HS-5011

Pentium® MMX™ PICMG Bus SBC

• Full Size • CRT/Panel • ATA/33/66 • LAN •
• Audio • RS-232/422/485 • PC/104 • IrDA • USB •
• DOC • WDT • CTA •
• PICMG Bus Industrial Single Board Computer •

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Edition 1.3 March 06, 2003

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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-5011 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-5011 is Full size PICMG Bus Pentium® MMX™ Industrial Single Board Computer. The board design combine together with all necessary input and output effects interfaces which makes it an ideal all-in-one industrial single board computer. The board design with 100MHz FSB clock rate architecture.

The HS-5011 provides one set of PC/104 bus connector for 16-bit ISA bus. The board also designs with an ESS® Solo1 3D audio provides an ideas audio adapter in any audio application.

The IDE interface with ATA/33/66 access of mode 4 to IDE drive interface architecture, supports with maximum 66MB/sec in data transfer rating to four IDE drive connection and provides an onboard Intel® 82559 10/100 based LAN for easy network connection.

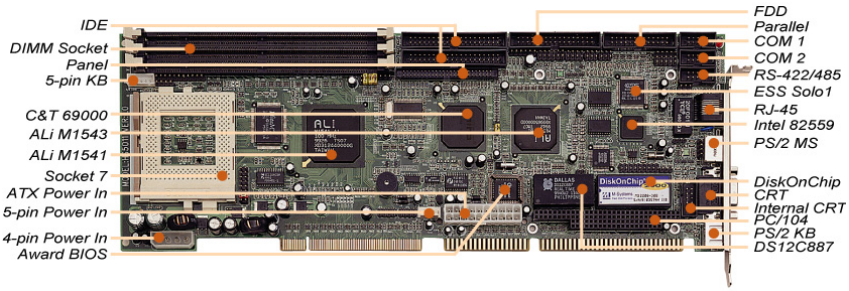
The board design with C&T 69000 CRT/Panel display controller provides internal connection to CRT and Panel display. It can supports up to 1280 x 1024 at 256 colors.

A single Flash chip holds the system BIOS, and you can change the Flash BIOS by the Utility Update. Advanced IR also provides a faster data transmission. You can also use the DOS version of the "DiskOnChip" socket by issuing commands from the DOS prompt without the necessity of other software supports up to 288MB.

The HS-5011 supports memory at three DIMM sockets. This gives you the flexibility of configuring your system from 8MB to 1.5GB by using the most economical DIMM memory modules for its onboard system SDRAM.

If a non-expect program cause halts, the onboard Watchdog Timer (WDT) will automatically reset the CPU or generate an interrupt. The WDT is designed with pure hardware and doesn't need any arithmetical functions of a real-time clock chip. This ensures the reliability in an unmanned or standalone system.

1.1 Major Features



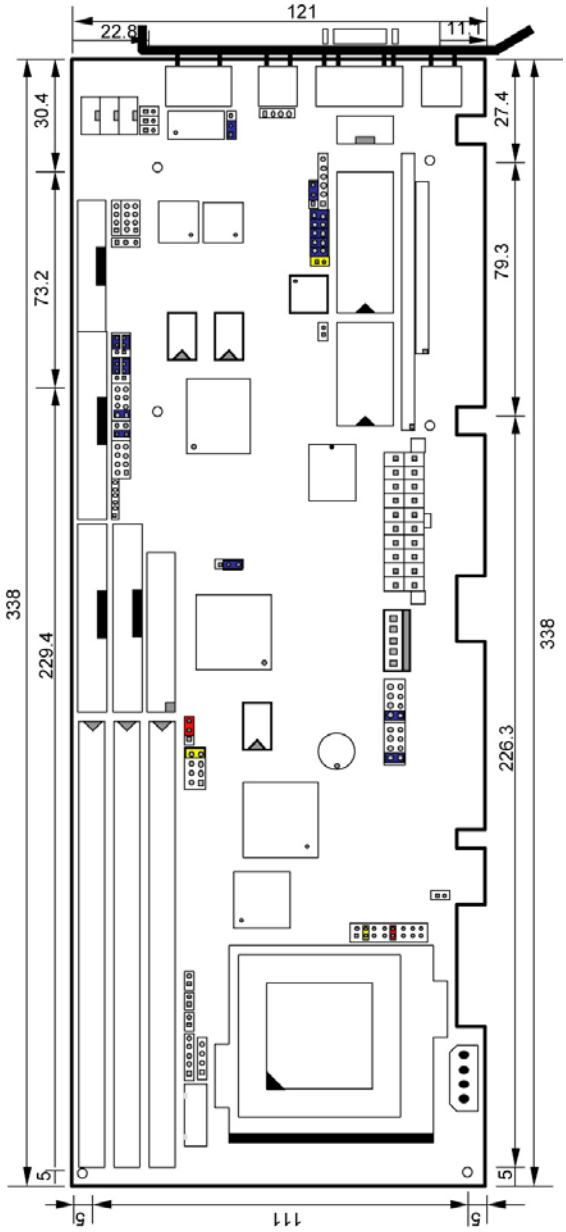
The HS-5011 comes with the following features:

- 75~500MHz CPU for Intel® Pentium® MMX™/Tillamook/K5/K6
- Ali M1541/M1543 system chipset
- Fast PCI ATA/33/66 IDE controller
- Three DIMM sockets with a maximum capacity of 1.5GB
- ALi M1543 super I/O chipset
- One RS-232 and one RS-232/422/485 serial ports
- PC/104 Bus connector
- C&T 69000 CRT/Panel display controller
- Intel 82559 10/100 Based LAN
- ESS® Solo1 3D audio controller
- DiskOnChip™ socket supporting memory sizes of up to 288MB
- Two USB connectors
- Supports ATX power function
- Supports CPU Temperature Alarm function
- Switching power regulator

1.2 Specifications

- **CPU:** 75~500MHz CPU for Intel® Pentium® MMX™ /Tillamook/K5/K6
- **Bus Interface:** PICMG Bus
- **Memory:** Three DIMM sockets supporting up to 1.5GB
- **Chipset:** ALi M1541/M1543
- **I/O Chipset:** ALi M1543
- **VGA:** C&T69000 with 2MB memory supporting CRT/Panel displays up to 1280 x 1024 at 256 colors
- **IDE:** Four IDE disk drives supporting ATA/33/66 and with a transfer rate of up to 33/66MB/sec.
- **Floppy:** Supports up to two floppy disk drives
- **Parallel Port:** One enhanced bi-directional parallel port supporting SPP/ECP/EPP
- **LAN:** Intel® 82559 10/100 Based LAN
- **Audio:** ESS® Solo1 3D audio controller
- **Serial Port:** 16C550 UART-compatible RS-232/422/485 x 1 and RS-232 x 1 serial ports with 16-byte FIFO
- **PC/104:** PC/104 connector for 16-bit ISA Bus
- **IrDA:** One IrDA TX/RX header
- **USB:** Two USB connectors
- **Keyboard:** PS/2 6-pin Mini DIN or 5-pin connector
- **Mouse:** PS/2 6-pin Mini DIN or 4-pin connector
- **DiskOnChip™:** DiskOnChip™ socket supporting memory sizes of up to 288MB
- **BIOS:** Award PnP Flash BIOS
- **Watchdog Timer:** Sets 1, 2, 10, 20, 110, 220 seconds activity trigger with Reset or NMI
- **CMOS:** DS12C887 or equivalent device
- **DMA Channels:** 7
- **Interrupt Levels:** 15
- **Power:** +5V, +12V, -12V
- **Maximum Power Consumption:** +5V@6A, +12V@120mA, -12V@50mA
- **Operating Temperature:** 0~60°C
- **CPU Temperature Alarm:** Beeping alarm when CPU temperature exceeds temperature limits
- **Board Size:** 33.8 x 12.1 cm

