

HS-4655

Eden Embedded Engine Board

- CompactFlash • Mini PCI • 133MHz FSB •
 - SO-DIMM • CRT/LVDS Panel •
- TV-Out • Dual LAN • Audio • ATA/33/66/100 •
- RS-232/422/485 • 8 COM • USB2.0 • PC/104 •
 - WDT • H/W Monitor •
- Industrial Embedded 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-4655 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 PROTECTIONS.*

Chapter 1

General Description



The HS-4655 is a VIA VT8606 chipset-based board designed for VIA Eden 667MHz low power embedded CPU. These features combine and make the HS-4655 an ideal all-in-one industrial single board computer. Additional features include an enhanced I/O with CRT/LVDS Panel, dual LAN, audio, TV-Out, 8 COM, and USB2.0 ports interfaces.

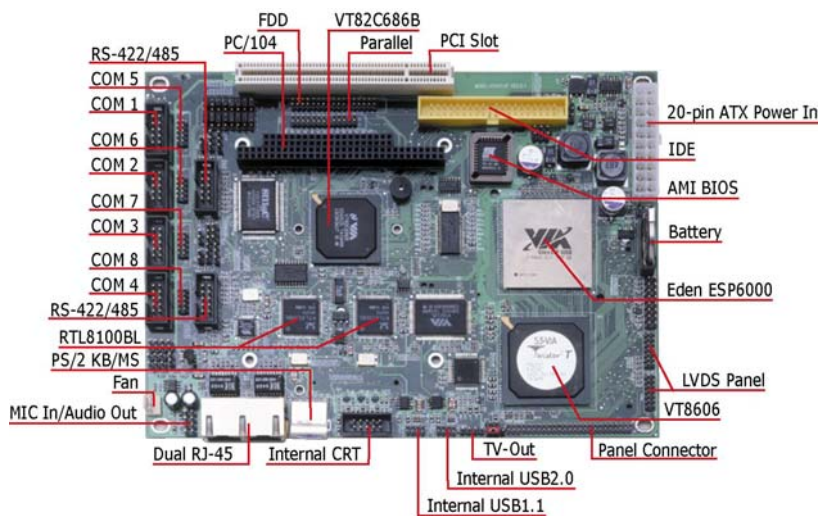
Its onboard ATA/33/66/100 to IDE drive interface architecture allows the HS-4655 to support data transfers of 33, 66 or 100MB/sec. to one IDE drive connection. Designed with the VIA VT8606 core logic chipset, the board supports VIA Eden 667MHz low power embedded CPU. The VIA VT8606 with 32MB shared main memory supporting CRT/Panel displays.

System memory is also sufficient with the two SO-DIMM sockets that can support up to 1GB.

Additional onboard connectors include two USB1.1 and two USB2.0 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-4655 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



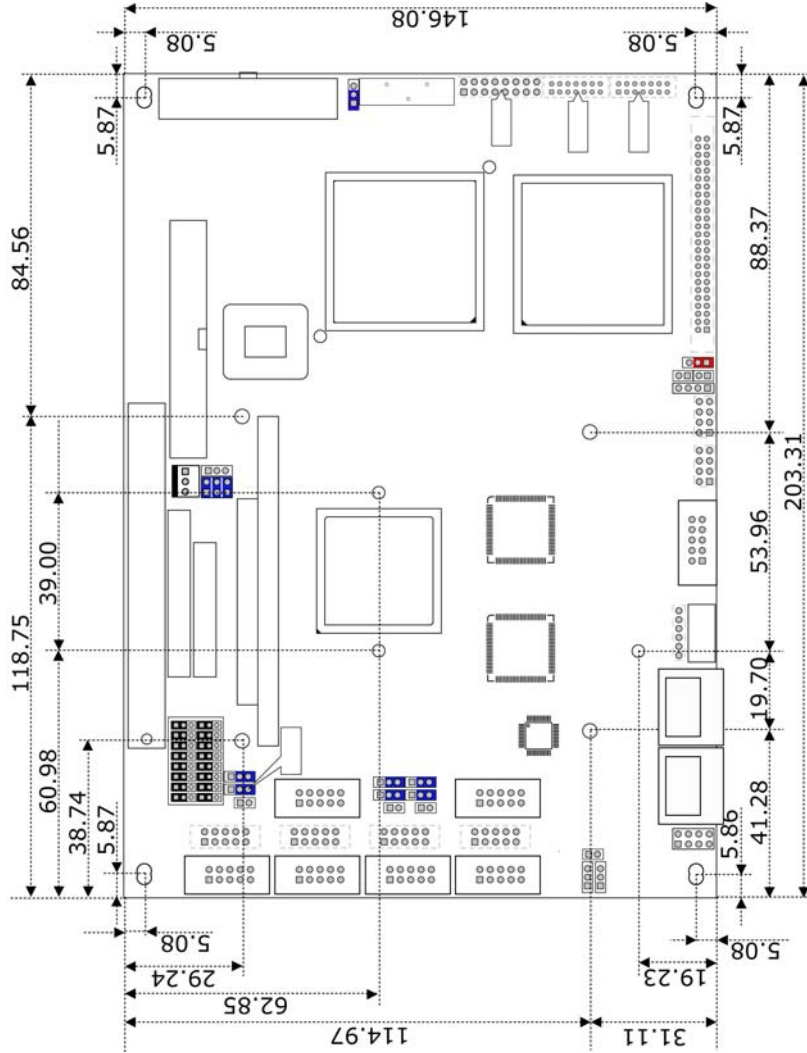
The HS-4655 comes with the following features:

- VIA Eden 667MHz low power embedded CPU
- Supports 100/133MHz FSB
- Two SO-DIMM sockets with a max. capacity of 1GB
- VIA VT8606/VT82C686B system chipset
- VIA VT82C686B, SMC 37C669, XR17D154CV super I/O chipset
- VIA VT8606 graphics controller
- LVDS Panel display interface
- Dual RealTek RTL8100BL Ethernet controller
- AC97 3D audio controller
- Fast PCI ATA/33/66/100 IDE controller
- CompactFlash card adapter, eight COM, four USB, PC/104 connector
- TV-Out function
- Hardware Monitor function

1.2 Specifications

- **CPU:** VIA Eden 667MHz low power embedded CPU
- **Memory:** Two SO-DIMM sockets supporting up to 1GB
- **Chipset:** VIA VT8606/VT82C686B
- **I/O Chipset:** VIA VT82C686B, SMC 37C669, XR17D154CV
- **CompactFlash:** One, Type II IDE interface adapter
- **PCI Slot:** One, Type I mini PCI slot
- **VGA:** VIA VT8606 with 32MB shared main memory supporting CRT/Panel displays up to 1280 x 1024 at 24bpp colors(CRT)/1024 x 768 at 18bpp colors(Panel)
- **LVDS Panel:** Supports 18-bit single channel/36-bit dual channel LVDS interface
- **TV-Out:** Supports PAL or NTSC TV systems
- **LAN:** Dual RealTek RTL8100BL 10/100 Based LAN
- **Audio:** AC97 3D audio controller
- **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
- **Serial Port:** 16C550 UART-compatible RS-232/422/485 x 2 and RS-232 x 6 serial ports with 16-byte FIFO
- **PC/104:** PC/104 Bus connector for 16-bit ISA Bus
- **USB:** Two internal USB1.1 and two internal USB2.0 ports
- **Keyboard/Mouse:** PS/2 6-pin Mini DIN or 6-pin header
- **BIOS:** AMI PnP Flash BIOS
- **Watchdog Timer:** Sets 1/2/10/20/110/220 seconds, activity trigger with Reset or NMI
- **CMOS:** Battery backup
- **Temperature:** 0~+60°C (operating)
- **Hardware Monitor:** VIA VT82C686B
- **Board Size:** 20.3(L) x 10.2(W) cm

1.3 Board Dimensions



Chapter 2

Unpacking

2.1 Opening the Delivery Package

The HS-4655 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-4655 delivery package contains the following items:

- HS-4655 Board x 1
- Utility CD Disk x 1
- Cable Package x 1
- Jumper Bag x 1
- User's Manual



Cables Package	
NO.	Description
1	ATA/100 IDE flat cable x 1
2	MIC/Audio 8-pin cable with bracket x 1
3	Floppy flat cable x 1
4	PS/2 KB/MS transfer cable x 1
5	Parallel port flat cable x 1
6	8-pin USB split type cable with bracket x 1
7	VGA flat cable x 1
8	Four COM flat cable by 2.54pitch x 1
9	Four COM flat cable by 2.0pitch x 1

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

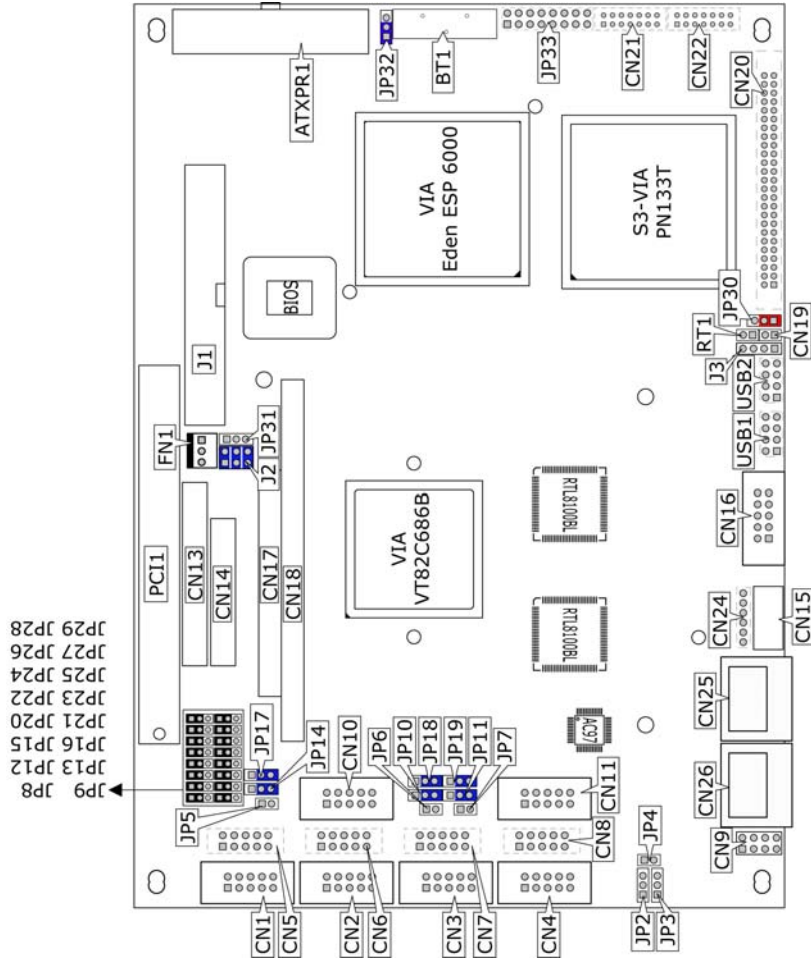
This chapter provides the information on how to install the hardware using the HS-4655. This chapter also contains information related to jumper settings of switch, watchdog timer, and the DiskOnChip™ address selection etc.

