

GENE-9455

Onboard Intel® Atom™ N270
Processor

Intel® 82574L for 10/100/1000Mbps

Type II CompactFlash

4 COM, 4 USB2.0,

ECX Proprietary Expansion/

Mini PCI

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Packing List

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

- 9681945600 Cable Kit
 - 1700060152 Keyboard & Mouse Cable
 - 1701440500 IDE Cable
- 9657666600 Jumper Cap
- Cooler or Heatsink
- Quick Installation Guide
- CD-ROM for manual (in PDF format) and drivers
- GENE-9455

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-9455. The GENE-9455 is a cutting-edge product that provides high performance and low power consumption in the embedded market.

GENE-9455 adopts the latest Intel® Atom™ N270 Processor and the system memory is deployed with SODIMM DDRII 400/533 up to 2GB. In addition, Intel® 82574L supports two 10/100/100Base-TX that allows network connections. This model applies one Mini PCI and one ECX Proprietary expansion. Moreover, one EIDE, two SATA II and one Type II CompactFlash™ storages are configured on the GENE-9455. In addition to the diverse storages, GENE-9455 also equips four USB2.0, four COM, one keyboard/mouse ports for flexible I/O expansions. There is no more worries about installing many necessary devices to complete the functions of your system.

The display of GENE-9455 supports CRT/LCD simultaneous/ dual view displays and is up to 18-bit dual-channel LVDS. 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

- Onboard Intel® Atom™ N270 Processor
- Intel® 945GSE + ICH7M
- DDRII 400/533 Memory, Max. 2GB
- Gigabit Ethernet x 2
- CRT or DVI, 18-bit Dual-channel LVDS LCD, TV
- AC97 2.3 Codec 2CH Audio
- SATA II x 2, EIDE x 1 & CompactFlash™ x 1
- USB2.0 x 4, COM x 4, 8-bit Digital I/O
- Mini PCI and ECX Proprietary Expansion
- +8.5V to +19V Wide DC Input Range or +5V Only Operation
- 4/5/8-wire Touch Screen Controller (Optional)

1.3 Specifications

System

- Processor Onboard Intel® Atom™ N270 Processor 1.6GHz, FSB 533MHz
- System Memory 200-pin DDRII SODIMM x 1, Max. 2GB (DDRII 400/533)
- Chipset Intel® 945GSE + ICH7M
- I/O Chipset ITE8781
- Ethernet Intel® 82574L, 10/100/100Base-TX, RJ-45 x 2
- BIOS Award Plug & Play SPI BIOS – 2MB Flash
- Watchdog Timer Generates a time-out system reset
- H/W Monitor Chipset Supports power supply voltages and temperature monitoring
- Expansion Interface Mini PCI x 1 & ECX Proprietary Expansion x 1
- Battery Lithium battery
- Power Requirement +8.5V to +19V Wide DC Input Range or +5V only
- Board Size 5.75”(L) x 4”(W) (146mm x 101.6mm)

- Gross Weight 0.88 lb (0.4 kg)
- 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

Display Supports CRT/LCD simultaneous/dual view displays

- Chipset Intel® 945GSE integrated
- Memory Shared system memory up to 224MB/ DVMT3.0
- LCD Interface Up to 18-bit dual-channel LVDS
- Resolution Up to 2048 x 1536 @ 32bpp for CRT; Up to 1600 x 1200 @ 18bpp for LCD

I/O

- Storage EIDE x 1 (UDMA-100 for two devices); SATA II x 2, Type II CompactFlash x 1
- Serial Port RS-232 x 3, 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 Line-in, Line-out, Mic-in & CD-in
- TouchScreen (Optional) Supports 4/5/8-wire

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!

