ROBO-882N-VG2

System Host Board

User's Manual

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Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

FCC Compliance Statement for Class A Devices

The product(s) described in this user's guide has been tested and proved to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equip-ment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user's guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE Certification

The product(s) described in this user's guide complies with all applicable European Union (CE) directives if it has a CE marking.

Table of Contents

Chapter 1
General Information

Features

- Support socket 604 dual Intel$^®$ Xeon™ / LV
- Xeon™ processors with 400/533MHz FSB up to 3.06GHz
- Max. 8GB DDR SDRAM support, DDR DIMM x 4
- Intel$^®$ E7501 chipsets
- Intel$^®$ P64H2 x 1
- ATI Rage™ XL VGA controller w/8MB frame buffer memory
- Dual Intel$^®$ 82545EM Gigabit Ethernet controllers
- Customized 2U heatsink/FAN for CPU

Specifications

System Architecture
- Full size SBC with 64bit/66MHz PCI/ISA Golden finger
- PCI V2.2 compliant
- PICMG 1.0 (Rev.2.0) compliant

CPU Support
- Socket 604 dual Intel$^®$ Xeon™ / LV Xeon™ processors with 400/533MHz FSB, speed up to 3.06GHz
- On board intelligent switching type power regulator x 2
- Support streaming SIMD instruction
- SMP support is requiring
- Support uni-processor implementation.
- Support Hyper-Threading technology

Main Memory
- DDR SDRAM DIMM x4 support max. memory up to 8GB (DDR200/266)
- Support two 64-bit DDR channels
- Registered/ECC DIMMs only

BIOS
- Award System BIOS
- Plug & Play support
- Advanced Power Management support
- ACPI 2.0 compliant
- 4M bits flash ROM

Chipsets
- Intel$^®$ E7501 chipsets
- Intel$^®$ ICH3-S (82801CA)
- Intel$^®$ P64H2 (82870P2) x1
- Intel$^®$ Firmware Hub (FWH)
- PCI V2.2 compliant

On Board LAN
- Dual Intel$^®$ 82545EM Gigabit Ethernet controllers
- Compliant with PCI V2.1/V2.2, IEEE802.3, IEEE 802.3u, IEEE802.3x, IEEE802.3y, IEEE802.3ab
- WfM 2.0, PC2001 compliant
- RJ45 with LED connector x 2

On Board VGA
- ATI Rage™ XL with 8MB frame buffer memory
- Fully PC 98 and PC 99 Compliant
- 15 pin CRT connector x 1

On Chip I/O (ICH3-S)
- On board USB port x 4
- SMBus 2.0 controller
- FWH interface
- LPC interface
- AC' 97 2.0 interface
- PCI 2.2 interface
- USB 1.1 compliant
- Integrated System Management Controller

On Board Super I/O
- Onboard ITE 8712F-A super I/O
- SIO x 2, with 2 x 16C550 UARTs, 10 pin header x 2
- PIOx 1, bi-directional, EPP/ECP support, 26 pin connector x1
- Floppy Disk controller: 34 pin connector x 1
- 6 pin mini DIN connector x 1, for PS/2 keyboard/mouse, 5 pin connector x 1
  (for external keyboard)
- On Board buzzer x 1
- GPIO (4 in 4 out)
- On board 2 pin header for I2C;
- On Board 2 pin header for reset SW / 2 pin for IDE active LED / 2 pin ATX power SW
- One 3 pins power header for 3 pins Power Cable connect to Backplane Board
  to support ATX Power On function.
- On board 4 Pin Additional Power Source Input
- AC97 output, 10 pin header x 1

System Monitor
- Derived from Super IO ITE 8712F-A to support system monitor.
- 8 voltage (For+1.5V, +3.3V, +5V, -5V, +12V, -12V, Vcore and Vcc5VStand-By)
- One Fan speed for CPU ;Temperature x 2 (one for CPU internal use, another for external system use)

ACPI Function
(only when 3 pins Power cable connect to Backplane which connect with ATX Power Source)
- Soft Power off
- Power-on by Keyboard
- Wake-up by LAN
- Wake-up by Ring

Real Time Clock
- On chip RTC with battery back up
- External Li Battery x 1

Watchdog Timer
- Watchdog timeout can be programmable by Software from 1,2,4,8,16,32,…...256 seconds
- Reserved 32 bit PCI interface for Portwell EBK module
- PCI to ISA Bridge & ISAMAX Support
- ITE 8888F x 1 PCI to ISA Bridge
- Provide 64mA high driving capability to maximize ISA signals for support ISA cards up to 20 on the backplane ISA Slot.

Dimensions
- 338.58mm(L) x 122mm(W)
  13.3"(L) x 4.8"(W)

Customized Heatsink/FAN
- Customized heatsink/FAN to cover dual processors
- Height: 2U

Power Requirements

Voltage	Maximum
+5V	25A
+12V	20A

Environments

. Operating temperatures: 0°C to 60°C
  (0°C to 50°C for 2.8GHz CPU)
. Storage temperatures: -20°C to 80°C
. Relative humidity: 10% to 90%
  (Non-condensing)

Certification

. CE
. FCC

1.3 Board Layout

Max.8GB DDR 266/Dual channel
memory in 4 DIMM Slots

VGA Port

Dual LAN

Intel® E7501 Chipset

Intel® P64H2 64bit
PCI-X Bridge

Intel 82545EM
Gigabit Ethernet

Dual Intel® Xeon^TM /LV Xeon^TM
w/533MHz FSB Speed to 3.06GHz+

Intel® ICH3

ATI Rage XL VGA Chipset
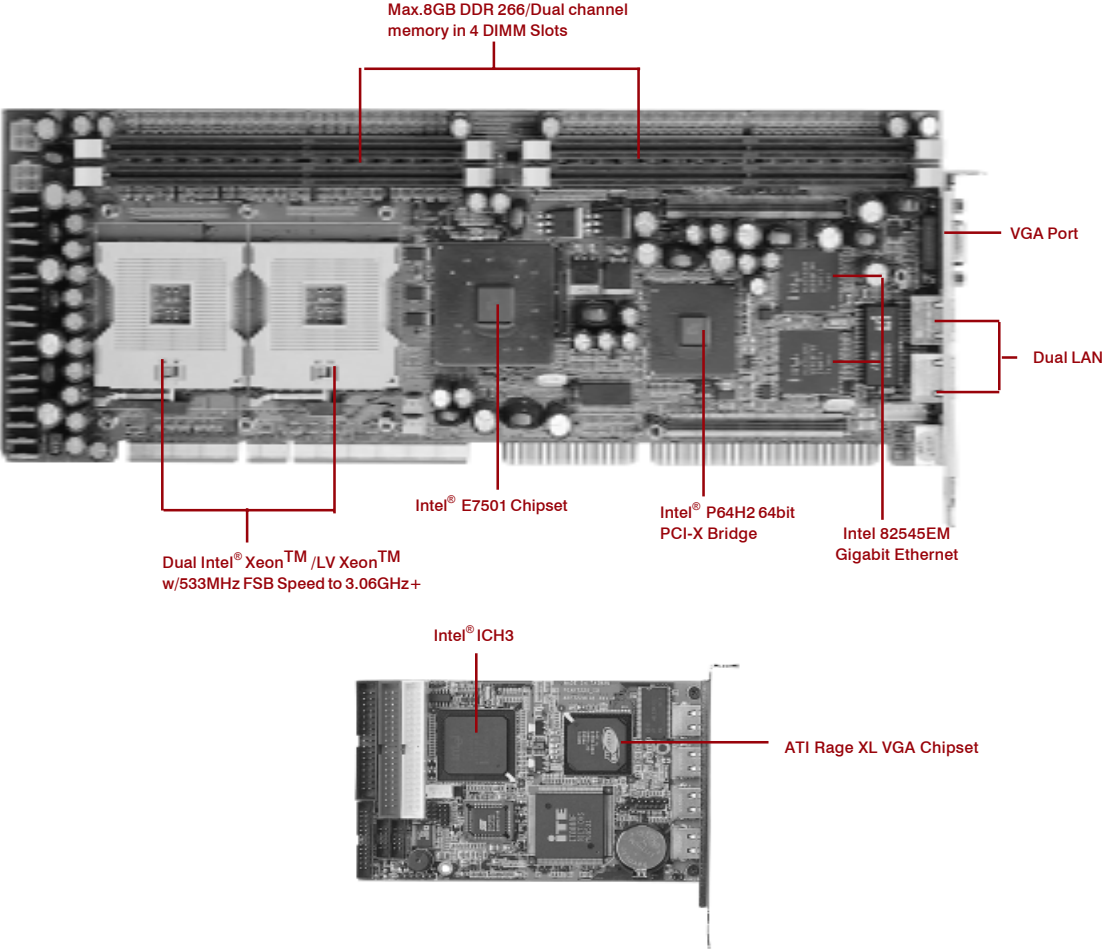
Figure 1-1: Birdeye's View of ROBO-882N-VG2

1.4 Checklist

After opening the package of the ROBO-882N-VG2, please check and make sure you have all of the following items:

- ☐ **One ROBO-882N-VG2 SBC**
  (A mechanical drawing of this model is shown below.)
- ☐ **One ROBO-882N-VG2 Quick Reference Guide**
- ☐ **One 50CM Cable JST 2.5mm 3 pin to 3 pin (5V standby ATX Power-on Cable)**
- ☐ **One Y Cable for Keyboard and Mouse**
- ☐ **One 180 mm AUX Power Cable (for J2)**
- ☐ **One Cable Set (FDD x1, SIO+PIO x1, SIO x1/Keyboard x1/IDE66 x1)**
- ☐ **One USB Cable with Bracket**
- ☐ **One Driver Manual CD**

Figure 1-2: Mechanical Drawing of ROBO-882N-VG2

Chapter 2
Jumper & Switch Settings

This chapter of the User's Manual describes how to set jumpers.

Before You Begin

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

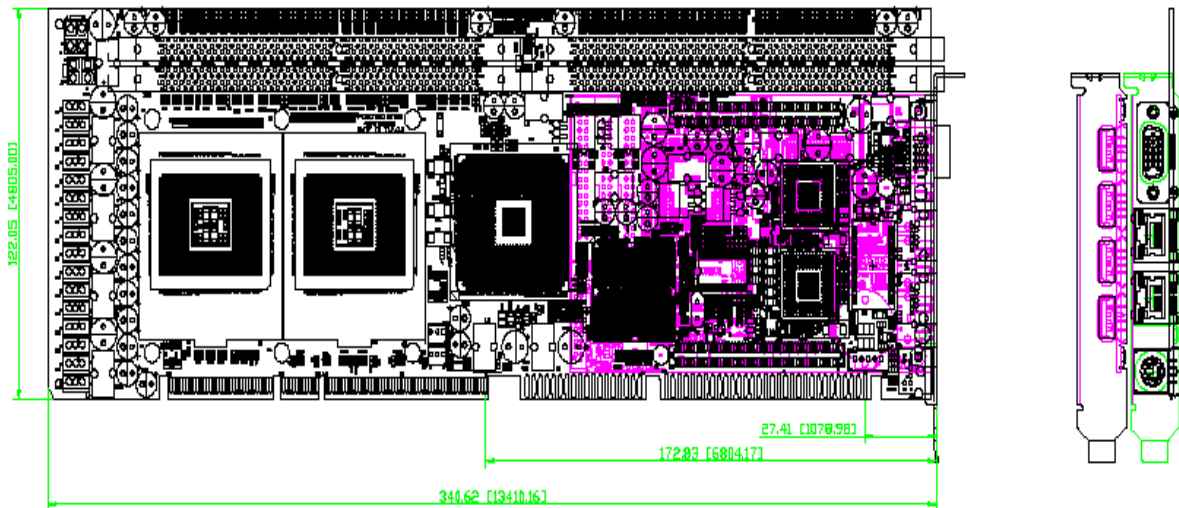Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

◆ A Philips screwdriver
◆ A flat-tipped screwdriver
◆ A set of jewelers Screwdrivers
◆ A grounding strap
◆ An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environment tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on the computers that are still connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to your computer or yourself.

◆ Always disconnect the unit from the power outlet whenever you are working inside the case.
◆ If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
◆ Hold electronic circuit boards (such as the ROBO-882N-VG2 board) by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
◆ Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
◆ Use correct screws and do not over tighten screws.

