

HS-6238

Celeron™/Coppermine™/Tualatin™ Industrial Single Board Computer

- Half Size • All-in-One • CRT/Panel • 133MHz FSB •
- CompactFlash • ATA/33/66/100 • Dual LAN •
- Audio • 4COM • PC/104 • IrDA • USB • WDT •
- PCI-ISA Bus Industrial Single Board Computer •

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Safety Instructions

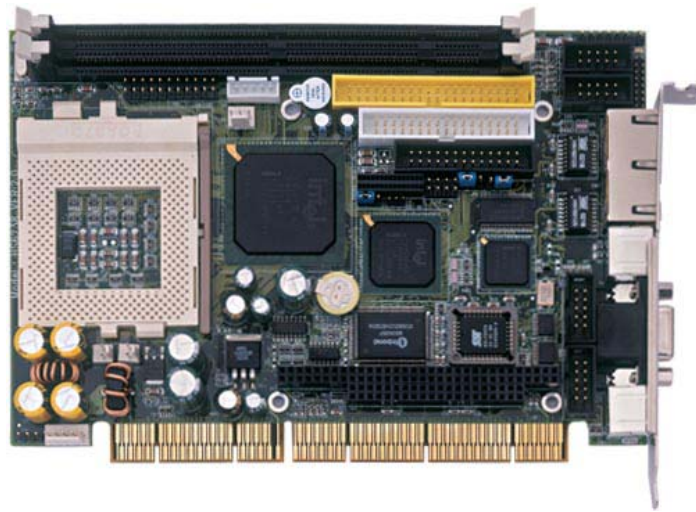
Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

- 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-6238 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-6238 is a 133MHz FSB Intel® 82815 chipset-based board designed for PCI-ISA Bus Celeron™/Coppermine™/Tualatin™ 800MHz~1.2GHz CPU compatibility. These features combine and make the HS-6238 an ideal all-in-one industrial single board computer. Additional features include an enhanced I/O with 4COM ports, Dual LAN and CRT/Panel interface.

Its onboard ATA/33/66/100 to IDE drive interface architecture allows the HS-6238 to support data transfers of 33, 66 or 100MB/sec. to each IDE drive connection. Designed with the Intel® 82815 core logic chipset, the board supports all Celeron™/Coppermine™/Tualatin™ CPU series operating at 800MHz to 1.2GHz. The 82815 integrated CRT/Panel display controller supports up to 1280 x 1024 at 16-bit CRT high color resolution, and a digital RGB interface for panel displays.

For suitable installation into any size system with 8/16/32-bit ISA and/or PCI slots operation, the board's advanced PCI-ISA bus add-on feature allows user to easily obtain both ISA's 16-bit and PCI's 32-bit full set signals from a half-size PCI-ISA slot. 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 two external RJ-45 connectors for 10/100 Based Ethernet use.

To ensure the reliability in an unmanned or standalone system, the Watchdog Timer (WDT) onboard HS-6238 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.

1.1 Major Features

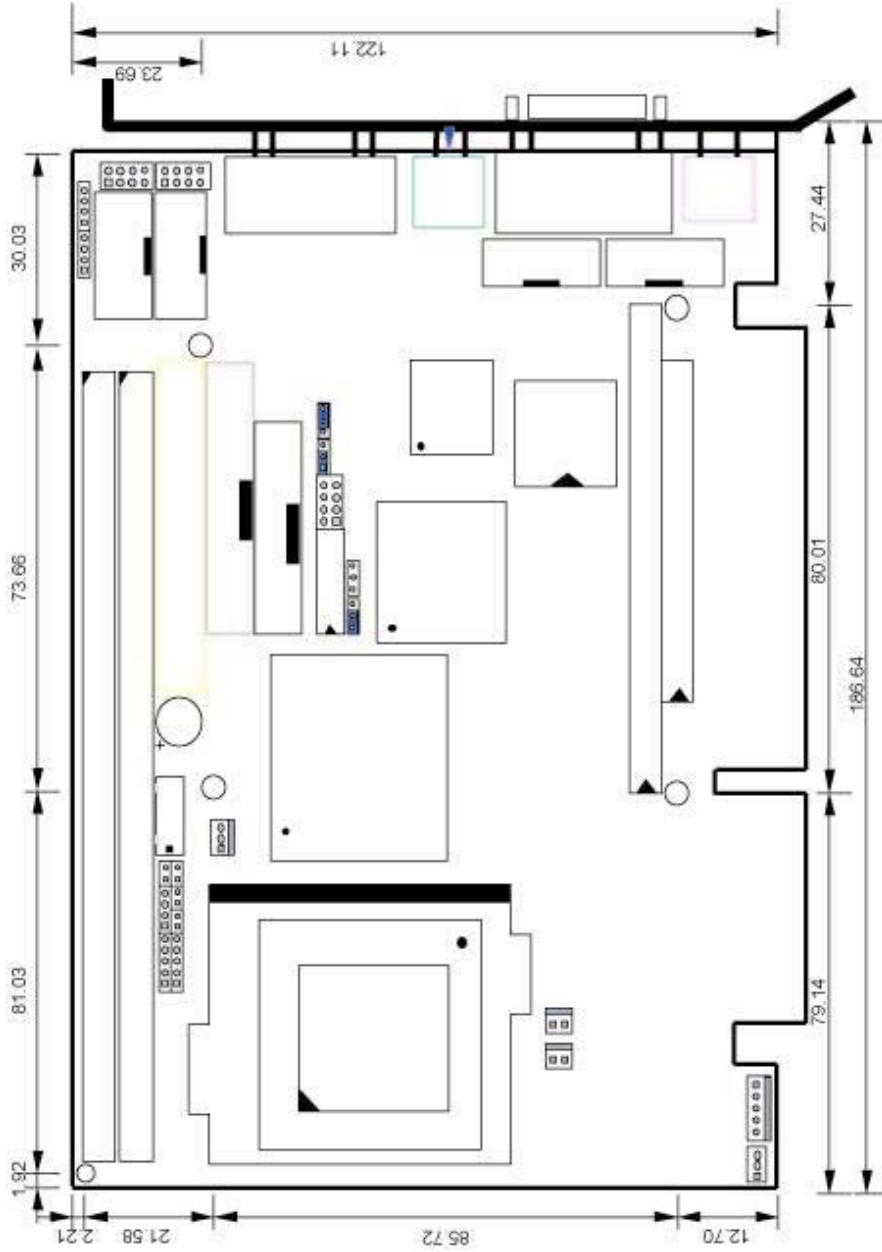
The HS-6238 comes with the following features:

- Socket 370 for Intel® Celeron™/Coppermine™/Tualatin™ 800MHz~1.2GHz CPU
- Intel® 82815 system chipset
- Supports 66/100/133MHz FSB
- Two DIMM sockets with a max. capacity of 512MB
- Winbond W83977 and Intel® 82801 super I/O chipset
- Fast PCI ATA/33/66/100 IDE controller
- Four RS-232 serial ports with 16byte FIFO
- PC/104 Bus connector
- Intel® 82815 CRT/Panel display controller
- Dual 10/100 Based LAN
- AC97 3D audio controller
- Four USB connectors
- Supports CompactFlash card reader
- Supports digital RGB interface

1.2 Specifications

- **CPU:** Socket 370 for Intel® Celeron™/Coppermine™/Tualatin™ 800MHz~1.2GHz CPU
- **Bus Interface:** PCI-ISA Bus
- **Memory:** Two DIMM sockets supporting up to 512MB
- **Chipset:** Intel® 82815
- **I/O Chipset:** Winbond W83977, Intel® 82801
- **CompactFlash™:** One standard CompactFlash™ adapter onboard (solder side)
- **VGA:** Intel® 82815 supporting CRT/Panel displays up to 1280 x 1024 at 16-bit colors
- **Panel Display:** Digital RGB interface (need Mini PCI add-on card)
- **IDE:** Two 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
- **Dual LAN:** Intel® 82559 and Intel® ICH10 10/100 Based LAN
- **Audio:** AC97 3D audio controller supporting speaker out
- **Serial Port:** 16C550 UART-compatible RS-232 x 4 serial ports with 16-byte FIFO
- **PC/104:** PC/104 connector for 16-bit ISA Bus
- **IrDA:** One IrDA TX/RX header
- **USB:** Four USB connectors
- **Keyboard:** PS/2 6-pin Mini DIN or 5-pin connector
- **Mouse:** PS/2 6-pin Mini DIN
- **BIOS:** AMI PnP Flash BIOS
- **Watchdog Timer:** Jumper selectable for system Reset and NMI; Software program time-out intervals from 1~256 sec.
- **CMOS:** Battery backup
- **DMA Channels:** 7
- **Interrupt Levels:** 15
- **Maximum Power Consumption:** +5V@10A (1GHz CPU), +12V@120mA
- **Operating Temperature:** 0~60°C
- **Board Size:** 18.5 x 12.1 cm

1.3 Board Dimensions



Chapter 2

Unpacking

2.1 Opening the Delivery Package

The HS-6238 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-6238 delivery package contains the following items:

- ◆ HS-6238 Industrial Single Board Computer
- ◆ Ultra 100 IDE port Flat Cable x 1
- ◆ FDD port Flat Cable x 1
- ◆ Printer Port Flat Cable x 1
- ◆ PS/2 to Standard type Keyboard Transfer Cable x 1
- ◆ 8-pin USB Cable x 1
- ◆ Speaker Connector with bracket x 1
- ◆ Dual-ported RS-232 connector with bracket x 2
- ◆ ATX 5-pin power connector x 1
- ◆ Jumper Bag
- ◆ Utility CD-ROM x 1
- ◆ 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

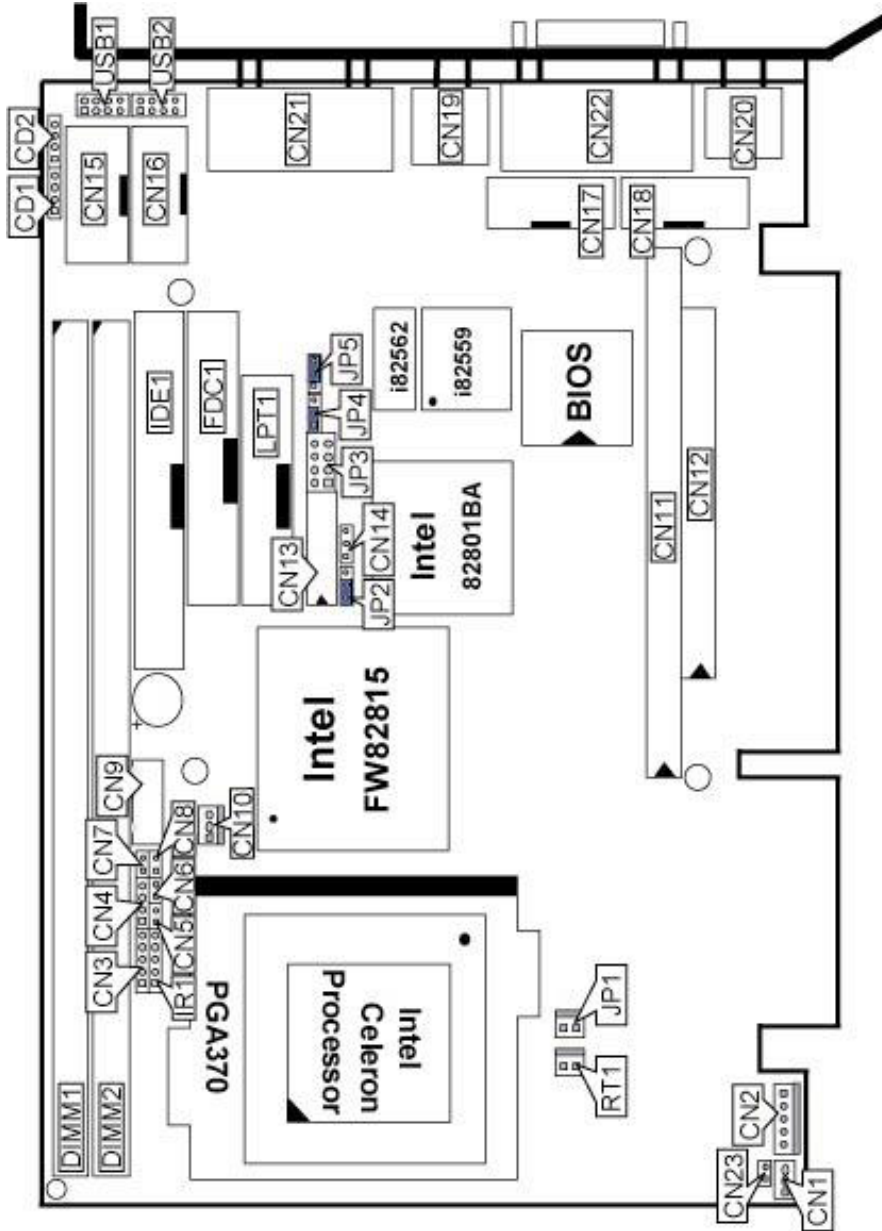
This chapter provides the information on how to install the hardware using the HS-6238. This chapter also contains information related to jumper settings of switch, watchdog timer, and the DiskOnChip™ address selection etc.

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 on 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	Page
JP2	Clear CMOS Jumper: <i>Clear CMOS</i>	16
JP4	LAN2 Enable/Disable Select: <i>Disable</i>	14
JP5	WDT Active Type Setting: <i>Reset</i>	20
CN23	66/100 or 133MHz FSB Select: <i>133MHz</i>	10

3.4 Connector List

Connector	Definition	Page
CD1	CD-ROM Line In Connector	19
CD2	Line In Connector	19
CN1	I ² C Bus Connector	10
CN2	5-pin ATX Power In	16
CN3	Keylock Connector	18
CN4	Speaker Connector	19
CN5	HDD LED	18
CN6	Reset	18
CN7	SMI Switch Connector	20
CN8	2-pin ATX Power Connector	16
CN9	5-pin Keyboard Connector	17
CN10	Fan Connector	16
CN11	PC/104 64-pin Connector	22
CN12	PC/104 40-pin Connector	22
CN13	Panel Connector	10
CN14	Wake On LAN Connector	14
CN15	COM 3 Connector	13
CN16	COM 4 Connector	13
CN17	COM 2 Connector	13
CN18	COM 1 Connector	13
CN19	PS/2 Mouse Connector	18
CN20	PS/2 Keyboard Connector	17
CN21A	LAN 1 RJ-45 Connector	14
CN21B	LAN 2 RJ-45 Connector	14
DIM1/DIM2	DIMM Socket	10
FDC1	Floppy Connector	13
IDE1	ATA/100 IDE Connector	12
IDE2	CompactFlash™ Connector	22
IR1	IrDA Connector	15
JP1	System Sensing	19

...More on next page...

Connector	Definition	Page
JP3	Audio Out / MIC In Connector	19
LPT1	Parallel Connector	14
RT2	Power Sensing	19
USB1/USB2	USB Connectors	15
VGA1	VGA Connector	10
CN22	COM1 Connector (DB9)	----

3.5 Configuring the CPU

The HS-6238 offers the convenience in CPU installation by *CN23* select.

- **CN23: 66/100 or 133MHz FSB Select**

CN23	Description
ON	66/100MHz
OFF	133MHz

3.6 System Memory

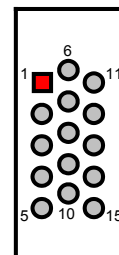
The HS-6238 provides two DIMM sockets at locations *DIM1* and *DIM2*. The maximum capacity of the onboard memory is 512MB. Please note that only memory modules complying with PC133 standard are compatible with the HS-6238.

3.7 VGA Controller

The HS-6238 provides two connection methods of a VGA device. *VGA1* offers a single standard CRT connector (DB15) while *CN13* is the 30-pin panel connector onboard reserved for flat panel installation.

