GENE-8315

Onboard Intel® ULV Celeron® M
600MHz/1.0GHz ZC or
Celeron® M 1.3GHz/1.5GHz
Processor
SubCompact Board
With 18/24-bit Dual-channel LVDS
AC97 2CH Audio

GENE-8315 Manual Rev. A 3rd Ed.
February 2009

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Packing List

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

- 1   GENE-8315 CPU Card with thermal solution
- 1   IDE Cable
- 1   KB/Mouse Cable
- 1   USB 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.

Contents

iv

Appendix B I/O Information

Appendix C Mating Connector

Chapter

1

General Information

1.1 Introduction

The GENE-8315 is based on Intel® ULV Celeron® M 600MHz/ 1.0GHz ZC or Celeron® M 1.3GHz (Optional)/ 1.5GHz processor and 200-pin DDR SODIMM up to 1GB system memory. It is designed to provide the ideal combination of low power, excellent performance, and small size for applications that require a small form factor like AAEON SubCompact Board –GENE-8315.

The most significant feature of GENE-8315 is the LAN port deployment. It accommodates three 10/100Base-TX RJ-45 connectors that allow more and faster network connections. GENE-8315 equips one Intel EP82562ET Ethernet controller and two Realtek RTL8100BL-LF Ethernet controllers for multi-task data transmission in the network.   It also provides a basic display mode that is CRT & LVDS multi-displays and has fulfilled market demands to achieve the target of cost efficiency.

For a wide expansion capability, GENE-8315 equips flexible I/O interfaces—2 COM, 4 USB2.0, Parallel port, Digital I/O, Keyboard/Mouse interfaces, etc. In addition, one PATA-33 IDE and one Type II CompactFlash slots to enlarge the storage of GENE-8315. The GENE-8315 combines superb performance and controllable power usage. It is the best solution for supporting diverse applications.

1.2 Features

- Onboard Intel® ULV Celeron® M 600MHz/ 1.0GHz ZC or Celeron® M 1.3GHz (Optional)/ 1.5GHz Processor

- Up to 24-bit Dual-Channel LVDS LCD

- CRT & LVDS Multiple Displays

- DDR266 SODIMM, Max. 1GB

- Three Ethernet Ports

- IDE & Type II CompactFlash™ Slot

- COM x 2/ USB2.0 x 4/ 2CH AC97 2.0 Codec

- +5V Only Operation

1.3 Specifications

System

- CPU   Onboard Intel® ULV Celeron® M 600MHz/ 1.0GHz ZC or Celeron® M 1.3GHz (Optional)/ 1.5GHz
- Memory   200-pin DDR SODIMM x 1, Max. 1GB (DDR 266)
- Chipset   Intel® 852GM+ICH4
- I/O Chipset   IT8712IX
- Ethernet   Intel® 82562 x 1 + Realtek RTL8100BL x 2, 10/100Base-TX, RJ-45 connector x 3
- BIOS   Award 1MB Flash ROM
- Watchdog Timer   ITE 8712IX, generates a time-out system reset
- Hardware Monitoring   ITE 8712IX, supports power supply voltages, fan speed, and temperature monitoring
- Battery   Lithium battery
- Power Requirement   4-pin AT power connector + Mini 6-pin connector, supports ATX/AT power, +5V only power

		input
●	Power Consumption (Typical)	Intel® Celeron® M 1.5GHz, DDR 1GB; 5.21A @ +5V
●	Board Size	5.75"(L) x 4" (W) (146mm x 101.6mm)
●	Gross Weight	0.88 lb (0.4Kg)
●	Operating Temperature	32°F~140°F (0°C~60°C) -4°F~158°F (-20°C~70°C) (for GENE-8315W1 w/ ULV 1.0GHz ZC only)
●	Storage Temperature	-40°F~176°F (-40°C~80°C)
●	Operating Humidity	0% ~ 90% relative humidity, non-condensing
●	MTBF (Hours)	90,000

Display: Supports CRT/LCD simultaneous/ dual view display

●	Chipset	Intel® 852GM integrated VGA
●	Memory	Shared system memory up to 32MB
●	Resolutions	Up to 1600 x 1200 @ 85Hz for CRT; Up to 1920 x 1440 @ 60Hz for CRT; Up to 1600 x 1200 @ 18/24-bit dual-channel for LCD

