VIA C3 Low Power Processors Embedded SBC

User's Manual

Version 1.0

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Chapter 1. General Information

1.1 Introduction

The AW-P631 is a full function of PC/104 CPU module use VIA VT8606 and VT82C686B chipset supports processors VIA Ezra/Eden (EBGA packaging) processors. The AW-P631 supports CRT, Intel 82559ER Ethernet chipset with RJ45 jack for 10/100Mbps.

The onboard features include two RS-232 serial ports, and onboard SSD interface. The AW-P631 supports up to 2 USB ports. For the expansion ability, the AW-P631 reserved a PC/104 connector for flexible expansion capabilities.

1.2 Specification

General Functions

CPU	VIA Eden series (EBGA packaging) CPU
BIOS	Award® 256KB Flash BIOS
Chipset	VIA VT8606 + VT82C686B
I/O Chipset	Built-in VT82C686B
Memory	Onboard one 144-pin SO-DIMM socket support up to 512Mbytes
Enhanced IDE	Support two IDE devices, Shared with SSD. Support Ultra DMA 33/66/100 mode with data transfer rate up to 100MB/sec
FDD interface	Support one floppy disk drives
Parallel port	One bi-directional parallel port. Support SPP, ECP, and EPP modes
Serial port	Two RS-232 serial ports
IR interface	Support one IrDA Tx/Rx header
KB/Mouse connector	Header on board support PC/AT keyboard and PS/2 mouse
USB connector	Header on board support dual USB ports
Battery	Lithium battery for data retention up to 10 years (in normal condition)
Watchdog Timer	Can generate a system reset, or IRQ11. Support software selectable timeout interval
Digital I/O	Four digital output and four input
PC/104 Connector	One PC/104 connector for ISA expansion board

Flat Panel/CRT Interface	
Chipset	VIA VT8606
Display memory	Share system memory 8/16/32MB
Display type	Support CRT, 18-bit TFT LCD or LVDS panel interface
Resolution	Flat panel displays support up to 1024 x 768 @ 18bpp TFT panel and CRT monitors up to 1024 x 768 @ 16bpp or 1280 x1024 @ 8bpp
Ethernet Interface	
Chipset	One Intel 82559ER 100Base-Tx Fast Ethernet controller
Ethernet interface	PCI 100/10 Mbps Ethernet controller. IEEE 802.3U protocol compatible
SSD Interface	One 50-pin CompactFlash socket
Mechanical and Environmental	
Power supply voltage	+5V (4.75V to 5.25V)
Max. power requirements	4A @ 5 V
Operating temperature	32 to 140°F (0 to 60°C)
Board size	3.77"(L)x3.54"(W) (96mmx90mm)
Weight	0.26 lb. (0.12 Kg) (bare)

1.3 AW-P631 Package

Please make sure that the following items have been included in the package before installation.

1. AW-P631 VIA C3 Single Board
2. Quick Setup
3. Cable: Please refer to Appendix Optional Cables
4. CD-ROM which contains the following folders:

(1) Manual
(2) LAN Driver
(3) Tools
(4) Chipset Driver
(5) VGA Driver

If any of these items are missing or damaged, please contact your dealer from whom you purchased the board at once. Save the shipping materials and carton in the event that you want to ship or store the board in the future. After you unpack the board, inspect it to assure an intact shipment. Do not apply power to the board if it appears to have been damaged.

Leave the board in its original packing until you are ready to install

Precautions

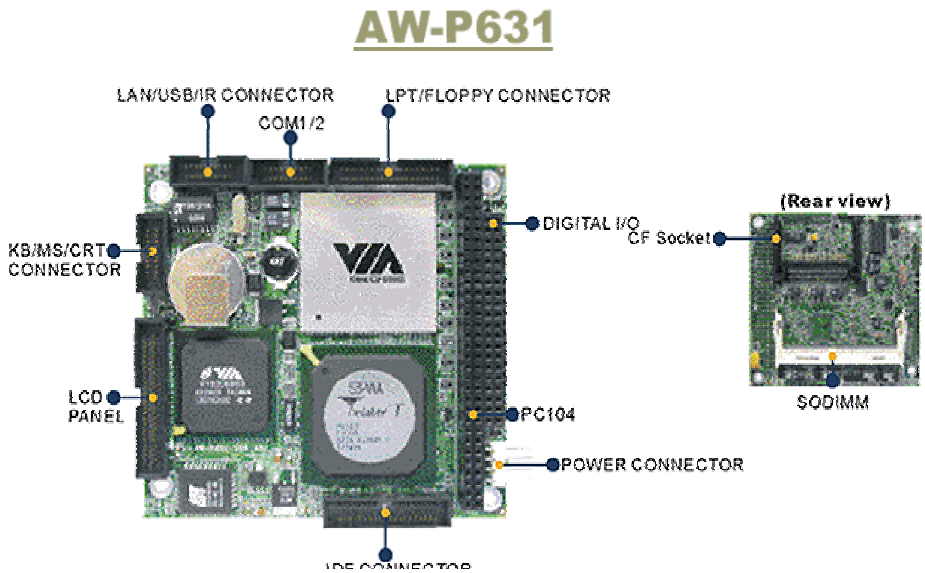
Please make sure you properly ground yourself before handling the AW-P631 board or other system components. Electrostatic discharge can be easily damage the AW-P631 board.

Do not remove the anti-static packing until you are ready to install the AW-P631 board.

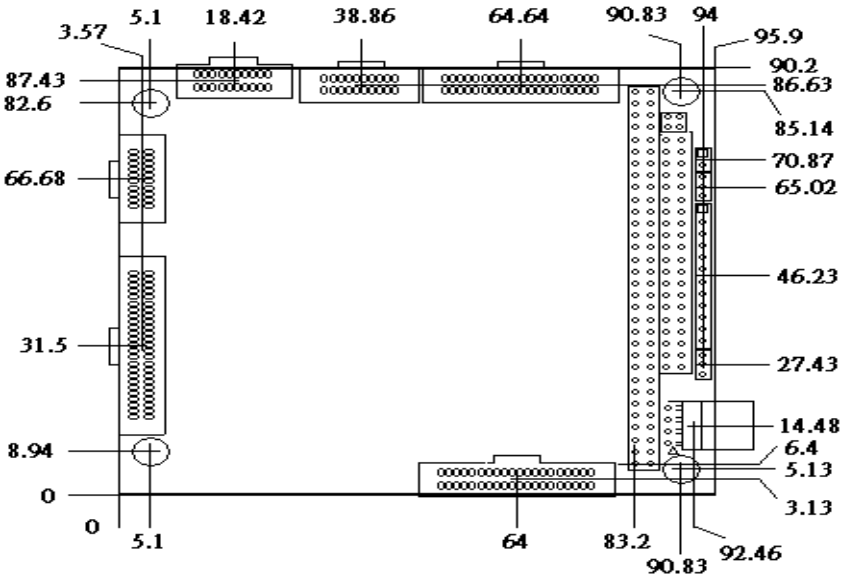
Ground yourself before removing any system component from it protective anti-static packaging. To ground yourself, grasp the expansion slot covers or other unpainted parts of the computer chassis.

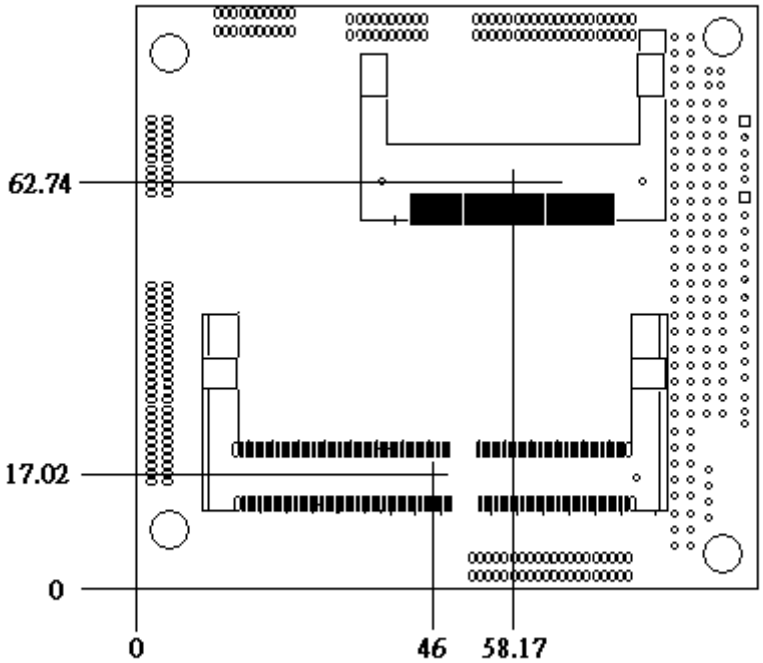
Handle the AW-P631 board by its edges and avoid touching its component.

1.4 Board Layout



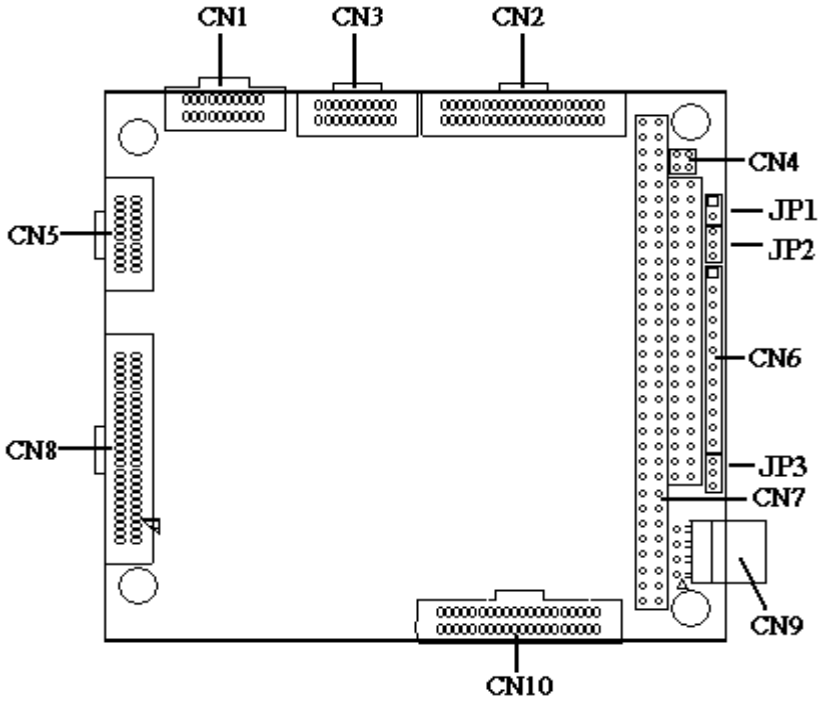
1.5 Board Dimension

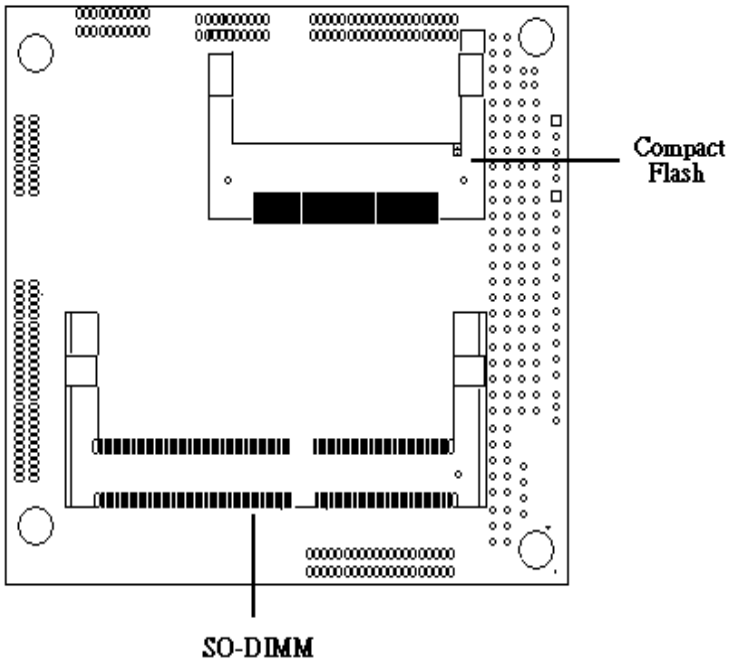




Chapter 2. Connectors/Jumpers Location and Configuration

2.1 Connectors/Jumpers Location and Define





Connector	Description	Connector	Description
CN1	USB, IR, Ethernet Connector	CN6	Digital I/O Connector
CN2	Parallel Port and Floppy Interface Connector	CN7	PC/104 Connector
CN3	Serial Port Connector	CN8	LVDS and LCD Connector
CN4	LAN LED	CN9	Power Connector
CN5	VGA CRT, Keyboard, Mouse, Reset, Speaker and Battery Connector	CN10	IDE Connector
JP1	CompactFlash Mode Select	JP2	Clear CMOS
JP3	Watchdog Output Select		

2.2. Onboard Processors

The AW-P631 has onboard built-in VIA Ezra or EDEN EBGA Package processor. The CPU cooler fan will be mounted when board with 800MHz CPU and the high profile Heatsink will be mounted when 667MHz CPU.

2.3 Installing Memory

To insert a SO-DIMM Memory:

The AW-P631 supports one 144-pin SO-DIMM sockets, memory up to 512Mbyte.

To Insert a SO-DIMM Memory*:* Please align the module with the socket key and press down until the levers at each end of the socket snap close up.

There is only one direction for installing a module in the socket. Do not attempt to force the module into the socket incorrectly.

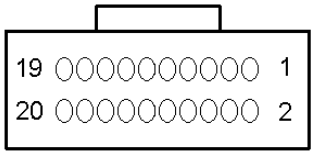
To Remove a SO-DIMM Memory: To remove a SO-DIMM, press down on the levers at both end of the module until the module pops out

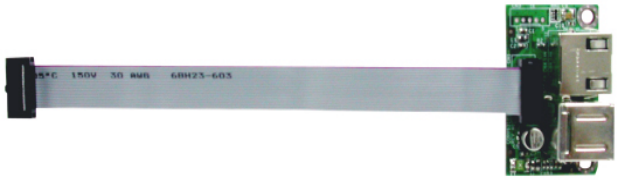
There is only one direction for installing a module in the socket. Do not attempt to force the module into the socket incorrectly.

2.4 Connector and Jumper Settings

CN1: USB, IR, Ethernet Connector

The AW-P631 CN1 combine the USB, Ethernet & IR connectors by using 1.27mm pitch connector onboard, it is necessary to use a converter (CONV63101-00) if you use pin-up solution.





