HS-6251

Socket 370 133MHz FSB
Industrial Single Board Computer

• Half Size • All-in-One • CRT/Panel • 133MHz FSB •
• ATA/33/66/100 • LAN • Audio • PC/104 •
• IrDA • USB • DOC • WDT • H/W Monitor •
• PCI-ISA Bus Industrial Single Board Computer •

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Edition 1.2, August 11, 2005

Table of Contents

Safety Instructions

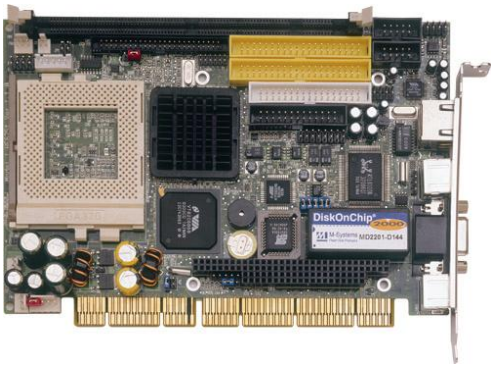
Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

- 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-6251 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-6251 is a VIA VT8606 chipset-based board designed for PCI-ISA Bus Socket 370 Intel® Celeron™ (100MHz FSB/1GHz)/ Coppermine™ (133MHz FSB/1GHz)/Tualatin™ (100MHz FSB/1.3GHz) and VIA C3 (133MHz FSB/1GHz) CPU. The combination of these features makes the HS-6251 an ideal all-in-one industrial single board computer. Additional features include an enhanced I/O with CRT/Panel, LAN, audio, and COM port interface.

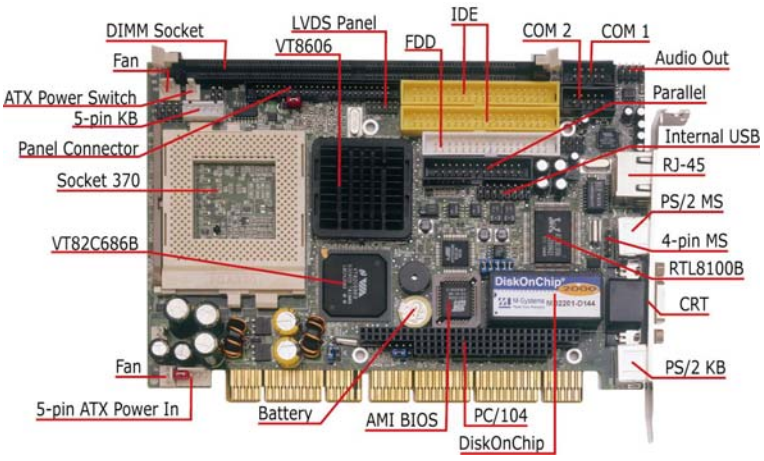
Its onboard ATA/33/66/100 connected to IDE drive interface architecture allows the HS-6251 to support data transfers of 33, 66 or 100MB/sec. for each IDE drive connection. Designed with the VIA VT8606 core logic chipset, the board supports all Celeron™ (100MHz FSB/1GHz)/Coppermine™ (133MHz FSB/1GHz)/Tualatin™ (100MHz FSB/1.3GHz) and VIA C3 (133MHz FSB/1GHz) CPU. The display controller is VIA VT8606 supporting CRT/Panel displays with 1280 x 1024 resolution.

For suitable plug 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 one DIMM socket that can support up to 512MB.

Additional onboard connectors include two advanced USB and IrDA ports providing faster data transmission, a DOS-compatible DiskOnChip™ socket with a maximum capacity of 288MB, and one external RJ-45 connector for 10/100 Base-TX Ethernet use.

To ensure the reliability in an unmanned or standalone system, the Watchdog Timer (WDT) onboard HS-6251 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-6251 comes with the following features:

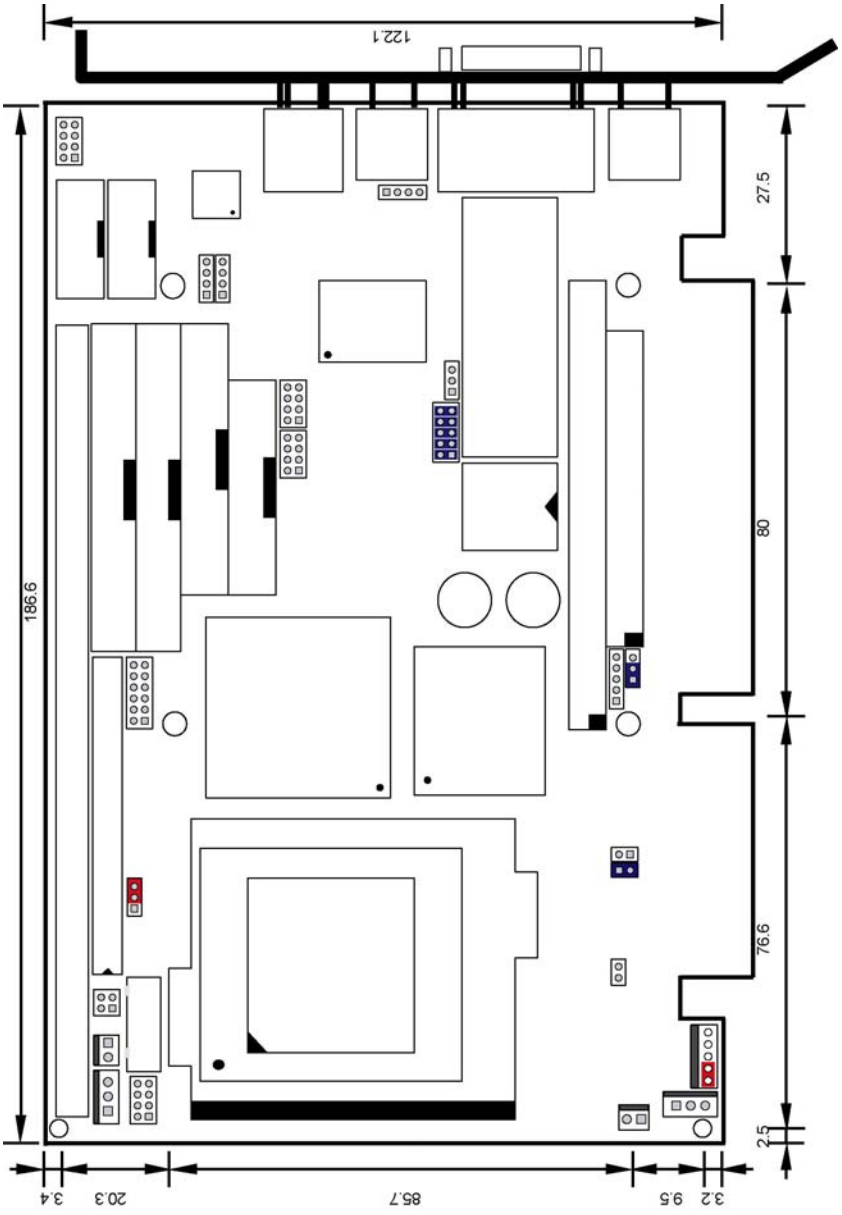
- Socket 370 for Intel® Celeron™ (100MHz FSB/1GHz)/Coppermine™ (133MHz FSB/1GHz)/Tualatin™ (100MHz FSB/1.3GHz) and VIA C3 (133MHz FSB/1GHz) CPU
- Supports 66/100/133MHz FSB
- One DIMM socket with a max. capacity of 512MB
- VIA VT8606 system chipset
- VIA VT82C686B super I/O chipset
- VIA VT8606 CRT/Panel display controller
- RealTek RTL8100B or Intel® 82559 or Intel® 82551 10/100 Based LAN
- AC97 3D audio controller
- Fast PCI ATA/33/66/100 IDE controller
- Two COM, four USB connectors

- PC/104 Bus connector
- DiskOnChip socket supporting memory sizes of up to 288MB
- Supports Hardware Monitor

1.2 Specifications

- **CPU:** Socket 370 for Intel® Celeron™ (100MHz FSB/1GHz)/ Coppermine™(133MHz FSB/1GHz)/Tualatin™ (100MHz FSB/1.3GHz) and VIA C3 (133MHz FSB/1GHz) CPU
- **Bus Interface:** PCI-ISA Bus
- **Memory:** One DIMM socket with a max. capacity of 512MB
- **Chipset:** VIA VT8606
- **I/O Chipset:** VIA VT82C686B
- **VGA:** VIA VT8606 integrated Savage 4 2D/3D/Video accelerator up to 1280 x 1024 resolution
- **Panel Display:** Supports TTL/LVDS Panel interface
- **LAN:** RealTek RTL8100B or Intel® 82559 or Intel® 82551 10/100 Based LAN
- **Audio:** AC97 3D audio controller
- **IDE:** Four IDE disk drives supporting ATA/33/66/100 and with transfer rates of up to 33/66/100MB/sec.
- **Floppy:** Support up to two floppy disk drives
- **Parallel Port:** One enhanced bi-directional parallel port supporting SPP/ECP/EPP
- **Serial Port:** 16C550 UART-compatible RS-232 x 2 serial ports with 16-byte FIFO
- **PC/104:** PC/104 connector for 16-bit ISA Bus
- **IrDA:** One TX/RX IrDA header
- **USB:** Four USB connectors
- **Keyboard:** PS/2 6pin Mini DIN or 5-pin connector
- **Mouse:** PS/2 6pin Mini DIN or 4-pin header
- **DiskOnChip™：** DiskOnChip™ socket supporting memory sizes of up to 288MB
- **BIOS:** AMI PnP Flash BIOS
- **Watchdog Timer:** Sets 1, 2, 10, 20, 110, 220 seconds activity trigger with Reset or NMI
- **CMOS:** Battery backup
- **Maximum Power Consumption:** +5V/7.5A (1GHz CPU), +12V/120mA
- **Operating Temperature:** 0~60°C
- **Hardware Monitor:** VIA VT82C686B
- **Board Size:** 18.6 x 12.2 cm

1.3 Board Dimensions



Chapter 2

Unpacking

2.1 Opening the Delivery Package

The HS-6251 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-6251 delivery package contains the following items:

- HS-6251 Board x 1
- ATA/100 IDE flat cable x 2
- FDD flat cable x 1
- Printer cable with bracket x 1
- Two RS-232 COM Port cable with bracket x 1
- 8-pin USB split type cable with bracket x 1
- MIC/Audio 8-pin cable + 2 phone jacks with bracket x 1
- 5-pin ATX power cable x 1
- Utility CD Disk x 1
- Jumper Bag 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

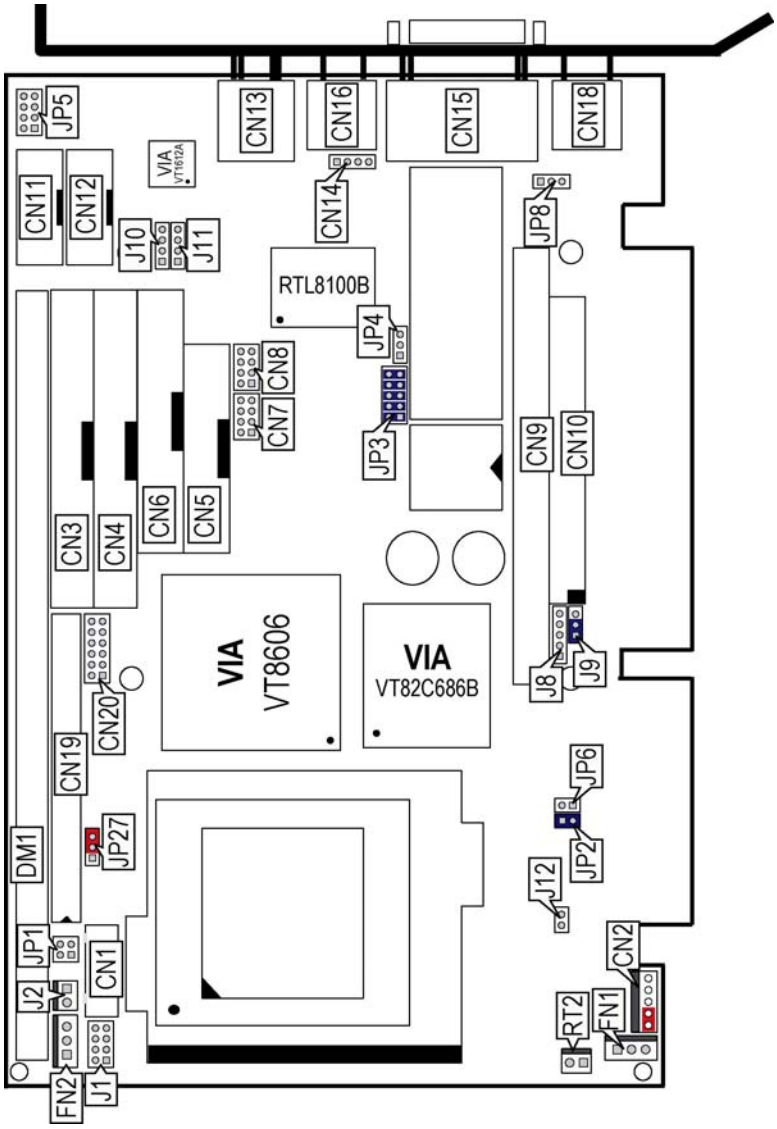
This chapter provides the information on how to install the hardware using the HS-6251. This chapter also contains information related to jumper settings of switch, watchdog timer, and the DiskOnChip™ address selection etc.

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



NOTE: *JP8 only for use Intel 82559, if you want to use Intel 82559, please set JP8 short 1-2.*

3.3 Jumper List

Jumper	Definition	Setting	Page
J9	Clear CMOS: *Normal Operation*	Short 1-2	22
JP1	Bus Clock Select: *133MHz FSB*	Open 1-2, 3-4	12
JP2	CPU Process Select: *0.18*	Short	12
JP3(1-4)	DiskOnChip Address Select: *D000*	Short 1-2, 3-4	13
JP3(5-10)	WDT Period Select: *1 sec.*	Short 5-6, 7-8, 9-10	24
JP4	WDT Active Type Select: *Disabled*	Open	24
JP6	CPU Process Select: *0.18*	Open	12
JP8	Intel 82559 Enabled/Disabled Select: *Enabled*	Short 1-2	20
JP27	Panel Voltage Select: *+3.3V*	Short 2-3	13

3.4 Connector List

Connector	Definition	Page
CN1	5-pin Keyboard Connector	23
CN2	5-pin ATX Power In Connector	22
CN4 / CN3	Primary/Secondary IDE Connector	15
CN5	Parallel Connector	19
CN6	Floppy Connector	17
CN7/CN8	USB Connectors	21
CN9 / CN10	PC/104 Bus 64-pin/40-pin Connector	27
CN11 / CN12	COM1/COM2 Connector (5x2 header)	18
CN13	RJ-45 Connector	20
CN14	4-pin Mouse Connector	24
CN15	15-pin CRT Connector	13
CN16	PS/2 6-pin Mini DIN Mouse Connector	24
CN17	COM1 Connector (DB9)	18
CN18	PS/2 6-pin Mini DIN Keyboard Connector	23
CN19	50-pin Panel Connector	13
CN20	LVDS Connector	13
DM1	168-pin DIMM Socket	12
FN1/FN2	Fan Power In Connectors	22
J1	Front Panel Connector	22
J2	2-pin ATX Power Switch	22
J8	IrDA Connector	21
J10	CD-ROM Analog Input Connector	20

. . . More on next page . . .