I/O

- Storage   PATA-33 x 1 (supports two ATAPI devices), Type II CompactFlash x 1
- Serial Port   RS-232 x 1, RS-232/422/485 x 1 (RS-485 w/auto flow)
- Parallel Port   Supports SPP/EPP/ECP mode
- USB   USB2.0 x 4 (one internal pin-header & one stack type A connector)
- PS/2 Port   One Mini-DIN PS/2 K/B and Mouse connector
- Digital I/O   Supports 8-bit (Programmable)
- IrDA   One IrDA Tx/Rx header
- Audio   Realtek ALC655 2CH, MIC-in/ Line-in/ Line-out/ CD-in

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.

OZONE SAFE

RECYCLABLE

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

Solder Side

- SO-DIMM
- CFD
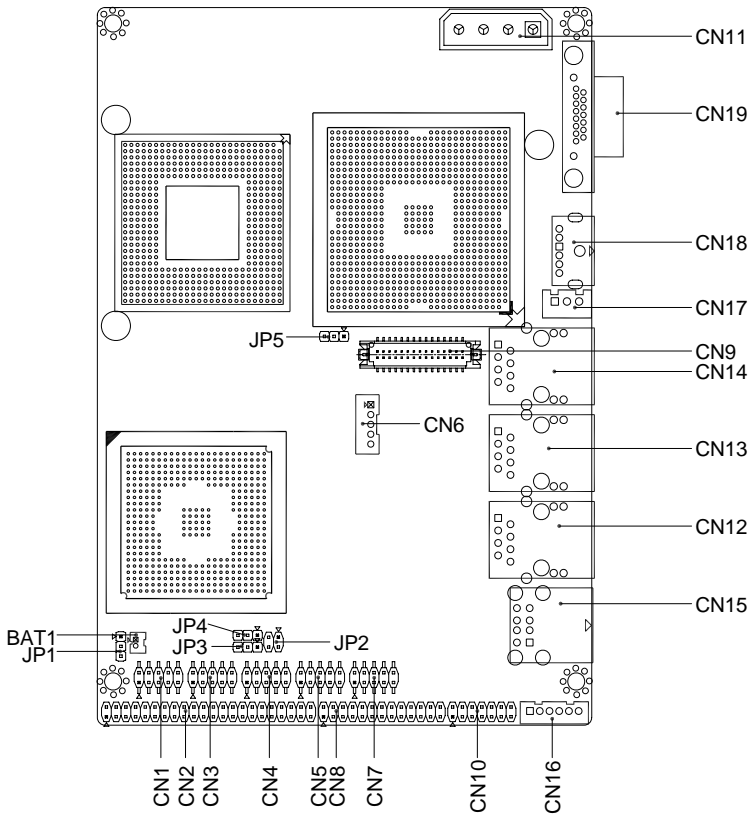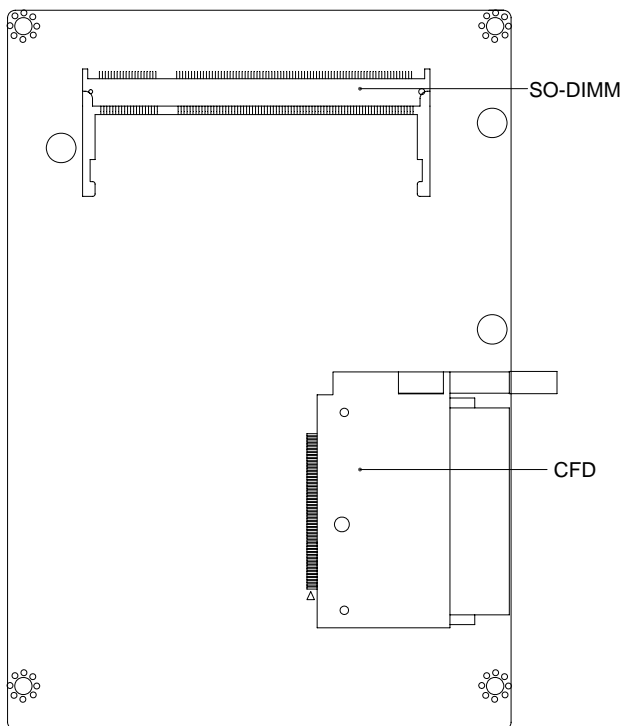
2.3 Mechanical Drawing

