Gene-6320

Intel Pentium III Low-Power Consumption Subcompact Board with LCD, LVDS, Ethernet, TV-out, Audio and CFD.

FCC STATEMENT

THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE. (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINTST HARMFUL INTERFERENCE WHEN THE EQUIPMENT 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 INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

Copyright Notice

This document is copyrighted, 2002. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated, or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, nor for any infringements upon the rights of third parties which may result from its use.

Acknowledgements

A Message to the Customer

AAEON Customer Services

Each and every AAEON's product is built to meet your exact needs and specifications to ensure excellent performance in the harsh and demanding conditions which is typical of the industrial environments. Whether the new AAEON equipment is designed for the laboratory or the factory floor, you can be assured that the product will provide the reliability and ease of operation for which the name AAEON has come to be known.

Your satisfaction is our primary concern, and here is a guide of the services for AAEON's customers. To get the full benefit of our services, please follow the instructions below carefully.

Technical Support

We hope you can get the outstanding performance from our products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally much more detailed than the ones we can provide over the phone.

So please consult this manual first. If you still cannot find the answer, gather all the information or questions that apply to your problem, and with the product close at hand, call your dealer. Our dealers are well trained and ready to give you the support you need to get the most from your AAEON products. In fact, most problems reported are minor and could be easily solved over the phone.

In addition, professional technical support is available from AAEON's engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products.

Product Warranty

AAEON warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or modified by unauthorized personnel, or those products which have been misused, abused, installed improperly and altered accidentally. AAEON assumes no liability under the terms of this warranty as a consequence of such events.

Because of AAEON's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an AAEON's product is defective, it will be repaired or replaced with no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you think you have received a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU type and speed, AAEON products used, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.

2. Please prepare your manual, product, and other helpful information before calling your dealer to describe your problem.

3. If your product is diagnosed as defective, please manage to obtain an RMA (return material authorization) number from your dealer. This allows us to deal with your return quickly.

4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card, and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without the proof of the purchase date is not eligible for warranty service.

5. Write the RMA number visibly on the outside of the package and ship it out after paying to your dealer for it.

Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

- **1 GENE-6320 All-in-One Single Board Computer**

- **Hard disk drive (IDE) interface cable (44 pin, pitch 2.0mm)**

- **1 Floppy disk drive interface (34 pin, ptich 2.0mm)**

- **1 6-pin mini-DIN dual outlet adapter for keyboard and PS/2**

- **1 Parallel port (26-25 pin, pitch 2.0mm) mouse & serial port (10-9 pin, pitch 2.0mm) adapter kit**

- **1 USB cable (2.00mm)**

- **1 Audio 3.14-pin (2.00mm) and RCA jack cable 4-pin (2.54mm)**

- **1 bag of screws and miscellaneous parts**

- **1 Quick Installation Guide**

- **1 CD-ROM contains the followings:**

  User Manual (this manual in PDF file)

  Ethernet drivers and utilities

  VGA drivers and utilities

  Audio drivers and utilities

  Lastest BIOS (as of the CD-ROM was made)

If any of these items is missing or damaged, contact your distributor or sales representative immediately.

Notice

Dear Customer,

Thank you for purchasing the GENE-6320 board. This user manual is designed to help you to get the most out of the GENE-6320, please read it thoroughly before you install and use the board. The product that you have purchased comes with a two-year limited warranty, but AAEON will not be responsible for misuse of the product. Therefore, we recommand you to read the manual before using the product.

To get the lastest version of the user manual, please visit our Web site at:

http://www.aaeon.com.tw

Contents

CHAPTER 1

General Information

This chapter gives background information on the mainboard.

Sections include:

Board specifications

Layout and dimensions

Introduction

GENE-6320 is an all-in-one single board computer (SBC) which can provide the most alternatives on CPU, VGA memory, audio, and GbE function. First, it can support onboard mobile Pentium III or mobile Celeron. The next is you can choose 4 or 8 MB independent VGA memory and with this integrated 2D/3D Graphics Accelerator, the one channel LVDS interface can support dual view function in addition to 24-bit TTL LCD output. And the third choice is the audio function with a 10/100 Base-T Ethernet Controller (Gene-6320AE) or one 10/100 Base-T RJ-45 connector with another 100/1000 Base-T RJ-45 connector (Gene-6320GE). At last, PCI-104 socket onboard is the newest and customers' favorite expansion solution. This compact (only 5.75" x 4") unit offers all the functions of a single board computer, but still fits in the space of a FDD drive.

Onboard features include two serial ports (one RS-232, one RS-232/422/485), one multi-mode parallel (ECP/EPP/SPP) port, pin header for 2 USB (Universal Serial Bus) ports, a floppy drive controller, and a keyboard/PS/2 mouse interface. The built-in high speed PCI-EIDE controller supports Ultra DMA-33 master mode. Up to two IDE devices can be connected, including large hard disks, CD-ROM drives, and tape backup drives, etc.

GENE-6320 can support AT/ATX power supply function and also features power management to minimize power consumption. It complies with the APM standard and supports three types of power saving features: Doze mode, Standby mode, and Suspend mode. In addition, the board's watchdog timer can be programmed to reset the system or generate an interrupt in case the system stops due to a program bug or SMI.

The Best, High End, Ultra Low Power Consumption Solution For Portable Devices

The GENE-6320 is a highly integrated multi-media SBC that combines video, network, and audio function on a FDD drive size single computer board. Moreover, it provides the TV-out function and up to 1280 x 1024 resolution @ 24 bit-per-pixel colors with on-chip 4MB (or 8MB) display memory. Thus this ultra low power consumption board with great expansibility is your best solution for low profile, powerful, quiet, portable all-in-one multimedia board.

LVDS Introduction

Low Voltage Differential Signaling is a low noise, low power, low amplitude method for high-speed (gigabits per second) data transmission over copper wire.

LVDS differs from normal input/output (I/O) in a few ways: Normal digital I/O works with 5 volts as a high (binary 1) and 0 volts as a low (binary 0). When you use a differential, you add a third option (-5 volts), which provides an extra level with which to encode and results in a higher maximum data tranferrate.

A higher data transfer rate means fewer wires are required, as in UW (Ultra Wide) and UW-2/3 SCSI harddrive, which use only 68 wires. These devices require a high transfer rate over short distances. Using standard I/O transfer, SCSI hard drives would require a lot more than 68 wires. Low voltage means that the standard 5 volts is replaced by either 3.3 volts or 1.5 volts. LVDS uses a dual wire system, running 180 degrees of each other. This enables noise to travel at the same level, which in turn can get filtered more easily and effectively.

With standard I/O signaling, data storage is contingent upon the actual voltage level. Voltage level can be affected by wire length (longer wires increase resistance, which lowers voltage). But with LVDS, data storage is distinguished only by positive and negative voltage values, not the voltage level. Therefore, data can travel over greater lengths of wire while maintaining a clear and consistent data stream.

Features

- **3.5" FDD SubCompact Form Factor**
- **Supports Mobile Intel Celeron (ULP) or Mobile Intel Pentium III (LP) processor**
- **Integrated AGP 2X 2D/3D Graphics Accelerator**
- **Supports CRT and 24-bit TFT/DSTN panels**
- **Integrated one channel LVDS interface onboard**
- **Supports NTSC/PAL TV output**
- **Integrated SoundBlaster-compatible PCI audio (optional)**
- **Supports Compact Flash Storage**
- **Supports 10 /100Base-T Fast Ethernet (GbE is optional) (Dual Ethernet is available but without audio function)**
- **2 COMs / 1 Parallel / 2 USBs / 1 IrDA Port**
- **5V only operation**

Notice

1. Due to the memory addressing limitation of North bridge, 82443BX, and chipset, be sure that SODIMM memory configuration (can be found in SODIMM memory module datasheet) is arranged as the following description before you install 256MB memory:

16Mb x 8(single memory chip) x 8(pcs/side) x 2 side = 256MB

Or

16Mb x 16(single memory chip) x 4(pcs/side) x 2 side = 256MB

Otherwise system may detect 128MB only.

2. GENE-6320 series adapt SMI722 integrated TV-output encoder. Owing to the chipset limitation, it can only support AV-terminal jack output (CN9, pin-2, 4, 6,and 8). For S-terminal video output, Silicon Motion Inc. would release revised software when the function is ready. Please contact AAEON for the latest driver update.

Specifications

● General Functions

CPU: Mobile Intel Celeron 300MHz processor (fanless) ,

Mobile Intel Pentium III processor-M (700MHz, with fan)

BIOS: Award 256KB FLASH BIOS

Chipset: Intel 440BX

I/O chopset: Winbond W83977

Memory: One 144-pin SO-DIMM socket to support up to 256MB

Enhanced IDE: One IDE connector to support up to 2 IDE devices in Bus Master mode, also support UltraDMA 33 synchronous DMA mode with transfer rate up to 33 MB/sec

FDD interface: Supports up to two floppy disk drives, 5.25" (360KB and 1.2MB) and/or 3.5" (720KB, 1.44MB, and 2.88MB)

Parallel port: One bi-directional parallel port to support SPP, ECP, and EPP mode

Serial port: One RS-232 and one RS-232/422/485 serial port. Ports can be configured as COM1, COM2 or disabled individually. (16C550 equivalent)

IR interface: Supports one IrDA Tx/Rx header

KB/Mouse connector: One 6-pin mini DIN connector to support PC/AT keyboard and PS/2 mouse

USB connectors: One 5x2 header to support dual USB ports on board

Battery: Lithium battery for data retention

Watchdog Timer: Can generate a system reset, IRQ or NMI. Support Win2000, Win98, Win95, Win31. Software selectable time-out interval (1sec~255 sec, 1sec/step)

Power management: Supports AT/ATX power supply

Flat Panel/CRT Interface

Chipset: SMI 722 Lynx3DM+ to support 24-bit TTL/LVDS TFT LCD , 24-bit TTL DSTN LCD, and NTSC/PAL TV-OUT encoder. (LVDS DSTN panel is not supported)

Display memory: Built-in 4 or 8MB (according to your needs)

Display type: Supports non-interlace CRT and up to 24-bit TFT LCD displays: Can display both CRT and Flat Panel (TFT, DSTN) simultaneously.

Resolution: Up to 1280X1024 @ 24-bit colors (CRT/LCD-CRT simultaneous mode)

Audio Interface (only provided by Gene-6320AE)

Chipset: ESS 1938 Solo-1

Ethernet Interface

Gene-6320AE

Chipset: Intel 82559ER

Ethernet interface: Onboard 10/100 Base-T RJ-45 connector

Gene-6320GE

Chipset: Intel 82559ER for 10/100 Mb/s N-way auto-negotiation operation

Intel 82540EM for 1000 Mb/s N-way auto-negotiation operation

Ethernet interface: Onboard one 10/100Base-T RJ-45 connector and the other 100/1000 Base-T RJ-45 connector

SSD Interface

One socket supports Compact Flash Disk (Type II)

Expansion Interface

PCI-104 connector: One 120-pin (PCI Interface) connector

Mechanical and Environmental

Power supply voltage:+5V (4.75V to 5.25V)

Operating temperature:32 to 140 ºF (0 to 60 ºC)

Board size:5.75" (L) x 4" (W) (146 mm x 101.6 mm)