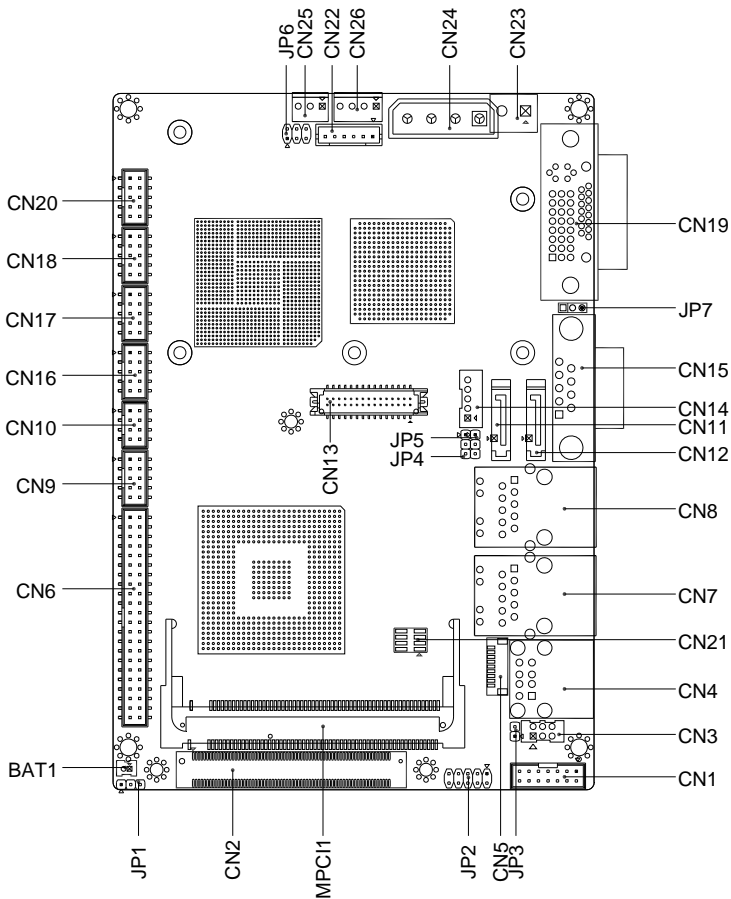
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Caution!

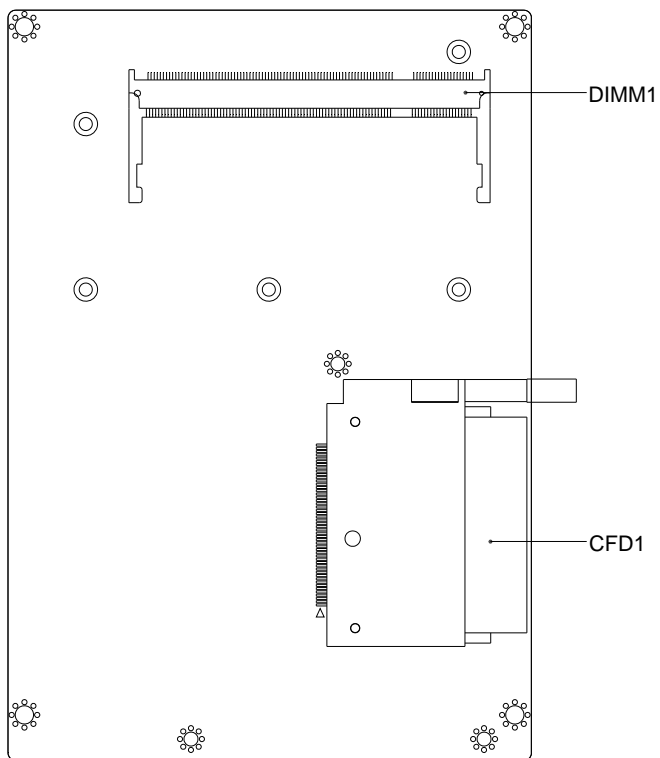
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

