

# **IB720**

Half-Size Socket 370 CPU Card  
With VGA/LAN

## **USER'S MANUAL**

Version 1.0

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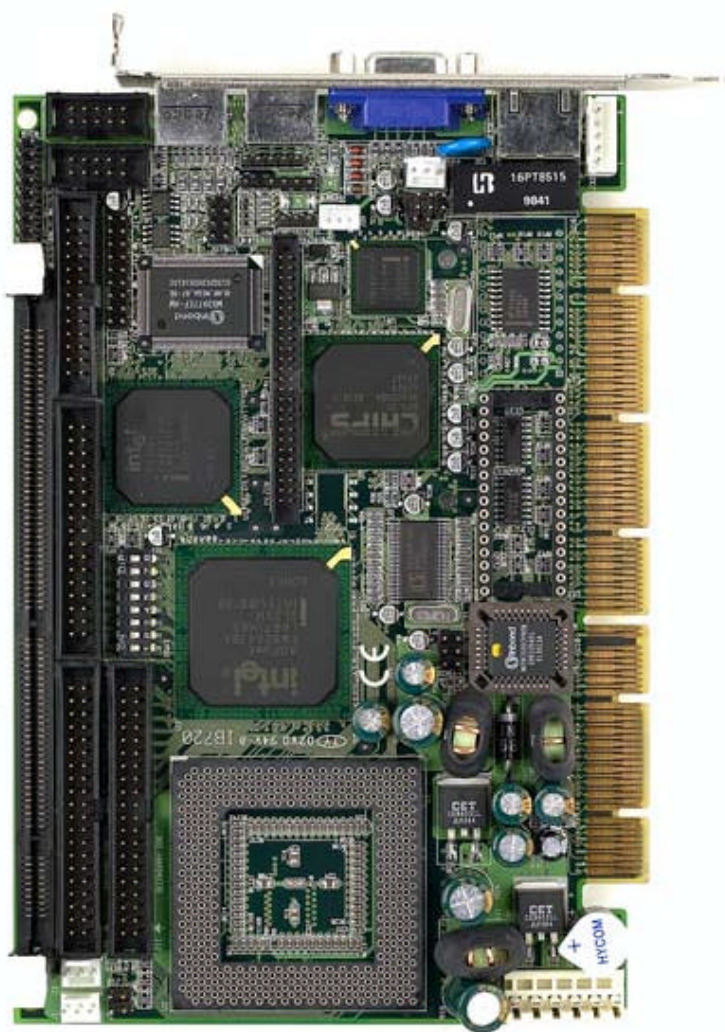
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A Picture of the IB720 CPU Card

# Introduction

## Product Description

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IB720 is a high-performance PISA-compliant CPU card that comes with optional VGA and LAN functions. It is based on the Intel 440BX AGPset and features a Socket 370 architecture that supports 66MHz/100MHz front side bus and Intel Celeron / Pentium !!! processors with frequencies up to 850MHz.

System memory is provided by one 168-pin DIMM socket that accommodates up to 256MB SDRAM. The on board Award BIOS facilitates easy system configuration and peripheral setup. Other advanced features include *DiskOnChip flash disk support*, watchdog timer, USB and IrDA interface.

*DiskOnChip flash disks* are storage devices that has no moving parts and emulates FDD/HDD with Flash/RAM/ROM offering reliable data/program storage and long life span. They are reliable and suitable for industrial or other harsh environments characterized by motion, shock, vibration, adverse temperature, dust and humidity. Other features include faster data access, longer MTBF, lower power consumption, cost effective for small capacity and small form factor.

# Checklist

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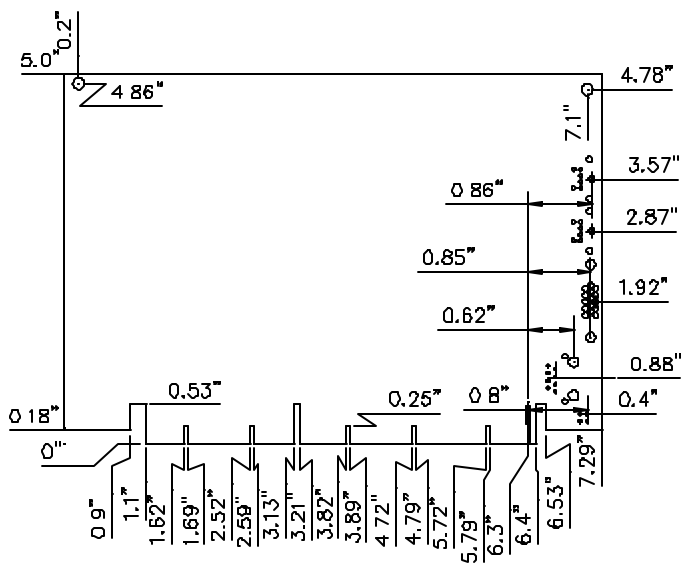
Your IB720 package should include the items listed below.

- The IB720 CPU Card
- This User's Manual
- 1 IDE Ribbon Cable
- 1 Floppy Ribbon Connector
- 2 Serial Port Ribbon Cables and 1 Parallel Port attached to a Mounting Bracket
- 1 CD containing the following:
  - Intel PCI IDE Driver and Flash Memory Utility
  - VGA Drivers
  - Ethernet Drivers

## Specifications

<b>Processor Supported</b>	Socket 370 processors with CPU frequency up to 850MHz; 66MHz/100MHz Front Side Bus
<b>Chipset</b>	Intel 440BX AGPset
<b>BIOS</b>	Award BIOS Supports DMI, PnP
<b>System Memory</b>	1x DIMM socket support up to 256MB capacity
<b>Multi I/O Chipset</b>	Winbond W83977EF (keyboard controller is built-in)
<b>I/O Features</b>	1x FDD (up to 2.88MB, 3 Mode, LS120) 1x Parallel Port (EPP, ECP Port) 2x Serial Ports (1x RS232 and 1x RS232/422/485) 1x IrDA TX/RX Headers
<b>Bus Master IDE</b>	2x IDE interfaces for up to 4 devices; supports PIO Mode 3/4 or Ultra DMA/33 IDE HDD, and ATAPI CD-ROM
<b>VGA (option)</b>	C&T 69000 (2MB embedded memory) or C&T 69030 (4MB embedded) VGA controller CRT & LCD panel support
<b>Ethernet (option)</b>	Intel 82559 Fast Ethernet controller 10/100Mbps data transfer speeds, WakeOnLAN support RJ-45 on board
<b>Hardware Monitoring</b>	Winbond W83781D IC Monitors CPU/system temperature and voltages
<b>SSD Interface</b>	Supports M-Systems 2MB~144MB DiskOnChip flash disk
<b>USB</b>	Pin header for 2 USB ports
<b>IrDA</b>	Pin header
<b>Other Features</b>	Watchdog timer
<b>Form Factor</b>	Half Size, PISA compliant
<b>Dimensions</b>	185mm x 127mm (7.29" x 5.0")
<b>Power Requirements</b>	+5V : 12A (max); +/-12V : 200mA (max)
<b>Operating Temperature</b>	0°C to 60°C
<b>Storage Temperature</b>	-20°C to 80°C
<b>Relative Humidity</b>	10% to 90% (non-condensing)

Board Dimensions





# Installations

This section provides information on how to use the jumpers and connectors on the IB720 in order to set up a workable system. The topics covered are:

Installing the CPU.....	6
Installing the Memory (DIMM).....	7
Setting the Jumpers.....	8
Connectors on IB720 .....	14
Watchdog Timer Configuration .....	26

### Installing the CPU

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The IB720 CPU Card supports a Socket 370 processor socket that comes with a lever to secure the processor. Raise this lever to approximately 90° to allow the insertion of the processor. Place the processor into the socket by making sure the notch on the corner of the CPU corresponds with that of the socket. Once the processor has slid into the socket, return the lever to the lock position.

After you have installed the processor into the socket, check if the jumpers for the CPU type and speed are correct. Refer to the section on *Setting the Jumpers*.