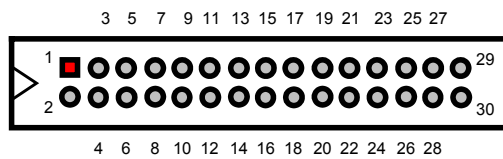
- **VGA1: CRT Connector (DB15)**

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		



- **CN13: Panel Connector**

PIN	Description	PIN	Description
1	PCIRST	2	Vcc 3.3
3	FTD0	4	FTCLK0
5	FTD1	6	FTCLK1
7	FTD2	8	FTVSYNC
9	FTD3	10	FTHSYNC
11	FTD4	12	FTBLNK
13	FTD5	14	3VFTSCL
15	FTD6	16	3VFTSDA
17	FTD7	18	TVCLKIN
19	FTD8	20	GND
21	FTD9	22	VCC 1.8V
23	FTD10	24	VCC
25	FTD11	26	VCC
27	VCC3	28	+12V
29	VCC3	30	+12V

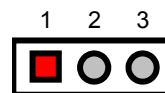


NOTE: Please set the proper voltage of your panel using JP8 before proceeding on installing it.

An Inter-IC connector, on CN1 onboard, also offers the flexibility of installing an I²C digital signal-based device.

- **CN1: I²C Bus Connector**

PIN	Description
1	SMBDATA
2	SMBCLK
3	GND



3.8 IDE Drive Connector

IDE1 is a standard 40-pin connector daisy-chain driver connector serves the PCI E-IDE drive provisions onboard the HS-6238. A maximum of two IDE drives can connect to the HS-6238 via *IDE1*.

- **IDE1: IDE Connector**

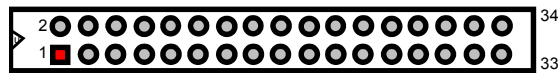
PIN	Description	PIN	Description
1	RESET	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GND	20	N/C
21	PDREQ	22	GND
23	PDIOW#	24	GND
25	PDIOR#	26	GND
27	PIORDY	28	GND
29	RPDACK-	30	GND
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-6238 uses a standard 34-pin header connector, *FDC1*, for floppy disk drive connection. A total of two FDD drives may be connected to *FDC1* at any given time.

- **FDC1: FDD 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-

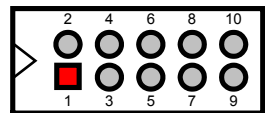


3.10 Serial Port Connectors

The HS-6238 offers two NS16C550 compatible UARTs with Read/Receive 16-byte FIFO serial ports.

- **CN18, CN17, CN15 and CN16: COM1/COM2/COM3/COM4 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

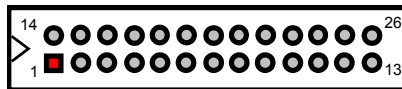


3.11 Parallel Connector

LPT1 is a standard 26-pin flat cable connector designed to accommodate parallel port connection onboard the HS-6238.

- **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

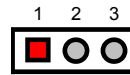
The HS-6238 provides two external RJ-45 10/100 Based LAN interface connectors. Please refer to the following table for their identical pin assignments.

- **CN21A & CN21B: RJ-45 Connectors**

PIN	Description
1	TX+
2	TX-
3	RX+
4	N/C
5	N/C
6	RX-
7	N/C
8	N/C

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

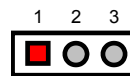
Options	Settings
Enabled	Short 1-2
Disabled	Short 2-3



CN14 connector is connected to external LAN card for Wake On LAN function.

- **CN14: Wake On LAN Connector**

PIN	Description
1	PCI_PME#
2	GND
3	5VSBY

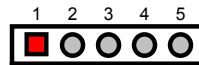


3.13 IrDA Connector

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

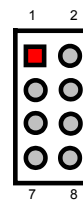


3.14 USB Connector

The HS-6238 provides two 8-pin connectors, at locations USB1 and USB2, for dual USB connections to the HS-6238.

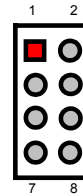
- **USB1: USB Connector**

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



- **USB2: USB Connector**

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

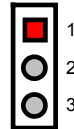


3.15 CMOS Data Clear

The HS-6238 has a Clear CMOS jumper on JP2.

- **JP2: Clear CMOS**

Options	Settings
Normal Operation	Short 1-2
Clear CMOS	Short 2-3



NOTE: The default setting of JP2 is Short 2-3 in storage. Before you turn on the power of your system, please set JP2 to Short 1-2 for normal operation.

3.16 Power and Fan Connectors

The HS-6238 provides one 5-pin ATX Power On connector at CN2, one 2-pin ATX Power ON switch at CN8, and a single 3-pin FAN out connector at CN10.

- **CN2: 5-pin Power Connector**

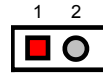
PIN	Description	PIN	Description
1	GND	2	PS_ON
3	VCC13	4	5Vsb
5	VCC		

If the system is not using the ATX power function, you may SHORT pins 4 and 5 of CN2 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 PCI-ISA Bus backplane in order to use the ATX Power function.

When using the ATX Power, CN8 is used to turn on the power. In this case, a BOSER PCI-ISA Bus backplane must complement HS-6238 for proper operation.

- **CN8: 2-pin ATX Power On Switch**

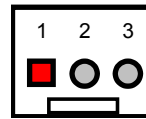
PIN	Description
1	5VSBY
2	PANSWIN



CN5 onboard HS-6238 is a 3-pin fan power output connector.

- **CN10: Fan Connector**

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

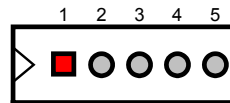


3.17 Keyboard Connectors

The HS-6238 offers two possibilities for keyboard connections. The connections are via CN20 for an external PS/2 type keyboard or via CN9 for an internal 5-pin cable converter to an AT keyboard.

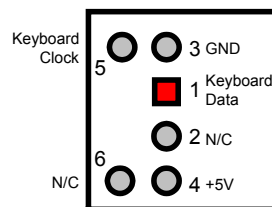
- **CN9: 5-pin Keyboard Connector**

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



- **CN20: PS/2 6-pin Mini DIN Keyboard Connector**

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

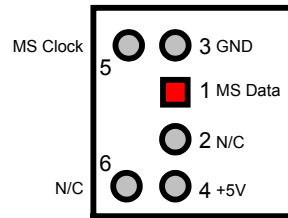


3.18 PS/2 Mouse Connector

CN19 is a 6-pin mini DIN connector for connections to an external PS/2 mouse connector.

- **CN19: PS/2 6-pin Mini DIN Mouse Connector**

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



3.19 System Front Panel Connectors

The HS-6238 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 *CN5*.

- **CN5: IDE LED**

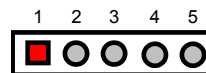
PIN	Description
1	+5V
2	HDD ACTIVE#



CN3 and CN6 are the Keylock and Reset Button connectors onboard.

- **CN3: Keylock Connector**

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



- **CN6: Reset**

PIN	Description
1	GND
2	H/W Reset

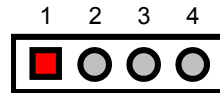


3.20 External Speaker

Aside from the buzzer at location *BZ1* onboard, the HS-6238 also offers a connector (*CN4*) for an external speaker connection. The table below lists the pin assignments of *CN4*.

- **CN4: Speaker Connector**

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

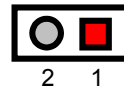


3.21 Thermal Input Connectors

In relevance to the Hardware Monitoring feature provided by the onboard Winbond W83627, the board allows the installation of a thermal sensor via connectors *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.

- **JP1 and RT2: Power/System Sensing Connectors**

PIN	Description
1	Sensing
2	GND

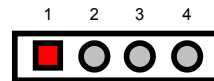


3.22 Audio Connectors

The HS-6238 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.

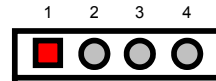
- **CD1: CD-ROM Analog Input Connector**

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



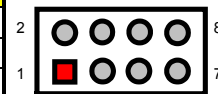
- **CD2: Line In Connector**

PIN	Description
1	LINE_R
2	GND
3	GND
4	LINE_L



- **JP3: 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



3.23 SMI Signal Input Switch

HS-6238 has an SMI connector at location CN7. If there is an external SMI Signal Input Switch, this input switch will be able to receive signals.

- **CN7: SMI Signal Input Switch**

PIN	Description
1	GND
2	EXTSMI

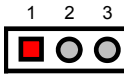


3.24 Watchdog Timer

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 to re-start when such error happens.