2.2 Location of Connectors and Jumpers

Component Side

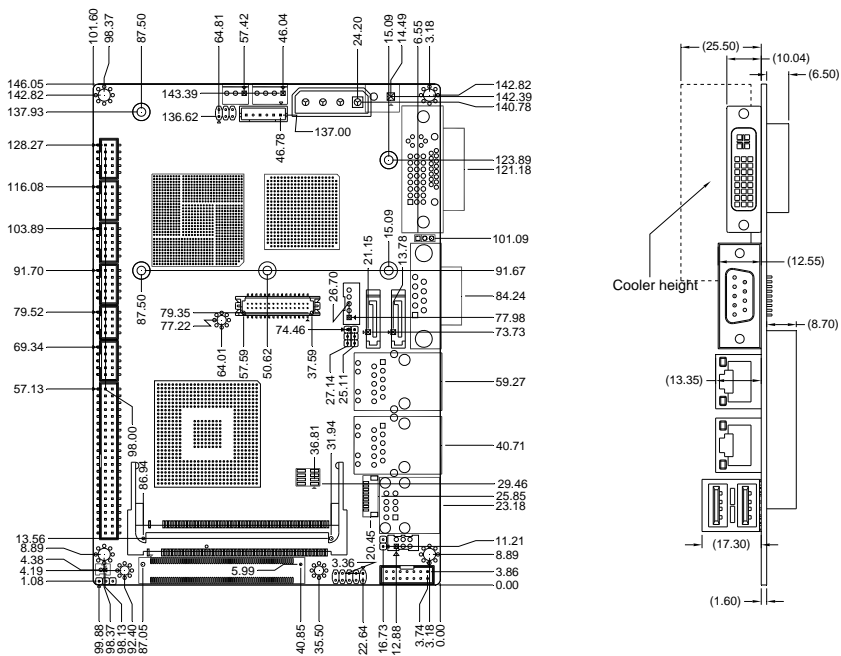


Solder Side

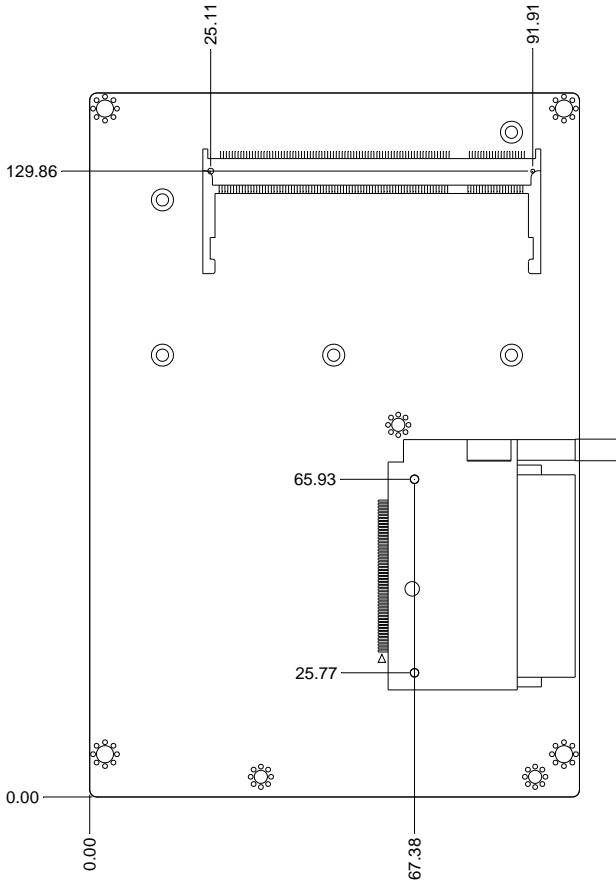


2.3 Mechanical Drawing

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	Front Panel
JP3	Touch Screen 4/5/8-wires Mode Selection (Optional)
JP4	LVDS Operating Voltage Selection
JP5	LCD Backlight Voltage Selection
JP6	COM2 RI/+5/+12V Selection1
JP7	LCD Backlight Voltage/PWM Control Selection
CN22 Pin 4-5	AT/ATX Selection (for +5V input version only)