2.1 Functions of Jumpers

You can use jumpers to set configuration options. The table below defines function of each jumper:

Jumper	Function	Jumper	Function
J1,J2	Power Connector	JP1	Speaker
J4,J5	Fan Connector	JP3	GPIO
J5 on Daughter Board	ATX Power	JP4	On-board RTC
J6	AC'97	JP5	SMBUS
J7	IDE Active LED	JP6	Reset Button
J13	AT/ATX Selection	JP7	Power Button
		JP9	Keyboard Lock

Table 2-1: Functions of Jumpers

2.2 Setting Jumpers

A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumpr is OPEN. Please see the following illustrations:

The illustrations on the right show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is **SHORT**. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is **OPEN**.	**Open (Off)**	**Short (On)**
These illustrations show a 3-pin jumper. Pins 1 and 2 are **SHORT**.		
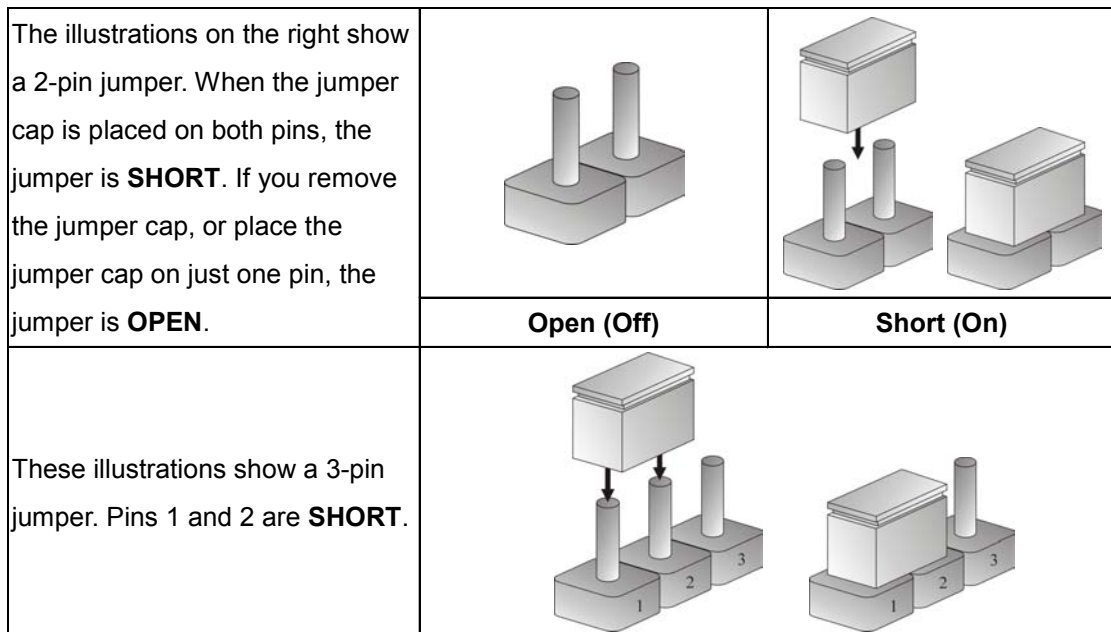
Figure 2-1 : How to Set Jumpers

2.3 Location of Jumpers

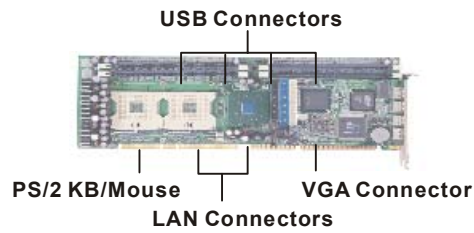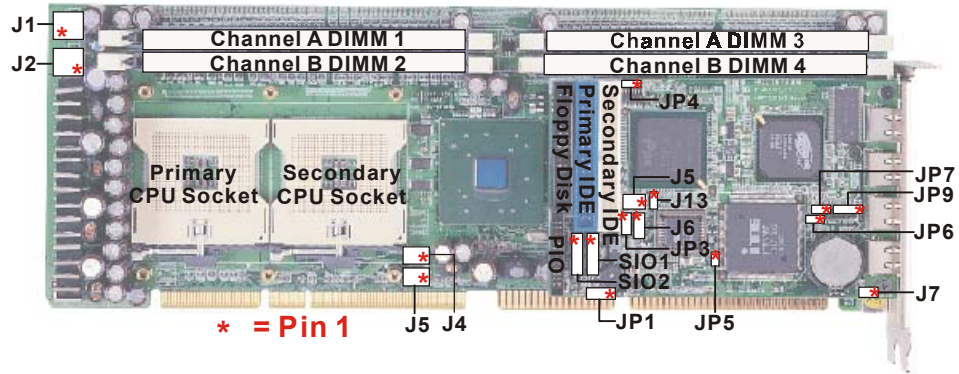The illustration below shows the location of the mainboard jumpers:

Figure 2-2 : Location of Jumpers

2.4 Jumper Setting

Mainboard

- **J1,J2 : Power Connector**

Pin	Definition	Pin	Definition
1	GND	2	GND
3	+V12	4	+V12

- **J4,J5 : Single Ramp System FAN Connector**

Pin No.	Description	Pin No.	Description
1	Ground	2	+12V
3	Sense		

- **J7 : External Keyboard Function Connector**

Pin No.	Description	Pin No.	Description
1	KCLK	2	KDAT
3	NC	4	GND
5	+V5.0		

- **J8 : Keyboard & Mouse Mini Din**

Pin No.	Description	Pin No.	Description
1	KBDATA-	2	MOUSEDATA
3	GND	4	VCC
5	KBCLK		MOUSECLK

- **J9,J10 : LAN RJ45 Connector**

Pin	Definition	Pin	Definition
1	TXD_0P	2	TXD_0N
3	TXD_1P	4	TXD_2P
5	TXD_2N	6	TXD_1N
7	TXD_3P	8	TXD_3N
9	SPEED_LED	10	+VSBY3.3
11	LINK_LED	12	ACTIVE_LED
13	PD to TERMPLANE	14	PD to TERMPLANE

* **PD** means Pull-Down.

Daughterboard

- **J1 : 2x13 2.0mm Box Header for PIO Connector**

Pin	Definition	Pin	Definition
1	STB-	14	AFD-
2	PD0	15	ERR-
3	PD1	16	INIT-
4	PD2	17	SLIN-
5	PD3	18	GND
6	PD4-	19	GND
7	PD5	20	GND
8	PD6	21	GND
9	PD7	22	GND
10	ACK-	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT	26	GND

- **J2 : Floppy Disk Connector**

Pin	Description	Pin	Description
1	GND	2	REDWC#
3	GND	4	NC
5	GND	6	NC
7	GND	8	INDEX#
9	GND	10	MOTSA#
11	GND	12	DRVSB#
13	GND	14	DRVSA#
15	GND	16	MOTEB#
17	GND	18	DIR#
19	GND	20	STEP#
21	GND	22	WDATA#
23	GND	24	WGATE#
25	GND	26	TK00#
27	GND	28	WPT#
29	GND	30	RDATA#
31	GND	32	SIDE1#
33	GND	34	DSKCHG#

- **J3 : SIO2 Connector**

Pin	Definition	Pin	Definition
1	DCD2#(Data Carrier Detect 2)	2	RXD2 (Receive Data 2)
3	TXD2 (Transmit Data 2)	4	DTR2#(Data Terminal Ready 2)
5	GND (Chassis Ground)	6	DSR2#(Data Set Ready 2)
7	RTS2#(Request To Send 2)	8	CTS2#(Clear To Send 2)
9	RI2#(Ring Indicator 2)	10	GND (Chassis Ground)

- **J4 : SIO1 Connector**

Pin	Definition	Pin	Definition
1	DCD1#(Data Carrier Detect 2)	2	RXD1 (Receive Data 2)
3	TXD1 (Transmit Data 2)	4	DTR1#(Data Terminal Ready 2)
5	GND (Chassis Ground)	6	DSR1#(Data Set Ready 2)
7	RTS1#(Request To Send 2)	8	CTS1#(Clear To Send 2)
9	RI1#(Ring Indicator 2)	10	GND (Chassis Ground)

- **J5 : ATX Power Connector (daughterboard)**

Pin	Description	Pin	Description
1	5VSTB	2	GND
3	Power Up		

- **J6 : AC' 97 Connector**

Pin	Definition	Pin	Definition
1	SDATOUT	2	VCC5V
3	RST	4	GND
5	SYNC	6	VCC12V
7	SDATAIN0	8	SDATAIN1
9	BITCLK	10	NC

- **J7 : 1x2 2.54mm Pin Header for IDE LED**

Pin	Description	Pin	Description
1	+5V	2	IDE_LED

- **J8,J9,J10,J11 : USB Single Upright Right-angle Connector**

Pin	Description	Pin	Description
1	VCC	2	USBP0 minus
3	USBP0 plus	4	Ground

- **J13 : 1x3 2.54mm Pin Header for AT/ATX Selection**

Pin	Description
1, 2 Short	ATX Mode
*2, 3 Short	AT Mode

* = Default

- **JP1 : 1x4 2.54mm Pin Header for Speaker Function**

Pin	Description	Pin	Description
1	Speaker	2	GND
3	GND	4	+V5.0

- **JP3 : 2x4 2.0mm Pin Header for Digital IO**

Pin	Definition	Pin	Definition
1	GP27_D_IN1	2	GP23_D_OUT1
3	GP26_D_IN2	4	GP22_D_OUT2
5	GP25_D_IN3	6	GP21_D_OUT3
7	GP24_D_IN4	8	GP20_D_OUT4

- **JP4 : 1x3 2.0mm Pin Header for On Board RTC**

Pin	Description
*1, 2 Short	Operation Mode
2, 3 Short	Clear CMOS

   * = Default

- **JP5 : 1x2 2.0mm Pin Header for SMBUS External Connector**

Pin	Description	Pin	Description
1	SMB_CLK	2	SMB_DAT

- **JP6 : 1x2 2.54mm Pin Header for Reset Button**

Pin	Description	Pin	Description
1	Ground	2	Reset

- **JP7 : 1x2 2.54mm Pin Header for Power Button**

Pin	Description	Pin	Description
1	Power Up	2	GND

- **JP9 : 1x5 2.54mm Pin Header for Keyboard Lock Function**

Pin	Definition	Pin	Definition
1	KL_VCC	2	NC
3	GND	4	KEYLOCK
5	GND	6	

● **CON1: Primary IDE Connector**

Pin	Definition	Pin	Definition
1	Reset #	2	Ground
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	Ground	20	NC
21	DMA REQ	22	Ground
23	IOW	24	Ground
25	IOR	26	Ground
27	IOCHRDY	28	Pull Down
29	DMA ACK	30	Ground
31	Interrupt 14	32	NC
33	Disk Address 1	34	DMA66 Detect
35	Disk Address 0	36	Disk Address 2
37	HDC CS100	38	HDC CS300
39	HDD Active Led	40	Ground

● **CON2: IDE (Secondary) Connector**

Pin	Description	Pin	Description
1	Reset #	2	Ground
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	Ground	20	NC
21	DMA REQ	22	Ground
23	IOW	24	Ground
25	IOR	26	Ground
27	IOCHRDY	28	Pull Down
29	DMA ACK	30	Ground
31	Interrupt 15	32	NC
33	Disk Address 1	34	DMA66 Detect
35	Disk Address 0	36	Disk Address 2
37	HDC CS100	38	HDC CS300
39	HDD Active Led	40	Ground

Chapter 3
Expansion Capabilities

3.1 System Memory

Your system memory is provided by DIMM's (Dual In-line Memory Modules) on the CPU board. The CPU board contains two memory banks: Bank 0 and 1, corresponding to connector DIMM1, DIMM2.

The table below shows possible DIMM configurations for the memory banks. Please be noted that the ROBO-882N-VG2 supports 8 GB DDR SDRAM. Configurations using different brands of memory modules are not recommended.

DIMM1 Channel A	DIMM3 Channel A	DIMM2 Channel B	DIMM4 Channel B	Total Memory
128MB	128MB	Empty	Empty	256MB
256MB	256MB	Empty	Empty	512MB
512MB	512MB	Empty	Empty	1024MB
1024MB	1024MB	Empty	Empty	2048MB
Empty	Empty	128MB	128MB	256MB
Empty	Empty	256MB	256MB	512MB
Empty	Empty	512MB	512MB	1024MB
Empty	Empty	1024MB	1024MB	2048MB
128MB	128MB	128MB	128MB	512MB
256MB	256MB	256MB	256MB	1024MB
512MB	512MB	512MB	512MB	2048MB
1024MB	1024MB	1024MB	1024MB	4096MB
2048MB	2048MB	2048MB	2048MB	8192MB

Table 3-1 : ROBO-882N-VG2 DIMM Configurations

3.2 Installing DIMM

To install DIMM:

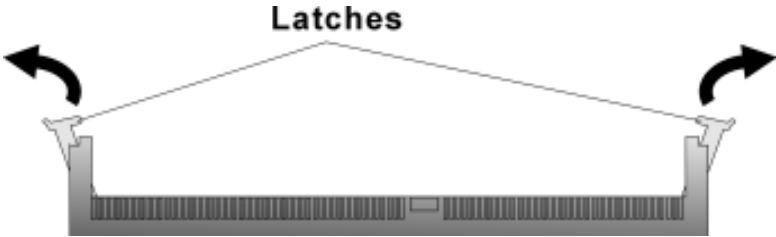1. Make sure the two handles of the DIMM sockets are in the "open" position, i.e. the handles stay outward.

