

HS-4600

Pentium™ II/III Embedded Little Board

- 133MHz FSB • CRT/Panel • LAN • Sound • 4 COM •
- RS-232/422/485 • PC/104 • GPS • IrDA • USB • DGIO •
- TV Out • DOC • WDT • CTM • Hardware 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:

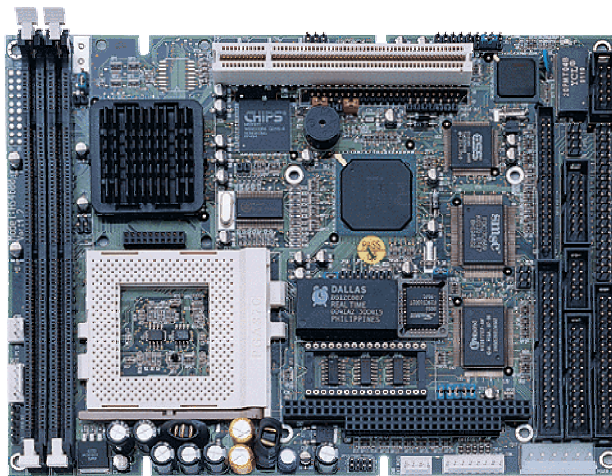
- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This helps to discharge any static electricity on your body.
- 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 HS-4600 to ensure harmlessly discharge any static electricity through the strap.
- Please use an anti-static pad when putting down any components or parts or tools outside the computer. You may also use an anti-static bag instead of the pad. Please inquire from your local supplier for additional assistance in finding the necessary anti-static gadgets.

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

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Chapter 1

General Description

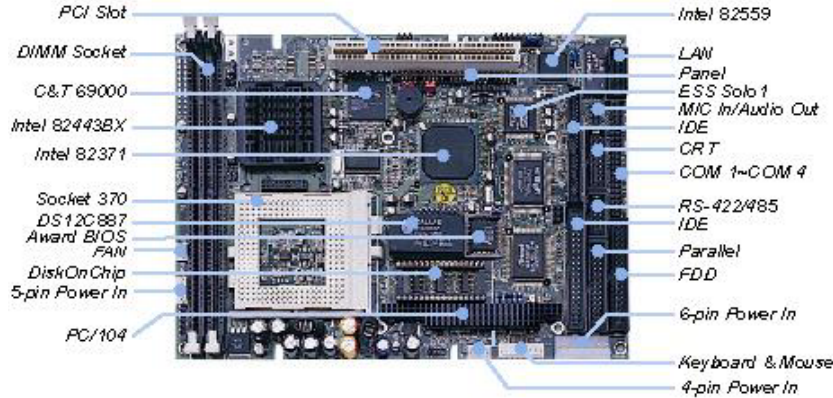


The HS-4600 is an embedded little board that features support for Intel® Pentium® II/III microprocessors. The board design combines together all necessary input and output factors that make it an ideal all-in-one industrial single board computer. Its 100MHz FSB architecture accommodates microprocessors of up to 133MHz FSB. A special feature bundled with the HS-4600 is its provision for a GPS system application. The board provides a 20-pin internal I/O connector for convenient installation of Rockwell's "Jupiter" Global Positioning System (GPS) Receiver.

To meet the sound quality required by most sound applications, its ESS Solo1 3D sound interface/adapter provides the perfect solution. Its IDE architecture offers DMA33 access of mode 4 to IDE drives, at 33.3MB/sec data transfer rate on all four IDE drives. For easy network connection, the HS-4600 has a 10/100 Base TX LAN controller to serve this need. The HS-4600 also deploys a single Flash chip for the system BIOS. Modifying the Flash BIOS is possible and implemented via the Utility Update.

Additional onboard connectors include an IrDA port providing a faster data transmission, a DOS-compatible DiskOnChip™ socket with a maximum capacity of 144MB, a CRT/VGA connector for C&T69000 display controller –compatible CRTs/panels providing up to a maximum of 1280x1024, 256colors resolution, and two DIMM socket up to 512MB. To ensure the reliability in an unmanned or standalone system, the Watchdog Timer (WDT) onboard HS-4600 is designed with pure hardware that does not need the arithmetical functions of a real-time clock chip. If any program causes unexpected halts to the system, the onboard Watchdog Timer (WDT) will automatically reset the CPU or generate an interrupt to resolve such condition.

1.1 Major Features



The HS-4600 comes with the following features:

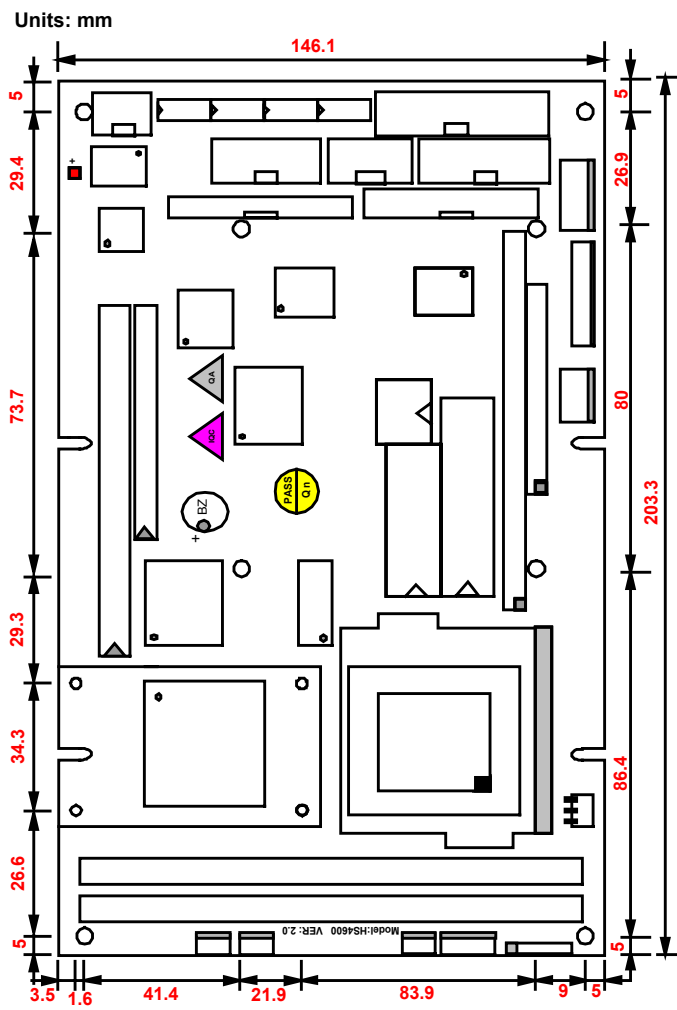
- Socket 370 for Intel® Celeron™/Coppermine™ 266MHz~1GHz CPU
- 100MHz system clock rate provides up to 133MHz
- Two DIMM sockets provide maximum system memory of up to 512MB
- Fast PCI DMA33 IDE controller supporting four IDE disk drives including large size hard disks, CD-ROM, tape backup etc.
- Three RS-232 and one RS-232/422/485 serial ports with 16C550 UART and 16byte FIFO
- One enhanced bi-directional parallel port supporting SPP/ECP/EPP
- Onboard PS/2 Keyboard and PS/2 Mouse connectors
- SMC37C669 super I/O chipset
- C&T69000 CRT/Panel display controller
- Intel® 82559 100 Base TX LAN controller
- ESS Solo1 3D Sound
- Onboard 8bit Digital In/Out function
- Supports TV Out function
- DiskOnChip™ memory size support of up to 144MB
- Rockwell GPS modules socket support
- PC/104 Bus connector
- One standard PCI Slot
- Hardware Monitor support
- ATX Power Function support

1.2 Specifications

- **CPU** : Socket 370 for Intel® Celeron™ / Coppermine™ 266MHz~1GHz CPU
- **Bus Interface** : PCI Bus
- **Bus Clock Rate** : 100MHz System Clock Rate provides up to 133MHz
- **Memory** : Two DIMM sockets provides up to 512MB
- **Chipset** : Intel® 82443BX, Intel® 82371
- **I/O Chipset** : SMC 37C669
- **PCI Slot** : One standard PCI Slot
- **VGA** : C&T69000 with 2MB memory support CRT/Panel up to 1280x1024, 256colors
- **IDE** : Four IDE disk drives support DMA33 transfer rate up to 33.3MB/sec
- **Floppy** : Support up to two floppy disk drives
- **Parallel Port** : Support SPP/ECP/EPP
- **LAN** : Intel® 82559 100 Based LAN
- **Sound** : ESS Solo1 3D Sound
- **Serial Port** : Three RS-232 and one RS-232/422/485 serial ports include 16C550 UART with 16byte FIFO
- **PC/104** : PC/104 connector for 16bit ISA Bus
- **GPS** : Support one Rockwell GPS module socket
- **IrDA** : One IrDA TX/RX header
- **USB** : Support two USB ports
- **Digital I/O** : 8bit Digital I/O (HS-4600TV only)
- **TV Out** : Support PAL or NTSC system (HS-4600TV only)
- **Keyboard/Mouse** : 8-pin connector support standard PC/AT Keyboard and PS/2 Mouse
- **DiskOnChip™** : Socket for DiskOnChip™ and memory size up to 144MB
- **BIOS** : Award Y2K PnP Flash BIOS
- **Watchdog Timer** : Set 1, 2, 10, 20, 110, 220 seconds activity trigger with Reset or NMI
- **CMOS** : DS12C887 or equivalent device
- **ATX Power** : Support ATX Power Function
- **Power Connector** : One 4-pin +5V/+12V and one 6-pin -5V/-12V connector
- **Maximum Power Consumption** : +5V@6A 、 +12V@100mA

- Operating Temperature : 0~60°C
- Hardware Monitor : Winbond W83783S
- CPU Temperature Monitor : Winbond W83783S
- Board Size : 8"(L) x 5.75"(W)

1.3 Board Dimensions



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Chapter 2

Unpacking

This chapter explains unpacking the board, checking the equipment and documentation and where to go from there.

2.1 Opening the Delivery Package

The HS-4600 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-4600 delivery package contains the following items:

- ◆ HS-4600 Industrial Single Board Computer
- ◆ One Printer port Flat Cable
- ◆ Two IDE port Flat Cable
- ◆ One FDD port Flat Cable
- ◆ One 40-pin COM ports Cable
- ◆ One Panel Connection Flat Cable
- ◆ One Front Panel Cable
- ◆ One Ethernet Cable
- ◆ One PS/2 Keyboard and Mouse Transfer Cable
- ◆ One MIC/SPK Cable
- ◆ Utility CD Disk
- ◆ User's Manual

It is recommended that you keep all the parts of the delivery package intact and store them in a safe/dry place for any unforeseen event requiring the return shipment of the product. In case you discover any missing and/or damaged items from the list of items, please contact your dealer immediately.

