HS-6038

Socket 370 133MHz FSB
Industrial Single Board Computer

• Full-size • All-in-One • CompactFlash •
• 133MHz FSB • CRT • Dual LAN • Audio •
• ATA/33/66/100 • RS-232/422/485 • PC/104 •
• IrDA • USB • DOC • WDT • H/W Monitor •
• PICMG Bus Industrial Single Board Computer •

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Version 1.0, May 06, 2004

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Safety Instructions

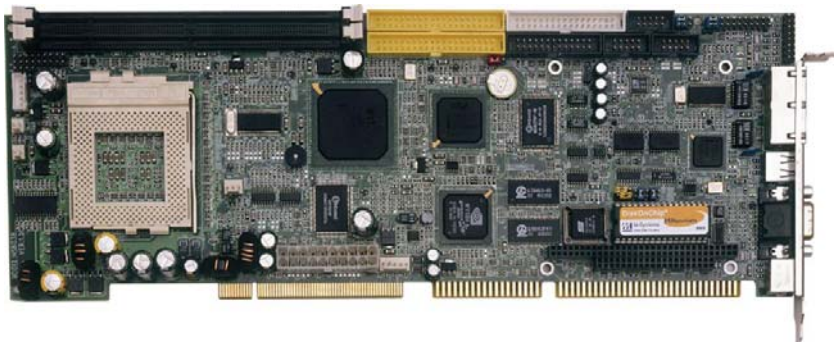
Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This helps to discharge any static electricity on your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components. Fasten the ALLIGATOR clip of the strap to the end of the shielded wire lead from a grounded object. Please wear and connect the strap before handle the HS-6038 to ensure harmlessly discharge any static electricity through the strap.
- Please use an anti-static pad when putting down any components or parts or tools outside the computer. You may also use an anti-static bag instead of the pad. Please inquire from your local supplier for additional assistance in finding the necessary anti-static gadgets.

NOTE: *DO NOT TOUCH THE BOARD OR ANY OTHER SENSITIVE COMPONENTS WITHOUT ALL NECESSARY ANTI-STATIC PROTECTION.*

Chapter 1

General Description



The HS-6038 is a 133MHz FSB Intel® 82815/82801BA chipset-based board designed for PICMG Bus Celeron™/Coppermine™/Tualatin™ 800MHz~1.2GHz CPU compatibility. These features combine and make the HS-6038 an ideal all-in-one industrial single board computer. Additional features include an enhanced I/O with CompactFlash, VGA, dual LAN, audio, and two COM interfaces.

Its onboard ATA/33/66/100 to connected IDE drive interface architecture allows the HS-6038 to support data transfers of 33, 66 or 100MB/sec. for each IDE drive connection. Designed with the Intel® 82815/82801BA core logic chipset, the board supports all Celeron™/Coppermine™/Tualatin™ CPU series operating at 800MHz to 1.2GHz. The 82815 integrated CRT display controller supports up to 1280 x 1024 at 16 color resolution.

A single Flash chip holds the system BIOS, and you can change the Flash BIOS by the Utility Update. Advanced IrDA port also provides a faster data transmission. You can also use the DOS version of the "DiskOnChip™" socket by issuing commands from the DOS prompt without the necessity of other software supports up to 288MB. System memory is also sufficient with the two DIMM sockets that can support up to 512MB.

Additional onboard connectors include an advanced USB and IrDA ports providing faster data transmission, and a dual RJ-45 connector for 10/100 Based Ethernet use.

To ensure the reliability in an unmanned or standalone system, the Watchdog Timer (WDT) onboard HS-6038 is designed with pure hardware that does not need the arithmetical functions of a real-time clock chip. If any program causes unexpected halts to the system, the onboard Watchdog Timer (WDT) will automatically reset the CPU or generate an interrupt to resolve such condition.

The HS-6038 also has a CompactFlash™ connector that accommodates standard of memory cards available in the market.

1.1 Major Features

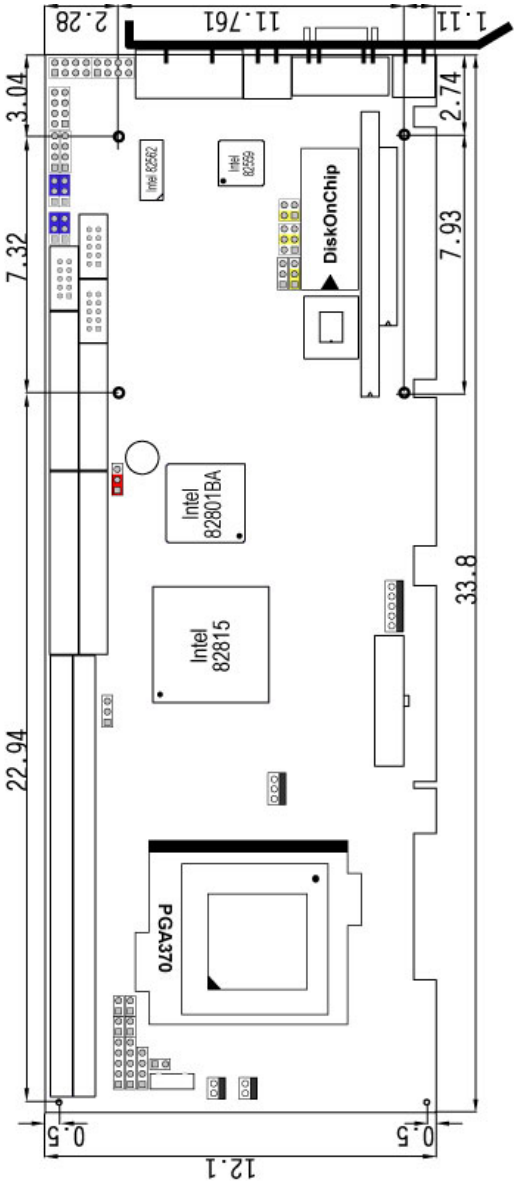
The HS-6038 comes with the following features:

- Socket 370 for Intel® Celeron™/Coppermine™/Tualatin™ 800MHz ~1.2GHz CPU
- Supports 66/100/133MHz FSB
- Two DIMM sockets with a max. capacity of 512MB
- Intel® 82815/82801BA system chipset
- Winbond W83627 super I/O chipset
- Intel® 82815 CRT display controller
- Intel® 82559 and ICHII 10/100 Based LAN
- AC97 3D audio controller
- Two COM, four USB connectors
- PC/104 Bus connector
- DiskOnChip™ socket supporting memory sizes of up to 288MB
- Supports Hardware Monitor
- Supports CompactFlash™ card reader (optional)

1.2 Specifications

- **CPU:** Socket 370 for Intel® Celeron™/Coppermine™/Tualatin™ 800MHz ~1.2GHz CPU
- **Bus Interface:** PICMG Bus
- **Memory:** Two DIMM sockets supporting up to 512MB
- **Chipset:** Intel® 82815/82801BA
- **I/O Chipset:** Winbond W83627
- **CompactFlash™:** One, IDE interface adapter (optional)
- **VGA:** Intel® 82815 supporting CRT display up to 1280 x 1024 at 16 colors
- **LAN:** Intel® 82559 and Intel® ICHII 10/100 Based LAN
- **Audio:** AC97 3D audio controller
- **IDE:** Four IDE disk drives supporting ATA/33/66/100 and with transfer rates of up to 33/66/100MB/sec.
- **FDD:** Supports up to two floppy disk drives
- **Parallel:** One enhanced bi-directional parallel port supporting SPP/ECP/EPP
- **Serial Port:** 16C550 UART-compatible RS-232/422/485 x 1 and RS-232 x 1 serial ports with 16-byte FIFO
- **PC/104:** PC/104 connector for 8-bit ISA Bus
- **IrDA:** One TX/RX IrDA header
- **USB:** Four USB connectors
- **Keyboard/Mouse:** PS/2 6-pin Mini DIN
- **DiskOnChip:** DiskOnChip socket supporting memory sizes of up to 288MB
- **BIOS:** AMI PnP Flash BIOS
- **Watchdog Timer:** Software programmable time-out intervals from 1~256 sec.
- **CMOS:** Battery backup
- **Power Consumption:** +5V/7.5A (1GHz CPU), +12V/120mA
- **Operating Temperature:** 0~60°C
- **Hardware Monitor:** Winbond W83627
- **Board Size:** 33.8 x 12.1 cm

1.3 Board Dimensions



Chapter 2

Unpacking

2.1 Opening the Delivery Package

The HS-6038 is packed in an anti-static bag. The board has components that are easily damaged by static electricity. Do not remove the anti-static wrapping until proper precautions have been taken. Safety Instructions in front of this manual describe anti-static precautions and procedures.

2.2 Inspection

After unpacking the board, place it on a raised surface and carefully inspect the board for any damage that might have occurred during shipment. Ground the board and exercise extreme care to prevent damage to the board from static electricity.

Integrated circuits will sometimes come out of their sockets during shipment. Examine all integrated circuits, particularly the BIOS, processor, memory modules, ROM-Disk, and keyboard controller chip to ensure that they are firmly seated. The HS-6038 delivery package contains the following items:

- **HS-6038 Industrial Single Board Computer**
- **ATA/100 IDE flat cable x 2**
- **FDD flat cable x 1**
- **Printer cable with bracket x 1**
- **KB/MS transfer cable x 1**
- **8-pin USB split type cable with bracket x 1**
- **Speaker connector flat cable with bracket x 1**
- **Two RS-232 cable with bracket x 1**
- **5-pin ATX cable x 1**
- **Jumper Bag**
- **Utility CD-ROM**
- **User's Manual**

It is recommended that you keep all the parts of the delivery package intact and store them in a safe/dry place for any unforeseen event requiring the return shipment of the product. In case you discover any missing and/or damaged items from the list of items, please contact your dealer immediately.

Chapter 3

Hardware Installation

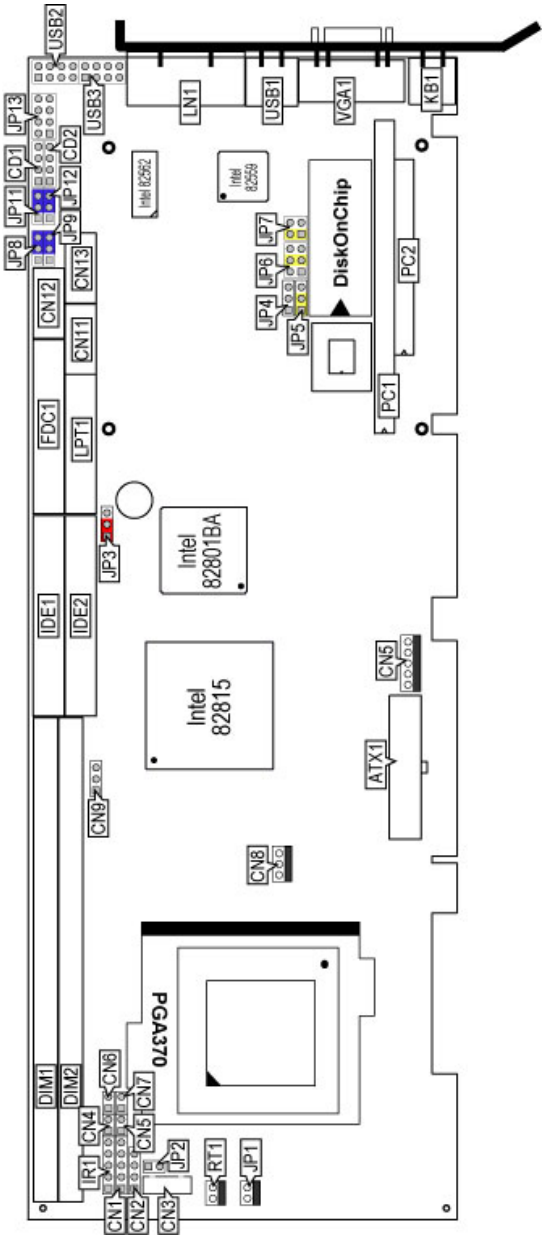
This chapter provides the information on how to install the hardware using the HS-6038. This chapter also contains information related to jumper settings of switch, watchdog timer, and the DiskOnChip™ address selection etc.

3.1 Before Installation

After confirming your package contents, you are now ready to install your hardware. The following are important reminders and steps to take before you begin with your installation process.

1. Make sure that all jumper settings match their default settings and CMOS setup correctly. Refer to the sections on this chapter for the default settings of each jumper.
2. Go through the connections of all external devices and make sure that they are installed properly and configured correctly within the CMOS setup. Refer to the sections in this chapter for the detailed information on the connectors.
3. Keep the manual and diskette in good condition for future reference and use.

3.2 Board Layout



3.3 Jumper List

Jumper	Definition	Setting	Page
JP2	Host Bus Clock Rate Select: *133MHz FSB*	Open	10
JP3	Clear CMOS: *Normal Operation*	Short 1-2	15
JP4	LAN2 Enabled/Disabled Select: *Enabled*	Short 1-2	14
JP5	WDT Active Type Setting: *System Reset*	Short 2-3	20
JP6	DiskOnChip Address Select: *0D000H~ 0D1FFH*	Short 3-4	25
JP7		Short 1-2	25
JP8 / JP9 / JP11 / JP12	COM 2 Use RS-232 or RS-422/485 Select: *RS-232*	Short 2-3	12

3.4 Connector List

Connector	Definition	Page
ATX1	20-pin ATX Power In Connector	16
CD1	CD-ROM Analog Input Connector	19
CD2	Line In Connector	19
CN1	Keylock Connector	17
CN2	Speaker Connector	18
CN3	5-pin Keyboard Connector	17
CN4	HDD LED Connector	17
CN5	SMI Signal Input Connector	19
CN6	2-pin ATX Power On Switch	16
CN7	2-pin Reset Button Connector	17
CN8	Fan Power In Connector	16
CN9	I^2C Bus Connector	10
CN10	5-pin ATX Power In Connector	16
CN11	COM 1 Connector (5x2 header)	12
CN12	RS-422/485 Connector (5x2 header)	12
CN13	COM 2 Connector (5x2 header)	12
CF1	CompactFlash™ Connector	21
DIM1/DIM2	168-pin DIMM Sockets	10
FDC1	Floppy Connector	12
IDE1/IDE2	Primary/Secondary IDE Connectors	11
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JP1	System Sensing Connector	18
JP13	MIC In / Audio Out Connector	19
KB1	PS/2 6-pin Mini DIN KB/MS Connector	17
LAN1	Dual RJ-45 Connector	14
LPT1	Parallel Connector	13

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Connector	Definition	Page
PC1 / PC2	PC/104 Bus 64-pin/40-pin Connectors	22
USB1	External USB Connector	15
USB2/USB3	Internal USB Connectors	15
RT1/RT2	Power Sensing Connectors	18
VGA1	15-pin VGA Connector	10

3.5 Configuring the CPU

JP2 is used to set the Host Bus Clock Rate. The setting of internal Host Bus Clock Rate is for defining the operating clock base rate of the internal bus of core logic.

