HS-2616
HS-2616M

Intel® Pentium® M/Celeron®M/
ULV Intel® Celeron® M processor
Embedded Engine Board

• CompactFlash • Mini PCI • 8-bit I/O •
• CRT/LVDS • Dual LAN • Audio •
• ATA/33/66/100 • RS-232/485 •
• USB2.0 • PCI-104 • WDT •
• Single +5V • H/W Monitor •

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Edition 1.4, October 15, 2009

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Safety Instructions

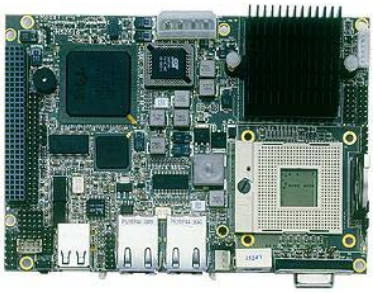
Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

- 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 product 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.

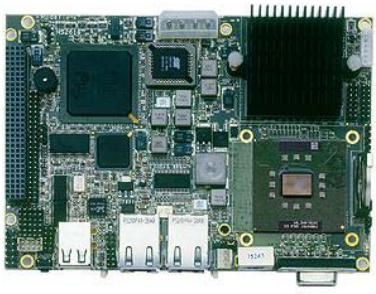
NOTE: *DO NOT TOUCH THE BOARD OR ANY OTHER SENSITIVE COMPONENTS WITHOUT ALL NECESSARY ANTI-STATIC PROTECTIONS.*

Chapter 1

General Description



HS-2616



HS-2616M

The HS-2616 is an Intel® 852GME GMCH and HS-2616M is an Intel® 852GM GMCH chipset-based board designed. The HS-2616/ HS-2616M is ideal all-in-one embedded engine board. Additional features include an enhanced I/O with CF, CRT/LVDS, dual LAN, audio, 4 COM, and USB2.0 interfaces.

Its onboard ATA/33/66/100 to IDE drive interface architecture allows the HS-2616/HS-2616M to support data transfers of 33, 66 or 100MB/sec. to one IDE drive connection. The HS-2616 supports Intel® Pentium® M/Celeron® M processor, and HS-2616M supports ULV Intel® Celeron® M processor 600MHz/512K.

The Intel® 852GM with 8MB shared main memory supporting CRT display up to 1600 x 1200. It also supports 18-bit single/dual-channel LVDS interface.

System memory is also sufficient with the one SO-DDR socket that can support up to 1GB.

Additional onboard connectors include four 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-2616/HS-2616M is designed with software that does not need the arithmetical functions of a real-time clock chip. If any program causes unexpected halts to the system, the onboard WDT will automatically reset the CPU or generate an interrupt to resolve such condition.

1.1 Major Features

The HS-2616/HS-2616M comes with the following features:

- HS-2616 provides Intel® Pentium® M/Celeron® M processor 1.3~2.0GHz, supports 533/400MHz FSB
- HS-2616M provides ULV Intel® Celeron® M processor 600MHz/512K, supports 400MHz FSB
- 1 x SO-DIMM up to 1GB DDR SDRAM
- Intel® 852GM(E) GMCH/ICH4 system chipset
- Intel® 852GM(E) integrated VGA for CRT & LVDS
- 2 x Intel® 10/100 Mbps ethernet
- AC'97 audio codec
- Supports CF, 2 x COM, 4 x USB2.0, PCI-104
- Supports 18-bit LVDS, 8-bit I/O, Single +5V power in, H/W Monitor function

1.2 Specifications

System

- **CPU**
  HS-2616 provides
  Intel® Pentium® M processor 760 2.0GHz
  Intel® Pentium® M processor 745 1.8GHz
  Intel® Celeron® M processor 370 1.5GHz
  Intel® Celeron® M processor 320 1.3GHz
  HS-2616M provides ULV Intel® Celeron® M processor 600MHz/512K
- **Front Side Bus**
  533/400MHz FSB (HS-2616)
  400MHz FSB (HS-2616M)
- **BIOS**
  AMI PnP Flash BIOS
- **System Chipset:**
  Intel® 852GME GMCH/ICH4 (HS-2616)
  Intel® 852GM GMCH/ICH4 (HS-2616M)
- **I/O Chipset**
  Winbond W83627HG

- **System Memory**
  1 x 200-pin SO-DIMM socket up to 1GB DDR SDRAM
- **Storage**
  1 x Type II CF socket
- **Watchdog Timer**
  Software programmable time-out intervals from 1~255 sec. or 1~255 min.
- **Hardware Monitor**
  Monitoring temperatures, voltages, and cooling fan status
- **Expansion**
  PCI-104
- **Power In**
  Single +5V power in
- **Operating Temperature**
  0~+60 degrees C
- **Operating Humidity**
  0~95%, non-condensing
- **Board Size (L x W)**
  145 x 102 mm

I/O Interface

- **MIO**
  1 x RS-232
  1 x RS-232/485
  4 x USB2.0 (2 x internal, 2 x external)
  1 x IDE
  1 x PS/2 for KB/MS
- **DI/O**
  8-bit input/output by parallel port

Display

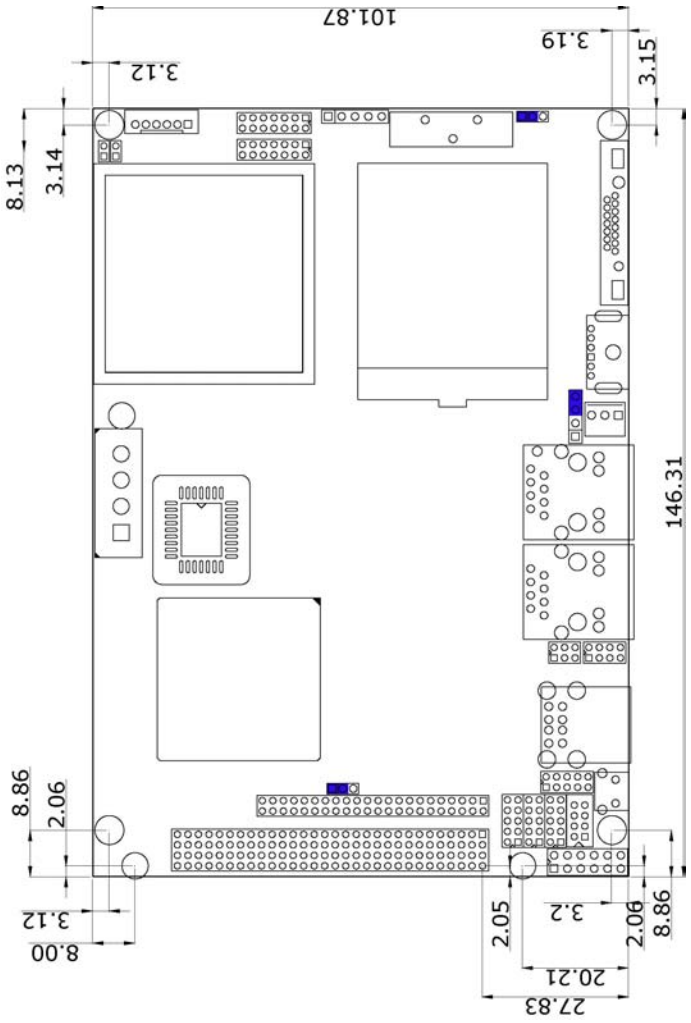
- **Chipset**
  Intel® 852GME (HS-2616)
  Intel® 852GM (HS-2616M)
- **Display Memory**
  8MB shared main memory
- **LVDS**
  18-bit single/dual-channel
- **Resolution**
  CRT Mode: 1600 x 1200

Audio

- **Chipset**
  RealTek ALC202A
- **Audio Interface (w/pin header)**
  MIC In, Line Out

- **Ethernet**
  - **Chipset**
    Intel® 82551QM and 82562ET dual 10/100 Mbps LAN
  - **Ethernet Interface**
    2 x RJ-45

1.3 Board Dimensions



Chapter 2

Unpacking

2.1 Opening the Delivery Package

The HS-2616/HS-2616M 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-2616/HS-2616M delivery package contains the following items:

- **HS-2616 or HS-2616M Board x 1**
- **Utility CD Disk x 1, including User's Manual**
- **Cables (as following table)**
- **Jumper Bag x 1**

Cables Package		
NO.	**Description**	**QTY.**
1	1-to-2 Mini DIN cable	1
2	SPK 8-pin(2.0-pitch) phone jack x 2	1
3	COM DB9-10P (2.0-pitch)	1
4	40-pin to 44-pin IDE flat cable	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.

Option Accessories	
NO.	**Description**
1	1-to-2 USB cable with bracket
2	Pentium® M Cooler (251-10310003G)

Chapter 3

Hardware Installation

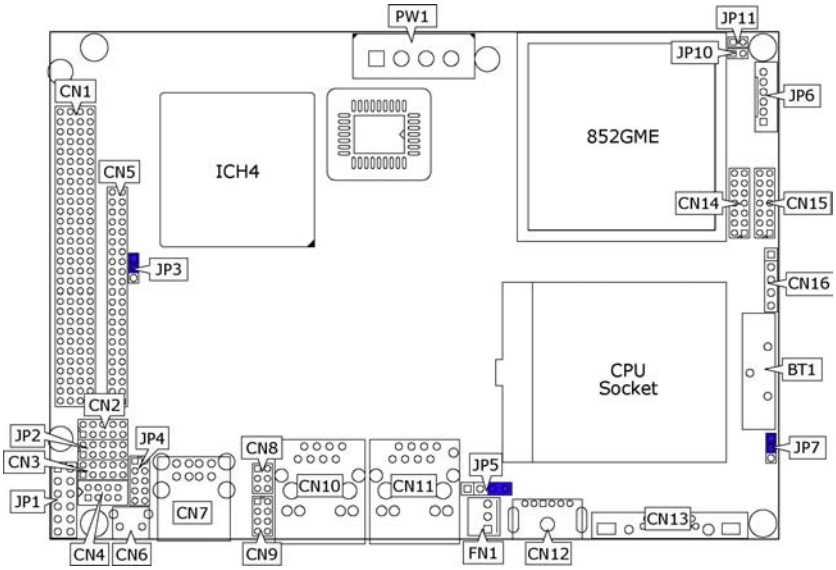
This chapter provides the information on how to install the hardware using the HS-2616/HS-2616M. This chapter also contains information related to jumper settings of switch, and watchdog timer selection etc.

3.1 Before Installation

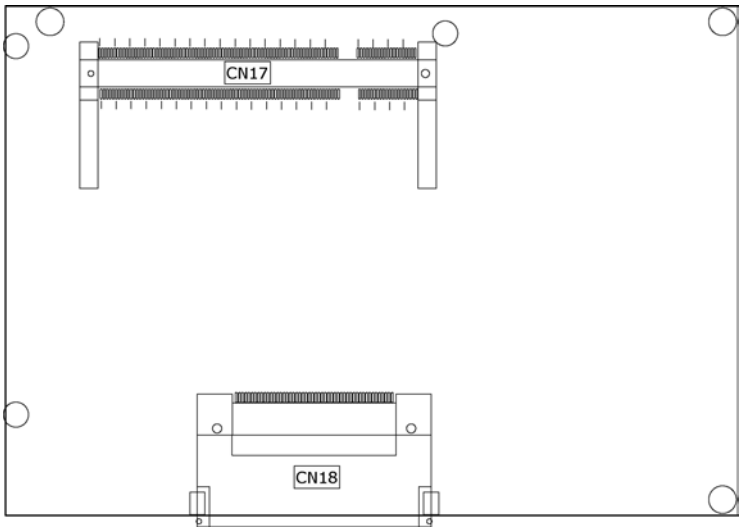
After confirming your package contents, you are now ready to install your hardware. The following are important reminders and steps to take before you begin with your installation process.