Figure 3-1 : How to Install DIMM (1)

2. Slowly slide the DIMM modules along the plastic guides in the both ends of the socket.
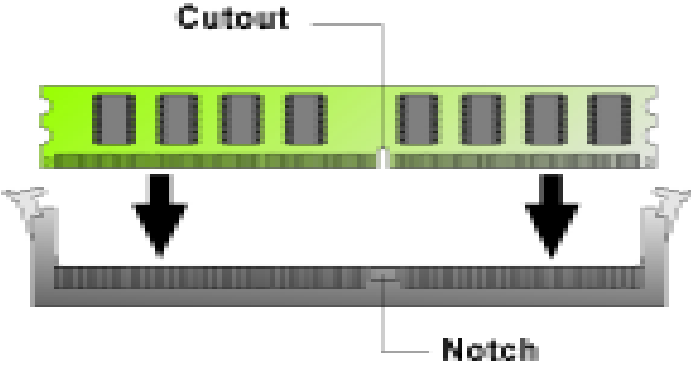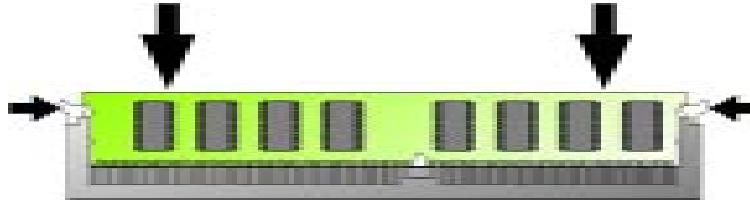
Figure 3-2 : How to Install DIMM (2)

3. Then press the DIMM module down right into the socket, until a click is heard. That means the two handles automatically locked the memory modules into the right position of the DIMM socket.

Figure 3-3 : How to Install DIMM (3)

4. To take away the memory module, just push the both handles outward, the memory module will be ejected by the mechanism in the socket.

Figure 3-4 : How to Install DIMM (4)

3.3 Changing CPU

To change the CPU:

1. Pull the handling bar of the socket upward to the other end to loosen the socket's openings. Carefully lift the existing CPU up to remove it from the socket.

2. Place the new CPU on the middle of the socket, orienting its beveled corner to line up with the socket's beveled corner. Make sure the pins of the CPU fit evenly to the socket openings. Replace the handling bar to fasten the CPU to the socket.
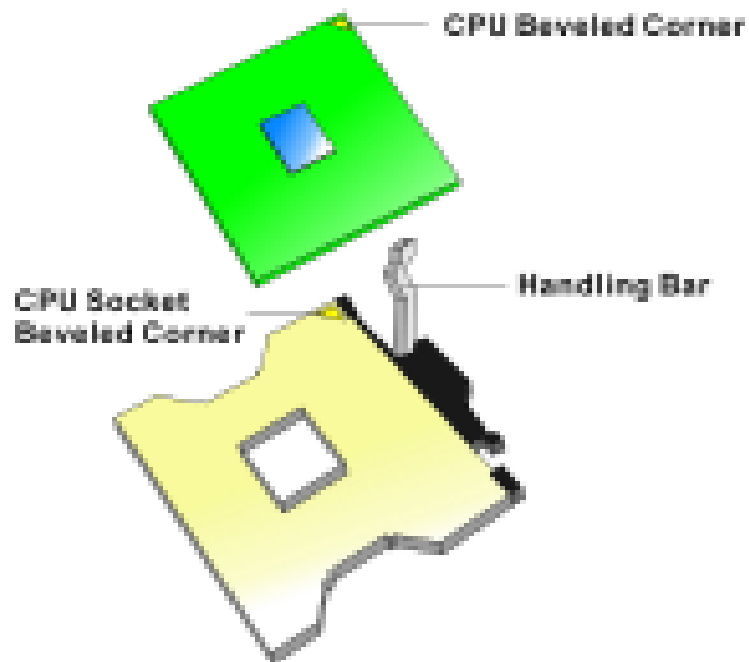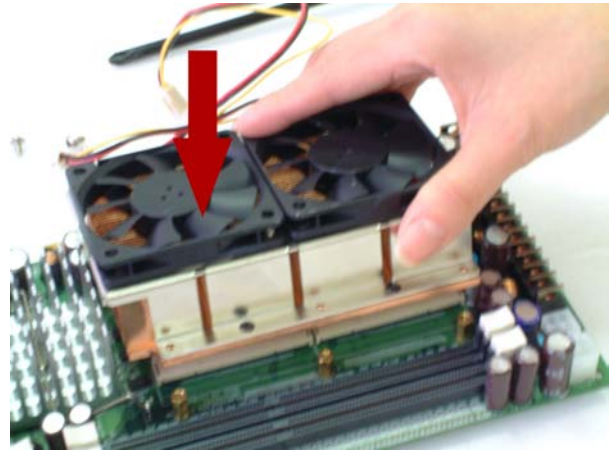

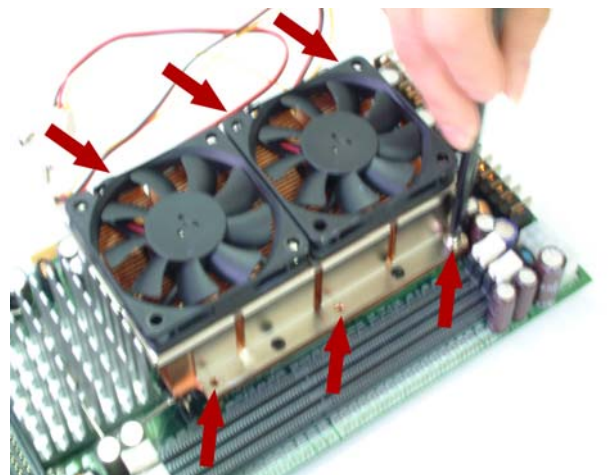**Figure 3-5 : How to Change CPU**

3.4 Installing the Fan Heatsink

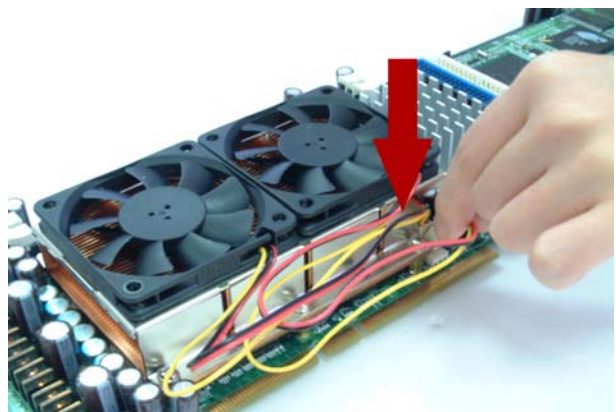**Step 1**

Insert the fan in the CPU bed.

Step 2

As shown in the picture, screw tight.

Step 3

Then get the fan connector connected.

Chapter 4
Award BIOS Setup

This chapter explains how to use the BIOS Setup program for the ROBO-882N-VG2. The current BIOS setup pictures in the chapter is for reference only, which may change by the BIOS modification in the future. User can download any major updated items from Portwell web site http://www.portwell.com. If any unclear message occurs, please contact Portwell customer service representative for help or log onto http://www.portwell.com.

About the BIOS

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

When to Run BIOS

This program should be executed under the following conditions:

- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the Setup program
- When resetting the system clock
- When setting the CPU clock speed so that it automatically runs either fast or slow
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

4.1 Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- ◆ If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- ◆ If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <**Del**> allows you to enter Setup. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

TO ENTER SETUP BEFORE BOOT
PRESS <CTRL-ALT-ESC> OR <DEL> KEY

Press the <**Del**> key or press the <**Ctrl**>, <**Alt**>, and <**Esc**> keys to enter Setup:

4.2 The Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The main menu allows you to select from ten setup functions and two exit choices. Use arrow keys to select among the items and press**<Enter>** to accept or enter the sub-menu.
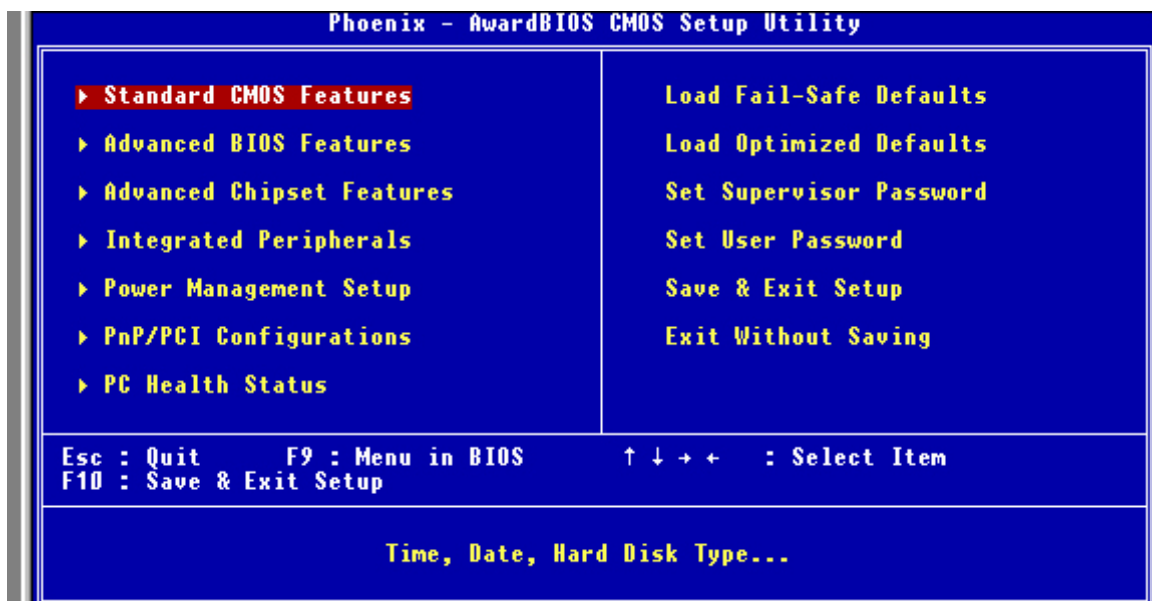

Figure 4-1: BIOS Setup Utility Main Menu

Standard CMOS Features

Use this menu for basic system configuration

Advanced BIOS Features

Use this menu to set the Advanced Features available on the system

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize the system's performance

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals

Power Management Setup

Use this menu to specify your settings for power management.

PnP/PCI Configurations

This entry appears if your system supports Plug and Play and PCI Configuration

PC Health Status

Displays CPU, System Temperature, Fan Speed, and System Voltages Value

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

Load Optimized Defaults

Use this menu to load the BIOS default values, i.e., factory settings for optimal performance system operations. While Award has de-signed the custom BIOS to maximize performance, the factory has the option to change these defaults to meet their needs.

Set Supervisor/User Password

Enables you to change, set, or disable the supervisor or user pass-word.

Save & Exit Setup

Saves CMOS value changes to CMOS and exits setup.

Exit Without Saving

Ignores all CMOS value changes and exits setup.