(P/N: CONV63101-01)

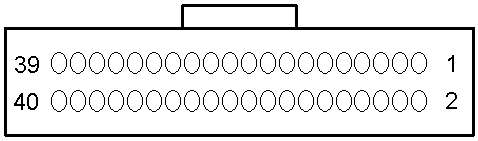
CN2: 2-Channels USB Jack

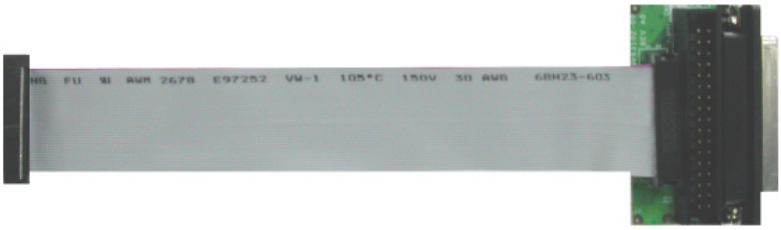
CN3: IR Header

CN4: LAN Jack

Pin	Signal	Pin	Signal
1	LAN_TX-	2	LAN_TX+
3	+5V	4	IR_TX
5	IR_RX	6	LAN_RX-
7	LAN_RX+	8	LAN_SPEED LED+
9	GND-	10	USB_OC0-
11	USB_DATA 1-	12	USB_DATA 1+
13	+3.3V	14	GND-
15	LAN_ACTIVE LED+	16	USB_OC0-
17	USB_DATA 0-	18	USB_DATA 0+
19	GND-	20	GND-

CN2: Parallel Port and Floppy Interface Connector





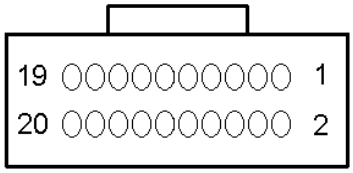
(P/N: CONV63102-01)

CN1: LPT D-Sub Connector

CN3: FDC Connector

Pin	Signal	Notes	Pin	Signal	Notes
1	STROBE	D-sub pin 1	2	PD0	D-sub pin 2
3	PD1	D-sub pin 3	4	PD2	D-sub pin 4
5	PD3	D-sub pin 5	6	PD4	D-sub pin 6
7	PD5	D-sub pin 7	8	PD6	D-sub pin 8
9	PD7	D-sub pin 9	10	ACK*	D-sub pin 10
11	BUSY	D-sub pin 11	12	PE	D-sub pin 12
13	SLCT	D-sub pin 13	14	AUTOFD*	D-sub pin 14
15	ERROR*	D-sub pin 15	16	INIT*	D-sub pin 16
17	SLCTIN*	D-sub pin 17	18	GND	D-sub pin 18-25
19	+5V	Floppy	20	INDEX*	Floppy
21	+5V	Floppy	22	DRIVE SELECT 0*	Floppy
23	+5V	Floppy	24	DISKETTE CHANGE*	Floppy
25	MOTOR ENABLE 0*	Floppy	26	DIRECTION*	Floppy
27	GND	Floppy	28	STEP*	Floppy
29	GND	Floppy	30	WRITE DATA*	Floppy
31	GND	Floppy	32	WRITE GATE*	Floppy
33	GND	Floppy	34	TRACK 00*	Floppy
35	GND	Floppy	36	WRITE PROTECT*	Floppy
37	GND	Floppy	38	READ DATA*	Floppy
39	GND	Floppy	40	DENSITY SELECT*	Floppy

CN3: Serial Port Connector



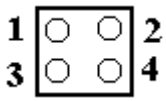
(P/N: CONV63103-01)

CN1: COM1

CN2: COM2

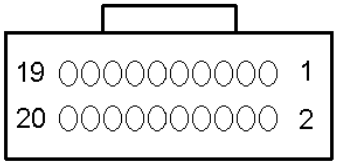
Pin	Signal	Pin	Signal
1	DCD2	2	DSR2
3	RXD2	4	RTS2
5	TXD2	6	CTS2
7	DTR2	8	RI2
9	GND	10	GND
11	DCD1	12	DSR1
13	RXD1	14	RTS1
15	TXD1	16	CTS1
17	DTR1	18	RI1
19	GND	20	GND

CN4: LAN LED



Pin	Signal	Pin	Signal
1	LAN-SPEED LED+	2	+3.3V
3	LAN-LINK LED+	4	+3.3V

CN5: VGA, CRT, Keyboard, Mouse, Reset, Speaker and Battery Connector



(P/N: CONV63104-01)

SW1: RESET BOTTOM

CN2: VGA CONNECTOR

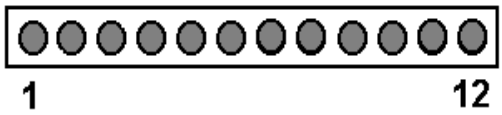
CN3: PS2 MS/KB JACK

CN4: RESET HEADER

CN5: EXT. BAT HEADER

Pin	Signal	Notes	Pin	Signal	Notes
1	EXTERNAL RESET IN	Short to GND for RESET	2	GND	MOUSE and RESET GND
3	MS-CLK	PS/2 MOUSE Pin 5	4	MS-DATA	PS/2 MOUSE Pin 1
5	MSPWR (+5V)	PS/2 MOUSE Pin 4	6	N/C	
7	KB-DATA	PS/2 KB Pin 1	8	KB-CLK	PS/2 KB Pin 5
9	KBPWR (+5V)	PS/2 KB Pin 4	10	SPKROUT	Legacy PC/AT speaker output
11	SPKPWR (+5V)	Power to speaker	12	EXT_BAT+ IN	Input for optional external battery
13	GND		14	RED	VGA DB15 Pin 1
15	GREEN	VGA DB15 Pin 2	16	BLUE	VGA DB15 Pin 3
17	HSYNC	VGA DB15 Pin 13	18	VSYNC	VGA DB15 Pin 13
19	GND	GND reference for RGB	20	GND	GND reference for HSYNC, VSYNC

CN6: Digital I/O Connector



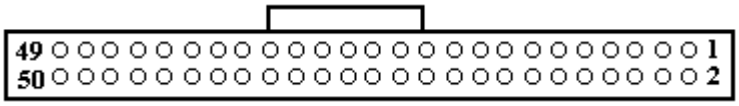
Pin	Signal	Pin	Signal
1	+5V	2	DIN0
3	DIN1	4	DIN2
5	DIN3	6	GND
7	GND	8	DOUT0
9	DOUT0	10	DOUT0
11	DOUT0	12	+3.3V

CN7: PC/104 Connector

Pin	Signal	Pin	Signal
A1	IOCHCHK*	B1	GND
A2	SD7	B2	RESET
A3	SD6	B3	+5V
A4	SD5	B4	IRQ9
A5	SD4	B5	N/C
A6	SD3	B6	N/C
A7	SD2	B7	N/C
A8	SD1	B8	0 WS
A9	SD0	B9	+12
A10	IOCHRDY	B10	GND
A11	AEN	B11	SMEMW*
A12	SA19	B12	SMEMR*
A13	SA18	B13	IOW*
A14	SA17	B14	IOR*
A15	SA16	B15	DACK3*
A16	SA15	B16	DRQ3
A17	SA14	B17	DACK1*
A18	SA13	B18	DRQ1
A19	SA12	B19	REFRESH*
A20	SA11	B20	SYSCLK
A21	SA10	B21	IRQ7
A22	SA9	B22	IRQ6
A23	SA8	B23	IRQ5
A24	SA7	B23	IRQ4
A25	SA6	B25	IRQ3
A26	SA5	B26	N/C
A27	SA4	B27	TC
A28	SA3	B28	BALE
A29	SA2	B29	+5V
A30	SA1	B30	OSC
A31	SA0	B31	GND
A32	GND	B32	GND

Pin	Signal	Pin	Signal
C0	GND	D0	GND
C1	SBHE*	D1	MEMCS16*
C2	LA23	D2	IOCS16*
C3	LA22	D3	IRQ10
C4	LA21	D4	IRQ11
C5	LA20	D5	IRQ12
C6	LA19	D6	IRQ15
C7	LA18	D7	IRQ14
C8	LA17	D8	DACK0*
C9	MEMR*	D9	DRQ0
C10	MEMW*	D10	DACK5*
C11	SD8	D11	DRQ5
C12	SD9	D12	DACK6*
C13	SD10	D13	DRQ6
C14	SD11	D14	DACL7*
C15	SD12	D15	DRQ7
C16	SD13	D16	+5V
C17	SD14	D17	MASTER*
C18	SD15	D18	GND
C19	GND	D19	GND

CN8: LVDS and LCD Connector



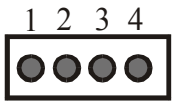
(P/N: CONV63105-01)

CN1: LVDS /CN2: LCD Connector

CN4: LCD B.Light/CN6: LCD PWR Connector

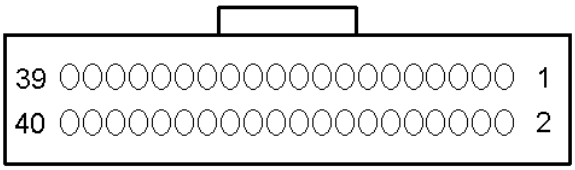
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	ENA_VDD	14	GND	27	LVDS DATA1+	40	LVDS DATA2-
2	ENABKL	15	LVDS DATA0+	28	LVDS DATA1-	41	GND
3	LVDS CLK+	16	LVDS DATA0-	29	GND	42	FD12
4	LVDS CLK-	17	GND	30	FD6	43	FD13
5	ENABKL	18	FD0	31	FD7	44	GND
6	GND	19	FD1	32	GND	45	FD14
7	M/DE	20	GND	33	FD8	46	FD15
8	N/C	21	FD2	34	FD9	47	GND
9	GND	22	FD3	35	GND	48	FD16
10	LP/HSYNC	23	GND	36	FD10	49	FD17
11	FLM/VSYNC	24	FD4	37	FD11	50	GND
12	GND	25	FD5	38	GND		
13	SFHCLK	26	GND	39	LVDS DATA2+		

CN9: Power Connector



Pin	Signal	Pin	Signal
1	+5V (INPUT)	2	GND
3	GND	4	+3.3V (OUTPUT)

CN10: IDE Connector



(P/N: CONV63106-01)

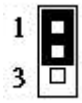
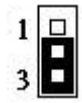
CN1: 2.0mm IDE CONNECTOR

Pin	Signal	Pin	Signal
1	IDE RESET*	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GND	20	N/C
21	DREQ	22	GND
23	DIOW*	24	GND
25	DIOR*	26	GND
27	IOCHRDY	28	PULL DOWN
29	DACK*	30	GND
31	IRQ14	32	PULL DOWN
33	A1	34	N/C
35	A0	36	A2
37	HD SELECT 0*	38	HD SELECT 1*
39	+5V	40	+5V

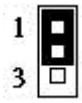
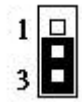
JP1: CompactFlash Mode Select

Setting		Define
	Closed	Closed for Master
	Open	Opened for Slave

JP2: Clear CMOS

Setting		Define
	1-2	Hold Data (Default)
	2-3	Clear CMOS

JP3: Watchdog Output Select

Setting		Define
	1-2	IRQ11
	2-3	Reset (Default)

Chapter 3. BIOS Setup

The ROM chip of your AW-P631 board is configured with a customized Basic Input/Output System (BIOS) from Phoenix-Award BIOS. The BIOS is a set of permanently recorded program routines that give the system its fundamental operational characteristics. It also tests the computer and determines how the computer reacts to instructions that are part of programs.

The BIOS is made up of code and programs that provide the device-level control for the major I/O devices in the system. It contains a set of routines (called POST, for Power-On Self Test) that check out the system when you turn it on. The BIOS also includes CMOS Setup program, so no disk-based setup program is required CMOS RAM stores information for:

- Date and time
- Memory capacity of the main board
- Type of display adapter installed
- Number and type of disk drives

The CMOS memory is maintained by battery installed on the AW-P631 board. By using the battery, all memory in CMOS can be retained when the system power switch is turned off. The system BIOS also supports easy way to reload the CMOS data when you replace the battery of the battery power lose.

3.1 Quick Setup

In most cases, you can quickly configure the system by choosing the following main menu options:

1. Choose "Load Optimized Defaults" from the main menu. This loads the setup default values from the BIOS Features Setup and Chipset Features Setup screens.
2. Choose "Standard COS Features" from the main menu. This option lets you configure the date and time, hard disk type, floppy disk drive type, primary display and more.
3. In the main menu, press F10 ("Save & Exit Setup") to save your changes and reboot the system.

3.2 Entering the CMOS Setup Program

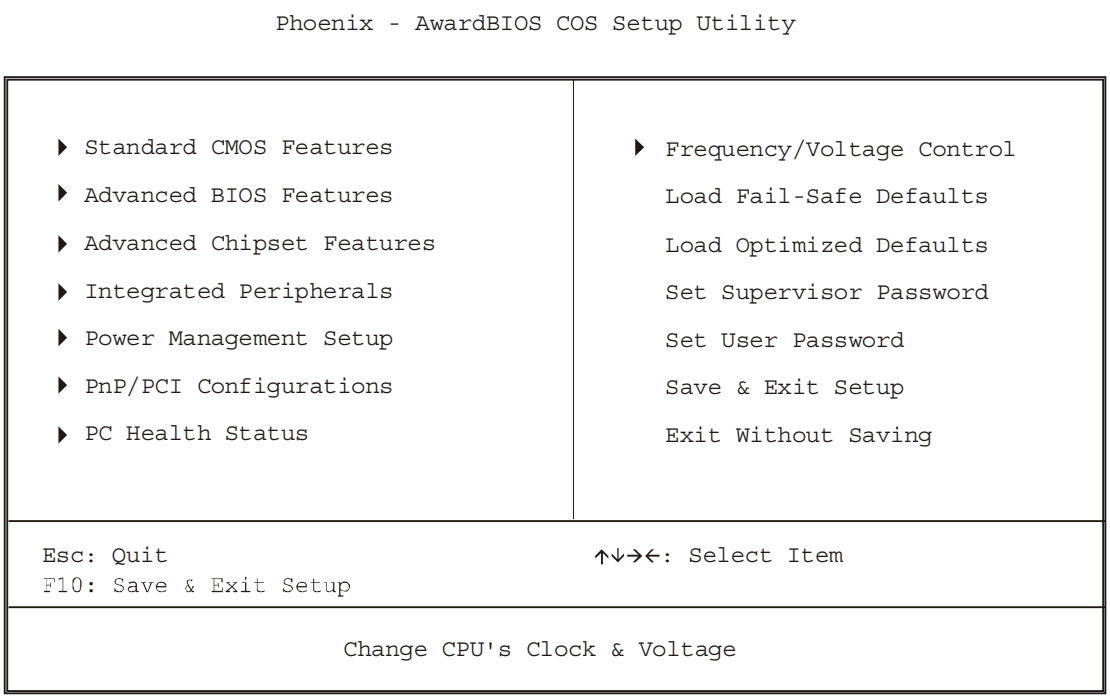
Use the CMOS Setup program to modify the system parameters to reflect the options installed in your system and to customized your system. For example, you should run the Setup program after you:

- Received an error code at startup
- Install another disk drive
- Use your system after not having used it for a long time
- Find the original setup missing
- Replace the battery
- Change to a different type of CPU
- Run the Phoenix-Award Flash program to update the system BIOS

Run the CMOS Setup program after you turn on the system. On-screen instructions explain how to use the program.

⇩ **Enter the CMOS Setup program's main menu as follows:**

1. Turn on or reboot the system. After the BIOS performs a series of diagnostic checks, the following message appears:
   "Press DEL to enter SETUP"
2. Press the <DEL> key to enter CMOS Setup program. The main menu appears:



3. Choose a setup option with the arrow keys and press <Enter>. See the following sections for a brief description of each setup option.

In the main menu, press F10 ("Save & Exit Setup) to save your changes and reboot the system. Choosing "EXIT WITHOUT SAVING" ignores your changes and exits the program. Pressing <ESC> anywhere in the program returns you to the main menu.

3.3 Menu Options

The main menu options of the CMOS Setup program are described in the following sections of this chapter.

STANDARD CMOS FEATURES:
Configure the date & time, hard disk drive type, floppy disk drive type, primary display type and more

ADVANCED BIOS FEATURES:
Configure advanced system options such as enabling/disabling cache memory and shadow RAM

ADVANCED CHIPSET FEATURES:
Configure advanced chipset register options such DRAM timing

INTEGRATED PERIPHERALS:
Configure onboard I/O functions

POWER MANAGEMENT SETUP:
Configure power management features such as timer selects

PNP/PCI CONFIGURATION:
Configure Plug & Play IRQ assignments and PCI slots

PC HEALTH STATUS:
Configure the CPU speed and, if the optional Winbond W83627HF system monitor IC is installed, view system information

FREQUENCY/VOLTAGE CONTROL
Use this menu to specify your settings for frequency/voltage control

LOAD FAIL-SAFE DEFAULT:
Loads BIOS default values. Use this option as diagnostic aid if your system behaves erratically

LOAD OPTIMIZED DEFAULTS:
Use this menu to load the BIOS default values that are factory settings for optimal performance system operations.