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	Default Setting	Setting	Page
J2(1-6)	WDT Timer Select: <i>1sec.</i>	Short 1-2, 3-4, 5-6	22
JP30	Panel Voltage Select: <i>+3.3V</i>	Short 1-2	11
JP31	WDT Active Type Setting: <i>Disabled</i>	All Open	22
JP32	Clear CMOS: <i>Normal Operation</i>	Short 1-2	20
JP8/JP12 JP15/JP20	COM3 Use RS-232 or RS-422/485 Select: <i>RS-232</i>	Short 1-2	15
JP9/JP13 JP16/JP21	COM4 Use RS-232 or RS-422/485 Select: <i>RS-232</i>	Short 1-2	15
JP22/JP24 JP26/JP28	COM7 Use RS-232 or RS-422/485 Select: <i>RS-232</i>	Short 1-2	15
JP23/JP25 JP27/JP29	COM8 Use RS-232 or RS-422/485 Select: <i>RS-232</i>	Short 1-2	15
JP14 JP17	COM3 Use RS-422/485 full duplex	Short 1-2 Open *	15
JP10 JP18	COM4 Use RS-422/485 full duplex	Short 1-2 Open *	
JP11 JP19	COM7 Use RS-422/485 full duplex	Short 1-2 Open *	
JP2 JP3	COM8 Use RS-422/485 full duplex	Short 1-2 Open *	
JP14/ JP17 JP10/JP18	COM3 COM4 Use RS-422/485 half duplex	Short 2-3 Short 2-3	15
JP11/JP19 JP2/JP3	COM7 COM8 Use RS-422/485 half duplex	Short 2-3 Short 2-3	
JP4~JP7	Debug Only	All Open	15

Example:

1. Set COM3 as RS232, to short 1-2 for JP8, JP12, JP15, JP20; total 4 jumpers.
2. Set COM3 as RS422/485 full duplex, to short 2-3 for JP8, JP12, JP15, JP20; to short 1-2 for JP14; to open for JP17; total 6 jumpers.
3. Set COM3 as RS422/485 half duplex, to short 2-3 for JP8, JP12, JP15, JP20; to short 2-3 for JP14, JP17; total 6 jumpers.

4. RS232 & RS422/485 can use either one at same time for COM3, COM4, COM7, COM8

3.4 Connector List

Connector	Definition	Page
ATXPR1	20-pin ATX Power In Connector	20
CN1	COM 1 Connector (5x2 header)	15
CN2	COM 2 Connector (5x2 header)	15
CN3	COM 3 Connector (5x2 header)	15
CN4	COM 4 Connector (5x2 header)	15
CN5	COM 5 Connector (5x2 header)	15
CN6	COM 6 Connector (5x2 header)	15
CN7	COM 7 Connector (5x2 header)	15
CN8	COM 8 Connector (5x2 header)	15
CN9	Line In/Audio Out Connector	28
CN10/CN11	RS-422/485 Connector (5x2 header)	15
CN13	FDC Connector	14
CN14	Parallel Connector	15
CN15	PS/2 6-pin Mini DIN KB/MS Connector	21
CN16	Internal CRT Connector (5x2 header)	11
CN17	PC/104 40-pin Connector	26
CN18	PC/104 64-pin Connector	26
CN19	RCA Connector	29
CN20	50-pin Panel Connector	11
CN21/CN22	LVDS Connector	11
CN23	CompactFlash Connector	28
CN24	6-pin KB/MS Connector	
CN25/CN26	RJ-45 Connectors	
DM1	SO-DIMM Socket	11
FN1	Fan Connector	20
J1	IDE Connector	13
J3	S-Video Connector	29
JP33	System Front Panel Connector	21
PCI	Mini PCI Connector	24
PCI1	PCI Slot	30
USB1/USB2	USB Connector	19

3.5 Configuring the CPU

The HS-4655 embedded with a VIA Eden 667MHz low power CPU. User don't need to adjust the frequently and check speed of VIA Eden CPU.

3.6 System Memory

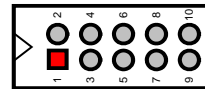
The HS-4655 provides two SO-DIMM sockets at locations *DM1/DM2*. The maximum capacity of the onboard memory is 1GB.

3.7 VGA Controller

The HS-4655 provides three connection methods of a VGA device. *CN16* offers an internal CRT connector while *CN20* is the 50-pin panel connector and *CN21/CN22* are the LVDS interface connectors onboard reserved for flat panel installation.

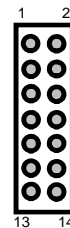
- **CN16: Internal CRT Connector**

PIN	Description	PIN	Description
1	Red	2	GND
3	Green	4	GND
5	Blue	6	GND
7	HSYNCB	8	DCSDA
9	VSYNCB	10	DCSCL



- **CN21/CN22: LVDS Interface Connector**

PIN	Description	PIN	Description
1	V _{LCD}	2	V _{LCD}
3	GND	4	GND
5	Y0M/Z0M	6	Y0P/Z0P
7	Y1M/Z1M	8	Y1P/Z1P
9	Y2M/Z2M	10	Y2P/Z2P
11	YCM/ZCM	12	ZCP/ZCP
13	N/C	14	N/C



- **CN20: 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	P26	42	P27
43	P28	44	P29
45	P30	46	P31
47	P32	48	P33
49	P34	50	P35



NOTE: Please set the proper voltage of your panel using JP30 before proceeding on installing it.

The HS-4655 has an onboard jumper that selects the working voltage of the flat panel connected to the system. Jumper *JP30* offers two voltage settings for the user.

- **JP30: Panel Voltage Select**

Options	Settings
+3.3V (default)	Short 1-2
+5V	Short 2-3

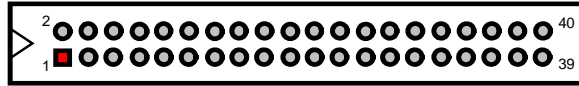


3.8 PCI E-IDE Drive Connector

CN23 is a standard 44-pin 2.0mm pitch connector daisy-chain driver connector serves the PCI E-IDE drive provisions onboard the HS-4655. A maximum of two ATA/33/66/100 IDE drives can be connected to the HS-4655 via *J1*.

- **J1: IDE Connector**

PIN	Description	PIN	Description
1	Reset	2	GND
3	DATA7	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	IOW#	24	GND
25	IOR#	26	GND
27	PIORDY	28	RP1PD1-
29	RPDACK#	30	GND
31	IRQ14	32	N/C
33	RPDA1-	34	DATA66
35	RPDA0-	36	RPDA2-
37	PPCS1-	38	RPCS3-
39	HDD Active	40	GND

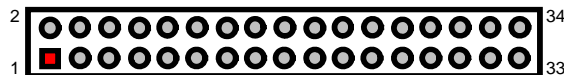


3.9 Floppy Disk Drive Connector

The HS-4655 uses a standard 34-pin header connector, *CN13*, for floppy disk drive connection. A total of two FDD drives may be connected to *CN13* at any given time.

- **CN13: FDC 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#

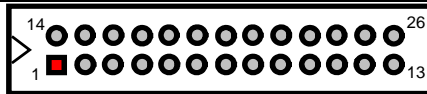


3.10 Parallel Connector

CN14 is a standard 26-pin flat cable connector designed to accommodate parallel port connection on the HS-4655.

- **CN14: Parallel Connector**

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

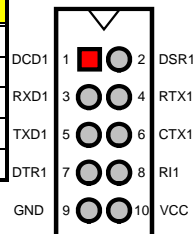


3.11 Serial Port Connectors

The HS-4655 offers two NS16C550 compatible UARTs with Read/Receive 16-byte FIFO serial ports and eight internal 10-pin headers and two RS-422/485 connectors.

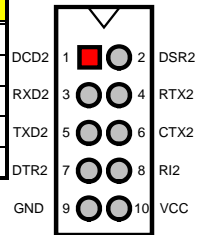
- **CN1: COM1 Connector (5x2 Header)**

PIN	Description	PIN	Description
1	DCD1	2	DSR1
3	RXD1	4	RTX1
5	TXD1	6	CTX1
7	DTR1	8	RI1
9	GND	10	VCC



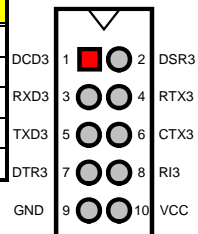
- **CN2: COM2 Connector (5x2 Header)**

PIN	Description	PIN	Description
1	DCD2	2	DSR2
3	RXD2	4	RTX2
5	TXD2	6	CTX2
7	DTR2	8	RI2
9	GND	10	VCC



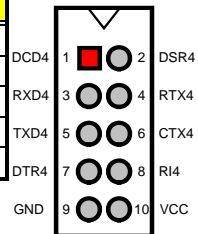
- **CN3: COM3 Connector (5x2 Header)**

PIN	Description	PIN	Description
1	DCD3	2	DSR3
3	RXD3	4	RTX3
5	TXD3	6	CTX3
7	DTR3	8	RI3
9	GND	10	VCC



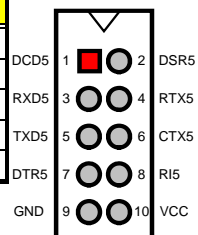
- **CN4: COM4 Connector (5x2 Header)**

PIN	Description	PIN	Description
1	DCD4	2	DSR4
3	RXD4	4	RTX4
5	TXD4	6	CTX4
7	DTR4	8	RI4
9	GND	10	VCC



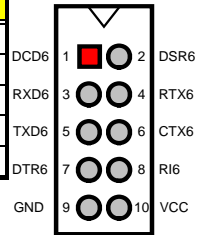
- **CN5: COM5 Connector (5x2 Header)**

PIN	Description	PIN	Description
1	DCD5	2	DSR5
3	RXD5	4	RTX5
5	TXD5	6	CTX5
7	DTR5	8	RI5
9	GND	10	VCC



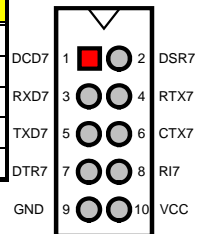
- **CN6: COM6 Connector (5x2 Header)**

PIN	Description	PIN	Description
1	DCD6	2	DSR6
3	RXD6	4	RTX6
5	TXD6	6	CTX6
7	DTR6	8	RI6
9	GND	10	VCC



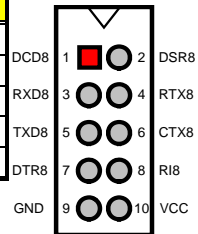
- **CN7: COM7 Connector (5x2 Header)**

PIN	Description	PIN	Description
1	DCD7	2	DSR7
3	RXD7	4	RTX7
5	TXD7	6	CTX7
7	DTR7	8	RI7
9	GND	10	VCC



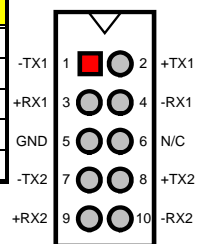
- **CN8: COM8 Connector (5x2 Header)**

PIN	Description	PIN	Description
1	DCD8	2	DSR8
3	RXD8	4	RTX8
5	TXD8	6	CTX8
7	DTR8	8	RI8
9	GND	10	VCC



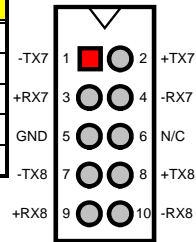
- **CN10: RS-422/485 Connector (5x2 Header, COM3 & COM4)**

PIN	Description	PIN	Description
1	-TX1	2	+TX1
3	+RX1	4	-RX1
5	GND	6	N/C
7	-TX2	8	+TX2
9	+TX2	10	-RX2



- **CN11: RS-422/485 Connector (5x2 Header, COM7 & COM8)**

PIN	Description	PIN	Description
1	-TX7	2	+TX7
3	+RX7	4	-RX7
5	GND	6	N/C
7	-TX8	8	+TX8
9	+TX8	10	-RX8



- **JP8/JP12/JP15/JP20: COM3 use RS-232 or RS-422/485 Select**

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



- **JP9/JP13/JP16/JP21: COM4 use RS-232 or RS-422/485 Select**

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



- **JP22/JP24/JP26/JP28: COM7 use RS-232 or RS-422/485 Select**

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



- **JP23/JP25/JP27/JP29: COM8 use RS-232 or RS-422/485 Select**

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



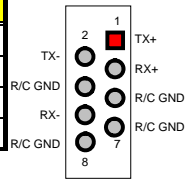
NOTE: RS-422/485 port uses COM3/COM4 and COM7/COM8. RS-232 of COM3/COM4 and COM7/COM8 cannot be used while RS-422/485 is selected.

3.12 Ethernet Connector

The HS-4655 provides two external RJ-45 connectors. Please refer to the following for its pin information.

- **CN25/CN26: RJ-45 Connector**

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

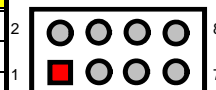


3.13 USB Connector

The HS-4655 provides TWO 8-pin connectors, at location *USB1/USB2*, for four USB ports to the HS-4655.

- **USB1/USB2: USB Ports**

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



3.14 CMOS Data Clear

The HS-4655 has a Clear CMOS jumper on JP32.