4.3 Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/ Option Page Setup Menu

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

4.4 Control Keys

The table below lists the keys that help you navigate the setup program.
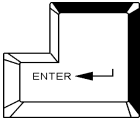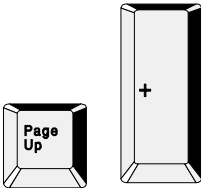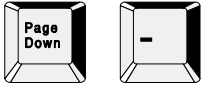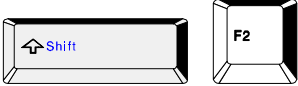
Up arrow	↑	Move to previous item
Down arrow	↓	Move to next item
Left arrow	←	Move to the item to the left
Right arrow	→	Move to the item to the right
Esc key	Esc	*Main Menu:* Quit without saving changes to CMOS *Status/Option Page Setup Menus*: Exit current page and return to Main Menu.
Enter Key	ENTER	Select or Accept an Item
PgUp/plus key	Page Up +	Increase the numeric value or make changes
PgDn/minus key	Page Down −	Decrease the numeric value or make changes
F1 key	F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2/Shift + F2 key	Shift F2	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F5 key	F5	Restore the previous CMOS value from CMOS (only for Option Page Setup Menu)
F6 key	F6	Load the default CMOS value from BIOS default table (only for Option Page Setup Menu)
F7 key	F7	Load the Setup default value (only for Option Page Setup Menu)
F9 Key	F9	Menu in BIOS
F10 key	F10	Save all the CMOS changes (only for Main Menu)

Figure 4-2 : BIOS Control Keys

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4.5 Standard CMOS Features

Selecting Standard CMOS Features on the main program screen displays the following menu:

```
        Phoenix - Award WorkstationBIOS CMOS Setup Utility
                      Standard CMOS Features

    Date (mm:dd:yy)        Tue, Jan 20 2004    │      Item Help
    Time (hh:mm:ss)        15 : 30 : 16        │
                                               │  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.]     │

    Video                 [EGA/VGA]            │
    Halt On               [All , But Keyboard] │

    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
```

Figure 4-3 : BIOS -- Standard CMOS Features

The Standard CMOS Setup utility is used to configure the following features:

Date (mm:dd:yy)

The BIOS determines the day of the week from the other data information. This field is for information only. Press the left or right arrow key to move to the desired field (date, month, year). Press the PgUp or PgDn key to arrange the setting, or type the desired value into the field.

Time (hh:mm:ss)

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

IDE Devices

Your computer has two IDE channels and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel. Press <Enter> to display the IDE submenu:

```
            Phoenix - AwardBIOS CMOS Setup Utility
                     IDE Channel 1 Slave

   IDE HDD Auto-Detection     [Press Enter]          Item Help

   IDE Channel 1 Slave        [Auto]            Menu Level    ▶▶
   Access Mode                [Auto]
                                               To auto-detect the
   Capacity                   0 MB             HDD's size, head... on
                                               this channel
   Cylinder                   0
   Head                       0
   Precomp                    0
   Landing Zone               0
   Sector                     0




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

Figure 4-4 : BIOS -- IDE Channel Slave

IDD HDD Auto-Detection

If you want the Setup Utility to automatically detect and configure a hard disk drive on the IDE channel, press <**Enter**> while this item is highlighted.

If your system has an IDE hard drive, you can use this utility to detect its parameters and enter them into the Standard CMOS Setup automatically.

If the auto-detected parameters displayed do not match the ones that should be used for your hard drive, do not accept them. Press the <**N**> key to reject the values and enter the correct ones manually in the Standard CMOS Setup screen. (**Note:** If you are setting up a new hard disk drive that supports LBA mode, more than one line will appear in the parameter box. Choose the line that lists *LBA* for an LBA drive.)

Do not choose **Large** or **Normal** if the hard disk drive is already fully formatted when you installed it. Select the mode that was used to format it.

IDE Primary/Secondary Master/Slave

If you leave this item at **Auto**, the system will automatically detect and configure any IDE devices it finds. If it fails to find a hard disk, change the value to **Manual** and then manually configure the drive by entering the characteristics of the drive in the items below:

Capacity	**approximate hard disk drive capacity**
Cylinder	**number of cylinders**
Head	**number of heads**
Precomp	**write precompensation cylinder**
Landing Zone	**landing zone**
Sector	**number of sectors**

Refer to your drive's documentation or look on the drive if you need to obtain this information. If no device is installed, change the value to **None**.

Access Mode

This item defines some special ways that can be used to access IDE hard disks such as LBA (Logical Block Addressing). Leave this value at **Auto** and the system will automatically decide the fastest way to access the hard disk drive.

Press **<Esc>** to close the IDE device submenu and return to the Standard CMOS Features page.

Floppy Drive A

Options for these fields are:

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

The **None** option could be used for diskless workstations.

Video

Set this field to the type of graphics card installed in your system. If you are using a VGA or higher resolution card, choose the **EGA/VGA** option. The options are:

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 40 column mode
Mono	Monochrome adapter, includes high resolution monochrome adapters

Halt On

This setting determines which type of errors will cause the system to halt during booting. The options are:

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

Base/Extended/Total Memory

This category is display-only. The contents are determined by the POST (Power-On Self-Test) of the BIOS. You cannot make changes to these fields.

Base Memory: Also called conventional memory. The DOS operating system and conventional applications use this area.

Extended Memory: The POST of the BIOS will determine the amount of extended memory installed in the system.

Total Memory: This option shows system memory capacity.

After you have made your selections in the Standard CMOS Setup screen, press <**ESC**> to go back to the main screen.

4.6 Advanced BIOS Features

Selecting Advanced BIOS Features on the main program screen displays this menu, which allows you to define advanced information about your system. You can make modifications to most of these items without causing fatal errors to your system.
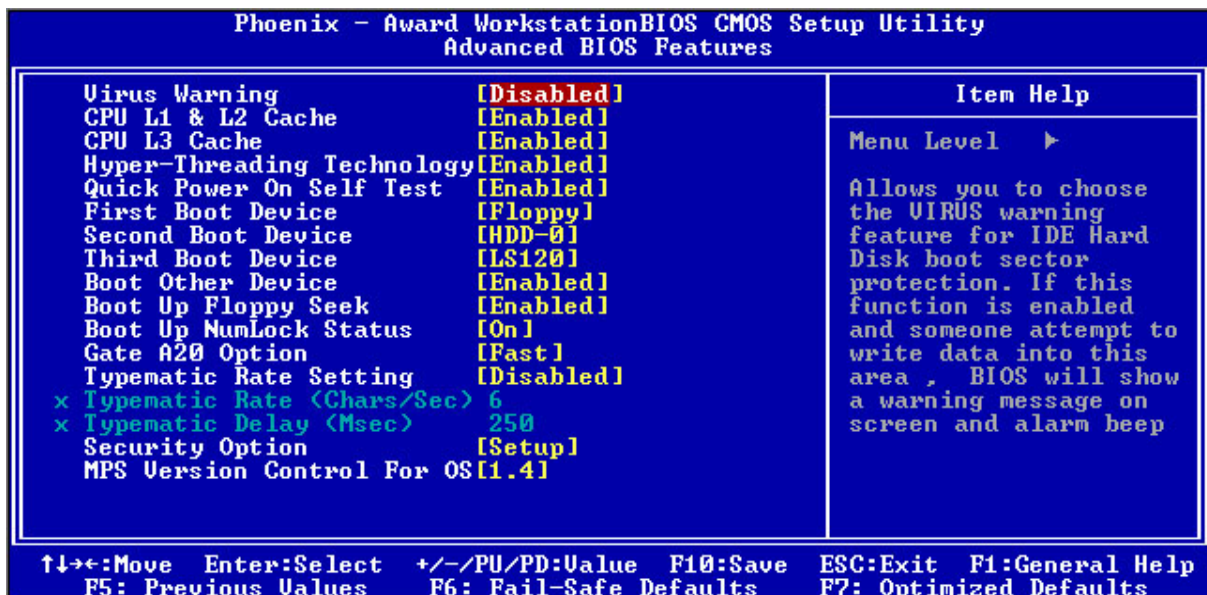
Figure 4-5 : BIOS -- Advanced BIOS Features

The following explains the options for each feature:

Virus Warning

Allows you to choose the Virus Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, BIOS will show a warning message on screen and an alarm will beep.

· **Enabled:** Activates automatically when the system boots up causing the following warning message to appear when anything attempts to access the boot sector or hard disk partition table:

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

· **Disabled:** No warning message will appear when an attempt is made to access the boot sector or hard disk partition table.

Note:

This function is available only for DOS and other operating systems that do not trap INT13. For complete protection against viruses, install virus software in your operating system and update the virus definitions regularly. Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you disable the virus warning.

CPU L1, L2 and L3 Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). This BIOS feature is used to enable or disable the processor's Level 1, Level 2 and Level 3 cache. Naturally, the default and recommended setting is Enabled.

Hyper Threading Technology

The Intel Hyper-Threading Technology allows a single processor to execute *two or more* separate threads concurrently. When hyper-threading is enabled, multi-threaded software applications can execute their threads in parallel, thereby improving the processor's performance.

Quick Power On Self Test

This item speeds up the Power On Self Test (POST) when you turn on the computer. If it is set to Enabled, BIOS will shorten or skip some check items during the POST.

First/Second/Third Boot Device

BIOS attempts to load the operating system from the devices in the sequence selected in these items. The available choices are Floppy, LS120, Hard Disk Drive, SCSI, CDROM, HDD 1, HDD 2, HDD 3.

Boot Other Device

If the selected boot devices fail to boot, selecting Enabled for this item allows the BIOS to boot from other boot devices (in a predefined sequence) which are present but not selected as boot devices in the setup.

Boot Up Floppy Seek

Enable this to allow the system to search for floppy drives during the POST. Disable this item to boot faster.

Boot Up NumLock Status

Toggle between On or Off to control the state of the NumLock key when the system boots. If On, the numeric keypad is in numeric mode. If Off, the numeric keypad is in cursor control mode.

Gate A20 Option

Enables you to select whether the chipset or the keyboard controller should control Gate A20. The options are:

· **Normal:** A pin in the keyboard controller controls Gate A20.
· **Fast:** Lets chipset control Gate A20.

Typematic Rate Setting

If set to Enabled, enables you to set the Typematic Rate and Typematic Delay.

Typematic Rate (Chars/Sec)

This setting controls the speed at which the system registers held-down key-strokes. The choices range from 6 to 30 Chars/Sec.

Typematic Delay (Msec)

This setting controls the time between the display of the first character and successive characters. There are four delay choices: 250ms, 500ms, 750ms and 1000ms.

Security Option

Enables you to select whether the password is required every time the system boots or only when you enter Setup.

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

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

MPS Version Control for OS

This feature is only applicable to multiprocessor motherboards as it specifies the version of the Multi-processor Specification (MPS) that the motherboard will use. The MPS is a specification by which PC manufacturers design and build Intel architecture systems with two or more processors. MPS version 1.4 is required for a motherboard to support a bridgeless secondary PCI bus.

After you have made your selections in the Advanced BIOS Features setup, press <**ESC**> to go back to the main screen.

4.7 Advanced Chipset Features
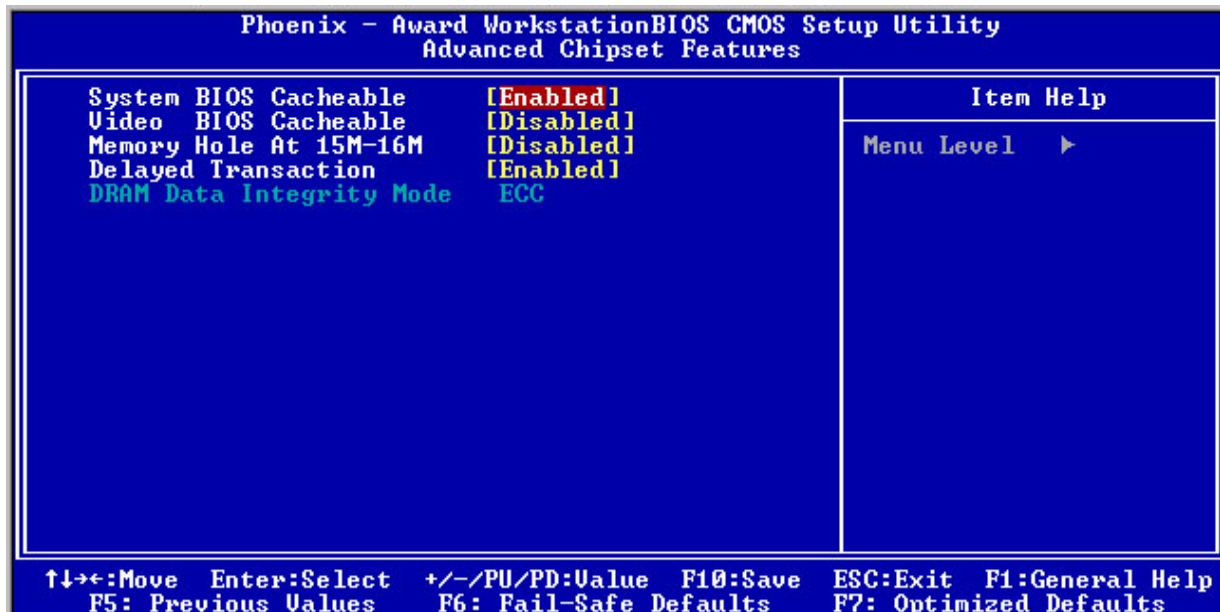
```
        Phoenix - Award WorkstationBIOS CMOS Setup Utility
                    Advanced Chipset Features
┌──────────────────────────────────────────┬─────────────────────────┐
│  System BIOS Cacheable     [Enabled]      │       Item Help         │
│  Video  BIOS Cacheable     [Disabled]     │                         │
│  Memory Hole At 15M-16M    [Disabled]     │  Menu Level    ▶        │
│  Delayed Transaction       [Enabled]      │                         │
│  DRAM Data Integrity Mode   ECC           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
├──────────────────────────────────────────┴─────────────────────────┤
│ ↑↓→←:Move   Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│     F5: Previous Values      F6: Fail-Safe Defaults   F7: Optimized Defaults   │
└─────────────────────────────────────────────────────────────────────┘
```

Figure 4-5 : BIOS- Advanced Chipset Features

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The available choices are Enabled, Disabled.

Video BIOS Cacheable

Selecting Enabled allows caching of the video BIOS ROM at C0000h, resulting in better video performance. However, if any program writes to this memory area, a system error may result. The choices : Enabled, Disabled.

Memory Hole at 15M-16M

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory. The choices: Enabled, Disabled.

Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transaction cycles. Select Enabled to support compliance with PCI specification version 2.1
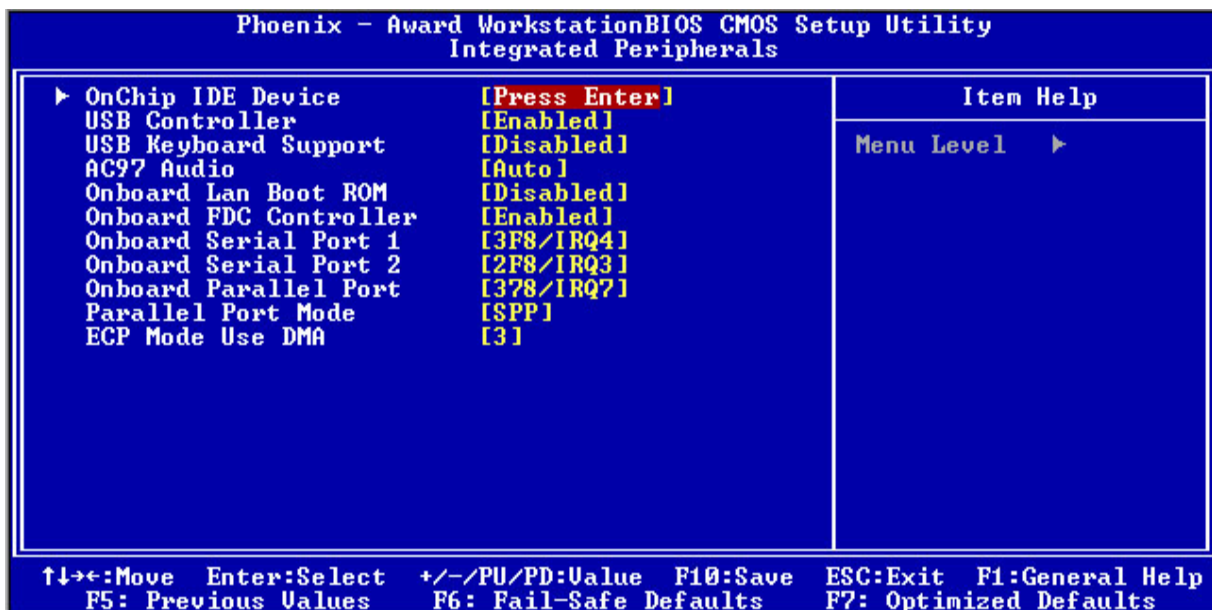
4.8 Integrated Peripherals

