CITSP Series
Half-Size Intel 815E/ 815EP
Socket 370 CPU Card
Version 1.0

Industrial CPU Card
PC-Based Computer Boards for Industrial Automation
User's Manual

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Contents

Chapter **1**

Introduction

This manual is designed to give you information on the CITSP Series CPU card. It is divided into the following sections:

Checklist

Please check that your package is complete and contains the items below. If you discover damaged or missing items, please contact your dealer.

- The CITSP Series Industrial 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 Audio Cable W/Ext EXTVGM Daughter Board
- 1 Ext-NET Cable W/Ext EXTLAN Daughter Board
- 1 IPC drive CD

Description

The CITSP Series is a Pentium III Industrial CPU card based on the Intel 815E/EP chipset and is fully designed for harsh industrial environment. It features a Socket-370 processor connector that is compatible with Intel Pentium III/ Tualatin processors. This card accommodates up to 512MB SDRAM configuration.

The CITSP Series comes with Winbond's W83627HF hardware monitoring device that monitors system and CPU temperature, system voltages, CPU and chassis fan speeds to prevent system crashes by warning the user of adverse conditions. The power management feature provides power savings by slowing down the CPU clock, turning off the monitor screen and stopping the HDD spindle motor.

CITSP Series
CITSP   : 815EP + C&T 69000 chipset
CITSPV : 815EP + C&T 69030 chipset
CITSPE : 815E chipset

Features

- CPU Speed 500MHz~1GHz, Intel Pentium III/ Celeron (Coppermine) / Tualatin processors

- Bus Speed 100MHz/133MHz

- Intel 815E/EP with 82801BA (ICH2) Chipset

- System memory up to 512MB

- CHIPS 69000/69030 VGA chip for LCD & CRT display

- Two serial ports
  (COM1 as RS-232; COM2 as RS-232/ RS-422/ RS-485)

- High speed bi-directional SPP/ECP/EPP parallel port

- Hardware Monitoring, Windows Serials shut-off, Modem ring-in

- Dual 10/100 Base-T Ethernet controller onboard

- AC'97 compliant Audio CODEC

- CompactFlash disk (IDE2 interface) → Type I/ II

- Watchdog timer

Specifications

- **Processor Socket**: Socket 370 connector

- **Processor**: Intel Pentium III/ Tualatin, 1GHz

- **Bus Speed**: 100MHz/ 133MHz

- **Chipset**: Intel 815E/EP with 82801BA (ICH2) chipset

- **Secondary Cache**: CPU integrated

- **VGA/LCD controller: C&T 69000/69030(2M/4M)**

- **LAN:** Intel 82559 10/100 BaseT Ethernet controller and 82562ET LAN Controller Interface for Connecting to the ICH2

- **Memory Socket**:
  One 168-pin DIMM socket
  Max. 512MB SDRAM
  Memory type: SDRAM (Synchronous DRAM)

- **Sound**:
  AC'97 compliant audio CODEC for controller Interface for Connector to ICH2

- **BIOS**: Award BIOS, PnP support
  - FLASH EEPROM (4MB) for BIOS update
  - Power management

- **DMI BIOS Support**:
  Desktop Management Interface (DMI) allows users to download system hardware-level information such as CPU type, CPU speed, internal/external frequencies and memory size.

- **Multi I/O**: Winbond W83627 HF

- **CompactFlash socket**: Onboard CompactFlash Socket (Type I/ II)

- **Parallel Port**: One high-speed parallel port, SPP/EPP/ECP mode

- **Serial Port**: Two 16550 UART compatible ports configurable COM1 as RS-232; COM2 as RS-232/ RS-422/ RS-485

- **Enhanced IDE**: Two Bus Mastering EIDE mode, up to 4 devices, Two EIDE interfaces for up to four devices, support PIO Mode 0~3 or Ultra DMA 33/66/100 IDE Hard Disk and ATAPI CD-ROM. (LS-120)

- **FDD Interface**: Two floppy drives (360KB, 720KB, 1.2MB, 1.44MB, 2.88MB)

- **CRT/LCD**: C&T 69000/69030 chipset
  - Embedded 2MB/4MB SDRAM display memory
  - Simultaneous CRT & LCD display
  - LCD panel supports DSTN/TFT
  - 1280x 1024x 8bpp colors CRT resolution
  - Up to 1280x 1024x 8bpp colors resolution for color active matrix TFT panels (18, 24bit analog), (18+18) double pixel/CLK interface

- **USB Interface**: Four 1.1 USB pin-header connectors.

- **Watchdog Timer**: 256sec level, programmable
- **Green Function**: Power management via BIOS, activated through mouse/keyboard movement

- **PCI Bus Ethernet Interface**: Intel 82559 chip
  - PCI local bus Ethernet controller
  - Supports IEEE802.3u auto-negotiation for automatic speed selection
  - Support 10/100Mbps operation in a single port PCI bus master architecture

- **Keyboard and Mouse Connectors**: PS/2 type mini-DIN that supports PC/AT; supports a 5-pin external keyboard & mouse connectors

- **IrDA Interface**: Pin-header connector for the optional IrDA external connector

- **Environmental and Mechanical**:
  - **Power Supply**: 10A @+5V(max), ±12V: 100mA(max)
  - **Temperature**: 0°C to 60°C
  - **Humidity**: 5% to 95%
  - **Storage Temperature:** -25~+65°C
  - **Dimensions**: 185mm x 129mm (7.3" x 5.0")

Intelligence

- **Temperature Monitoring and Alert**: A sensor for the CPU temperature on the CITSP Series monitors the CPU temperature and alerts the user through the speaker or buzzer when temperature exceeds the safe heat level.

- **Windows Serials shut-off:** Allows shut-off control from within Windows Serials and through an ATX power supply.

- **Modem ring-on:** Allows system powering on through an external modem and through an ATX power supply.

- **Year 2001 Compliant BIOS**: The onboard Award BIOS is Year 2001 Compliant and will pass software applications that have the tendency to invoke INT1AH function 04H such as year 2001.exe utility released by NSTL.

- **Wake On LAN**: Through an ATX power supply and network connection, systems can be turned on from the power-off state.

Chapter 2

Configurations

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

CPU Installation

The CITSP Series Industrial CPU Card supports a Socket 370 connector processor socket for Intel Pentium III /Celeron (Coppermine)/ Tualatin processors.

The Socket 370 connector uses a standard FC-PGA socket connector. To install the CPU, insert it to the socket by aligning the notch of the Socket 370 CPU with the one of the FC-PGA socket.

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

Memory Installation

The CITSP Series Industrial CPU Card supports one 168-pin DIMM socket for a maximum total memory of 512MB. The memory module can come in sizes of 32MB, 64MB, 128MB, 256MB and 512MB SDRAMs.

Jumpers on the CITSP Series

The jumpers on the CITSP Series allow you to configure your CPU card according to the needs of your applications. If you have doubts about the best jumper configuration for your needs, contact your dealer or sales representative. The following table lists the connectors on CITSP Series and their respective functions.

The following examples show the conventions used in this section.

☐ ☐	Jumper Open
▣ ☐	Jumper Closed

Jumper Locations on the CITSP/PV
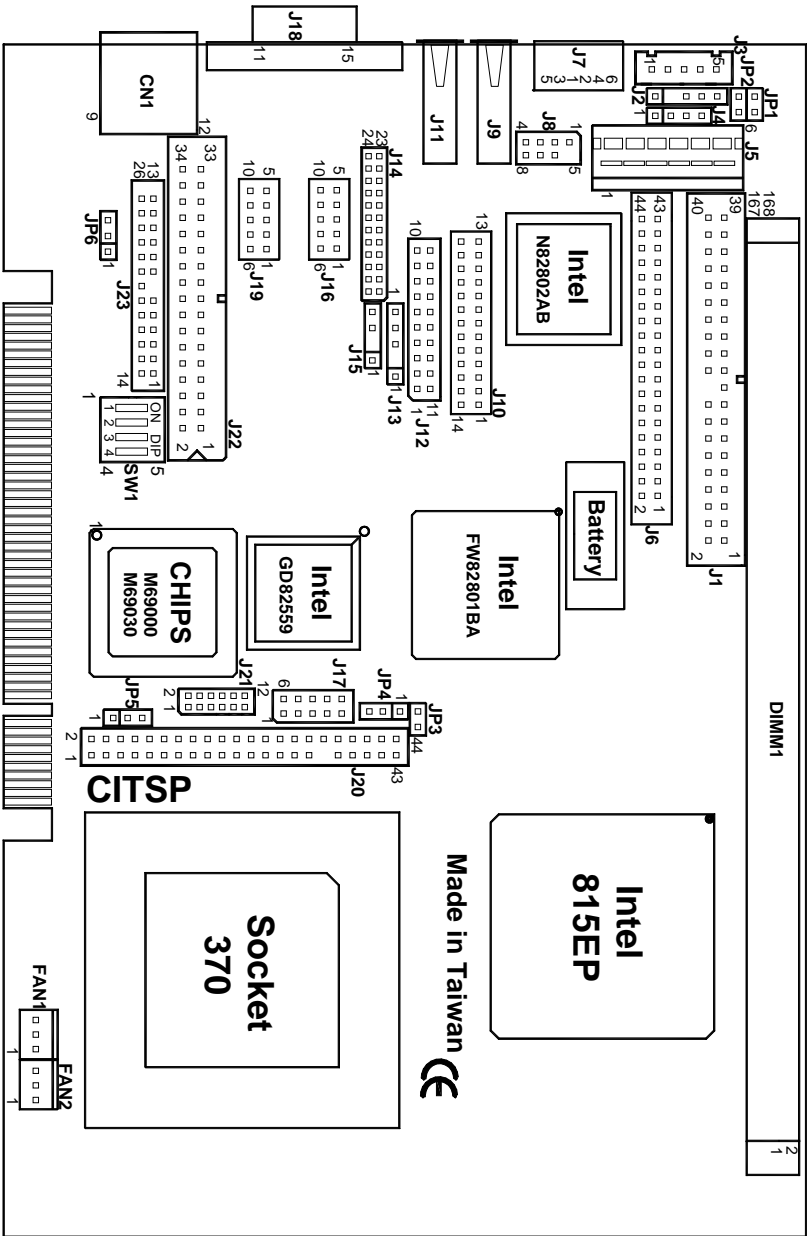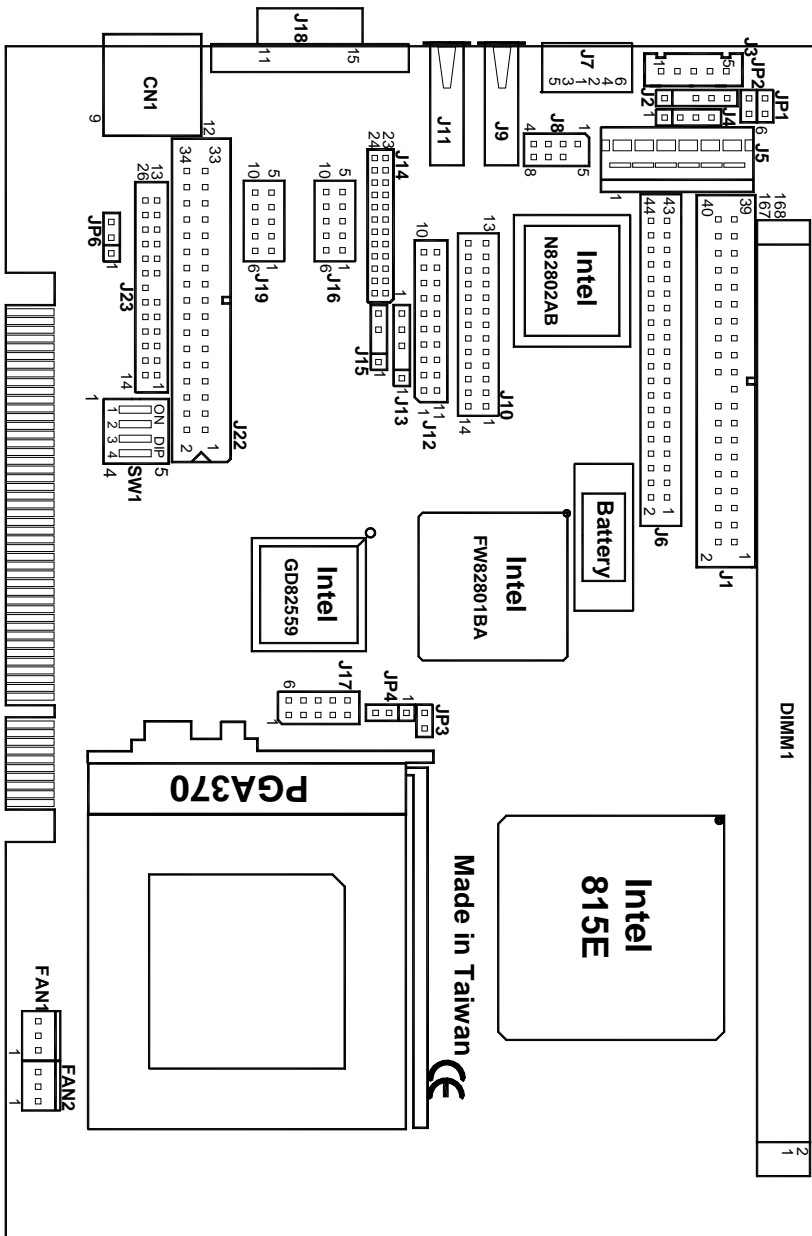
Jumper Locations on the CITSPE

JP1: Select CompactFlash Disc

JP1	Setting	Function
1 □ □ 2	Pin 1-2 Closed	Master
1 □ □ 2	Pin 1-2 Open	Slave

JP2: Boot Block Lock/Unlock

When the Boot Block is locked, BIOS flash update cannot be executed.

JP2	Setting	Function
1 □ □ 2	Pin 1-2 Closed	Boot Block Unlock
1 □ □ 2	Pin 1-2 Open	Boot Block Locked

JP4: Clear BIOS CMOS Content

JP4	Setting	Function
1 □ □ □ 3	Pin 2-3 Closed	Clear CMOS Content
1 □ □ □ 3	Pin 1-2 Closed	Normal Operation

JP5: LCD Power Setting (C&T 69000/69030 chipset only)

The CITSP/PV VGA interface supports 5V and 3.3V LCD displays. Use JP5 to change between 5V and 3.3V (default) panel video signal level.