- **JP32: Clear CMOS**

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



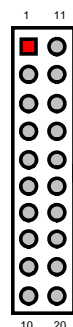
IMPORTANT: Before you turn on the power of your system, please set JP32 to Short 1-2 for normal operation.

3.15 Power and Fan Connectors

HS-4655 provides one 20-pin power connectors at ATXPR1. And one 3-pin fan power in at FN1.

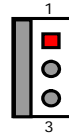
- **ATXPR1: 20-pin ATX Power In Connector**

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



- **FN1: Fan Connector**

PIN	Description
1	GND
2	+5V
3	CPU Fan1

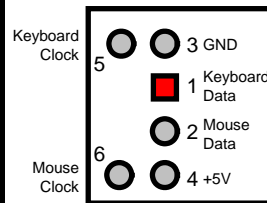


3.16 Keyboard/Mouse Connectors

The HS-4655 offers one possibilities for keyboard/mouse connection. The connection are via *CN15* for an external PS/2 type keyboard/mouse.

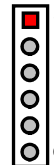
- **CN15: PS/2 6-pin Mini DIN Keyboard/Mouse Connector**

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



- **CN24: 6-pin KB/MS Connector**

PIN	Description
1	KB DATA
2	KB CLK
3	MS DATA
4	VCC
5	GND
6	MS CLK



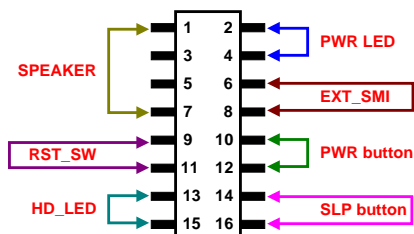
3.17 System Front Panel Connectors

The HS-4655 has one LED at location *JP33* that indicates the power-on status. This visual feature of the IDE LED may also be connected to an external IDE LED, Speaker, Reset Switch, Power LED, EXT SMI, Power Button, and SLP Button via connector *JP3(13-15)*, *JP3(1-3-5-7)*, *JP3(9-11)*, *JP3(2-4)*, *JP3(6-8)*, *JP3(10-12)*, *JP3(14-16)*.

- **JP33: System Front Panel Connector**

PIN	Description	PIN	Description
1	+5V	2	330Ω Pull +5V
3	GND	4	GND
5	N/C	6	EXT SMI
7	Speaker	8	GND
9	GND	10	PW Button
11	Reset Switch	12	GND
13	330Ω Pull +5V	14	SLP Button
15	HDD LED	16	GND

Connector JP33 Orientation



3.18 Watchdog Timer

There are three access cycles of Watchdog 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 preset period 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 *JP31* is used to select the function of Watchdog Timer.

- **JP31: Watchdog Timer Active Type Setting**

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



● **J2(1-6): WDT Timeout Period Select**

Period	PINS 1-2	PINS 3-4	PINS 5-6
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

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. There are three I/O ports that control the Watchdog Timer.