SET SUPERVISORS & USER PASSWORD:
Configure the system so that a password is required when the system boots or you attempt to enter the CMOS setup program. When you log in with this password, you will be able to enter the COS Setup main menu, but you can not enter other menus in the CMOS Setup program.

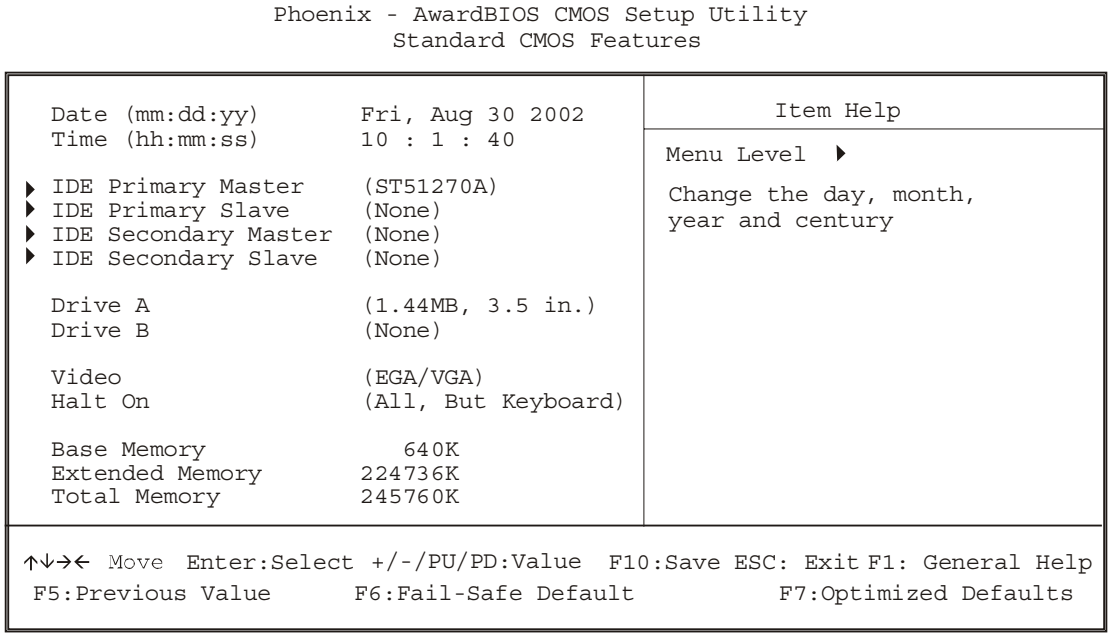
SAVE & EXIT SETUP:
Save changes of values to CMOS and exit the CMOS setup program

EXIT WITHOUT SAVING:
Abandon all CMOS changes and exit the CMOS setup program

Standard CMOS Features Setup

⇩Use the Standard CMOS Setup option as follows:

1. Choose "Standard CMOS Features" from the main menu. The following screen appears:



2. Use the arrow keys to move between fields. Modify the selected field using the PgUP/PgDN/+/- keys. Some fields let you enter numeric values directly.

Date (mm:dd:yy)/Time (hour:min:sec):

Type the current date/Type the current time (24-hour clock)

Hard Disks:

Choose from "Auto", "User", or "None"

If your drive is not one of the predefined types, choose "User" and enter the following drive specifications:

Cylinders, heads, Wpcom, L-Zone, sectors, and mode

Consult the documentation received with the drive for the values that will give you optimum performance.

Drive A & Drive B:

Choose: None
360K, 5.25 in
1.2M, 5.25 in

720K, 3.5 in
1.44M, 3.5"
2.88M, 3.5"

Video:

Choose: EGA/VGA
CGA 40
CGA 80
Mono

Halt On:

Controls whether the system stops in case of an error detected during power up.

Choose: All Errors (Default)
No Errors
All, But Keyboard
All, But Diskette
All, But Disk/Key

3. After you have finished with the Standard CMOS Features program, press the <ESC> key to return to the main menu.

Advanced BIOS Features Setup

⇩ **Use the Advanced BIOS Features Setup option as follows:**

1. Choose "Advanced BIOS Features Setup" from the main menu. The following screen appears:

```
                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>      | Allow you to change
  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)      |
  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         <Disabled>     |

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

2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUP/PgDN keys. Press the <F1> "Help" key for information on the available options:

Virus Warning:

When enabled, any attempt to write to the boot sector and partition table will halt the system and cause a warning message to appear. If this happens, you can use an anti-virus utility on a virus-free, bootable floppy disk to reboot and clean your system. The default setting is **Disabled**

CPU Internal/External Cache:

Cache memory is an additional memory that is much faster than the conventional

DRAM (system memory). CPUs with 486-type contain internal cache memory; most PCs have external cache memory. When CPU requests data, the system transfers the data from the main DRAM into cache memory, for even faster access by the CPU. The External Cache wouldn't appear if the system using does not have external cache memory.
Choose: Enabled / Disabled

CPU L2 Cache FCC Checking:
When enabled, memory checking is enabled when the external cache contains ECC SRAMs.
Choose: Enabled / Disabled

Quick Power on Self Test:
When enabled, the reducing time required runs the power-on-self-test (POST); a quick POST could skip certain steps. We recommend users disable quick POST normally.
Choose: Enabled / Disabled

First/Second/Third Boot Device:
The BIOS attempts to load the operating system from the devices in the sequence selected in these items.
Choose: Floppy, LS-120, HDH-0, 1, 2, 3, SCSI, CDROM, ZIP100, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, LAN, Disabled

Boot other Device:
If your boot device is not included in the following choices of Floppy---LS120, HDD0, HDD1, HDD2, SCSI, CDROM---you may set First/Second/Third Boot devices to disable and enable the "Boot Other Device" function. The system will automatically boot the other device.
Choose: Enabled / Disabled

Swap Floppy Drive:
This would be effective only in systems with tow floppy drives. To select enable assigns physical drive B to logical drive A, and physical drive A to logical drive B.
Choose: Enabled / Disabled

Boot Up Floppy Seek:
When enabled, the BIOS seeks floppy drives to decide the tracks—40 or 80. 360KB

floppy drives have 40 tracks; 720KB floppy drives, 1.2MB, and 1.44MB capacity all have 80 tracks. Few modern PCs have 40-tracks floppy drives; therefore, we recommend that you would disable this option to save time.
Choose: Enabled / Disabled

Boot Up NumLock Status:
Choose On or Off. On puts the numeric keypad in Num Lock mode at boot-up.
Off puts the numeric keypad in arrow key mode at boo-up

Gate A20 Option:
Choose Enabled or Disabled. Enable this option to allow RAM accesses faster than normal, and is useful in networking operating systems.

Typematic Rate Setting:
Choose Enabled or Disabled. Enable his option to adjust the keystroke repeat rate.
Adjust the rate via Typematic Rate Delay and Typematic Rate

Typematic Rate (Chars/Sec):
Choose the rate at which character keeps repeating

Typematic Delay (Msec):
Choose the delay between holding down a key and when the character begins repeating

Security Option:
Choose Setup or System. This lets you specify whether a password is required every time the system boots or only when an attempt is made to enter the CMOS Setup program.
"Setup" – The password prompt only appears if you attempt to enter the CMOS setup program.
"System" – The password prompt appears each time the system is booted.
Note: The password function is disabled by default. For a description of enabling the password function, refer to the section: Supervisor Password & User Password later in this chapter.

OS Select for DRAM > 64MB:
Set to OS/2 if your system is using OS/2 and has a memory size of more than 64MB

Small Logo:

Choose: Enabled / Disabled

Advanced Chipset Features Setup

⇩ **Use the Advanced Chipset Features Setup option as follows:**

1. Choose "Advanced Chipset Features Setup" from the main menu. The following screen appears:

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

  DRAM Timing By SPD           <Enabled>
X DRAM Clock                    Host CLK      Item Help
X SDRAM Cycle Length            3
X Bank Interleave               Disabled    Menu Level ▸
  Memory Hole                  <Disabled>
  P2C/C2P Concurrency          <Enabled>
  System BIOS Cacheable        <Disabled>
  Video RAM Cacheable          <Disabled>
  Frame Buffer Size            <8M>
  AGP Aperture Size            <64M>
  AGP-4X Mode                  <Enabled>
  Panel Type                   <07>
  Boot Device Select           <Auto>
  OnChip USB                   <Enabled>
  USB Keyboard Support         <Disabled>
  CPU to PCI Write Buffer      <Enabled>
  PCI Dynamic Bursting         <Enabled>
  PCI Master 0 WS Write        <Enabled>
  PCI Delay Transaction        <Disabled>
  PCI#2 Access #1 Retry        <Enabled>
  AGP Master 1 WS Write        <Disabled>
  AGP Master 1 WS Read         <Disabled>

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

2. Move between items and select values by using the arrow keys. Modify the selected fields using the PnUP/PgDN keys. For information on the various options, press <F1> key.

DRAM Timing By SPD:

It lets you select the value in this field, depending on the board paged DRAMs or EDO (Extended Data Output) DRAMS.

Choose: Enabled / Disabled

DRAM Clock:

It lets you control the DRAM speed.

Choose: Host Clock, HCLK-33M, HCLK+33M

SDRAM Cycle Length:
It sets the CAS latency timing.
Choose: 3 / 2

Bank Interleave:
Choose: 2 Bank / 4 Bank / Disabled

Memory Hole At 15M-16M:
Choose Enabled or Disabled. You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it can not be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirement.

P2C/C2P Concurrency:
It lets you enable or disable the PIC to CPU or CPU to PCI.
Choose: Enabled / Disabled

System BIOS Cacheable:
Choose Enabled or Disabled. When enabled, caching of the system BIOS at F0000h-FFFFFh, enhancing system performance. However, if any program writes to this memory area, a system error may result.

Video RAM Cacheable:
Choose: Enabled / Disabled

Frame Buffer Size:
Choose: 2M / 4M / 8M / 16M / 32M

AGP Aperture Size (MB):
Select the size of AGP aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycle that hit the aperture range are forwarded to the AGP without any translation. 64MB

AGP-4X Mode:
When 4X mode enabled, it will enhance your system performance.
Choose: Enabled / Disabled

OnChip USB:
You could enable this function if the system contains USB (Universal Serial Bus) controller and USB keyboard. When disabled, the system will not be able to access USB keyboard.
Choose: Enabled / Disabled

USB Keyboard Support:
You could enable this function if the system contains USB controller and USB keyboard.
Choose: Enabled / Disabled

OnChip Sound:
It lets you control the onboard VIA 1611 audio.
Choose: Auto / Disabled

CPU to PIC Write Buffer:
When enabled, writes from CPU to PCI bus are buffered. It also compensate the speed differences
Between the CPU and PCI bus. Otherwise, when disabled, the writes are not buffered. The CPU must wait until the write is completed starting another write cycle.
Choose: Enabled / Disabled

PCI Dynamic Bursting:
When enabled, each write transaction goes to the write buffer. Then, burstable transactions burst on the PCI bus and nonburstable truncations don't.
Choose: Enabled / Disabled

PCI Master 0 WS Write:
When enabled, writes to the PCI bus are executed with zero waiting states.
Choose: Enabled / Disabled

PCI Delay Transaction:
The chipset with an embedded 32-bit posted write buffer supports delay transaction cycles. Choose "enable" to support compliances with PCI specification, version 2.1.
Choose: Enabled / Disabled

PCI#2 Access #1 Retry:

When enabled, PCI#2 will be unconnected if max retries attempt to be without success.

Choose: Enabled / Disabled

AGP Master 1 WS Write:

When enabled, the system will run single wait state delay before writing data from buffer; if users disable the system, it will run twice wait states and the system can be stable.

Choose: Enabled / Disabled

AGP Master 1 WS Read:

When enabled, the system will run single wait state delay before reading data from buffer; if users disable the system, it will run twice wait states and the system can be stable.

Choose: Enabled / Disabled

Integrated Peripherals

⇩**Use the Integrated Peripherals Setup option as follows:**

1. Choose "Integrated Peripherals Setup" from the main menu. The following screen appears:

```
                Phoenix - AwardBIOS CMOS Setup Utility
                        Integrated Peripherals

  On-Chip IDE Channel0        <Enabled>          |          Item Help
  On-Chip IDE Channel1        <Enabled>          |
  IDE Prefetch Mode           <Enabled>          |  Menu Level  ▸
  Primary Master   PIO        <Auto>             |
  Primary Slave    PIO        <Auto>             |
  Primary Master   UDMA       <Auto>             |
  Primary Slave    UDMA       <Auto>             |
  Init Display First          <PCI Slot>         |
  IDE HDD Block Mode          <Enabled>          |
  Onboard FDD Controller      <Enabled>          |
  Onboard Serial Port 1       <Auto>             |
  Onboard Serial Port 2       <Auto>             |
  UART 2 Mode                 <Standard>         |
X IR Function Duplex           Half              |
x TX RX inverting enable       No, Yes           |
  Onboard Parallel Port       <378/IRQ7>         |
  Onboard Parallel Mode       <Normal>           |
X ECP Mode Use DMA             3                 |
X Parallel Port EPP Type       EPP1.9            |

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

2. Move between items and select values by using the arrow keys. Modify the selected fields using the PgUP/PgDN keys. Please press the <F1> key for information on the various options.

On-Chip IDE Channel 0/1:

The system chipset contains a PIC IDE interface, which supports two IDE channels. When enabled, it will activate the primary and/or secondary IDE interface. When disabled, it will deactivate the interface.

Choose: Enabled / Disabled

IDE Prefetch Mode:

The onboard IDE drive interfaces support IDE prefetch, which are faster drive accesses. If the interface doesn't support prefetch, users could choose "disable" when installing the primary and/or secondary add-in IDE interface.

Choose: Enabled / Disabled

IDE Primary Master/Slave PIO:
Auto/Mode0/Mode1/Mode2/Mode3/Mode4
The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

IDE Primary Master/Slave UDMA:
Auto, Mode0, Mode1, Mode2, Mode3, Mode4
UltraDMA33/66/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. If your hard drive and your system software both support UltraDMA33/66/100, select Auto to enable BIOS support.

Init Display First:
Default: PCI Slot
This option lets you choose the priority of PCI or AGPVGA card

IDE HDD Block Mode:
Enabled / Disabled the IDE HDD Block Mode function.
Note: Not all drives support this function

Onboard FDC Controller:
Enabled/Disabled. Select enabled if your system has a floppy disk controller installed on the system board and you wish to use it. If the system has no floppy drive, select Disabled in this field.

Onboard Serial Port1/2:
Default: Auto
Select an address and corresponding interrupt for the first and second serial ports.

UART 2 Mode:
Select an operating mode for the second serial port:

Normal	RS-232C serial port
Standard	RS-232C serial port
IrDA 1.0	Infrared port compliant with IrDA 1.0 specification
IrDA SIR	IrDA-compliant serial

	Infrared port
IrDA MIR	1 MB/sec infrared port
IrDA FIR	Fast infrared standard
FIR	Fast infrared standard
MIR 0.57M	0.57 MB/sec infrared port
MIR 1.15M	1.15 MB/sec infrared port
Sharp IR	4 MB/sec data transmission
HPSIR	IrDA-compliant serial infrared port
ASKIR	Amplitude shift keyed infrared port

IR Function Duplex:
Choose the requiring value of the IR device and connect to the IR port. Full duplex mode allows two directions transmission simultaneously. Half duplex mode allows only one direction at the same time.
Choose: Full / Half

TX RX inverting enable:
Check your IR peripheral documentation to select the correct setting.
Choose: Yes/No, Yes/Yes, No/Yes, No/No

Onboard Parallel Port:
Choose: 378/IRQ7
This option lets you to determine onboard parallel port controller I/O address setting.

Parallel Port Mode:
Default Setting: SPP
Select an operating mode for the onboard parallel port.

ECP Mode Use DMA:
Select a DMA channel for the port
Choose: 3 / 1

Parallel Port EPP Type:
Select EPP port type 1.7 or 1.9
Choose: EPP1.9 / EPP1.7

Power Management Setup

The Power Management Setup controls the board's "green" features. To save energy these features shut down the video display and hard disk drive.