JP5	Setting	Function
1 □ □ □ 3	Pin 2-3 Closed	3.3V (default)
1 □ □ □ 3	Pin 1-2 Closed	5V
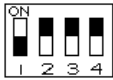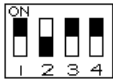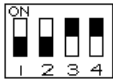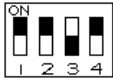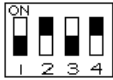
JP6: Select Sound

JP6	Setting	Function
1 □ ▣ ▢ 3	Pin 2-3 Closed	Disable
1 ▣ ▢ □ 3	Pin 1-2 Closed	Enable

SW1: Select Resolution Panel Type Setting

This SW1 is for 18bit/36bit TFT panel with panel's BIOS. This illustrate pin assignments of the TFT Panel Connector are as follows:

Noted: This function does not relate to CRT BIOS.

SW1 (1-3)	Resolution
ON ∎∎∎∎ 1 2 3 4 on on on on	1024X768, Dual Scan STN Color
ON ∎ 1 2 3 4 off on on on	1080X1024, TFT Color
ON ∎ 1 2 3 4 on off on on	640X480, Dual Scan STN Color
ON 1 2 3 4 off off on on	800X600, Dual Scan STN Color
ON ∎ ∎ 1 2 3 4 on on off on	640X480, Sharp TFT Color
ON ∎ ∎ 1 2 3 4 off on off on	640X480, 18-bit TFT Color

on off off on	1024X768, 18-bit TFT Color
off off off on	800X 600, 18-bit TFT Color
on on on off	800X 600, TFT Color
off on on off	800X 600, TFT Color
on off on off	800X 600, Dual Scan STN Color
off off on off	800X 600, Dual Scan STN Color
on on off off	1024X 768, 36-bit TFT Color
off on off off	1280X1024, Dual Scan STN Color
on off off off	1024X 600, Dual Scan STN Color
off off off off	1024X 600, TFT Color

Connectors on the CITSP Series

The connectors on the CITSP Series allow you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on CITSP Series and their respective functions.
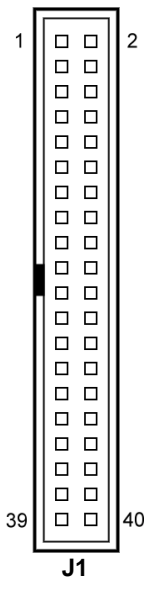
Jumper Locations on the CITSP/PV

Jumper Locations on the CITSPE

J1: Primary IDE Connector

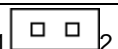| Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	GND
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
GND	19	20	Key
DRQ0	21	22	GND
Host IOW	23	24	GND
Host IOR	25	26	GND
IOCHRDY	27	28	Host ALE
DACK0	29	30	GND
IRQ14	31	32	N/C
Address 1	33	34	N/C
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	GND

J2: External Mouse Connector

Pin #	Signal Name
1	Mouse Data
2	N/C
3	GND
4	Vcc
5	Mouse Clock

J3: External Keyboard Connector

Pin #	Signal Name
1	Keyboard clock
2	Keyboard data
3	N/C
4	GND
5	Vcc

J5: P8 AT Power Connector
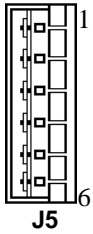
Pin #	Signal Name
1	N/C
2	+5V
3	+12V
4	-12V
5	GND
6	GND

J5

J6: Secondary IDE Connector
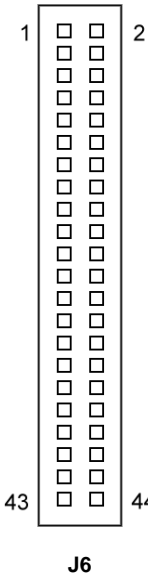
Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	GND
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
GND	19	20	N/C
DRQ0	21	22	GND
Host IOW	23	24	GND
Host IOR	25	26	GND
IOCHRDY	27	28	GND
DACK0	29	30	GND
IRQ15	31	32	N/C
Address 1	33	34	N/C
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
LED	39	40	GND
Vcc	41	42	Vcc
GND	43	44	N/C

J6

J7: PS/2 Keyboard and PS/2 Mouse Connectors

Below are the pin-out assignments of the connectors.

Mouse	Signal Name
1	Keyboard data
2	Mouse data
3	GND
4	5V
5	Keyboard Clock
6	Mouse Clock

J7
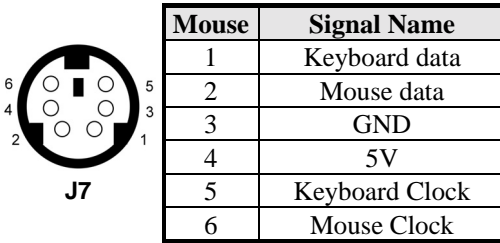
J8: Extension-USB3/USB4 Connectors

J8 is the onboard USB pin-headers that support extension-USB3/USB4 connector with two ports.

J8 Pin #		Signal Name
1	N/C	Vcc
2	6	USB-
3	7	USB+
4	8	GND

J8
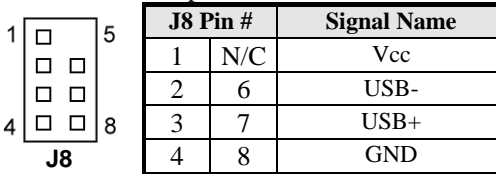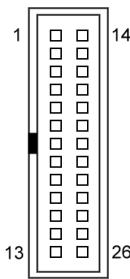
J9, J11: USB1/USB2 Connectors

The following table shows the pin outs of the USB1/ USB2 connectors.

J9 Pin #	Signal Name
1	Vcc
2	USB-
3	USB+
4	GND

J9

J11 Pin #	Signal Name
1	Vcc
2	USB-
3	USB+
4	GND

J11
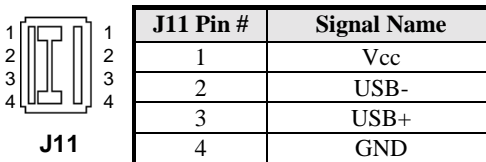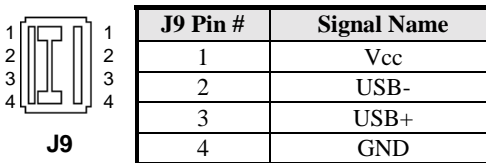
J10: Parallel Port Connector

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	GND
PD4, parallel data 4	6	19	GND
PD5, parallel data 5	7	20	GND
PD6, parallel data 6	8	21	GND
PD7, parallel data 7	9	22	GND
ACK, acknowledge	10	23	GND
Busy	11	24	GND
Paper empty	12	25	GND
Select	13	N/A	N/A

J12: Front Bezel Connector

The front bezel of the case has a control panel that provides light indication of the computer activities and switches to change the computer status. J12 is a 20-pin header that provides interfaces for the following functions.

Power LED and Keylock

Speaker

SMI / Hardware Switch

ATX Power On Switch

Turbo LED Connector

Reset Switch

Hard Disk Drive LED
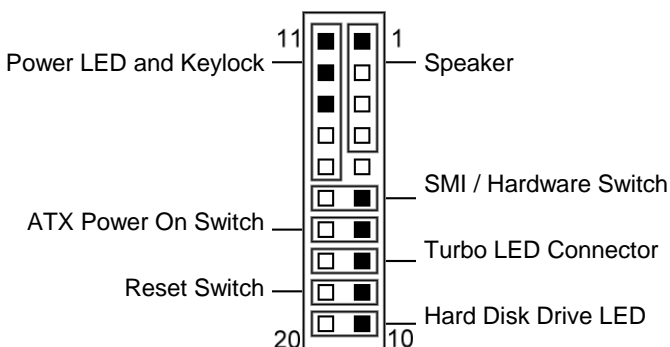
Speaker: Pins 1 - 4

This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.
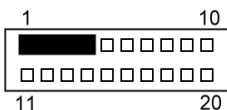
Pin #	Signal Name
1	Speaker out
2	N/C
3	+5V
4	GND

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.
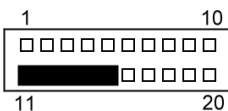
Pin #	Signal Name
11	Vcc
12	N/C
13	GND
14	Keylock
15	GND

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.
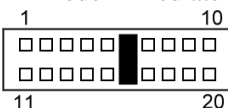
Pin #	Signal Name
6	Sleep
16	GND

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.
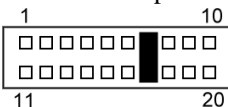
Pin #	Signal Name
7	Power ON
17	VCC5SBY

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.
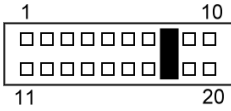
Pin #	Signal Name
8	5V
18	GND

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.
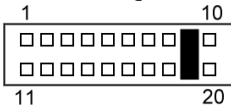
Pin #	Signal Name
9	Reset
19	GND

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.
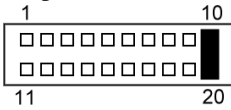
Pin #	Signal Name
10	HDD
20	5V

J13: IrDA Connector

This connector is used for an IrDA connector for wireless communication.
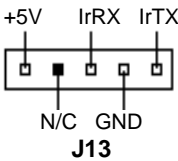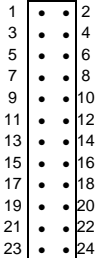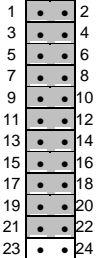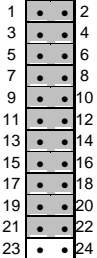
Pin #	Signal Name
1	+5V
2	N/C
3	IrRX
4	GND
5	IrTX

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 of this connector.

COM2 Function	RS-232	RS-422	RS-485
Jumper Setting (pin closed)	all jumpers open	1-2 3-4 5-6 7-8 9-10 11-12 13-14 15-16 17-18 19-20 21-22	1-2 3-4 5-6 7-8 9-10 11-12 13-14 15-16 17-18 19-20 21-22
Jumper Illustration	J14	J14	J14

J15: External ATX Power Connector

J15
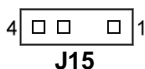
Pin #	Signal Name
1	GND
2	N/C
3	PS-ON (soft on/off)
4	5V SB (standby +5V)

J16, J19: COM2/COM1 Serial Ports

J16(COM2) and J19(COM1), 10-pin header connectors, are the onboard serial ports of CITSP Series. The following table shows the pin assignments of this connector.
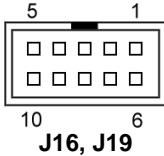
Pin #	Signal Name
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator
10	N/C

J16, J19

J17: 82559 LAN Output
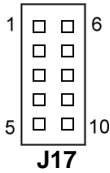
Signal Name	Pin #	Pin #	Signal Name
Vcc3 SBY	1	6	N/C
BTXD+	2	7	BTXD-
BLED1	3	8	BLED2
BRXIN+	4	9	BRXIN-
GND	5	10	GND

J17

J18: VGA CRT Connector

The pin assignments of the J18 VGA CRT connector are as follows:
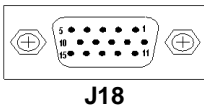
Signal Name	Pin	Pin	Signal Name
Red	1	2	Green
Blue	3	4	VCC
GND	5	6	GND
GND	7	8	GND
VCC	9	10	N/C
N/C	11	12	DDATA
HSYNC	13	14	VSYNC
DCLOCK	15		

J18

CN1: RJ45 Connector

This connector is for the 10/100Mbps Ethernet capability of the CPU card. The figure below shows the pin out assignments of this connector and its corresponding input jack.

```
                          TD+(pin#1)
                          TD-(pin#2)
                          RD+(pin#3)

                          RD-(pin#6)
```
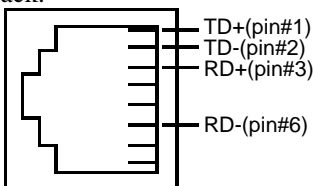
J20, J21: LCD Panel Connectors (C&T 69000/69030 chipset only)

J20 and J21 are pin headers for flat panel LCD displays. The following shows the pin assignments of this connector.

Signal Name	Pin #	Pin #	Signal Name
+12V	1	2	+12V
GND	3	4	GND
5V/3.3V	5	6	5V/3.3V
ENAVEE	7	8	GND
P0	9	10	P1
P2	11	12	P3
P4	13	14	P5
P6	15	16	P7
P8	17	18	P9
P10	19	20	P11
P12	21	22	P13
P14	23	24	P15
P16	25	26	P17
P18	27	28	P19
P20	29	30	P21
P22	31	32	P23
N/C	33	34	GND
SHFCLK	35	36	FLM
MDE	37	38	LP
GND	39	40	ENABKL
GND	41	42	LCDVDD
DNAVDD	43	44	5V/3.3V

J20

1 ... 2
43 ... 44
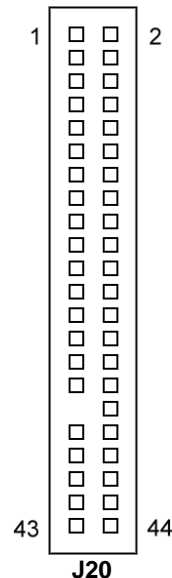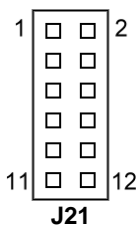
Signal Name	Pin #	Pin #	Signal Name
P24	1	2	P25
P26	3	4	P27
P28	5	6	P29
P30	7	8	P31
P32	9	10	P33
P34	11	12	P35

J21

J22: Floppy Drive Connector

J22 is a 34-pin header and will support up to 2.88MB floppy drives.
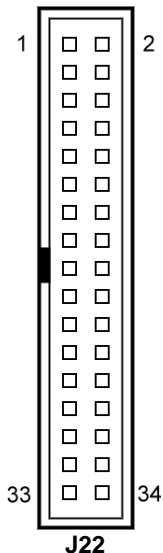
Signal Name	Pin #	Pin #	Signal Name
GND	1	2	RM/LC
GND	3	4	N/C
GND	5	6	N/C
GND	7	8	Index
GND	9	10	Motor enable 0
GND	11	12	Drive select 1
GND	13	14	Drive select 0
GND	15	16	Motor enable 1
GND	17	18	Direction
GND	19	20	Step
GND	21	22	Write data
GND	23	24	Write gate
GND	25	26	Track 00
GND	27	28	Write protect
GND	29	30	Read data
GND	31	32	Side 1 select
GND	33	34	Diskette change

J22

Fan1, Fan2: Chassis Fan Power Connector

Fan1 and Fan2 are 3-pin headers for the chassis fan powers. These fans must be 12V fans.
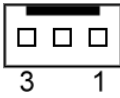
Pin #	Signal Name
1	Rotation
2	+12V
3	GND
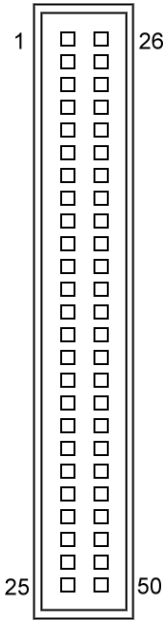
J23: Sound Connector

J23 is a 26-pin header and will support ExtVGM Daughter Board.