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. (set JP7 1-2)
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



Top Side



Solder Side

3.3 Jumper List

Jumper	Default Setting	Setting	Page
JP3	Onboard LAN 2 Enabled/Disabled Select: *Enabled*	Short 1-2	14
JP4	COM2 Use RS-232 or RS-485 Select: *RS-232*	Open	13
JP5	System Frequency Select: *400MHz*	Short 3-4	10
JP10		Short	10
JP7	Clear CMOS: *Normal Operation*	Short 1-2	15
JP11	SDRAM Frequency Select: *266MHz*	Short 1-2	10

3.4 Connector List

Connector	Definition	Page
CN1	PCI-104 Connector	24
CN3/CN2	COM 1/COM 2 Connector (5x2 header)	13
CN4	Internal USB2.0 Port	14
CN5	IDE Connector	12
CN6	External Reset Button	16
CN7	External USB2.0 Port	14
CN8	RS-485 Connector	13
CN9	MIC In/Line Out Connector	18
CN10/CN11	RJ-45 Connector	14
CN12	PS/2 6-pin Mini DIN KB/MS Connector	16
CN13	15-pin CRT Connector	10
CN15/CN14	LVDS Panel Connector	10
CN16	IrDA Connector	20
CN17	SO-DDR Socket	10
CN18	CompactFlash Connector	18
FN1	Fan Power In Connector	15
JP1	System Front Panel Control	16
JP2	8-bit I/O Connector	20
JP6	Inverter Power In Connector	10
PW1	4-pin Power In Connector	15

3.5 Configuring the CPU

The HS-2616 provides Intel® Pentium® M processor 760 2.0GHz, Pentium® M processor 745 1.8GHz, Celeron® M processor 370 1.5GHz, and Celeron® M processor 1.3GHz. The HS-2616M embedded with ULV Intel® Celeron® M processor 600MHz/512K. If you want to use 533MHz FSB processor, please set *JP5/JP10*, and *JP5/JP10* is only for HS-2616.

- **JP5/JP10: System Frequency Select**

Options	Settings	
	JP5	JP10
400MHz FSB (default)	Short 3-4	Short
533MHz FSB	All Open	Open

3.6 System Memory

The HS-2616/HS-2616M provides one SO-DDR socket at locations *CN17*. The maximum capacity of the onboard memory is 1GB.

NOTE: *If System Frequency sets 400MHz FSB, please use 266MHz SDRAM*

- **JP11: SDRAM Frequency Select**

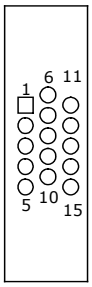
Options	Settings
333MHz FSB	Open
266MHz FSB (default)	Short

3.7 VGA Controller

The HS-2616/HS-2616M provides two connection methods of a VGA device. *CN13* offers a single standard CRT connector and *CN15/CN14* are the LVDS interface connectors onboard reserved for flat panel installation.

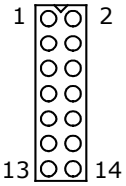
- **CN13: CRT Connector**

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



- **CN15/CN14: LVDS Interface Connector**

PIN	Description	PIN	Description
1	V_{LCD}	2	V_{LCD}
3	GND	4	GND
5	A0-/A4-	6	A0+/A4+
7	A1-/A5-	8	A1+/A5+
9	A2-/A6-	10	A2+/A6+
11	CLK1-/CLK2-	12	CLK1+/CLK2+
13	N/C	14	N/C

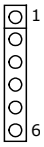


NOTE: *LVDS cable should be produced very carefully. A0- & A0+ have to be fabricated in twister pair (A1- & A1+, A2- & A2+ and so on) otherwise the signal won't be stable.*

NOTE: *If use CN15 only, it just supports 18-bit single channel LVDS panel; If you want to use 36-bit dual channel LVDS panel, please use CN15 and CN14 combined.*

- **JP6: Inverter Power In Connector**

PIN	Description
1	+12V
2	+12V
3	VCC5
4	BK_EN
5	LCD_EN
6	GND

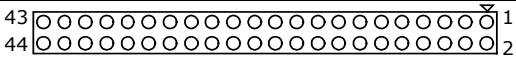


3.8 PCI E-IDE Drive Connector

CN5 is a standard 44-pin 2.0-pitch connector daisy-chain driver connector serves the PCI E-IDE drive provisions onboard the HS-2616/ HS-2616M. A maximum of two ATA/33/66/100 IDE drives can be connected to the HS-2616/HS-2616M via *CN5*.

- **CN5: IDE Connector**

PIN	Description	PIN	Description
1	Reset	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GND	20	N/C
21	PDREQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	PIORDY	28	PR1PD1-
29	RPDACK-	30	GND
31	Interrupt	32	N/C
33	RPDA1-	34	PATA66
35	RPDA0-	36	RPDA2-
37	RPCS1-	38	RPCS3-
39	HDD Active	40	GND
41	VCC	42	VCC
43	GND	44	N/C



3.9 Serial Port Connectors

The HS-2616/HS-2616M offers NS16C550 compatible UARTs with Read/ Receive 16-byte FIFO serial ports and internal 10-pin headers and RS-422/485 connector.

- **CN3/CN2: COM 1/COM 2 Connector (5x2 Header)**

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

- **CN8: RS-485 Connector (3x2 Header, COM4)**

PIN	Description	PIN	Description
1	TX-	2	TX+
3	RX+	4	RX-
5	GND	6	VCC

NOTE: *The terminal resistance of RX & TX is set at 180 Ω.*

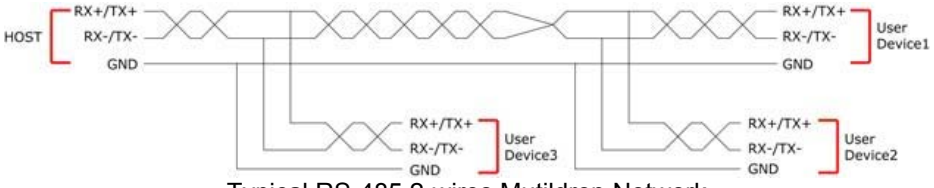
- **JP4: COM 2 use RS-232 or RS-485 Select**

Options	Settings
RS-232 (default)	Open
RS-485 by Auto (*1)	Short 1-2, 3-4, 5-7, 8-10
RS-485 by –RTS (*-1)	Short 1-2, 3-4, 7-9, 8-10
RS-485 Full Duplex (*2)	Short 1-2, 3-4, 6-8

NOTE: **1: 2-wires RS-485 function*

**2: 4-wires point-to-point full duplex function*

4-wires point-to-point full duplex RS-485



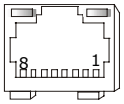
Typical RS-485 2-wires Mutildrop Network

3.10 Ethernet Connector

The HS-2616/HS-2616M provides two external RJ-45 interface connectors. Please refer to the following for its pin information.

- **CN10/CN11: RJ-45 Connector**

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



- **JP3: Onboard LAN 2 Enabled/Disabled Select**

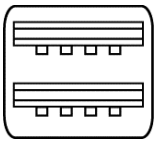
Options	Settings
Enabled (default)	Short 1-2
Disabled	Short 2-3

3.11 USB Port

The HS-2616/HS-2616M provides one 8-pin connectors, at location *CN4*, for two USB ports, and four external USB2.0 ports at *CN7*.

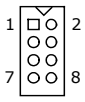
- **CN7: External USB2.0 Port**

PIN	Description	PIN	Description
1	VCC	2	VCC
3	USBD0-	4	USBD1-
5	USBD0+	6	USBD1+
7	GND	8	GND



- **CN4: Internal USB2.0 Port**

PIN	Description	PIN	Description
1	VCC	2	VCC
3	USBD2-	4	USBD3-
5	USBD2+	6	USBD3+
7	GND	8	GND



3.12 CMOS Data Clear

The HS-2616/HS-2616M has a Clear CMOS jumper on *JP7.*

- **JP7: Clear CMOS**

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

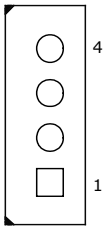
IMPORTANT: *Before you turn on the power of your system, please set JP7 to Short 1-2 for normal operation.*

3.13 Power and Fan Connectors

HS-2616/HS-2616M provides one 4-pin power in at *PW1*.

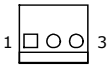
- **PW1: 4-pin Power In Connector**

PIN	Description
1	VCC
2	GND
3	GND
4	+12V



- **FN1: Fan Power In Connector**

PIN	Description
1	GND
2	+5V
3	Fan Speed



3.14 Keyboard/Mouse Connectors

The HS-2616/HS-2616M offers *CN12* for an internal 6-pin cable converter to keyboard/mouse.

- **CN12: 6-pin Keyboard/Mouse Connector**

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

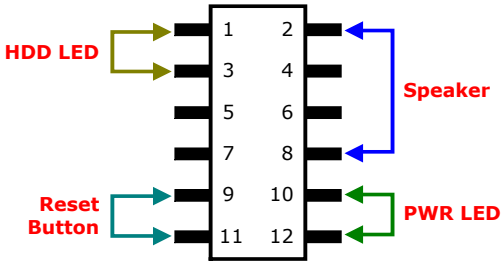
3.15 System Front Panel Control

The HS-2616/HS-2616M has system front panel control at location *JP1*.

- **JP1: System Front Panel Control**

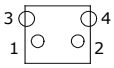
PIN	Description	PIN	Description
1	VCC	2	Speaker
3	HDD LED	4	N/C
5	N/C	6	GND
7	N/C	8	VCC
9	Reset Switch	10	VCC
11	GND	12	GND

Connector JP1 Orientation



- **CN6: External Reset Button**

PIN	Description
1	GND
2	Reset Switch
3	GND
4	GND



3.16 Watchdog Timer

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

The following sample programs show how to enable, disable and refresh the watchdog timer:

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

        MOV     AL, 00H
        OUT     DX, AL
        MOV     DX, 2EH
        MOV     AL, F6H
        OUT     DX, AL
        MOV     DX, 2FH
        MOV     AL, 00H             ; *00H=Disabled
        OUT     DX, AL
```

