	

Hint referring to the COM2 interface (for RS422 or RS485 communication):

Do not wire any of the pins that are not needed for RS422 or RS485 connections!

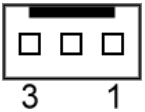
CPU Fan: CPU Fan Power Connector

It is a 3-pin header that allows the connection of the CPU fan. The CPU fan must be a 12V fan.

CPU Fan: Pin Header, 3-pin	Pin #	Signal Name
	1	GND
	2	+12V controlled
	3	Rotation

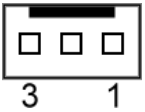
CHS Fan: Chassis Fan Power Connector

It is a 3-pin header that allows the connection of the System fan. The System fan must be a 12V fan.

CHS Fan: Pin Header, 3-pin	Pin #	Signal Name
	1	GND
	2	+12V
	3	Rotation

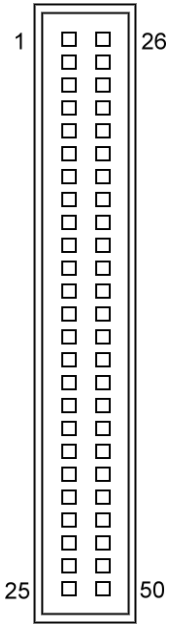
PWR Fan: Chassis Fan Power Connector

It is a 3-pin header that allows to connect the Chassis fan. The Chassis fan must be a 12V fan.

PWR Fan: Pin Header, 3-pin	Pin #	Signal Name
	1	GND
	2	+12V controlled
	3	Rotation

CF: CompactFlash™ Connector

The CompactFlash™ connector is located on the rear side of the PCI-951 board.

CompactFlash	Signal Name	Pin #	Pin #	Signal Name
 **CF**	GND	1	26	GND
	DO3	2	27	D11
	DO4	3	28	D12
	DO5	4	29	D13
	DO6	5	30	D14
	DO7	6	31	D15
	CSO	7	32	CS1
	GND	8	33	GND
	GND	9	34	IORD
	GND	10	35	IOWR
	GND	11	36	WE
	GND	12	37	IRQ25
	VCC	13	38	VCC
	GND	14	39	CSEL
	GND	15	40	NC
	GND	16	41	RESET
	GND	17	42	IORDY
	AO2	18	43	NC
	A01	19	44	VCC
	AO0	20	45	IDE-ACT
	DO0	21	46	connected to 39
	DO1	22	47	D8
	DO2	23	48	D9
	pulled down	24	49	D10
	GND	25	50	GND

Watchdog Timer Configuration

The function of the watchdog timer is to reset the system automatically and is defined by Winbond W83627HF chip. If the Wachdog timer is activated, the system could restart only when the Watchdog is not relocated within the installed time interval.

Please observe: the watchdog timer has a tolerance of 20% for its intervals.

For more information for the programming of the watchdog timer refer to the on-line manual of the Winbond chip W83627HF (www.winbond.com).

Award BIOS Configuration

This chapter describes the settings available in the Award BIOS for the PCI-951 board.

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel® Pentium® 4 and Celeron® processors in a standard IBM-AT compatible I/O system.

BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the Award BIOS is activated.
Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

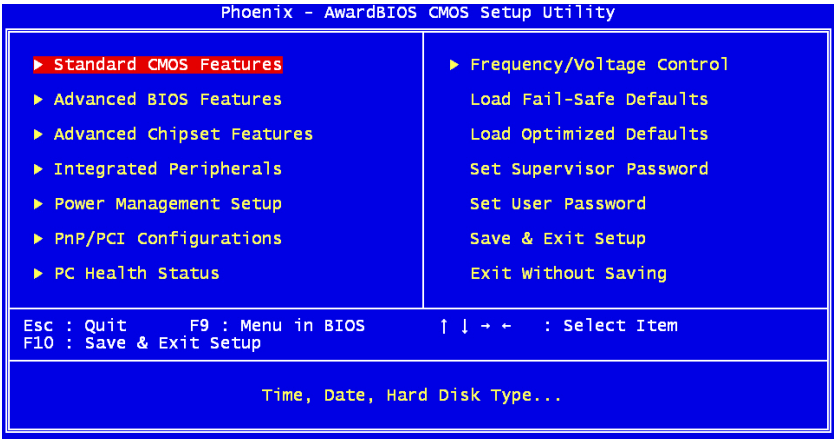
```
Press  <DEL>  to  Enter  Setup
```

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various Setup functions and exit choices.

The changes will be adopted only, if „SAVE & EXIT" is selected for quitting.

CMOS SETUP UTILITY-Copyright (C) 1984-2001



The fields selected by the user are coloured highlighted.

The keys (command keys) and their functions are indicated in a range at the lower edge of the menu.

Underneath the command keys border are information about the current selected menu function (coloured highlighted).

If your computer can not boot after you have made some Setup changes, exists the possibility to reload the functional settings. (vgl. …..)

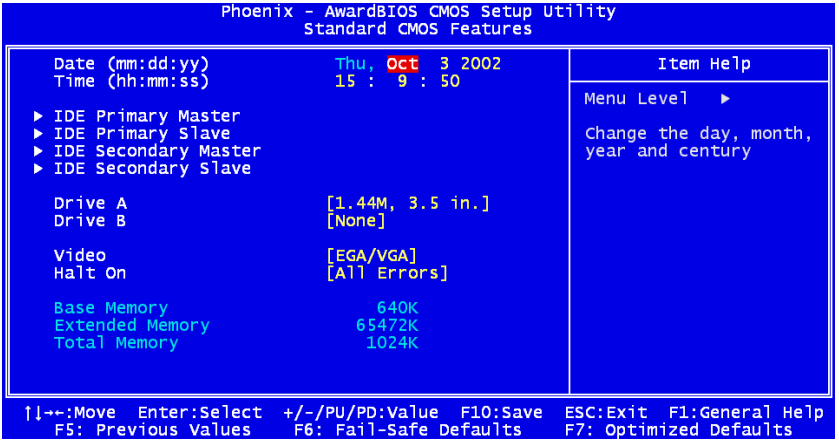
We recommend to avoid changes of the chipset pre-settings (default). These pre-settings are carefully selected, in order to ensure the maximum efficiency with simultaneous reliability.

Standard CMOS Setup

The “Standard CMOS Setup” choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the board is already installed in a working system, you will not need to select this option.

You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

CMOS Setup Utility – Copyright (C) 1984-2001
Standard CMOS Features
AWARD BIOS INC.



At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following describes each item of this menu.

☞ If the memory is not completely recognised, please ensure that it correspond to the recommended specification.

Date

Date:	indicate the date of the device. If you change the date setting, enter the date in the format *mm:dd:yyyy* (month: day: year).		
	Date settings:	*Day:*	*Sun - Sat*
		Month:	*1 - 12*
		Date:	*1 - 31*
		Year:	*1999 - 2099*

Time

Time:	indicate the time of the device. If you change the time setting, enter the time in the format *hh:mm:ss* (hours: minutes: seconds)		
	Time settings:	*Hour:*	*00 - 23*
		Minute:	*00 - 59*
		Second:	*00 - 59*

IDE Primary / IDE Secondary

The onboard IDE connectors provide primary and pecondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the “Master” and the second is the “Slave”.

IDE HDD Autodetection

If you select this option, the parameters of the IDE devices are registered automatically.

IDE Primary / IDE Secondary

None	Set to *None*, if no IDE equipment is installed, or you remove the IDE device without replacing it.
Auto	If the hard disk supports this mode, the Setup menu reads the hard disk parameters from the disk itself. You do not need to select the parameters yourself. This will enable auto detection of your IDE drives and CD-ROM drive during POST.
Manual	You have to enter the parameters of the IDE devices manually. Please only use, if *Auto* does not work correctly

☞ Some data may be lost, if you made changes of the already installed IDE devices subsequently.

Capacity	This entry (size) results automatically from the following data.
CYLS:	Number of cylinders
HEAD:	Number of read/write heads
PRECOMP:	Write pre-compensation cylinder
LANDZ:	Landing zone
SECTOR:	Number of sectors

Access MOD (only for IDE HDDs)

CHS	HD < 528MB
LBA:	HD > 528MB or different CF-devices
Large:	To use with MS-DOS only
Auto:	The optimal mode is selected by the BIOS automatically.

The specifications of your drive must match with the drive table. The hard disk will not work properly, if you enter incorrect information in these fields. If your hard disk drive type is not matched or listed, you can use *Manual* to define your own drive type manually. If you select the option *Manual*, the HDD referred information should be registered manually.

Drive A / Drive B

This field determines the type of the floppy disk drives, which are installed in your system.
The available settings are:

1.44MB - 3.5 in. *360KB - 5.25 in.* *1.2MB - 5.25 in.* *720KB - 3.5 in.* *2.88MB – 3.5 in.*	A 3.5“ Floppy disk drive with 1.44MB is installed.
None	The floppy disk drive is not installed.

Video

This field allows you to select the type of the video card installed in your system.
Available settings:

EGA/VGA(default)	For EGA, VGA, SEGA, SVGA or PGA monitor adapters.
CGA 40	Power up in 40 column mode (only for DOS).
CGA 80	Power up in 80 column mode (only for DOS)..
MONO	For Hercules or MDA adapters.

Halt On

This field specifies the errors which determine the interruption of the boot procedure.

All errors (Default)	The boot procedure stops, whenever the BIOS detects an error.
No errors	The boot procedure will be not halted for any error that may be detected.
All, But Keyboard	The boot procedure will not be halted for a keyboard error; it will stop for all other errors
All, But Diskette	The boot procedure will be not halted for a disk error; it will stop for all other errors.
All, But Disk/Key	The boot procedure will be not halted for a key- board or disk error; it will stop for all others.

☞ If the system stops because of an error, press the F1-key to continue the boot procedure. The system does not start in such a case independently.

Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

CMOS Setup – Copyright (C) 1984-2001
Advanced BIOS Feature
AWARD SOFTWARE, INC.

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                          Advanced BIOS Features

    Virus Warning                [Disabled]          Item Help
    CPU L1 & L2 Cache            [Enabled]
    Quick Power On Self Test     [Enabled]     Menu Level  ►
    First Boot Device            [Floppy]
    Second Boot Device           [HDD-0]       Allows you to choose
    Third Boot Device            [LS120]       the VIRUS warning
    Boot Other Device            [Enabled]     feature for IDE Hard
    Swap Floppy Drive            [Disabled]    Disk boot sector
    Boot Up Floppy Seek          [Enabled]     protection. If this
    Boot Up NumLock Status       [On]          function is enabled
    Gate A20 Option              [Fast]        and someone attempt to
    Typematic Rate Setting       [Disabled]    write data into this
  x Typematic Rate (Chars/Sec) 6                area ,  BIOS will show
  x Typematic Delay (Msec)      250            a warning message on
    Security Option              [Setup]       screen and alarm beep
    APIC Mode                    [Enabled]
    MPS Version Control For OS [1.4]
    OS Select For DRAM > 64MB  [Non-OS2]
    Report No FDD For WIN 95     [No]

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values     F6: Fail-Safe Defaults     F7: Optimized Defaults
```

Virus Warning

This setting (when *Enabled*) protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program.

Default setting: *Disabled.*

☞ Note: The message is not visible under graphic user surfaces such as Windows.

CPU L1 & L2 Cache

This setting allows you to enable or disable the Level-1 and Level-2 cache function.

Enabled (Default):	L1 and L2 Cash are enabled.
Disabled	L1 and L2 Cash are disabled.

Quick Power On Self Test

This field determines whether booting is to be shortened.

Enabled (Default):	Certain tests are not carried out during booting. This accelerates the system start-up.
Disabled	The complete system tests will be carried out during the POST.

First/ Second/ Third Boot Device

These fields specify the sequence in which the BIOS searches the drives of the system, to boot the operating system.
The available options include: *Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, HDD-2, HDD-3, ZIP 100, USB-FDD, USB-ZIP, USB- CDROM, USB- HDD, LAN* and *Disabled*.

Default settings:

First Boot Device	*Floppy*	Default
Second Boot Device	*HDD-0*	Default
Third Boot Device	*LS120*	Default

Boot Other Device

This setting allows you to boot the operating system from other devices other than the ones selected in the First/Second/Third Boot Device.
Default setting: *Enabled.*

Swap Floppy Drive

This field allows you to change the drive letters of the disc drives.

Enabled (Default):	Drive A: becomes B: and drive B becomes A.
Disabled	The drive letters are not changed.

Boot Up Floppy Seek

When *Enabled*, the BIOS will seek whether or not the floppy drive installed has 40 or 80 tracks.
360K type has 40 tracks while 760K, (1.2M and 1.44M) all have 80 tracks.
Default setting: *Enabled*.

Boot Up NumLock Status

This allows you to activate the NumLock function after you power up the system.

On (Default):	The number PAD of the keyboard functions in number mode.
Off:	The number PAD of the keyboard functions in cursor mode.

Gate A20 Option

This field allows you to select how Gate A20 is working. Gate A20 is a device used to address memory above 1 MB.

Fast (Default):	The access is made by the chip set.
Normal:	The access is made by the keyboard controller.

Typematic Rate Setting

This field allows you to specify the repetition rate of the keyboard.

Enabled:	A character sequence appears on the screen, as long as you keep the key pressed.
Disabled (Default):	When a key is held down continuously, only one indication appears on the screen.

Typematic Rate (Chars/Sec)

This field allows you to select, how quickly (characters/second) the keyboard entry (repetition of characters) is to take place.

6 (Default):	Six (6) Chars/Sec
6 to 30	6, 8, 10, 12, 15, 20, 24, 30 Chars/Sec

Typematic Delay (Msec)

These settings allow you to select the time interval for displaying the first and second characters.
By default, this setting is set to *250msec*.

250 (Default):	*250 Msek.*
250-1000	*250, 500, 750, 1000 Msek.*

CMOS Setup – Copyright (C) 1984-2001
Advanced Chipset Feature Setup
AWARD SOFTWARE, INC.

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                          Advanced BIOS Features

    CPU L1 & L2 Cache          [Enabled]                 Item Help
    Quick Power On Self Test   [Enabled]
    First Boot Device          [Floppy]                  Menu Level  ►
    Second Boot Device         [HDD-0]
    Third Boot Device          [LS120]
    Boot Other Device          [Enabled]
    Swap Floppy Drive          [Disabled]
    Boot Up Floppy Seek        [Enabled]
    Boot Up NumLock Status     [On]
    Gate A20 Option            [Fast]
    Typematic Rate Setting     [Disabled]
  x Typematic Rate (Chars/Sec) 6
  x Typematic Delay (Msec)      250
    Security Option            [Setup]
    APIC Mode                  [Enabled]
    MPS Version Control For OS [1.4]
    OS Select For DRAM > 64MB  [Non-OS2]
    Report No FDD For WIN 95   [No]
    Small Logo(EPA) Show       [Enabled]

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults
```

Security Option

This field allows you to limit the access to the System and Setup.
Available settings are:

Setup (Default):	The password is required only for the access to the BIOS.
System	The password is required each time when the computer boots up.

☞ If the installed password is empty, then no inquiry is made.

APIC Mode

This field is used to enable or disable the APIC (Advanced Programmable Interrupt Controller). Due to compliance with PC2001 design guide, the system is able to run in APIC mode.
Available settings:

Enabled (Default):	APIC mode will expand available IRQ resources for the system.
Disabled:	APIC is switched off.

MPS Version Control For OS

This field allows you to select which MPS (Multi-Processor Specification) version is used. You have to select the MPS version supported by your operating system.
Available settings: *1.4* and *1.1*.
Default setting: *1.4*.

OS Select for DRAM > 64MB

This field determines whether the storage area over 64 MByte is to be administrated by the operating system OS/2. If is used the operating system OS/2 select the option *OS2* here, otherwise *Non-OS2*.
Default setting: *Non-OS2.*

Report No FDD For WIN 95

This field determines whether the BIOS should inform the operating system Windows 95 whether a floppy disc drive is present or not. This function avoids unnecessary waiting times under Windows 95. Available settings are *Yes* and *No*.

Yes:	Windows 95 should not look for a floppy disc drive if none is present.
No (Default):	Windows 95 should ascertain itself whether a floppy disc drive is present.

Small Logo (EPA) Show

This option allows you to determine if the EPA Logo is to be indicated during the bootup on the screen.
Available settings are:

Enabled (Default):	Show the EPA screen logo.
Disabled:	No show EPA screen logo.

Advanced Chipset Features

This Setup menu controls the configuration of the board chipset.