Signal Name	Pin #	Pin #	Signal Name
+12V	1	14	-12V
GND	2	15	LineOut- L
LineOut-R	3	16	GND
CD-L	4	17	CD-R
GND	5	18	LineIn-R
LineIn-L	6	19	GND
N/C	7	20	Audio REFOut
VCL	8	21	MIC
MSI	9	22	MSO
GPSB2	10	23	GPSB1
GPSA2	11	24	GPSA1
GPY2	12	25	GPX2
GPY1	13	26	GPX1

J24: CompactFlash Connector

J24, a CompactFlash™ connector, is a very small removable mass storage device located on the solder side

Signal Name	Pin #	Pin #	Signal Name
GND	1	26	CD1
DO3	2	27	D11
DO4	3	28	D12
DO5	4	29	D13
DO6	5	30	D14
DO7	6	31	D15
CSO	7	32	CS1
N/C	8	33	N/C
ATASEL	9	34	IORD
N/C	10	35	IOWR
N/C	11	36	WE
N/C	12	37	INTR
VCC	13	38	VCC
N/C	14	39	CSEL
N/C	15	40	N/C
N/C	16	41	RESET
N/C	17	42	IORDY
AO2	18	43	N/C
A01	19	44	N/C
AO0	20	45	DASP
DO0	21	46	N/C
DO1	22	47	D8
DO2	23	48	D9
N/C	24	49	D10
CO2	25	50	GND

Flat Panel Display Interface Pin Descriptions

Pin Name	Mono SS 8-bit	Mono DD 8-bit	Mono DD 16-bit	Color TFT 9/12/16 bit	Color TFT 18/24 bit	Color TFT 36-bit	Color TFT 18/24 bit	Color TFT+HR 8-bit (4bP)	Color STN-SS 16-bit (4bP)	Color STN-SS 8-bit (4bP)	Color STN-DD 16-bit (4bP)	Color STN-DD 24-bit
P0	D0	UD3	UD7	B0	B0	FB0	FB0	R1	R1	UR1	UR0	UR0
P1	D1	UD2	UD6	B1	B1	FB1	FB1	B1	G1	UG1	UG0	UG0
P2	D2	UD1	UD5	B2	B2	FB2	FB2	G2	B1	UB1	UB0	UB0
P3	D3	UD0	UD4	B3	B3	FB3	FB3	B3	R2	UB2	UR1	LR0
P4	D4	LD3	UD3	B4	B4	FB4	SB0	G4	G3	LR1	LR0	LG0
P5	D5	LD2	UD2	G0	B5	FB5	SB1	R5	G0	LG1	LG0	LB0
P6	D6	LD1	UD1	G1	B6	SB0	SB2	B5	R3	LB1	LB0	UR1
P7	D7	LD0	UD0	G2	B7	SB1	B3		G3	LR2	LR1	UG1
P8			LD7	G3	G0	SB2	FG0		B3		UG1	UB1
P9			LD6	G4	G1	SB3	FG1		R4		UB1	LR1
P10			LD5	G5	G2	SB4	FG2		G4		UR2	LG1
P11			LD4	R0	G3	SB5	FG3		B4		UG2	LB1
P12			LD3	R1	G4	FG0	SG0		R5		LG1	UR2
P13			LD2	R2	G5	FG1	SG1		G5		LB1	UG2
P14			LD1	R3	G6	FG2	SG2		B5		LR2	UB2
P15			LD0	R4	G7	FG3	SG3		G6		LG2	LR2
P16					R0	FG4	FR0					LG2
P17					R1	FG5	FR1					LB2
P18					R2	SG0	FR2					UR3
P19					R3	SG1	FR3					UG3
P20					R4	SG2	SR0					LR3
P21					R5	SG3	SR1					LG3
P22					R6	SG4	SR2					LB3
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						
SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK
Pixels /Clk:	8	8	16	1	1	2	2	2-2/3	5-1/3	2-2/3	5-1/3	8

Watchdog Timer Configuration

The function of the watchdog timer is to reset the system automatically and is defined at WinbonW83627HF. To enable the watchdog timer and allow the system to reset, the timer has a tolerance of 20% for its intervals.

The following example is writing in Intel 8086 assembly language and describes how the timer should be programmed.

The setting Active allows you to select logic device 8.

```
MOV DX, 2EH
MOV AL, 87H
OUT DX, AL
OUT DX, AL

MOV DX, 2EH
MOV AL, 07H
OUT DX, AL          point to Logical Device Number Reg.

MOV DX, 2FH
MOV AL, 08H
OUT DX, AL          select logical device 8

MOV DX, 2EH
MOV AL, 30H
OUT DX, AL          select CR30

MOV DX, 2FH
MOV AL, 01H
OUT DX, AL          update CR30 with value 01H, Active GPIO2
```

Exit extended function mode

MOV DX, 2EH
MOV AL, F5H
OUT DX, AL

MOV, DX, 2FH
MOV AL, 00L
OUT DX, AL

Noted: In minutes setting function, it is recommended that this value number is 08; In seconds setting function, it is recommended that this value number is 00.

MOV DX, 2EH
MOV AL, F6H
OUT DX, AL

MOV, DX, 2F
MOV AL, 05
OUT DX, AL

Noted: To get enable message, you can choose the values from 1; By the same token, to get disable message, you can select the values from 0.

To setup watchdog timer function by debug.exe, you can consult the sample setting from this table.

WATCHDOG TIMER CONTROL TABLE

Level	Value	Time/sec
0	0	Disable
1	1	0.5
2	2	1.5
3	3	2.5
4	4	3.5
5	5	4.5
6	6	5.5
.	.	.
.	.	.
255	255	254.5

Chapter 3

BIOS Configuration

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

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel Pentium III/Celeron (Comppermine) 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.

CMOS SETUP UTILITY-Copyright (C) 1984-2001

```
             Phoenix - AwardBIOS CMOS Setup Utility

   ▶ Standard CMOS Features          ▶ Frequency/Voltage Control

   ▶ Advanced BIOS Features            Load Fail-Safe Defaults

   ▶ Advanced Chipset Features         Load Optimized Defaults

   ▶ Integrated Peripherals            Set Supervisor Password

   ▶ Power Management Setup            Set User Password

   ▶ PnP/PCI Configurations           Save & Exit Setup

   ▶ PC Health Status                 Exit Without Saving

   Esc : Quit      F9 : Menu in BIOS    ↑ ↓ → ←   : Select Item
   F10 : Save & Exit Setup

                   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.

NOTE: *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.*

   We strongly recommend 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.

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 motherboard 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.

CMOS Setup Utility – Copyright (C) 1984-2001
STANDARD CMOS SETUP
AWARD BIOS INC.

```
          Phoenix - AwardBIOS CMOS Setup Utility
                   Standard CMOS Features

     Date (mm:dd:yy)          Tue, Nov 12 2002      │      Item Help
     Time (hh:mm:ss)          13 : 53 : 39          │
                                                    │  Menu Level    ▶
   ▶ IDE Primary Master                             │
   ▶ IDE Primary Slave                              │  Change the day, month,
   ▶ IDE Secondary Master                           │  year and century
   ▶ IDE Secondary Slave                            │

     Drive A                  [1.44M, 3.5 in.]
     Drive B                  [None]

     Video                    [EGA/VGA]
     Halt On                  [All Errors]

     Base Memory                    640K
     Extended Memory              65472K
     Total Memory                  1024K


  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

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 :	**1999 to 2099**

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.

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

> *NOTE :* *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:

None	360K	1.2M	720K	1.44M	2.88MB
	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 (default)	For EGA, VGA, SEGA, SVGA or PGA monitor adapters.
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.

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

Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.
Figure1.

CMOS Setup – Copyright (C) 1984-2001
Advanced BIOS Feature Setup
AWARD SOFTWARE, INC.

```
           Phoenix - AwardBIOS CMOS Setup Utility
                    Advanced BIOS Features

   Virus Warning              [Disabled]      ▲        Item Help
   CPU Internal Cache         [Enabled]
   External Cache             [Enabled]              Menu Level   ►
   CPU L2 Cache ECC Checking  [Enabled]
   Processor Number Feature   [Enabled]              Allows you to choose
   Quick Power On Self Test   [Enabled]              the VIRUS warning
   First Boot Device          [Floppy]               feature for IDE Hard
   Second Boot Device         [HDD-0]                Disk boot sector
   Third Boot Device          [LS120]                protection. If this
   Boot Other Device          [Enabled]              function is enabled
   Swap Floppy Drive          [Disabled]             and someone attempt to
   Boot Up Floppy Seek        [Enabled]              write data into this
   Boot Up NumLock Status     [On]                   area , BIOS will show
   Gate A20 Option            [Fast]                 a warning message on
   Typematic Rate Setting     [Disabled]             screen and alarm beep
 x Typematic Rate (Chars/Sec) 6
 x Typematic Delay (Msec)     250
   Security Option            [Setup]
   OS Select For DRAM > 64MB  [Non-OS2]      ▼

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized 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.
Setting: ***Disabled (default), Enabled***.

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. Setting: ***Enabled (default), Disabled***.

CPU L2 Cache ECC Checking
When enabled, this allows ECC checking of the CPU's L2 cache.
Setting: ***Enabled (default), Disabled***.

Processor Number Feature
This field only appears if the processor on board is a Pentium III processor.
Setting: ***Enabled (default), 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. Setting: *Enabled (default), Disabled*.

First/Second/Third Boot Device

These fields determine the drive that the system searches first for an operating system.

Setting: *Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, HDD-2, HDD-3, ZIP 100, USB-FDD, USB-ZIP, USB- CDROM, USB- HDD, LAN* and *Disabled*

Boot Other Device

These fields allow the system to search for an operating system from other devices other than the ones selected in the First/Second/Third Boot Device. Setting: *Enabled (default), Disabled*.

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.
Setting: *Disabled (default), Enabled*.

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. Setting: *Enabled (default), Disabled*.

Boot Up NumLock Status

This allows you to activate the NumLock function after you power up the system. Setting: *On (default), Off*.

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. Setting: *Fast (default), Normal*.

Typematic Rate Setting

When disabled, continually holding down a key on your keyboard will generate only one instance. When enabled, you can set the two typematic controls listed next. Setting: *Disabled (default), Enabled*.

Figure 2.

CMOS Setup – Copyright (C) 1984-2001
Advanced BIOS Feature Setup
AWARD SOFTWARE, INC.

```
               Phoenix - AwardBIOS CMOS Setup Utility
                       Advanced BIOS Features

     Boot Other Device         [Enabled]      ▲        Item Help
     Swap Floppy Drive         [Disabled]
     Boot Up Floppy Seek       [Enabled]          Menu Level   ▶
     Boot Up NumLock Status    [On]
     Gate A20 Option           [Fast]
     Typematic Rate Setting    [Disabled]
   x Typematic Rate (Chars/Sec) 6
   x Typematic Delay (Msec)      250
     Security Option           [Setup]
     OS Select For DRAM > 64MB [Non-OS2]
     Report No FDD For WIN 95  [No]
     Video BIOS Shadow         [Enabled]
     C8000-CBFFF Shadow        [Disabled]
     CC000-CFFFF Shadow        [Disabled]
     D0000-D3FFF Shadow        [Disabled]
     D4000-D7FFF Shadow        [Disabled]
     D8000-DBFFF Shadow        [Disabled]
     DC000-DFFFF Shadow        [Disabled]
     Small Logo(EPA) Show      [Enabled]     ▼

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

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. Setting: *6 (default), 8, 10, 12, 15, 20, 24, 30*.

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.
By default, this item is set to *250msec.*

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. Setting: *Setup (default), System*.

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. Setting: *Non-OS2 (default), OS2*.

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.
Setting: *No (default), Yes*.

Video BIOS Shadow

This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.
Setting: *Enabled (default), Disabled*.

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.

Small Logo(EPA) show

This item enables you to show EPA logo on the bootup screen.
Setting are---Enabled (Default): Show the EPA screen logo.
　　　　　　　　Disabled　　　 : No show EPA screen logo.

Advanced Chipset Features

This Setup menu controls the configuration of the motherboard chipset. *Figure1*.

CMOS Setup Utility – Copyright (C) 1984-2001
Advanced CHIPSET FEATURES
AWARD SOFTWARE INC.

```
        Phoenix - AwardBIOS CMOS Setup Utility
               Advanced Chipset Features

    SDRAM CAS Latency Time    [2]          ▲        Item Help
    SDRAM Cycle Time Tras/Trc [Auto]
    SDRAM RAS-to-CAS Delay    [Auto]              Menu Level   ▶
    SDRAM RAS Precharge Time  [Auto]
    System BIOS Cacheable     [Disabled]
    Video BIOS Cacheable      [Disabled]
    CPU Latency Timer         [Enabled]
    Delayed Transaction       [Enabled]
    AGP Graphics Aperture Size[64MB]
    Display Cache Frequency   [100 MHz]
    System Memory Frequency   [100 MHz]
    Power-Supply Type         [ATX]
    On-Chip Video Window Size [64MB]

    * Onboard Display Cache Setting *
      CAS# Latency            [3]
      Paging Mode Control     [Open]
      RAS-to-CAS Override     [by CAS# LT]
      RAS# Timing             [Fast]       ▼

  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults
```

SDRAM CAS Latency Time
You can select CAS latency time in HCLKs of 2/2 or 3/3. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU. Setting: *3, 2 (default)*.

SDRAM Cycle Time Tras/Trc
The settings available for the SDRAM Cycle Time Tras/Trc are *Auto, 7/9* and *5/7.* Setting: *Auto (default), 7/9* and *5/7.*

SDRAM RAS-to-CAS Delay
You can select RAS to CAS Delay time in HCLKs of 2/2 or 3/3. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.
Setting: *Auto (default), 3* and *2.*

SDRAM RAS Precharge Time
This option defines the length of time for Row Address Strobe is allowed to precharge. Setting: *Auto (default), 3* and *2.*

System BIOS Cacheable

The setting of *Enabled* allows caching of the system BIOS ROM at F000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.
Setting: *Enabled (default), Disabled*.

Video BIOS Cacheable

The Setting *Enabled* allows caching of the video BIOS ROM at C0000h-F7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.
Setting: *Enabled (default), Disabled*.

Memory Hole At 15M-16M

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB. Setting: *Enabled (default), Disabled*.