*Ensure that the CPU heat sink and the CPU's top surface are in total contact to avoid CPU overheating problem that would cause your system to hang or be unstable.*

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## Installing the Memory (DIMM)

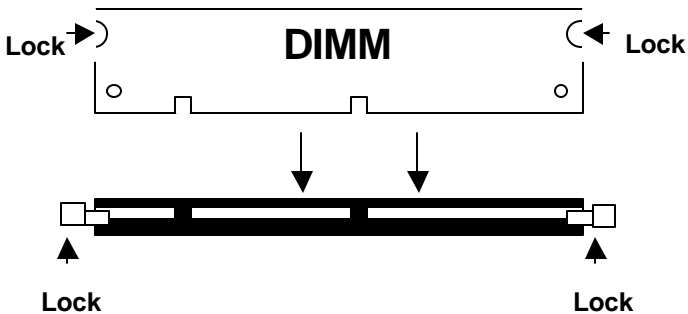
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The IB720 CPU Card supports one 168-pin DIMM socket that accommodates a maximum memory of 256MB in SDRAM type. The memory module capacities supported are 32MB, 64MB, 128MB and 256MB.

### Installing and Removing DIMMs

To install the DIMM, locate the memory slot on the CPU card and perform the following steps:

1. Hold the DIMM so that the two keys of the DIMM align with those on the memory slot.
2. Gently push the DIMM in an upright position until the clips of the slot close to hold the DIMM in place when the DIMM touches the bottom of the slot.
3. To remove the DIMM, press the clips with both hands.



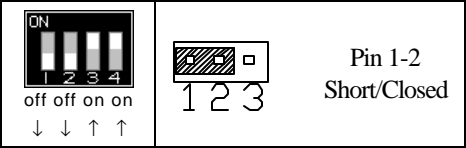
**Top View of DIMM Socket**

# Setting the Jumpers

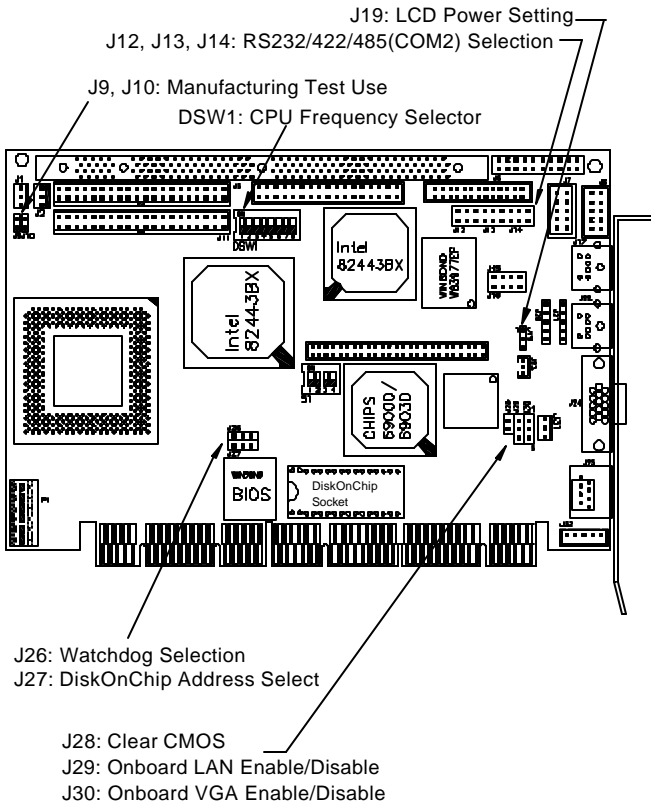
Jumpers on IB720 are used to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on IB720 and their respective functions.

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DSW1 (3): CPU Bus Speed Selector.....	10
DSW1 (5-8): CPU Frequency Selector .....	10
J9, J10: Manufacturing Test Use.....	11
J12, J13, J14: RS232/422/485 (COM2) Selection .....	11
J19: LCD Power Setting.....	11
J26: Watchdog Selection.....	12
J27: DiskOnChip Address Select.....	12
J28: Clear CMOS Content .....	12
J29: Onboard LAN Enable/Disable .....	12
J30: Onboard VGA Enable/Disable.....	13



*The following conventions are used in this section:*



## Jumper Locations on IB720











## DSW1 (3): CPU Bus Speed Selector

Bus Speed	SW1 (3)	Switch Setting
100MHz		off
66MHz		on

## DSW1 (5-8): CPU Frequency Selector

The table below shows the correct setting to match the CPU frequency.

Frequency Multiplier	CPU Frequency (66MHz)	CPU Frequency (100MHz)	SW1(5-8)
4.5X	300MHz	450MHz	
5X	333MHz	500MHz	
5.5X	366MHz	550MHz	
6X	400MHz	600MHz	
6.5X	433MHz	650MHz	
7X	466MHz	700MHz	
7.5X	500MHz	750MHz	
8X	533MHz	800MHz	

## J9, J10: Manufacturing Test Use

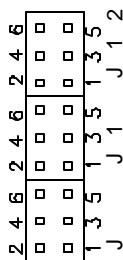
These two 2-pin header are for manufacturing test use only.

## J12, J13, J14: RS232/422/485 (COM2) Selection

COM1 is fixed for RS-232 use only.

COM2 is selectable for RS232, RS-422 and RS-485.

The following table describes the jumper settings for COM2 selection.





COM2 Function	RS-232	RS-422	RS-485
Jumper Setting (pin closed)	J12: 1-2	J12: 3-4	J12: 5-6
	J13: 3-5 & 4-6	J13: 1-3 & 2-4	J13: 1-3 & 2-4
	J14: 3-5 & 4-6	J14: 1-3 & 2-4	J14: 1-3 & 2-4



## J19: LCD Power Setting

3.3V Setting	5V Setting



### J26: Watchdog Selection

J26	Setting	Function
 1 2 3	Pin 1-2 Short/Closed	Reset
 1 2 3	Pin 2-3 Short/Closed	NMI



### J27: DiskOnChip Address Select

J27	Address
 1 2 3	D0000-D7FFF
 1 2 3	D8000-DFFFF (default)

### J28: Clear CMOS Content



J28	Setting	Function
	Open	Normal Operation
	Short/Closed	Clear CMOS Content

### J29: Onboard LAN Enable/Disable

J29	Setting	LAN Function
 1 2 3	Pin 1-2 Short/Closed	Enabled
 1 2 3	Pin 2-3 Short/Closed	Disabled



**J30: Onboard VGA Enable/Disable**

J30	Setting	VGA Function
 1 2 3	Pin 1-2 Short/Closed	Enabled
 1 2 3	Pin 2-3 Short/Closed	Disabled

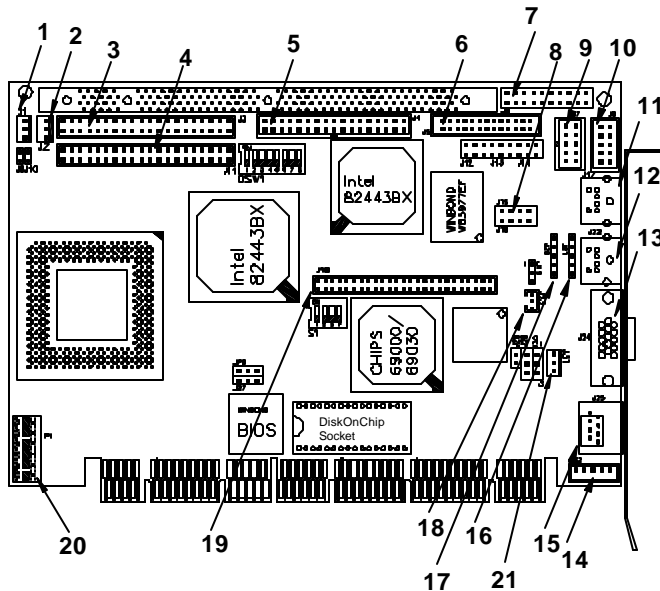
## Connectors on IB720

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The connectors on IB720 allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on IB720 and their respective functions.