Chapter 3

Hardware Installation

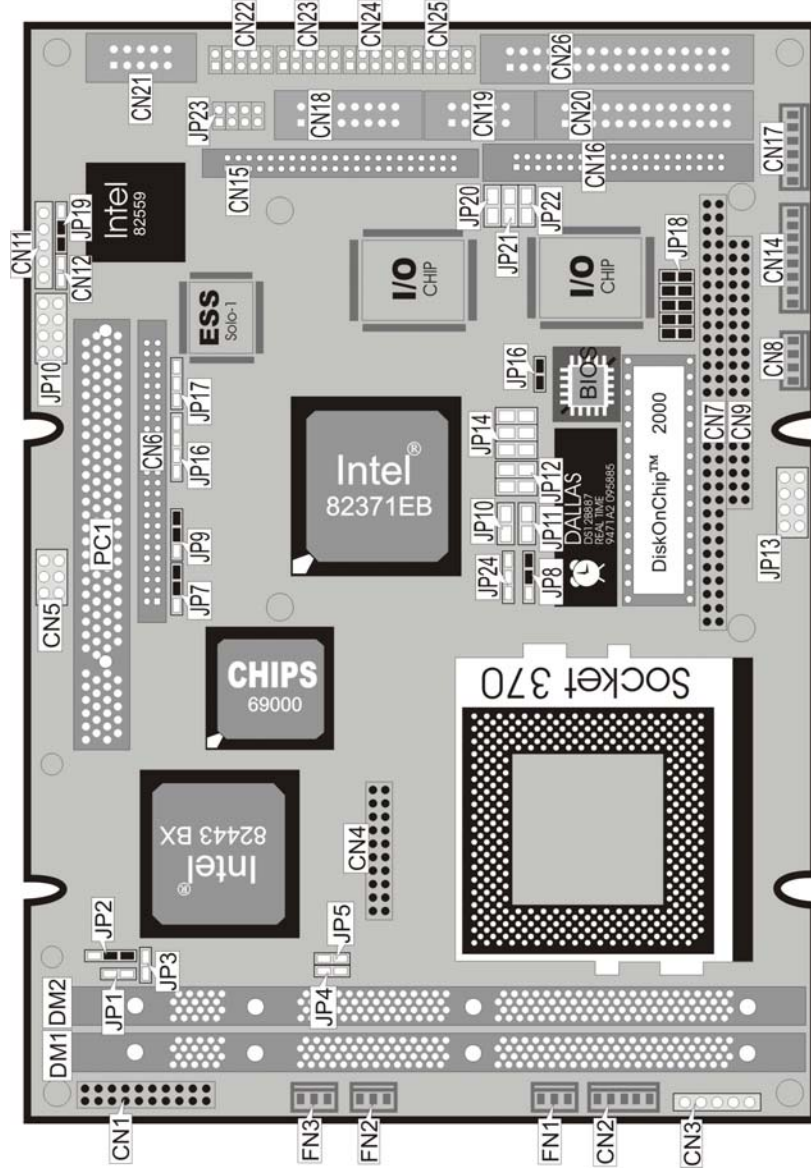
This chapter provides the information on how to install the hardware using the HS-4600. This chapter also contains information related to jumper settings of switch, watchdog timer, and the DiskOnChip™ address selection etc.

3.1 Before Installation

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

1. Make sure that all jumper settings match their default settings and CMOS setup correctly. Refer to the sections on this chapter for the default settings of each jumper.
2. Go through the connections of all external devices and make sure that they are installed properly and configured correctly within the CMOS setup. Refer to the sections on this chapter for the detailed information on the connectors.
3. Keep the manual and diskette in good condition for future reference and use.

3.2 HS-4600 Board Layout



3.3 HS-4600 Jumper List

Jumper	Definition	Page
JP1	NTSC Clock Select	16
JP2	PAL System or NTSC System	16
JP3	TV Out Enabled/Disabled Select	16
JP4	Host Communications Protocol Select for GPS	26
JP5	Host Communications Protocol Select for GPS	26
JP6	Thermal Input	17
JP7	Panel Voltage Select	17
JP8	Watchdog Timer Active Type Select	14
JP11	Clear CMOS	16
JP12	RS-422/485 Receiver Enabled/Disabled Select	19
JP13	Front Panel Signal Connector	22
JP14	RS-422/485 Transceiver Enabled/Disabled Select	19
JP15	Audio In Connector	29
JP16	Temperature Enabled/Disabled Select	17
JP17	AUX In Connector	29
JP18 (1-4)	DiskOnChip™ Address Select	13
JP18 (5-10)	WDT Out Period Select	14
JP19	LAN Enabled/Disabled Select	30
JP20	COM3 Enabled/Disabled Select	19
JP21	COM4 Enabled/Disabled Select	19
JP22	COM2 Enabled/Disabled Select	19
JP23	MIC In / Audio Out Connector	29
JP24	I ² C Connector	----

3.4 HS-4600 Connector List

Connector	Definition	Page
CN1	Digital I/O Connector	35
CN2	5-pin ATX Power Connector	34
CN3	Keylock Connector	25
CN4	GPS Connector	26
CN5	S-Video Connector	16
CN6	Panel Connector	17
CN7	PC/104 64-pin Connector	31
CN8	4-pin Power Connector	34
CN9	PC104 40-pin Connector	31
CN10	USB Connector	33
CN11	IrDA Connector	33
CN12	2-pin ATX Power ON/OFF Switch	34
CN14	8-pin Keyboard/Mouse Connector	21
CN15	Primary IDE Connector	23
CN16	Secondary IDE Connector	23
CN17	6-pin Power In Connector	----
CN18	CRT Connector	17
CN19	RS-422/485 Connector (5x2 Header)	19
CN20	Parallel Connector	25
CN21	LAN Connector (5x2 Header)	30
CN22	COM1 Connector (5x2 Header)	19
CN23	COM2 Connector (5x2 Header)	19
CN24	COM3 Connector (5x2 Header)	19
CN25	COM4 Connector (5x2 Header)	19
CN26	Floppy Connector	28
FN1	FAN Power Connector	34
FN2	FAN Power Connector	34
FN3	FAN Power Connector	34

3.5 DiskOnChip™ Address Setting

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

The U11 location onboard the HS-4600 is the DiskOnChip™ module socket. Jumper JP18 assigns the address setting of the installed module. Setting the 4 pins of JP18 allows you to select the starting memory address of the DiskOnChip™ (D.O.C.). If you have additional memory devices in the system, please set both at different memory address mapping to avoid the mapping area conflicts.

- **JP18 (1-4): DiskOnChip™ Address**

PIN	Address
Short1-2	D000 (default)
Short 3-4	D800

3.6 Configuring the CPU

The HS-4600 offers the convenience in CPU installation with its auto-detect feature. After installing a new microprocessor onboard, the HS-4600 automatically identifies the frequency and clock speed of the installed microprocessor chip, thereby eliminating the need for user to do additional CPU configuration or hardware settings related to it.

3.7 Watchdog Timer

There are three access cycles of Watch-Dog Timer as Enable, Refresh and Disable are the three access cycles of Watchdog Timer. The Enable cycle proceeds via READ PORT 443H whereas the Disable cycle proceeds via READ PORT 043H. A continued Enable cycle after a first Enable cycle means Refresh.

Once the Enable cycle is active, a Refresh cycle is requested before the time-out period. This restarts counting of the WDT period. When the time counting goes over the period preset of WDT, it will assume that the program operation is abnormal. A System Reset signal to re-start or a NMI cycle to the CPU transpires when such error happens. Jumper JP8 is used to select the active function of Watchdog Timer.

- **JP8: Watchdog Timer Active Type Setting**

JP8	Description
Short 1-2	Active NMI
Short 2-3	System Reset (default)
Open	Disabled Watchdog Timer

- **JP18 (5-10): Watchdog Timer Out Period Select**

Period	PINS 5-6	PINS 7-8	PINS 9-10
*1 sec	SHORT	SHORT	SHORT
2 sec	OPEN	SHORT	SHORT
10 sec	SHORT	OPEN	SHORT
20 sec	OPEN	OPEN	SHORT
110 sec	SHORT	SHORT	OPEN
220 sec	OPEN	SHORT	OPEN

The Watchdog Timer is disabled after the system Power-On. It can be enabled via an Enable cycle and reading the control port (443H), or via a Refresh cycle and reading the control port (443H), or via a Disable cycle and reading the disable control port (043H).

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

443H	I/O Read	The Enable cycle
443H	I/O Read	The Refresh cycle
043H	I/O Read	The Disable cycle

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

```

WDT_EN_RF      EQU    0433H
WDT_DIS        EQU    0043H

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

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

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

```

3.8 CMOS Data Clear

- JP11: Clear CMOS

JP11	Description
SHORT	Clear CMOS
OPEN	Normal

3.9 PAL System or NTSC System

- JP1: NTSC Clock Select

JP1	Description
SHORT	1 FSC
OPEN	4 FSC

- JP2: PAL or NTSC System Select

JP2	Description
1-2	PAL System
2-3	NTSC System

- JP3: TV Out Enabled/Disabled Select

JP3	Description
SHORT	Enabled
OPEN	Disabled

- CN5: TV Out Connector

PIN	Description
1	CRMA
2	GND
3	GND
4	LUMA
5	CMPS
6	GND

3.10 Hardware Monitor

The HS-4600 comes with the Hardware Monitor function. Users can view information of Voltage, FAN speeds and Temperatures through the BIOS.

- **JP6: Temperatures Sensor Connector**
- **JP16: CPU Temperature Alarm**

JP16	Description
SHORT	Enabled
OPEN	Disabled

3.11 VGA Controller

The onboard C&T69000 CRT/Panel display controller provides up to 1280x1024, 256colors resolution. The board provides an auto disable VGA once a display card is plugged into the PCI Slot. The HS-4600 provides one internal connector, CN18, for the VGA monitor connection.

- **CN18: CRT Connector**

CN18	Description	CN18	Description
1	RED	2	GND
3	GREEN	4	GND
5	BLUE	6	GND
7	GND	8	GND
9	GND	10	HSYNC
11	GND	12	VSYNC
13	GND	14	N/C
15	GND	16	N/C

The HS-4600 provides a 50-pin 2.0mm pitch header connector (CN6). JP7 is Panel Voltage select jumper.

