

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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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
- Disular
- 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

Board Dimensions 1.3



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

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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 Solect: 400MHz	Short 3-4	10
JP10	System Frequency Select. 400Minz	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

Ontions	Settings		
Options	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}	1 00 2
3	GND	4	GND	00
5	A0-/A4-	6	A0+/A4+	
7	A1-/A5-	8	A1+/A5+	lõõ
9	A2-/A6-	10	A2+/A6+	00
11	CLK1-/CLK2-	12	CLK1+/CLK2+	130014
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	01
2	+12V	0
3	VCC5	
4	BK_EN	0
5	LCD_EN	06
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
1			

Serial Port Connectors 3.9

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	9 1
5	TXD	6	CTS	10 0000
7	DTR	8	RI	10 2
9	GND	10	N/C	

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

PIN	Description	PIN	Description	
1	TX-	2	TX+	5
3	RX+	4	RX-	00
5	GND	6	VCC	6

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

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

Options	Settings	
RS-232 (default)	Open	9 1
RS-485 by Auto (*1)	Short 1-2, 3-4, 5-7, 8-10	000000
RS-485 by –RTS (*-1)	Short 1-2, 3-4, 7-9, 8-10	10 2
RS-485 Full Duplex (*2)	Short 1-2, 3-4, 6-8	

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



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



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	0
Disabled	Short 2-3	O 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	0
Clear CMOS	Short 2-3	03

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	2 Mouse Data	
3	3 GND	
4	4 VCC	
5	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	3 0 04
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 f	function mode	, interruptible double-write
;	 DX 2EH	
MOV	ΔI 87H	
	DX AL	
MOV	DX 2FH	
MOV	AL. 07H	
OUT	DX. AI	
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.

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

• CN9: MIC In/Line Out Connector

3.18 CompactFlash™ Connector

The HS-2616/HS-2616M also offers a Type I/II CompactFlashTM connector which is IDE interface located at the solder side of the board. The designated *CN18* connector, once soldered with an adapter, can hold CompactFlashTM 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	01
2	N/C	0
3	IRRX	
4	GND	05
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	De	scripti	on	PIN	Descriptio	n
1		VCC		2	GND	9 1
3		GD0		4	GD4	
5		GD1		6	GD5	10 2
7		GD2		8	GD6	
9		GD3		10	GD7	
ροι pri	rt nt	.MODEL S .DATA equ .CODE macro mov mov	MAL 037 buff dx, ah.(L 8h offset b 29h	;this is ;print puff;	data area ort can be change to 278h
del @@	lay : @:	int endm push mov jmp push mov	21h cx cx,(\$+2 cx cx,()155h 2		

wait1:	loop pop loop pop ret	wait1 cx @b cx
begin	proc mov mov STI	near ax,@data ds,ax
	Mov Mov	dx, port al, 80h
;;		
;;ROR @@:	mov	cx, 08h
ee.	ror	al, 1
	call	delay
	out	dx, al
	loop	@b
5.01	рор	CX
;;ROL		
	push	CX CX OPh
രം	mov	CX, 0011
ພພ.	rol	al. 1
	out	dx, al
	call delay	,
	loop	@b
	рор	СХ
;;		
;;		
;;RUR	mov	cv 09h
രം	mov	CX, UOII
യയ.	ror	al 1
	call delay	
	out	dx, al
	loop	@b
	рор	сх
;;ROL		
	push	cx
AA .	mov	cx, 08h
ພພ.	rol	al 1
	out	dx. al
	call delay	,
	loop	@b
	рор	сх
;;		
;;		
;;ror		0.01
@@·	rnov	cx, uvn
യയ.	ror	al, 1
		•

out dx, al

	call delay out loop pop	dx, al @b cx
,,KUL @@∙	push mov	cx cx, 08h
e e.	rol out call delay loop pop	al, 1 dx, al @b cx
;;		
;;		
;;ROR	mov	cx, 08h
യയ.	ror call delay	al, 1
••ROI	out loop pop	dx, al @b cx
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	push mov	cx cx, 08h
@@:	rol out	al, 1 dx, al
	loop pop	@b cx
;;		
;;ROR	mov	cx, 08h
@@:	ror	al, 1
	out loop pop	dx, al @b cx
;;RUL	push mov	cx cx, 08h
@@:	rol out call delay loop	al, 1 dx, al @b
	рор	сх
;;		
;;;ROR		
@@:	mov	cx, 08h
	ror call delay	al, 1

DOI	out loop @t pop	dx, al cx
;;ROL	push mov	cx cx, 08h
;;	rol out call delay loop pop	al, 1 dx, al @b cx
;;		
;;ROR @@:	mov	cx, 08h
	ror call delay	al, 1
	out loop pop	dx, al @b cx
;;ROL	push mov	cx cx, 08h
@@:		
	rol out call delay	al, 1 dx, al
	loop pop	@b cx
,,		
;flash Ll	ED 3 time mov	cx, 01h
@@:	mov out	al, Offh dx, al
	mov out call delay	al,0h dx, al
ee:	loop	@b
	mov int .stack begin end begin	ah, 4ch 21h endp

;go back to dos

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.