1.3 Board Dimensions



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-5011 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-5011 delivery package contains the following items:

- **HS-5011 Board**
- **IDE port flat cable x 2**
- **FDD port flat cable x 1**
- **Printer port flat cable with bracket x 1**
- **COM Port cable with bracket x 1**
- **MIC/Audio 8-pin cable + 2 phone jacks with bracket x 1**
- **5-pin ATX power cable x 1**
- **Jumper bag x 1**
- **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

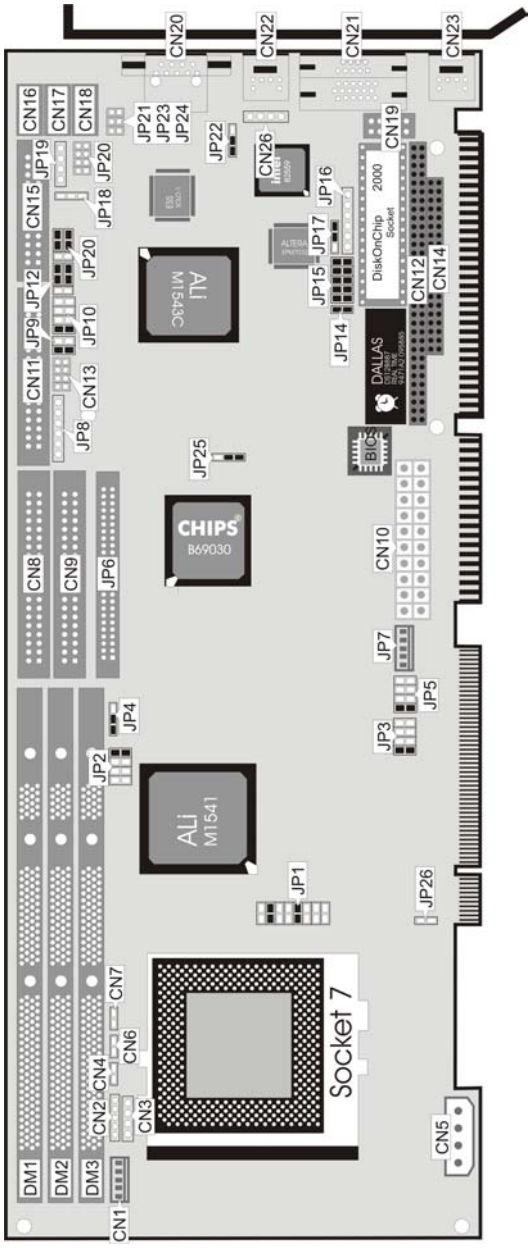
This chapter provides the information on how to install the hardware using the HS-5011. This chapter also contains information related to jumper settings of switch, watchdog timer, and the DiskOnChip™ address selection etc.

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-5011 Board Layout



3.3 HS-5011 Jumper List

Jumper	Definition	Setting	Page
JP1(1-6)	CPU Clock-in Multiplex Weighted Value Select: *x3*	Short 3-4	11
JP1(7-16)	CPU Vcore Voltage Select: *2.9V*	Short 7-8, 13-14	11
JP2	Host Bus Clock Rate Select: *100MHz*	Short 7-8	11
JP3	Audio Chipset "REQ" & "GNT" Select: *PCI1*	Short 1-2	23
JP4	Panel Voltage Select: *3.3V*	Short 1-2	15
JP5	Audio Chipset "REQ" & "GNT" Select: *PCI1*	Short 1-2	23
JP9	RS-422/485 Receiver Enabled/ Disabled Select: *Always Disabled*	All Open	18
JP10	RS-422/485 Transceiver Enabled/ Disabled Select: *Always Disabled*	Short 7-8	18
JP11	Clear CMOS: *Normal Operation*	Open	15
JP12	RS-232 or RS-422/485 Select: *RS-232*	Short 3-5, 4-6	18
JP13	RS-232 or RS-422/485 Select: *RS-232*	Short 3-5, 4-6	18
JP14	Temperature Alarm Setting: *Enabled*	Short	24
JP15(1-4)	DiskOnChip™ Address Select: *D000*	Short 1-2	11
JP15(5-10)	WDT Time Out Period Select: *1sec.*	Short 5-6, 7-8, 9-10	13
JP17	Watchdog Timer Active Type Select: *System Reset*	Short 2-3	13
JP22	LAN Enabled/Disabled by Hardware: *Tillamook*	Short 1-2	25
JP25	VGA Enabled/Disabled by Hardware: *Enabled*	Short 2-3	15
JP26	Tillamook CPU Enabled/Disabled Select: *Tillamook 266MHz*	Short	11

3.4 HS-5011 Connector List

Connector	Definition	Page
CN1	5-pin Keyboard Connector	19
CN2	Keylock Connector	20
CN3	Speaker Connector	20
CN4	2-pin ATX Power On/Off Connector	28
CN5	4-pin +5V/+12V Power Connector	28
CN6	Reset Connector	20
CN7	IDE LED Connector	20
CN8 & CN9	IDE1 & IDE2 Connector	21
CN10	20-pin ATX Power Connector	28
CN11	FDD Connector	23
CN12	64-pin PC/104 Bus Connector	26
CN13	USB Connector	27
CN14	40-pin PC/104 Bus Connector	26
CN15	Parallel Connector	22
CN16	COM1 Connector (5x2 header)	18
CN17	COM2 Connector (5x2 header)	18
CN18	RS-422/485 Connector (5x2 header)	18
CN19	CRT Connector (5x2 header)	15
CN20	RJ-45 Connector	25
CN21	15-pin CRT Connector	15
CN22	PS/2 6-pin Mini DIN Mouse Connector	19
CN23	PS/2 6-pin Mini DIN Keyboard Connector	19
CN24	COM2 Connector (DB9)	18
CN26	4-pin Mouse Connector	19
DM1 & DM2 & DM3	DIMM Socket	11
JP6	Panel Connector	15
JP7	5-pin ATX Power Connector	28
JP8	IrDA Connector	25
JP18	Aux Audio Input Connector	23
JP19	Line In Connector	23
JP20	MIC In/Audio Out Connector	23
JP21	LAN Connection LED	25
JP23	LAN Active LED	25
JP24	LAN Speed LED	25

3.5 System Memory

The HS-5011 provides three DIMM sockets at locations *DM1, DM2* and *DM3*. The maximum capacity of the onboard memory is 1.5GB.

3.6 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 *U18* location onboard the HS-5011 is the DiskOnChip module socket. Jumper *JP15(1-4)* assigns the address setting of the installed module. Setting the 4 pins of *JP15(1-4)* 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.

- **JP15(1-4): DiskOnChip™ Address Select**

PIN	Address
Short 1-2	D000
Short 2-3	E000

3.7 Setting the CPU of HS-5011

The HS-5011 offers the convenience in CPU installation with its auto-detect feature. After installing a new microprocessor onboard, the HS-5011 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. The HS-5011 provides all possibility in jumper setting for wide using all types of CPU with *JP1(7-16)* for CPU Vcore Voltage, *JP2* for Host Bus Clock Rate and *JP1(1-6)* for CPU Clock-in Multiplex Weighted Value setting as following. Please contact with your CPU's supplier in getting those information for correctly setting. Any wrong setting may cause CPU defect.

Correspond to different type CPU, it is request to set *JP1(7-16)* for match the CPU's Vcore operating voltage. Here shows at below of the proper jumper settings for their respective Vcore at range 1.8V to 3.5V.