- **CN6: Panel Connector**

CN6	Description	CN6	Description
1	+12V	2	+12V
3	GND	4	GND
5	+3V PVcc	6	ENAVdd
7	FPVee	8	GND
9	P ₀	10	P ₁
11	P ₂	12	P ₃
13	P ₄	14	P ₅
15	P ₆	16	P ₇
17	P ₈	18	P ₉
19	P ₁₀	20	P ₁₁
21	P ₁₂	22	P ₁₃
23	P ₁₄	24	P ₁₅
25	P ₁₆	26	P ₁₇
27	P ₁₈	28	P ₁₉
29	P ₂₀	30	P ₂₁
31	P ₂₂	32	P ₂₃
33	P ₂₄	34	P ₂₅
35	SHFCLK	36	FLM
37	M	38	LP
39	GND	40	ENABKL
41	P ₂₆	42	P ₂₇
43	P ₂₈	44	P ₂₉
45	P ₃₀	46	P ₃₁
47	P ₃₂	48	P ₃₃
49	P ₃₄	50	P ₃₅

- **JP7: Panel Voltage Selection**

JP7	Description
Short 1-2	5V
Short 2-3	3.3V (default)

3.12 Serial Port Connectors

The HS-4600's CN22, 23, 24 and 25 headers provide four high speeds NS16C550 compatible UART with Read/Receive 16 byte FIFO serial ports. User may use the 40-pin COM cable that came with the delivery package when connecting COM1 to COM4 to CN22, 23, 24 and 25.

- **CN22, 23, 24, 25: COM1~COM4 Connector**

COM Port	PIN	Description	PIN	Description
COM 1 (CN22)	1(1)	DCD	2(2)	DSR
	3(3)	RXD	4(4)	RTX
	5(5)	TXD	6(6)	CTX
	7(7)	DTR	8(8)	RI
	9(9)	GND	10(10)	N/C
COM 2 (CN23)	1(11)	DCD	2(12)	DSR
	3(13)	RXD	4(14)	RTX
	5(15)	TXD	6(16)	CTX
	7(17)	DTR	8(18)	RI
	9(19)	GND	10(20)	N/C
COM 3 (CN24)	1(21)	DCD	2(22)	DSR
	3(23)	RXD	4(24)	RTX
	5(25)	TXD	6(26)	CTX
	7(27)	DTR	8(28)	RI
	9(29)	GND	10(30)	N/C
COM 4 (CN25)	1(31)	DCD	2(32)	DSR
	3(33)	RXD	4(34)	RTX
	5(35)	TXD	6(36)	CTX
	7(37)	DTR	8(38)	RI
	9(39)	GND	10(40)	N/C

- **JP22: COM2 Enabled/Disabled Select**

JP22	Description
SHORT	Disabled
OPEN	Enabled (default)

NOTE: *If the onboard GPS feature is in use, please set COM2 as "Disabled".*

- **JP20: COM3 Enabled/Disabled Select**

JP20	Description
SHORT	Disabled
OPEN	Enabled (default)

- **JP21: COM4 Enabled/Disabled Select**

JP21	Description
SHORT	Disabled
OPEN	Enabled (default)

The onboard COM4 may be configured as RS-232, RS-422, or RS-485.

- **CN19: RS-422/485 Connector**

PIN	Description	PIN	Description
1	TX-	2	TX+
3	RX+	4	RX-
5	GND	6	RTS-
7	RTS+	8	CTS+
9	CTS-	10	N/C

- **JP12: RS-422/485 Receiver Enabled/Disabled Select**

JP12	Description
Short 1-2	Always Enable
Short 3-4	Enable by writing the REG : 2 EFH BIT1=1
Open 1-2	Always Disable (default)

- **JP14: RS-422/485 Transceiver Enabled/Disabled Select**

JP14	Description
Short 1-2	Always Enable
Short 3-4	Enable by "-RTS" signal
Short 5-6	Enable by writing the REG : 2 EFH BIT0=1
All Open	Always Disable (default)

3.13 Keyboard & Mouse Connector

The onboard CN14 connector is an 8-pin header for PS/2 Keyboard & PS/2 Mouse connection.

- **CN14: 8-pin Keyboard & Mouse Connector**

PIN	Description
1	GND
2	VCC
3	MS Data
4	MS Clock
5	GND
6	VCC
7	KB Data
8	KB Clock

3.14 Front Panel Connector

The front panel connector, JP13, provides a multi port connection to various functions/indicators like reset button, WDT LED, speaker, and IDE-drive's Active LED.

Pin 1 and 2 provide the signal connection for the IDE Activity LED Indicator on the front panel. This LED indicates the IDE drive's activity status and behaves with a light ON when Active. Pin 3 and pin 4 assigns the signals for Speaker output connection for external sound capabilities. Pins 7 and 8 of JP13 are for Reset Button use. Pin 5 and pin 6 provide a signal connection to the WDT (Watchdog Timer) LED Indicator. It may also be used as a control signal in WDT activity control. Shorting pin 7 and pin 8 sends a Hardware Reset cycle to system.

- **JP13: Front Panel Connector**

JP13	Description	Input / Output
1	IDE-Drive's Indicator	Output
2	VCC	Power VCC
3	Speaker	Output
4	GND	Power GND
5	GND	Power GND
6	WDT Indicator	Output
7	GND	Power GND
8	Reset Button	Input

3.15 PCI E-IDE Drive Connector

CN15 (a 44-pin connector) and CN16 (a 40-pin connector) both provide the PCI E-IDE drive provisions onboard. A maximum of four IDE drives may be connected on them.

- **CN15: Primary IDE Connector**

CN15	Description	CN15	Description
1	BRSTDRVJ	2	GND
3	DD7-1	4	DD8-1
5	DD6-1	6	DD9-1
7	DD5-1	8	DD10-1
9	DD4-1	10	DD11-1
11	DD3-1	12	DD12-1
13	DD2-1	14	DD13-1
15	DD1-1	16	DD14-1
17	DD0-1	18	DD15-1
19	GND	20	N/C
21	RPDDREQ-	22	GND
23	RPDIOW-	24	GND
25	RPDIOR-	26	GND
27	PIORDY	28	PRIPD1-
29	RPDACK-	30	GND
31	IRQ14	32	N/C
33	RPDA1-	34	N/C
35	RPDA0-	36	RPDA2-
37	RPCS1-	38	RPCS3-
39	HLED	40	GND
41	VCC	42	VCC
43	GND	44	VCC

- **CN16: Secondary IDE Connector**

CN16	Description	CN16	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	N/C	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	N/C	28	BALE
29	N/C	30	GND
31	INTERRUPT	32	IOCS16
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0	38	HDC CS1#
39	HDD ACTIVE	40	GND

3.16 Parallel Connector

CN20 is a standard 26-pin flat cable connector designed to accommodate onboard parallel port connection.

- **CN20: Parallel Connector**

PIN	Description	PIN	Description
1	STROBE	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND	26	GND

3.17 Keylock Connector

CN3 is the onboard Keylock connector of HS-4600.

- **CN3: Keylock**

PIN	Description
1	330Ω PULL HIGH (VCC)
2	N/C
3	GND
4	KEYLOCK
5	GND

3.18 GPS Connector

CAUTION: *The information provided herein are for reference only. For details and accurate information, please refer to the document that came along with the GPS Receiver you purchased.*

The HS-4600 provides a 20-pin optional connector, CN4, for installation of Rockwell's "Jupiter" Global Positioning System (GPS) Receiver.

NOTE: *When enabling the GPS function, please set COM 2 as "Disabled".*

● CN4: GPS Connector

CN4	Description	CN4	Description
1	NOTE ⁽⁰⁾	2	VCC
3	N/C	4	N/C
5	RESET#	6	N/C
7	NOTE ⁽¹⁾	8	NOTE ⁽¹⁾
9	N/C	10	GND
11	RX2	12	TX2
13	GND	14	RX3
15	TX3	16	GND
17	GND	18	GND
19	NOTE ⁽²⁾	20	NOTE ⁽³⁾

NOTE⁽⁰⁾: *No use in the first version of GPS application.*

NOTE⁽¹⁾: *Please reference to the next table for detail.*

NOTE⁽²⁾: *Test only. 1PPS time mark output, rising edge synchronized with each set valid navigation binary message data.*

NOTE⁽³⁾: *Test only. 10KHz clock waveform, positive logic synchronized to pin 19.*

- **JP4 & JP5: Host Communications Protocol Select**

JP4	JP5	Description
OPEN	OPEN	Data stored in SRAM or EEPROM determines message format, host port communication settings, and default message set.
OPEN	SHORT	Binary message format; host port communication settings=9600bps, no parity, 8 data bits, 1 stop bit. The receiver operates from default initialization values stored in ROM.
SHORT	OPEN	NMEA message format; host port communication settings=4800bps, no parity, 8 data bits, 1 stop bit. The receiver selects the default NMEA output message set and uses initialization values from the data stored in SRAM or EEPROM.
SHORT	SHORT	NMEA message format; host port communication settings=4800bps, no parity, 8 data bits, 1 stop bit. The receiver operates from default initialization values stored in ROM and will output the default NMEA message set from ROM.

3.19 Floppy Disk Drive Connector

The HS-4600 uses a standard 34-pin header connector, CN26, for floppy disk drive connection. A total of two FDD drives may be connected at any given time.

- **CN26: FDD Connector**

CN26	Description	CN26	Description
1	GND	2	REDUCE WRITE
3	GND	4	N/C
5	GND	6	N/C
7	GND	8	INDEX#
9	GND	10	MOTOR ENABLE A#
11	GND	12	DRIVE SELECT B#
13	GND	14	DRIVE SELECT A#
15	GND	16	MOTOR ENABLE B#
17	GND	18	DIRECTION#
19	GND	20	STEP#
21	GND	22	WRITE DATA#
23	GND	24	WRITE DATA#
25	GND	26	TRACK 0#
27	GND	28	WRITE PROTECT#
29	GND	30	READ DATA#
31	GND	32	SIDE 1 SELECT
33	GND	34	DISK CHANGE#

3.20 Audio Connectors

The onboard ESS Solo1 3D sound interface includes features for AUX IN, LINE IN and MIC IN / AUDIO OUT connections.

- **JP15: LINE IN Connector**

JP15	Description
1	LINEL
2	GND
3	LINER
4	GND

- **JP17: AUX IN Connector**

JP17	Description
1	AUXBL
2	GND
3	AUXBR

- **JP23: MIC IN / AUDIO OUT Connector**

JP23	Description	JP23	Description
1	AOUTL	2	AOUTR
3	GND	4	GND
5	MIC	6	N/C
7	GND	8	GND

When using a MIC IN/AUDIO OUT cable, user can connect right/left speakers to the AOUTL and AOUTR pins of JP23, and connect microphone to the MIC pin of JP23.