- **JP2: Host Bus Clock Rate Select**

Description	Setting
66/100MHz FSB	Short
133MHz FSB (default)	Open

3.6 System Memory

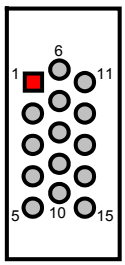
The HS-6038 provides two 168-pin DIMM sockets at locations *DIM1* and *DIM2*. The maximum capacity of the onboard memory is 512MB.

3.7 VGA Controller

The HS-6038 provides one connection for VGA device. *VGA1* offers a single standard 15-pin CRT connector.

- **VGA1: 15-pin CRT Connector**

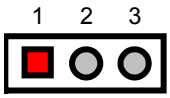
PIN	Description	PIN	Description
1	Red	2	Green
3	Blue	4	VCC
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	VCC	12	DDCDA
13	HSYNC	14	VSYNC
15	DDCCL		



An Inter-IC connector *CN9*, also offers the flexibility of installing an I^2C digital signal-based device.

- **CN9: I²C Bus Connector**

PIN	Description
1	SMBDATA
2	SMBCLK
3	GND

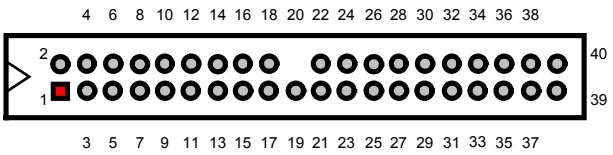


3.8 IDE Drive Connector

IDE1/IDE2 are standard 40-pin connector daisy-chain driver connectors serving the PCI E-IDE drive provisions onboard the HS-6038. A maximum of four IDE drives can be connected to the HS-6038 via *IDE1/IDE2*.

- **IDE1/IDE2: Primary/Secondary IDE Connectors**

PIN	Description	PIN	Description
1	RESET	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GND	20	N/C
21	PDREQ	22	GND
23	PDIOW#	24	GND
25	PDIOR#	26	GND
27	PIORDY	28	GND
29	RPDACK-	30	GND
31	IRQ14	32	N/C
33	RPDA1-	34	PATA66DET
35	RPDA0-	36	RPDA2-
37	RPCS1-	38	RPCS3-
39	HDD ACTIVE	40	GND

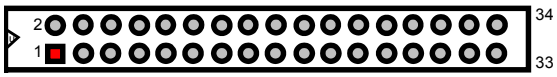


3.9 Floppy Disk Drive Connector

The HS-6038 uses a standard 34-pin header connector, *FDC1*, for floppy disk drive connection. A total of two floppy drives may be connected to *FDC1* at any given time.

- **FDC1: Floppy Connector**

PIN	Description	PIN	Description
1	GND	2	RWC-
3	GND	4	N/C
5	GND	6	DS1-
7	GND	8	Index#
9	GND	10	Motor Enable A#
11	GND	12	Drive Select B#
13	GND	14	Drive Select A#
15	GND	16	Motor Enable B#
17	GND	18	Direction#
19	GND	20	Step#
21	GND	22	WD-
23	GND	24	WE-
25	GND	26	Track 0#
27	GND	28	WP-
29	N/C	30	RDATA-
31	GND	32	HEAD-
33	N/C	34	DSKCHG-

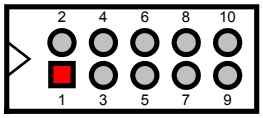


3.10 Serial Port Connectors

The HS-6038 offers one NS16C550 compatible UARTs with Read/Receive 16-byte FIFO serial ports.

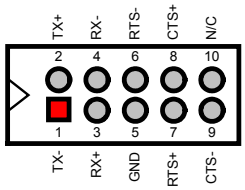
- **CN11, CN13: COM1/COM2 Connectors (5x2 header)**

PIN	Description	PIN	Description
1	DCD	2	DSR
3	RXD	4	RTX
5	TXD	6	CTX
7	DTR	8	RI
9	GND	10	N/C



- **CN12: RS-422/485 Connector (5x2 header)**

PIN	Description	PIN	Description
1	TX-	2	TX+
3	RX+	4	RX-
5	GND	6	RTS-
7	RTS+	8	CTS+
9	CTS-	10	N/C



- **JP8/JP9/JP11/JP12: COM2 Use RS-232 or RS-422/485 Select**

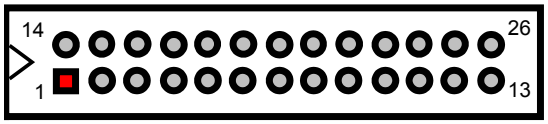
Options	Settings
RS-232 (default)	Short 2-3
RS-422/485	Short 1-2

3.11 Parallel Connector

LPT1 is a standard 26-pin flat cable connector designed to accommodate parallel port connection onboard the HS-6038.

- **LPT1: Parallel Connector**

PIN	Description	PIN	Description
1	Strobe	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	Acknowledge
11	Busy	12	Paper Empty
13	Printer Select	14	Auto Form Feed
15	ERROR#	16	Initialize
17	Printer Select LN#	18	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND	26	GND

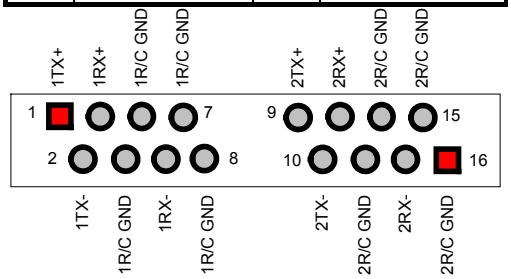


3.12 Ethernet Connector

The HS-6038 provides one dual RJ-45 10/100 Based LAN interface connectors. Please refer to the following table for their identical pin assignments.

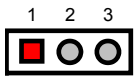
- **LAN1: Dual RJ-45 Connector**

PIN	Description	PIN	Description
1	1TX+	2	1TX-
3	1RX+	4	1R/C GND
5	1R/C GND	6	1RX-
7	1R/C GND	8	1R/C GND
9	2TX+	10	2TX-
11	2RX+	12	2R/C GND
13	2R/C GND	14	2RX-
15	2R/C GND	16	2R/C GND



- **JP4: LAN2 Enable/Disable Select**

Options	Settings
Enabled (default)	Short 1-2
Disabled	Short 2-3

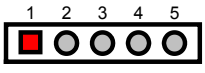


3.13 IrDA Connector

IR1 is a 5-pin internal IR communication connector for connection of an IrDA device.

- **IR1: IrDA Connector**

PIN	Description
1	VCC
2	N/C
3	IRRX
4	GND
5	IRTX

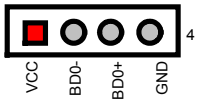


3.14 USB Connector

The HS-6038 provides one 4-pin external USB connector at location *USB1*, and two 8-pin connectors at locations *USB2* and *USB3*.

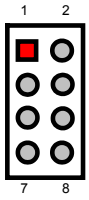
- **USB1: External USB Connector**

PIN	Description
1	VCC
2	BD0-
3	BD0+
4	GND



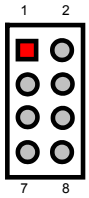
- **USB2: Internal USB Connector**

PIN	Description	PIN	Description
1	VCC	2	VCC
3	BD0-	4	BD1-
5	BD0+	6	BD1+
7	GND	8	GND



- **USB3: Internal USB Connector**

PIN	Description	PIN	Description
1	VCC	2	VCC
3	BD02-	4	BD3-
5	BD02+	6	BD3+
7	GND	8	GND

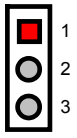


3.15 CMOS Data Clear

The HS-6038 has a Clear CMOS jumper on *JP3*.

- **JP3: Clear CMOS**

Options	Settings
Normal Operation (default)	Short 1-2
Clear CMOS	Short 2-3



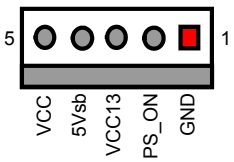
NOTE: *The default setting of JP3 is Short 1-2 in storage. Before you turn on the power of your system, please set JP3 to Short 1-2 for normal operation.*

3.16 Power and Fan Connectors

The HS-6038 provides one 5-pin ATX Power On connector at *CN10*, one 2-pin ATX Power ON switch at *CN6*, and a single 3-pin FAN out connector at *CN8*.

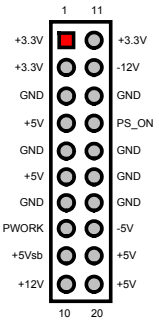
- **CN10: 5-pin ATX Power In Connector**

PIN	Description
1	GND
2	PS_ON
3	VCC13
4	5Vsb
5	VCC



- **ATX1: 20-pin ATX Power In Connector**

PIN	Description	PIN	Description
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PS_ON
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	PWORK	18	-5V
9	+5Vsb	19	+5V
10	+12V	20	+5V

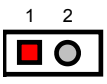


If the system is not using the ATX power function, you may SHORT pins 4 and 5 of *CN10* so that the ATX power supply can be used as an AT power unit. If not, *CN2* must be connected to a corresponding connector on a PICMG Bus backplane in order to use the ATX Power function.

When using the ATX Power, *CN6* is used to turn on the power. In this case, a BOSER PICMG Bus backplane must complement the HS-6038 for proper operation.

- **CN6: 2-pin ATX Power On Switch**

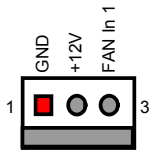
PIN	Description
1	5VSBY
2	PANSWIN



CN8 onboard HS-6038 is a 3-pin fan power output connector.

- **CN8: Fan Power In Connector**

PIN	Description
1	GND
2	+12V
3	FAN In 1

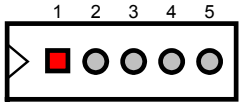


3.17 Keyboard/Mouse Connectors

The HS-6038 offers two possibilities for keyboard connection. The connections are via *KB1* for an external PS/2 type keyboard/mouse or via *CN3* for an internal 5-pin cable converter to an AT keyboard.

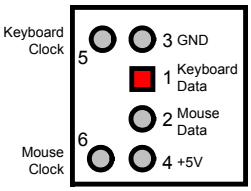
- **CN3: 5-pin Keyboard Connector**

PIN	Description
1	Keyboard Clock
2	Keyboard Data
3	N/C
4	GND
5	+5V



- **KB1: PS/2 6-pin Mini DIN Keyboard/Mouse Connector**

PIN	Description
1	Keyboard Data
2	Mouse Data
3	GND
4	+5V
5	Keyboard Clock
6	Mouse Clock



3.18 System Front Panel Connectors

The HS-6038 has one LED at location *D1* that indicates the power-on status. This visual feature of the IDE LED may also be connected to an external IDE LED via connector *CN4*.

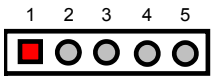
- **CN4: IDE LED Connector**

PIN	Description
1	+5V
2	HDD ACTIVE#

CN1 and *CN7* are the Keylock and Reset Button connectors onboard.

- **CN1: Keylock Connector**

PIN	Description
1	VCC
2	N/C
3	GND
4	Keylock
5	GND



- **CN7: 2-pin Reset Button Connector**

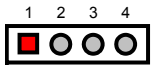
PIN	Description
1	GND
2	H/W Reset

3.19 External Speaker

Aside from the buzzer at location *BZ1* onboard, *t*he HS-6038 also offers a connector (*CN2*) for an external speaker connection. The table below lists the pin assignments of *CN2*.

- **CN2: Speaker Connector**

PIN	Description
1	Speaker Signal
2	GND
3	GND
4	+5V

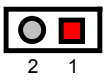


3.20 Thermal Input Connectors

In relevance to the Hardware Monitoring feature provided by the onboard Winbond W83627, the board allows the installation of a thermal sensor via connectors *RT1/RT2* and *JP1*. The thermal connector *JP1* monitors and displays the current system temperature whereas *RT2* monitors the temperature conditions along the area where the power supply system sits. The displayed values are read-only figures and may not be altered.

- **RT1, RT2, JP1: System/Power Sensing Connectors**

PIN	Description
1	Sensing
2	GND

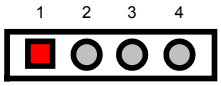


3.21 Audio Connectors

The HS-6038 has an onboard AC97 3D audio interface. The following tables list the pin assignments of the CD-ROM Analog Input, the Line In and the MIC In/Audio Out connectors.

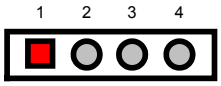
- **CD1: CD-ROM Analog Input Connector**

PIN	Description
1	CD IN_R
2	CD REF
3	CD REF
4	CD IN_L



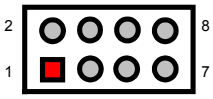
- **CD2: Line In Connector**

PIN	Description
1	LINE_R
2	GND
3	GND
4	LINE_L



- **JP13: MIC In/Audio Out Connector**

PIN	Description	PIN	Description
1	OUT_L	2	OUT_R
3	GND	4	GND
5	MIC IN	6	N/C
7	GND	8	GND



3.22 SMI Signal Input Switch

The HS-6038 has an SMI connector at location *CN5*. If there is an external SMI Signal Input Switch, this input switch will be able to receive signals.

- **CN5: SMI Signal Input Switch**

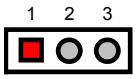
PIN	Description
1	GND
2	EXTSMI

3.23 Watchdog Timer

Once the Enable cycle is active, a Refresh cycle is requested before the time-out period. This restarts counting of the WDT period. When the time counting goes over the period preset of WDT, it will assume that the program operation is abnormal. A System Reset signal is to re-start when such error happens.