CMOS Setup Utility – Copyright © 1984-2001
Advanced CHIPSET FEATURES
AWARD SOFTWARE INC.

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                          Advanced Chipset Features

   DRAM Timing Selectable      [By SPD]                    Item Help
   CAS Latency Time            [1.5]
   Active to Precharge Delay   [7]                         Menu Level  ►
   DRAM RAS# to CAS# Delay     [3]
   DRAM RAS# Precharge         [3]
   Turbo Mode                  [Disabled]
   Memory Frequency For        [Auto]
   System BIOS Cacheable       [Enabled]
   Video  BIOS Cacheable       [Enabled]
   Memory Hole At 15M-16M      [Disabled]
   Delayed Transaction         [Enabled]
   Delay Prior to Thermal      [16 Min]
   AGP Aperture Size (MB)      [64]

   ** On-Chip VGA Setting **
   On-Chip VGA                 [Enabled]
   On-Chip Frame Buffer Size   [8MB]
   Boot Display                [Auto]

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values     F6: Fail-Safe Defaults    F7: Optimized Defaults
```

DRAM Timing Selectable

This field allows you to select the timing of the DDR DRAM memory modules.
Available settings: *By SPD* and *Manual*.
Default setting: *By SPD*.

CAS Latency Time

This field allows you to select the latency between access time from the “Read” command of the memory controller to the time of the delivering the requested data. The manufacturer of this board sets this value, according to the installed DDR DRAM.
Do not change the values in this field, unless you change specifications of the installed DRAM or the installed CPU.
Available settings: *1.5, 2* and *2.5* .
Default setting: *1.5*.

Activity to Precharge Delay

This setting controls the number of clock cycles for DRAM to be allowed to precharge from the active state. Available settings : *7, 6,* and *5.*
Default setting: *7*. (Do not change the default setting)

DRAM RAS# to CAS# Delay

You can select RAS to CAS Delay time in CLKs of 2/2 or 3/3. The manufacturer of this board sets this value, according to the installed DDR DRAM. Do not change this value, unless you change specifications of the installed DRAM (DDR) or the installed CPU.
Available settings are: *2* and *3*.
Default setting: *3*.

DRAM RAS# Precharge

This field allows you to select how much time between two memory accesses passes. Available settings are *2* und *3.*
Default setting: 3

Turbo Mode

This setting controls the DRAM running to Turbo mode or not.
Setting option: *Disabled* (default)***,*** *Enabled.*

Memory Frequency For

This field allows you to configure the clock frequency of the installed SDRAM.

Available settings: *Auto* (Default)*, DDR 200, DDR 266, DDR 333.*

System BIOS Cacheable

The setting of *Enabled* allows caching of the system BIOS ROM at F000h-FFFFFh, resulting in better system performance. This memory area can be buffered (in the internal Cache of the CPU). The accesses to the BIOS become faster.
Available settings are *Enabled* (Default) and *Disabled*.

Video BIOS Cacheable

The video BIOS occupies the range from C000:0 to maximally DFFF:0. This range can be buffered (in the internal Cache CPU). The accesses to the video BIOS become faster. Available settings are: *Enabled* (default) and *Disabled*.

The settings „Video BIOS Cacheable“ and „System BIOS Cacheable“ offer practically only under DOS an acceleration. Modern operating systems did not use the BIOS.

Memory Hole At 15M-16M

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB. Available settings are *Enabled* and *Disabled* (default).

Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Settings options are *Enabled* (default) and *Disabled*.
The compatibility to the PCI specification version 2.1 is only ensured, if the buffer is activated (*Enabled*).

Delay Prior to Thermal

When the CPU temperature reaches a factory preset level, a thermal monitoring mechanism will be enabled following the appropriate timing delay specified in this field. With the thermal monitoring enabled, clock modulation controlled by the processor’s internal sensor is also activated to keep the processor within allowable temperature limit.
Available settings: *4 Min*, *8 Min*, *16 Min* (Default), *32 Min*.

AGP Aperture Size (MB)

The field sets aperture size of the graphics. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. Available settings are *4M*, *8M*, *16M*, *32M*, *64M*, *128M* and *256M*.
Default setting: *64M*.

On-Chip VGA

The available settings for the On-Chip VGA are *Enabled* and *Disabled*.
Default setting: *Enabled*.

On-Chip Frame Buffer Size

The available settings for the On-Chip Frame Buffer Size are *8MB* and *1MB*.
Default setting: *8MB*.

Boot Display

The available settings for the Boot Display are *Auto*, *CRT*, *TV* and *EFP*.
Default setting: *Auto*.

Integrated Peripherals

This option sets your hard disk configuration, mode and port.

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INTEGRATED PERIPHERALS
AWARD SOFTWARE INC.

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                              Integrated Peripherals

   On-Chip Primary   PCI IDE [Enabled]                    Item Help
   IDE Primary Master PIO    [Auto]
   IDE Primary Slave  PIO    [Auto]                     Menu Level  ►
   IDE Primary Master UDMA   [Auto]
   IDE Primary Slave  UDMA   [Auto]
   On-Chip Secondary PCI IDE [Enabled]
   IDE Secondary Master PIO  [Auto]
   IDE Secondary Slave  PIO  [Auto]
   IDE Secondary Master UDMA [Auto]
   IDE Secondary Slave  UDMA [Auto]
   USB Controller            [Enabled]
   USB 2.0 Controller        [Enabled]
   USB Keyboard Support      [Disabled]
   AC97 Audio                [Auto]
   Init Display First        [Onboard/AGP]
   Onboard LAN control       [Enabled]
   IDE HDD Block Mode        [Enabled]
   Onboard FDC Controller    [Enabled]
   Onboard Serial Port 1     [3F8/IRQ4]

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults
```

On-Chip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Available settings are *Enabled* (Default) and *Disabled*.
The setting *Enabled* is available for each channel separately.

IDE Primary/Secondary Master/Slave PIO

These fields allow your system hard disk controller to work faster. Rather than have the BIOS issue a series of commands that transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with the controller and CPU directly.
The system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. Available settings are: *0, 1, 2, 3, 4* and *Auto*. When *Auto* is selected, the BIOS will select the best available mode.
Default setting: *Auto*.

IDE Primary/Secondary Master/Slave UDMA

These fields allow you to improve the disk I/O through the Ultra DMA feature. The available settings are *Auto* and *Disabled*.
Default setting: *Auto*

USB Controller

The available settings for this field are *Enabled* and *Disabled*.
Default setting: *Enabled*.

USB 2.0 Controller

The available settings for this field are *Enabled* and *Disabled*.
Default setting: *Enabled*.

USB Keyboard Support

This field allows you to switch on or off the support for USB keyboards (for operating systems without USB supporting).
Available settings are *Enabled* and *Disabled*.
Default setting: *Disabled*.

This function should not be activated, if the operating system provides USB support.

AC97 Audio

The available settings for this field are *Auto* and *Disabled*.
Default setting: *Auto*.

Init Display First

This field allows you to select the VGA card that is to be initialised first. Available choices: PCI-slot or AGP card.
Available settings are *Onboard/AGP* und *PCI Slot.*
Default setting: *Onboard/AGP*.

Onboard LAN Controller

The field determines whether the onboard LAN controller will be activated.
Available settings are *Enabled* and *Disabled.*
Default setting: *Enabled*.

IDE HDD Block Mode

If your hard disk supports the block mode, select *Enabled* for the automatic determination of the number of the blocks per request. Several sectors can be at the same time read/written. The data transfer rate will be increased.
Available settings are *Enabled* and *Disabled*.
Default setting: *Enabled*.

Onboard FDC Controller

This field allows you to activate or to deactivate the on board integrated floppy disk controller.

Enabled (Default):	The floppy disk controller of the board is used.
Disabled	If a supplementary floppy disk controller is used or the system is not equipped with a floppy disk drive.

Onboard Serial Port 1&2

These fields allow you to select the onboard serial ports and their addresses.
Available settings are:

	Default	Available settings (without default setting)
Serial Port 1	*3F8/IRQ4*	*2F8/IRQ3 / 3E8/IRQ4 / 2E8/IRQ3 / Disabled / Auto*
Serial Port 2	*2F8/IRQ3*	*3F8/IRQ4 / 3E8/IRQ4 / 2E8/IRQ3 / Disabled / Auto*

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INTEGRATED PERIPHERIAL
AWARD SOFTWARE INC.

```
Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals

USB 2.0 Controller          [Enabled]          Item Help
USB Keyboard Support        [Disabled]
AC97 Audio                  [Auto]             Menu Level  ►
Init Display First          [Onboard/AGP]
Onboard LAN control         [Enabled]
IDE HDD Block Mode          [Enabled]
Onboard FDC Controller      [Enabled]
Onboard Serial Port 1       [3F8/IRQ4]
Onboard Serial Port 2       [2F8/IRQ3]
UART Mode Select            [Normal]
RxD , TxD Active            [Hi,Lo]
IR Transmission Delay       [Enabled]
UR2 Duplex Mode             [Half]
Use IR Pins                 [IR-Rx2Tx2]
Onboard Parallel Port       [378/IRQ7]
Parallel Port Mode          [SPP]
EPP Mode Select             [EPP1.7]
ECP Mode Use DMA            [3]
PWRON After PWR-Fail        [Off]

↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
F5: Previous Values  F6: Fail-Safe Defaults  F7: Optimized Defaults
```

UART Mode Select

This field determines the UART mode in your computer.
Available settings are *Normal*, *IrDA* and *ASKIR*.
Default setting: *Normal*.

RxD, TxD Active

The available settings for this field are *Hi,Lo* / *Lo,Hi* / *Lo,Lo* / *Hi,Hi*.
Default setting: *Hi,Lo.*

IR Transmission Delay

By default, this field is set to *Enabled*.

UR2 Duplex Mode

The available settings for this field are *Half* (default) and *Full.*

Use IR Pins

The available settings for this field are *IR-Rx2Tx2* (default) and *RxD2, TxD2*.

The setting depends on the used infrared transmitter and the used end device.

Onboard Parallel Port

This field allows you to select the resources (I/O address and IRQ) for the onboard parallel port.
Available settings are:

	Default	Available settings (without default setting)
Parallel Port	*378/IRQ7*	*278/IRQ5 / 3BC/IRQ7 / Disabled*

The ECP or EPP mode is not supported, if the setting option is 3BC.

Parallel Port Mode

This field allows you to select the modes of the parallel port.

SPP	Normal Printer Port
EPP	Enhanced Parallel Port
ECP	Extended Capabilities Port
ECP+EPP	Enhanced Parallel and Extended Capabilities Port
Normal	Normal Parallel Port

ECP Mode Select

The available settings for this field are *EPP 1.7* and *EPP 1.9*.
Default setting: *EPP 1.7*.

ECP Mode Use DMA

The available settings for this field are *3* and *1*.
Default setting: *3*.

PWRON After PWR-Fail

Depending on this setting, the system behaves differently, if the power connection is restored after a power failure or interrupt occurs.
The available settings for this field are *Off*, *On*, *Former-Sts*.
Default setting: *Off*.

Power Management Setup

The Power Management Setup allows you to use energy saving functions for your system effectively. It will shut down the hard disk and turn off video controller after a period of inactivity.

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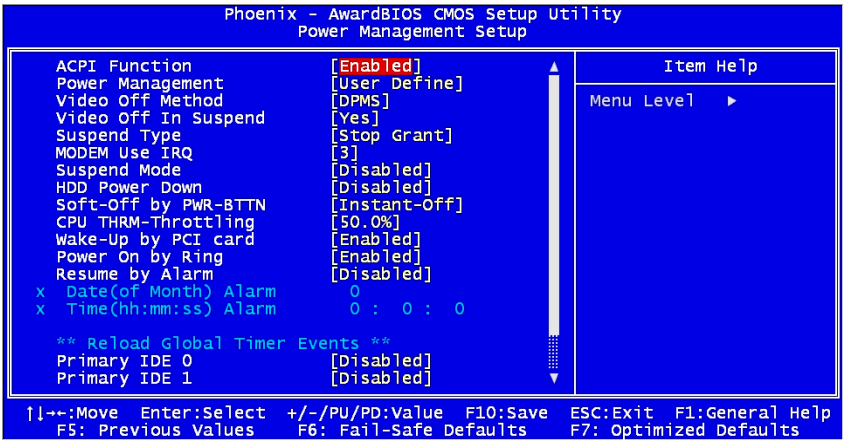
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.



ACPI Function

This field allows you to enable or to disable the Advanced Configuration Power Management (ACPI) function.

The available settings are *Enabled* and *Disabled*.

Default setting: *Enabled.*

Power Management

This field allows you to select the type of power saving management modes. Available settings for this field are:.

User Define (Default)	Each of the ranges is from 1 min. to 1h. Exception: the ranges can be set for the HDD from 1 min. to 15 min.
Min. Power Saving	Minimum power management.
Max. Power Saving	Maximum power management.

In order to ensure the CPU overheat protection, the *Power Management* field should not be set to *Disabled*; (the setting *Disabled* is not available).

Video Off Method

This field defines the Video Off features.
The available settings are:

DPMS	Allows the BIOS to control the video card if it supports the DPMS feature.
Blank Screen	This option only writes blanks to the video buffer.
V/H SYNC+Blank	Video off function depend on display's H-SYNC & V-SYNC signal.

Video Off In Suspend

This field determines whether the monitor will be switched into the power save mode or not.
Available settings are: *Yes* (Default) and *No*.

Suspend Type

Available settings for this field are: *Stop Grant*, *PwrOn Suspend*.
Default setting: *Stop Grant.*

Modem Use IRQ

This field names the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always wakes up the system.
Available settings are: *NA*, *3* (Default), *4, 5, 7, 9, 10, 11.*

Suspend Mode

When *Enabled*, after the set time of system inactivity all devices, except the CPU, will be shut off.
Available settings are: *Enabled* and *Disabled* (Default).

HDD Power Down

This field determines whether the hard disk will be powered down or not.
Available settings are: *Disabled* (Default)*, 1Min, 2Min, 3Min, 4Min, 5Min, 6Min, 7Min.*
After the set time (Min. = minutes) of system inactivity, the hard disk drive will be powered down.
Default setting: *Disabled* (The system will be not powered down the hard disk).

Soft-Off by PWR-BTTN

This field defines the power-off mode when using an ATX power supply.
The available settings are *Instant Off* and *Delay 4 sec.*
Default setting: *Instant-Off*.
The instant-Off mode allows powering off immediately upon pressing the power button. In the *Delay 4 Sec.* mode, the system powers off when the power button is pressed for more than four seconds or places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity (see next field) when pressed for less than 4 seconds.

CPU THRM-Throttling

This field allows you to reduce the CPU internal working frequency.
Available settings are: *12,5 %, 25%, 37,5%, 50%, 62,5%, 75%, 87,5%*.
(e.g.: for a set value of 12%, the CPU working frequency will be stopped to 12%.)
Default setting: *50.0 %.*

Wake-Up by PCI Card & Power On by Ring

These fields specify whether the system will be waked up from power saving modes, when activity or input signal of the specified hardware peripheral or component is detected.
The available settings are *Enabled* und *Disabled*.
Default setting: *Enabled*.

To use the function “*Wake Up On Ring*“ or “Wake Up On LAN” you have to install a modem/LAN card, that supports the “power on” function.

Resume by Alarm

The available settings are *Enabled* and *Disabled* (Default).
This field allows you to enable or to disable the resumption of the system operation. When *Enabled*, the user can set the *Date Alarm* and *Time Alarm*.

	Default	Available settings
Date (of Month) Alarm	*0*	0-31
Time (HH:MM:SS:) Alarm	*00:00:00*	00-23 / 00-59 / 00-59

Reload Global Timer Events

The HDD, FDD, COM, LPT Ports, and PCI PIRQ are I/O events which can prevent the system from entering a power saving mode or can wake up the system from such a mode. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

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POWER MANAGEMENT SETUP
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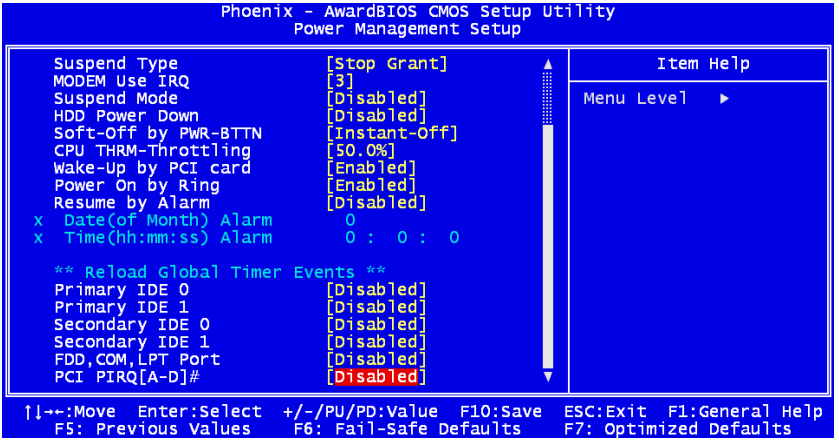

PNP/PCI Configuration

This option configures the PCI bus system and the Plug & Play function.