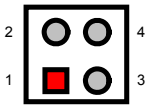
Connector	Definition	Page
J11	Line In Connector	20
JP5	MIC In/Audio Out Connector	20
U9	DiskOnChip Socket	13

3.5 Configuring the CPU

The HS-6251 provides all necessary by jumper setting in using Bus Clock frequency as the system bus clocking with *JP1* and CPU type select with *JP2* and *JP6*.

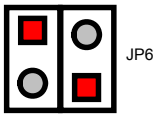
- **JP1: Bus Clock Select**

Bus Clock	PINS 1-2	PINS 3-4
66MHz	Short	Short
100MHz	Open	Short
133MHz (default)	Open	Open



- **JP2, JP6: CPU Process Select**

CPU Process	JP2	JP6
0.13	Short	Open
0.18 (default)	Short	Open
0.25	Open	Short



3.6 System Memory

The HS-6251 provides one DIMM socket. The maximum capacity of the onboard memory is 512MB.

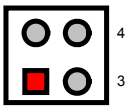
3.7 DiskOnChip™ Address Setting

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

The U9 location onboard the HS-6251 is the DiskOnChip™ module socket. Jumper *JP3 (1-4)* assigns the address setting of the installed module. If you have additional memory devices in the system, please set both at different memory address mapping to avoid the mapping area conflicts.

- **JP3 (1-4): DiskOnChip™ Address Select**

Address	PINS 1-2	PINS 3-4
D000 (default)	Short	Short
D800	Open	Short



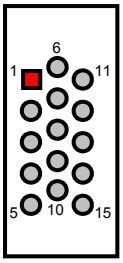
3.8 VGA Controller

The HS-6251 deploys the VIA VT8606 Savage 4 CRT/Panel display controller that supports 2D/3D/Video accelerator with 1280 x 1024 resolution.

NOTE: *The Panel display support requires the use of an additional LCD convert card. Please contact your dealer for more information.*

- **CN15: 15-pin CRT Connector (DB15)**

PIN	Description	PIN	Description
1	Red	2	Green
3	Blue	4	N/C
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	N/C	12	SDATA
13	HSYNC	14	VSYNC
15	SCL		

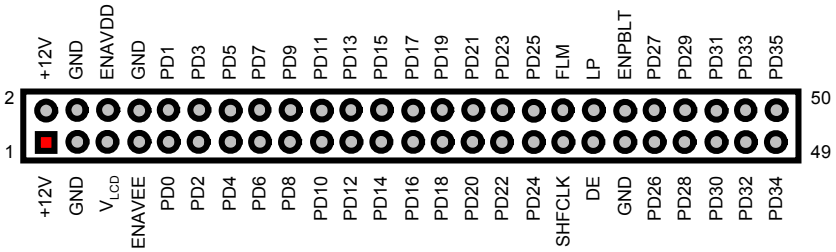


The HS-6251 provides another 50-pin Panel and one 12-pin LVDS connections as following *CN19* and *CN20* pin information.

NOTE: *Please set the proper voltage of your panel using JP27 before proceeding on installing it.*

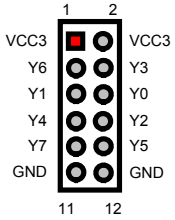
- **CN19: 50-pin Panel Connector**

PIN	Description	PIN	Description
1	+12V	2	+12V
3	GND	4	GND
5	V_{LCD}	6	ENAVDD
7	ENAVEE	8	GND
9	PD0	10	PD1
11	PD2	12	PD3
13	PD4	14	PD5
15	PD6	16	PD7
17	PD8	18	PD9
19	PD10	20	PD11
21	PD12	22	PD13
23	PD14	24	PD15
25	PD16	26	PD17
27	PD18	28	PD19
29	PD20	30	PD21
31	PD22	32	PD23
33	PD24	34	PD25
35	SHFCLK	36	FLM
37	DE	38	LP
39	GND	40	ENPBLT
41	PD26	42	PD27
43	PD28	44	PD29
45	PD30	46	PD31
47	PD32	48	PD33
49	PD34	50	PD35



- **CN20: LVDS Connector**

PIN	Description	PIN	Description
1	VCC3	2	VCC3
3	Y6	4	Y3
5	Y1	6	Y0
7	Y4	8	Y2
9	Y7	10	Y5
11	GND	12	GND



- **JP27: Panel Voltage Select**

PIN	Description
1-2	+5V
2-3 (default)	+3.3V

3.9 PCI E-IDE Drive Connector

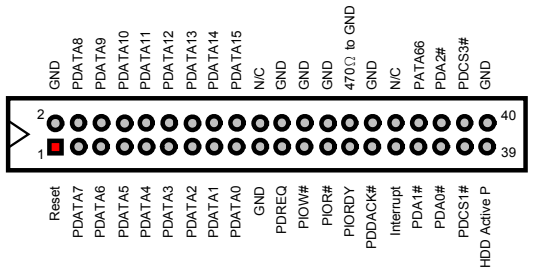
CN4 and *CN3* are standard 40-pin connectors daisy-chain driver connector serves the PCI E-IDE drive provisions onboard the HS-6251. A maximum of four IDE drives can connect to *CN4* and *CN3*.

- **CN4: Primary IDE Connector**

PIN	Description	PIN	Description
1	RESET	2	GND
3	PDATA7	4	PDATA8
5	PDATA6	6	PDATA9
7	PDATA5	8	PDATA10
9	PDATA4	10	PDATA11
11	PDATA3	12	PDATA12
13	PDATA2	14	PDATA13
15	PDATA1	16	PDATA14
17	PDATA0	18	PDATA15
19	GND	20	N/C
21	PDREQ	22	GND
23	PIOW#	24	GND
25	PIOR#	26	GND
27	PIORDY	28	470Ω to GND
29	PPDACK#	30	GND
31	Interrupt	32	N/C
33	PDA1#	34	PATA66

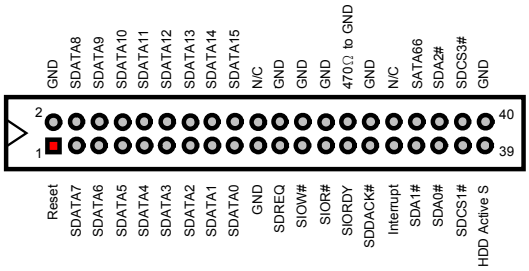
. . . More on next page . . .

PIN	Description	PIN	Description
35	PDA0#	36	PDA2#
37	PDCS1#	38	RPCS3#
39	HDD Active P	40	GND



- **CN3: Secondary IDE Connector**

PIN	Description	PIN	Description
1	RESET	2	GND
3	SDATA7	4	SDATA8
5	SDATA6	6	SDATA9
7	SDATA5	8	SDATA10
9	SDATA4	10	SDATA11
11	SDATA3	12	SDATA12
13	SDATA2	14	SDATA13
15	SDATA1	16	SDATA14
17	SDATA0	18	SDATA15
19	GND	20	N/C
21	SDREQ	22	GND
23	SIOW#	24	GND
25	SIOR#	26	GND
27	SIORDY	28	470Ω to GND
29	SDDACK#	30	GND
31	Interrupt	32	N/C
33	SDA1#	34	SATA66
35	SDA0#	36	SDA2#
37	SDCS1#	38	SDCS3#
39	HDD Active S	40	GND

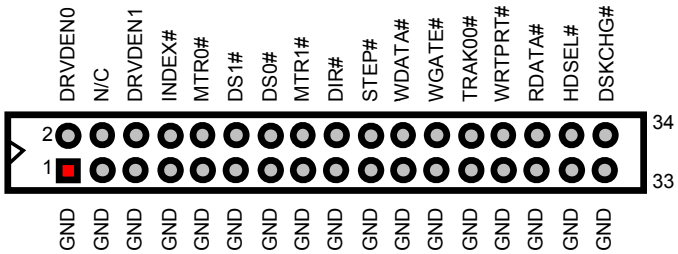


3.10 Floppy Disk Drive Connector

The HS-6251 uses a standard 34-pin header connector, *CN6*, for floppy disk drive connection. A total of two FDD drives may be connected to *CN6* at any given time.

- **CN6: Floppy Connector**

PIN	Description	PIN	Description
1	GND	2	DRVDEN0
3	GND	4	N/C
5	GND	6	DRVDEN1
7	GND	8	INDEX#
9	GND	10	MTR0#
11	GND	12	DS1#
13	GND	14	DS0#
15	GND	16	MTR1#
17	GND	18	DIR#
19	GND	20	STEP#
21	GND	22	WDATA#
23	GND	24	WGATE#
25	GND	26	TRAK00#
27	GND	28	WRTPRT#
29	GND	30	RDATA#
31	GND	32	HDSEL#
33	GND	34	DSKCHG#

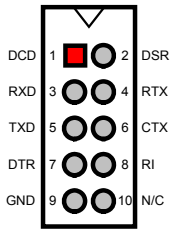


3.11 Serial Port Connectors

The HS-6251 offers two NS16C550 compatible UARTs with Read/Receive 16byte FIFO serial ports with two internal 5x2 connectors and one DB9.

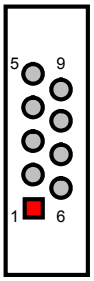
- **CN11, CN12: COM1/COM2 (5x2 Header)**

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



- **CN17: COM1 (DB9 only for HS-6251P)**

PIN	Description
1	DCD1
2	RXD1
3	TXD1
4	DTR1
5	GND
6	DSR1
7	RTX1
8	CTX1
9	RI1

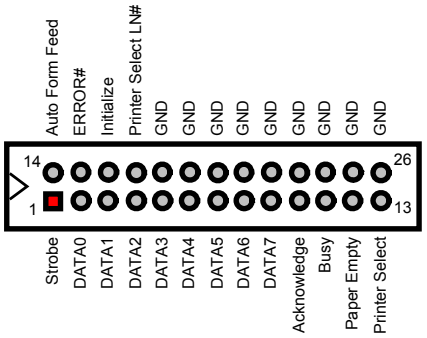


3.12 Parallel Connector

CN5 is a standard 26-pin flat cable connector deigned to accommodate parallel port connection onboard the HS-6251.

- **CN5: Parallel Connector**

PIN	Description	PIN	Description
1	Strobe	14	Auto Form Feed
2	DATA0	15	ERROR#
3	DATA1	16	Initialize
4	DATA2	17	Printer Select LN#
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	Acknowledge	23	GND
11	Busy	24	GND
12	Paper Empty	25	GND
13	Printer Select	26	GND

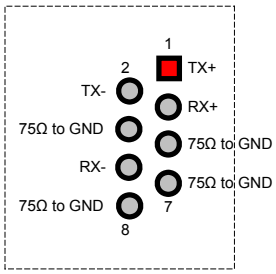


3.13 Ethernet Connector

The HS-6251 provides one external RJ-45 10/100 Base-TX LAN interface connector. Please refer to the following detail of pin information.

- **CN13: RJ-45 Connector**

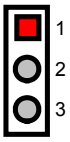
PIN	Description
1	TX+
2	TX-
3	RX+
4	75Ω to GND
5	75Ω to GND
6	RX-
7	75Ω to GND
8	75Ω to GND



If you want to use Intel 82559, please set *JP8* to short 1-2, to enable the chipset work.

- **JP8: Intel 82559 Enabled/Disabled Select**

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

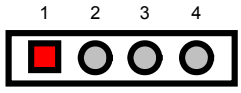


3.14 Audio Connector

The HS-6251 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.

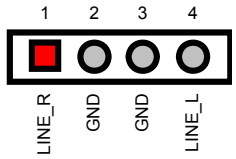
- **J10: CD-ROM Analog Input Connector**

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



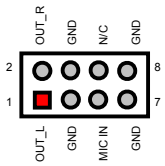
- **J11: Line In Connector**

PIN	Description
1	LINE_R
2	GND
3	GND
4	LINE_L



- **JP5: 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

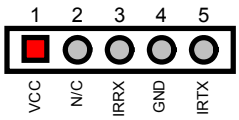


3.15 IrDA Connector

J8 is a 5-pin internal IR communication connector for connection of an IrDA device.

- **J8: IrDA Connector**

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

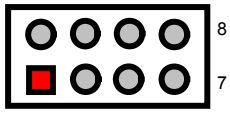


3.16 USB Connector

The HS-6251 provides two 8-pin connectors for USB0 & USB1 ports at locations *CN7* and *CN8*.

- **CN7, CN8: USB Connectors**

PIN	Description	PIN	Description
1	VCC	2	VCC
3	BD0-/BD2-	4	BD1-/BD3-
5	BD0+/BD2+	6	BD1+/BD3+
7	GND	8	GND

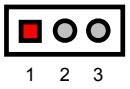


3.17 CMOS Data Clear

The HS-6251 provides a setting for the selection of the Clear CMOS by *J9* setting as following:

- **J9: Clear CMOS**

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



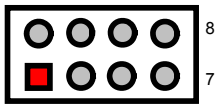
IMPORTANT: *Before you turn on the power of your system, please set J9 to Short 1-2 for normal operation.*

3.18 Front Panel Connector

The front panel connector, *J1*, provides a multi port connection to various functions/indicators like reset button, EXT SMI switch, speaker, and HDD LED.

- **J1: Front Panel Connector**

PIN	Description	PIN	Description
1	RST_SW	2	GND
3	EXT SMI	4	GND
5	SPK	6	VCC
7	HDD LED	8	With 330Ω pull VCC

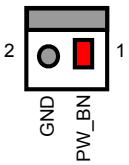


3.19 Power and Fan Connectors

HS-6251 provides a 5-pin ATX Power Connector at *CN2,* and two FAN connectors at locations *FN1* and *FN2*.

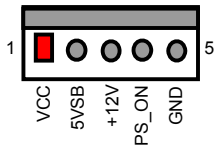
- **J2: 2-pin ATX Power Switch**

PIN	Description
1	PW_BN
2	GND



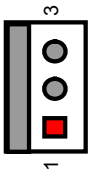
- **CN2: 5-pin ATX Power In Connector**

PIN	Description
1	VCC
2	5VSB
3	+12V
4	PS_ON
5	GND



- **FN1, FN2: FAN Power In Connector**

PIN	Description
1	FAN Speed
2	+12V
3	GND

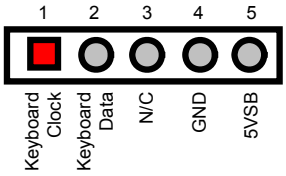


3.20 Keyboard Connectors

The HS-6251 offers two possibilities for keyboard connections. The connections are via *CN18* for an external PS/2 type keyboard or via *CN1* for an internal 5-pin cable converter to an AT keyboard.