- **JP5: WDT Active Type Setting**

Options	Settings
Active NMI	Short 1-2
System Reset (default)	Short 2-3
Disabled Watchdog Timer	Open



The following sample programs show how to Enable, Disable and Refresh the Watchdog Timer:

```
;--------------------------------------------------------------------------
; Enter the WDT function mode, interruptible double-write
;--------------------------------------------------------------------------
      MOV     DX, 2EH
      MOV     AL, 87H
      OUT     DX, AL
      OUT     DX, AL
      MOV     DX, 2EH
      MOV     AL, 07H
      OUT     DX, AL
      MOV     DX, 2FH
      MOV     AL, 08H
      OUT     DX, AL
      MOV     DX, 2EH
      MOV     AL, F5H
      OUT     DX, AL              ; select CRF0
      MOV     DX, 2FH
      MOV     AL, 80H
      OUT     DX, AL
      MOV     DX, 2EH
      MOV     AL, F7H
      OUT     DX, AL
      MOV     DX, 2FH
      MOV     AL, 00H
      OUT     DX, AL
      MOV     DX, 2EH
      MOV     AL, F6H
      OUT     DX, AL
      MOV     DX, 2FH
      MOV     AL, 00H             ; * 00H=Disabled
      OUT     DX, AL
;--------------------------------------------------------------------------
; Exit extended function mode
;--------------------------------------------------------------------------
```

```
MOV     DX, 2EH
MOV     AL, AAH
OUT     DX, AL
```

* User can also use AL, 00H's defined time for reset purposes, e.g.00H for Disable, 01H = 1sec, 02H = 2sec…..FFH = 255sec

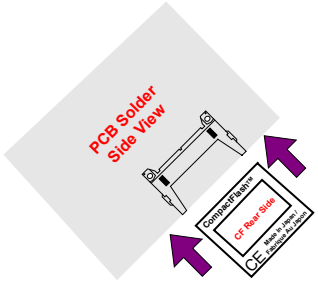
3.24 CompactFlash™ Connector

The HS-6038 also offers an optional CompactFlash™ connector which is IDE interface located at the solder side of the board. The designated *IDE2* connector, once soldered with an adapter, can hold CompactFlash™ cards of various sizes. Please turn off the power before inserting the CF card. Inserting a CompactFlash™ card into the adapter is not a difficult task. The socket and card are both keyed and there is only one direction for the card to be completely inserted. Refer to the diagram below for the traditional way of inserting the card.

- **CF1: CompactFlash™ Connector**

PIN	Description	PIN	Description
1	GND	2	DATA 3
3	DATA 4	4	DATA 5
5	DATA 6	6	DATA 7
7	SDCS1#	8	GND
9	GND	10	GND
11	GND	12	GND
13	+5V	14	GND
15	GND	16	GND
17	GND	18	SDA2
19	SDA1	20	SDA0
21	DATA 0	22	DATA 1
23	DATA 2	24	470Ω pull to GND
25	N/C	26	N/C
27	DATA 11	28	DATA 12
29	DATA 13	30	DATA 14
31	DATA 15	32	SDCS3#
33	N/C	34	IOR
35	IOW	36	EWE0
37	IRQ	38	+5V
39	N/C	40	N/C
41	Reset	42	IORDY
43	N/C	44	REQ 0
45	IDE LED	46	PDIAG
47	DATA 8	48	DATA 9
49	DATA 10	50	GND

Inserting a CompactFlash™ card into the adapter is not a difficult task. The socket and card are both keyed and there is only one direction for the card to be completely inserted. Refer to the diagram on the following page for the traditional way of inserting the card.



3.25 PC/104 Connectors

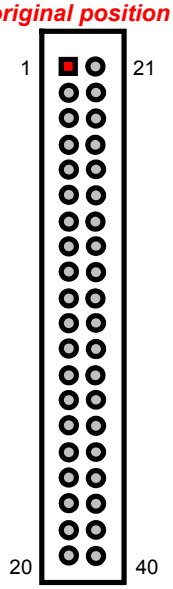
The PC/104 expansion bus offers provisions to connect all types of PC/104 modules. With the PC/104 bus being known as the new generation of industrial embedded 16bit PC standard bus, thousands of PC/104 modules from multiple venders can be easily installed onboard. The detailed pin assignment of the PC/104 expansion bus connectors *PC1* and *PC2* are listed in the following tables:

NOTE： *The PC/104 connector allows direct plugging or stack-through piling of PC/104 modules without requiring the PC/104 mounting kit.*

- **PC2: PC/104 Bus 40-pin Connector**

PIN	Description	PIN	Description
1	GND	21	GND
2	MEMCS16*	22	SBHE*
3	IOSC16*	23	LA23
4	IRQ10	24	LA22
5	IRQ11	25	LA21
6	IRQ12	26	LA20
7	IRQ15	27	LA19
8	IRQ14	28	LA18
9	DACK0*	29	LA17
10	DRQ0	30	MEMR*
11	DACK5*	31	MEMW*
12	DRQ5	32	SD8
13	DACK6*	33	SD9
14	DRQ6	34	SD10
15	DACK7*	35	SD11
16	DRQ7	36	SD12
17	+5V	37	SD13
18	MASTER*	38	SD14
19	GND	39	SD15
20	GND	40	GND

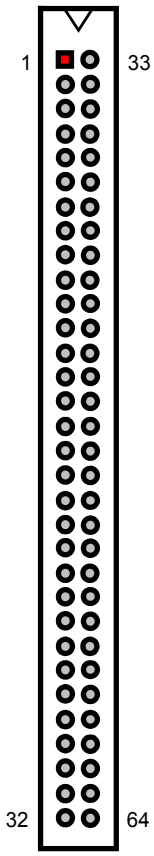
Connector diagram rotated 90 degrees clockwise from original position



- **PC1: PC/104 Bus 64-pin Connector**

PIN	Description	PIN	Description
1	IOCHECK*	33	GND
2	SD7	34	RESETDRV
3	SD6	35	+5V
4	SD5	36	IRQ9
5	SD4	37	N/C
6	SD3	38	DRQ2
7	SD2	39	-12V
8	SD1	40	OWS
9	SD0	41	+12V
10	IOCHRDY	42	GND
11	AEN	43	SMEMW*
12	SA19	44	SMEMR*
13	SA18	45	IOW*
14	SA17	46	IOR*
15	SA16	47	DACK3*
16	SA15	48	DRQ3
17	SA14	49	DACK1*
18	SA13	50	DRQ1
19	SA12	51	REFRESH*
20	SA11	52	SYSCLK
21	SA10	53	IRQ7
22	SA9	54	IRQ6
23	SA8	55	IRQ5
24	SA7	56	IRQ4
25	SA6	57	IRQ3
26	SA5	58	DACK2*
27	SA4	59	TC
28	SA3	60	BALE
29	SA2	61	+5V
30	SA1	62	OSC
31	SA0	63	GND
32	GND	64	GND

Connector diagram rotated 90 degrees clockwise from original position



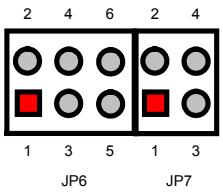
3.26 DiskOnChip™ Address Setting

The DiskOnChip™ function allows the system to boot or operate without a FDD or a HDD. DiskOnChip™ modules may be formatted as drive C. With DiskOnChip™, user may also execute DOS commands such as FORMAT, SYS, COPY, XCOPY, DISCOPY, DISKCOMP, etc.

The *U31* location onboard the HS-6038 is the DiskOnChip™ module socket. If you have another memory device that has a similar memory capacity with that of the DOC in your system, please set both at different memory address mapping to avoid mapping area conflicts. Failing to do so will not make the HS-6038 and the additional memory device function properly. *JP6/JP7* selects the starting memory address of the DiskOnChip™ (D.O.C.) to avoid the mapping area with any other memory devices.

- **JP6 and JP7: DiskOnChip™ Address Select**

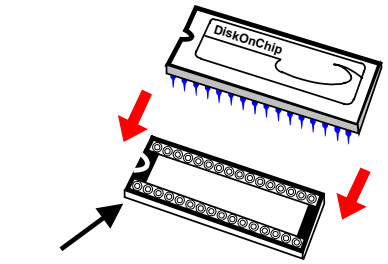
Address	JP6	JP7
0C800H~0C9FFH	Short 1-2	Short 1-2
0CC00H~0CDFFH	Short 1-2	Short 3-4
0D000H~0D1FFH (default)	Short 3-4	Short 1-2
0D400H~0D5FFH	Short 3-4	Short 3-4
0D800H~0D9FFH	Short 5-6	Short 1-2
0DC00H~0DDFFH	Short 5-6	Short 3-4



3.26.1 Installing DiskOnChip™ Modules

When installing a DiskOnChip™ module onto your board, please take note of the following:

1. Orient yourself properly with the location of the DiskOnChip™ socket. Try to locate the pin 1 location on your socket. Pin numbers are usually printed on either the component side or the solder side of your board.
2. Locate the Pin 1 location on your DiskOnChip™ module. More often than not, Pin 1 can be found on the lower right corner of the chip. Please refer to the diagram for the exact location.
3. Once you have figured out where the pin 1 locations are (on both chip and socket), align the module's pins on an upright angle against the socket. Using both thumbs, gently press the module into the socket until all the pins are secured to their designations.



4. The installation is now complete and your module is now ready for use.

NOTE: *If you encounter difficulty installing your DiskOnChip™ module, please consult a qualified technician or engineer to perform the installation.*

3.26.2 Removing DiskOnChip™ Modules

When removing a DiskOnChip™ module from its socket, please take note of the following:

1. Loosen the contact of the module from its socket using a screwdriver.
2. Insert the screwdriver's flat head into a gap on either end of the socket. Do not insert the screwdriver head on either side where the pins are located. Doing so might damage the pins in the process.
3. Slowly lift the screwdriver handle upwards. This will disengage the module from its socket.

NOTE: *If you encounter difficulty removing your DiskOnChip™ module, please consult a qualified technician or engineer to remove it for you.*

Chapter 4

AMI BIOS Setup

The HS-6038 uses AMI BIOS for the system configuration. The AMI BIOS setup program is designed to provide the maximum flexibility in configuring the system by offering various options that could be selected for end-user requirements. This chapter is written to assist you in the proper usage of these features.

4.1 Starting Setup

The AMI BIOS is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Del> immediately after switching the system on, or
2. By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test).

Press DEL to enter SETUP.

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF, then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to...

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

4.2 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the <PageUp> and <PageDown> keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more details about how to navigate in the Setup program using the keyboard.

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift)F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Calendar, only for Status Page Setup Menu
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the default
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

4.2.1 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.

4.3 Main Menu

Once you enter the AMI BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to enter the sub-menu.

AMIBIOS HIFLEX SETUP UTILITY – VERSION 1.52 **(C)2001 American Megatrends, Inc. All Rights Reserved**
HS-6038LV VER:1.1. Standard CMOS Setup Advanced CMOS Setup Advanced Chipset Setup Power Management Setup PCI / Plug and Play Setup Peripheral Setup Hardware Monitor Setup Auto-Detect Hard Disks Change User Password Change Supervisor Password Auto Configuration with Optimal Settings Auto Configuration with Fail Safe Settings Save Settings and Exit Exit Without Saving
Standard CMOS setup for changing time, date, hard disk type, etc. ESC:Exit ↑↓:Sel F2/F3: Color F10: Save & Exit

NOTE: *A brief description of the highlighted choice appears at the bottom of the screen.*

4.4 Standard CMOS Setup

The Standard Setup is used for the basic hardware system configuration. The main function is for Data/Time and Floppy/Hard Disk Drive settings. Please refer to the following screen for the setup. When the IDE hard disk drive you are using is larger than 528MB, you must set the HDD mode to **LBA** mode. Please use the IDE Setup Utility in BIOS SETUP to install the HDD correctly.

AMIBIOS SETUP – STANDARD CMOS SETUP
(C)2001 American Megatrends, Inc. All Rights Reserved

Date (mm/dd/yyyy) : Fri Oct 24, 2003 Base Memory : 639 KB
Time (hh/mm/ss) : 19:04:12 Extd Memory : 126 MB

Floppy Drive A: Not Installed
Floppy Drive B: Not Installed

	Type	Size	Cyln	Head	WPcom	Sec	LBA Mode	Blk Mode	PIO Mode	32Bit Mode
Pri Master	: Not Installed									
Pri Slave	: Not Installed									
Sec Master	: Not Installed									
Sec Slave	: Not Installed									

Boot Sector Virus Protection : Disabled

Month: Jan - Dec ESC:Exit ↑↓:Sel
Day: 01 - 30 PgUp/PgDn: Modify
Year: 1980 - 2099 F1:Help F2/F3:Color

4.5 Advanced CMOS Setup

This section allows you to configure your system for the basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

AMIBIOS SETUP – STANDARD CMOS SETUP
(C)2001 American Megatrends, Inc. All Rights Reserved

Quick Boot	Enabled	Available Options:
Pri Master ARMD Emulated as	Auto	▸ Disabled
Pri Slave ARMD Emulated as	Auto	Enabled
Sec Master ARMD Emulated as	Auto	
Sec Slave ARMD Emulated as	Auto	
USB ARMD Emulated as	Auto	
1st Boot Device	Disabled	
2nd Boot Device	Disabled	
3rd Boot Device	Disabled	
Try Other Boot Devices	Yes	
Initial Display Mode	BIOS	
Display Mode at Add-On ROM Init	Force BIOS	
Floppy Access Control	Read-Write	
S.M.A.R.T. for Hard Disks	Disabled	
BootUp Num-Lock	On	
Floppy Drive Seek	Disabled	
PS/2 Mouse Support	Enabled	
Primary Display	VGA/EGA	
Password Check	Setup	
Boot To OS/2	No	
CPU Serial Number	Disabled	
L1 Cache	Writeback	
L2 Cache	Writeback	
System BIOS Cacheable	Disabled	
C000,16k Shadow	Enabled	
C400,16k Shadow	Enabled	
C800,16k Shadow	Enabled	
CC00,16k Shadow	Disabled	
D000,16k Shadow	Disabled	
D400,16k Shadow	Disabled	ESC:Exit ↑↓:Sel
D800,16k Shadow	Disabled	PgUp/PgDn: Modify
DC00,16k Shadow	Disabled	F1:Help F2/F3:Color

4.6 Advanced Chipset Setup

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and the access to the system memory resources, such as DRAM and the external cache. It also coordinates the communications between the conventional ISA and PCI buses. It must be stated that these items should never be altered. The default settings have been chosen because they provide the best operating conditions for your system. You might consider and make any changes only if you discover that the data has been lost while using your system.