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 0443H
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_RF ; 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

```

3.19 Mini PCI Connector

HS-4655 supports a Mini PCI connector. The peripheral component with standard Type1 Mini PCI can be used. For particular requirement, please refer to “BOSER Mini PCI series product” on website or contact with us.

- **PCI: Mini PCI Connector**

PIN	Description	PIN	Description
1	INTA#	2	VCC
3	VCC3	4	INTD#
5	INTB#	6	INTB#
7	GND	8	N/C
9	CLK	10	RST#
11	GND	12	VCC3
13	REQ#	14	GNT#
15	VCC3	16	GND
17	AD[31]	18	PME#
19	AD[29]	20	GNT1
21	GND	22	AD[30]
23	AD[27]	24	VCC3
25	AD[25]	26	AD[28]
27	REQ1	28	AD[26]
29	C/BE[3]#	30	AD[24]
31	AD[23]	32	AD[21]
33	GND	34	GND
35	AD[21]	36	AD[22]
37	AD[19]	38	AD[20]
39	GND	40	PAR
41	AD[17]	42	AD[18]
43	C/BE[2]#	44	AD[16]
45	IRDY#	46	GND
47	VCC3	48	FRAME#

... More on next page ...

PIN	Description	PIN	Description
49	N/C	50	TRDY#
51	SERR#	52	STOP#
53	GND	54	VCC3
55	PERR#	56	DEVSEL#
57	C/BE[1]#	58	GND
59	AD[14]	60	AD[15]
61	GND	62	AD[13]
63	AD[12]	64	AD[11]
65	AD[10]	66	GND
67	GND	68	AD[9]
69	AD[8]	70	C/BE[0]#
71	AD[7]	72	VCC3
73	VCC3	74	AD[6]
75	AD[5]	76	AD[4]
77	REQ2	78	AD[2]
79	AD[3]	80	AD[0]
81	VCC	82	GNT2
83	AD[1]	84	GNT3
85	GND	86	GND
87	N/C	88	M66EN
89	N/C	90	N/C
91	N/C	92	N/C
93	N/C	94	N/C
95	N/C	96	N/C
97	N/C	98	RESERVED
99	N/C	100	N/C



**Mini PCI Socket
pin orientation**

3.21 PC/104 Connectors

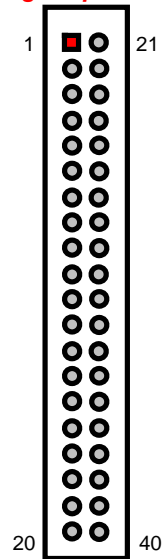
The PC/104 expansion bus offers provisions to connect all types of PC/104 modules. With the PC/104 bus being known as the new generation of industrial embedded 16-bit PC standard bus, thousands of PC/104 modules from multiple vendors can be easily installed onboard. The detailed pin assignment of the PC/104 expansion bus connectors CN17 and CN18 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.*

● **CN17: PC/104 40-pin Connector**

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

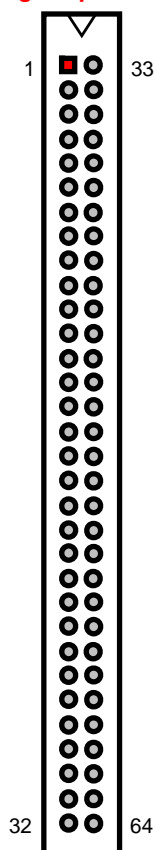
Connector diagram rotated 90 degrees clockwise from original position



● CN18: PC/104 64-pin Connector

PIN	Description	PIN	Description
1	-IOCHECK	33	GND
2	SD7	34	RESETDRV
3	SD6	35	+5V
4	SD5	36	IRQ9
5	SD4	37	N/C
6	SD3	38	N/C
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	N/C
27	SA4	59	TC
28	SA3	60	BALE
29	SA2	61	+5V
30	SA1	62	OSC
31	SA0	63	N/C
32	GND	64	GND

Connector diagram rotated 90 degrees clockwise from original position

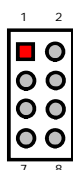


3.21 Audio Connectors

The HS-4655 has an onboard AC97 3D audio interface. The following tables list the pin assignments of the Line In/Audio Out connector.

- **CN9: Line In/Audio Out Connector**

PIN	Description	PIN	Description
1	AOUTL	2	AOUTR
3	GND	4	LI_R
5	MIC IN	6	LI_L
7	GND	8	GND



3.23 CompactFlash™ Connector

The HS-4655 also offers an optional CompactFlash™ connector which is IDE interface located at the solder side of the board (beneath the SO-DIMM connector). The designated CN23 connector, once soldered with an adapter, can hold CompactFlash™ cards of various sizes. Please turn off the power before inserting the CD card.

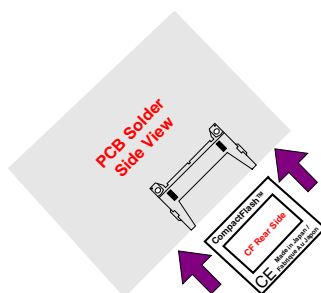
- **CN23: CompactFlash™ Connector**

PIN	Description	PIN	Description
1	GND	2	DATA 3
3	DATA 4	4	DATA 5
5	DATA 6	6	DATA 7
7	SDCS1#	8	GND
9	GND	10	GND
11	GND	12	GND
13	VCC	14	GND
15	GND	16	GND
17	GND	18	SDA2
19	SDA1	20	SDA0
21	DATA 0	22	DATA 1
23	DATA 2	24	470Ω pull to GND
25	N/C	26	N/C
27	DATA 11	28	DATA 12
29	DATA 13	30	DATA 14
31	DATA 15	32	SDCS3#

... More on next page ...

PIN	Description	PIN	Description
33	N/C	34	IOR
35	IOW	36	EWE0
37	IRQ	38	VCC
39	CS	40	N/C
41	Reset	42	IORDY
43	DACK	44	REQ
45	IDE LED	46	PDIAG
47	DATA 8	48	DATA 9
49	DATA 10	50	GND

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




3.23 TV-Out Connector

HS-4655 can support TV-Out function which input could be up to 800 x 600 graphics resolutions. World Wide Video standards are supported including NTSC-M (North America, Taiwan), NTSC-J (Japan), PAL-B, D, G, H, I (Europe, Asia), PAL-M (Brazil), PAL-N (Uruguay, Paraguay) and PAL-NC (Argentina).

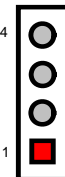
- **CN19: RCA Connector (for TV-Out function)**

PIN	Description
1	CVBS
2	GND



- **J3: S-Video Connector**

PIN	Description
1	C
2	GND
3	Y
4	GND



3.24 PCI Expansion Slot

HS-4655 provides one standard PCI expansion slot at PCI1.

Chapter 4

AMI BIOS Setup

The HS-4655 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 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, 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 previous item
	Move to previous item