CPU Latency Timer

You can select enable or disable the CPU latency timer.
Setting: *Enabled (default), Disabled*.

Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select *Enabled* to support compliance with PCI specification version 2.1. Setting: *Enabled (default), Disabled*.

AGP Graphics Aperture Size

The field sets aperture size of the graphics. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. Setting: *64MB (default), 32MB*.

Display Cache Frequency

The Frequency setting available for this item are 100MHz and 133MHz.
Setting: *100MHz (default), 133MHz*.

System Memory Frequency

The Frequency setting available for this item are 100MHz, 133MHz and Auto. Setting: *100MHz (default), 133MHz, Auto*.

Power-Supply Type
The setting choices for the Power-Supply Type are ATX and AT.
Setting: *ATX (default), AT*.

On-Chip Video Window Size
The setting choices for the On-Chip Video Window Size are *64MB* and *Disabled*. Setting: *64MB (default), Disabled*.

Onboard Display Cache Setting
The default setting and optional setting for the onboard display cache functions are as follows:

CAS# Latency   3(default), 2(option)
Paging Mode Control   Open (default), Close (option)
RAS-to-CAS Override   by CAS# LT (default), Override (2)(option)
RAS# Timing   Fast (default), Slow (option)
RAS# Precharge Timing   Fast (default), Slow (option)

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ADVANCED CHIPSET FEATURES
AWARD SOFTWARE INC.

```
          Phoenix - AwardBIOS CMOS Setup Utility
                  Advanced Chipset Features

   SDRAM Cycle Time Tras/Trc [Auto]         ▲        Item Help
   SDRAM RAS-to-CAS Delay    [Auto]
   SDRAM RAS Precharge Time  [Auto]               Menu Level   ▶
   System BIOS Cacheable     [Disabled]
   Video BIOS Cacheable      [Disabled]
   CPU Latency Timer         [Enabled]
   Delayed Transaction       [Enabled]
   AGP Graphics Aperture Size[64MB]
   Display Cache Frequency   [100 MHz]
   System Memory Frequency   [100 MHz]
   Power-Supply Type         [ATX]
   On-Chip Video Window Size [64MB]

   * Onboard Display Cache Setting *
     CAS# Latency            [3]
     Paging Mode Control     [Open]
     RAS-to-CAS Override     [by CAS# LT]
     RAS# Timing             [Fast]
     RAS# Precharge Timing   [Fast]      ▼

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults
```

Integrated Peripherals

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

CMOS Setup Utility – Copyright (C) 1984-2001
INTEGRATED PERIPHERALS
AWARD SOFTWARE INC.

```
        Phoenix - AwardBIOS CMOS Setup Utility
                 Integrated Peripherals

   On-Chip Primary   PCI IDE  [Enabled]    ▲        Item Help
   On-Chip Secondary PCI IDE  [Enabled]
   IDE Primary Master PIO     [Auto]            Menu Level  ▶
   IDE Primary Slave  PIO     [Auto]
   IDE Secondary Master PIO   [Auto]
   IDE Secondary Slave  PIO   [Auto]
   IDE Primary Master UDMA    [Auto]
   IDE Primary Slave  UDMA    [Auto]
   IDE Secondary Master UDMA  [Auto]
   IDE Secondary Slave  UDMA  [Auto]
   USB Controller             [Enabled]
   USB Keyboard Support       [Disabled]
   USB Mouse Support          [Disabled]
   Init Display First         [PCI Slot]
   AC97 Audio                 [Auto]
   IDE HDD Block Mode         [Enabled]
   Onboard FDC Controller     [Enabled]
   Onboard Serial Port 1      [3F8/IRQ4]
   Onboard Serial Port 2      [2F8/IRQ3]   ▼

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults
```

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. Setting: *Enabled (default), Disabled*.

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.

Setting: *Auto (default), Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.*

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. Setting: *Auto (default), Disabled*.

USB Controller

The options for this field are *Enabled* and *Disabled*.
Setting: *Enabled (default), Disabled*.

USB Keyboard Support
Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.
Setting: *Disabled (default), Enabled*.

USB Mouse Support
Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB mouse.
Setting: *Disabled (default), Enabled*.

Init Display First
This field allows the system to initialize first the VGA card on chip or the display on the PCI Slot. Setting: *PCI Slot (default), Onboard/AGP*.

AC97 Audio
The options for this field are *Auto* and *Disabled*.
Setting: *Auto (default), Disabled*.

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.
Setting: *Disabled (default), Enabled*.

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.
Setting: *Enabled (default), Disabled*.

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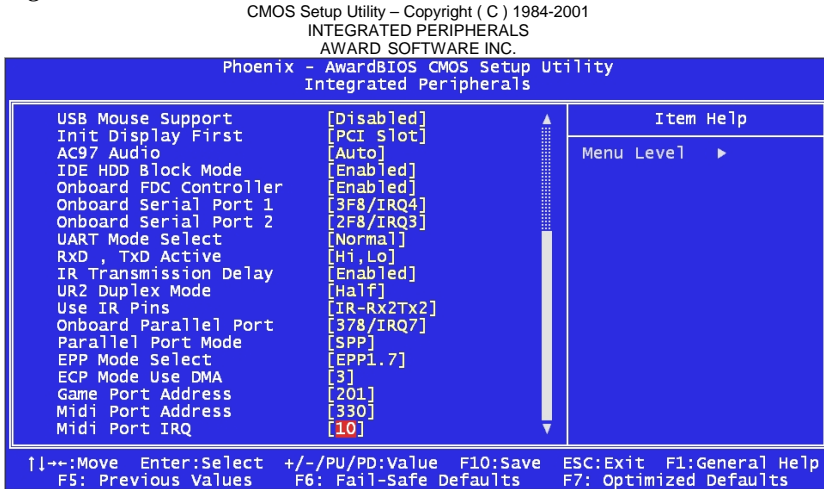
Serial Port 1	*3F8/IRQ4*
Serial Port 2	*2F8/IRQ3*
Parallel Port	*378/IRQ7*

UART Mode Select
This field determines the UART mode in your computer.
Setting: *Normal (default), IrDA, ASKIR*.

Figure 2

CMOS Setup Utility – Copyright (C) 1984-2001
INTEGRATED PERIPHERALS
AWARD SOFTWARE INC.

```
          Phoenix - AwardBIOS CMOS Setup Utility
                   Integrated Peripherals
┌─────────────────────────────────────────┬───────────────────┐
│  USB Mouse Support       [Disabled]    ▲ │    Item Help      │
│  Init Display First      [PCI Slot]      │                   │
│  AC97 Audio              [Auto]          │  Menu Level   ▶   │
│  IDE HDD Block Mode      [Enabled]       │                   │
│  Onboard FDC Controller  [Enabled]       │                   │
│  Onboard Serial Port 1   [3F8/IRQ4]      │                   │
│  Onboard Serial Port 2   [2F8/IRQ3]      │                   │
│  UART Mode Select        [Normal]        │                   │
│  RxD , TxD Active        [Hi,Lo]         │                   │
│  IR Transmission Delay   [Enabled]       │                   │
│  UR2 Duplex Mode         [Half]          │                   │
│  Use IR Pins             [IR-Rx2Tx2]     │                   │
│  Onboard Parallel Port   [378/IRQ7]      │                   │
│  Parallel Port Mode      [SPP]           │                   │
│  EPP Mode Select         [EPP1.7]        │                   │
│  ECP Mode Use DMA        [3]             │                   │
│  Game Port Address       [201]           │                   │
│  Midi Port Address       [330]           │                   │
│  Midi Port IRQ           [10]          ▼ │                   │
├─────────────────────────────────────────┴───────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│   F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults      │
└──────────────────────────────────────────────────────────────┘
```

RxD, TxD Active
Setting: *Hi,Lo(default), Lo,Hi, Lo,Lo, Hi,Hi.*

IR Transmission Delay
Setting: *Enabled (default), Disabled*.

UR2 Duplex Mode
Setting: *Half (default), Full.*

Use IR Pins
Setting: *IR-Rx2Tx2 (default), RxD2,TxD2.*

Onboard Parallel Port
Setting: *378/IRQ7 (default)*, *278/IRQ5*, *3BC/IRQ7, Disabled*.

Parallel Port Mode
This field allows you to determine parallel port mode function.

SPP (default)	Normal Printer Port
EPP	Enhanced Parallel Port
ECP	Extended Capabilities Port
ECP+EPP	Enhanced Parallel and Extended Capabilities Port
Normal	Normal Parallel Port

EPP Mode Select
The option settings for this field are *EPP 1.9* and *EPP 1.7*.
Setting: *EPP 1.9 (default), EPP 1.7 .*

ECP Mode Use DMA
It specifies a DMA channel 1 or 3 for the Parallel Port when it is set to ECP or
ECP/EPP mode.
Setting: *3 (default), 1.*

Game Port Address
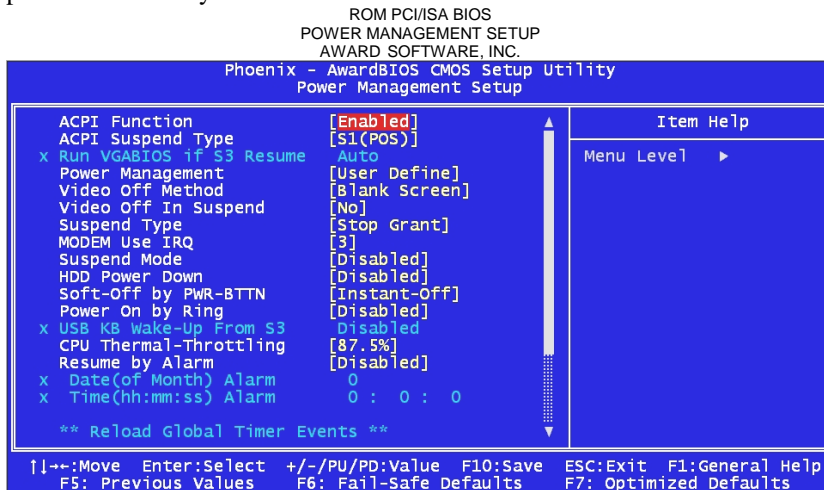Setting: *201 (default), 209, Disabled.*

Midi Port Address
Setting: *330 (default), 300, 290, Disabled.*

Midi Port IRQ
Setting: *10 (default), 5.*

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.

```
        Phoenix - AwardBIOS CMOS Setup Utility
                 Power Management Setup

   ACPI Function            [Enabled]          ▲        Item Help
   ACPI Suspend Type        [S1(POS)]
 x Run VGABIOS if S3 Resume  Auto              Menu Level    ▶
   Power Management         [User Define]
   Video Off Method         [Blank Screen]
   Video Off In Suspend     [No]
   Suspend Type             [Stop Grant]
   MODEM Use IRQ            [3]
   Suspend Mode             [Disabled]
   HDD Power Down           [Disabled]
   Soft-Off by PWR-BTTN     [Instant-Off]
   Power On by Ring         [Disabled]
 x USB KB Wake-Up From S3    Disabled
   CPU Thermal-Throttling   [87.5%]
   Resume by Alarm          [Disabled]
 x  Date(of Month) Alarm     0
 x  Time(hh:mm:ss) Alarm     0 :  0 :  0

   ** Reload Global Timer Events **            ▼

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values     F6: Fail-Safe Defaults    F7: Optimized Defaults
```

ACPI Function

This Item allows you to Enabled/Disabled the Advanced Configuration Power Management (ACPI). Setting: *Enabled (default), Disabled*.

ACPI Suspend Type

The options for the ACPI Suspend Type field are *S1(POS)* and *S3(STR)*. Setting: *S1(POS) (default), S3(STR), S1&S3*.

Power Management

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

User Define (*Default*)	Each of the ranges is from 1 min. to 1hr. Except for HDD Power Down, which ranges from 1 min. to 15 min.
Min. Saving	Minimum power management.
Max. Saving	Maximum power management.

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

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

Blank Screen (Default)	This option only writes blanks to the video buffer.
V/H SYNC+Blank	Turn off vertical and horizontal scanning
DPMS	Allowing the BIOS to control the video display card if it supports the DPMS feature.

Video Off In Suspend
This determines the manner in which the monitor is blanked.
Setting: *No (default), Yes*.

Suspend Type
Select the Suspend Type. Setting: *Stop Grant (default), PwrOn Suspend*.

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. Setting: *3 (default), 4, 5, 7, 9, 10, 11, NA.*

Suspend Mode
When enabled, after the set time of system inactivity, all devices except the CPU will be shut off.

HDD Power Down
When enabled, after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

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. Setting: *Instant-Off(default), Delay 4 Sec*.

Power On by Ring
An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state. Setting: *Disabled (default), Enabled*.

CPU Thermal-Throttling

The CPU Thermal Throttling function.
Setting: *87.5% (default), 75.0%, 62.5%, 50.0%, 37.5%, 25.0%, 12.5%*.

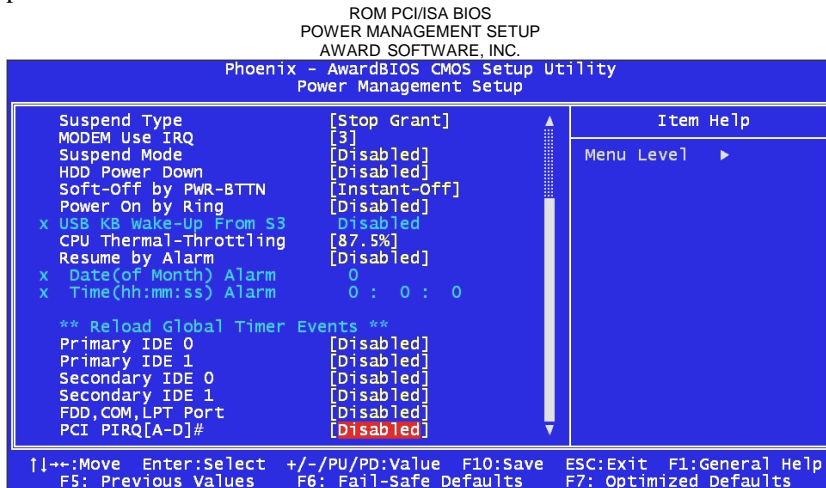## Resume by Alarm

This field enables or disables the resumption of the system operation. When enabled, the user is allowed to set the *Date* and *Time*.
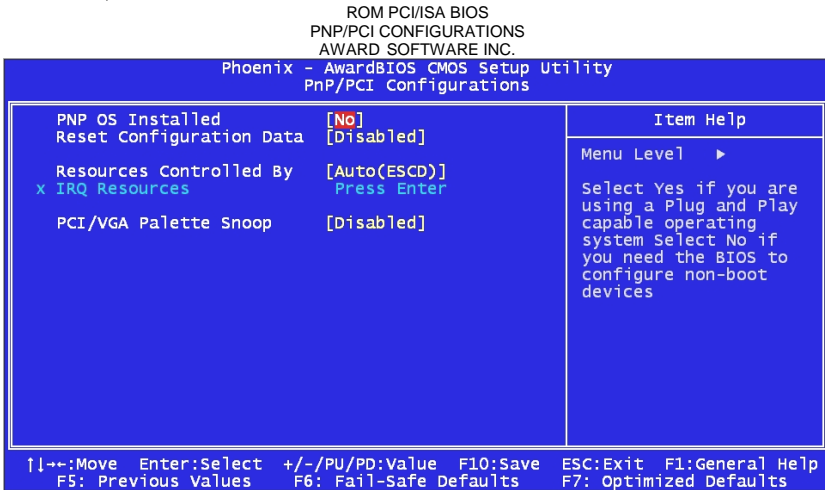Setting: *Disabled (default), Enabled*.