- **JP1(7-16): CPU Vcore Voltage Select**

CPU Vcore Voltage	JP1(7-16)
1.8V	Short 9-10, 13-14, 15-16
1.9V	Short 11-12, 13-14, 15-16
2.0V	Short 9-10, 11-12, 13-14, 15-16
2.1V	Short 7-8
2.2V	Short 9-10
2.3V	Short 7-8, 9-10
2.4V	Short 11-12
2.5V	Short 7-8, 11-12
2.6V	Short 9-10, 11-12
2.7V	Short 7-8, 9-10, 11-12
2.8V	Short 13-14
2.9V	Short 7-8, 13-14
3.0V	Short 9-10, 13-14
3.1V	Short 7-8, 9-10, 13-14
3.2V	Short 11-12, 13-14
3.3V	Short 7-8, 11-12, 13-14
3.4V	Short 9-10, 11-12, 13-14
3.5V	Short 7-8, 9-10, 11-12, 13-14

JP2 used to setting the Host Bus clock Rate. The setting of internal host bus clock rate is for defined the defined the operating clock base rate of the internal bus of core logic.

- **JP2: Host Bus Clock Rate Select**

Host Bus Clock Rate	JP2
60MHz	Short 1-2, 3-4, 5-6, 7-8
66.8MHz	Short 3-4, 5-6, 7-8
75MHz	Short 1-2, 3-4, 7-8
100MHz	Short 7-8

JP1(1-6) used to setting the CPU Clock-in Multiplex Weighted Value. The setting value is for multiplex to internal host bus clock rate and obtain the CPU operating clock value.

- **JP1(1-6): CPU Clock-in Multiplex Weighted Value Select**

JP1(1-6)			CPU Clock In Multiplex Weighted Value
1-2	3-4	5-6	
Short	Open	Open	X 2
Short	Short	Open	X 2.5
Open	Short	Open	X 3
Open	Open	Open	X 3.5(1.5)
Short	Open	Short	X 4
Short	Short	Short	X 4.5
Open	Short	Short	X 5
Open	Open	Short	X 5.5

The HS-5011 provides jumper for setting Intel® Tillamook low power CPU by *JP26* and select *JP1, JP2* to match Tillamook CPU requirement.

- **JP26: Tillamook CPU Enabled/Disabled Select**

Tillamook	266MHz(4x)			Description
JP26	ON			Dual Power
JP1	1-2	3-4	5-6	3.5x or 4x
	ON	OFF	ON	
JP1	11-12	13-14	15-16	1.9V
	ON	ON	ON	
JP2	3-4, 5-6, 7-8			66.6MHz

3.8 Watchdog Timer

There are three access cycles of watchdog timer as Enable, Refresh and Disable. The Enable cycle should proceed by READ PORT 443H. The Disable cycle should proceed by READ PORT 045H. A continue Enable cycle after a first Enable cycle means Refresh.

Once if the Enable cycle activity, a Refresh cycle is request before the time-out period for restart counting the WDT Timer's period. Otherwise, it will assume that the program operation is abnormal when the time counting over the period preset of WDT Timer. A System Reset signal to start again or a NMI cycle to the CPU comes if over.

The *JP17* is using for select the active function of watchdog timer in disable the watchdog timer, or presetting the watchdog timer activity at the reset trigger, or presetting the watchdog timer activity at the NMI trigger.

- **JP17: Watchdog Timer Active Type Setting**

JP17	Description
Short 1-2	Active NMI
Short 2-3	System Reset
Open	Disabled Watchdog Timer

- **JP15(5-10): Watchdog Timer Out Period Select**

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

The watchdog timer is disabled after the system power-on. The watchdog timer can be enabled by a Enable cycle with reading the control port(443H), a Refresh cycle with reading the control port(443H) and a Disable cycle by reading the watchdog timer disable control port(045H). After a Enable cycle of WDT, user must constantly proceed a Refresh cycle to WDT before its period setting comes ending of every 1, 2, 10, 20, 110 or 220 seconds (Please reference to the selection table of *JP8* for WDT Time Out period setting). If the Refresh cycle does not active before WDT period cycle, the onboard WDT architecture will issue a Reset or NMI cycle to the system. The watchdog timer is controlled by two IO port.