```
;-------------------------------------------------------------
;Exit extended function mode
;-------------------------------------------------------------
        MOV     DX, 2EH
        MOV     AL, AAH
        OUT     DX, AL
```

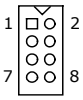
User can also use AL, 00H's defined time for reset purposes, e.g.00H for Disable, 01H = 1sec, 02H=2sec….FFH=255sec.

3.17 Audio Connectors

The HS-2616 has an onboard AC97 3D audio controller. The following tables list the pin assignments of the Line In/Audio Out connector.

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

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



3.18 CompactFlash™ Connector

The HS-2616/HS-2616M also offers a Type I/II CompactFlash™ connector which is IDE interface located at the solder side of the board. The designated *CN18* connector, once soldered with an adapter, can hold CompactFlash™ cards of various sizes. Please turn off the power before inserting the CF card.

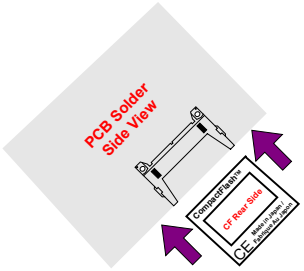
- **CN18: CompactFlash™ Connector**

PIN	Description	PIN	Description
1	GND	2	IDE_PDD3
3	IDE_PDD4	4	IDE_PDD5
5	IDE_PDD6	6	IDE_PDD7
7	IDE_PDCS1#	8	GND
9	GND	10	GND
11	GND	12	GND
13	+3.3V	14	GND
15	GND	16	GND
17	GND	18	IDE_PDA2
19	IDE_PDA1	20	IDE_PDA0

…MORE ON NEXT PAGE…

PIN	Description	PIN	Description
21	IDE_PDD0	22	IDE_PDD1
23	IDE_PDD2	24	GND
25	GND	26	GND
27	IDE_PDD11	28	IDE_PDD12
29	IDE_PDD13	30	IDE_PDD14
31	IDE_PDD15	32	IDE_PDCS3#
33	GND	34	IDE_PDIOR#
35	IDE_PDIOW#	36	+3.3V
37	INT_IRQ15	38	+3.3V
39	+3.3V	40	N/C
41	RESET#	42	IDE_PDIORDY
43	CF_PDERQ	44	CF_REGB
45	IDE_ACTP#	46	DETECT
47	IDE_PDD8	48	IDE_PDD9
49	IDE_PDD10	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.



3.19 IrDA Function

CN16 is a 5-pin internal IR communication connector for connection of an IrDA device.

- **CN16: IrDA Connector**

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

3.20 8-bit I/O Function

The HS-2616/HS-2616M offers one 8-bit input/output port by parallel port.

- **JP2: 8-bit Input/Output**

PIN	Description	PIN	Description
1	VCC	2	GND
3	GD0	4	GD4
5	GD1	6	GD5
7	GD2	8	GD6
9	GD3	10	GD7


```
.286

        .MODEL SMALL
        .DATA                       ;this is data area
port    equ     0378h               ;print port can be change to 278h

        .CODE

print   macro   buff
        mov     dx, offset buff;
        mov     ah,09h
        int     21h
        endm

delay :
        push    cx
        mov     cx,0155h
@@:
        jmp     $+2
        push    cx
        mov     cx,0ffffh
```

```
wait1:  loop    wait1
        pop     cx
        loop    @b
        pop     cx
        ret


begin   proc    near
        mov     ax,@data
        mov     ds,ax
        STI

        Mov     dx, port
        Mov     al, 80h             out     dx, al

;;--------------------
;;ROR
        mov     cx, 08h
@@:
        ror     al, 1
        call    delay
        out     dx, al
        loop    @b
        pop     cx
;;ROL
        push    cx
        mov     cx, 08h
@@:
        rol     al, 1
        out     dx, al
        call delay
        loop    @b
        pop     cx
;;--------------------
;;--------------------
;;ROR
        mov     cx, 08h
@@:
        ror     al, 1
        call delay
        out     dx, al
        loop    @b
        pop     cx
;;ROL
        push    cx
        mov     cx, 08h
@@:
        rol     al, 1
        out     dx, al
        call delay
        loop    @b
        pop     cx
;;--------------------
;;--------------------
;;ROR
        mov     cx, 08h
@@:
        ror     al, 1
```

```
        call delay
        out     dx, al
        loop    @b
        pop     cx
;;ROL
        push    cx
        mov     cx, 08h
@@:
        rol     al, 1
        out     dx, al
        call delay
        loop    @b
        pop     cx
;;--------------------
;;--------------------
;;ROR
        mov     cx, 08h
@@:
        ror     al, 1
        call delay
        out     dx, al
        loop    @b
        pop     cx
;;ROL
        push    cx
        mov     cx, 08h
@@:
        rol     al, 1
        out     dx, al
        call delay
        loop    @b
        pop     cx
;;--------------------
;;--------------------
;;ROR
        mov     cx, 08h
@@:
        ror     al, 1
        call delay
        out     dx, al
        loop    @b
        pop     cx
;;ROL
        push    cx
        mov     cx, 08h
@@:
        rol     al, 1
        out     dx, al
        call delay
        loop    @b
        pop     cx
;;--------------------
;;--------------------
;;ROR
        mov     cx, 08h
@@:
        ror     al, 1
        call delay
```

```
        out     dx, al
        loop    @b
        pop     cx
;;ROL
        push    cx
        mov     cx, 08h
@@:
        rol     al, 1
        out     dx, al
        call delay
        loop    @b
        pop     cx
;;--------------------
;;--------------------
;;ROR
        mov     cx, 08h
@@:
        ror     al, 1
        call delay
        out     dx, al
        loop    @b
        pop     cx
;;ROL
        push    cx
        mov     cx, 08h
@@:
        rol     al, 1
        out     dx, al
        call delay
        loop    @b
        pop     cx
;;--------------------

;flash LED 3 time
        mov     cx, 01h
@@:
        mov     al, 0ffh
        out     dx, al
        call delay
        mov     al,0h
        out     dx, al
        call delay
        loop    @b
ee:

        mov     ah, 4ch             ;go back to dos
        int     21h
        .stack
        begin   endp
        end begin
```

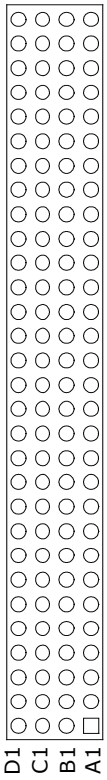
3.21 PCI-104 Connector

The HS-2616/HS-2616M provides one PCI-104 connector, at location *CN1*.

NOTE: *To integrate the PCI-104 module on to the HS-2616/HS-2616M, please use the enclosed 17mm copper stand-off to raise up the module board.*

- **CN1: PCI-104 Connector**

PIN	Description	PIN	Description
A1	N/C	B1	N/C
A2	N/C	B2	AD2
A3	AD5	B3	GND
A4	CBE0#	B4	AD7
A5	GND	B5	AD9
A6	AD11	B6	N/C
A7	AD14	B7	AD13
A8	+3.3V	B8	CBE1#
A9	SERR#	B9	GND
A10	GND	B10	PERR#
A11	STOP#	B11	+3.3V
A12	+3.3V	B12	TRDY-
A13	FRAME#	B13	GND
A14	GND	B14	AD16
A15	AD18	B15	+3.3V
A16	AD21	B16	AD20
A17	+3.3V	B17	AD23
A18	IDSEL0	B18	GND
A19	AD24	B19	CBE3#
A20	GND	B20	AD26
A21	AD29	B21	VCC
A22	VCC	B22	AD30
A23	REQ0#	B23	GND
A24	GND	B24	REQB
A25	GNTA	B25	N/C
A26	VCC	B26	PCICLK8
A27	PCICLKB	B27	VCC



...MORE ON NEXT PAGE...

PIN	Description	PIN	Description
A28	GND	B28	INTR_D#
A29	+12V	B29	INTR_A#
A30	-12V	B30	REQC
C1	VCC	D1	AD0
C2	AD1	D2	VCC
C3	AD4	D3	AD3
C4	GND	D4	AD6
C5	AD8	D5	GND
C6	AD10	D6	PULL VCC
C7	GND	D7	AD12
C8	AD15	D8	+3.3V
C9	N/C	D9	PAR
C10	+3.3V	D10	PULL VCC
C11	PULL VCC	D11	GND
C12	GND	D12	DEVSEL#
C13	IRDY#	D13	+3.3V
C14	+3.3V	D14	CBE2#
C15	AD17	D15	GND
C16	GND	D16	AD19
C17	AD22	D17	+3.3V
C18	IDSEL1	D18	IDSEL2
C19	N/C	D19	IDSEL3
C20	AD25	D20	GND
C21	AD28	D21	AD27
C22	GND	D22	AD31
C23	REQA	D23	N/C
C24	VCC	D24	GNT0#
C25	GNTB	D25	GND
C26	GND	D26	PCICLKA
C27	PCICLKC	D27	GND
C28	VCC	D28	PCIRST#
C29	INTR_B#	D29	INTR_C#
C30	INTR_C#	D30	N/C

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Chapter 4

AMI BIOS Setup

The HS-2616 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 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.

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Power	Exit

System Overview

AMI BIOS
Version : 08.00.13
Build Date : 11/01/06
ID : HS261601

Processor
Type : Genuine Intel® processor
Speed : 600MHz
Count : 1

System Memory
Size : 112MB

System Time [00:29:32]
System Date [Tue 01/01/2002]

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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

4.4 Advanced Settings

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.

BIOS SETUP UTILITY

Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Power	Exit

Advanced Settings

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

- ► CPU Configuration
- ► IDE Configuration
- ► SuperIO Configuration
- ► Hardware Health Configuration
- ► USB Configuration

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Power	Exit

Configure advanced CPU settings
Module Version –13.04

Manufacturer	:	Intel
Brand String	:	Genuine Intel® processor
Frequency	:	600MHz
FSB Speed	:	400MHz
Cache L1	:	32 KB
Cache L2	:	512 KB

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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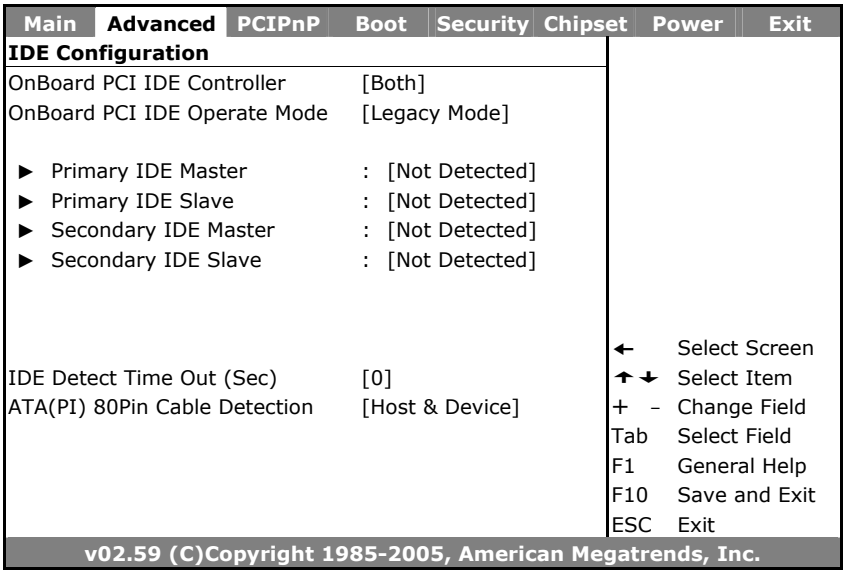
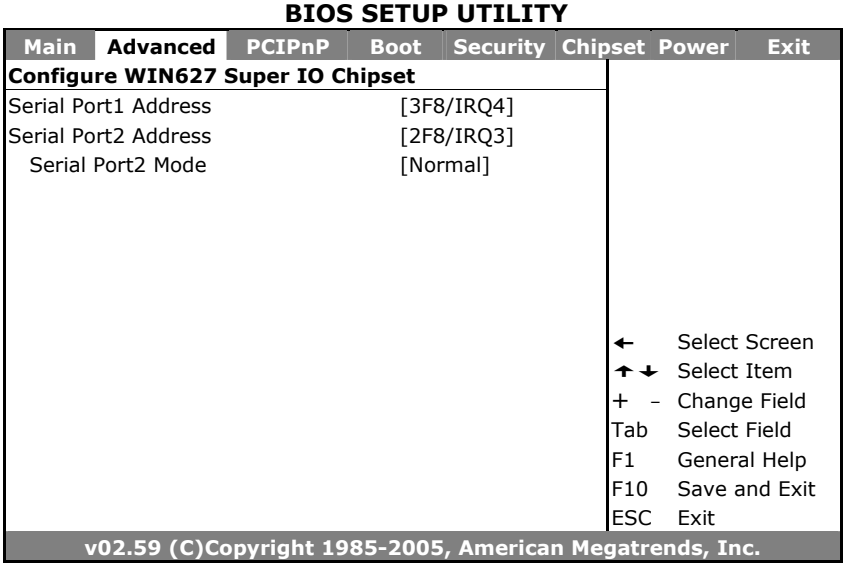
BIOS SETUP UTILITY



BIOS SETUP UTILITY



BIOS SETUP UTILITY

Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Power	Exit

Hardware Health Configuration

H/W Health Function	[Enabled]	
Hardware Health Event Monitoring		
CPU Temperature		
VcoreA		
+3.3Vin		← Select Screen
+5Vin		↑↓ Select Item
		+ – Change Field
		Tab Select Field
		F1 General Help
		F10 Save and Exit
		ESC Exit

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BIOS SETUP UTILITY

Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Power	Exit

USB Configuration

Module Version – 2.24.0-11.4		
USB Devices Enabled : None		
USB Function	[6 USB Ports]	
Legacy USB Support	[Enabled]	
USB 2.0 Controller	[Enabled]	
USB 2.0 Controller Mode	[FullSpeed]	
BIOS EHCO Hand-Off	[Enabled]	← Select Screen
Hotplug USB FDD Support	[Auto]	↑↓ Select Item
Hotplug USB CDROM Support	[Auto]	+ – Change Field
		Tab Select Field
► USB Mass Storage Device Configuration		F1 General Help
		F10 Save and Exit
		ESC Exit

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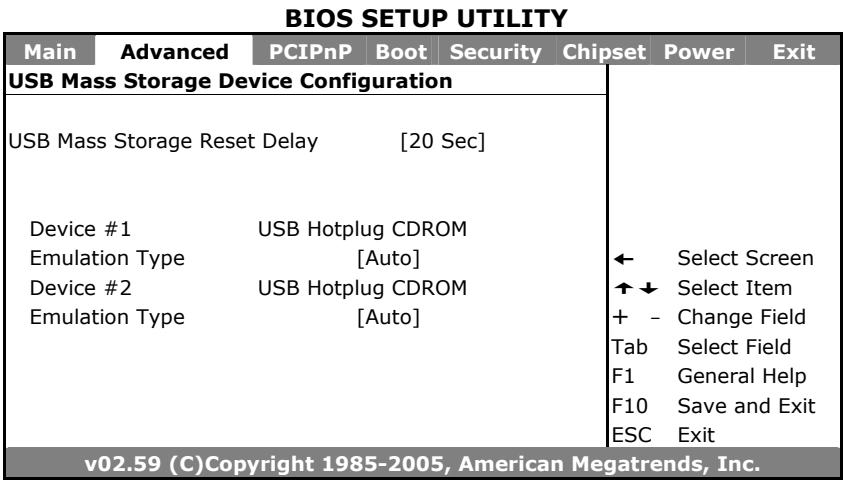