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	Decrease the numeric value or make changes
PgDn key	Increase 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
F2 key	Change color from total 8 colors. F2 to select color forward
F3 key	F2 to select color backward
F4 key	Reserved
F5 key	Reserved
F6 key	Reserved
F7 key	Reserved
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

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 capacity of the IDE hard disk drive 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 Apr 17, 2003	Base Memory :	639KB							
Time (hh/mm/ss)	:	19:04:12	Extd Memory :	247MB							
Floppy Drive A: 1.44MB, 3 1/2											
Floppy Drive B: Not Installed											
							LBA	Blk	PIO	32Bit	
	Type	Size	Cyln	Head	WPcom	Sec	Mode	Mode	Mode	Mode	
Pri Master	:	Auto								On	
Pri Slave	:	Auto								On	
Sec Master	:	Auto								On	
Sec Slave	:	Auto								On	
Boot Sector Virus Protection: Disabled											
Month:	Jan - Dec						ESC: Exit	↑↓: Sel			
Day:	01 - 31						PgUp/PgDn:	Modify			
Year:	1980 - 2099						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 – ADVANCED CMOS SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
Quick Boot	Enabled	▲ Available Options: ▶ Disabled Enabled
Primary Master ARMD Emulated as	Auto	
Primary Slave ARMD Emulated as	Auto	
Secondary Master ARMD Emulated as	Auto	
Secondary Slave ARMD Emulated as	Auto	
1st Boot Device	Floppy	
2nd Boot Device	IDE-0	
3rd Boot Device	CD-ROM	
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	Cached	
C800,16k Shadow	Disabled	
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 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	PCICLK/4	
USB Controller	All USB Port	
USB Device Legacy Support	Disabled	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	Yes	▲ Available Options:
ACPI Standby State	S1/POS	▶ No
USB Device Wakeup From S3-S5	Disabled	Yes
Re-Call VGA BIOS at S3 Resuming	Enabled	
Power Management / APM	Disabled	
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	N/A	
Wake-Up Key	N/A	
Wake-Up Password	N/A	
Resume On PS/2 Mouse	N/A	
Resume On RTC Alarm	Disabled	
RTC Alarm Date	15	
RTC Alarm Hour	12	ESC: Exit ↑↓: Sel
RTC Alarm Minute	30	PgUp/PgDn: Modify
RTC Alarm Second	30	▼ 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	Yes
PCI Latency Timer (PCI Clocks)	32	
Primary Graphics Adapter	PCI	
Boot Screen Select	CRT	
TV Out Type	U.S NTSC	
LCD Panel Type	1. 800 x 600 TFT	
PCI IDE BusMaster	Enabled	
Off Board PCI IDE Card	Auto	
Off Board PCI IDE Primary IRQ	Disabled	
Off Board PCI IDE Secondary IRQ	Disabled	
DMA Channel 0	PnP	
DMA Channel 1	PnP	
DMA Channel 3	PnP	
DMA Channel 5	PnP	
DMA Channel 6	PnP	
DMA Channel 7	PnP	
IRQ3	PCI/PnP	
IRQ4	PCI/PnP	
IRQ5	PCI/PnP	
IRQ7	PCI/PnP	
IRQ9	PCI/PnP	
IRQ10	PCI/PnP	
IRQ11	PCI/PnP	
IRQ14	PCI/PnP	ESC: Exit ↑↓: Sel
IRQ15	PCI/PnP	PgUp/PgDn: Modify
		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: ▶ Auto Disabled Enabled
OnBoard Serial Port 1	3F8/COM1	
OnBoard Serial Port 2	2F8/COM2	
Serial Port2 Mode	Normal	
IR Pins	N/A	
Duplex Mode	N/A	
Receiver Polarity	N/A	
Transmitter Pparity	N/A	
OnBoard Parallel Port	378	
Parallel Port Mode	Normal	
EPP Version	N/A	
Parallel Port DMA Channel	3	
Parallel Port IRQ	7	
OnBoard Serial Port3	3E8/COM3	
Serial Port3 IRQ	10	
OnBoard Serial Port4	2E8/COM4	
Serial Port4 IRQ	11	
OnBoard IDE	Both	
OnBoard AC'97 Audio	Enabled	
OnBoard Legacy Audio	Enabled	
Sound Blaster	Disabled	
SB I/O Base Address	Disabled	
SB IRQ Select	5FT	
SB DMA Select	1	
MPU-401	Disabled	ESC: Exit ↑↓: Sel PgUp/PgDn: Modify F2/F3: Color
MPU-401 I/O Address	330h-333h	

4.10 Hardware Monitor Setup

AMIBIOS SETUP – HARDWARE MONITOR SETUP (C)2001 American Megatrends, Inc. All Rights Reserved	
*** System Hardware Monitor ***	
Chassis Intrusion	Disabled
TSENS1 Temperature	
TSENS2 Temperature	
TSENS3 Temperature	
CPU Fan Speed	
Chassis Fan Speed	
Vcore	
+ 2.500V	
+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
Auto-detect all hard disk parameters ESC: Exit ↑↓: Sel F2/F3: Color F10: Save & Exit

4.12 Change Supervisor/User Password

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
Enter new supervisor password: _
Change Supervisor Password Auto Configuration with Optimal Settings Auto Configuration with Fail Safe Settings Save Settings and Exit Exit Without Saving
Change the Supervisor Password ESC: Exit ↑↓:Sel F2/F3: Color F10: Save & Exit

You can set either supervisor or user password, or both of them. The differences 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.

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
Load high performance settings (Y/N) ? <u>N</u>