⇩ **Use the Power Management Setup option as follows:**

1. Choose "Power Management Setup" from the main menu. The following screen appears.

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

                                                        Item Help
▸ Power Management          <Press Enter>
  PM Control by APM         <Yes>                       Menu Level ▸
  Video Off Option          <Suspend -> Off>
  Video Off Method          <V/H SYNC+Blank>
  MODEM Use IRQ             <3>
  Soft-Off by PWRTBN        <Instant-Off>
  Wake Up Events            <Press Enter>

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

2. Move between items and select values by using the arrow keys. Modify the selected field the PgUP/PgDN keys. For information on the various options, press <F1> key.

Power Management:
Choose Disable, User Define, Min Saving or Max. Saving.
"User Define" – Lets you specify when the HDD and system will shut down
"Min Saving" - Predefine timer value of 4-12 min.
"Max Saving" – Predefine timer value of 1 minute

PM Control by APM:
When the advanced power management is installed on the system, users would select "Yes" to save more power.
Choose: Yes / No

Video off Option:

Select the power saving modes when the monitor is blank.

Always on	Monitor remains "on" during power saving modes.
Suspend-off,	Monitor is blank when system is in suspension mode
Suspend, Standby-off	Off monitor is blank when the system is in either suspension or standby mode.
All modes-off	Monitor is blank when the system is in any power saving mode.

Video Off Method:

Choose V/H SYNC+Blank, DPMS, Blank Screen

When power management blanks the screen and turns off vertical and horizontal scanning.

The DPMS (Display Power Management System) setting allows the BIOS to control the video card if it has the DPMS features. If you don't have a Green monitor, use the Blank Screen option

MODEM Use IRQ:

Choose the IRQ used by the modem.

Default: Disabled

3. After you have finished with the Power Management Setup, press the <ESC> key to return to the main menu.

PNP/PCI Configuration

This option is used to configure Plug and Play assignments and route PCI interrupts to designated ISA interrupts.

⇩ Use the PNP/PCI Configuration Setup option as follows:

1. Choose "PNP/PCI Configuration Setup" from the main menu, the following screen appears.

```
                Phoenix - AwardBIOS CMOS Setup Utility
                        PnP/PCI Configurations

                                                        Item Help
  PNP OS Installed          <No>
  Reset Configuration Date  <Disabled>                  Menu Level  ▸
                                                        Select Yes if you are
  Resources Controlled By   <Audo(ESCD)>                using a Plug and Play
X IRQ Resources              Press Enter                capable operating
X DMA Resources              Press Enter                system Select No if
                                                        you need the BIOS to
  PCI/VGAS Palette Snoop    <Disabled>                  configure non-boot
  Assign IRQ For VGA        <Enabled>                   devices
  Assign IRQ For USB        <Enalbed>

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

2. Move between items and select values by using the arrow keys. Modify the selected fields using the PgUP/PgDN keys. For information on the various options, please press <F1> key.

PNP OS Installed:
Choose "Yes" when the system operating environment is "Plug and Play aware", for example, Win95. Choose "No" if users need the BIOS to configure non-boot devices.
Choose: Yes / No

Reset Configuration Data:
Choose Enable or Disable
"Enable" – PNP configuration data is reset in BIOS
"Disable" – PNP configuration date is retained in BIOS

Resources Controlled By:
Choose Auto or Manual. This option specifies whether resources are controlled by automatic or manual configuration

IRQ Resources:
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>

DMA Resources:
Assigning every DMA channel a type when resources are controlled manually. This would depend on the type of device using the DMA channel.

PCI/VGA Palette Snoop:
Enabling this item informs the PCI/VGA card to keep silent when palette register is updated

Assign IRQ for VGA:
Choose Enabled/Disabled to specify whether the VGA uses on IRQ or not.

Assign IRQ for USB:
Choose Enabled/Disabled to specify whether the USB uses an IRQ or not.

3. Please press the <ESC> key to return the main menu after finishing with the PNP/PCI Configuration Setup.

PC Health Status Configuration Setup

Choose "PC Health Status Configuration Setup" from the main menu, the following screen appears:

```
                    Phoenix - AwardBIOS Setup Utility
                              PC Health Status

┌──────────────────────────────────────────┬──────────────────────────────┐
│                                          │          Item Help           │
│  Current CPU Temp.          30/86        ├──────────────────────────────┤
│  Current CPUFAN Speed       31/87        │ Menu Level  ▸                │
│  Vcore                      1.16 V       │                              │
│   2.5V                      2.61 V       │                              │
│   3.3V                      3.38 V       │                              │
│     5V                      5.30 V       │                              │
│                                          │                              │
└──────────────────────────────────────────┴──────────────────────────────┘
↑↓→← Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC: Exit  F1: General Help
 F5:Previous Value      F6:Fail-Safe Default          F7:Optimized Defaults
```

Frequency/Voltage Control Option

Choose the "Frequency/Voltage Control" from main menu, the following screen appears:

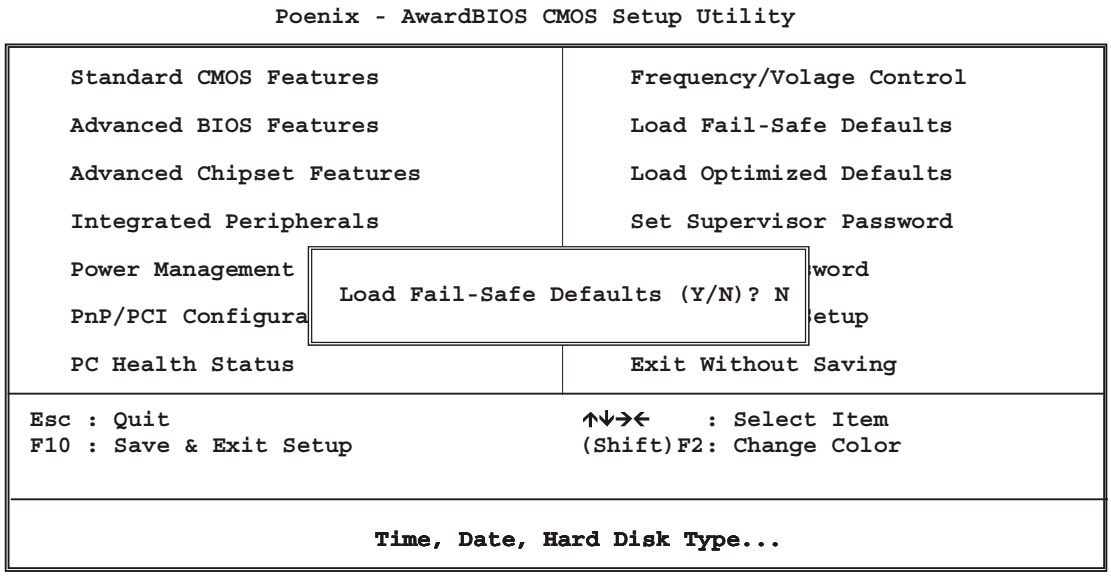
```
                  Phoenix - AwardBIOS CMOS Setup Utility
                        Frequency/Voltage Control