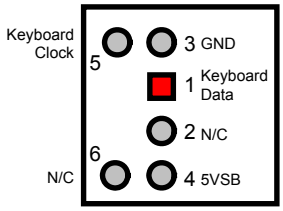
- **CN1: 5-pin Keyboard Connector**

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



- **CN18: PS/2 6-pin Mini DIN Keyboard Connector**

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

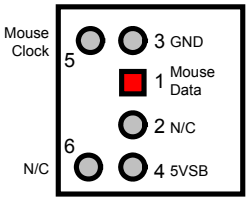


3.21 PS/2 Mouse Connectors

The HS-6251 provides an external PS/2 mouse connector at *CN16* and an additional 4-pin connector at *CN14* for an AT mouse.

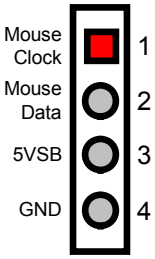
- **CN16: PS/2 6-pin Mini Din Mouse Connector**

PIN	Description
1	Mouse Data
2	N/C
3	GND
4	5VSB
5	Mouse Clock
6	N/C



- **CN14: 4-pin Mouse Connector**

PIN	Description
1	Mouse Clock
2	Mouse Data
3	5VSB
4	GND



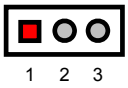
3.22 Watchdog Timer

There are three access cycles of Watch-Dog Timer as Enable, Refresh and Disable. The Enable cycle proceeds via READ PORT 443H whereas the Disable cycle proceeds via READ PORT 045H. A continued Enable cycle after a first Enable cycle means Refresh.

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 or a NMI cycle to the CPU transpires when such error happens. Jumper *JP4* is used to select the function of Watchdog Timer.

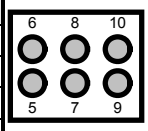
- **JP4: WDT Active Type Select**

JP4	Description
Short 1-2	Active NMI
Short 2-3	System Reset
Open (default)	Disabled Watchdog Timer



- **JP3 (5-10): WDT Period Select**

Period	PINS 5-6	PINS 7-8	PINS 9-10
1 sec (default)	Short	Short	Short
2 sec	Open	Short	Short
10 sec	Short	Open	Short
20 sec	Open	Open	Short
110 sec	Short	Short	Open
220 sec	Open	Short	Open



NOTE: *If you want to use WDT function, please Disabled ACPI in BIOS options.*

The Watchdog Timer is disabled after the system Power-On. It can be enabled via an Enable cycle and reading the control port (443H), or via a Refresh cycle and reading the control port (443H), or via a Disable cycle and reading the disable control port (045H).

After an Enable cycle of WDT, user must immediately execute a Refresh cycle to WDT before its period setting comes to an end every 1, 2, 10, 20, 110 or 220 seconds. If the Refresh cycle does not activate before WDT period cycle, the onboard WDT architecture will issue a Reset or NMI cycle to the system. The Watchdog Timer controls three I/O ports.

443H	I/O Read	The Enable cycle
443H	I/O Read	The Refresh cycle
045H	I/O Read	The Disable cycle

The following sample program shows how to Enable, Disable and Refresh the Watchdog Timer：

```
WDT_EN_RF       EQU     0433H
WDT_DIS         EQU     0045H

WT_Enable       PUSH    AX              ; keep AX DX
                PUSH    DX
                MOV     DX,WDT_EN_RF    ; enable the WDT
                IN      AL,DX
                POP     DX              ; get back AX, DX
                POP     AX
                RET

WT_Refresh      PUSH    AX              ; keep AX, DX
                PUSH    DX
                MOV     DX,WDT_ET_R     ; refresh the WDT
                IN      AL,DX
                POP     DX              ; get back AX, DX
                POP     AX
                RET

WT_DISABLE      PUSH    AX
                PUSH    DX
                MOV     DX,WDT_DIS      ; disable the WDT
                IN      AL,DX
                POP     DX              ; get back AX, DX
                POP     AX
                RET
```

3.23 PC/104 Connectors

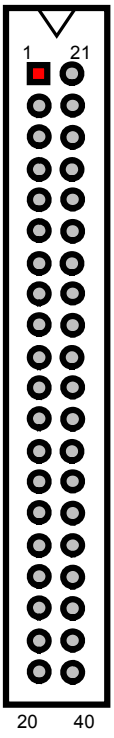
The PC/104 expansion bus offers provisions to connect all types of PC/104 modules. With the PC/104 bus being known as the new generation of industrial embedded 16bit PC standard bus, thousands of PC/104 modules from multiple venders can be easily installed onboard. The detailed pin assignment of the PC/104 expansion bus connectors *CN9* and *CN10* 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.*

- **CN10: PC/104 Bus 40-pin Connector**

Pin	Description	Pin	Description
1	GND	21	GND
2	MEMCS16#	22	SBHE#
3	IOSC16#	23	SA23
4	IRQ10	24	SA22
5	IRQ11	25	SA21
6	IRQ12	26	SA20
7	IRQ15	27	SA19
8	IRQ14	28	SA18
9	DACK0#	29	SA17
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	VCC	37	SD13
18	MASTER#	38	SD14
19	GND	39	SD15
20	GND	40	N/C

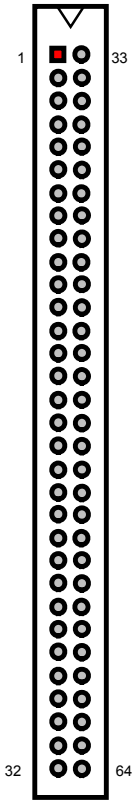
Connector diagram rotated 90 degrees clockwise from original position



CN9: PC/104 Bus 64-pin Connector

Pin	Description	Pin	Description
1	IOCHECK#	33	GND
2	SD7	34	RESETDRV
3	SD6	35	VCC
4	SD5	36	IRQ9
5	SD4	37	N/C
6	SD3	38	DRQ2
7	SD2	39	-12V
8	SD1	40	OWS#
9	SD0	41	+12V
10	IOCHRDY	42	GND
11	AEN	43	SMEMW#
12	SA19	44	SMEMR#
13	SA18	45	IOW#
14	SA17	46	IOR#
15	SA16	47	DACK3#
16	SA15	48	DRQ3#
17	SA14	49	DACK1#
18	SA13	50	DRQ1#
19	SA12	51	REFRESH#
20	SA11	52	SYSCLK
21	SA10	53	IRQ7
22	SA9	54	SLPBTN
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-6251 uses AMI BIOS for the system configuration. The AMI BIOS setup program is designed to provide the maximum flexibility in configuring the system by offering various options that could be selected for end-user requirements. This chapter is written to assist you in the proper usage of these features.

4.1 Starting Setup

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

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

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

Press DEL to enter SETUP.

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

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

4.2 Using Setup

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

↑	Move to previous item
↓	Move to next item
←	Move to the item in the left hand
→	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	Reserved
(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 x.xx **(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 Auto Configuration with Fail Safe Settings Save Settings and Exit Exit Without Saving
Standard CMOS setup for changing time, date, hard disk type, etc. ESC: Exit ↑↓: Sel F2/F3: Color F10: Save & Exit

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

4.4 Standard CMOS Setup

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

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

Date (mm/dd/yyyy) : Thu Jan 03, 2002
Time (hh/mm/ss) : 19:04:12

Base Memory : 0 KB
Extd Memory : 0 MB

Floppy Drive A: 1.44MB, 3.5"
Floppy Drive B: Not Installed

	Type	Size	Cyln	Head	WPcom	Sec	LBA Mode	Blk Mode	PIO Mode	32Bit Mode
Pri Master	: Auto									
Pri Slave	: Auto									
Sec Master	: Auto									
Sec Slave	: Auto									

Boot Sector Virus Protection : Disabled

Month: Jan - Dec
Day: 01 - 30
Year: 1980 - 2099

ESC: Exit ↑↓: Sel
PgUp/PgDn: Modify
F2/F3: Color

4.5 Advanced CMOS Setup

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

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

Quick Boot	Enabled	▲	Available Options:
Pri Master ARMD Emulated as	Auto		▸ Disabled
Pri Slave ARMD Emulated as	Auto		Enabled
Sec Master ARMD Emulated as	Auto		
Sec Slave ARMD Emulated as	Auto		
USB ARMD Emulated as	Auto		
1st Boot Device	Floppy		
2nd Boot Device	IDE-0		
3rd Boot Device	CD/DVD		
Try Other Boot Devices	Yes		
S.M.A.R.T. for Hard Disks	Disabled		
BootUp Num-Lock	On		
Floppy Drive Swap	Disabled		
Floppy Drive Seek	Disabled		
PS/2 Mouse Support	Enabled		
Primary Display	VGA/EGA		
Password Check	Setup		
Boot To OS/2	No		
CPU Microcode Updation	Enabled		
CPU Serial Number	Enabled		
L1 Cache	Enabled		
L2 Cache	Enabled		
System BIOS Cacheable	Enabled		
C000,32k Shadow	Cache		
C800,16k Shadow	Disabled		
CC00,16k Shadow	Disabled		
D000,16k Shadow	Disabled		
D400,16k Shadow	Disabled		ESC:Exit ↑↓:Sel
D800,16k Shadow	Disabled		PgUp/PgDn: Modify
DC00,16k Shadow	Disabled	▼	F2/F3:Color

4.6 Advanced Chipset Setup

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

AMIBIOS SETUP – ADVANCED CHIPSET SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
******** DRAM Timing ********		Available Options:
Configure SDRAM Timing by SPD	Disabled	▶ Disabled
DRAM Frequency	100MHz	Enabled
SDRAM CAS# Latency	3	
DRAM Bank Interleave	Enabled	
Memory Hole	Disabled	
AGP Mode	4x	
AGP Fast Write	Disabled	
AGP Aperture Size	64MB	
AGP Master 1 W/S Write	Disabled	
AGP Master 1 W/S Read	Disabled	
Search for MDA Resources	Yes	
PCI Delay Transaction	Enabled	
ISA Bus Clock	PCI CLK/4	
USB Controller	All USB Port	
USB Device Legacy Support	All Device	ESC:Exit ↑↓:Sel
Port 64/60 Emulation	Disabled	PgUp/PgDn: Modify
ATX Power Supply	Disabled	F2/F3:Color

4.7 Power Management Setup

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

AMIBIOS SETUP – POWER MANAGEMENT SETUP
(C)2001 American Megatrends, Inc. All Rights Reserved

ACPI Aware O/S	No	▲
ACPI Standby State	S1/POS	
USB Device Wakeup From S3-S5	Disabled	
Re-Call VGA BIOS at S3 Resuming	Enabled	
Power Management / APM	Enabled	
Video Power Down Mode	Disabled	
Hard Disk Power Down Mode	Disabled	
Standby Time Out (Minute)	Disabled	
Suspend Time Out (Minute)	Disabled	
Throttle Slow Clock Ratio	50%~56.25%	
Display Activity	Ignore	
IRQ3	Monitor	
IRQ4	Monitor	
IRQ5	Ignore	
IRQ7	Monitor	
IRQ9	Ignore	
IRQ10	Ignore	
IRQ11	Ignore	
IRQ12	Ignore	
IRQ13	Ignore	
IRQ14	Monitor	
IRQ15	Ignore	
System Thermal	Disabled	
Thermal Active Temperature	65°C / 149°F	
Thermal Slow Clock Ratio	50%~56.25%	
Power Button Function	On / Off	
Restore on AC / Power Loss	Last State	
Resume On Ring	Disabled	
Resume On LAN	Disabled	
Resume On PME#	Disabled	
Resume On KBC	Disabled	
Wake-Up Key	N/A	
Wake-Up Password	N/A	
Resume On PS/2 Mouse	Disabled	
Resume On RTC Alarm	Disabled	
RTC Alarm Date	15	
RTC Alarm Hour	12	
RTC Alarm Minute	30	
RTC Alarm Second	30	▼

Available Options:
▸ No
Yes

ESC:Exit ↑↓:Sel
PgUp/PgDn: Modify
F2/F3:Color

4.8 PCI / Plug and Play Setup

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

AMIBIOS SETUP – PCI / PLUG AND PLAY SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
Plug and Play Aware O/S	No	Available Options:
Clear NVRAM	No	▸ No
OnChip VGA Frame Buffer Size	8MB	
PCI Latency Timer (PCI Clocks)	32	Yes
Primary Graphics Adapter	PCI	
Boot Screen Select	Both CRT & LCD	
LCD Panel Type	0	
DMA Channel 0	PnP	
PCI IDE Bus Master	Disabled	
OffBoard PCI IDE Card	Auto	
Primary IRQ	Disabled	
Secondary IRQ	Disabled	
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	F2/F3:Color

4.9 Peripheral Setup

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

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

AMIBIOS SETUP – PERIPHERAL SETUP **(C)2001 American Megatrends, Inc. All Rights Reserved**		
OnBoard FDC	Enabled	Available Options:
OnBoard Serial Port 1	3F8/COM1	▸ Disabled
OnBoard Serial Port 2	2F8/COM2	Primary
Serial Port2 Mode	Normal	Secondary
Duplex Mode	N/A	Both
OnBoard Prarllel Port	378	
Parallel Port Mode	ECP	
EPP Version	N/A	
Parallel Port DMA Channel	3	
Parallel Port IRQ	IRQ7	
OnBoard IDE	Both	
OnBoard AC'97 Audio	Enabled	
SoundBlaster	Disabled	
SB I/O Base Address	220h-22Fh	
SB IRQ Select	5FT	
SB DMA Select	1	
OnBoard Legacy Audio	Enabled	
MPU-401	Disabled	ESC:Exit ↑↓:Sel
MPU-401 I/O Address	300h-303h	PgUp/PgDn: Modify
		F2/F3:Color

4.10 Hardware Monitor Setup

AMIBIOS SETUP – HARDWARE MONITOR SETUP (C)2001 American Megatrends, Inc. All Rights Reserved	
*** System Hardware Monitor *** TSENS1 Temperature CPU Fan Speed Vcore + 2.500V +3.300V +5.000V +12.000V	Available Options: ▶ Disabled Enabled Reset ESC:Exit ↑↓:Sel PgUp/PgDn: Modify F2/F3:Color

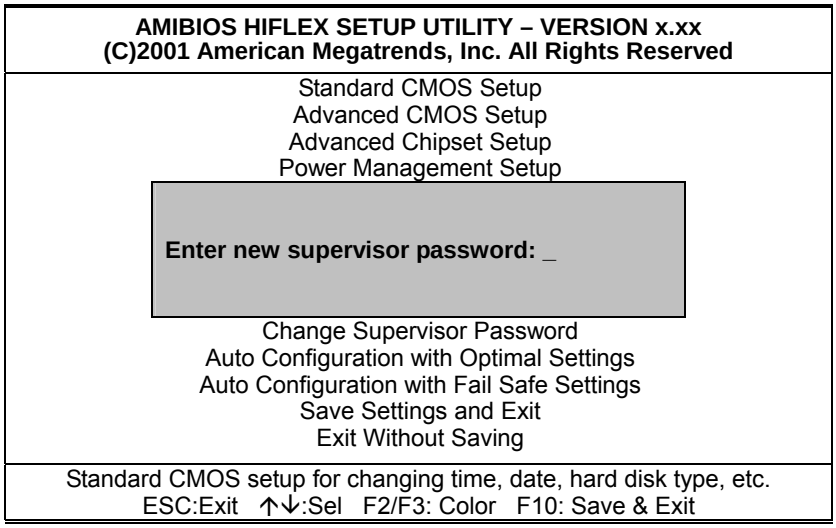
4.11 Auto-Detect Hard Disks

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

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

AMIBIOS HIFLEX SETUP UTILITY – VERSION x.xx **(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 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

4.12 Change Supervisor/User Password



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

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

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

ENTER PASSWORD:

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

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

PASSWORD DISABLED.