3.21 Fast Ethernet Connector

The Fast Ethernet controller provides 32bit performance, and PCI bus master capability that fully complies with IEEE 802.3 10/100 Base-T specifications.

For 10/100 Base-T operations, simply plug one end of the cable into the 10-pin header of CN21 connector.

- **CN21: LAN Connector (5x2 header)**

PIN	Description	PIN	Description
1	VCC	2	LILED
3	RX+	4	RX-
5	ACTLED	6	GND
7	SPELED	8	GND
9	TX+	10	TX-

NOTE : *LILED : LINK LED*
ACTLED : ACTIVE LED
SPELED : SPEED LED

- **JP19: LAN Enabled/Disabled Select**

JP18	Description
Short 1-2	Enabled (default)
Short 2-3	Disabled

3.22 PC/104 Bus Connection

The PC/104 expansion bus offers provisions to connect all types of PC/104 modules. With the PC/104 bus being known as the new generation of industrial embedded 16bit PC standard bus, thousands of PC/104 modules from multiple vendors can be easily installed onboard. The detailed pin assignment of the PC/104 expansion bus connectors CN7 and CN9 are listed on the following tables:

NOTE : *The PC/104 connector allows direct plugging or stack-through piling of PC/104 modules without requiring the PC/104 mounting kit.*

- **CN7: 64-pin/Female PC/104 Expansion Bus Connector**

PIN	CN7 Row A	PIN	CN7 Row B
1	IOCHECK*	33	0V
2	SD7	34	RESETDRV
3	SD6	35	+5V
4	SD5	36	IRQ9
5	SD4	37	-5V
6	SD3	38	DRQ2
7	SD2	39	-12V
8	SD1	40	NOW*
9	SD0	41	+12V
10	IOCHRDY	42	(KEY)
11	AEN	43	SMEMW*
12	SA19	44	SMEMR*
13	SA18	45	IOW*
14	SA17	46	IOR*
15	SA16	47	DACK3*
16	SA15	48	DRQ3
17	SA14	49	DACK1*
18	SA13	50	DRQ1
19	SA12	51	REFRESH*
20	SA11	52	SYSCLK
21	SA10	53	IRQ7

...More on next page...

PIN	CN7 Row A	PIN	CN7 Row B
22	SA9	54	IRQ6
23	SA8	55	IRQ5
24	SA7	56	IRQ4
25	SA6	57	IRQ3
26	SA5	58	DACK2*
27	SA4	59	TC
28	SA3	60	BALE
29	SA2	61	+5V
30	SA1	62	OSC
31	SA0	63	0V
32	0V	64	0V

- **CN9: 40-pin/Female PC/104 Expansion Bus Connector**

PIN	CN9 Row D	PIN	CN9 Row C
1	0V	21	0V
2	MEMCS16*	22	SBHE*
3	IOSC16*	23	LA23
4	IRQ10	24	LA22
5	IRQ11	25	LA21
6	IRQ12	26	LA20
7	IRQ15	27	LA19
8	IRQ14	28	LA18
9	DACK0*	29	LA17
10	DRQ0	30	MEMR*
11	DACK5*	31	MEMW*
12	DRQ5	32	SD8
13	DACK6*	33	SD9
14	DRQ6	34	SD10
15	DACK7*	35	SD11
16	DRQ7	36	SD12
17	+5V	37	SD13
18	MASTER*	38	SD14
19	0V	39	SD15
20	0V	21	(KEY)

3.23 USB Connector

The HS-4600 provides one 10-pin connector for USB0 & USB1 ports at location CN10.

- **CN10: USB Connector**

CN10	USB	CN10	USB
1	VCC	2	VCC
3	USB PO-	4	USB P1-
5	USB PO+	6	USB P1+
7	GND	8	GND

3.24 IrDA Connector

CN11 is a 5-pin internal FIR communication connector for connection of an IrDA device.

- **CN11: IrDA Connector**

PIN	Description
1	VCC
2	FIRRX
3	IRRX
4	GND
5	IRTX

3.25 Power and FAN Connectors

The HS-4600 reserves CN2 for ATX Power installation from the backplane. Installation is done via an extension cable connected to the 5-pin CN2 to the backplane.

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

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

Besides CN2, the HS-4600 also provides a 4-pin connector (CN8) for connection to an external power unit with voltage ratings of -5V and -12V. Connector CN12 is reserved for ATX Power ON/OFF control.

- **CN8: 4-pin Power Connector**

PIN	Description
1	GND
2	-5V
3	GND
4	-12V

- **CN12: 2-pin ATX Power On/OFF Switch**

PIN	Description
1	VCC5ON
2	PWRBT

- **FN1, FN2, FN3: FAN Power Connector**

PIN	Description
1	GND
2	+12V
3	N/C

- **CN17: Power In Connector**

PIN	Description
1	GND
2	GND
3	-12v
4	+12v
5	VCC
6	VCC

3.26 DIO Connector

The HS-4600 provides a CN1 connector for Digital I/O function.

- **CN1: Digital I/O Connector**

Digital In		Digital Out	
1	GND	2	GND
3	DI0	4	DO0
5	DI1	6	DO1
7	DI2	8	DO2
9	DI3	10	DO3
11	DI4	12	DO4
13	DI5	14	DO5
15	DI6	16	DO6
17	DI7	18	DO7
19	GND	20	GND

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Chapter 4

Award BIOS Setup

The HS-4600 uses Award PCI/ISA BIOS for the system configuration. The Award 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 Award BIOS is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

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

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

Press DEL to enter SETUP.

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

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

4.2 Using Setup

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

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift)F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Calendar, only for Status Page Setup Menu
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the default
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

4.2.1 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.

4.3 Main Menu

Once you enter the Award 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.

**ROM PCI/ISA BIOS (2A69KD2I)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.**

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION SETUP	SAVE & EXIT SETUP
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
Esc : Quit	↑↓→← : Select Item
F10 : Save & Exit	(Shift)F2 : Change Color

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

- **Standard CMOS Setup**
This setup page includes all the items in a standard, AT-compatible BIOS.
- **BIOS Features Setup**
This setup page includes all the items of Award special enhanced features.

- **Chipset Features Setup**
This setup page includes all the items of chipset special features.
- **Power Management Setup**
This entry only appears if your system supports Power Management, "Green PC", standards.
- **PNP/PCI Configuration Setup**
This entry appears if your system supports PNP/PCI.
- **Load BIOS Defaults**
The BIOS defaults have been set by the manufacturer and represent settings that provide the minimum requirements for your system to operate.
- **Load Setup Defaults**
The chipset defaults are settings that provide for maximum system performance. While Award has designed the custom BIOS to maximize performance, the manufacturer has the right to change these defaults to meet their needs.
- **Integrated Peripherals**
This section page includes all the items of IDE hard drive and Programmed Input / Output features.
- **Supervisor / User Password**
Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup.
- **IDE HDD Auto Detection**
Automatically detect and configure hard disk parameters. The Award BIOS includes this ability in the event you are uncertain of your hard disk's parameters.
- **Save & Exit Setup**
Save CMOS value changes to CMOS and exit setup.
- **Exit Without Saving**
Abandon all CMOS value changes and exit setup.

4.4 Standard CMOS Setup

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

ROM PCI/ISA BIOS (2A69KD2I)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Data (mm:dd:yy) : Fri, Oct 19 1999									
Time (hh:mm:ss) : 00 : 00 : 00									
	Type	Size	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE	
Primary Master	: Auto	(0Mb)	0	0	0	0	0	Auto	
Primary Slave	: Auto	(0Mb)	0	0	0	0	0	Auto	
Secondary Master	: Auto	(0Mb)	0	0	0	0	0	Auto	
Secondary Slave	: Auto	(0Mb)	0	0	0	0	0	Auto	
Drive A	: 1.44M , 3.5in.								
Drive B	: None								
LCD&CRT	: Auto								
Halt On	: All, But keyboard								
ESC : Quit			↑↓→← : Select Item			PU/PD/ + / - : Modify			
F1 : Help			(Shift) F2 : Change Color						

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

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

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

● **Primary Master/Primary Slave/Secondary Master/Secondary Slave:**

The categories identify the types of 2 channels that have been installed in the computer. There are 45 predefined types and 4 user definable types are for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type user is user-definable.

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

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

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

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

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

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

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

- **Drive A Type / Drive B Type:**

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

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

- **LCD&CRT:**

The category selects the type of video adapter used for the system monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

BOTH	Enables display of both CRT and LCD
LCD	Enables display of LCD displays only
CRT	Enables display of CRT displays only
Auto	Auto detects the installed display on the system

- **Halt On:** The category determines whether the computer will stop if an error is detected during power up.

No errors	The system boot will not be stopped for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error the system will be stopped and you will be prompted.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

- **Memory:**

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

- **Base Memory:** The POST will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard, or 640K for systems with *640K or more memory installed on the motherboard.*
- **Extended Memory:** The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.
- **Other Memory:** This refers to the memory located in the 640K to 1024K address space. This is memory that can be used for different applications. DOS uses this area to load device drivers in an effort to keep as much base memory free for application programs. The BIOS is the most frequent user of this RAM area since this is where it shadows RAM

4.5 BIOS Features Setup

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

ROM PCI/ISA BIOS (2A69KD2I)			
BIOS FEATURES SETUP			
AWARD SOFTWARE, INC.			
Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF	Shadow : Disabled
External Cache	: Enabled	CC000-CFFFF	Shadow : Disabled
CPU L2 Cache ECC Checking	: Enabled	D0000-D3FFF	Shadow : Disabled
Processor Number Feature	: Enabled	D4000-D7FFF	Shadow : Disabled
Quick Power On Self Test	: Disabled	D8000-DBFFF	Shadow : Disabled
Boot From LAN First	: Disabled	DC000-DFFFF	Shadow : Disabled
Boot Sequence	: A, C, SCSI		
Swap Floppy Drive	: Disabled		
Boot Up Floppy Seek	: Enabled		
Boot Up NumLock Status	: On		
Gate A20 Option	: Fast		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PS/2 Mouse Function Control	: Enabled		
PCI/VGA Palette Snoop	: Disabled		
OS Select For DRAM > 64MB	: Non-OS2		
Report No FDD For WIN 95	: Yes		
		ESC	: Quit ↑↓→←: Select Item
		F1	: Help PU/PD/+/-: Modify
		F5	: Old Values (Shift) F2: Color
		G6	: Load BIOS Defaults
		G7	: Load Setup Defaults

- **Virus Warning:**

When this item is enabled, the Award BIOS will monitor the boot sector and partition table of the hard disk drive for any attempt at modification. If an attempt is made, the BIOS will halt the system and the following error message will appear. Afterwards, if necessary, you will be able to run an anti-virus program to locate and remove the problem before any damage is done.