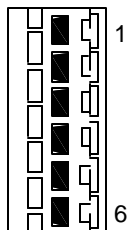
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J32: External Keyboard Connector .....	25

## Connector Locations on IB720



- 1 J1: System Fan Power Connector
- 2 J2: CPU Fan Power Connector
- 3/4 J3, J11: EIDE Connectors
- 5 J4: Floppy Drive Connector
- 6 J5: Parallel Port Connector
- 7 J6: System Function Connector
- 8 J15, J16: USB Connectors
- 9/10 J7, J8: COM2, COM1 Serial Port
- 11 J17: PS/2 Keyboard Connector
- 12 J22: PS/2 Mouse Connector
- 13 J24: VGA CRT Connector
- 14 J32: External Keyboard Connector
- 15 J25: RJ45 Connector
- 16 J21: External PS/2 Mouse Connector
- 17 J20: IrDA Connector
- 18 J23: WakeOnLAN Connector
- 19 J18: LCD Panel Connector
- 20 P1: AT P8 Power Connector
- 21 J31: ATX Power Controller Connector

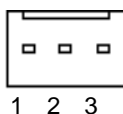
## P1: AT P8 Power Connector



Pin #	Signal Name
1	N.C.
2	+5V
3	+12V
4	-12V
5	Ground
6	Ground

## J1: System Fan Power Connector

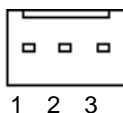
J1 is a 3-pin header for the system fan. The fan must be a 12V fan.



Pin #	Signal Name
1	Rotation
2	+12V
3	Ground

## J2: CPU Fan Power Connector

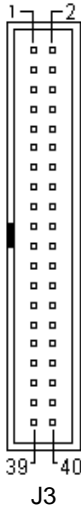
J2 is a 3-pin header for the CPU fan. The fan must be a 12V fan.



Pin #	Signal Name
1	Rotation
2	+12V
3	Ground

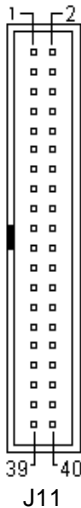
## J3, J11: EIDE Connectors

### J3: Primary IDE Connector



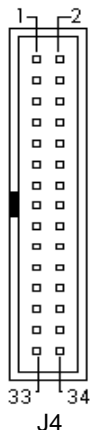
Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

### J11: Secondary IDE Connector



Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ1	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK1	29	30	Ground
IRQ15	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

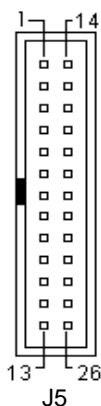
## J4: Floppy Drive Connector



Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	RM/LC
Ground	3	4	No connect
Ground	5	6	No connect
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	Write gate
Ground	25	26	Track 00
Ground	27	28	Write protect
Ground	29	30	Read data
Ground	31	32	Side 1 select
Ground	33	34	Diskette change

## J5: Parallel Port Connector

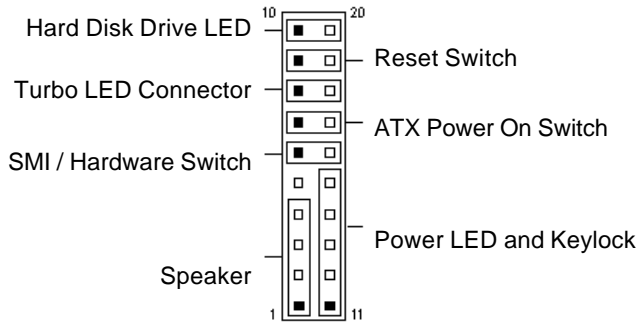
The following table describes the pin out assignments of this connector.



Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

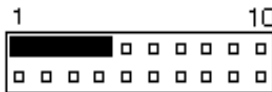
## J6: System Function Connector

J6 provides connectors for system indicators that provide light indication of the computer activities and switches to change system status. J6 is a 20-pin header that provides interfaces for the following functions.



### Speaker: Pins 1 - 4

This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.



Pin #	Signal Name
1	Speaker out
2	No connect
3	Ground
4	+5V

### Power LED and Keylock: Pins 11 - 15

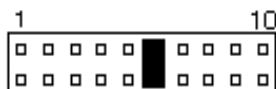
The power LED indicates the status of the main power switch. The keylock switch, when closed, will disable the keyboard function.



Pin #	Signal Name
11	Power LED
12	No connect
13	Ground
14	Keylock
15	Ground

## SMI/Hardware Switch: Pins 6 and 16

This connector supports the "Green Switch" on the control panel, which, when pressed, will force the system into the power-saving mode immediately.



Pin #	Signal Name
6	Sleep
16	Ground

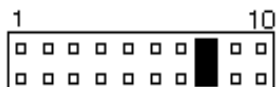
## ATX Power ON Switch: Pins 7 and 17

This 2-pin connector is an "ATX Power Supply On/Off Switch" on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will force the system to power off.



## Turbo LED Connector: Pins 8 and 18

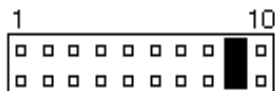
There is no turbo/deturbo function on the CPU card. The Turbo LED on the control panel will always be On when attached to this connector.



Pin #	Signal Name
8	5V
18	Ground

## Reset Switch: Pins 9 and 19

The reset switch allows the user to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.





### Hard Disk Drive LED Connector: Pins 10 and 20

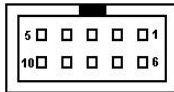
This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.



Pin #	Signal Name
10	Ground
20	5V

### J7, J8: COM2, COM1 Serial Port

J7 and J8, both 10-pin headers, are the onboard serial port connectors of the IB720. The following table shows the pin assignments of these connectors.



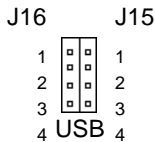
J8: COM1

J7: COM2

Pin #	Signal Name
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator
10	NC

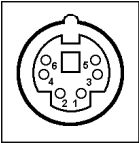
### J15, J16: USB Connectors

These are the pin headers for the optional USB cable connector.



J16 Pin #	J15 Pin #	Signal Name
1	1	Vcc
2	2	USB-
3	3	USB+
4	4	Ground

J17: PS/2 Keyboard Connector

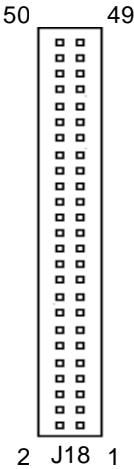


J17

Pin #	Signal Name
1	Keyboard data
2	N.C.
3	GND
4	5V
5	Keyboard clock
6	N.C.

J18: LCD Panel Connector

Use J18 to connect the system to an LCD panel.



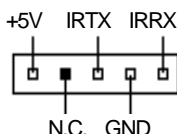
Signal Name	Pin #	Pin #	Signal Name
GND	1	2	P33
P34	3	4	P31
P35	5	6	P32
P30	7	8	P28
P29	9	10	P27
P25	11	12	P26
P24	13	14	P21
P23	15	16	P22
P16	17	18	P20
P17	19	20	P18
P19	21	22	P14
P13	23	24	P12
P15	25	26	P11
P7	27	28	P10
5V or 3.3V	29	30	5V or 3.3V
P9	31	32	P8
P4	33	34	P6
P3	35	36	P5
P2	37	38	P1
M	39	40	P0
SHFCLK	41	42	ENABKL
FPVDD	43	44	FLM(V SYNC)
FPVEE	45	46	LP(H SYNC)
GND	47	48	GND
+12V	49	50	+12V

## Flat Panel Display Interface Pin Descriptions

	Mono	Mono	Mono	Color	Color	Color	Color	Color	Color	Color	Color	Color	Color
	SS	DD	DD	TFT	TFT	TFT	TFT	TFT+HR	STN-SS	STN-SS	STN-SS	STN-DD	STN-DD
Pin Name	8-bit	8-bit	16-bit	9/12/16 bit	18/24 bit	36-bit	18/24 bit	8-bit (4bP)	16-bit (4bP)	8-bit (4bP)	16-bit (4bP)	16-bit (4bP)	24-bit
P0	D0	UD3	UD7	B0	B0	FB0	FB0	R1	R1	UR1	UR0	UR0	UR0
P1	D1	UD2	UD6	B1	B1	FB1	FB1	B1	G1	UG1	UG0	UG0	UG0
P2	D2	UD1	UD5	B2	B2	FB2	FB2	G2	B1	UB1	UB0	UB0	UB0
P3	D3	UD0	UD4	B3	B3	FB3	FB3	B3	R2	UR2	UR1	UR1	UR1
P4	D4	LD3	UD3	B4	B4	FB4	SB0	G4	G3	LR1	LR0	LR0	LR0
P5	D5	LD2	UD2	G0	B5	FB5	SB1	R5	B2	LG1	LG0	LG0	LG0
P6	D6	LD1	UD1	G1	B6	SB0	SB2	B5	R3	LB1	LB0	LB0	LB0
P7	D7	LD0	UD0	G2	B7	SB1	B3		G3	LR2	LR1	LR1	LR1
P8			LD7	G3	G0	SB2	FG0		B3		UG1	UG1	UG1
P9			LD6	G4	G1	SB3	FG1		R4		UR1	UR1	UR1
P10			LD5	G5	G2	SB4	FG2		G4		UR2	UR2	UR2
P11			LD4	R0	G3	SB5	FG3		B4		UG2	UG2	UG2
P12			LD3	R1	G4	FG0	SG0		R5		LG1	LG1	LG1
P13			LD2	R2	G5	FG1	SG1		G5		LB1	LB1	LB1
P14			LD1	R3	G6	FG2	SG2		B5		LR2	LR2	LR2
P15			LD0	R4	G7	FG3	SG3		G6		LG2	LG2	LG2
P16					R0	FG4	FR0						
P17					R1	FG5	FR1						
P18					R2	SG0	FR2						
P19					R3	SG1	FR3						
P20					R4	SG2	SR0						
P21					R5	SG3	SR1						
P22					R6	SG4	SR2						
P23					R7	SG5	SR3						
P24						FR0							
P25						FR1							
P26						FR2							
P27						FR3							
P28						FR4							
P29						FR5							
P30						SR0							
P31						SR1							
P32						SR2							
P33						SR3							
P34						SR4							
P35						SR5							
SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK	SHFCLK
Pixels/Cik:	8	8	16	1	1	2	2	2-2/3	5-1/3	2-2/3	5-1/3	8	8