AMIBIOS SETUP – ADVANCED CHIPSET SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
CPU Ratio Selection	Safe Mode	Available Options:
CPU BIST Enable	Disabled	▸ Safe Mode
ICH Delayed Transaction	Disabled	5.5x
DMA Collection Buffer Enable	Disabled	6.0x
DRAM Page Closing Policy	Open	6.5x
Memory Hole	Disabled	7.0x
MPS Revision	1.1	7.5x
System memory Frequency	100MHz	8.0x
SDRAM Timing by SPD	Disabled	8.5x
DRAM Refresh	15.6us	9.0x
DRAM Cycle time (SCLKs)	7/9	9.5x
CAS# Latency (SCLKs)	3	10.0x
RAS to CAS delay (SCLKs)	3	10.5x
SDRAM RAS# Precharge (SCLKs)	3	11.0x
Internal Graphics Mode Select	1MB	11.5x
Display Cache Window Size	64MB	12.0x
AGP Aperture Window	64MB	
Local memory Frequency	100MHz	
Initialize Display Cache Memory	Enabled	
Paging Mode Control	Closed	
RAS – to CAS	Default	
CAS Latency	Slow	
RAS Timing	Slow	
RAS Precharge Timing	Slow	
CPU Latency Timer	Disabled	
USB Function	All USB Port	ESC:Exit ↑↓:Sel
USB Device Legacy Support	Disabled	PgUp/PgDn: Modify
Port 64/60 Emulation	Disabled	F1:Help F2/F3:Color

4.7 Power Management Setup

The Power Management Setup allows user to configure the system for saving energy in a most effective way while operating in a manner consistent with his own style of computer use.

AMIBIOS SETUP – POWER MANAGEMENT SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
ACPI Aware O/S	No	Available Options:
APIC Interrupt Mode	Disabled	▸ No
Sleep State	S1/POS	Yes
USB KB/MS Wake Up From S3	Disabled	
Power Management/APM	Enabled	
Suspend Time Out	Disabled	
Keyboard & PS/2 Mouse	Monitor	
FDC/LPT/COM Ports	Monitor	
SB & NSS Audio Ports	Ignore	
MIDI Ports	Ignore	
ADLIB Ports	Ignore	
Primary Master IDE	Monitor	
Primary Slave IDE	Ignore	
Secondary Master IDE	Monitor	
Secondary Slave IDE	Ignore	
System Thermal	Ignore	
Power Button Function	On/Off	
Restore on AC/Power Loss	Power On	
Wake Up On Ring	Disabled	
Wake Up On LAN	Disabled	
Wake Up On PME	Disabled	
Resume By Alarm	Disabled	
Alarm Date	15	
Alarm Hour	12	ESC:Exit ↑↓:Sel
Alarm Minute	30	PgUp/PgDn: Modify
Alarm Second	30	F1:Help F2/F3:Color

4.8 PCI / Plug and Play Setup

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system that allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

AMIBIOS SETUP – PCI / PLUG AND PLAY SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
Plug and Play Aware O/S	No	Available Options:
Clear NVRAM on Every Boot	No	▸ No
PCT Latency Timer (PCI Clocks)	64	Yes
Primary Graphics Adapter	Auto	
Allocate IRQ to PCI VGA	Yes	
PCI IDE BusMaster	Disabled	
DMA Channel 0	PnP	
DMA Channel 1	PnP	
DMA Channel 3	PnP	
DMA Channel 5	PnP	
DMA Channel 6	PnP	
DMA Channel 7	PnP	
IRQ3	PCI/PnP	
IRQ4	PCI/PnP	
IRQ5	PCI/PnP	
IRQ7	PCI/PnP	
IRQ9	PCI/PnP	
IRQ10	PCI/PnP	
IRQ11	PCI/PnP	ESC:Exit ↑↓:Sel
IRQ14	PCI/PnP	PgUp/PgDn: Modify
IRQ15	PCI/PnP	F1:Help F2/F3:Color

4.9 Peripheral Setup

The IDE hard drive controllers can support up to two separate hard drives. These drives have a master/slave relationship that is determined by the cabling configuration used to attach them to the controller. Your system supports two IDE controllers--a primary and a secondary--so you can install up to four separate hard disks.

PIO means Programmed Input/Output. Rather than having the BIOS issue a series of commands to affect the transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by them. This is much simpler and more efficient (also faster).

AMIBIOS SETUP – PERIPHERAL SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
OnBoard FDC	Enabled	Available Options:
OnBoard Serial Port A	3F8/COM1	▸ Disabled
OnBoard Serial Port B	2F8/COM2	Enabled
Serial Port B Mode	Normal	
IR Duplex Mode	Half Duplex	
IR Pin Select	IRRX/IRTX	
OnBoard Parallel Port	378	
Parallel Port Mode	Normal	
EPP Version	N/A	
Parallel Port IRQ	7	
Parallel Port DMA Channel	N/A	
Keyboard Power On Function	Disabled	
Specific Key for Power On	N/A	
Mouse Power On Function	Disabled	
On-Chip IDE	Both	ESC:Exit ↑↓:Sel
OnBoard Lan	Enabled	PgUp/PgDn: Modify
		F1:Help F2/F3:Color

4.10 Hardware Monitor Setup

AMIBIOS SETUP – HARDWARE MONITOR SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
CPU Temperature Detected by	CPU	Available Options:
CPU Temperature		▸ CPU
System Temperature		Thermistor
Power Temperature		
CPU Fan Speed		
Chassis Fan Speed		
Power Fan Speed		
CPU VID		
Vcore		
Vtt		
Vio		
+ 5.000V		
+12.000V		
-12.000V		
- 5.000V		ESC:Exit ↑↓:Sel
Battery		PgUp/PgDn: Modify
+5V SB		F1:Help F2/F3:Color

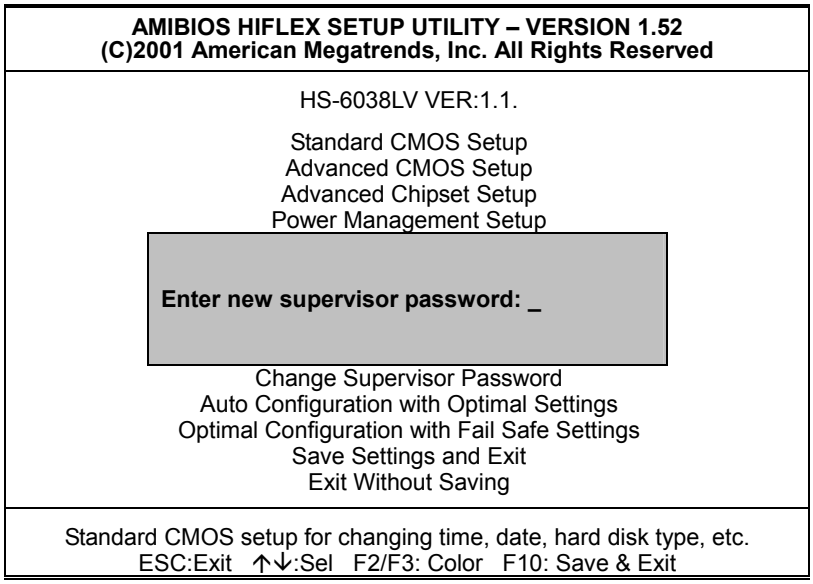
4.11 Auto-Detect Hard Disks

This option detects the parameters of an IDE hard disk drive, and automatically enters them into the Standard CMOS Setup screen.

Up to four IDE drives can be detected, with parameters for each appearing in sequence inside a box. To accept the displayed entries, press the "Y" key; to skip to the next drive, press the "N" key. If you accept the values, the parameters will appear listed beside the drive letter on the screen.

AMIBIOS HIFLEX SETUP UTILITY – VERSION 1.52 **(C)2001 American Megatrends, Inc. All Rights Reserved**
HS-6038LV VER:1.1. Standard CMOS Setup Advanced CMOS Setup Advanced Chipset Setup Power Management Setup PCI / Plug and Play Setup Peripheral Setup Hardware Monitor Setup Auto-Detect Hard Disks Change User Password Change Supervisor Password Auto Configuration with Optimal Settings Optimal Configuration with Fail Safe Settings Save Settings and Exit Exit Without Saving
Standard CMOS setup for changing time, date, hard disk type, etc. ESC:Exit ↑↓:Sel F2/F3: Color F10: Save & Exit

4.12 Change Supervisor/User Password



You can set either supervisor or user password, or both of then. The differences between are:

- **supervisor password:** can enter and change the options of the setup menus.
- **user password:** just can only enter but do not have the right to change the options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

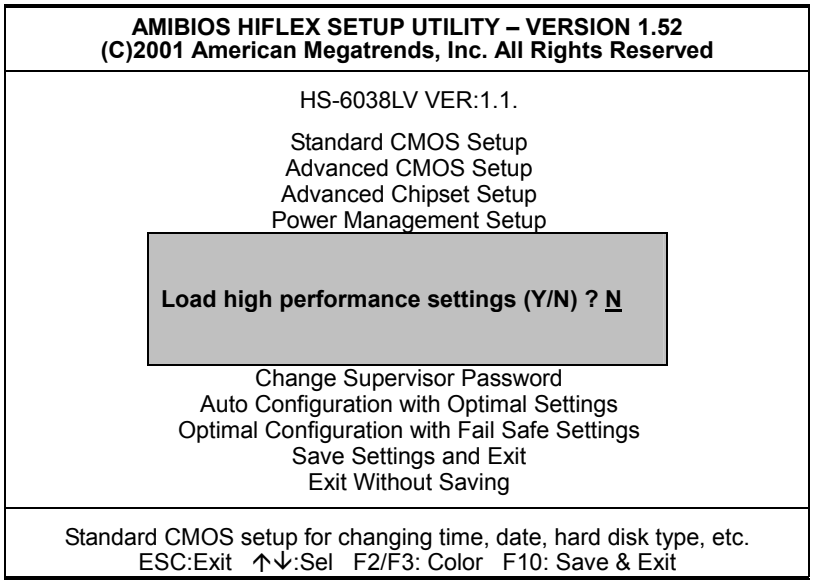
When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to “System”, the password will be required both at boot and at entry to Setup. If set to “Setup”, prompting only occurs when trying to enter Setup.

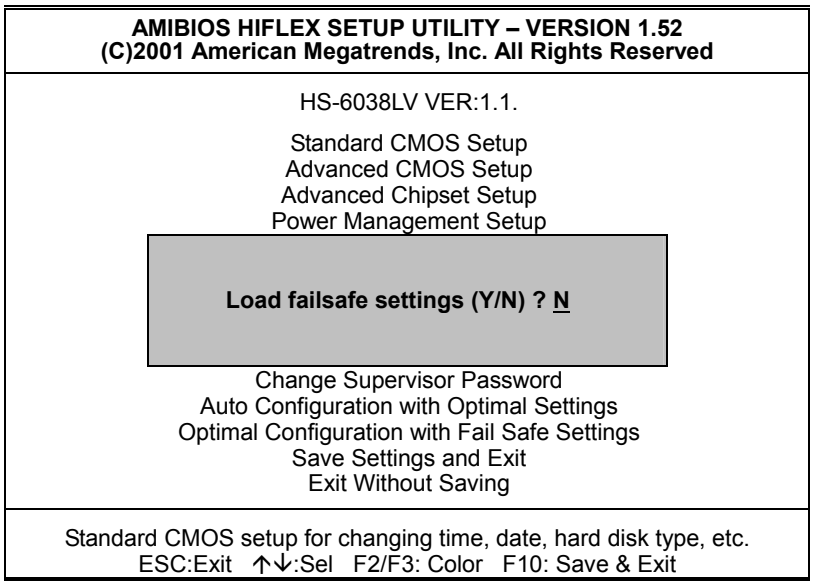
4.13 Auto Configuration with Optimal Settings

When you press <Enter> on this item you will get a confirmation dialog box with a message shown below. This option allows you to load/restore the BIOS default values permanently stored in the BIOS ROM. Pressing ‘Y’ loads the BIOS default values for the most stable, minimal-performance system operations.



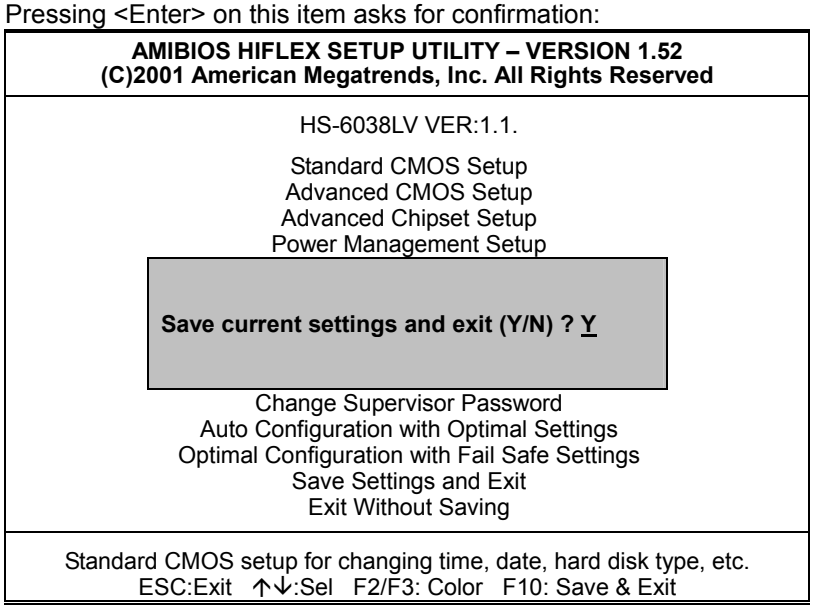
4.14 Optimal Configuration with Fail Safe Settings

When you press <Enter> on this item you get a confirmation dialog box with a message similar to the figure below. This option allows you to load/restore the default values to your system configuration, optimizing and enabling all high performance features. Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.