```
        Phoenix - Award WorkstationBIOS CMOS Setup Utility
                      Integrated Peripherals

   ▶ OnChip IDE Device        [Press Enter]          Item Help
     USB Controller           [Enabled]
     USB Keyboard Support     [Disabled]        Menu Level    ▶
     AC97 Audio               [Auto]
     Onboard Lan Boot ROM     [Disabled]
     Onboard FDC Controller   [Enabled]
     Onboard Serial Port 1    [3F8/IRQ4]
     Onboard Serial Port 2    [2F8/IRQ3]
     Onboard Parallel Port    [378/IRQ7]
     Parallel Port Mode       [SPP]
     ECP Mode Use DMA         [3]




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

Figure 4-6 : BIOS- Integrated Peripherals

On-Chip IDE Device

The system chipset contains IDE HDD Block mode, and a PCI IDE interface with support for two IDE Primary (Master & Slave) PIO's and two IDE Primary (Master & Slave) UDMA's, and two IDE Secondary (Master & Slave) PIO's and two IDE Secondary (Master & Slave) UDMA's. Select Enabled to activate the primary and/or secondary IDE interface. Select Disabled to deactivate this interface if you install a primary and/or secondary add-in IDE interface.

USB Controller

Select Enabled if your system contains a Universal Serial Bus controller and you have USB peripherals.

USB Keyboard Support

Select Enabled if your USB controller is enabled and it needs USB keyboard support in legacy (old) OS operating systems such as DOS.

AC97 Audio

Selecting Auto will enable the AC97 audio if it is detected onboard.

Onboard LAN Boot ROM

Decides whether to invoke the boot ROM of the onboard LAN chip. The available choices are LAN1, LAN2, and Disabled.

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.

Onboard Serial Ports 1 and 2

Select an address and corresponding interrupt for the first and second serial ports. The choices: Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3.

Onboard Serial Ports (1, 2, 3, 4)

This feature allows you to manually select the I/O address and IRQ for the first and second serial ports. It is recommended that you leave it as Auto so that the BIOS can select the best settings for it. But if you need a particular I/O port or IRQ that's been taken up by this serial port, you can manually select an alternative I/O port or IRQ for it. You can also disable this serial port if you do not need to use it. Doing so frees up the I/O port and IRQ used by this serial port. Those resources can then be reallocated for other devices to use.

Onboard Parallel Port

This feature allows you to select the I/O address and IRQ for the onboard parallel port. The default I/O address of 387h and IRQ of 7 should work well in most cases. Unless you have a problem with the parallel port, you should leave it at the default settings. The choices: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, and Disabled.

Parallel Port Mode

The choices available include SPP, EPP, ECP and ECP+EPP.

ECP Mode Use DMA

When the on-board parallel port is set to ECP mode, the parallel port can use DMA 3 or DMA 1.

After you have made your selections in the Integrated Peripherals setup, press the **<ESC>** key to go back to the main program screen.
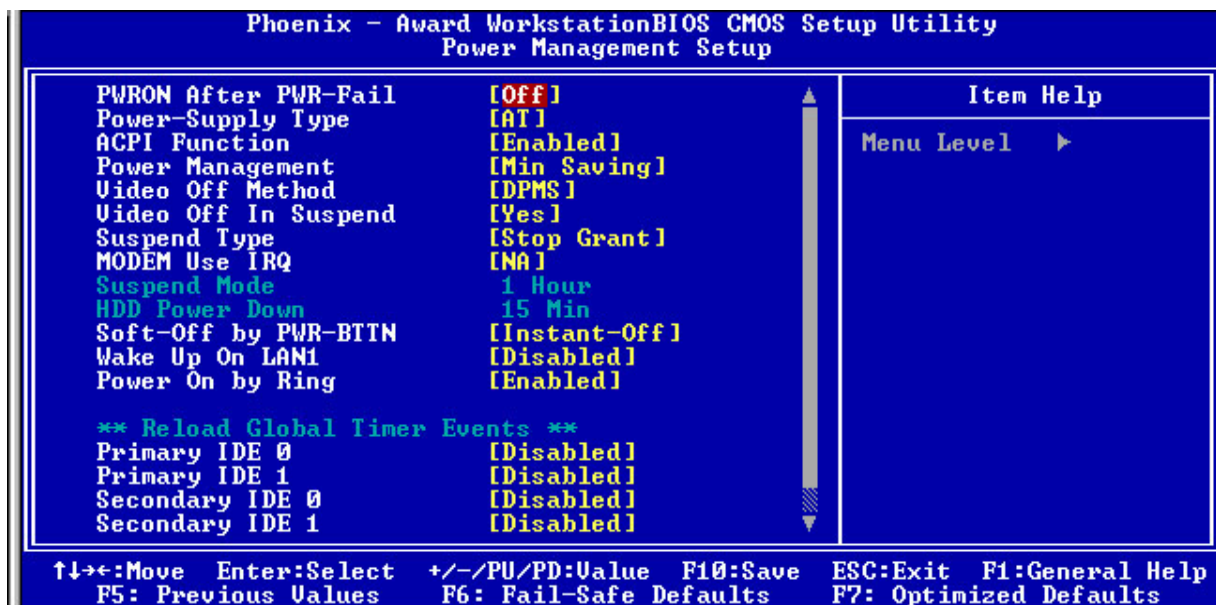
4.9 Power Management Setup

```
          Phoenix - Award WorkstationBIOS CMOS Setup Utility
                        Power Management Setup
  ┌─────────────────────────────────────────────┬──────────────────────┐
  │ PWRON After PWR-Fail      [Off]            ▲ │      Item Help        │
  │ Power-Supply Type         [AT]              │                       │
  │ ACPI Function             [Enabled]         │ Menu Level    ▶       │
  │ Power Management          [Min Saving]      │                       │
  │ Video Off Method          [DPMS]            │                       │
  │ Video Off In Suspend      [Yes]             │                       │
  │ Suspend Type              [Stop Grant]      │                       │
  │ MODEM Use IRQ             [NA]              │                       │
  │ Suspend Mode              1 Hour            │                       │
  │ HDD Power Down            15 Min            │                       │
  │ Soft-Off by PWR-BTTN      [Instant-Off]     │                       │
  │ Wake Up On LAN1           [Disabled]        │                       │
  │ Power On by Ring          [Enabled]         │                       │
  │                                             │                       │
  │ ** Reload Global Timer Events **            │                       │
  │ Primary IDE 0             [Disabled]        │                       │
  │ Primary IDE 1             [Disabled]        │                       │
  │ Secondary IDE 0           [Disabled]      ▒ │                       │
  │ Secondary IDE 1           [Disabled]      ▼ │                       │
  ├─────────────────────────────────────────────┴──────────────────────┤
  │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
  │    F5: Previous Values    F6: Fail-Safe Defaults  F7: Optimized Defaults  │
  └────────────────────────────────────────────────────────────────────┘
```

Figure 4-7 : BIOS -- Power Management Setup

Auto PWR-Failure Resume

This setting specifies whether your system reboots after a power failure.

There are three selections:

Off: The system will remain off when power comes back after a power failure.

On: The system will switch on when power comes back after a power failure.

Power Supply Type

The choices: AT, ATX.

ACPI Function

The ACPI standard (Advanced Configuration and Power Interface) allows the operating system to directly check the functions of energy saving and the PnP (Plug and Play) functionality. The ACPI functions are normally activated by the BIOS. The choices are: Enabled and Disabled.

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes: HDD Power Down, Doze Mode and Suspend Mode

- Min. Saving: Minimum power management
- Max Saving: Maximum power management
- User Define: Allows you to set each mode individually

Video Off Method

This determines the manner in which the monitor is blanked. There are three choices:

1. V/H SYNC+Blank: This selection will cause the system to turn off the vertical and horizontal synchronization port and write blanks to the video buffer.
2. Blank Screen: This option only writes blanks to the video buffer.
3. DPMS Support: Select this option if your monitor supports the Display Power Management signaling (DPMS) standard of the Video Electronics Standard to select video power management values.

Video Off In Suspend

This determines the manner in which the monitor is blanked. The choices: Yes, No.

Suspend Type

Select the Suspend Type.
The Choices: PwrON Suspend, Stop Grant.

MODEM Use IRQ

This determines the IRQ in which the MODEM can use.
The Choices: 3, 4, 5, 7, 9, 10, 11, NA.

Soft-Off by PWRBTN (Power Button)

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system "hangs". The available choices are Delay 4 Seconds, Instant-Off

Wake up on LAN 1

When the system enters a Soft-off mode (Standby power exists but system is not working), it will wake up system when specific signals occurred. The BIOS monitors the system for "activity" to determine when to enable power management.

If you enable this feature, the computer specifies that any signal noticed on the LAN bus channel must go out from the hibernation state. The choices: Enabled, Disabled.

Power On by Ring

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state. The choices: Enabled, Disabled.

Reload Global Timer Events
Primary IDE 0
Primary IDE 1
Secondary IDE 0
Secondary IDE 1

The events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as Enabled, even when the system is in a power down mode. The choices: Enabled, Disabled.