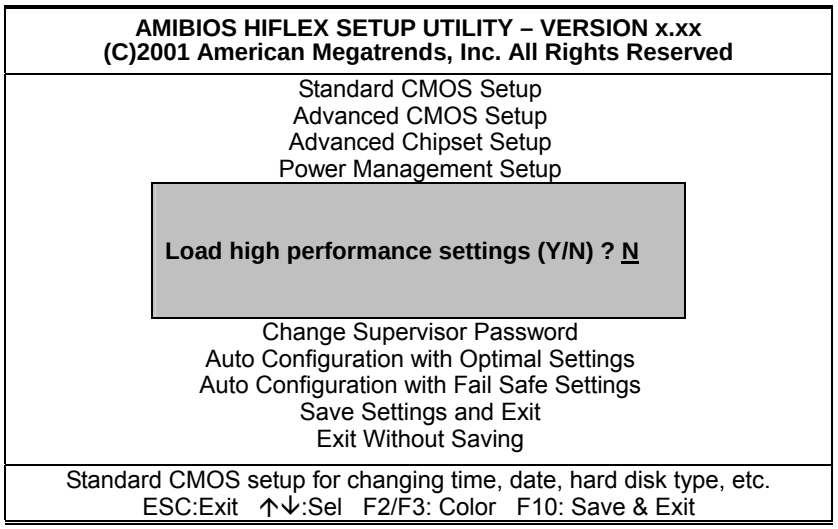
When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

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

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

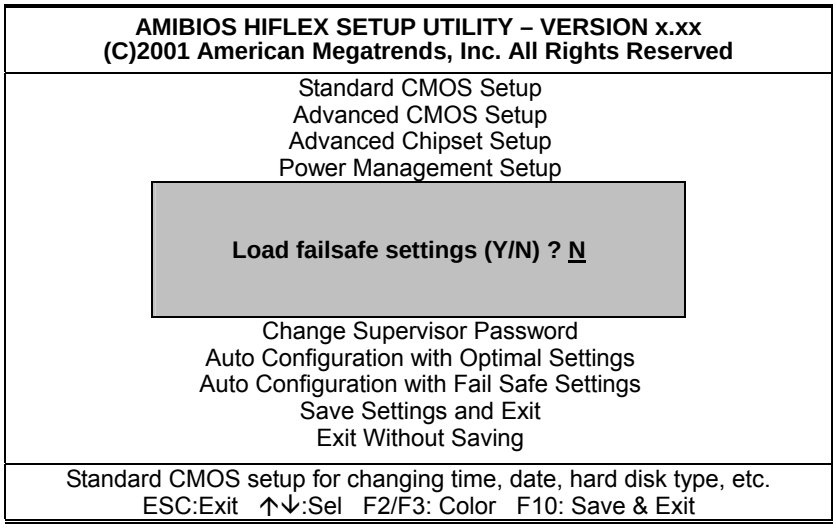
4.13 Auto Configuration with Optimal Settings

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



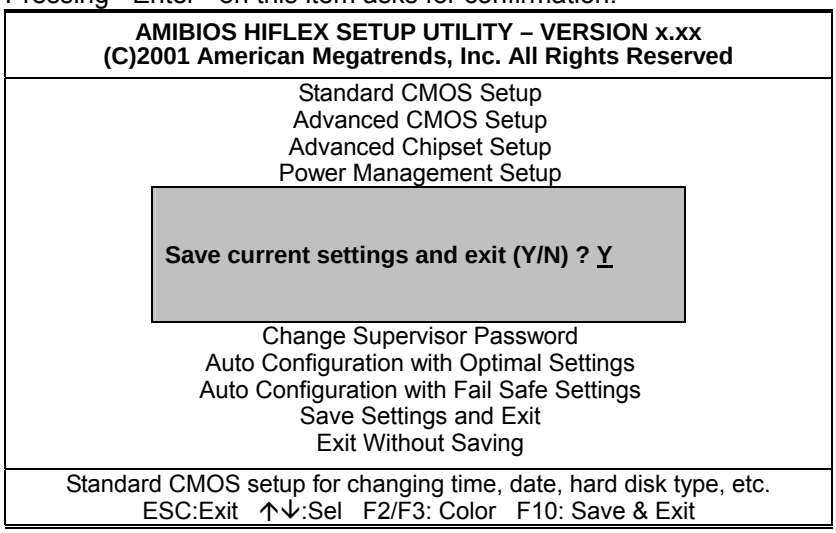
4.14 Auto Configuration with Fail Safe Settings

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



4.15 Save Settings and Exit

Pressing <Enter> on this item asks for confirmation:



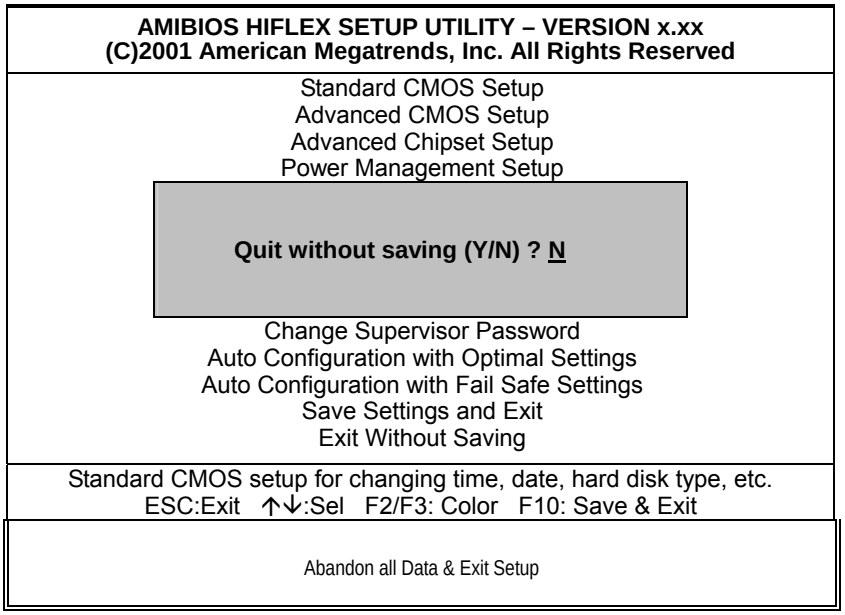
Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted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



Chapter 5

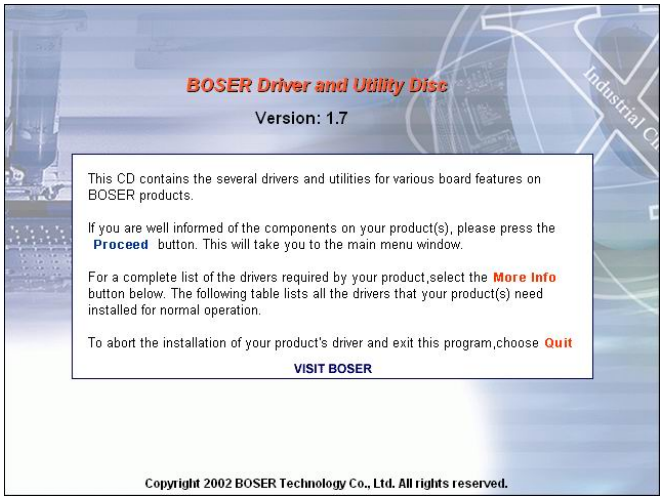
Software Utilities

This chapter contains the detailed information of IDE, VGA, Audio and LAN driver installation procedures.

5.1 VIA 4 in 1 Driver

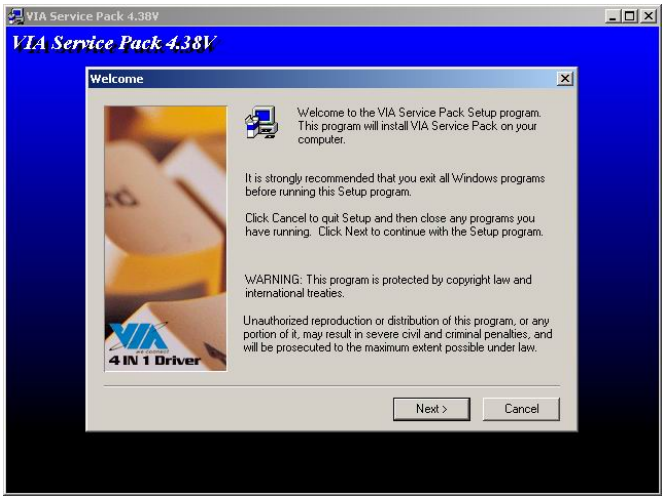
The utility disk that came with the delivery package contains an auto-run program that invokes the installation programs for the VIA 4 in 1 driver. The following describes the installation procedures of each driver.

1. Insert Utility CD Disk to your CD ROM. The main menu will pop up as shown below.

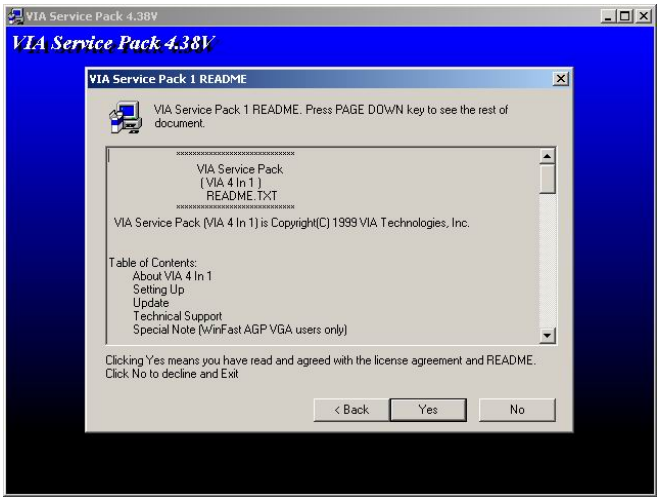


2. Press “VIA 4 IN 1” and to go Setup.

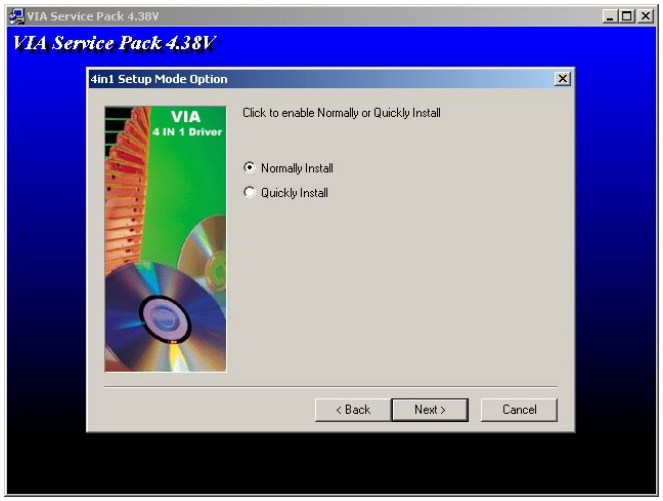
3. Once the Welcome screen appears on the screen, make sure to close any applications running and then click on the Next button.



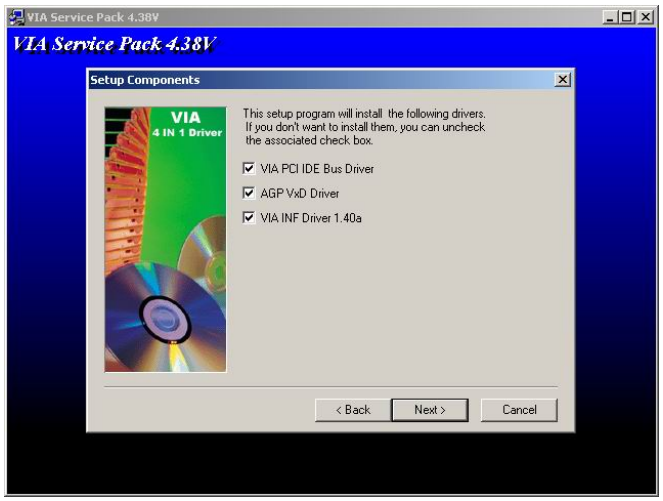
4. When the Readme window pops on the screen, you may read the whole document including the license agreement or just press Yes to skip through and continue installation.



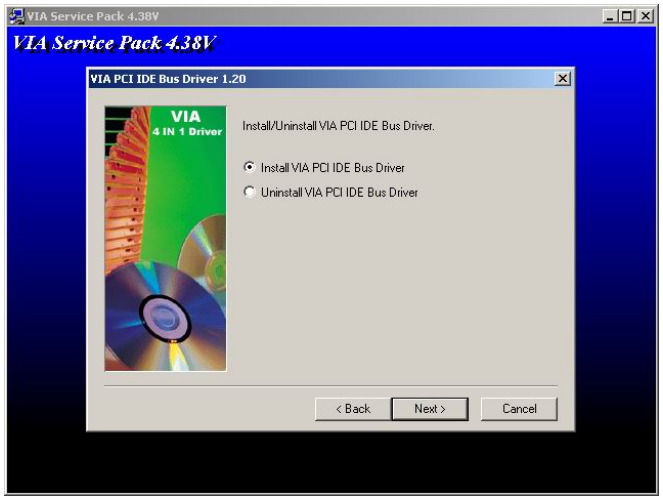
5. The 4 in 1 Setup dialog is now displayed. Select on Normally Install and then click on Next.



6. The next window lists all components detected in your system and asks you to select the ones requiring drivers. Tick on all items then proceed by clicking on the Next button below the screen.