<p>! WARNING ! Disk boot sector is to be modified Type "Y" to accept write or "N" to abort write Award Software, Inc.</p>

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

NOTE: *Many disk diagnostic programs which attempt to access the boot sector table can cause the above warning message. If you will be running such a program, we recommend that you first disable Virus Protection beforehand.*

- **CPU Internal Cache/External Cache:**
 These two categories speed up memory access. However, it depends on CPU/chipset design. The default value is enable.

Enabled	Enable cache
Disabled	Disable cache

- **CPU L2 Cache ECC Checking:**
 This item allows you to enable/disable CPU L2 Cache ECC checking. The available choices are Enabled, Disabled.
- **Processor Number Feature:**
 This option allows the system to automatically detect and display the Pentium III microprocessor installed. When enabled, this option is only available when using Pentium III chips.
- **Quick Power On Self Test:**
 This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

Enabled	Enable quick POST
Disabled	Normal POST

- **Quick Power On Self Test:**

This item lets you boot the system from a network connection without the necessity of having a hard drive or FDD installed on your system.

Enabled	System may boot from a LAN connection during start-up
Disabled	System can only from a hard drive or FDD during start-up

- **Boot Sequence:**

This category determines which drive to search first for the disk operating system (i.e., DOS). The available options are:

- A, C, SCSI
- C, S, SCSI
- C, CD-ROM, A
- CD-ROM, C, A
- D, A, SCSI
- E, A, SCSI
- F, A, SCSI
- SCSI, A, C
- SCSI, C, A
- C only
- LS, C
- Zip100, C
- USB-FDD, C
- USB-Zip, C
- USB-CD, C
- USB-HDD, C

- **Swap Floppy Drive:**

This item allows you to determine whether enable the swap floppy drive or not. The available choices are Enabled/Disabled.

- **Boot Up Floppy Seek:**

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS cannot tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.

- **Boot Up NumLock Status:**

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on.

On	Keypad is number keys
Off	Keypad is arrow keys

- **Gate A20 Option:**

This entry allows you to select how the gate A20 is handled. The gate A20 is a device used to address memory above 1 Mbytes. Initially, the gate A20 was handled via a pin on the keyboard. Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset to provide support for gate A20.

Normal	keyboard
Fast	chipset

- **Typematic Rate Setting:**

This determines if the typematic rate is to be used. When disabled, continually holding down a key on your keyboard will generate only one instance. In other words, the BIOS will only report that the key is down. When the typematic rate is enabled, the BIOS will report as before, but it will then wait a moment, and, if the key is still down, it will begin the report that the key has been depressed repeatedly. For example, you would use such a feature to accelerate cursor movements with the arrow keys.

Enabled	Enable typematic rate
Disabled	Disable typematic rate

- **Typematic Rate (Chars/Sec):**

When the typematic rate is enabled, this selection allows you select the rate at which the keys are accelerated.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

- **Typematic Delay (Msec):**

When the typematic rate is enabled, this selection allows you to select the delay between when the key was first depressed and when the acceleration begins.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

- **Security Option:**

This category allows you to limit access to the system and Setup, or just to Setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

NOTE: *To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.*

- **PS/2 Mouse Function Control:**

This lets you enable or disable the hardware PS/2 mouse function onboard.

- **PCI/VGA Palette Snoop:**

It determines whether the MPEG ISA/VESA VGA Cards can work with PCI/VGA or not.

Enabled	When PCI/VGA working with MPEG ISA/VESA VGA Card
Disabled	When PCI/VGA not working with MPEG ISA/VESA VGA Card

- **OS Select For DRAM > 64MB:**

This item allows you to access the memory that over 64MB in OS/2. The available choices are Non-OS2, OS2.

- **Report No FDD For WIN 95:**

Whether report no FDD for Win 95 or not. The available choices are Yes, No.

- **Video BIOS Shadow:**

Determines whether video BIOS will be copied to RAM. However, it is optional depending on chipset design. Video Shadow will increase the video speed.

Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

- **C8000 - CBFFF Shadow/D0000 - DFFFF Shadow:**

These categories determine whether option ROMs will be copied to RAM. An example of such option ROM would be support of on-board SCSI.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

4.6 Chipset Features Setup

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

**ROM PCI/ISA BIOS (2A69KD2I)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.**

Auto Configuration	: Enabled	Power-Supply Type	: Auto
EDO DRAM Speed Selection	: 60ns	Auto Detect DIMM/PCI Clk	: Enabled
EDO CASx# MA Wait State	: 2	Spread Spectrum	: Disabled
EDO RASx# Wait State	: 1	CPU Host Clock (CPU/PCI)	:
SDRAM RAS to CAS Delay	: 3	CPU Warning Temperature	:
SDRAM RAS Precharge Time	: 3	Current System Temp.	:
SDRAM CAS Latency Time	: 3	Current CPU1 Temperature	:
SDRAM Precharge Control	: Enabled	Current CPUFAN1 Speed	:
DRAM Data Integrity Mode	: Non-ECC	Current CPUFAN2 Speed	:
System BIOS Cacheable	: Enabled	Current CPUFAN3 Speed	:
Video BIOS Cacheable	: Enabled	Vcore	: +3.3V
Video RAM Cacheable	: Enabled	+5V	: +12V
8 bit I/O Recovery Time	: 3	-12V	:
16 bit I/O Recovery Time	: 2	Shutdown Temperature	: Disabled
Memory Hole At 15M-16M	: Disabled		
Passive Release	: Enabled	ESC	: Quit
Delayed Transaction	: Disabled	F1	: Help
AGP Aperture Size(MB)	: 64	F5	: Old Values (Shift) F2: Color
		F6	: Load BIOS Defaults
		F7	: Load Setup Defaults

- **Auto Configuration:**

Auto Configuration selects predetermined optimal values of chipset parameters. When Disabled, chipset parameters revert to setup information stored in CMOS. Many fields in this screen are not available when Auto Configuration is Enabled. The available choices are Enabled, Disabled.

- **EDO DRAM Speed Selection:**
The DRAM timing is controlled by the DRAM Timing Registers. The timings programmed into this register are dependent on the system design. Slower rates may be required in certain system designs to support loose layouts or slower memory.

50ns	DRAM Timing Type
60ns	DRAM Timing Type

- **EDO CAS# MA Wait State:**
You could select the timing control type of EDO DRAM CAS MA (memory address bus). The available choices are 1, 2.
- **EDO RAS# Wait State:**
You could select the timing control type of EDO DRAM RAS MA (memory address bus). The available choices are 1, 2.
- **SDRAM RAS to CAS Delay:**
You can select RAS to CAS Delay time in HCLKs of 2/2 or 3/3. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU. The available choices are 2, 3.
- **SDRAM RAS Precharge Time:**
Defines the length of time for Row Address Strobe is allowed to precharge. The available choices are 2, 3.
- **SDRAM CAS Latency Time:**
You can select CAS latency time in HCLKs of 2/2 or 3/3. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU. The available choices are 2, 3.
- **SDRAM Precharge Control:**
When enabled, all CPU cycles to SDRAM results in an All Banks Precharge Command on the SDRAM Interface.
- **DRAM Data Integrity Mode:**
Select Parity or ECC (error-correcting code), according to the type of installed DRAM. The available choices are Non-ECC, ECC.

- **System BIOS Cacheable:**

Select Enabled allows caching of the system BIOS ROM at F000h-FFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Enabled	BIOS access cached
Disabled	BIOS access not cached

- **Video BIOS Cacheable:**

Select Enabled allows caching of the video BIOS ROM at C0000h-F7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

Enabled	Video BIOS access cached
Disabled	Video BIOS access not cached

- **Video RAM Cacheable:**

Select Enabled allows caching of the video RAM , resulting in better system performance. However, if any program writes to this memory area, a system error may result.

- **8 Bit I/O Recovery Time:**

The recovery time is the length of time, measured in CPU clocks, which the system will delay after the completion of an input/output request. This delay takes place because the CPU is operating so much faster than the input/output bus that the CPU must be delayed to allow for the completion of the I/O. This item allows you to determine the recovery time allowed for 8-bit I/O. The available choices are from NA, 1 to 8 CPU clocks.

- **16 Bit I/O Recovery Time:**

This item allows you to determine the recovery time allowed for 16-bit I/O. The available choices are from NA, 1 to 4 CPU clocks.

- **Memory Hole At 15M-16M:**

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB.

Enabled	Memory hole supported
Disabled	Memory hole not supported

- **Passive Release:**

When Enabled, CPU to PCI bus accesses are allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM. The available choices are Enabled, Disabled.

- **Delayed Transaction:**
The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1. The available choices are Enabled, Disabled.
- **AGP Aperture Size (MB):**
Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. See www.agpforum.org for AGP information. The available choices are 4, 8, 16, 32, 64, 128, and 256
- **Power-Supply Type:**
This item allows you to select the type of power supply installed to your board. The available choices are Auto (for auto-detection), P8&P9 (for AT power supplies), and ATX (for ATX power supply).
- **Auto Detect DIMM/PCI Clk:**
This item allows you to enable/disable auto detect DIMM/PCI Clock. The available choices are Enabled, Disabled.
- **Spread Spectrum:**
When the system clock generator pulses, the extreme values of the pulse generate excess EMI. Enabling this option changes the extreme values from spikes to flat curves, thus reducing EMI. The available choices are Enabled, Disabled.
- **CPU Host Clock (CPU/PCI):**
This option sets the timing combination of both CPU and PCI bus. The available choices are 66/133MHz, 100/33MHz, and 133/33MHz.
- **CPU Warning Temperature:**
This option sets the temperature limit of the CPU, once reached, would yield a system alarm. Select the CPU warning temperature. If your CPU temperature is higher than the selected temperature, the BIOS will slow down your CPU process till the temperature is below the CPU warning temperature then the CPU will work normally. The available choices are 50°C/122°F, 53°C/127°F, 56°C/133°F, 60°C/140°F, 63°C/145°F, 66°C/151°F, and 70°C/158°F.