┌──────────────────────────────────────────┬──────────────────────────────┐
│                                          │          Item Help           │
│  VIA C3 Clock Ration          <Default>  ├──────────────────────────────┤
│  Auto Detect DIMM/PCI Clk     <Enabled>  │ Menu Level  ▸                │
│  Spread Spectrum Modulated    <Disabled> │                              │
│  CPU Host Clock (CPU/PCI)     <Defualt>  │ This item is for VIA         │
│                                          │ C3 CPU Ratio                 │
│                                          │ adjustment                   │
└──────────────────────────────────────────┴──────────────────────────────┘
↑↓→← Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC: Exit  F1: General Help
 F5:Previous Value      F6:Fail-Safe Default          F7:Optimized Defaults
```

Load Fail-Safe Defaults

This option loads the troubleshooting default values permanently stored in the BIOS ROM. This is useful if you are having problems with the main board and need to debug or troubleshoot the system. The loaded default settings do not affect the Standard CMOS Setup screen.

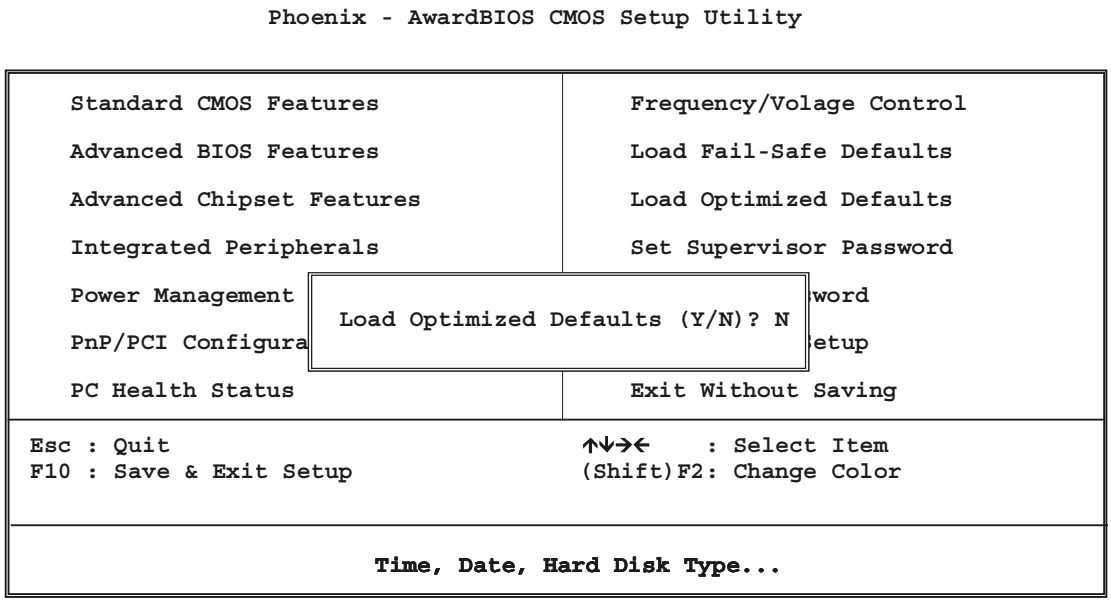
To use this feature, highlight it on the main screen and press <Enter>. A line will appear on the screen asking if you want to load the BIOS default values. Pres the <Y> key and then press <Enter> if you want to load the BIOS default.



Load Optimized Defaults

This option loads optimized settings stored in the BIOS ROM. The auto-configured settings do not affect the Standard CMOS Setup screen.

To use this feature, highlight it on the main screen and press <Enter>. A line will appear on the screen asking if you want to load the Optimized Default Values. Press the <Y> key and then press <Enter> if you want to load the SETUP default.

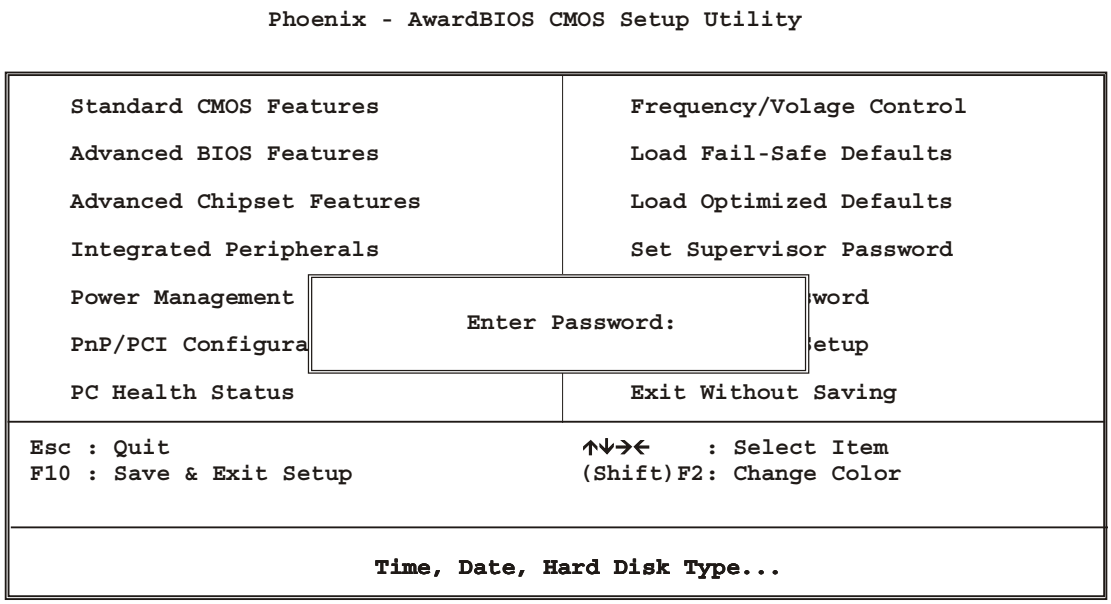


Supervisor/User Password

The password options let you prevent unauthorized system boot-up or unauthorized use of CMOS setup. The Supervisor Password allows both system and CMOS Setup program access; the User Password allows access to the system and the CMOS Setup Utility main menu.

The password functions are disabled by default. You can use these options to enable a password function or, if a password function is already enabled, change the password.

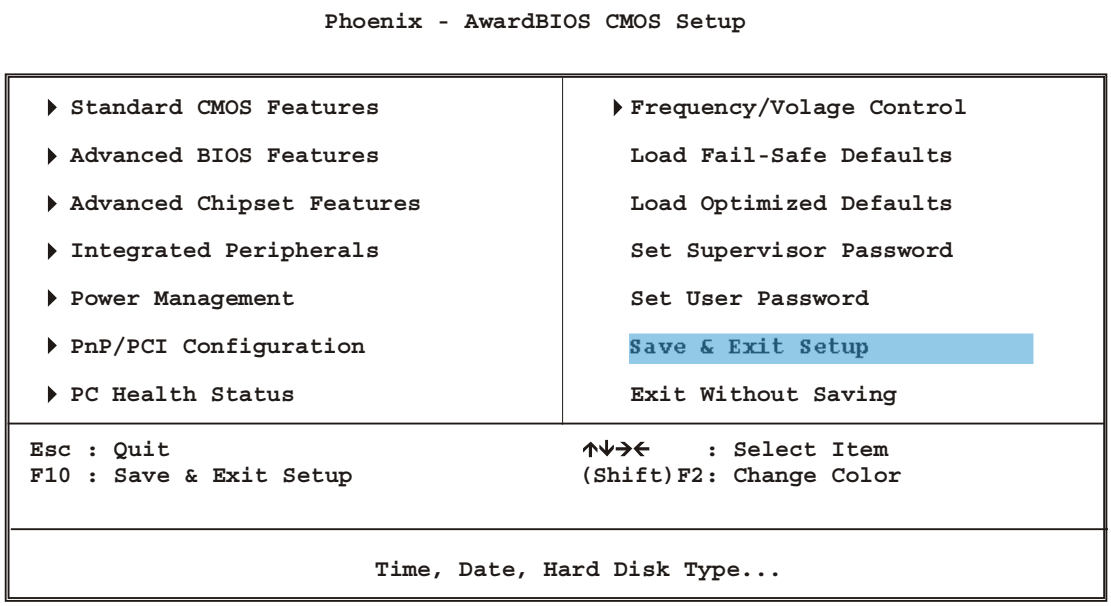
To change a password, first choose a password option from the main menu and enter the current password. Then type your new password at the prompt. The password is case sensitive and you can use up to 8 alphanumeric characters. Press <Enter> after entering the password. At the Next Prompt, confirm the new password by typing it and pressing <Enter> again.