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

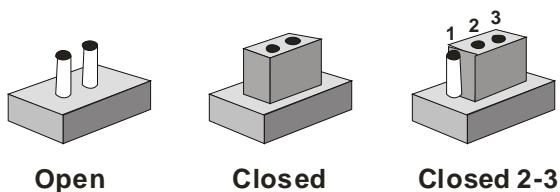
Label	Function
CN1	Audio Connector
CN2	AAEON Expansion Slot
CN3	Keyboard / Mouse Connector
CN4	USB Port 1,2 Connector
CN5	Touch Screen Connector
CN6	IDE Connector
CN7	RJ-45 Ethernet #2 Connector
CN8	RJ-45 Ethernet #1 Connector
CN9	USB Port 3,4 Connector
CN10	TV-out Connector
CN11	SATA 1 Connector
CN12	SATA 2 Connector
CN13	LVDS Connector
CN14	LCD Backlight Connector
CN15	COM Port 1 Connector
CN16	COM Port 2 Connector
CN17	COM Port 3 Connector

CN18	COM Port 4 Connector
CN19	DVI / CRT Display Connector (Configured by manufacturer)
CN20	Digital I/O Connector
CN21	Onboard BIOS Programming I/F
CN22	ATX Connector
CN23	Wide Range Voltage Input Connector (Configured by manufacturer)
CN24	+5V Power Input Connector (Configured by manufacturer)
CN25	CPU Fan Connector
CN26	+5V/+12V Output Connector
CFD1	Compact Flash Disk
MPCI1	Mini-PCI Slot
DIMM1	DDRII SODIMM 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 (JP1)

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

2.8 Front Panel (JP2)

JP2	Function
(-)1-2(+)	ATX Power-on Button
(-)3-4(+)	HDD Active LED
(-)5-6(+)	External Speaker
(-)7-8(+)	Power LED
(-)9-10(+)	System Reset Button

2.9 Touch Screen 4/5/8-wire Mode Selection (Optional)(JP3)

JP3	Function
1-2	4, 8 wire (Default)
NC	5 wire

2.10 LVDS Operating Voltage Selection (JP4)

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

2.11 LCD Backlight Voltage Selection (JP5)

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

2.12 COM2 RI/+5V/+12V Selection (JP6)

JP6	Function
5-6	RI (Default)
3-4	+5V
1-2	+12V

2.13 LCD Backlight Voltage/PWM Control Selection (JP7)

JP7	Function
1-2	BIAS (Default)
2-3	PWM Control

2.14 AT/ATX Selection (CN22 Pin 4-5)

CN22 Pin 4-5	Function
4-5	AT (Default)
NC	ATX

2.15 Audio Connector (CN1)

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

2.16 AAEON Expansion Slot (CN2)

Pin	Signal	Pin	Signal
1	+2.5 Volt.	2	SDVO_CLK#
3	+2.5 Volt.	4	SDVO_CLK
5	+2.5 Volt.	6	Ground
7	RI#	8	SDVO_BLUE#
9	SERIRQ#	10	SDVO_BLUE
11	PCI_RST#	12	SDVO_GREEN#
13	PCI_GNT#2	14	SDVO_GREEN
15	PCI_GNT#1	16	SDVO_RED#
17	PCI_AD11	18	SDVO_RED
19	PCI_AD13	20	Ground
21	PCI_TRDY#	22	SDVO_INT#
23	PCI_FRAME#	24	SDVO_INT
25	PCI_AD24	26	Ground
27	PCI_INT#C	28	SDVOCTRL_CLK
29	PCI_PME#	30	SDVOCTRL_DATA
31	PCI_AD28	32	SDVO_FLDSTALL#
33	PCI_REQ#1	34	SDVO_FLDSTALL
35	PCI_AD22	36	Ground
37	PCI_PAR	38	+5 Volt.
39	PCI_INT#D	40	+5 Volt.
41	PCICLK2_IN	42	+5 Volt.
43	PCICLK1_IN	44	Ground
45	PCI_AD16	46	SMBCLK
47	PCI_REQ#2	48	SMBDATA
49	PCI_AD26	50	Ground