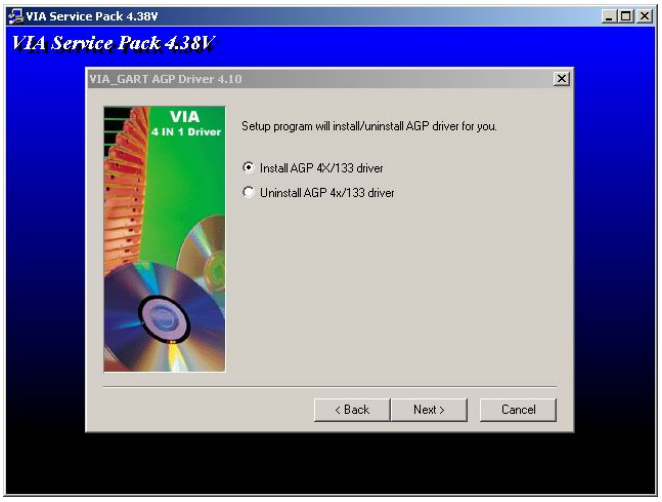


7. The program starts to install the ATAPI driver when you click the Next button on the screen below.

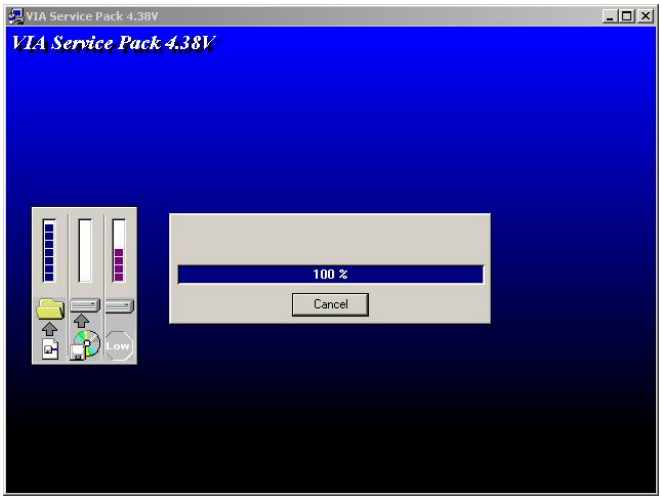


8. When the ATAPI driver is completely installed. The utility then displays your DMA mode status and allows you to enable it. Tick on the box and press on the Next button to continue.

9. The following screen then gives you the choice of installing the AGP driver in standard o turbo mode. Select on the Standard Mode and then click on Next to proceed.



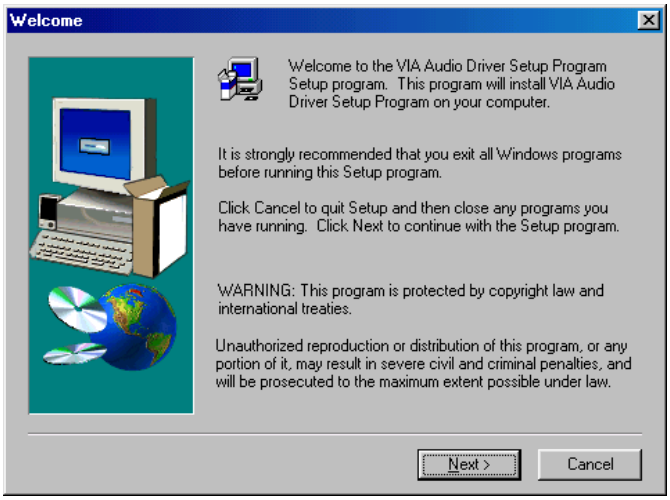
10. Installation of the AGP driver is now complete. Once the screen below appears, select on restarting your computer to activate all drivers/settings completed.



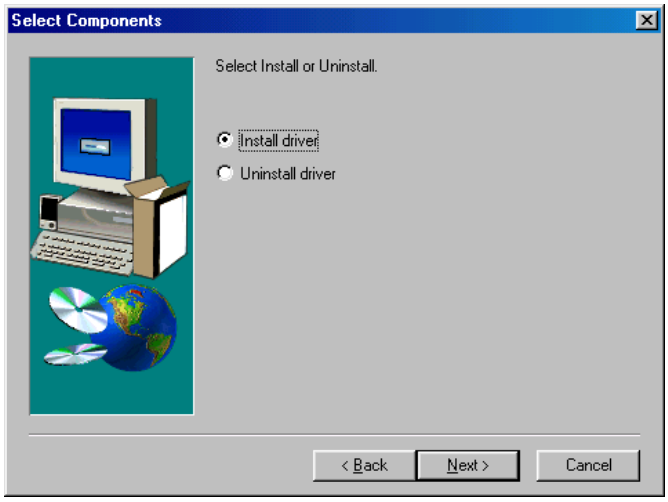
5.2 Audio Driver Installation

1. With the Utility CD Disk still in your CD ROM drive, open the File Manager and then select the CD-ROM drive. As soon as the system reads the disk, the VGA Menu screen below will appear on your display. Click on VIA_AC97 from the main menu.

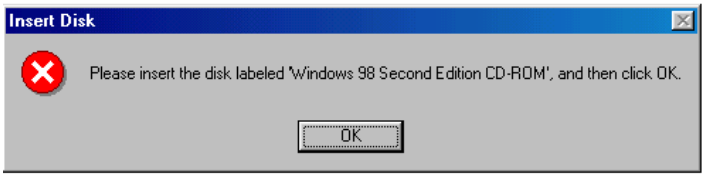
2. Once the Welcome screen appears on the screen, make sure to close applications that are running and then click the Next button.



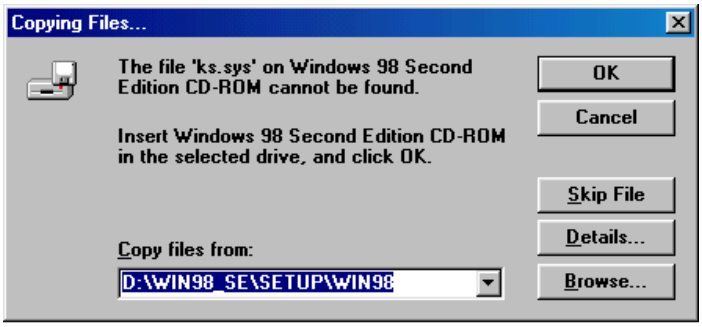
3. The Select Components dialog box is now displayed. Select on Install driver and then click on Next.



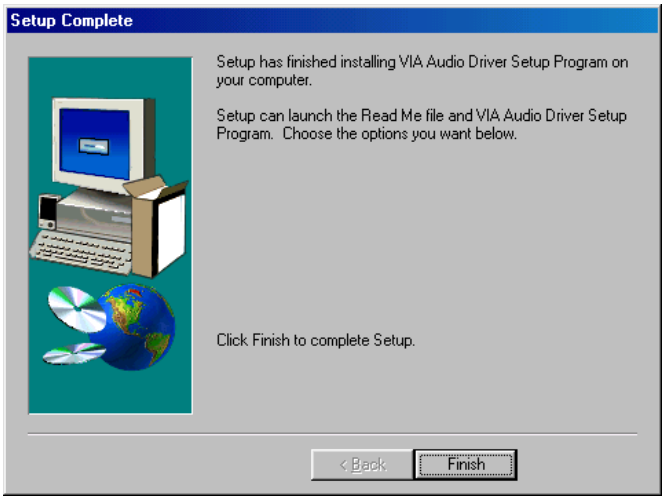
4. The program will now require the Windows installation disk for proper hardware installation. Insert the CD and then click on Next.



5. When the display below appears on your screen, Setup is already installing and copying the related files onto your hard drive. Click on the Next button to proceed.



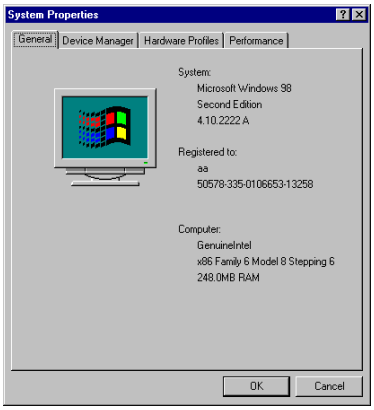
6. After the audio driver installation finishes, select the Finish button to complete the installation process.



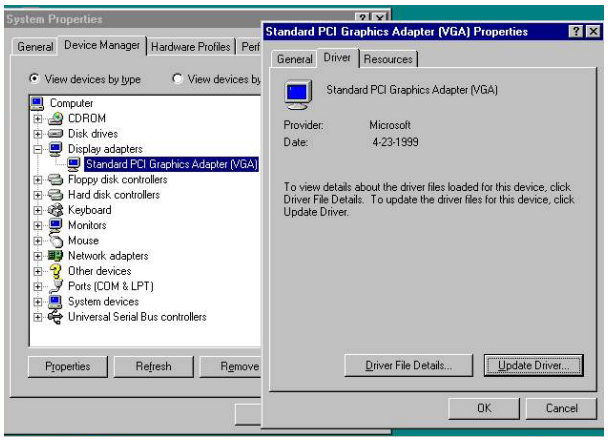
5.3 VGA Driver Installation

5.3.1 WIN98

1. With the Utility CD Disk still in your CD ROM drive, right click on My Computer icon from the Windows menu. Select on System Properties and then proceed to the Device Manager from the main menu.



2. Select on Display Adapters from the list of devices then double-click on Standard PCI Graphics Adapter (VGA). The Standard PCI Graphics Adapter (VGA) Properties screen then appears, allowing you to re-install the driver. Select Driver from the main menu to proceed.



3. The window then displays the current status of your VGA driver. Press on Update Driver button to continue. The program will then launch the Update Device Driver Wizard window that will install your device driver. Click on the Next button to proceed to the next step.

4. When the succeeding window asks you what you wish Windows to do, tick on the “Search for a better driver….” Click on the Next button to proceed.

5. The Update Device Driver Wizard will then ask you to specify, by ticking, the path of the new driver. Tick on the open boxes where you require the program to search for the device driver then click on the Browse button to manually specify the path.

6. Press on the OK button as soon as you have located the path of your driver.
7. Once the program returns to the Add New Hardware Wizard screen, your specified location will appear. Press on the Next button to continue.

8. Once the program detects the device driver (*.inf) file from your specified location, it will automatically copy the files into your hard drive.

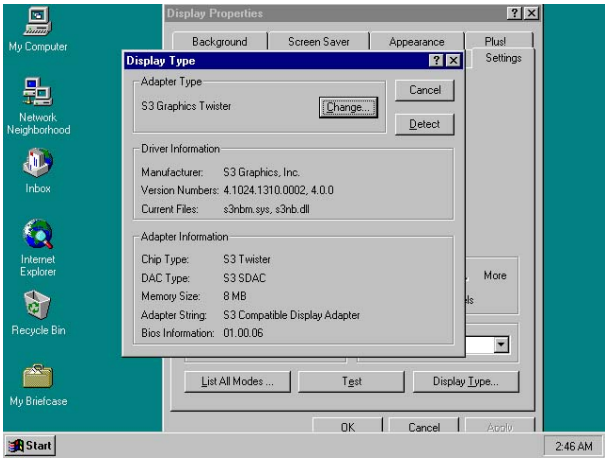
9. When copying of driver files finishes, the program will then ask you to insert your Windows.

10. The program then copies the necessary files from your Windows installation disk to complete the driver setup process. Once the driver is completely installed, the following message appears on your display. Click on the Finish button to proceed.

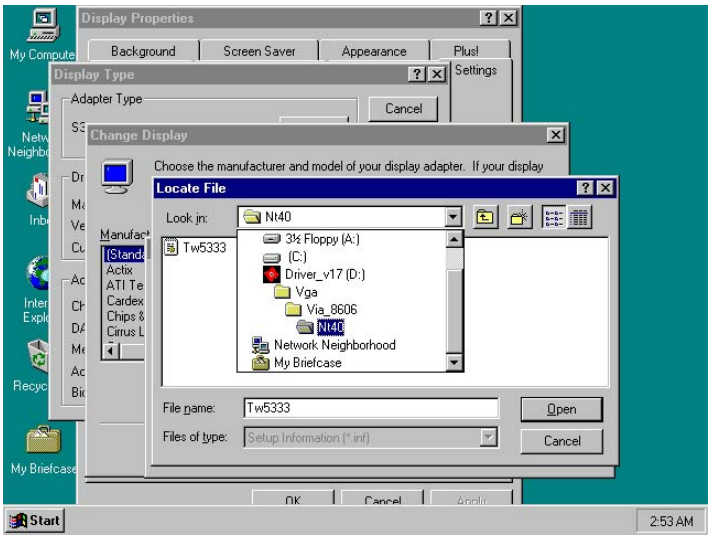
11. Restart your computer to make the new system settings take effect. Click on the Yes button when the screen below appears and your VGA Driver for Win98 are now completely installed.

5.3.2 WIN NT

1. Click the **Start** button on the lower left hand corner of your screen, then select **Setting**. Choose **Control Panel** and double-click on the **Display** icon to launch its **Display Properties** window. Click on the **Settings** tab, and then choose **Display Type**. In the **Change Display Type** window, click on **Have Disk**.

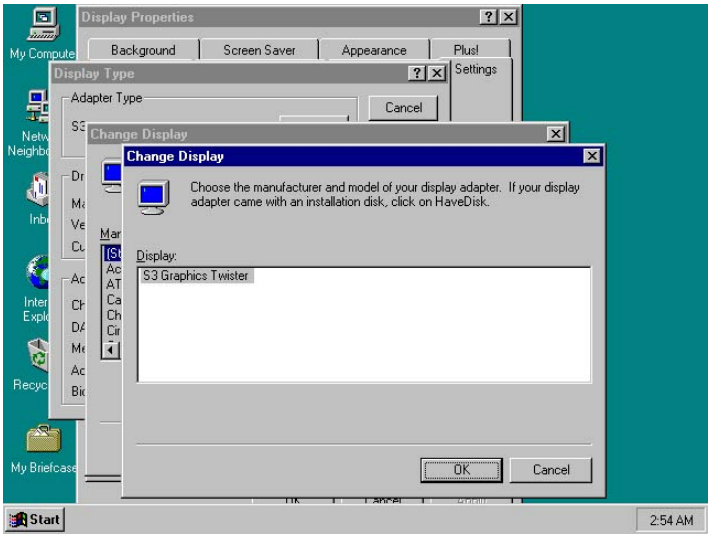


2. Specify the path of the new driver and then press on **Enter**. (If in driver D:, type d:\Vga/Via_8606/Nt40)

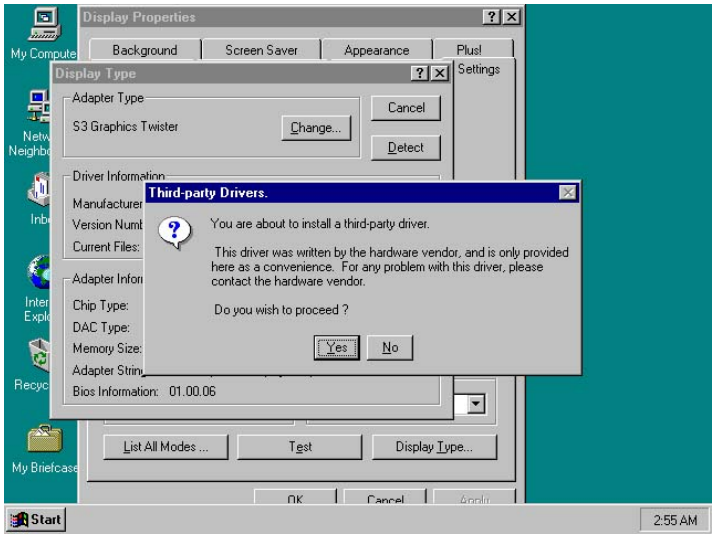


3. Select

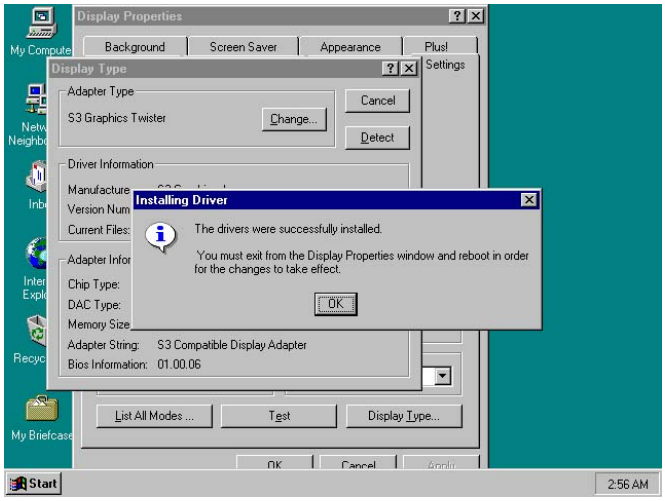
S3 Graphics Twister

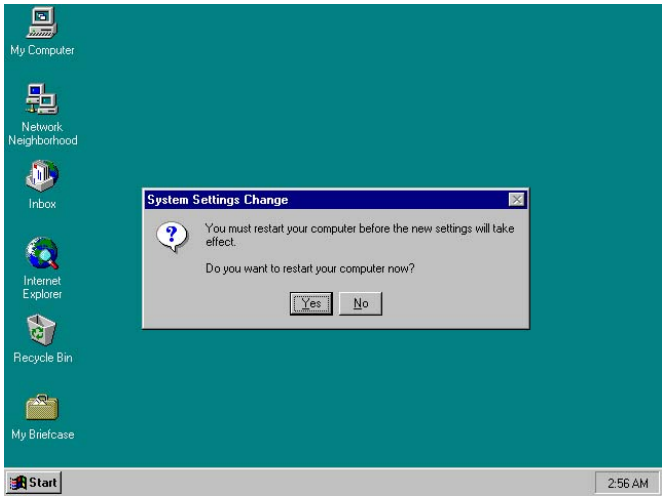


4. Click **OK** or press **Enter**.
5. You will see warning panel about **Third Party Drivers**. Click on **Yes** to finish the installation.



