

GENE-9155

Intel® Embedded Pentium® M/
Celeron® M Processor

Intel® 82573L for 10/100/1000Mbps

Type II CompactFlash™

2 COM/ 4USB/ 8-bit Digital I/O

Mini PCI/ Proprietary Expansion Connector

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Packing List

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

- 1 9681915500 Cable Kit for GENE-9155
 - 1701440500 IDE Cable, Length 30+20cm
 - 1700060192 Keyboard/Mouse Cable, Length 19cm
- 1 9657666600 Jumper Cap
- 1 Quick Installation Guide
- 1 CD-ROM for manual (in PDF format) and drivers
- 1 GENE-9155

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

AAEON, a leading embedded boards manufacturer, is pleased to announce the debut of their new generation 3.5" SubCompact Board—GENE-9155.

GENE-9155 adopts Intel® Embedded Pentium® M/ Celeron® M Processor. The system memory is deployed with 200-pin DDRII 400/533 SODIMM up to 2GB. In addition, Intel® 82573L supports one 10/100/1000Base-TX that allows a faster network connections. This model applies a Mini PCI socket and Proprietary Expansion Connector for a flexible expansion. Moreover, four USB 2.0, one EIDE, one SATA I provide a better storage. One RS-232, one RS-232/422/485 and 8-bit digital I/O are configured on the GENE-9155 as well. Full functions make GENE-9155 user friendly. With the GENE-9155, there are no more worries about installing many necessary devices to complete the functions of your system.

The display of GENE-9155 supports CRT/LCD simultaneous and dual view display, and is up to 24-bit dual-channel LVDS or DVI (optional). Furthermore, this brand new SubCompact board is developed to cater to the requirements of Automation, Medical, ticket machine, transportation, gaming, KIOSK, and POS/POI applications.

1.2 Features

- Intel® Embedded Pentium® M/ Celeron® M Processors
- Intel® 915GME + ICH6M
- SODIMM DDRII 400/533 Max. 2GB
- 10/100/1000Base-TX Ethernet x 1
- CRT & 18-bit Dual-channel LVDS LCD
- AC97 2.3 Codec 2CH Audio
- EIDE x 1, SATA I x 1 & CompactFlash™ Slot x 1
- 8-bit Digital I/O, USB x 4, COM x 2
- Flexible Expansion: Mini-PCI Socket and Proprietary Expansion Connector
- +12V Only Operation
- Optional Extension Board Supports:
24-bit Dual-channel LVDS or DVI, USB x 1, SATA x 2 (Supports RAID 0 & RAID 1) or PCI-E [x1] x 1, COM x 4, LPC x 1 & PCI x 1 Signals

1.3 Specifications

System

- Processor Intel® Embedded Pentium M processor up to 2.0GHz with FSB: 400/533MHz; Celeron® M up to 1.5GHz with FSB 400MHz
- System Memory 200-pin DDRII 400/533 SODIMM x 1, Max. 2GB
- Chipset Intel® 915GME+ICH6M
- I/O Chipset ITE IT8712
- Ethernet Intel® 82573L, 10/100/1000Base-TX, RJ-45 x 1
- BIOS Award Plug & Play BIOS – 1MB ROM
- Watchdog Timer Generates a time-out system reset
- H/W Monitor Chipset Supports power supply voltages, fan speed and temperature monitoring
- Expansion Interface Mini PCI & Proprietary Expansion Connector
- Power Requirement +12V, AT/ATX
- Board Size 5.75”(L) x 4”(W) (146mm x 101.6mm)

- Operating Temperature 32°F~ 140°F (0°C ~ 60°C)
- Storage Temperature -40°F~ 176°F (-40°C ~ 80°C)
- Operating Humidity 0%~90% relative humidity, non-condensing
- MTBF (Hours) 70,000

Display: Supports CRT/LCD simultaneous and dual view display

- Chipset Intel® 915GME integrated
- Memory Shared system memory up to 224MB w/ DVMT 3.0
- LCD Interface 18-bit LVDS TFT LCD
- Resolution Up to 2048 x 1536 for CRT
Up to 1920 x 1200 for LCD

I/O

- Storage EIDE x 1 (UDMA-33 for two devices), SATA I x 1, Type II CompactFlash x 1
- Serial Port RS-232 x 1, RS-232/422/485 x 1
- USB Port USB2.0 x 4
- PS/2 Port Keyboard & Mouse x 1
- Digital I/O Supports 8-bit (Programmable)
- Audio MIC-in, Line-in, Line-out, CD-in, S/PDIF in/out

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!