After you use this option to enable a password function, use the "Security Option" in "BIOS Feature Setup" to specify whether a password is required every time the system boots or only when an attempt is made to enter the CMOS Setup program.

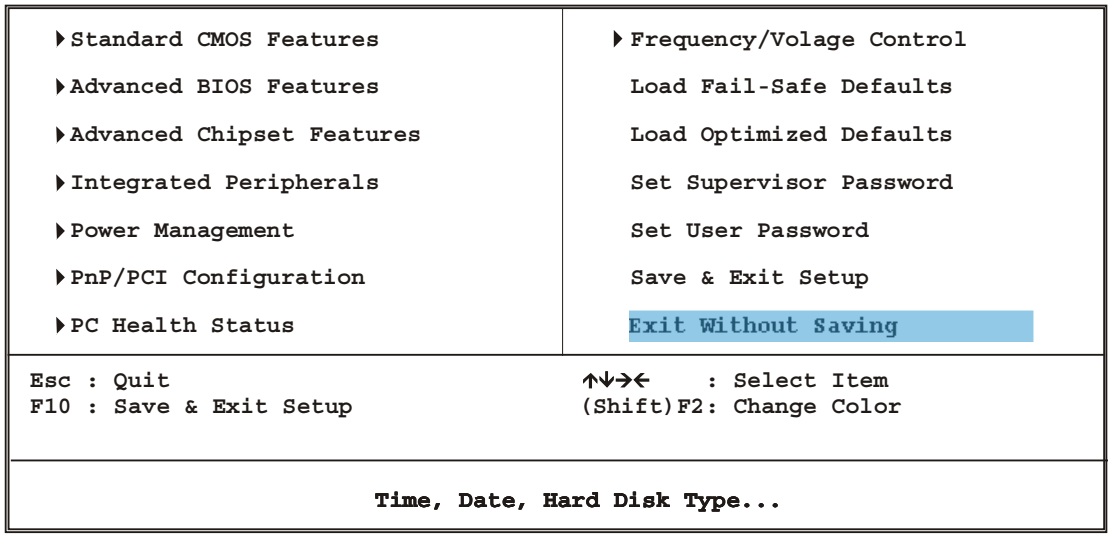
Save and Exit Setup

This function automatically saves all CMOS values before exiting Setup.



Exit Without Saving

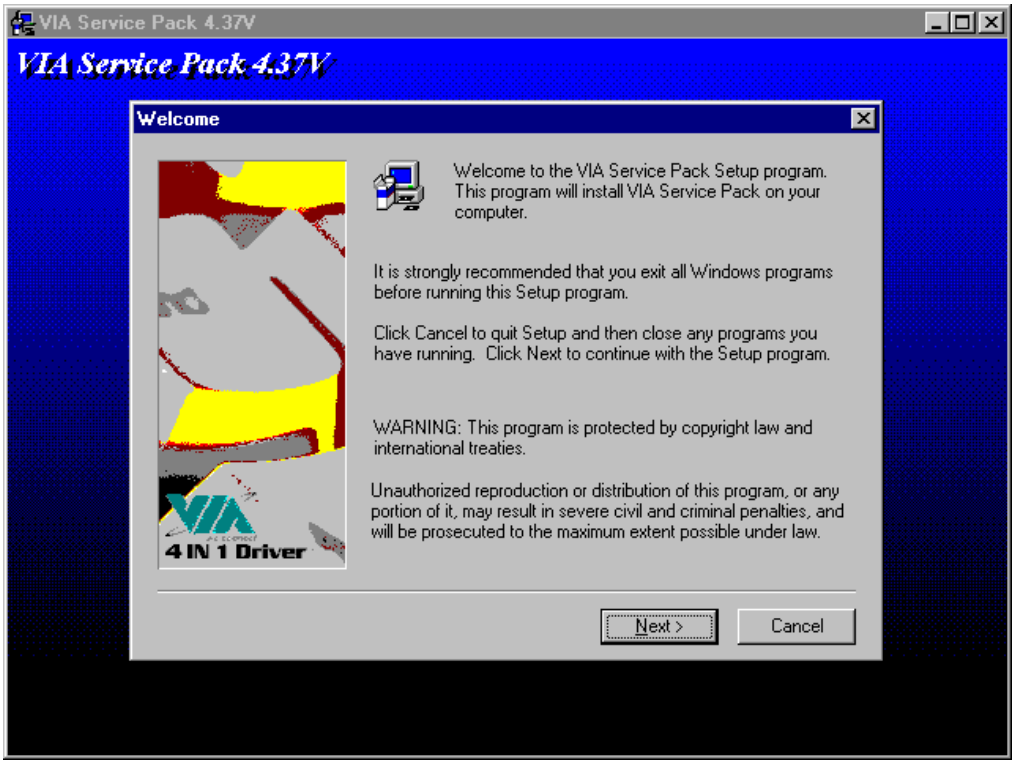
Use this function to exit Setup without saving the CMOS value.



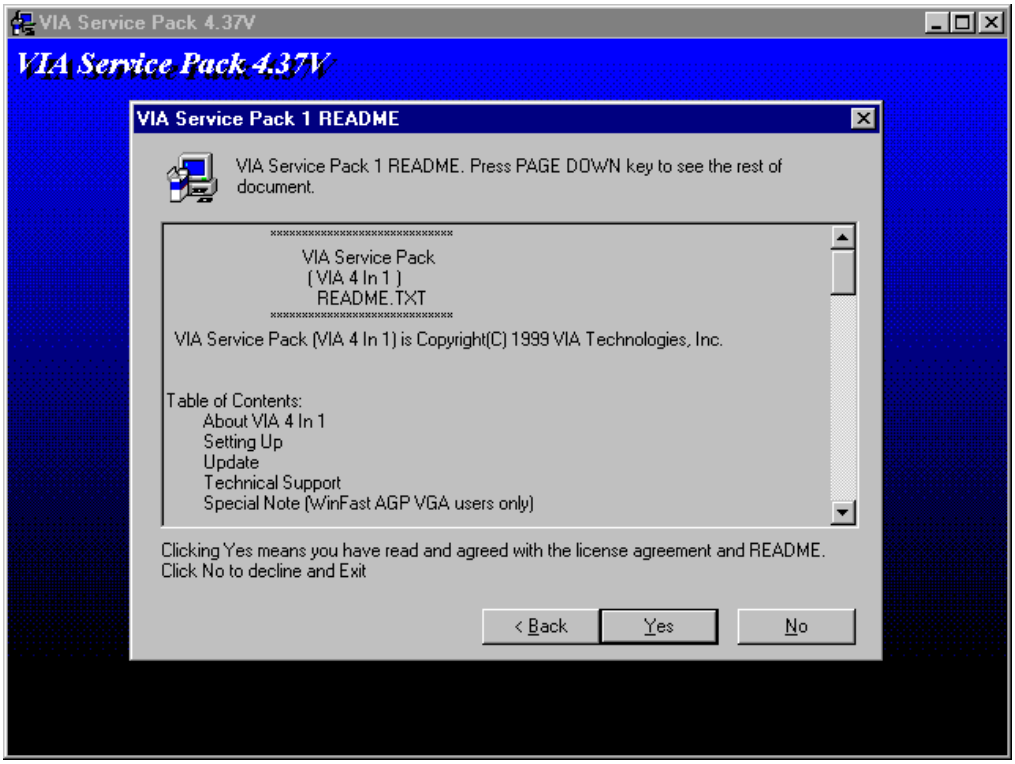
Chapter 4. Driver Utility

4.1 The system driver installation procedure must be performed first.

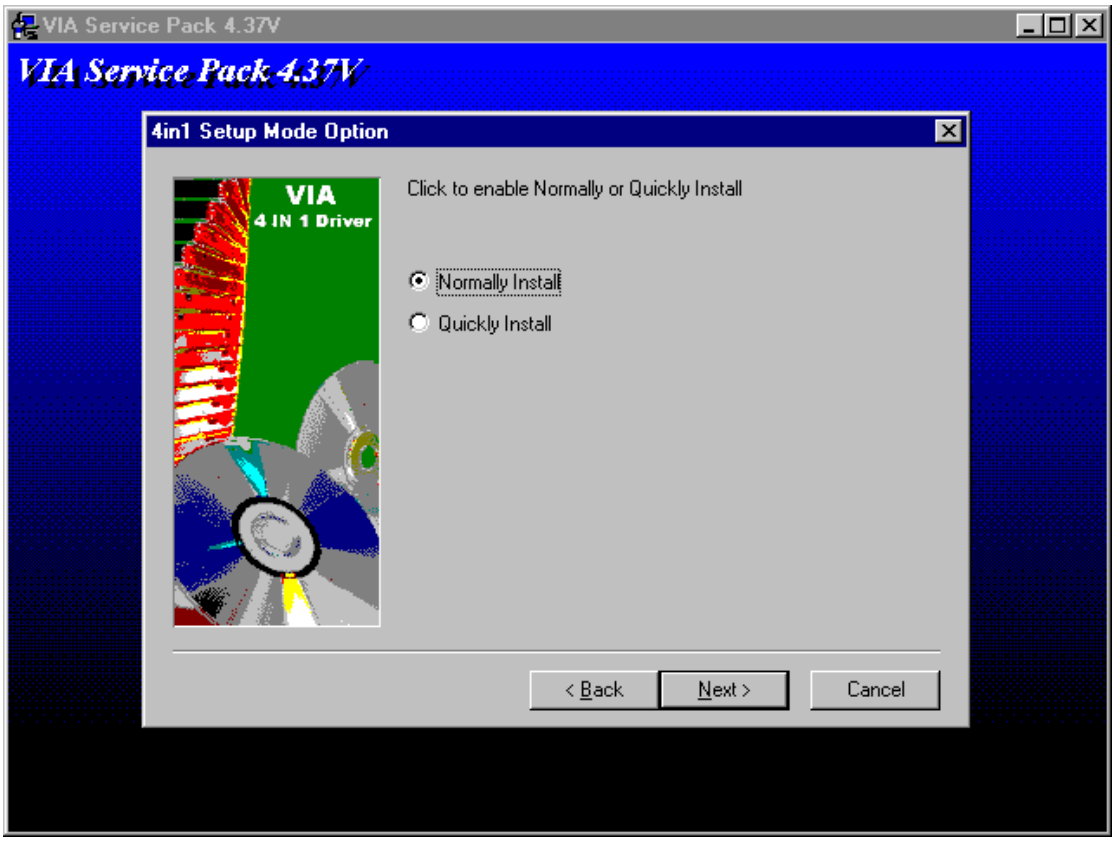
1. Insert the AW-P631 CD-ROM driver into the CD-ROM Drive
2. Select the Drivers\system file to click the Setup icon.
3. Click **Next**



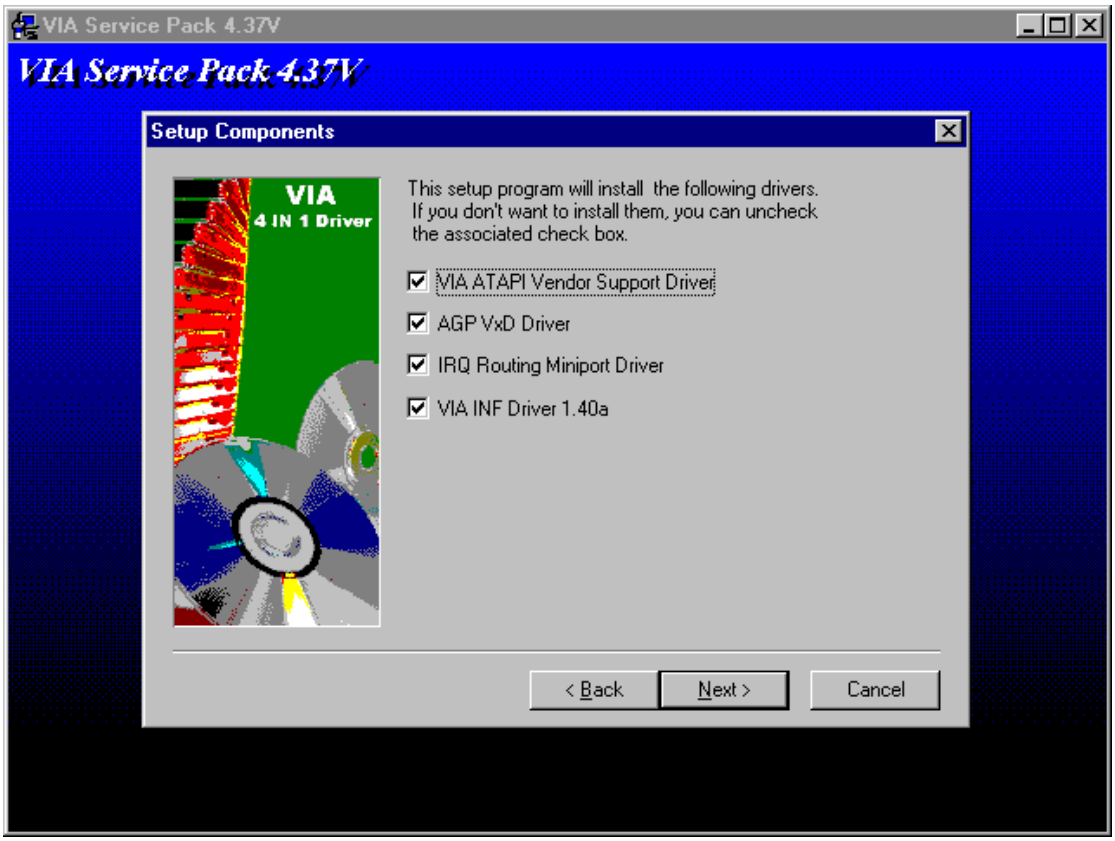
4. Click **Yes**



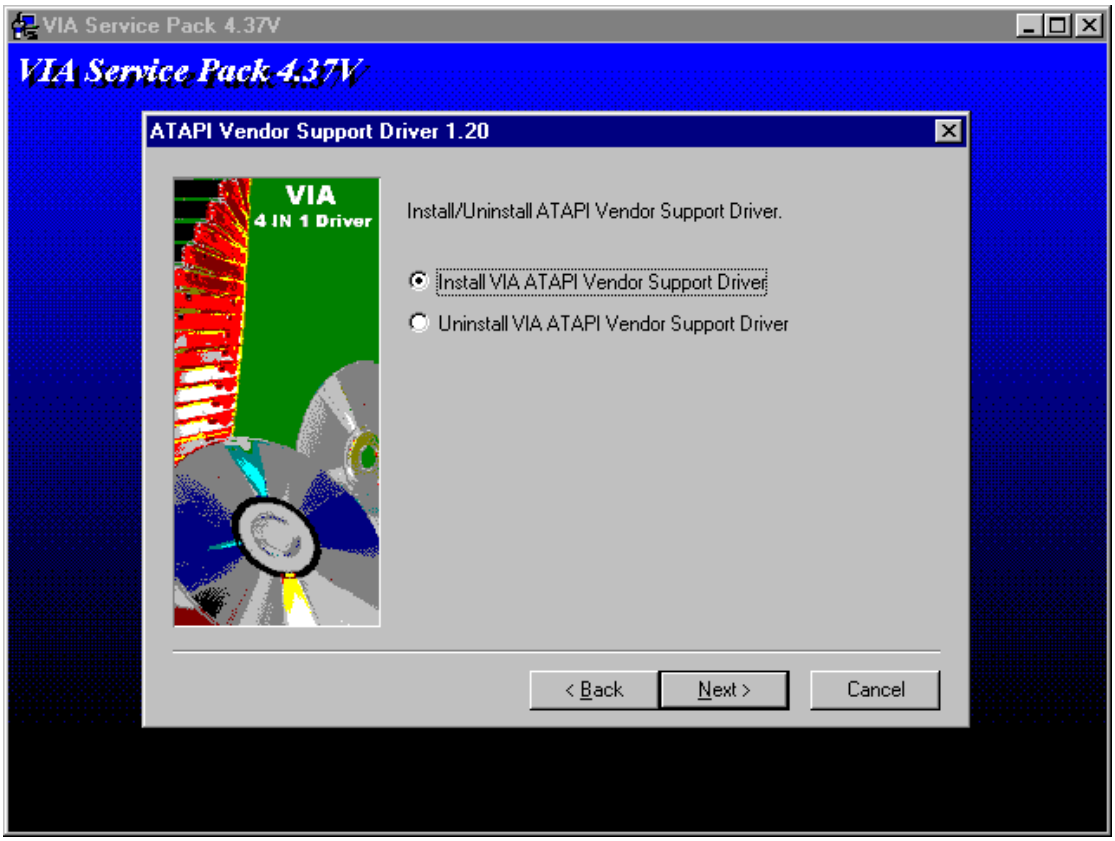
5. Select **Normally Install,** and then click **Next**



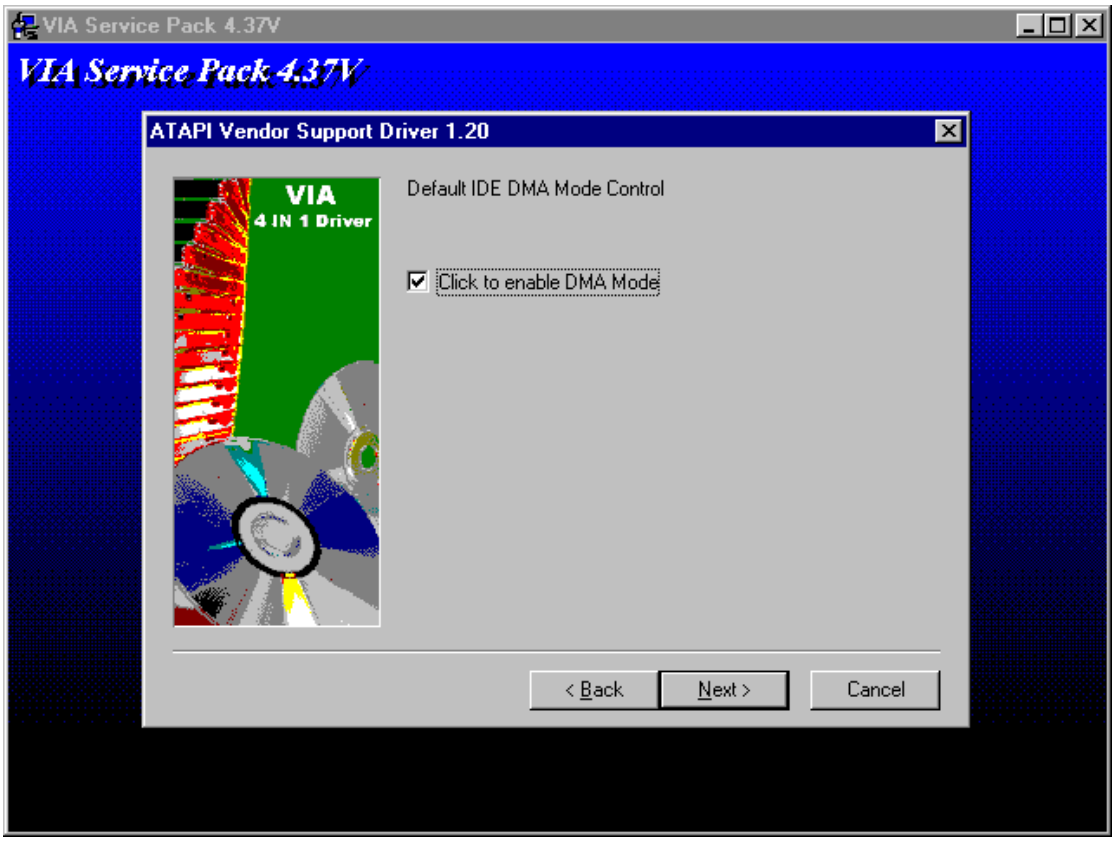
6. Remain the default setting, and then click **Next**



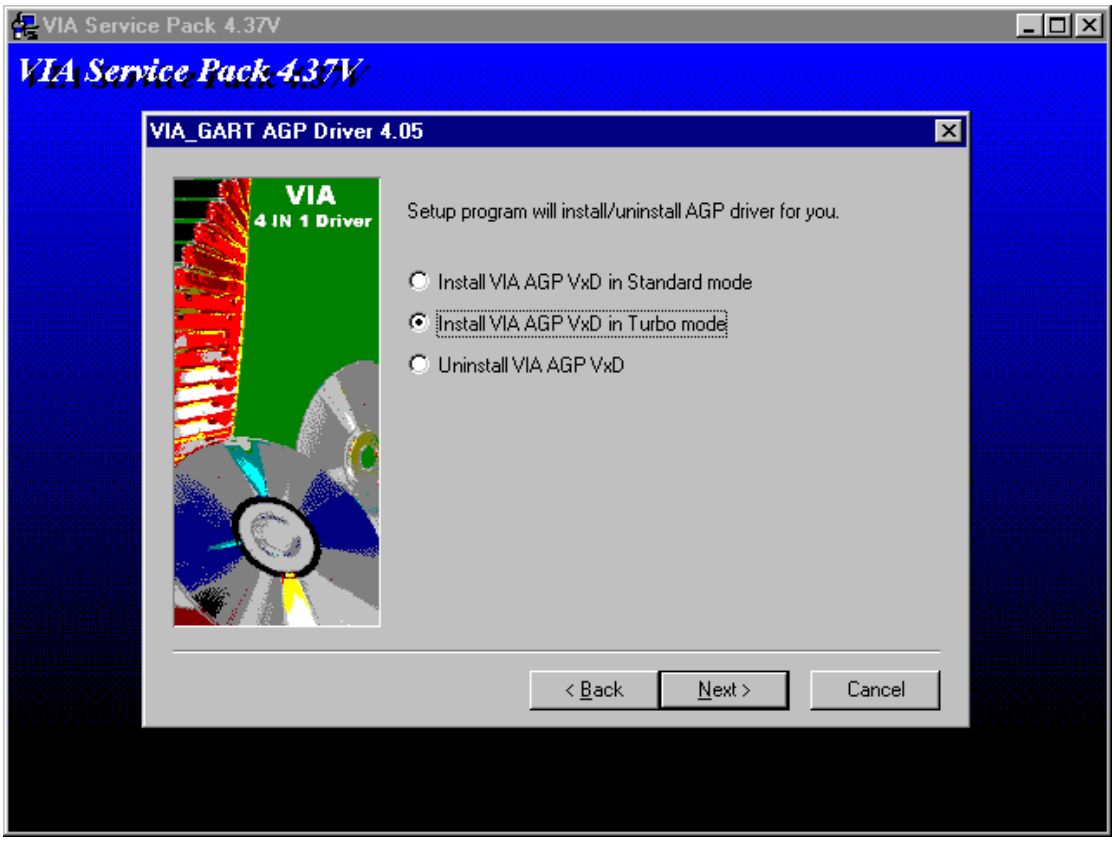
7. Click **Next**



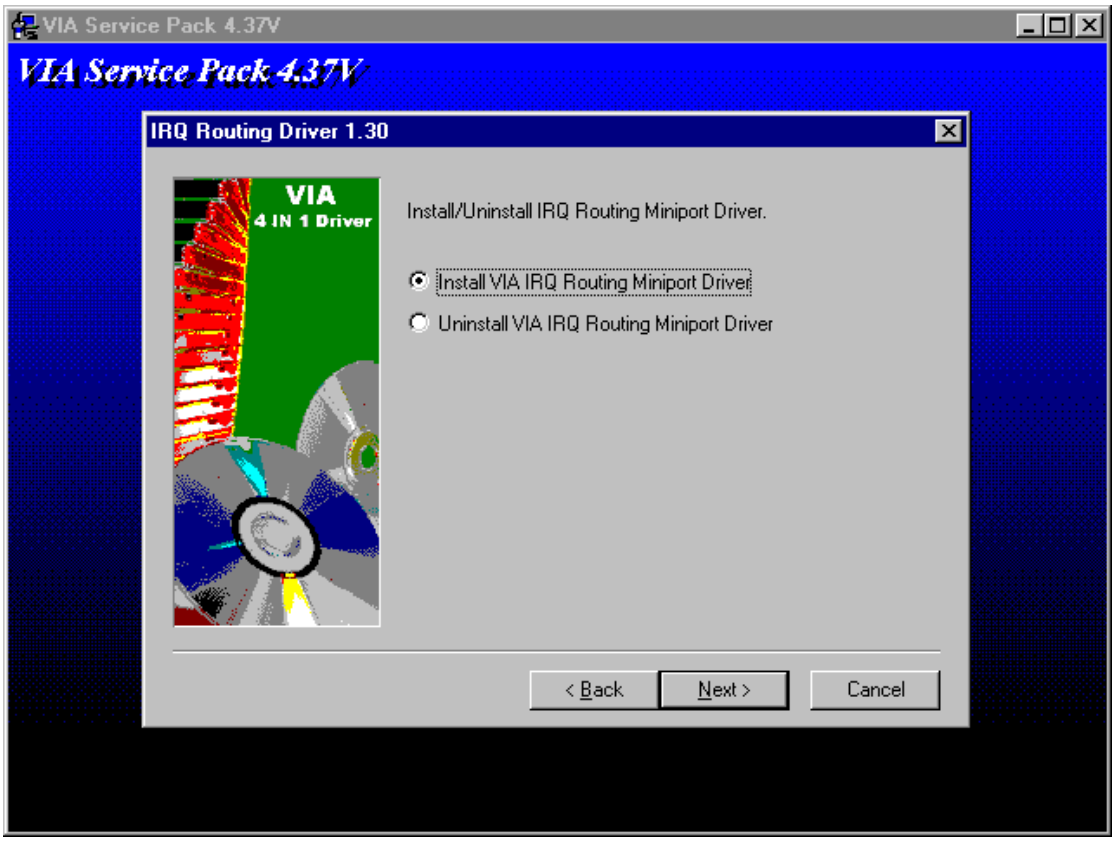
8. As the following picture, click **Next**



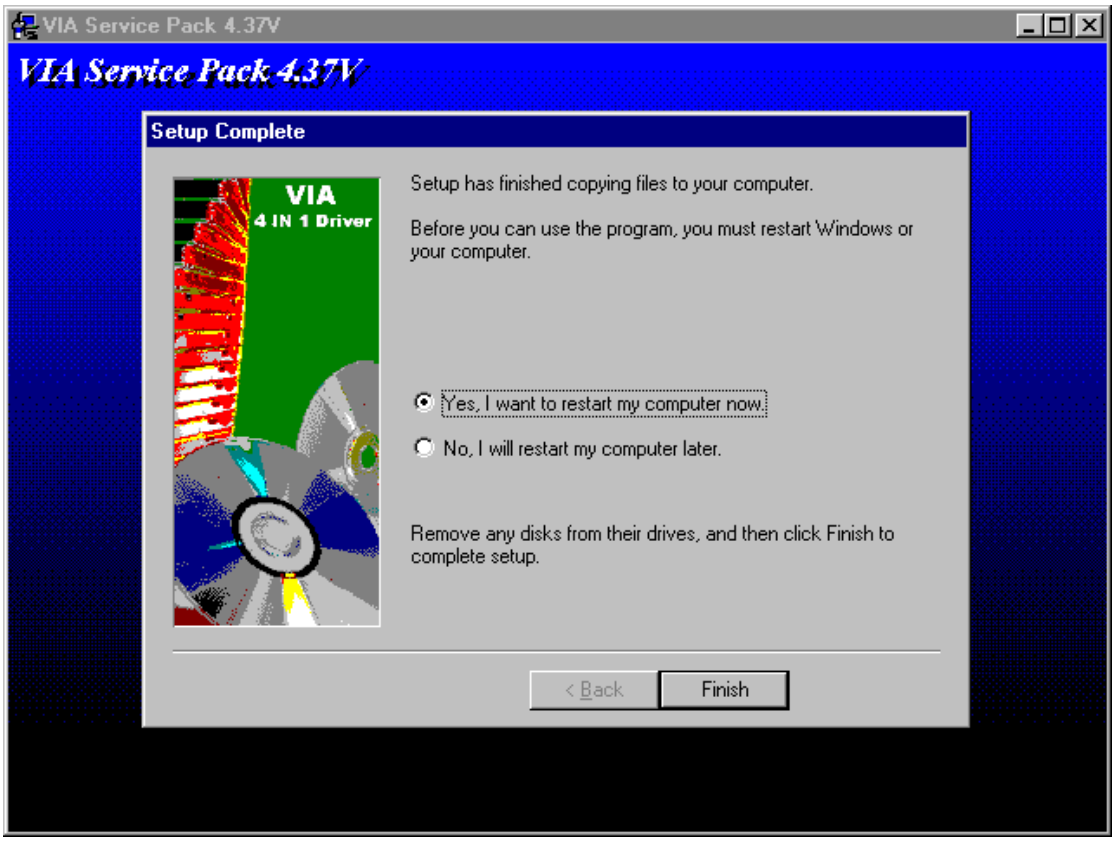
9. Select **Install VIA AGP VxD in Turbo Mode,** and click **Click**



10. Click **Next**



11. Click **Finish**



Installation process is completed and allowed the system to reboot.

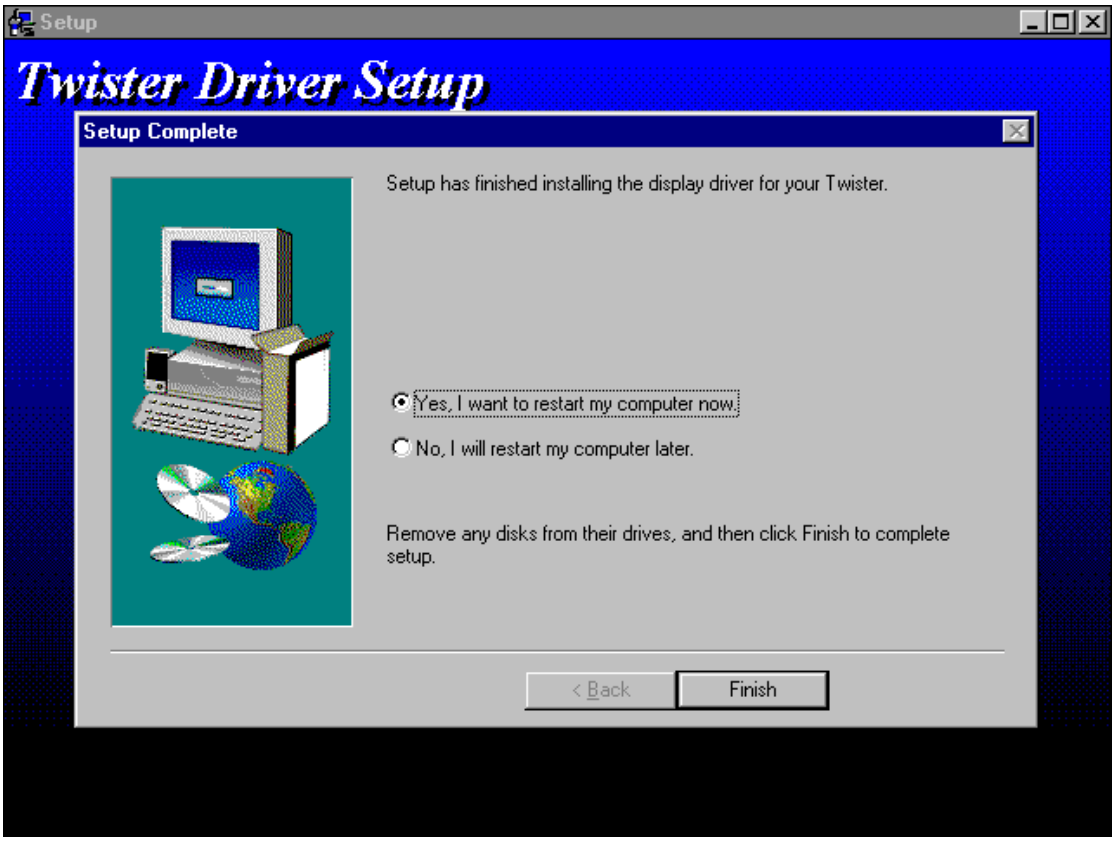
4.2 VGA Driver Installation

1. Install the AW-P631 CD ROM into the CD-ROM Drive
2. Select the Drivers\vga\9x file to click the Setup icon

A driver installation screen will appear, please follow the onscreen instruction to install the driver in sequence

3. At last, click **Next**

4. Click **Next**



Installation process is completed and allowed the system to reboot

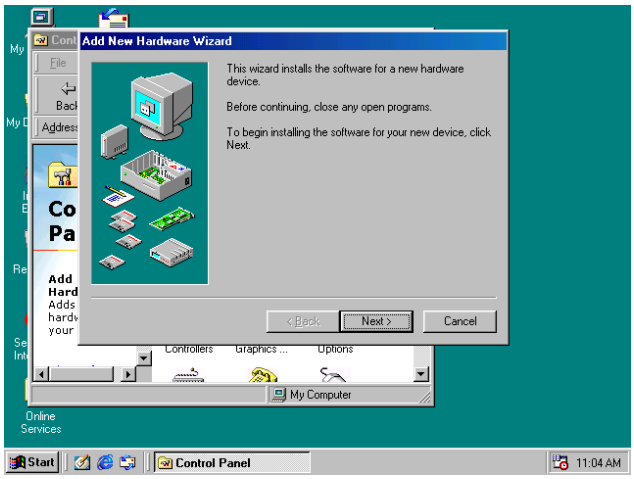
4.3 Intel 82559ER Ethernet Driver Installation

.

Please install Ethernet drivers as follows:

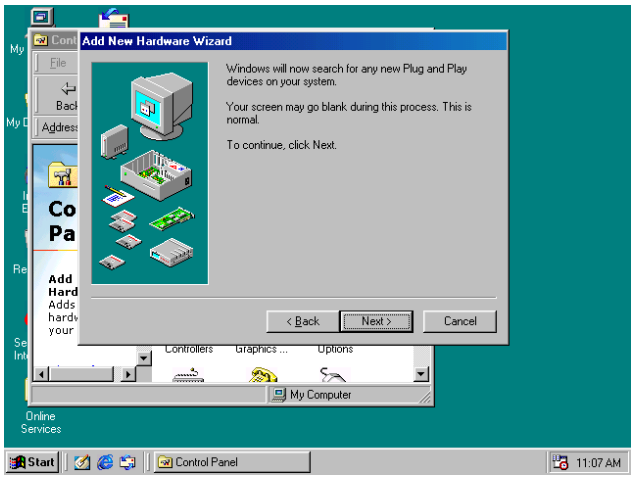
1. Click **"Start"**, go to **"Setting"** and click **"Control Panel"**. Choose the **"Add New Hardware"** icon and double-click the icon, the next configuration screen will appear.

2. **"Add New Hardware Wizard"** shown this wizard installs the software for a new hardware device. Before continuing, close any open programs. To begin installing the software for your new device, click "Next>", go to the next step of installation.

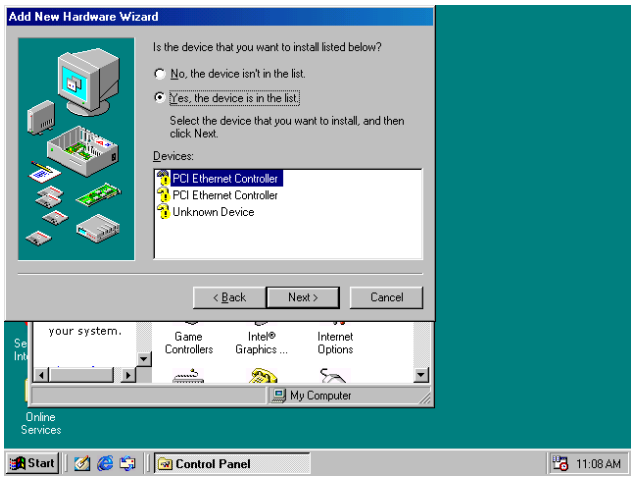


3. **"Add New Hardware Wizard"** shown Windows will no search for any new Plug and Play devices on your system. Your screen may go black during this process. This is normal.

   To continue, click "Next>" to the next step of installation.

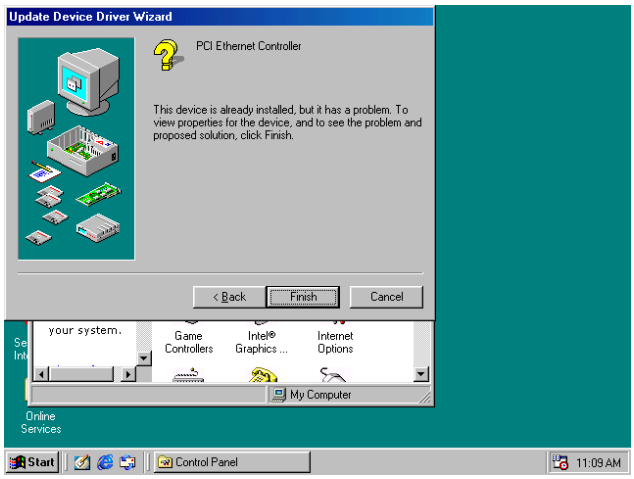


4. Please select the device that you want to install, and then click "Next>" to the next step of installation.