● **JP5: Watchdog Timer 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:

```

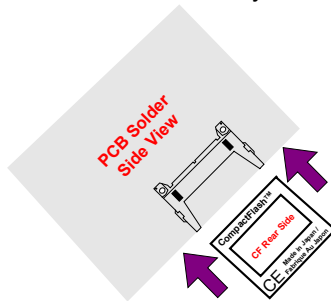
;-----
; Enter the WDT function mode, interruptible double-write
;-----
MOV    DX, 2EH
MOV    AL, 87H
OUT    DX, AL
OUT    DX, AL
MOV    DX, 2EH
MOV    AL, 07H
OUT    DX, AL
MOV    DX, 2FH
MOV    AL, 08H
OUT    DX, AL
MOV    DX, 2EH
MOV    AL, F5H
OUT    DX, AL           ; select CRF0
MOV    DX, 2FH
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

3.25 CompactFlash™ Connector

The HS-6238 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.



3.26 PC/104 Connectors

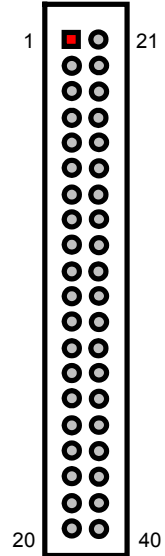
The PC/104 expansion bus offers provisions to connect all types of PC/104 modules. With the PC/104 bus being known as the new generation of industrial embedded 16bit PC standard bus, thousands of PC/104 modules from multiple vendors can be easily installed onboard. The detailed pin assignment of the PC/104 expansion bus connectors *CN11* and *CN12* are listed on 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.*

● **CN12: 40-pin PC/104 Expansion Slot**

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

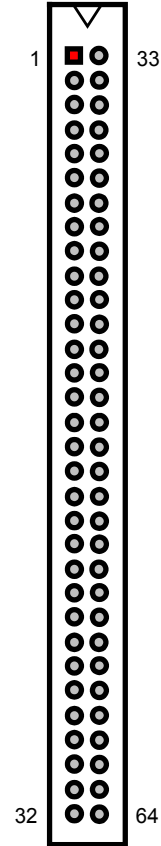
Connector diagram rotated 90 degrees clockwise from original position



● CN11: 64-pin PC/104 Expansion Slot

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	OVS
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



Chapter 4

AMI BIOS Setup

The HS-6238 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 immediately after switching the system on, or
2. By pressing the 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 detail 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
Standard CMOS Setup Advanced CMOS Setup Advanced Chipset Setup Power Management Setup PCI / Plug and Play Setup Peripheral Setup Hardware Monitor Setup Setup Hdd Security Password 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.*

- **Standard CMOS Setup**
This setup page includes all the items in a standard, AT-compatible BIOS.
- **Advanced CMOS Setup**
This setup page includes all the items of AMI special enhanced features.
- **Advanced Chipset Setup**
This setup page includes all the items of chipset special features.
- **Power Management Setup**
This entry only appears if your system supports Power Management, “Green PC”, standards.
- **PCI/Plug and Play Setup**
This entry appears if your system supports PNP/PCI.
- **Peripheral Setup**
This section page includes all the items of IDE hard drive and Programmed Input / Output features.

- **Hardware Monitor Setup**
This menu contains the system's auto-detect functions for CPU Vcore, CPU voltage, and CPU temperature.
- **Auto-Detect Hard Disks**
Automatically detect and configure hard disk parameters. The AMI BIOS includes this ability in the event you are uncertain of your hard disk's parameters.
- **Change User/Supervisor Password**
Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup.
- **Auto Configuration with Optimal Settings**
The BIOS defaults have been set by the manufacturer and represent settings that provide the minimum requirements for your system to operate.
- **Auto Configuration with Fail Safe Settings**
The chipset defaults are settings that provide for maximum system performance. While AMI has designed the custom BIOS to maximize performance, the manufacturer has the right to change these defaults to meet their needs.
- **Save Settings and Exit**
Save CMOS value changes to CMOS and exit setup.
- **Exit Without Saving**
Abandon all CMOS value changes and exit setup.

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) : Tue Jul 30, 2002					Base Memory : 0 KB				
Time (hh/mm/ss) : 19:04:12					Extd Memory : 0 MB				
Floppy Drive A: Not Installed									
Floppy Drive B: Not Installed									
	Type	Size	Cyln	Head	WPcom	Sec	LBA Mode	Blk Mode	PIO 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		

- Date:**
 The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	The day, from Sun to Sat, determined by the BIOS and is display-only
date	The date, from 1 to 31 (or the maximum allowed in the month)
month	The month, Jan through Dec.
year	The year, from 1900 through 2099

- Time:**
 The time format is <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **Floppy A / B:**

The category identifies the types of floppy disk drive A or drive B that have been installed in the computer.

None	No floppy drive installed
360K, 5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 megabyte capacity

- **Pri Master/Slave & Sec Master/Slave:**

The categories identify the types of 4 channels that have been installed in the computer. There are 45 predefined types with 4 user-definable types for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type user is user-definable.

Press PgUp or PgDn to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Type "User" to define your own drive type manually.

If you select Type "User", you will need to know the information listed below. Enter the information directly from the keyboard and press <Enter>. This information should be included in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is ESDI, the selection shall be "Type 1".

If the controller of HDD interface is SCSI, the selection shall be "None".

If you select Type "Auto", BIOS will Auto-Detect the HDD & CD-ROM Drive at the POST stage and showing the IDE for HDD & CD-ROM Drive.

If a hard disk has not been installed select NONE and press <Enter>.

TYPE	drive type
CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precompensation
SECTORS	number of sectors
MODE	mode type

- **Boot Sector Virus Protection:**

If set to Enabled, this category will flash on the screen when there is any attempt to write to the boot sector or partition table of the hard disk drive. The system will halt and an error message will appear. You may run anti-virus program to locate the problem.

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled (default)	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

- **Memory:**

The category is display-only that is determined by POST (Power On Self Test) of the BIOS.

- **Base Memory:** The POST will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard, or 640K for systems with *640K or more memory installed on the motherboard.*
- **Extd Memory:** The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.

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: ▶ Disabled Enabled