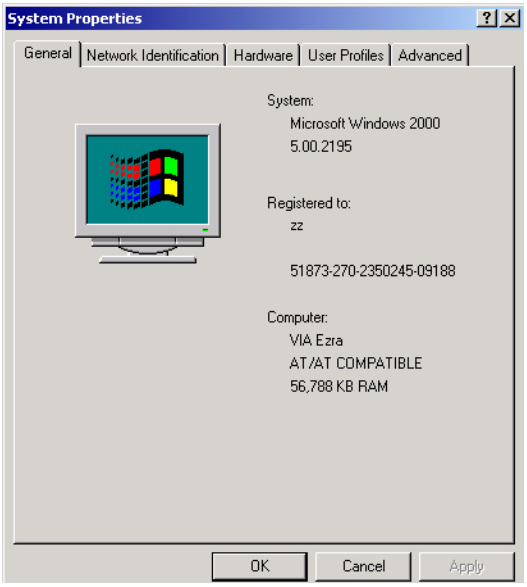
6. Once the installation is completed, you must shut down the system and restart for the new driver to take effect.



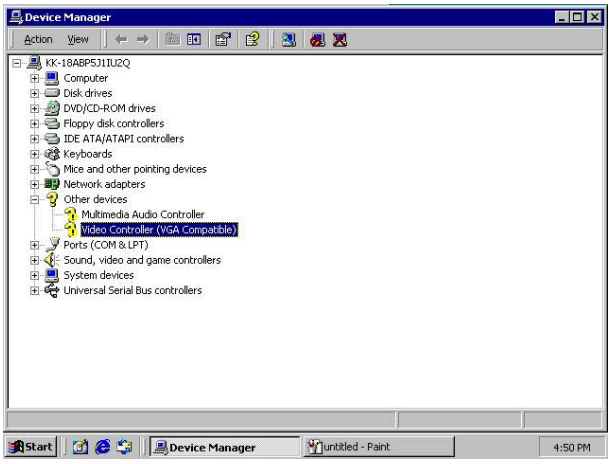


5.3.3 WIN 2K

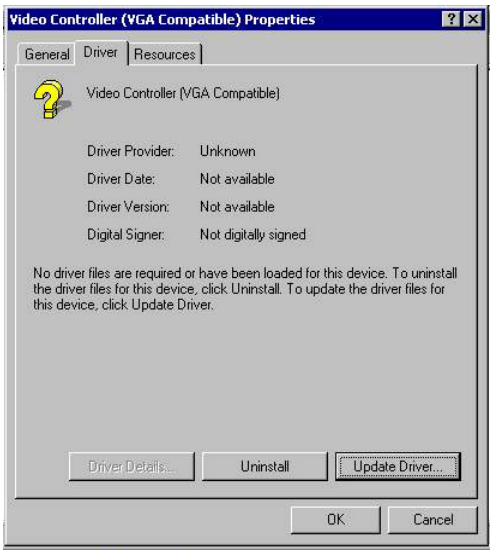
1. With the Utility CD Disk still in your CD ROM drive, right click on My Computer icon from the Windows menu. Select on System Properties and then proceed to the Device Manager from the main menu.



2. Select on Other Devices from the list of devices then double-click on Video Controller (VGA Compatible).

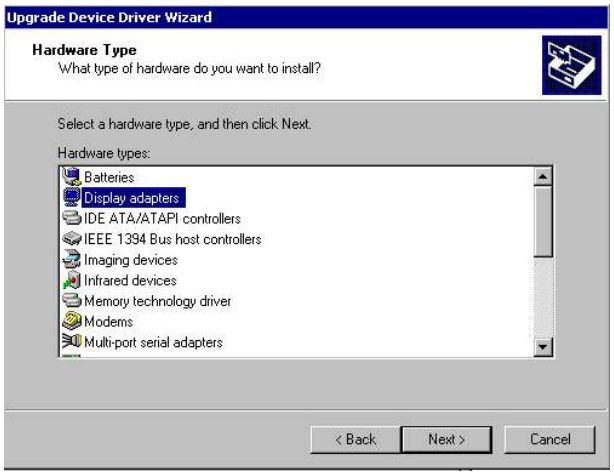


3. The Video Controller (VGA Compatible) Properties screen then appears, allowing you to re-install the driver. Select Driver from the main menu to proceed.

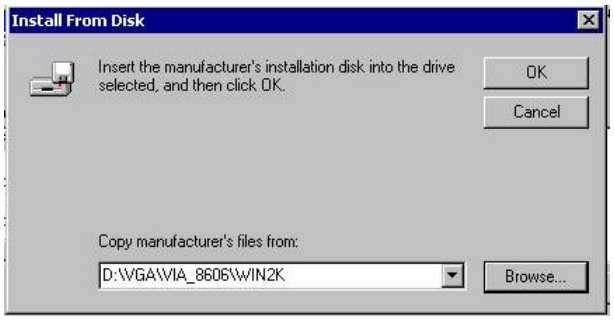


4. When the succeeding window asks you what you wish Windows to do, tick on the “Search for a better driver….” Click on the Next button to proceed.

5. Upgrade Device Driver Wizard screen appear, select Display adapters and click on Next.



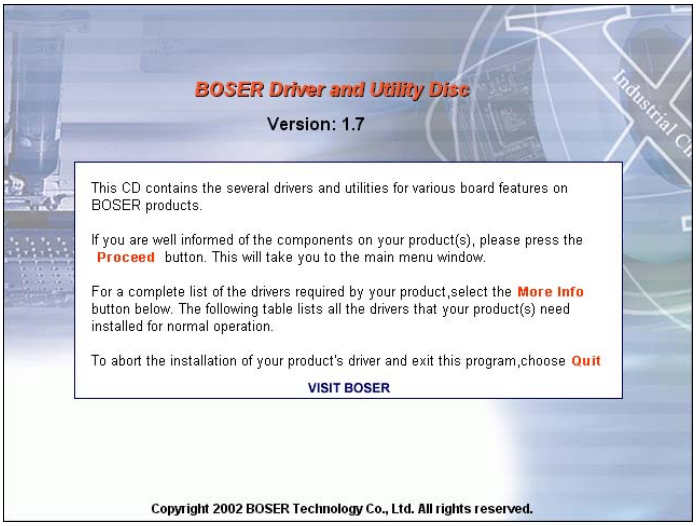
6. Once the program returns to the Add New Hardware Wizard screen, your specified location will appear. Press on the Next button to continue.

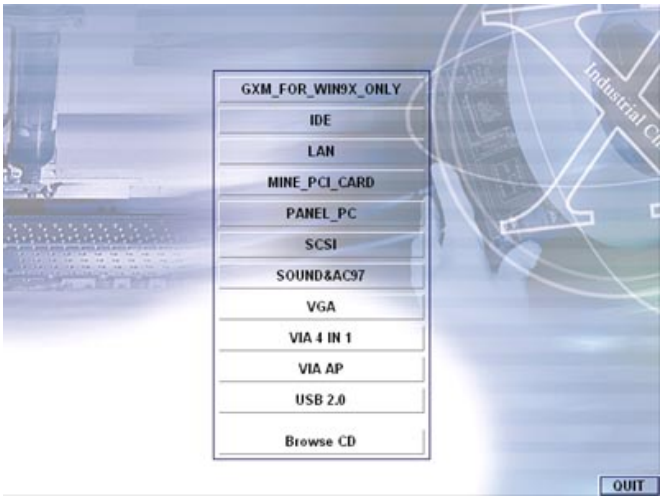


7. The program then copies the necessary files from your Windows installation disk to complete the driver setup process. Once the driver is completely installed, the following message appears on your display. Click on the Finish button to proceed.

5.3.4 WIN XP

1. With the Utility CD Disk still in your CD ROM drive, open the File Manager and then select the CD-ROM drive. As soon as the system reads the disk, the VGA Menu screen below will appear on your display. Click on VIA_8606 from the main menu.

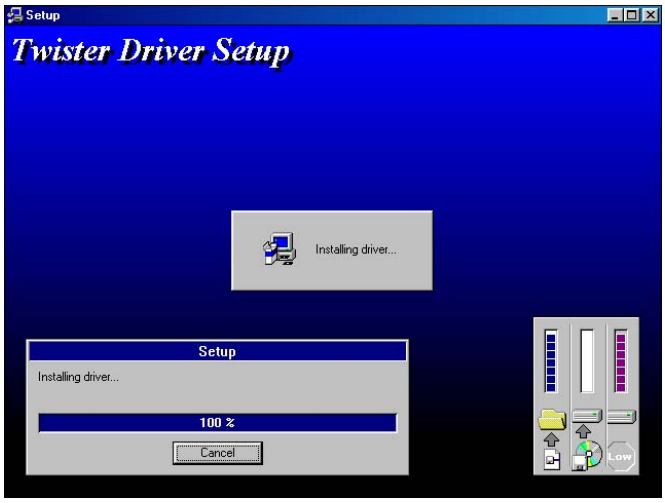




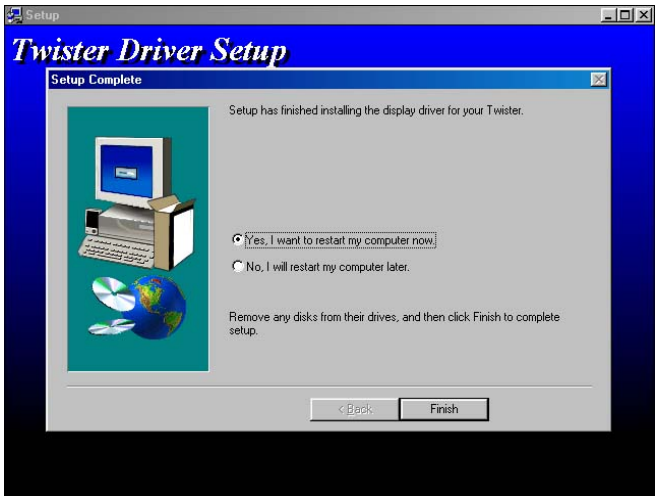
2. Select the operating system of your computer to proceed with the installation process.

3. Once the Welcome screen appears on the screen, make sure to close applications that are running and then click the Next button.

4. When the display below appears on your screen, Setup is already ready to install and copy the related files onto your hard drive. Click on the Next button to proceed.



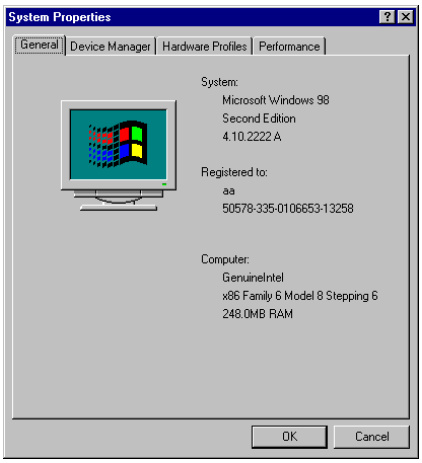
5. After the installation finishes, you will be prompted to restart your system. We recommend you to reboot your computer to allow the new settings to take effect. Click on the Finish button to reboot.



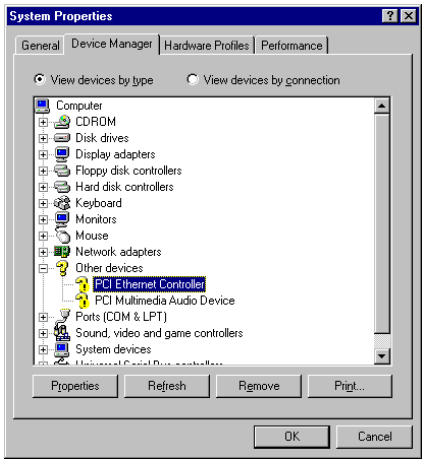
5.4 LAN Driver Installation

5.4.1 RTL8100 Driver Installation for WIN98

1. With the Utility CD Disk still in your CD ROM drive, right click on My Computer icon from the Windows menu. Select on System Properties and then proceed to the Device Manager from the main menu.



2. Select on Other Devices from the list of devices then double-click on PCI Ethernet Controller.



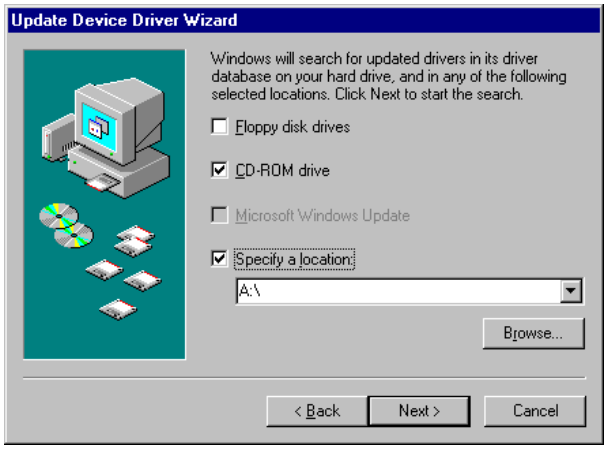
3. The PCI Ethernet Controller Properties screen then appears, allowing you to re-install the driver. Select Driver from the main menu to proceed.