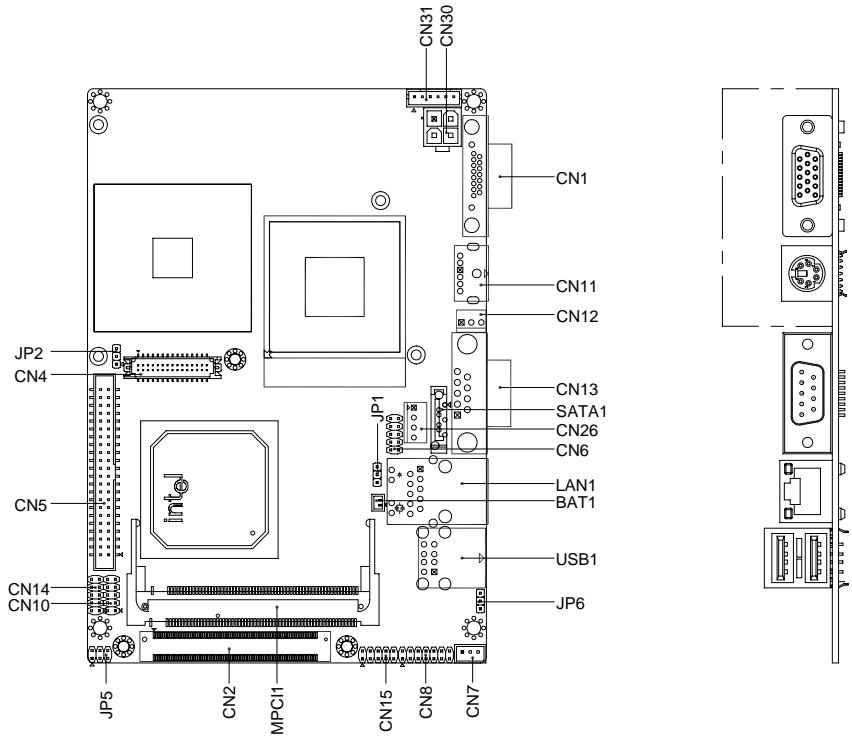
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Caution!

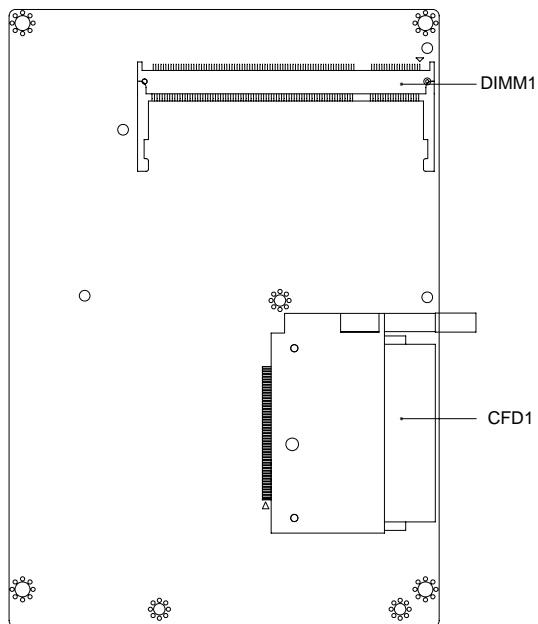
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