1st Boot Device	Floppy	
2nd Boot Device	IDE-0	
3rd Boot Device	CD-ROM	
Try Other Boot Devices	Yes	
Initial Display Mode	BIOS	
Display Mode at Add-On ROM nit	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	
Wait For 'F1' If Error	Enabled	
Hit 'DEL' Message Display	Enabled	
CPU Serial Number	Enabled	
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	
D800,16k Shadow	Disabled	
DC00,16k Shadow	Disabled	
		ESC:Exit ↑↓:Sel PgUp/PgDn: Modify ▼ F1:Help F2/F3:Color

- **Quick Boot:**
When set as enabled, the program disables the DRAM testing function. The available options are Enabled, and Disabled.
- **1st Boot Device:**
This option sets the type of device from where the BIOS will FIRST seek to boot from after AMIBIOS POST completes. The available settings are Disabled, IDE-0, IDE-1, IDE-2, IDE-3, Floppy, ARMD-FDD, ARMD-HDD, CDROM, and SCSI.

- **2nd Boot Device:**
This option sets the type of SECOND device from where the BIOS will seek to boot from, if and when the 1st Boot Device fails after AMIBIOS POST completes. The available settings are Disabled, IDE-0, IDE-1, IDE-2, IDE-3, Floppy, ARMD-FDD, ARMD-HDD, CDROM, and SCSI.
- **3rd Boot Device:**
This option sets the type of THIRD device from where the BIOS will seek to boot from, if and when the 1st and 2nd Boot Devices fail after AMIBIOS POST completes. The available settings are Disabled, IDE-0, IDE-1, IDE-2, IDE-3, Floppy, ARMD-FDD, ARMD-HDD, CDROM, and SCSI.
- **Try Other Boot Devices:**
Set this option to Yes to instruct AMIBIOS to attempt to boot from any other drive in the system. This is useful if the BIOS cannot find a boot drive among the drives specified in the 1st /2nd/3rd/4th Boot Devices. The available settings are Yes, and No.
- **Initial Display Mode:**
This feature can control the display on/off settings of your OEM full logo screen.
- **Floppy Access Control:**
This option specifies the read/write access that is set when booting from a floppy drive. The available settings are Read/Write, and Read-Only.
- **S.M.A.R.T. for Hard Disks:**
Self-Monitoring, Analysis and Reporting Technology. This option can help the BIOS in warning the user of possible device failure, giving user a chance to back up the device before actual failure happens. The available options are Enabled, and Disabled.
- **BootUp Num-Lock:**
When set as On, this option turns off numeric lock when the system is powered, allowing the end user to use the arrow keys on both the numeric keypad and the keyboard.
- **Floppy Drive Seek:**
Set this option to Enabled to specify that floppy drive A: will perform a Seek operation at system boot. The available options are Enabled, and Disabled.
- **PS/2 Mouse Support:**
When this option is enabled, BIOS allows the system to support a PS/2 type mouse. The available options are Enabled, and Disabled.

- **Primary Display:**
Select this option to configure the type of monitor attached to the computer. The available settings are Monochrome, Color 40x25, Color 80x25, VGA/PGA/EGA, and Absent.
- **Password Check:**
This option enables the password check option every time the system boots or the end user runs Setup. If set as Always, a user password prompt appears every time the computer is tuned on. If setup is chosen, the password prompt appears if BIOS is executed.
- **Boot To OS/2:**
Set this option to Enabled if running OS/2 operating system and using more than 64MB of system memory on the system board. The available options are Yes, and No.
- **L1 Cache:**
This option enables or disables the internal cache memory of the installed processor.
- **L2 Cache:**
This option enables/disables the secondary cache memory of your board. The available options are Enabled, and Disabled.
- **System BIOS Cacheable:**
When this option is enabled, the System ROM area from C000-DC00 is copied (shadowed) to RAM for faster execution.
- **C000,16k/C400,16k/C800,16k/ CC00,16k/D000,16k/D400,16k/D800,16k/ DC00,16k Shadow:**
These options enable shadowing of the contents of the ROM area named in the option title. The available settings are Enable Disable, Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.

Enabled	Video ROM area from C0000-C7FFF is copied (shadowed) from ROM to RAM for faster execution.
Disabled	The contents of the video ROM are not copied to RAM
Cached	The contents of the video ROM area from C0000h-C7FFFh are copied from ROM to RAM and can be written to or read from cache memory.

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	3.0x
DMA Collection Buffer Enable	Disabled	3.5x
DRAM Page Closing Policy	Open	4.0x
Memory Hole	Disabled	4.5x
Auto detect PCI Clock	Disabled	5.0x
ClkGen Spread Spectrum	Enabled	5.5x
System memory Frequency	133MHz	6.0x
SDRAM Timing by SPD	Enabled	6.5x
DRAM Refresh	7.8us	7.0x
DRAM Cycle time (SCLKs)	5/7	7.5x
CAS# Latency (SCLKs)	2	8.0x
RAS to CAS delay (SCLKs)	3	
SDRAM RAS# Precharge (SCLKs)	3	
Internal Graphics Mode Select	1MB	
Display Cache Window Size	64MB	
AGP Aperture Window	64MB	
Local memory Frequency	100MHz	
Initialize Display Cache Memory	Enabled	
Paging Mode Control	Close	
RAS – to CAS	Default	
RAS 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

- **ICH Delayed Transaction:**

This function allows you to enable or disable PCI 2.1 features including passive release and delayed transaction.

- **DMA Collection Buffer Enable:**
This option allows the BIOS to auto-detect the DMA mode of the Intel 82801BA chip. When disabled, the drive mode settings on the Standard CMOS Setup screen may be manually configured according to user's preference. The available choices are Enabled and Disabled.
- **DRAM Page Closing Policy:**
After a page miss cycle, this item controls whether the Graphics and Memory Controller Hub (GMCH) will issue a "precharge only the bank" or a "precharge all" command to a specific opened SDRAM bank.
- **Memory Hole:**
This field allows you to reserve an address space for ISA devices that require it. The available options are Disabled, and 15MB-16MB.
- **Internal Graphics Mode Select:**
This option assigns the memory size to be allocated as shared memory of the Intel 82815 VGA chip. The available choices are 1MB, 512K and Disabled. Disabling this item will shut off the VGA capabilities of your HS-6238.
- **Display Cache Window Size:**
This feature allows you to select the size of mapped memory for Display Cache data.
- **AGP Aperture Window:**
This feature allows you to select the size of mapped memory for AGP graphic data.