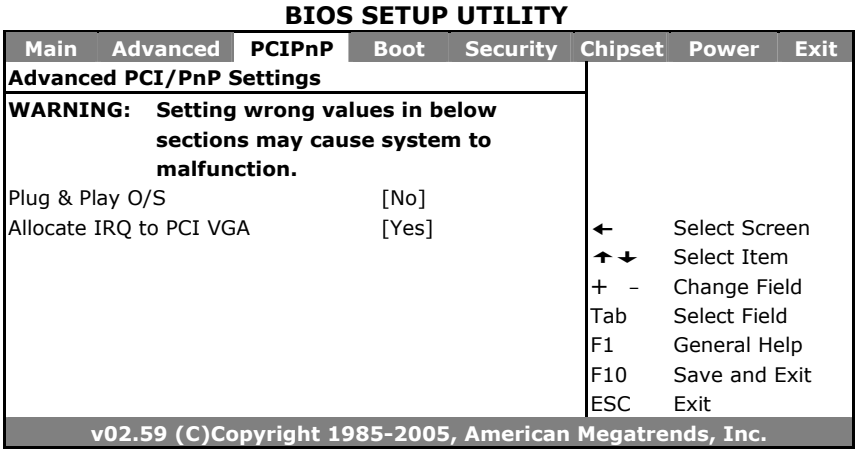


4.5 Advanced PCI/PnP Settings

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.



4.6 Boot Settings

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Power	Exit

Boot Settings

► Boot Settings Configuration

► Boot Device Priority
► Removable Drives
► CD/DVD Drives

←	Select Screen
↑ ↓	Select Item
+ –	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Power	Exit

Boot Settings Configuration

Quick Boot	[Enabled]
AddOn ROM Display Mode	[Force BIOS]
Bootup Nom-Lock	[On]
Wait For 'F1' If Error	[Disabled]
Hit 'DEL' Message Display	[Enabled]

←	Select Screen
↑ ↓	Select Item
+ –	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Power	Exit

Boot Device Priority

1st Boot Device	[1st FLOPPY DRIVE]
2nd Boot Device	[USB:USB Hotplug CD]

←	Select Screen
↑ ↓	Select Item
+ –	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Power	Exit

Removable Drives

1st Drive		[1st FLOPPY DRIVE]
2nd Device		[USB:USB Hotplug FD]

←	Select Screen
↑ ↓	Select Item
+ –	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Power	Exit

CD/DVD Drives

1st Drive		[USB:USB Hotplug FD]

←	Select Screen
↑ ↓	Select Item
+ –	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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4.7 Security Settings

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Power	Exit

Security Settings

Supervisor Password	:	Not Installed
User Password	:	Not Installed
Change Supervisor Password		
Change User Password		
Boot Sector Virus Protection		[Disabled]

←	Select Screen
↑ ↓	Select Item
+ –	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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4.8 Advanced Chipset Settings

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Power	Exit

Advanced Chipset Settings

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

► NorthBridge Configuration

► SouthBridge Configuration

←	Select Screen
↑ ↓	Select Item
+ –	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Power	Exit

NorthBridge Chipset Configuration

DRAM Frequency	[Auto]
Configure DRAM Timing by SPD	[Enabled]
Init. Graphic Adapter Priority	[PCI/Int-VGA]
Internal Graphics Mode Select	[Enabled, 8MB]
Graphics Aperture Size	[64MB]
Video Function Configuration	
DVMT Mode Select	[Combo Mode]
Boot Display Device	[CRT]
Flat Panel Type	[800x600LVDS]
Local Flat Panel Scaling	[Auto]

←	Select Screen
↑ ↓	Select Item
+ –	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Power	Exit

SorthBridge Chipset Configuration

OnBoard AC'97 Audio	[Auto]
OnBoard LAN	[Enabled]

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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4.9 Exit Options

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Power	Exit

Exit Options

Save Changes and Exit
Discard Changes and Exit
Discard Changes

Load Optimal Defaults
Load Failsafe Defaults

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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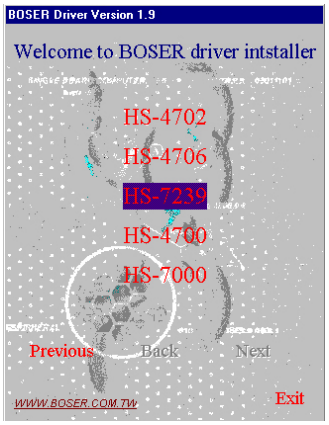
Chapter 5

Software Utilities

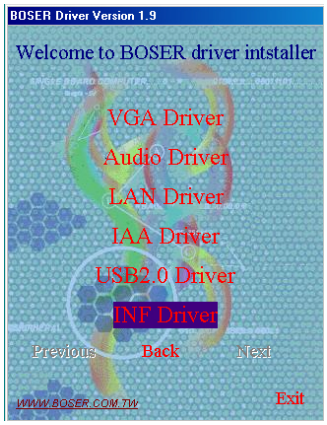
This chapter contains the detailed information of IDE, VGA, LAN, audio and USB2.0 driver installation procedures. The utility disk that comes with the delivery package contains an auto-run program that invokes the installation programs for the IDE, VGA, LAN and Audio drivers. The following sections describe the installation procedures of each driver based on Win 95/98, Win 2000 and Win NT operating systems. It is recommended that you install the drivers matching the sections listed in this chapter.

5.1 IDE Driver Installation

1. Insert Utility CD Disk into your CD-ROM drive. The main menu will pop up as shown below. Select on the **HS-2616 (or HS-7239)** button to launch the installation program.

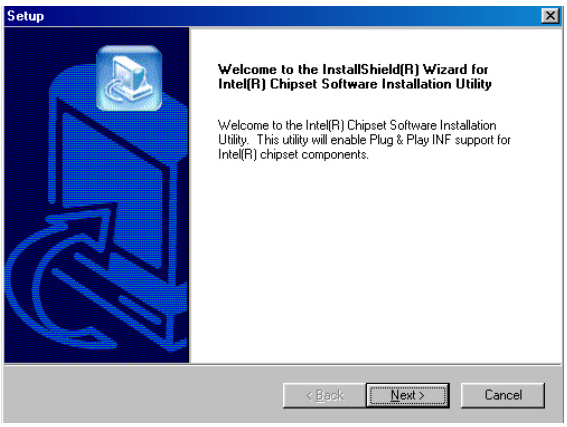


2. Click on the **INF Driver** button to continue.

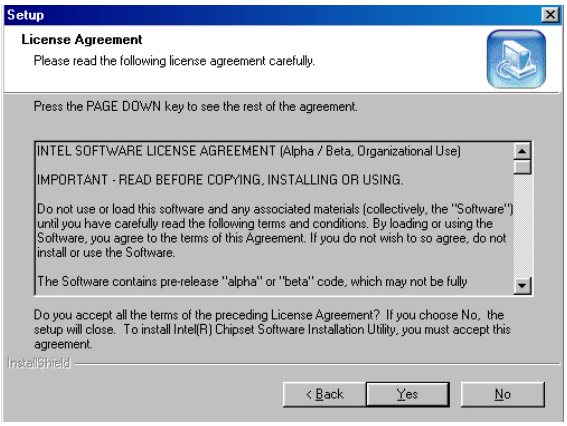


3. Click on the appropriate **OS button** to continue.

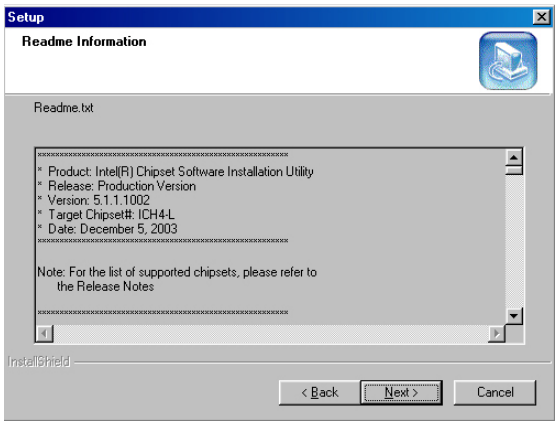