## J20: IrDA Connector

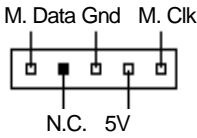
J20 is used for an IrDA connector for wireless communication.



Pin #	Signal Name
1	+5V
2	No connect
3	Ir TX
4	Ground
5	Ir RX

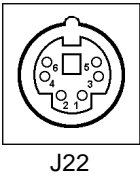
**J21: External PS/2 Mouse Connector**

J21 is a 5-pin pin header for the optional external PS/2 mouse cable connector.



Pin #	Signal Name
1	Mouse data
2	N.C.
3	Ground
4	5V
5	Mouse Clock

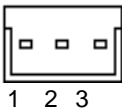
**J22: PS/2 Mouse Connector**



Pin #	Signal Name
1	Mouse data
2	N.C.
3	N.C.
4	5V
5	Mouse Clock
6	N.C.

**J23: WakeOnLAN Connector**

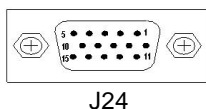
The table below shows the pin out assignments J23. WakeOnLAN will function properly only with an ATX power supply with 5VSB that has 800mA.



Pin #	Signal Name
1	+5VSB
2	Ground
3	Wake on LAN

### J24: VGA CRT Connector

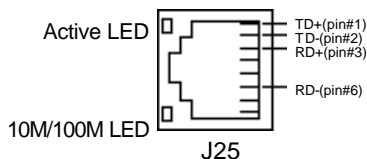
The pin assignments of the VGA CRT connector are as follows:



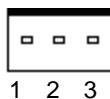
Signal Name	Pin	Pin	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
N.C.	9	10	GND
N.C.	11	12	N.C.
HSYNC	13	14	VSYNC
NC	15		

### J25: RJ45 Connector

This connector is for the Ethernet function of the CPU card. The figure below shows the pin out assignments of this connector and its corresponding input jack.

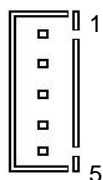


### J31: ATX Power Controller Connector



Pin #	Signal Name
1	Ground
2	PS-ON (soft on/of)
3	5VSB (Standby +5V)

### J32: External Keyboard Connector



Pin #	Signal Name
1	Keyboard clock
2	Keyboard data
3	NC
4	GND
5	Vcc

## Watchdog Timer Configuration

---

The function of the watchdog timer is to reset the system automatically and is defined at I/O port 0443H. To enable the watchdog timer and allow the system to reset, write I/O port 0443H. To disable the timer, write I/O port 0441H for the system to stop the watchdog function. The timer has a tolerance of 20% for its intervals.

The following describes how the timer should be programmed.

### Enabling Watchdog:

```
MOV    AX, 000FH (Choose the values from 0)
MOV    DX, 0443H
OUT    DX, AX
```

### Disabling Watchdog

```
MOV    AX, 00FH (Any value is fine.)
MOV    DX, 0441H
OUT    DX, AX
```

WATCHDOG TIMER CONTROL TABLE

Level	Value	Time/sec	Level	Value	Time/sec
1	F	0	9	7	16
2	E	2	10	6	18
3	D	4	11	5	20
4	C	6	12	4	22
5	B	8	13	3	24
6	A	10	14	2	26
7	9	12	15	1	28
8	8	14	16	0	30

# BIOS Setup

This chapter describes the different settings available in the Award BIOS that comes with the CPU card. The topics covered in this chapter are as follows:

BIOS Introduction.....	28
BIOS Setup .....	28
Standard CMOS Setup.....	30
BIOS Features Setup.....	33
Power Management Setup .....	39
PNP/PCI Configuration.....	42
Load BIOS Defaults .....	43
Integrated Peripherals.....	44
Supervisor / User Password.....	46
IDE HDD Auto Detection.....	47
Save & Exit Setup.....	48
Exit Without Saving.....	48

### BIOS Introduction

---

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel processors in a standard IBM -AT compatible I/O system. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

### BIOS Setup

---

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the Award BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

Press <DEL> to Enter Setup

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.



ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

<b>STANDARD CMOS SETUP</b> BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PNP/PCI CONFIGURATION LOAD BIOS DEFAULTS LOAD SETUP DEFAULTS	INTEGRATED PERIPHERALS SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION SAVE & EXIT SETUP EXIT WITHOUT SAVING
ESC : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item (Shift) F2 : Change Color
Time, Date, Hard Disk Type	

The section below the setup items of the Main Menu displays the control keys for this menu. At the bottom of the Main Menu just below the control keys section, there is another section which displays information on the currently highlighted item in the list.



*If your computer cannot boot after making and saving system changes with Setup, the Award BIOS supports an override to the CMOS settings that resets your system to its default.*

**Warning:** *It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.*

## Standard CMOS Setup

The “Standard CMOS Setup” choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the card is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

ROM PCI/ISA BIOS  
STANDARD CMOS SETUP  
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Wed, Mar 4 1998								
Time (hh:mm:ss) : 00 : 00 : 00								
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	Auto	0	0	0	0	0	0	Auto
Primary Slave	Auto	0	0	0	0	0	0	Auto
Secondary Master	Auto	0	0	0	0	0	0	Auto
Secondary Slave	Auto	0	0	0	0	0	0	Auto
Drive A	: 1.44M, 3.5in				Base Memory		: 640K	
Drive B	: None				Extended Memory		: 15360K	
					Other Memory		: 384K	
Video	: EGA / VGA				Total Memory		: 16384K	
Halt On	: All Errors							
ESC : Quit			↑ ↓ → ← : Select			Item PU / PD / + / - : Modify		
F1 : Help			(Shift) F2 : Change Color					

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following describes each item of this menu.

### Date

The date format is:

**Day :** Sun to Sat  
**Month :** 1 to 12  
**Date :** 1 to 31  
**Year :** 1994 to 2079

To set the date, highlight the “Date” field and use the PageUp/ PageDown or +/- keys to set the current time.

## Time

The time format is:

**Hour : 00 to 23**  
**Minute : 00 to 59**  
**Second : 00 to 59**

To set the time, highlight the “Time” field and use the <PgUp>/<PgDn> or +/- keys to set the current time.

## Primary HDDs / Secondary HDDs

The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the “Master” and the second is the “Slave”.

To enter the specifications for a hard disk drive, you must select first a “Type”. There are 45 predefined types and 4 user definable types are for Enhanced IDE BIOS. Type 1 to 45 are predefined. Type “User” is user-definable. For the Primary Master/Slave as well as Secondary Master/Slave, you can select “Auto” under the TYPE and MODE fields. This will enable auto detection of your IDE drives and CD-ROM drive during POST.

Press <PgUp>/<PgDn> to select a numbered hard disk type or type the number and press the <Enter> key. The hard disk will not work properly if you enter incorrect information for this field. 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, related information is asked to be entered to the following items.