2.2 Location of Connectors and Jumpers

Component Side

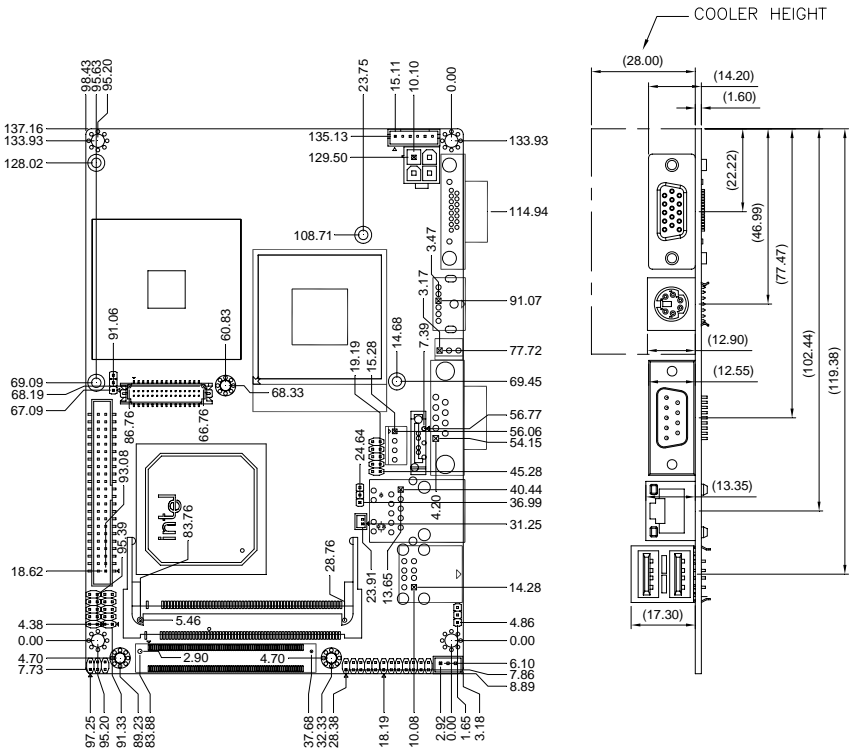


Solder Side

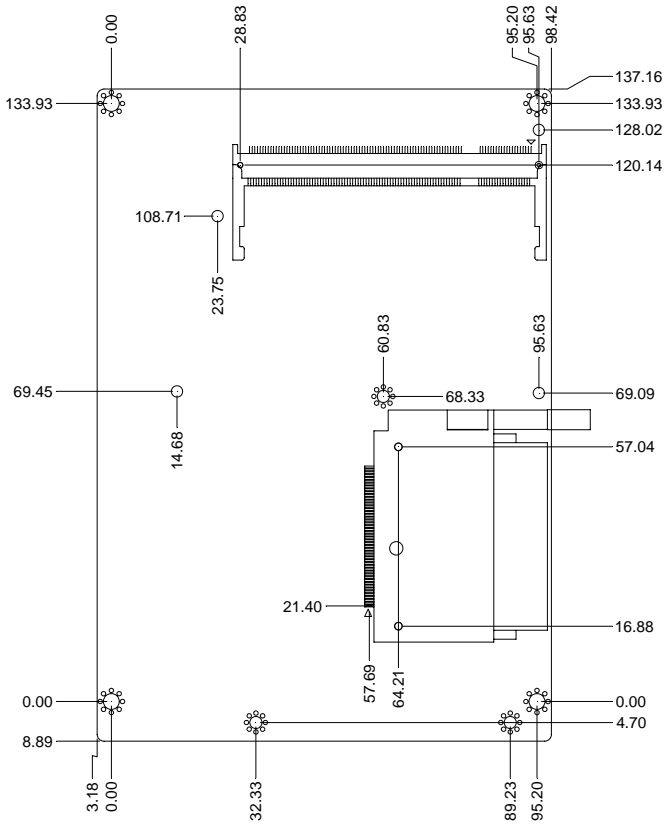


2.3 Mechanical Drawing

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	LVDS LCD +5V/+3.3V selection
JP5	COM2 +5V/+12V/Ring selection
JP6	AT/ATX Power 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

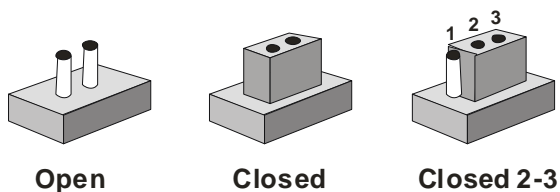
Label	Function
CN1	VGA Connector
CN2	Expansion slot
CN4	LVDS panel Connector
CN5	IDE Connector
CN6	USB Connector
CN7	SPDIF in/out Connector
CN8	Audio Connector
CN10	Digital I/O Connector
CN11	Keyboard/Mouse Connector
CN12	Fan Connector
CN13	COM1 RS-232 Serial Port Connector
CN14	COM2 RS-232/422/485 Serial Port Connector
CN15	Front Panel Connector
CN26	Power Output Connector
CN30	Power Input Connector
CN31	ATX Power Connector
SATA1	Serial-ATA Connector