☞ Change of the default settings in this menu may only carried out by very experienced users. Incorrect settings can cause malfunctions or damage of the board.

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PNP/PCI CONFIGURATION
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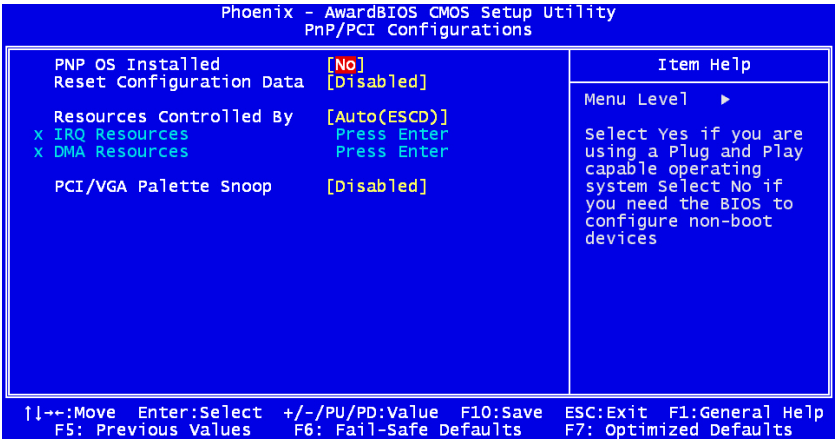


PNP OS Installed

This field determines the Plug&Play function. Plug&Play means that added components are automatically recognised and installed if they support automatic recognition.
The available settings are *No* (Default) and *Yes*.

Yes:	The operating system assumes part of the Plug&Play functions. This setting should only be selected if the operating system supports Plug&Play (e. g. Windows 95 or higher).
No: (Default)	The system BIOS assumes the recognition of the components and assigns the resources.

Reset Configuration Data

This field determines whether the configuration data are newly initiated (reset) when the device is started.

Disabled (Default):	The installed components and drives are initiated with the existing configuration data. There is no updating when the device is started.
Enabled:	After the device is started the old configuration data are reset. The current configuration data are registered by the Plug&Play function. The installed components and drives are initiated with these data.

Resources Controlled by

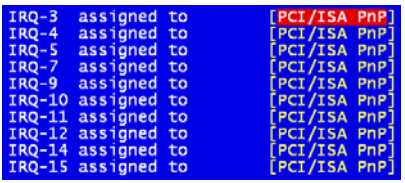
This field determines by whom the system resources are to be administrated. This PnP BIOS can configure all of the boot and PnP compatible devices automatically. However, this capability needs you to use a PnP operating system such as Windows 95.

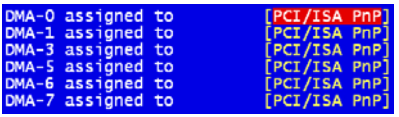
Available settings are: *Auto* and *Manual.*

Auto(ESCD) (Default):	The BIOS administrates the resources automatically.
Manual	The user determines the resources assignment.

IRQ Resources/ DMA Resources

To configure the IRQ Resources and the DMA Resources, these *Resources Controlled By* field should be set to *Manual*.
Available settings are: *PCI/ISA PnP* (Default) and *Legacy ISA*.





PCI/ VGA Palette Snoop

The available settings are *Enabled* and *Disabled*.
Leave this filed at *Disabled*.

PC Health Status

This section shows the states of the CPU, fans, warning for overall system status.

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PC Health Status
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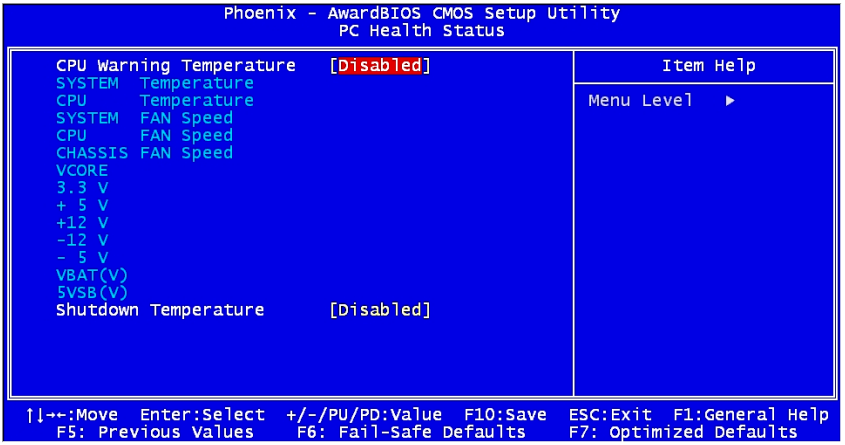

CPU Warning Temperature

The available settings are *Disabled* (Default), *50°C (122°F), 53°C (127°F), 56°C (133°F), 60°C (140°F), 63°C (145°F), 66°C (151°F)* und *70°C (158°F)*.
When *Enabled,* you can set a temperature limit value for the temperature monitoring of the CPU. The system will warn the user, when the CPU temperature has reached the set temperature value.

Temperature/ Fan Speed/ Voltages

These fields allow you to observe the parameters of the hardware monitoring function feature of the system. The values are read-only values for the monitoring of the system and show the PC health status.

Shutdown Temperature

The Available settings are *Disabled* (Default), *60°C (140°F), 65°C (149°F), 70°C (158°F)* und *75°C (167°F).*
This field allows you to set the *Shutdown Temperature* level for the processor. The system will be shut down, when the processor has reached the set temperature.

Frequency/ Voltage Control

This section allows you to set the CPU Frequency/ Voltage Control.

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Frequency / Voltage Control
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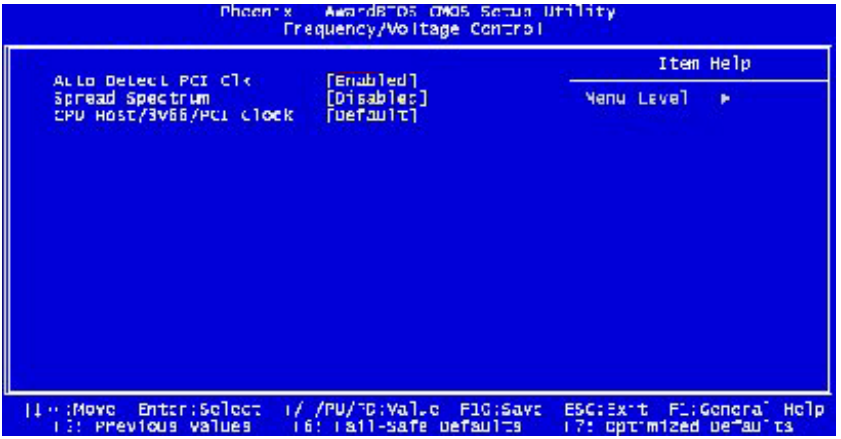

Auto Detect PCI Clk

This field allows you to enable or to disable auto detect PCI Clock.
Available settings are: *Enabled* (Default) and *Disabled*.

Spread Spectrum

This field allows you to set the CPU Clock / Spread Spectrum.
The setting *Enable* is recommended for low EMI radiation.
Available settings are: *Enabled* and *Disabled* (Default).

CPU Host/ 3V66/ PCI Clock

The standard setting for this field is *Default.* All other settings affect negatively the stability of system and are not recommended to be used.

Load Fail-Safe Defaults

By this option the system can reload all default settings, which are permanently stored in the BIOS-ROM.
These settings are not the optimised default settings (manufacturing defaults) for your system, but can be used, if after changes, the system does not run reliably.

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Load Fail-Safe Defaults Setup Utility
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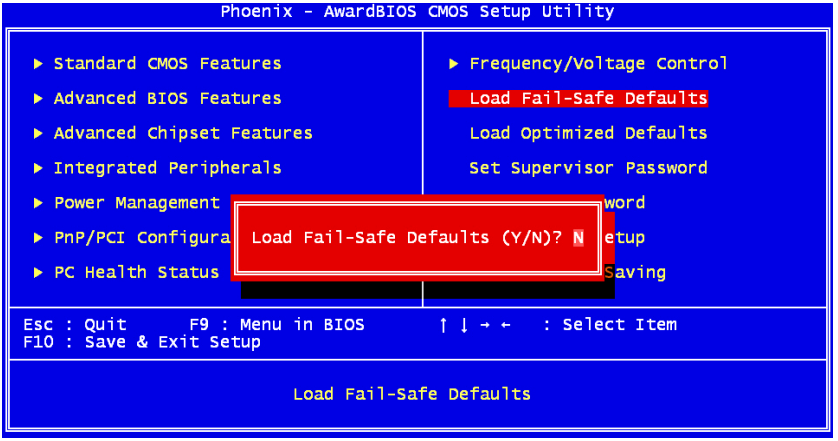

Load Optimized Defaults

This option allows you to load the default values of your system configuration. These default settings (manufacturing settings) are optimal and enable all high performance features.

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Load Optimized Defaults Setup Utility
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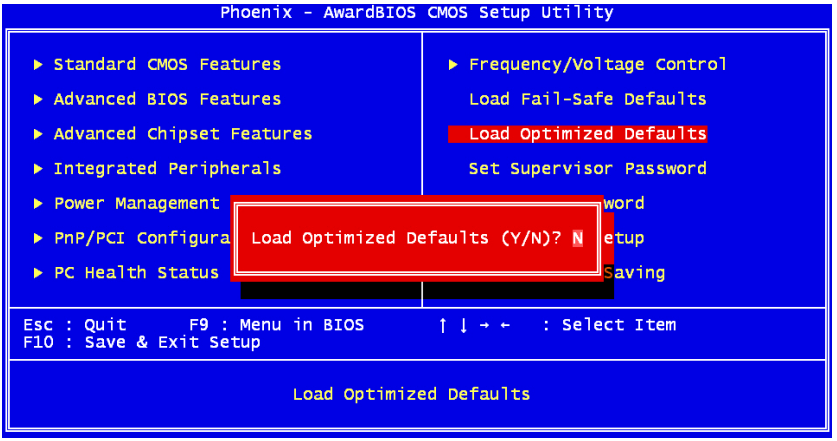

Set Supervisor / User Password

These two options set the system password. *Supervisor Password* sets a password that will be used to protect the “System” and the “Setup utility”. Starting of the operating system as well as changes in the BIOS Setup require the enter of this password.
User Password sets a password that will be used exclusively on the system. Only starting of the operating system requires the enter of this password.

To specify a password, highlight the type you want and press <Enter>.
The *Enter Password:* message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled.

See also subsection “Security Option”, chapter “Advanced BIOS Features”.

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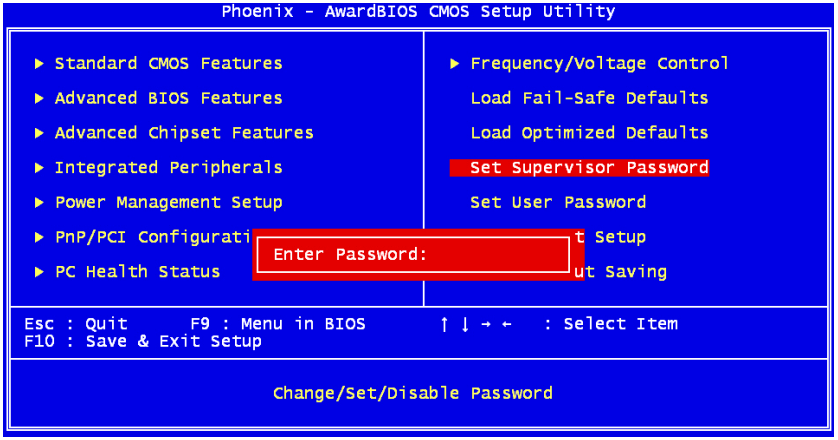
Set Supervisor / User Password Utility
AWARD SOFTWARE INC.



Save & Exit Setup

This option allows you to determine whether to accept the modifications or not. If you type “Y”, you will quit the Setup utility and save all changes into the CMOS memory. If you type “N”, you will return to Setup utility.

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Save & Exit Setup Utility
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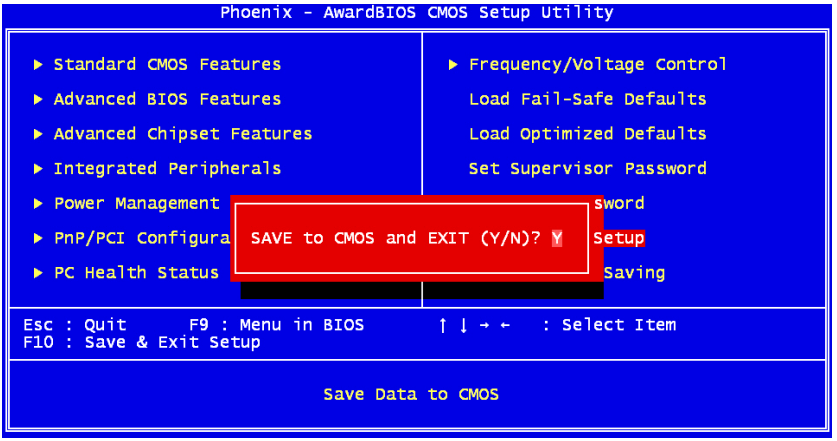

Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing “Y” will quit the Setup utility without saving the modifications. Typing “N” will return you to Setup utility.

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Exit Without Saving Utility
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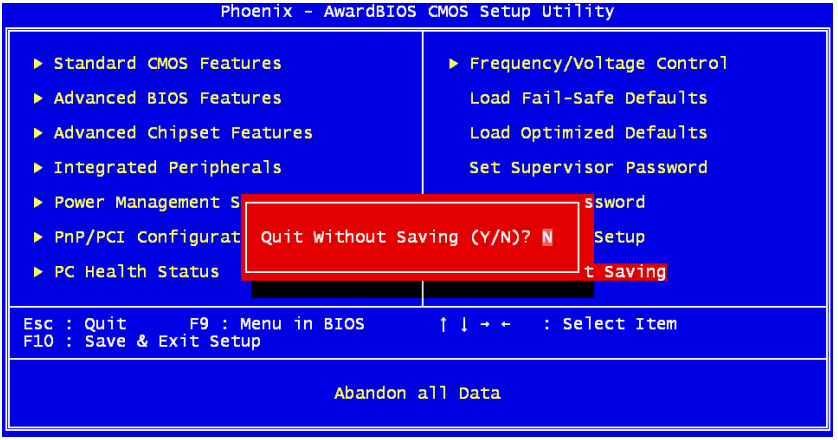

AMI BIOS Configuration

This chapter describes the settings available in the optional AMI-BIOS for the PCI-951 board. The AMI-BIOS (Basic Input/Output System) pre- installed in your computer system's ROM supports Intel® Pentium® 4 and Celeron® processors in a standard IBM-AT compatible I/O system.

BIOS Setup

The AMI-BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the AMI-BIOS is activated.
Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

```
Press  <DEL>  to  Enter  Setup
```

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.
When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various Setup functions and exit choices.
The Main BIOS Setup menu screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured. Options is blue 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

Hot Key	Description
→← Left/Right	The *Left and Right* <Arrow> keys allow you to select a BIOS Setup screen. For example: Main screen, Advanced screen, Chipset screen, and so on.
↑↓ Up/Down	The *Up and Down* <Arrow> keys allow you to select a BIOS Setup item or sub-screen.
+- Plus/Minus	The *Plus and Minus* <Keys> keys allow you to change the field value of a particular BIOS Setup item. For example: Date and Time.
Tab	The <Tab> key allows you to select BIOS Setup fields.

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. The Fail-Safe settings allow the motherboard to boot up with the least amount of options enabled. This can lessen the probability of conflicting settings.

The <F9> key on your keyboard is the Optimal-Default key. To set the Optimal-Default settings of the BIOS, press the <F9> key on your keyboard.