<b>CYLS :</b>	Number of cylinders
<b>HEAD :</b>	Number of read/write heads
<b>PRECOMP :</b>	Write precompensation
<b>LANDZ :</b>	Landing zone
<b>SECTOR :</b>	Number of sectors
<b>SIZE :</b>	Automatically adjust according to the configuration
<b>MODE (for IDE HDD only) :</b>	Auto
	Normal (HD < 528MB)
	Large (for MS-DOS only)
	LBA (HD > 528MB and supports Logical Block Addressing)



The specifications of your drive must match with the drive table. The hard disk will not work properly if you enter incorrect information in these fields. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

### Drive A / Drive B

These fields identify the types of floppy disk drive A or drive B that has been installed in the computer. The available specifications are:

360KB	2MB	720KB	44MB	88MB
5.25 in.	5.25 in.	3.5 in.	3.5 in.	3.5 in.

### Video

This field selects the type of video display card installed in your system. You can choose the following video display cards:

EGA/VGA	For EGA, VGA, SEGA, SVGA or PGA monitor adapters. (default)
CGA 40	Power up in 40 column mode.
CGA 80	Power up in 80 column mode.
MONO	For Hercules or MDA adapters.

### Halt On

This field determines whether the system will halt if an error is detected during power up.

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

## BIOS Features Setup

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

ROM / PCI ISA BIOS  
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	: Disabled	D0000-D3FFF Shadow	: Disabled
Processor Number Feature	: Enabled	D4000-D7FFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D8000-DBFFF Shadow	: Disabled
Boot Sequence	: A, C, SCSI	DC000-DFFF Shadow	: Disabled
Swap Floppy Drive	: Disabled		
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		
PCI /VGA Palette Snoop	: Disabled		
OS Select For DRAM>64MB	: Non-OS2	ESC : Quit	↑ ↓ → ← : Select Item
HDD S.M.A.R.T. Capability	: Disabled	F1 : Help	PU/PD/+/- : Modify
Report No FDD For WIN 95	: Yes	F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

### Virus Warning

This item protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program.

### CPU Internal Cache / External Cache

When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. These items allow you to enable (speed up memory access) or disable the cache function. By default, these items are *Enabled*.

### CPU L2 Cache ECC Checking

When enabled, this allows ECC checking of the CPU's L2 cache.

### Processor Number Feature

This field only appears if the processor on board is a Pentium III processor. The Processor Number Feature can be enabled or disabled.

### Quick Power On Self Test

When enabled, this field speeds up the Power On Self Test (POST) after the system is turned on. If it is set to *Enabled*, BIOS will skip some items.

### Boot Sequence

This field determines the drive that the system searches first for an operating system. The options are:

A, C, SCSI	D, A, SCSI	SCSI, C, A
C, A, SCSI	E, A, SCSI	C only
C, CDROM, A	F, A, SCSI	LS/ZIP, C
CDROM, C, A	SCSI, A, C	

The default value is *A, C, SCSI*.

### Swap Floppy Drive

This item allows you to determine whether or not to enable Swap Floppy Drive. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to *Disabled*.

### Boot Up Floppy Seek

When enabled, the BIOS will seek whether or not the floppy drive installed has 40 or 80 tracks. 360K type has 40 tracks while 760K, 1.2M and 1.44M all have 80 tracks. By default, this field is set to *Enabled*.

### Boot Up NumLock Status

This allows you to activate the NumLock function after you power up the system. By default, the system boots up with *NumLock On*.

### Boot Up System Speed

This has no function and selects the default system speed (*High*).

### Gate A20 Option

This field allows you to select how Gate A20 is worked. Gate A20 is a device used to address memory above 1 MB. The default setting is *Fast*.

### Typematic Rate Setting

When disabled, continually holding down a key on your key board will generate only one instance. When enabled, you can set the two typematic controls listed next. By default, this field is set to *Disabled*.

**Typematic Rate (Chars/Sec)**

When the typematic rate is enabled, the system registers repeated keystrokes speeds. You can select speed range from 6 to 30 characters per second. By default, this item is set to **6**.

**Typematic Delay (Msec)**

When the typematic rate is enabled, this item allows you to set the time interval for displaying the first and second characters.

**Security Option**

This field allows you to limit access to the System and Setup. The default value is **Setup**. When you select **System**, the system prompts for the User Password every time you boot up. When you select **Setup**, the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

**PCI/VGA Palette Snoop**

Some non-standard VGA display cards may not show colors properly. This field allows you to set whether or not MPEG ISA/VESA VGA Cards can work with PCI/VGA. When this field is enabled, a PCI/VGA can work with an MPEG ISA/VESA VGA card. When this field is disabled, a PCI/VGA cannot work with an MPEG ISA/VESA Card.

**OS Select for DRAM > 64MB**

This option allows the system to access greater than 64MB of DRAM memory when used with OS/2 that depends on certain BIOS calls to access memory. The default setting is **Non-OS/2**.

**Report No FDD for Win 95**

This option allows Windows 95 to share with other peripherals IRQ6 which is assigned to a floppy disk drive if the drive is not existing.

**HDD S.M.A.R.T. Capability**

Enable this field if S.M.A.R.T. is supported by the HDD installed.

**Video BIOS Shadow**

This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.

**C8000 - CBFFF Shadow/DC000 - DFFFF Shadow**

Shadowing a ROM reduces the memory available between 640KB to 1024KB. These fields determine whether or not optional ROM will be copied to RAM.

## Chipset Features Setup

This Setup menu controls the configuration of the chipset.

ROM PCI/ISA BIOS  
CHIPSET FEATURES SETUP  
AWARD SOFTWARE INC.

SDRAM RAS-to-CAS Delay	: 3		
SDRAM RAS Precharge Time	: 3		
SDRAM CAS Latency Time	: 3		
SDRAM Precharge Control	: Disabled	CPU Warning Temperature	: 66°C/151°F
DRAM Data Integrity Mode	: Non-ECC		
System BIOS Cacheable	: Disabled	Current System Temp.	: 41°C/ 105°F
Video BIOS Cacheable	: Disabled	Current CPU Temp.	: 27°C/ 80°F
Video RAM Cacheable	: Disabled		
8 Bit I/O Recovery Time	: 3	Current CPU Fan Speed	: 2789 RPM
16 Bit I/O Recovery Time	: 2	Current Chassis Fan Speed	: 2045 RPM
Memory Hole At 15MB-16MB	: Disabled	VCCP (V) : 1.98 v	VTT (V) : 1.50 V
Passive Release	: Enabled	VCC3 (V) : 3.45 v	+ 5 V : 4.99 V
Delayed Transaction	: Enabled	+12 V : 12.46 v	-12 V : -12.54V
		-5V : - 5.21 v	
		ESC : Quit	↑ ↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

### SDRAM RAS-to-CAS Delay

When DRAM is refreshed, both rows and columns are addressed separately. This field allows you to determine the timing of transition from Row Address Strobe (RAS) to Column Address Strobe (CAS). The default setting is 3.

### SDRAM RAS Precharge Time

The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refresh. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data. The default setting is 3.

### SDRAM CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer. The default value is 3.

### SDRAM Precharge Control

By default, the SDRAM Precharge Control field is set to **Disabled**.

### System BIOS Cacheable

When enabled, access to the system BIOS ROM addressed at F0000H-FFFFFH is cached, provided that the cache controller is disabled.



**DRAM Data Integrity Mode**

This field configures your RAM's data integrity mode. ECC stands for Error Checking and Correction and it should only be used if you are using special 72-bit ECC RAM. This will enable the system to detect and correct single-bit errors. It will also detect double-bit errors though it will not correct them.

**Video RAM Cacheable**

Selecting *Enabled* allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. If any program writes to this memory area, a memory access error may result.

**System BIOS Cacheable**

This feature is only valid when the system BIOS is shadowed. It enables or disables the caching of the system BIOS ROM at F0000h-FFFFFh via the L2 cache. This greatly speeds up accesses to the system BIOS. However, this does not translate into better system performance because the OS does not need to access the system BIOS much.

**Video BIOS Cacheable**

This feature is only valid when the video BIOS is shadowed. It enables or disables the caching of the video BIOS ROM at C0000h-C7FFFh via the L2 cache. This greatly speeds up accesses to the video BIOS. However, this does not translate into better system performance because the OS bypasses the BIOS using the graphics driver to access the video card's hardware directly.

**8 Bit I/O Recovery Time**

This option specifies the length of the delay (in sysclks) inserted between consecutive 8-bit I/O operations. The settings are 1, 2, 3, 4, 5, 6, 7, and 8. The default setting is 3.