Board Layout
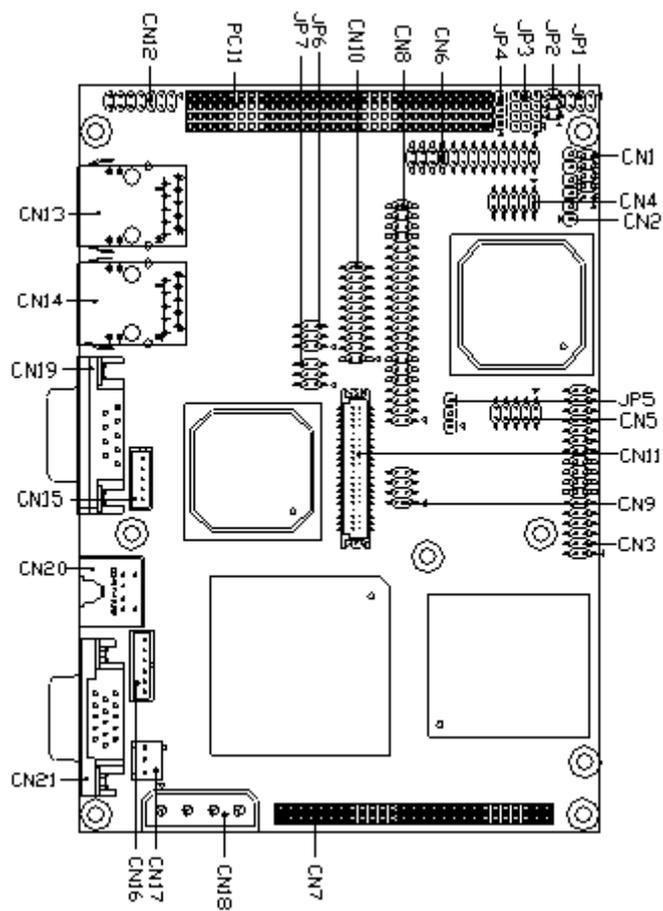
Board Layout (Reverse Side)
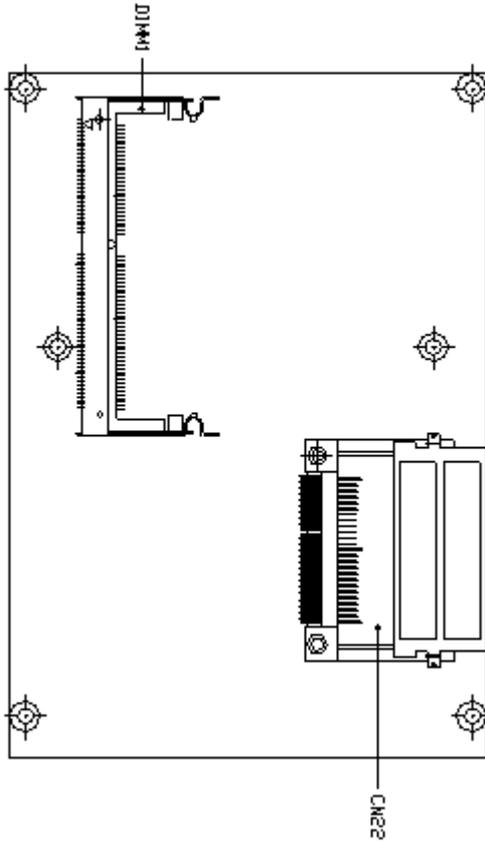
Board   Dimensions
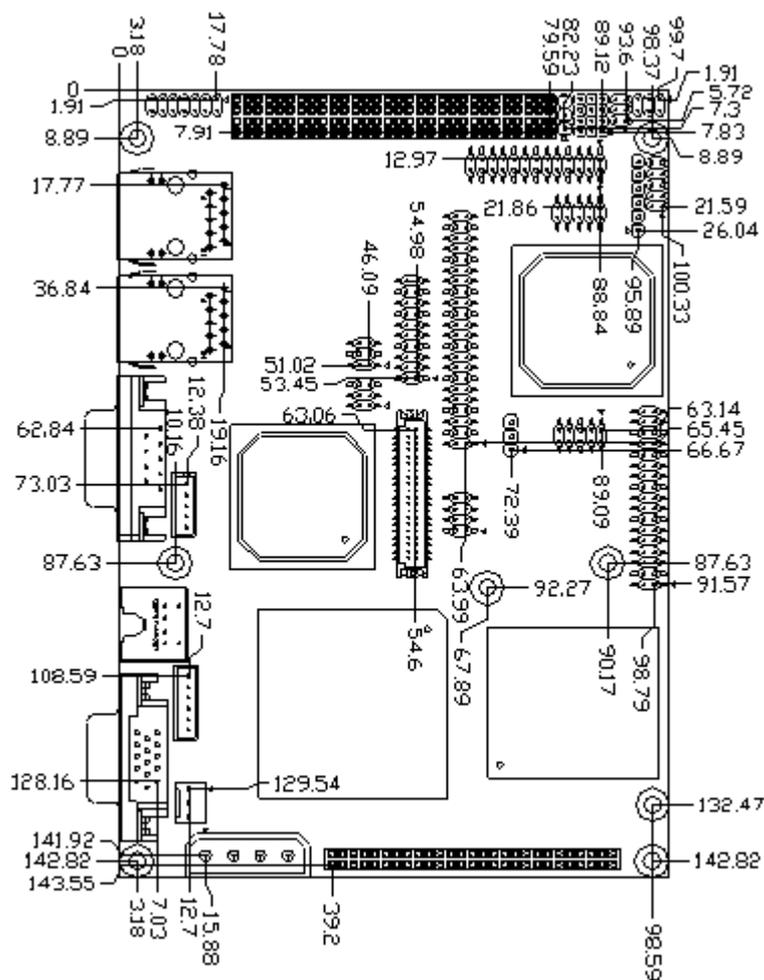
Board Dimensions (Reverse Side)
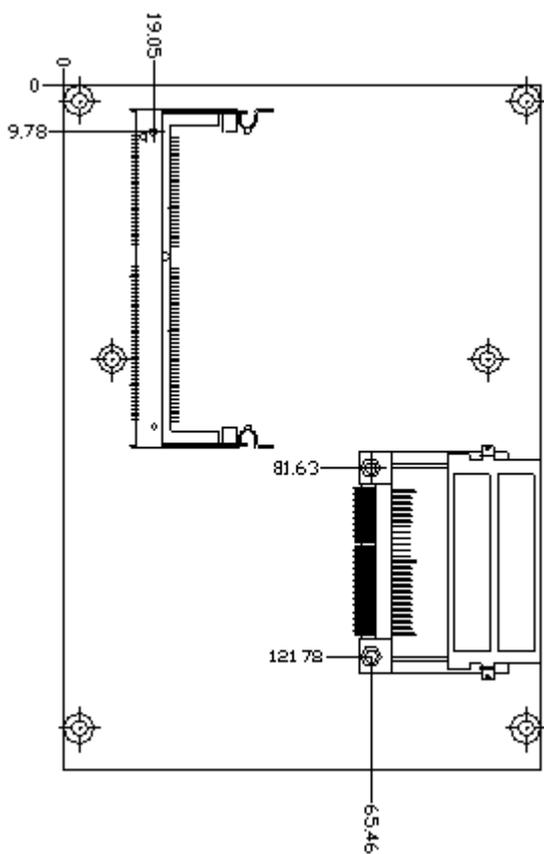
Installation

This chapter describes how to set up the board hardware, including instructions on setting jumpers and connecting peripherals, switches, and indicators.

Locating Jumpers & Connectors
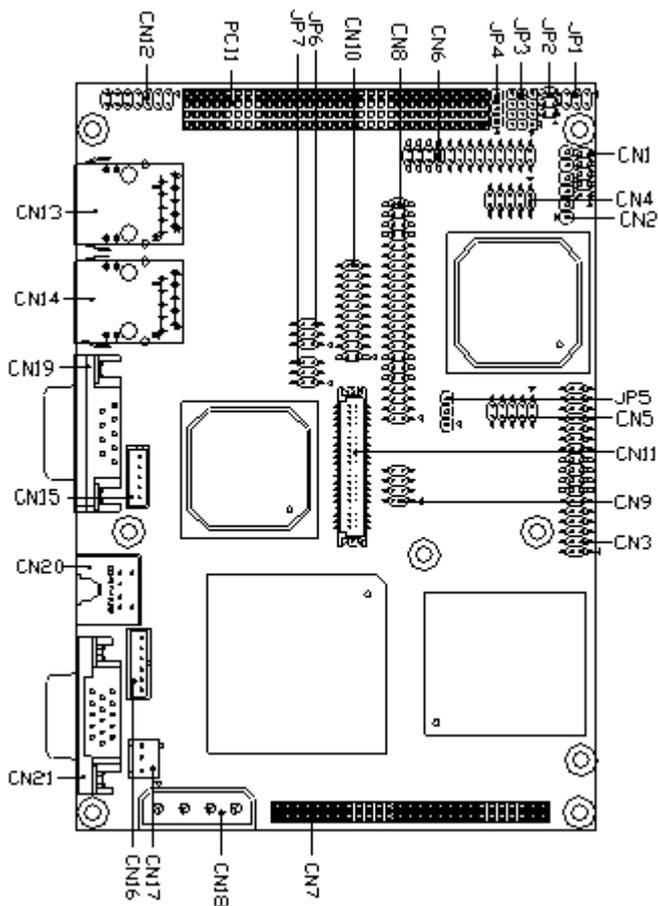
Locating Jumpers & Connectors (Reverse side)
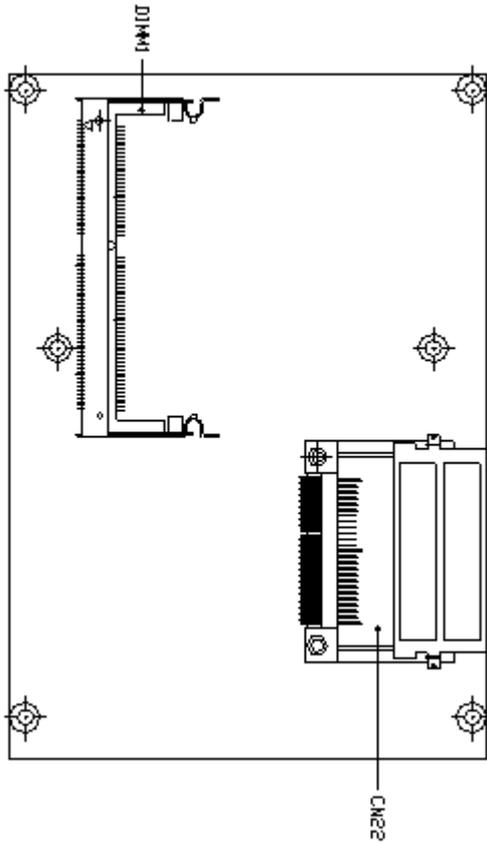
Jumpers and Connectors

Connectors on the board link themselves to external devices, such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your applications. The table below lists the function of each jumper and connector:

Jumpers and Connectors

Label	Function
JP1	COM2 Ring/+5V/+12V Select
JP2	COM2 RS-232/422/485 Select
JP3	COM2 RS-232/422/485 Select
JP4	PCI-104 I/O Voltage Select
JP5	Clear CMOS
JP6	TTL-LCD Clock & VGA Disable/Enable Select
JP7	LCD Voltage Select
CN1	Front Panel Connector
CN2	IrDA Connector
CN3	Floppy Connector
CN4	COM2 RS-232/422/485 Serial Port Connector
CN5	USB Connector
CN6	LPT Port Connector
CN7	Power Module Connector
CN8	IDE Connector
CN9	TV-Out Connector
CN10	LVDS-LCD Connector
CN11	TTL-LCD Connector
CN12	Audio Connector(**Gene-6320AE only)**
CN13	100/1000 Base-Tx Ethernet Connector(**Gene-6320GE)**
CN14	10/100 Base-Tx Ethernet Connector
CN15	External PME Connector
CN16	External ATX Power Connector
CN17	FAN Connector
CN18	4P Power Connector
CN19	COM1 RS-232 Serial Port Connector
CN20	PS2 Keyboard/Mouse Connector
CN21	VGA Display Connector
CN22	Compact Flash Connector
DIMM1	SODIMM Memory Socket

COM2 Ring/+5V/+12V Select (JP1)

COM2 Ring/+5V/+12V Select (JP1)		
+12V	**+5V**	**Ring***
5 3 1 ○ ○ ■ ○ ○ ● 6 4 2	5 3 1 ○ ● □ ○ ● ○ 6 4 2	5 3 1 ● ○ □ ● ○ ○ 6 4 2

* default

COM2 RS-232/422/485 Select (JP2 & JP3)

The COM2 serial port can be selected as RS-232, RS-422, or RS-485 by setting JP2 and JP3. The follwing chart shows the jumper setting:

COM2 RS-232/422/485 Select (JP2 & JP3)			
	*RS-232	**RS-422**	**RS-485**
JP2	6 ○ ○5 4 ○ ○3 2 ●■1	6 ○ ○5 4 ●●3 2 ○ □1	6 ●●5 4 ○ ○3 2 ○ □1
JP3	12 ○ ●● 10 9 ○ ●● 7 6 ○ ●● 4 3 ○ ●● 1	12 ●● ○ 10 9 ●● ○ 7 6 ●● ○ 4 3 ●● ○ 1	12 ●● ○ 10 9 ●● ○ 7 6 ●● ○ 4 3 ●● ○ 1

* default

PCI-104 Voltage Select (JP4)

You can use JP4 to set the input/output voltage at 5 volts or 3.3 volts.

PCI-104 Voltage Select (JP4)	
+5V *	+3.3V
3 ○ 2 ● 1 ●	3 ● 2 ● 1 ○

italic *default*

Clear CMOS (JP5)

You can connect an external switch to clear the CMOS. This switch closes JP5 and turns on the power, at which time the CMOS setup will be cleaned.

Clear CMOS (JP5)	
*Protect (default)	Clear CMOS
3 ○ 2 ● 1 ●	3 ● 2 ● 1 ○

default

VGA Disable/Enable Select (JP6 Pin1, 3, 5)

You can disable VGA by setting Pin3 and Pin5 of JP6 closed and the following chart shows the available options.

VGA Disable/Enable Select (JP6 Pin1,3,5)	
Enable*	Disable
6 ○ ● 5 4 ○ ● 3 2 ○ □ 1	6 ○ ○ 5 4 ○ ● 3 2 ○ ■ 1

default

TTL-LCD Clock Select (JP6 Pin2, 4, 6)

You can select the LCD clock situation by setting Pin2, 4, and 6 of JP6. The following chart shows the available options.

TTL-LCD Clock Select (JP6 Pin2,4,6)	
CLK*	Reverse CLK
6 ○ ○ 5 4 ● ○ 3 2 ● □ 1	6 ● ○ 5 4 ● ○ 3 2 ○ □ 1

*** default**

LCD Voltage Select (JP7)

LCD Voltage Select (JP7)		
	+3.3V *	+5V
TTL-LCD	6 ○ ● 5 4 ○ ● 3 2 ○ □ 1 *** default***	6 ○ ○ 5 4 ○ ● 3 2 ○ ■ 1
LVDS-LCD	6 ● ○ 5 4 ● ○ 3 2 ○ □ 1 *** default***	6 ○ ○ 5 4 ● ○ 3 2 ● □ 1

Front Panel (CN1)

Front Panel (CN1)	
Pin	Signal
1	Power On Button(-)
2	Power On Button(+)
3	IDE LED(-)
4	IDE LED(+)
5	Ext_SPK(-)
6	Ext_SPK(+)
7	Power LED(-)
8	Power LED(+)
9	Reset Switch(-)
10	Reset Switch(+)

IrDA Connector (CN2)

The IrDA connector (CN2) can be configured to support wireless infrared module. With this module and application software, such as laplink or Win95/98 Direct Cable connection, user can transfer files to or from laptops, notebooks, PDA, and printers. This connector supports HPSIR (115.2Kbps, 2 meters), ASK-IR (56Kbps) and Fast .