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
```

3.9 CMOS Data Clear

The HS-5011 provides a setting for the selection of the CMOS Clear jumper by *JP11*. But only use to DS12B887, the DS12C887 is not clear pin, HS-5011 provides RTC socket. You can remove the DS12C887 and change the new one.

- **JP11: Clear CMOS(Only for DS12B887)**

JP11	Description
Short	Clear CMOS
Open	Normal Operation

3.10 VGA Controller

The onboard C&T 69000 CRT/Panel display controller provides up to 1280 x 1024 at 256 colors resolution. The board provides an auto disable VGA once a display card is plugged into the PCI slot. The HS-5011 provides two connection methods of CRT and Panel device. *CN19* offers an internal 10-pin CRT connector, *CN21* is 15-pin CRT connector and *JP6* is 50-pin Panel connector.

- **CN19: 10-pin CRT Connector**

CN19	Description	CN19	Description
1	RED	2	GND
3	GREEN	4	GND
5	BLUE	6	GND
7	HSYNC	8	GND
9	VSYNC	10	GND

- **CN21: 15-pin CRT Connector**

CN21	Description	CN21	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	DDCLK
13	HSYNC	14	VSYNC
15	DDDA		

- **JP25: VGA Enabled/Disabled by Hardware**

JP25	Description
Short 1-2	Disabled
Short 2-3	Enabled

The HS-5011 provides a 50-pin 2.0mm pitch header connector (*JP6*). *JP4* is Panel voltage select jumper.

- **JP4: Panel Voltage Select**

JP4	Description
Short 1-2	3.3V (default)
Short 2-3	5V

- **JP6: Panel Connector**

JP6	Description	JP6	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}

...More On Next Page...

JP6	Description	JP6	Description
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}

3.9.1 Flat Panel Display Interface

HS-5011		Mono			Color									
		SS	DD		TFT				STN-HR	STN-SS		STN-DD		
PIN#	Name	8-bit		16-bit	9/12/16-bit	18-bit	18/24-bit	36-bit	18/24-bit	8-bit (4bP)	16-bit (4bP)	8-bit (4bP)	16-bit (4bP)	24-bit
9	P0	D0	UD3	UD7	B0		B0	FB0	FB0	R1	R1	UR1	UR0	UR0
10	P1	D1	UD2	UD6	B1		B1	FB1	FB1	B1	G1	UG1	UG0	UG0
11	P2	D2	UD1	UD5	B2	B0	B2	FB2	FB2	G2	B1	UB1	UB0	UB0
12	P3	D3	UD0	UD4	B3	B1	B3	FB3	FB3	R3	R2	UR2	UR1	LR0
13	P4	D4	LD3	UD3	B4	B2	B4	FB4	SB0	B3	G2	LR1	UR0	LG0
14	P5	D5	LD2	UD2	G0	B3	B5	FB5	SB1	G4	B2	LG1	LG0	LB0
15	P6	D6	LD1	UD1	G1	B4	B6	SB0	SB2	R5	R3	LB1	LB0	UR1
16	P7	D7	LD0	UD0	G2	B5	B7	SB1	SB3	B5	G3	LR2	LR1	UG1
17	P8			LD7	G3		G0	SB2	FG0		B3		UG1	UB1
18	P9			LD6	G4		G1	SB3	FG1		R4		UB1	LR1
19	P10			LD5	G5	G0	G2	SB4	FG2		G4		UR2	LG1
20	P11			LD4	R0	G1	G3	SB5	FG3		B4		UG2	LB1
21	P12			LD3	R1	G2	G4	FG0	SG0		R5		LG1	UR2
22	P13			LD2	R2	G3	G5	FG1	SG1		G5		LB1	UG2
23	P14			LD1	R3	G4	G6	FG2	SG2		B5		LR2	UB2
24	P15			LD0	R4	G5	G7	FG3	SG3		R6		LG2	LR2
25	P16						R0	FG4	FR0					LG2
26	P17						R1	FG5	FR1					LB2
27	P18					R0	R2	SG0	FR2					UR3
28	P19					R1	R3	SG1	FR3					UG3
29	P20					R2	R4	SG2	SR0					UB3
30	P21					R3	R5	SG3	SR1					UR3
31	P22					R4	R6	SG4	SR2					LG3
32	P23					R5	R7	SG5	SR3					LB3
33	P24							FR0						
34	P25							FR1						
41	P26							FR2						
42	P27							FR3						
43	P28							FR4						
44	P29							FR5						
45	P30							SR0						
46	P31							SR1						
47	P32							SR2						
48	P33							SR3						
49	P34							SR4						
50	P35							SR5						
35	SHFCLK: Pixel clock .Shift Clock													
36	FLM.VSYNC: First line marker													
37	M: Panel AC driver control													
38	LP,DE,HSYNC: Latch pulse													
40	ENABKL: Power sequencing control for enabling the backlight.(high active)													

3.11 Serial Port Connectors

The HS-5011 offer four high speed NSIGC550 compatible UARTS with Read/Receive 16-byte FIFO serial ports. The HS-5011 also provides one RS-422/485 connector, the *CN18* for uses as or RS-422 or RS-485. Please reference to the following for setting *JP12, JP13* at enabled or disabled the RS-232 or RS-422/485 function.

- **CN16, 17: COM1, COM2 Connector (5x2 header)**

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

- **CN18: RS-422/485 Connector (5x2 header)**

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

- **JP9: RS-422/485 Receiver Enabled/Disabled Select**

JP9	Description
Short 1-2	Always Enable
Short 3-4	Enable by “-RTS” Signal
All Open	Always Disable

- **JP10: RS-422/485 Transceiver Enabled/Disabled Select**

JP10	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
Short 7-8	Always Disable