4. The window then displays the current status of your LAN driver. Press on Update Driver button to continue.

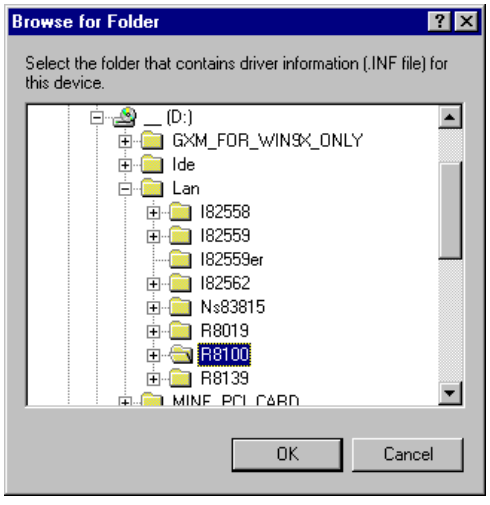
5. The program will then launch the Update Device Driver Wizard window that will install your device driver. Click on the Next button to proceed to the next step.

6. When the succeeding window asks you what you wish Windows to do, tick on the “Search for a better driver….” Click on the Next button to proceed.

7. The Update Device Driver Wizard will then ask you to specify, by ticking, the path of the new driver. Tick on the open boxes where you require the program to search for the device driver then click on the Browse button to manually specify the path.



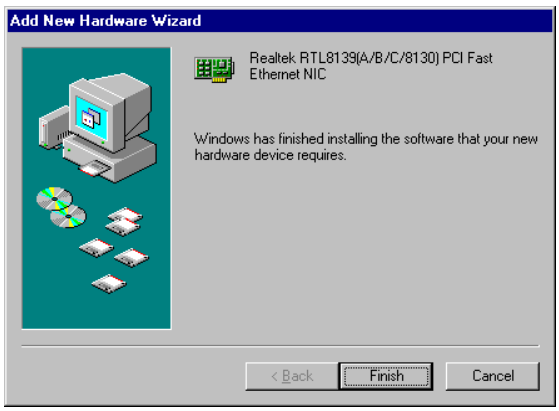
8. Press on the OK button as soon as you have located the path of your driver.



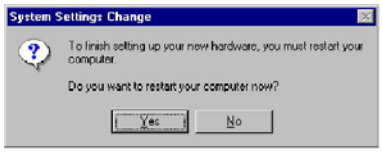
9. Once the program returns to the Add New Hardware Wizard screen, your specified location will appear. Press on the Next button to continue.

10. Once the program detects the device driver (*.inf) file from your specified location, it will automatically copy the files into your hard drive.
11. When copying of driver files finishes, the program will then ask you to insert your Windows.

12. The program then copies the necessary files from your Windows installation disk to complete the driver setup process. Once the driver is completely installed, the following message appears on your display. Click on the Finish button to proceed.

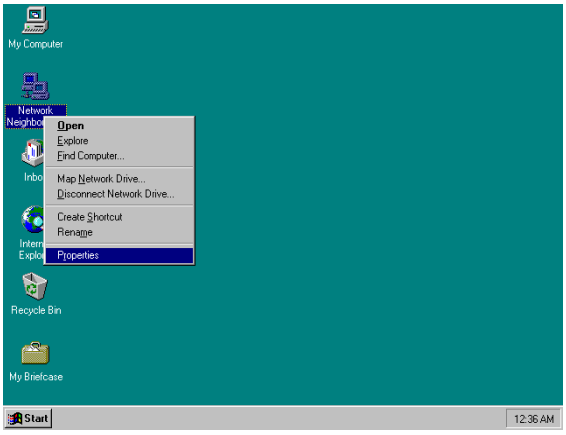


13. Restart your computer to make the new system settings take effect. Click on the Yes button when the screen below appears and your LAN Driver for Win95 and Win98 are now completely installed.

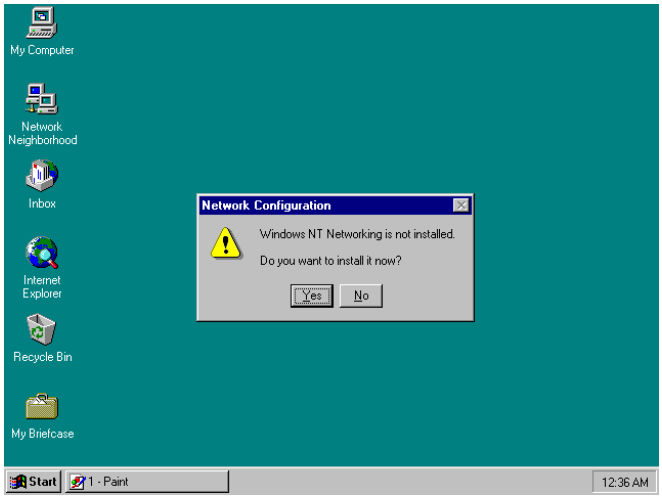


5.4.2 RTL8100 Driver Installation for WIN NT4.0

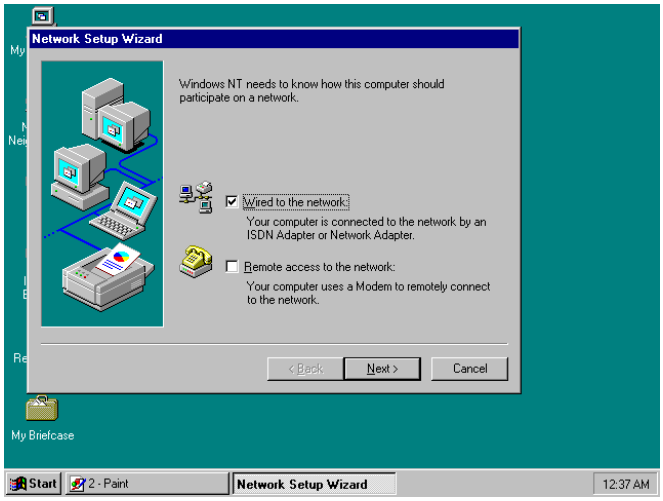
1. With the Utility CD Disk still in your CD ROM drive, right click on Network Neighborhood icon from the Windows menu. Select on Properties.



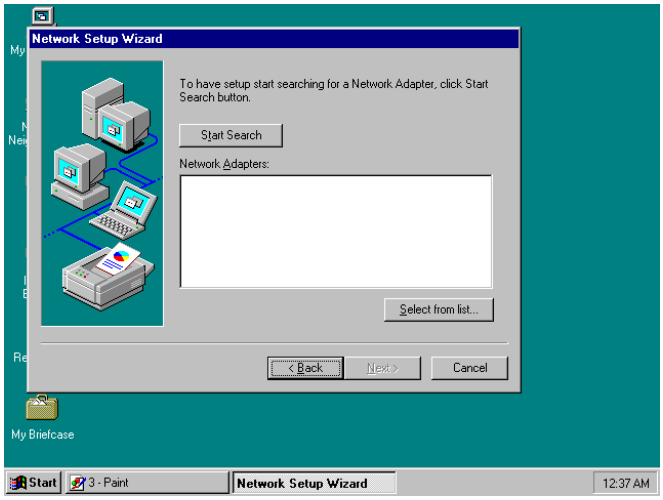
2. The system automatically detects the absence of Windows NT Networking. Click on the Yes button to start installation.



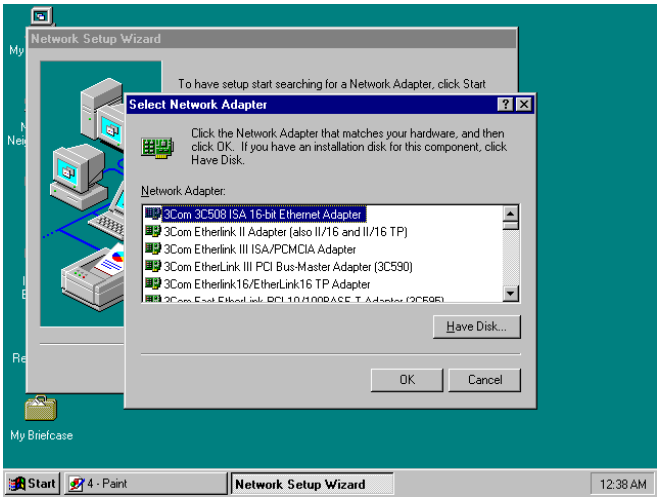
3. Tick on the “Wired to Network” once the following screen appears. Click on the Next to proceed.



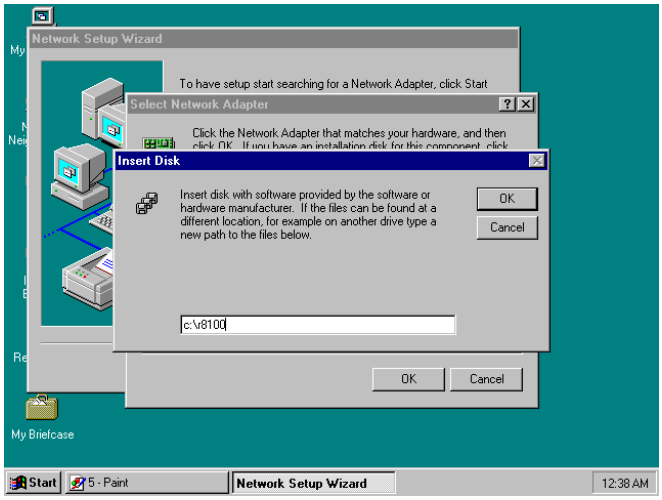
4. Click on the Start Search button for the program to locate the Network Adapter.



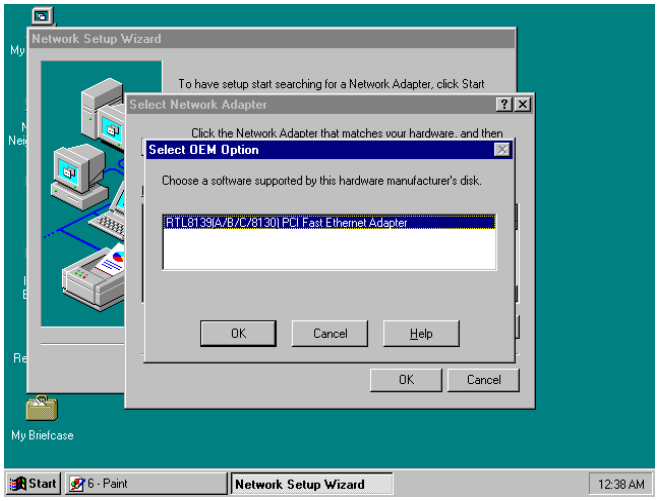
5. Once setup finishes the search, it will list a number of adapters for you to choose from. Press on the Have Disk button to assign the driver path location.



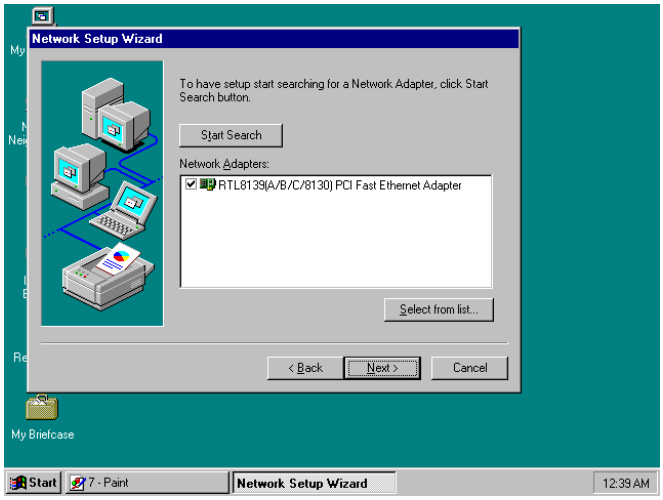
6. Setup now asks you for the location of the driver. When you have entered the new driver path, press on the OK button to continue.



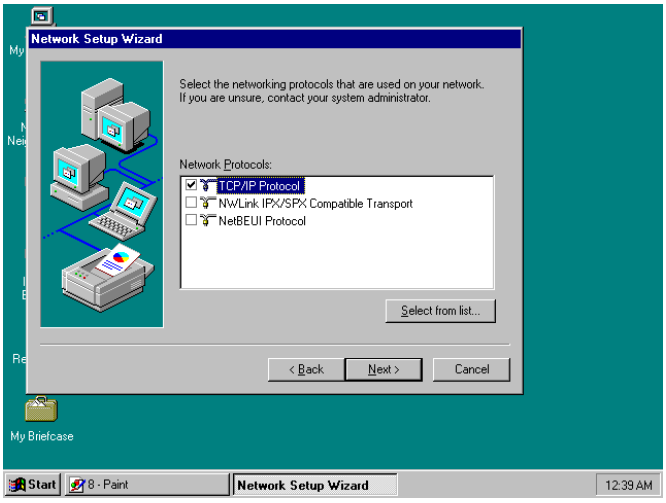
7. When Setup finds the information it needs about the new driver, it will display the device it found on the following screen. Press on the OK button to accept and proceed.



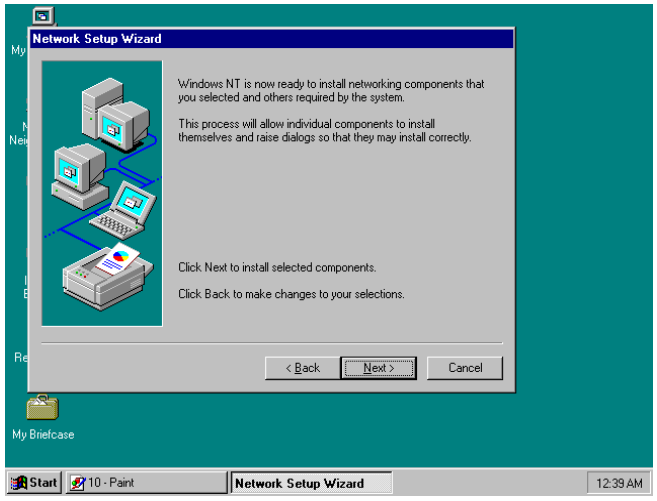
8. Setup then returns to Network Setup Wizard screen and displays your new Network Adapter. Click on Next to continue.



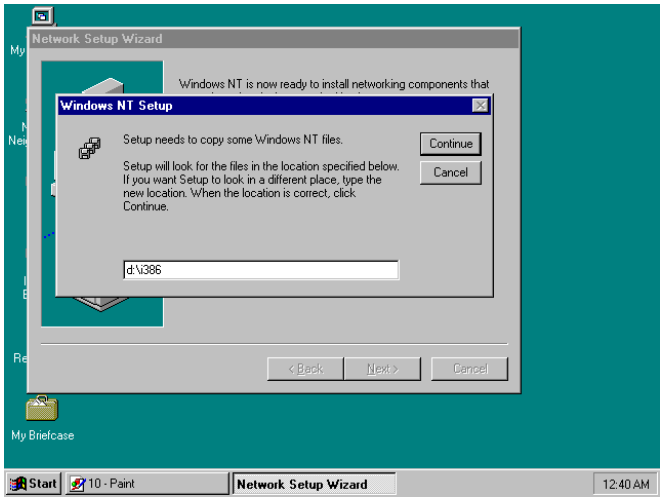
9. The Network Setup Wizard then allows you to set the Network Protocols on your network. Select the appropriate protocol and then click on Next to continue.