Main

```
                              BIOS Setup Utility
 Main   Advanced   PCIPnP   Boot   Security   Chipset   Exit
System Overview                                          Item Specific
                                                         Help
AMIBIOS
Version:        08.00.10
Build Date:     08/02/04
ID:             0AAZI021

Processor
Type:           Intel(R) Pentium(R) 4 CPU 3.06GHz
Speed:          3066MHz
Count:          1                                        ←→ Select Menu
                                                         ↑↓  Select Item
System Memory                                            +-  Change Field
Size:           248MB                                    Tab Select Field
                                                         F1  General Help
System Time                     [13:15:41]               F10 Save and Exit
System Date                     [Wed 11/17/2004]         ESC Exit
                 Version, (C) Copyright, American Megatrends, Inc.
```

System Time / System Date

System Time	Indicates the time of the device. If you change the time setting, enter the time in the format *HH:MM:SS* (hours: minutes: seconds).
System Date	Indicates the date of the device. If you change the date setting, enter the date in the format *MM.DD.YYYY* (month/day/year). The “System Date” format can be arbitrary configured.

Advanced

```
                          BIOS Setup Utility
   Main    | Advanced | PCIPnP | Boot | Security | Chipset | Exit

 Advanced Settings                          Item Specific Help

 Warning:  Setting wrong values in below
           sections may cause system to
           malfunction.

 > CPU Configuration
 > IDE Configuration                        ←→ Select Menu
 > Floppy Configuration                     ↑↓  Select Item
 > SuperIO Configuration                    Enter Go to Sub Screen
 > Hardware Health Configuration            F1  General Help
 > ACPI Configuration                       F10 Save and Exit
 > Event Log Configuration                  ESC Exit
 > Remote Access Configuration
 > USB Configuration

          Version, (C) Copyright, American Megatrends, Inc.
```

You can select the sub menus of the *Advanced* BIOS Setup:

- CPU Configuration
- IDE Configuration
- Floppy Configuration
- SuperIO Configuration
- Hardware Health Configuration
- ACPI Configuration
- Event Log Configuration
- Remote Access Configuration
- USB Configuration

CPU Configuration

BIOS Setup Utility						
Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Exit

Configure advanced CPU settings		Item Specific Help
Manufacterer:	Intel	
Brand String:	Intel(R) Pentium(R) 4 CPU 3.06GHz	
Frequency:	3.06GHz	
FSB Speed:	533MHz	
Cache L1:	8 KB	←→ Select Screen
Cache L2:	512 KB	↑↓ Select Item
		F1 General Help
Ratio Status:	Locked	F10 Save and Exit
Ratio Actual value:	23	ESC Exit

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IDE Configuration

This field can be use to select options for the IDE Configuration settings.

```
                          BIOS Setup Utility
Main   | Advanced | PCIPnP | Boot | Security | Chipset | Exit

IDE Configuration                                  Item Specific
                                                   Help
Onboard PCI IDE Controller      [Both]

> Primary IDE Master                [Hard Disk]
> Primary IDE Slave                 [Not Detected]   ←→ Select Screen
> Secondary IDE Master              [ATAPI CDROM]    ↑↓  Select Item
> Secondary IDE Slave               [Not Detected]   +-  Change Option
                                                     F1  General Help
Hard Disk Write Protect         [Disabled]           F10 Save and Exit
IDE Detect Time Out (Sec)       [35]
ATA(PI) 80Pin Cable Detection   [Host & Device]      ESC Exit

          Version, (C) Copyright, American Megatrends, Inc.
```

Onboard PCI IDE Controller

This item specifies the IDE channels used by the onboard PCI IDE controller. Possible settings are: *Disabled, Primary, Secondary or* ***Both****.*

Disabled	Set this value to prevent the computer system from using the onboard IDE-controller.
Primary	Set this value to allow the computer system to enable only the primary IDE-channel (primary master and primary slave).
Secondary	Set this value to allow the computer system to enable only the secondary IDE-channel (secondary master and secondary slave).
Both	Set this value to allow the computer system to enable the primary and the secondary IDE-channel (primary master, primary slave, secondary master and secondary slave).

Hard Disk Write Protect

This option allows you to enable or disable the device write protection. This will be effective only if the device is accessed through BIOS (e. g. MS-DOS). Possible settings are: ***Disabled****, Enabled.*

IDE Detect Time Out (Sec)

Set this option to stop the AMIBIOS from searching for IDE devices within the specified number of seconds. Basically, this allows you to fine-tune the settings to allow for faster boot times.

Low settings can cause unreliable detection!

Possible settings are: *0, 5, 10, 15, 20, 25, 30* and ***35****.*

0	This is the optimal setting for systems whose onboard controllers point to a specific IDE device in the AMI BIOS.
5	Set this option to stop the BIOS from searching the IDE bus for IDE devices in five seconds.
10	Set this option to stop the BIOS from searching the IDE bus for IDE devices in ten seconds.
15	Set this option to stop the BIOS from searching the IDE bus for IDE devices in 15 seconds.
20	Set this option to stop the BIOS from searching the IDE bus for IDE devices in 20 seconds.
25	Set this option to stop the BIOS from searching the IDE bus for IDE devices in 25 seconds.
30	Set this option to stop the BIOS from searching the IDE bus for IDE devices in 30 seconds.
35	This setting is recommended for all IDE devices that are set to AUTO in the BIOS setting (because a Master waits 30 sec. max. for a slave device).

ATA(PI) 80Pin Cable Detection

Set this option to define the method used to detect an ATA (PI) 80-pin cable. Possible settings are: ***Host & Device****, Host* and *Device.*

Host & Device	Set this value to use both the motherboard IDE controller and the IDE device to detect the type of IDE cable present.
Host	Set this value to use motherboard onboard IDE controller to detect the type of IDE cable present.
Device	Set this value to use IDE disk drive to detect the type of IDE cable present.

- **Primary IDE Master, Primary IDE Slave, Secondary IDE Master, Secondary IDE Slave**

These two fields call the submenu to make corresponding settings of the IDE devices.

You should change the default settings only if you are connecting an additional IDE drive (e.g. Hard disk drive).

The description of the setting options for *Primary Master* also applies to *Primary Slave (Secondary Master/Secondary Slave)*. The default settings strongly depend on the installed drive. The pictured screen is only an example for which entries should be available.

```
                              BIOS Setup Utility
 Main   | Advanced | PCIPnP | Boot | Security | Chipset | Exit
 Primary IDE Master/Primary IDE Slave          Item Specific
                                               Help
 Device:        Hard Disk
 Vendor:        Maxtor 2B020H1
 Size:          20.4GB
 LBA Mode:      Supported
 Block Mode:    16Sectors
 PIO Mode:      4
 Async DMA :    MultiWord DMA-2
 Ultra DMA:     Ultra DMA-5                    ←→ Select Menu
 S.M.A.R.T.     Supported                      ↑↓  Select Item
                                               +-  Change Option
 Type                                [Auto]    F1  General Help
 LBA/Large Mode                      [Auto]    F10 Save and Exit
 Block (Multi-Sector Transfer)       [Auto]    ESC Exit
 PIO Mode                            [Auto]
 S.M.A.R.T.                          [Auto]
 32Bit Data Transfer                 [Disabled]
          Version, (C) Copyright, American Megatrends, Inc.
```

Type

Select the type of device connected to the system.
*Not Installed**, Auto***, *CDROM* and *ARMD (**A**TAPI **R**emovable **M**edia **D**evice)*.

LBA/Large Mode

The LBA (**L**ogical **B**lock **A**ddressing)/Large Mode option allows you to enable or disable support for IDE devices with capacities greater than 528MB. The maximum drive capacity in the LBA mode is 137GB.

Disabled	Disables the LBA Mode and prevent the BIOS from using LBA mode control on the specified channel.
Auto	This setting allows the BIOS to auto-detect LBA mode control on the specified channel (if the device supports it and the device is not already formatted with LBA Mode disabled).

Block (Multi-Sector Transfer)

If your hard disk supports the block mode, select *Auto* for the automatic determination of the number of the blocks per request. Several sectors can be at the same time read/written. The data transfer rate will be increased.

Available settings are: ***Auto*** and *Disabled*.

Auto	The data transfer from and to the device occurs multiple sectors at a time if the device supports it. Block mode allows transfers of up to 64Kb per interrupt.
Disabled	The data transfer from and to the device occurs one sector at a time. Only 512 byte of data can be transferred per interrupt if block mode is not used. Use this setting only if read and write failures occur with “Auto”.

PIO Mode

These fields allow your system IDE controller to work faster. Rather than have the BIOS issue a series of commands that transfer to or from the IDE drive, PIO (Programmed Input/Output) allows the BIOS to communicate with the controller and CPU directly.

The system supports five modes, numbered from 0 to 4, which primarily differ in timing. Available settings are: *0, 1, 2, 3, 4* and *Auto*. When *Auto* is selected, the BIOS will select the best available mode.

Available settings are: ***Auto***, 0, 1, 2, 3, 4.

Auto	This setting allows the BIOS to auto-detect the PIO mode. This setting is to be used if the IDE disk drive cannot be determined.
0	This setting allows the BIOS to use the PIO mode 0. It has a data transfer rate of 3.3MBs.
1	This setting allows the BIOS to use the PIO mode 1. It has a data transfer rate of 5.2MBs.
2	This setting allows the BIOS to use the PIO mode 2. It has a data transfer rate of 8.3MBs.
3	This setting allows the BIOS to use the PIO mode 3. It has a data transfer rate of 11.1MBs.
4	This setting allows the BIOS to use the PIO mode 4. It has a data transfer rate of 16.6MBs. This setting generally works with all hard disk drives manufactured after 1999. For other disk drive, such as IDE CD-ROM drives, check the specification s of the drive.

Do not change the default setting "***Auto***".
If some read and write failures occur, check the length and quality of the integrated device cable first or set this option to a setting with a lower data transfer rate as specified for your device.

DMA Mode

This option allows you to select the DMA mode option (depending on the integrated device). Available settings are:
Auto, SWDMA0, SWDMA1, SWDMA2, MWDMA0, MWDMA1, MWDMA2, UDMA0, UDMA1, UDMA2, UDMA3, UDMA4, UDMA5 and UDMA6.

Auto	If "*Auto*" is set, the BIOS auto-detects the DMA mode. This is the default setting.
SWDMA0	If "*SWDMA0*" is set the BIOS uses the Single Word DMA mode 0. It has a data transfer rate of 2.1MBs.
SWDMA1	If "*SWDMA1*" is set the BIOS uses the Single Word DMA mode 1. It has a data transfer rate of 4.2MBs.
SWDMA2	If "*SWDMA2*" is set the BIOS uses the Single Word DMA mode 2. It has a data transfer rate of 8.3MBs.
MWDMA0	If "*MWDMA0*" is set the BIOS uses the Multi Word DMA mode 0. It has a data transfer rate of 4.2MBs.
MWDMA1	If "*MWDMA1*" is set the BIOS uses the Multi Word DMA mode 1. It has a data transfer rate of 13.3MBs.
MWDMA2	If "*MWDMA2*" is set the BIOS uses the Multi Word DMA mode 2. It has a data transfer rate of 16.6MBs.
UDMA0	If "*UDMA0*" is set the BIOS uses the Ultra DMA mode 0. It has a data transfer rate of 16.6MBs (the same data transfer rate as PIO mode 4, and Multi Word DMA mode 2).
UDMA1	If "*UDMA1*" is set the BIOS uses the Ultra DMA mode 1. It has a data transfer rate of 25MBs.
UDMA2	If "*UDMA2*" is set the BIOS uses the Ultra DMA mode 2. It has a data transfer rate of 33.3MBs.
UDMA3	If "*UDMA3*" is set the BIOS uses the Ultra DMA mode 3. It has a data transfer rate of 44.4MBs. It is required to be used the 80-conductor ATA cable for this data transfer rate.
UDMA4	If "*UDMA4*" is set the BIOS uses the Ultra DMA mode 4. It has a data transfer rate of 66.6MBs. It is required to be used the 80-conductor ATA cable for this data transfer rate.
UDMA5	If "*UDMA5*" is set the BIOS uses the Ultra DMA mode 5. It has a data transfer rate of 99.9MBs. It is required to be used the 80-conductor ATA cable for this data transfer rate.
UDMA6	If "*UDMA6*" is set the BIOS uses the Ultra DMA mode 6. It has a data transfer rate of 133.2MBs. It is required to be used the 80-conductor ATA cable for this data transfer rate.

S.M.A.R.T.

S. M. A. R. T. (Self-Monitoring, Analysis and Reporting Technology) is used to predict drive failures. (The integrated drive has to support this feature).

Available Settings are: ***Auto***, *Disabled* and *Enabled*.

32Bit Data Transfer

This option allows you to enable or disable the 32bit data transfer rate for the IDE devices. If this option is *"Enabled"* the date transfer is accelerated and the CPU (PCI Bus) is relieved.

Available settings are: ***Disabled*** and *Enabled*.

Floppy Configuration

Floppy A and B

This option selects the type of the floppy drive. Possible settings are: *Disabled, 360KB* 5¼“, *1.2MB* 5¼“, *720KB* 3½“; *1.44MB* 3½“ and *2.88 MB* 3½“.

BIOS Setup Utility						
Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Exit
Floppy Configuration					Item Specific Help	
Floppy A			[1.44MB 3½“]			
Floppy B			[Disabled]			
					←→ Select Menu	
					↑↓ Select Item	
					+- Change Option	
					F1 General Help	
					F10 Save and Exit	
					ESC Exit	
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Disabled	Set this value to prevent the use of the selected floppy disk drive channel. This option should be set if no floppy disk drive is installed on the specified channel. This is the default setting for *Floppy Drive B*.
360KB 5¼“	Set this value if the floppy disk drive attached to the corresponding channel is a 360 KB 5¼“ floppy disk drive.
1.2MB 5¼“	Set this value if the floppy disk drive attached to the corresponding channel is an 1.2 MB 5¼“ floppy disk drive.
720KB 3½“	Set this value if the floppy disk drive attached to the corresponding channel is a 720 KB 3½“ floppy disk drive.
1.44MB 3½“	Set this value if the floppy disk drive attached to the corresponding channel is an 1.44 MB 3½“ floppy disk drive. This is the default setting for *Floppy Drive A*.
2.88 MB 3½“	Set this value if the floppy disk drive attached to the corresponding channel is a 2.88 MB 3½“ floppy disk drive.