- **JP12, JP13: RS-232 or RS-422/485 Select**

JP12	JP13	Description
Short 3-5, 4-6	Short 3-5, 4-6	RS-232
Short 1-3, 2-4	Short 1-3, 2-4	RS-422/485

- **CN24: COM2 Connector (DB9)**

PIN	Description	PIN	Description
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTX	8	CTX
9	RI		

3.12 Keyboard & Mouse Connector

The HS-5011 offers two possibilities for keyboard connections to external PS/2 keyboard at *CN23* or an internal 5-pin connector at *CN1*.

- **CN23: PS/2 6-pin Mini DIN Keyboard Connector**

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

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

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

The HS-5011 offers two possibilities for mouse connections to external PS/2 mouse at *CN22* or an internal 5-pin connector at *CN26*.

- **CN22: PS/2 6-pin Mini DIN Mouse Connector**

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

- **CN26: 4-pin Mouse Connector**

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

3.13 Front Panel Connector

The onboard connector *CN2, CN6, CN3, CN7* provides a multi connection to keylock, reset button, speaker connector and IDE-Drives activity indicator.

The following provides the pin information for keylock connector from *CN2*.

- **CN2: Keylock Connector**

CN2	Description
1	5V_ON
2	N/C
3	GND
4	KBINH
5	GND

The HS-5011 has an onboard buzzer (BZ1). And it also provides the *CN3* in allows user to connecting to the external speaker.

- **CN3: Speaker Connector**

CN3	Description
1	Speaker Signal
2	N/C
3	GND
4	+5V

The HS-5011 has one connector (*CN7*) indicates out power-on status. Reset button connection from *CN6*.

- **CN7: IDE LED Connector**

CN7	Description
1	+5V
2	HDD Active#

- **CN6: Reset Connector**

CN6	Description
1	Reset
2	GND

3.14 PCI E-IDE Drive Connector

One standard 40-pin header daisy-chain driver connector provides as *CN8, CN9* with following pin assignment. Total four IDE (Integrated Device Electronics) drivers may connect.

- **CN8, CN9: IDE1, IDE2 Connector**

CN8, CN9	Description	CN8, CN9	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	DMARQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IORDY	28	CSEL
29	DMACK#	30	Ground# - Default
31	Interrupt	32	N/C
33	SA1	34	ATA/33/66 Select
35	SA0	36	DA2
37	HDC CS0	38	HDC CS1#
39	HDD Active	40	GND

3.15 Parallel Connector

A standard 26-pin flat cable driver connector provides as *CN15* with following pin assignment for connection to parallel printer.

- **CN15: 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	N/C

3.16 Floppy Disk Drive Connector

The HS-5011 uses a standard 34-pin header connector, *CN11*, for floppy disk drive connection. A total of two FDD drives may be connected at any given time.

- **CN11: FDD Connector**

CN11	Description	CN11	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 Gate #
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#

3.17 Audio Connectors

The HS-5011 has an onboard ESS Solo1 3D audio interface. The following are the connectors of Line In, AUX Audio input connector and MIC In/Audio Out connectors.

The Line In and AUX Audio input connectors are for audio sound input. The Line in provides for 4-pin connection, and AUX Audio input connector provides for 3-pin connection.

The HS-5011 has a REQ & GNT signal select jumper for change PCI IRQ routing.

- **JP19: Line In Connector**

JP19	Description	JP19	Description
1	Line L	3	Line R
2	GND	4	GND

- **JP18: AUX Audio Input Connector**

JP18	Description
1	AUXAL
2	GND
3	AUXAR

- **JP20: MIC In/Audio Out Connector**

JP18	Description	JP18	Description
1	AOUTL	2	AOUTR
3	GND	4	GND
5	MIC	6	N/C
7	GND	8	GND

- **JP3, JP5: Audio Chipset "REQ" & "GNT" Signal Select**

JP3	JP5	Description
Short 1-2	Short 1-2	PCI 1
Short 3-4	Short 3-4	PCI 2
Short 5-6	Short 5-6	PCI 3
Short 7-8	Short 7-8	PCI 4

When using a MIC In/Audio Out cable, user can connect right/left speakers to the AOUTL and AOUTR pins of *JP20* and connect microphone to the MIC pin of *JP20*.

3.18 CPU Temperature Alarm Setting

The HS-5011 provides a select for Hardware temperature alarm. It will be a warning "beep" come out if the CPU's temperature reached 70°C, and it will stop as the CPU's temperature going down below 70°C again.

- **JP14: Temperature Alarm Enabled/Disabled Select**