Component Side
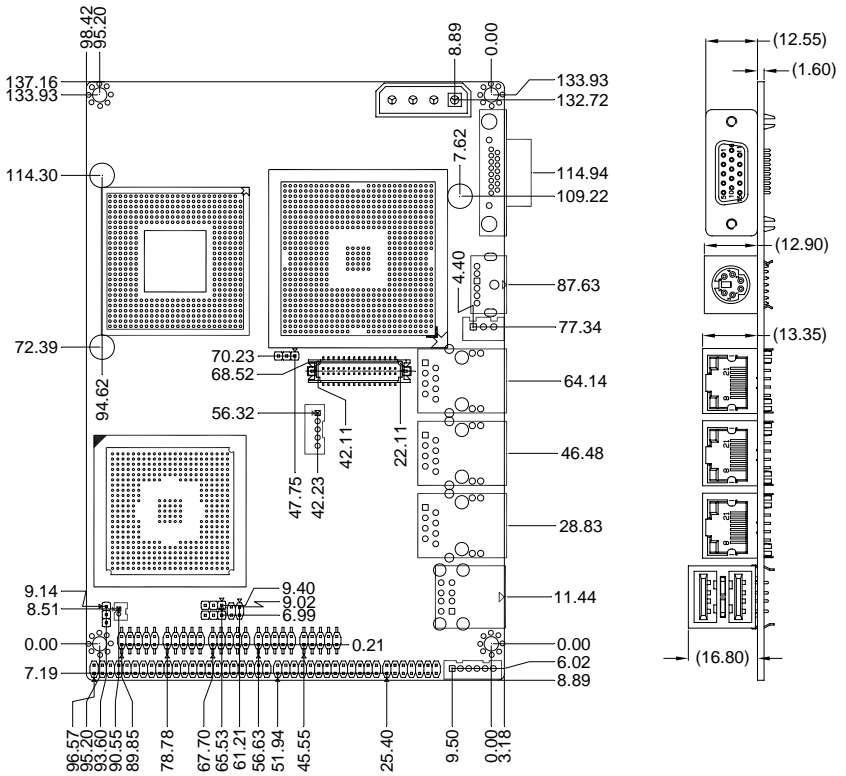
Solder Side
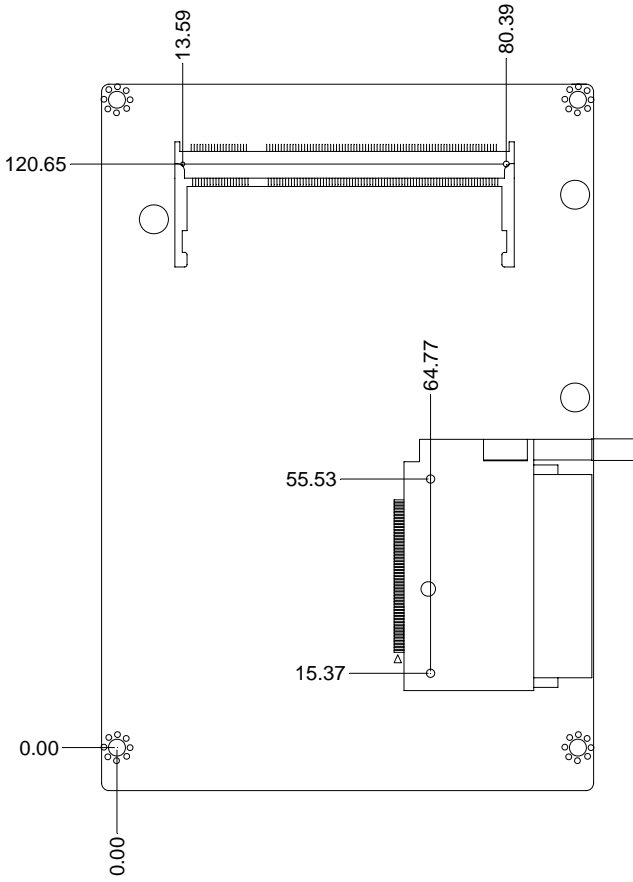
2.4 List of Jumpers