LAN1	LAN Connector
USB1	USB Connector
BAT1	Battery Connector
CFD1	Compact Flash Disk Connector
MPC11	MINIPCI Connector
DIMM1	DDR2 SODIMM Connector

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	Protected (Default)
2-3	Clear

2.8 LVDS LCD +5V/+3.3V Selection (JP2)

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

2.9 COM2 Ring/+5V/+12V Selection (JP5)

JP5	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

2.10 AT/ATX Power Selection (JP6)

JP6	Function
1-2	AT (Default)
2-3	ATX

2.11 VGA Display Connector (CN1)

Pin	Signal	Pin	Signal
1	RED	2	GREEN
3	BLUE	4	N.C
5	GND	6	GND
7	GND	8	GND
9	+5V	10	GND

11	N.C	12	DDCDAT
13	HSYNC	14	VSYNC
15	DDCCLK		

2.12 Expansion Slot (CN2)

Pin	Signal	Pin	Signal
1	VCC2.5	2	SDVOB_CLKN
3	VCC2.5	4	SDVOB_CLKP
5	VCC2.5	6	GND
7	ICH_RI#	8	SDVOB_BLUE#
9	INT_SERIRQ	10	SDVOB_BLUE
11	PCIE1_RST#	12	SDVOB_GREEN#
13	PCI_GNT#2	14	SDVOB_GREEN
15	PCI_GNT#1	16	SDVOB_RED#
17	PCI_AD11	18	SDVOB_RED
19	PCI_AD13	20	GND
21	PCI_TRDY#	22	SDVOB_INT#
23	PCI_FRAME#	24	SDVOB_INT
25	PCI_AD24	26	GND
27	INT_PIRQC#	28	SDVO_CLCLK
29	PCI_PME#	30	SDVO_CLDATA
31	PCI_AD28	32	SDVO_FLDSTALL#
33	PCI_REQ#1	34	SDVO_FLDSTALL
35	PCI_AD22	36	GND
37	PCI_PAR	38	VCC5
39	INT_PIRQD#	40	VCC5
41	PCI_EPSLOT2_CLK33	42	VCC5
43	PCI_EPSLOT1_CLK33	44	GND

45	PCI_AD16	46	SMBCLK_SBY
47	PCI_REQ#2	48	SMBDAT_SBY
49	PCI_AD26	50	GND
51	PCI_AD30	52	PCIE_WAKE#
53	PCI_AD31	54	PCIE1_RST#
55	PCI_AD29	56	GND
57	PCI_STOP#	58	PCIE_TXP2
59	PCI_AD18	60	PCIE_TXN2
61	PCI_AD27	62	PCIE_RXP2
63	PCI_AD25	64	PCIE_RXN2
65	PCI_C/BE#0	66	GND
67	PCI_AD27	68	PCIESLOT1_CLK
69	PCI_C/BE#3	70	PCIESLOT1_CLK#
71	PCI_AD23	72	GND
73	PCI_AD25	74	LPC_AD3
75	PCI_AD20	76	LPC_AD2
77	PCI_DEVSEL#	78	LPC_AD1
79	PCI_AD21	80	LPC_AD0
81	PCI_AD19	82	ICH_DRQ#1
83	PCI_AD17	84	LPC_FRAME#
85	PCI_C/BE#2	86	GND
87	PCI_IRDY#	88	3VDUAL
89	PCI_AD4	90	3VDUAL
91	PCI_AD9	92	3VDUAL
93	PCI_AD15	94	GND
95	PM_CLKRUN#	96	PM_SLP_S3#
97	PCI_SERR#	98	PM_SLP_S4#
99	PCI_AD6	100	PM_SLP_S5#