- **Current System Temp:**
This field displays the *current* system temperature, if your computer contains a monitoring system. The available choices are Enabled and Disabled.
- **Current CPUFAN1/2/3 Speed:**
These fields display the *current* speed of up to three CPU fans, if your computer contains a monitoring system.
- **Vcore/+3.3V/+5V/+12V/-12V:**
Once the hardware monitoring IC detects the current voltages of voltage regulators and power supply unit, it shows the values on these for read-only purposes.
- **Shutdown Temperature:**
You may select the combination of lower and upper limits for the system shutdown temperature IF your computer contains an environmental monitoring system,. If the temperature extends beyond either limits, the system will automatically shut down. The available choices are Disabled, 60°C/100°F, 65°C/149°F, 70°C/158°F, and 75°C/167°F.

4.7 Power Management Setup

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

**ROM PCI/ISA BIOS (2A69KD21)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.**

ACPI function	: Enabled	** Reload Global Timer Events **	
Power Management	: User Define	IRQ[3-7,9-15], NMI	: Disabled
PM Control by APM	: Yes	Primary IDE 0	: Disabled
Video Off Method	: V/H SYNC+Blank	Primary IDE 1	: Disabled
Video Off After	: Standby	Secondary IDE 0	: Disabled
MODEM Use IRQ	: 3	Secondary IDE 1	: Disabled
Doze Mode	: Disabled	Floppy Disk	: Disabled
Standby Mode	: Disabled	Serial Port	: Enabled
Suspend Mode	: Disabled	Parallel Port	: Disabled
HDD Power Down	: Disabled		
Throttle Duty Cycle	: 62.5%		
PCI/VGA Act Monitor	: Disabled		
Soft-Off by PWR-BTTN	: Instant-Off		
Power On by Ring	: Enabled	ESC	: Quit ↑↓→←: Select Item
Wake Up On LAN	: Enabled	F1	: Help PU/PD/+/-: Modify
IRQ 8 Break Suspend	: Disabled	F5	: Old Values (Shift) F2: Color
		F6	: Load BIOS Defaults
		F7	: Load Setup Defaults

- **ACPI function:**

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The available choices are Enabled, Disabled.

- **Power Management:**

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

- Doze Mode
- Standby Mode
- Suspend Mode
- HDD Power Down

There are four selections for Power Management, three of which have fixed mode settings.

Disable (default)	No power management. Disables all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- ONLY AVAILABLE FOR SL CPU'S . Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each range is from 1 min. to 1 hr. except for HDD Power Down that ranges from 1 min. to 15 min. and disable.

- **PM Control by APM:**

When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If the Max. Power Saving is not enabled, this will be preset to *No*.

- **Video Off Method:**

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

- **Video Off After:**

When enabled, this feature allows the VGA adapter to operate in a power saving mode.

N/A	Monitor will remain on during power saving modes.
Suspend	Monitor blanked when the systems enters the Suspend mode.
Standby	Monitor blanked when the system enters Standby mode.
Doze	Monitor blanked when the system enters any power saving mode.

- **MODEM Use IRQ:**
This item determines the IRQ in which the MODEM can be used.
The available choices are 3, 4, 5, 7, 9, 10, 11, NA.

4.7.1 PM Timers

The following four modes are Green PC power saving functions that are only user configurable when *User Defined* Power Management has been selected. See above for available selections.

- **Doze Mode:**
When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.
- **Standby Mode:**
When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.
- **Suspend Mode:**
When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.
- **HDD Power Down:**
When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.
- **Throttle Duty Cycle:**
When the system enters Doze mode, the CPU clock runs only part of the time. You may select the percent of time that the clock runs. The available choices are 12.5%, 25.0%, 37.5%, 50.0%, 62.5%, and 75.0%
- **PCI/VGA Act Monitor:**
When Enabled, any video activity restarts the global timer for Standby mode. The available choices are Enabled, Disabled.

- **Soft-Off by PWR-BTTN:**
When Enabled, turning the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity. The available choices are Instant-Off, Delay 4 Sec.
- **Power On by Ring:**
An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state. The available choices are Enabled, Disabled.
- **Wake Up On LAN:**
An input signal on the local area network (LAN) awakens the system from a soft off state.
- **IRQ 8 Break Suspend:**
You can Enable or Disable monitoring of IRQ8 so it does not awaken the system from Suspend mode. The available choices are Enabled, Disabled.

4.7.2 Reload Global Timer Events

When Enabled, an event occurring on each device listed below restarts the global time for Standby mode.

- **Parallel Port IRQ[3-7,9-15], NMI**
- **Primary IDE 0/1**
- **Secondary IDE 0/1**
- **Floppy Disk**
- **Serial Port**
- **Parallel Port**

4.8 PNP/PCI Configuration Setup

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

ROM PCI/ISA BIOS (2A69KD2I)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

PNP OS Installed	: No	Assign IRQ For VGA	: Enabled
Resources Controlled by	: Auto		
Reset Configuration Data	: Disabled	Assign IRQ For USB	: Enabled
		ESC : Quit ↑ ↓ → ← : Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift)F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults	

- **PNP OS Installed:**
 This item allows you to determine install PnP OS or not. The available choices are Yes or Not.
- **Resource Controlled by:**
 The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows® 95. The available choices are *Auto* and *Manual*.

- **Reset Configuration Data:**
This item allows you to determine reset the configuration data or not. The available choices are *Enabled* and *Disabled*.
- **Assign IRQ For VGA/USB:**
This option turns on or off the IRQ assignment for both VGA and USB ports.

4.9 Load BIOS Defaults

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

**ROM PCI/ISA BIOS (2A69KD2I)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.**

STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PNP/PCI CONFIGURA LOAD BIOS DEFAULT LOAD SETUP DEFAULTS	INTEGRATED PERIPHERALS SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION ETUP SAVING
<div style="background-color: black; color: white; padding: 2px 10px; display: inline-block;">Load BIOS Defaults (Y/N)? N</div>	
Esc : Quit ↑ ↓ → ← : Select Item F10 : Save & Exit Setup (Shift) F2 : Change Color	
Load BIOS Defaults except Standard CMOS Setup	

4.10 Load Setup Defaults

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

**ROM PCI/ISA BIOS (2A69KD2I)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.**

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURA	ETUP
LOAD BIOS DEFAULT	SAVING
LOAD SETUP DEFAULTS	
Load SETUP Defaults (Y/N)? N	
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Load BIOS Defaults except Standard CMOS Setup	

4.11 Integrated Peripherals

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

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

**ROM PCI/ISA BIOS (2A69KD21)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.**

IDE HDD Block Mode	: Enabled	RxD, TxD Active	: Hi, Lo
IDE Primary Master PIO	: Auto	IR Transmission delay	: Enabled
IDE Primary Slave PIO	: Auto	Onboard Parallel Port	: 378/IRQ7
IDE Secondary Master PIO	: Auto	Parallel Port Mode	: SPP
IDE Secondary Slave PIO	: Auto	ECP Mode Use DMA	: 3
IDE Primary Master UDMA	: Auto	EPP Mode Select	: EPP1.7
IDE Primary Slave UDMA	: Auto	Onboard Serial Port 3	: 3E8
IDE Secondary Master UDMA	: Auto	Serial Port 3 Use IRQ	: IRQ10
IDE Secondary Slave UDMA	: Auto	Onboard Serial Port 4	: 2E8
On-chip Primary PCI IDE	: Enabled	Serial Port 4 Use IRQ	: IRQ11
On-chip Secondary PCI IDE	: Enabled	LCD Panel Type	: Panel 5
USB Keyboard Support	: Disabled		
Init Display First	: PCI Slot		
KBC input clock	: 8MHz		
Onboard FDC Controller	: Enabled	ESC	: Quit
Onboard Serial Port 1	: 3F8/IRQ4	↑↓→←	: Select Item
Onboard Serial Port 2	: 2F8/IRQ3	F1	: Help
UART Mode Select	: Normal	F5	: Old Values
UART2 Duplex mode	: Half	F6	: Load BIOS Defaults
		F7	: Load Setup Defaults
			PU/PD/+/-: Modify
			(Shift) F2: Color

- **IDE HDD Block Mode:**

This allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).

Enabled	IDE controller uses block mode
Disabled	IDE controller uses standard mode

- **IDE Primary/Secondary Master/Slave PIO:**
The four IDE PIO (Programmed Input/ Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.
- **IDE Primary/Secondary Master/Slave UDMA:**
Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support. The available choices are Auto, Disabled
- **On-Chip Primary/Secondary PCI IDE:**
The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately.
- **USB Keyboard support:**
Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard. The available choices are Enabled, Disabled.
- **Init Display First:**
This item allows you to decide to active whether PCI Slot or on-chip VGA first The available choices are PCI Slot, Onboard .
- **KBC Input Clock:**
The input clock setting of your onboard keyboard controller is set from here.
- **Onboard FDD Controller:**
Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field. The available choices are Enabled, Disabled.

- **Onboard Serial Port 1/2/3/4:**
This item allows you to determine access onboard serial port 1/2/3/4 controller with which I/O address. The available choices are 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.
- **UART Mode Select:**
This option allows you to configure the infrared interface modes (IrDA, ASKIR (an IrDA-compliant serial infrared) port, and Normal) generated from the second serial port. Only when set to ASKIR mode will the options RxD, TxD Active and IR Transmission delay activate for configuration. Disabling the Onboard Serial Port 2 setting automatically removes the UART Mode Select option from the options list.
- **UART2 Duplex mode:**
Select the value required by the IR device connected to the IR port. Full-duplex mode permits simultaneous two-direction transmission. Half-duplex mode permits transmission in one direction only at a time. The available choices are Half, Full.
- **RxD, TxD Active:**
This item allows you to determine the active of RxD, TxD. The available choices are "Hi, Hi", "Lo, Lo", "Lo, Hi", "Hi, Lo".
- **IR Transmission delay:**
Full duplex mode permits simultaneous bi-directional transmission. Half duplex mode permits transmission in one direction only at a time. Select Disabled if there is no infrared port present.
- **Onboard Parallel Port:**
Select a logical LPT port name and matching address for the physical parallel (printer) port. The available choices are 378H/IRQ7, 278H/IRQ5, 3BCH/IRQ7, Disabled.
- **Parallel Port Mode:**
Select an operating mode for the onboard parallel port. Select Compatible or Extended unless you are certain both your hardware and software support EPP or ECP mode. The available choices are SPP, ECP+EPP1.7, EPP1.7+SPP, EPP1.9+SPP, ECP, ECP+EPP1.9, and Normal.