51	PCI_AD30	52	PCIE_WAKE#
53	PCI_AD31	54	PCIE_RST#
55	PCI_AD29	56	Ground
57	PCI_STOP#	58	PCIE_TXP
59	PCI_AD18	60	PCIE_TXN
61	PCI_AD27	62	PCIE_RXP
63	PCI_AD25	64	PCIE_RXN
65	PCI_C/BE#0	66	Ground
67	IDSEL2 – (PCI_AD27)	68	PCIE_CLK
69	PCI_C/BE#3	70	PCIE_CLK#
71	PCI_AD23	72	Ground
73	IDSEL1 – (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	LPC_DRQ#
83	PCI_AD17	84	LPC_FRAME#
85	PCI_C/BE#2	86	Ground
87	PCI_IRDY#	88	+3.3 Volt. Standby
89	PCI_AD4	90	+3.3 Volt. Standby
91	PCI_AD9	92	+3.3 Volt. Standby
93	PCI_AD15	94	Ground
95	PCI_CLKRUN#	96	SLP_S3#
97	PCI_SERR#	98	SLP_S4#
99	PCI_AD6	100	SLP_S5#
101	PCI_PERR#	102	N/C
103	PCI_C/BE#1	104	+5 Volt. Standby
105	PCI_AD0	106	+5 Volt. Standby

107	PCI_AD2	108	+5 Volt. Standby
109	PCI_AD14	110	N/C
111	PCI_LOCK#	112	N/C
113	PCI_INT#B	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	PCI_INT#A	124	N/C
125	PCI_AD3	126	N/C
127	PCI_AD5	128	Ground
129	PCI_AD1	130	CLK48_IN
131	+3.3 Volt.	132	CLK33_IN
133	+3.3 Volt.	134	Ground
135	+3.3 Volt.	136	USB_D+
137	Ground	138	USB_D-
139	Ground	140	OC#

2.17 Keyboard/Mouse Connector (CN3)

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

2.18 USB Port 1, 2 Connector (CN4)

Pin	Signal	Pin	Signal
1	+5 Volt. Standby	5	+5 Volt. Standby
2	Data0-	6	Data1-
3	Data0+	7	Data1+

4	Ground	8	Ground
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2.19 Touch Screen Connector (CN5)

Pin	8-wire Signal	4-wire Signal	5-wire Signal
1	Ground	Ground	Ground
2	Top Excite	Top	UL(Y)
3	Bottom Excite	Bottom	UR(H)
4	Left Excite	Left	LL(L)
5	Right Excite	Right	LR(X)
6	Top Sense	N/C	SENSE
7	Bottom Sense	N/C	N/C
8	Left Sense	N/C	N/C
9	Right Sense	N/C	N/C

2.20 IDE Connector (CN6)

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 /+5 Volt. For DOM optional
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

2.21 RJ-45 Ethernet #2 Connector (CN7)

Pin	Signal	Pin	Signal
1	MDI2_0+ / TXD+	2	MDI2_0- / TXD-
3	MDI2_1+ / RXD+	4	MDI2_1- / RXD-
5	TCD2_0	6	TCD2_1
7	MDI2_2+	8	MDI2_2-
9	MDI2_3+	10	MDI2_3-
11	ACT_2_LED	12	+3.3 Volt.
13	SPD100_2_LED	14	SPD1G_2_LED

2.22 RJ-45 Ethernet #1 Connector (CN8)

Pin	Signal	Pin	Signal
1	MDI1_0+ / TXD+	2	MDI1_0- / TXD-
3	MDI1_1+ / RXD+	4	MDI1_1- / RXD-
5	TCD1_0	6	TCD1_1
7	MDI1_2+	8	MDI1_2-
9	MDI1_3+	10	MDI1_3-
11	ACT_1_LED	12	+3.3 Volt.
13	SPD100_1_LED	14	SPD1G_1_LED