Change Supervisor Password Auto Configuration with Optimal Settings Auto Configuration with Fail Safe Settings Save Settings and Exit Exit Without Saving
Load configuration settings giving highest performance ESC:Exit ↑↓:Sel F2/F3: Color F10: Save & Exit

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.

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
Load failsafe settings (Y/N) ? <u>N</u>
Change Supervisor Password Auto Configuration with Optimal Settings Auto Configuration with Fail Safe Settings Save Settings and Exit Exit Without Saving
Load failsafe configuration settings 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 x.xx (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 Auto Configuration with Fail Safe Settings Save Settings and Exit Exit Without Saving</p>
<p>Write the current setting to CMOS and exit 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 will be 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.

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
Quit without saving (Y/N) ? <u>N</u>
Change Supervisor Password Auto Configuration with Optimal Settings Auto Configuration with Fail Safe Settings Save Settings and Exit Exit Without Saving
Exit without saving the current setting ESC:Exit ↑↓:Sel F2/F3: Color F10: Save & Exit
Abandon all Data & Exit Setup

Chapter 5

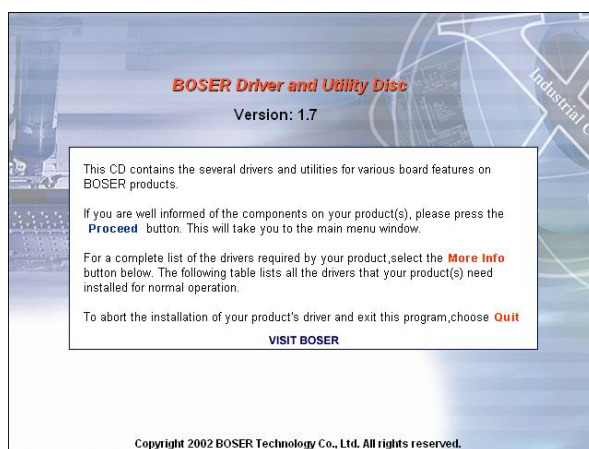
Software Utilities

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

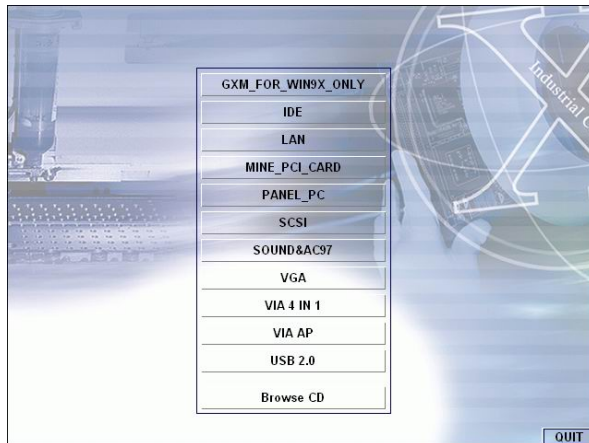
5.1 IDE Driver Installation

The utility disk that came with the delivery package contains an auto-run program that invokes the installation programs for the IDE, VGA and Audio drivers. 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.



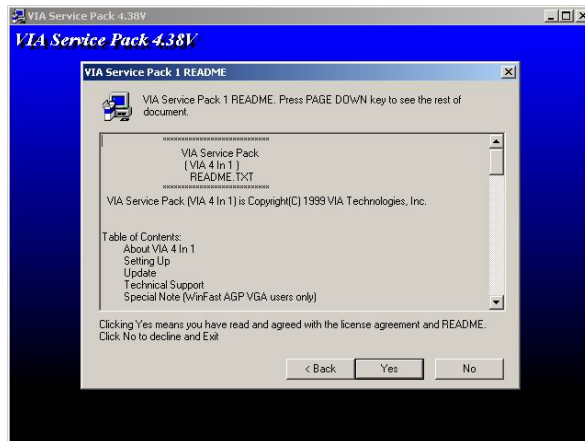
2. Press "VIA 4 IN 1" and to go Setup.



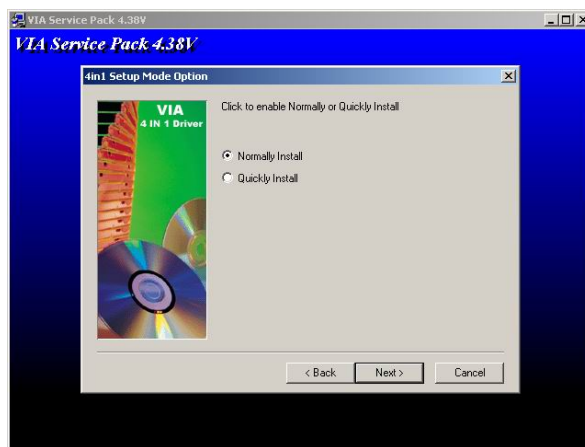
3. Once the Welcome screen appears on the screen, make sure to close any applications running and then click on the Next button.



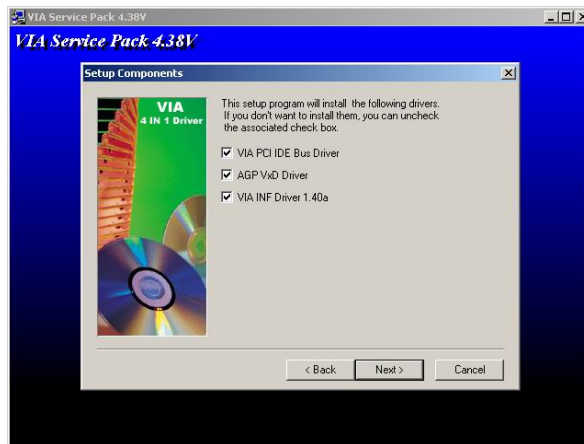
4. When the Readme window pops on the screen, you may read the whole document including the license agreement or just press Yes to skip through and continue installation.



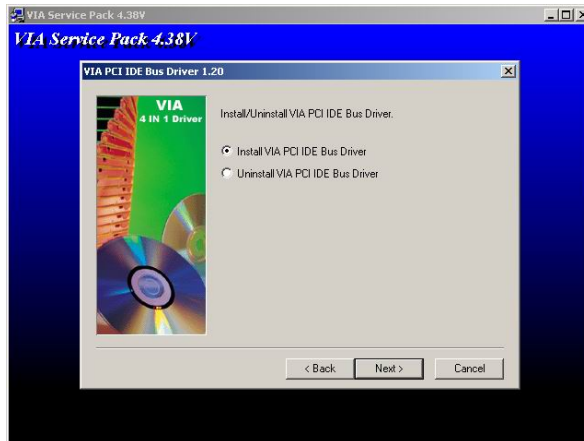
5. The 4 in 1 Setup dialog is now displayed. Select on Normally Install and then click on Next.



- 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.

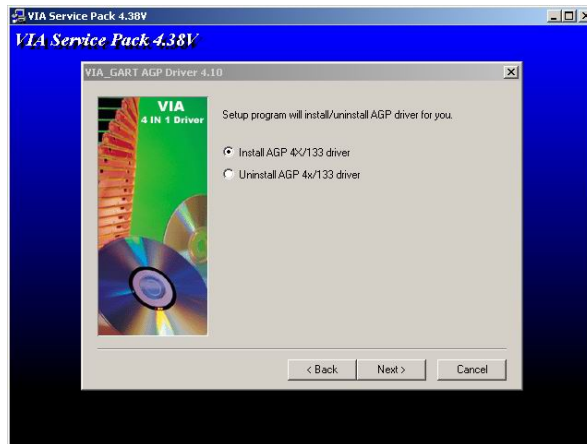


- The program starts to install the ATAPI driver when you click the Next button on the screen below.

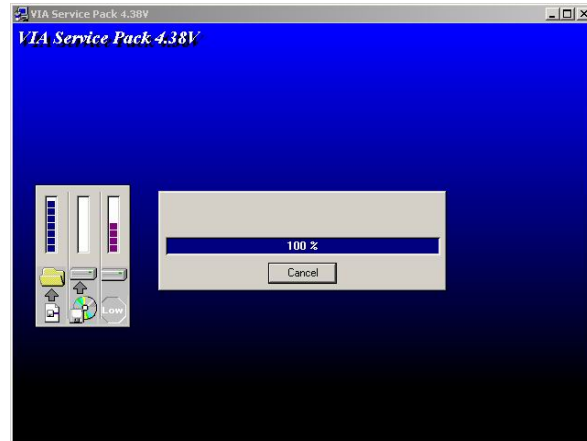


- When the ATAPI driver is completely installed. The utility then displays your DMA mode status and allows you to enable it. Tick on the box and press on the Next button to continue.

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



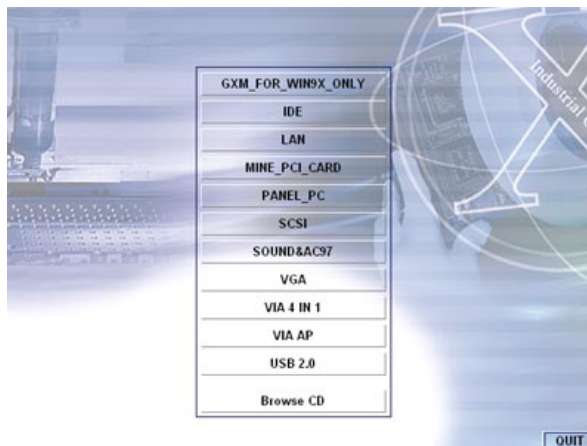
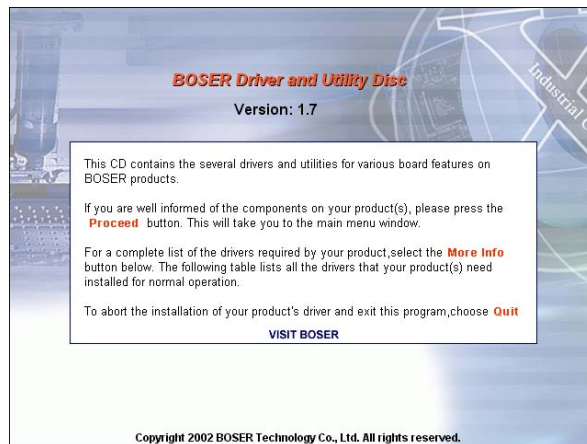
10. Installation of the AGP driver is now complete. Once the screen below appears, select on restarting your computer to activate all drivers/settings completed.



5.2 VGA Driver Installation

5.2.1 VGA Driver Installation for WIN95/98/2K

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.



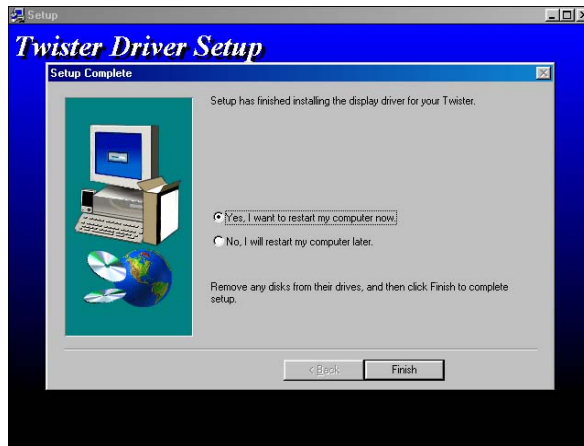
3. Once the Welcome screen appears on the screen, make sure to close applications that are running and then click the Next button.



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.

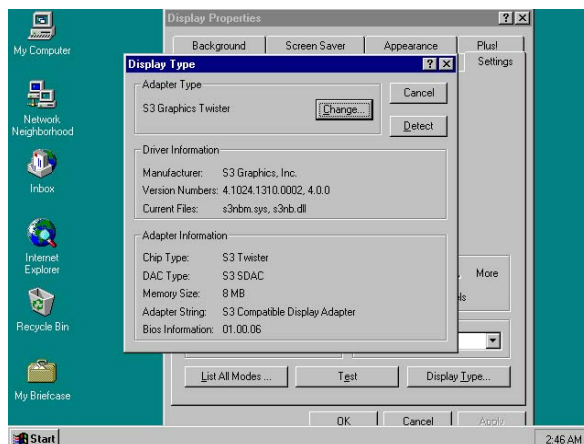


5. After the installation finishes, you will be prompted to restart your system. We recommend you to reboot your computer to allow the new settings to take effect. Click on the Finish button to reboot.

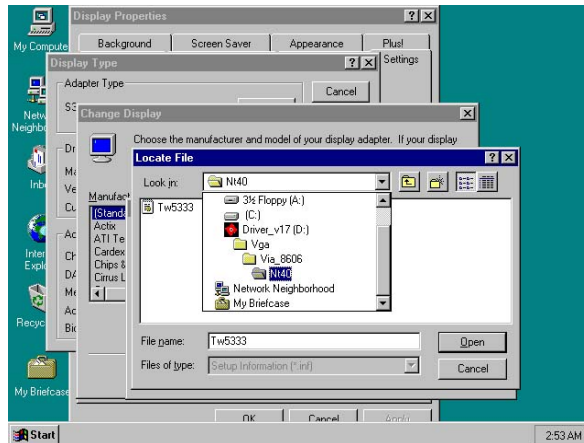


5.2.2 VGA Driver Installation for WIN NT4.0

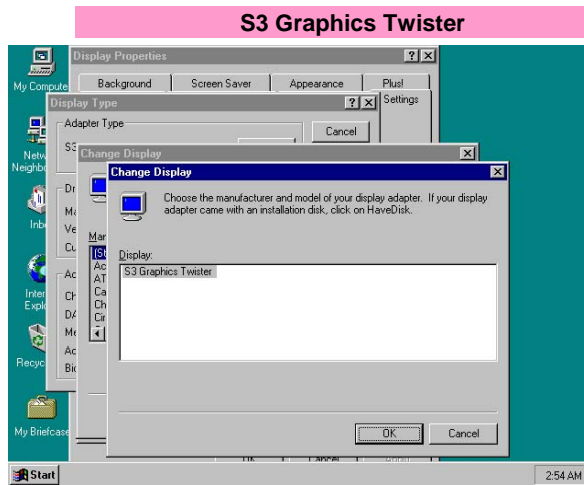
1. Click the **Start** button on the lower left hand corner of your screen, then select **Setting**. Choose **Control Panel** and double-click on the **Display** icon to launch its **Display Properties** window. Click on the **Settings** tab, and then choose **Display Type**. In the **Change Display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



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

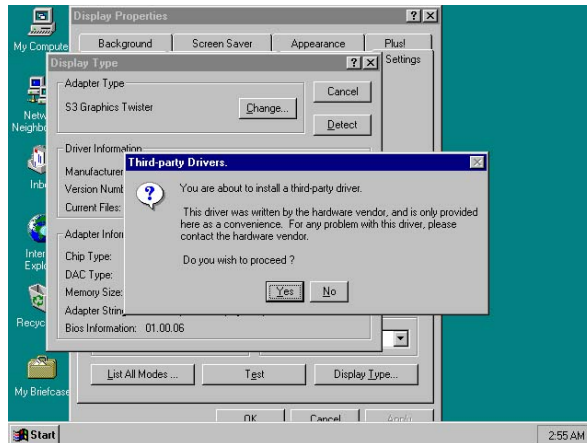


- Select

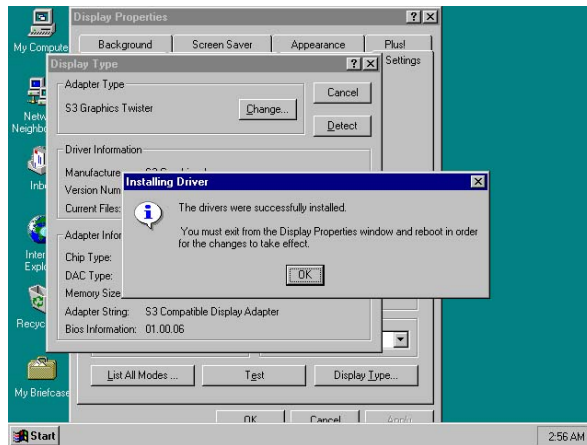


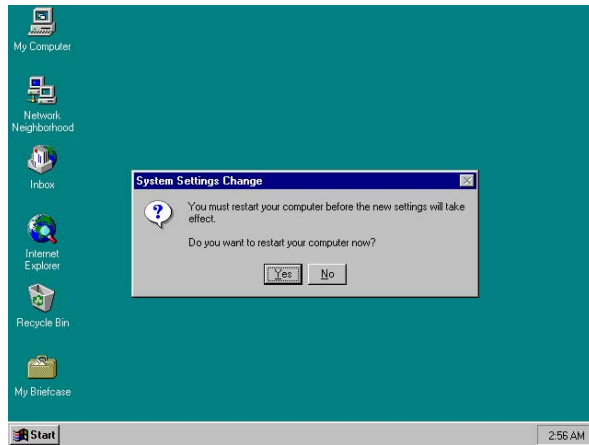
- Click **OK** or press **Enter**.

7. You will see warning panel about **Third Party Drivers**. Click on **Yes** to finish the installation.



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





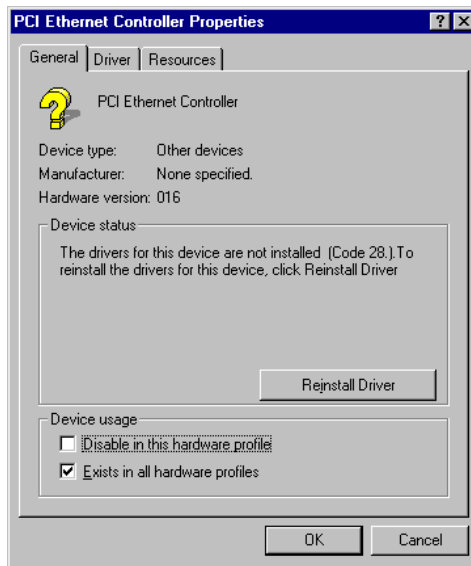
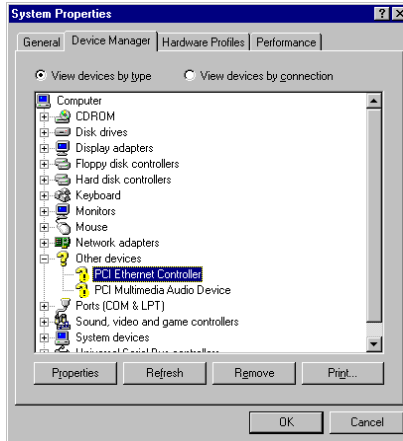
5.3 LAN Driver Installation

