

# Gene-4310

All-in-One 3.5" Single Board  
Cyril GXLV computer with LCD,  
Ethernet, Audio & 2 COMs

## **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 UNDESIRE 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 AGAINST 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, 2000. 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

AMD is a trademark of Advanced Micro Devices, Inc.

AMI is a trademark of American Megatrends, Inc.

Award is a trademark of Award Software International, Inc.

Cyrix is a trademark of Cyrix Corporation.

IBM, PC/AT, PS/2, and VGA are trademarks of International Business Machines Corporation.

Intel and Pentium II are trademarks of Intel Corporation.

Microsoft Windows ® is a registered trademark of Microsoft Corp.

SMC is a trademark of Standard Microsystems Corporation.

RTL is a trademark of Realtek Semi-Conductor Co., Ltd.

C&T is a trademark of Chips and Technologies, Inc.

UMC is a trademark of United Microelectronics Corporation.

ITE is a trademark of Integrated Technology Express, Inc.

SiS is a trademark of Silicon Integrated Systems Corp.

VIA is a trademark of VIA Technology, Inc.

All other product names or trademarks are properties of their respective owners.

# A Message to the Customer

---

## AAEON Customer Services

Each and every AAEON product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new AAEON equipment is destined for the laboratory or the factory floor, you can be assured that your 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. Here is a guide to AAEON's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

## Technical Support

We want you to get the maximum performance from your 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 a lot more detailed than the ones we can give 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 are able to be easily solved over the phone.

In addition, free technical support is available from AAEON 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 one year from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by AAEON, or which have been subject to misuse, abuse, accident or improper installation. 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 product is defective, it will be repaired or replaced at 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 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. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your return more 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 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 prepaid to your dealer.

# Packing list

---

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

- 1 GENE-4310 All-in-One Single Board Computer
- 1 Hard disk drive (IDE) interface cable (44 pin, pitch 2.0mm)
- 1 Floppy disk drive interface (34 pin, pitch 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 20cm 20-pin (2.0mm) for LVDs extension
- 1 bag of screws and miscellaneous parts
- 1 Quick Installation Guide
- 1 CD-ROM contains the followings:
  - User's Manual (this manual in PDF file)
  - Ethernet drivers and utilities
  - VGA drivers and utilities
  - Audio drivers and utilities
  - Latest BIOS (as of the CD-ROM was made)

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

# Notice

---

Dear Customer,

Thank you for purchasing the GENE-4310 board. This user's manual is designed to help you to get the most out of the GENE-4310, please read it thoroughly before you install and use the board. The product that you have purchased comes with an two-year limited warranty, but AAEON will not be responsible for misuse of the product. Therefore, we strongly urge you to first read the manual before using the product.

To receive the latest version of the user manual, please visit our Web site at:

**<http://www.aaeon.com>**

# Contents

Chapter 1: General Information.....	1
<b>Introduction ...</b> .....	<b>2</b>
<b>Features</b> .....	<b>3</b>
<b>Specifications</b> .....	<b>4</b>
<b>Board layout</b> .....	<b>7</b>
<b>Board dimensions</b> .....	<b>9</b>
Chapter 2: Installaion .....	11
<b>Jumpers and connectors</b> .....	<b>12</b>
<b>Locating jumpers &amp; connector</b> .....	<b>14</b>
<b>Setting jumpers</b> .....	<b>16</b>
<b>Installing DRAM (DIMMs)</b> .....	<b>17</b>
<b>Clear CMOS (JP2 1~3)</b> .....	<b>18</b>
<b>Onboard buzzer / external speaker select (JP2 4~7) ....</b>	<b>18</b>
<b>IrDA Connector (JP3)</b> .....	<b>19</b>
<b>COM2 RS-232/422/485 select (JP12, JP4)</b> .....	<b>20</b>
<b>Audio connector (JP5)</b> .....	<b>20</b>
<b>LCD driving voltage select (JP8, 1-3-5)</b> .....	<b>21</b>
<b>LCD backlight voltage select &amp; output (JP8 2-4-6)</b> <b>(JP10)</b> .....	<b>21</b>
<b>Watchdog timer output select (JP11)</b> .....	<b>22</b>
<b>LVDS ede trigger select (JP13) (4310T only)</b> .....	<b>22</b>
<b>IDE hard drive connector (J2)</b> .....	<b>23</b>
Connecting the hard drive .....	23
<b>IDE hard drive connector (J2)</b> .....	<b>24</b>
<b>Serial ports (J4, J5)</b> .....	<b>25</b>
COM 2 RS-232/422/485 serial ports (J5) .....	25
<b>USB connector (J7)</b> .....	<b>26</b>
<b>Floppy drive connector (J9)</b> .....	<b>27</b>
Connecting the floppy drive .....	27
Floppy drive connector (J9) .....	28
<b>Parallel port connector (J10)</b> .....	<b>29</b>

<b>Display connectors (J14, J16)</b> .....	<b>30</b>
<b>100Base-T Ethernet connector (CN2)</b> .....	<b>32</b>
<b>Power connector (P1)</b> .....	<b>32</b>
<b>Keyboard and PS/2 mouse connector (CN11)</b> .....	<b>33</b>
Chapter 3: Award BIOS Setup .....	35
<b>Starting setup</b> .....	<b>36</b>
<b>Setup keys</b> .....	<b>37</b>
<b>Getting help</b> .....	<b>38</b>
In case of problem .....	38
<b>Main setup menu</b> .....	<b>39</b>
<b>Standard CMOS setup</b> .....	<b>41</b>
<b>BIOS features setup</b> .....	<b>46</b>
<b>CHIPSET features setup</b> .....	<b>50</b>
<b>Powr management setup</b> .....	<b>53</b>
<b>PNP/PCI configuration setup</b> .....	<b>56</b>
<b>Load BIOS defaults/Load setup defaults</b> .....	<b>58</b>
<b>Integrated peripherals setup</b> .....	<b>59</b>
<b>Supervisor/User password setting</b> .....	<b>63</b>
<b>IDE HDD auto detection</b> .....	<b>65</b>
<b>Save &amp; exit setup</b> .....	<b>66</b>
<b>Exit without saving</b> .....	<b>67</b>
Chapter 3: Ethernet Software Configuration ...	
.....	69
<b>Ethernet software configuration</b> .....	<b>70</b>
Appendix A: Programming the Watchdog	
Timer .....	71
<b>Programming the watchdog timer</b> .....	<b>72</b>
Watchdog timer .....	72
Configuration register .....	72



## General Information

This chapter gives background information on the mainboard.

Sections include:

- Board specifications
- Layout and dimensions

# Introduction

---

The GENE-4310 is an all-in-one NS GXLV processor based single board computer (SBC) with a 16-bit PCI audio controller, a PCI Flat Panel controller, a 100Base-T Ethernet interface and a PC/104 fo expansion. This compact (only 5.75" x 4") unit offers all the functions of a single board industrial 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 two USB (Universal Serial Bus) ports, a floppy drive controller, and a keyboard/PS/2 mouse interface. The built-in high speed PCI IDE controller supports Ultra DMA/33 mode. Up to two IDE devices can be connected, including large hard disks, CD-ROM drives, and tape backup drives, etc.

The GENE-4310 also features power management to minimize power consumption. It complies with the ACPI standard and supports three types of power saving features: Doze mode, Standby mode, and Suspend mode. In addition, the board's watchdog timer can automatically reset the system or generate an interrupt in case the system stops due to a program bug or SMI.

## **Highly integrated multi-media SBC**

The GENE-4310 is a highly integrated multi-media SBC that combines audio, video, and network functions on a FDD drive size single computer board. It provides , 16-bit full-duplex, integrated 3D audio and up to 1024 x 768 resolution @ 64K colors with UMA 4MB SDRAM display memory. Major onboard devices adopt PCI technology to achieve outstanding computing performance when used with NS GXLV level processors, making the GENE-4310 one of the world's smallest and most powerful all-in-one multimedia boards.

# Features

---

- 3.5" FDD SubCompact Form Factor
- Supports NS Geode GXLV Low-power BGA CPUs
- Supports CRT and 18-bit TFT Panels
- LVDS interface
- 10/100Base-T Fast Ethernet
- Integrated AC-97 2.0 SoundBlaster compatible Audio
- Supports Compact Flash Storages
- 2 COMs/1 Parallel/2 USB/1 IrDA Port
- 5V only operation

# Specifications

---

## **Standard SBC Functions**

**CPU :** NS Geode GXLV (low-power) 233MHz (available in different speeds by request)

**CPU type:** Onboard BGA

**BIOS:** Award 256KB FLASH BIOS

**Chipset:** NS CS5530

**I/O Chipset:** Winbond W83977F. Fully 16-bit I/O decoded

**Memory :** Onboard one 144-pin SODIMM socket supports up to 128 Mbytes SDRAM

**Enhanced IDE:** Supports two IDE devices. Supports Ultra DMA/33 mode with data transfer rate up to 33MB/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:** Internal header for bi-directional parallel port x 1. Supports SPP, ECP, and EPP modes

**Serial port:** One external DB-9 connector supports RS-232 x 1, one internal header supports RS-232/422/485 x 1. Ports can be configured as COM1, COM2, or disabled individually (16C550 equivalent)

**IR interface:** Supports one IrDA Tx/Rx header

**KB/Mouse connector:** Mini-DIN connector supports Keyboard and PS/2 mouse

**USB connectors:** One 5 x 2 header onboard supports dual USB ports

**Battery:** Lithium battery for data retention

**Watchdog Timer:** Can generate a system reset or IRQ15. Supports Win98, Win3.1. Software selectable time-out interval (15 sec. ~ 3825sec., 15 sec./step)

**DMA:** 7 DMA channels (8237 equivalent)

**Interrupt:** 15 interrupt levels (8259 equivalent)

**Power management:** I/O peripheral devices support power saving and doze/standby/suspend modes. APM 1.2 compliant

**H/W status monitoring:** Winbond W83781D H/W status monitoring IC supports power supply voltages, fan speed, and temperatures monitoring

## **Flat Panel/CRT Interface**

- **Chipset:** NS CS5530
- **Display memory:** Shared UMA up to 4MB
- **Display type:** Supports non-interlaced CRT and up to 18-bit TFT LCD displays. Can display both CRT and flat panel simultaneously
- **Resolution:** Up to 1024x768 @ 64K colors (CRT/LCD simultaneous display)

## **LVDS Interface (Optional)**

**Chipset:** Thine THC63LVDM63A

**Transmitting capability:** 18-bit panel signal over 10 meters cable

## **Audio Interface**

**Chipset:** NS CS5530

**3D audio Supports:** Microsoft DirectSound and DirectSound 3D audio technology in two-speaker mode (requires Microsoft Direct Sound 3D supported software titles)

**16-bit stereo digital audio:** Full-duplex supports enables simultaneous record and playback for Internet communications software

## **Ethernet Interface**

Chipset: Intel 82559ER 10/100Base-T Fast Ethernet controller

Ethernet interface: Onboard 10/100Base-T RJ-45 connector. Optional Remote Boot ROM function

## **SSD Interface**

One socket supports Compact Flash Disk

## **Expansion Interface**

**PC/104 connector:** One 16-bit 104-pin connector onboard Connectors

**External connectors:** VGA (DB-15), COM 1 (DB-9), Ethernet (RJ-45), KB/Mouse (Mini-DIN)

**Power connectors:** 4-pin HDD type

## **Mechanical and Environmental**

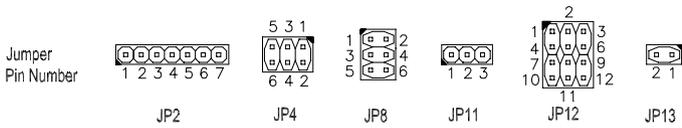
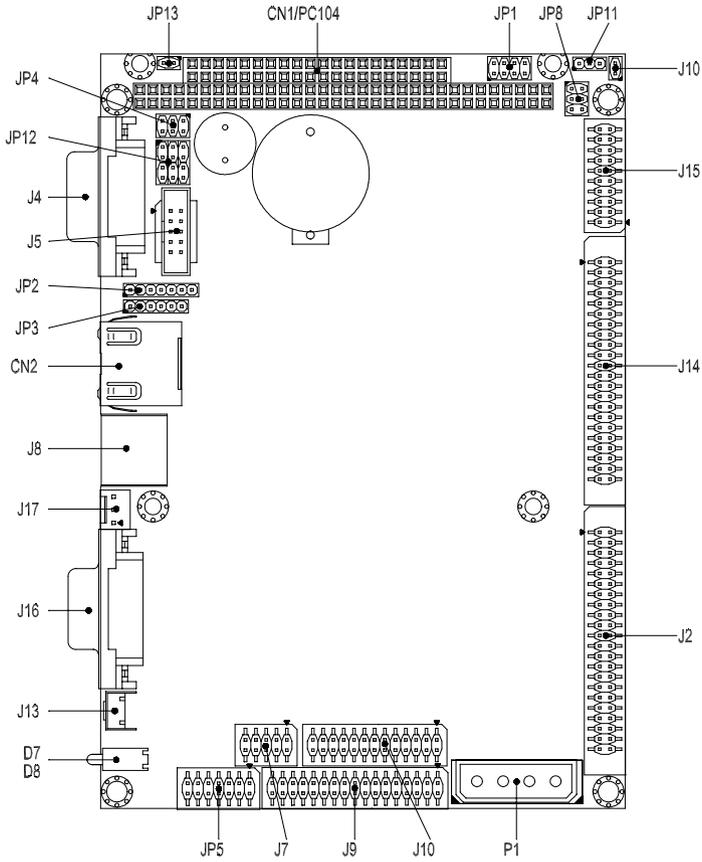
**Power supply voltage:** +5V (4.75V to 5.25V)

**Operating temperature:** 32 to 140 °F (0 to 60 °C)

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

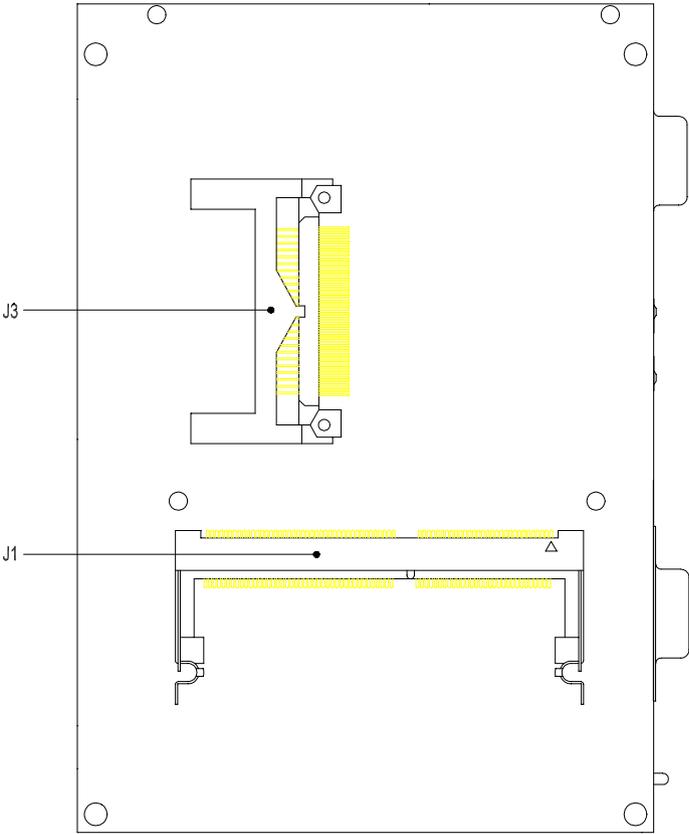
**Weight:** 0.88 lb. (0.4 Kg)

# Board layout

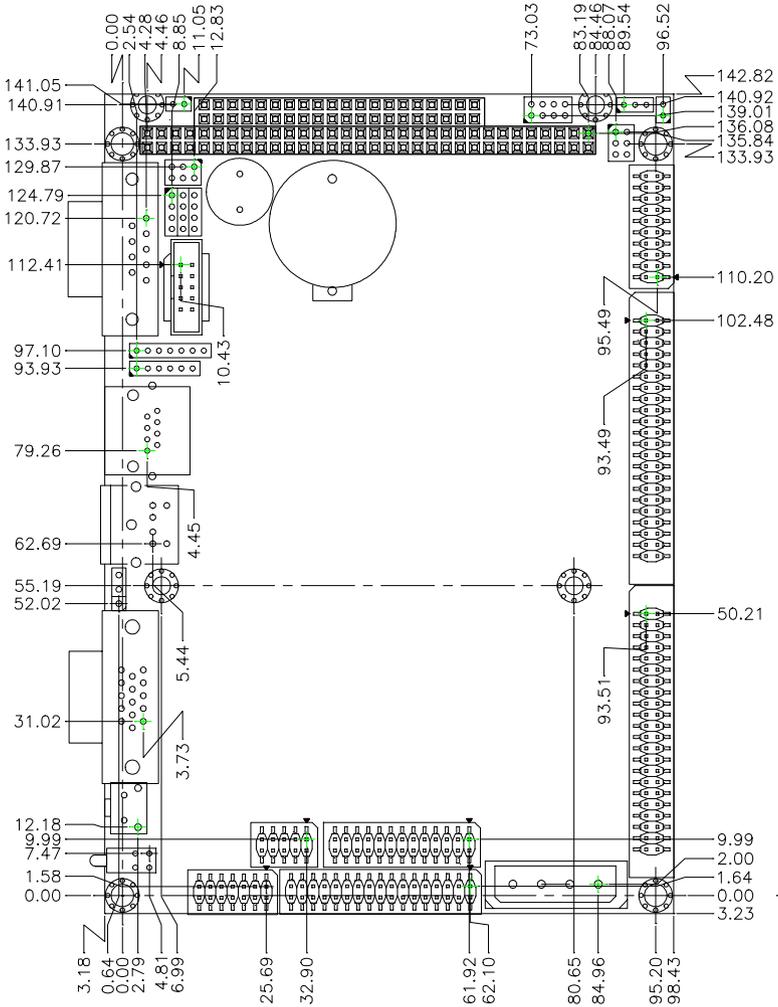


# Board layout

---

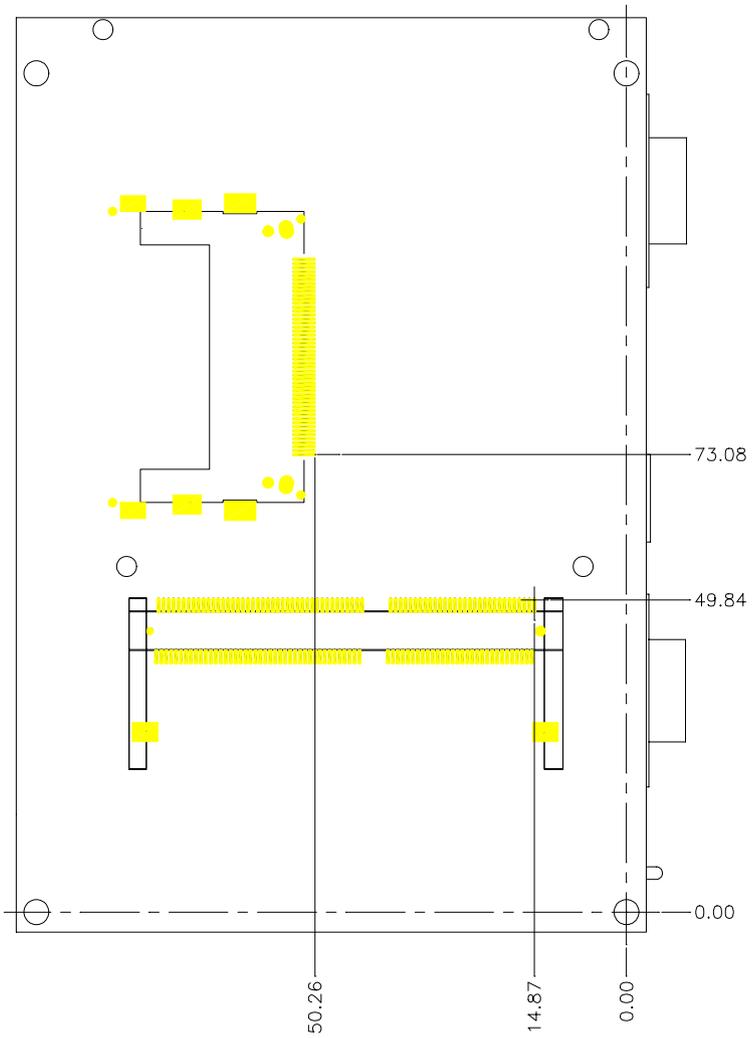


# Board dimensions



# Board dimensions

---



## Installation

This chapter describes how to set up the main board hardware, including instructions on setting jumpers and connecting peripherals, switches, and indicators. Be sure to read all the safety precautions before you begin the installation procedure.

## Jumpers and connectors

---

Connectors on the board link it 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 application.

The following tables list the function of each of the board's jumpers and connectors.

---

### Jumpers

<b>Label</b>	<b>Function</b>
JP2 (1~3)	Clear CMOS
JP2 (4~7)	Onboard buzzer and external speaker select
JP4	COM2 RS232/422/485 select
JP12	COM2 RS232/422/485 select
JP8 (1-3-5)	LCD Panel voltage select
JP8 (2-4-6)	Backlight voltage select
JP11	Watchdog Timer output select
JP13	LVDS Edge Trigger select (4310S only)

---

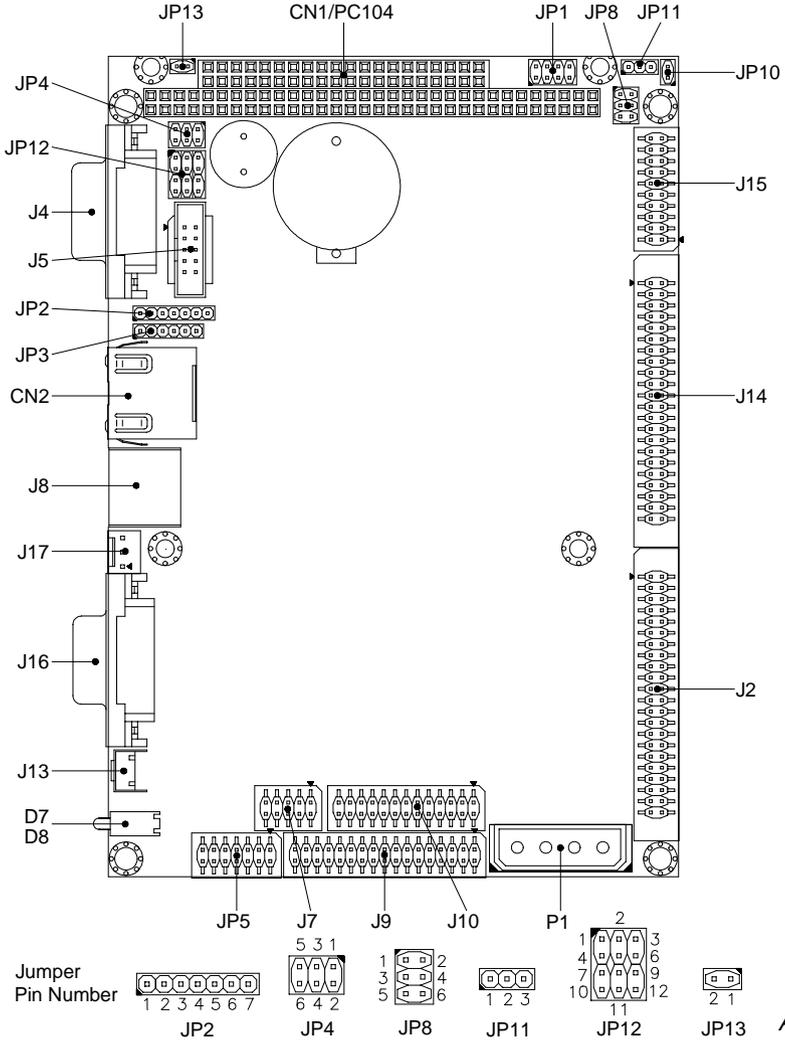
Connectors

---

<b>Label</b>	<b>Function</b>
J1	SO-DIMM 144 Pin socket
J2	IDE connector (2.0 mm)
J3	Compact Flash Disk socket
J4	COM1 D-SUB 9 Pin connector
J5	COM2 RS232/422/485 connector (2.0 mm)
J7	Dual USB connector (2.0 mm)
J8	PS/2 Mouse and Keyboard connector
J9	FDD connector (2.0 mm)
J10	LPT1 Parallel Port connector (2.0 mm)
J13	Reset Switch connector
J14	LCD connector (2.0 mm)
J15	LVDS interface connector (2.0 mm) (4310S only)
J16	VGA D-SUB connector
J17	FAN connector (Reserved)
JP1	TV-out connector (2.0mm) (4310T only)
JP3	IR connector
JP5	Audio connector (2.0 mm)
JP10	Backlight Voltage connector (2.0 mm)
CN1	PC104 connector
CN2	RJ45 connector with LED indicator
P1	Power connector

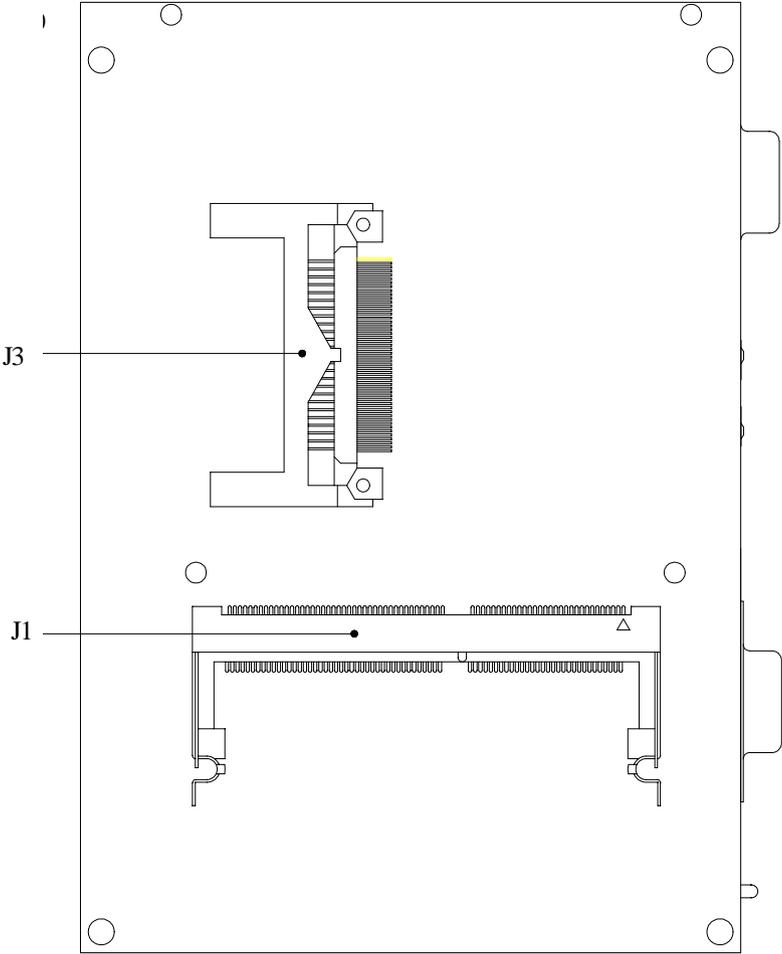
---

# Locating jumpers & connectors



# Locating jumper & connectors

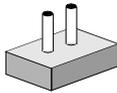
---



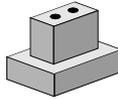
# Setting jumpers

---

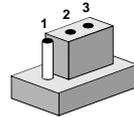
You can configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



**Open**



**Closed**



**Closed 2-3**

The jumper settings are schematically depicted in this manual as follows:



**Open**



**Closed**



**Closed 2-3**

A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

# Installing SDRAM (SODIMM)

---

## System Memory

The reverse side of the Gene-4310 contains a socket for 144-pin dual inline memory module (SODIMM). The socket uses 3.3 V unbuffered synchronous SDRAM and is available in capacities of 16, 32, 64, or 128 MB. The socket can be filled in the SODIMM of any size, giving your GENE-4310 single board computer between 16 and 128 MB of memory.

## Supplementary information about DIMM

Your Gene-4310 can accept regular PC-100 SDRAM SODIMM Module(with or without parity).

Single-sided modules are typically 16 or 64 MB; double-sided modules are usually 32 or 128 MB.

## Memory Installation Procedures

To install SDRAM, Slowly slide the SDRAM module along the plastic guides on both ends of the socket. Then press the SDRAM module into the socket, until you hear a click. This is when the two handles have automatically locked the memory module into the correct position of the soDIMM socket. To take away the memory module, just push both handles outward, and the memory module will be ejected by the mechanism in the socket.

## Clear CMOS (JP2 1 ~ 3)

---

You can use JP2 pin 1~3 to clear the CMOS data if necessary. To reset the CMOS data, set JP2 to 2-3 closed for just a few seconds, and then move the jumper back to 1-2 closed.

---

Clear CMOS (JP2 1 ~ 3)

---

	<b>Protect*</b>	<b>Clear CMOS</b>
JP2	1  2  3 	1  2  3 

---

\*default

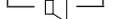
## Onboard buzzer / external speaker select JP2 (4 ~ 7)

---

---

Onboard buzzer / external speaker select JP2 (4 ~ 7)

---

	<b>Internal buzzer*</b>	<b>External speaker</b>
JP2	4  5  6  7 	4  5  6  7  

---

\* default

## IrDA connector (JP3)

---

The IrDA connector (JP3) can be configured to support wireless infrared module, with this module and application software such as laplink or Win95 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 IR (4Mbps, 2 meters).

Install infrared module onto IrDA connector and enable infrared function from BIOS setup. Make sure to have correct orientation when you plug onto IrDA connector (JP3).

---

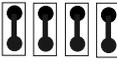
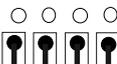
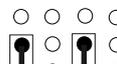
IrDA connector (JP3)

<b>Pin</b>	<b>Signal</b>
1	Vcc
2	IrRxH
3	IrRx
4	GND
5	IrTx
6	CIRRX

---

# COM2 RS-232/422/485 select (JP12, JP4)

The Gene-4310 COM2 serial port can be selected as RS-232, RS-422, or RS-485 by setting JP12 and JP4.

COM2 Select (JP12, JP4)			
	RS-232*	RS-422	RS-485
JP12	1 4 7 10  3 6 9 12	1 4 7 10  3 6 9 12	1 4 7 10  3 6 9 12
	1 3 5  2 4 6	1 3 5  2 4 6	1 3 5  2 4 6

\*default

# Audio connector (JP5)

The Gene-4310 provides all major audio signals on a 14-pin flat-cable connector, JP5.

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

Audio connector (JP5)			
Pin	Signal	Pin	Signal
1	Mic In	2	MIC_Vcc
3	GND	4	CD_GND
5	Line In Left	6	CD_Left
7	Line In Right	8	CD_GND
9	GND	10	CD_Right
11	Audio Out Left	12	Audio Out Right
13	GND	14	GND

## LCD driving voltage select (JP8 1-3-5)

You can select the LCD connector J14 (pin 5 and pin 6) driving voltage by setting JP8 1-3-5. The configurations are as follows:

---

### LCD driving voltage select (JP8 1-3-5)

---

	<b>5V</b>	<b>3.3V *</b>
JP8		

---

\*default

## LCD backlight voltage select & output (JP8 2-4-6) (JP10)

You can set the JP10 for LCD backlight voltage to 5V or 12V output, by configuring JP8 2-4-6. The configurations are as follows:

---

### LCD backlight voltage select (JP8 2-4-6)

---

	<b>5V*</b>	<b>12V</b>
JP8		

---

\*default

---

### LCD backlight voltage output (JP10)

---

Pin	Signal
1	Backlight Vcc
2	GND

---

**Note :** DC 12V input is required to have 12V backlight output.

## Watchdog timer output select (JP11)

---

Watchdog timer output select (JP11)

---

	<b>IRQ15</b>	<b>Reset *</b>
JP11		

---

\*default

## LVDS edge trigger select (JP13) (4310T only)

---

LVDS edge trigger select (JP13)

---

	<b>Falling edge *</b>	<b>Rising edge</b>
JP13		

---

\*default

## IDE hard drive connector (J2)

---

You can attach one or two Enhanced Integrated Device Electronics hard disk drives to the mainboard's internal controller. The mainboard's IDE controller uses a PCI local-bus interface. This advanced interface supports faster data transfer and allows the IDE hard drive to exceed 528 MB.

### Connecting the hard drive

Connecting drives is done in a daisy-chain fashion and requires one of two cables, depending on the drive size.

Wire number 1 on the cable is normally red or blue, and the other wires are usually gray.

1. Connect one end of the cable to J2. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
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 drives. (see your hard drive's documentation for the location of the connector).

Connect a second drive as described above.

Unlike floppy drives, IDE hard drives can connect to either end of the cable. If you install two drives, you will need to set one as the master and the other one as the slave by using jumpers on the drives. If you install just one drive, set it as the master.

## IDE hard drive connector (J2)

IDE hard drive connector (J2)			
Pin	Signal	Pin	Signal
1	IDE RESET	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	SIGNAL GND	20	NC
21	DREQ	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO CHANNEL READY	28	ALE
29	DACK#	30	GND
31	IRQ14	32	IOCS16
33	ADDR 1	34	NC
35	ADDR 0	36	ADDR 2
37	HARD DISK SELECT 0	38	HARD DISK SELECT 1
39	IDE ACTIVE	40	MGND
41	VCC	42	MVCC
43	GND	44	NC

## Serial ports (J4, J5)

---

The Gene-4310 offers two serial ports, one RS-232 and one RS-232/422/485. These ports allow you to connect them to serial devices (mouse, printers, etc.).

### COM 2 RS-232/422/485 serial ports (J5)

---

COM1, COM2, RS-232/422/485 serial port

---

	<b>PIN</b>	<b>SIGNAL</b>	<b>PIN</b>	<b>SIGNAL</b>
<b>COM1</b>	1	DCDB	2	RXDB
	3	TXDB	4	DTRB
	5	GND	6	DSRB
	7	RTSB	8	CTSB
	9	RIB	10	NC
<b>COM2</b>	1	DCDB (485DTXD-)	2	RXDB (422RXD+)
	3	TXDB (485TXD+)	4	DTRB (422RXD-)
	5	GND	6	DSRB
	7	RTSB	8	CTSB
	9	RIB	10	NC

---

## USB connector (J7)

---

The Gene-4310 provides two USB (Universal Serial Bus) interfaces, which give complete plug and play, hot attach/detach for up to 127 external devices. The USB interfaces comply with USB specification Rev. 1.0, and can be disabled in the system BIOS setup.

---

USB connector (J7)

---

<b>Pin</b>	<b>Function</b>	<b>Pin</b>	<b>Function</b>
1	USB Vcc	2	GND
3	UD0-	4	USB GND
5	UD0+	6	UD1+
7	USB GND	8	UD1-
9	GND	10	USB Vcc

---

## Floppy drive connector (J9)

---

You can attach up to two floppy drives to the mainboard controller. You can use any combination of 5¼" (360 KB and 1.2 MB) and/or 3½" (720 KB, 1.44 MB, and 2.88 MB) drives.

A 34-pin daisy-chain drive connector cable is required for a dual-drive system. On one end of the cable is a 34-pin flat-cable connector. On the other end are two sets of floppy disk drive connectors. Each set consists of a 34-pin flat-cable connector (usually used for 3½" drives) and a printed-circuit board connector (usually used for 5¼" drives).

Wire number 1 on the cable is normally red or blue, and the other wires are usually gray.

### Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into J9. Make sure that the red or blue wire corresponds to pin 1 on the 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: drive. The set in the middle connects to the B: drive.
3. If you are connecting a 5¼" floppy drive, line up the slot in the printed circuit board with the blocked-off part of the cable connector.

If you are connecting a 3½" floppy drive, you may have trouble determining which pin is pin number 1. Look for a number printed on the circuit board indicating pin number 1. Also, the connector on the floppy drive connector may have a slot. When the slot is up, pin number 1 should be on the right. Check the documentation that came with the drive for more information.

If you desire, connect the B: drive to the connectors in the middle of the cable as described above.

## Floppy drive connector (J9)

Floppy drive connector (J9)			
<b>Pin</b>	<b>Signal</b>	<b>Pin</b>	<b>Signal</b>
1	GND	2	DENSITY SELECT
3	GND	4	NC
5	GND	6	DRIVE TYPE
7	GND	8	INDEX
9	GND	10	MOTOR 0
11	GND	12	DRIVE SELECT 1
13	GND	14	DRIVE SELECT 2
15	GND	16	MOTOR 1
17	GND	18	DIRECTION
19	GND	20	STEP
21	GND	22	WRITE DATA
23	GND	24	WRITE GATE
25	GND	26	TRACK 0
27	GND	28	WRITE PROTECT
29	GND	30	READ DATA
31	GND	32	HEAD DELECT
33	GND	34	DISK CHANGE

## Parallel port connector (J10)

---

Normally, the parallel port is used to connect the board to a printer. The Gene-4310 includes an onboard parallel port, accessed through PC1, a 26-pin flat-cable connector. You need an adapter cable if you use a traditional DB-25 connector. The cable has a 26-pin connector on one end and a DB-25 connector on the other.

### Parallel port IRQ

The Gene-4310 supports one parallel port. The port is designated as LPT1 and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

### Parallel port connector table (J10)

Parallel port connector (J10)			
Pin	Signal	Pin	Signal
1	$\overline{\text{STROBE}}$	2	$\overline{\text{AUTOFD}}$
3	DO	4	ERR
5	D1	6	$\overline{\text{INIT}}$
7	D2	8	$\overline{\text{SLCTINI}}$
9	D3	10	GND
11	D4	12	GND
13	D5	14	GND
15	D6	16	GND
17	D7	18	GND
19	$\overline{\text{ACK}}$	20	GND
21	BUST	22	GND
23	PE	24	GND
25	SLCT	26	NC

## Display connectors (J14, J16)

---

The mainboard's PCI SVGA interface can drive conventional CRT displays and is capable of driving a wide range of flat panel displays, including electroluminescent (EL), gas plasma, passive LCD, and active LCD displays. The board has two connectors to support these displays, one for standard CRT VGA monitors and one for flat panel displays.

### VGA display connector (J16)

A simple one-to-one adapter can be used to match J16 to a standard 15-pin D-SUB connector commonly used for VGA.

### Floppy drive connector (J9)

---

#### Floppy drive connector (J9)

---

<b>Pin</b>	<b>Signal</b>	<b>Pin</b>	<b>Signal</b>
1	Red video	9	DENSITY SELECT (no pin)
2	Green video	10	Sync return (GND)
3	Blue video	11	Monitor ID (not used)
4	Not used	12	Monitor ID
5	GND	13	Horizontal Sync
6	Red returned(GND)	14	Vertical Sync
7	Green returned(GND)	15	Not used
8	Blue returned (GND)		

---

## LCD connector (J14)

J14 is a 44-pin, dual-in-line header used for flat panel displays.

When the mainboard's power is applied, the control signal is low until just after the relevant flat panel signals are present.

Configuration of the VGA interface is done completely via the software utility. You do not have to set any jumpers.

LCD connector (J14)

<b>Pin</b>	<b>Signal</b>	<b>Pin</b>	<b>Signal</b>
1	+12 V <sub>DC</sub>	2	+12 V <sub>DC</sub>
3	GND	4	GND
5	+5 V <sub>DC</sub>	6	+5 V <sub>DC</sub>
7	ENAVEE	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	GND	34	GND
35	SHF CLK	36	FLM (V SYS)
37	M	38	LP (H SYS)
39	GND	40	ENABKL
41	NC	42	NC
43	NC	44	NC

## 100Base-T Ethernet connector (CN2)

---

This 100Base-T Ethernet connector is a standard RJ-45 connector.

The onboard Intel 82559ER fast Ethernet controller supports 10Mb/s and 100 Mb/s N-way auto-negotiation operation.

---

100Base-Tx Ethernet connector (CN2)

---

<b>Pin</b>	<b>Signal</b>	<b>Pin</b>	<b>Signal</b>
1	Tx+	2	Tx-
3	Rx+	4	NC
5	NC	6	Rx-
7	NC	8	NC

---

## Power connector (P1)

---

In single board computer (non-passive backplane) applications, you will need to connect the power to the Gene-4310 board using P1. This connector is fully compatible with the standard PC power supply connector. See the following table for its pin assignments:

---

Power connector (P1)

---

<b>Pin</b>	<b>Signal</b>
1	+5V
2	GND
3	GND
4	+12 Vcc

---

## Keyboard and PS/2 mouse connector (CN11)

---

The Gene-4310 provides a keyboard connector which supports both a keyboard and a PS/2 style mouse. In most 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. The main-board BIOS Advanced setup menu allows you to select "Present" or "Absent" under the "System Keyboard" section. This allows no-keyboard operation in embedded system applications without the system halting under POST (power-on-self-test).

---

Keyboard and mouse connector (CN11)

---

<b>Pin</b>	<b>Signal</b>
1	KB DATA
2	MS DATA
3	GND
4	Vcc
5	KB CLOCK
6	MS CLOCK

---



## Award BIOS Setup

This chapter describes how to configure the BIOS for the Gene-4310.

## 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 help you navigate in Setup:

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
PgDn/+	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	Change color from total 16 colors. F2 to select color forward, Shift-F2 to select color backward
F3	Calendar, only for Status Page Setup Menu
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 causing the system to become unstable.*

# Main setup Menu

---



Standard CMOS	Options in the original PC AT-compatible BIOS.
BIOS Features	Award Software enhanced BIOS options.
Chipset Features	Options specific to your system chipset.
Power Management	Advanced Power Management (APM) options.
PnP/PCI Configuration	Plug and Play standard and PCI Local Bus configuration options.
Integrated Peripherals	I/O subsystems that depend on the integrated peripherals controller in your system.
Supervisor/User Password Setting	Change, set, or disable a password. In BIOS versions that allow separate user and supervisor passwords, only the supervisor password permits access to Setup. The user password generally allows only power-on access.
IDE HDD Auto Detection	Automatically detect and configure IDE hard disk parameters.

Load BIOS Defaults	BIOS defaults are factory settings for the most stable, minimal-performance system operations.
Load Setup Defaults	Setup defaults are factory settings for optimal-performance system operations.
Save & Exit Setup	Save settings in nonvolatile CMOS RAM and exit Setup.
Exit Without Save	Abandon all changes and exit Setup.



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. 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.

### **HARD DISKS**

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 about 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 type AUTO for a hard drive, the BIOS detects its specifications during POST, every time the system boots.

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

1. Match the specifications of your installed IDE hard drive(s) with the preprogrammed values for drive types 1 through 45.
2. Select USER and enter values into each drive parameter field.
3. Use the IDE HDD AUTO DETECTION function in Setup.

Here is a brief explanation of drive specifications:

- **Type:** The BIOS contains a table of pre-defined drive types. Each defined drive type has a specified number of cylinders, number of heads, write precompensation factor, landing zone, and number of sectors. Drives whose specifications do not accommodate any pre-defined type are classified as type USER.
- **Size:** 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.
- **Cyls:** Number of cylinders
- **Head:** Number of heads
- **Precomp:** Write precompensation cylinder
- **Landz:** Landing zone
- **Sector:** Number of sectors
- **Mode:** Auto, Normal, Large, or LBA
  - **Auto:** The BIOS automatically determines the optimal mode.
  - **Normal:** Maximum number of cylinders, heads, and sectors supported are 1024, 16, and 63.
  - **Large:** For drives that do not support LBA and have more than 1024 cylinders.

- **LBA (Logical Block Addressing):** During drive accesses, 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.

**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 megabyte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 megabyte capacity

### **Halt On**

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

- **No errors:** POST does not stop for any errors.
- **All errors If:** the BIOS detects any non-fatal error, POST stops and prompts you to take corrective action.
- **All, But Keyboard:** POST does not stop for a keyboard error, but stops for all other errors
- **All, But Diskette:** POST does not stop for diskette drive errors, but stops for all other errors.
- **All, But Disk/Key:** POST does not stop for a keyboard or disk error, but stops for all other errors.

### •**Other Memory**

Between 640 KB and 1 MB; often called High memory. DOS may load terminate-and-stay-resident (TSR) programs, such as device drivers, in this area, to free as much conventional memory as possible for applications. Lines in your CONFIG.SYS file that start with LOADHIGH load programs into high memory.



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.*

### **CPU Internal 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.

### **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.

### **Boot Sequence**

The original IBM PCs loaded the DOS operating system from drive A (floppy disk), so IBM PC-compatible systems are designed to search for an operating system first on drive A, and then on drive C (hard disk). However, the BIOS now offers many boot sequence options.

### **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.

### **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 that you set this field to Disabled to save time.

### **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.

### **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.

### **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.

## **Shadow**

Software that resides in a read-only memory (ROM) chip on a device is called firmware. The AwardBIOS 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 improves 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.

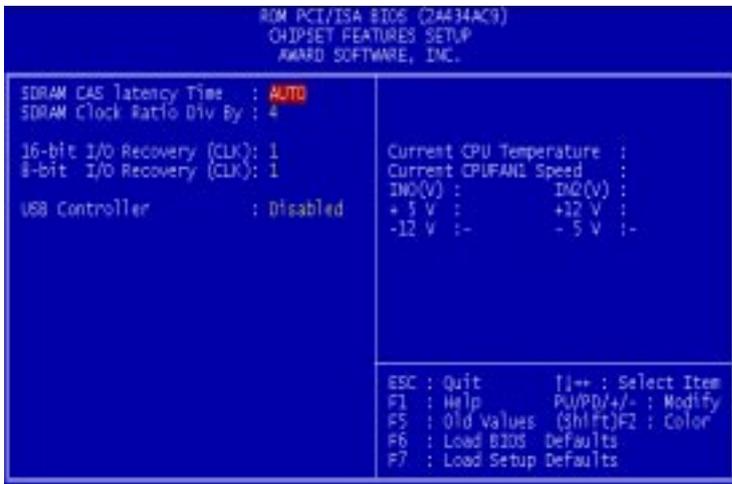
Enable shadowing into each section of memory separately. Many system designers hardwire shadowing of the system BIOS and eliminate a System BIOS Shadow option.

Video BIOS shadows into memory area C8000-CBFFF. 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.

## CHIPSET features setup



By choosing the CHIPSET FEATURES SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed.



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

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as SDRAM. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

Because of the complexity and technical nature of some of the options, not all of the options are described here.

#### **SDRAM CAS Latency Time**

When synchronous SDRAM is installed, you can control the number of CLKs between when the SDRAMs sample a read command and when the controller samples read data from the SDRAMs. Do not reset this field from the default value specified by the system designer.

#### **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.

#### **USB Controller**

The Gene-4310 supports 2 sets of USB for connection. To Enable the onboard USB controller please set to Enable, otherwise set to Disable as default.

**USB legacy support**

When you set the USB controller to be Enable, then the item will be appear. It is in order to support applications and drivers in non-USB-aware environments (e.g., DOS), the Host controller needs to provide some amount of hardware support for the emulation of PS/2 KB or PS/2 Mouse by their USB equivalents.

**Hardware monitoring support**

The Gene-4310 support onboard monitoring as CPU temperature, Fan speed, and Voltages for user reference.

# Power management setup



By choosing the POWER MANAGEMENT option from the INITIAL SETUP SCREEN menu, the screen below is displayed.



## Power Management

This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes.

This table describes each power management mode:

Max Saving	Maximum power savings. Only Available for SL CPUs. Inactivity period is 1 minute in each mode.
User Define	Set each mode individually. Select time-out periods in the section for each mode, below.
Min Saving	Minimum power savings. Inactivity period is 1 hour in each mode (except the hard drive).

### Doze Mode

After the selected period of system inactivity, the CPU clock throttles to a small percentage of its duty cycle — between 10 percent and 25 percent for most chipsets. All other devices still operate at full speed.

### Standby mode

After the selected period of system inactivity, the CPU clock stops, the board drive enters an idle state, and the L2 cache enters a power-save mode. All other devices still operate at full speed.

### HDD Power Down

After the selected period of drive inactivity, any system IDE devices compatible with the ATA-2 specification or later power manage themselves, putting themselves into an idle state after the specified timeout and then waking themselves up when accessed.

**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.

**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.

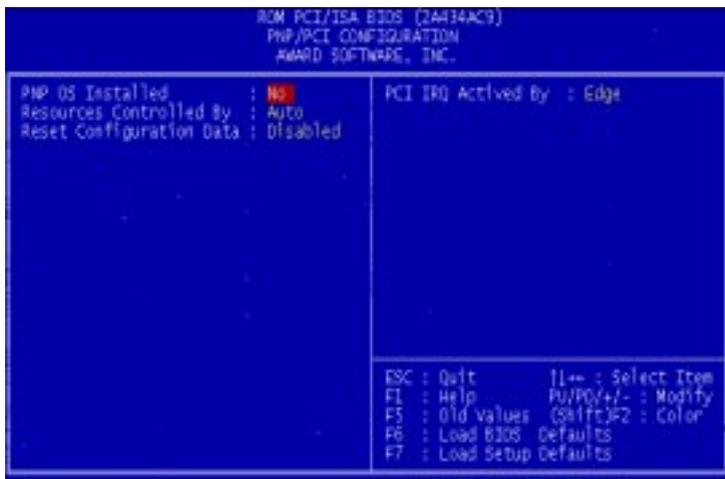
**IRQ1~IRQ15****IRQ1 (keyboard)****IRQ3 (COM2)****IRQ4 (COM1)****IRQ5 (LPT2)****IRQ6 (Floppy Disk)****IRQ7 (LPT1)****IRQ9 (IRQ2 Redir)****IRQ10 (Reserved)****IRQ11 (Reserved)****IRQ12 (PS/2 mouse)****IRQ13 (Coprocessor)****IRQ14 (Hard Disk)****IRQ15 (Reserved)**

As above the default setting are Disable.

# PNP/PCI configuration setup



By choosing the PNP/PCI CONFIGURATION SETUP option from the initial SETUP SCREEN menu, the screen below is displayed.



**PNP OS Installed**

Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95).

**Resources Controlled By**

The Plug and Play AwardBIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them.

**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 cannot boot.

**PCI IRQ Activated by**

Leave the IRQ trigger set at Level unless the PCI device assigned to the interrupt specifies Edge-triggered interrupts.

## Load BIOS defaults/Load setup defaults

---

LOAD BIOS DEFAULTS loads the default system values directly from ROM. The BIOS DEFAULTS provides the most stable settings, though they do not provide optimal performance. LOAD SETUP DEFAULTS, on the other hand, provides for maximum system performance. If the stored record created by the setup utility becomes corrupted (and therefore unusable), BIOS defaults will load automatically when you turn the Gene-4310 on.



# Integrated peripherals setup



By choosing the INTEGRATED PERIPHERALS option from the initial SETUP SCREEN menu, the screen below is displayed.



**IDE HDD Block Mode**

Select Enabled only if your hard drives support block mode.

**IDE PIO Modes (Primary Master/Slave)**

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of up to four IDE devices that the internal PCI IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

**IDE Primary Master/Slave UDMA**

UDMA (Ultra DMA) is a DMA data transfer protocol that utilizes ATA commands and the ATA bus to allow DMA commands to transfer data at a maximum burst rate of 33 MB/s. When you select Auto in the four IDE UDMA fields (for each of up to four IDE devices that the internal PCI IDE interface supports), the system automatically determines the optimal data transfer rate for each IDE device.

**KBC input clock**

The Gene-4310 offer four kind of frequency for user option, as default 6MHz, 8 MHz, 12 MHz, and 16 MHz.

**RING POWER ON Controller****Onboard FDC Controller**

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field.

**Onboard Serial Ports (1, 2)**

Select a logical COM port address for the first and second serial ports.

**ECP Mode Use DMA**

Select a DMA channel for the port.

**Onboard IR controller**

Enable or Disable the onboard IR controller, as default is Disable. When you set it to Enable. There are several item will be appear as below.

**IR Address select:** Set IR address as (2F8H, 3E8H, 2E8H, 3E0H, 2E0H, 3F8H)

**IR Mode:** Setup IR mode as (IrDA, ASKIR, FIR, CIR)

When you set it to FIR mode. You also have to setting the FIR DMA.

**IR Transmission delay:** enable or Disable IR transmission delay.

**IR IRQ select:** Setup IR IRQ

**Onboard parallel port**

You can enable or Disable the parallel port address 2 IRQ as 278/IRQ5, 378/IRQ7, 3BC/IRQ7, for user option.

**ECP mode use DMA1**

Setup ECP DMA, it is available, when parallel port mode be selected as ECP.

**EPP mode select: EPP1.9**

Setup EPP operation version when parallel port mode select EPP or EPP+ECP.

**Build in CPU Audio**

Onboard offer Audio function which be selected by this item, when you set it to Enable, some extra items will be appear as below:

**Audio I/O Base Address:** Setup audio I/O base address. (220H, 240H, 260H, 280H)

**Audio IRQ select:** Disable or Setup audio IRQ (IRQ5, IRQ7, IRQ10, & disable)

**Audio Low DMA select:** disable or Setup low DMA (DMA1, DMA1, DMA3, & disable)

**Audio High DMA select:** Disable or Setup audio high DMA. (DMA5, DMA6, & DMA7)

**Multiple Monitor support:** Support dual display functions (PCI first, M/B first, No onboard)

**Multiple Monitor Support**

Choose priority of the VGA function from PCI slot or onboard.

**Video Memory size**

Share memory from DIMM, from 1.5MB to 4MB.

**TV output Mode**

The Gene-4310 onboard support TV output function for option. (NTSC, PAL).

**Panel Clock Freg**

There are 4 kind of LCD frequency for option as 60MHz , 72 MHz, 80 MHz, and 85 MHz.

**Flat Panel Resolution**

Onboard support TFT LCD as below.

**640x480**

**800x600**

**1024x768**

## Supervisor/User password setting

You can set either SUPERVISOR or USER PASSWORD, or both of them. The difference between the two is that the supervisor password allows unrestricted access to enter and change the options of the setup menus, while the user password only allows entry to the program, but not modify options.



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.*

## IDE HDD auto detection

---

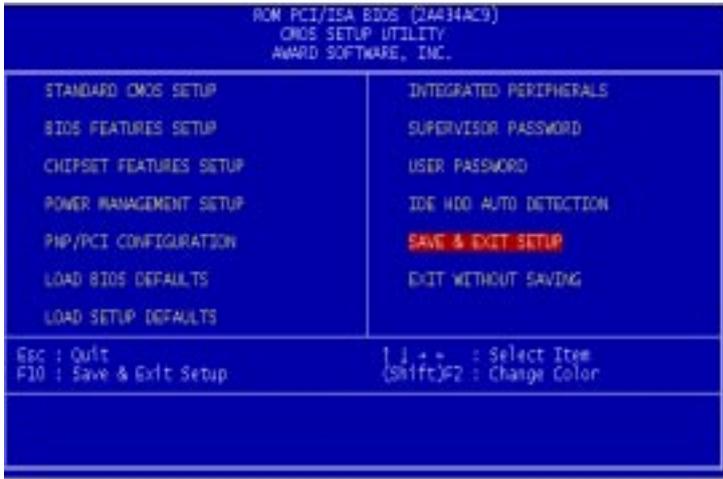
The IDE HDD AUTO DETECTION utility can automatically detect the IDE hard disk installed in your system. You can use it to self-detect and/or correct the hard disk type configuration. You need to repeat the setup for each of the IDE combinations:



## Save & exit setup

---

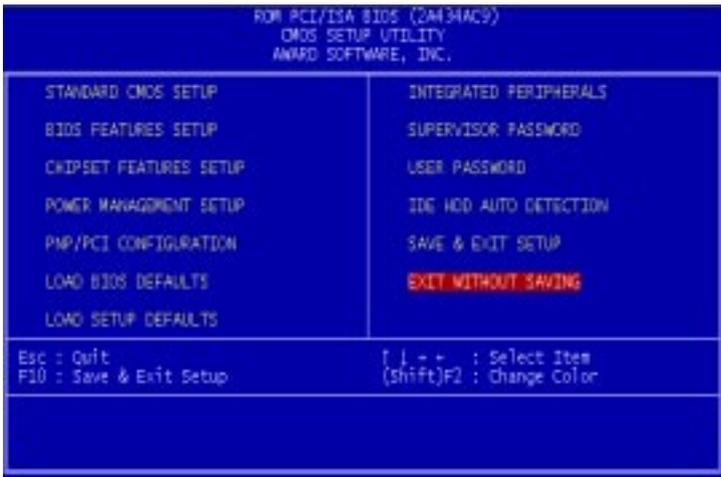
If you select this option and press <ENTER>, the values entered in the setup utility will be recorded in the chipset's CMOS memory. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.



## Exit without saving

---

If you select this option and press <ENTER>, the values entered in the setup utility will be recorded in the chipset's CMOS memory. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.



CHAPTER

# 4

## Ethernet Software Configuration

This chapter describes how to configure the Ethernet Card to match your application requirements.

# Ethernet software configuration

---

The onboard Ethernet interface supports all major network operating systems. I/O addresses and interrupts are easily configured via the Award BIOS Setup. To configure the medium type, to view the current configuration, or to run diagnostics, please refer to the following instruction:

1. Power the mainboard on. Ensure that the 8255X.EXE file is located in the working drive.
2. At the prompt, type 8255X.EXE and press <ENTER>. The Ethernet configuration program will then be displayed.
3. This simple screen shows all the available options for the Ethernet interface. Just highlight the option you wish to change by using the Up and DOWN keys. To change a selected item, press <ENTER>, and a screen will appear with the available options. Highlight your option and press <ENTER>. Each highlighted option has a helpful message guide displayed at the bottom of the screen for additional information.
4. After you have made your selections and the configuration is what you want, press <ESC>. A prompt will appear asking if you want to save the configuration. Press "Y" if you want to save.

The Ethernet Setup Menu also offers three very useful diagnostic functions. These are:

1. Run EEPROM test
2. Run Diagnostics on Board
3. Run Diagnostics on Network

Each option has its own display screen which shows the format and result of any diagnostic tests undertaken.

## Programming the Watchdog Timer

The mainboard 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.

# Programming the watchdog timer

---

## Watchdog timer

The watchdog timer uses a 8-bit counter. The time range is from 15 seconds to 3825 seconds with a resolution of 1 min. When timer times out, a system reset will happen.

## Configuration register

The watchdog timer of Gene-4310 is located on the chipset – Winbond W83977. If you want to use it, you have to know how to read/write the configuration register of W83977. The basic procedure is as follows.

1. Enter configuration mode.
2. Select Logical Device.
3. Select register number.
4. Write/read data to/from register.
5. Exit configuration mode.

To Enter/Exit the configuration mode is to write a specific value to configuration port — **3F1h**.

Enter configuration mode: write value **87h** to configuration port twice.

Exit configuration mode: write value **aah** to configuration port.

## How to set the watchdog timer

1. Set register 30h of logical device 7 to 1 to activate the timer.
2. Write the desired counter value to register F2h of logical device 8.

### Logical Device 7 : Register number 30h (CR30)

00h : Logical device is inactive

01h : Activates the logical device

### Logical Device 8 : Register number F2h (CRF2)

00h : Time-out Disable

01h : Time-out occurs after 15 seconds

02h : Time-out occurs after 30 seconds

03h : Time-out occurs after 45 seconds

04h : Time-out occurs after 60 seconds

.....

FFh : Time-out occurs after 3825 seconds

**Example**

Following is an example of programming 15 sec period for watch-dog timer in assembly language. When timer times out, it will generate signal of system reset.

```
CONFIG_PORT    dw    370h
DATA_PORT     dw    371h
```

**SetWatchDog\_Time PROC**

```
    push bx
    push cx
    push dx
    mov     bl,7           ;; Select logical device number 7
    mov     ax,0130h      ;; write 01h to register 30h to
                           activate
                           ;; timer
    call    W977Write     ;; mov bl,8
                           ;; Select logical device number 8
    mov     ax,01f2h      ;; write time-out value (01h) to
                           register
                           ;; F2h
    call    W977Write     ;; set time-out value to 32 sec
    pop     dx
    pop     cx
    pop     bx
    mov     ah,4ch
    int     21h
    ret
```

**SetWatchDog\_Time ENDP**

;; Enter to I/O Chip Program Configuration Register Mode Enterv  
Config proc

```
    push    ax
    push    dx
    mov     al,87h    ;; Specific value to enter Config
                    ;; Mode
    mov     dx,cs:CONFIG_PORT
    out     dx,al    ;; Write to Config Port twice!
    out     dx,al
    jmp     $+2      ;; Delay
    jmp     $+2      ;;
    pop     dx
    pop     ax
    ret
```

**EnterConfig endp**

;; Exit to I/O Chip Program Configuration Register Mode

ExitConfig proc

```
    push ax
    push dx
    mov     al,0aah  ;; Specific value to exit Config
                    ;; Mode
    mov     dx,cs:CONFIG_PORT
    out     dx,al
    pop     dx
    pop     ax
    ret
```

### **ExitConfig endp**

;; Select The I/O Chip Program Configuration Register Logical Device

;; Input : bl = logical device number

SelectDevice proc

```
    push ax
    push dx
    mov     al,07h    ;; Select control register 7
    mov     dx,cs:CONFIG_PORT
    out     dx,al    ;; Write to Config Port
    jmp     $+2
    mov     al,bl    ;; Write logical device number
    mov     dx,cs:DATA_PORT    ;; to Data Port
    out     dx,al
    pop     dx
    pop     ax
    ret
```

### **SelectDevice endp**

;; Setting I/O Chip Program Configuration Register Value

;; Input : al = register number

;; ah = setting value

### W977Write PROC

```
    push    dx
    call    EnterConfig    ;; Enter Config Mode
    call    SelectDevice   ;; Select logical device
    mov     dx,cs:CONFIG_PORT
    out     dx,al          ;; Select register number
    mov     al,ah
    mov     dx,cs:DATA_PORT
    out     dx,al
    call    ExitConfig     ;; Exit Config Mode
    pop     dx
    ret
```

### W977Write ENDP

```
end
```