2.23 USB Port 3, 4 Connector (CN9)

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

2.24 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

2.25 SATA 0 Connector (CN11)

Pin	Signal
1	Ground
2	TX0+
3	TX0-
4	Ground
5	RX0-
6	RX0+
7	Ground

2.26 SATA 2 Connector (CN12)

Pin	Signal
1	Ground
2	TX1+
3	TX1-
4	Ground
5	RX1-
6	RX1+
7	Ground

2.27 LVDS Connector (CN13)

Pin	Signal	Pin	Signal
1	Back-Light Enable	2	Back-Light Control / N/C
3	LCD Volt.	4	Ground
5	LA_CLK#	6	LA_CLK
7	LCD Volt.	8	Ground
9	LA_DATA#_0	10	LA_DATA_0
11	LA_DATA#_1	12	LA_DATA_1
13	LA_DATA#_2	14	LA_DATA_2
15	N/C	16	N/C
17	LVDS_DATA / N/C	18	LVDS_CLK / N/C
19	LB_DATA#_0	20	LB_DATA_0
21	LB_DATA#_1	22	LB_DATA_1
23	LB_DATA#_2	24	LB_DATA_2
25	N/C	26	N/C
27	LCD Volt.	28	Ground
29	LB_CLK#	30	LB_CLK

2.28 LCD Backlight Connector (CN14)

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

2.29 COM Port 1 Connector (CN15)

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

2.30 COM Port 2 Connector (CN16)

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 / +5 Volt. / +12 Volt.	10	N/C

RS-422 Mode

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. / +12 Volt.	10	N/C

RS-485 Mode

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. / +12 Volt.	10	N/C

2.31 COM Port 3 Connector (CN17)

Pin	Signal	Pin	Signal
1	DCDC	2	RXC
3	TXC	4	DTRC
5	Ground	6	DSRC
7	RTSC	8	CTSC
9	RIC	10	N/C

2.32 COM Port 4 Connector (CN18)

Pin	Signal	Pin	Signal
1	DCDD	2	RXD
3	TXD	4	DTRD
5	Ground	6	DSRD
7	RTSD	8	CTSD
9	RID	10	N/C

2.33 DVI/CRT Display Connector (CN19) -Configured by manufacturer

DVI Display

Pin	Signal	Pin	Signal
C1	RED	C2	GREEN
C3	BLUE	C4	HSYNC
C5	Ground	C6	N/C
1	DVI_TDC2#	2	DVI_TDC2
3	Ground	4	DDCCLK
5	DDCDATA	6	DVI_CLK
7	DVI_DATA	8	VSYNC
9	DVI_TDC1#	10	DVI_TDC1
11	Ground	12	N/C
13	N/C	14	+5 Volt.
15	Ground	16	DVI_DET
17	DVI_TDC0#	18	DVI_TDC0
19	Ground	20	N/C
21	N/C	22	Ground
23	DVI_TLC	24	DVI_TLC#
25	Ground	26	Ground
27	N/C	28	N/C

CRT Display

Pin	Signal	Pin	Signal
29	DDCCLK	30	N/C
31	+5 Volt.	32	HSYNC
33	GREEN	34	Ground
35	N/C	36	Ground

37	Ground	38	VSYNC
39	BLUE	40	Ground
41	DDCDATA	42	RED
43	CRT_PLUG#		

2.34 Digital I/O Connector (CN20)

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

The pin definitions and registers mapping are illustrated below:

Address: 680,682,684H

BIOS Setting	Connector Definition	Address	IT8712 GPIO Setting
Port 8 @684h	CN22 Pin 8	GPIO Set 5 / Bit 2	U9 Pin 9 (GPIO 52)
Port 7 @684h	CN22 Pin 7	GPIO Set 5 / Bit 1	U9 Pin 10 (GPIO 51)
Port 6 @682h	CN22 Pin 6	GPIO Set 3 / Bit 7	U9 Pin 11 (GPIO 37)
Port 5 @682h	CN22 Pin 5	GPIO Set 3 / Bit 6	U9 Pin 12 (GPIO 36)
Port 4 @680h	CN22 Pin 4	GPIO Set 1 / Bit 4	U9 Pin 31 (GPIO 14)
Port 3 @680h	CN22 Pin 3	GPIO Set 1 / Bit 3	U9 Pin 32 (GPIO 13)
Port 2 @680h	CN22 Pin 2	GPIO Set 1 / Bit 2	U9 Pin 33 (GPIO 12)
Port 1 @680h	CN22 Pin 1	GPIO Set 1 / Bit 1	U9 Pin 34 (GPIO 11)