JP14	Description
Short	Enabled
Open	Disabled

3.19 Fast Ethernet Connector

The Fast Ethernet controller provides with 32-bit performance, PCI bus master capability, and full compliance with IEEE 802.3 10/100 based specifications.

For 10/100 based operation, please connect the network connection by plugging one end of the cable into the RJ-45 of the *CN20* connector.

For indication out the LAN operating status, the board provides three LED connectors, *JP21* is connection LED, *JP23* is active LED, and *JP24* is speed LED, in show out the status at follows.

- **CN20: RJ-45 Connector**

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

- **JP22: LAN Enabled/Disabled by Hardware**

JP22	Description
Short 1-2	Enabled
Short 2-3	Disabled

3.20 IrDA Connector

The HS-5011 provides a 6-pin internal FIR communication connector as following *JP8* pin information.

- **JP8: IrDA Connector**

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

3.21 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 16-bit PC standard bus, thousands of PC/104 modules from multiple venders can be easily installed onboard. The detailed pin assignment of the PC/104 expansion bus connectors *CN12* and *CN14* 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.*

- **CN12: 64-pin PC/104 Bus Connector**

PIN	CN12 Row A	PIN	CN12 Row B
1	IOCHECK*	33	GND
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	GND
11	AEN	43	SMEMW*
12	SA19	44	SMEMR*
13	SA18	45	IOW*
14	SA17	46	IOR*
15	SA16	47	DACK3*
16	SA15	48	DRQ3
17	SA14	49	DACK1*
18	SA13	50	DRQ1
19	SA12	51	REFRESH*
20	SA11	52	SYSCLK
21	SA10	53	IRQ7
22	SA9	54	IRQ6
23	SA8	55	IRQ5
24	SA7	56	IRQ4
25	SA6	57	IRQ3
26	SA5	58	DACK2*
27	SA4	59	TC

...More on next page...

PIN	CN12 Row A	PIN	CN12 Row B
28	SA3	60	BALE
29	SA2	61	+5V
30	SA1	62	OSC
31	SA0	63	GND
32	GND	64	GND

- **CN14: 40-pin PC/104 Bus Connector**

PIN	CN14 Row D	PIN	CN14 Row C
1	GND	21	GND
2	MEMCS16*	22	SBHE*
3	IOSC16*	23	LA23
4	IRQ10	24	LA22
5	IRQ11	25	LA21
6	MSDATA	26	LA20
7	IRQ15	27	LA19
8	IRQ14	28	LA18
9	DACK0*	29	LA17
10	DRQ0	30	MEMR*
11	DACK5*	31	MEMW*
12	DRQ5	32	SD8
13	DACK6*	33	SD9
14	DRQ6	34	SD10
15	DACK7*	35	SD11
16	DRQ7	36	SD12
17	+5V	37	SD13
18	MASTER*	38	SD14
19	GND	39	SD15
20	GND	40	N/C

3.22 USB Connector

The HS-5011 provides one 8-pin connector for USB0 & USB1 ports at location *CN13*.

- **CN13: USB Connector**

CN13	USB	CN13	USB
1	VCC	2	VCC
3	USB PO-	4	USB P1-
5	USB PO+	6	USB P1+
7	GND	8	GND

3.23 Power and FAN Connectors

The HS-5011 provides ATX power function by *CN7*. The connector of *CN10* can control the 5-pin ATX power via the extension cable from the backplane (from the ver6.1).

The HS-5011 reserved a *CN4* for ATX power function it can control the 5-pin ATX via the extension cable from the backplane.

- **CN4: 2-pin ATX Power On/Off Connector**

PIN	Description
1	PWRBTNJ
2	GND

- **CN5: 4-pin +5V/+12V Power Connector**

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

- **CN10: 20-pin ATX Power Connector**

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

- **JP7: 5-pin ATX Power Connector**

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

Chapter 4

Award BIOS Setup

The HS-5011 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 <Del> immediately after switching the system on, or
2. By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test).

Press DEL to enter SETUP.

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

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

4.2 Using Setup

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

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 (xxxxxxxx)
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	HDD LOW LEVEL FORMAT
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
Esc：Quit F10：Save & Exit	↑↓→←：Select Item (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**
  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 (xxxxxxxx)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Data (mm:dd:yy) : Fri, Oct 19 1999
Time (hh:mm:ss) : 14 : 50 : 1

HARD DISKS		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	Base Memory :	640K
			Extended Memory :	31744K
			Other Memory :	384K
Halt On	:	All, but keyboard	Total Memory :	32768K

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.

- **Drive C/Drive D:**

  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.

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 (xxxxxxxx)
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	
Quick Power On Self Test	: Disabled	D0000-D3FFF	Shadow	: Disabled	
Boot Sequence	: A, C, SCSI	D4000-D7FFF	Shadow	: Disabled	
Swap Floppy Drive	: Disabled	D8000-DBFFF	Shadow	: Disabled	
Boot Up Floppy Seek	: Enabled	DC000-DFFFF	Shadow	: Disabled	
Boot Up NumLock Status	: On	Cyrix 6x86/MII CPUID		: Enabled	
Boor Up System Speed	High				
Gate A20 Option	Fast				
Typematic Rate Setting	Disabled				
Typematic Rate (Chars/Sec)	: 6				
Typematic Delay (Msec)	: 250				
Security Option	: Setup	ESC : Quit	↑↓→←: Select Item		
PCI/VGA Palette Snoop	: Disabled	F1 : Help	PU/PD/+/-: Modify		
Assign IRQ For VGA	: Enabled	F5 : Old Values	(Shift) F2: Color		
OS Select For DRAM > 64MB	: Non-OS2	F6 : Load BIOS Defaults			
Report No FDD For WIN 95	: Yes	F7 : 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.

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

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 en able.

Enabled	Enable cache
Disabled	Disable cache

- **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

- **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, A, 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.*

- **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 (xxxxxxxx)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration	: Enabled		
AT Bus Clock	: 7.16MHz		
L2 TA RAM Size	: 8		
DRAM Timing	: Normal		
SDRAM CAS Latency	: 3		
Pipelined Function	: Enabled		
Graphics Aperture Size	: 64		
DRAM Date Integrity Mode	: Disabled		
Memory Hole At 15M-16M	: Disabled		
Host Read DRAM Command Mode	: Syn.		
AGP Read Burst	: Enabled		
ISA Line Buffer	: Enabled		
Passive Release	: Enabled		
Delay Transaction	: Disabled		
Primary Frame Buffer	: All		
VGA Frame Buffer	: Enabled		
		ESC : Quit	↑↓→←: Select Item
Data Merge	: Disabled	F1 : Help	PU/PD/+/-: Modify
IO Recovery Period	: 1 us	F5 : Old Values	(Shift) F2: Color
Auto Detect DIMM/PCI Slk	: Enabled	F6 : Load BIOS Defaults	
Spread Spectrum	: Disabled	F7 : Load Setup Defaults	

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 (xxxxxxxx)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	:	User Define	** External Switch **		
PM Control by APM	:	Yes	Power Button Mode	:	Instant-off
MODEM Use IRQ	:	3	DOCK I/O SMI	:	Disabled
Video Off Option	:	Susp, stby → Off	AC Power SMI	:	Disabled
Video Off Method	:	DPMS Support	Thermal SMI Mode	:	Disabled
** PM Monitor **					
HDD Power Down	:	Disabled			
Doze Mode	:	Disabled			
Standby Mode	:	Disabled			
Suspend Mode	:	Disabled			
FAN Off Option	:	Suspend → Off			
Wake On LAN Use	:	NA			
** PM Events **					
Primary HDD	:	Disabled	ESC : Quit		↑↓→←: Select Item
Floppy	:	Disabled	F1 : Help		PU/PD/+/-: Modify
COM Ports	:	Enabled	F5 : Old Values		(Shift) F2: Color
Keyboard	:	Enabled	F6 : Load BIOS Defaults		
LPT Ports	:	Disabled	F7 : Load Setup Defaults		

4.8 Integrated Peripherals

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

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

ROM PCI/ISA BIOS (2A69KD2I)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

On-Chip Primary IDE	: Enabled		
Master PIO	: Auto		
Slave PIO	: Auto	KBC clock Source	: 8 MHz
Master Ultra DMA	: Auto	Onboard FDC Controller	: Enabled
Slave Ultra DMA	: Auto	Onboard UART Port 1	: 3F8/IRQ4
On-Chip Secondary IDE	: Enabled	Onboard UART Port 2	: 2F8/IRQ3
Master PIO	: Auto		
Slave PIO	: Auto	Onboard Parallel Port	: 378/IRQ7
Master Ultra DMA	: Auto	Parallel Port Mode	: ECCEPP 1.9
Slave Ultra DMA	: Auto	ECP Mode Use DMA	: 3
IDE HDD Block Mode	: Enabled	Onboard IrDA Port	: Disabled
On-Chip USB Controller	: Disabled		
Init Display Mode	: PCI Slot		
Ring/Wake On LAN Control	: Disabled		
RTC Alarm Controller	: Disabled		
		LCD Panel Type	: Panel 5
Power On Function	: BUTTON ONLY		

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

4.9 PNP/PCI Configuration Setup

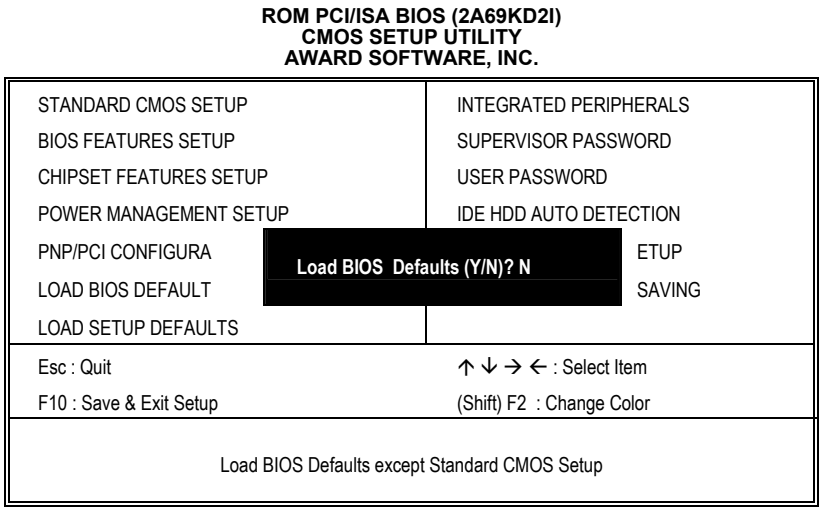
This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system that allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and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

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

PNP OS Installed	: Yes	PCI IDE 2nd Channel	: Enabled
Resources Controlled by	: Manual	PCI IRQ Actived By	: Level
Reset Configuration Data	: Disabled	PCI IDE IRQ Map To	: ISA
IRQ3	: PCI/ISA PNP		
IRQ4	: PCI/ISA PNP		
IRQ5	: PCI/ISA PNP		
IRQ7	: Legacy ISA		
IRQ9	: PCI/ISA PNP		
IRQ10	: PCI/ISA PNP		
IRQ11	: PCI/ISA PNP		
IRQ12	: PCI/ISA PNP		
IRQ14	: Legacy ISA		
IRQ15	: Legacy ISA		
DMA0	: PCI/ISA PNP		
DMA1	: PCI/ISA PNP	ESC : Quit	↑ ↓ → ← : Select Item
DMA3	: PCI/ISA PNP	F1 : Help	PU/PD/+/- : Modify
DMA5	: PCI/ISA PNP	F5 : Old Values	(Shift)F2 : Color
DMA6	: PCI/ISA PNP	F6 : Load BIOS Defaults	
DMA7	: PCI/ISA PNP	F7 : Load Setup Defaults	

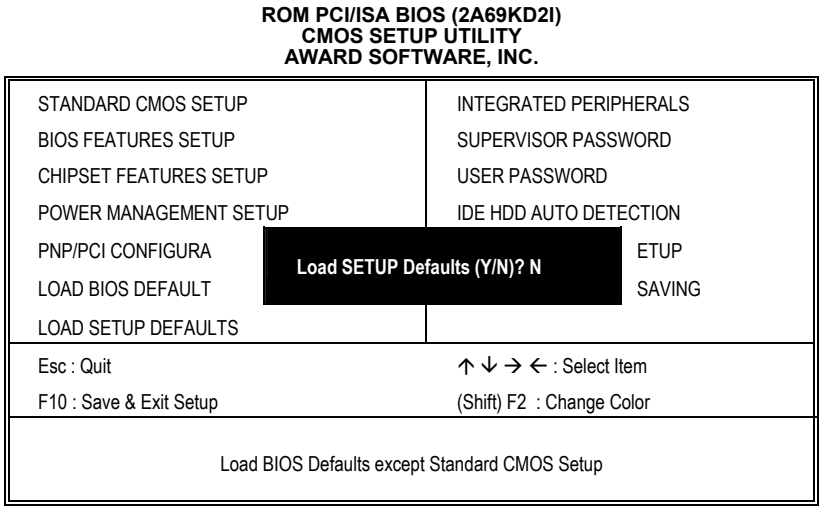
4.10 Load BIOS Defaults

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.

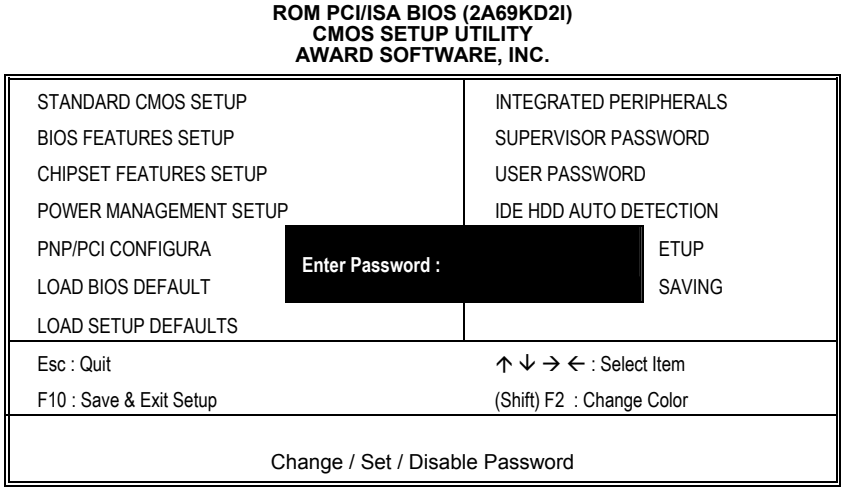


4.11 Load Setup Defaults

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.



4.12 Supervisor/User Password Setting



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

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

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

ENTER PASSWORD:

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

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

PASSWORD DISABLED.

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

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

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

4.13 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

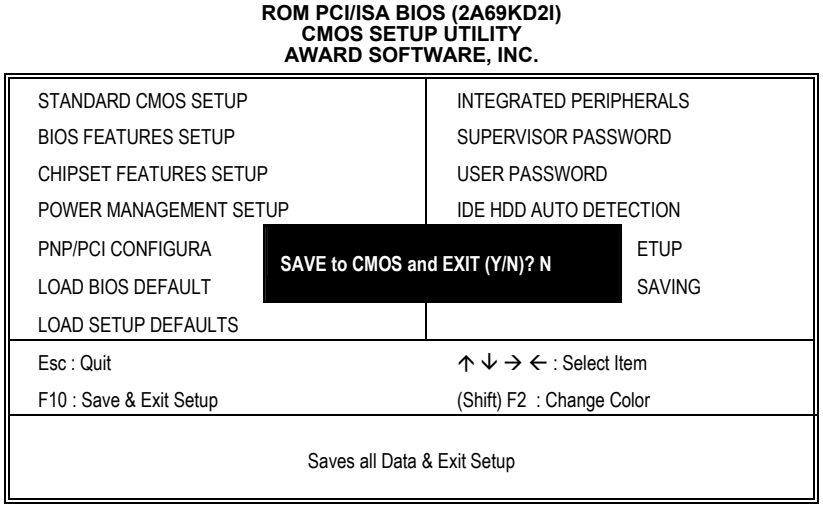
OPTIONS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
1 (Y)	0	0	0	0	0	0	0	NORMAL

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.

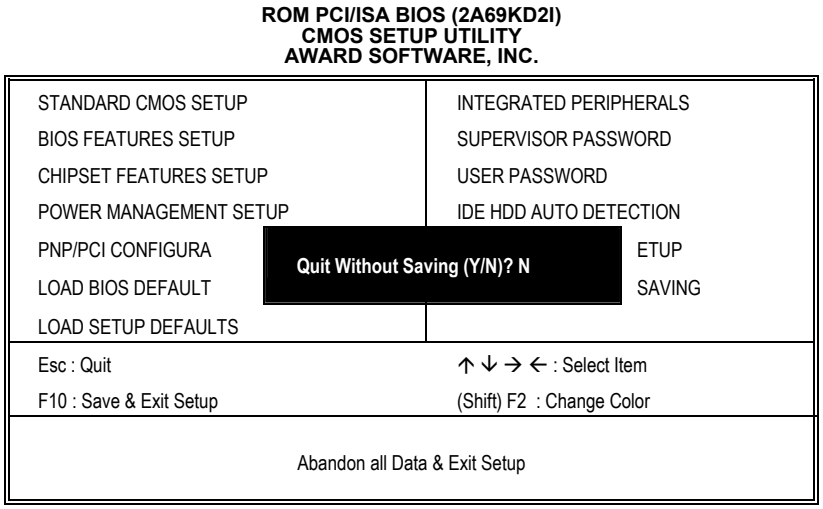


4.15 Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.



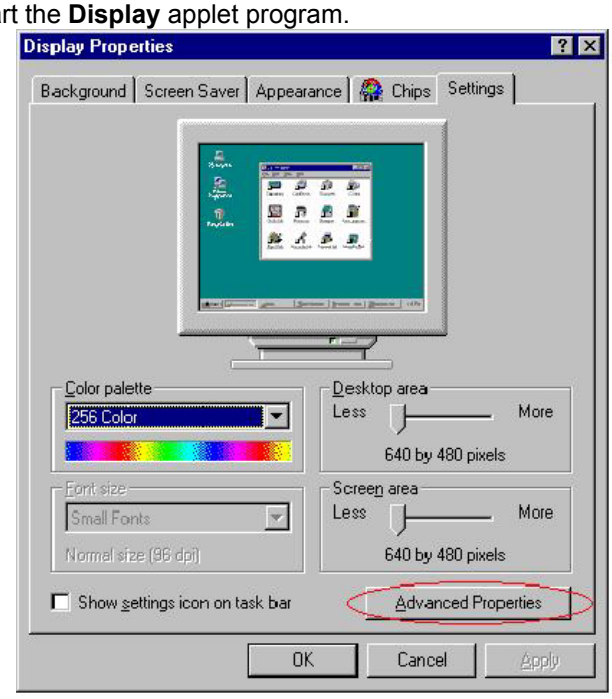
Chapter 5

Software Utilities

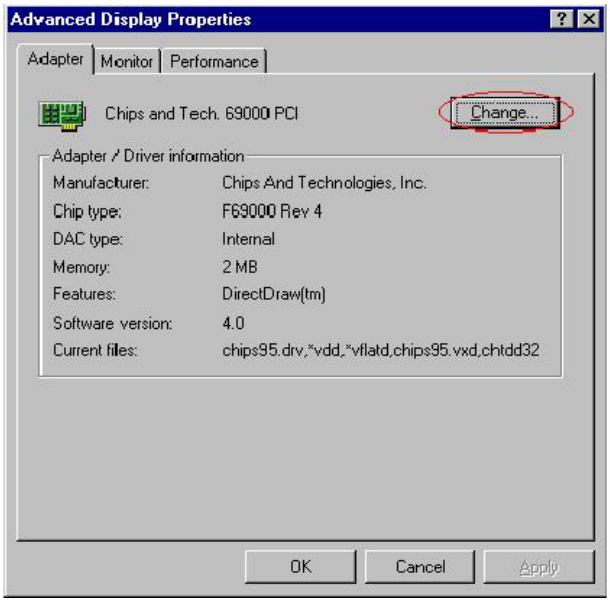
This chapter contains the detailed information of VGA, Audio and LAN driver installation procedures.

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:

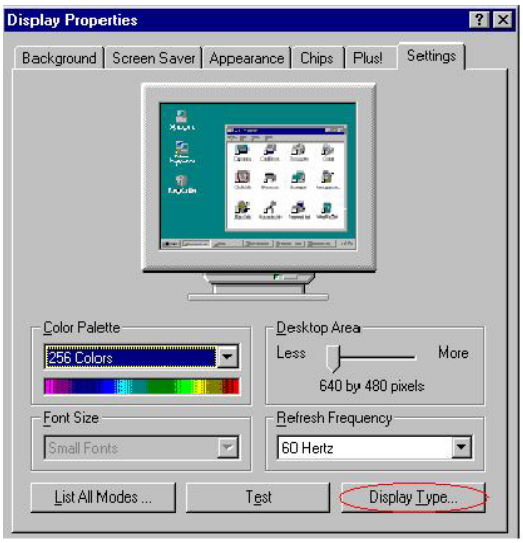
   Chips and Tech. 69000 PCI

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.

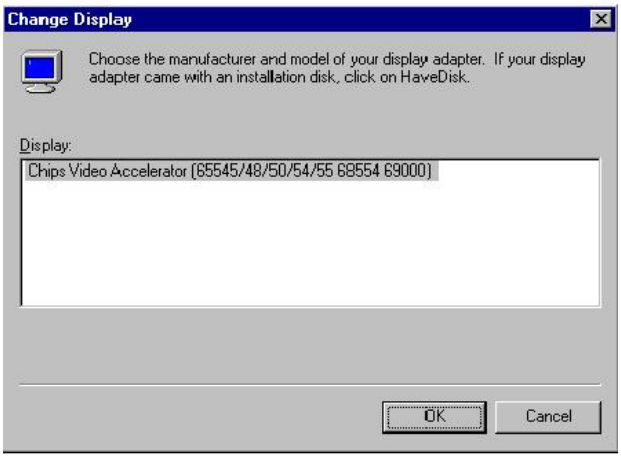
NOTE: *Installation procedure for Windows 98 is similar to Windows95.*

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 (655545/48/50/54/55/68554 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.

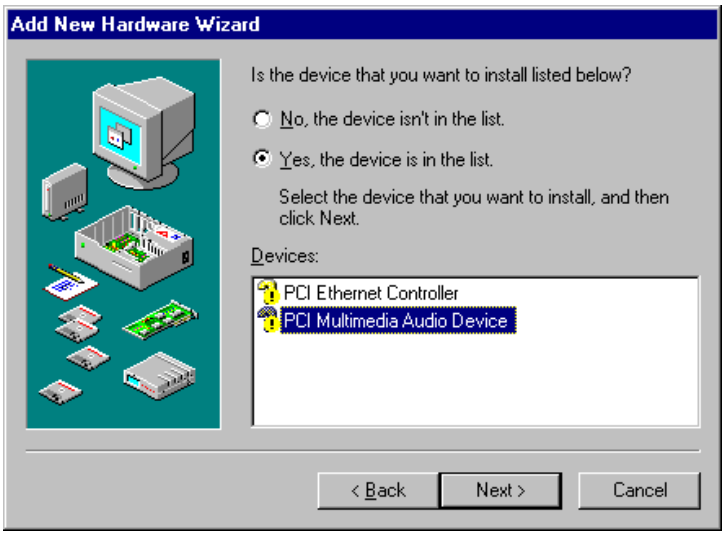
5.3 Audio Driver Installation for Win 98/95

5.3.1 Win98

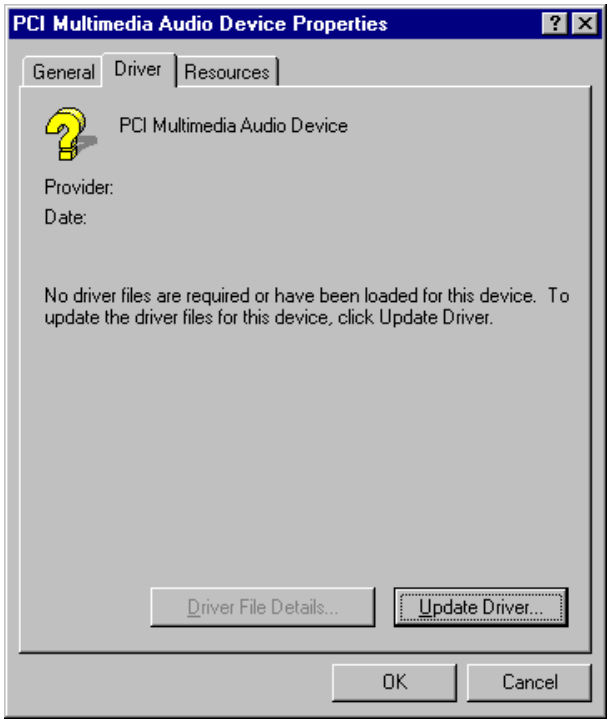
Windows 98 will detect the audio driver automatically therefore there is no need for further configuration.

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**.



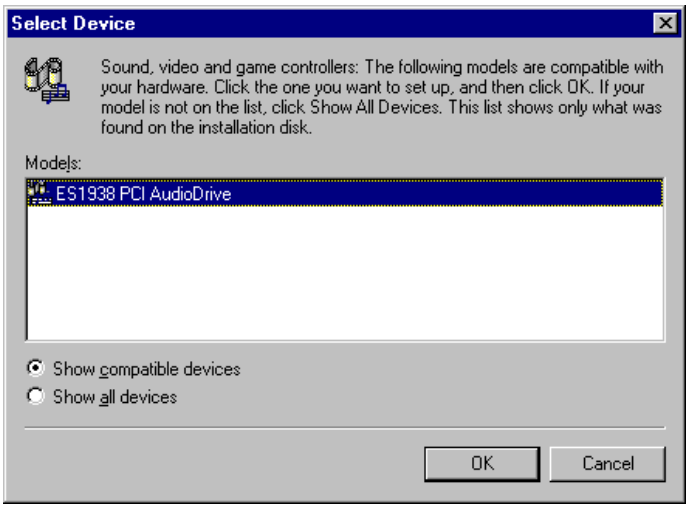
4. In the **Driver** window, select **Update Driver** then click **Next**.



5. This will bring up the **Insert Disk** window.
6. 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

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



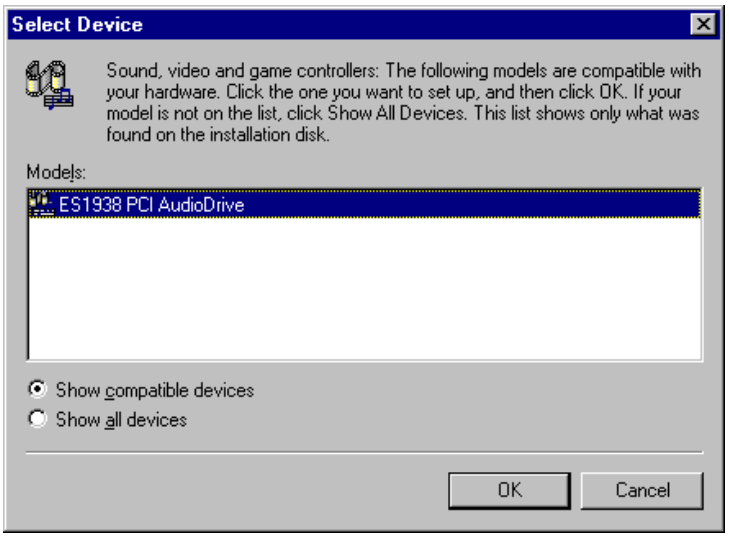
5.4 Audio Driver Installation for Win NT4.0

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.


Select Device
Sound, video and game controllers: The following models are compatible with your hardware. Click the one you want to set up, and then click OK. If your model is not on the list, click Show All Devices. This list shows only what was found on the installation disk.
Models:
ES1938 PCI AudioDrive
Show compatible devices
Show all devices
OK
Cancel

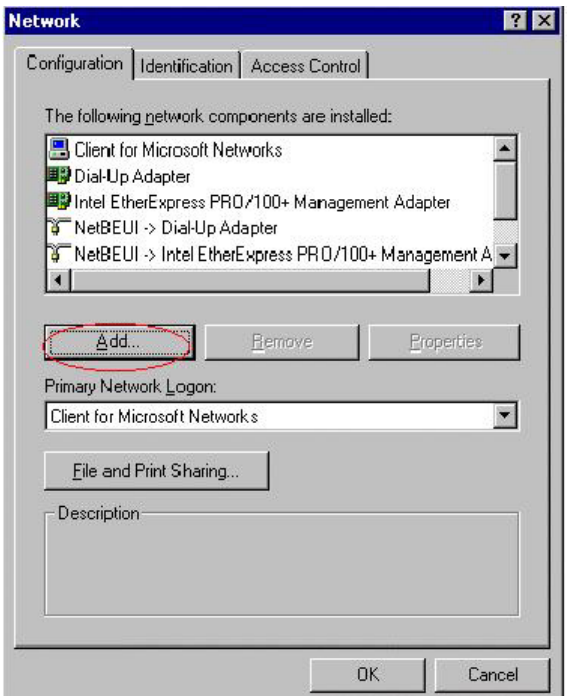
5.5 Network Driver Installation for Win95/98

5.5.1 Win98

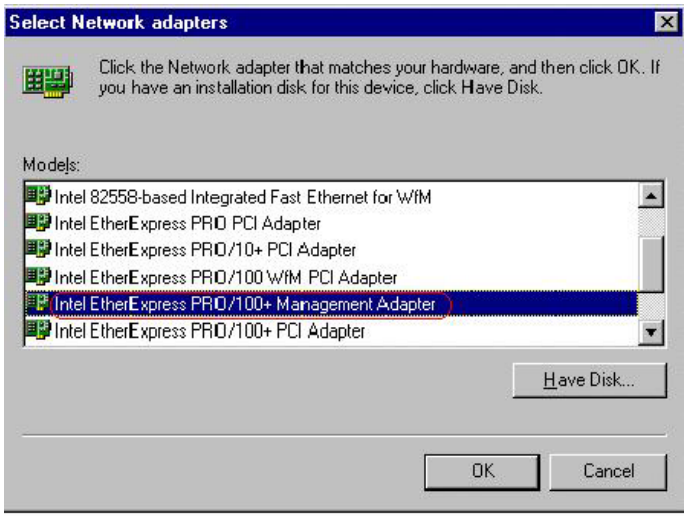
Windows 98 will detect the network driver automatically therefore there is no need for further configuration.

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**.



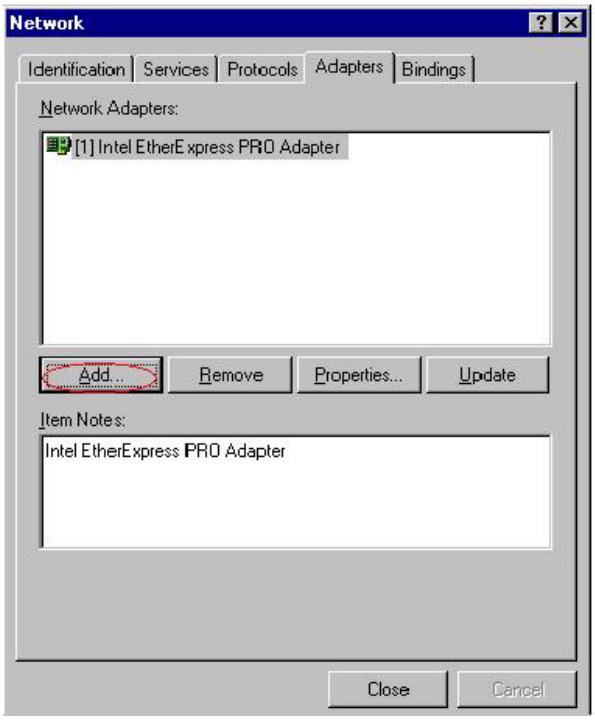
4. From the **Select Network Component Type**, select **Adapter** then click **Add**.
5. Specify the path the new driver and press <ENTER> key (if in driver a:, type a:\). If you're not sure exactly where the drivers are, choose the **Browse** button and find it.



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.