4.10 PnP/PCI Configurations
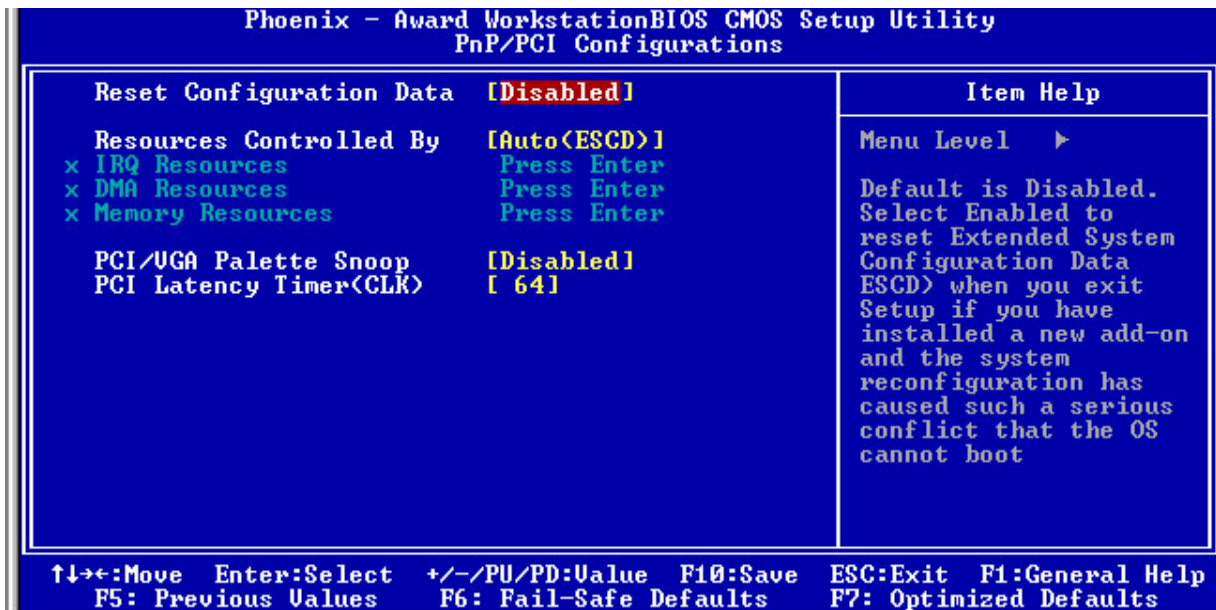
Figure 4-8 : BIOS -- PnP/PCI Configurations

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on Card and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.
The choices: Enabled, Disabled .

Resources Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows95. If you set this field to Manual, then choose specific resources by going into each of the submenus that follows this field.
The Choice: Auto (ESCD), Manual.

PCI/VGA Palette Snoop

Leave this field at Disabled. The Choices: Enabled, Disabled.

PCI Latency Timer (CLK)

This item controls how long each PCI device can hold the bus before another takes over.

4.11 PC Health Status
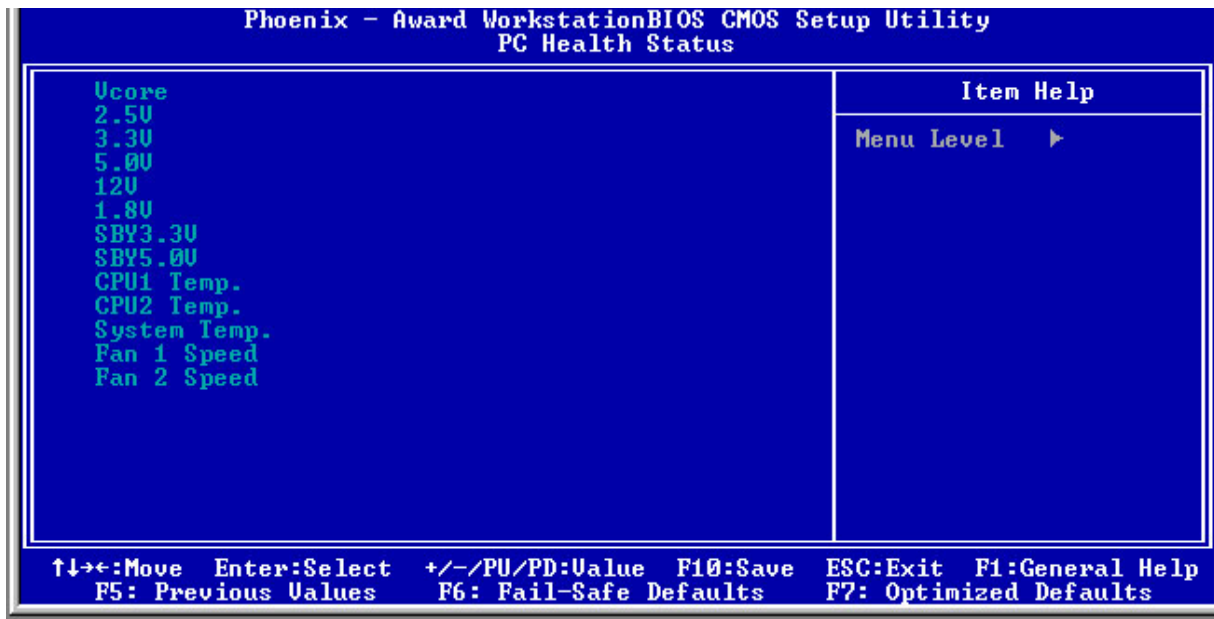
Figure 4-9 : BIOS- PC Health Status

After you have read the PC Health Status, press the <**ESC**> key to go back to the main program screen.

4.12 Load Fail-Safe Defaults

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the whole setup utility.
Use this option if you have changed your system and it does not operate correctly or does not power up.

4.13 Load Optimized Defaults

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the whole Setup Utility. Press the <Y> key and then <Enter> to install the defaults. Press the <N> key and then <Enter> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press the <F7> key.

4.14 Set Supervisor/User Password

The Supervisor/User Password utility sets the password. The mainboard is shipped with the password disabled. If you want to change the password, you must first enter the current password, then at the prompt enter your new password. The password is case sensitive. You can use up to eight alphanumeric characters. Press <Enter> after entering the password. At the next prompt, confirm the new password by retyping it and pressing <Enter> again.
To disable the password, press <Enter> instead of entering a new password when the Enter Password dialog box appears. A message appears confirming that the password has been disabled.
If you have set supervisor and user passwords, only the supervisor password allows you to enter the BIOS Setup Program.

> **Note: If you forget your password, the only way to solve this problem is to discharge the CMOS memory by turning power off and placing a shunt (jumper cap) on jumper JP2 to short pin 2 and pin 3 for five seconds, then putting the shunt back to pin 1 and pin 2 of JP2.**

4.15 Save & Exit Setup

Selecting this option and pressing <Enter> will save the new setting information in the CMOS memory and continue with the booting process.

4.16 Exit Without Saving

Selecting this option and pressing <Enter> will exit the Setup Utility without recording any new values or changing old ones.

Chapter 5

Driver Installation

The ROBO-882N-VG2 series comes with a driver installation CD-ROM that enables you to install VGA driver software, Intel chipset software, and LAN.

5.1 Installing VGA Driver

Step 5.1.1

Double click the folder of **VGA**.

The menu will display.

Select the folder of **J5.30.0_CD09_ RXL_N-WDM** for Windows 2000 operating system.
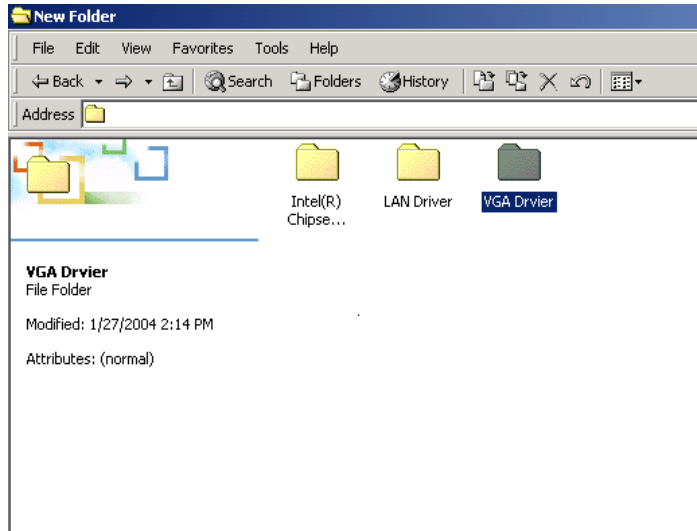
Step 5.1.2

After the menu displays, select the **SETUP** icon.
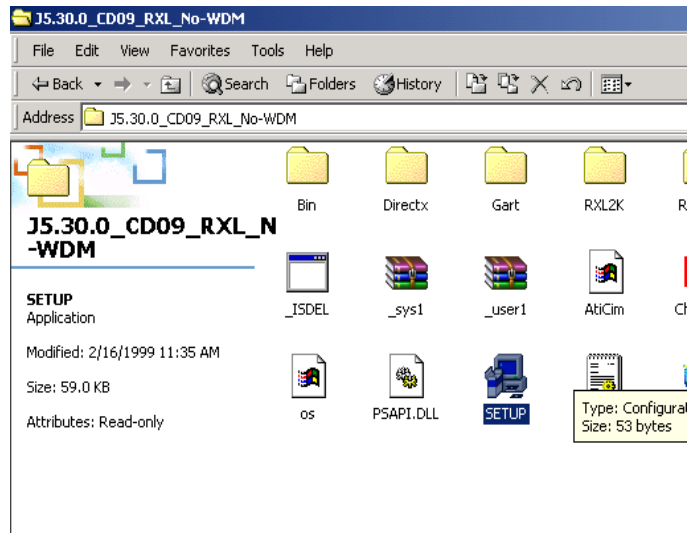
Step 5.1.3

Click **NEXT** to continue with the Setup program.
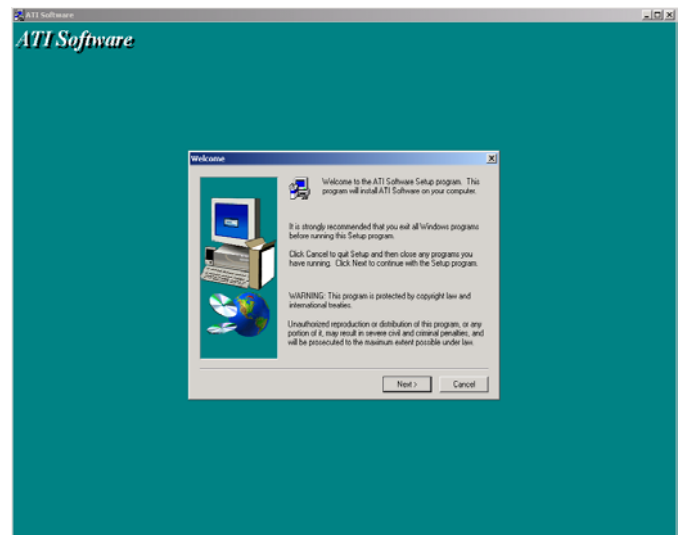
Step 5.1.4

To install ATI software, you must
accept this agreement.
Click **YES** to continue Setup.
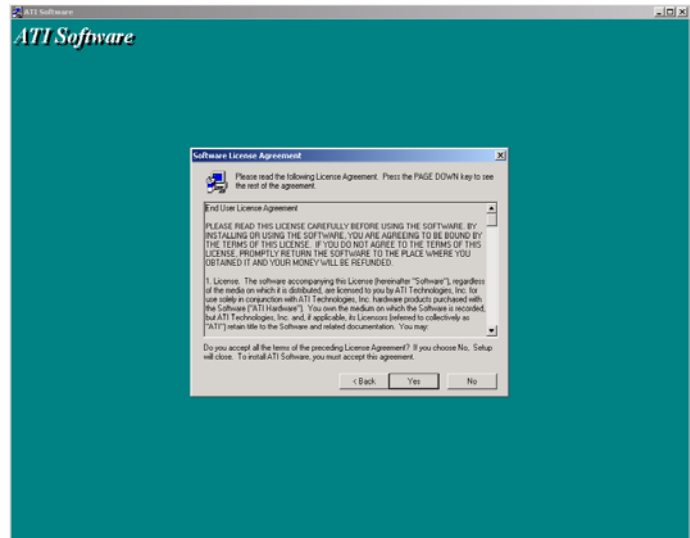
Step 5.1.5

Please select the component you
want to install and then click
NEXT.
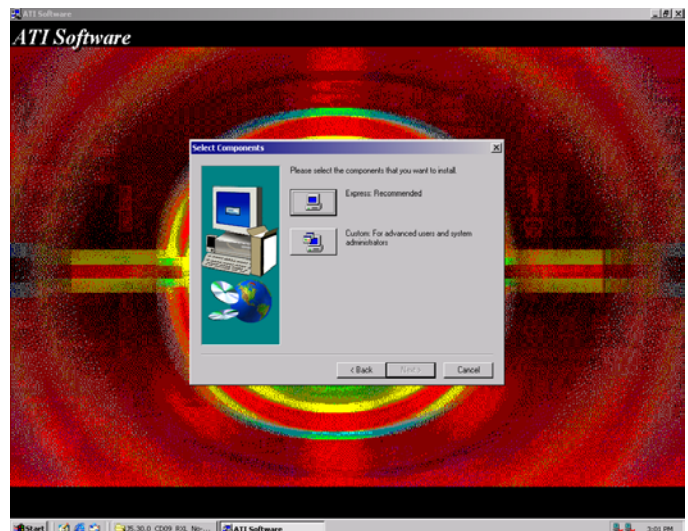
Step 5.1.6

An installation wizard will inform
successful completion of driver
software installation and ask you
to restart your computer.