Please install infrared module onto IrDA connector, enable infrared function from BIOS setup, and make sure to have correct orientation when you plug onto IrDA connector (CN2).

IrDA connector (CN2)	
Pin	Signal
1	+5V
2	N.C.
3	IrRx
4	GND
5	IrTx
6	N.C.

Floppy Drive Connector (CN3)

You can attach up to two floppy disks to the Gene-6320's on-board controller and use any combination of 5.25" (360 KB and 1.2 MB) and/or 3.5" (720 KB, 1.44 MB, and 2.88 MB) drives.

The Gene-6320 CPU card comes with a 34-pin daisy-chain drive connector cable. On one end of the cable is a 34-pin flat-cable connector. There are two sets of floppy disk drive connectors, one in the middle, and one on the other end. Each set consists of a 34-pin flat-cable connector (usually used for 3.5" drives) and a printed-circuit board connector (usually used for 5.25" drives).

Connecting the Floppy Drive

1. Plug the 34-pin flat-cable connector into the CN3 connector.

2. Attach the appropriate connector on the other end of the cable to the floppy drive(s). You can use only one connector in the set. The set on the end (after the twist in the cable) connects to the A: floppy and the other set in the middle connects to the B: floppy.

Pin Assignments
The following table lists the pin assignments for the CN3 connector:

Floppy Drive Connector (CN3)

Pin	Signal	Pin	Signal
1~33 (odd)	GND	2	REDWC
4	N.C.	6	DS1
8	INDEX	10	MOTOR A
12	DRIVE SELECT B	14	DRIVE SELECT A
16	MOTOR B	18	DIR
20	STEP	22	WRITE DATA
24	WRITE GATE	26	TRACK0
28	WRITE PROTCET	30	READ DATA
32	SIDE1	34	DISK CHANGE

Serial Port COM1 (CN19) & COM2 (CN4) Connectors

The Gene-6320 offers one RS-232 serial port (COM1--CN19) and one RS-232/422/485 serial port (COM2--CN4) to connect serial devices. Using the BIOS Peripheral Setup program, you can select the address for each port or disable it. Please check the following table for the pin assignment.

COM1 RS-232 Connector (CN19)

Pin	Signal
1	DCD1
2	RXD1
3	TXD1
4	DTR1
5	GND
6	DSR1
7	RTS1
8	CTS1
9	RI
10	N.C.

COM2 RS-232/422/485 (CN4)

Pin	Signal
1	DCD2 (422TXD- / 485DATA-)
2	RXD2 (422RXD+)
3	TXD2 (422TXD+ / 485DATA+)
4	DTR2 (422RXD-)
5	GND
6	DSR2
7	RTS2
8	CTS2
9	RI/+5V/+12V
10	N.C.

USB Connector (CN5)

USB (Universal Serial Bus) ports can provide complete function of "plug and play", "hot attach/detach" for up to 127 external devices. Moreover, the USB interfaces on Gene-6320 comply with USB specification Rev. 1.1 and can be disabled in the system BIOS setup.

USB Connector (CN5)

Pin	Function	Pin	Function
1	+5V	2	GND
3	USBD0-	4	GND
5	USBD0+	6	USBD1+
7	GND	8	USBD1-
9	GND	10	+5V

Parallel (Printer) Connector (CN6)

Normally, the parallel port is used to connect the card to a printer. The Gene-6320 includes an onboard parallel port, accessed through the CN6 connector, a 26-pin flat-cable connector.

Pin Assignments

Parallel (Printer) Connector (CN6)

Pin	Signal	Pin	Signal
1	STROBE	2	AFD
3	PTD0	4	ERROR
5	PTD1	6	INIT
7	PTD2	8	SLIN
9	PTD3	10	GND
11	PTD4	12	GND
13	PTD5	14	GND
15	PTD6	16	GND
17	PTD7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SELECT	26	N.C.

Power Module Connector (CN7)

The power module can swift the voltage as the components need. Please check the following table for its pin assignments:

Power Module Connector (CN7)			
Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	+5V	4	+5V
5	GND	6	GND
7	GND	8	GND
9	GND	10	GND
11	GND	12	+3.3V
13	GND	14	+3.3V
15	GND	16	+3.3V
17	+2.5V	18	+3.3V
19	+2.5V	20	+3.3V
21	GND	22	+3.3V
23	GND	24	+1.5V
25	GND	26	+1.5V
27	GND	28	GND
29	GND	30	GND
31	GND	32	GND
33	GND	34	GND
35	+5V	36	GND
37	+5V	38	GND
39	+5V	40	VCORE
41	N.C.	42	VCORE
43	GND	44	VCORE
45	VID4	46	VCORE
47	VID3	48	VCORE
49	VID2	50	VCORE
51	VID1	52	VCORE
53	VID0	54	VCORE

IDE Hard Drive Connector (CN8)

You can attach two Enhanced Integrated Device Electronics hard disk drives to the Gene-6320's internal controller.

Connecting the Hard Drive

Wire number 1 on the cable is red, and the other wires are gray.

1. Connect one end of the cable to the IDE connector and make sure that the red wire corresponds to pin 1 on the connector, which is labeled on the board.

2. Plug the other end of the cable to the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector.)

Unlike floppy drives, you can make the connections with any of the connectors on the cable. If you install two drives, you will need to set one as the master and the other as the slave by using jumpers on the drives. If you install just one drive, set it as the master.

Pin Assignments

The following table lists the pin numbers and their respective signals:

IDE Connector (CN8)

Pin	Signal	Pin	Signal
1	IDE RESET	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	GND	20	N.C.
21	REQ	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO READY	28	GND
29	DACK	30	GND
31	IRQ 14	32	N.C.
33	ADDR1	34	UDMA DETECT
35	ADDR0	36	ADDR2
37	CS#1	38	CS#3
39	LED	40	GND
41	+5V	42	+5V
43	GND	44	N.C

TV-Out Connector (CN9)

Gene-6320 has an 8-pin connector to support TV output function. The definition is listed as below.

TV-Out Connector (CN9)

Pin	Signal	Pin	Signal
1	Y	2	CVBS
3	GND	4	GND
5	C	6	N.C.
7	GND	8	N.C.

LVDS Connector (CN10)

LVDS Connector (CN10)

Pin	Signal	Pin	Signal
1	LVDS_TX1P	2	LVDS_TX1N
3	GND	4	GND
5	LVDS_TXCLKP	6	LVDS_TXCLKN
7	GND	8	PPVCC
9	PPVCC	10	PPVCC
11	LVDS_TX2P	12	LVDS_TX2N
13	GND	14	GND
15	LVDS_TX0P	16	LVDS_TX0N
17	LVDS_TX3P	18	LVDS_TX3N
19	F_ENABKL	20	N.C.

TTL-LCD Connector (CN11)

TTL-LCD Connector (CN11)

Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	GND	4	GND
5	+3.3V	6	+3.3V
7	ENBKL	8	GND
9	BLUE0	10	BLUE1
11	BLUE2	12	BLUE3
13	BLUE4	14	BLUE5
15	BLUE6	16	BLUE7
17	GREEN0	18	GREEN1
19	GREEN2	20	GREEN3
21	GREEN4	22	GREEN5
23	GREEN6	24	GREEN7
25	RED0	26	RED1
27	RED2	28	RED3
29	RED4	30	RED5
31	RED6	32	RED7
33	GND	34	GND
35	CLOCK	36	VSYNC
37	DE	38	HSYNC
39	N.C.	40	ENAVEE

Audio Connector (CN12)

The audio function is optional in Gene-6320. If the version of your board is Gene-6320AE, you will have the audio function on board.

It attaches the Mic In, Line In, and Audio Out to the corresponding pins as shown in the following table.

Audio Connector (CN12)

Pin	Signal	Pin	Signal
1	MIC IN	2	MIC VCC
3	GND	4	CD-GND
5	LINE-IN LEFT	6	CD-IN LEFT
7	LINE-IN RIGHT	8	CD-GND
9	GND	10	CD-IN RIGHT
11	LINE-OUT LEFT	12	LINE-OUT RIGHT
13	GND	14	GND

Ethernet Connector

If the version of your board is **"Gene-6320AE"**, it will support singal LAN that offers 10/100 Mb/s N-way auto-negotiation operation through CN14.

While **"Gene-6320GE"** can support dual LAN (without audio function): one to offer 1000 Mb/s N-way auto-negotiation operation (CN13), and the other to offer 10/100 Mb/s N-way auto-negotiation operation (CN14).

10/100Base-Tx Ethernet Connector (CN14)

Pin	Signal	Pin	Signal
1	N.C.	9	TRD0-
2	N.C.	10	TRD0+
3	N.C.	11	LINK LED
4	N.C.	12	ACTIVE LED
5	TCD0	13	SPEED 100 LED
6	N.C.	14	SPEED 10 LED
7	TRD1-	15	GND
8	TRD1+	16	GND

table 1

100/1000Base-Tx Ethernet Connector (CN13)

Pin	Signal	Pin	Signal
1	TRD3-	9	TRD0-
2	TRD3+	10	TRD0+
3	TRD2-	11	LINK LED
4	TRD2+	12	ACTIVE LED
5	TCD0	13	SPEED 1000 LED
6	TCD1	14	SPEED 100 LED
7	TRD1-	15	GND
8	TRD1+	16	GND

table 2

External PME Connector (CN15)

There is an onboard external PME connector, which enables the Gene-6320 connected to other equipment (specifically AAEON's products, such as PCI-104 modules), thus enhancing the application of the instrument.

External PME Connector (CN15)	
Pin	Signal
1	VCC5SBY
2	GND
3	PME
4	SMBDATA
5	SMBCLK

External ATX Power Connector (CN16)

If you want to use ATX power and some special function, such as wake on LAN, you may need to connect the power to the board via CN16 and buy the specific cable designed for Gene-6320 (made by AAEON). Please check the following table for its pin assignment:

External ATX Power Connector (CN16)	
Pin	Signal
1	N.C.
2	GND
3	ATX PWROK
4	GND
5	PS-ON
6	VCC5SBY

FAN Connector (CN17)

This connector is what you need to connectorize an untailed fan so that it can be plugged into your board fan header.

FAN Connector (CN17)

Pin	Signal
1	GND
2	+12V
3	FAN SPEED SENSE

4P Power Connector (CN18)

This is the common power connector and please check the following table for its pin assignment:

4P Power Connector (CN18)

Pin	Signal
1	+5V
2	GND
3	GND
4	+12V

PS/2 Keyboard/Mouse Connector (CN20)

Gene-6320 can support a keyboard and a mouse like most cases, but in some cases, especially in embedded applications, a keyboard is not used. The standard PC/AT BIOS will report an error or fail during power-on-self-test (POST) after a reset if the keyboard is not present.

Keyboard and Mouse Connector (CN20)

Pin	Signal
1	KB_DATA
2	MS_DATA
3	GND
4	+5V
5	KB_CLK
6	MS_CLK

Compact Flash Disk Connector (CN22)

Pin	Signal	Pin	Signal
Compact Flash Disk Connector (CN22)			
Pin	**Signal**	**Pin**	**Signal**
1	GND	26	GND
2	DATA3	27	DATA11
3	DATA4	28	DATA12
4	DATA5	29	DATA13
5	DATA6	30	DATA14
6	DATA7	31	DATA15
7	CS#1	32	CS#3
8	GND	33	GND
9	GND	34	IO READ
10	GND	35	IO WRITE
11	GND	36	+5V
12	GND	37	IRQ15
13	+5V	38	+5V
14	GND	39	CSEL
15	GND	40	N.C.
16	GND	41	IDE RESET
17	GND	42	IO READY
18	ADDR2	43	N.C.
19	ADDR1	44	+5V
20	ADDR0	45	DASP
21	DATA0	46	DIAG
22	DATA1	47	DATA8
23	DATA2	48	DATA9
24	N.C.	49	DATA10
25	GND	50	GND

Award BIOS Setup

This chapter describes how to configure the BIOS for the system.

Starting Setup

The Award BIOS is immediately activated when you first turn on the computer. The BIOS reads system configuration information in CMOS RAM and begins the process of checking out the system and configuring it through the power-on self test (POST).

When these preliminaries are finished, the BIOS seeks an operating system on one of the data storage devices (hard drive, floppy drive, etc.). The BIOS launches the operating system and hands control of system operations to it.

During POST, you can start the Setup program in one of two ways:
1.By pressing Del immediately after switching the system on, or
2.By pressing Del or pressing Ctrl-Alt-Esc when the following message appears briefly at the bottom of the screen during POST:

 TO ENTER SETUP BEFORE BOOT PRESS DEL KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the RESET button on the system case. You may also restart by simultaneously pressing Ctr-Alt-Del. If you do not press the keys at the correct time and the system does not boot, an error message appears and you are again asked to

 PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

Setup Keys

These keys helps you navigate in Award BIOS:

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc	Main Menu:Quit and not save changes into CMOS RAM
	Other pages:Exit current page and return to Main Menu
PgUP/+	Increase the numeric value or make changes
PgDn/-	Decrease the numeric value or make changes
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Item Help
F3	Reserved
F4	Reserved
F5	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6	Load the default CMOS RAM value from BIOS default table, only for Option Page Setup Menu
F7	Load the default
F8	Reserved
F9	Reserved
F10	Save all the CMOS changes, only for Main Menu

Getting Help

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

In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the **Award BIOS** supports an override to the CMOS settings that resets your system to its default configuration.

You can invoke this override by immediately pressing Insert; when you restart your computer. You can restart by either using the ON/OFF switch, the RESET button or by pressing Ctrl-Alt-Delete.

The best advice is to alter only settings that you thoroughly understand. In particular, do not change settings in the Chipset screen without a good reason. The Chipset defaults have been carefully chosen by Award Software or your system manufacturer for the best performance and reliability. Even a seemingly small change to the Chipset setup may cause the system to become unstable.

Main Setup Menu

```
            Phoenix - AwardBIOS CMOS Setup Utility

 ► Standard CMOS Features          ► Frequency/Voltage Control
 ► Advanced BIOS Features            Load Fail-Safe Defaults
 ► Advanced Chipset Features         Load Optimized Defaults
 ► Integrated Peripherals            Set Supervisor Password
 ► Power Management Setup            Set User Password
 ► PnP/PCI Configurations            Save & Exit Setup
 ► PC Health Status                  Exit Without Saving

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

Standard CMOS Features

Use this menu for basic system configuration. (Date, time, IDE, etc.)

Advanced BIOS Features

Use this menu to set the advanced features available on your system.

Advanced Chipset Features

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

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals. (Primary slave, secondary slave, keyboard, mouse etc.)

Power Management Setup

Use this menu to specify your settings for power management.

(HDD power down, power on by ring, KB wake up, etc.)

PnP/PCI Configurations

This entry appears is your system supports PnP/PCI.

PC Health Status

This menu allows you to set the shutdown temperature for your system.

Frequency/Voltage Control

Use this menu to specify your settings for frequency/ voltage control.

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 that are factory settings for optimal performance system operations. While AWARD has designated the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Set Supervisor /User Password

Use this menu to set Supervisor / User Passwords.

Save and Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

Standard CMOS Features

```
          Phoenix - AwardBIOS CMOS Setup Utility
                  Standard CMOS Features
┌─────────────────────────────────────────────┬──────────────────────┐
│ Date (mm:dd:yy)      Thu, Aug  8 2002  ▲      │      Item Help       │
│ Time (hh:mm:ss)      17 : 18 : 59             ├──────────────────────┤
│                                               │ Menu Level     ►     │
│ ► IDE Primary Master                          │                      │
│ ► IDE Primary Slave                           │ Change the day, month,│
│ ► IDE Secondary Master                        │ year and century     │
│ ► IDE Secondary Slave                         │                      │
│                                               │                      │
│ Drive A              [1.44M, 3.5 in.]         │                      │
│ Drive B              [None]                   │                      │
│                                               │                      │
│ LCD&CRT              [CRT+LCD]                │                      │
│                                               │                      │
│ Panel                [640x480   24Bit TFT]   │                      │
│ TV Mode              [NTSC]                   │                      │
│ Halt On              [All , But Keyboard]     │                      │
│                                               │                      │
│ Base Memory                  640K        ▓   │                      │
│ Extended Memory            65472K        ▼   │                      │
├───────────────────────────────────────────────┴────────────────────┤
│↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help│
│  F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults │
└──────────────────────────────────────────────────────────────────────┘
```

This standard setup menu allows users to configure system
components such as the date, time, hard disk drive, floppy drive,
display, and memory. Online help for each field can be accessed
by pressing F1.

Date and Time Configuration

The BIOS determines the day of the week from the other date
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 increment the
setting, or type the desired value into the field.

The time format is based on the 24-hour military-time clock. For
example, 1 p.m. is 13:00:00 hours. Press the left or right arrow key
to move to the desired field. Press the PgUp/- or PgDn/+ key to
increment the setting, or type the desired value into the field.

IDE Primary/Secondary Master/Slave

The BIOS supports up to four IDE drives. This section does not show information about other IDE devices, such as a CD-ROM drive, or other hard drive types, such as SCSI drives.

NOTE: We recommend that you select type AUTO for all drives.

The BIOS can automatically detect the specifications and optimal operating mode of almost all IDE hard drives. When you select AUTO for a hard drive, the BIOS will detect its specifications

If you do not want to select "AUTO", other methods of selecting the drive type are available:

1.NONE: No drive type to be selected.

2.Manual: This will allow you to manually set the drive type you are using in your system. (See as below)

Access Mode: Auto, Large, CHS or LBA.

- Auto: The BIOS automatically determines the optimal mode.
- CHS: This allows the user to enter their own hardware values.

- Large: For drives that do not support LBA and have more than 1024 cylinders.

- LBA (Logical Block Addressing): During drive access, the IDE controller transforms the data address described by sector, head, and cylinder number into a physical block address, significantly improving data transfer rates. For drives with greater than 1024 cylinders.

Here is a brief explanation of drive specifications:

Capacity: Disk drive capacity (approximate). Note that this size is usually slightly greater than the size of a formatted disk given by a disk-checking program.

Cylinder: Number of cylinders.

Head: Number of heads.

Precomp: Write precompensation cylinder .

Landz: Landing zone.

Sector: Number of sectors.

Drive A
Drive B

Select the correct specifications for the diskette drive(s) installed in the computer.

None	No diskette 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 mega byte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 mega byte capacity

LCD & CRT

GENE-6320 can be used with various visual display peripherals. It can also display different image on a CRT and LCD monitor simultaneously. This function allows the end user to select the type of visual display peripheral they are incorporating with the GENE-6320 single board computer.

The choices: LCD, CRT, LCD+CRT, and TV

Panel Type

GENE-6320 can be used with various display panels. Please select the type of panel you are incorporating with your single board computer. Consult your panel manual for detail information.

The choices: 640x480 18Bit TFT, 640x480 24Bit TFT, 800x600 18Bit TFT, 800x600 24Bit TFT, 1024x768 18Bit TFT, 1024x768 24Bit TFT.

TV Mode

Phase Alternation Line (PAL) is the analog television display standard that is used in Europe and certain other parts of the world. PAL is one of the three major TV standards together with the American National Television Systems Committee(NTSC) color television system and the French Sequential Couleur avec Memoire (SECAM). NTSC is also used in Japan. SECAM is used in countries of the former Soviet Union.
The choices: NTSC, PAL.

Halt On

During the power-on-self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell BIOS to ignore certain errors during POST and continue the boot-up process.

The choices: All,But Keyboard; **All,But Diskette**; **All,But Disk/ Key**; **All Errors**; **No Errors**.

Memory

You cannot change any values in the Memory fields; they are only for your information. RAM is counted in kilobytes (KB: approximately one thousand bytes) and megabytes (MB: approximately one million bytes).

RAM is the computer's working memory, where the computer stores programs and data currently being used, so they are accessible to the CPU. Modern personal computers may contain up to 64 MB, 128 MB, or more.

Base Memory

Typically 640 KB. Also called conventional memory. The DOS operating system and conventional applications use this area.

Extended Memory

Above the 1-MB boundary. Early IBM personal computers could not use memory above 1 MB, but current PCs and their software can use extended memory.

Total Memory

The fields show the total installed random access memory (RAM).

Advanced BIOS Features

```
      CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                       Advanced BIOS Features

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

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

The displayed configuration is based on the manufacturer's SETUP DEFAULTS settings.

Virus Warning

When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive. You should then run an anti-virus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

NOTE: *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 first disable the virus warning.*

The choices: Enabled, Disabled.

CPU Internal Cache/External Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. The External Cache field may not appear if your system does not have external cache memory.

The choices: Enabled, Disabled.

CPU L2 Cache ECC Checking

When you select Enabled, memory checking is enable when the external cache contains ECC SRAMs.

The choices: Enabled, Disabled.

Quick Power On Self Test

Select Enabled to reduce the amount of time required to run the power-on-self-test (POST). A quick POST skips certain steps. We recommend that you normally disable quick POST. Better to find a problem during POST than lose data during your work.

The choices: 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.

The choices: Floppy, LS120, HDD0, HDD1, HDD2, HDD3, SCSI, CDROM, LAN, Disabled.

Boot Other Device

If your boot device is not included in the following choices 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.

The choices: Enabled, Disabled.

Swap Floppy Drive

This field is effective only in systems with two floppy drives. Selecting enabled assigns physical drive B to logical drive A, and physical drive A to logical drive B.

The choices: Enabled, Disabled.

Boot Up Floppy Seek

When Enabled, the BIOS tests (seeks) floppy drives to determine whether they have 40 or 80 tracks. Only 360-KB floppy drives have 40 tracks; drives with 720 KB, 1.2 MB, and 1.44 MB capacity all have 80 tracks. Because very few modern PCs have 40-track floppy drives, we recommend you to choose "Disabled" to save time.

The choices: Enabled, Disabled.

Boot Up NumLock Status

Toggle between On or Off to control the state of the NumLock key when the system boots. When toggled On, the numeric keypad generates numbers instead of controlling cursor operations.

The choices: On, Off.

Gate A20 Option

Gate A20 refers to the way the system addresses memory above 1 MB (extended memory). When set to Fast, the system chipset controls Gate A20. When set to Normal, a pin in the keyboard controller controls Gate A20. Setting Gate A20 to Fast improves system speed, particularly with OS/2 and Windows.

The choices: Fast, Normal.

Typematic Rate Setting

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

The choices: Enabled/Disabled.

Typematic Rate

When the typematic rate setting is enabled, you can select a typematic rate (the rate at which character repeats when yu hold down a key) of 6, 8, 10, 12, 15, 20, 24, 30.

Typematic Delay

When the typematic rate setting is enabled, you can select a typematic delay (the delay before key strokes begin to repeat) of 250, 500, 750 or 1000 milliseconds.

Security Option

If you have set a password, select whether the password is required every time the System boots, or only when you enter Setup.

The choices: Setup, Sysytem.

OS Select For DRAM>64MB

Select the operating system that is running with greater than 64MB or RAM on the system.

The choices: Non-OS2, OS2.

Report No FDD For WIN 95

Select "Yes" to release IRQ6 when the system contains no floppy drive, for compatibility with Windows 95 logo certification. In the Integrated Peripherals screen, select Disabled for the Onboard FDC Controller field.

The choices: Yes, No.

Shadow

Software that resides in a read only memory (ROM) chip on a device is called firmware. The Award BIOS permits shadowing of firmware such as the system BIOS, video BIOS, and similar operating instructions that come with some expansion peripherals such as, for example, a SCSI adaptor.

Shadowing copies firmware from ROM into system RAM, where the CPU can read it through the 16-bit or 32-bit DRAM bus. Firmware not shadowed must be read by the system through the 8-bit X-bus. Shadowing impoves the performance of the system BIOS and similar ROM firmware for expansion peripherals. but it also reduces the amount of high memory (640 KB to 1 MB) available for loading device drivers, etc.

Enable shadowing into each section of memory separately. Many system designers hardwire shadowing of the system BIOS and eliminate a System BIOS Shadow option.

Video BIOS shadows into memory are C0000-C7FFF. The remaining areas shown on the BIOS Features Setup screen may be occupied by other expansion card firmware. If an expansion peripheral in your system contains ROM-based firmware, you need to know the address range the ROM occupies to shadow it into the correct area of RAM.

The choices: Enabled, Disabled.

Small Logo (EPA) Show

If you want to show your logo, please enable it.

The choices: Enabled, Disabled

Advanced Chipset Features

```
             Phoenix - AwardBIOS CMOS Setup Utility
                    Advanced Chipset Features
┌─────────────────────────────────────────────┬─────────────────────┐
│ Auto Configuration          [Enabled]      ▲ │      Item Help      │
│ EDO DRAM Speed Selection     [60ns]          │                     │
│ EDO CASx# MA Wait State       1              │ Menu Level    ►     │
│ EDO RASx# Wait State          1              │                     │
│ SDRAM RAS-to-CAS Delay       [3]             │                     │
│ SDRAM RAS Precharge Time     [3]             │                     │
│ SDRAM CAS latency Time       [3]             │                     │
│ SDRAM Precharge Control      [Disabled]      │                     │
│ DRAM Data Integrity Mode     [Non-ECC]       │                     │
│ System BIOS Cacheable        [Disabled]      │                     │
│ Video  BIOS Cacheable        [Disabled]      │                     │
│ Video RAM Cacheable          [Disabled]      │                     │
│ 8 Bit I/O Recovery Time      [1]             │                     │
│ 16 Bit I/O Recovery Time     [1]             │                     │
│ Memory Hole At 15M-16M       [Disabled]      │                     │
│ Passive Release              [Enabled]       │                     │
│ Delayed Transaction          [Disabled]      │                     │
│ AGP Aperture Size (MB)       [64]          ▓ │                     │
│ Power-Supply Type            [AT]          ▼ │                     │
├─────────────────────────────────────────────┴─────────────────────┤
│ ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│   F5: Previous Values     F6: Fail-Safe Defaults    F7: Optimized Defaults    │
└────────────────────────────────────────────────────────────────────┘
```

Auto Configuration

Auto Configuration selects predetermined optimal values of
chipset parameters. When "Disabled", chipset parameters revert to
setup information stored in CMOS. Many fields in this screen are
not available when Auto Configuration is "Enabled".

The choices: Enabled, Disabled.

EDO DRAM Speed Selection

The value in this field must correspond to the speed of the DRAM
installed in your system. "DO NOT" change the default setting of
this field, as determined by the system board manufacturer for the
installed DRAM. This value is access speed, so a lower value
means a faster system. This field applies only if EDO DRAM is
installed in the system.

The choice: 60ns, 50ns.

EDO CASx# MA Wait State

We may elect to insert one additional wait state before the assertion of the first CASx# for page hit cycles, thus allowing one additional clock of MA setup time to the CASx# for the leadoff page hit cycle. Do not change the default unless you are getting memory addressing errors. This field applies only if EDO DRAM is installed in the system.

The choices: 1, 2.

EDO RASx# Wait State

We may elect to insert one additional wait state before RAS# is asserted for row misses, thus allowing one additional MAX[13:0] setup time to RASx# assertion. This field applies only if EDO DRAM is installed in the system.

The choices: 1, 2.

SDRAM RAS-to-CAS Delay

This field lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. This field applies only when synchronous DRAM is installed in the system.

The choices: 3, 2.

SDRAM RAS Precharge Time

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. This field applies only when synchronous DRAM is installed in the system.

The choices: 3, 2.

SDRAM CAS Latency Time

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

The choices: 3, 2.

SDRAM Precharge Control

When "Enabled", all CPU cycles to SDRAM result in an All Banks Precharge Command on the SDRAM interface.

The choices: Disabled, Enabled.

DRAM Data Integrity Mode

Select Non-ECC or ECC (error-correcting code) according to the type of installed DRAM.

The choices: Non-ECC, ECC.

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 choices: Disabled, Enabled.

Video BIOS Catchable

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

The choices: Disabled, Enabled.

Video RAM Cacheable

Selecting "Enabled" allows caching of the video memory (RAM) at A0000h to AFFFFh, resulting in better video performance. However, if any program writes to this memory area, a memory access error may result.

The choices: Disabled, Enabled.

8/16 Bit I/O Recovery Time

The I/O recovery mechanism adds bus clock cycles between PCI-originated I/O cycles to the ISA bus. This delay takes place because the PCI bus is so much faster than the ISA bus.

These two fields let you add recovery time (in bus clock cycles) for 16-bit and 8-bit I/O.

The choices: NA, 1-8 (8-bit I/O) ; NA, 1-4 (16-bit I/O).

Memory Hole At 15M-16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

The choices: Disabled, Enabled.

Passive Release

When "Enabled", CPU to PCI bus accesses are allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM.

The choices: Disabled, Enabled.

Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Please select "Enabled" to support compliance with PCI specification version 2.1.

The choices: Disabled, Enabled.

AGP Aperture Size (MB)

Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

The choices: 4, 8, 16, 32, 64, 128, 256.

Power-Supply Type

Most of traditional industrial cases use AT power supply type. And if you want the support of ATX power supply, please choose "ATX" in this field.

The choices: AT, ATX.

Onboard LAN1/2 Control

By selecting "Disabled" in these two items, you can disable LAN1 or LAN2 in BIOS.

The choices: Disabled, Enabled.

Integrated Peripherals

```
        Phoenix - AwardBIOS CMOS Setup Utility
                Integrated Peripherals
 ┌──────────────────────────────────────────┬──────────────────┐
 │ IDE Primary Master PIO     [Auto]      ▲  │   Item Help      │
 │ IDE Primary Slave  PIO     [Auto]         │                  │
 │ IDE Secondary Master PIO   [Auto]         │ Menu Level    ►  │
 │ IDE Secondary Slave  PIO   [Auto]         │                  │
 │ IDE Primary Master UDMA    [Auto]         │                  │
 │ IDE Primary Slave  UDMA    [Auto]         │                  │
 │ IDE Secondary Master UDMA  [Auto]         │                  │
 │ IDE Secondary Slave  UDMA  [Auto]         │                  │
 │ On-Chip Primary   PCI IDE  [Enabled]      │                  │
 │ On-Chip Secondary PCI IDE  [Enabled]      │                  │
 │ USB Keyboard Support       [Disabled]     │                  │
 │ Init Display First         [AGP]          │                  │
 │ IDE HDD Block Mode         [Enabled]      │                  │
 │ Power On By Button         [Enabled]      │                  │
 │ Power On By Keyboard       [Disabled]     │                  │
 │ KB Power ON Password       [Enter]        │                  │
 │ Hot Key Power ON           [Ctrl-F1]      │                  │
 │ KBC input clock            [8 MHz]        │                  │
 │ Onboard FDC Controller     [Enabled]   ▼  │                  │
 ├──────────────────────────────────────────┴──────────────────┤
 │↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
 │  F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults     │
 └──────────────────────────────────────────────────────────────┘
```

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmable Input/Output) fields let you set a
PIO mode (0-1) 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.

The choices: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA33/66 implementation is possible only if your IDE hard
drive supports it and the operating environment includes a DMA
driver (Windows 95 OSR2 or a third-party IDE bus master driver). If
your hard drive and your IDE Cable both support Ultra DMA 33/66
select Auto to enable BIOS support.

The choices: Auto, Disable.

On-Chip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Please select "Enabled" to activate each channel separately.

The choices: Enabled, Disabled.

USB Keyboard Support

Select "Enabled" if your system contains a Universal Serial Bus (USB) controller and you want to use a USB keyboard.

The choices: Enabled, Disabled.

Init Display First

Initialize the AGP video display before initializing any other display device on the system. Thus the AGP display becomes the primary display.

The choices: PCI Slot, AGP.

IDE HDD Block Mode

Block mode is also called "block transfer", "multiple commands", or "multiple sector read/write". If your IDE hard drive supports block mode (most new drives do), please select "Enabled" for automatic detection of the optimal number of block read/writes per sector the drive can support.

The choices: Enabled, Disabled.

Power On By Button

When "Enabled", you can power on the system by pressing the power button. **Please notice that this and the next three items will be configurable only when you use ATX power supply function.**

The choices: Enabled, Disabled.

Power On By Keyboard

When "Enabled", you can power on the system by entering hot key, any key, password or keyboard 98 according to your choice in this item.

The choices: Disabled, Password, Hot Key, Any Key, Keyboard 98.

KB Power On Password

The system will ask for a password. After entering correct password, the keyboard can then be used.

Hot Key Power On

When the power is on the "standby" mode, you can turn on the power by pressing Ctrl+F1 or Ctrl+F2, Ctrl+F3...,according to the choice you make in the BIOS.

The choices: Ctrl+F1, Ctrl+F2, Ctrl+F3...Ctrl+F12.

KBC Input Clock

The system designer must select the correct frequency for the keyboard controller input clock. Do not change this value from the default value.

The choices: 6MHz, 8MHz, 12MHz, 16MHz.

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.

The choices: Disabled, Enabled.

Onboard Serial Ports (1, 2)

Normally, the boards' I/O chips will occupy a certain portion of memory space. For each I/O device the computer provides an I/O address. The more devices attached the more address needed to organize the memory storage areas. If all the I/O devices were run through the same address, your devices would come to a near halt. Also the corresponding interrupt needs to be selected.

The choices: Disabled, 3F8/IRQ4, 3E8/IRQ4, 2F8/IRQ3, 2E8/IRQ3, Auto.

UART Mode Select

Select an operating mode for the second serial port:

Normal	**RS-232C serial port**
IrDA	**Infrared port compliant**
ASK IR	**Amplitude shift keyed infrared port**

UART2 Duplex Mode

In an infrated port mode, this field appears. Full-duplex mode permits simultaneous two-direction transmission. Half-duplex mode permits transmission in one direction only at a time. Select the value required by the IR device connected to the IR port.

The choices: Full, Half.

RxD, TxD Active

Please consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals.

The choices: Hi, Hi / Hi,Lo / Lo,Hi / Lo,Lo.

IR Transmission Delay

Please choose "Enabled" to add more stability for the system.

The choices: Enabled, Disabled.

Onboard Parallel Port

Select a logical LPT port address and corresponding interrupt for the physical parallel port

The Choice: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled.

Parallel Port Mode

Two bidirectional parallel ports.

Supports Normal, ECP, EPP, ECP + EPP.

The choices: SPP, EPP, ECP, ECP+EPP .

ECP Mode Use DMA

Select a DMA channel for the port.

The choices: 1, 3.

EPP Mode Select

You can use this feature to choose which version of EPP to use. For better performance, use EPP 1.9. But if you are facing connection issues, try setting it to EPP 1.7.

The choices: EPP1.9, EPP1.7.

Power Management Setup

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

 ACPI function               [Disabled]              ▲      Item Help
 Power Management             [Min Saving]
 PM Control by APM            [Yes]                       Menu Level   ►
 Video Off Method            [V/H SYNC+Blank]
 Video Off After             [Standby]
 MODEM Use IRQ               [3]
 Doze Mode                    1 Hour
 Standby Mode                 1 Hour
 Suspend Mode                 1 Hour
 HDD Power Down               15 Min
 Throttle Duty Cycle         [62.5%]
 VGA Active Monitor          [Disabled]
 Soft-Off by PWR-BTTN        [Instant-Off]
 PowerOn by Ring             [Enabled]
 Wake Up On LAN              [Enabled]
 IRQ 8 Break Suspend         [Disabled]
 ** Reload Global Timer Events **
 IRQ[3-7,9-15],NMI           [Disabled]
 Primary IDE 0               [Disabled]              ▼

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

ACPI Function

ACPI (Advanced Configuration and Power Interface) is an open industry specification co-developed by Compaq, Intel, Microsoft, Phoenix, and Toshiba. It establishes industry-standard interfaces for OS-directed configuration and power management on laptops, desktops, and servers.

If you want to manage power consumption well, please "Enable" this item.

The choices: Enabled, Disabled.

Power Management

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

Maximum Saving

1. HDD - 1~15 minutes or Disable

2. Doze Mode - 1 Minute

3. Suspend Mode - 1 Minute

Minimum Saving

1. HDD - 1~15 minutes or Disable

2. Doze Mode - 1 Hour

3. Suspend Mode - 1 Hour

User Define

1. HDD - 1~15 minutes or Disable

2. Doze Mode - 1 min, 2 min, 4 min, 6 min, 8 min, 10 min, 20 min, 30 min, 40 min, 1 hour.

3. Suspend Mode - 1 min, 2 min, 4 min, 6 min, 8 min, 10 min, 20 min, 30 min, 40 min, 1 hour.

PM Control by APM

If advanced power management is installed on your system, selecting Yes gives better power savings.

The choices: Yes, No.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC + Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer
Blank Screen	This option only writes blanks to the video buffer
DPMS	Initial display power management signaling

Video Off After

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

The choices: NA, Suspend, Standby, Doze.

Modem Use IRQ

Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

The choices: NA, 3, 4, 5, 7, 9, 10, 11.

Doze Mode

After the selected period of system inactivity, the CPU clock runs at slower speed while all other devices still operate at full speed.

Standby Mode

After the selected period of system inactivity, the fixed disk drive and the video shut off while all other devices still operate at full speed.

Suspend Mode

After the selected period of system inactivity, all devices except the CPU shut off.

HDD Power Down

After the selected period of drive inactivity, the hard disk drive powers down while all other devices remain active.

Throttle Duty Cycle

When the system enters Doze mode, the CPU clock runs only part of the time. You may select the percent of time that the clock runs.

The choices: 12.5%, 25%, 37.5%, 50%, 62.5%, 75%.

VGA Active Monitor

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

The choices: Disabled, Enabled.

Soft-Off by PWR-BTTN

When "Enabled", turning the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity.

The choices: Instant-Off, Delay 4 Sec.

PowerOn by Ring

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

The Choices : Enabled, Disabled.

Wake Up On LAN

Sets to turn the system on from power off state by network, or any event on PCI cards. Please notice that Intel 82559GD can support this function, while Intel 82559ER cannot. So if your board is with Intel 82559GD controller, you can "Enable" this item.

The Choices : Enabled, Disabled.

IRQ 8 Break Suspend

You can "Enable" or "Disable" monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode.

The Choices : Enabled, Disabled.

Reload Global Timer Events

When "Enabled", an event occurring on each listed device restarts the global timer for Standby mode.

These 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.

IRQ (3-7,9-15), NMI
Primary IDE 0
Primary IDE 1
Secondary IDE 0
Secondary IDE 1
Floppy Disk
Serial Port
Parallel Port
Power On on PCI card

PnP/PCI Configurations

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

PNP OS Installed

Select Yes if the system operating environment is Plug and Play
aware, for example Windows 95.
Select No if you need the BIOS to configure non-boot devices.
The choices: No, Yes.

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 and the system reconfiguration
has caused such a serious conflict that the operating system can not
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 Windows ® 95. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is proceeded by a ">")

The choices: Auto (ESCD), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

DMA Resources

When resources are controlled manually, assign each DMA channel a type, depending on the type of device using the DMA channnel.

Memory Resources

When resources are controlled manually, assign memory base and length.

PCI/VGA Palette Snoop

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

PC Health Status

```
              Phoenix - AwardBIOS CMOS Setup Utility
                        PC Health Status
┌──────────────────────────────────────────┬──────────────────────┐
│ Current CPU Temperature                    │     Item Help        │
│ Current FAN Speed                          │                      │
│ CPUcore                                    │  Menu Level    ▶     │
│ CPUvtt                                     │                      │
│ +3.3V                                      │                      │
│ + 5 V                                      │                      │
│ +12 V                                      │                      │
└──────────────────────────────────────────┴──────────────────────┘
```

PC Health Status

Your system does not allow you to alter any of the setting in this menu. The system engineer has already designated the correct setting for Gene-6320.

Frequency/Voltage   Control

```
              Phoenix - AwardBIOS CMOS Setup Utility
                      Frequency/Voltage Control
┌──────────────────────────────────────────┬──────────────────────┐
│ Auto Detect DIMM/PCI Clk  [Enabled]        │     Item Help        │
│ Spread Spectrum           [Enabled]        │                      │
│                                            │  Menu Level    ▶     │
└──────────────────────────────────────────┴──────────────────────┘
```

Auto Detect DIMM/PCI CLK

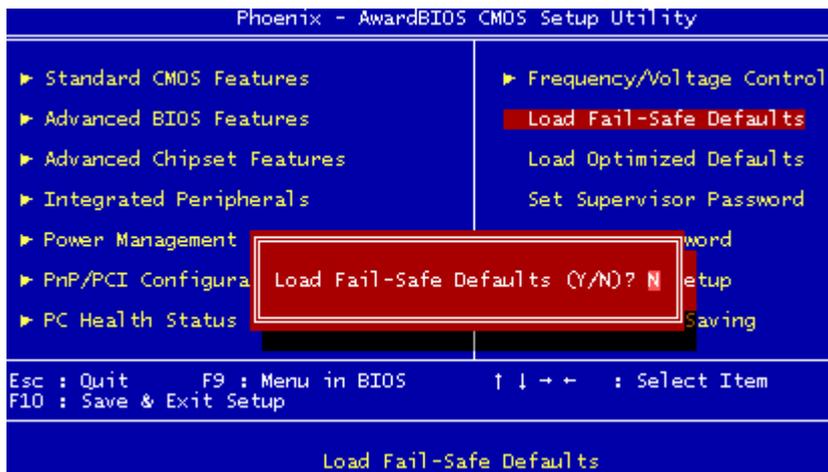This item allows you to enable/disable auto detect DIMM/PCI clock.
The choices: Enabled/Disabled

Spread Spectrum

This allows you to enable/disable the spread spectrum modulate. When the system clock generator pulses, the extreme values of the pulse generate excess EMI. Enabling pulse spectrum spread modulation changes the extreme pulse spikes to flat curves thus reducing EMI.
The choices: Enabled, Disabled

Load Fail-Safe Defaults

```
            Phoenix - AwardBIOS CMOS Setup Utility

  ▶ Standard CMOS Features          ▶ Frequency/Voltage Control
  ▶ Advanced BIOS Features            Load Fail-Safe Defaults
  ▶ Advanced Chipset Features         Load Optimized Defaults
  ▶ Integrated Peripherals            Set Supervisor Password
  ▶ Power Management         ┌──────────────────────────────┐word
  ▶ PnP/PCI Configura        │ Load Fail-Safe Defaults (Y/N)? N │etup
  ▶ PC Health Status         └──────────────────────────────┘aving

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

                    Load Fail-Safe Defaults
```
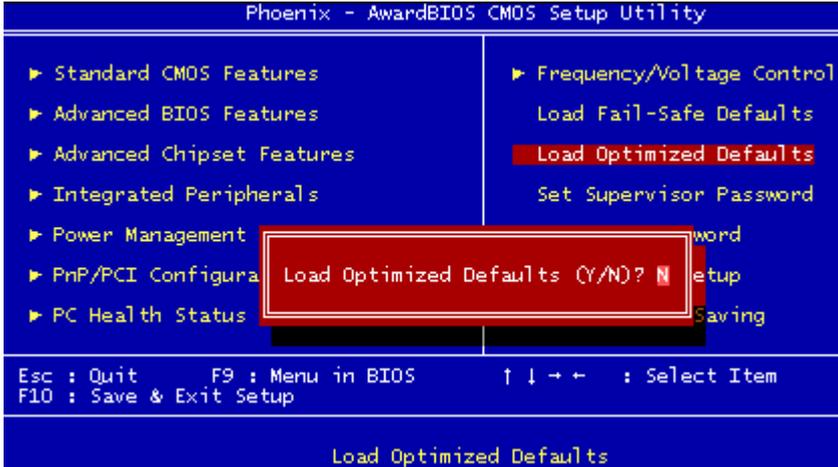
Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Default (Y/N)?

Pressing "Y" loads the BIOS default values for the most stable, minimal performance system operations.

Load Optimized Default

```
            Phoenix - AwardBIOS CMOS Setup Utility

 ► Standard CMOS Features          ► Frequency/Voltage Control
 ► Advanced BIOS Features            Load Fail-Safe Defaults
 ► Advanced Chipset Features         Load Optimized Defaults
 ► Integrated Peripherals            Set Supervisor Password
 ► Power Management          ┌──────────────────────────┐word
 ► PnP/PCI Configura         │Load Optimized Defaults (Y/N)? N│etup
 ► PC Health Status          └──────────────────────────┘aving

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

                    Load Optimized Defaults
```
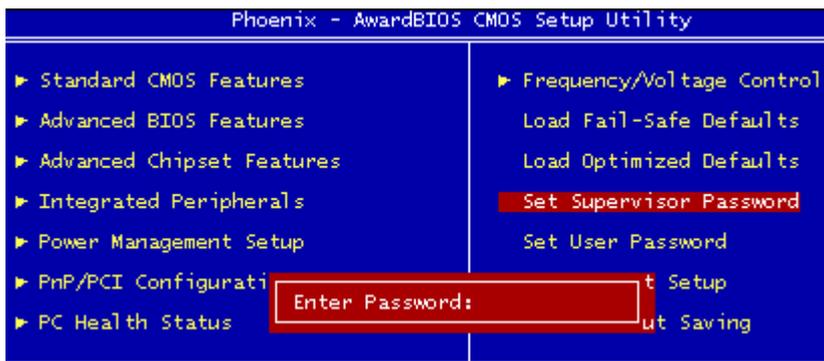
Load Optimized Default

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)?

Pressing "Y" loads the default values that are factory settings for optimal performance system operations.

Set Supervisor Password

When you select this function, a message appears at the center of the screen:

ENTER PASSWORD:

Type the password, up to eight characters, and press Enter. Typing a password clears any previously entered password from CMOS memory.

Now the message changes:

CONFIRM PASSWORD:

Again, type the password and press Enter.

To abort the process at any time, press Esc.

In the Security Option item in the BIOS Features Setup screen, select System or Setup:

System   Enter a password each time the system boots and when ever you enter Setup.

Setup   Enter a password when ever you enter Setup.

NOTE: To clear the password, simply press Enter when asked to enter a password. Then the password function is disabled.

Set User Password

When you select this function, a message appears at the center of the screen:

ENTER PASSWORD:

Type the password, up to eight characters, and press Enter. Typing a password clears any previously entered password from CMOS memory.

Now the message changes:

CONFIRM PASSWORD:

Again, type the password and press Enter.
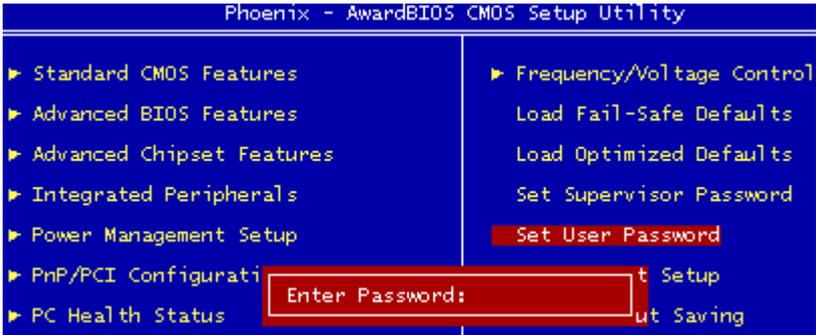
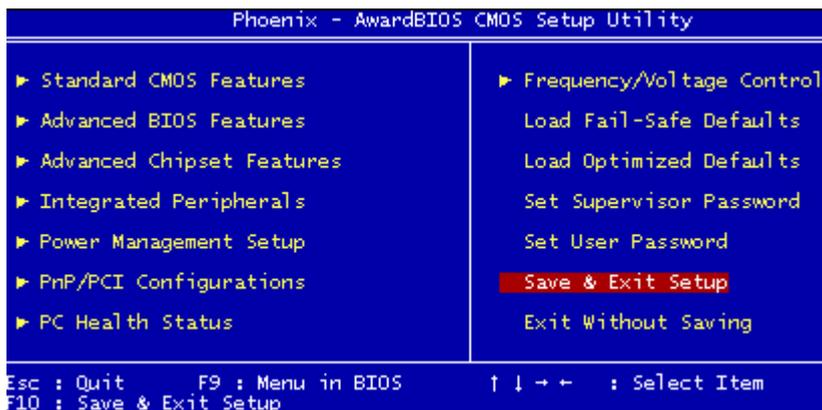To abort the process at any time, press Esc.

In the Security Option item in the BIOS Features Setup screen, select System or Setup:

System   Enter a password each time the system boots and when ever you enter Setup.

Setup   Enter a password when ever you enter Setup.

NOTE: To clear the password, simply press Enter when asked to enter a password. Then the password function is disabled.

Save & Exit Setup

```
                Phoenix - AwardBIOS CMOS Setup Utility
  ► Standard CMOS Features          ► Frequency/Voltage Control
  ► Advanced BIOS Features            Load Fail-Safe Defaults
  ► Advanced Chipset Features         Load Optimized Defaults
  ► Integrated Peripherals            Set Supervisor Password
  ► Power Management Setup            Set User Password
  ► PnP/PCI Configurations            Save & Exit Setup
  ► PC Health Status                  Exit Without Saving

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

Save & Exit Setup
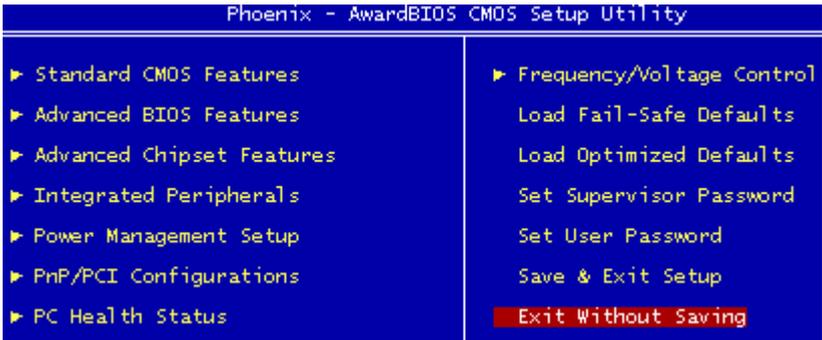
Pressing <Enter> on this item asks for confirmation:

Save to CMOS and Exit (Y/N)?

Pressing "Y" stores the selections made in the menus in CMOS, a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

```
        Phoenix - AwardBIOS CMOS Setup Utility

 ▶ Standard CMOS Features        ▶ Frequency/Voltage Control
 ▶ Advanced BIOS Features           Load Fail-Safe Defaults
 ▶ Advanced Chipset Features        Load Optimized Defaults
 ▶ Integrated Peripherals           Set Supervisor Password
 ▶ Power Management Setup           Set User Password
 ▶ PnP/PCI Configurations           Save & Exit Setup
 ▶ PC Health Status                 Exit Without Saving
```

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit Without Saving (Y/N)?

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

CHAPTER
4

Drivers Installation

This Gene-6320 is equipped with an audio, VGA and LAN interface. This chapter provides instructions for installing the software drivers on these peripherals.

Audio Driver Installation

Gene-6320AE can support the audio output function, so you have to follow the instructions as below to install the audio driver.

1. Insert the **Gene-6320 CD-ROM** into the CD-ROM Drive.
2. Select the **Drivers/audio** folder to click on the setup icon.
   Please choose the folder according to your Windows OS.

A driver installation box will appear,

3. Click on Next.

Setup

Welcome to Solo1 Setup

This program will install Solo1 on your computer. It is strongly recommended that you exit all Windows programs before running this Setup program.

< Back   Next >   Cancel
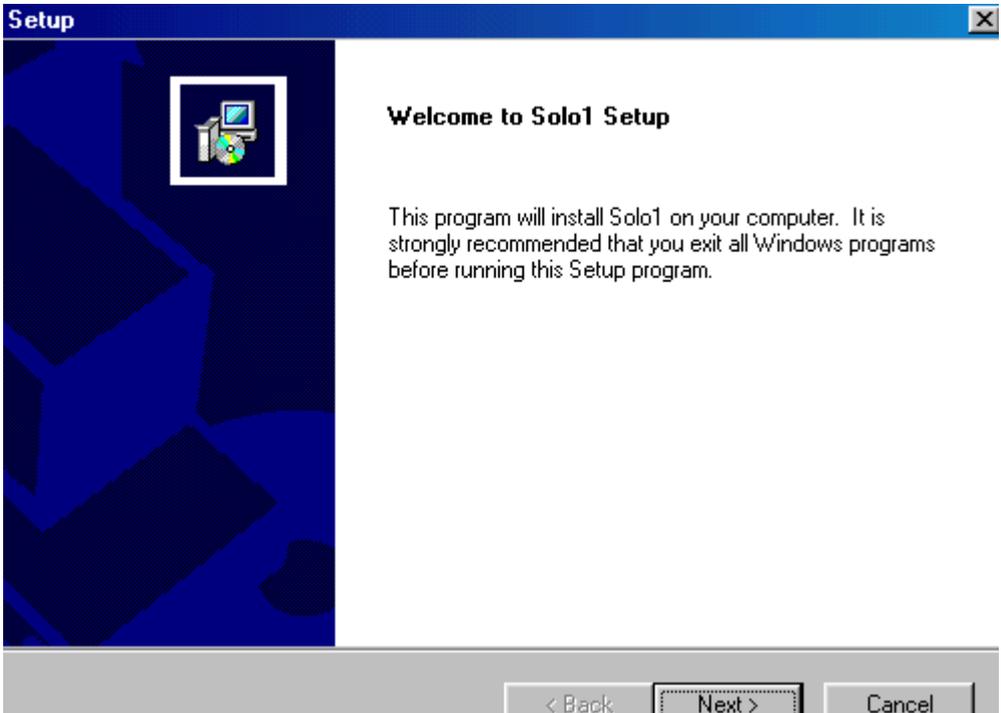
4. Select the default setting, and then click on **Next**.
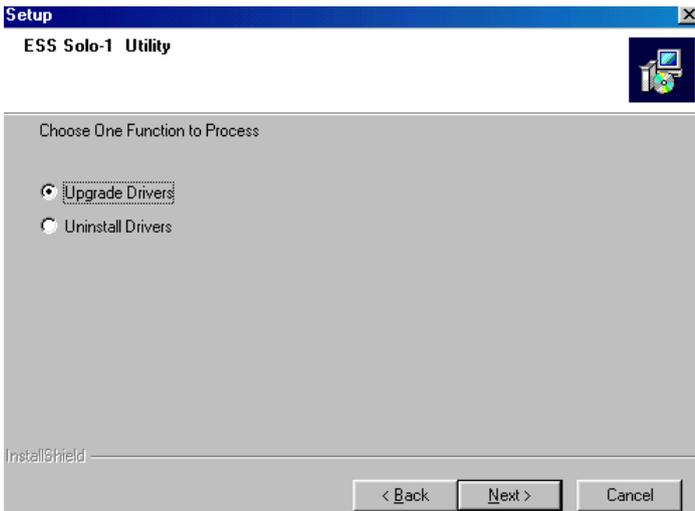
5. Click on **Finish**.
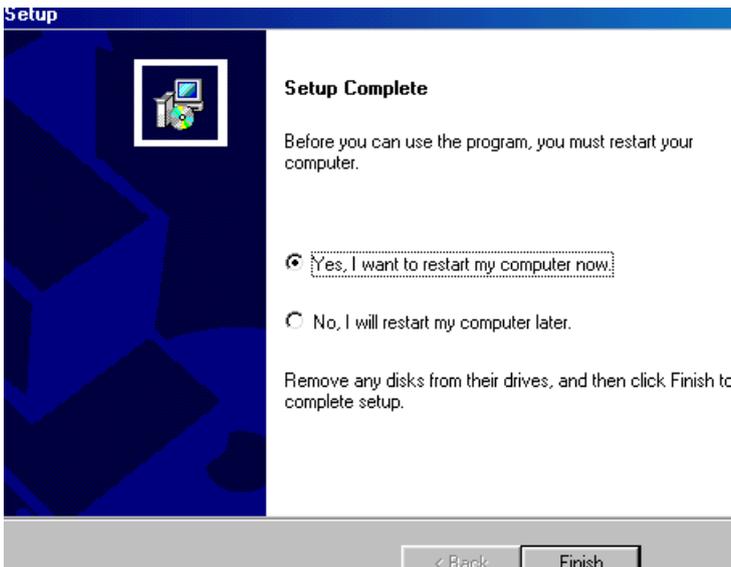
Installation process is completed and allows the system to reboot.

VGA Driver Installation

1. Insert the **Gene-6320 CD-ROM** into the CD-ROM Drive.
2. Select the **Drivers**/**vga/Windows/Complete/Win9X** to click on the setup icon.
Notice:We take the VGA installation under Windows 98 for example here. Please choose the file according to your Windows OS.

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

.

Welcome ☒

Welcome to the Silicon Motion Control Programs Setup program. This program will install Silicon Motion Control Programs on your computer.

It is strongly recommended that you exit all Windows programs before running this Setup program.

Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.

WARNING: This program is protected by copyright law and international treaties.

Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.

Next >   Cancel

3. At last, click on **Finish**.

Setup Complete

Setup has finished copying files to your computer.

Before you can use the program, you must restart Windows or your computer.

⦿ Yes, I want to restart my computer now.

○ No, I will restart my computer later.

Remove any disks from their drives, and then click Finish to complete setup.

< Back   Finish

Installation process is complete and allows the system to reboot.

Ethernet Driver Installation

With dual Intel 82559ER/82540EM LAN controller, you will need to install or configure ethernet driver for Gene-6320GE.

Installing Intel 82559ER Driver

Here, we install the Intel 82540EM driver first.

1. Insert the **Gene-6320 CD-ROM** into the CD-ROM Drive.
2. Find out and double click on the setup icon according to your Windows OS.
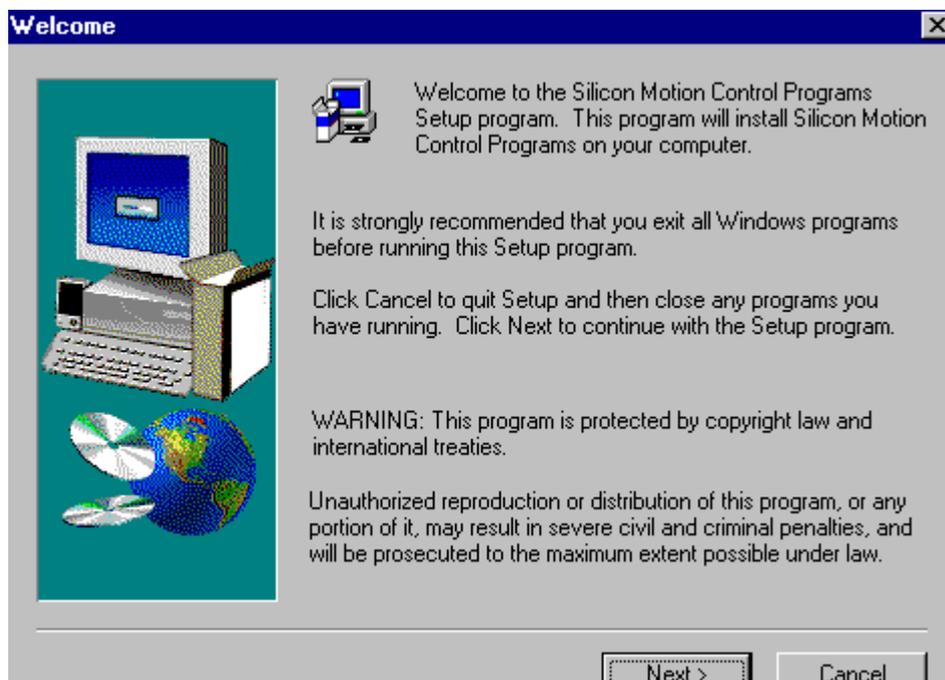
A driver installation wizard will appear, please follow the onscreen instructions to install the driver in sequence.
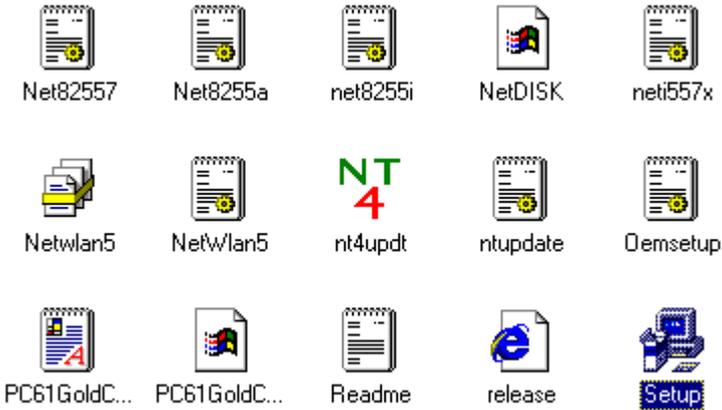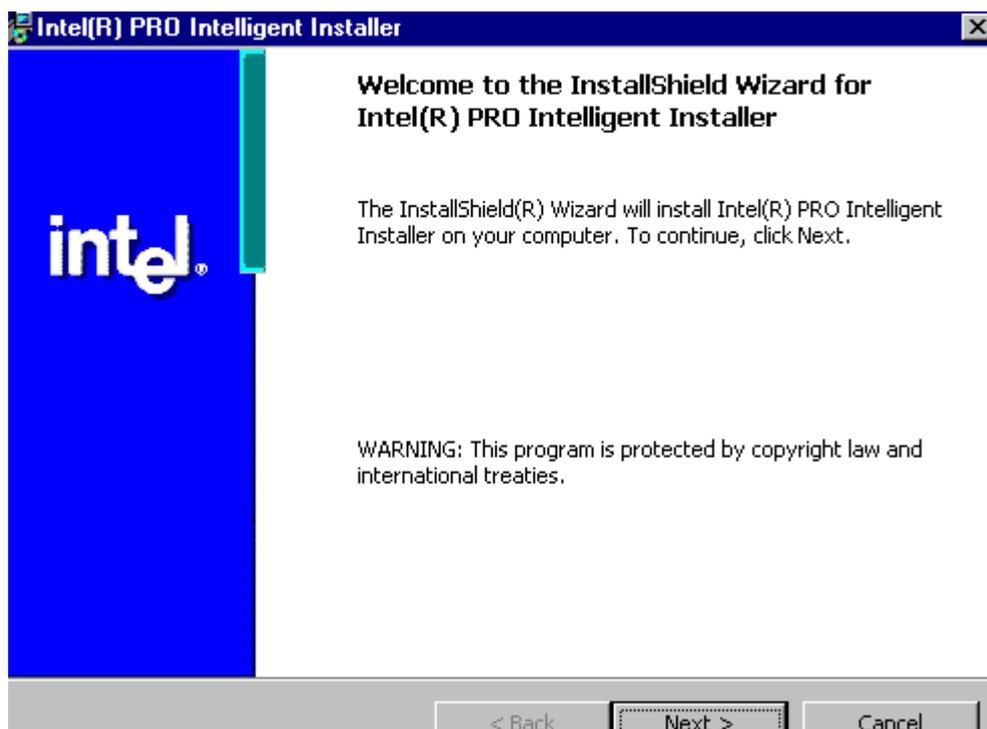
3. Click on **Next**.

4. Click on **Next**.

Intel(R) PRO Intelligent Installer

License Agreement

Please read the following license agreement carefully.

INTEL SOFTWARE LICENSE AGREEMENT (Final, License)

IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.

Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not agree with the terms of this Agreement, do not install or use the Software.

◉ I accept the terms in the license agreement

○ I do not accept the terms in the license agreement

InstallShield

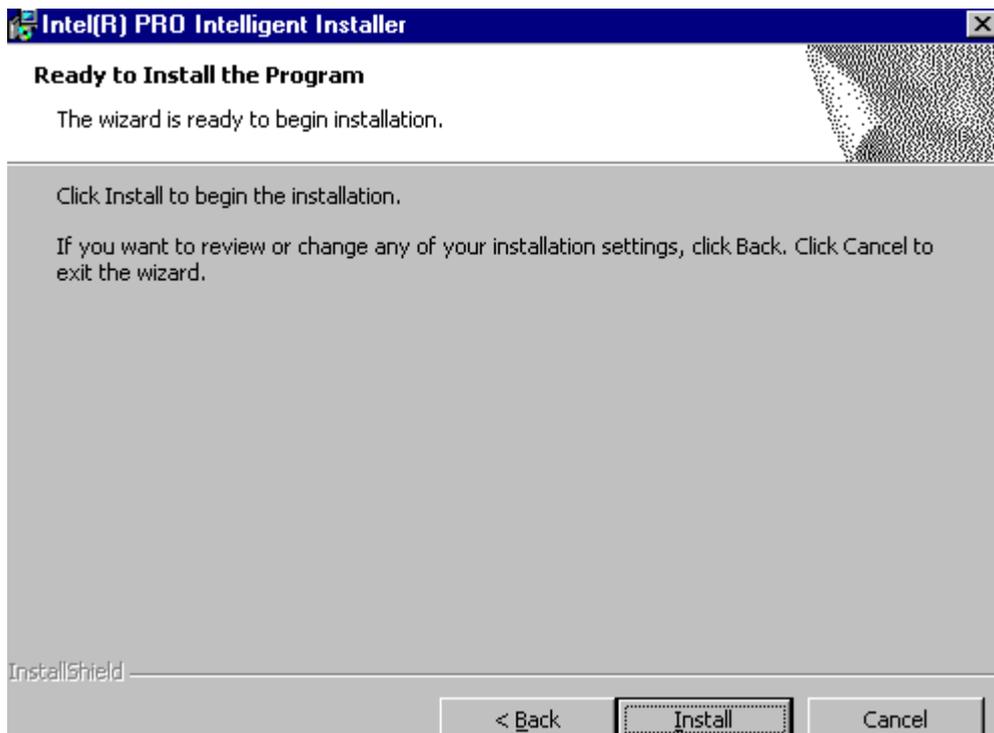| < Back | Next > | Cancel |

5. Choose **Typical** or **Custom** setting according to your needs and click on **Next**.
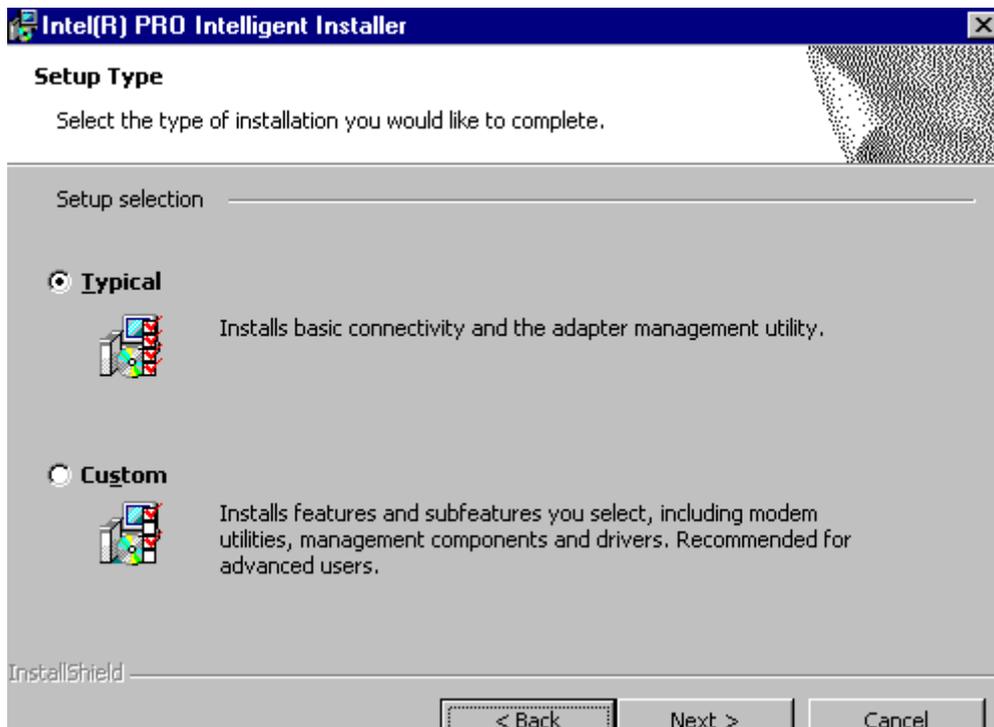
6. Click on **Install** to start the process of installation.

Intel(R) PRO Intelligent Installer	✕

Ready to Install the Program

The wizard is ready to begin installation.

Click Install to begin the installation.

If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.

InstallShield

| < Back | Install | Cancel |

7. Click on **OK** to confirm the results of installation.
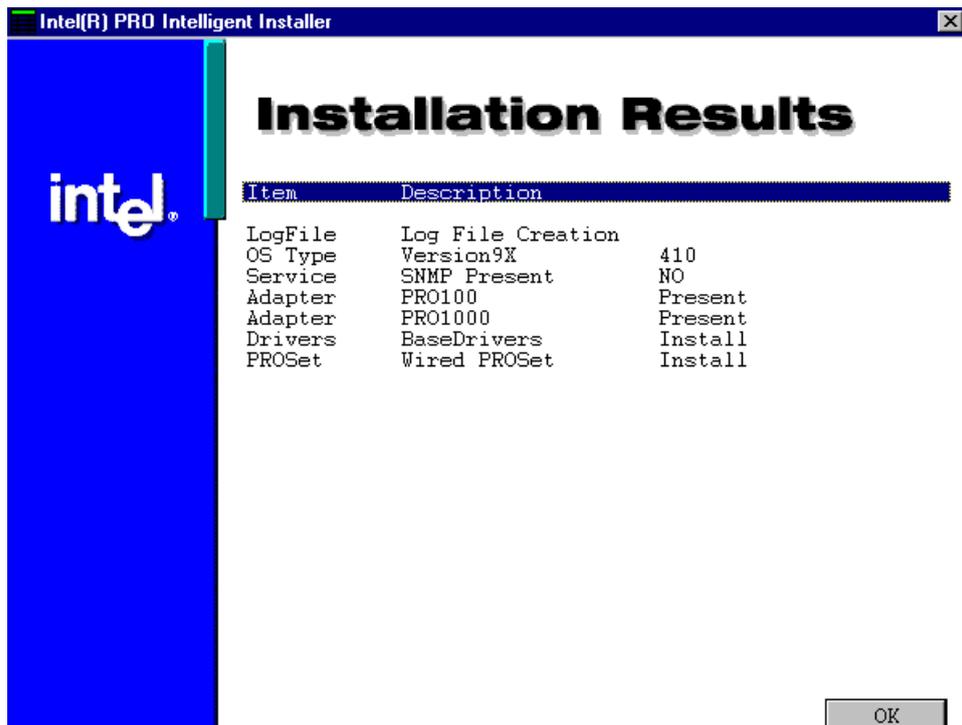
7. Click on **Yes** to carry out the effect od installation.
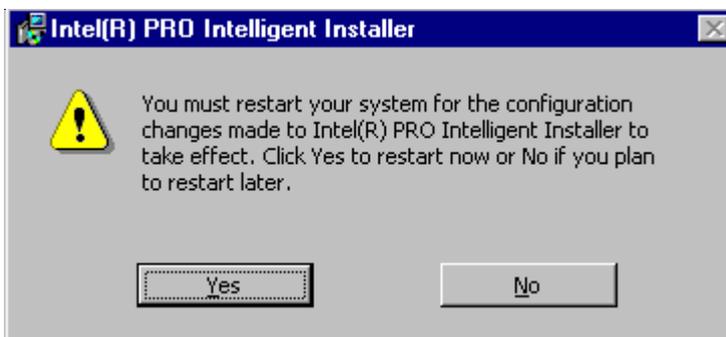
Installing Intel 82559ER Driver

No matter your board is Gene-6320AE or Gene-6320GE, you will need to install the Intel 82559ER driver. Please follow the instructions below to install it.

1. Insert the **Gene-6320 CD-ROM** into the CD-ROM Drive.
2. Click the **Start** button.
3. Select the **Settings** item.
4. Click the **Control Panel** item.
5. Select the **Systems** icon to open the **System Properties** box.
6. Click the **Device Manager** tab.
7. Select the **Network adapters** item.
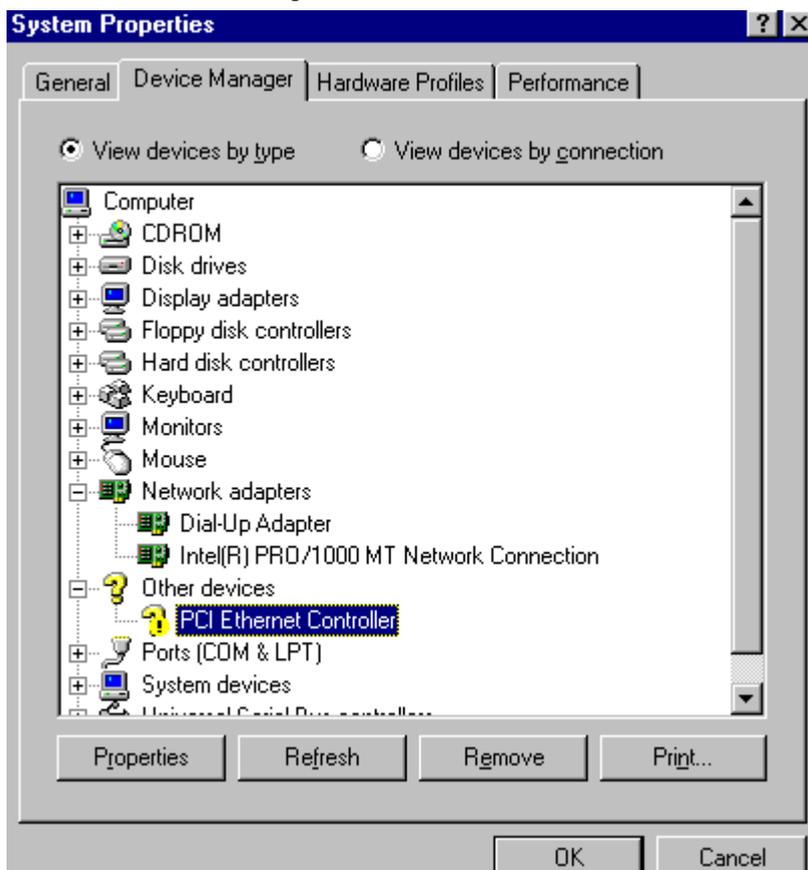
Another file will appear below this file,and then click on the file,
  8. Click on the **Driver** Tab.
  9. Click on the **Update Driver** Button.
 The **Update Device Driver Wizard** will appear,
  10. Click on **Next**.

Update Device Driver Wizard

This wizard searches for updated drivers for:

PCI Ethernet Controller

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

Upgrading to a newer version of a device driver may
improve the performance of your hardware device or add
functionality.

< Back   Next >   Cancel

11. Click on **Next**.

Update Device Driver Wizard

What do you want Windows to do?

⦿ Search for a better driver than the one your device is using now. (Recommended)

○ Display a list of all the drivers in a specific location, so you can select the driver you want.

< Back   Next >   Cancel

12. Find out the intel 82559ER driver in CD-ROM drive according to your windows OS and click on **Next**.

Update Device Driver Wizard

Windows will search for updated drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.

☐ Floppy disk drives

☐ CD-ROM drive

☐ Microsoft Windows Update

☑ Specify a location:

F:\driver\Lan\82559erdrivers17

Browse...

< Back   Next >   Cancel

13. Click on **Next**.

Update Device Driver Wizard

Windows driver file search for the device:

Intel(R) GD82559ER PCI Adapter

Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.

Location of driver:

F:\DRIVER\LAN\82559E~1\NET559ER.INF

< Back   Next >   Cancel

APPENDIX

A

Watchdog Timer

The board is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for whatever reason. This feature ensures system reliability in industrial stand-alone and unmanned environments.

Watchdog Timer

Gene-6320 contains a watchdog timer reset pin. (GP16)

All reference material can be found as the following.

```
/*═══════════════════════════════════════════════════════**
** Title  : WatchDog Timer Setup Utility (for W83977 GP16)  **
** Company : AAEON Technology Inc.                  **
** Compiler : Borland C ++ Version 3.0             **
**═══════════════════════════════════════════════════════*/

#include <dos.h>
#include <io.h>
#include <bios.h>
#include <stdio.h>
#include <stdlib.h>
#include <conio.h>

/* Set I/O Address : 370/371 or 3F0/3F1 */
#define IO_INDEX_PORT   3F0
#define IO_DATA_PORT    3F1

/* Set Watchdog reset pin : 12/13/16 */
#define watch_dog_output_GP16

#define UNLOCK_DATA    0x87
#define LOCK_DATA      0xAA
#define DEVICE_REGISTER 0x07

void EnterConfigMode()
{
            outportb(IO_INDEX_PORT, UNLOCK_DATA);
            outportb(IO_INDEX_PORT, UNLOCK_DATA);
}

void ExitConfigMode()
{
            outportb(IO_INDEX_PORT, LOCK_DATA);
}
```

```
void SelectDevice(unsigned char device)
{
            outportb(IO_INDEX_PORT, DEVICE_REGISTER);
            outportb(IO_DATA_PORT, device);
}

unsigned char ReadAData(short int reg)
{
            outportb(IO_INDEX_PORT, reg);
            return (inportb(IO_DATA_PORT));
}

void WriteAData(unsigned char reg, unsigned char data)
{
            outportb(IO_INDEX_PORT, reg);
            outportb(IO_DATA_PORT, data);
}

void SetWatchDogTime(unsigned char time_val)
{
            EnterConfigMode();
            SelectDevice(8);
            //Set Register F2
            //Set Watch-Dog Timer 1~ 256
            WriteAData(0xF2, time_val);
            // set counter counts in second (or minute)
            // Register F4 Bit 6 = 0/1 (minutes/seconds)
            // For w83977EF only
            WriteAData(0xF4, 0x40);
            ExitConfigMode();
}
```

```
void init_w83977tf_aw_watchdog()
{
                short int value;

                //Enter W83977 Configure Mode
                EnterConfigMode();

                //Select Device 7
                SelectDevice(7);
                //Set Device Active
                WriteAData(0x30, 0x01);

                //caution:skip this step will be a mistake!!
                if (watch_dog_output_GP==12)
                {
                                //Set Register E2 to define GP12
                                WriteAData(0xE2, 0x0A);
                }
                else if(watch_dog_output_GP==13)
                {
                                //Set Register E3 to define GP13
                                WriteAData(0xE3, 0x0A);
                }
                else if(watch_dog_output_GP==16)
                {
                                //Set Register E6 to define GP16
                                WriteAData(0xE6, 0x0A);
                }

                //Select Device 8
                SelectDevice(8);
                //Set Register F3
                //keyboard and mouse interrupt reset Enable
                //When Watch-Dog Time-out occurs,Enable POWER LED
output
                WriteAData(0xF3, 0x0E);
```

```
            //caution:skip this step will be a mistake!!
            if (watch_dog_output_GP==12)
            {
            //Set Register 2A (PIN 57) Bit 7 = 0/1 (KBLOCK/GP12)
            //set to GP12 for WD Rst
            WriteAData(0x2A,ReadAData(0x2A)|0x80);
            }
            else if(watch_dog_output_GP==13)
            {
            //Set Register 2B (PIN 58) Bit 0 = 0/1 (KBLOCK/GP13)
            //set to GP13 for WD Rst
            WriteAData(0x2B,ReadAData(0x2B)|0x01);
            }
            else if(watch_dog_output_GP==16)
            {
            //Set Register 2C (PIN 119) Bit 5-4 = 01 (GP16)
            //set to GP16 for WD Rst
            WriteAData(0x2C,ReadAData(0x2C)|0x10);
            }

            //Exit W83977 Configure mode
            ExitConfigMode();
}

void main(int argc, char* argv[])
{
            int time_value=0;
            char *ptr;
            printf("winBond 83977 WatchDog Timer Setup Utility
Version 1.0 \n");
            printf("Copyright (c) 2000 AAEON Technology Inc.\n");
            printf("This version only for W83977 that using GP%d to
Reset System.\n",watch_dog_output_GP);
```

```
if (argc == 1)
{
                printf("\n Syntax: WATCHDOG [time] \n");
                printf(" time range : 1 ~ 256 \n\n");
                return ;
}
if (argc > 1)
{
                ptr = argv[1];
                time_value = atoi(ptr);
}
if (time_value > 0 && time_value < 256)
{
SetWatchDogTime((unsigned char) time_value);
init_w83977tf_aw_watchdog();
printf("Watch Dog Timer set up : %d \n",time_value);
}
}
```