Reload Global Timer Events

The HDD, FDD, COM, LPT Ports, and PCI PIRQ are I/O events, which can prevent the system from entering a power saving mode or can awaken the system from such a mode. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

```
                        ROM PCI/ISA BIOS
                     POWER MANAGEMENT SETUP
                      AWARD SOFTWARE, INC.
              Phoenix - AwardBIOS CMOS Setup Utility
                      Power Management Setup

      Suspend Type           [Stop Grant]          ▲        Item Help
      MODEM Use IRQ          [3]
      Suspend Mode           [Disabled]                  Menu Level    ►
      HDD Power Down         [Disabled]
      Soft-Off by PWR-BTTN   [Instant-Off]
      Power On by Ring       [Disabled]
   x  USB KB Wake-Up From S3    Disabled
      CPU Thermal-Throttling [87.5%]
      Resume by Alarm        [Disabled]
   x   Date(of Month) Alarm     0
   x   Time(hh:mm:ss) Alarm     0 :  0 :  0

      ** Reload Global Timer Events **
      Primary IDE 0          [Disabled]
      Primary IDE 1          [Disabled]
      Secondary IDE 0        [Disabled]
      Secondary IDE 1        [Disabled]
      FDD,COM,LPT Port       [Disabled]
      PCI PIRQ[A-D]#         [Disabled]             ▼

   ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5: Previous Values      F6: Fail-Safe Defaults    F7: Optimized Defaults
```

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 CONFIGURATIONS
                   AWARD SOFTWARE INC.
```

```
             Phoenix - AwardBIOS CMOS Setup Utility
                      PnP/PCI Configurations
   ┌─────────────────────────────────────────┬───────────────────────┐
   │  PNP OS Installed         [No]           │      Item Help        │
   │  Reset Configuration Data [Disabled]     │                       │
   │                                          │  Menu Level   ▶       │
   │  Resources Controlled By  [Auto(ESCD)]   │                       │
   │ x IRQ Resources              Press Enter │  Select Yes if you are│
   │                                          │  using a Plug and Play│
   │  PCI/VGA Palette Snoop    [Disabled]     │  capable operating    │
   │                                          │  system Select No if   │
   │                                          │  you need the BIOS to │
   │                                          │  configure non-boot   │
   │                                          │  devices              │
   │                                          │                       │
   │                                          │                       │
   │                                          │                       │
   │                                          │                       │
   ├──────────────────────────────────────────────────────────────────┤
   │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
   │    F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults │
   └──────────────────────────────────────────────────────────────────┘
```

PNP OS Installed
This field allows you to specify if the operating system installed in your system is plug and play aware. Setting: *No (default), Yes*.

Reset Configuration Data
This field allows you to determine whether or not to reset the configuration data. Setting: *Disabled (default), Enabled*.

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. Setting: *Auto (ESCD) (default), Manual*.

IRQ Resources/DMA Resources
To configure the IRQ Resources and DMA Resources, these *Resources Controlled By* field should be set to *Manual*.

```
IRQ-3   assigned to      [PCI Device]
IRQ-4   assigned to      [PCI Device]
IRQ-5   assigned to      [PCI Device]
IRQ-7   assigned to      [PCI Device]
IRQ-9   assigned to      [PCI Device]
IRQ-10  assigned to      [PCI Device]
IRQ-11  assigned to      [PCI Device]
IRQ-12  assigned to      [PCI Device]
IRQ-14  assigned to      [PCI Device]
IRQ-15  assigned to      [PCI Device]
```

PCI / VGA Palette Snoop
Leave this filed at Disabled. Setting: ***Disabled (default), Enabled***.

PC Health Status
This sections the States of your CPU, Fan, Warning for overall system status.

CMOS Setup Utility – Copyright (C) 1984-2001 Award Software
PC Health Status
AWARD SOFTWARE INC.

```
        Phoenix - AwardBIOS CMOS Setup Utility
                    PC Health Status

  CPU Warning Temperature    [Disabled]            Item Help
  Current System Temp.
  Current CPU1 Temperature                     Menu Level    ▶
  Current CPUFAN1 Speed
  Current CPUFAN2 Speed
  IN0(V)
  IN1(V)
  IN2(V)
  + 5 V
  +12 V
  -12 V
  - 5 V
  VBAT(V)
  5VSB(V)



  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F5: Previous Values    F6: Fail-Safe Defaults  F7: Optimized Defaults
```

CPU Warning Temperature
During Enabled, this will warn the user when the CPU temperature reaches a certain temperature.

Temperatures/ Fan Speeds/ Voltages
These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status.

Frequency/ Voltage Control

This section is for setting CPU Frequency/ Voltage Control.

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Frequency / Voltage Control
AWARD SOFTWARE INC.

```
          Phoenix - AwardBIOS CMOS Setup Utility
                  Frequency/Voltage Control

   Auto Detect DIMM/PCI Clk   [Enabled]         ┌──────────────────┐
   Spread Spectrum            [Disabled]        │    Item Help     │
   CPU HOST/PCI Clock/PC133   [Default]         │ Menu Level   ►   │
   CPU Clock Ratio            [X 3]             │                  │




 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```
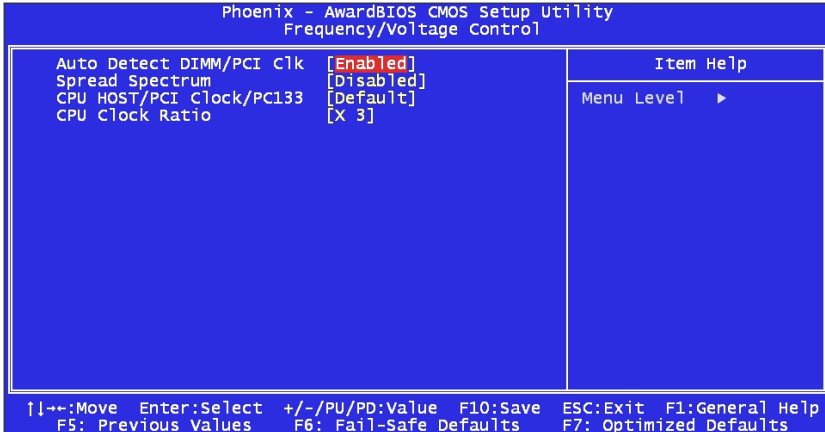
Auto Detect DIMM/PCI CIK
This item allows you to enable/disable auto detect DIMM/PCI Clock.
Setting: *Enabled (default), Disabled*.

Spread Spectrum
This item allows you to set the CPU Clock / Spread Spectrum.
Setting: *Disabled (default), Enabled*.

CPU Host /PCI Clock/PC133
The CPU Host /PCI Clock/PC133 has the setting of *Default* which supports 133MHz only or above by the system.
Setting: *Default (default), 67/33 Mhz/No - 166/42 Mhz/Yes*

CPU Clock Ratio
The CPU Ratio, also known as the CPU bus speed multiplier.
Setting: *×3, ×3.5, ×4, ×4.5, ×5, ×5.5, ×6, ×6.5, ×7, ×7.5, ×8.*

Load Fail-Safe 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.

Load Fail-Safe Defaults Setup Utility – Copyright © 1984-2001 Award Software

```
        Phoenix - AwardBIOS CMOS Setup Utility

 ▶ Standard CMOS Features          ▶ Frequency/Voltage Control

 ▶ Advanced BIOS Features            Load Fail-Safe Defaults

 ▶ Advanced Chipset Features         Load Optimized Defaults

 ▶ Integrated Peripherals            Set Supervisor Password

 ▶ Power Management                                    word

 ▶ PnP/PCI Configura  Load Fail-Safe Defaults (Y/N)? N  etup

 ▶ PC Health Status                                   Saving

 Esc : Quit      F9 : Menu in BIOS      ↑ ↓ → ←  : Select Item
 F10 : Save & Exit Setup

                    Load Fail-Safe Defaults
```

Load Optimized 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.

Load Optimized Defaults Setup Utility – Copyright © 1984-2001 Award Software

```
        Phoenix - AwardBIOS CMOS Setup Utility

 ▶ Standard CMOS Features          ▶ Frequency/Voltage Control

 ▶ Advanced BIOS Features            Load Fail-Safe Defaults

 ▶ Advanced Chipset Features         Load Optimized Defaults

 ▶ Integrated Peripherals            Set Supervisor Password

 ▶ Power Management                                    word

 ▶ PnP/PCI Configura  Load Optimized Defaults (Y/N)? N  etup

 ▶ PC Health Status                                   Saving

 Esc : Quit      F9 : Menu in BIOS      ↑ ↓ → ←  : Select Item
 F10 : Save & Exit Setup

                    Load Optimized Defaults
```

Set 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.

Set Supervisor / User Password Utility – Copyright © 1984-2001 Award Software

```
              Phoenix - AwardBIOS CMOS Setup Utility

  ▶ Standard CMOS Features          ▶ Frequency/Voltage Control

  ▶ Advanced BIOS Features            Load Fail-Safe Defaults

  ▶ Advanced Chipset Features         Load Optimized Defaults

  ▶ Integrated Peripherals            Set Supervisor Password

  ▶ Power Management Setup            Set User Password

  ▶ PnP/PCI Configurati              t Setup
                         Enter Password:
  ▶ PC Health Status                          ut Saving


  Esc : Quit      F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup

                    Change/Set/Disable Password
```

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.

Save & Exit Setup Utility – Copyright © 1984-2001 Award Software

```
           Phoenix - AwardBIOS CMOS Setup Utility

  ▶ Standard CMOS Features        ▶ Frequency/Voltage Control

  ▶ Advanced BIOS Features          Load Fail-Safe Defaults

  ▶ Advanced Chipset Features       Load Optimized Defaults

  ▶ Integrated Peripherals          Set Supervisor Password

  ▶ Power Management                           sword

  ▶ PnP/PCI Configura   SAVE to CMOS and EXIT (Y/N)? Y   Setup

  ▶ PC Health Status                          Saving


  Esc : Quit      F9 : Menu in BIOS     ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup

                   Save Data to CMOS
```

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.

Exit Without Saving Utility – Copyright © 1984-2001 Award Software

```
           Phoenix - AwardBIOS CMOS Setup Utility

  ▶ Standard CMOS Features        ▶ Frequency/Voltage Control

  ▶ Advanced BIOS Features          Load Fail-Safe Defaults

  ▶ Advanced Chipset Features       Load Optimized Defaults

  ▶ Integrated Peripherals          Set Supervisor Password

  ▶ Power Management S                         sword

  ▶ PnP/PCI Configurat   Quit Without Saving (Y/N)? N    Setup

  ▶ PC Health Status                         t Saving


  Esc : Quit      F9 : Menu in BIOS     ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup

                   Abandon all Data
```

Chapter **4**

815E/EP Chipset Driver Installation Guide

This chapter provides information on how to install the 815E/EP Chipset Driver that comes in this CD driver with the package. Please follow the instructions set forth in this chapter carefully. Please note that this 815E/EP Chipset Driver must be installed in your system first before you could proceed to install the relevant drivers.

The following items are covered in this chapter:

Installing the 815E/EP Chipset Drivers for Windows 98SE/ 2000/ XP

The following section describes the 815E/EP Chipset driver installation procedures for Windows 98SE, Windows 2000 and windows XP.

Step 1: Insert driver CD into CD-ROM.
Step 2: Click *Intel Chipset*.
Step 3: Click *Intel Chipset Driver*.
Step 4: Click *Next*.
Step 5: Click *Yes*.
Step 6: Click *Next*.
Step 7: Click **Finish. You must restart your computer now.**

Chapter **5**

VGA Driver Installation Guide

This chapter provides information on how to install VGA drivers that comes in this CD driver with the package. Please follow the instructions set forth in this chapter 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 chapter:

Installing the VGA Drivers for Windows 98SE

69000/69030 VGA Driver

The following section describes the **69000/69030** VGA driver installation procedures for Windows 98SE.

Step 1: Click *My Computer⟹ Properties*.
Step 2:
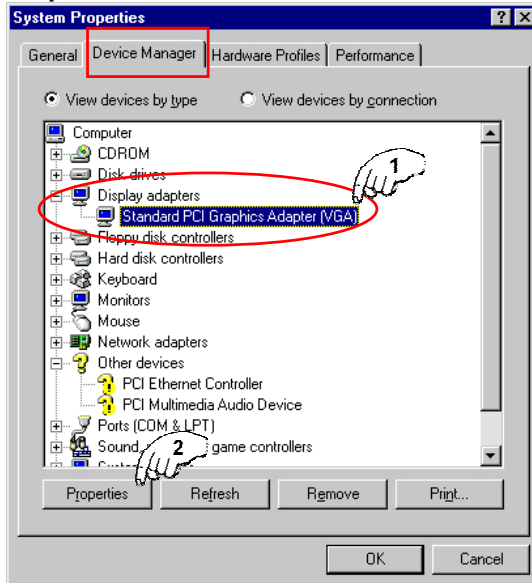
Step 3: Click *Driver ⟹ Update Driver*.
Step 4: Click *Next.*

Step 5: Click *"Display a list of all the drivers in a Specific location, so you can select the driver you want"* ⇒ *Next.*
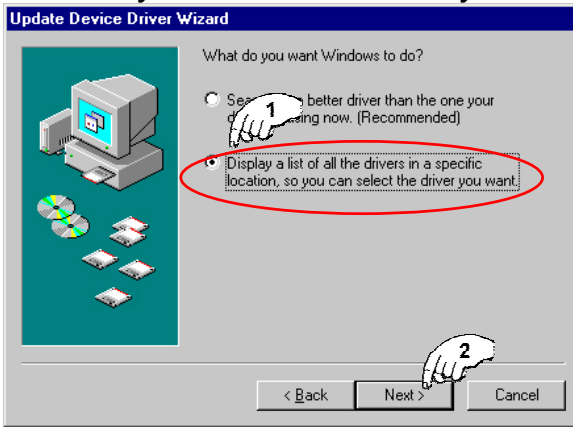
Step 6: Click *Have Disk.*
Step 7: Insert driver CD into CD-ROM.
Step 8: Click *Browse.*
Step 9:
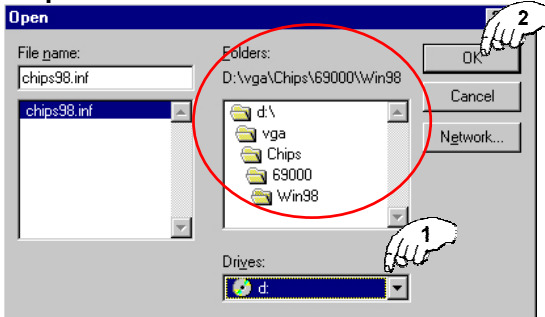
Step 10: Click *OK.*
Step 11: Click *OK.*
Step 12: Click *Next.*
Step 13: Click *Finish.*
Step 14: Click *Yes*. You must restart your computer now.