Super IO Configuration

This field can be used to select the Super I/O settings.

```
                          BIOS Setup Utility
Main   | Advanced | PCIPnP | Boot | Security | Chipset | Exit

Configure Win627 Super IO Chipset                  Item Specific Help

OnBoard Floppy Controller        [Enabled]
Serial Port1 Address             [3F8/IRQ4]
Serial Port2 Address             [2F8/IRQ3]
   Serial Port2 Mode             [Normal]
Parallel Port Address            [378]
   Parallel Port Mode            [Normal]
   Parallel Port IRQ             [IRQ7]                  ←→ Select Menu
                                                         ↑↓  Select Item
                                                         +-  Change Option
                                                         F1  General Help
                                                         F10 Save and Exit
                                                         ESC Exit

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```

Onboard Floppy Controller

This function enables or disables the floppy drive controller.

Possible settings are: *Disabled and* ***Enabled****.*

Disabled	If a supplementary floppy disk controller is used or the system is not equipped with a floppy disk drive.
Enabled	The floppy disk controller of the board is used.

Serial Port1&2 Address

These fields allow you to select the onboard serial ports and their addresses.

Available settings are:

	Default	Available settings (without default setting)
Serial Port 1	***3F8/IRQ4***	*3E8/IRQ4 / 2E8/IRQ3 / Disabled*
Serial Port 2	***2F8/IRQ3***	*3E8/IRQ4 / 2E8/IRQ3 / Disabled*

Serial Port 2 Mode

This field is used to specify whether the second serial port is to be used as a serial port or as an infrared port. The signals at the SUBD connector of serial port 2 will be unused if a mode other than *Normal* is set.

Normal	The COM2 port is used as a standard serial port.
ASKIR	The COM2 port is used as an infrared port in ASKIR standard.
IrDA	The COM2 port is used as an infrared port.

If your “Serial Port 2 Mode” option is set to IrDA, there are available two supplementary options:

IR I/O Pin Select selectable between: **[SINB/SOUTB]** and **[IRRX/IRTX]**

IR Duplex Mode selectable between: **[Half Duplex]** and **[Full Duplex]**

```
                          BIOS Setup Utility
Main   | Advanced | PCIPnP | Boot | Security | Chipset | Exit
Configure Win627 Super IO Chipset                Item Specific
                                                 Help

OnBoard Floppy Controller        [Disabled]
Serial Port1 Address             [3F8/IRQ4]
Serial Port2 Address             [2F8/IRQ3]
   Serial Port2 Mode             [IrDA]
        IR I/O Pin Select        [SINB/SOUTB]
        IR Duplex Mode           [Half Duplex]
Parallel Port Address            [378]
   Parallel Port Mode            [Normal]
   Parallel Port IRQ             [IRQ7]

                                 ←→ Select Menu
                                 ↑↓ Select Item
                                 +- Change Option
                                 F1 Help
                                 F10 Save and Exit
                                 ESC Exit
          Version, (C) Copyright, American Megatrends, Inc.
```

Parallel Port Address

This field selects the I/O address used to access the parallel interface.

The possible values are: *Disabled*, ***378***, *278*, *3BC.*

☞ The use of address space *3BC* may be restricted for some modes because it doesn’t allow for 8 consecutive addresses.

Parallel Port Mode

This field is used to specify whether the parallel port is to be used as a bi-directional input/output port or just as an output port. *ECP* and *EPP* transfer modes allow faster transfer rates of 2 and 2.4 Mbytes/s. These modes will only work with peripheral devices which support them. In addition, the field *Parallel Port Address* must be set to *378* or *278* when using one of these two modes.

Normal	The port functions as an output port only.
Bi-Directional	Data can be transferred in both directions across the port.
EPP	Fast transfer mode (up to 2 Mbytes/s), can output and receive data. The mode requires a peripheral device which supports the EPP (Enhanced Parallel Port) transfer mode.
ECP & EPP	Fast transfer mode (up to 2.4 Mbytes/s), can output and receive data. The mode requires a peripheral device which supports both EPP (Enhanced Parallel Port) and ECP (Enhanced Capability Port) transfer mode.

Parallel Port IRQ

This field selects the interrupt used for the parallel interface.

It is possible to choose between: *IRQ7* and *IRQ5*.

IRQ7	This setting allows the parallel port to use the interrupt IRQ7.
IRQ5	This setting allows the parallel port to use the interrupt IRQ5.

Hardware Health Configuration

```
                          BIOS Setup Utility
   Main    | Advanced | PCIPnP | Boot | Security | Chipset | Exit
Hardware Health Configuration                      Item Specific
                                                   Help

H/W Health Function          [Enabled]

Hardware Health Event Monitoring

System Temperature                  : 41°C/109°F
CPU Temperature                     : 53°C/127°F

Fan# Speed                          : 3534 RPM

VcoreA                              : 1.500 V
+3.3Vin                             : 3.306 V          ←→ Select Menu
+5Vin                               : 5.040 V          ↑↓  Select Item
+12Vin                              : 12.012 V         +-  Change Option
-12Vin                              : -12.131 V        F1  General Help
-5Vin                               : -5.137 V         F10 Save and Exit
+5SB                                : 4.960 V          ESC Exit
UBAT                                : 3.154 V
          Version, (C) Copyright, American Megatrends, Inc.
```

H/W Health Function

This option allows you the enable or disable the “Hardware Health Event Monitoring”.

Available settings: *Disabled* and ***Enabled***.

Hardware Health Event Monitoring

These fields allow you to observe the parameters of the hardware monitoring function feature of the system (only if the “H/W Health Function” option is set to *Enabled*). The values are read-only values for the monitoring of the system and show the PC health status.

ACPI Settings

BIOS Setup Utility						
Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Exit

ACPI Settings	Item Specific Help
ACPI Aware O/S [Yes] > Advanced ACPI Configuration	←→ Select Menu ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit

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ACPI Aware O/S

This option allows you to set that the used operating system supports the ACPI (Advanced Configuration and power interface) standard or not.

It is possible to choose between: ***Yes*** and *No.*

Yes	Set this setting if the used operating system supports the ACPI standard.
No	Set this setting if the used operating system does not support the ACPI standard.

☞ **For Windows® OS (O**perating **S**ystem**) user:**
If you have changed the setting of this option to „*No*“ before the OS installation, the installed OS will not support the ACPI standard. A reinstallation of the OS is required.

Select the required setting before the OS installation.

➢ Advanced ACPI Configuration

```
                              BIOS Setup Utility
   Main    | Advanced | PCIPnP | Boot | Security | Chipset | Exit
Advanced ACPI Configuration                          Item Specific
                                                     Help
ACPI 2.0 Features          [No]
AMI OEMB table             [Enabled]
Headless mode              [Disabled]                ←→ Select Menu
                                                     ↑↓  Select Item
                                                     +-  Change Option
                                                     F1  General Help
                                                     F10 Save and Exit
                                                     ESC Exit
          Version, (C) Copyright, American Megatrends, Inc.
```

ACPI 2.0 Features

Set this value to allow or to prevent the system to be compliant with the ACPI 2.0 specification.

It is possible to choose between: *Yes* and ***No***.

Yes	This setting allows the BIOS to support the ACPI 2.0 specification.
No	This setting prevents the BIOS from supporting the ACPI 2.0 specification.

AMI OEMB table

This option allows you to include the OEMB table pointer to R(X)SDT pointer list.

It is possible to choose between***: Enabled*** and *Disabled*.

Enabled	This setting enables adding an OEMB table.
Disabled	This setting disables adding an OEMB table.

OEMB table is used to pass POST data to the AML code during ACPI O/S operation. It is required for proper functionality.

Headless mode

This option is used to update the ACPI FACP table to indicate headless operations.

It is possible to choose between: *Enabled* and ***Disabled***.

Enabled	This option enables updating the ACPI FACP table to indicate headless operation.
Disabled	This option disables updating the ACPI FACP table to indicate headless operation.

Event Log Configuration

AMI BIOS logs certain events to be event log, which can be configured using these options.

BIOS Setup Utility						
Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Exit

Event Logging details	Item Specific Help
View Event Log Mark all events as read Clear Event Log Event Log Statistics PCI Error Logging [Disabled]	←→ Select Menu ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit

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View Event Log

This selection allows you to view the event log.

Mark all events as read

This selection allows you to set the events as already read.

Clear Event Log

This selection allows you to clear all events in the event log.

Event Log Statistics

This selection displays the total size, free size and unread events in the event log.

PCI Error Logging

This selection enables the event log to log all PCI errors that occur.

It is possible to choose between: *Enabled* and ***Disabled***.

Enabled	This setting disables the PCI Error Logging function.
Disabled	This setting enables the PCI Error Logging function.

Remote Access Configuration

This settings allow you to manage this system from a client system by redirecting keyboard input and text output through a serial port. You cannot redirect graphic output. Console redirection is used for configuring BIOS settings with a remote Terminal (emulation). Use a null-modem serial cable to connect the client to the target system.

```
                              BIOS Setup Utility
Main   | Advanced | PCIPnP | Boot | Security | Chipset | Exit
Configure Remote Access type and parameters          Item Specific Help

Remote Access                      [Enabled]

Serial port number                 [COM1]            ←→ Select Menu
Serial Port Mode                   [115200 8,n,1]    ↑↓  Select Item
Flow Control                       [None]            +-  Change Option
Redirection After BIOS POST        [Always]          F1  General Help
                                                     F10 Save and Exit
Terminal Type                      [ANSI]            ESC Exit
VT-UTF8 Combo Key Support          [Disabled]

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```

Remote Access

This option allows you to enable or disable the console redirection features.

It is possible to choose between: ***Enabled*** and *Disabled.*

Serial port number

This option allows you to select the serial port for console redirection.

The available settings are: ***COM1*** and *COM2*.

Serial Port Mode

This option allows you to select the serial port features (Speed, Data Bits, Parity, StopBits) for a proper data transfer with the client system.

The available settings are: **115200 8,n,1** / 57600 8,n, 1 / 38400 8,n,1 / 19200 8,n,1 / 09600 8,n,1.

Flow Control

Flow Control lets computers (host and client) tell each other when they can accept more data for transmission and when to wait. This handshaking prevents data from being lost because one computer was busy.

The available settings are: ***None***, *Hardware* and *Software*.

Redirection After BIOS POST

This option allows you to select when the console redirection will be used.

Always	Redirection is always active. (some OSs may not work if this setting is chosen).
Boot Loader	Redirection is active during POST and during Boot Loader.
Disabled	Turns off the redirection after POST.

Terminal Type

This option allows you to select the target terminal type.

The available settings (industry standard terminal protocol) are:
ANSI, *VT 100* and *VT-UTF8*.

VT-UTF8 Combo Key Support

This option allows you to enable or disable the VT-UTF8 Combo Key Support for ANSI/VT 100 terminals.

It is possible to choose between: *Enabled* and ***Disabled***.

☞ Client and target systems must have the same settings for a working communication.

USB Configuration

This field allows you to select options for USB configuration.

```
                          BIOS Setup Utility
 Main   | Advanced | PCIPnP | Boot | Security | Chipset | Exit

 USB Configuration                                Item Specific
                                                  Help
 Module Version - 2.23.2-6.4

 USB Devices Enabled:
   None                                           ←→ Select Menu
                                                  ↑↓  Select Item
 Legacy USB Support                    [Enabled]  +-  Change Option
 USB 2.0 Controller Mode               [HiSpeed]  F1  General Help
 > USB Mass Storage Device Configuration          F10 Save and Exit
                                                  ESC Exit
          Version, (C) Copyright, American Megatrends, Inc.
```

Legacy USB Support

This function enables or disables support for legacy USB. Enabling legacy USB support allows to use USB devices under DOS and other non-Plug & Play operating systems.

Possible settings are: ***Enabled****, Disabled* and *Auto.*

If "*Auto*" is set, the system searches for USB devices. Whether no device is detected, the BIOS disables this option in background.

USB 2.0 Controller Mode

The "USB 2.0 Controller Mode" option is available only if the "Legacy USB Support" option is set to *Enable* or *Auto*.

This option allows you to set the data signaling rate for the USB 2.0 controller.

Possible settings are: *Full Speed* and ***High Speed****.*

➢ USB Mass Storage Device Configuration

This option is fully available if USB devices are connected to the board.

```
                          BIOS Setup Utility
 Main   | Advanced | PCIPnP | Boot | Security | Chipset | Exit

 USB Mass Storage Device Configuration          Item Specific Help

 USB Mass Storage Reset Delay  [20 Sec]
 Device #
 Emulation Type                [Auto]           ←→ Select Menu
                                                ↑↓ Select Item
                                                +- Change Option
                                                F1 General Help
                                                F10 Save and Exit
                                                ESC Exit

          Version, (C) Copyright, American Megatrends, Inc.
```

USB Mass Storage Reset Delay

This option specifies amount of time the BIOS USB code should wait after issuing a reset to the USB mass storage devices.

It is possible to choose between: *10 Sec*, ***20 Sec***, *30 Sec,* and *40 Sec.*

Emulation Type

This option specifies the type of emulation provided by the BIOS for the device.

It is possible to choose between: ***Auto***, *Hard Disk, CD-ROM, Floppy* and *Forced FDD.*

Auto	When this option is selected, the BIOS detects the current formatted media.
Hard Disk	This option allows the device to be emulated as hard disk.
CD-ROM	This option allows the device to be emulated as a CD-ROM (if the block size of the media is greater than 512 bytes).
Floppy	This option allows the device to be emulated as floppy drive.
Forced FDD	This option allows a hard disk image to be connected as a floppy image.

PCIPnP

The “PCI PnP Configuration” section of the BIOS controls the settings for the onboard PCI slots.

```
                          BIOS Setup Utility
Main | Advanced | PCIPnP | Boot | Security | Chipset | Exit

Advanced PCI/PnP Settings                    Item Specific Help

Warning:   Setting wrong values in below sections
           may cause system to malfunction.

Plug & Play O/S                [No]
PCI Latency Timer              [64]
Allocate IRQ to PCI VGA        [Yes]
Palette Snooping               [Disabled]
PCI IDE BusMaster              [Disabled]
OffBoard PCI/ISA IDE Card      [Auto]

IRQ3                           [Available]
IRQ4                           [Available]
IRQ5                           [Available]
IRQ7                           [Available]
IRQ9                           [Available]
IRQ10                          [Available]      ←→ Select Menu
IRQ11                          [Available]      ↑↓  Select Item
IRQ14                          [Available]      +-  Change Field
IRQ15                          [Available]      F1  Help
                                                F10 Save and Exit
DMA Channel 0                  [Available]      ESC Exit
DMA Channel 1                  [Available]
DMA Channel 3                  [Available]
DMA Channel 5                  [Available]
DMA Channel 6                  [Available]
DMA Channel 7                  [Available]

Reserved Memory Size           [Disabled]

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```

Plug & Play O/S

This field determines the Plug&Play function. Plug&Play means that added components are automatically recognised and installed if they support automatic recognition.

The available settings are: ***No*** and *Yes*.

Yes	The operating system assumes part of the Plug&Play functions. This setting should only be selected if the operating system supports Plug&Play (e. g. Windows 95 or higher).
No	The system BIOS assumes the recognition of the components and assigns the resources.

PCI Latency Timer

This option allows you to set the latency timing (PCI clock) of all PCI devices on the PCI bus.

The available settings are: *32,* ***64****, 96, 128, 160, 192, 224* and *248.*

Allocate IRQ to PCI VGA

This option allows or restricts the system to allocate an IRQ to a VGA adapter card that uses the PCI bus.

The available settings are: *No* and ***Yes***.

Palette Snooping

This option allows the compliance of older higher resolution video cards to the VGA standard. As presently all video boards are compliant to this standard, this option must stay ***Disabled***. This default setting should not be changed unless the VGA card manufacturer requires Palette Snooping to be *Enabled*.

The available settings are: *Enabled* and ***Disabled***.

PCI IDE BusMaster

This option allows you to specify if the IDE controller on the PCI bus should include a bus mastering capability or not.

The available settings are: *Enabled* and ***Disabled***.

OffBoard PCI/ISA IDE Card

This option is to be used if an offboard PCI/ISA IDE controller adapter card is installed in the system. The settings of this option allow you to specify the PCI expansion slot on the motherboard where the offboard PCI/ISA controller is installed.

The available settings are: *PCI Slot1, PCI Slot2, PCI Slot3, PCI Slot4, PCI Slot5, PCI Slot6,* and ***Auto***.

IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11, IRQ14, IRQ15

These options allow you to configure the IRQ Resources.

Available settings are: ***Available*** and *Reserved*.

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

DMA Channel 0, DMA Channel 1, DMA Channel 3, DMA Channel 5, DMA Channel 6, DMA Channel 7

These options allow you to configure the DMA Channels.

Available settings are: ***Available*** and *Reserved*.

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

Reserved Memory Size

This option allows you to specify the memory size for the ISA extension cards.

Available settings are: *16k, 32k, 64k* and ***Disabled***.

If this option is enabled to *16k, 32k* or *64k* a supplementary option is available: "**Reserved Memory Address**".

```
                          BIOS Setup Utility
Main | Advanced | PCIPnP | Boot | Security | Chipset | Exit
Advanced PCI/PnP Settings                    Item Specific
                                             Help

Warning:   Setting wrong values in below
           sections may cause system to
           malfunction.                      ←→ Select Menu
                                             ↑↓  Select Item
DMA Channel 0                [Available]     +-  Change Field
DMA Channel 1                [Available]     F1  Help
DMA Channel 3                [Available]     F10 Save and Exit
DMA Channel 5                [Available]     ESC Exit
DMA Channel 6                [Available]
DMA Channel 7                [Available]

Reserved Memory Size         [16k]
Reserved Memory Address      [C8000]
          Version, (C) Copyright, American Megatrends, Inc.
```

Reserved Memory Address

This option allows you to specify the memory size for the ISA extension cards in the reserved memory address.

Available settings are: *C0000, C4000,* ***C8000****, CC000, D0000, D4000, D8000* and *DC000*.

☞ For a proper ISA card installation, set the same values of the BIOS options "Reserved Memory Size" and "Reserved Memory Address" like on the OS level and/or driver level (depending on the installed ISA card).

Boot

In the Boot menu you define the sequence in which the system BIOS searches the drives for system files to start the operating system.