Select "**Yes, I want to restart my
computer now**," and then click
Finish.

After your computer reboots,
VGA driver is already setup in
your computer.
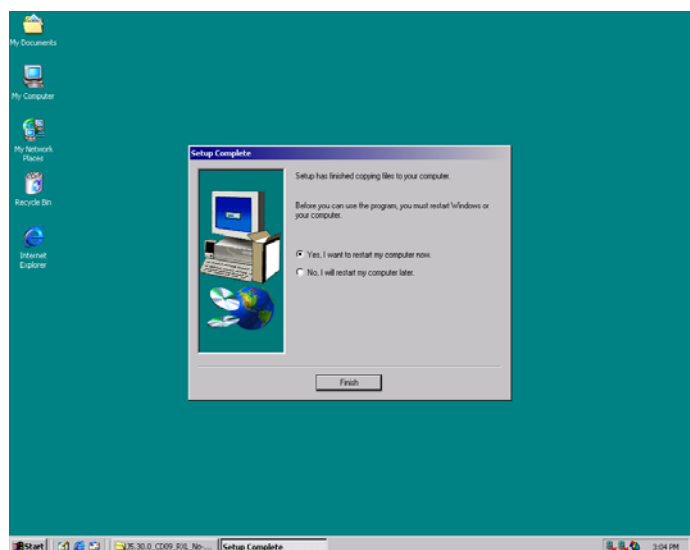
5.2 Installing Intel Chipset Software

Step 5.2.1

Open the folder of
Intel Chipset Software
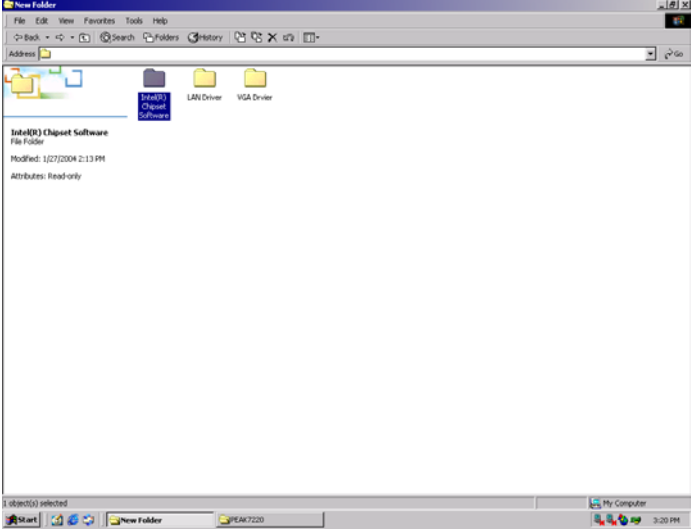
Step 5.2.2

Double click the blue icon
infinst_autol
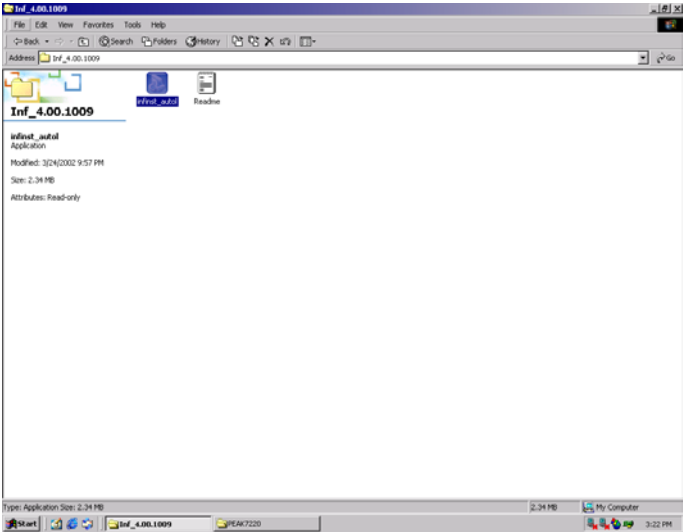
Step 5.2.3

Click **Next** to install INF.

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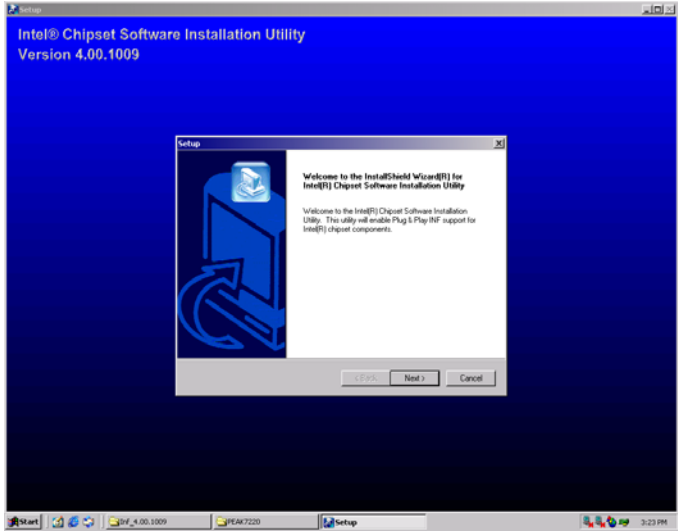
Step 5.2.4

Click **Yes** to continue.
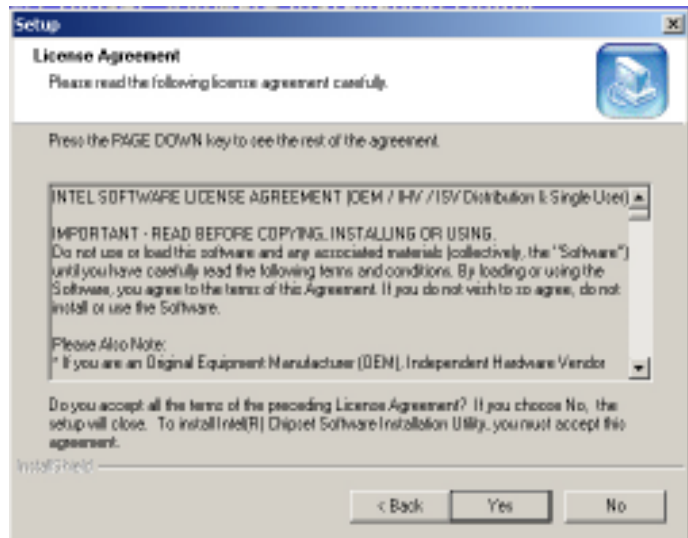
Step 5.2.5

Click **NEXT.**

Step 5.2.6

Select **Yes, I want to restart my computer now**.

Then click **Finish**.

INF is installed.
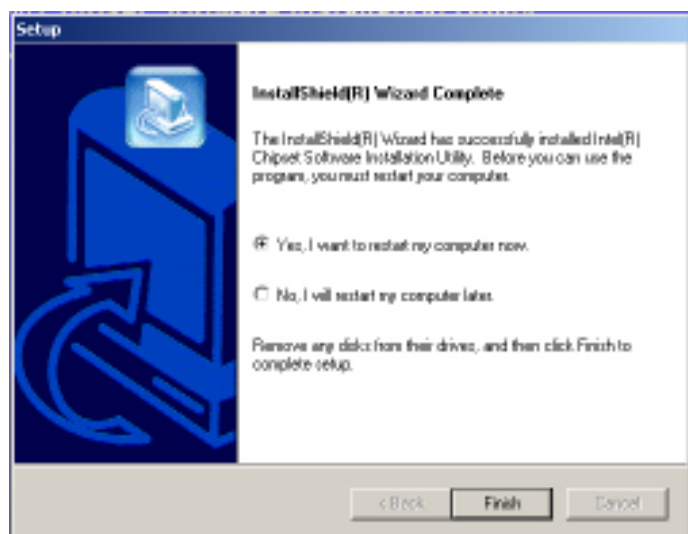
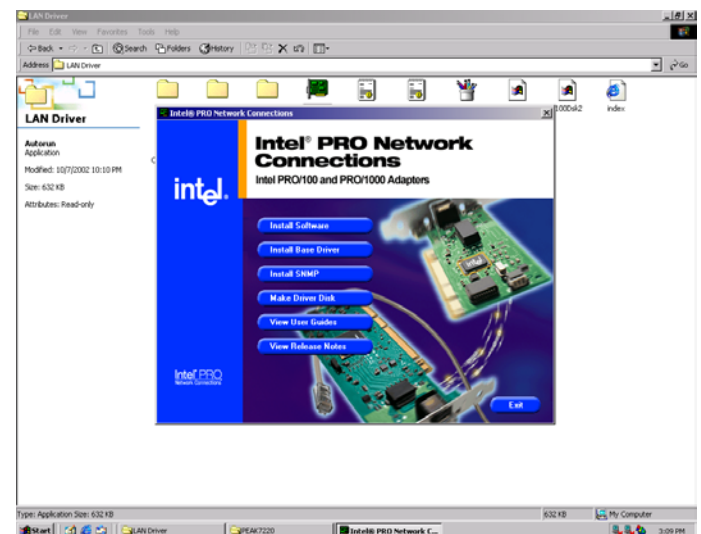## 5.3 Installing LAN

Step 5.3.1

After the folder of **LAN driver** displays, click it.
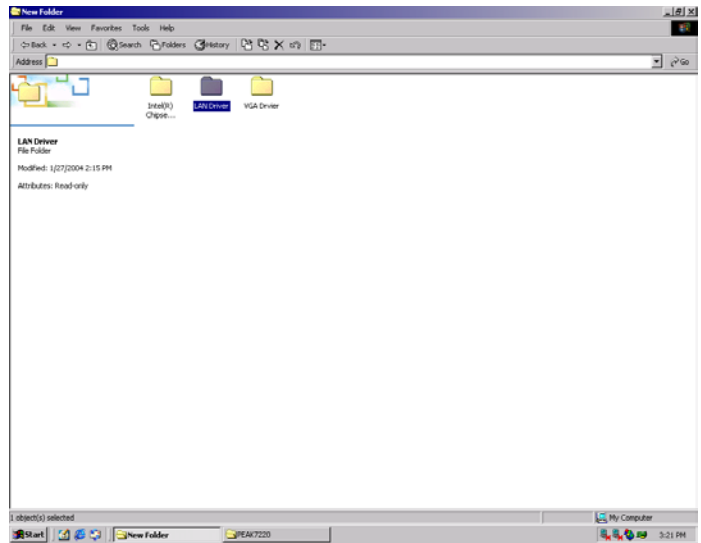
Step 5.3.2