**16 Bit I/O Recovery Time**

This option specifies the length of the delay (in sysclks) inserted between consecutive 16-bit I/O operations. The settings are 1, 2, 3, and 4. The default setting is 2.

**Memory Hole at 15MB - 16MB**

In order to improve performance, certain space in memory can be reserved for ISA cards. This field allows you to reserve 15MB to 16MB of memory address space to ISA expansion cards. This makes memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB. By default, this field is set to *Disabled*.

### 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.

### 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 default setting is *Disabled*.

### Auto Detect DIMM/PCI Clk

When enabled, the system automatically shuts off clocks of unused DIMM/PCI slots. The default setting is *Disabled*. This field is for CE testing use only.

### Spread Spectrum

This field sets the value of the spread spectrum. Options are Disabled, 0.25% and 0.5%. The default setting is *Disabled*. This field is for CE testing use only.

### CPU Warning Temperature

This field sets the threshold temperature at which an alert is sounded through the system's speaker. The CPU temperature is monitored by the onboard thermal sensor to prevent the CPU from overheating.

### Current System Temp./ Current CPU Temp.

These read-only fields reflect the functions of the hardware thermal sensor that monitors the chip blocks and system temperatures to ensure the system is stable.

### Current CPU Fan Speed/Chassis Fan Speed

These optional and read-only fields show the current speeds in RPM (revolution per minute) for the CPU fan and chassis fan as monitored by the hardware monitoring IC.

### VCCP / VTT / VCC3

These optional and read-only fields show the current voltages in the voltage regulators and power supply as monitored by the hardware monitoring IC.

## Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn off video display after a period of inactivity.

ROM PCI/ISA BIOS  
POWER MANAGEMENT SETUP  
AWARD SOFTWARE, INC.

Power Management	: User Define	<b>** Reload Global Timer Events **</b>	
PM Control by APM	: Yes	IRQ3 (3-7, 9-15), NMI	: Disabled
Video Off Method	: V/H SYNC +Blank	Primary IDE 0	: Enabled
Video Off After	: Standby	Primary IDE 1	: Enabled
MODEM Use IRQ	: 3	Secondary IDE 0	: Disabled
		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 Active Monitor	: Disabled		
Soft-Off by PWR-BTTN	: Instant-Off		
Power On by Ring	: Disabled		
		ESC : Quit	↑ ↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	
IRQ 8 Break Suspend	: Disabled		

### Power Management

This field allows you to select the type of power saving management modes. There are four selections for Power Management.

Min. Power Saving  
Max. Power Saving  
User Define

Minimum power management  
Maximum power management.

Each of the ranges is from 1 min. to 1hr.  
Except for HDD Power Down which ranges from 1 min. to 15 min.  
(Default)

**NOTE:** In order to enable the CPU overheat protection feature, the Power Management field should not be set to Disabled.

### PM Control by APM

This field allows you to use the Advanced Power Management device to enhance the Max. Power Saving mode and stop the CPU's internal clock. If the Max. Power Saving is not enabled, this will be preset to NO.

### Video Off Method

This field defines the Video Off features. There are three options.

V/H SYNC + Blank      Default setting, blank the screen and turn off vertical and horizontal scanning.

DPMS                      Allows the BIOS to control the video display card if it supports the DPMS feature.

Blank Screen            This option only writes blanks to the video buffer.

### Video Off After

As the system moves from lesser to greater power-saving modes, select the mode in which you want the monitor to blank.

### Modem Use IRQ

This field names the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system. By default, the IRQ is set to 3.

### Doze Mode

When enabled, and after the set time of system inactivity, the CPU clock will run at a slower speed while all other devices still operate at full speed.

### Standby Mode

After the selected period of system inactivity, the fixed disk drive and the video 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.

**PCI VGA Active Monitor**

When enabled, any video activity restarts the global timer for Standby mode.

**Soft-Off by PWR-BTTN**

This field defines the power-off mode when using an ATX power supply. The Instant-Off mode allows powering off immediately upon pressing the power button. In the Delay 4 Sec mode, the system powers off when the power button is pressed for more than four seconds or 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 (see next field) when pressed for less than 4 seconds. The default value is *Instant-Off*.

**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.

**IRQ 8 Break Suspend**

You can enable or disable the monitoring of IRQ 8 (Real Time Clock) so it does not awaken the system from Suspend mode.

**Reload Global Timer Events**

This section determines the reloading of the 'timers' after entering the Full On You can enable or disable the monitoring of IRQ 8 (Real Time Clock) so it does not awaken the system from Suspend mode.

## PNP/PCI Configuration

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

ROM PCI/ISA BIOS  
PNP/PCI CONFIGURATION  
AWARD SOFTWARE INC.

PNP OS Installed	: No	Used MEM base addr	: N/A
Resources Controlled by	: Manual		
Reset Configuration Data	: Disabled		
IRQ-3 assigned to	: Legacy ISA		
IRQ-4 assigned to	: Legacy ISA		
IRQ-5 assigned to	: PCI/ISA PnP		
IRQ-7 assigned to	: Legacy ISA		
IRQ-9 assigned to	: PCI/ISA PnP		
IRQ-10 assigned to	: PCI/ISA PnP		
IRQ-11 assigned to	: PCI/ISA PnP		
IRQ-12 assigned to	: PCI/ISA PnP		
IRQ-14 assigned to	: PCI/ISA PnP		
IRQ-15 assigned to	: PCI/ISA PnP		
DMA-0 assigned to	: PCI/ISA PnP		
DMA-1 assigned to	: PCI/ISA PnP	ESC : Quit	↑ ↓ ← → : Select Item
DMA-3 assigned to	: PCI/ISA PnP	F1 : Help	PU/PD/+/- : Modify
DMA-5 assigned to	: PCI/ISA PnP	F5 : Old Values	(Shift) F2 : Color
DMA-6 assigned to	: PCI/ISA PnP	F6 : Load BIOS Defaults	
DMA-7 assigned to	: PCI/ISA PnP	F7 : Load Setup Defaults	

### PNP OS Installed

This field allows you to specify if the operating system installed in your system is plug and play aware.

### Resources Controlled by

This PnP BIOS can configure all of the boot and compatible devices automatically. However, this capability needs you to use a PnP operating system such as Windows 95. The default value is **Manual**.

### Reset Configuration Data

This field allows you to determine whether or not to reset the configuration data. The default value is **Disabled**.

### IRQ3/4/5/7/9/10/11/12/14/15, DMA0/1/3/5/6/7 assigned to

These fields allow you to determine the IRQ/DMA assigned to the ISA bus and is not available to any PCI slot.

### Used MEM base addr

Select a base address for the memory area used by any peripheral that requires high memory. The default setting is **N/A**.

Load BIOS Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT	LOAD BIOS DEF
PNP/PCI CONFIGURATION	LOAD SETUP DEFAULTS
Load BIOS Defaults (Y/N)? N	
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Load BIOS Defaults except Standard CMOS Setup	

To load BIOS defaults value to CMOS SRAM, enter “Y”. If not, enter “N”.

Load Setup Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT	LOAD BIOS DEF
PNP/PCI CONFIGURATION	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	

To load SETUP defaults value to CMOS SRAM, enter “Y”. If not, enter “N”.

## Integrated Peripherals

This option sets your hard disk configuration, mode and port.

ROM PCI/ISA BIOS  
INTEGRATED PERIPHERALS  
AWARD SOFTWARE INC.

IDE HDD Block Mode	: Enabled	Onboard FDC Controller	: Enabled
IDE Primary Master PIO	: Auto	Onboard Serial Port 1	: 3F8/IRQ4
IDE Primary Slave PIO	: Auto	Onboard Serial Port 2	: 2F8/IRQ3
IDE Secondary Master PIO	: Auto	UART Mode Select	: Normal
IDE Secondary Slave PIO	: Auto	Onboard Parallel Port	: 378/IRQ7
IDE Primary Master UDMA	: Auto	Parallel Port Mode	: SPP
IDE Primary Slave UDMA	: Auto		
IDE Secondary Master UDMA	: Auto		
IDE Secondary Slave UDMA	: Auto		
On-Chip Primary PCI IDE	: Enabled		
On-Chip Secondary PCI IDE	: Enabled		
USB Keyboard Support	: Disabled		
Init Display First	: PCI		
		ESC : Quit                    ↑ ↓ ← : Select Item	
		F1 : Help                    PU/PD/+/- : Modify	
		F5 : Old Values            (Shift) F2 : Color	
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

### IDE HDD Block Mode

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

### IDE Primary/Secondary Master/Slave PIO

These fields allow your system hard disk controller to work faster. Rather than have the BIOS issue a series of commands that transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with the controller and CPU directly.