- **ECP Mode Use DMA:**
Select a DMA channel for the port. The available choices are 3, 1.
- **EPP Mode Select:**
This item allows you to determine the IR transfer mode of onboard I/O chip. The available choices are EPP1.9, EPP1.7.
- **Serial Port 3/4 Use IRQ:**
This category assigns the interrupt request for both serial ports 3 and 4. The available options are 3F8/3, 3F8/4, 3F8/10, 3F8/11, 2F8/3, 2F8/4, 2F8/10, 2F8/11, 3E8/3, 3E8/4, 3E8/10, 3E8/11, 2E8/3, 2E8/4, 2E8/10, and 2E8/11.
- **LCD Type:**
This option allows you to select the panel display type and resolution installed on your system.

Panel#	Panel Type
0	1024*768 Dual Scan STN Color Panel
1	128*1024 TFT Color Panel
2	640*480 Dual Scan STN Color Panel
3	800*600 Dual Scan STN Color Panel
4	640*480 Sharp TFT Color Panel
5	640*480 18-bit TFT Color Panel
6	1024*768 TFT Color Panel
7	800*600 TFT Color Panel
8	800*600 TFT Color Panel (Large BIOS ONLY)
9	800*600 TFT Color Panel (Large BIOS ONLY)
10	800*600 Dual Scan STN Color Panel (Large BIOS ONLY)
11	800*600 Dual Scan STN Color Panel (Large BIOS ONLY)
12	1024*768 TFT Color Panel (Large BIOS ONLY)
13	1280*1024 Dual Scan STN Color Panel (Large BIOS ONLY)
14	1024*600 Dual Scan STN Color Panel (Large BIOS ONLY)
15	1024*600 TFT Color Panel (Large BIOS ONLY)

4.12 Supervisor/User Password Setting

ROM PCI/ISA BIOS (2A69KD2I)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURA	ETUP
LOAD BIOS DEFAULT	SAVING
LOAD SETUP DEFAULTS	
Esc : Quit	
↑ ↓ → ← : Select Item	
F10 : Save & Exit Setup	
(Shift) F2 : Change Color	
Change / Set / Disable Password	

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

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

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

ENTER PASSWORD:

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

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

PASSWORD DISABLED.

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

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

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

4.13 IDE HDD Auto Detection

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

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

ROM PCI/ISA BIOS (2A69KD2I)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master:								
Select Primary Master Option (N=SKIP) : N								
OPTIONS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
1 (Y)	0	0	0	0	0	0	0	NORMAL

NOTE: Some OSes (like SCO-UNIX) must use "NORMAL" for installation

4.14 Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

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

**ROM PCI/ISA BIOS (2A69KD2I)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.**

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURA	ETUP
LOAD BIOS DEFAULT	SAVING
LOAD SETUP DEFAULTS	
SAVE to CMOS and EXIT (Y/N)? N	
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Saves all Data & Exit Setup	

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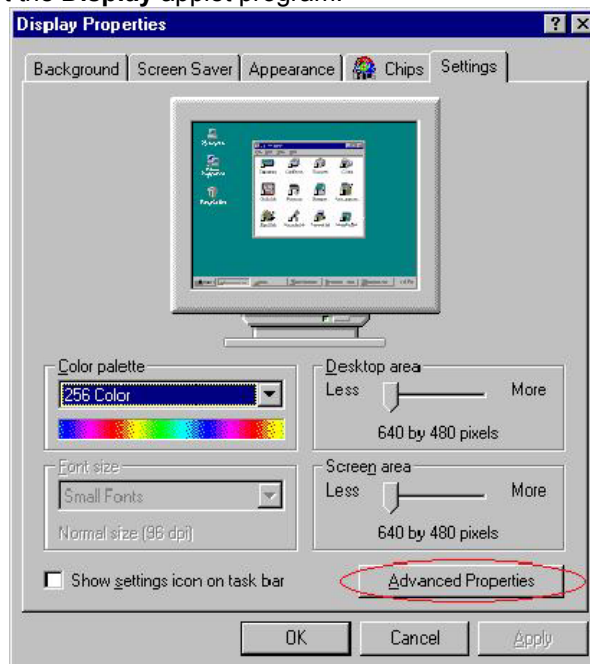
Chapter 5

Software Utilities

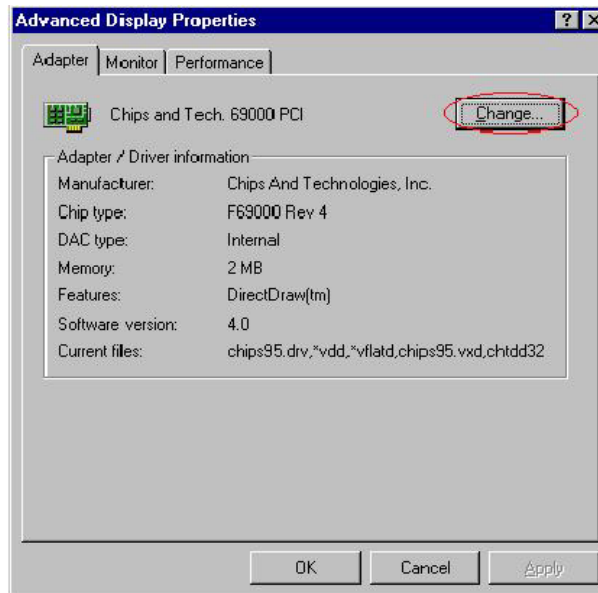
This chapter contains the detailed information of VGA, Audio and LAN driver installation procedures.

5.1 VGA Driver Installation for Win 95/98

1. Click **Start**, then **Setting**, then **Control Panel**.
2. Start the **Display** applet program.



3. Select the setting page, click on the **Advanced** properties button.
4. Press the **Change** button in the adapter area.



5. Click on **Next** to continue and then select

Display a list of all drivers in a specific location, so you can select the drivers you want.
6. Click on **Next**.
7. Select the **Specify a location** checkbox then **Browse**.
8. Specify the path to the new driver and then press the <ENTER> key (if in driver A: select a:\win95).
9. Once completed, the **Select** device dialog box will appear. Choose on:

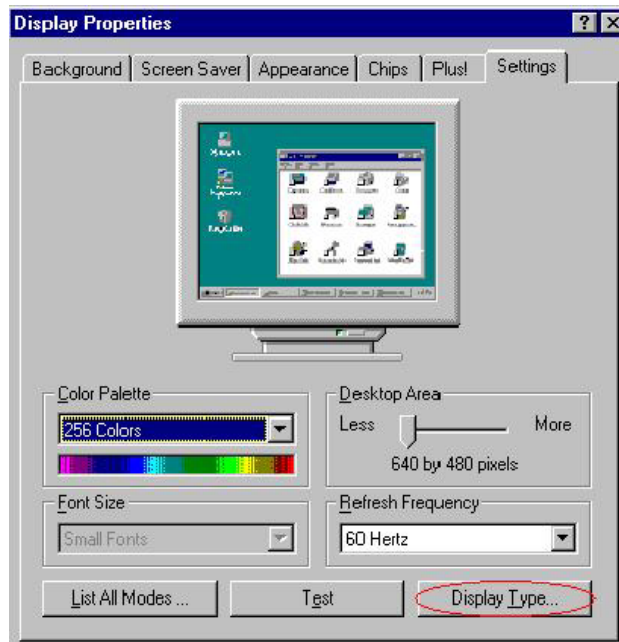
Chips and Tech. 69000 PCI
10. Continue choosing until asked to restart machine.

11. After the system has restarted, you can go back into the display applet and select alternate screen resolutions and color depths.

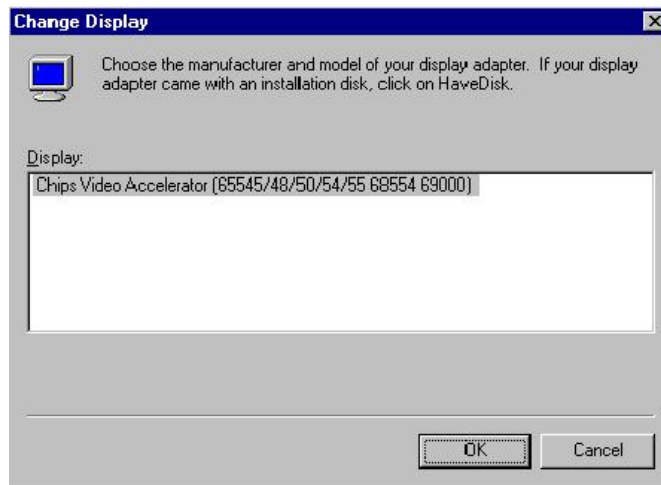
NOTE: *Installation procedure for Windows 98 is similar to Windows95.*

5.2 VGA Driver Installation for Win NT4.0

1. Click the **Start** button, then go to **Settings** and click on **Control Panel**.
2. Click on **Display** icon to start the **Display Properties** window.
3. Click on the **Settings** tab, and then click on **Display Type**.



4. In the **Change Display Type** window, click on **Have Disk**.

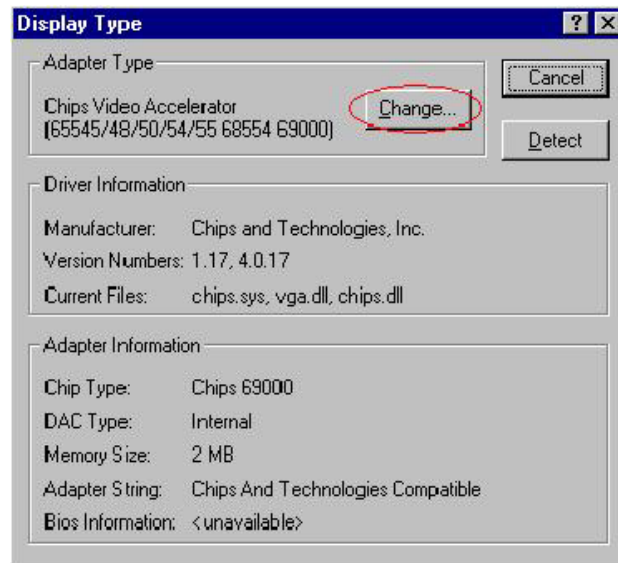


5. Specify the path to the new driver and press the <ENTER>key (if in driver A:, type a:\nt40). Select

**Chips Video Accelerator
(65545/48/50/54/55/68554 69000)**

6. Click **OK** or press Enter.
7. You will then see warning panel about Third Party Drivers. Click on **Yes** to complete installation.
8. Once the installation is complete, the system must be shut down and restarted for the new driver to take effect.

9. After restarting, check on the VGA driver and make sure the properties of the driver look similar to the following figure.