815E VGA Driver

The following section describes the **815E** VGA driver installation procedures for Windows 98SE.

Step 1: Insert driver CD into CD-ROM.
Step 2: Click *VGA Device*.
Step 3: Click *Intel-815 VGA Driver*.
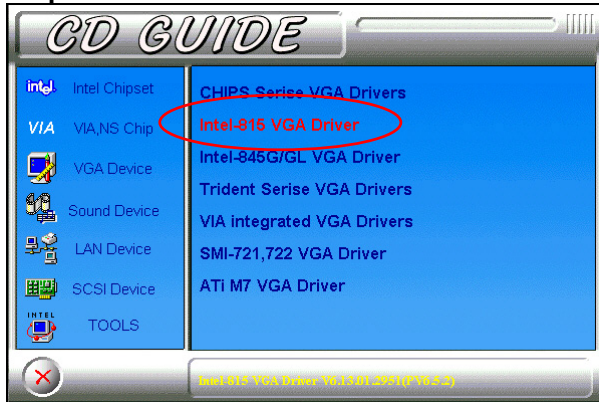
Step 4: Click *Next*.
Step 5: Click *Yes*.
Step 6: Click **Finish. You must restart your computer now.**
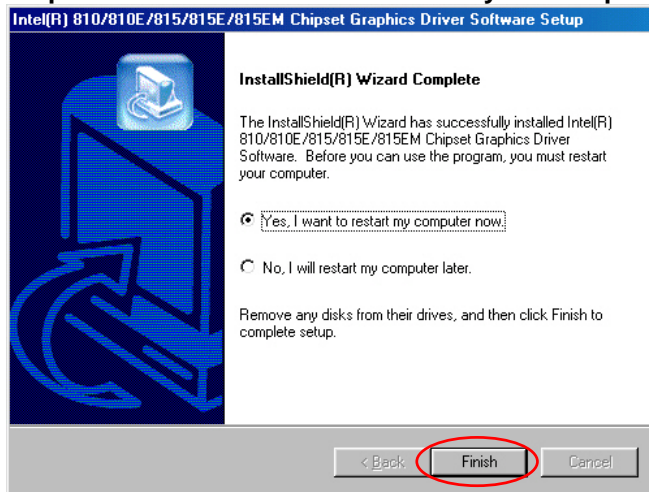
Installing the VGA Drivers for Windows 2000

815E VGA Driver
The following section describes the **815E** VGA driver installation procedures for Windows 2000.

Step 1: Insert driver CD into CD-ROM.
Step 2: Click *VGA Device*.
Step 3: Click *Intel-815 VGA Driver*.
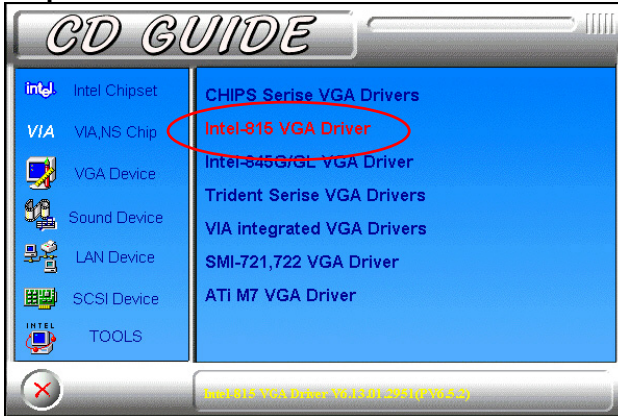
Step 4: Click *Next*.
Step 5: Click *Yes*.
Step 6: Click **Finish. You must restart your computer now.**
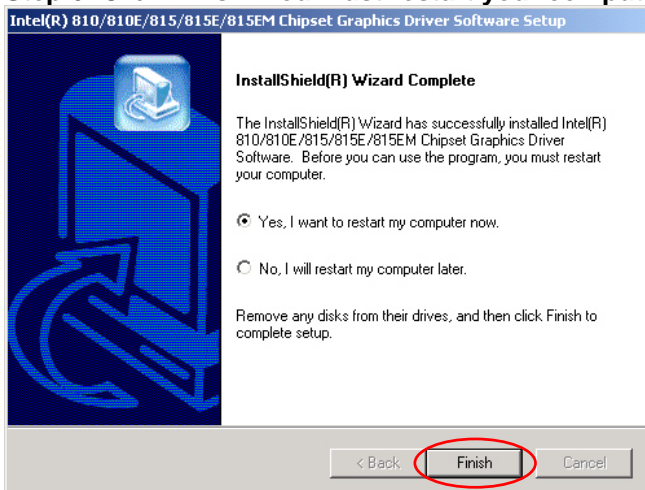
Installing the VGA Drivers for Windows XP

69000/69030 VGA Driver

The following section describes the **69000/69030** VGA driver installation procedures for Windows XP.

Step 1: Insert driver CD into CD-ROM.
Step 2: Click *Start* ⟹ *Control Panel*.
Step 3: Click *System.*
Step 4: Click *Hardware* ⟹ *Device Manager*.
Step 5:
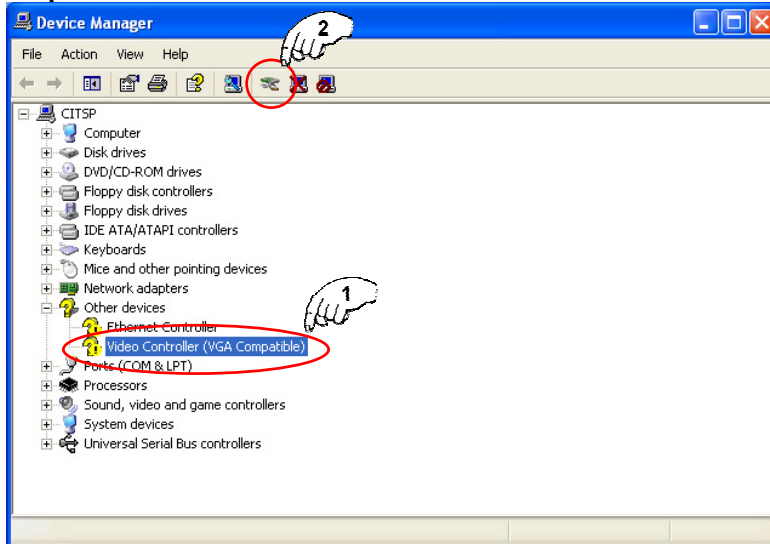
Step 6:
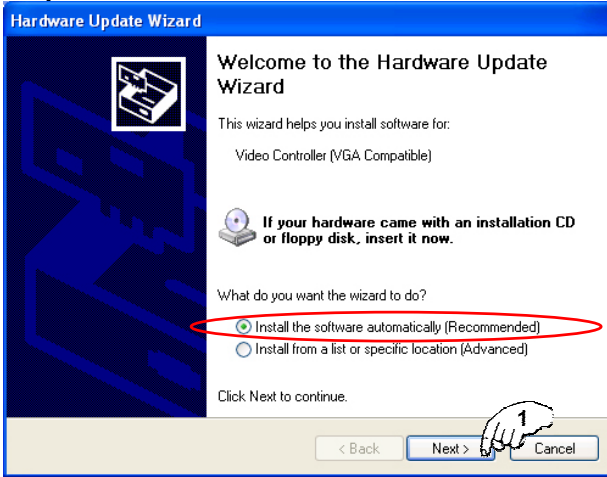
Step 7:
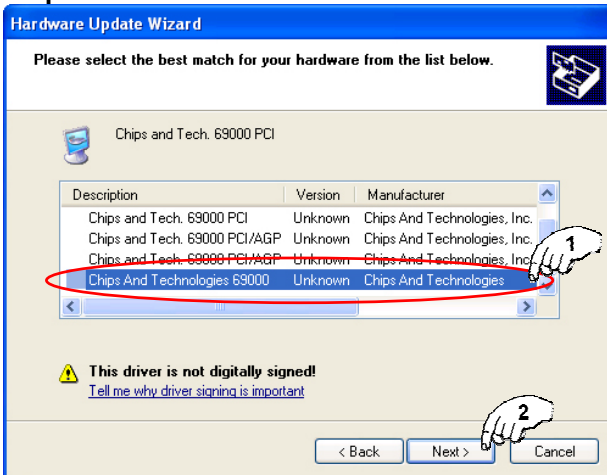
Step 8:

Step 9: Click *Finish.* You must restart your computer.

Installing the VGA Drivers for Windows NT 4.0

69000/69030 VGA Driver

The following section describes the **69000/69030** VGA driver installation procedures for Windows NT 4.0.

IMPORTANT: You should install the Windows NT 4.0 Service Pack 3 or above first before installing the VGA drivers.

Step 1: Click *Start* ⇒ *Settings* ⇒ *Control Panel*.
Step 2: Click *Display* ⇒ *Settings* ⇒ *Display Type* ⇒ *Change*
Step 3: Click *Have Disk*.
Step 4: Insert driver CD into CD-ROM.
Step 5: Click *Browse.*
Step 6: Search for 69000/69030 VGA file within CD-Drive ⇒ *Open.*
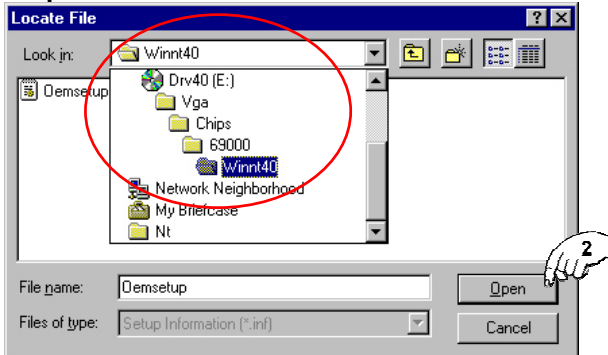
Step 7: Click *OK.*
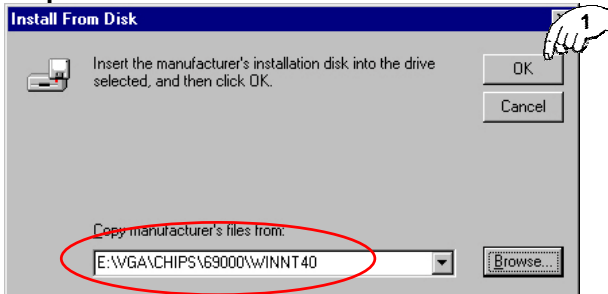
Step 8: Click *OK.*
Step 9: Click *Yes.*
Step 10: Click *OK.*
Step 11: Click *Close.*
Step 12: Click *Close.*
Step 13: Click *Yes.*
Step 14: Click *OK.* You must restart your computer.

815E VGA Driver

The following section describes the **815E** VGA driver installation procedures for Windows NT 4.0.

IMPORTANT: You should install the Windows NT 4.0 Service Pack 3 or above first before installing the VGA drivers.

Step 1: Click *Start ⇒ Settings ⇒ Control Panel*.
Step 2: Click *Display ⇒ Settings ⇒ Display Type ⇒ Change*
Step 3: Click *Have Disk*.
Step 4: Insert driver CD into CD-ROM.
Step 5: Click *Browse.*
Step 6: Search for 815E VGA file within CD-Drive ⇒ *Open.*
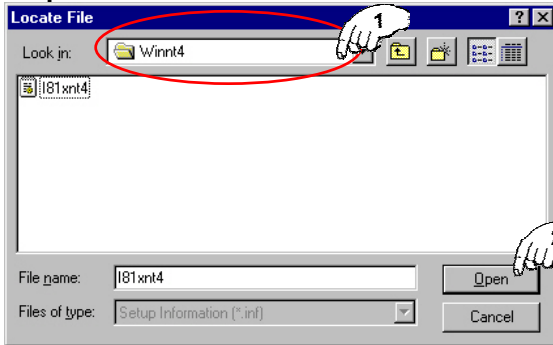
Step 7: Click *OK.*
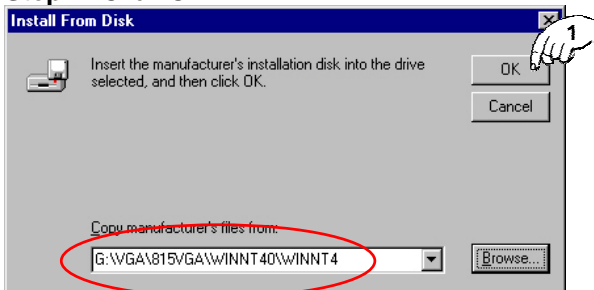
Step 8: Click *OK.*
Step 9: Click *Yes.*
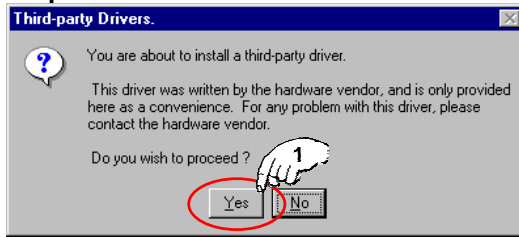
Step 10: Click *OK.*
Step 11: Click *Next.*
Step 12: Click *Yes.*
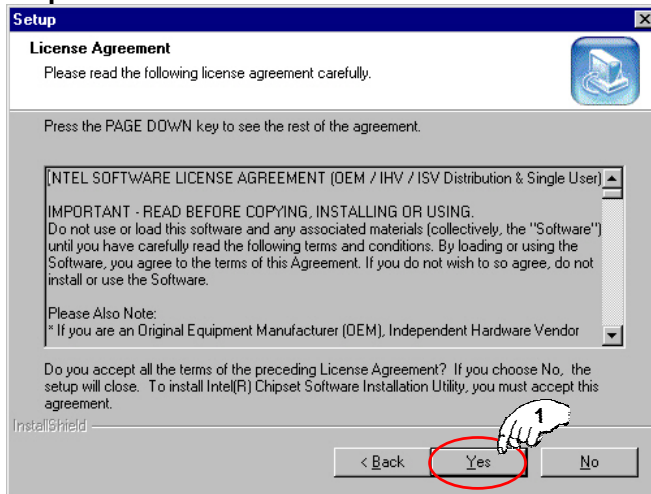
Step 13: Click *Next.*
Step 14: Click *OK.* You must restart your computer.