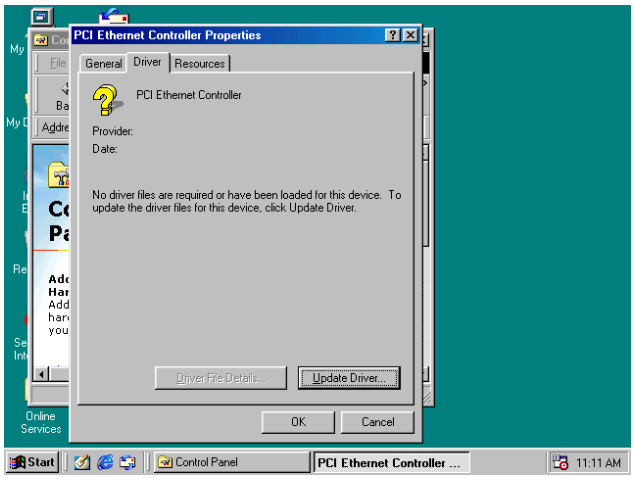
5. This is Update Device Driver Wizard.

   This device is already installed, but it has a problem. To view properties for the device, and to see the problem and proposed solution, please click "Finish" to the next step of installation



6. This is PCI Ethernet Controller Properties screen.

   No driver files are required or have been loaded for this device. To update the driver files for this device, please click "Update Driver" to the next step of installation

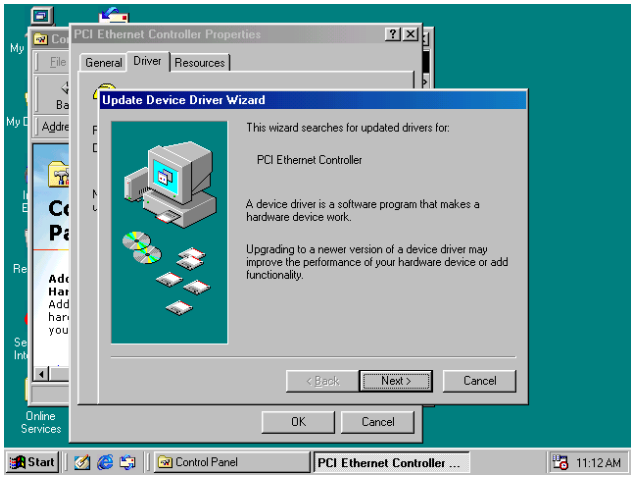


7. This Wizard searches for update drivers for:

   PCI Ethernet Controller

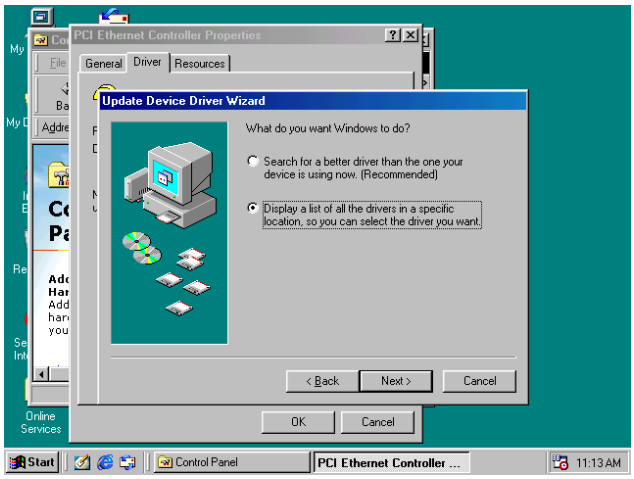
   A device driver is a software program that makes a hardware device work.

   Updating to a newer version of a device driver may improve the performance of your hardware device or add functionality, please click "Next>" to the next step of installation

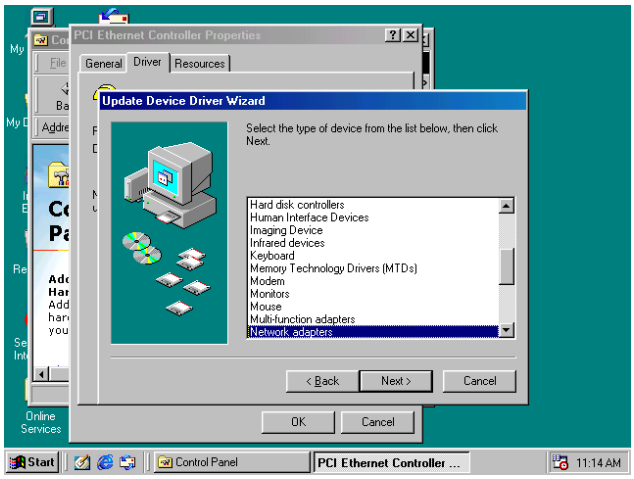


8. This is Update Device Driver Wizard. What do you want Windows to do? Please choose "Display a list of all the drivers in a specific location, so you can select the driver you want.

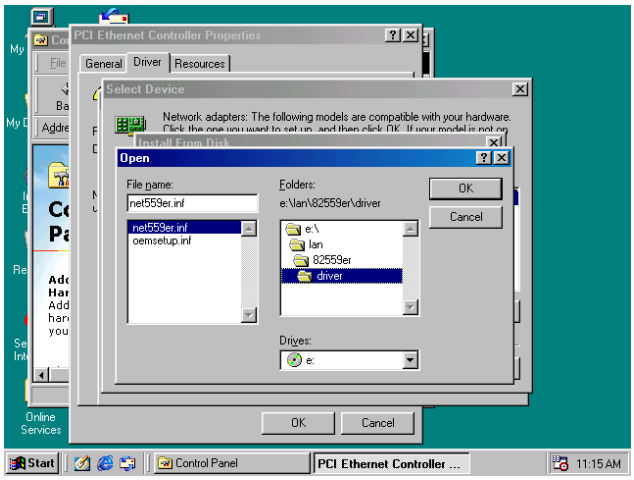
   Please click "Next>" to the next step of installation



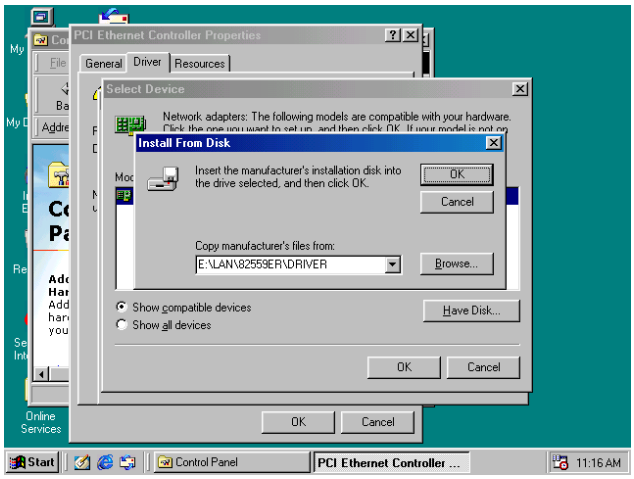
9. This s screen for selecting the type of device from the list, then click "Next>" to next step of installation



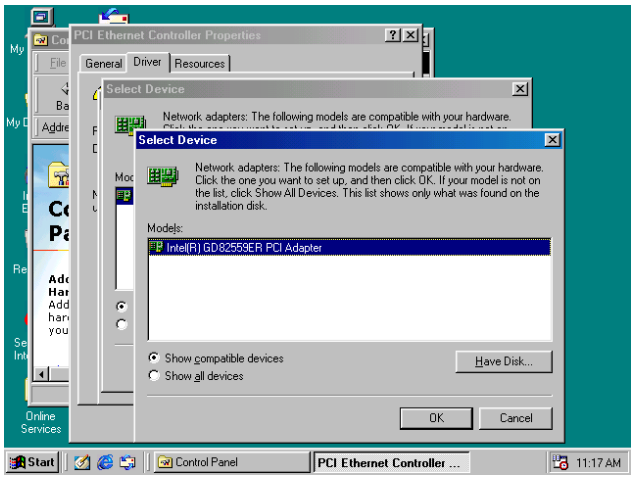
10. This is to show the "Folders", please click "OK" to the next step of installation.



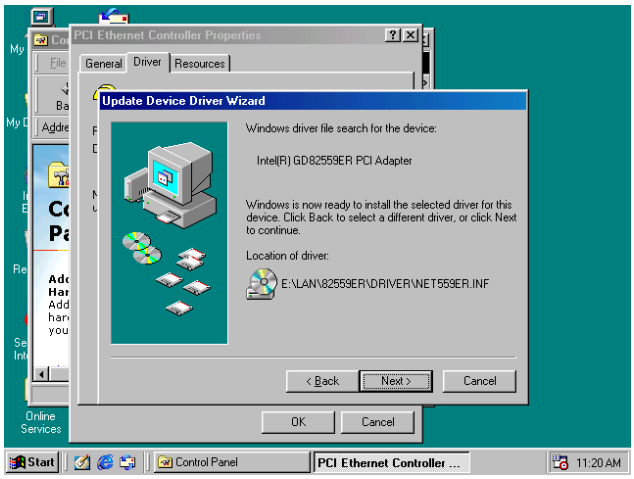
11. This is Install from Disk. Please insert the manufacturer's installation disk into the drive selected, and then please click "OK" to next step of installation.



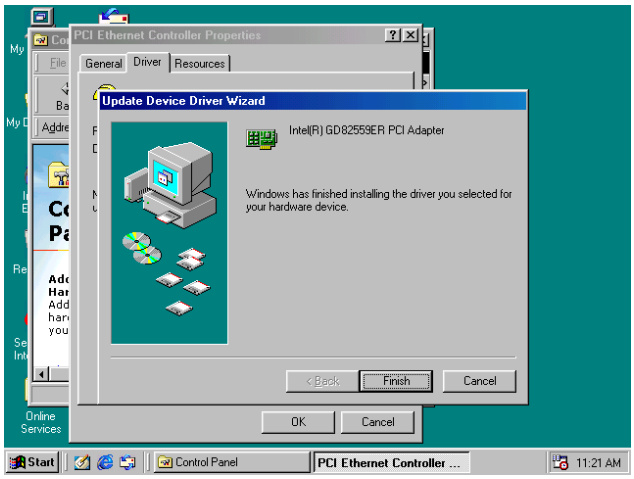
12. This is Select Device screen. Network adapters: The following models are compatible with your hardware. Click the one you want to set up, and then click "OK". If your model is not on the list, please click Show All Devices. This list shows only what was found on the installation disk



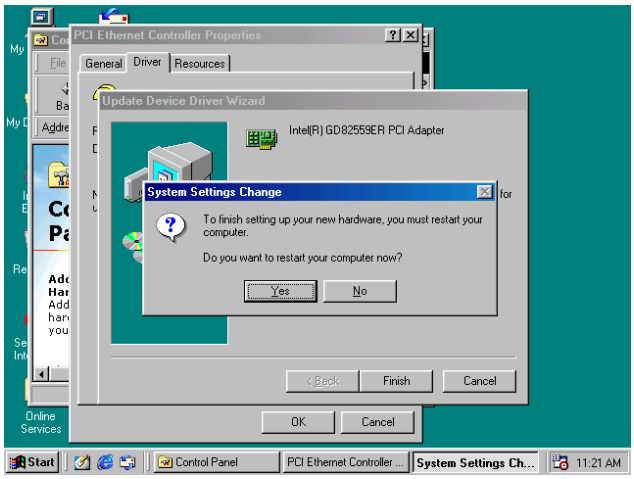
13. This is Update Driver Wizard. Windows is now ready to install the selected driver for this device. Please click Back to select a different driver, or click Next to continue.



14. This screen shown Windows has finished installing the driver you selected for your hardware device. Please click "Finish" to the next step of installation



15. This screens the System Settings Change. To finish setting up your new hardware, you must restart your computer. Please click "YES" to restart your computer.



Appendix A: Programming the GPIO Port

The AW-P631 provides an 4-bit GPIO Port that you can use to read and write data through. The GPIO Port base address is 440(hex)

Reading the GPIO Data