PIN	Description	PIN	Description	0000
A1	N/C	B1	N/C	0000
A2	N/C	B2	AD2	
A3	AD5	B3	GND	0000
A4	CBE0#	B4	AD7	0000
A5	GND	B5	AD9	
A6	AD11	B6	N/C	0000
A7	AD14	B7	AD13	0000
A 8	+3.3V	B 8	CBE1#	0000
A9	SERR#	B9	GND	0000
A10	GND	B10	PERR#	0000
A11	STOP#	B11	+3.3V	0000
A12	+3.3V	B12	TRDY-	
A13	FRAME#	B13	GND	0000
A14	GND	B14	AD16	0000
A15	AD18	B15	+3.3V	0000
A16	AD21	B16	AD20	0000
A17	+3.3V	B17	AD23	0000
A18	IDSEL0	B18	GND	0000
A19	AD24	B19	CBE3#	
A20	GND	B20	AD26	0000
A21	AD29	B21	VCC	0000
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	
	MOD			

• CN1: PCI-104 Connector

...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
C 8	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 immediately after switching the system on, or
- 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.

1	Move to previous item				
→	Move to next item				
4	Move to previous item				
\rightarrow	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 kev	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.

Main	Ad	vanced	PCIPnP	Boot	Security	Chips	et P	ower	Exit
System Overview									
AMI BIOS	5								
Version	:	08.00.1	3						
Build Date	:	11/01/0	6						
ID	:	HS2616	01						
Processo	r								
Туре	:	Genuine	Intel® pr	ocessor					
Speed	:	600MHz							
Count	:	1							
System M	len	ory							
Size	:	112MB					←	Select	Screen
							++	Select	Item
System Ti	me			[00:29	9:32]		+ -	Chang	je Field
System Da	ate			[Tue C	01/01/2002]	Tab	Select	Field
							F1	Gener	al Help
							F10	Save a	and Exit
							ESC	Exit	
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BIOS SETUP UTILITY

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	Chipse	t P	ower	Exit
Advanc	ed Settings							
WARNI	NG: Setting	wrong val	ues in	below see	ctions			
	may car	ise system	to mal	function.				
► CPL	Configuratior	I						
► IDE	Configuration							
Sup	erIO Configura	ation						
► Har	dware Health	Configuratio	n		•	F	Select	Screen
► USE	8 Configuration	ı			-	+ +	Select	Item
					-	+ -	Chang	e Field
					Т	ab	Select	Field
					F	1	Genera	al Help
					F	10	Save a	nd Exit
					E	SC	Exit	
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		DIAC	CETH		ту			