5.3.1 LAN Driver Installation for WIN95/98/2K

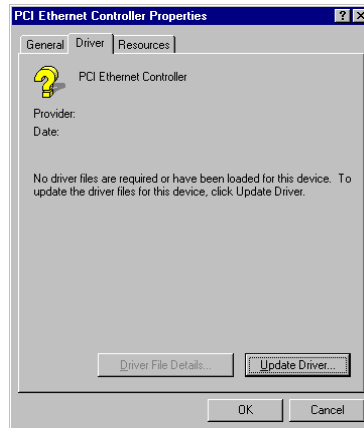
1. With the Utility CD Disk still in your CD ROM drive, right click on My Computer icon from the Windows menu. Select on System Properties and then proceed to the Device Manager from the main menu.



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



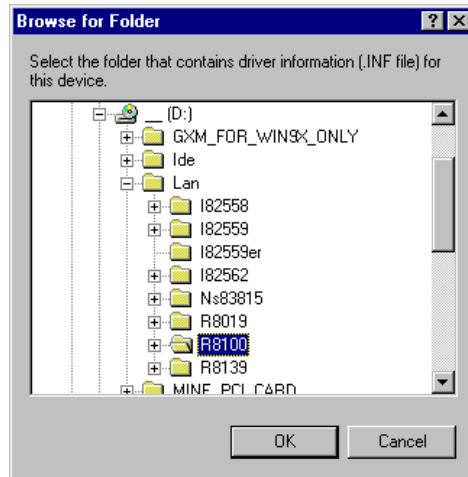
- When the succeeding window asks you what you wish Windows to do, tick on the "Search for a better driver...." Click on the Next button to proceed.



- 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.

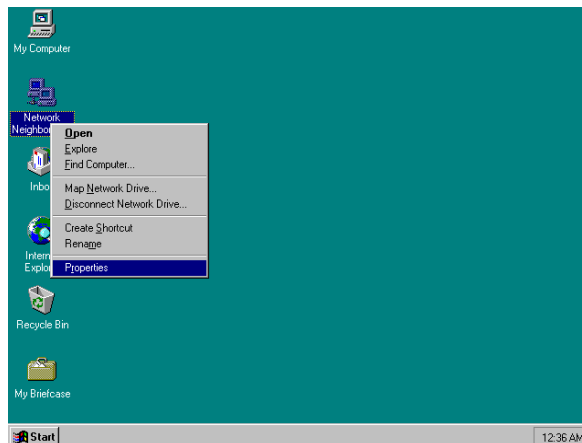


13. Restart your computer to make the new system settings take effect. Click on the Yes button when the screen below appears and your LAN Driver for Win95 and Win98 are now completely installed.

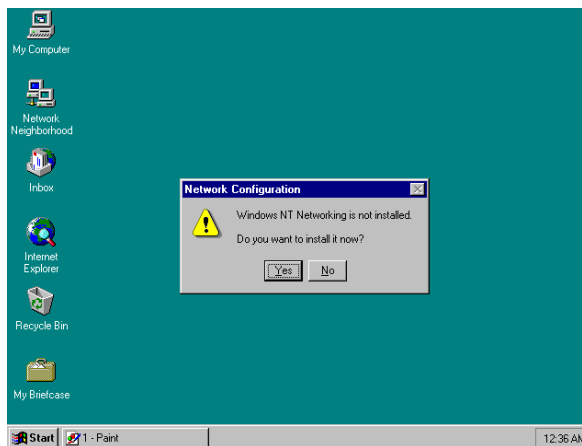


5.3.2 LAN Driver Installation for WIN NT4.0

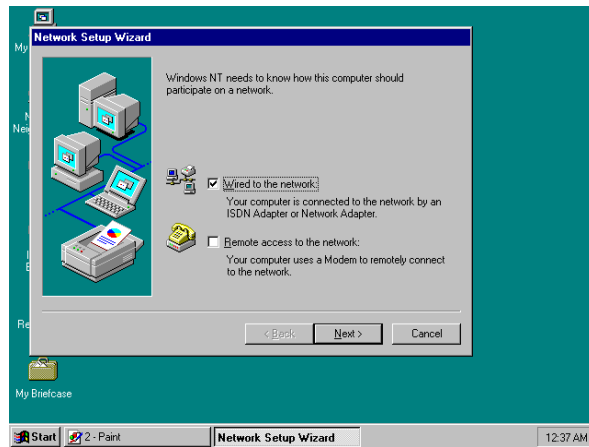
1. With the Utility CD Disk still in your CD ROM drive, right click on Network Neighborhood icon from the Windows menu. Select on Properties.



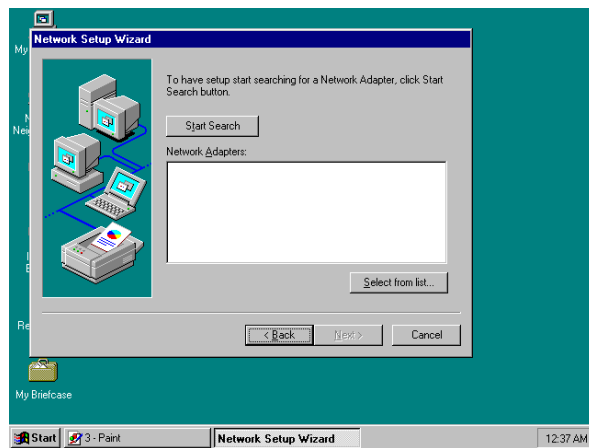
2. The system automatically detects the absence of Windows NT Networking. Click on the Yes button to start installation.



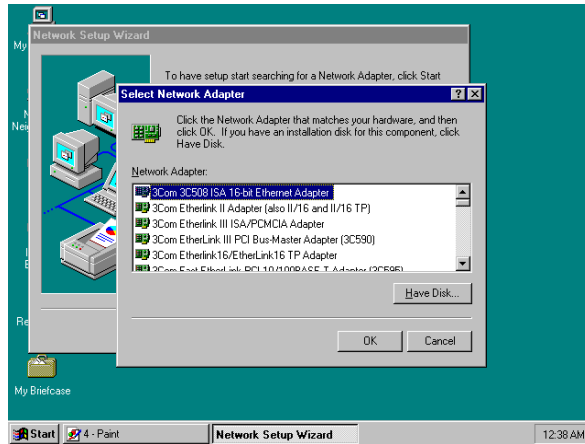
3. Tick on the "Wired to Network" once the following screen appears. Click on the Next to proceed.



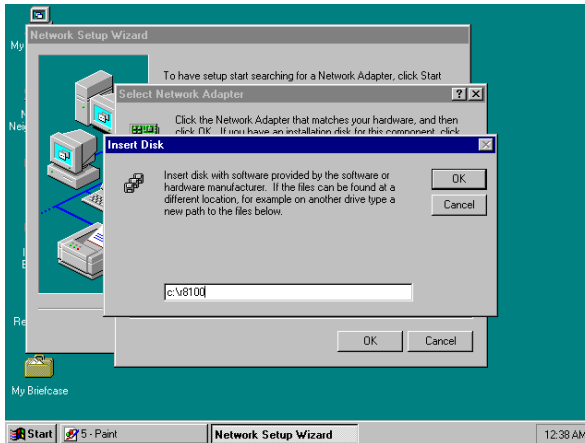
4. Click on the Start Search button for the program to locate the Network Adapter.



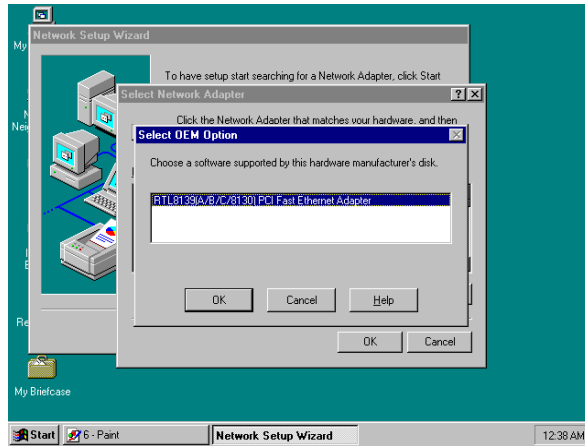
- Once setup finishes the search, it will list a number of adapters for you to choose from. Press on the Have Disk button to assign the driver path location.



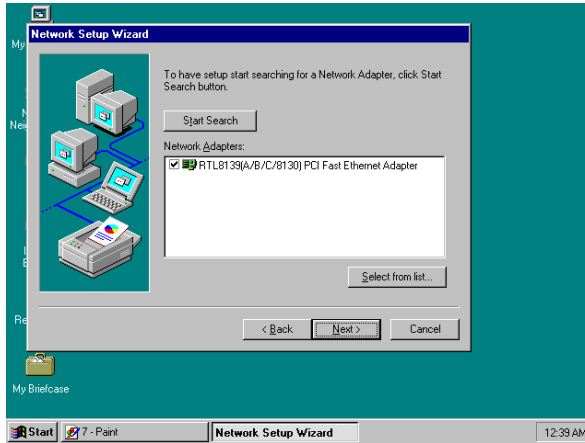
- Setup now asks you for the location of the driver. When you have entered the new driver path, press on the OK button to continue.



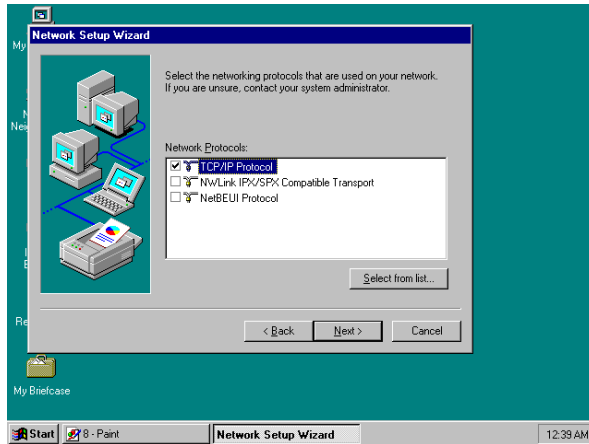
- When Setup finds the information it needs about the new driver, it will display the device it found on the following screen. Press on the OK button to accept and proceed.



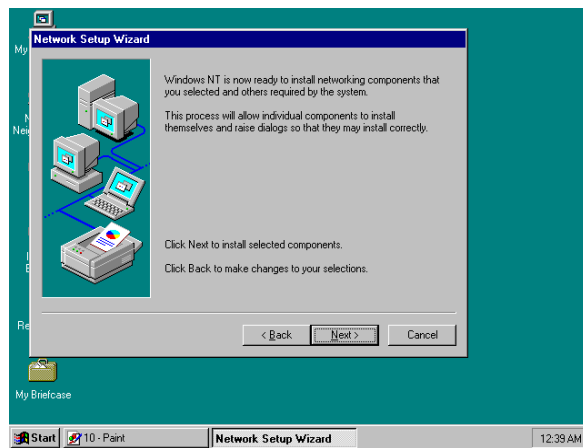
- Setup then returns to Network Setup Wizard screen and displays your new Network Adapter. Click on Next to continue.



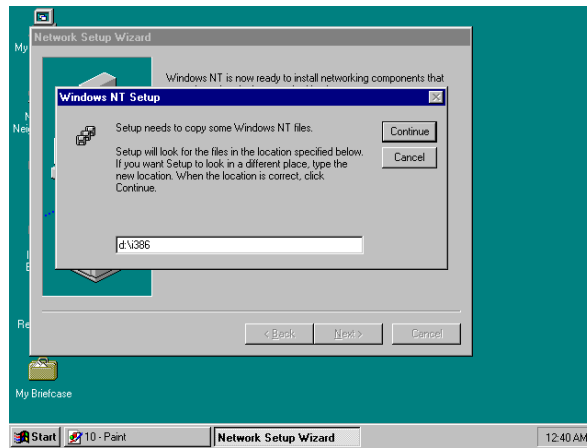
9. The Network Setup Wizard then allows you to set the Network Protocols on your network. Select the appropriate protocol and then click on Next to continue.



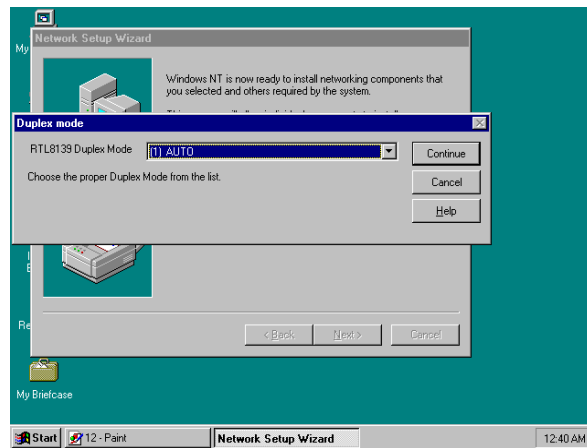
10. Before Setup starts installing the components found and the settings you made, it will give you the option to proceed or go back for changes from the following screen. Click on the Next button once you are sure of your devices.



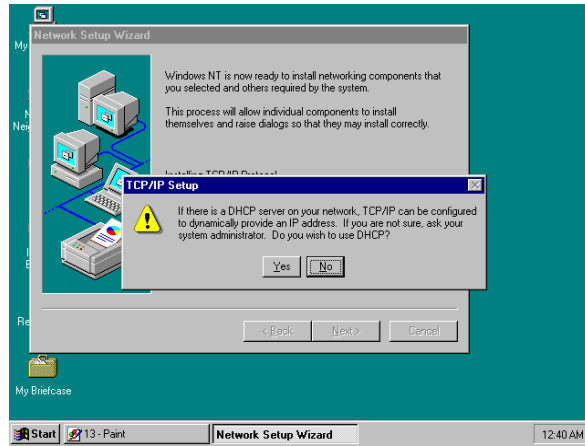
11. Windows NT Setup will then need to copy files necessary to update the system information. Specify the path then press Continue.



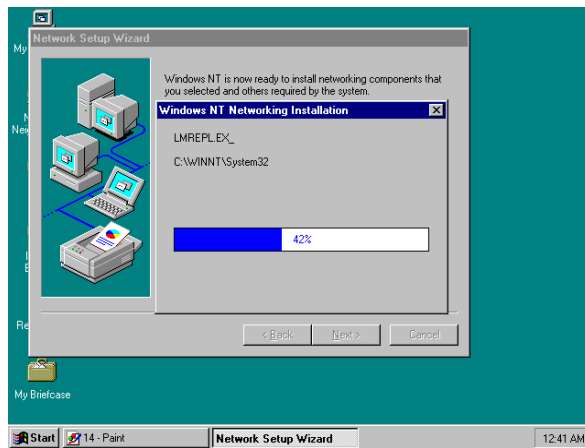
12. Once it finishes copying the files, Setup will now allow you to choose the Duplex Mode of your LAN controller. Press on the Continue button after making your selection.



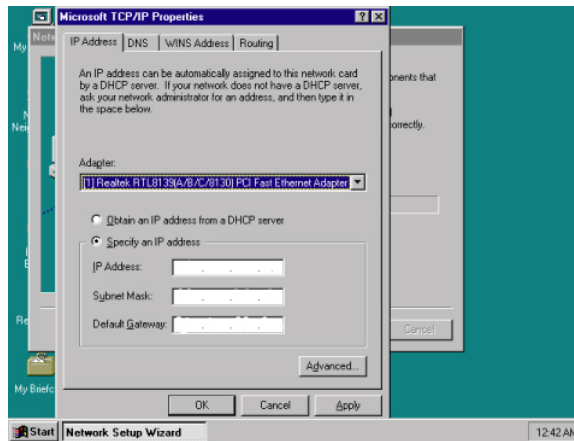
13. When Setup asks if you wish to change the TCP/IP settings of your system, select the appropriately. The default choice is No.



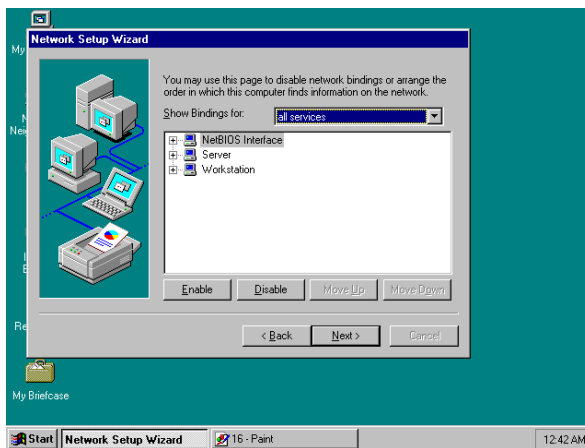
14. Setup then starts the Networking installation and copies the files.



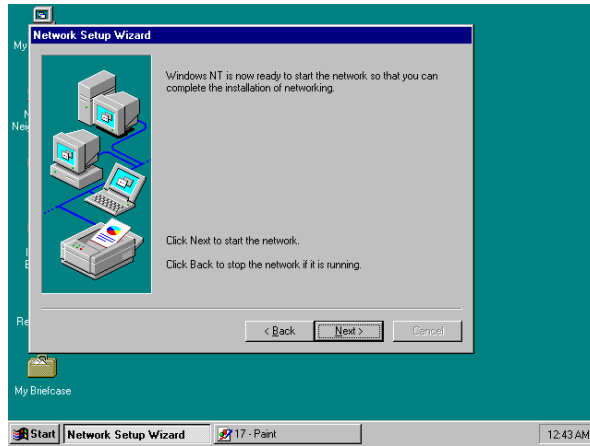
15. When Setup finishes copying, the TCP/IP properties of your system will then pop up on your screen like the one shown below. Make the necessary changes then click on OK to continue.



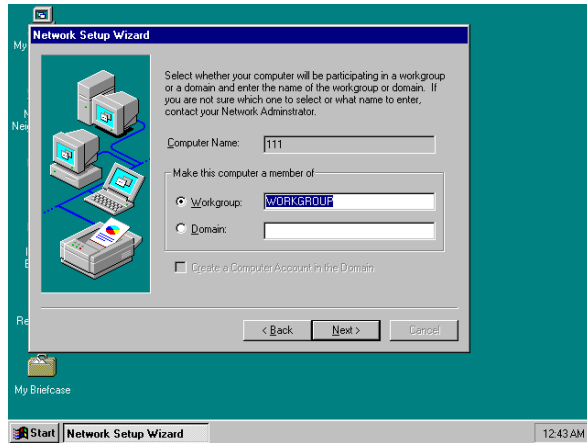
16. When the screen below appears, click on Next to continue.



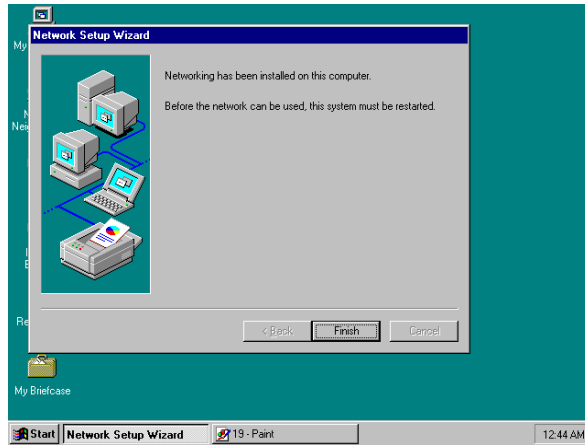
17. Setup then prompts you that it is ready to start the network. You may complete the installation thereafter. Click on Next to continue.



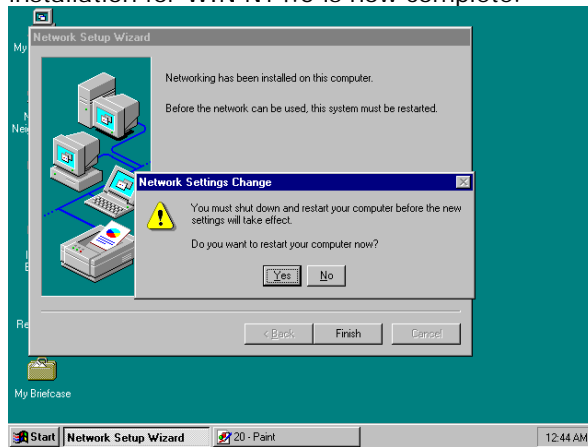
18. Assign the workgroup or domain setting of your computer. Click on Next to continue.



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.

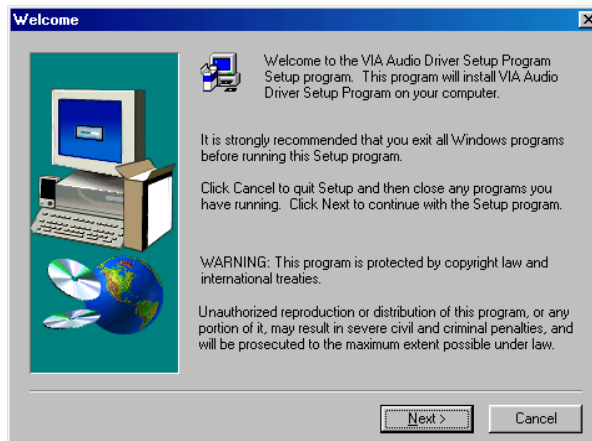


5.4 Audio Driver Installation

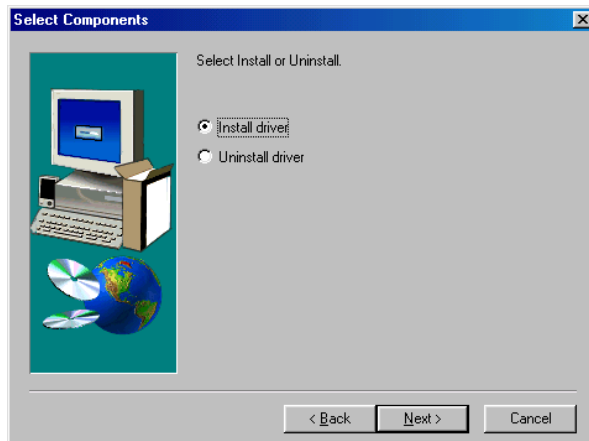
1. With the Utility CD Disk still in your CD ROM drive, open the File Manager and then select the CD-ROM drive. As soon as the system reads the disk, the VGA Menu screen below will appear on your display. Click on VIA_AC97 from the main menu.



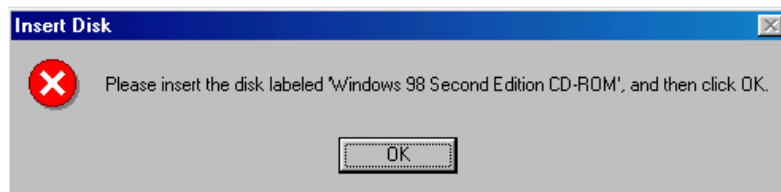
2. Once the Welcome screen appears on the screen, make sure to close applications that are running and then click the Next button.