Chapter **6**

Audio Driver Installation Guide

This chapter provides information on how to install the AC'97 CODEC Audio Driver that comes in this CD driver with the package. Please follow the instructions set forth in this chapter carefully. Please note that there must be relevant software installed in your system before you could proceed to install the Audio drivers.

The following items are covered in this chapter:

Installing the Audio Drivers for Windows 98SE

The following section describes the Audio driver installation procedures for Windows 98SE, Windows 2000, Windows Millennium Edition and Windows NT 4.0.

Step 1: Insert driver CD into CD-ROM ⇒ *Sound Device*.
Step 2: Click *Analog AD188x AC97 Codec Sound*.
Step 3: Click *Next*.
Step 4: Click *Finish.* You must restart your computer now.

Installing the Audio Drivers for Windows 2000

The following section describes the Audio driver installation procedures for Windows 98SE, Windows 2000, Windows Millennium Edition and Windows NT 4.0.

Step 1: Insert driver CD into CD-ROM ⇒ *Sound Device*.
Step 2: Click *Analog AD188x AC97 Codec Sound*.
Step 3: Click *Next*.
Step 4: Click *Yes*.
Step 5: Click *Finish.* You must restart your computer now.

Installing the Audio Drivers for Windows NT 4.0

The following section describes the Audio driver installation procedures for Windows 98SE, Windows 2000, Windows Millennium Edition and Windows NT 4.0.

Step 1: Insert driver CD into CD-ROM ⇒ *Sound Device*.
Step 2: Click *Analog AD188x AC97 Codec Sound*.
Step 3: Click *Next*.
Step 4: Click *OK*.
Step 5: Click *Finish.* You must restart your computer now.

Chapter 7

LAN Driver
Installation Guide

This chapter describes LAN features and driver installation of the onboard Intel 82559.

The following items are covered in this chapter:

Installing LAN Driver for Windows 98SE

This section describes the procedure to install Windows 98SE driver for Intel 82559 LAN adapter.

Step 1: Click *Start ⇒ Settings ⇒ Control Panel*.
**Step 2:** Double click *System.*
Step 3:
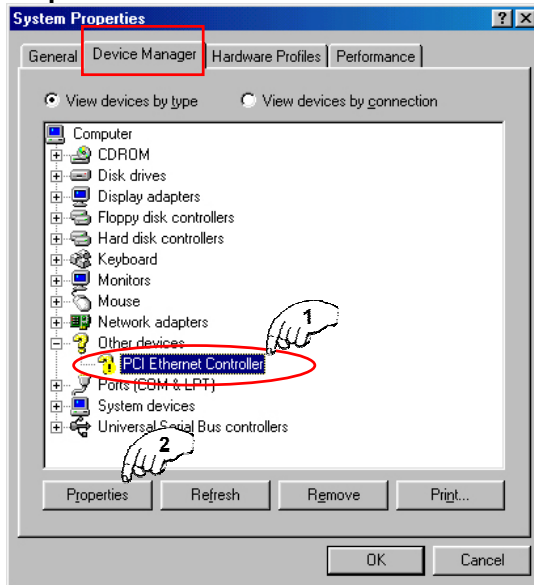
Step 4: Click *Driver ⇒ Update Driver*.
Step 5: Click *Next.*

Step 6:
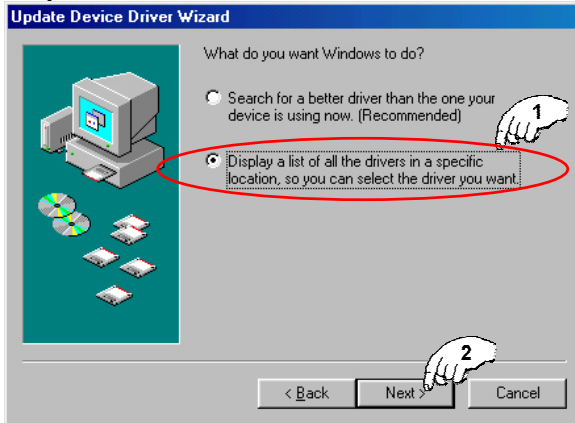
Step 7: Click *Next.*
Step 8:
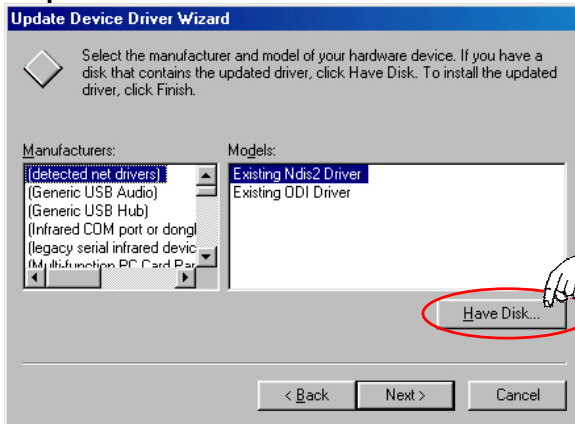
Step 9: Click **Browse.**
Step 10: Insert driver CD into CD-ROM.

Step 11: ⇒ *d:\lan\8255x*
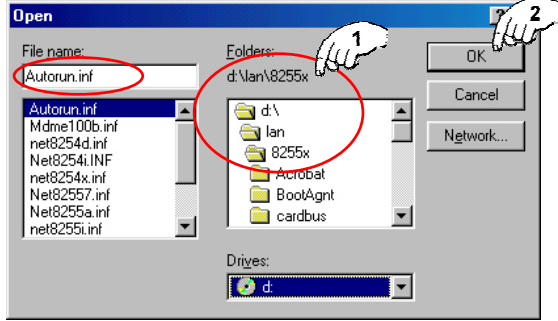
Step 12:
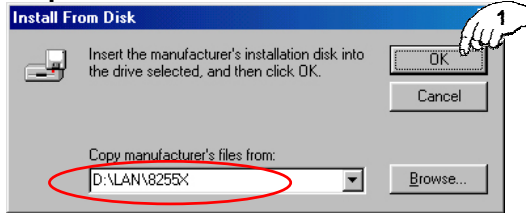
Step 13: Click *NEXT.*
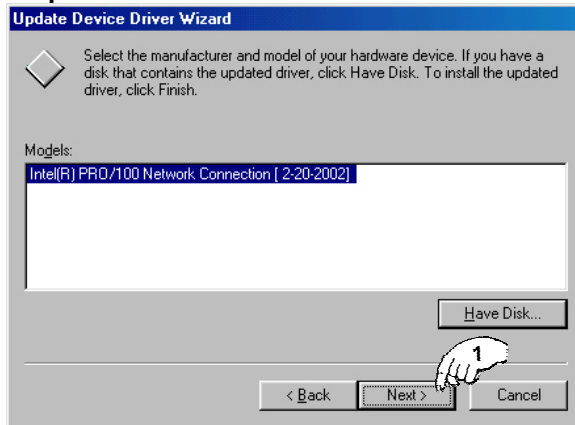
Step 14: Click *NEXT.*
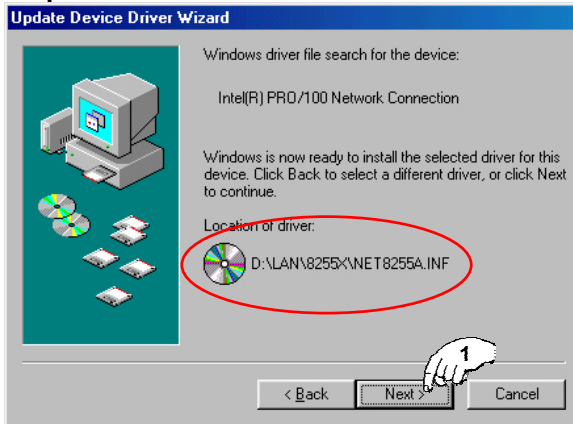
Step 15: Insert 98SE CD into CD-ROM ⇒ *OK.*
Step 16: Click *Finish.*
Step 17: Click *Yes.* You must restart your computer now*.*

Installing LAN Driver for Windows 2000

This section describes the procedure to install Windows 2000 driver for Intel 82559 LAN adapter.

*Note**d**: To setup LAN 82559 driver is the first step.*

Step 1: Click *Start ⇒ Settings ⇒ Control Panel*.
Step 2: Double click *System*.
Step 3:
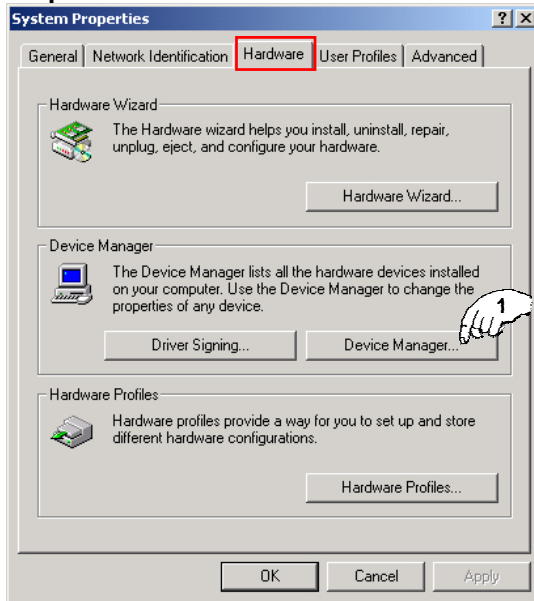
Step 4:
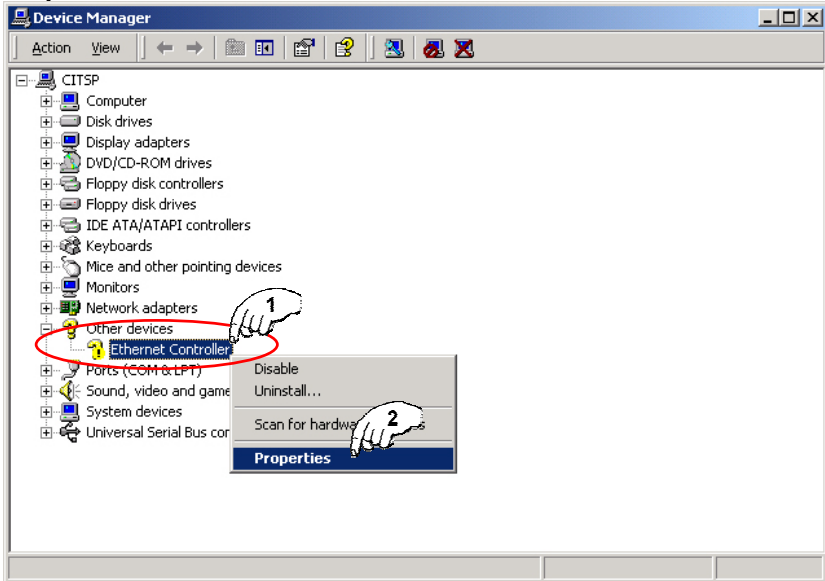
Step 5: Click *Driver* ⇒ *Update Driver.*
Step 6: Click *Next.*
Step 7: Select *"Search for a suitable driver for my device"* ⇒ *Next.*
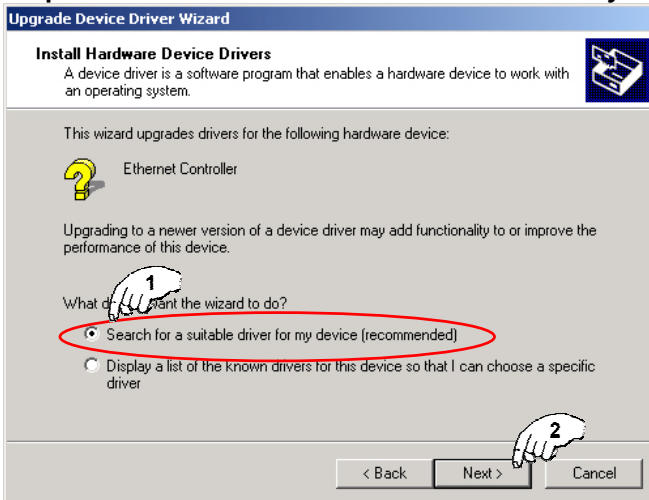
Step 8:
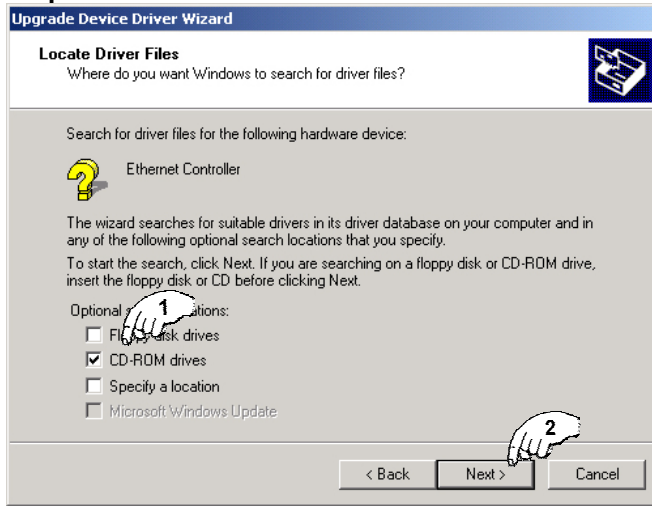
Step 9: Click *Next.*
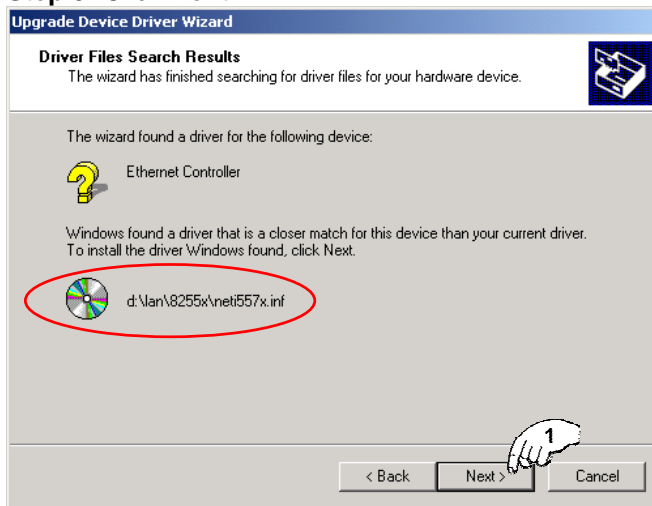
Step 10: Click *Yes.*
Step 11: Click *Finish.* You must restart your computer now.