4. Immediately after clicking the IDE button in Step 1, the program launches the *Setup* that will assist you in the installation process. Click on the **Next >** button to proceed.



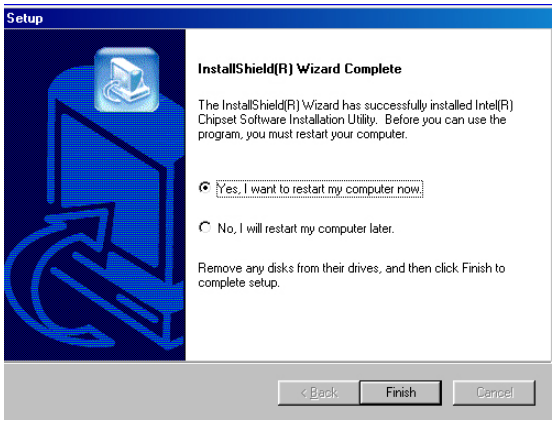
5. The *License Agreement* dialog box then appears on the screen. Choose **Yes** to proceed.



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



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

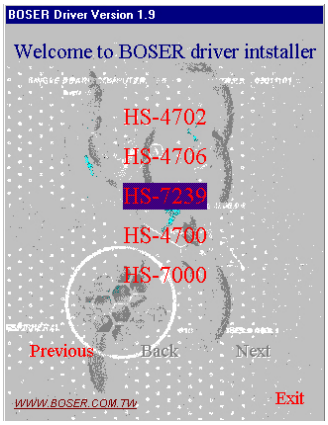


NOTE: *WIN98/2K/XP IDE driver installations are the same.*

5.2 VGA Driver Installation

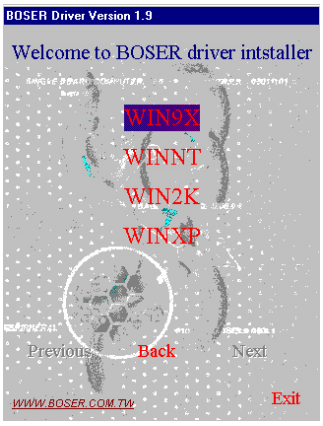
5.2.1 WIN98

1. Insert Utility CD Disk into your CD-ROM drive. The main menu will pop up as shown below. Select on the **HS-2616 (or HS-7239)** button to launch the installation program.

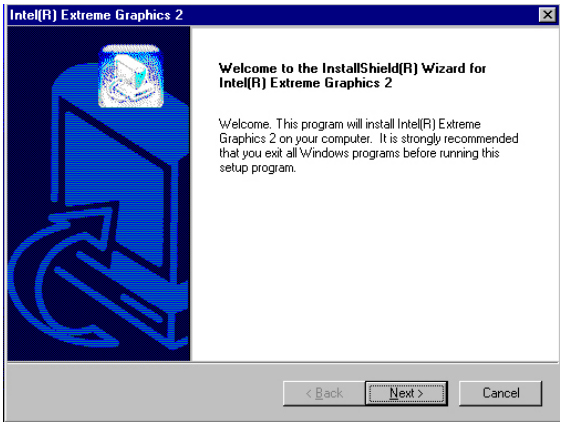


2. Click on the **VGA Driver** button to continue.

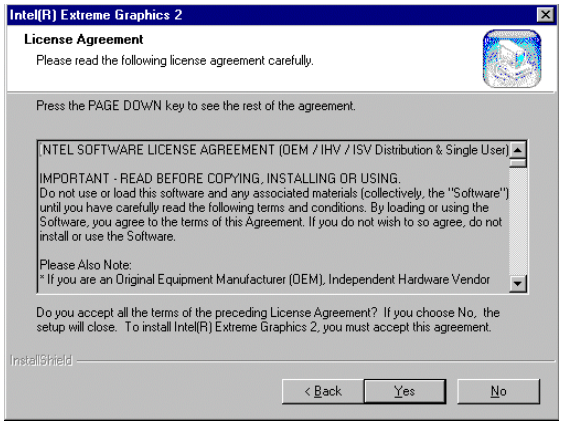
3. Click on the **WIN9X** button to continue.



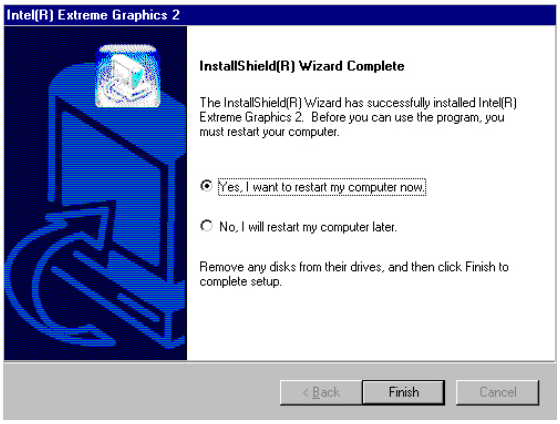
4. When the dialog box below appears, make sure you close all other Windows applications then click on the **Next >** button to proceed.



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



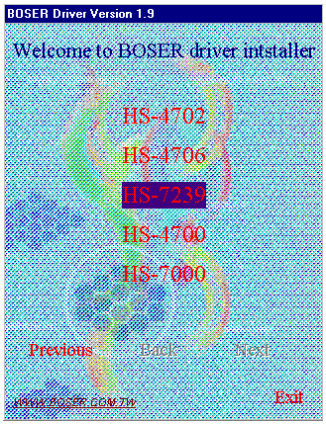
6. Once the setup program finishes copying files into your system, it will prompt you to restart the computer. Tick on the **Yes, I want to restart my computer** now followed by a click on the **Finish** button to reboot. Only after your computer boots will the new settings take effect.



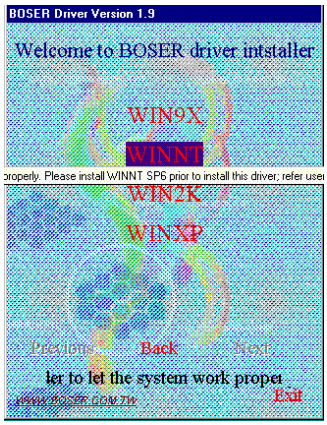
5.2.2 WIN NT

NOTE: *Please make sure you have already installed* ***Service Pack 6.0****.*

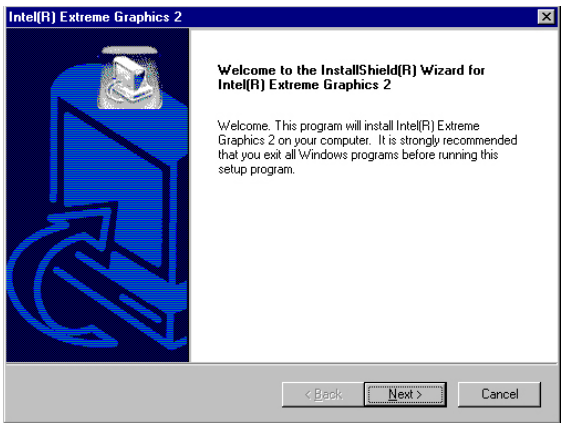
1. Insert Utility CD Disk into your CD-ROM drive. The main menu will pop up as shown below. Select on the **HS-2616 (or HS-7239)** button to launch the installation program.



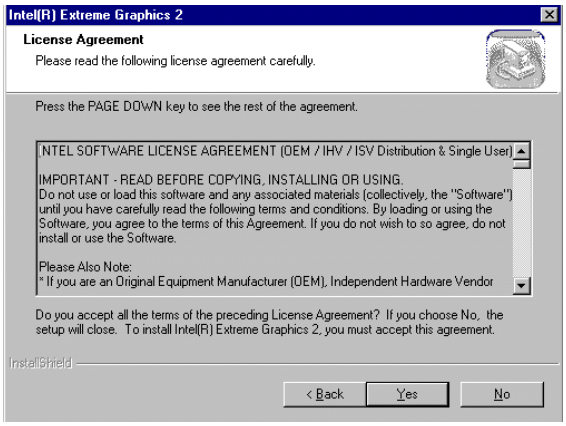
2. Click on the **VGA Driver** button to continue.
3. Click on the **WINNT** button to continue.



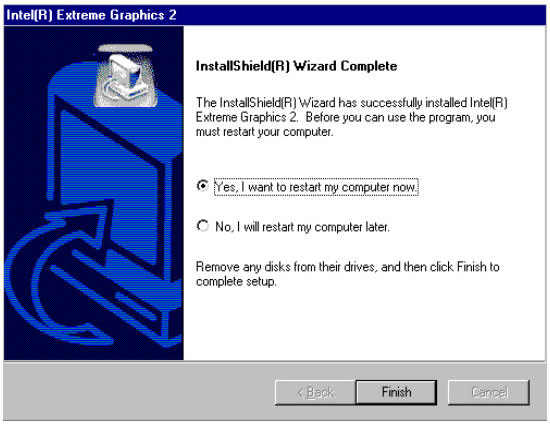
4. When the dialog box below appears, make sure you close all other Windows applications then click on the **Next >** button to proceed.



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

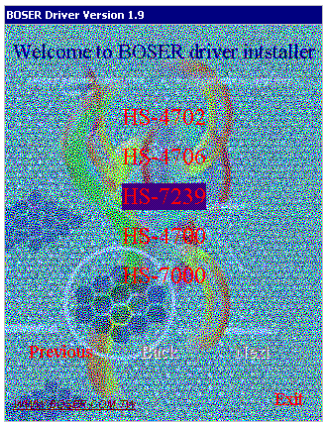


6. Once the setup program finishes copying files into your system, it will prompt you to restart the computer. Tick on the **Yes, I want to restart my computer** now followed by a click on the **Finish** button to reboot.

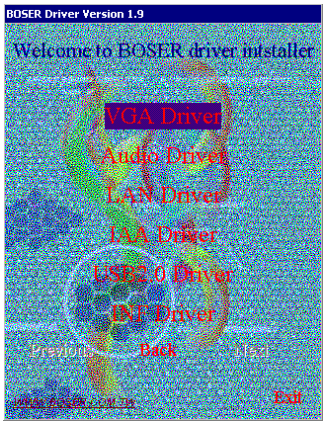


5.2.3 WIN2000/WINXP

1. Insert Utility CD Disk into your CD-ROM drive. The main menu will pop up as shown below. Select on the **HS-2616 (or HS-7239)** button to launch the installation program.

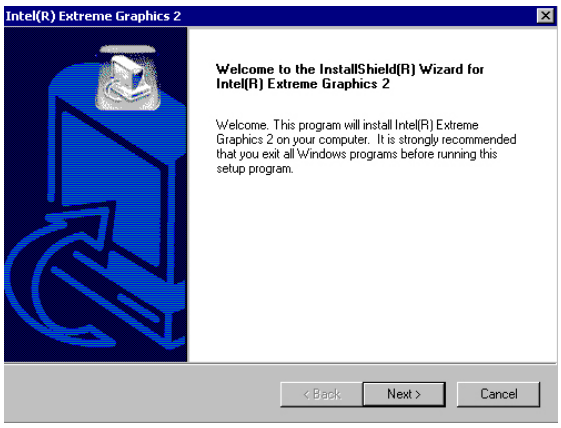


2. Click on the **VGA Driver** button to continue.

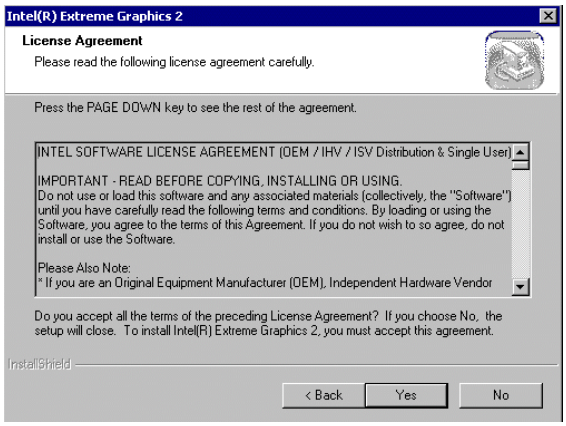


3. Click on the **WIN2K** button to continue.

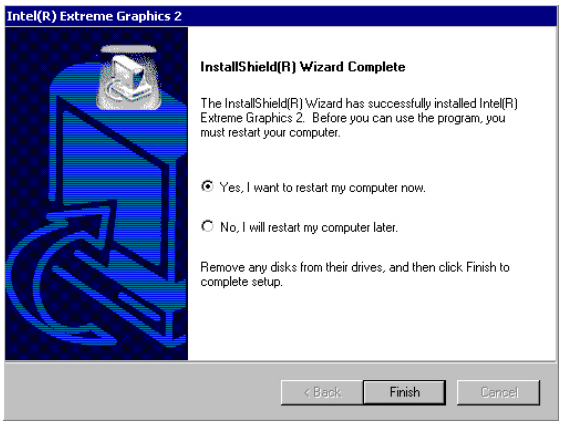
4. When the dialog box below appears, make sure you close all other Windows applications then click on the **Next >** button to proceed.



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



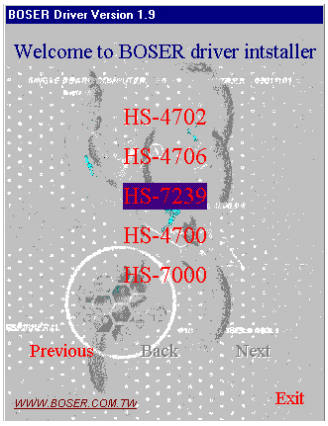
6. Once the setup program finishes copying files into your system, it will prompt you to restart the computer. Tick on the **Yes, I want to restart my computer now** followed by a click on the **Finish** button to reboot. Only after your computer boots will the new settings take effect.



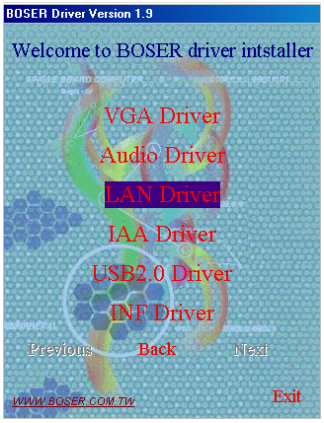
5.3 LAN Driver Installation

5.3.1 WIN98

1. Insert Utility CD Disk into your CD-ROM drive. The main menu will pop up as shown below. Select on the **HS-2616 (or HS-7239)** button to launch the installation program.



2. Click on the **LAN Driver** button to continue.

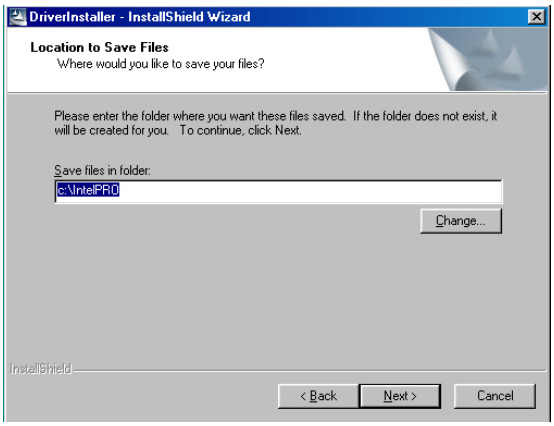


3. Click on the WIN9X button to continue.

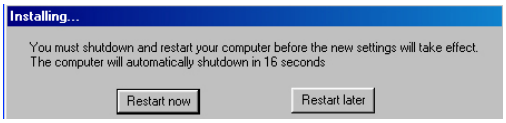
4. When the dialog box below appears, make sure you close all other Windows applications then click on the **Install Base Driver** button to proceed.

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