4.15 Save Settings and Exit

Pressing <Enter> on this item asks for confirmation:



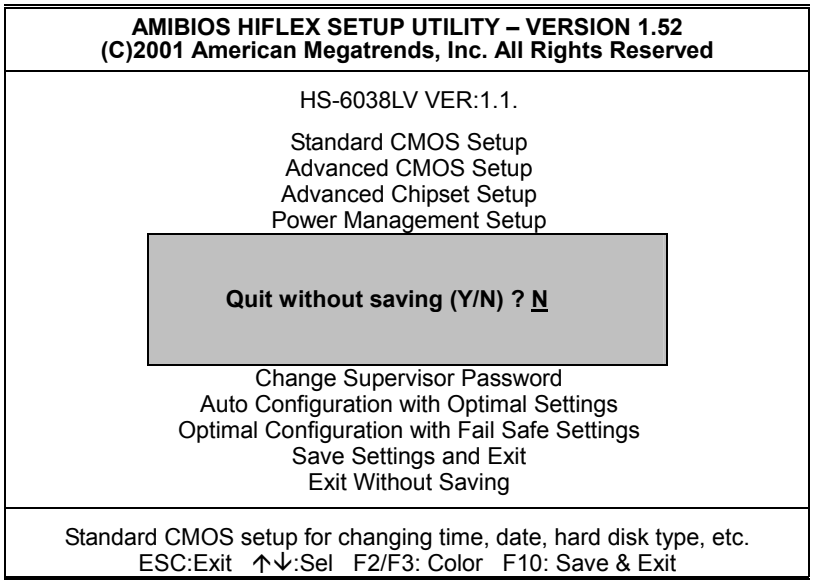
Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values, the system will restart.

4.16 Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing and having any change in CMOS. The previous selections remain in effect. This exits the Setup utility and restarts your computer.



Chapter 5

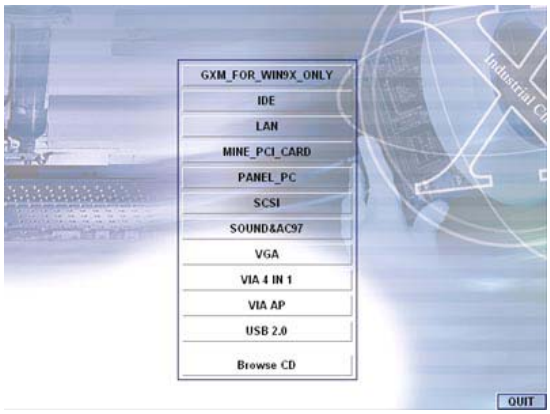
Software Utilities

This chapter contains the detailed information of IDE, VGA, LAN and Audio driver installation procedures. The utility disk that came with the delivery package contains an auto-run program that invokes the installation programs for the IDE, VGA, LAN and Audio drivers. The following sections describe the installation procedures of each driver based on Win 95/98, Win 2000 and Win NT operating systems. It is recommended that you install the drivers matching the sections listed in this chapter.

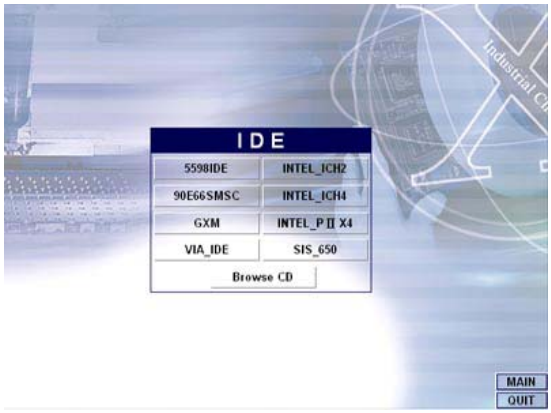
5.1 IDE Driver Installation

5.1.1 Installing Intel 815 Chipset Software

1. Insert Utility CD Disk into your CD ROM drive. The main menu will pop up as shown below. Select on the **IDE** button to launch the installation program.

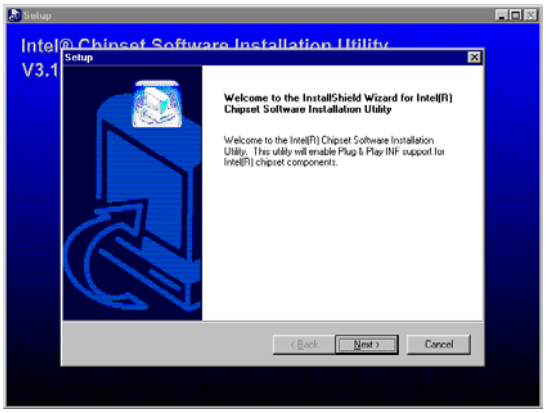


2. Click on the **INTEL_ICH2** button to continue.

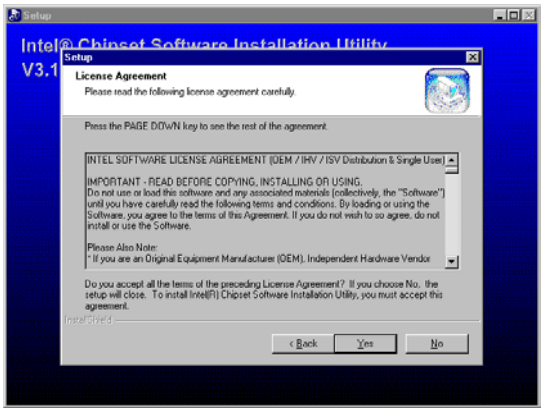


3. When the **IDE \ INTEL_ICH2** box appears on your screen, click on the **INTEL_R&HIPSET_SOFTWARE_INS** to install the IDE plug and play information files into your system.

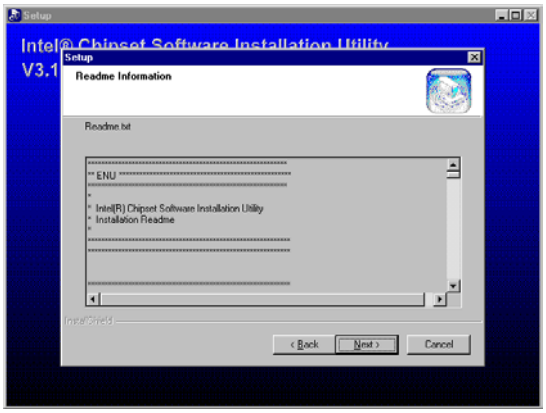
4. Immediately after clicking the IDE button in Step 1, the program launches the InstallShield Wizard that will assist you in the installation process. Click on the **Next >** button to proceed.



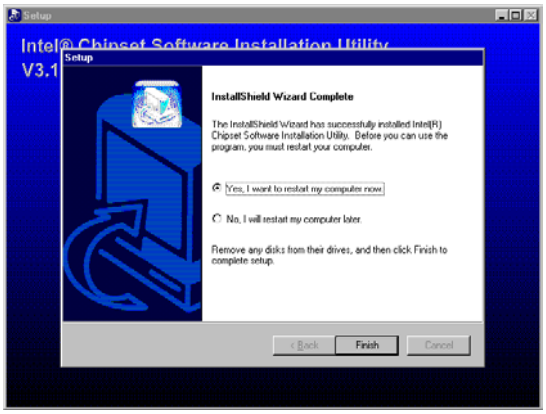
5. The Intel OEM Software License Agreement dialog box then appears on the screen. Choose **Yes** to proceed.



6. When the Readme Information dialog box pops up, just click on the **Next** button to proceed.



7. Once the InstallShield Wizard finishes updating your system, it will prompt you to restart the computer. Tick on the **Yes, I want to restart my computer now** followed by a click on the **Finish** button to reboot. Only after your computer boots will the new settings take effect.



5.1.2 Installing Intel Security Driver

1. Following Steps 1 ~ 3 of the Intel 815 chipset software (from the preceding section), click on the **INTEL_SECURITY_ DRIVER** button. When the dialog box below appears, make sure you close all other Windows applications then click on the **Next >** button to proceed.

2. The Intel OEM Software License Agreement dialog box then appears on the screen. Choose **Yes** to proceed.

3. When the **Release Notes** box pops up on the screen, read through any important information listed before clicking the **Next >** button.

4. Setup will then prompt you to specify the path where you would like the Security driver installed. Select the **Next >** button after you have made your path/installation choice.

5. Once the setup program finishes copying files into your system, it will prompt you to restart the computer. Tick on the **Yes, I want to restart my computer now** followed by a click on the **Finish** button to reboot. Only after your computer boots will the new settings take effect.

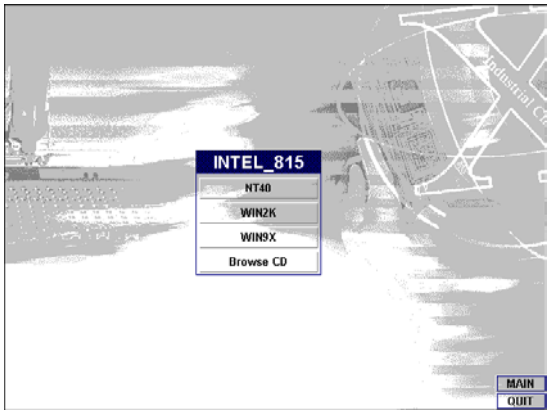
5.2 VGA Driver Installation

5.2.1 Win 95/98

1. After loading the Utility CD-ROM, the program automatically runs the utility. Press **Enter** to proceed installing. When the main utilities window pops up on the screen, select the **VGA** button.

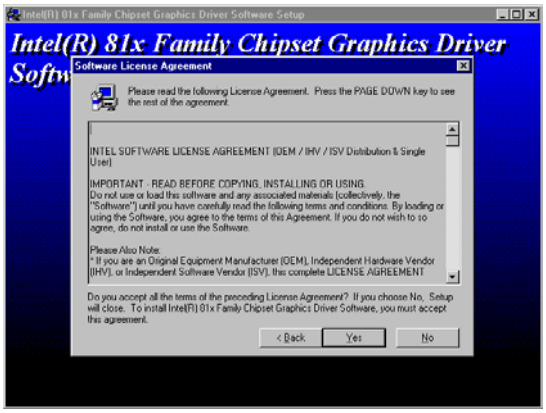
2. When the VGA main utility window is displayed. Select **INTEL_815** to continue.

3. The INTEL_815 window shows up next. Select **WIN9X** to invoke the corresponding installation program.



4. The program launches an introduction screen of what graphics driver it will install. Close all other running Windows applications then click on the **Next >** button to proceed.

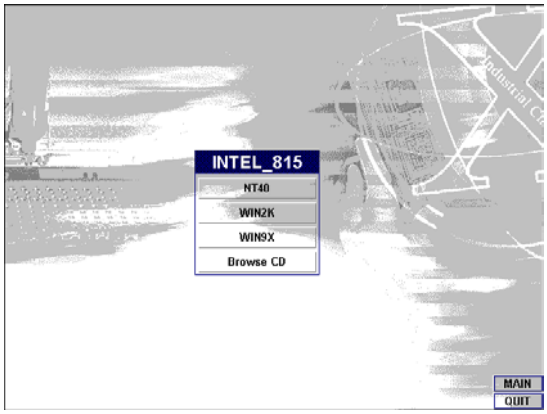
5. Immediately after clicking on the **Next >** button, the Intel OEM Software License Agreement pops up on the screen. Choose **Yes** to proceed.



6. The VGA driver utility program starts copying files needed by your Win98 to invoke the VGA capabilities. Once finishes, the system will prompt you to restart your computer. Tick on the **Yes, I want to restart my computer now** followed by a click on the **Finish** button to complete the installation.

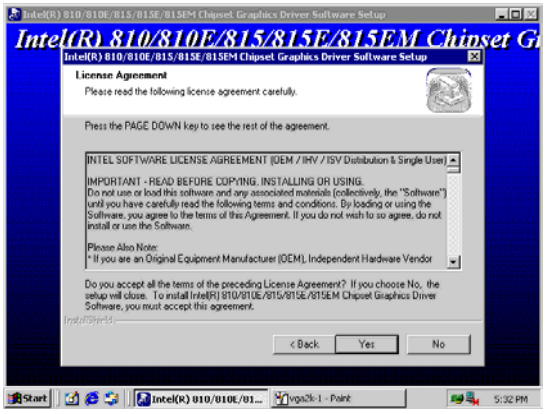
5.2.2 Win 2000

1. Follow steps 1 and 2 from the Win9x installation procedure. When the INTEL_815 window shows up, select WIN2K to invoke the installation program to your Win 2000 OS.



2. The program launches the InstallShield Wizard for Intel 810/810E/815/815E/815EM chipset graphics. Close all other running Windows applications then click on the **Next >** button.

3. Immediately after clicking the **Next >** button, the Intel OEM Software License Agreement pops up on the screen. Choose **Yes**.

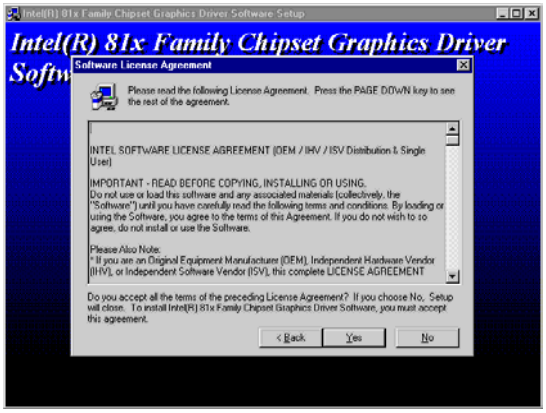


4. Once the utility program finishes copying and installing all the necessary files into your system, it will prompt you to restart your computer. Tick on the **Yes, I want to restart my computer now** followed by a click on the **Finish** button to complete the installation.

5.2.3 Win NT4.0

1. Follow steps 1 and 2 from the Win9x installation procedure. When the INTEL_815 window shows up, select **NT40** to invoke the installation program to your Win 2000 OS.
2. The program launches an introduction screen of the graphics it will install. Close all other running Windows applications and then click on the **Next >** button to proceed.