- **Initialize Display Cache Memory:**
This field must be enabled to see other "Display Cache" related configuration fields.
 - **Paging Mode Control:**
The available options are Closed, and Open.
 - **RAS-to-CAS:**
With the default setting [Determined by DCCAS], this field has the same configuration as "Display Cache CAS Latency (DCCAS)".
 - **CAS Latency / RAS Timing / RAS Precharge Timing:**
The available options are Slow, and Fast.
- **CPU Latency Timer:**
Leave this option to its default setting, Disabled, for best performance vs. stability.
- **USB Function:**
This system board supports Universal Serial Bus (USB) devices. Set to "All USB Port" if you want to use USB devices.

- **USB Device Legacy Support:**

This system board supports Universal Serial Bus (USB) devices. If detected, USB controller legacy mode will be enabled. If not detected, USB controller legacy mode will be disabled.

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: ▶ No Yes
Sleep State	S1/POS	
Power Management/APM	Enabled	
Suspend Time Out	Disabled	
Keyboard & PS/2 Mouse	Monitor	
System Thermal	Ignore	
Power Button Function	On/OFF	
Restore On AC/Power Loss	Last State	
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

- **ACPI Aware O/S:**

This item is the Advanced Configuration and Power Interface (ACPI) function switch. The available options are Enabled, and Disabled.

- **Sleep State:**

This item serves as the switch setting of STR (S3) or POS (S1) function. Configuration options are S3/STR, and S1/POS.

- **Power Management/APM:**

Set this option to Enabled to switch on the APM (Advanced Power Management). The available options are Enabled, and Disabled.

- **Suspend Time Out:**
This option specifies the length of system inactivity period while in the Standby state. When this length of time expires, the computer enters Suspend power state.
- **Keyboard & PS/2 Mouse:**
Enabling these options monitors the IRQ input of inactive and active devices. This allows the system to determine whether to enter Auto_mode/SMI_mode when it detects an inactive device, or Normal_mode once an active device is detected.
- **Restore on AC/Power Loss:**
This field registers the last power supply unit attached to your system. If an ATX power was last used before changing to AT power supply, setting this field to Last State (default) will NOT make the AT power supply function properly on your next boot up process. Setting this field to Power On auto-detects the power supply installed each time you boot up.
- **Wake Up On Ring:**
An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state. The available choices are Enabled, Disabled.
- **Wake Up On Lan**
An input signal on the local area network (LAN) awakens the system from a soft off state.
- **Wake Up On PME**
A PME# detected resumes or wakes the system from a Soft Off state.
- **Resume By Alarm**
When this option is set enabled, system will according to you set time then wakeup from soft off mode.
- **Alarm Date/Hour/Minute/Second**
You can set these fields to specify the alarm settings of your system.

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	Enabled	
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

- **Plug and Play Aware O/S:**
If enabled, BIOS will configure only PnP ISA boot devices (i.e., all PnP ISA cards with boot flag set) then configure all other devices. If disabled, the BIOS will configure all devices without following any sequence.
- **Clear NVRAM on Every Boot:**
When this option is set to Yes, the system can auto clear NVRAM.
- **PCI Latency Timer (PCI Clocks):**
This option specifies the latency timings (in PCI clocks) of PCI devices installed in the PCI expansion slots. The available settings are 32, 64, 96, 128, 160, 192, 224, and 248.

- **Primary Graphics Adapter:**
The settings made on this field identify the type of display controller used in the system. The available choices are Auto, Internal, and External AGP/External PCI.
- **Allocate IRQ to PCI VGA:**
Set this option to Yes when allocating an IRQ to the VGA device on the PCI bus. The available settings are Yes, and No.
- **DMA Channel 0/1/3/5/6/7:**
These options allow you to specify the bus type used by each DMA channel. The available settings are PnP, and ISA/EISA.
- **IRQ3/4/5/7/9/10/11/14/15**
These options specify the bus on which the specified IRQ line is used. The options allow you to reserve IRQs for legacy ISA adapter cards. The options also determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If user needs to remove more IRQs from the pool, he can use each option to reserve the IRQ by assigning an ISA/EISA setting to each. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are configured as PCI/PnP.

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 1	3F8/COM1	▶ Disabled
OnBoard Serial Port 2	2F8/COM2	Enabled
OnBoard Serial Port 3	3E8	
Serial Port3 IRQ	IRQ10	
OnBoard Serial Port 4	2E8	
Serial Port4 Mode	Normal	
Serial Port4 IRQ	IRQ11	
Receiver Polarity	Non-Inverted	
Transmitter Polarity	Non-Inverted	
OnBoard Parallel Port	378	
Parallel Port Mode	ECP	
EPP Version	N/A	
Parallel Port IRQ	7	
Parallel Port DMA Channel	3	
On-Chip IDE	Both	
AC97 Audio Controller	Auto	
OnBoard LAN	Disabled	
		ESC:Exit ↑↓:Sel
		PgUp/PgDn: Modify
		F1:Help F2/F3:Color

- **OnBoard FDC:**
Set this option to Enabled to activate the floppy drive controller on the system board. The available settings are Auto (AMIBIOS automatically determines if the floppy controller should be enabled), Enabled, and Disabled.

- **OnBoard Serial Port1/2/3/4:**
This option specifies the base I/O port address of serial ports 1, 2, 3 and 4. The available settings are Auto (AMIBIOS automatically determines the correct base I/O port address), Disabled, 3F8h, 2F8h, 2E8h, and 3E8h.
 - **Serial Port3/4 IRQ:**
This category assigns the interrupt request for both serial ports 3 and 4. The available options are IRQ10 and IRQ11.
- **OnBoard Parallel Port:**
This option specifies the base I/O port address of parallel port on the system board. The available settings are Disabled, 378h, 278h, and 3BCh.
 - **Parallel Port Mode:**
This option specifies the parallel port mode. The available settings are Normal, Bi-Dir, EPP, and ECP.
Normal: The normal parallel port mode is used.
Bi-Dir: Use this setting to support bi-directional transfers on the parallel port.