101	PCI_PERR#	102	N.C
103	PCI_C/BE#1	104	5VDUAL
105	PCI_AD0	106	5VDUAL
107	PCI_AD2	108	5VDUAL
109	PCI_AD14	110	N.C
111	PCI_LOCK#	112	N.C
113	INT_PIRQB#	114	N.C
115	PCI_AD12	116	N.C
117	PCI_AD10	118	N.C
119	PCI_AD8	120	N.C
121	PCI_AD7	122	N.C
123	INT_PIRQA#	124	N.C
125	PCI_AD3	126	N.C
127	PCI_AD5	128	GND
129	PCI_AD1	130	FIN_CLK48
131	VCC3	132	FIN_CLK33
133	VCC3	134	GND
135	VCC3	136	USB_PN4
137	GND	138	USB_PP4
139	GND	140	USB_OC#4

2.13 LVDS LCD Connector (CN4)

Pin	Signal	Pin	Signal
1	L_BKLTEN	2	L_BKLTCTL
3	LVDS1VCC	4	GND
5	LA_CLKN	6	LA_CLKP
7	LVDS1VCC	8	GND
9	LA_DATAN0	10	LA_DATAP0

11	LA_DATAN1	12	LA_DATAP1
13	LA_DATAN2	14	LA_DATAP2
15	N.C	16	N.C
17	L_DDC_DATA	18	L_DDC_CLK
19	LB_DATAN0	20	LB_DATAP0
21	LB_DATAN1	22	LB_DATAP1
23	LB_DATAN2	24	LB_DATAP2
25	N.C	26	N.C
27	LVDS1VCC	28	GND
29	LB_CLKN	30	LB_CLKP

2.14 Primary IDE Hard Drive Connector (CN5)

Pin	Signal	Pin	Signal
1	IDE RESET	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	GND	20	N.C
21	REQ	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO READY	28	GND
29	DACK	30	GND

31	IRQ	32	N.C
33	ADDR1	34	UDMA DETECT
35	ADDR0	36	ADDR2
37	CS#1	38	CS#3
39	LED	40	GND
41	NC	42	+5V
43	NC	44	GND

2.15 USB Connector (CN6)

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

2.16 SPDIF in/out Connector (CN7)

Pin	Signal
1	SPDIF OUT
2	GND
3	SPDIF IN

2.17 Audio Connector (CN8)

Pin	Signal	Pin	Signal
1	MIC_1	2	MIC_2
3	LINE_IN_GND	4	CD_GND
5	LINE_IN_L	6	CD_L
7	LINE_IN_R	8	CD_GND

9	LINE_IN_GND	10	CD_R
11	LINE_OUT_L	12	LINE_OUT_R
13	AUD_GND	14	AUD_GND

2.18 Digital IO Connector (CN10)

This connector offers 4-pair of digital I/O functions and address is 801H. The pin definitions are illustrated below:

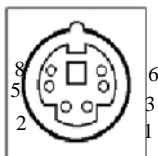
Pin	Signal	Pin	Signal
1	DIO1-1	2	DIO1-2
3	DIO1-3	4	DIO1-4
5	DIO1-5	6	DIO1-6
7	DIO1-7	8	DIO1-8
9	VCC5	10	GND

The pin definitions and registers mapping are illustrated below:

Address: **801H**

BIOS Setting	Connector Definition	Address	IT8712KX GPIO Setting
DIO1-1	CN10 Pin1	Bit0	U18 Pin27 (GPIO20)
DIO1-2	CN10 Pin2	Bit1	U18 Pin26 (GPIO21)
DIO1-3	CN10 Pin3	Bit2	U18 Pin25 (GPIO22)
DIO1-4	CN10 Pin4	Bit3	U18 Pin24 (GPIO23)
DIO1-5	CN10 Pin5	Bit4	U18 Pin23 (GPIO24)
DIO1-6	CN10 Pin6	Bit5	U18 Pin22 (GPIO25)
DIO1-7	CN10 Pin7	Bit6	U18 Pin21 (GPIO26)
DIO1-8	CN10 Pin8	Bit7	U18 Pin20 (GPIO27)

2.19 PS2 Keyboard/Mouse Connector (CN11)

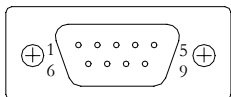


Pin	Signal
8	MS CLK
5	+5VSB
2	MS-DATA
1	KB_DATA
3	GND
6	KB_CLK

2.20 FAN Connector (CN12)

Pin	Signal
3	Speed Sense
2	+12V
1	GND

2.21 COM1 RS-232 Serial Port Connector (CN13)



Pin	Signal	Pin	Signal
1	RXD	2	CTS
3	DTR	4	TXD
5	GND	6	DCD
7	RTS	8	DSR
9	RI		

2.22 COM2 RS-232/422/485 Serial Port Connector (CN14)

Pin	Signal	Pin	Signal
1	DCD (422TXD-/485DATA-)	2	RXD (422RXD+)
3	TXD (422TXD+/485DATA+)	4	DTR (422RXD-)

5	GND	6	DSR
7	RTS	8	CTS
9	RI/+12V/+5V	10	N.C

2.23 Front Panel Connector (CN15)

Pin	Signal	Pin	Signal
1	Power On Button(-)	2	Power On Button(+)
3	IDE LED(-)	4	IDE LED(+)
5	External Buzzer(-)	6	External Buzzer(+)
7	Power LED(-)	8	Power LED(+)
9	Reset Switch(-)	10	Reset Switch(+)

2.24 Power Output Connector (CN26)

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

2.25 Power Input Connector (CN30)

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

2.26 ATX Power Connector (CN31)

Pin	Signal
1	NC
2	GND
3	NC
4	GND
5	PSON#
6	+5VSB

2.27 LAN Ethernet Connector (LAN1)

Pin	Signal	Pin	Signal
1	TRD0+	2	TRD0-
3	TRD1+	4	TRD1-
5	TCD0	6	TCD1
7	TRD2+	8	TRD2-
9	TRD3+	10	TRD3-
11	LINK_1000_LEDJ	12	LINK_ACTIVITY_LEDJ
13	LIN_100_LEDJ	14	LIN_1000_LEDJ

2.28 CompactFlash Disk Connector (CFD1)

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

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

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	×	○	○	○	○	○
<p>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。</p> <p>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。</p> <p>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。</p>						

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-9155 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**

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 ICH6-M INF Driver

Step 2-Install 915GM VGA Driver

Step 3-Install LAN Driver

Step 4-Install ALC655 Driver

Step 5-Install SATA 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.

4.1 Installation

Insert the GENE-9155 CD-ROM into the CD-ROM drive and install the drivers from Step 1 to Step 5 in order.

Step 1 – Install ICH6-M INF Driver

1. Click on the **Step 1- ICH6-M INF** folder and double click on ***Infinst_autol.exe***
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 2 – Install 915GM VGA Driver

1. Click on the **Step 2 –915GM VGA** folder and double click on ***win2K_xp142550.exe***
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 3 – Install LAN Driver

1. Click on the **Step 3 –LAN** folder and then select folder of ***82573L***
2. Select the OS folder your system is and 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 ALC 655 Driver

1. Click on the **Step 4 –ALC655** folder and select the OS folder 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 5 – Install SATA Driver

1. Click on the **Step 5 –Sil3132 SATA Driver** folder and then select the folder of **Sil 3132 32 & 64-bit Windows SATARAID5 Management Utility**
2. Double click on **3132-W-I32-R_1552.exe**
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Appendix

A

Programming the Watchdog Timer

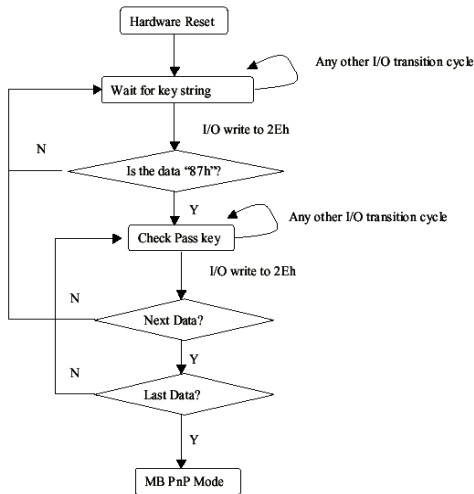
A.1 Programming

GENE-9155 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 IT8712 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

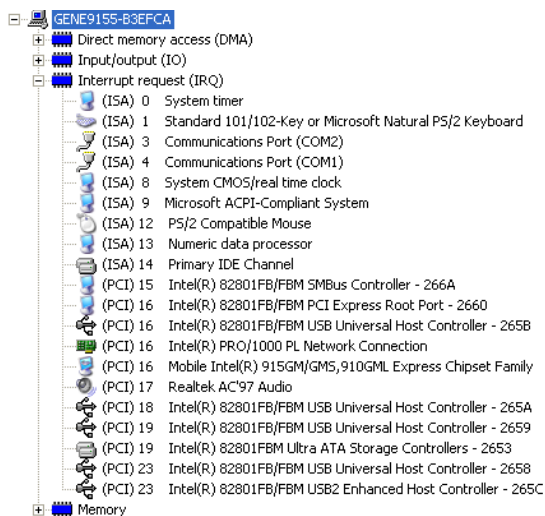
B.1 I/O Address Map

Address Range	Device Name
[00000000 - 0000000F]	Direct memory access controller
[00000000 - 00000CF7]	PCI bus
[00000010 - 0000001F]	Motherboard resources
[00000020 - 00000021]	Programmable interrupt controller
[00000022 - 0000003F]	Motherboard resources
[00000040 - 00000043]	System timer
[00000044 - 0000005F]	Motherboard resources
[00000060 - 00000060]	Standard 101/102-Key or Microsoft Natural P5/2 Keyboard
[00000061 - 00000061]	System speaker
[00000062 - 00000063]	Motherboard resources
[00000064 - 00000064]	Standard 101/102-Key or Microsoft Natural P5/2 Keyboard
[00000065 - 0000006F]	Motherboard resources
[00000070 - 00000073]	System CMOS/real time clock
[00000074 - 0000007F]	Motherboard resources
[00000080 - 00000090]	Direct memory access controller
[00000091 - 00000093]	Motherboard resources
[00000094 - 0000009F]	Direct memory access controller
[000000A0 - 000000A1]	Programmable interrupt controller
[000000A2 - 000000BF]	Motherboard resources
[000000C0 - 000000DF]	Direct memory access controller
[000000E0 - 000000EF]	Motherboard resources
[000000F0 - 000000FF]	Numeric data processor
[000001F0 - 000001F7]	Primary IDE Channel
[00000274 - 00000277]	ISAPNP Read Data Port
[00000279 - 00000279]	ISAPNP Read Data Port
[00000290 - 0000029F]	Motherboard resources
[000002F8 - 000002FF]	Communications Port (COM2)
[000003B0 - 000003BB]	Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[000003C0 - 000003DF]	Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[000003F6 - 000003F6]	Primary IDE Channel
[000003F8 - 000003FF]	Communications Port (COM1)
[00000400 - 000004BF]	Motherboard resources
[000004D0 - 000004D1]	Motherboard resources
[00000500 - 0000051F]	Intel(R) 82801FB/FBM SMBus Controller - 266A
[00000880 - 0000088F]	Motherboard resources
[00000A79 - 00000A79]	ISAPNP Read Data Port
[00000D00 - 0000FFFF]	PCI bus
[0000C000 - 0000CFFF]	Intel(R) 82801FB/FBM PCI Express Root Port - 2660
[0000CFE0 - 0000CFFF]	Intel(R) PRO/1000 PL Network Connection
[0000F000 - 0000F0FF]	Realtek AC'97 Audio
[0000F300 - 0000F30F]	Intel(R) 82801FBM Ultra ATA Storage Controllers - 2653
[0000F400 - 0000F403]	Intel(R) 82801FBM Ultra ATA Storage Controllers - 2653
[0000F500 - 0000F507]	Intel(R) 82801FBM Ultra ATA Storage Controllers - 2653
[0000F600 - 0000F603]	Intel(R) 82801FBM Ultra ATA Storage Controllers - 2653
[0000F700 - 0000F707]	Intel(R) 82801FBM Ultra ATA Storage Controllers - 2653
[0000F800 - 0000F80F]	Intel(R) 82801FB/FBM Ultra ATA Storage Controllers - 266F
[0000FA00 - 0000FA3F]	Realtek AC'97 Audio
[0000FB00 - 0000FB1F]	Intel(R) 82801FB/FBM USB Universal Host Controller - 265B
[0000FC00 - 0000FC1F]	Intel(R) 82801FB/FBM USB Universal Host Controller - 265A
[0000FD00 - 0000FD1F]	Intel(R) 82801FB/FBM USB Universal Host Controller - 2659
[0000FE00 - 0000FE1F]	Intel(R) 82801FB/FBM USB Universal Host Controller - 2658
[0000FF00 - 0000FF07]	Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family

B.2 1st MB Memory Address Map

Address Range	Device
[00000000 - 0009FFFF]	System board
[000A0000 - 000BFFFF]	Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[000A0000 - 000BFFFF]	PCI bus
[000C0000 - 000DFFFF]	PCI bus
[000E0000 - 000EFFFF]	System board
[000F0000 - 000FFFFF]	System board
[00100000 - 3F6DFFFF]	System board
[3F6E0000 - 3F6FFFFF]	System board
[3F700000 - FEBFFFFF]	PCI bus
[D0000000 - DFFFFFFF]	Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[E0000000 - EFFFFFFF]	Motherboard resources
[FDB00000 - FDB8FFFF]	Intel(R) 82801FB/FBM PCI Express Root Port - 2660
[FDBE0000 - FDB8FFFF]	Intel(R) PRO/1000 PL Network Connection
[FDC00000 - FDCFFFFF]	Intel(R) 82801FB/FBM PCI Express Root Port - 2660
[FDF00000 - FDF7FFFF]	Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[FDF80000 - FDFBFFFF]	Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[FDFFC000 - FDFFC3FF]	Intel(R) 82801FBM Ultra ATA Storage Controllers - 2653
[FDFFD000 - FDFFD0FF]	Realtek AC'97 Audio
[FDFFE000 - FDFFE1FF]	Realtek AC'97 Audio
[FDFFF000 - FDFFF3FF]	Intel(R) 82801FB/FBM USB2 Enhanced Host Controller - 265C
[FEB80000 - FEB8FFFF]	Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[FEC00000 - FEC0FFFF]	System board
[FED13000 - FED1DFFF]	System board
[FED20000 - FED8FFFF]	System board
[FEE00000 - FEE0FFFF]	System board
[FFB80000 - FFB7FFFF]	System board
[FFB80000 - FFB7FFFF]	Intel(R) 82802 Firmware Hub Device
[FFF00000 - FFFFFFFF]	System board

B.3 IRQ Mapping Chart



B.4 DMA Channel Assignments



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		
CN2	Expansion Slot	Hirose	0.6mm Pitch 140 pins (Hirose FX8C-140P-SV 6(93)	N/A	N/A
CN4	LVDS- LCD Connector	CATCH	1.25mm Pitch 30 pins (CATCH H716 or compatible)	N/A	N/A
CN5	IDE Connector	CATCH	2.00mm Pitch 44 pins (CATCH H820-2 or compatible)	IDE Cable	1701440500
CN6	USB Connector	CATCH	2.00mm Pitch 10 pins (CATCH H754-2x5 or compatible)	USB Cable	1709100201
CN7	SPDIF IN/OUT Connector	CATCH	2.00mm Pitch 3 pins (CATCH H732-03 or compatible)	SPDIF Cable	1709030150
CN8	Audio Connector	CATCH	2.00mm Pitch 14 pins (CATCH H709-2 or compatible)	Audio Cable	1700140510
CN10	Digital I/O Connector	CATCH	2.00mm Pitch 10 pins (CATCH H754-2x5 or compatible)	N/A	N/A
CN11	PS2 Keyboard/ Mouse Connector	CATCH	(CATCH MD-6PS or compatible)	Keyboard / Mouse Cable	1700060192

CN14	COM2 Connector	CATCH	2.00mm Pitch 10 pins (CATCH H754-2x5 or compatible)	Serial Port Cable	1701100206
CN15	Front Panel Connector	CATCH	2.00mm Pitch 10 pins (CATCH H754-2x5 or compatible)	N/A	N/A
CN26	Power Output Connector	HoBase	2543-H-4	SATA Power Cable	1702151200
SATA1	Serial ATA Connector	CATCH	1.27mm Pitch 7 pins (CATCH SA07FGP002X or compatible)	SATA Cable	1709070500