3. Immediately after clicking on the **Next >** button, the Intel OEM Software License Agreement pops on the screen. Choose **Yes**.

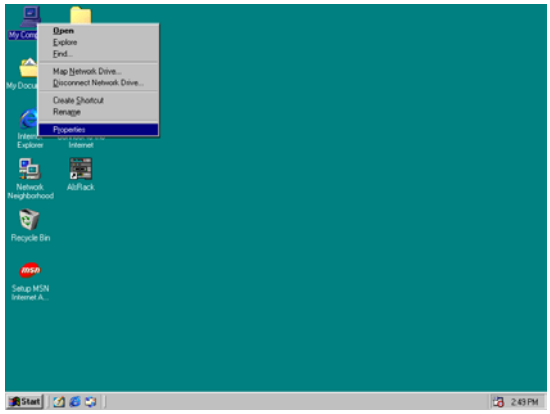


4. Once the utility program finishes copying and installing all the necessary files into your system, it will prompt you to restart your computer. Tick on the **Yes, I want to restart my computer now** followed by a click on the **Finish** button to complete the installation.

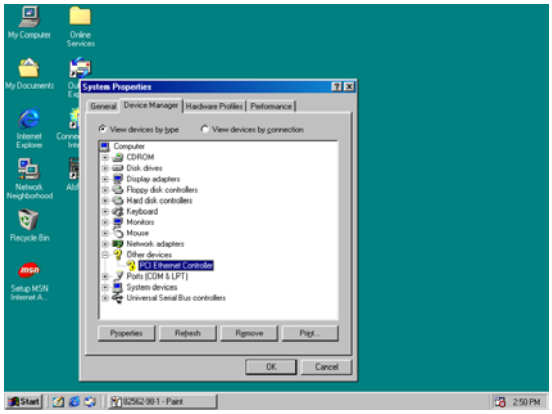
5.3 LAN Driver Installation

5.3.1 Win 95/98

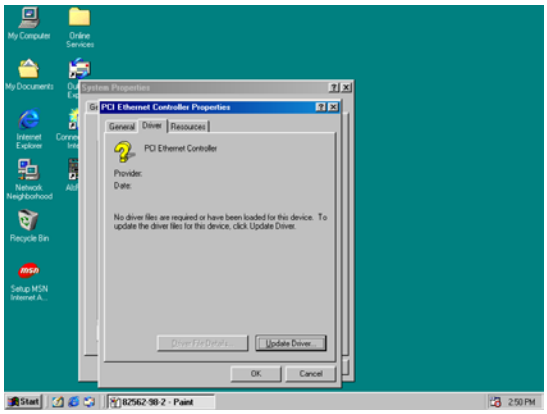
1. Right click on **My Computer** icon then scroll to the **Properties** item from the pop-up menu.

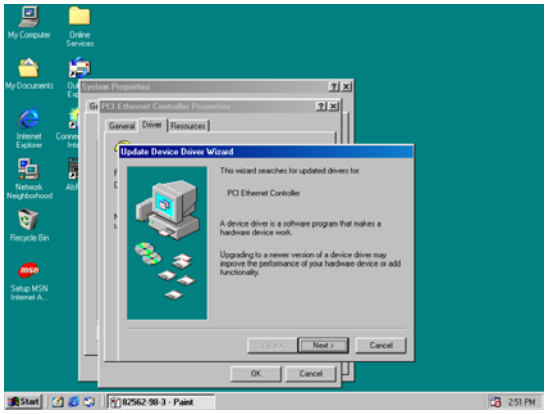


2. Select **Device Manager** from the top menu bar. A list of all devices installed appears, scroll down to the **Other devices** and then select on **PCI Ethernet Controller**. Select the Properties button to access the details of this *unknown* device. Refer to the following screen shot for a clearer explanation of this step.

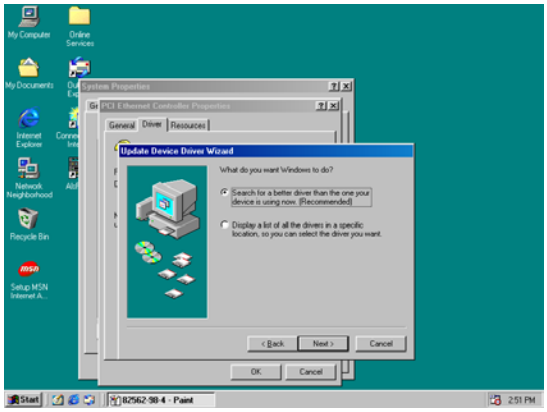


3. Once the **PCI Ethernet Controller Properties** screen pops up on the screen, click on the **Update Driver ...** button to launch the **Update Device Driver Wizard** screen.

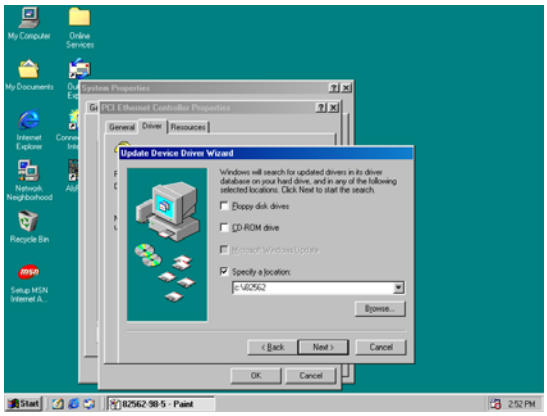


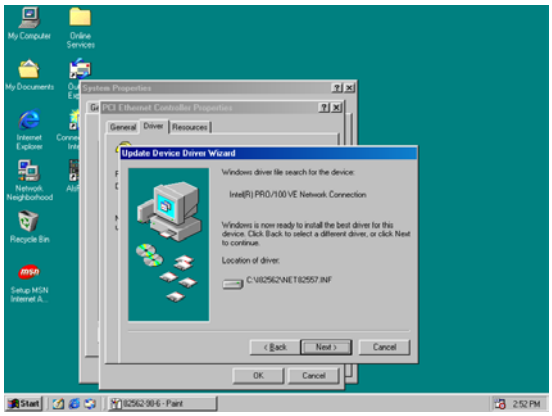


4. The succeeding screen then lets you choose whether to search for a better driver for the LAN or display the available list of drivers. Select **Search for a better driver than the one your device is using now** followed by a click on the **Next >** button.

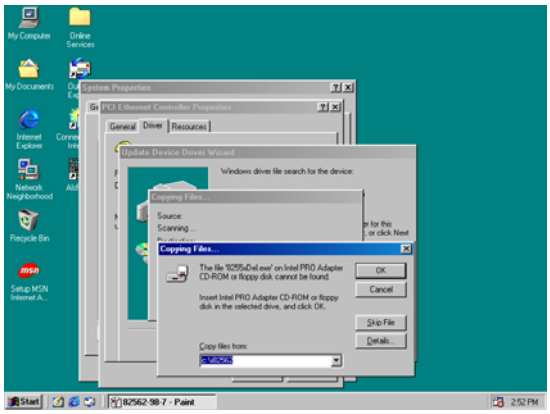


5. The wizard program will then require you to specify the location of the driver file. Tick on the **Specify a location:** and type or select the path where the driver files exist (c:\i82562). Click on the **Next >** button to proceed.

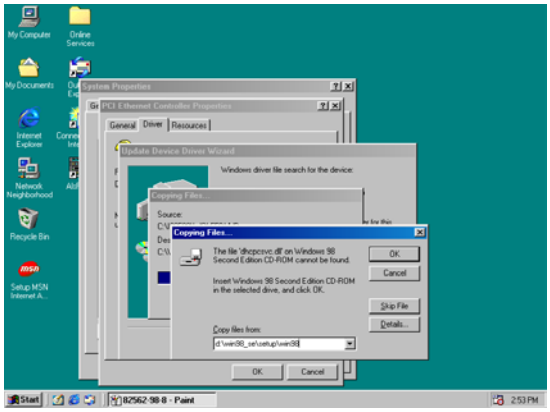




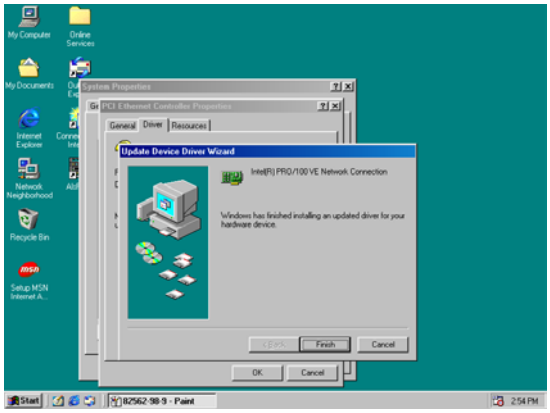
6. The program now starts copying the file(s) needed by your Win98. When the program fails to seek for 8255xDel.exe file from your specified location, it will prompt you to specify the path where the Intel Pro Adapter exists.



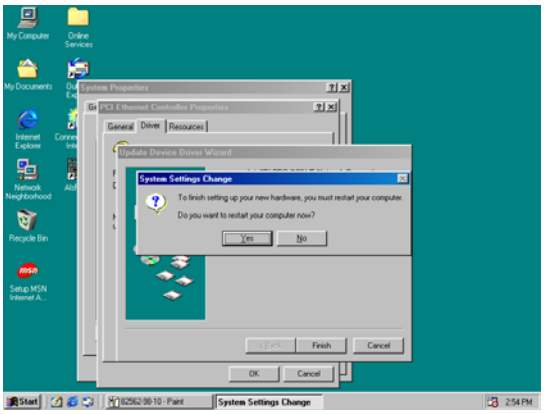
7. With the Utility CD Disk on your CD drive, key in *d:\win98_se\setup\win98* on the blank space below **Copy files from:** then press the **OK** button.



8. When the program finishes updating and copying files for the Intel Pro/100VE Network Connection, click on the **Finish** button to proceed.

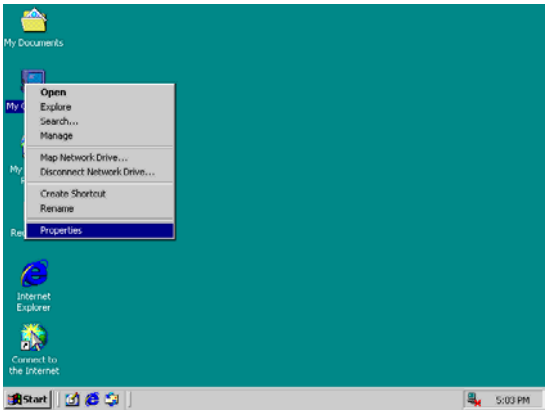


9. For the new hardware settings to take effect and to complete the installation process, you must restart your computer when the **System Settings Change** window below pops up. Click on the **Yes** button to complete the installation.

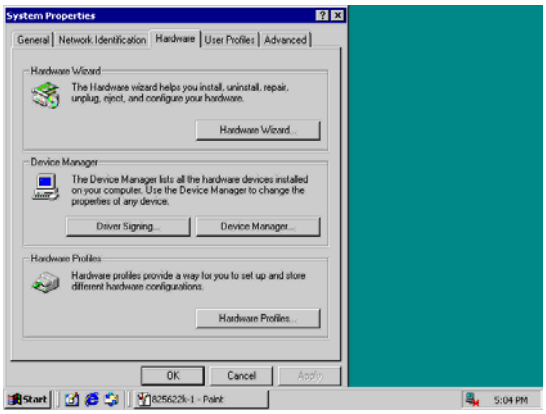


5.3.2 Win 2000

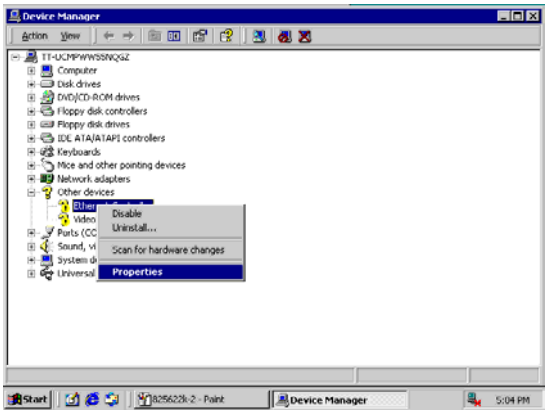
1. Right click on **My Computer** icon and then scroll to the **Properties** item from the pop-up menu.



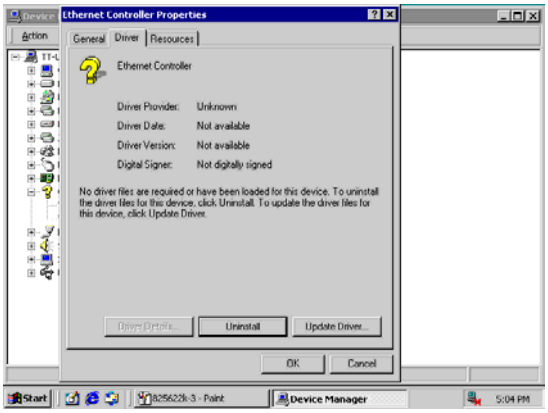
2. When the System Properties window pops up on the screen, click on the **Device Manager** button.



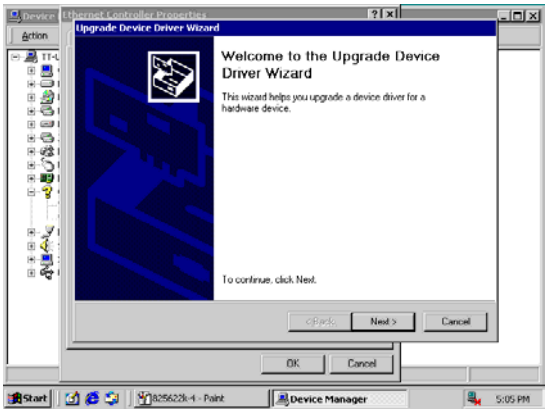
3. A list of all devices installed appears, scroll down to the **Other devices** and then right click on **Ethernet Controller** to select the Properties button. Refer to the following screen shot for a clearer explanation of this step.



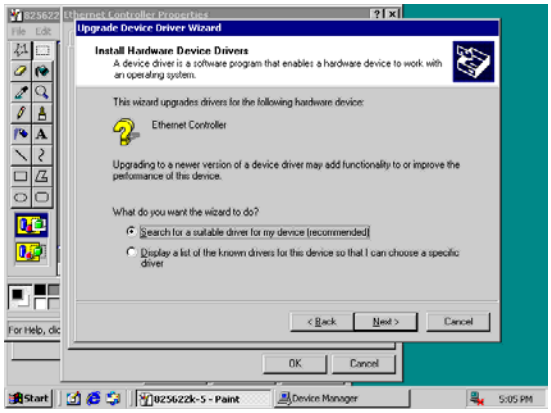
4. Once the **Ethernet Controller Properties** screen pops on the screen, click on the **Update Driver ...** button to launch up the **Update Device Driver Wizard** screen. Once the **Upgrade Device Driver Wizard** screen pops up on the screen, click **Update Driver ...** to launch the Win 2000 driver installation program.



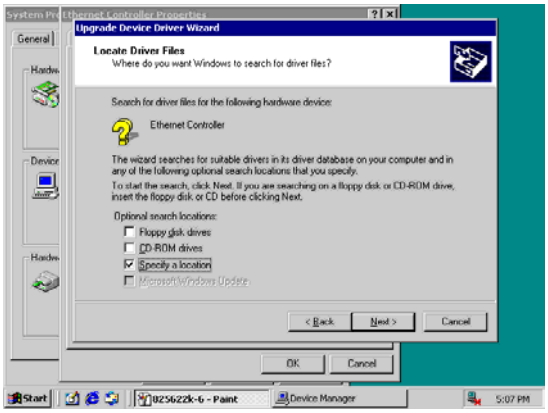
5. Click on **Next >** button to proceed with the installation.



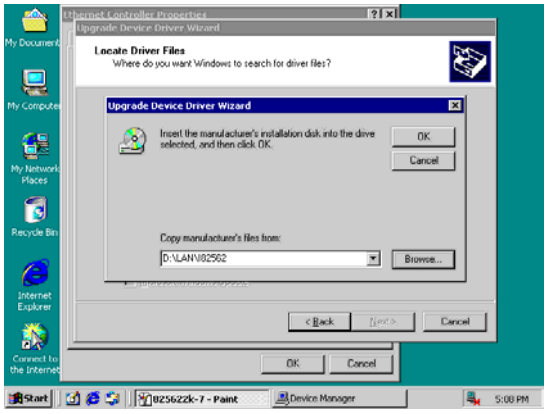
6. The wizard will then inform you the unknown device it detected from the system. Since the Win2000 driver list does not include Intel chip driver onboard HS-6038, tick **Search for a better driver than the one your device is using now** followed by a click on the **Next >** button to continue.



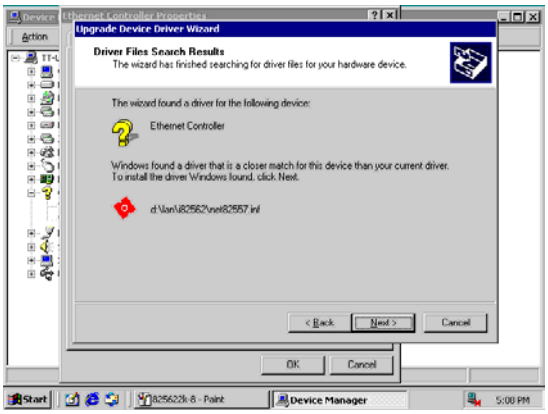
7. The wizard program will then prompt you to specify the location where it will start searching for the driver. Tick on the **Specify a location:** and then click on the **Next >** button to proceed.



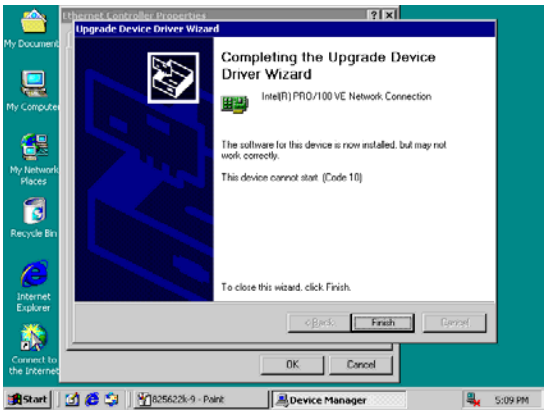
8. The wizard program will then require you to insert the manufacturer disk at your specified location (entered at the **Copy manufacturer's files from:** space) of the driver file. With your Utility CD disk inserted in the drive, type *d:lan\i82562* then click on the **OK** button to proceed.



9. The wizard program will start to scan and search for the driver(s) located at your specified location; after which, the wizard program will show the result of its search. When it finds a more suitable driver fitting your device, it will list the driver name and path. Just click on the **Next >** button to continue installing.



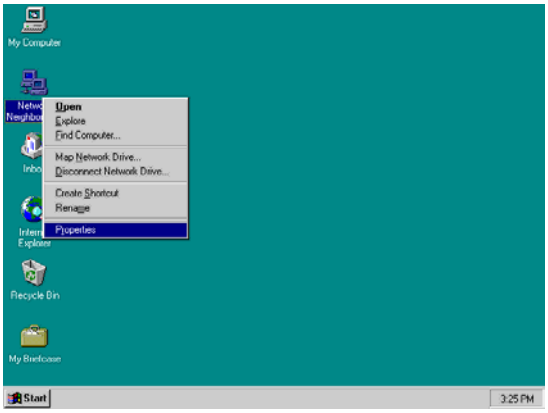
10. When the program finishes updating and copying files for the Intel Pro/100VE Network Connection, click **Finish** to proceed.



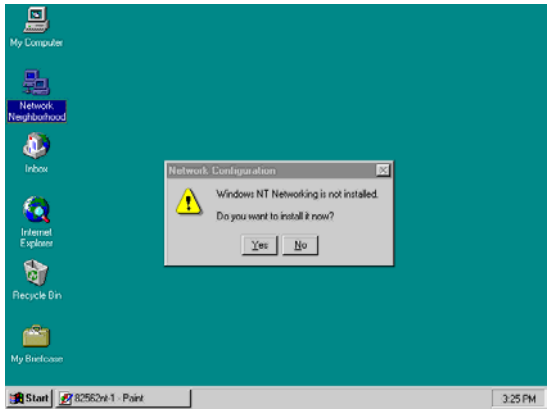
11. For the new hardware settings to take effect and to complete the installation process, you must restart your computer when the **System Settings Change** window below pops up. Click on the **Yes** button to complete the installation.

5.3.3 Win NT

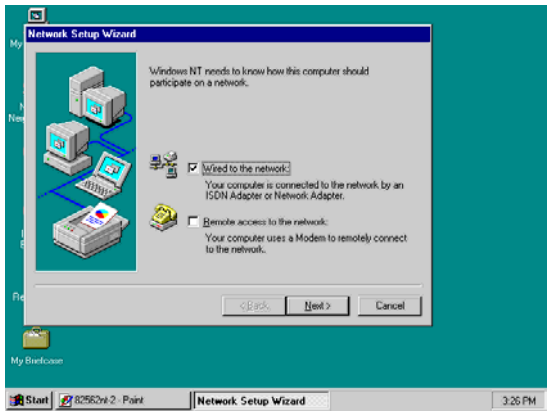
1. Right click on **Network Neighborhood** icon and then scroll to the **Properties** item from the pop-up menu.



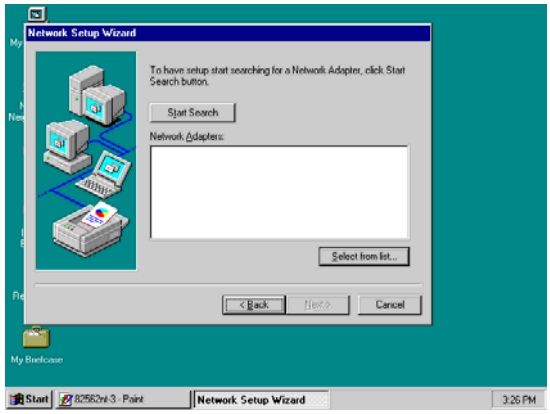
2. The Network Configuration dialog box then appears, notifying the user that there is no Windows NT Networking available. Click on the **Yes** button to start the installation process.



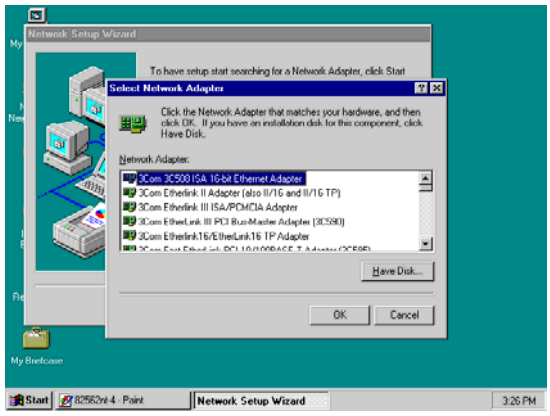
3. The Network Setup Wizard will then ask you to identify the network connection of your computer. Select **Wired to the network** and click on the **Next >** to continue.



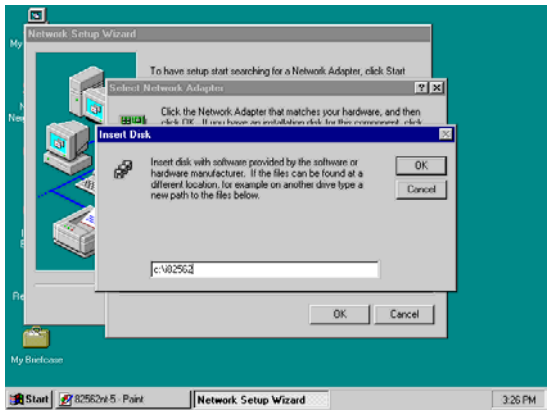
4. The succeeding screen then indicated that the wizard will initially search for Network Adapter from the available list of drivers. Select on **Start Search**.



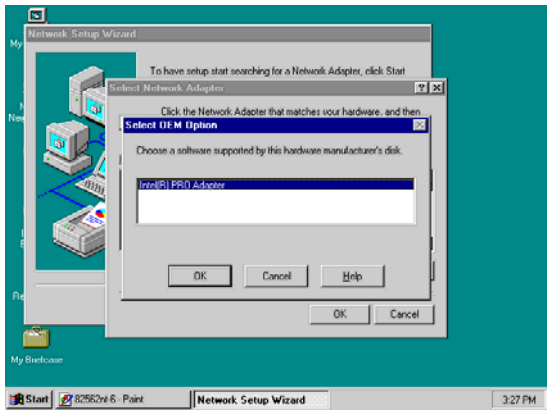
5. When it is done searching for available network drivers, the wizard will show a list and allow you to locate and choose the appropriate Network Adapter. Since the LAN device driver is in the Utility CD Disk, select on Have Disk … to proceed.



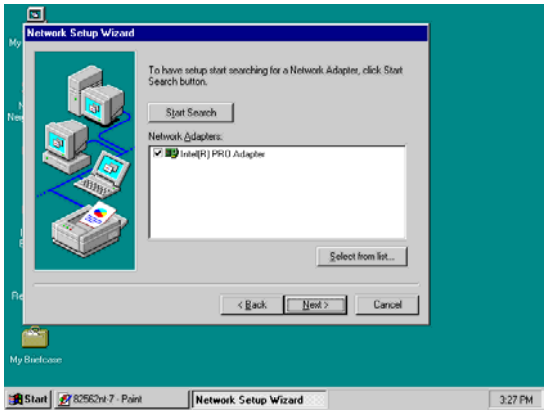
6. The wizard program will then require you to insert the manufacturer disk and specify the location of the driver file (i.e., c:\i82562). Click on the **OK** button to proceed.



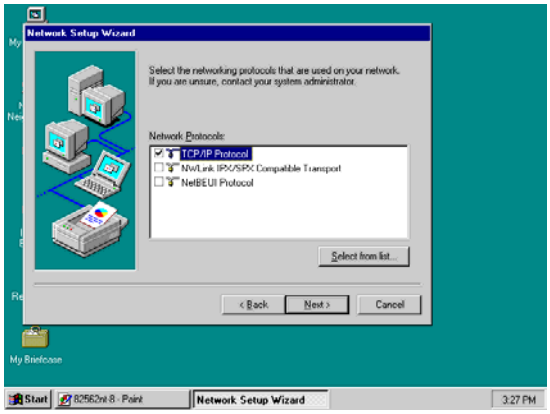
7. The Select OEM Option then appears, prompting you to select the software supported by the network hardware device you will install. Select Intel(R) PRO Adapter and click on the **OK** button to continue installing.



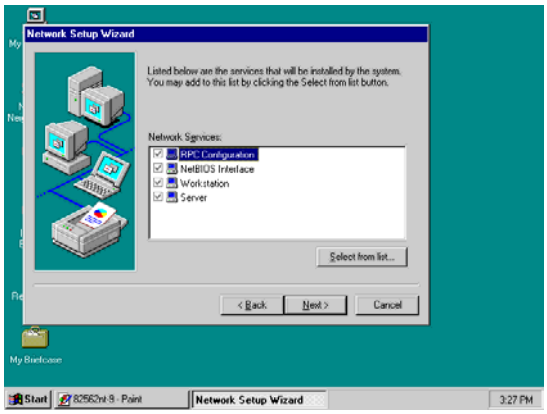
8. The wizard program now displays on the screen that it has detected the Intel() PRO Adapter. Click on the **Next >** button to continue installing.



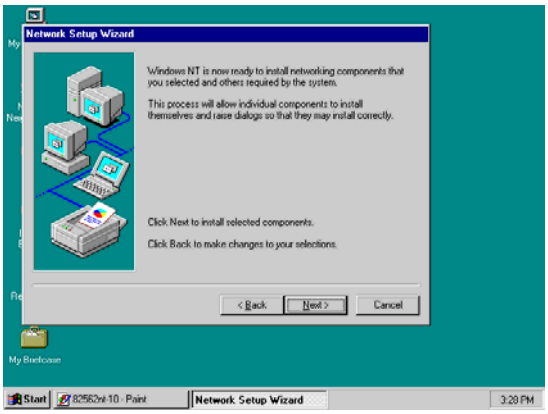
9. The wizard program now prompts you to specify the networking protocols used on your network structure. Tick on the TCP/IP Protocol and click on the **Next >** button to proceed.



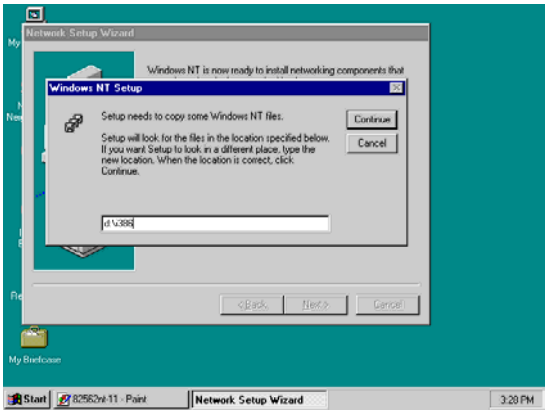
10. The next screen will allow you to customize the Network Services the wizard program intends to install. Tick services as needed and then click on the **Next >** button to continue.



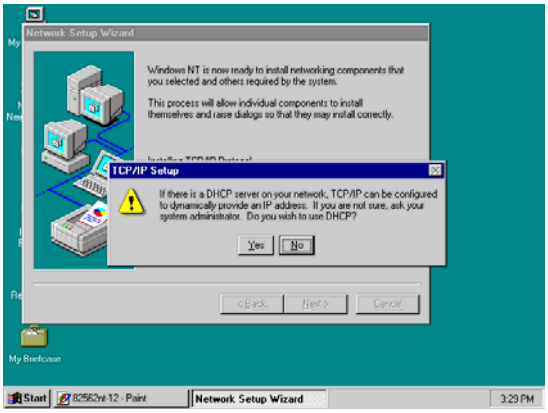
11. The Network Setup Wizard then prompts you that it is ready to install the network components based on your selection. You may start installing by clicking on he **Next >** button or make modifications on your choices using the **< Back** button.



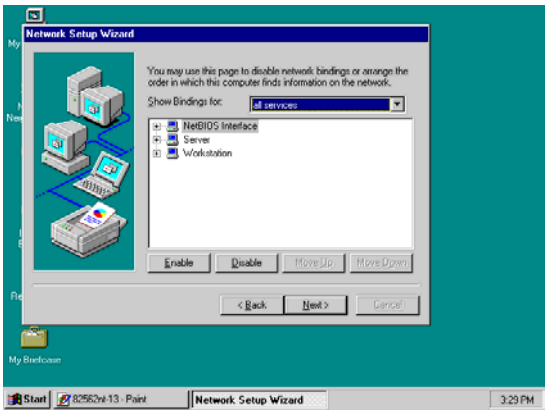
12. The Network Setup Wizard will then need to copy the drive file(s). Specify the path of your device driver(s) (i.e., d:\i386) and click the **Continue** button.



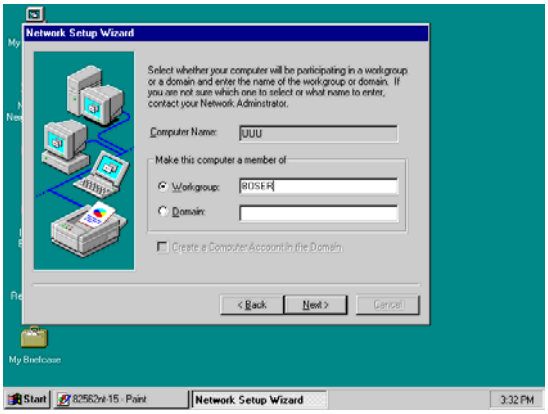
13. Choose the default entry, **No**, when the following screen pops up on the screen.



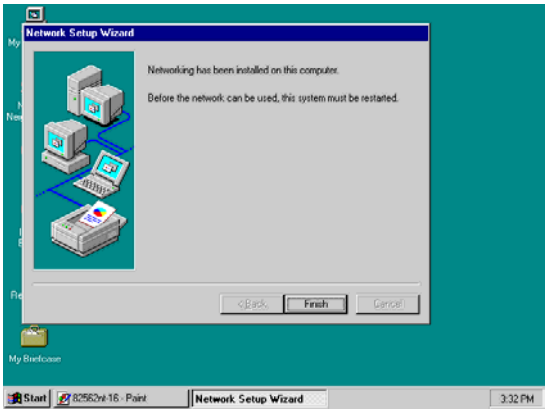
14. If you need to disable network bindings on the network services installed, select the service and then click on the **Disable** button. Otherwise, proceed by clicking on the **Next >** button.



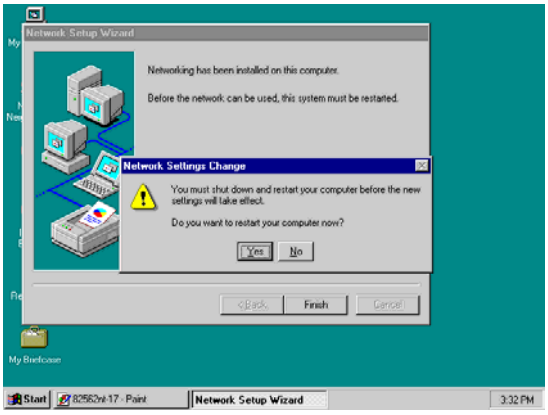
15. Select which member (Workgroup or Domain) you belong to. Click on the **Next >** button after identifying the network group installed on your computer.



16. The wizard program then informs you that Networking is now installed on your system. You must restart your computer to make the setting changes take effect. Click on the **Finish** button to close the wizard program.



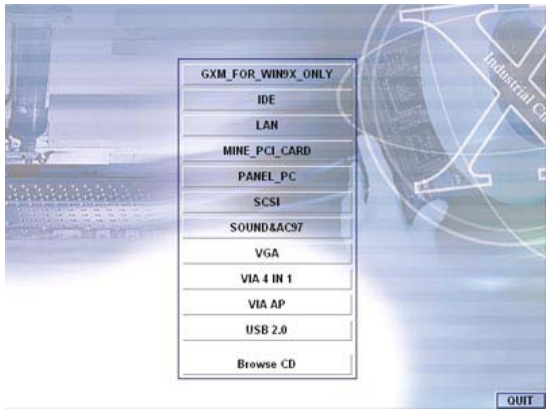
17. When the following dialog box pops up on your screen, click on the **Yes** button to restart your computer and make the setting changes take effect.



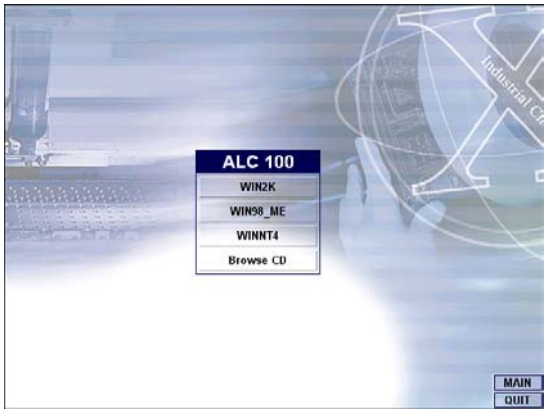
5.4 Audio Driver Installation

5.4.1 Win 95/98

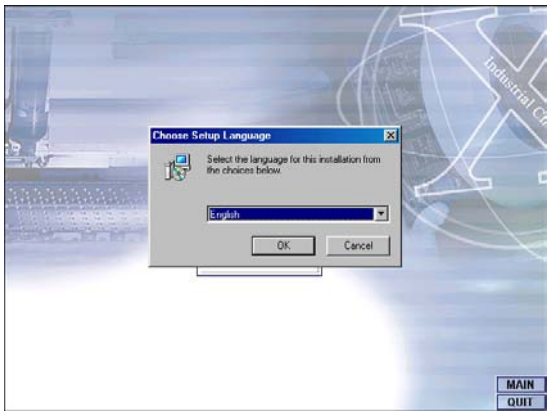
1. After loading the Utility CD-ROM, the program automatically runs the utility. Press **Enter** to proceed installing. When the main utilities window pops up on the screen, select **SOUND&AC7**.



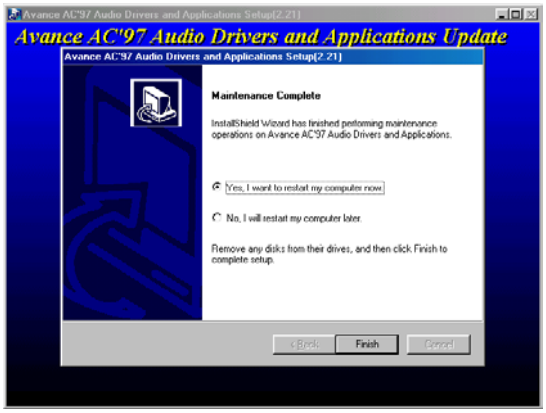
2. The succeeding screen will then show you the **SOUND&AC97** main menu. Select on **ALC 100** to continue installation. When the ALC100 dialog box appears, pick on **WIN98_ME** and it will take you to the ALC 100 menu. Refer to the following screen shots for a graphical description of this step.



3. Select the language you intend to use for the installation. The default is **English**. After making your choice, press on the **OK** button to proceed.

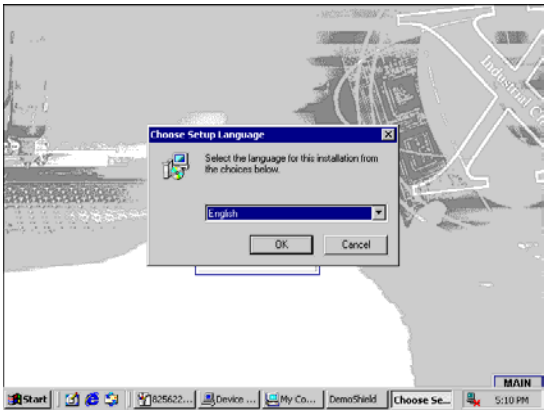


4. Once the InstallShield Wizard completes the operation and update of your AC'97 driver, it will ask you to remove disks from their drives, and prompt you to restart your system. Tick on the Yes, I want to restart my computer now. Afterwards, click on the **Finish** button to complete the installation process. The system changes you made will take effect after the system restarts.



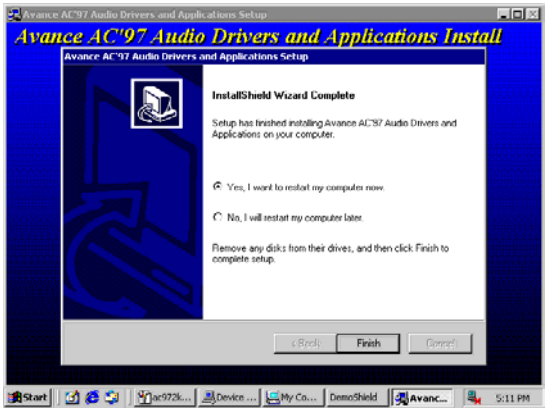
5.4.2 Win 2000

1. Following steps 1 and 2 of the Win95/98 AC97 installation, select **WIN2K** button when the ALC100 dialog box appears on the screen.
2. Select the language you intend to use for the installation. The default is **English**. After making your choice, press on the **OK** button to proceed.



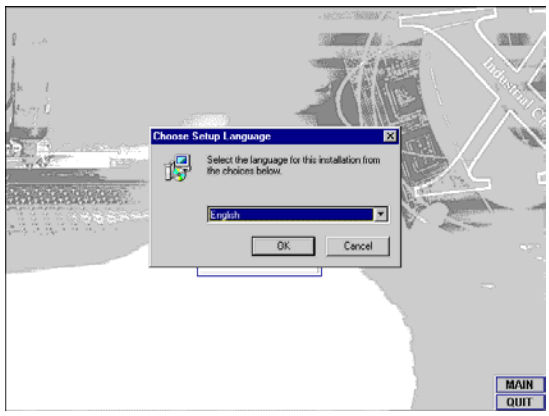
3. Immediately after clicking on the **OK** button from the preceding step, the **Advance AC'97 Audio Drivers and Applications Setup** dialog box will appear on the screen. Just click on the **Next >** button to continue.

4. Once the InstallShield Wizard completes the operation and update of your AC'97 driver, it will ask you to remove any disks from their drives, and prompt you to restart your system. Tick on the **Yes**, I want to restart my computer now. Afterwards, click on the **Finish** button to complete the installation process. The system changes you made will take effect after the system restarts.



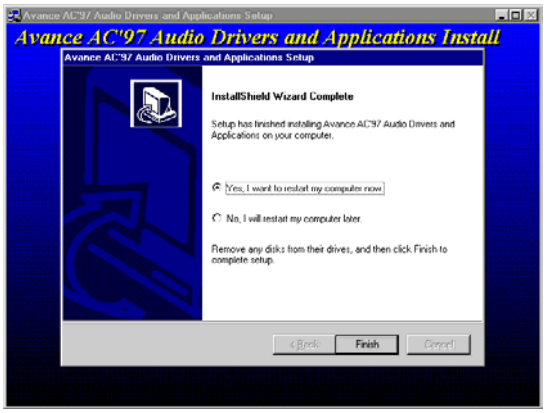
5.4.3 Win NT

1. Following steps 1 and 2 of the Win95/98 OR step 1 of Win 2000 AC97 installation, select **WINNT** button when the ALC100 dialog box appears on the screen.
2. Select the language you intend to use for the installation. The default is **English**. After making your choice, press on the **OK** button to proceed.



3. Immediately after clicking on the **OK** button from the preceding step, the **Advance AC'97 Audio Drivers and Applications Setup** dialog box will appear on the screen. Just click on the **Next >** button to continue.

4. Once the InstallShield Wizard completes the operation and update of your AC'97 driver, it will ask you to remove any disks from their drives, and prompt you to restart your system. Tick on the **Yes**, I want to restart my computer now. Afterwards, click on the **Finish** button to complete the installation process. The system changes you made will take effect after the system restarts.



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