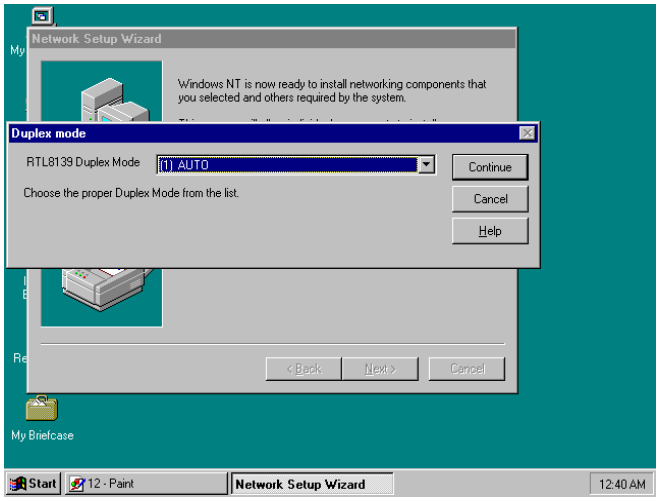
10. Before Setup starts installing the components found and the settings you made, it will give you the option to proceed or go back for changes from the following screen. Click on the Next button once you are sure of your devices.



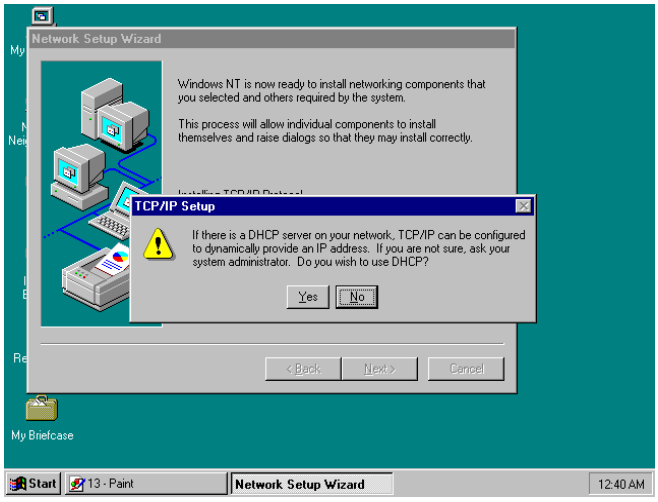
11. Windows NT Setup will then need to copy files necessary to update the system information. Specify the path then press Continue.



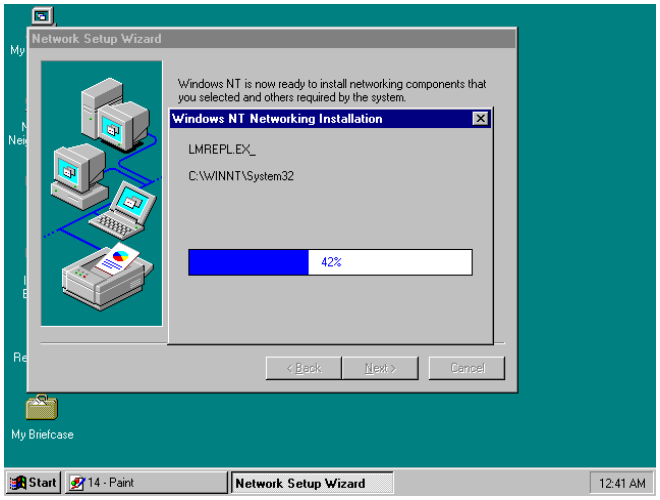
12. Once it finishes copying the files, Setup will now allow you to choose the Duplex Mode of your LAN controller. Press on the Continue button after making your selection.



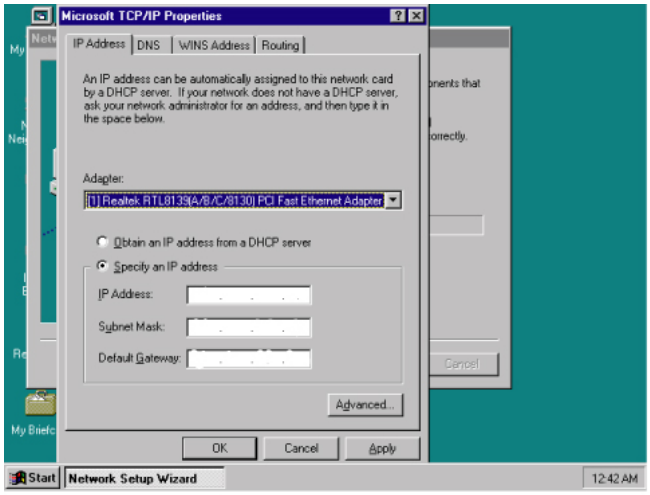
13. When Setup asks if you wish to change the TCP/IP settings of your system, select the appropriately. The default choice is No.



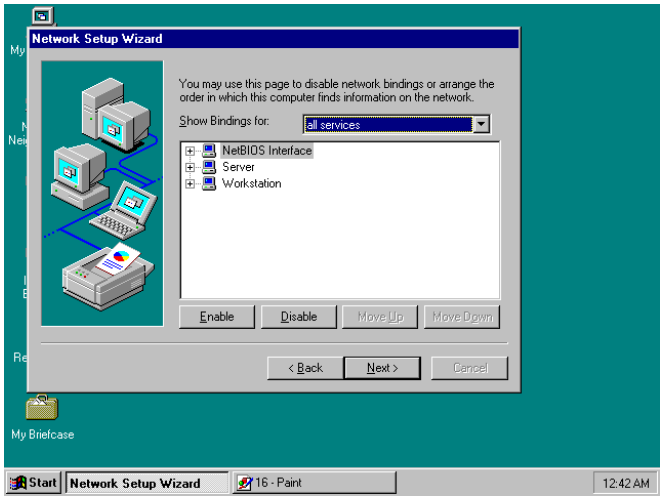
14. Setup then starts the Networking installation and copies the files.



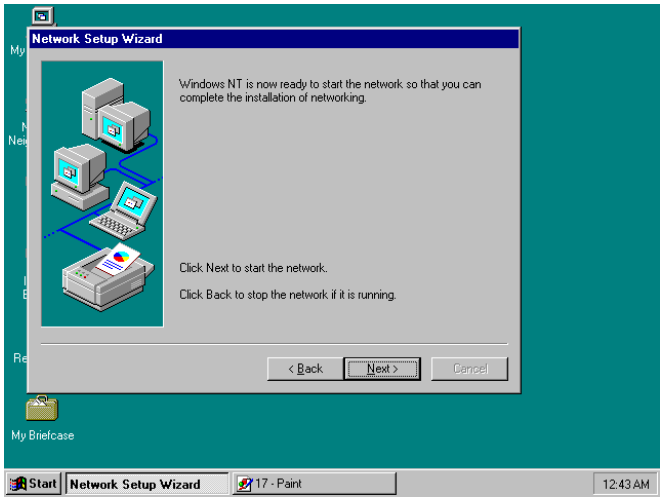
15. When Setup finishes copying, the TCP/IP properties of your system will then pop up on your screen like the one shown below. Make the necessary changes then click on OK to continue.



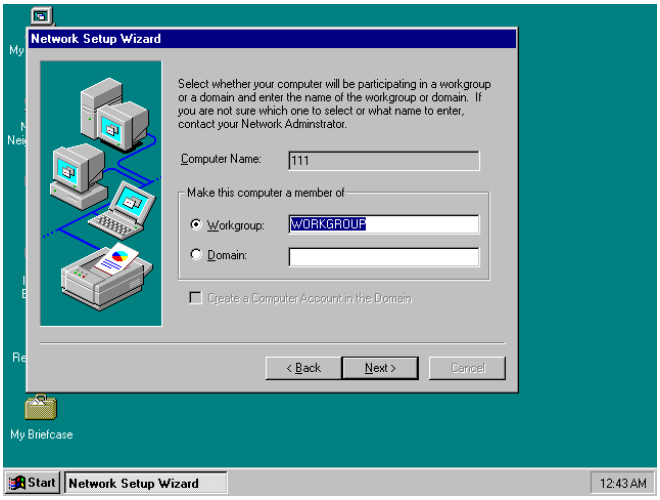
16. When the screen below appears, click on Next to continue.



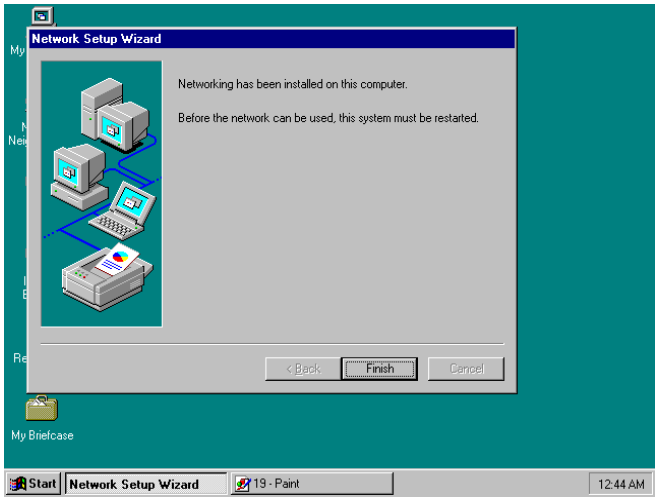
17. Setup then prompts you that it is ready to start the network. You may complete the installation thereafter. Click on Next to continue.



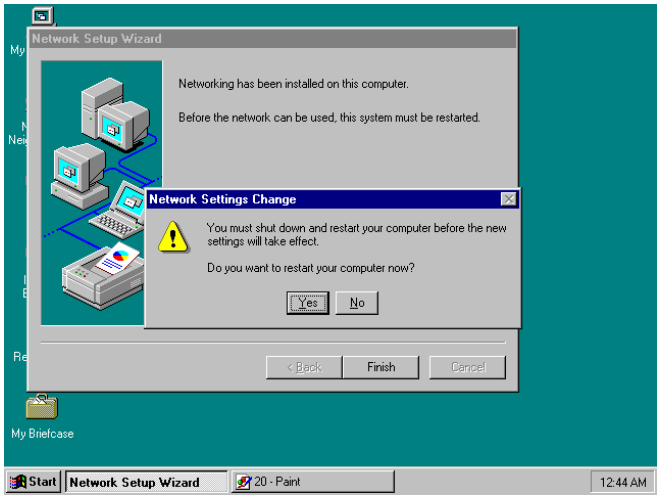
18. Assign the workgroup or domain setting of your computer. Click on Next to continue.



19. Restart your computer once the screen below appears. Click on Finish to continue.



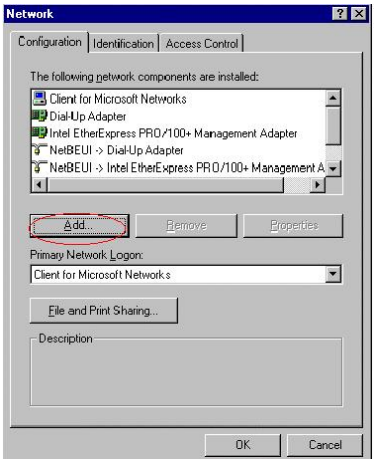
20. Click on the Yes button to restart your computer. The LAN driver installation for WIN NT4.0 is now complete.



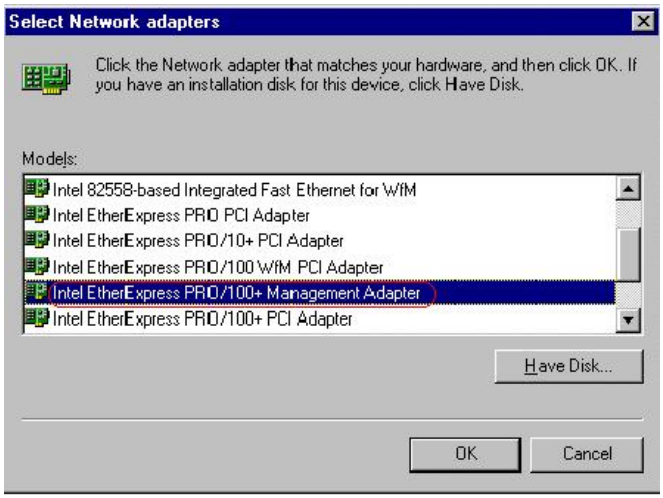
5.4.3 82559 Driver Installation for WIN 98

Windows 98 will detect the network driver automatically therefore there is no need for further configuration.

1. Click **Start**, then **Setting** then select **Control panel**.
2. Start the network applet program.
3. In the Network window, click **Add**.



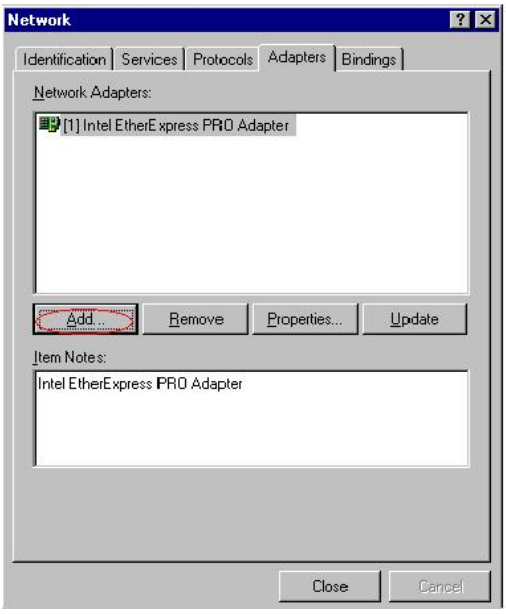
4. From the **Select Network Component Type**, select **Adapter** then click **Add**.
5. Specify the path the new driver and press <ENTER> key (if in driver a:, type a:\). If you're not sure exactly where the drivers are, choose the **Browse** button and find it.



6. Click **OK.**
7. Windows 95 will copy the network drivers to the proper directories into your system.
8. Continue choosing **OK** until asked to restart your system.
9. After restarting your computer, check the network driver and its properties. Be sure it looks similar with the following figure.

5.4.4 82559 Driver Installation for WIN NT4.0

1. Click the **Start** button, then go to **Setting** and click on **Control Panel**.
2. Click on the **Network** icon to start the **Network Window**.
3. Click on the **Adapters** tab, and then click **Add**.



4. In the **Select Network Adapter** window, click **Have Disk**.
5. This will bring up the **Insert Disk** window.
6. Supply the directory where the Windows NT driver files are located (If in driver a: type a:\).
7. The Select OEM Option window will show up. Select

Intel EtherExpress PRO Adapter

8. Click **OK** to finish the installation.
9. Once the installation is completed, the system must be shut down and restarted for the new driver to take effect.
10. After restart, confirm the network driver and its properties.