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	COM2 RI/+5V Selection
JP3	LVDS Inverter Voltage Selection
JP4	CFD Operating Voltage Selection
JP5	LVDS Voltage 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	Internal USB 2.0 Ports
CN2	Primary IDE Hard Drive Connector
CN3	Serial Port 1 Connector
CN4	Serial Port 2 Connector
CN5	Digital I/O Connector
CN6	LVDS Inverter Connector
CN7	Front Panel
CN8	Parallel Port Connector
CN9	Dual Channel LVDS Connector
CN10	Audio In/Out/CD-in and MIC Connector
CN11	4P Power Connector
CN12	Ethernet #3 10/100 Base-TX RJ-45 Phone Jack
CN13	Ethernet #2 10/100 Base-TX RJ-45 Phone Jack
CN14	Ethernet #1 10/100 Base-TX RJ-45 Phone Jack
CN15	External USB 2.0 Ports
CN16	External 5VSB/PSON# Connector
CN17	Fan Connector

CN18	Mini-Din PS/2 Connector
CN19	CRT Display Connector
BAT1	External Battery
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.

Open   **Closed**   **Closed 2-3**
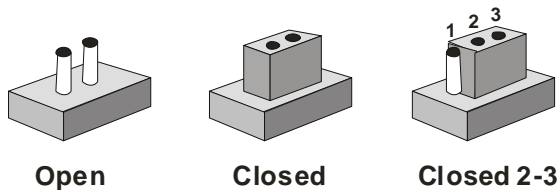
A pair of needle-nose pliers may be helpful when working with jumpers.

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

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

2.7 Clear CMOS (JP1)

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

2.8 COM2 RI/+5V Selection (JP2)

JP2	Function
1-2	+5V
3-4	RI (Default)

2.9 LVDS Inverter Voltage Selection (JP3)

JP3	Function
1-2	+5V (Default)
2-3	+12V

2.10 CFD Operating Voltage Selection (JP4)

JP4	Function
1-2	+5V
2-3	+3.3V (Default)

2.11 LVDS Operating Voltage Selection (JP5)

JP5	Function
1-2	+5V
2-3	+3.3V (Default)

2.12 Internal USB 2.0 Ports   (CN1)

Pin	Signal	Pin	Signal
1	+5 Volt.	2	Ground
3	Data2 -	4	Ground
5	Data2 +	6	Data3 +
7	Ground	8	Data3 -
9	Ground	10	+5 Volt.

2.13 Primary IDE Hard Drive Connector (CN2)

Pin	Signal	Pin	Signal
1	IDERST#	2	Ground
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	Ground	20	N/C
21	DREQ	22	Ground
23	IOW#	24	Ground
25	IOR#	26	Ground
27	IORDY	28	Ground
29	DACK#	30	Ground
31	IRQ14	32	N/C
33	A1	34	Cable Detect
35	A0	36	A2

37	CS#1	38	CS#3
39	ACT#	40	Ground
41	+5 Volt.	42	+5 Volt.
43	Ground	44	N/C

2.14 Serial Port 1 Connector (CN3)

COM1

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

2.15 Serial Port 2 Connector (CN4)

COM2/ RS-232

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

COM2/ RS-422

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

9	N/C / +5 Volt.	10	N/C

COM2/ RS-485

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

2.16 Digital I/O Connector (CN5)

Pin	Signal	Pin	Signal
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	+5 Volt.	10	Ground

Note: Digital I/O Address is 801H.

BIOS Setting	Connector Definition	Address	IT8712 GPIO Setting
Port 1	CN5 Pin 1	Bit 7	U40 Pin 20 (GPIO 27)
Port 2	CN5 Pin 2	Bit 6	U40 Pin 21 (GPIO 26)
Port 3	CN5 Pin 3	Bit 5	U40 Pin 22 (GPIO 25)
Port 4	CN5 Pin 4	Bit 4	U40 Pin 23 (GPIO 24)
Port 5	CN5 Pin 5	Bit 3	U40 Pin 24 (GPIO 23)
Port 6	CN5 Pin 6	Bit 2	U40 Pin 25 (GPIO 22)
Port 7	CN5 Pin 7	Bit 1	U40 Pin 26 (GPIO 21)