EPP: The parallel port can be used with devices that adhere to the Enhanced Parallel Port (EPP) specification. EPP uses the existing parallel port signals to provide asymmetric bi-directional data transfer driven by the host device.
ECP: The parallel port can be used with devices that adhere to the Extended Capabilities Port (ECP) specification. ECP uses the DMA protocol to achieve data transfer rates up to 2.5 Megabits per second. ECP provides symmetric bi-directional communication.
 - **Parallel Port IRQ:**
This option specifies the IRQ used by the parallel port. The available settings are Auto, (IRQ)5, and (IRQ)7.
 - **Parallel Port DMA Channel:**
This option is only available if the setting for the Parallel Port Mode option is ECP. This option sets the DMA channel used by the parallel port. The available settings are DMA Channel 0, 1, and 3.
- **On-Chip IDE:**
This option specifies the IDE channel used by the onboard IDE controller. The available settings are Disabled, Primary, and Secondary.
- **AC97 Audio Controller**
When set as Enabled, this item allows the BIOS program to auto-detect the presence of the AC'97 audio controller onboard. Disabling this item will automatically null the use of the controller, if there is one onboard. The available settings are Enabled and Disabled.

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 Thermistor ESC:Exit ↑↓:Sel PgUp/PgDn: Modify F1:Help F2/F3:Color
CPU Temperature		
System Temperature		
Power Temperature		
CPU Fan Speed		
Chassis Fan Speed		
Power Fan Speed		
CPU VID	2.00V	
Vcore		
Vtt		
Vio		
+ 5.000V		
+12.000V		
-12.000V		
- 5.000V		
Battery		
+5V SB		

- **CPU Temperature Detected by:**
 This field determines which component will detect the CPU temperature. If your board comes with a provision for a thermal connector, you may set this field as Thermistor. Otherwise, please configure it as CPU (also default setting).
 - **CPU Temperature:**
 This read-only field displays the current CPU temperature as part of the hardware monitoring feature of your board.
 - **System Temp by:**
 This field displays the *current* system and power supply temperatures, if your computer contains a monitoring system. The available choices are Both and Supervisor.
 - **CPU/Chassis/Power FAN Speeds:**
 These fields display the *current* speed of up to CPU, chassis (system) and Power supply fans, if your computer contains a monitoring system.
 - **Vcore/Vtt/Vio/-5V/-12V/+5V/+12V/Battery/+5V SB:**
 Once the hardware monitoring IC detects the current voltages of voltage regulators and power supply unit, it shows the values on these fields for read-only purposes.

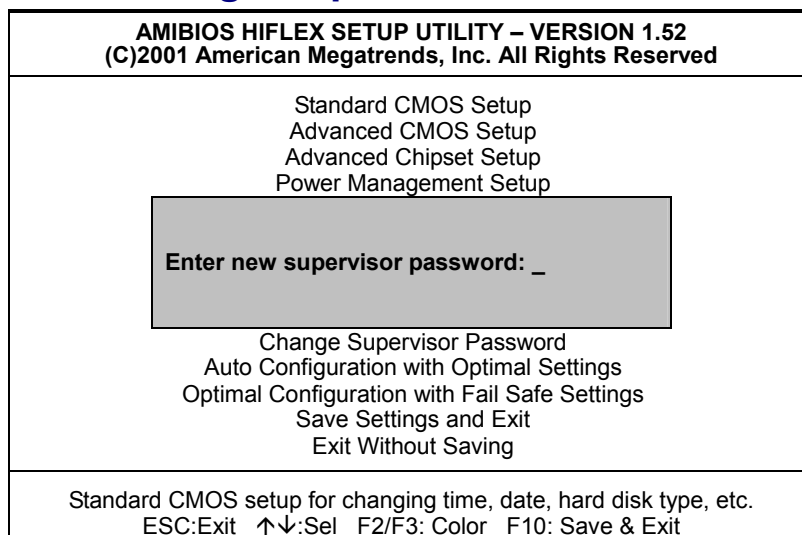
4.11 Auto-Detect Hard Disks

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
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 them. 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.

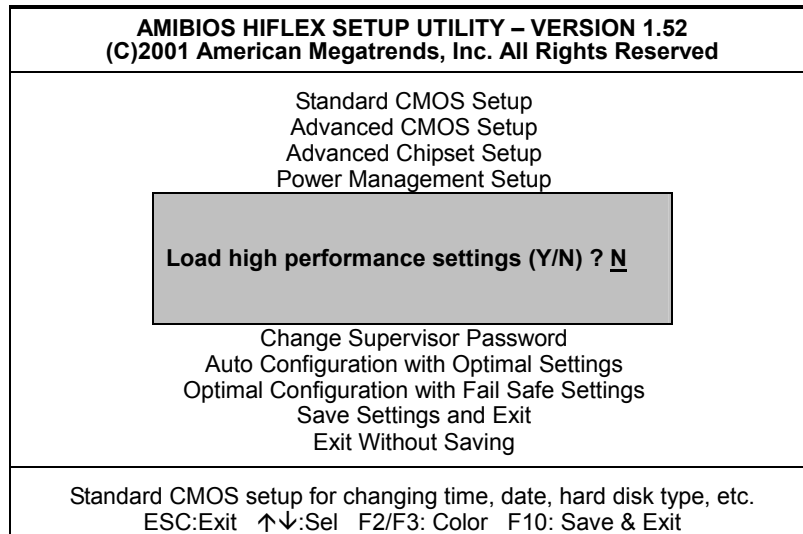
When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

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.

AMIBIOS HIFLEX SETUP UTILITY – VERSION 1.52 (C)2001 American Megatrends, Inc. All Rights Reserved
Standard CMOS Setup Advanced CMOS Setup Advanced Chipset Setup Power Management Setup
Load failsafe settings (Y/N) ? <u>N</u>
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

4.15 Save Settings and Exit

Pressing <Enter> on this item asks for confirmation:

<p>AMIBIOS HIFLEX SETUP UTILITY – VERSION 1.52 (C)2001 American Megatrends, Inc. All Rights Reserved</p>
<p>Standard CMOS Setup Advanced CMOS Setup Advanced Chipset Setup Power Management Setup</p> <p>Save current settings and exit (Y/N) ? <u>Y</u></p> <p>Change Supervisor Password Auto Configuration with Optimal Settings Optimal Configuration with Fail Safe Settings Save Settings and Exit Exit Without Saving</p>
<p>Standard CMOS setup for changing time, date, hard disk type, etc. ESC:Exit ↑↓:Sel F2/F3: Color F10: Save & Exit</p>

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 is restarted again.

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 in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

<p align="center">AMIBIOS HIFLEX SETUP UTILITY – VERSION 1.52 (C)2001 American Megatrends, Inc. All Rights Reserved</p>
<p align="center">Standard CMOS Setup Advanced CMOS Setup Advanced Chipset Setup Power Management Setup</p> <p align="center">Quit without saving (Y/N) ? <u>N</u></p> <p align="center">Change Supervisor Password Auto Configuration with Optimal Settings Optimal Configuration with Fail Safe Settings Save Settings and Exit Exit Without Saving</p>
<p align="center">Standard CMOS setup for changing time, date, hard disk type, etc. ESC:Exit ↑↓:Sel F2/F3: Color F10: Save & Exit</p>

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Chapter 5

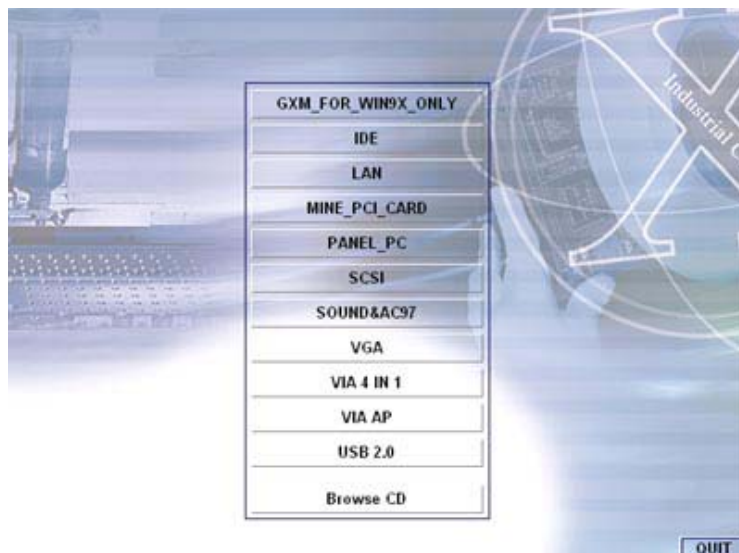
Software Utilities

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.

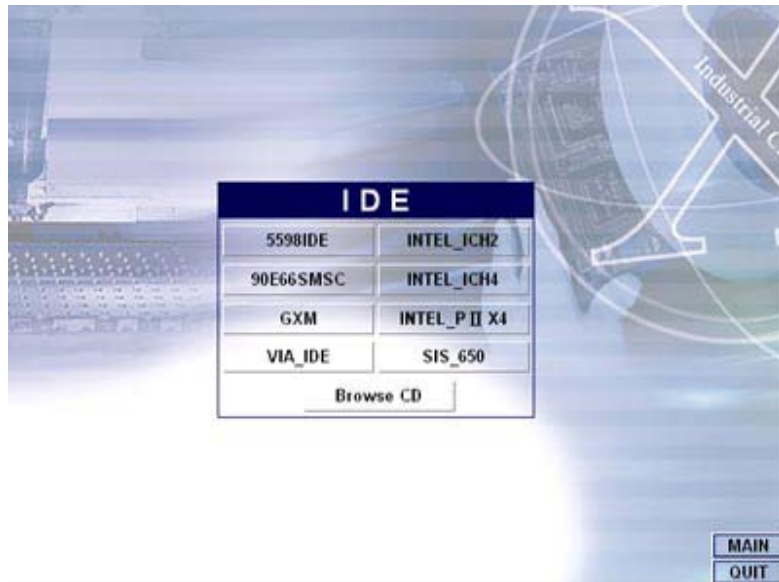
5.1 IDE Driver Installation

5.1.1 Installing Intel 815 Chipset Software

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



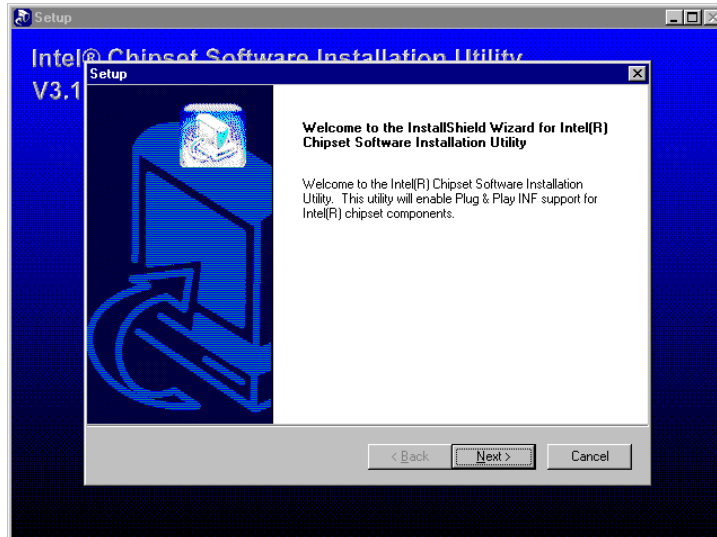
2. Click on the **INTEL_ICH2** button to continue.



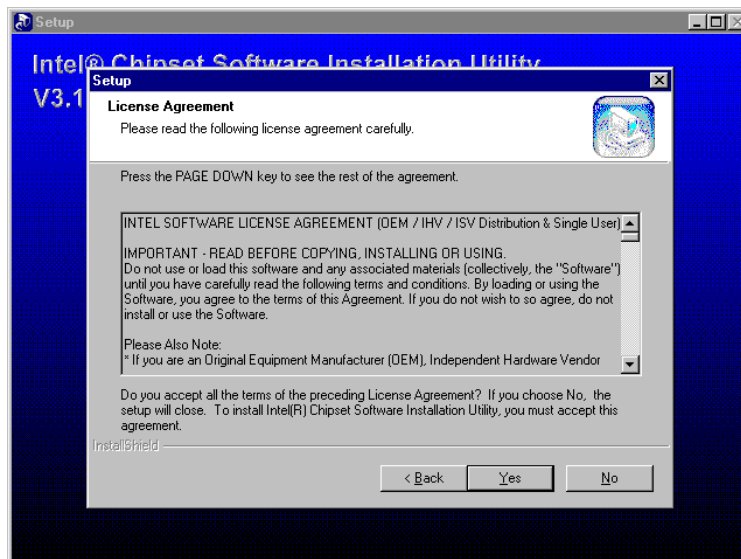
3. When the **IDE \ INTEL_ICH2** box appears on your screen, click on the **INTEL_R&HIPSET_SOFTWARE_INS** to install the IDE plug and play information files into your system.



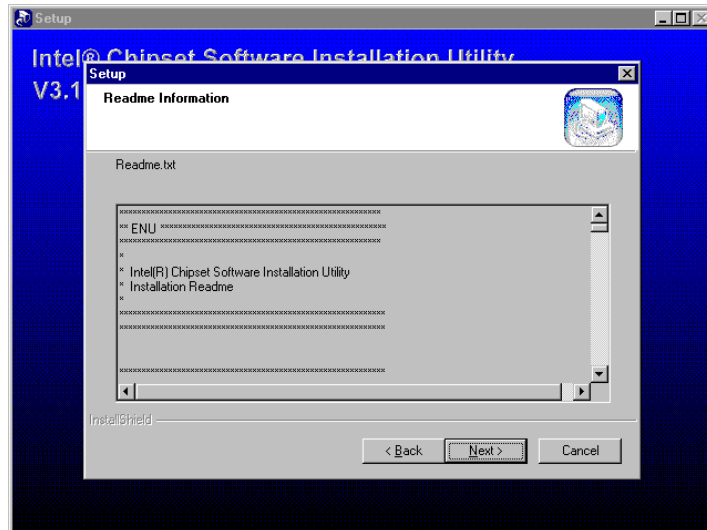
4. Immediately after clicking the IDE button in Step 1, the program launches the InstallShield Wizard that will assist you in the installation process. Click on the **Next >** button to proceed.



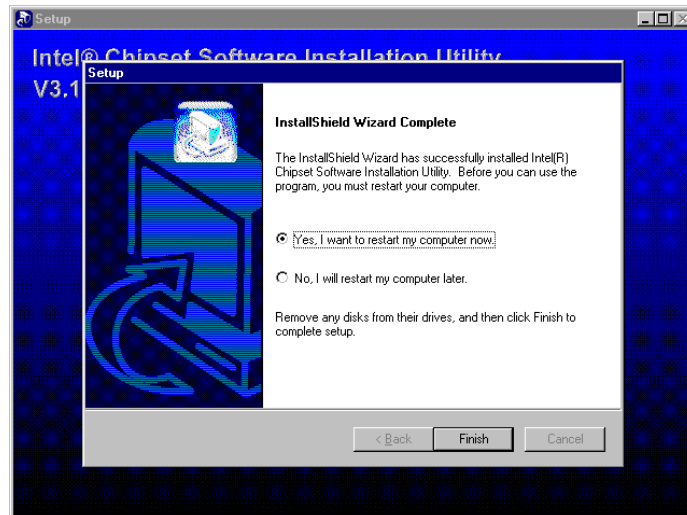
5. The Intel OEM Software License Agreement dialog box then appears on the screen. Choose **Yes** to proceed.



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 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.



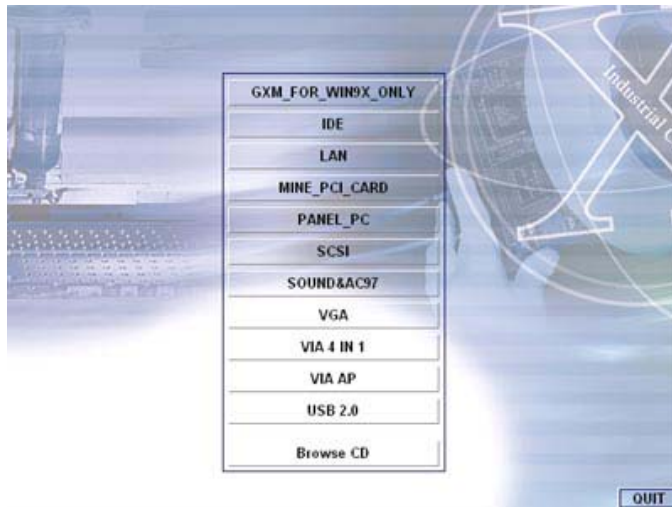
5. Once the setup program finishes copying files into your system, it will prompt you to restart the computer. Tick on the **Yes, I want to restart my computer now** followed by a click on the **Finish** button to reboot. Only after your computer boots will the new settings take effect.



5.2 VGA Driver Installation

5.2.1 Win 95/98

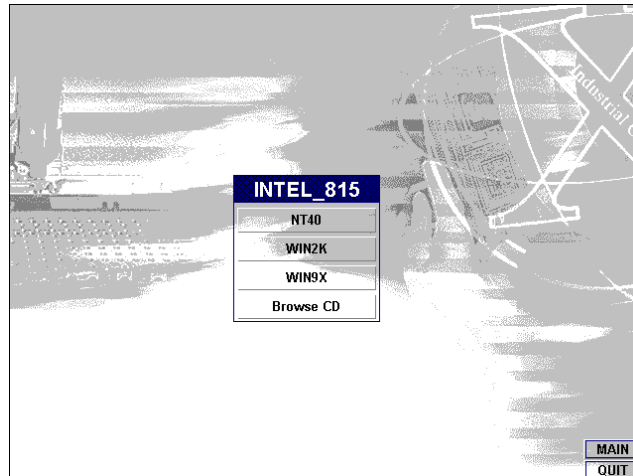
1. After loading the Utility CD-ROM, the program automatically runs the utility. Press **Enter** to proceed installing. When the main utilities window pops on the screen, select the **VGA** button.