The system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

### IDE Primary/Secondary Master/Slave UDMA

These fields allow your system to improve disk I/O throughput to 33Mb/sec with the Ultra DMA/33 feature. The options are *Auto* and *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.

### Init Display First

This field allows the system to initialize first the VGA card/hardware when system is turned on.

### Onboard FDC 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 an add-in FDC or the system has no floppy drive, select *Disabled* in this field. This option allows you to select the onboard FDD port.

### Onboard Serial/Parallel Port

These fields allow you to select the onboard serial and parallel ports and their addresses. The default values for these ports are:

Serial Port 1	3F8/IRQ4
Serial Port 2	2F8/IRQ3
Parallel Port	378H/IRQ7

### UART Mode Select

This field determines the UART mode in your computer. The settings are *Normal*, *IrDA* and *ASKIR*. The default value is *Normal*.

### Parallel Port Mode

This field allows you to determine parallel port mode function.

SPP	Normal Printer Port
EPP	Enhanced Parallel Port
ECP	Extended Capabilities Port

## Supervisor / User Password

These two options set the system password. Supervisor Password sets a password that will be used to protect the system and Setup utility. User Password sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The Enter Password: message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

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

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	<b>SUPERVISOR PASSWORD</b>
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	LOADING ERROR DETECTION
PNP/PCI CONFIGURATION	FORMAT
LOAD BIOS DEFAULTS	UP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Change / Set / Disable Password	

## 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.

ROM PCI/ISA BIOS  
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								
<b>ESC: SKIP</b>								

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.

## Save & Exit Setup

This option allows you to determine whether to accept the modifications or not. If you type “Y”, you will quit the setup utility and save all changes into the CMOS memory. If you type “N”, you will return to Setup utility.

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	LOADING
PNP/PCI CONFIGURATION	Save to CMOS and Exit (Y/N)? N
LOAD BIOS DEFAULTS	LOAD SETUP DEFAULTS
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Save Data to CMOS & Exit Setup	

## Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing “Y” will quit the Setup utility without saving the modifications. Typing “N” will return you to Setup utility.

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	LOADING
PNP/PCI CONFIGURATION	Quit Without Saving (Y/N)? N
LOAD BIOS DEFAULTS	LOAD SETUP DEFAULTS
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Abandon all Data & Exit Setup	

## VGA Drivers Installation

This section provides information on how to install the VGA drivers that come with IB720. Please follow the instructions set forth in this section carefully. Please note that there must be relevant software installed in your system before you could proceed to install the VGA drivers.

The following items are covered in this section:

Installing the Drivers for Windows 95/98.....	50
Installing the Drivers for Windows NT 4.0 .....	51



*The driver installation information in this manual is for reference only. It maybe possible that the installation procedure or the driver information has changed. In such cases, please contact the local agent or the distributor where you purchased the product.*

### Installing the Drivers for Windows 95/98

The following section describes the normal display driver installation procedures for Windows 95/98. Use the following procedures when installing the display drivers for Windows 95/98.

1. Click **Start**, then **Settings**, then **Control Panel**.
2. Double click **Display**.
3. Select the **Settings** tab, click the **Change Display Type** button.
4. Click the **Change** button under **Adapter Type**.
5. Click the **Have Disk** button and press **OK**.
6. Specify the path to the new driver and press <ENTER>:

Example 1: Insert the driver CD in the CD-ROM drive, and enter

d:\vga\ct69000\win95 (assuming D: is the CD-ROM drive.)

Example 2: If you're not sure exactly where the drivers are, click the **Browse** button to find them.

7. The *Select Device* dialog box will appear. Select the hardware that corresponds to the one you installed in your machine and click **OK**.
8. Windows 95/98 will copy the display drivers to the proper directories on your system.
9. Continue by choosing **Close**. You will be asked to restart your machine. Do so accordingly.
10. After the system has restarted, you can go back into the **Display** applet and select alternate screen resolutions and color depths.

## Installing the Drivers for Windows NT 4.0

Once you are in the Windows NT 4.0 environment, follow the procedures below to install the VGA drivers that come with your board.

1. Click the **Start** button, then go to **Settings** and click on **Control Panel**.
2. Click on the **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 **Change Adapter Type**. This will bring up the *Select Device* window.
5. In the *Change Display* window, click on **Have Disk**. Enter the directory where the Windows NT driver files are located as **d:\vga\ct69000\winnt40** (assuming D: is the CD-ROM drive.) Then select **OK**, or press **ENTER**.
6. Select **Chips Video Accelerator** from the display list provided, then click **OK** or press **ENTER**.
7. You will then see a warning panel about Third Party Drivers. Click on **Yes** to finish the installation.
8. Once the installation is complete, the system must be shut down and restarted for the new drivers to take effect.
9. When the system has restarted, the default graphics mode (usually 640x480x256color) has been automatically selected. Click the **Start** button, and then go to **Settings** and click on **Control Panel**. Click on the **Display** icon to start the *Display Properties* window. Click on the **Settings** tab. A new screen setting can be selected using either of the following methods:
  - A. Use the slide-bar in the Desktop Area to select new setting.
  - B. Click on **List All Modes**. From the list provided, select a new setting, then click **OK** or press **ENTER**.
  - C. Click on **Test** to test the newly selected graphics mode. Follow the instructions given on screen. A test screen should appear, followed by the *Testing Mode* window. Click on **Yes** to continue. Click on **Apply** to switch to the new graphics mode. Graphics modes are changed dynamically on NT 4.0, so you do not need to shut down and restart for the new screen settings to work.

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## LAN Drivers Installation

This section describes LAN features and driver installation of the the Intel 82559 Ethernet function.

The following items are covered in this section:

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Making Floppy Disks for NetWare and Windows Installation.....	54
Installing LAN Drivers for Windows 95.....	55
Installing LAN Drivers for Windows 98.....	55
Installing LAN Drivers for Windows NT.....	56

### Introduction

Intel 82559 a 32-bit 10/100Mbps Ethernet controller for PCI local bus-compliant PCs. It supports bus mastering architecture, and auto-negotiation feature that can be used for both 10Mbps and 100Mbps connection.

### Making Floppy Disks for NetWare and Windows Installation

You need to use a floppy disk to install the LAN drivers. Use the MAKEDISK.BAT utility located in the \LAN\I8255X\MAKEDISK directory on the CD.

MAKEDISK [operating system] [destination]

where [operating system] is the OS for which you are creating the diskette, and [destination] is the drive letter and path (such as A:). If no destination is specified, the A: drive will be used.

The possible [operating system] options are:

NT = Microsoft Windows NT

W2K = Microsoft Windows\* 2000

W9X = Microsoft Windows\* 95 and Windows 98

NW = Novell NetWare servers and clients

DOS = Microsoft DOS and IBM OS2

Make sure you have a 1.44 MB formatted, non-bootable diskette in the floppy drive when using this utility.

NOTE: The utility MUST be run from the \LAN\I8255X \MAKEDISK directory.

Alternately, you can use the following .BAT files (located in the root directory on this CD) to simplify this process:

MAKEW9X.BAT -- Creates a drivers disk for Windows 95 and Windows 98.

MAKENT.BAT -- Creates a drivers disk for Windows NT.

MAKEW2K.BAT -- Creates a drivers disk for Windows 2000.

MAKENW.BAT -- Creates a drivers disk for Novell NetWare servers and clients.

## Installing LAN Drivers for Windows 95

Follow these steps to install the Intel 82559 LAN/Ethernet driver for Windows 95:

1. From the **Control Panel**, double-click the **System** icon.
2. Click the **Device Manager** tab.
3. Double-click **Other Devices** (question mark icon) in the list area.
4. Double-click a PCI Ethernet Controller.
5. Click the **Driver** tab, then click **Update Driver**.
6. Insert the Configuration and Drivers disk or CD in the appropriate drive, and at the Update Device Driver Wizard, select "**No**" and click **Next**.
7. Click **Have Disk**, insert the Configuration and Drivers disk in the appropriate drive, and click **OK**.
8. At the Select Device dialog box, click **OK** again.
9. Follow any prompts for Windows 95 installation disks and restart when prompted.