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chips	et P	ower	Exit		
Configu	re advanced									
Module	Version -13									
Manufact	turer :	Intel								
Brand St	ring :	Genuine Int	el® pro	cessor						
Frequenc	cy :	600MHz								
FSB Spee	ed :	400MHz								
Cache L1	. :	32 KB								
Cache L2	2 :	512 KB								
						←	Select	Screen		
						++	Select	Item		
						+ -	Chang	je Field		
						Tab	Select	Field		
						F1	Gener	al Help		
						F10	Save a	and Exit		
						ESC	Exit			
v	v02.59 (C)Copyright 1985-2005, American Megatrends, Inc.									
Main	Advanced	PCIPnP	Boot	Security	Chips	et P	ower	Exit		
---	--	------------------------------	--	--	--------------	--	--	---		
IDE Cor	nfiguration									
OnBoard	d PCI IDE Cor	ntroller	[Both]							
OnBoard	PCI IDE Ope	erate Mode	[Legac	cy Mode]						
► Prim	nary IDE Mast	ter	: [Not	t Detected]						
Prim	nary IDE Slav	е	: [Not	t Detected]						
Second Second	ondary IDE M	laster	: [Not	t Detected]						
► Seco	ondary IDE S	lave	: [Not	t Detected]						
IDE Dete ATA(PI)	ect Time Out 80Pin Cable I	(Sec) Detection	[0] [Host i	& Device]		← + - Tab F1 F10 F10	Select Select Chang Select Gener Save a	Screen Item e Field Field al Help and Exit		
						ESC	Exit			
	/02.59 (C)C	opyright 19	985-200)5, Americ	an Meo	atre	nds, In	IC.		
		DIO	CETU							
		BIOS	S SETU		TY					
Main	Advanced	BIOS PCIPnP Super IO C	5 SETU Boot	JP UTILI Securit	TY y Chip	set P	ower	Exit		
Main Configu Serial Po	Advanced Ire WIN627	BIOS PCIPnP Super IO C	5 SETU Boot hipset	IP UTILI Securit	TY y Chip	set F	ower	Exit		
Main Configu Serial Po Serial Po	Advanced ire WIN627 ort1 Address ort2 Address	BIOS PCIPnP Super IO C	S SETU Boot hipset [31]	F8/IRQ4]	TY y Chip	oset F	ower	Exit		
Main Configu Serial Po Serial Po Serial	Advanced are WIN627 ort1 Address ort2 Address Port2 Mode	BIOS PCIPnP Super IO C	Boot Boot hipset [31 [21]	F8/IRQ4] F8/IRQ3] ormal]	TY y Chip	set F	Power	Exit		
Main Configu Serial Po Serial Po Serial	Advanced Ire WIN627 ort1 Address ort2 Address Port2 Mode	BIOS PCIPnP Super IO C	B SETU Boot Chipset [31 [24 [N	IP UTILI Securit F8/IRQ4] F8/IRQ3] ormal]	TY y Chip	oset F	ower	Exit		
Main Configu Serial Po Serial Po Serial	Advanced are WIN627 ort1 Address ort2 Address Port2 Mode	BIOS PCIPnP Super IO C	5 SETU Boot Chipset [3] [2] [N	IP UTILI Securit F8/IRQ4] F8/IRQ3] ormal]	TY y Chip	oset F	Power	Exit		
Main Configu Serial Po Serial Po Serial	Advanced Ire WIN627 ort1 Address ort2 Address Port2 Mode	BIOS PCIPnP Super IO C	Boot Boot (3) [2] [N	F8/IRQ4] F8/IRQ3] ormal]	TY y Chip	oset F	ower	Exit		
Main Configu Serial Po Serial Po Serial	Advanced Ine WIN627 ort1 Address ort2 Address Port2 Mode	BIOS PCIPnP Super IO C	S SETU Boot Chipset [31 [24 [No	F8/IRQ4] F8/IRQ4] F8/IRQ3] ormal]	y Chip	set F	Power	Exit		
Main Configu Serial Po Serial Po Serial	Advanced are WIN627 ort1 Address ort2 Address Port2 Mode	BIOS PCIPnP Super IO C	S SETU Boot :hipset [3] [2] [N	F8/IRQ4] F8/IRQ3] ormal]	y Chip	set F	Power	Exit		
Main Configu Serial Po Serial Serial	Advanced are WIN627 ort1 Address ort2 Address Port2 Mode	BIOS PCIPnP Super IO C	S SETU Boot :hipset [31 [21 [N/	F8/IRQ4] F8/IRQ3] ormal]	y Chip	set F	Power	Exit Screen Item		
Main Configu Serial Po Serial Serial	Advanced Ire WIN627 ort1 Address ort2 Address Port2 Mode	BIOS PCIPnP Super IO C	S SETU Boot Chipset [31 [21 [N	F8/IRQ4] F8/IRQ3] ormal]	y Chip	← + -	Power Select Select Chang	Exit Screen Item e Field		
Main Configu Serial Po Serial Serial	Advanced Ire WIN627 ort1 Address ort2 Address Port2 Mode	BIOS PCIPnP Super IO C	S SETU Boot Chipset [31 [21 [N	F8/IRQ4] F8/IRQ3] ormal]	y Chip	set F ★ + - Tab	Power Select Select Chang Select	Exit Screen Item e Field Field		
Main Configu Serial Po Serial Serial	Advanced Ine WIN627 ort1 Address ort2 Address Port2 Mode	BIOS PCIPnP Super IO C	S SETU Boot Chipset	F8/IRQ4] F8/IRQ3] ormal]	y Chip	← ★ ↓ + - Tab F1	Power Select Select Chang Select Gener	Exit Screen Item e Field Field al Help		
Main Configu Serial Po Serial Serial	Advanced Ine WIN627 ort1 Address ort2 Address Port2 Mode	BIOS PCIPnP Super IO C	S SETU Boot Chipset	F8/IRQ4] F8/IRQ3] ormal]	y Chip	← ★ ↓ + - Tab F1 F10	Select Select Chang Select Gener Save a	Exit Screen Item e Field Field al Help and Exit		
Main Configu Serial Po Serial Serial	Advanced Ire WIN627 port1 Address port2 Address Port2 Mode	BIOS PCIPnP Super IO C	S SETU Boot hipset [31 [21 [N	F8/IRQ4] F8/IRQ3] ormal]	y Chip	← ↑ ↓ + - Tab F1 F10 ESC	Select Select Chang Select Gener Save a Exit	Exit Screen Item e Field Field al Help and Exit		