6. Choose the drivers install location. (ex: c:\IntelPRO)



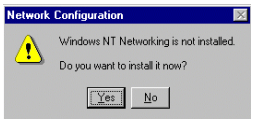
7. Once the setup program finishes copying files into your system, it will prompt you to restart the computer. Tick on the **Restart now** to reboot. Only after your computer boots will the new settings take effect.



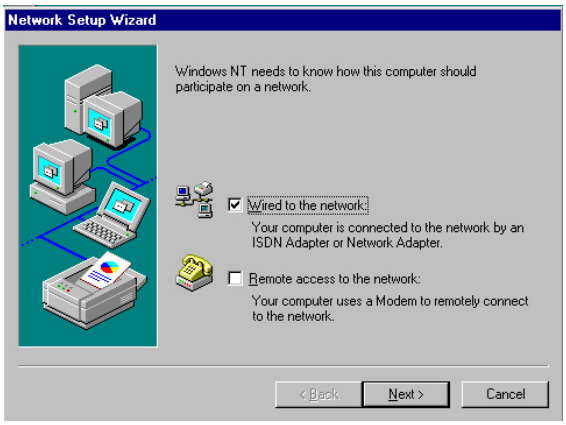
5.3.2 WINNT

NOTE: *Please make sure you have already installed* ***Service Pack 6.0****.*

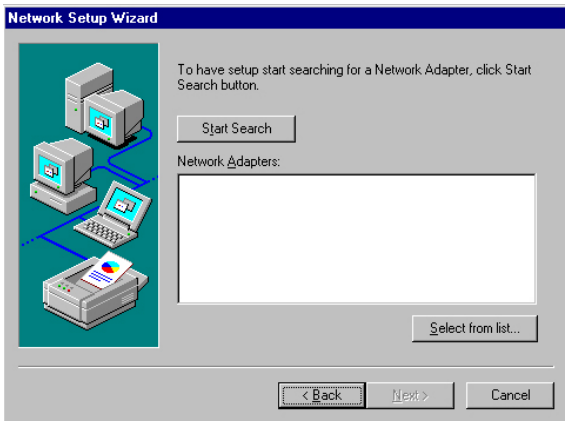
1. The system automatically detects the absence of Windows NT Networking. Click on the **Yes** button to start installation.



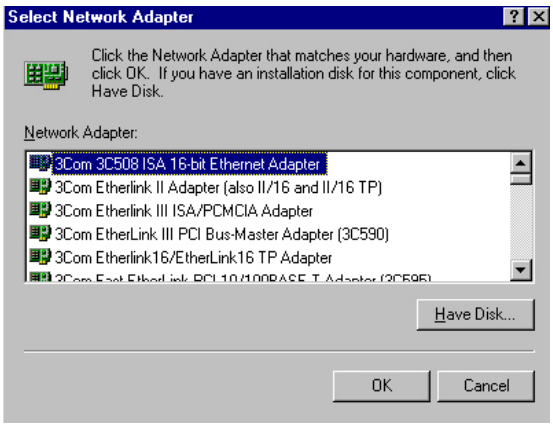
2. Tick on the **Wired to the network** once the following screen appears. Click on the **Next >** to proceed.



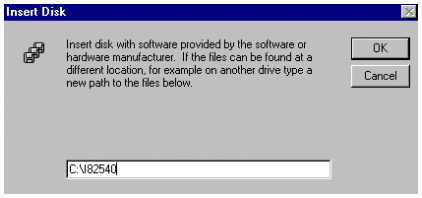
3. Click on the **Start Search** button for the program to locate the Network Adapter.



4. 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.

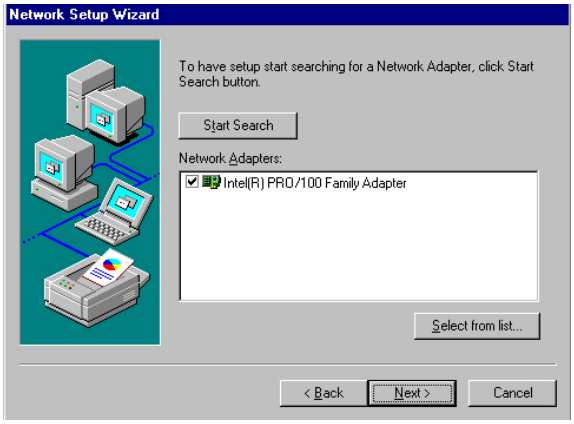


5. Setup now asks you for the location of the driver. When you have entered the new driver path, press on the **OK** button to continue.

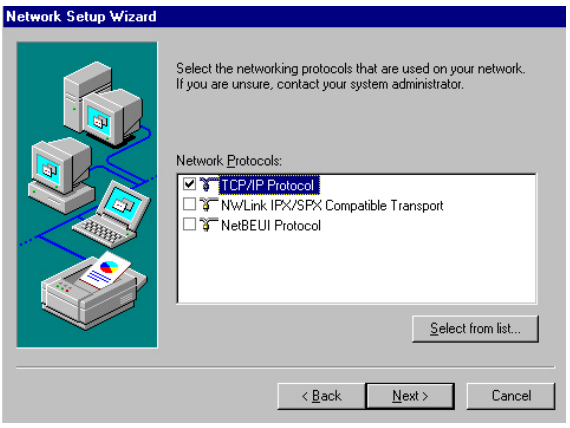


6. When Setup finds the information it needs about the new driver, it will display the device it found on the following screen. Please choose **"Intel® PRO/100 Family Adapter"**. Press on the **OK** button to accept and proceed.

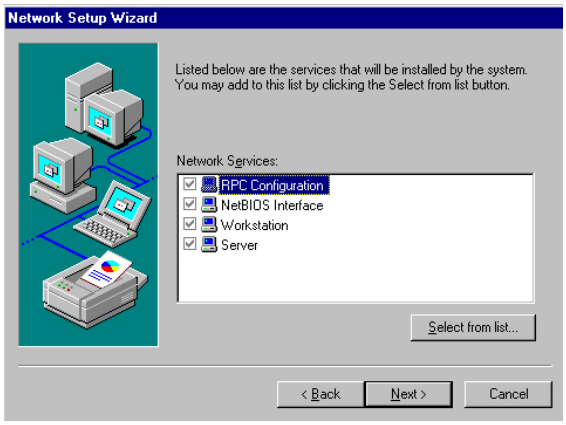
7. Setup then returns to *Network Setup Wizard* screen and displays your new Network Adapter. Click on **Next >** to continue.



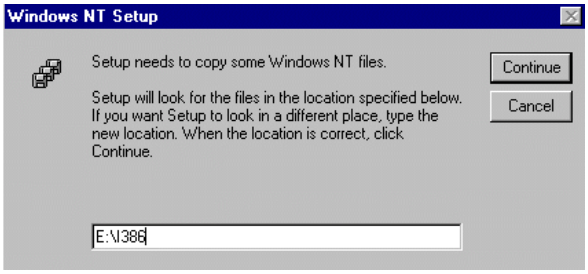
8. The *Network Setup Wizard* then allows you to set the **Network Protocols** on your network. Select the appropriate protocol and then click on **Next >** to continue.



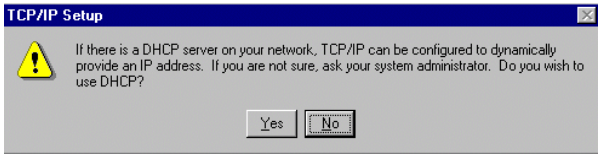
9. Before Setup starts installing the components found and the settings you made, it will give you the option to proceed or go back for changes from the following screen. Click on the **Next >** button once you are sure of your devices.



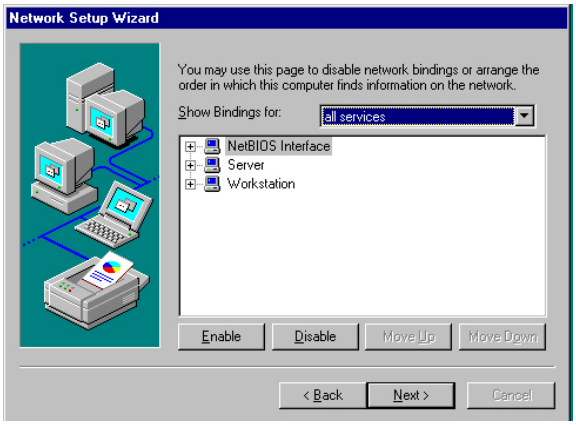
10. Windows NT Setup will then need to copy files necessary to update the system information. Specify the path then press **Continue**.



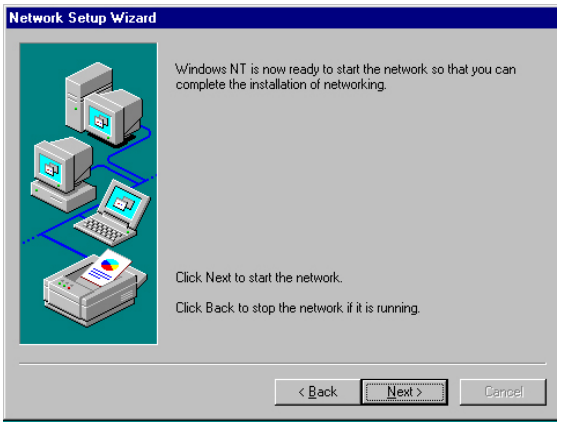
11. When Setup asks if you wish to change the TCP/IP settings of your system, select them appropriately. The default choice is **No**.



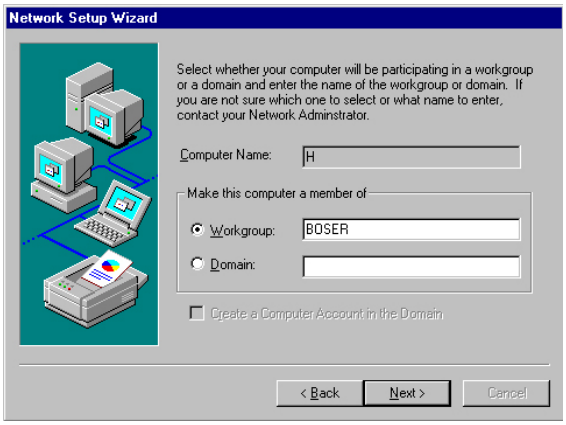
12. Setup then starts the Networking installation and copies the files.
13. When the screen below appears, click on **Next >** to continue.



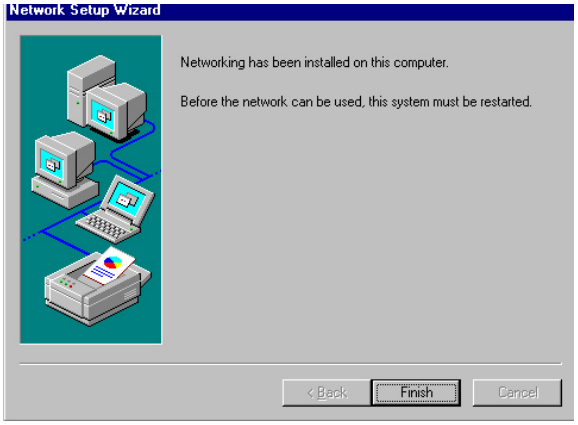
14. Setup then prompts you that it is ready to start the network. You may complete the installation thereafter. Click on **Next >** to continue.



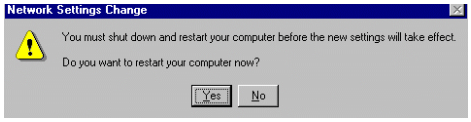
15. Assign the workgroup or domain setting of your computer. Click on **Next >** to continue.



16. When the dialog box below appears, it means your driver is install completed. Click **Finish** button to proceed.

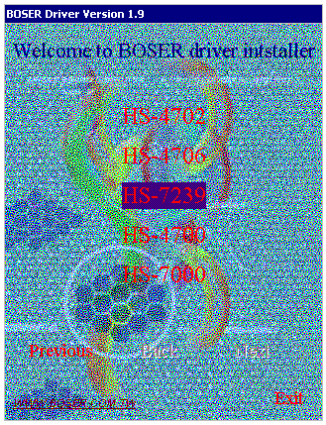


17. Click on the **Yes** button to restart your computer. The LAN driver installation for WINNT is now complete.

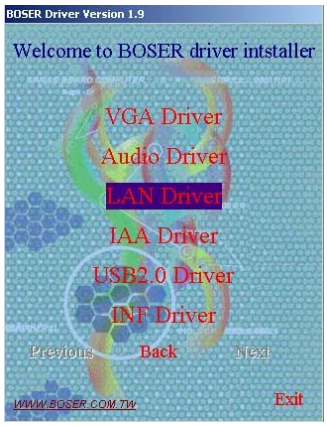


5.3.3 WIN2K/XP

1. Insert Utility CD Disk into your CD-ROM drive. The main menu will pop up as shown below. Select on the **HS-2616 (or HS-7239)** button to launch the installation program.



2. Click on the **LAN Driver** button to continue.

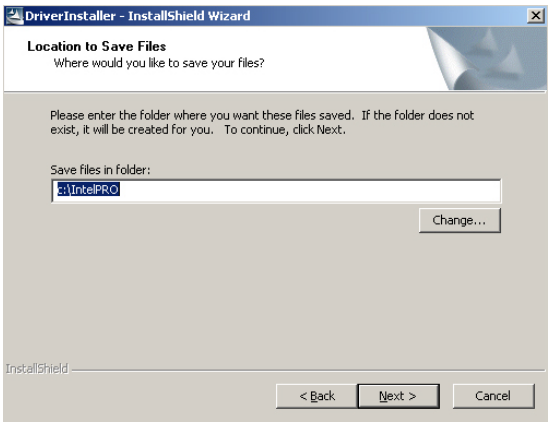


3. Click on the **WIN2K** button to continue.

4. When the dialog box below appears, make sure you close all other Windows applications the click on the **Install Base Driver** button to proceed.

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

6. Choose driver install location. (ex: c:\IntelPRO)

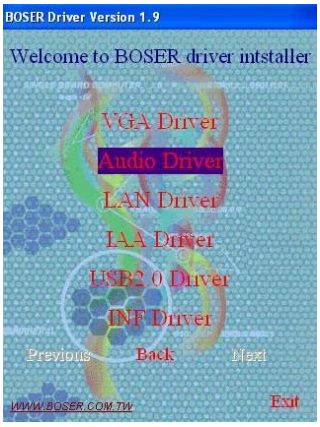


7. When setup is finished, please reboot your computer to complete.

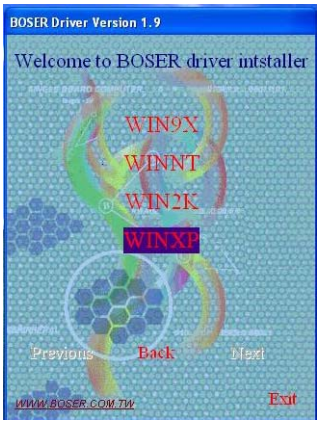
5.4 Audio Driver Installation

1. Insert Utility CD Disk into your CD-ROM drive. The main menu will pop up as shown below. Select on the **HS-2616 (or HS-7239)** button to launch the installation program.

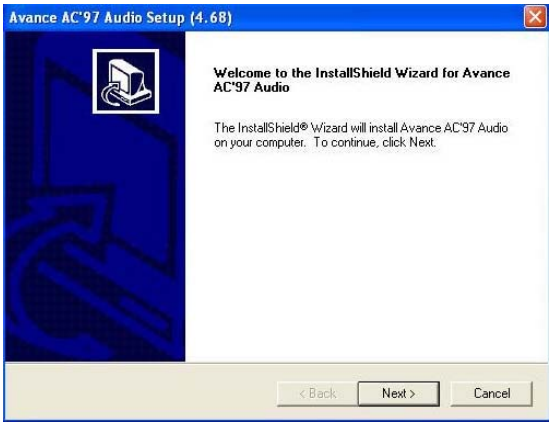
2. Click on the **Audio Driver** button to continue.



3. Click on the OS button to continue.



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



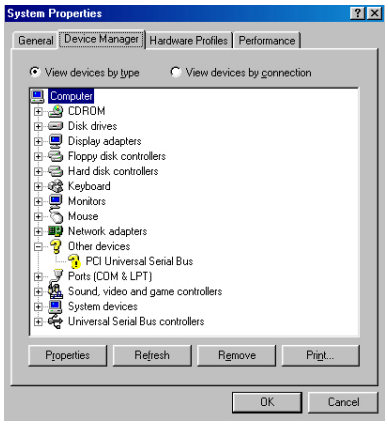
5. Once the *Install Shield Wizard* completes the operation and update of your AC97 driver, it will ask you to remove disks form their drives, and prompt you to restart your system. Tick on the **Yes, I want to restart my computer now**. Afterwards, click on the **Finish** button to complete the installation process. The system changes you made will take effect after the system restarts.

5.5 USB2.0 Driver Installation

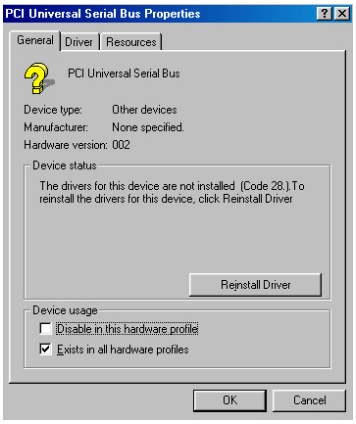
5.5.1 WIN98

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.

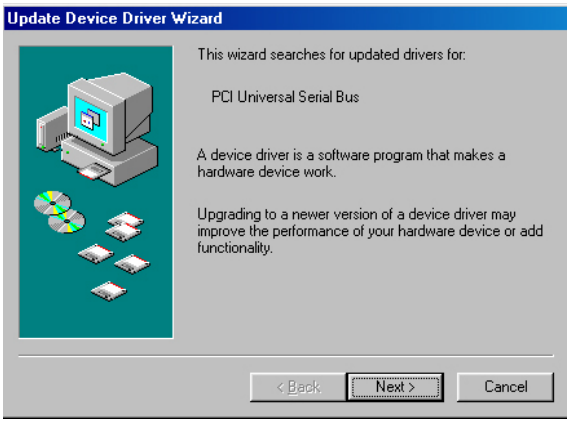
2. Select on **Other Devices** from the list of devices then double-click on **PCI Universal Serial Bus**.



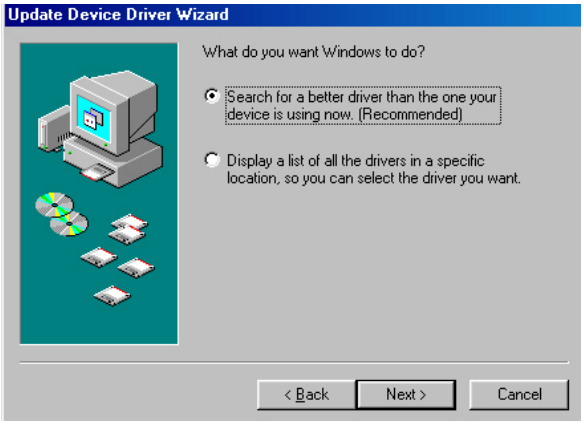
3. The **PCI Universal Serial Bus Properties** screen then appears, allowing you to reinstall the driver. Select **Driver** from the main menu to proceed.



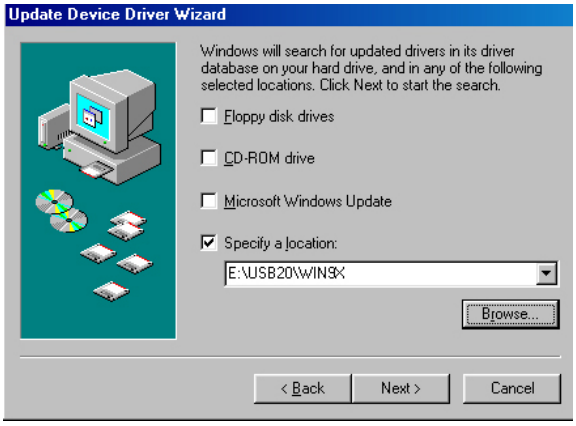
4. When the dialog box below appears, make sure you close all other Windows applications then click on the **Next >** button to proceed.



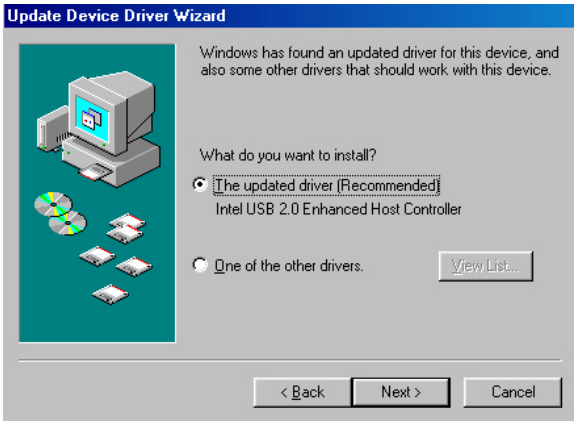
5. Tick on the **"Search for a better driver"** once the following screen appears, Click on the **Next >** to proceed.



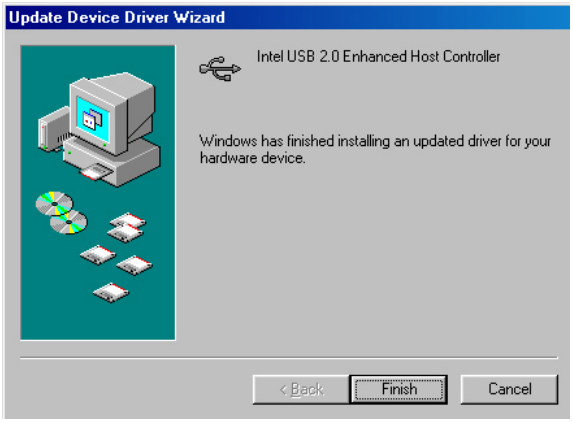
6. Once the program returns to the *Add New Hardware Wizard* screen, your specified location will appear. Press on the **Next >** button to continue.



7. 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 **Next >** button to accept and proceed.

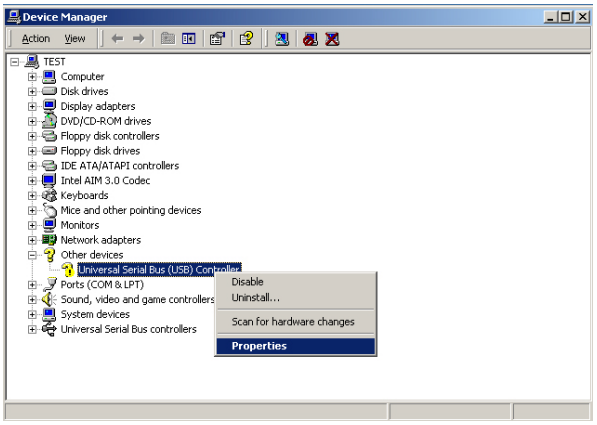


8. Once the *Install Shield Wizard* completes the operation and update of your USB2.0 driver. Click on the **Finish** button to complete the installation process.

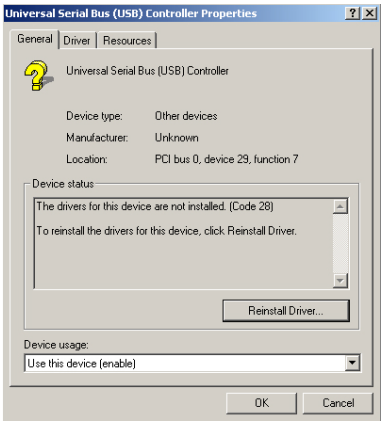


5.5.2 WIN2K

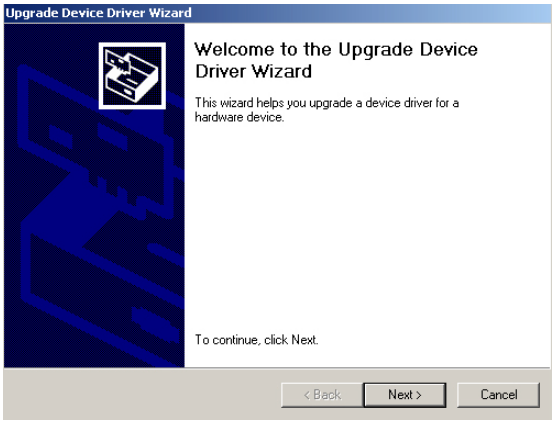
1. With the Utility CD Disk still in your CD-ROM drive, right click on **"My Computer"** icon from the Windows menu. Select on **System Properties** and then proceed to the **Device Manager** from the main menu.
2. Select on **Other Devices** from the list of devices then double-click on **PCI Universal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



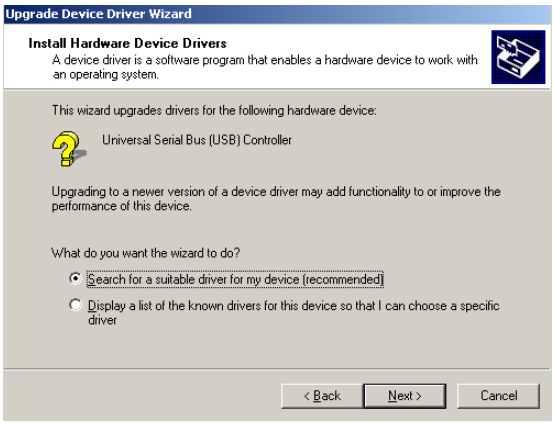
3. The **PCI Universal Serial Bus Properties** screen then appears, allowing you to reinstall the driver. Select **Driver** from the main menu to proceed.



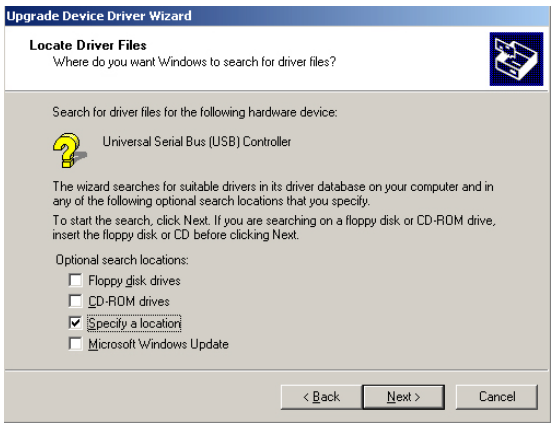
4. When the dialog box below appears, make sure you close all other Windows applications then click on the **Next >** button to proceed.



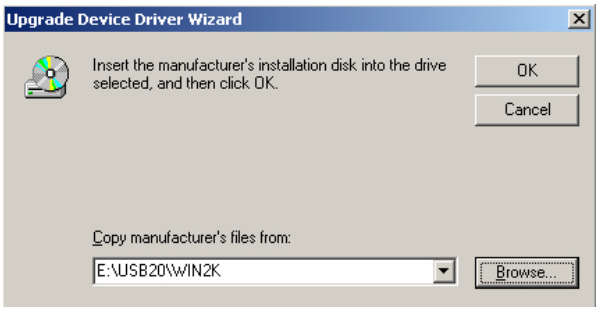
5. Tick on the **"Search for a better driver"** once the following screen appears, Click on the **Next >** to proceed.



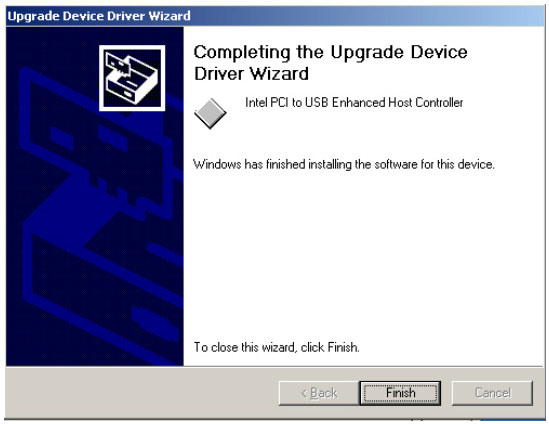
6. Once the program returns to the *Add New Hardware Wizard* screen, your specified location will appear. Press on the **Next >** button to continue.



7. Choose the driver disk location.

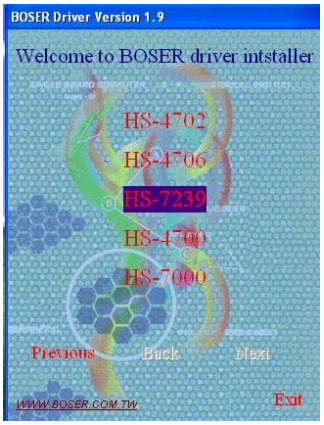


8. Once the *Install Shield Wizard* completes the operation and update of your USB2.0 driver. Click on the **Finish** button to complete the installation process.

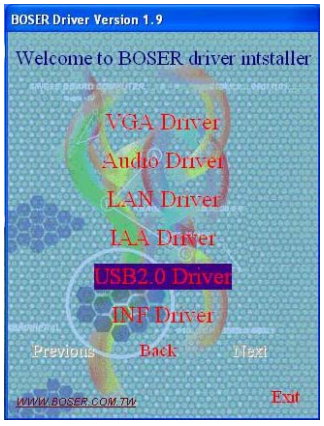


5.5.3 WINXP

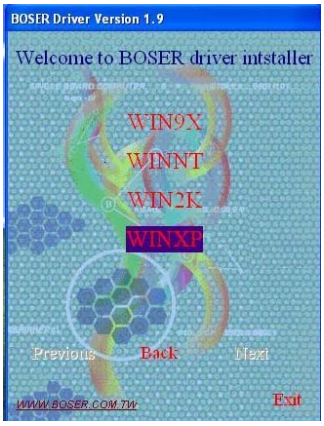
1. Insert Utility CD Disk into your CD-ROM drive. The main menu will pop up as shown below. Select on the **HS-2616 (or HS-7239)** button to launch the installation program.



2. Click on the **USB2.0 Driver** button to continue.



3. Click on the **WINXP** button to continue.



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

5. Once the *Install Shield Wizard* completes the operation and update of your USB2.0 driver. Click on the **Finish** button to complete the installation process.