Port 8	CN5 Pin 8	Bit 0	U40 Pin 27 (GPIO 20)

2.17 LVDS Inverter Connector (CN6)

Pin	Signal
1	+5 Volt. / +12 Volt.
2	Brightness
3	Ground
4	Ground
5	Backlight Enable

2.18 Front Panel (CN7)

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

2.19 Parallel Port Connector (CN8)

Pin	Signal	Pin	Signal
1	STB#	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

2.20 LVDS Connector (CN9)

Pin	Signal	Pin	Signal
1	Back-Light Enable	2	N/C
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

2.21 Audio In/ Out/ CD-in and MIC Connector (CN10)

Pin	Signal	Pin	Signal
1	MIC	2	MIC_Vcc
3	Ground	4	CD_GND

5	LINE_IN L	6	CD_L
7	LINE_IN R	8	CD_GND
9	Ground	10	CD_R
11	LINE_OUT L	12	LINE_OUT R
13	Ground	14	Ground

2.22 4P Power Connector (CN11)

Pin	Signal
1	+12 Volt.
2	Ground
3	Ground
4	+5 Volt.

2.23 Ethernet #3 10/100Base-TX RJ-45 Phone Jack (CN12)

Ethernet RJ-45 Connector/ Intel 82562ET

Pin	Signal	Pin	Signal
1	RXD-	2	RXD+
3	RCT	4	N/C
5	N/C	6	TCT
7	TXD-	8	TXD+
9	ACT_LED	10	LINK_LED
11	SPD_LED	12	Ground
13	Ground	14	Ground

2.24 Ethernet #2 10/100Base-TX RJ-45 Phone Jack (CN13)

Ethernet RJ-45 Connector/ Realtek RTL8100BL

Pin	Signal	Pin	Signal
1	RXD-	2	RXD+

3	RCT	4	N/C
5	N/C	6	TCT
7	TXD-	8	TXD+
9	ACT_LED	10	LINK_LED
11	+3.3 Volt.	12	SPD_LED
13	Ground	14	Ground

2.25 Ethernet #1 10/100Base-TX RJ-45 Phone Jack (CN14)

Ethernet RJ-45 Connector/ Realtek RTL8100BL

Pin	Signal	Pin	Signal
1	RXD-	2	RXD+
3	RCT	4	N/C
5	N/C	6	TCT
7	TXD-	8	TXD+
9	ACT_LED	10	LINK_LED
11	+3.3 Volt.	12	SPD_LED
13	Ground	14	Ground

2.26 External 5VSB/PSON# (CN16)

Pin	Signal
1	N/C
2	Ground
3	N/C
4	Ground
5	PS_ON#
6	+5 Volt. Standby

2.27 FAN Connector (CN17)

Pin	Signal
1	FAN Sense
2	+5 Volt. / +12 Volt. (Optional)
3	Ground

2.28 Mini-DIN PS/2 Connector (CN18)

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

2.29 External Battery (BAT1)

Pin	Signal
1	VBAT (+3 Volt.)
2	Ground

Below Table for China RoHS Requirements
产品中有毒有害物质或元素名称及含量
AAEON Main Board/ Daughter Board/ Backplane

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板 及其电子组件	×	○	○	○	○	○
外部信号 连接器及线材	×	○	○	○	○	○

O：表示该有毒有害物质在该部件所有均质材料中的含量均在
  SJ/T 11363-2006 标准规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出
  SJ/T 11363-2006 标准规定的限量要求。

备注：此产品所标示之环保使用期限，系指在一般正常使用状况下。

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-8315 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 <Del> 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

There are several installation ways depending on the driver package under different Operating System application. The Auto-run program will run automatically. However, if the Auto-run program cannot be run smoothly, please follow the steps below to install the drivers:

> Step 1-Install Intel® INF Update for Windows 9x-2003 Driver
>
> Step 2-Install Intel® Extreme Graphics 2 Driver
>
> Step 3-Install Intel® LAN Driver
>
> Step 4-Install Realtek LAN Driver
>
> Step 5-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/.

For installation procedures of each driver, you may see the details in the following.

Note:
GENE-8315 adopts two different LAN controllers-Intel® EP82562ET and Realtek RTL8100BL-LF. Therefore, please install both the LAN drivers of Step 3 and Step 4 to ensure the three LAN ports can work properly.

4.1 Installation

Insert the GENE-8315 CD-ROM into the CD-ROM drive and install the drivers from Step 1 to Step 5 in order.

Step 1 – Install Intel® INF Update for Windows 9x-2003 Driver

1. Click on the ***Step 1- Intel INF Update for Windows 9x-2003*** folder and double click on ***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 ***Step 2 –Intel Extreme Graphics 2 Driver*** folder and select the OS your system is
2. Double click on ***Setup.exe*** located in the OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 3 – Install Intel® LAN Driver

1. Click on the ***Step 3 –Intel LAN Driver*** folder and select the OS your system is
2. Double click on ***.exe*** file located in the OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 4 – Install Realtek LAN Driver

1. Click on the ***Step 4 –Realtek LAN Driver*** folder and double click on ***Setup.exe***

2. Follow the instructions that the window shows

3. The system will help you install the driver automatically

Step 5 – Install Realtek AC97 codec Driver

1. Click on the ***Step 5 –Realtek AC97 codec Driver*** folder and then double click on ***wdm_a361.exe***

2. Follow the instructions that the window shows

3. The system will help you install the driver automatically

Appendix

A

Programming the
Watchdog Timer

A.1 Programming

GENE-8315 utilizes ITE 8712 chipset as its watchdog timer controller. Below are the procedures to complete its configuration and the AAEON intial 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.
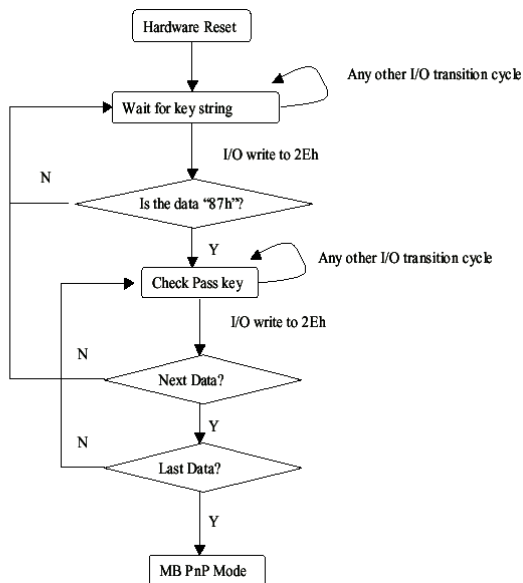
There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP

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 opera-tions 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 Timer	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-FFFFF	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

Appendix

C

Mating Connector

C.1 List of Mating Connectors and Cables

The table notes mating connectors and available cables.

Connector Label	Function	Mating Connector		Available Cable	Cable P/N
		Vendor	Model no		
CN1	Internal USB Connector	Neltron	2026B-10	USB Cable	1709100201
CN2	IDE Connector	Catch Electronics	B016-009-2	IDE Cable	1701440500
CN3	Serial Port 1 Connector	Neltron	2026B-10	Serial Port Cable	1701100206
CN4	Serial Port 2 Connector	Neltron	2026B-10	Serial Port Cable	1701100206
CN5	Digital I/O Connector	Neltron	2026B-10		N/A
CN6	LVDS Inverter Connector	Hobase Technology	2002-H-5		N/A
CN7	Front Panel	Neltron	2026B-10		N/A
CN8	Parallel Port Connector	HR	A2016H-N-2 X13P-A	Parallel Port Cable	1701260201
CN9	Dual Channel LVDS Connector	HIROSE	DF13-30DS-1.25C		N/A
CN10	Audio Connector	Catch Electronics	052-D200-1 4P	Audio Cable	1700140510
CN11	4P Power Connector	Neltron	8980-04		N/A
CN16	ATX External 5VSB Connector	Catch Electronics	2418HJ-06	ATX External 5VSB Cable	1702200205

CN17	CPU FAN Connector	Hobase Technology	2503-H-3		N/A
CN18	Mini-Din PS/2 Connector	Catch Electronics	MD06F011 121	Keyboard & Mouse Cable	1700060192