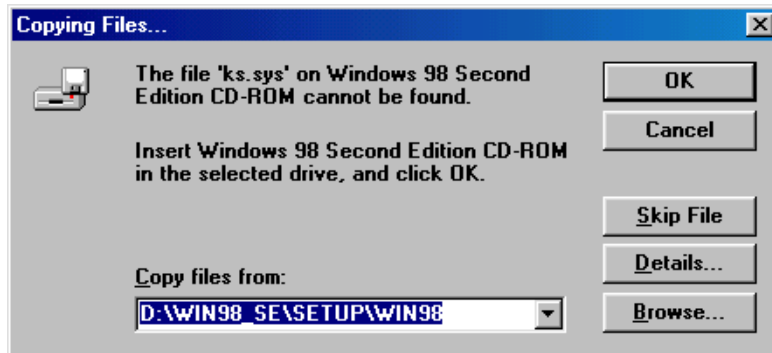
3. The Select Components dialog box is now displayed. Select on Install driver and then click on Next.



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



- 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.



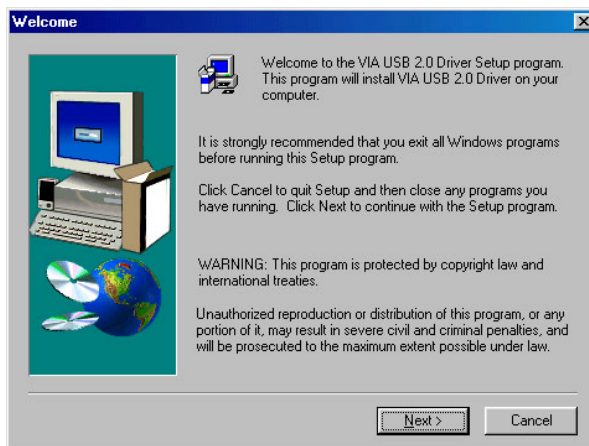
- After the audio driver installation finishes, select the Finish button to complete the installation process.



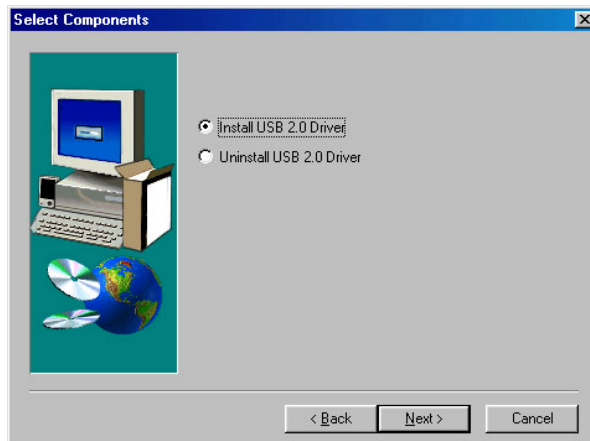
5.5 USB2.0 Driver Installation

5.5.1 Win 95/98

1. When the dialog box below appears, make sure you close all other Windows applications and then click on the **Next >** button to proceed.



2. Tick on the **"Install USB 2.0 Driver"** once the following screen appears. Click on the **Next** to proceed.

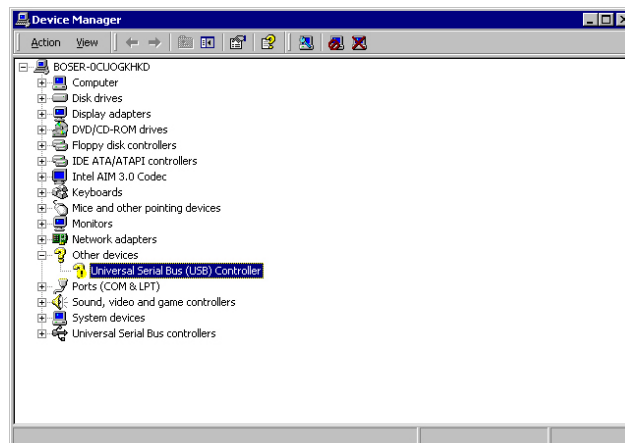


- Once the setup program finishes copying files into your system, it will prompt you to restart the computer. Tick on the **“Yes, I want to restart my computer now”** followed by a click on the **Close** button to reboot. Only after your computer boots will the new settings take effect.



5.5.2 Win 2000

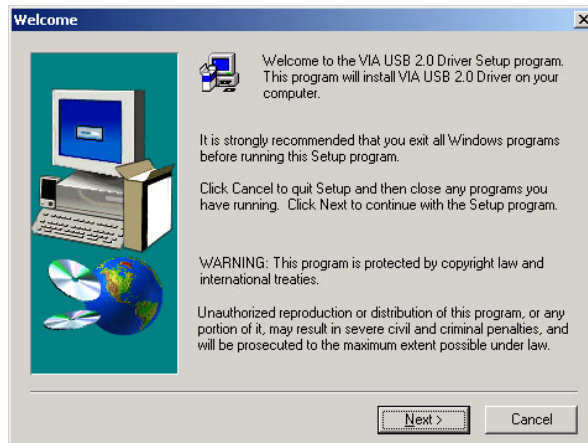
- With the Utility CD Disk still in your CD ROM drive, right click on **“My Computer”** icon from the Windows menu. Select on System Properties and then proceed to the Device Manager from the main menu.
- Select on Other Devices from the list of devices and then double-click on Universal Serial Bus (USB) Controller.



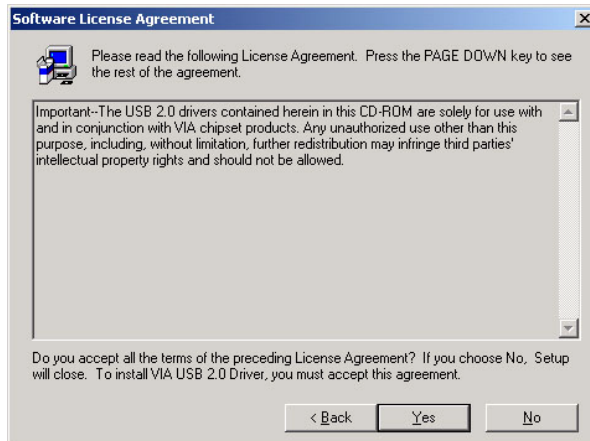
3. The Universal Serial Bus (USB) Controller Properties screen then appears, allowing you to re-install the driver. Select Update Driver from the main menu to proceed.



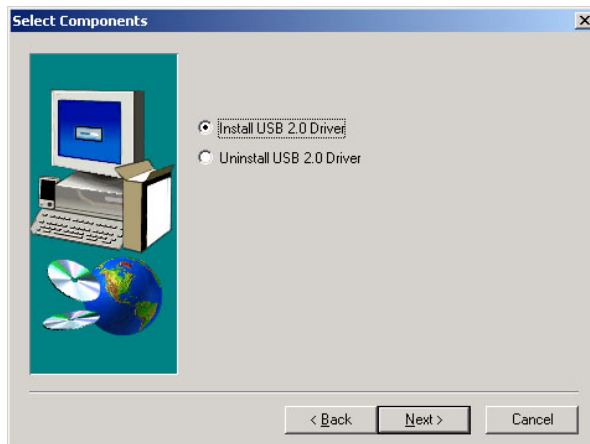
4. When the dialog box below appears, make sure you close all other Windows applications and then click on the **Next >** button to proceed.



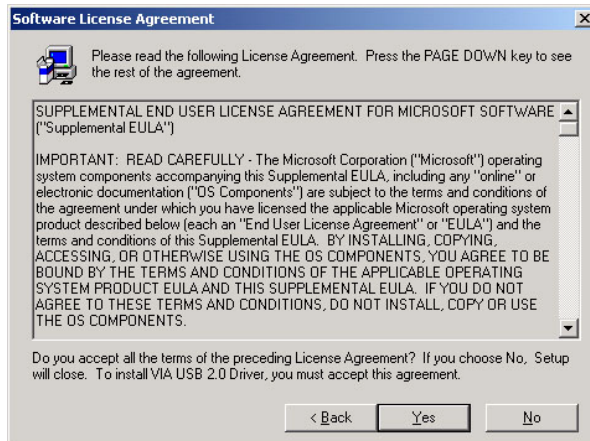
5. The Software License Agreement dialog box then appears on the screen. Choose **Yes** to proceed.



6. Tick on the **Install USB2.0 Driver** once the following screen appears. Click on **Next >** to proceed.



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



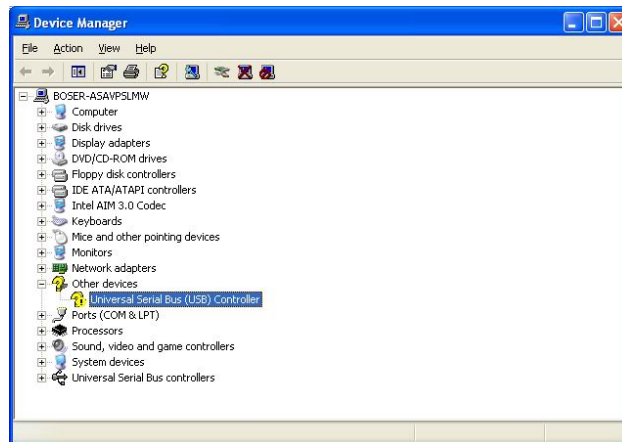
8. Once the InstallShield Wizard completes the operation and update of your USB2.0 driver, click on the **Print to File** and **Finish** button to complete the installation process.



5.5.3 Win XP

NOTE: *Please make sure you have already installed **Service Pack1**.*

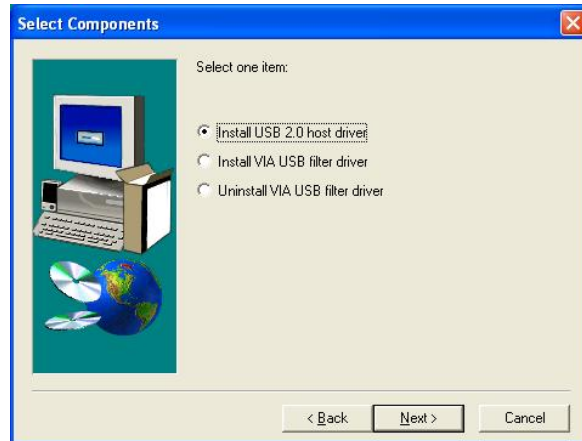
1. With the Utility CD Disk still in your CD ROM drive, right click on **"My Computer"** icon from the Windows menu. Select on System Properties and then proceed to the Device Manager from the main menu.



2. Click on the **Next >** to proceed.



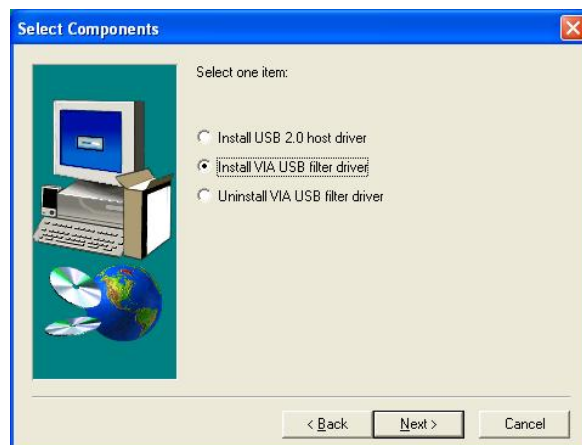
3. Tick on the **Install USB2.0 Driver** once the following screen appears. Click on **Next >** to proceed.



4. Click **Yes** to update the USB2.0 driver.



5. Tick on the **Install VIA USB filter driver** once the following screen appears. Click on **Next >** to proceed.



6. Once the InstallShield Wizard completes the operation and update of your USB2.0 driver, click on the **Finish** button to complete the installation process.



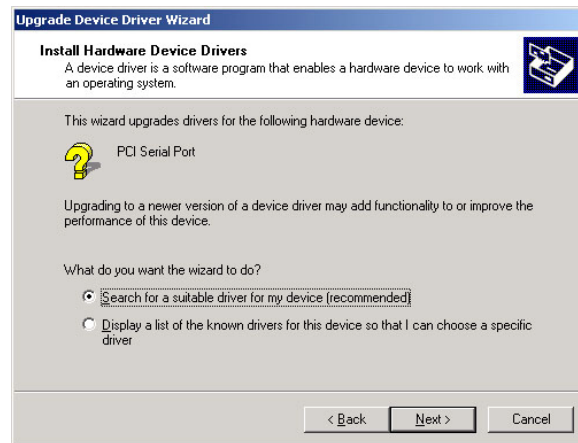
5.6 COM5~COM8 Driver Installation

5.6.1 Win 2000

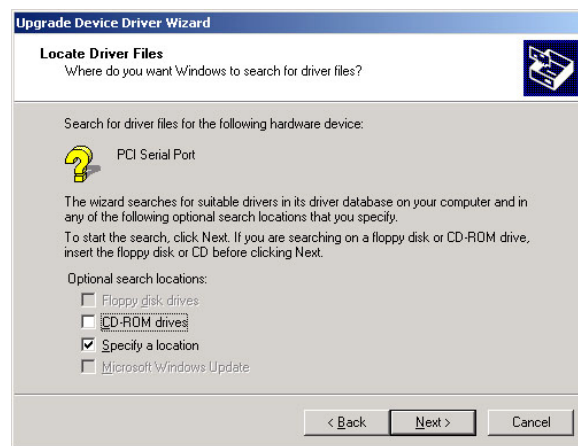
1. When the dialog box below appears, make sure you close all other Windows applications and then click on the **Next >** button to proceed.



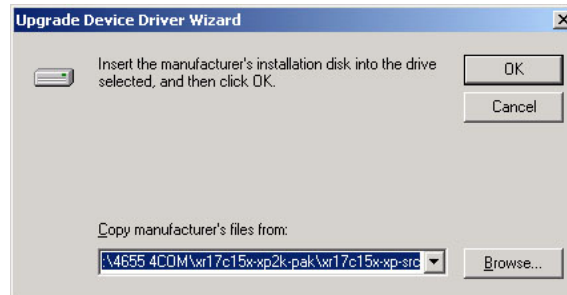
2. Tick on the **“Search for a suitable driver for my device (recommended)”** once the following screen appears. Click on the **N**ext to proceed.



3. Once the program returns to the Add New Hardware Wizard screen, your specified location will appear. Press on the **N**ext button to continue



4. Choose `sisusb2.inf` and press on the **Open** button to accept and proceed.



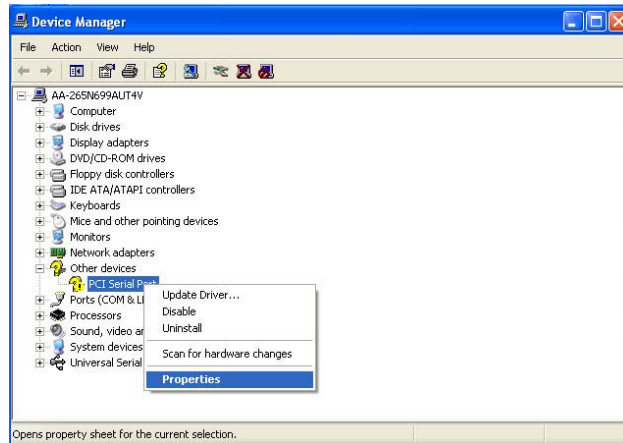
5. Once the InstallShield Wizard completes the operation and update of your USB2.0 driver, click on the **Finish** button to complete the installation process.



5.6.2 Win XP

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 and then double-click on **PCI Serial Port**.



3. The Universal Serial Bus (USB) Controller Properties screen then appears, allowing you to **Continue Anyway**.



4. Once the InstallShield Wizard completes the operation and update of your Serial Port driver, click on the **Finish** button to complete the installation process.



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