Main	Advanced	PCIPnP	Boot	Security	Chip	oset	Power	Exit
Hardware	e Health Conf	iguration						
H/W Healt	h Function		[Ena	abled]				
Hardware	Health Event N							
CPU Temp	erature							
VcoreA								
+3.3Vin						←	Select	Screen
+5Vin						++	Select	Item
						+ -	Change	e Field
						Tab	Select	Field
						F1	Genera	l Help
						F10	Save a	nd Exit
						ESC	Exit	
v0	2.59 (C)Copy	right 198	5-2005	5, America	n Me	gatre	ends, Ind	C.
		BIOS	SETU	<u>PUTILIT</u>	Y			
Main	Advanced	PCIPnP	Boot	Security	Chip	oset	Power	Exit
USB Conf	iguration							
Module Ve	rsion - 2.24.0	-11.4						

Main	Advanced	PCIPnP	Boot	Security	Chip	oset	Power	Exit		
USB Co	nfiguration									
Module \	/ersion - 2.24.0	-11.4								
USB Dev	rices Enabled :									
	None									
USB Fun	ction		[6 L	JSB Ports]						
Legacy L	JSB Support		[Ena	abled]						
USB 2.0	Controller		[Ena	abled]						
USB 2.0	Controller Mode	e	[Ful	ISpeed]						
BIOS EH	CO Hand-Off		[Ena	abled]		←	Select	Screen		
Hotplug	USB FDD Suppo	ort	[Au	to]		++	Select	Item		
Hotplug	USB CDROM Su	pport	[Au	to]		+ -	Change	e Field		
						Tab	Select	Field		
► USB	Mass Storage D	evice Confi	guratio	n		F1	Genera	al Help		
						F10	Save a	nd Exit		
						ESC	Exit			
V	v02.59 (C)Copyright 1985-2005, American Megatrends, Inc.									

Main	Advanced	PCIPnP	Boot	Security	Chip	oset	Power	Exit
USB Ma	ss Storage De	vice Config	guratio	n				
USB Mas	s Storage Resel							
Device Emulat Device	#1 ion Type #2	USB Hotplu [USB Hotplu	ug CDR Auto] ug CDR	ом ом		← ++	Select Select	Screen Item
Emulat	ion Type	[Auto]			+ – Tab F1 F10 ESC	Change Select Genera Save a Exit	e Field Field Il Help nd Exit
v	02.59 (C)Copy	yright 198	5-2005	5, America	n Me	gatre	ends, Ind	C.

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.

Main Advar	nced PCIP	nP	Boot	Security	Chipset	Power	Exit	
Advanced PCI/	PnP Setting	s						
WARNING: S	etting wrong	g valu	ies in be	elow				
Se	ections may	cause	e systen	n to				
m	alfunction.							
Plug & Play O/S			[No]					
Allocate IRQ to PCI VGA			[Yes]		←	Select Screen		
					++	Select Iter	n	
					+ -	Change Fie	eld	
					Tab	Select Field	d	
					F1	General He	elp	
					F10	Save and I	Exit	
					ESC	Exit		
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4.6 Boot Settings

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chi	pset	Power	Exit	
Boot Se	ttings								
► Boot	Settings Con	figuration							
 Boot 	Device Priorit	:y							
► Rem	ovable Drives					←	Select S	creen	
► CD/[OVD Drives					++	Select It	tem	
						+ -	Change	Field	
						Tab	Select F	ield	
						F1	General	Help	
						F10	Save an	d Exit	
						ESC	Exit		
v(v02.59 (C)Copyright 1985-2005, American Megatrends, Inc.								

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Ch	ipset	Power	Exit
Boot Se	ttings Configu	ration						
Quick Bo	ot		[Enab	led]				
AddOn R	OM Display Mod	le	[Force	BIOS]				
Bootup N	lom-Lock		[On]			+	Select Sc	reen
Wait For	`F1' If Error		[Disat	oled]		++	Select Ite	em
Hit 'DEL'	Message Displa	у	[Enab	led]		+ -	Change F	ield
						Tab	Select Fie	eld
						F1	General I	Help
						F10	Save and	l Exit
						ESC	Exit	

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Main	Advanced	PCIPnP	Boot	Security	C	hipset	Power	Exit	
Boot De	vice Priority								
1st Boot	Device	[1	st FLOPP	Y DRIVE]					
2nd Boot	Device	[U	ISB:USB	Hotplug CD]	←	Select Sc	reen	
						++	Select Ite	m	
						+ -	Change F	ield	
						Tab	Select Fie	ld	
						F1	General F	lelp	
						F10	Save and	Exit	
						ESC	Exit		
v	v02.59 (C)Copyright 1985-2005, American Megatrends, Inc.								

Main	Advanced	PCIPnP	Boot	Security	Chip	set	Power	Exit
Remova	ble Drives							
1st Drive		[1	st FLOPP	Y DRIVE]				
2nd Devi	ce	[U	SB:USB	Hotplug FD]	•		Select So	reen
					+	÷	Select Ite	em
					+	-	Change F	-ield
					Ta	ab	Select Fie	eld
					F1	-	General I	Help
					F1	.0	Save and	d Exit
					ES	SC	Exit	
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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Ch	nipset	Power	Exit
CD/DVD	Drives							
1st Drive		[U	SB:USB	Hotplug FD]				
						←	Select So	reen
						++	Select Ite	em
						+ -	Change F	ield
						Tab	Select Fie	eld
						F1	General I	Help
						F10	Save and	l Exit
						ESC	Exit	
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4.7 Security Settings BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chip	oset	Power	Exit			
Security	Settings										
Superviso	or Password	: N	lot Insta	lled							
User Pass	sword	: N	lot Insta	lled							
						←	Select	Screen			
Change S	upervisor Pass	word				++	Select	Item			
Change U	lser Password					+ -	Change	e Field			
Boot Sect	or Virus Protec	tion [Disabled]		Tab	Select	Field			
						F1	Genera	I Help			
						F10	Save a	nd Exit			
						ESC	Exit				
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4.8 Advanced Chipset Settings BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chi	pset	Power	Exit
Advan	ced Chipset S	ettings						
WARN	ING: Settin	g wrong va	lues in	below secti	ions			
	may c	ause systei	n to ma	Ifunction.				
Nor	thBridge Config	guration				←	Select S	Screen
Sou	uthBridge Confi	guration				++	Select I	tem
						+ -	Change	e Field
						Tab	Select I	Field
						F1	Genera	l Help
						F10	Save a	nd Exit
						ESC	Exit	
	v02.59 (C)Co	pyriaht 19	85-200	5. Americar	n Me	aatre	ends. Ind	C.

Main	Advanced	PCIPnP	Boot	Security	Chi	pset	Power	Exit
NorthB	ridge Chipset	Configura	tion					
DRAM F	requency		[A	uto]				
Configu	re DRAM Timing	g by SPD	[Ei	nabled]				
Init. Gra	aphic Adapter P	riority	[P0	CI/Int-VGA]				
Internal	Graphics Mode	Select	[Ei	nabled, 8MB]			
Graphic	s Aperture Size		[6	4MB]				
Video Fu	unction Configu	ration						
DVM	T Mode Select		[C	ombo Mode]		←	Select S	Screen
Boot	Display Device		[C	RT]		++	Select I	item
Flat F	Panel Type		[80	0x600LVDS	5]	+ -	Change	Field
Local	Flat Panel Scal	ing	[A	uto]		Tab	Select F	Field
						F1	Genera	l Help
						F10	Save a	nd Exit
						ESC	Exit	
,	v02.59 (C)Coj	oyright 198	85-2005	, Americar	n Me	gatre	ends, Ind	C.

Main	Advanced	PCIPnP	Boot	Security	Chips	et	Power	Exit
SorthB	ridge Chipset	Configurat	ion					
OnBoard	d AC'97 Audio		[4	Auto]				
OnBoard	d LAN		[E	nabled]				
						←	Select	Screen
						++	- Select	Item
						+ -	- Chang	e Field
						Tab	Select	Field
						F1	Gener	al Help
						F10	Save a	and Exit
						ESC	Exit	
	v02.59 (C)Cop	oyright 198	35-200	5, Americ	an Me	gatr	ends, Ir	nc.

4.9 Exit Options

Main	Advanced	PCIPnP	Boot	Security	Chipset	Pow	er	Exit
Exit Op	tions							
Save Ch	nanges and Ex	kit						
Discard	Changes and	Exit						
Discard	Changes							
						←	Sel	ect Screen
Load Op	otimal Default	S				++	Sel	ect Item
Load Fa	ilsafe Default	S				+ -	Cha	ange Field
						Tab	Sel	ect Field
						F1	Ger	neral Help
						F10	Sav	e and Exit
						ESC	Exit	t
	v02.59 (C)C	opyright 1	1985-20	005, Ameri	can Meg	atrenc	ls, I	inc.

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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

 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.



 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 <u>Next</u> > button to proceed.



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

etup X
License Agreement Please read the following license agreement carefully.
Press the PAGE DOWN key to see the rest of the agreement.
INTEL SOFTWARE LICENSE AGREEMENT (Alpha / Beta, Organizational Use) IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING. Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software. The Software contains pre-release "alpha" or "beta" code, which may not be fully
Do you accept all the terms of the preceding License Agreement? If you choose No, the setup will close. To install Intel(R) Chipset Software Installation Utility, you must accept this agreement.

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

Setup			×
Readme Information			
Readme.txt			
****	CERTIFICATION		
 Product: Intel(R) Chipset Software Instal Release: Production Version Version: 5.1.1.1002 Target Chipsetti: ICH4L Date: December 5. 2003 Note: For the list of supported chipsets, plate 	lation Utility		Ξ
the Release Notes	****		_
<u>र</u>			
	< <u>B</u> ack	<u>N</u> ext>	Cancel

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.

Setup	
	InstallShield(R) Wizard Complete The InstallShield(R) Wizard has successfully installed Intel(R) Chipset Software Installation Utility. Before you can use the program, you must restart your computer. (<u>Yes, I want to restart my computer now.</u> (No, I will restart my computer later. Remove any disks from their drives, and then click Finish to complete setup.
	< <u>B</u> ack Finish Cancel

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.



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

Intel(R) Extreme Graphics 2		×
	Welcome to the InstallShield(R) Wizard for Intel(R) Extreme Graphics 2 Welcome. This program will install Intel(R) Extreme Graphics 2 on your computer. It is strongly recommended that you exit all Windows programs before running this setup program.	
	< <u>B</u> ack <u>Next</u> > Cancel	

5. The *Intel*® *OEM Software License Agreement* dialog box the n appears on the screen. Choose **Yes** 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 Finish button to reboot. Only after your computer boots will the new settings take effect.

Intel(R) Extreme Graphics 2	
	InstallShield(R) Wizard Complete The InstallShield(R) Wizard has successfully installed Intel(R) Extreme Graphics 2. Before you can use the program, you must restart your computer. (Marcon Marcon Marcon Marcon Marcon Marcon Marcon (Marcon Marcon Marcon Marcon Marcon (Marcon Marcon Marcon Marcon Marcon (Marcon Marcon Marcon Marcon Marcon (Marcon Marcon Marcon Marcon (Marcon Marcon Marcon Marcon Marcon (Marcon Marcon Marcon Marcon Marcon (Marcon Marcon Marcon Marcon Marcon Marcon Marcon (Marcon Marcon Marc
	< <u>B</u> ack Finish Cancel

5.2.2 WIN NT

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

 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.



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



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

ei(H) Extreme Graphics 2		
icense Agreement Please read the following license agreement	carefully.	
Press the PAGE DOWN key to see the rest of	of the agreement.	
NTEL SOFTWARE LICENSE AGREEMEN IMPORTANT - READ BEFORE COPYING, I Do not use or load this software and any ass until you have carefully read the following ter Software, you agree to the terms of this Agree install or use the Software.	T (DEM / IHV / ISV I NSTALLING OR US ociated materials (co rms and conditions. B sement. If you do not	Distribution & Single User]
* If you are an Original Equipment Manufactu Do you accept all the terms of the preceding	urer (OEM), Independ License Agreement?	ent Hardware Vendor 💽
setup will close. To install Intel(R) Extreme G	raphics 2, you must a	accept this agreement.

 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

 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.



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



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

Intel(R) Extreme Graphics 2			×
License Agreement Please read the following license agreement care	efully.		
Press the PAGE DOWN key to see the rest of th	e agreement.		
INTEL SOFTWARE LICENSE AGREEMENT (D IMPORTANT - READ BEFORE COPYING, INS Do not use or load this software and any associ- until you have carefully read the following terms Software, you agree to the terms of this Agreeme install or use the Software. Please Also Note: * If you are an Original Equipment Manufacturer	DEM / IHV / IS TALLING OR I ated materials (and conditions ent. If you do n (OEM), Indepe	V Distribution & S JSING. collectively, the ' . By loading or us ot wish to so agre endent Hardware	ingle User)
Do you accept all the terms of the preceding Licc setup will close. To install Intel(R) Extreme Graph	ense Agreemer hics 2, you mus	nt? If you choose st accept this agr	e No, the eement.
	< Back	Yes	No

 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 <u>Finish</u> button to reboot. Only after your computer boots will the new settings take effect.



5.3 LAN Driver Installation

5.3.1 WIN98

 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.



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

)riverInstaller - In:	stallShield Wizard		
License Agreemen Please read the I	t following license agreement carefully.		
			-
IN	TEL SOFTWARE LICENSE AGREEMEN	т	
IMPORTANT -	READ BEFORE COPYING, INSTALLING	<u>g or using</u> .	
<u>IMPORTANT -</u> Do not use or lo ícollectively, the	READ BEFORE COPYING, INSTALLING ad this software and any associated n a "Software" until you have carefully	<u>G OR USING</u> . naterials read the	
<u>IMPORTANT</u> Do not use or lo (collectively, the following terms	READ BEFORE COPYING, INSTALLING ad this software and any associated n a "Software") until you have carefully and conditions. By loading or using tl	<u>G OR USING</u> . naterials read the he Software,	
<u>IMPORTANT</u> . Do not use or lo (collectively, the following terms you agree to the	READ BEFORE COPYING, INSTALLING ad this software and any associated n "Software") until you have carefully and conditions. By loading or using th terms of this Agreement. If you do no reall as use the Software the	<u>G OR USING</u> . naterials read the he Software, ot wish to so	
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<u>IMPORTANT</u> . Do not use or lo (collectively, the following terms you agree to the agree, do not in	READ BEFORE COPYING, INSTALLING ad this software and any associated n "Software") until you have carefully and conditions. By loading or using th e terms of this Agreement. If you do no stall or use the Software.	<u>G OR USING</u> . naterials read the he Software, ot wish to so	
IMPORTANT . Do not use or lo (collectively, the following terms you agree to the agree, do not in (] accept the terms	READ BEFORE COPYING, INSTALLING ad this software and any associated n "Software") until you have carefully and conditions. By loading or using th terms of this Agreement. If you do no stall or use the Software.	G OR USING. naterials read the he Software, ot wish to so	1
IMPORTANT - Do not use or lo (collectively, the following terms you agree to the agree, do not in	READ BEFORE COPYING, INSTALLING ad this software and any associated n a "Software" until you have carefully and conditions. By loading or using th a terms of this Agreement. If you do no stall or use the Software.	G OR USING. naterials read the he Software, ot wish to so	
IMPORTANT - Do not use or lo (collectively, the following terms you agree to the agree, do not in (accept the terms (accept the terms) (accept the terms)	READ BEFORE COPYING, INSTALLING ad this software and any associated n "Software") until you have carefully and conditions. By loading or using th terms of this Agreement. If you do no stall or use the Software.	G OR USING. naterials read the he Software, ot wish to so	2
IMPORTANT - Do not use or lo (collectively, the following terms you agree to the agree, do not in [accept the terms] I go not accept the ISheld	READ BEFORE COPYING, INSTALLING ad this software and any associated n "Software") until you have carefully and conditions. By loading or using th e terms of this Agreement. If you do no stall or use the Software. in the license agreement e terms in the license agreement	G OR USING. naterials read the he Software, ot wish to so	
IMPORTANT - Do not use or lo (collectively, the following terms you agree to the agree, do not in [accept the terms] I go not accept the ISPited	READ BEFORE COPYING, INSTALLING ad this software and any associated n "Software") until you have carefully and conditions. By loading or using th te terms of this Agreement. If you do no stall or use the Software.	G OR USING. naterials read the he Software, ot wish to so	<u> </u>

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

TriverInstaller - InstallShield Wizard		×
Location to Save Files Where would you like to save your files?		
Please enter the folder where you want the will be created for you. To continue, click	se files saved. If the fold Next.	ler does not exist, it
Save files in folder:		
jesantennite		Change
InstallShield		
	< <u>B</u> ack <u>N</u> e	xt > Cancel

 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.

You must shutdown and restart your comp	uter before the new settings will take effect.
The computer will automatically shutdown	in 16 seconds
Restart now	Restart later

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 **<u>H</u>ave 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.

Insert Di	isk	×
ŕ	Inset disk with software provided by the software or hardware manufacture. If the files can be found at a different location. for example on another drive type a new path to the files below.	OK Cancel
	C:\\82540	

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.

Select OEM Option			×
Choose a software suppor	rted by this hardw	are manufacturer's	disk.
Intel(R) PR0/100 Family Intel(R) PR0/1000 Family	Adapter y Adapter		
OK	Cancel	<u>H</u> elp]

 Setup then returns to Network Setup Wizard screen and displays your new Network Adapter. Click on <u>Next</u> > to continue.

Network Setup Wizard	
	To have setup start searching for a Network Adapter, click Start Search button. Network ≜dapters: ☑ III Intel(IR) PR0/100 Family Adapter Select from list
	< Back Next> Cancel

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



 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 <u>Next</u> > button once you are sure of your devices.

Network Setup Wizard	Listed below are the services that will be installed by the system. You may add to this list by clicking the Select from list button.
	Network Services:
	Select from list

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



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

TCP/IP 9	Setup 🔀
⚠	If there is a DHCP server on your network, TCP/IP can be configured to dynamically provide an IP address. If you are not sure, ask your system administrator. Do you wish to use DHCP?
	Yes

- 12. Setup then starts the Networking installation and copies the files.
- 13. When the screen below appears, click on **<u>Next</u> >** 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.



Assign the workgroup or domain setting of your computer. Click on <u>Next</u> > to continue.