```
                          BIOS Setup Utility
Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit
Boot Settings                                   Item Specific Help
> Boot Settings Configuration                    ←→ Select Menu
> Boot Device Priority                           ↑↓  Select Item
> Hard Disk Drivers                              +-  Change Field
> Removable Drives                               Enter Go to Sub Screen
> CD/DVD Drives                                  F1  General Help
                                                 F10 Save and Exit
                                                 ESC Exit
          Version, (C) Copyright, American Megatrends, Inc.
```

Boot Settings Configuration

```
                          BIOS Setup Utility
Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit
Boot Settings Configuration                     Item Specific Help
Quick Boot                  [Enabled]
Quiet Boot                  [Disabled]
AddOn ROM Display Mode      [Force BIOS]
Bootup Num-Lock             [On]                ←→ Select Menu
PS/2 Mouse Support          [Auto]              ↑↓  Select Item
Wait For 'F1' If Error      [Enabled]           +   Change Option
Hit 'DEL' Message Display   [Enabled]           F1  General Help
Interrupt 19 Capture        [Disabled]          F10 Save and Exit
                                                ESC Exit
          Version, (C) Copyright, American Megatrends, Inc.
```

Quick Boot

This option allows or restricts the BIOS to perform all POST tests.

It is possible to choose between: ***Enabled*** and *Disabled.*

Enabled	This setting allows the BIOS to perform all POST tests.
Disabled	This setting allows the BIOS to skip certain POST tests to boot faster.

Quiet Boot

This option allows you to modify the boot up screen settings between POST messages or OEM logo.

It is possible to choose between: *Enabled* and ***Disabled****.*

Enabled	This setting allows the computer system to display the OEM logo instead of POST messages.
Disabled	This setting allows the computer system to display the POST messages.

Tip

If this option is *Enabled* and a company logo is available the logo will be displayed during POST.

AddOn ROM Display Mode

This option can be used to display add-on ROM (read-only memory) messages (e.g. the SCSI BIOS or VGA BIOS).

It is possible to choose between: ***Force BIOS*** and *Keep Current.*

Force BIOS	This setting allows the computer system to force a third party BIOS to display its messages during system boot.
Keep Current	A third party BIOS messages are not displayed during system boot.

Bootup Num-Lock

Set this value to allow the Number Lock setting to be modified during boot up. It is possible to choose between: ***On*** and *Off.*

On	Set this value to allow the Number Lock on the keyboard to be enabled automatically when the computer system is boot up. This allows the immediate use of 10-keys numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard will be lit. This is the default setting.
Off	This option does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard will light up when the Number Lock is engaged.

PS/2 Mouse Support

This option allows you to activate or to restrict the PS/2 mouse support.

It is possible to choose between: ***Auto***, *Enabled* and *Disabled.*

Enabled	Set this value to allow the system to use a PS/2 mouse.
Disabled	This option will prevent the PS/2 mouse port from using system resources and will prevent the port from being active. Use this setting if you want to install an external serial mouse.
Auto	Set this value to allow the BIOS to auto-detect a PS/2 mouse and to reserve the resources for it.

Wait For ‘F1’ If Error

This option specifies if errors detected during the boot time, determine the interruption of the boot procedure.

It is possible to choose between: ***Enabled*** and *Disabled.*

Enabled	The boot procedure is stopped, whenever the BIOS detects an error. The system wait for an user input.
Disabled	The boot procedure will be not halted for any error that may be detected.

Hit 'DEL' Message Display

This option allows you to modify the setting for "Hit 'DEL' Message Display".

It is possible to choose between: ***Enabled*** and *Disabled.*

Enabled	This setting allows the system to display: `Hit Del to enter Setup` during memory initialization. If "Quiet Boot" option is enabled, the Hit 'DEL' message will not display.
Disabled	This setting prevents the system to display: `Hit Del to enter Setup` during memory initialization. If "Quiet Boot" option is enabled, the Hit 'DEL' message will not display.

Interrupt 19 Capture

Set this value to allow option ROMs such as network controllers to trap BIOS interrupt 19.

It is possible to choose between: *Enabled* and ***Disabled****.*

Enabled	The BIOS allows option ROMs to trap interrupt 19.
Disabled	The BIOS prevents option ROMs from trapping interrupt 19.

Boot Device Priority

In the *Boot Device Priority* menu you define the sequence in which the system BIOS searches the drives for system files to start the operating system.

```
                          BIOS Setup Utility
 Main   | Advanced | PCIPnP | Boot | Security | Chipset | Exit
 Boot Device Priority                          Item Specific
                                               Help
 1st Boot Device          [1st FLOPPY DRIVE]
 2nd Boot Device          [SM-CD-540E]
 3rd Boot Device          [PM-Maxtor 2B020H1]

                                               ←→ Select Menu
                                               ↑↓ Select Item
                                               +- Change Option
                                               F1 General Help
                                               F10 Save and Exit
                                               ESC Exit
          Version, (C) Copyright, American Megatrends, Inc.
```

List of devices available for use as boot devices (**possible selection depending on system configuration**).

[1st FLOPPY DRIVE], [SM-CD-540E] (M-Maxtor 2B020H1] and *Disabled*.

Boot Devices (examples)	**Description**
***PM**-Maxtor 2B020H1*	**P**rimary **M**aster IDE device (internal HDD) (not supplied)
***SM**-CD-540E*	**S**econdary **M**aster IDE device (DVD or CD ROM) (not supplied)
1st. FLOPPY DRIVE	Floppy Drive (not supplied)

Hard Disk Drivers

List of hard drives available for use as the boot device (**possible selection depending on system configuration**).
Available settings: *PM-Maxtor 2B020H1* and *Disabled*.

BIOS Setup Utility						
Main	Advanced	PCIPnP	**Boot**	Security	Chipset	Exit
Hard Disk Drivers					Item Specific Help	
1st Drive			[PM-Maxtor 2B020H1]		←→ Select Menu ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit	
Version, (C) Copyright, American Megatrends, Inc.						

Removable Drives

List of removable drives available for use as the boot device (**possible selection depending on system configuration**).
Available settings: *1st FLOPPY DRIVE* and *Disabled*.

BIOS Setup Utility						
Main	Advanced	PCIPnP	**Boot**	Security	Chipset	Exit
Removable Drives					Item Specific Help	
1st Drive			[1st FLOPPY DRIVE]		←→ Select Menu ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit	
Version, (C) Copyright, American Megatrends, Inc.						

CD/DVD Drives

List of CD/DVD drives available for use as the boot device (**possible selection depending on system configuration**).
Available settings: *SM-CD-540E* and *Disabled*.

BIOS Setup Utility						
Main	Advanced	PCIPnP	**Boot**	Security	Chipset	Exit
CD/DVD Drives					Item Specific Help	
1st Drive			[SM-CD-540E]		←→ Select Menu ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit	
Version, (C) Copyright, American Megatrends, Inc.						

Security

PCI-951 supports Supervisor, User and HDD Security password.

Valid password (Supervisor and User) can be an 1 to 6 alphanumeric characters combination. The Primary / Secondary Master / Slave HDD User password can be an 1 to 32 alphanumeric characters combination.
If you use both passwords(Supervisor and User), the Supervisor password must be set first.
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.

The system can be configured so that all users must enter a password every time the system boots or when PCI-951 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 an 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 reconfigure.

```
                          BIOS Setup Utility
Main | Advanced | PCIPnP | Boot | Security | Chipset | Exit
Security Settings                                  Item Specific
                                                   Help
Supervisor Password:                Not Installed
User Password:                      Not Installed

Change Supervisor Password                         ←→ Select Menu
Change User Password                               ↑↓  Select Item
Clear User Password                                Enter  Change
Boot Sector Virus Protection        [Disabled]     F1  General Help
                                                   F10 Save and Exit
Hard Disk Security                                 ESC Exit
There are no supported Hard Disk
Version, (C) Copyright, American Megatrends, Inc.
```

Supervisor Password

Indicates whether a supervisor password has been set.
If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

User Password

Indicates whether an user password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

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. Select the "Change Supervisor Password" option from the Security Setup menu and press <Enter>.
"Enter New Password:" input field appears. Valid password can be an 1 to 6 alphanumeric characters combination. Type the password and press <Enter>. The screen does not display the characters entered. "Confirm New Password:" input field appears. Retype the password as prompted and press <Enter>. If the password confirmation is incorrect, an error message appears. The password is stored in NVRAM.

If a Supervisor Password is installed two options are available:

"User Access Level" with following settings: ***Full Access***, *Limited, View Only,* and *No Access.*

"Password Check" with following settings: ***Setup*** and *Always*.

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

“Enter New Password:” input field appears. Valid password can be an 1 to 6 alphanumeric characters combination. Type the password and press <Enter>. The screen does not display the characters entered. “Confirm New Password:” input field appears. Retype the password as prompted and press <Enter>. If the password confirmation is incorrect, an error message appears. The password is stored in NVRAM.

If an User Password is installed is available following option:

“Password Check” with following settings: ***Setup*** and *Always*.

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. Select “Clear User Password” from the Security Setup menu and press <Enter>.

“Clear User Password” → [Ok] [Cancel] Choose your selection.

Boot Sector Virus Protection

With this field you can protect the boot sector against virus.
It is possible to choose between: *Enabled* and ***Disabled***.

Enabled	The boot sector cannot be changed. A virus that attacks the boot sector cannot infect the system. Select "*Enabled*" to enable boot sector protection. The system 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**)? _
Disabled	The boot sector could be changed. The protection is disabled.

Tip

Before installing an operating system you have to change this selection to "*Disabled"*. During installation the first sector is written by the operating system. After the installation you can enable the boot virus protection by set *"Enabled".*

Hard Disk Security

Hard Disk Security uses the Security Mode Feature commands defined in the ATA specification.
This option is available only if the installed HDD supports Security Mode Feature commands defined in the ATA specification.

The option “Primary / Secondary Master / Slave HDD User Password” allows you to protect the data stored on the installed HDD/s (depending on the system configuration).

Primary / Secondary Master / Slave HDD User Password

This option allows you to set drive-level password/s to protect your data stored on the installed HDD/s (depending on the system configuration).

This password is kept within the drive and the data is protected even if the drive is moved to another computer system.

This password can be an 1 to 32 alphanumeric characters combination.

Chipset

All “Chipset” BIOS Setup options are described in this section. The “Chipset” BIOS Setup screen is shown below.

```
                          BIOS Setup Utility
Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit
Advanced Chipset Settings                          Item Specific Help

Warning:   Setting wrong values in below
           sections may cause system to
           malfunction.                            ←→ Select Menu
                                                   ↑↓  Select Item
                                                   Enter Go to Sub Screen
> Intel Brookdale-G NorthBridge Configuration      F1  General Help
> Intel ICH4 SouthBridge Configuration             F10 Save and Exit
                                                   ESC Exit
          Version, (C) Copyright, American Megatrends, Inc.
```

Intel Brookdale-G NorthBridge Configuration

You can use this field to select options for the NorthBridge chipset configuration.

```
                          BIOS Setup Utility
Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit
Configure advanced settings for NorthBridge        Item Specific
                                                   Help
Primary Video Device            [Auto]
Graphics Mode Select            [Enabled, 8MB]
Graphics Aperture Size          [ 64MB]            ←→ Select Menu
Search for MDA Resources        [Yes]              ↑↓  Select Item
                                                   +-  Change Option
                                                   F1  General Help
                                                   F10 Save and Exit
                                                   ESC Exit
          Version, (C) Copyright, American Megatrends, Inc.
```

Primary Video Device

This option allows you to select which graphics controller to use as the primary boot device.

Available settings are: *Internal*, *External PCI*, *External AGP* and **Auto**.

Graphics Mode Select

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

Available settings are: *Enabled, 1MB*, / ***Enabled, 8MB***, / *Disabled*.

Graphics Aperture Size

The option allows you to set the aperture size of the graphics. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

Available settings are *4MB**,** 8MB**,** 16MB**,** 32MB**,** **64MB,** 128MB* and *256MB*. Default setting: *64MB*.

Search for MDA Resources

This option allows you to search for and Setup an MDA (Monochrome) video adapter.

Available settings are: Y***es*** and *No*.

Intel ICH4 SouthBridge Configuration

You can use this field to select options for the SouthBridge chipset configuration.

```
                          BIOS Setup Utility
Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit
Configure advanced settings for SouthBridge          Item Specific Help
ICH4 Dev31 Func1, IDE            [Enabled]
ICH4 Dev31 Func3, SMBUS          [Enabled]
ICH4 Dev31 Func5, AC'97          [Enabled]
ICH4 Dev29 Func0, USB#1          [Enabled]
ICH4 Dev29 Func1, USB#2          [Enabled]
ICH4 Dev29 Func2, USB#3          [Enabled]          ←→ Select Menu
ICH4 Dev29 Func7, EHCI           [Enabled]          ↑↓  Select Item
                                                    +   Change Option
Onboard LAN                      [Enabled]          F1  General Help
Moon ISA Device                  [Disabled]         F10 Save and Exit
ICH4 Positive Decode             [Disabled]         ESC Exit
IOAPIC                           [Enabled]
Extended IOAPIC                  [Enabled]
CPU B.I.S.T.                     [Disabled]
ICH4 DMA Collection              [Enabled]