5.3 Audio Driver Installation for Win 98/95

5.3.1 Win98

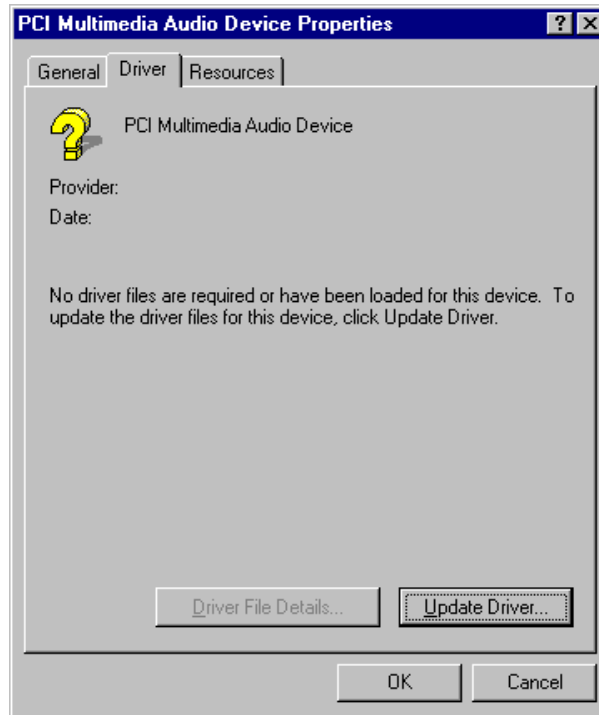
Windows 98 will detect the audio driver automatically therefore there is no need for further configuration.

5.3.2 Win95

1. Click **Start**, then go to **Setting** and select **Control panel**.
2. Click on the **Add New Hardware** icon to start the applet program.
3. In the window, click **Next**, choose **PCI Multimedia Audio Device**, and click **Next**.



- In the **Driver** window, select **Update Driver** then click **Next**.

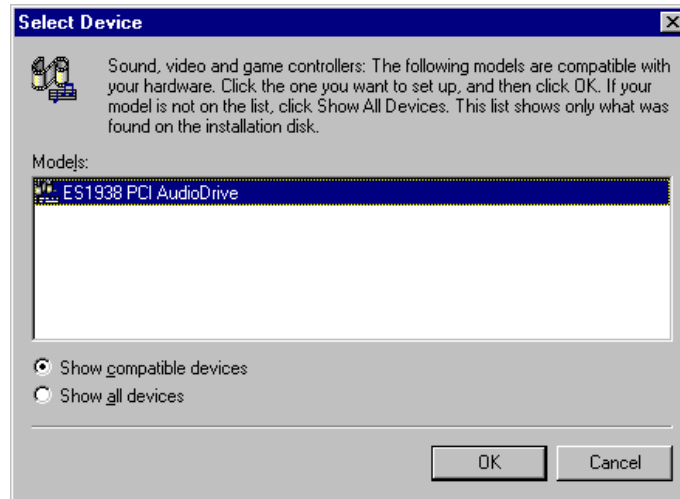


- This will bring up the **Insert Disk** window.
- Specify the path where the new driver is and then press <ENTER>. (If in driver a:, type a:\) If you're not sure exactly where the drivers are, choose the **Browse** button and locate the file.

ES1938 PCI Audio Drive

- Click **OK**.
- Windows 95 will copy the sound drivers to the proper directories on your system.
- Continue choosing **OK** until asked to restart your system.

10. After restarting your system, check the sound driver and its properties. Be sure it looks similar with the following figure.



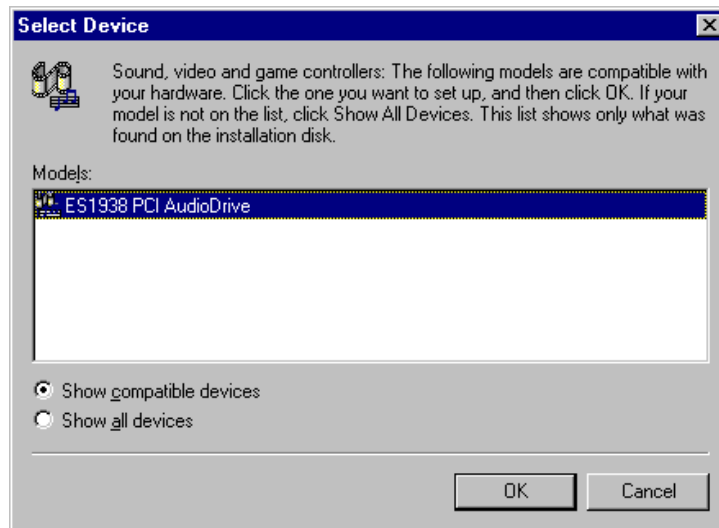
5.4 Audio Driver Installation for Win NT4.0

5.4.1 WinNT

1. Click **Start**, then go to **Setting** and select **Control panel**.
2. Click on the **Add New Hardware** icon to start the applet program.
3. In the window, click **Next**, choose **PCI Multimedia Audio Device**, and click **Next**.
4. In the Driver window, select **Update Driver** then click **Next**.
5. This will bring up the **Insert Disk** window.
6. Specify the path the new driver and press <ENTER> key. (If in driver a:, type a:\). If you're not sure exactly where the drivers are, choose the **Browse** button and locate it.

ES1938 PCI Audio Drive

7. Click **OK**.
8. Windows 95 will copy the sound drivers to the proper directories on your system.
9. Continue choosing **OK** until asked to restart your system.
10. After restart your computer, check the sound driver and its properties. Be sure that the driver looks similar to the following figure.



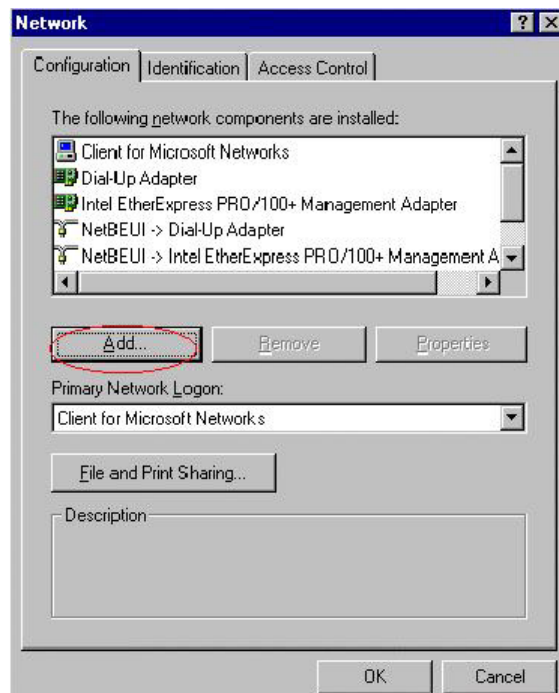
5.5 Network Driver Installation for Win 95/98

5.5.1 Win98

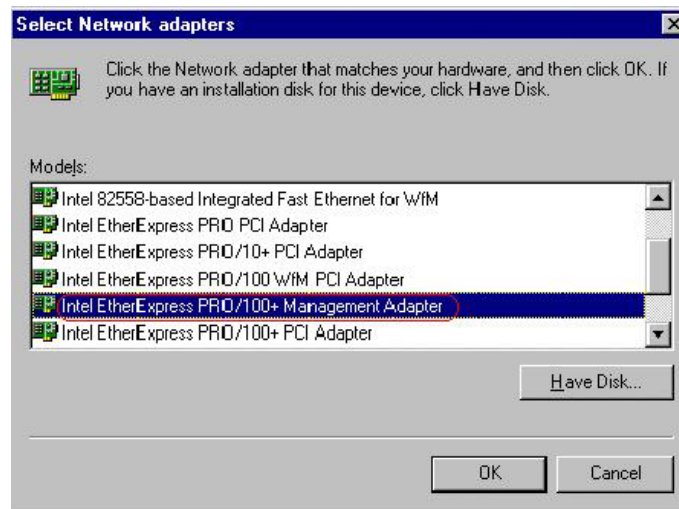
Windows 98 will detect the network driver automatically therefore there is no need for further configuration.

5.5.2 Win95

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



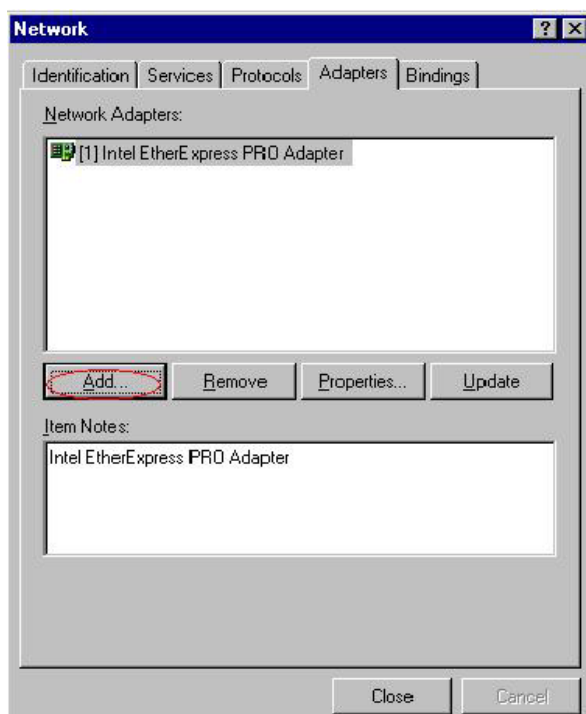
4. From the **Select Network Component Type**, select **Adapter** then click **Add**.
5. Specify the path the new driver and press <ENTER> key (if in driver a:, type a:\). If you're not sure exactly where the drivers are, choose the **Browse** button and find it.



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

5.6 Network Driver Installation for Win NT4.0

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



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

7. The Select OEM Option window will show up. Select
Intel EtherExpress PRO Adapter
8. Click **OK** to finish the installation.
9. Once the installation is completed, the system must be shut down and restarted for the new driver to take effect.
10. After restart, confirm the network driver and its properties.

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Chapter 6

The GPS Receiver

The HS-4600 is designed to facilitate options of Rockwell's "Jupiter" Global Positioning System (GPS) receiver engine based on the Zodiac chip set. The HS-4600 with GPS engine can be used in both static and mobile operations for evaluation purposes.

The HS-4600 implements the receiver control operation and input/output (I/O) functions of the GPS receiver through a serial port, external antenna, and LABMON software. A 2x10 header connector is used to connect the GPS receiver to the HS-4600. Please refer to the Chapter 3 for GPS connector pin assignment.

For specific and more details on applications, please refer to the manual of the GPS engine. You may also contact the supplier of your GPS engine device, or browse <http://www.rockwell.com>.

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