Double click the **Autorun Icon**
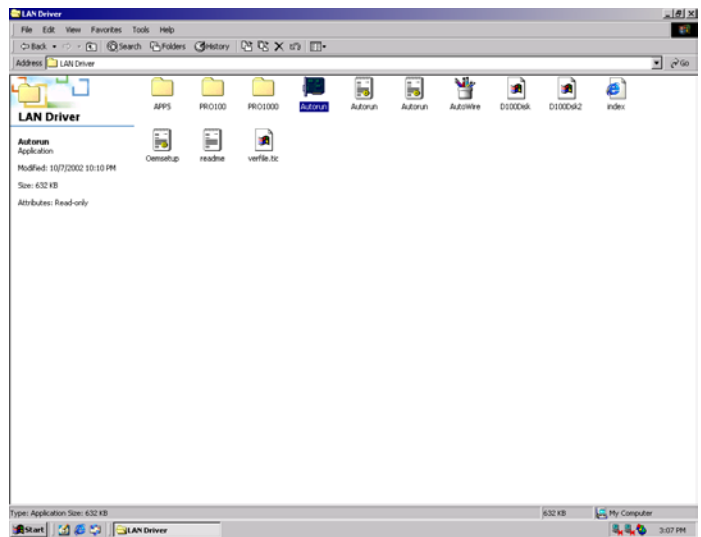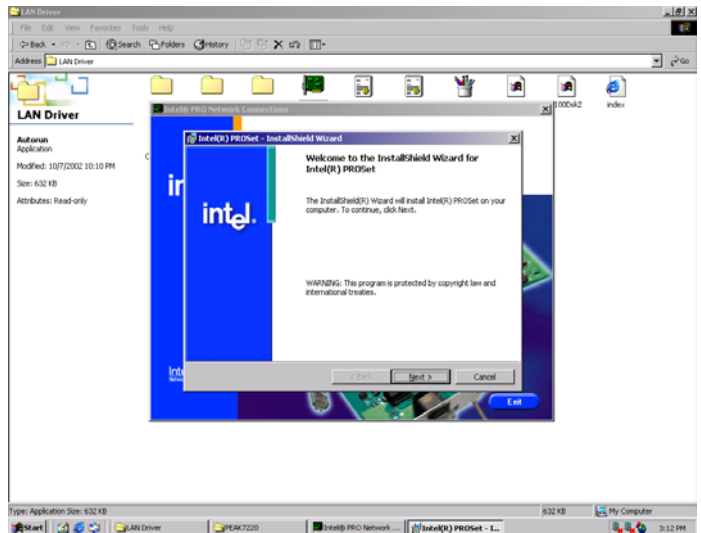

Step 5.3.3

Click **Install Base Driver.**

Step 5.3.4
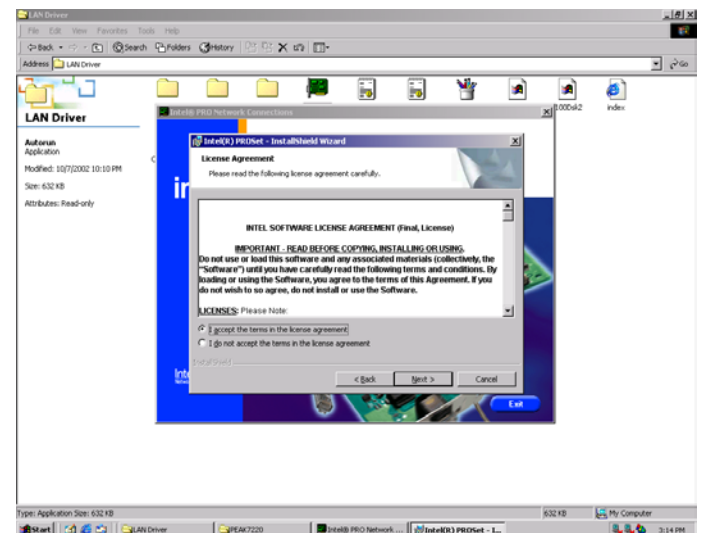
Click **OK** to continue

Step 5.3.5

Click **NEXT** to continue.

Step 5.3.6

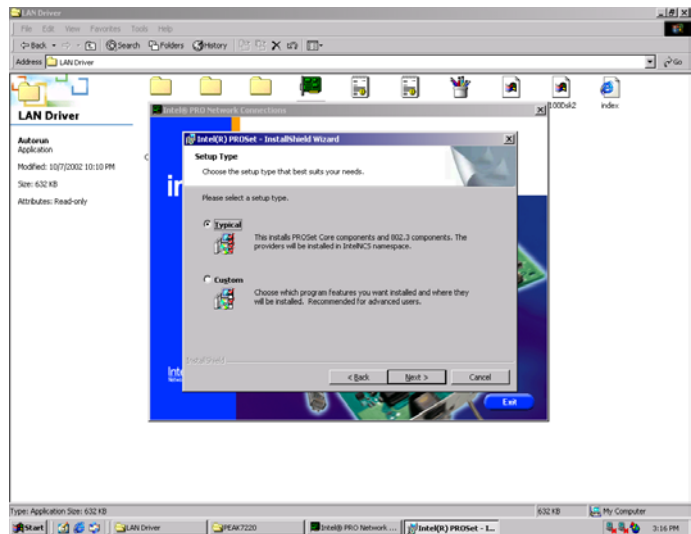Click **NEXT** after accepting the license agreement.

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5.4 Installing USB

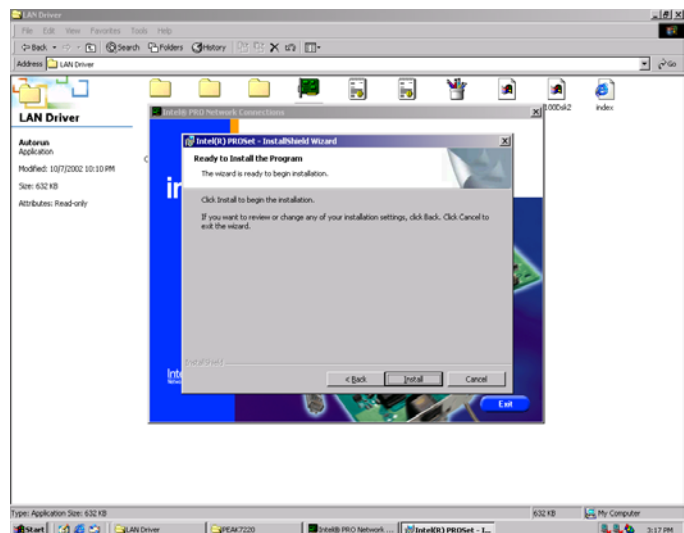After installing the LAN driver, go back to computer desktop and open My Computer.

Step 5.4.1
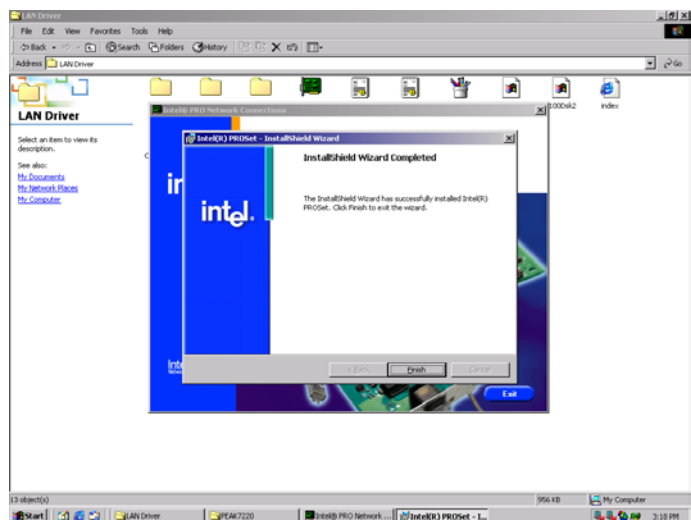Choose the setup type that best suits your needs and then click **NEXT**.

Step 5.4.2
Click **INSTALL** to begin installation.

Step 5.4.3
Click **FINISH** to exit after the installation.

Appendix: Watchdog Timer Setting

1 Watchdog Timer Working Procedure

Watchdog Timer (WDT) is a special hardware device that monitors the computer system during normal operation. WDT has a clock circuit that times down from a set number to zero. If a monitored item occurs before the timer reaches zero, WDT resets and counts down again. If for some reason the monitored item doesn't occur before the timer reaches zero, WDT performs an action, such as a diagnostic operation (rebooting the computer).

You must enter timer values into WDT Configuration Register (Write the control value to the Configuration Port), and clear WDT counter (read the Configuration Port).

WDT Configuration port	F2	Default at F2
Watch Dog Timer	Disabled	1. Default at disabled
	Enabled	2. Enabled for user's programming
WDT Active Time	1 sec	Default at 64 sec
	2 sec	
	4 sec	
	8 sec	
	16 sec	
	32 sec	
	64 sec	
	128 sec	

Table B-1 : Watchdog Timer Character and Function

2 Watchdog Timer Control Register

The Watchdog Timer Control Register controls the WDT working mode. Write the value to the WDT Configuration Port. The following table describes the Control Register bit definition:
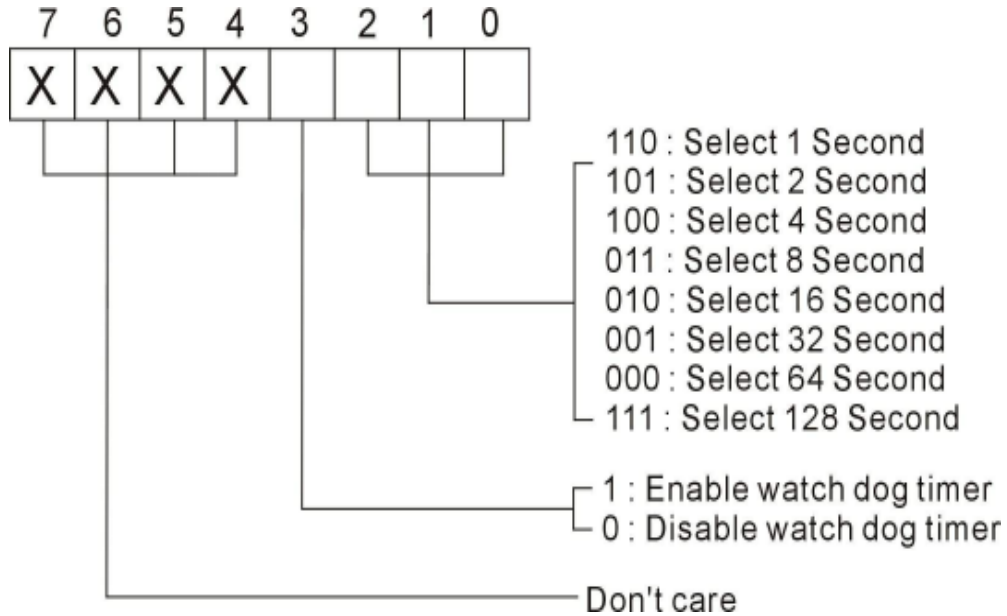
Table B-2 : WDT Control Register Bit Definition

3 Watchdog Timer Programming Procedure

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3.1 Power On or Reset the System

The initial value of WDT Control Register (D3~D0) is zero (0), when power is on or the system has been reset. The following table indicates the initial value of WDT (00000000b) :

Bit	Value	Mean
3	0	Disable Watchdog Timer
2, 1, 0	0 0 0	Select 64 second

Table B-3 : WDT Control Register Initial Value

B.3.2 Clear the WDT

WDT counter interval cannot be longer than the preset time, otherwise, WDT sends a reset signal to the system.

The following is an example of clearing the WDT program in Intel 8086 assembly language.

```
; ( Clear the WDT)
Mov   dx, F2h   ;Setting the WDT configuration port
In    al,  dx
```

Note: Before running WDT, you must clear WDT to ensure
           that the initial value is zero.

B.3.3 WDT Control Register

Note: This register writes to WDT configuration port.

Set WDT Control Register to control the WDT working mode. The initial value of WDT Control Register is shown as follows:

```
; (Setting the WDT Control Register as AL)
Mov        al, 0h  ; Setting initial value = 0 for the WDT Control Register
```

Follow these instructions to set the register:

1.   Select the time-out intervals of WDT (decide the values of D2, D1, D0 in F2)

   Example: If D2~D0 = 0, the time-out interval is 64 seconds.

```
AND      al, 11111000b  ; Setting the time-out interval as 64 sec.
```

2.   Enable or Disable WDT (decide D3 value in F2)

   i.e. D3=0, Disables WDT

```
AND      al, 11110111b  ; Disable the WDT
```
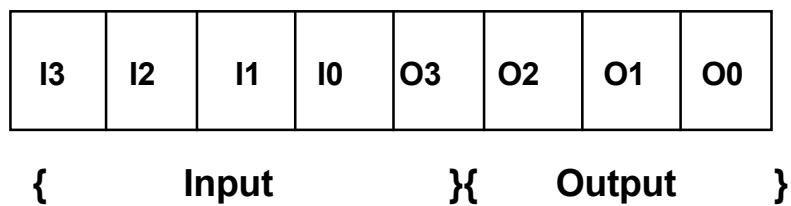
i.e. D3=1, Enables WDT

```
OR      al, 00001000b  ; Enable the WDT
```

After finishing the above settings, you must output the Control Register's value to WDT Configuration Port. Then WDT will start according to the above settings.

```
MOV     dx, F2h    ; Setting WDT Configuration Port
OUT     dx, al         ; Output the Control Register Value
```

GPIO User Guide

Digital I/O UESD Port 801

I3	I2	I1	I0	O3	O2	O1	O0

{   **Input**   **}{**   **Output**   **}**

JP17

IN 0	1	2	OUT 0
IN 1	3	4	OUT 1
IN 2	5	6	OUT 2
IN 3	7	8	OUT 3