DMA-0 Type                       [LPC DMA]
DMA-1 Type                       [LPC DMA]
DMA-2 Type                       [LPC DMA]
DMA-3 Type                       [LPC DMA]
DMA-5 Type                       [LPC DMA]
DMA-6 Type                       [LPC DMA]
DMA-7 Type                       [LPC DMA]
Version, (C) Copyright, American Megatrends, Inc.
```

ICH4 Dev31 Func1, IDE

This option allows you to enable or disable the ICH4 IDE controller function.

The available settings are: ***Enabled*** and *Disabled.*

ICH4 Dev31 Func3, SMBUS

This option allows you to enable or disable the ICH4 SMBUS controller function.

The available settings are: ***Enabled*** and *Disabled.*

ICH4 Dev31 Func5, AC'97

This option allows you to enable or disable the ICH4 AC'97 Audio controller function.

The available settings are: ***Enabled*** and *Disabled.*

ICH4 Dev29 Func0, USB#1

This option allows you to enable or disable the ICH4 USB Host controller #1 function.

The available settings are: ***Enabled*** and *Disabled.*

ICH4 Dev29 Func1, USB#2

This option allows you to enable or disable the ICH4 USB Host controller #2 function.

The available settings are: ***Enabled*** and *Disabled.*

☞ Make sure to enable the ICH4 USB Host controller #1.

ICH4 Dev29 Func2, USB#3

This option allows you to enable or disable the ICH4 USB Host controller #3 function.

The available settings are: ***Enabled*** and *Disabled.*

☞ Make sure to enable the ICH4 USB Host controller #1.

ICH4 Dev29 Func7, EHCI

This option allows you to enable or disable the ICH4 EHCI USB controller function.

The available settings are: ***Enabled*** and *Disabled.*

☞ Make sure to enable the ICH4 USB Host controller #1.

Onboard LAN

This option allows you to enable or disable the onboard LAN.

The available settings are: ***Enabled*** and *Disabled.*

ICH4 Positive Decode

This option allows you to enable or disable the Positive Decode in ICH4.

The available settings are: *Enabled* and ***Disabled****.*

Set this option to *Enable* if the optional onboard PCI/ISA bridge is present.

IOAPIC

This option allows you to enable or disable the ICH4 IOAPIC (Advanced Programmable Interrupt Controller) function.

The available settings are: ***Enabled*** and *Disabled.*

Extended IOAPIC

This option allows you to enable or disable the extended mode of ICH4 IOAPIC. If enabled the APIC mode will expand available IRQ resources for the system.

The available settings are: ***Enabled*** and *Disabled.*

☞ **For Windows® XP OS (O**perating **S**ystem**) user:**
Select the required setting before the OS installation.

CPU B.I.S.T.

This option allows you to enable or disable the CPU **B**uilt **I**n **S**elf **T**est.

The available settings are: *Enabled* and ***Disabled****.*

ICH4 DMA Collection

This option allows you to enable or disable the DMA collection buffer.

The available settings are: ***Enabled*** and *Disabled.*

DMA-0, 1, 2, 3, 4, 5, 6, 7 Type

This option allows you to select the type of DMA performed on the corresponding channel.

The available settings are: ***LPC DMA*** and *PC/PCI.*

PC/PCI	The PCI bus is supported by the corresponding DMA (Direct Memory Access) channel.
LPC DMA	The LPC bus is supported by the corresponding DMA (Direct Memory Access) channel.

Exit

BIOS Setup Utility						
Main	Advanced	PCIPnP	Boot	Security	Chipset	**Exit**

Save Changes and Exit Discard Changes and Exit Discard Changes Load Optimal Defaults Load Failsafe Defaults	Item Specific Help ←→ Select Menu ↑↓ Select Item +- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit

Version, (C) Copyright, American Megatrends, Inc.

Save Changes and Exit

This field saves the settings you have made and exits BIOS Setup.

Discard Changes and Exit

This field exits BIOS Setup without saving the new settings.

Discard Changes

This field resets all values to those that were active when the computer was turned on without exiting BIOS Setup.

Load Optimal Defaults

This option allows you to load the default values of your system configuration. These default settings (manufacturing settings) are optimal and enable all high performance features.

Load Failsafe Defaults

By this option the system can reload all default settings, which are permanently stored in the BIOS-ROM.
These settings are not the optimised default settings (manufacturing defaults) for your system, but can be used, if after changes, the system does not run reliably. The Fail-Safe settings are designed for maximum stability, but not maximum performance.

Resources

I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses, which also becomes the identity of the device. There is a total of 1K port address space available for ISA devices. The following table lists the I/O port addresses used for the standard settings of the PCI-951 board.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
278 - 27F	Parallel Port #2(LPT2)
2F8h - 2FFh	Serial Port #2(COM2)
2B0 - 2DF	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
360 - 36F	Network Ports
3B0 - 3BF	Monochrome & Printer adapter
3C0 - 3CF	EGA adapter
3D0 - 3DF	CGA adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

Interrupt Request Lines (IRQ)

There are a total of 15 IRQ lines available on the Industrial CPU Card. Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used for the standard settings of the PCI-951 board.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Parallel Port #2
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Software Redirected to Int 0Ah
IRQ10	Reserved
IRQ11	Reserved
IRQ12	Reserved
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

Intel® 845GV Chipset Driver Installation

The Intel®845GVChipset driver comes in a driver CD with the package. This chapter provides information to install the driver for the Intel®845GVChipset. Please follow the instructions set forth in this chapter carefully.

☞ Please note that the Intel® 845GV Chipset driver must be installed in your system first, before you could proceed to install the relevant drivers.

The following item is covered in this chapter:

- ❑ Installing the Intel® 845GV Chipset Driver for Windows 2000, XP

Installing the Intel® 845GV Chipset Driver for Windows 2000, XP

The following section describes the Intel® 845GV Chipset driver installation procedures for Windows 2000 and Windows XP.

Step 1: Insert driver CD into CD-ROM.

Step 2: Click ***Driver PCI-951 / Intel Chipset***.

Step 3: Click ***Intel Chipset Driver***.

Step *4*: Click ***Next***.

Step 5: Click ***Yes***.

Step *6*: Click ***Next***.

Step *7*: Click ***Finish.***

VGA Driver Installation

This chapter provides information to install VGA drivers. This driver comes on the driver CD with the package. Please follow the instructions set forth in this chapter carefully. Please note that there must be relevant software installed in your system before you could proceed to install the VGA drivers.

☞ Please observe, that for the installation of the VGA driver, the Intel® 845GV chipset driver should be already installed.

The following item is covered in this chapter:

- ❑ Installing VGA Driver for Windows 2000, XP

Installing VGA Driver for Windows 2000, XP

The following section describes the VGA driver installation procedures for Windows 98SE, Windows 2000, Windows XP.

Step 1: Insert the driver CD into CD-ROM.

Step 2: Click ***Driver PCI-951*** / ***Graphics Driver for 82845GV/ GL VGA Device***..

Step 3: Click ***Next***.

Step 4: Click ***Next***.

Step 5: Click ***Yes***.

Step 6: Click ***Finish.*** You must restart your computer now.

Audio Driver Installation

This chapter provides information to install the AC'97 CODEC Audio Driver. The driver is included on the supplied driver CD.
Please follow the instructions set forth in this chapter carefully.

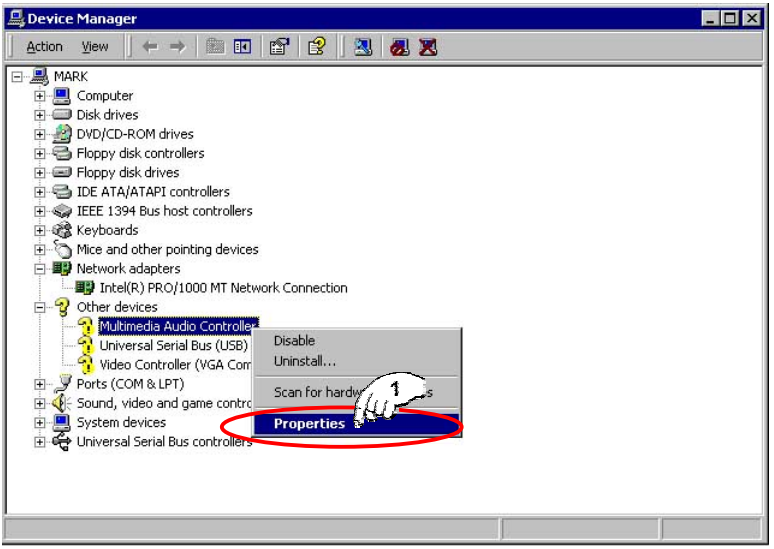
☞ Please observe, that for the installation of the Audio driver, the Intel® 845GV chipset driver should be already installed.

The following items are covered in this chapter:

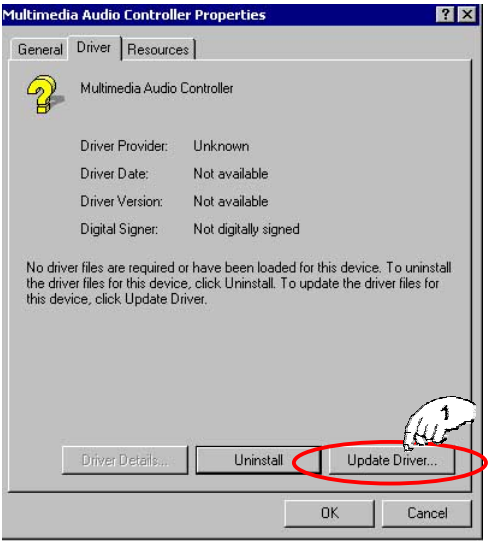
- ❑ Installing Audio Driver for Windows 2000
- ❑ Installing Audio Driver for Windows XP

Installing Audio Driver for Windows 2000

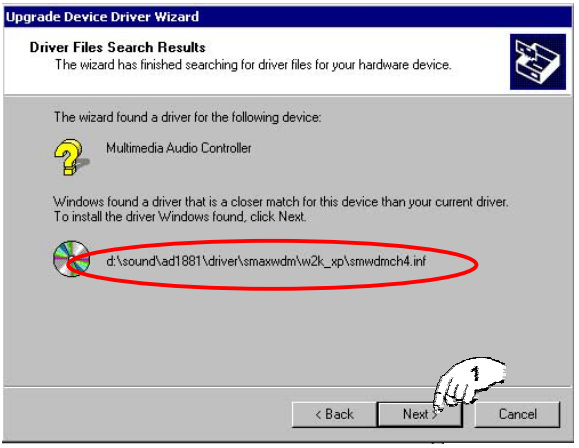
Step 1:



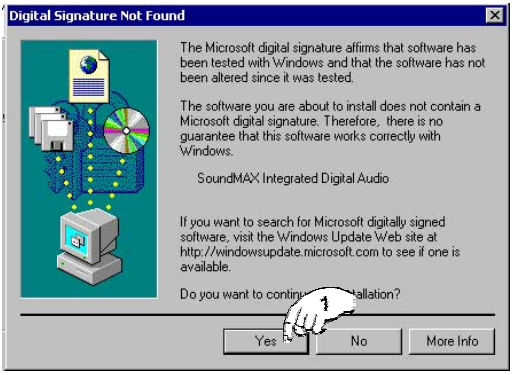
Step 2:



Step 3:


Upgrade Device Driver Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
Multimedia Audio Controller
Windows found a driver that is a closer match for this device than your current driver.