Network Setup Wizard	
	Select whether your computer will be participating in a workgroup or a domain and enter the name of the workgroup or domain. If you are not sure which one to select or what name to enter, contact your Network Administrator. ©omputer Name: H Make this computer a member of Workgroup: BOSER Domain: © Domain: Example © Domain: Example © Domain: Example
	< <u>B</u> ack <u>N</u> ext > Cancel

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

Networking has been installed on this computer. Before the network can be used, this system must be restarted.
< Back. Finish Cancel

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

Network	Settings Lhange
	You must shut down and restart your computer before the new settings will take effect.
-	Do you want to restart your computer now?
	<u>Y</u> es <u>N</u> o

5.3.3 WIN2K/XP

 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.

	ZDriverInstaller - InstallShield Wizard	1
	License Agreement Please read the following license agreement carefully.	
	INTEL SOFTWARE LICENSE AGREEMENT IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING. Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.	
Choos	e driver install location. (ex: c:\IntelPRO)	1
	Location to Save Files Where would you like to save your files?	
	Please enter the folder where you want these files saved. If the folder does not exist, it will be created for you. To continue, click Next. Save files in folder:	
	Change	
	InstallShieldCancel	

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

6.

5.4 Audio Driver Installation

 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.



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

Welcome to the InstallShield Wizard for Avance AC'97 Audio
The InstallShield® Wizard will install Avance AC'97 Audio on your computer. To continue, click Next,
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 **<u>Finish</u>** button to complete the installation process. The system changes you made will take effect after the system restarts.

InstallShield Wizard Complete Setup has finished installing Avance AC'97 Audio on your computer.
 Yes, I want to restart my computer now. No, I will restart my computer later. Remove any disks from their drives, and then click Finish to complete setup.
< Back Finish Cancel

5.5 USB2.0 Driver Installation

5.5.1 WIN98

 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.

General Device Manager Hardware Profiles Performance Image: System: Microsoft Windows 98 Second Edition 4.10.2222 A Image: System: Microsoft Windows 98 Second Edition 4.10.2222 A Image: System: Microsoft Windows 98 Second Edition 4.10.2222 A Image: System: Microsoft Windows 98 Second Edition 4.10.2222 A Image: System: Microsoft Windows 98 Second Edition 4.10.2222 A Image: System: Image: System: Image: System: Image: System: Image: System: Image: System: Image: System: Image: System: Image: System: Image: System: Image: System: Image: System: Image: System: Image: System: Image: System: Image: System: System: Image: System: System: Image: System: System: Image: System: System: System: Image: System: System: System: Image: System:	stem Pr	operties			?
System: Microsoft Windows 98 Second Edition 4.10.2222 A Registered to: aa 50578-336-0106653-13258	General	Device Manager	Hardware Profile	s Performance	
Computer: Geruinefnitel x86 Family 6 Model 8 Stepping 6 248 0MB RAM			System Mic 4.10 e a 505 Compute x86 249	osolt Windows 98 ond Edition 12222 A ed to: 78-335-0106653-1 rr: unertritet Family 6 Model 8 (0MB RAM	1 3258 Stepping 6

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.



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

Update Device Driver Wizard		
	This wizard searches for updated drivers for: PCI Universal Serial Bus A device driver is a software program that makes a hardware device work. Upgrading to a newer version of a device driver may improve the performance of your hardware device or add functionality.	
	<back next=""> Cancel</back>	

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



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

Update Device Driver	Wizard
	Windows will search for updated drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
	< <u>B</u> ack Next > Cancel

 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 <u>Next</u> > button to accept and proceed.



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

Update Device Driver \	√izard
	Intel USB 2.0 Enhanced Host Controller
	Windows has finished installing an updated driver for your hardware device.
`	
	K Back Finish Cancel

5.5.2 WIN2K

- 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.



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



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

nyraue bevice briver wizaru
Install Hardware Device Drivers A device driver is a software program that enables a hardware device to work with an operating system.
This wizard upgrades drivers for the following hardware device: Image: Controller Universal Serial Bus (USB) Controller Upgrading to a newer version of a device driver may add functionality to or improve the performance of this device. What do you want the wizard to do? © Search for a suitable driver for my device (recommended) © Display a list of the known drivers for this device so that I can choose a specific driver
< <u>B</u> ack Next> Cancel

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

Upgrade Device Driver Wizard
Locate Driver Files Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
Universal Serial Bus (USB) Controller
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< <u>B</u> ack Next> Cancel

7. Choose the driver disk location.

Upgrade I	Device Driver Wizard	×
	Insert the manufacturer's installation disk into the drive selected, and then click DK.	OK Cancel
	Copy manufacturer's files from: E:\USB20\WIN2K	Browse

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



5.5.3 WINXP

 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.



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

🌆 Install Driver	
	Install Driver
	The wizard has finished searching for driver files for your hardware device.
	The wizard found driver for the following device:
	USB 2.0 Root Hub
	The wizard found the following driver for the device:
	D:\USB20\WINXP\usb2x.inf
Setup Driver	Installing driver wizard found, please wait
	KBack Next> Cancel Finish

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.