*The Windows 95 system files are typically available on the Windows 95 CD in the win95 directory (D:\win95).*

## Installing LAN Drivers for Windows 98

Follow these steps to install the Intel 82559 LAN/Ethernet driver for Windows 95:

1. From the **Control Panel**, double-click the **System** icon.
2. Click the **Device Manager** tab.
3. Double-click **Other Devices** or Network Adapters in the list area.
4. Double-click a PCI Ethernet Controller.
5. Click the **Driver** tab, then click **Update Driver**.
6. Click **Next** at the Update Device Driver Wizard.
7. Select "**Display a list of all the drivers...**" and click **Next**.
8. Insert the Intel adapter disk and click **Have Disk**.
9. Enter the appropriate drive for your disk media (A:) and click **OK**.
10. Click **OK** at the Select Device dialog box.
11. The Update Wizard displays the message that it has found the driver. Click **Next**.
12. Click **Finish**.
13. Restart your computer when prompted.

## Installing LAN Drivers for Windows NT



*It is recommended that you install the latest Service Pack for Windows NT 4.0, available through Microsoft.*

Follow the instructions below to configure the Ethernet hardware under Windows NT.

1. Double-click the **Network** icon in the **Control Panel**.
2. Select the **Adapter** tab.
3. Click **Add**. You'll see a list of adapters.
4. Don't select an adapter from this list. Instead, insert the Intel adapter disk or CD into the appropriate drive and click

### **Have Disk.**

5. Enter the appropriate drive for your disk media (A:) and click **OK**. Then follow the prompts to complete installation. When the adapter is added you'll see a new adapter listed in the Network adapters list.
6. Click **Close** to finish and configure any protocols as prompted.
7. Restart Windows NT when prompted.

## Appendix

- A. Post Codes
- B. I/O Port Address Map
- C. Interrupt Request Lines (IRQ)

**A. POST Codes**

POST (Power On Self Test) codes are to determine problems during boot up. Below are the codes for your reference.

<b>POST (hex)</b>	<b>Description</b>
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (Socket 370 or below) -Program basic chipset registers
C1h	Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (Socket 370 or below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
01h	Expand the Xgroup codes locating in physical address 1000:0
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
09h	Reserved
0Ah	1. Disable PS/2 mouse interface (optional). 2. Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). 3. Reset keyboard for Winbond 977 series Super I/O chips.
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.

POST (hex)	Description
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
16h	Initial Early_Init_Onboard_Generator switch.
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Dh	Initial EARLY_PM_INIT switch.
1Fh	Load keyboard matrix (notebook platform)
21h	HPM initialization (notebook platform)
23h	<ol style="list-style-type: none"> <li>1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute.</li> <li>2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead.</li> <li>3. Prepare BIOS resource map for PCI &amp; PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information.</li> <li>4. Onboard clock generator initialization. Disable respective clock resource to empty PCI &amp; DIMM slots.</li> <li>5. Early PCI initialization: <ul style="list-style-type: none"> <li>-Enumerate PCI bus number</li> <li>-Assign memory &amp; I/O resource</li> <li>-Search for a valid VGA device &amp; VGA BIOS, and put it into C000:0.</li> </ul> </li> </ol>
27h	Initialize INT 09 buffer
29h	<ol style="list-style-type: none"> <li>1. Program CPU internal MTRR (P6 &amp; PII) for 0-640K memory address.</li> <li>2. Initialize the APIC for Pentium class CPU.</li> <li>3. Program early chipset according to CMOS setup. Example: onboard IDE controller.</li> <li>4. Measure CPU speed.</li> <li>5. Invoke video BIOS.</li> </ol>
2Dh	<ol style="list-style-type: none"> <li>1. Initialize multi-language</li> <li>2. Put information on screen display, including Award title, CPU type, CPU speed ...</li> </ol>
33h	Reset keyboard except Winbond 977 series Super I/O chips.

## ***APPENDIX***

<b>POST (hex)</b>	<b>Description</b>
3Ch	Test 8254
3Eh	Test 8259 interrupt mask bits for channel 1.
40h	Test 8259 interrupt mask bits for channel 2.
43h	Test 8259 functionality.



POST (hex)	Description
47h	Initialize EISA slot
49h	<ol style="list-style-type: none"> <li>1. Calculate total memory by testing the last double word of each 64K page.</li> <li>2. Program writes allocation for AMD K5 CPU.</li> </ol>
4Eh	<ol style="list-style-type: none"> <li>1. Program MTRR of M1 CPU</li> <li>2. Initialize L2 cache for P6 class CPU &amp; program CPU with proper cacheable range.</li> <li>3. Initialize the APIC for P6 class CPU.</li> <li>4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.</li> </ol>
50h	Initialize USB
52h	Test all memory (clear all extended memory to 0)
55h	Display number of processors (multi-processor platform)
57h	<ol style="list-style-type: none"> <li>1. Display PnP logo</li> <li>2. Early ISA PnP initialization -Assign CSN to every ISA PnP device.</li> </ol>
59h	Initialize the combined Trend Anti-Virus code.
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Dh	<ol style="list-style-type: none"> <li>1. Initialize Init_Onboard_Super_IO switch.</li> <li>2. Initialize Init_Onboard_AUDIO switch.</li> </ol>
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
65h	Initialize PS/2 Mouse
67h	Prepare memory size information for function call: INT 15h ax=E820h
69h	Turn on L2 cache
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Dh	<ol style="list-style-type: none"> <li>1. Assign resources to all ISA PnP devices.</li> <li>2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".</li> </ol>
6Fh	<ol style="list-style-type: none"> <li>1. Initialize floppy controller</li> <li>2. Set up floppy related fields in 40:hardware.</li> </ol>
73h	(Optional Feature) Enter AWDFLASH.EXE if : -AWDFLASH is found in floppy drive. -ALT+F2 is pressed

## ***A P P E N D I X***

<b>POST (hex)</b>	<b>Description</b>
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM...
77h	Detect serial ports & parallel ports.
7Ah	Detect & install co-processor

POST (hex)	Description
7Fh	<ol style="list-style-type: none"> <li>1. Switch back to text mode if full screen logo is supported.</li> <li>-If errors occur, report errors &amp; wait for keys</li> <li>-If no errors occur or F1 key is pressed to continue: <ul style="list-style-type: none"> <li>◆Clear EPA or customization logo.</li> </ul> </li> </ol>
82h	<ol style="list-style-type: none"> <li>1. Call chipset power management hook.</li> <li>2. Recover the text font used by EPA logo (not for full screen logo)</li> <li>3. If password is set, ask for password.</li> </ol>
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	<ol style="list-style-type: none"> <li>1. USB final Initialization</li> <li>2. NET PC: Build SYSID structure</li> <li>3. Switch screen back to text mode</li> <li>4. Set up ACPI table at top of memory.</li> <li>5. Invoke ISA adapter ROMs</li> <li>6. Assign IRQs to PCI devices</li> <li>7. Initialize APM</li> <li>8. Clear noise of IRQs.</li> </ol>
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	<ol style="list-style-type: none"> <li>1. Enable L2 cache</li> <li>2. Program boot up speed</li> <li>3. Chipset final initialization.</li> <li>4. Power management final initialization</li> <li>5. Clear screen &amp; display summary table</li> <li>6. Program K6 write allocation</li> <li>7. Program P6 class write combining</li> </ol>
95h	<ol style="list-style-type: none"> <li>1. Program daylight saving</li> <li>2. Update keyboard LED &amp; typematic rate</li> </ol>
96h	<ol style="list-style-type: none"> <li>1. Build MP table</li> <li>2. Build &amp; update ESCD</li> <li>3. Set CMOS century to 20h or 19h</li> <li>4. Load CMOS time into DOS timer tick</li> <li>5. Build MSIRQ routing table.</li> </ol>
FFh	Boot attempt (INT 19h)

## B. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
278 - 27F	Parallel Port #2(LPT2)
2F8h - 2FFh	Serial Port #2(COM2)
2B0 - 2DF	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
360 - 36F	Network Ports
3B0 - 3BF	Monochrome & Printer adapter
3C0 - 3CF	EGA adapter
3D0 - 3DF	CGA adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

## C. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on the board.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Reserved
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Reserved
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 Mouse
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

D. Memory Mapping