To install the driver Windows found, click Next.
d:\sound\ad1881\driver\smaxwdm\w2k_xp\smwdmch4.inf
< Back
Next >
Cancel

Step 4:


Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
SoundMAX Integrated Digital Audio
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to contin allation?
Yes
No
More Info

Step 5:

Upgrade Device Driver Wizard
Completing the Upgrade Device Driver Wizard
SoundMAX Integrated Digital Audio
Windows has finished installing the software for this device.
To close this wizard, click Finish.
1
< Back
Finish
Cancel

Installing Audio Driver for Windows XP

Step 1: Insert driver CD into CD-ROM.

Step 2: Click ***Driver PCI-951*** / ***AD1881 Sound Driver***.

Step 3: Click ***Next.***

Step 4:

Step 5: Click ***Finish.*** You must restart your computer now.

LAN Driver Installation

This chapter describes the LAN driver installation of the onboard Intel® 82551QM LAN controller.

The following items are covered in this chapter:

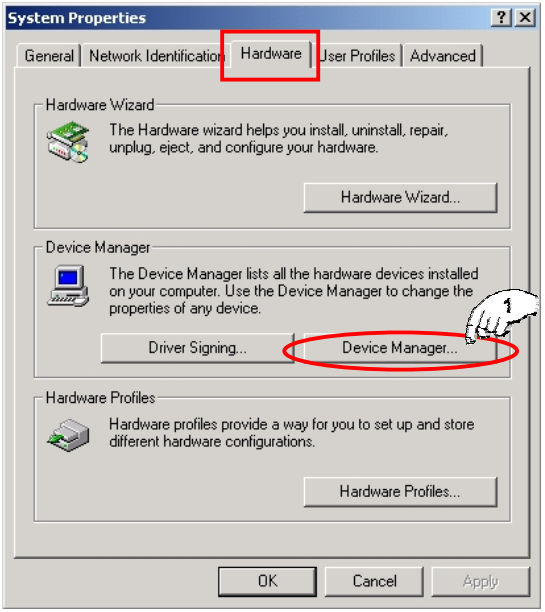
- ❑ Installing LAN Driver for Windows 2000
- ❑ Installing LAN Driver for Windows XP

Installing LAN Driver for Windows 2000

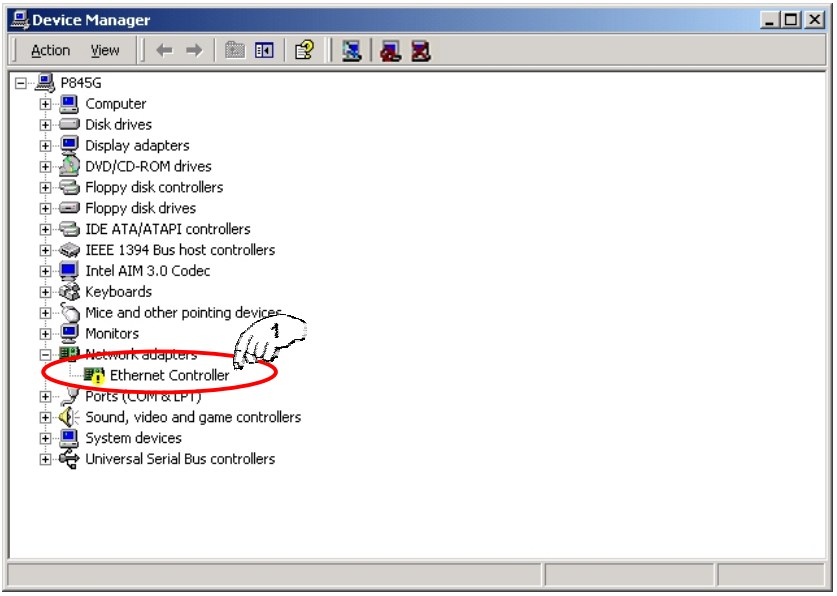
Step 1: Click **Start** ⇒ **Settings** ⇒ **Control Panel**.

Step 2: Double click **System.**

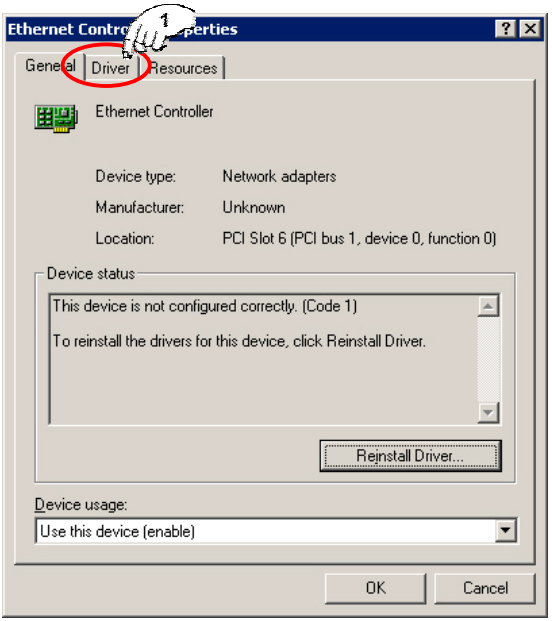
Step 3:



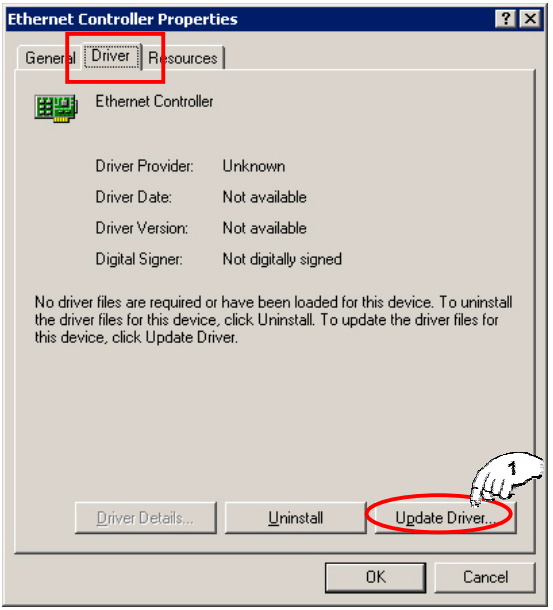
Step 4:


Device Manager
Action
View
P845G
Computer
Disk drives
Display adapters
DVD/CD-ROM drives
Floppy disk controllers
Floppy disk drives
IDE ATA/ATAPI controllers
IEEE 1394 Bus host controllers
Intel AIM 3.0 Codec
Keyboards
Mice and other pointing devices
Monitors
Network adapters
Ethernet Controller
Ports (COM & LPT)
Sound, video and game controllers
System devices
Universal Serial Bus controllers

Step 5:

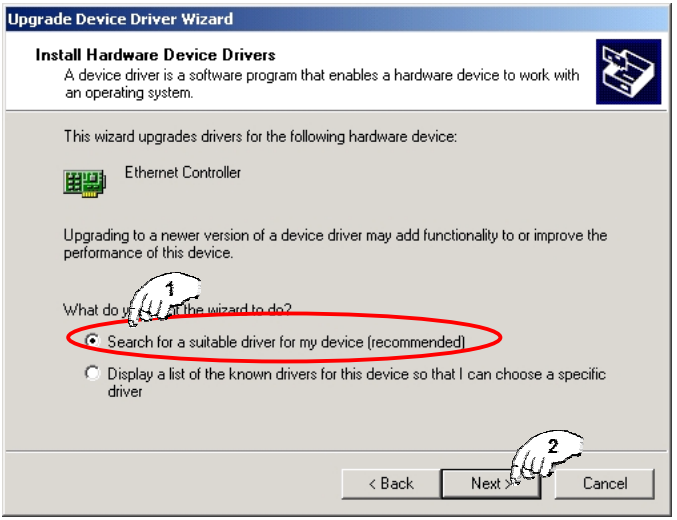

Ethernet Contro perties
General
Driver
Resources
Ethernet Controller
Device type: Network adapters
Manufacturer: Unknown
Location: PCI Slot 6 (PCI bus 1, device 0, function 0)
Device status
This device is not configured correctly. (Code 1)
To reinstall the drivers for this device, click Reinstall Driver.
Reinstall Driver...
Device usage:
Use this device (enable)
OK
Cancel

Step 6:

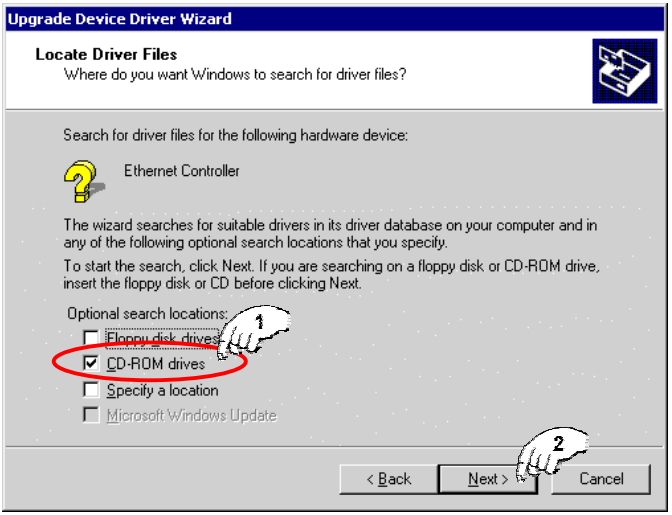


Step 7: Click ***Next.***

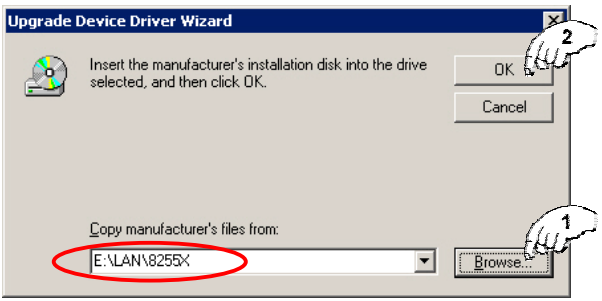
Step 8:



Step 9:

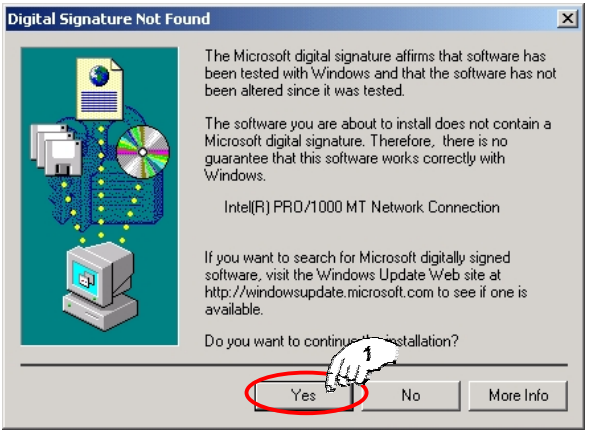


Step 10:



Step 11: Click ***Next***.

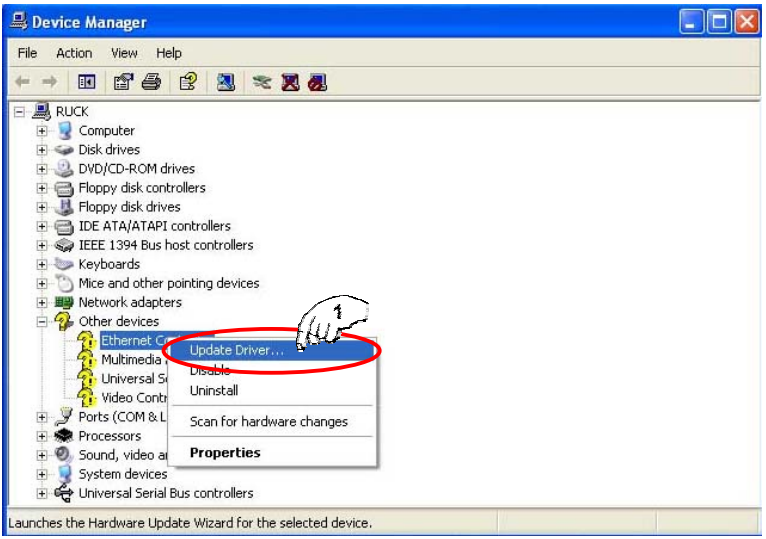
Step 12:



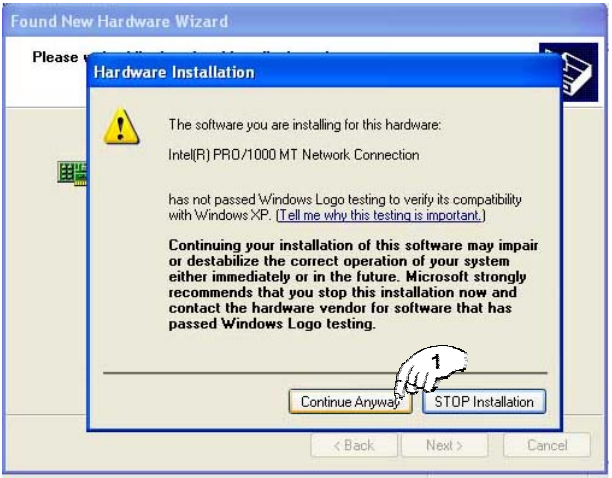
Step 13: Click ***Finish*.** You must restart your computer now.

Installing LAN Driver for Windows XP

Step 1:



Step 2:



USB 2.0 Driver Installation

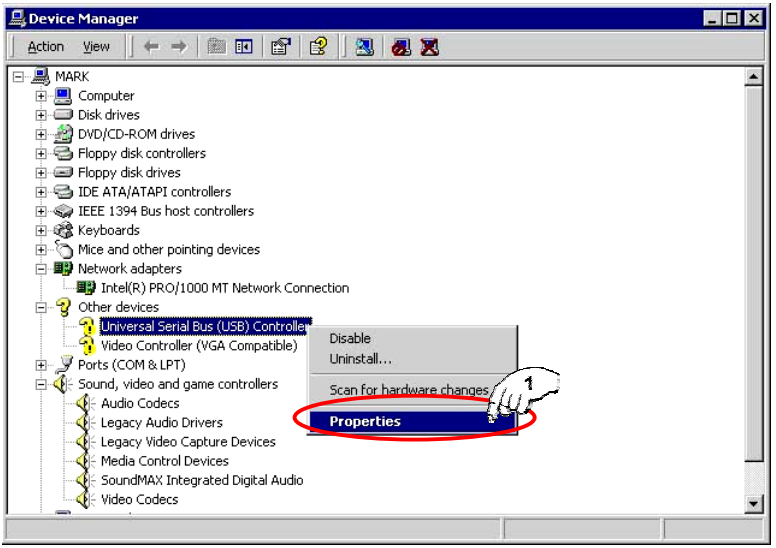
This chapter provides information for installing the USB 2.0 driver. The driver is included on the supplied driver CD.
Please follow the instructions set forth in this chapter carefully.

The following items are covered in this chapter:

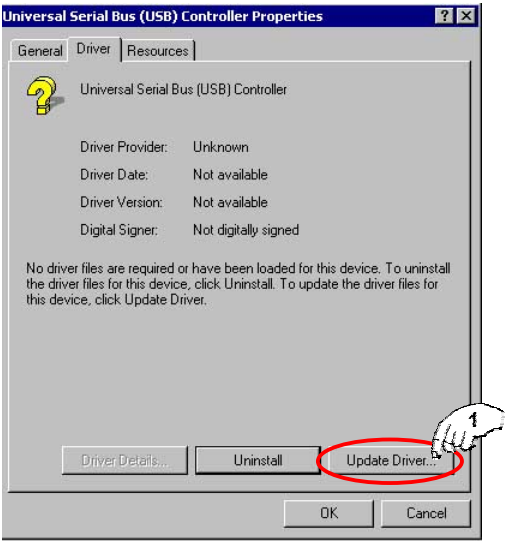
- ❑ Installing USB 2.0 Driver for Windows 2000
- ❑ Installing USB 2.0 Driver for Windows XP

Installing USB 2.0 Driver for Windows 2000

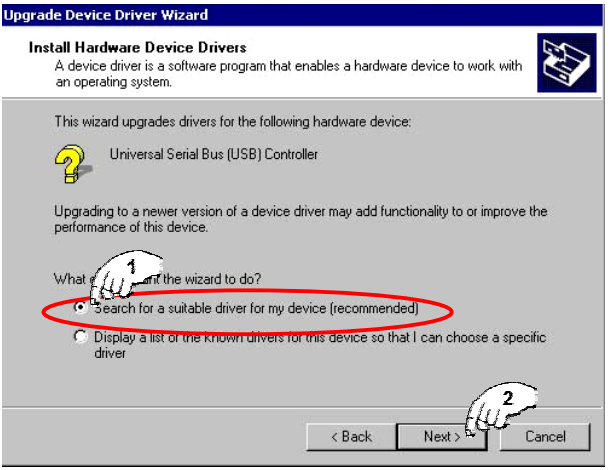
Step 1:



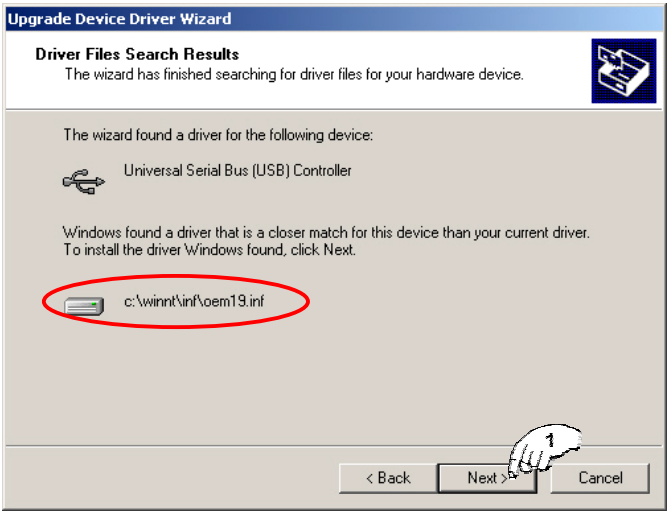
Step 2:


Universal Serial Bus (USB) Controller Properties
General
Driver
Resources
Universal Serial Bus (USB) Controller
Driver Provider: Unknown
Driver Date: Not available
Driver Version: Not available
Digital Signer: Not digitally signed
No driver files are required or have been loaded for this device. To uninstall the driver files for this device, click Uninstall. To update the driver files for this device, click Update Driver.
Driver Details...
Uninstall
Update Driver...
1
OK
Cancel

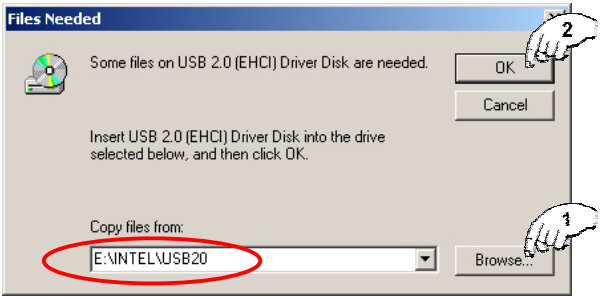
Step 3:


Upgrade Device Driver Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard upgrades drivers for the following hardware device:
Universal Serial Bus (USB) Controller
Upgrading to a newer version of a device driver may add functionality to or improve the performance of this device.
What do you want the wizard to do?
1
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
2
< Back
Next >
Cancel

Step 4:


Upgrade Device Driver Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
Universal Serial Bus (USB) Controller
Windows found a driver that is a closer match for this device than your current driver.
To install the driver Windows found, click Next.
c:\winnt\inf\oem19.inf
< Back
Next >
Cancel
1

Step 5:

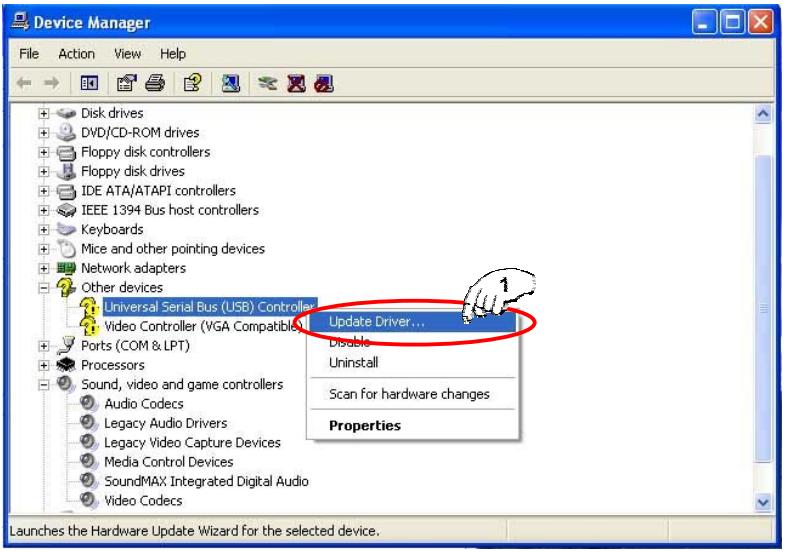

Files Needed
Some files on USB 2.0 (EHCI) Driver Disk are needed.
OK
Cancel
2
Insert USB 2.0 (EHCI) Driver Disk into the drive
selected below, and then click OK.
Copy files from:
E:\INTEL\USB20
Browse...
1

Step 6:

Upgrade Device Driver Wizard
Completing the Upgrade Device Driver Wizard
Intel PCI to USB Enhanced Host Controller
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

Installing USB 2.0 Driver for Windows XP

Step 1:



Step 2:

Step 3:

Hardware Installation
The software you are installing for this hardware:
Intel PCI to USB Enhanced Host Controller
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

Step 4:

Hardware Update Wizard
Completing the Hardware Update Wizard
The wizard has finished installing the software for:
Intel PCI to USB Enhanced Host Controller
Click Finish to close the wizard.
< Back
Finish
Cancel

Main Specifications

PCI-951	Main Specification
Processor	Intel® Pentium® 4 CPU or Celeron® For CPU frequency, please refer to the actually data sheet on the web site: www.kontron.com Socket 478 400/533MHz FSB (Front Side Bus)
Memory	2x 184-pin non-ECC DDR DIMMs for up to 2GB of 200MHz or 266MHz DDR SDRAM (PC1600/PC2100)
Cache	8-KB Level 1 512-KB or 256-KB Level 2
Chipset	Intel® 845GV with integrated graphic controller Intel® 82801DB (ICH4)
LPC I/O	Winbond W83627HF
PCI to ISA Bridge	ITE IT8888F
BIOS	Award BIOS PnP FWH 4Mbit Flash DMI BIOS support
Board Type	PICMG 1.0 standards
Ethernet	1x ICH4 with 82562ET 1x 82551QM
Interfaces **Connectors** **Expansion sockets**	**External connectors (on the board bracket)** 1x combined PS/2 (keyboard and mouse) 1x VGA 2x LAN **Onboard Connectors:** 2x FDD 4x USB (Vers. 2.0) with cable 2x IDE 1x IrDA 1x CompactFlash Socket™ (on the rear side) 1x DVI with optional adapter card 1x keyboard and mouse connector

The table continued on the following page.

	1x LPT1 Parallel Port 2x COM Serial Port compatible with: COM1 as RS232 COM2 as RS232 / RS422 / RS485 1x CPU fan power connector 2x Chassis fan power connector 1x Multifunction connector: Power LED and Keylock ATX Power ON Switch Reset Switch Speaker SMI / Hardware Switch alternative connector for Power LED Hard Disk Drive LED
Power supply	Battery socket and lithium battery 3.0 V for RTC Input: ATX 12V
Operating systems	Information about the applicable operating systems refer to the website: www.kontron.com or: techsupport@kontron.com
Dimensions	338mm x 122mm (13.307“ x 4.803“)
Operating Temp.	0°C to 50°C (32°F to122°F)
Storage Temp.	–25°C to +65°C (–13°F 5to 149°F)
Relative Humidity	5% to 95% (non condensing)
Weight	0.450kg (0.992 lbs.) (without CPU fan)

Electrical Specifications

Board Version	**Type of the external PSU**	**Inputs**	
PCI-951 Board	ATX 12V PSU by use of the supplied ATX adapter cable	PW1	+3:3V, +5V
		PW2	+12V
		J6	+5VSB
		J8	–5V, –12V

Power Specification

Input	Input Peak Current
PW2: +12V	10A
PW1: +3V3	6A
PW1: +5V	1A
J6: +5VSB	1A
J8: –5V	negligible
J8: –12V	negligible

CE-Directives, Standards and Approvals

CE -Directives	
Low Voltage directive (Electrical Safety)	73/23/EEC
EMC Directive	89/336/EEC

Electrical Safety	Standards
EUROPE	EN 60 950:2000 / IEC 60950:1999 (Third Edition)
U.S.A.	UL 60950-1:2003, First Edition
Canada	CSA C22.2 No. 60950-1-03 1st Ed. April 1, 2003

EMC	Standards
EUROPE	EN 61000-6-4:2001 (emission) EN 50082-1/ EN 61000-6-2 :2001 (immunity) EN 55011: 1991 (CISPR11)
U.S.A.	FCC 47 CFR Part 15, Class A

Approvals	Product Category CCN
UL Mark	NWG2.E147705
cUL Mark	NWG8.E147705

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: techsup@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 near Munich
Germany

Returning Defective Merchandise

Before returning any merchandise please:

1. Contact our Service and request an
   RMA number (Return Material Authorization) by :
   Fax: (+49) 8165-77 311
   E-mail: service@kontron.com

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.