Installing LAN Driver for Windows XP

The procedures below show you how to install the LAN drivers for Windows Millennium Edition.

Noted*: To setup LAN 82559 driver is the first step.*

Step 1: Click *Start* ⇒ *Control Panel.*
Step 2: Click *System.*
Step 3:
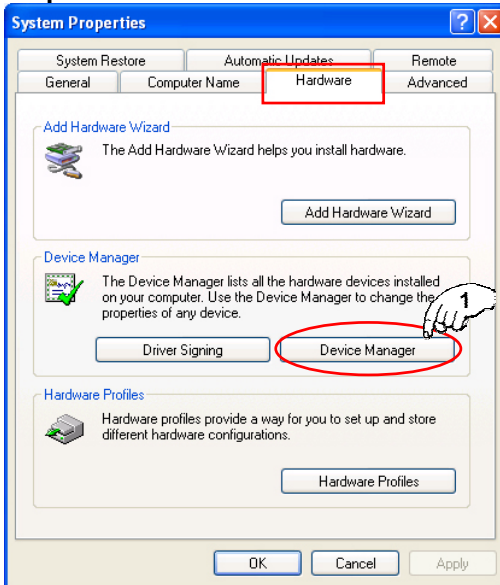
Step 4:
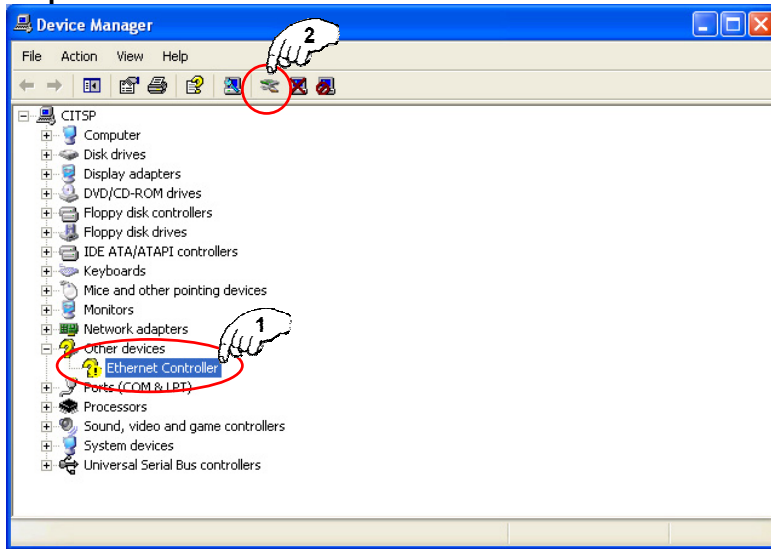
Step 5: Click *Next.*
Step 6: Insert the driver CD into CD-ROM.
Step 7: Select *Continue Anyway*.

Step 8:
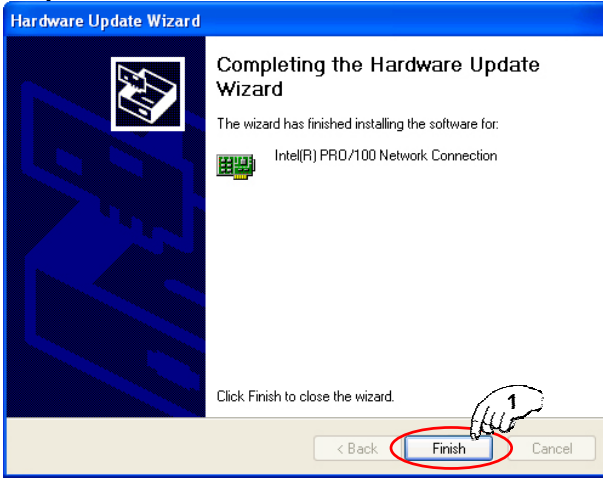
Step 9:
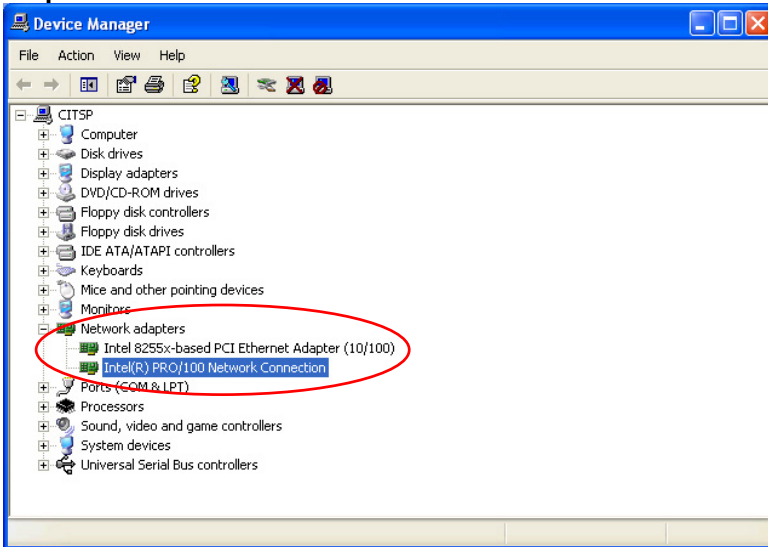
Installing LAN Driver for Windows NT 4.0

IMPORTANT: **You should install the Windows NT 4.0 Service Pack 3 or above first before installing the drivers.** If you don't have the Windows NT 4.0 Service Pack 3 or above, please contact your software vendor or download it from Microsoft's website.

The procedures below show you how to install the LAN drivers for Windows NT 4.0.

Noted: Please insert blank diskette into floppy to make diskette driver with CD driver before installing Windows NT 4.0.

Step 1:
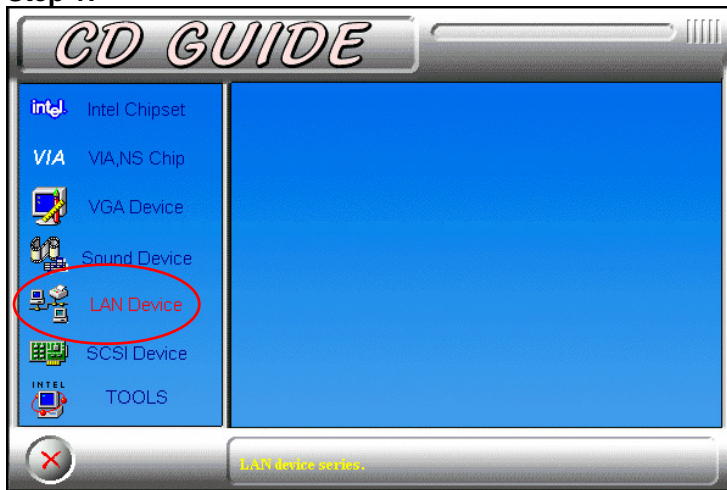
Step 2:

Step 3:
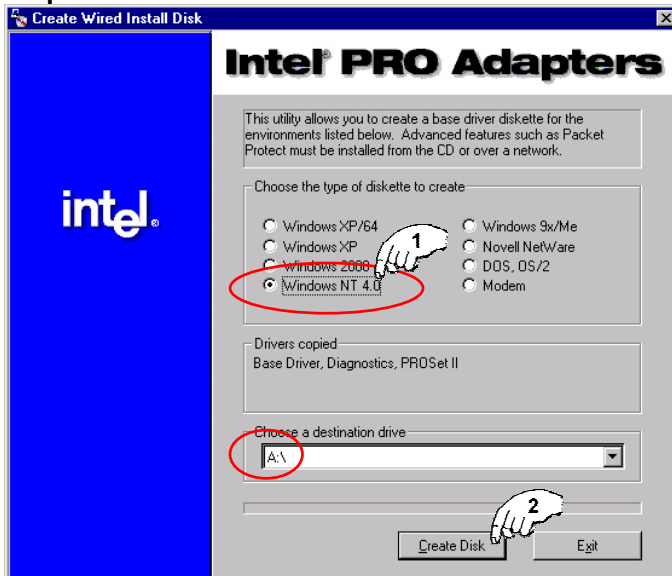
Step 4: Click *Start* ⟹ *Settings* ⟹ *Control Panel*.
Step 5: Double click *Network* ⟹ *Yes*.
Step 6: Click *Next*.
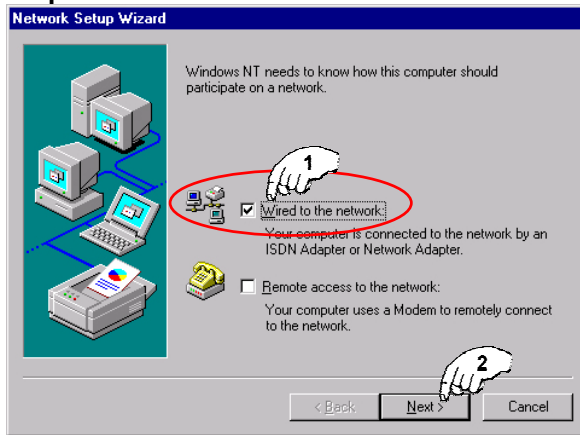
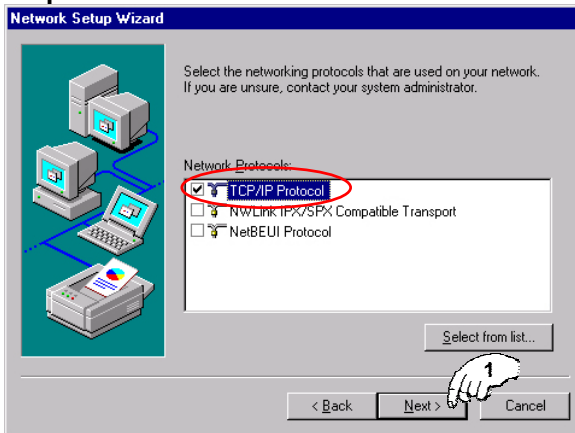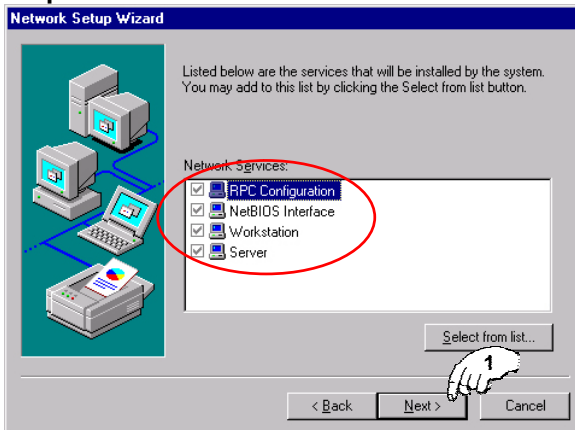**Step 7:**
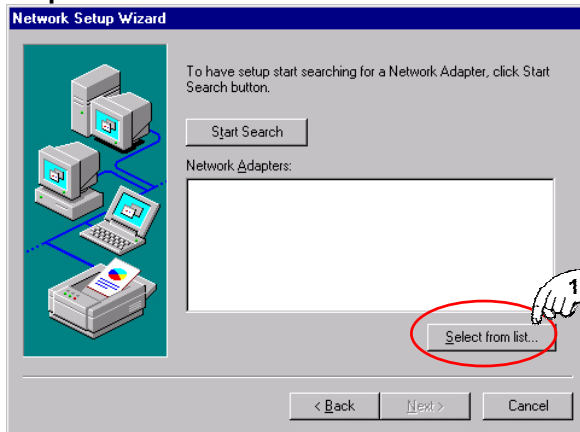
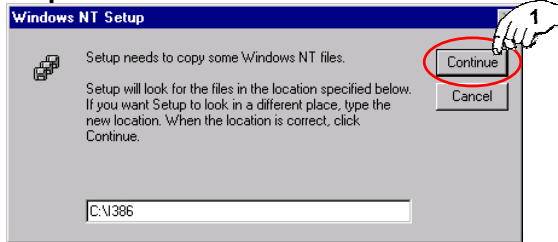**Step 8:** Insert diskette driver into floppy ⟹ *Have Disk.*
Step 9: Click *OK.*

Step 10: Click *OK.*

Step 11: Click *Next.*
Step 12: Click *Next.*

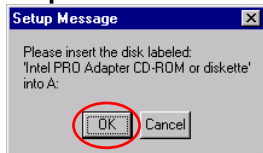**Step 13:** Click *Next.*

Step 14: Click *Next*.
Step 15: Insert the WINNT4.0 CD into CD-ROM.
Step 16: Copy the CD-ROM d:\I386 folder to c:\ .
Step 17:

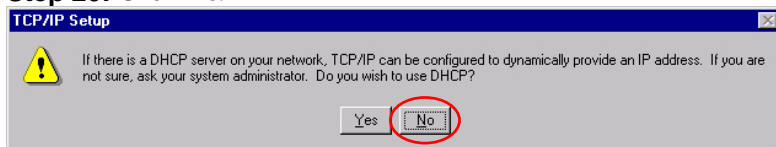

Step 18: Put Diskette Driver 1 into floppy ⇒ *OK.*

Step 19: Put Diskette Driver 2 into floppy ⇒ *OK.*

Step 20: Click *No*.

Step 21: This LAN adapter must be filled in *IP Address, Subnet Mask and Default Gateway* ⇒ *OK.*
Step 22: Click *Yes.* You must restart your computer now.

Appendix

A. I/O Port Address Map
B. Interrupt Request Lines (IRQ)

A. 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. There is a total of 1K port address space available. The following table lists the I/O port addresses used on the Industrial CPU Card.

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)

B. Interrupt Request Lines (IRQ)

There are a total of 15 IRQ lines available on the Industrial CPU Card. 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 Industrial CPU Card.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Parallel Port #2
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Software Redirected to Int 0Ah
IRQ10	Reserved
IRQ11	Reserved
IRQ12	Reserved
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE