

SubCompact Board

GENE-8310

GENE-8310

Intel® Celeron® M Processor
Subcompact Board
With LVDS, Ethernet,
6 Channel Audio & Mini PCI

GENE-8310 Rev. A Manual 2nd Ed.
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Packing List

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

- 1 GENE-8310 CPU Card
- 1 IDE Cable
- 1 KB/Mouse Cable
- 2 USB Cable
- 1 Audio Cable
- 1 COM Port Cable
- 1 TV-out and S-terminal Cable
- 1 DVI Cable
- 1 Parallel Port Cable
- 1 Jumper Cap
- 1 Quick Installation Guide
- 1 CD-ROM for manual (in PDF format) and drivers

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

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Chapter

1

**General
Information**

1.1 Introduction

The GENE-8310 is the third generation of fanless solutions that AAeon has released through their original design. It is more advanced than previous SubCompact Boards, with higher performance and lower power consumption. We believe the GENE-8310 will become one of the best choices for our customers who need a higher requirement in processor ability with excellent power consumption control.

The GENE-8310 derives its excellent functionality from several distinctive features:

Superb Performance and Controllable Power Usage

The Gene-8310 utilizes the newest generation Intel[®] Ultra Low Voltage Celeron[®] processor and chipset. With its low-power consumption platform, the GENE-8310 offers a stable and efficient computing platform which not only exceeds past products but also solves your problem when attempting to balance performance and power consumption. The obvious benefit is that the GENE-8310 is more flexible and can be used widely even in development for a new application field.

Multiple Display Modes

The previous generation of fanless 3.5" SubCompact Boards can usually provide a basic display mode due to the limitation of board size and power consumption; nevertheless, the GENE-8310 offers diverse display modes based upon the support provided by the

Intel® platform. It has the best graphics capability among current 3.5" SubCompact Boards. In addition, the GENE-8310 supports CRT, LCD, DVI and TV-out which can meet your requirements. The result is you will never need to worry about the limitations of board size and power consumption using this SubCompact Board for sophisticated graphics output.

Wide Expansion Capability

Although the GENE-8310 measures only 5.75" x 4", that does not affect its expansion ability because of the presence of an onboard Mini PCI slot. Hence, the GENE-8310 allows a greater variety of expansion interfaces in a very small space. Compared with PC/104 modules, Mini PCI modules are cheaper in price and more helpful for saving system space. The GENE-8310 is the optimum 3.5" Board for expansion capability.

Not all customers have needs that can be easily satisfied by a 3.5" board that only has limited features due to its small-size and fanless operation. The GENE-8310 has been endowed by our engineers with features that can meet the high CPU loads of complex application needs with higher performance and multiple functionality. This SubCompact Board will meet the stringent demands of the embedded market by fulfilling the requirements of faster processor speed with fanless operation, better graphics and small size.

1.2 Features

- Onboard Intel® Celeron® M or Mobile Intel® Celeron® Processor at 600MHz 0K L2 Cache Processor
- 48-bit Dual Channels LVDS TFT LCD
- 10/100Mbps Fast Ethernet
- AC-97 3D Surround 5.1 Channel Audio
- Supports Type II CompactFlash™ Memory
- 2 COM / 4 USB2.0 / TV-out / DVI / Digital I/O
- + 5V Only Operation

1.3 Specifications

System

- CPU: Onboard Mobile Intel® Celeron® Processor at 600MHz with 0K L2 Cache or Intel® Celeron® M Processor 1.3GHz
- Memory: 200-pin DDR SODIMM x 1, Max. 1GB (DDR 266MHz)
- Chipset: Intel® 852GM + 82801 DB (ICH4)
- I/O Chipset: ITE IT8712IX
- Ethernet: Intel® 82562, 10/100Base-TX RJ-45
- BIOS: AWARD512KB FLASH ROM
- Watchdog Timer: Generates a Time-out System Reset
- H/W Status Monitoring: Supports Power Supply Voltages and Temperatures Monitoring
- SSD: Type II CompactFlash™ slot x 1
- Expansion Interface: Type III Mini PCI Socket x 1
- Battery: Lithium battery
- Power Supply Voltage: +5V, AT/ATX
- Board Size: 5.75"(L) x 4"(W) (146mm x

101.6mm)

- Gross Weight: 0.88lb (0.4kg)
- Operating Temperature: 32°F~140°F (0°C~60°C)

Display

- Chip: Intel® 852GM + Chrontel 7009
- Memory: Shared System Memory Up to 64MB with DVMT
- Resolutions: Up to 1280 x 1024 @ 32bpp Colors for CRT;
Up to 1280 x 1024 @ 24bpp Colors for LCD
- TV-Out: Supports NTSC and PAL standard
- Internal Graphics: Supports CRT/LCD, CRT/TV, CRT/DVI, LCD/DVI and LCD/TV Dual View/ Simultaneous Display

I/O

- MIO: EIDE x 1(UDMA33 x 1), KB + Mouse x 1, RS-232 x 1, RS-232/422/485 x 1, Parallel x 1
- IrDA: One IrDA Tx/Rx Header
- Audio: MIC in, Line in, Line out 5.1 Output

- **USB:** Two 5 x 2 Pin Headers Support
4 USB 2.0 Ports (Does not
support Wake-up function)

Chapter

2

Quick Installation Guide

Notice:

The Quick Installation Guide is derived from Chapter 2 of user manual. For other chapters and further installation instructions, please refer to the user manual CD-ROM that came with the product.



2.1 Safety Precautions

Warning!

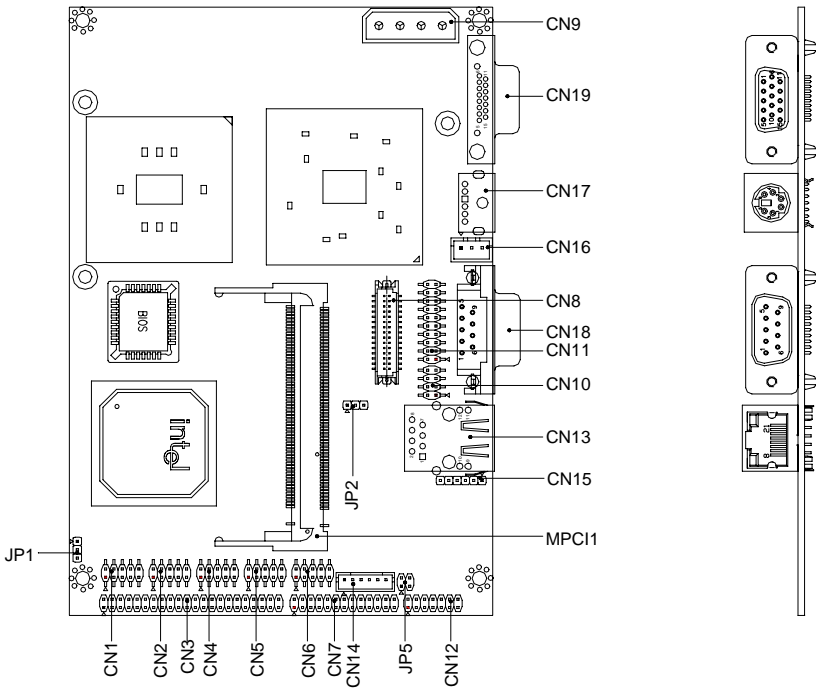
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Caution!

Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis

2.2 Location of Connectors and Jumpers

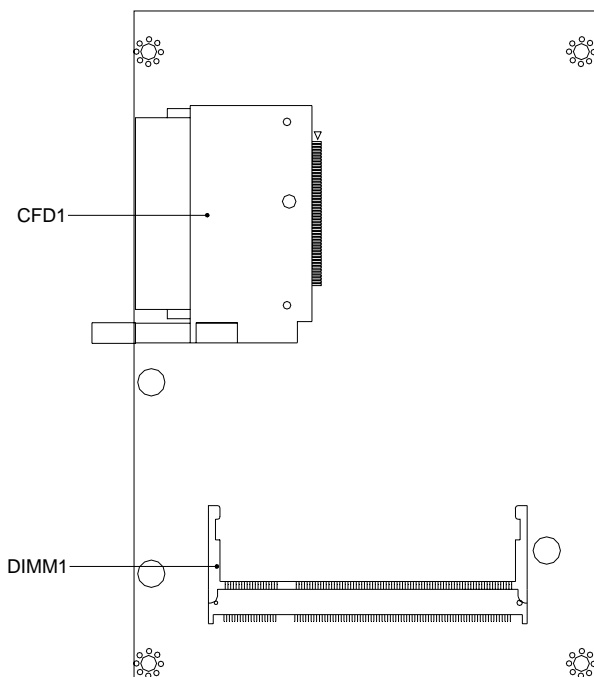
Component Side



NOTE:

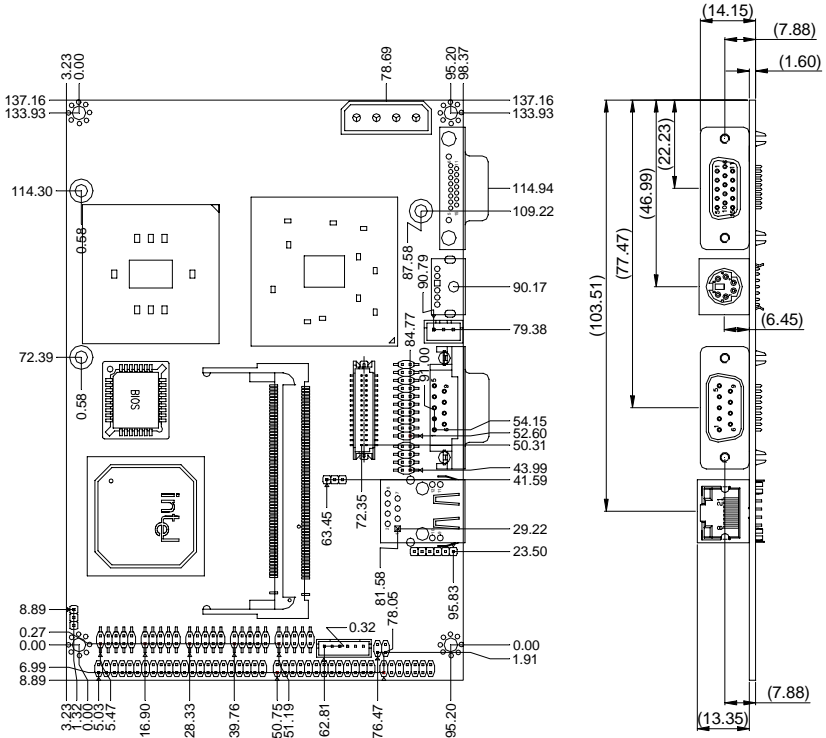
The Height of Cooling System Depends on Customer Cooling Device.

Solder Side



2.3 Mechanical Drawing

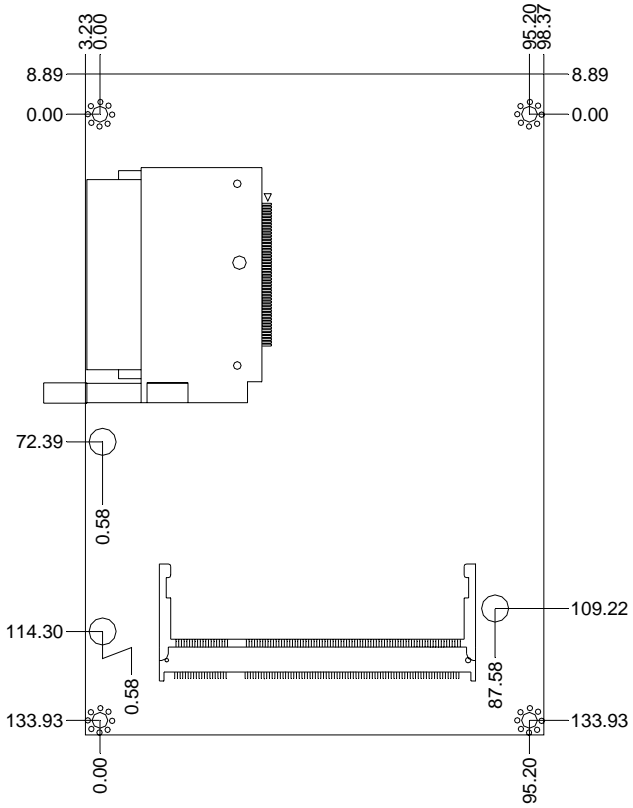
Component Side



NOTE:

The Height of Cooling System Depends on Customer Cooling Device.

Solder Side



2.4 List of Jumpers

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

Jumpers

Label	Function
JP1	Clear CMOS
JP2	LCD Voltage Selection
JP5	COM2 RI/+5V Selection

2.5 List of Connectors

The board has a number of connectors that allow you to configure your system to suit your application. The table below shows the function of each board's connectors:

Connectors

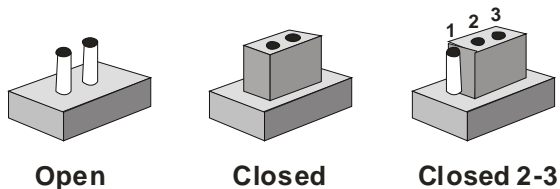
Label	Function
CN1	USB 2.0 Port 1 Connector
CN2	USB 2.0 Port 2 Connector
CN3	Primary IDE Hard Drive Connector
CN4	Digital I/O Connector
CN5	Front Panel
CN6	Serial Port COM 2 Connector
CN7	Parallel Port 1 Connector
CN8	Dual Channel LVDS Connector
CN9	4P Power Connector
CN10	TV-Out Connector
CN11	DVI Connector
CN12	Audio Input/Output Connector
CN13	Ethernet 10/100 Base-TX RJ-45 Phone Jack
CN14	External 5VSB/PWRGD Connector
CN15	IrDA Connector
CN16	Fan Connector

CN17	Mini-DIN PS/2 Connector
CN18	Serial Port COM 1 Connector
CN19	CRT Display Connector
VBAT2	External Battery
MPCI1	Mini PCI Slot
CFD1	Compact Flash Disk Slot

2.6 Setting Jumpers

You 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.



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 change.

Generally, you simply need a standard cable to make most connections.

2.7 Clear CMOS Selection (JP1)

JP1	Function
1-2	Normal (Default)
2-3	Clear CMOS

2.8 LCD Voltage Selection (JP2)

JP2	Function
1-2	+5V (Default)
2-3	+3.3V

2.9 COM2 RI/+5V Selection (JP5)

JP5	Function
1-2	+5V
3-4	RI (Default)

2.10 USB2.0 Port 1 Connector (CN1)

Pin	Signal	Pin	Signal
1	USBVDD0-1	2	USBGND
3	USB0-	4	USBGND
5	USB0+	6	USB1+
7	USBGND	8	USB1-
9	USBGND	10	USBVDD0-1

2.11 USB2.0 Port 2 Connector (CN2)

Pin	Signal	Pin	Signal
1	USBVDD2-3	2	USBGND
3	USBD2-	4	USBGND
5	USBD2+	6	USBD3+
7	USBGND	8	USBD3-
9	USBGND	10	USBVDD2-3

2.12 Primary IDE Hard Drive Connector (CN3)

Pin	Signal	Pin	Signal
1	PRI_IDERST#	2	Ground
3	PDD7	4	PDD8
5	PDD6	6	PDD9
7	PDD5	8	PDD10
9	PDD4	10	PDD11
11	PDD3	12	PDD12
13	PDD2	14	PDD13
15	PDD1	16	PDD14
17	PDD0	18	PDD15
19	Ground	20	N/C
21	PDREQ	22	Ground
23	PDIOW#	24	Ground
25	PDIOR#	26	Ground
27	PIORDY	28	Ground

29	PDDACK#	30	Ground
31	IRQ14	32	N/C
33	PDA1	34	P66DET
35	PDA0	36	PDA2
37	PDCS#1	38	PDCS#3
39	IDEACTP#	40	Ground
41	+5Volt.	42	+5Volt.
43	Ground	44	N/C

2.13 Digital IO Connector (CN4)

Pin	Name	Pin	Name
1	Port 1	2	Port 2
3	Port 3	4	Port 4
5	Port 5	6	Port 6
7	Port 7	8	Port 8
9	+5V	10	Ground

DIO Address is 801H:

BIOS Setting	Connector Definition	Address	IT8712 GPIO Setting
Port 1	CN4. pin 1	Bit 7	U35. pin 20 (GPIO27)
Port 2	CN4. pin 2	Bit 6	U35. pin 21 (GPIO26)
Port 3	CN4. pin 3	Bit 5	U35. pin 22 (GPIO25)
Port 4	CN4. pin 4	Bit 4	U35. pin 23 (GPIO24)
Port 5	CN4. pin 5	Bit 3	U35. pin 24 (GPIO23)
Port 6	CN4. pin 6	Bit 2	U35. pin 25 (GPIO22)

Port 7	CN4. pin 7	Bit 1	U35. pin 26 (GPIO21)
Port 8	CN4. pin 8	Bit 0	U35. pin 27 (GPIO20)

2.14 Front Panel (CN5)

Pin	Signal
1-2	ATX Power-on Button
3-4	HDD Active LED
5-6	External Speaker
7-8	Power LED
9-10	System Reset Button

2.15 Serial Port COM2 Connector (CN6)

COM2/ RS-232 Mode

Pin	Signal	Pin	Signal
1	DCDB	2	RXB
3	TXB	4	DTRB
5	Ground	6	DSRB
7	RTSB	8	CTSB
9	RIB	10	N/C

COM2/ RS-422 Mode

Pin	Signal	Pin	Signal
1	TXD-	2	RXD+
3	TXD+	4	RXD-
5	N/C	6	N/C
7	N/C	8	N/C

9	Ground	10	N/C
---	--------	----	-----

COM2/ RS-485 Mode

Pin	Signal	Pin	Signal
1	TXD-	2	N/C
3	TXD+	4	N/C
5	N/C	6	N/C
7	N/C	8	N/C
9	Ground	10	N/C

Note: COM mode, RS-232/422/485, selected by BIOS.

2.16 Parallel Port Connector (CN7)

Pin	Signal	Pin	Signal
1	STBX	2	AFD#
3	PTD0	4	ERR#
5	PTD1	6	PINIT#
7	PTD2	8	SLIN#
9	PTD3	10	Ground
11	PTD4	12	Ground
13	PTD5	14	Ground
15	PTD6	16	Ground
17	PTD7	18	Ground
19	ACK#	20	Ground
21	BUSY	22	Ground
23	PE	24	Ground
25	SLCT	26	N/C

2.17 Dual Channel LVDS Connector (CN8)

Pin	Signal	Pin	Signal
1	Back-Light Enable	2	Back-Light Control
3	LCD Volt.	4	Ground
5	TXLCLK#	6	TXLCLK
7	LCD Volt.	8	Ground
9	TXL0#	10	TXL0
11	TXL1#	12	TXL1
13	TXL2#	14	TXL2
15	TXL3#	16	TXL3
17	LVDS_DATA	18	LVDS_CLK
19	TXU0#	20	TXU0
21	TXU1#	22	TXU1
23	TXU2#	24	TXU2
25	TXU3#	26	TXU3
27	LCD Volt.	28	Ground
29	TXUCLK#	30	TXUCLK

2.18 4P Power Connector (CN9)

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

2.19 TV-Out Connector (CN10)

Pin	Signal	Pin	Signal
1	Y	2	CVBS
3	Ground	4	Ground
5	C	6	N/C
7	Ground	8	N/C

2.20 DVI Connector (CN11)

Pin	Signal	Pin	Signal
1	TD1	2	TD1#
3	Ground	4	Ground
5	TDC	6	TDC#
7	Ground	8	+5V
9	HPDET	10	+5V
11	TD2	12	TD2#
13	Ground	14	Ground
15	TD0	16	TD0#
17	N/C	18	N/C
19	DVI_DATA	20	DVI_CLK

2.21 Audio Input/Output Connector (CN12)

Pin	Signal	Pin	Signal
1	MIC_IN	2	MIC_Vcc
3	Audio Ground	4	CD_GND
5	LINE_IN L	6	CD_L
7	LINE_IN R	8	CD_GND

9	Audio Ground	10	CD_R
11	LINE_OUT L	12	LINE_OUT R
13	Audio Ground	14	Audio Ground

2.22 Ethernet 10/100Base-TX RJ-45 Phone Jack Connector (CN13)

Pin	Signal	Pin	Signal
1	TX+	2	TX-
3	TCT	4	N/C
5	N/C	6	RCT
7	RX+	8	RX-
9	LINK_LED	10	ACT_LED
11	SPD_LED	12	+3.3V

2.23 External 5VSB/PWRGD Connector (CN14)

Pin	Signal
1	N/C
2	Ground
3	N/C
4	Ground
5	PS_ON
6	+5V Stand-by

2.24 IrDA Connector (CN15)

Pin	Signal
1	+5V
2	N/C (CIR_Tx Option)

3	Rx
4	Ground
5	Tx
6	N/C (CIR_Rx Option)

2.25 Fan Connector (CN16)

Pin	Signal
1	FAN Sense
2	+5V
3	Ground

2.26 Mini-DIN PS/2 Connector (CN17)

Pin	Signal	Pin	Signal
1	Keyboard Data	2	Mouse Data
3	Ground	4	Shield
5	+5V	6	Keyboard Clock
7	Shield	8	Mouse Clock

2.27 Serial Port COM1 Connector (CN18)

Pin	Signal	Pin	Signal
1	DCDA	2	RXA
3	TXA	4	DTRA
5	Ground	6	DSRA
7	RTSA	8	CTSA
9	RIA	10	N/C

2.28 CRT Display Connector (CN19)

Pin	Signal	Pin	Signal
1	CRT_RED	9	5V
2	CRT_GREEN	10	VGA Ground
3	CRT_BLUE	11	N/C
4	N/C	12	CRT_SDA
5	VGA Ground	13	CRT_HSYNC
6	VGA Ground	14	CRT_VSYNC
7	VGA Ground	15	CRT_SCL
8	VGA Ground		

2.29 External Battery (VBAT2)

Pin	Signal
1	VBAT (+3V)
2	Ground

2.30 Mini PCI Slot (MPC11)

Standard Specification.

2.31 CompactFlash Disk Slot (CFD1)

Pin	Signal	Pin	Signal
1	Ground	26	Ground
2	SDD3	27	SDD11
3	SDD4	28	SDD12
4	SDD5	29	SDD13
5	SDD6	30	SDD14
6	SDD7	31	SDD15

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7	SDCS#1	32	SDCS#3
8	Ground	33	Ground
9	Ground	34	SDIOR#
10	Ground	35	SDIOW#
11	Ground	36	+5 Volt.
12	Ground	37	IRQ15
13	+5V	38	+5V
14	Ground	39	CSEL#
15	Ground	40	N/C
16	Ground	41	IDERST#
17	Ground	42	SIORDY
18	SDA2	43	N/C
19	SDA1	44	+5V
20	SDA0	45	DASP#
21	SDD0	46	PDIAG#
22	SDD1	47	SDD8
23	SDD2	48	SDD9
24	N/C	49	SDD10
25	Ground	50	Ground

Chapter

3

**Award
BIOS Setup**

3.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

Press <F1> to RESUME

Write down the message and press the F1 key to continue the boot up sequence.

System configuration verification

These routines check the current system configuration against the values stored in the CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The GENE-8310 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 Award BIOS Setup

Awards BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press immediately. This will allow you to enter 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 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 if 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 auto detect DIMM/PCI clock and spread spectrum.

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.

You can refer to the "AAEON BIOS Item Description.pdf" file in the CD for the meaning of each setting in this chapter.

Chapter

4

**Driver
Installation**

The GENE-8310 comes with a CD-ROM that contains all drivers and utilities that meet your needs.

Follow the sequence below to install the drivers:

Step 1 – Install Intel® INF Update for Windows 2000/XP

Step 2 – Install Intel® Extreme Graphics 2 Driver

Step 3 – Install Intel® LAN 82562ET Driver

Step 4 – Install Realtek AC97 codec Driver

USB 2.0 Drivers are available for download using Windows Update for both Windows XP and Windows 2000. For additional information regarding USB 2.0 support in Windows XP and Windows 2000, please visit www.microsoft.com/hwdev/usb/.

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the GENE-8310 CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 4 in order.

Step 1 – Install Intel® INF Update for Windows 2000/XP

1. Click on the **Intel® INF Update for Windows 2000/XP** folder and then double click on the **setup.exe**
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 2 – Install Intel Extreme Graphics 2 Driver

1. Click on the **Intel® Extreme Graphics 2 Driver** folder and then double click on the **setup.exe**
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically
4. Please re-start your computer

Remark: You can choose the different display ways by pressing below hot key,

C+A+F1=CRT, C+A+F2=LCD, C+A+F3=TV, C+A+F4=DVI,
C+A+F12=Graphic Control Panel

Step 3 – Install Intel® LAN 82562ET Driver

1. Click on the **Intel® LAN 82562ET Driver** folder and then double click on the **setup.exe**
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 4 – Install Realtek AC97 codec Driver

1. Click on the **Realtek AC97 codec Driver** folder and then double click on the **setup.exe**
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Note:

Under the Window OS environment, if the CRT connector is connected to display monitor by the data switch device, the user need to set the color and resolution from Intel Graphic utility (VGA driver) instead of setting from the control panel in case of the wrong display appearance.

Appendix

A

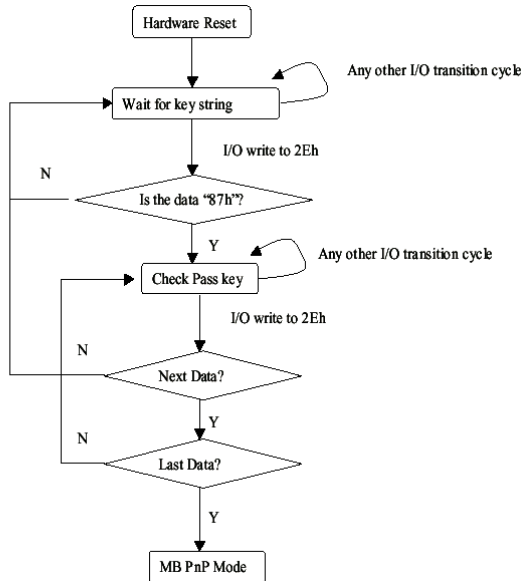
Programming the Watchdog Timer

A.1 Programming

GENE-8310 utilizes ITE 8712 chipset as its watchdog timer controller. Below are the procedures to complete its configuration and the AAEON initial watchdog timer program is also attached based on which you can develop customized program to fit your application.

Configuring Sequence Description

After the hardware reset or power-on reset, the ITE 8712 enters the normal mode with all logical devices disabled except KBC. The initial state (enable bit) of this logical device (KBC) is determined by the state of pin 121 (DTR1#) at the falling edge of the system reset during power-on reset.



There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may

occur if the MB PnP Mode is not exited normally.

(1) Enter the MB PnP Mode

To enter the MB PnP Mode, four special I/O write operations are to be performed during Wait for Key state. To ensure the initial state of the key-check logic, it is necessary to perform four write operations to the Special Address port (2EH). Two different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
87h, 01h, 55h, 55h:	2Eh	2Fh

(2) Modify the Data of the Registers

All configuration registers can be accessed after entering the MB PnP Mode. Before accessing a selected register, the content of Index 07h must be changed to the LDN to which the register belongs, except some Global registers.

(3) Exit the MB PnP Mode

Set bit 1 of the configure control register (Index=02h) to 1 to exit the MB PnP Mode.

WatchDog Timer Configuration Registers

LDN	Index	R/W	Reset	Configuration Register or Action
All	02H	W	N/A	Configure Control
07H	71H	R/W	00H	WatchDog Timer Control Register
07H	72H	R/W	00H	WatchDog Timer Configuration Register
07H	73H	R/W	00H	WatchDog Timer Time-out Value Register

Configure Control (Index=02h)

This register is write only. Its values are not sticky; that is to say, a hardware reset will automatically clear the bits, and does not require the software to clear them.

Bit	Description
7-2	Reserved
1	Returns to the Wait for Key state. This bit is used when the configuration sequence is completed
0	Resets all logical devices and restores configuration registers to their power-on states.

WatchDog Timer Control Register (Index=71h, Default=00h)

Bit	Description
7	WDT is reset upon a CIR interrupt
6	WDT is reset upon a KBC (mouse) interrupt
5	WDT is reset upon a KBC (keyboard) interrupt
4	WDT is reset upon a read or a write to the Game Port base address
3-2	Reserved
1	Force Time-out. This bit is self-clearing
0	WDT Status
	1: WDT value reaches 0.
	0: WDT value is not 0

WatchDog Timer Configuration Register (Index=72h, Default=00h)

Bit	Description
7	WDT Time-out value select
	1: Second
	0: Minute
6	WDT output through KRST (pulse) enable
5-4	Reserved
3-0	Select the interrupt level ^{Note} for WDT

WatchDog Timer Time-out Value Register (Index=73h, Default=00h)

Bit	Description
7-0	WDT Time-out value 7-0

A.2 ITE8712 Watchdog Timer Initial Program

```
.MODEL SMALL
```

```
.CODE
```

Main:

```
CALL Enter_Configuration_mode
```

```
CALL Check_Chip
```

```
mov cl, 7
```

```
call Set_Logic_Device
```

```
;time setting
```

```
mov cl, 10 ; 10 Sec
```

```
dec al
```

Watch_Dog_Setting:

```
;Timer setting
```

```
mov al, cl
```

```
mov cl, 73h
```

```
call Superio_Set_Reg
```

```
;Clear by keyboard or mouse interrupt
```

```
mov al, 0f0h
```

```
mov cl, 71h
```

```
call Superio_Set_Reg
```

```
;unit is second.
```

```
mov al, 0C0H
```

```
mov cl, 72h
```

```
call Superio_Set_Reg
```

```
; game port enable  
mov cl, 9  
call Set_Logic_Device
```

```
Initial_OK:  
CALL Exit_Configuration_mode  
MOV AH,4Ch  
INT 21h
```

```
Enter_Configuration_Mode PROC NEAR  
MOV SI,WORD PTR CS:[Offset Cfg_Port]
```

```
MOV DX,02Eh  
MOV CX,04h  
Init_1:  
MOV AL,BYTE PTR CS:[SI]  
OUT DX,AL  
INC SI  
LOOP Init_1  
RET  
Enter_Configuration_Mode ENDP
```

```
Exit_Configuration_Mode PROC NEAR  
MOV AX,0202h  
CALL Write_Configuration_Data
```

RET

Exit_Configuration_Mode ENDP

Check_Chip PROC NEAR

MOV AL,20h

CALL Read_Configuration_Data

CMP AL,87h

JNE Not_Initial

MOV AL,21h

CALL Read_Configuration_Data

CMP AL,12h

JNE Not_Initial

Need_Initial:

STC

RET

Not_Initial:

CLC

RET

Check_Chip ENDP

Read_Configuration_Data PROC NEAR

MOV DX,WORD PTR CS:[Cfg_Port+04h]

OUT DX,AL

```
MOV DX,WORD PTR CS:[Cfg_Port+06h]
IN AL,DX
RET
Read_Configuration_Data ENDP
```

```
Write_Configuration_Data PROC NEAR
MOV DX,WORD PTR CS:[Cfg_Port+04h]
OUT DX,AL
XCHG AL,AH
MOV DX,WORD PTR CS:[Cfg_Port+06h]
OUT DX,AL
RET
Write_Configuration_Data ENDP
```

```
Superio_Set_Reg proc near
push ax
MOV DX,WORD PTR CS:[Cfg_Port+04h]
mov al,cl
out dx,al
pop ax
inc dx
out dx,al
ret
Superio_Set_Reg endp.Set_Logic_Device proc near
```

```
Set_Logic_Device proc near
push ax
push cx
xchg al,cl
mov cl,07h
call Superio_Set_Reg
pop cx
pop ax
ret
Set_Logic_Device endp
```

```
;Select 02Eh->Index Port, 02Fh->Data Port
Cfg_Port DB 087h,001h,055h,055h
DW 02Eh,02Fh
```

END Main

Note: Interrupt level mapping

0Fh-Dh: not valid

0Ch: IRQ12

.

.

03h: IRQ3

02h: not valid

01h: IRQ1

00h: no interrupt selected

Appendix

B

I/O Information

B.1 I/O Address Map

Address	Description	User Address
000-01F	DMA Controller #1	000-000F
020-03F	Interrupt Controller #1, Master	020-021
040-05F	System Time	040-043
060-06F	8042 (Keyboard Controller)	060-064
070-07F	Real time Clock, NMI (non-maskable Interrupt) Mask	070-073
080-09F	DMA Page Register	080-08F
0A0-0BF	Interrupt Controller #2	0A0-0A1
0C0-0DF	DMA Controller #2	0C0-0DF
0F0-0FF	Math Coprocessor	0F0-0FF
170-177	Secondary IDE Channel	170-177
1F0-1F7	Primary IDE Channel	1F0-1F7
2F8-2FF	Serial Port 2	2F8-2FF
378-37F	Parallel Printer Port 1	378-37F
3B0-3DF	EGA / VGA card	3B0-3DF
3F8-3FF	Serial Port 1	3F8-3FF

B.2 1st MB Memory Address Map

Memory Address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
C0000-CFFFF	VGA BIOS
E0000-FFFFFF	System BIOS

B.3 IRQ Mapping Chart

IRQ0	System Timer	IRQ8	System CMOS / Real time clock
IRQ1	Keyboard	IRQ9	Microsoft ACPI – Compliant system
IRQ2	Cascade to IRQ Controller	IRQ10	Unused
IRQ3	COM2	IRQ11	Unused
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	Unused	IRQ13	FPU
IRQ6	Unused	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Secondary IDE

B.4 DMA Channel Assignments

DMA Channel	Function
0	Available
1	Available
2	Unused
3	Available
4	Direct Memory Access Controller
5	Available
6	Available
7	Available