```
MOV DX, 440; the GPIO address
IN AL,DX        ; read the data into AL register
```

Writing the GPIO Data

```
MOV DX, 440; the GPIO address
MOV AL, XXH; output data value "XX"
OUT DX,AL
```

bit0 : GPI(O)0
bit1 : GPI(O)1
bit2 : GPI(O)2
bit3 : GPI(O)3

Appendix B : Programming the Watchdog Timer

The AW-P631 provides a watchdog timer that resets the CPU or generates an interrupt if processing comes to a stop. This function ensures greater system reliability in industrial stand-alone and unmanned environments.

In order to enable the watchdog timer, you have to output the value of the watchdog timer interval to the controller. The value range is from 01H to FFH, and the related time watchdog timer interval is 1 sec to 255 sec.

Data	**Timer Interval**
00	Disabled
01	1 sec
02	2 sec
*	*
*	*
FF	255 sec

If you want to program the watchdog timer, you must write timer value to I/O Port 444(hex).

For example:

ASSEMBLY LANGUAGE

START Watchdog Timer	DOS DEBUG

MOV DX, 444H
MOV AL, XXH
OUT DX, AL
	OUT 444, XX

STOP Watchdog Timer	
MOV DX, 441H IN AL, DX	IN 441

Note: "XX" timer value

Appendix C: System Resource

Interrupt Controller

The AW-P631 is a fully PC compatible control board, it consists of 16 ISA interrupt request lines and most of them already in used by other part of the board. Both of ISA and PCI expansion cards may need to use IRQs, please make sure that the IRQs do not conflict if you would like to use extra add-on cards.

System IRQs are available to cards installed in the ISA expansion Bus first. Any remaining IRQs then may be assigned to this PCI Bus. You are able to use the AMI Diagnostic utility to see their map.

IRQ	Assignment
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial Port 2
IRQ4	Serial Port 1
IRQ5	Reserved
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port
IRQ8	Real Time Clock
IRQ9	Reserved
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 Mouse
IRQ13	Math Coprocessor
IRQ14	Primary IDE Controller
IRQ15	Secondary IDE Controller

DMA Channel Assignment

Channel 4 is by default used to cascade the two controllers

Channel	Assignment
DMA0	**Available for PCI and ISA Slot**
DMA1	**Sound Card**
DMA2	**Floppy Disk Controller**
DMA3	**ECP Printer Port**
DMA4	**Cascade**
DMA5	**Sound Card**
DMA6	Available for PCI and ISA Slot
DMA7	Available for PCI and ISA Slot

Memory Map

The following table indicates memory of AW-P631. The address ranges specify the runtime code length.

Memory below 1MB (1Mb ~ 640KB)

Address Range	Type	Owner
A0000~AFFFF	**ISA**	**VGA Adapter**
B0000~BFFFF	**ISA**	**VGA Adapter**
C0000~C7FFF	**ISA**	**Adapter ROM**
C8000~CBFFF	**ISA**	**Adapter ROM**
F0000~FFFFF	**ISA**	**System BIOS**

Memory above 1MB (1MB ~ 142336KB)

Address Range	Type	Owner
40011000~40011D7F	**PCI**	**Multimedia Audio**
40012000~400120FF	**PCI**	**Bridge Device**
40800000~40FFFFFF	**PCI**	**VGA Adapter**
D0000000~D00000FF	**PCI**	**Ethernet Controller**
D0004000~D0004FFF	**PCI**	**USB Controller**

System Memory Map

Start High	**Start Low**	**Size High**	**Size Low**	**Type**
00000000	00000000	00000000	0009FC00	Available
00000000	0009FC00	00000000	00000400	Available
00000000	000F0000	00000000	00010000	Reserved
00000000	FFFF0000	00000000	00010000	Reserved
00000000	00100000	00000000	08B00000	Available

I/O Map

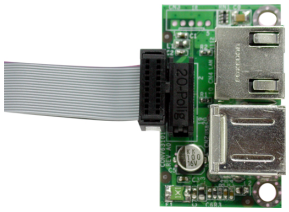
The addresses shown in the table are typical locations.

I/O Port	Assignment
0 ~ F	**AT DMA Controller**
20 ~ 21	**AT Interrupt Controller**
40 ~ 43	**82C54 Compatible Programmable Timer**
60	**8042 Compatible keyboard Controller**
61	**AT Style Speaker**
64	**8042 Compatible keyboard Controller**
70 ~ 71	**Real Time Clock**
81 ~ 83	**AT DMA Controller**
87	**AT DMA Controller**
89 ~ 8B	**AT DMA Controller**
8F ~ 91	**AT DMA Controller**
A0 ~ A1	**AT Interrupt Controller**
C0 ~ DF	**AT DMA Controller**
F0 ~ FF	**Math Coprocessor**
170 ~ 177	**IDE Controller**
1F0 ~ 1F7	**IDE Controller**
220 ~ 22E	**Sound Card**
2F8 ~ 2FF	**Communication Port (COM2)**
330	**Midi**
376	**IDE Controller**
378 ~ 37A	**LPT1**
3B0 ~ 3BB	**VGA Adapter**
3C0 ~ 3DF	**VGA Adapter**
3F0 ~ 3F5	**FDD Controller**
3F6	**IDE Controller**

3F7	**FDD Controller**
3F8 ~ 3FF	**Communication Port (COM1)**
480 ~ 48F	**PCI Bus**
4D0 ~ 4D1	**PCI Bus**
778 ~ 77A	**Printer Port**
CF8 ~ CFF	**PCI Bus**
E000 ~ E0FE	**Ethernet Controller**
F000 ~ F00E	**IDE Controller**

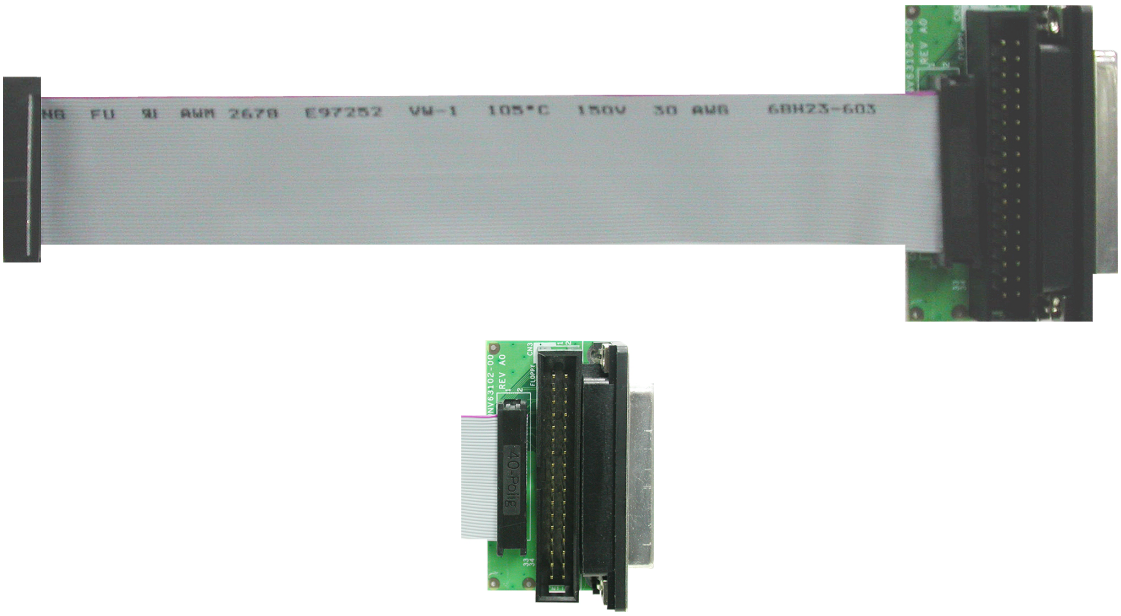
Appendix D: Optional Converter for Pin-Up Solution

(1) CONV63101-01 USB/LAN/IR Converter with 2 USB/1 LAN Jack
AW-P631 Connector: CN1



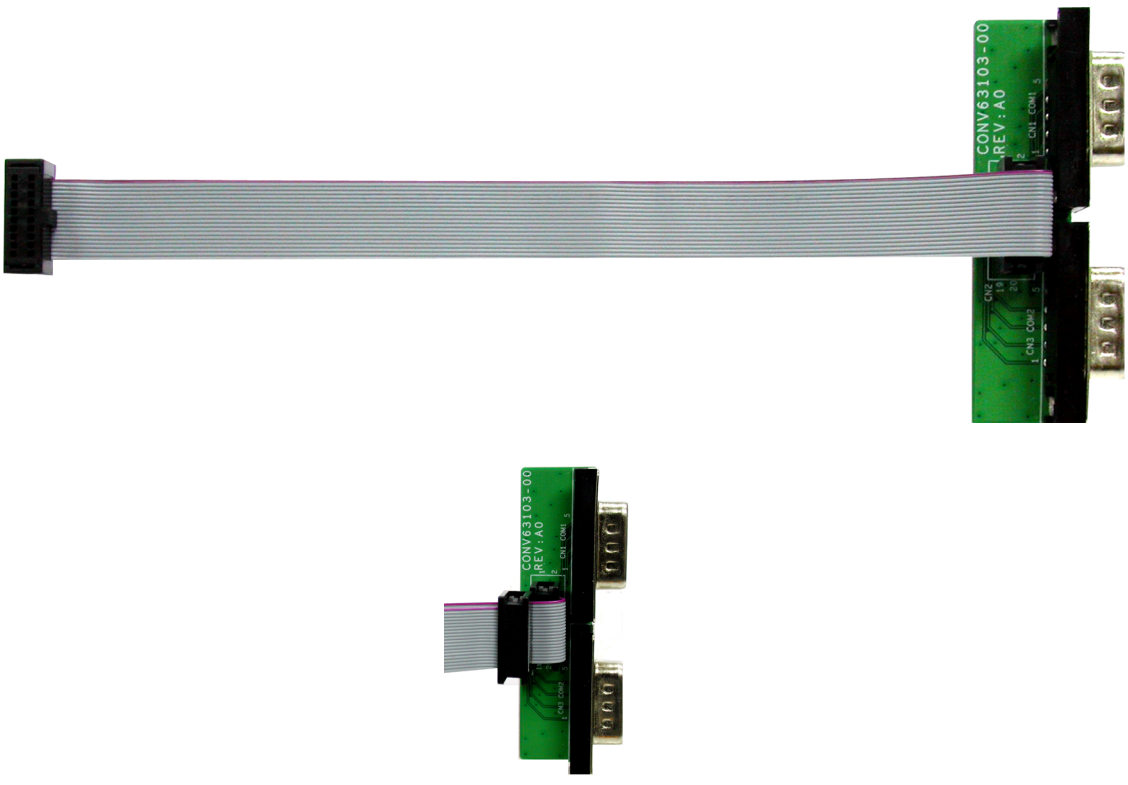
(2) CONV63102-01 LPT/FLOPPY Converter with LPT D-Sub/34-pin FDD Connector

AW-P631 Connector: CN2



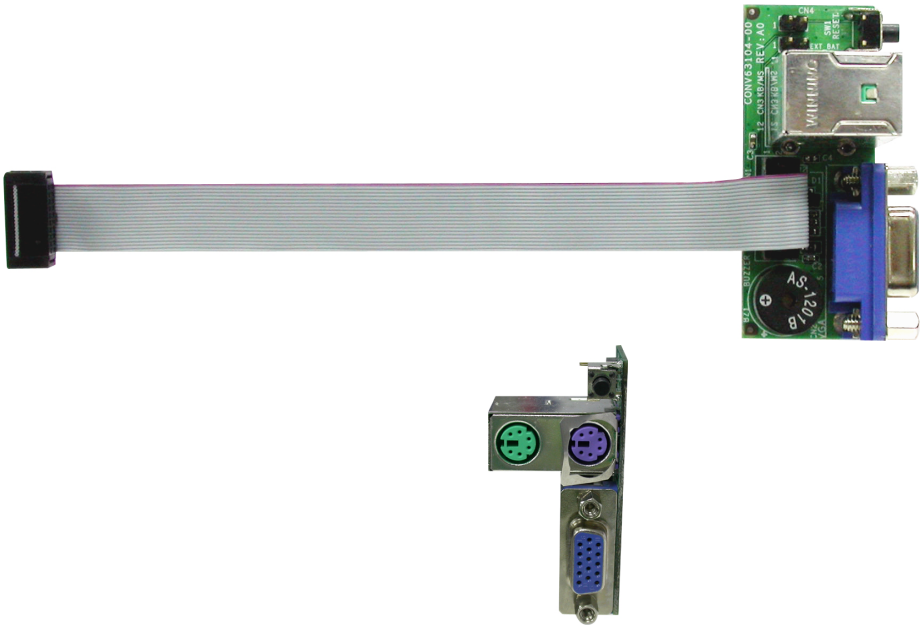
(3) CONV63103-01 Serial Port Converter with Two RS232 D-Sub Connectors

AW-P631 Connector: CN3



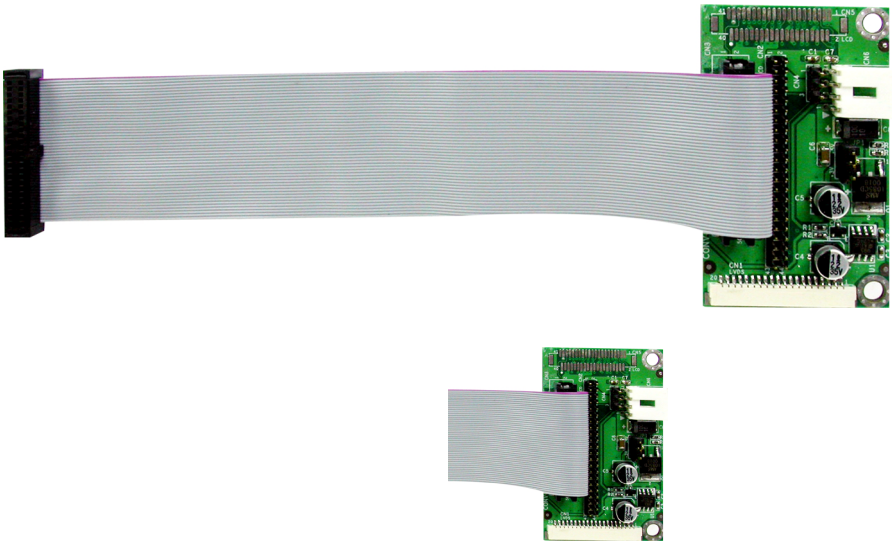
(4) CONV63104-01 CRT/PS2 KB-MS/RESET/SPEAKER/Ext. Battery Header Converter with CRT D-Sub/PS2 MS-KB Jack/Reset Bottom/Speaker

AW-P631 Connector: CN5



(5) CONV63105-01 LCD/LVDS Converter with 2.0mm Pitch LCD/LVDS Connector

AW-P631 Connector: CN8



(6) CONV63106-01 IDE Converter with one 2.0mm Pitch 44-pin IDE Connector

AW-P631 Connector: CN10