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



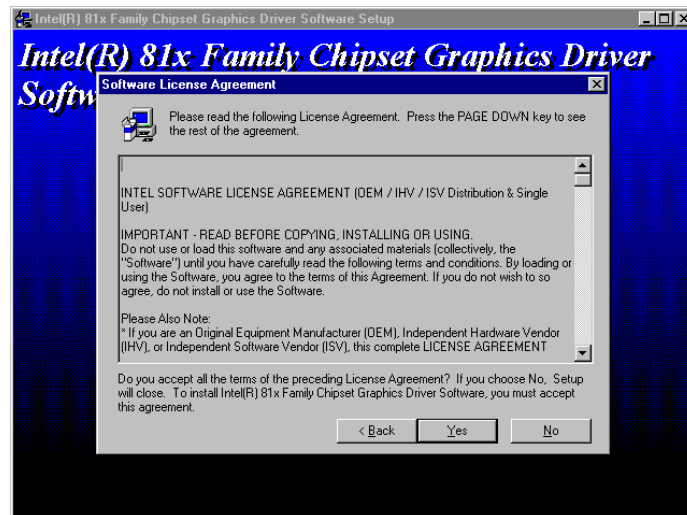
3. The INTEL_815 window shows up next. Select **WIN9X** to invoke the corresponding installation program.



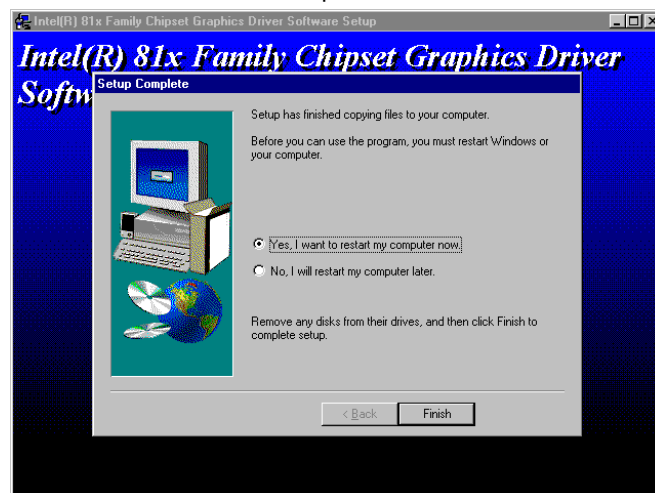
4. The program launches an introduction screen of what graphics driver it will install. Close all other running Windows applications then click on the **Next >** button to proceed.



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

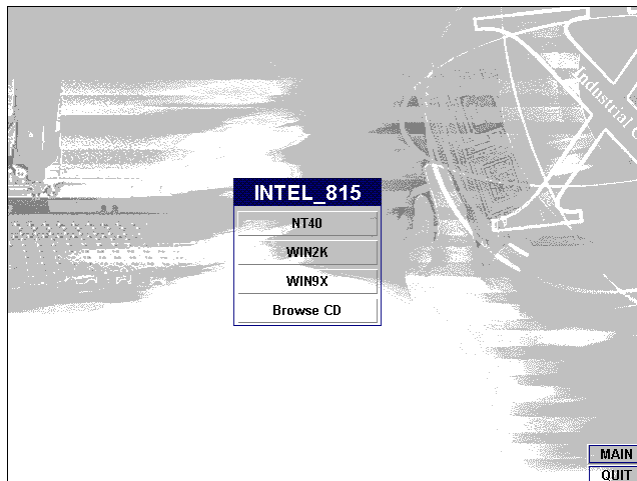


6. The VGA driver utility program starts copying files needed by your Win98 to invoke the VGA capabilities. Once finishes, the system will prompt you to restart your computer. Tick on the **Yes, I want to restart my computer now** followed by a click on the **Finish** button to complete the installation.

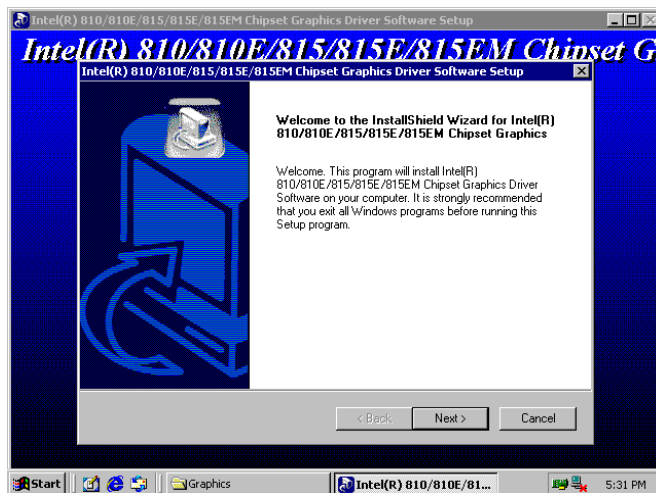


5.2.2 Win 2000

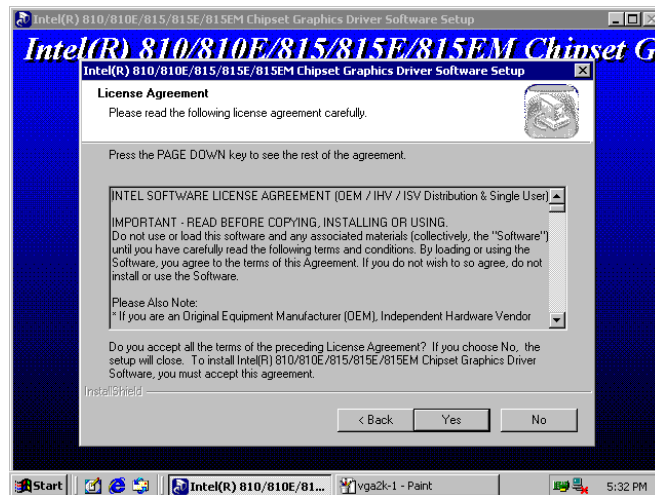
1. Follow steps 1 and 2 from the Win9x installation procedure. When the INTEL_815 window shows up, select WIN2K to invoke the installation program to your Win 2000 OS.



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.



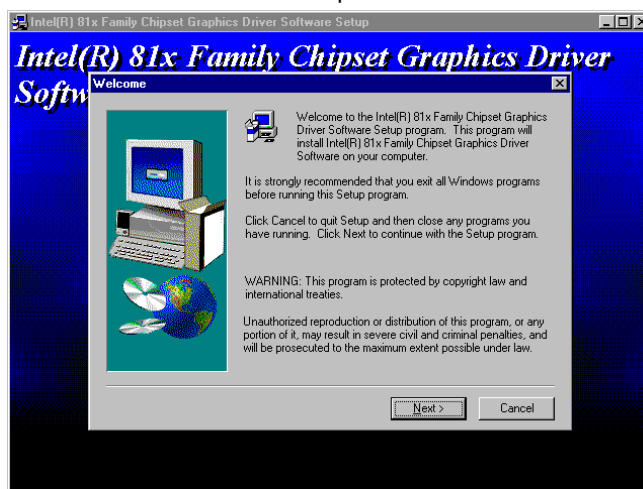
3. Immediately after clicking the **Next >** button, the Intel OEM Software License Agreement pops on the screen. Choose **Yes**.



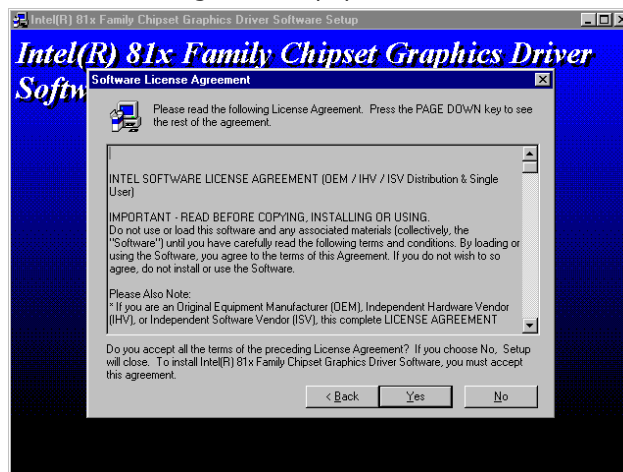
4. Once the utility program finishes copying and installing all the necessary files into your system, it will prompt you to restart your computer. Tick on the **Yes, I want to restart my computer now** followed by a click on the **Finish** button to complete the installation.

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 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**.

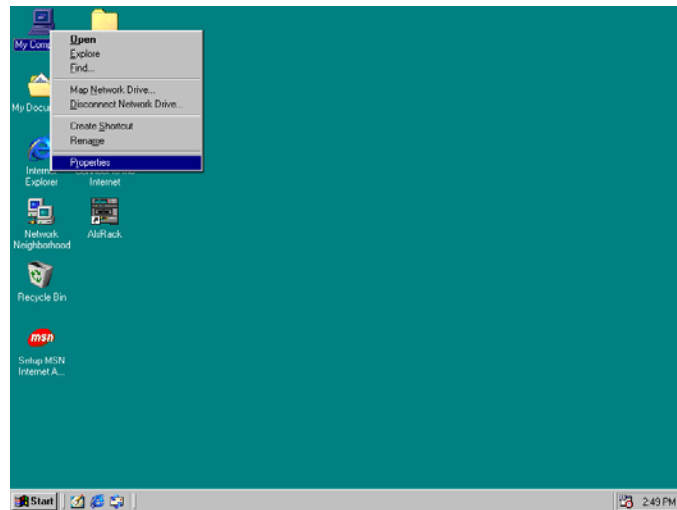


4. Once the utility program finishes copying and installing all the necessary files into your system, it will prompt you to restart your computer. Tick on the **Yes, I want to restart my computer now** followed by a click on the **Finish** button to complete the installation.

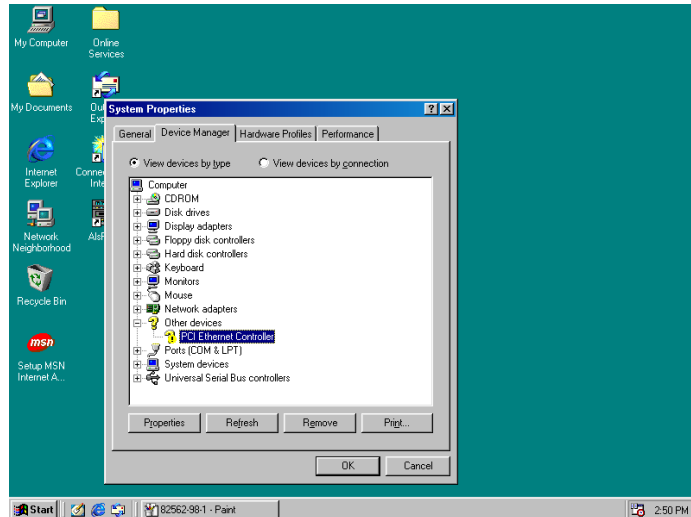
5.3 LAN Driver Installation

5.3.1 Win 95/98

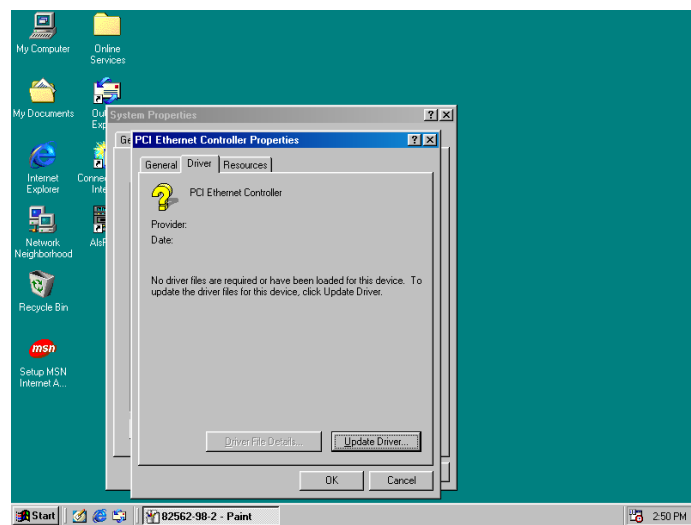
1. Right click on **My Computer** icon then scroll to the **Properties** item from the pop-up menu.

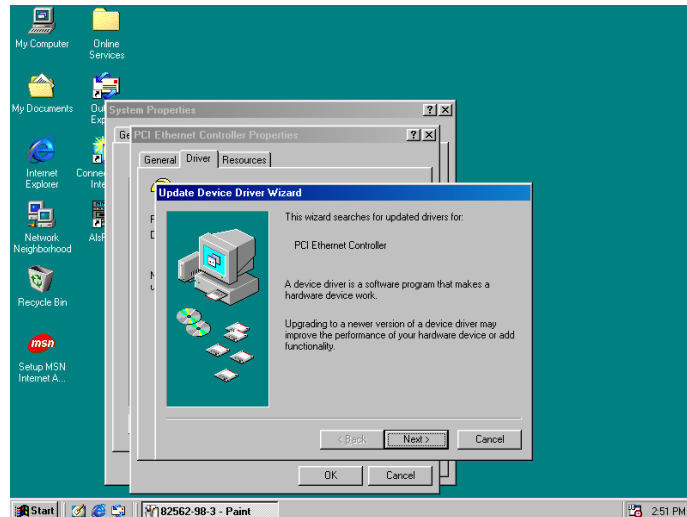


2. Select **Device Manager** from the top menu bar. A list of all devices installed appears, scroll down to the **Other devices** and then select on **PCI Ethernet Controller**. Select the Properties button to access the details of this *unknown* device. Refer to the following screen shot for a clearer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

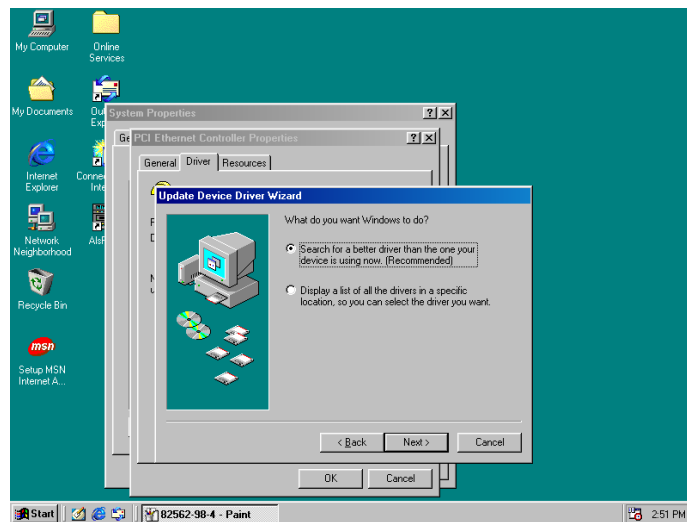


3. Once the **PCI Ethernet Controller Properties** screen pops on the screen, click on the **Update Driver ...** button to launch the **Update Device Driver Wizard** screen.

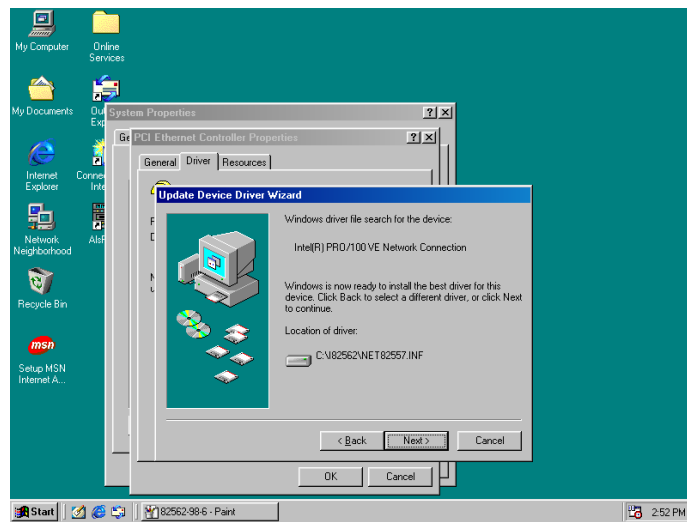
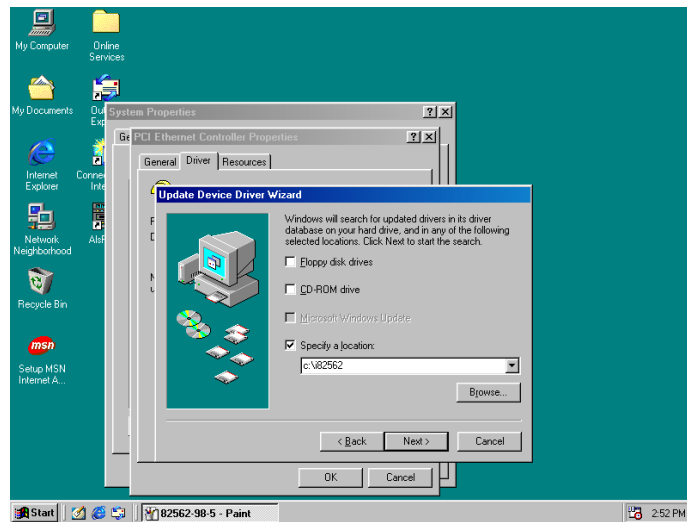




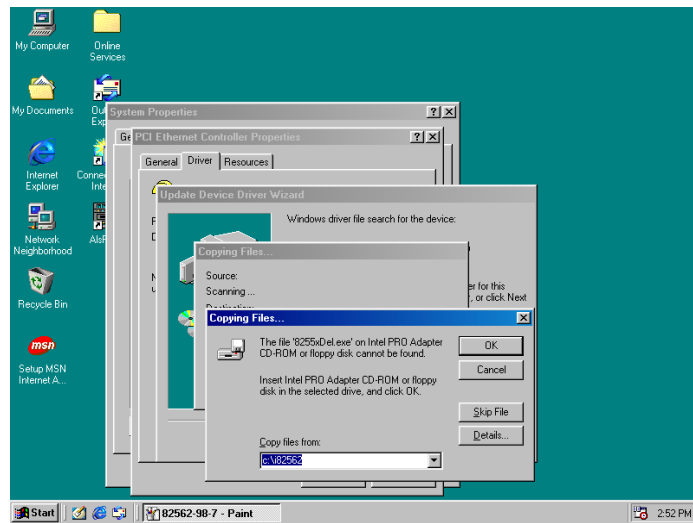
4. The succeeding screen then lets you choose whether to search for a better driver for the LAN or display the available list of drivers. Select **Search for a better driver than the one your device is using now** followed by a click on the **Next >** button.



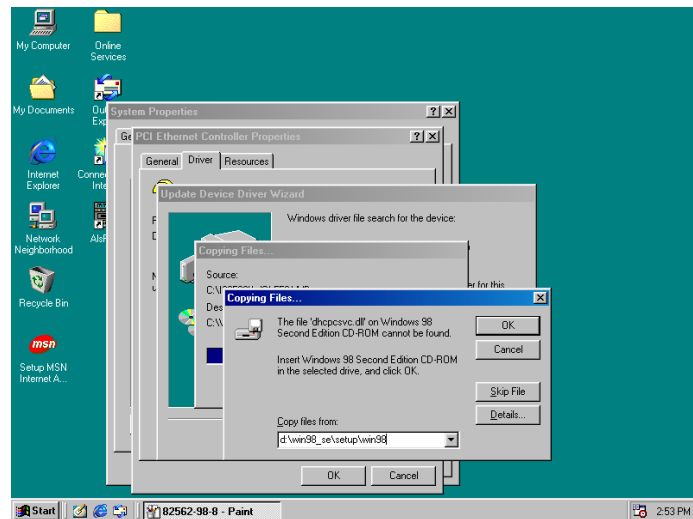
- The wizard program will then require you to specify the location of the driver file. Tick on the **Specify a location:** and type or select the path where the driver files exist (c:\i82562). Click on the **Next >** button to proceed.



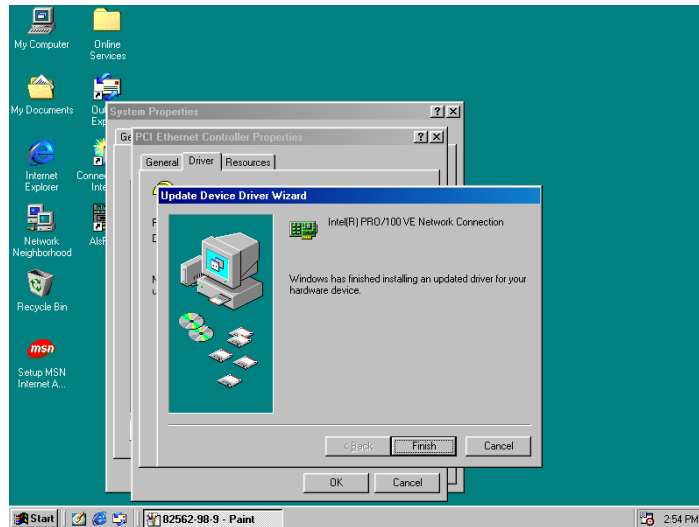
- The program now starts copying the file(s) needed by your Win98. When the program fails to seek for 825xDel.exe from your specified location, it will prompt you to specify the path where the Intel Pro Adapter exists.



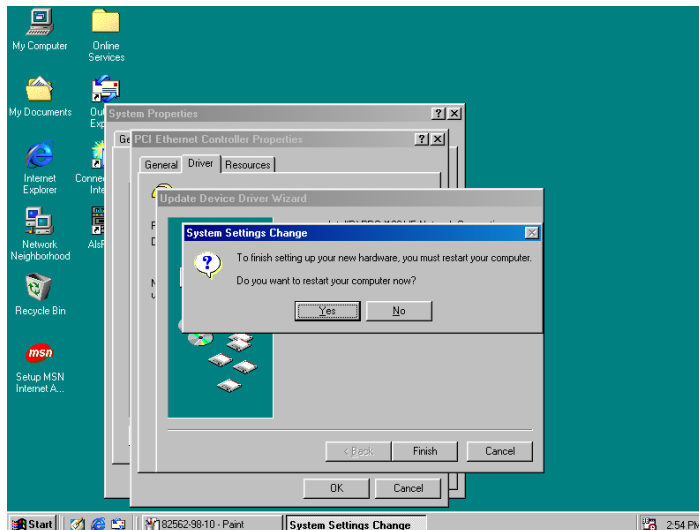
- With the Utility CD Disk on your CD drive, key in `d:\win98_se\setup\win98` on the blank space below **Copy files** from: then press the **OK** button.



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

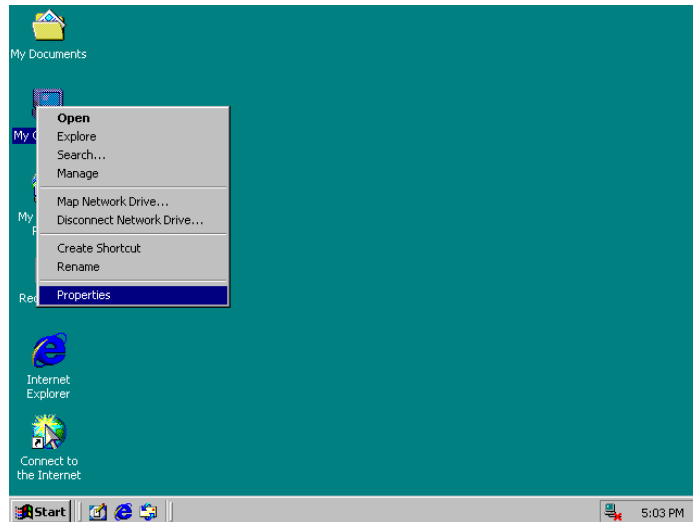


9. For the new hardware settings to take effect and to complete the installation process, you must restart your computer when the **System Settings Change** window below pops up. Click on the **Yes** button to complete the installation.

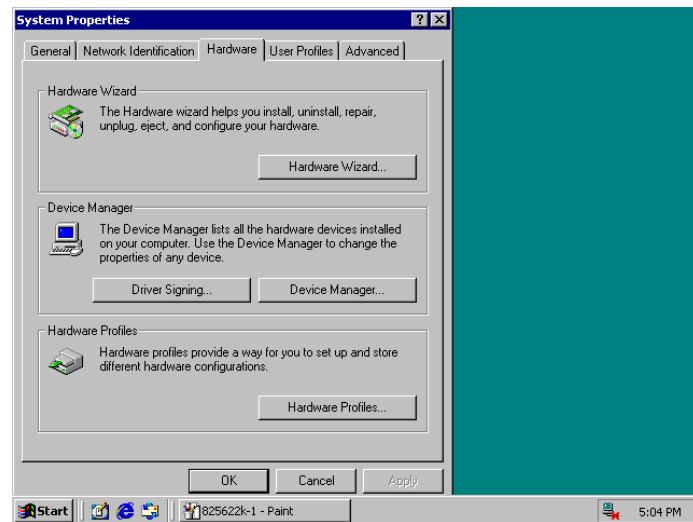


5.3.2 Win 2000

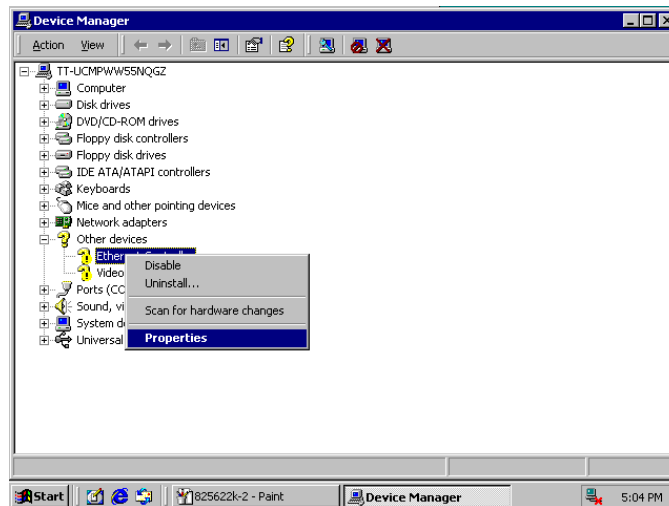
1. Right click on **My Computer** icon then scroll to the **Properties** item from the pop-up menu.



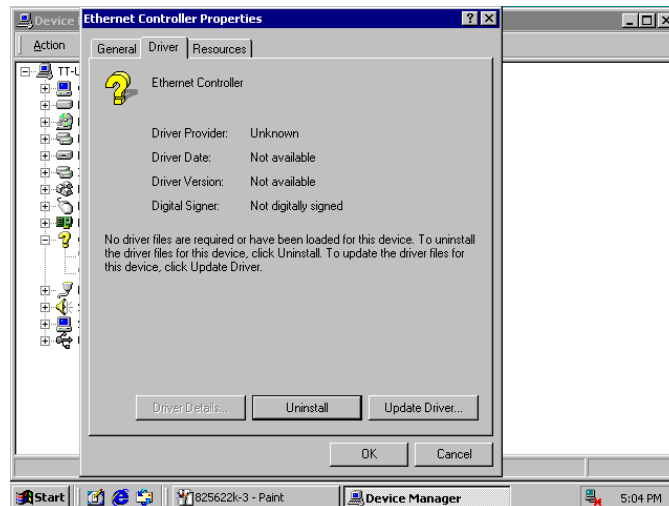
2. When the System Properties window pops up on the screen, click on the **Device Manager** button.



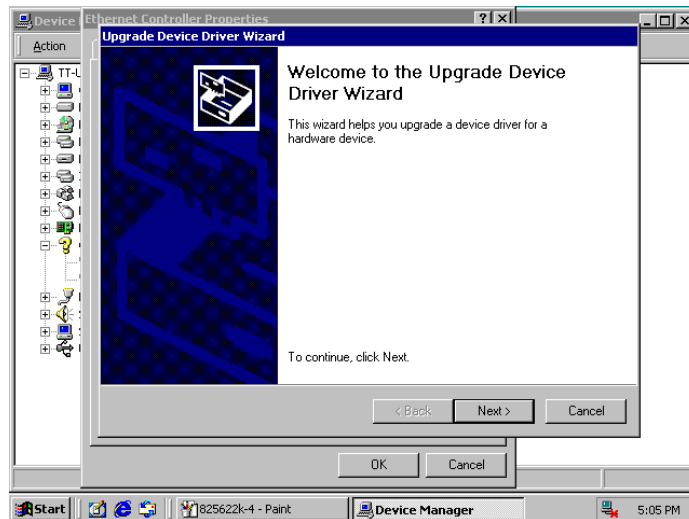
3. A list of all devices installed appears, scroll down to the **Other devices** and then right click on **Ethernet Controller** to select the Properties button Refer to the following screen shot for a clearer explanation of this step.



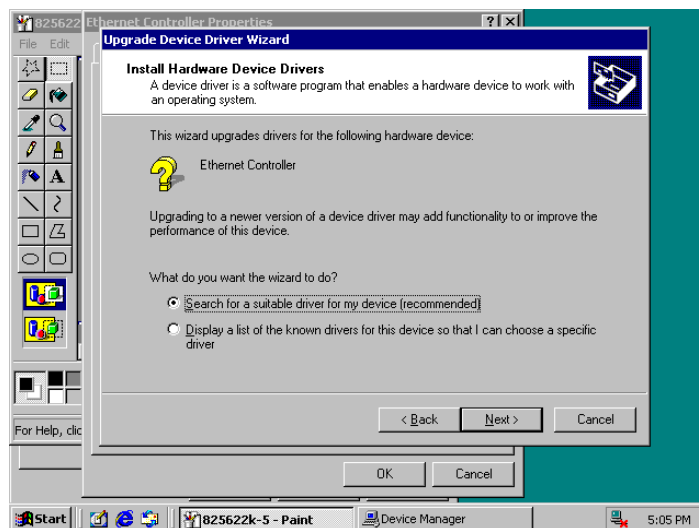
4. Once the **Ethernet Controller Properties** screen pops on the screen, click on the **Update Driver ...** button to launch the **Update Device Driver Wizard** screen. Once the **Upgrade Device Driver Wizard** screen pops on the screen, click **Update Driver ...** to launch the Win 2000 driver installation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



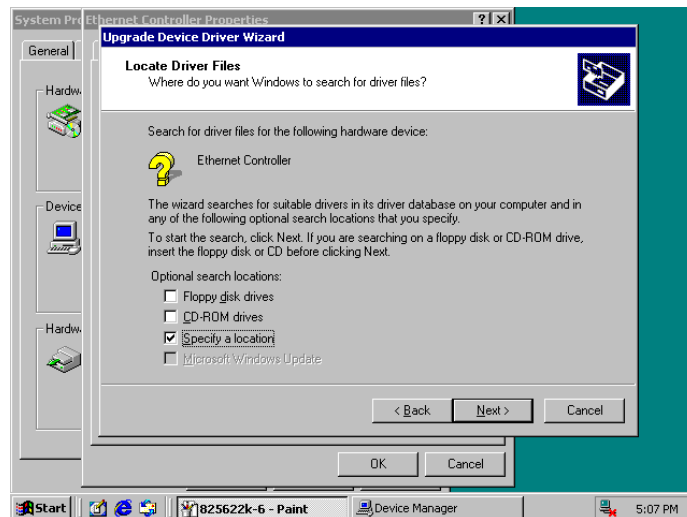
5. Click on **Next >** button to proceed with the installation.



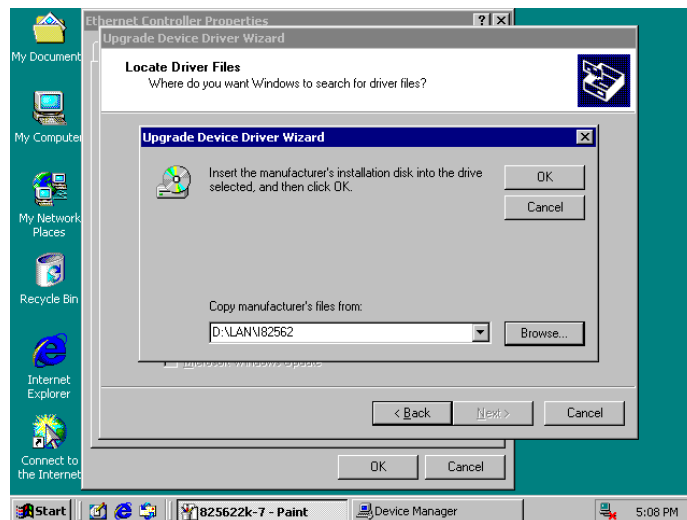
6. The wizard will then inform you the unknown device it detected from the system. Since the Win2000 drivers list do not include Intel chip driver onboard HS-6238, tick **Search for a better driver than the one your device is using now** followed by a click on the **Next >** button to continue.



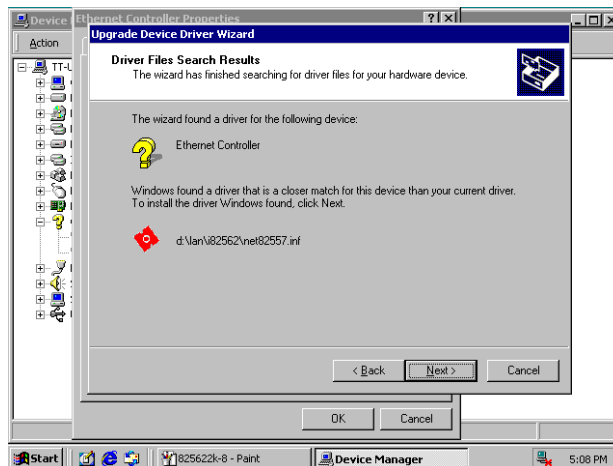
7. The wizard program will then prompt you to specify the location where it will start searching for the driver. Tick on the **Specify a location:** and then click on the **Next >** button to proceed.



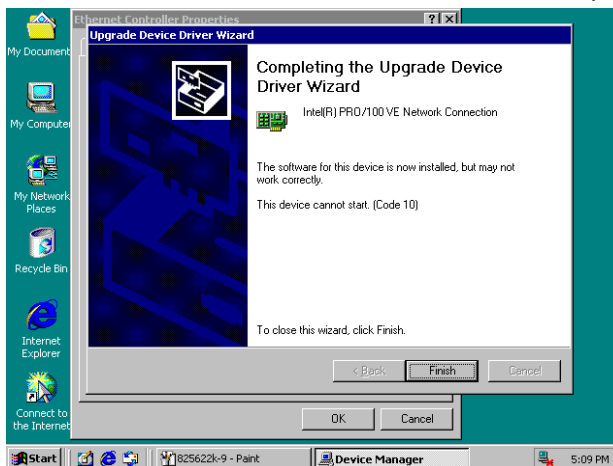
8. The wizard program will then require you to insert the manufacturer disk at your specified location (entered at the **Copy manufacturer's files from:** space) of the driver file. With your Utility CD disk inserted in the drive, type `d:\lan\i82562` then click on the **OK** button to proceed.



- 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.



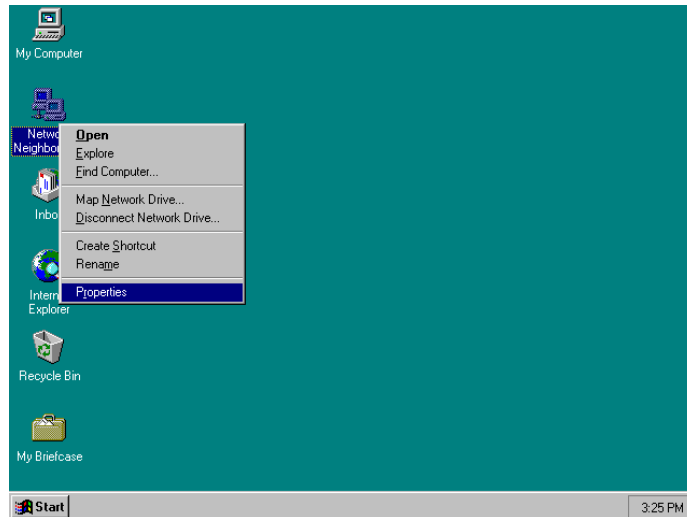
- When the program finishes updating and copying files for the Intel Pro/100VE Network Connection, click **Finish** to proceed.



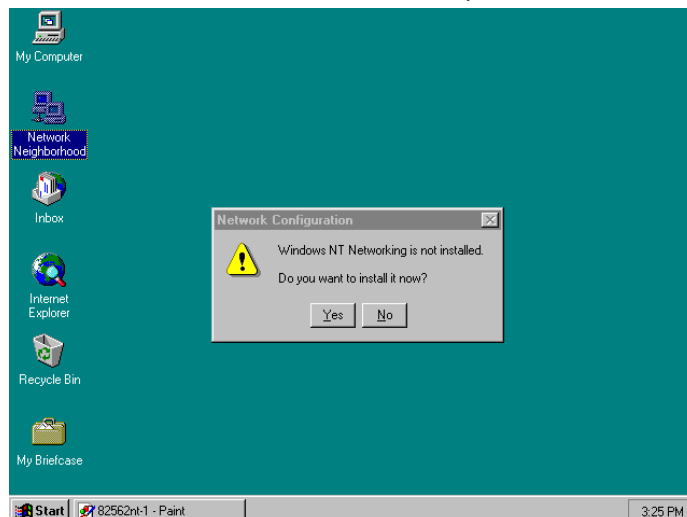
- For the new hardware settings to take effect and to complete the installation process, you must restart your computer when the **System Settings Change** window below pops up. Click on the **Yes** button to complete the installation.

5.3.3 Win NT

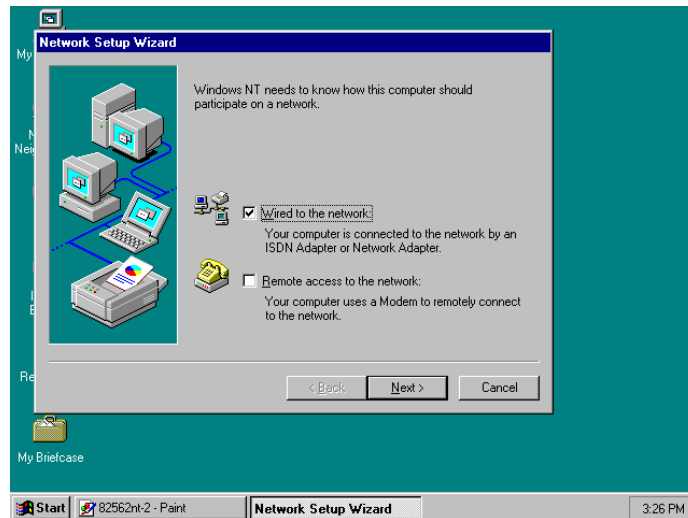
1. Right click on **Network Neighborhood** icon then scroll to the **Properties** item from the pop-up menu.



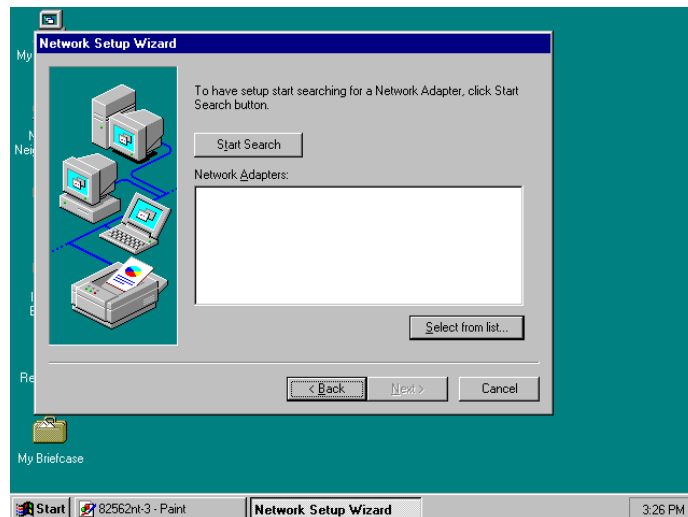
2. The Network Configuration dialog box then appears, notifying the user that there is no Windows NT Networking available. Click on the **Yes** button to start the installation process.



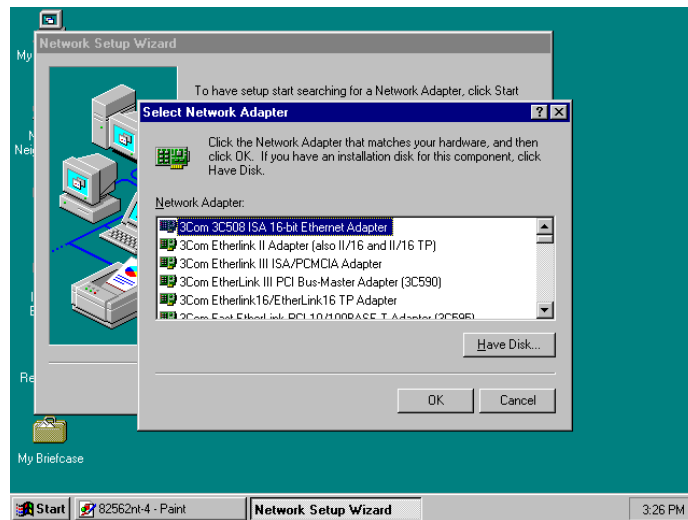
- The Network Setup Wizard will then ask you to identify the network connection of your computer. Select **Wired to the network** and click on the **Next >** to continue.



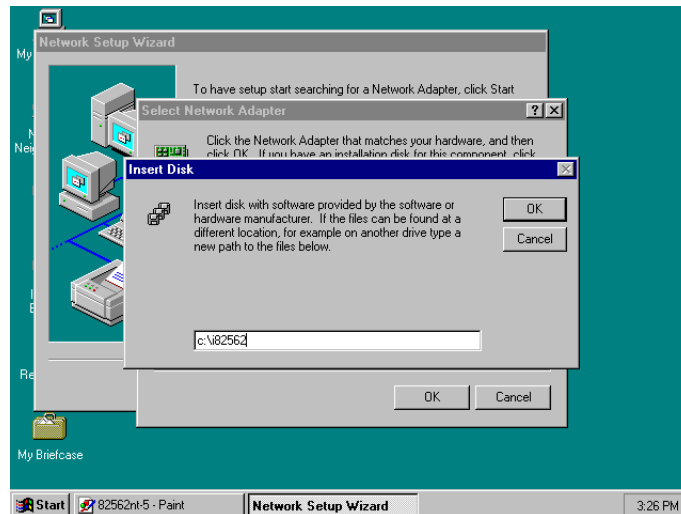
- The succeeding screen then indicated that the wizard will initially search for Network Adapter from the available list of drivers. Select on **Start Search**.



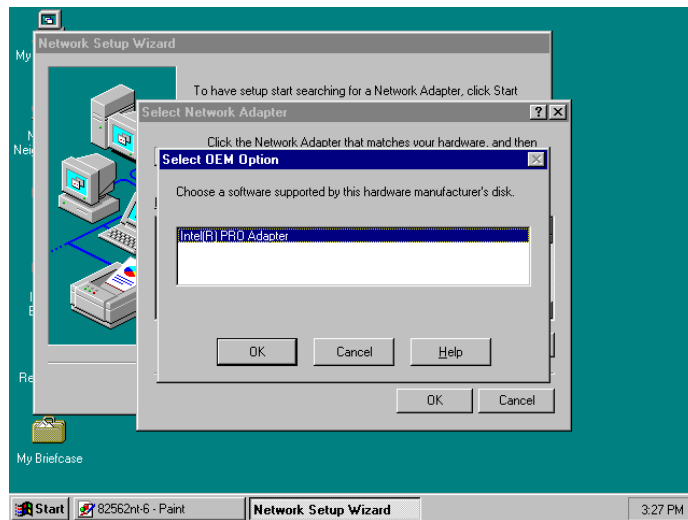
- When it is done searching for available network drivers, the wizard will show a list and allow you to locate and choose the appropriate Network Adapter. Since the LAN device driver is in the Utility CD Disk, select on Have Disk ... to proceed.



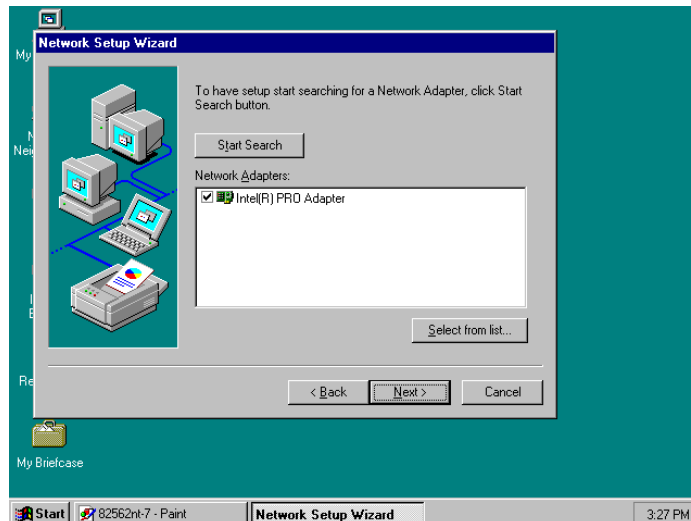
- The wizard program will then require you to insert the manufacturer disk and specify the location of the driver file (i.e., c:\i82562). Click on the **OK** button to proceed.



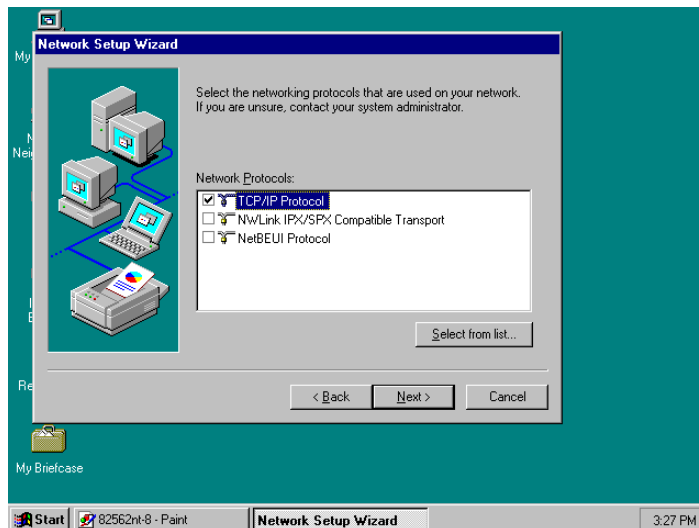
7. The Select OEM Option then appears, prompting you to select the software supported by the network hardware device you will install. Select Intel(R) PRO Adapter and click on the **OK** button to continue installing.



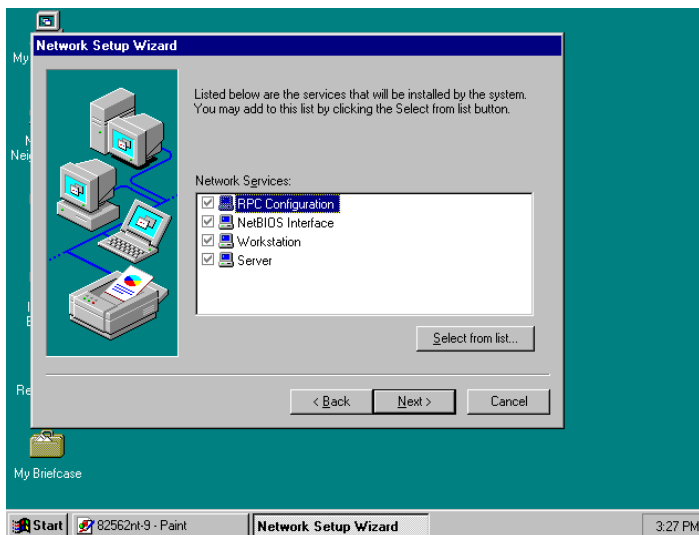
8. The wizard program now displays on the screen that it has detected the Intel() PRO Adapter. Click on the **Next >** button to continue installing.



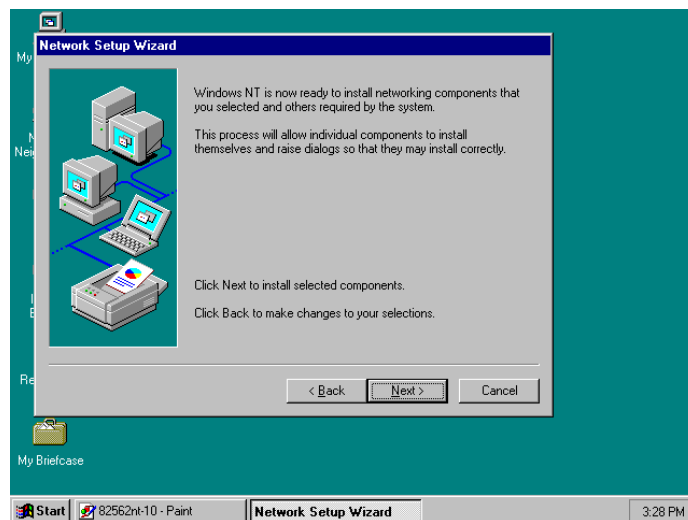
9. The wizard program now prompts you to specify the networking protocols used on your network structure. Tick on the TCP/IP Protocol and click on the **Next >** button to proceed.



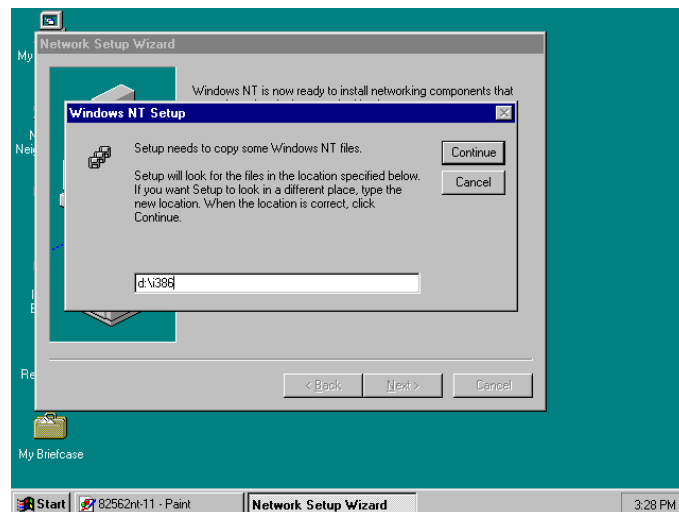
10. The next screen will allow you to customize the Network Services the wizard program intends to install. Tick services as needed and then click on the **Next >** button to continue.



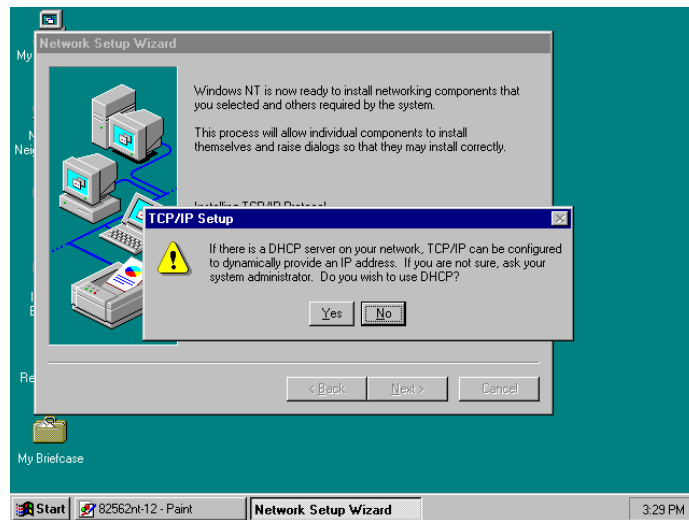
11. The Network Setup Wizard then prompts you that it is ready to install the network components based on your selection. You may start installing by clicking on the **Next >** button or make modifications on your choices using the **< Back** button.



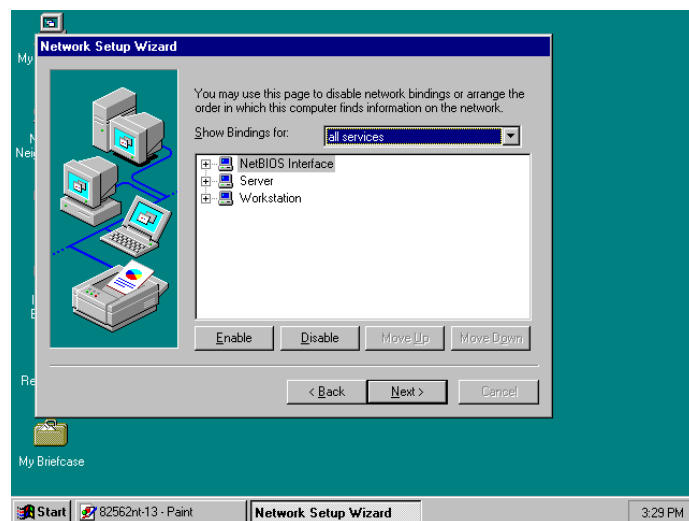
12. The Network Setup Wizard will then need to copy the drive file(s). Specify the path of your device driver(s) (i.e., d:\i386) and click the **Continue** button.



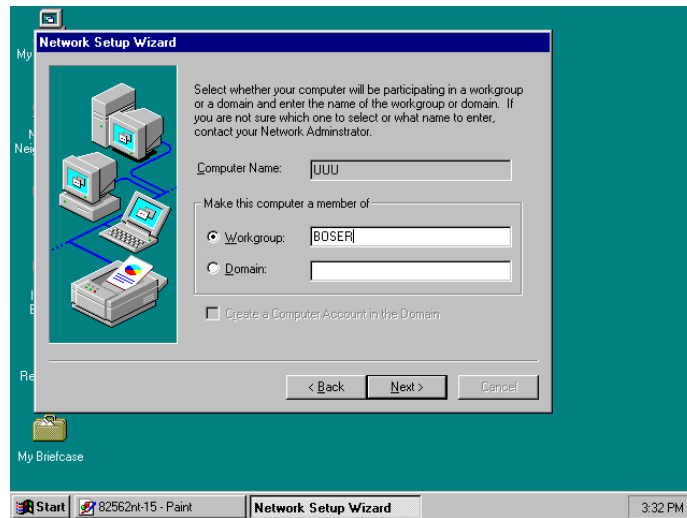
13. Choose the default entry, **No**, when the following screen pops on the screen.



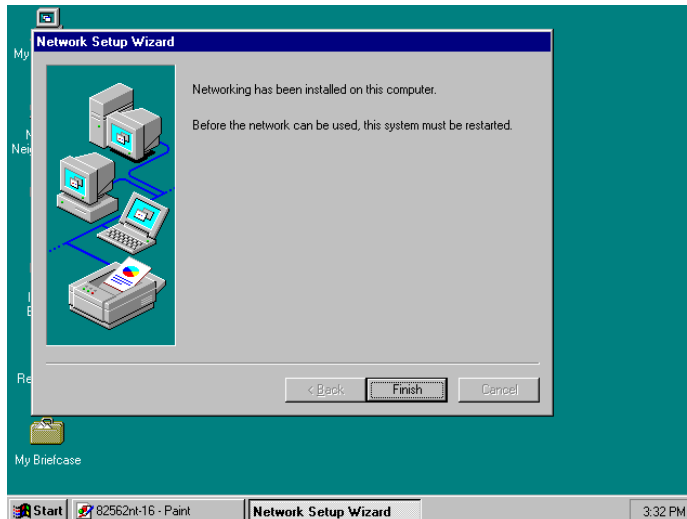
14. If you need to disable network bindings on the network services installed, select the service and then click on the **Disable** button. Otherwise, proceed by clicking on the **Next >** button.



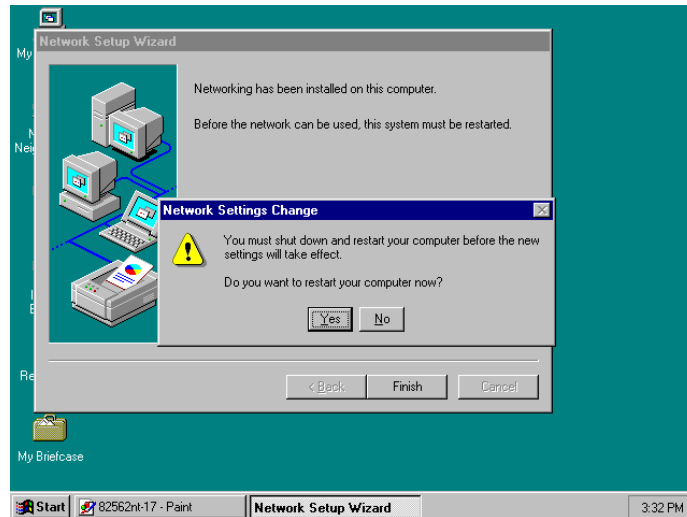
15. Specify the network participation type of your computer, either to a Workgroup or a Domain. Click on the **Next >** button after identifying the network group installed on your computer.



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.



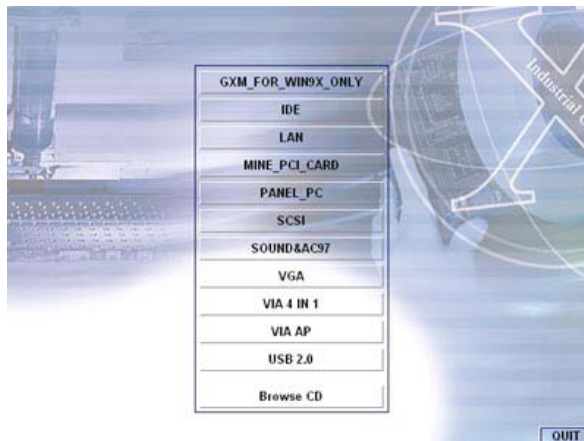
17. When the following dialog box pops on your screen, click on the **Yes** button to restart your computer and make the setting changes take effect.



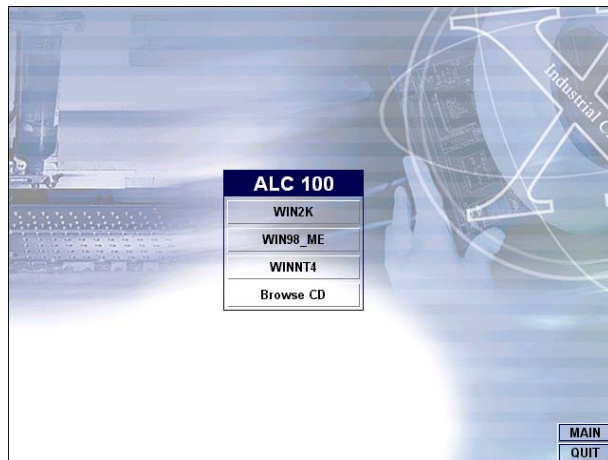
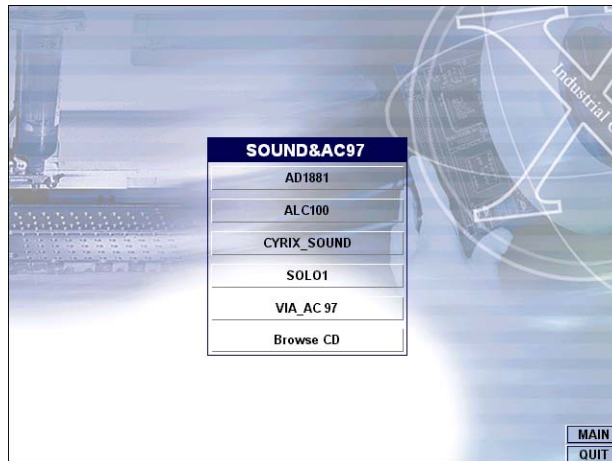
5.4 Audio Driver Installation

5.4.1 Win 95/98

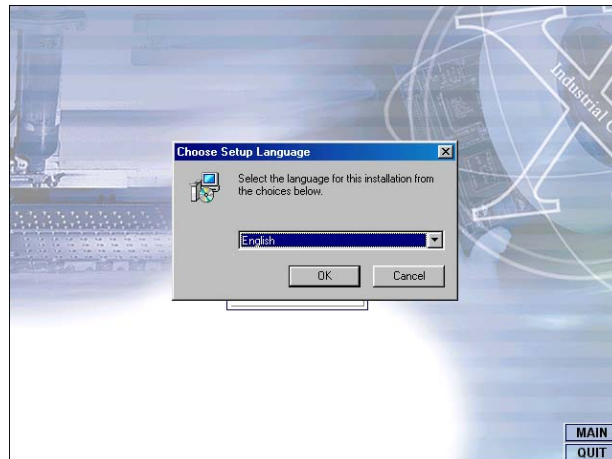
1. After loading the Utility CD-ROM, the program automatically runs the utility. Press **Enter** to proceed installing. When the main utilities window pops on the screen, select **SOUND&AC7**.



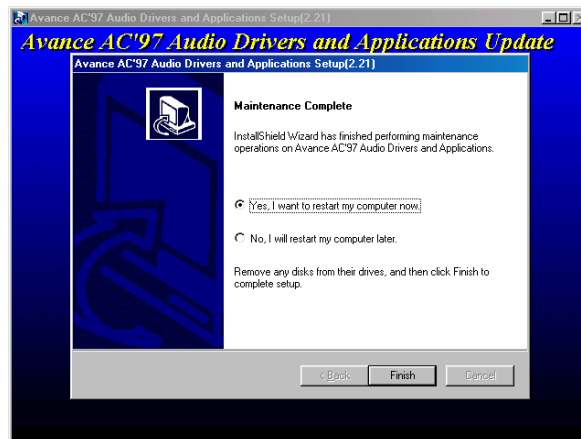
2. The succeeding screen will then show you the **SOUND&AC97** main menu. Select on **ALC 100** to continue installation. When the ALC100 dialog box appears, pick on **WIN98_ME** and it will take you to the ALC 100 menu. Refer to the following screen shots for a graphical description of this step.



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.

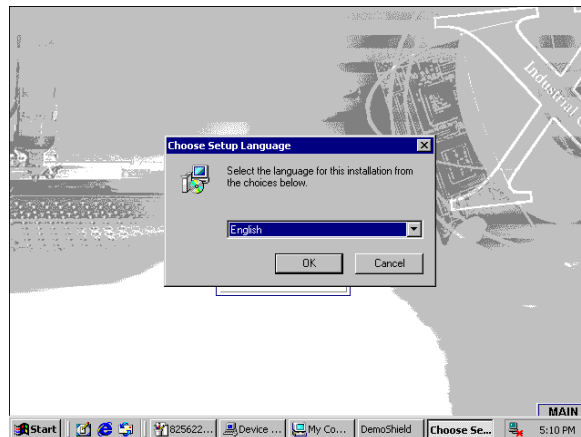


4. Once the InstallShield Wizard completes the operation and update of your AC'97 driver, it will ask you to remove disks from their drives, and prompt you to restart your system. Tick on the Yes, I want to restart my computer now. Afterwards, click on the **Finish** button to complete the installation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

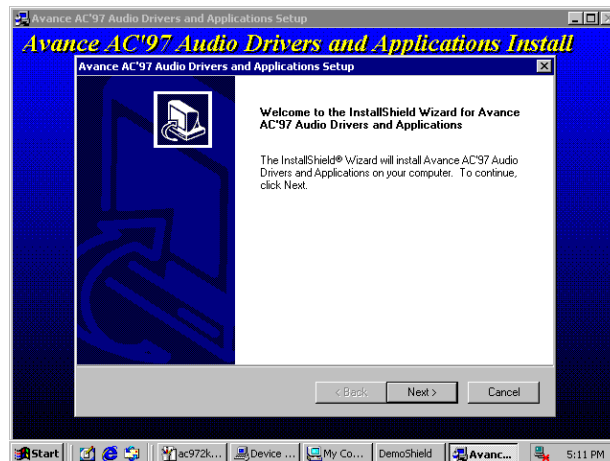


5.4.2 Win 2000

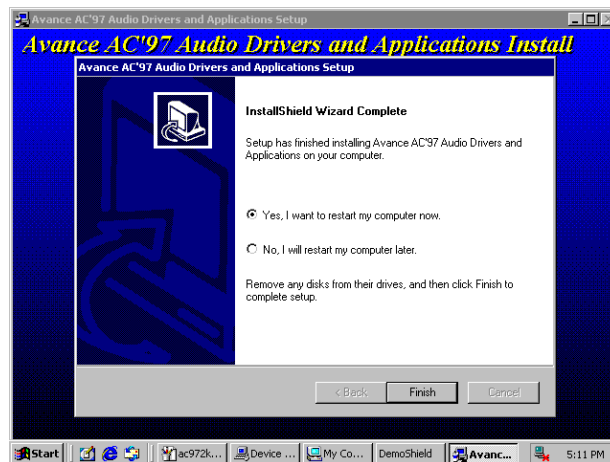
1. Following steps 1 and 2 of the Win95/98 AC97 installation, select **WIN2K** button when the ALC100 dialog box appears screen.
2. Select the language you intend to use for the installation. The default is **English**. After making your choice, press on the **OK** button to proceed.



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

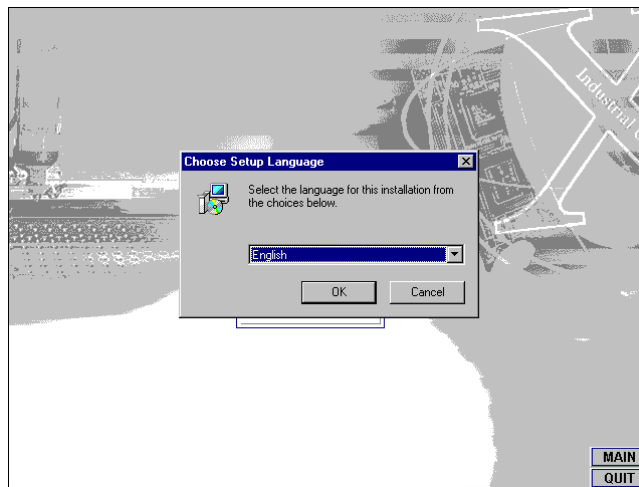


- Once the InstallShield Wizard completes the operation and update of your AC'97 driver, it will ask you to remove any disks from their drives, and prompt you to restart your system. Tick on the **Yes**, I want to restart my computer now. Afterwards, click on the **Finish** button to complete the installation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

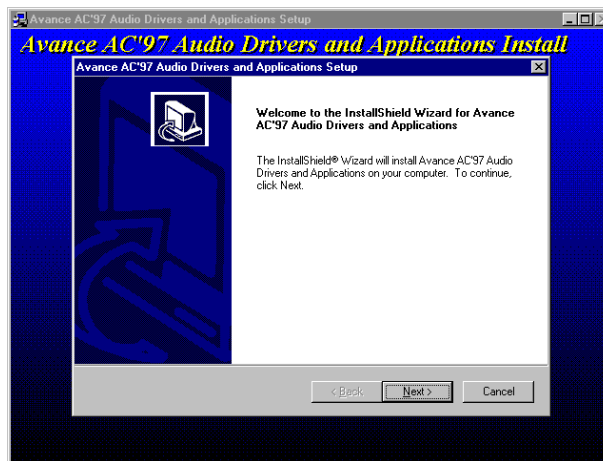


5.4.3 Win NT

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 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 **Avance AC'97 Audio Drivers and Applications Setup** dialog box will appear on 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.