2.35 Onboard BIOS Programming I/F (CN21)

Pin	Signal	Pin	Signal
1	+3.3 Volt.	2	Ground
3	SPI_CE#	4	SPI_CLK
5	SPI_SO	6	SPI_SI
7	N/C	8	N/C

2.36 ATX Connector (CN22)

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

2.37 Wide Range Voltage Input Connector (CN23)- Configured by manufacturer

Pin	Signal
1	Vin (+8.5~+19 Volt.)
2	Ground

2.38 +5V Power Input Connector (CN24)- Configured by manufacturer

Pin	Signal
1	N/C
2	Ground

3	Ground
4	+5 Volt.

2.39 CPU Fan Connector (CN25)

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

2.40 +5V/+12V Output Connector (CN26)

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

2.41 CompactFlash Disk (CFD1)

Pin	Signal	Pin	Signal
1	Ground	26	Ground
2	PDD3	27	PDD11
3	PDD4	28	PDD12
4	PDD5	29	PDD13
5	PDD6	30	PDD14
6	PDD7	31	PDD15
7	PDCS#1	32	PDCS#3
8	Ground	33	Ground
9	Ground	34	PDIOR#
10	Ground	35	PDIOW#

11	Ground	36	+3.3 Volt.
12	Ground	37	INT_IRQ14
13	+3.3 Volt.	38	+3.3 Volt.
14	Ground	39	CSEL#
15	Ground	40	N/C
16	Ground	41	IDERST#
17	Ground	42	PIORDY
18	PDA2	43	N/C
19	PDA1	44	+3.3 Volt.
20	PDA0	45	DASP#
21	PDD0	46	PDIAG#
22	PDD1	47	PDD8
23	PDD2	48	PDD9
24	N/C	49	PDD10
25	Ground	50	Ground

2.42 Mini-PCI Slot (MPC1)

Standard Specification.

2.43 DDRII SODIMM Slot (DIMM1)

Standard Specification.

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-9455 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 shows the voltage, temperature and fan speed of the system.

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-9455 comes with an AutoRun CD-ROM that contains all drivers and utilities that can help you to install the driver automatically.

Insert the driver CD, the driver CD-title will auto start and show the installation guide. If not, please follow the sequence below to install the drivers.

Follow the sequence below to install the drivers:

Step 1 – Install INF Driver

Step 2 – Install VGA Driver

Step 3 – Install LAN Driver

Step 4 – Install Audio Driver

Step 5 – Install Touch Panel Driver

Step 6 – Install PER-T061 & -T099 Sil3132 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/.

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the GENE-9455 CD-ROM into the CD-ROM drive. And install the drivers from Step 1 to Step 6 in order.

Step 1 – Install Chip Driver

1. Click on the **Step 1 - INF Update Utility v8.2.0.1014** folder and 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 VGA Driver

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

Step 3 –Install LAN Driver

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

Step 4 –Install Audio Driver

1. Click on the **Step 4 - Realtek ALC655 Audio Driver v3.71** folder and select the OS folder your system is
2. Double click on **setup.exe** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 5 –Install Touch Panel Driver

1. Click on the **Step 5 - PenMount 6300 Touch Driver** folder and select the OS folder your system is
2. Double click on the **Setup.exe** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 6 –Install PER-T061 & -T099 Sil3132 SATA Driver

1. Click on the **Step 6 - PER-T061 & -T099 Sil3132 SATA Driver** folder and select the **WDM** folder
2. Double click on the **3132-W-I32-R_1552.exe** file located in WDM folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Appendix

A

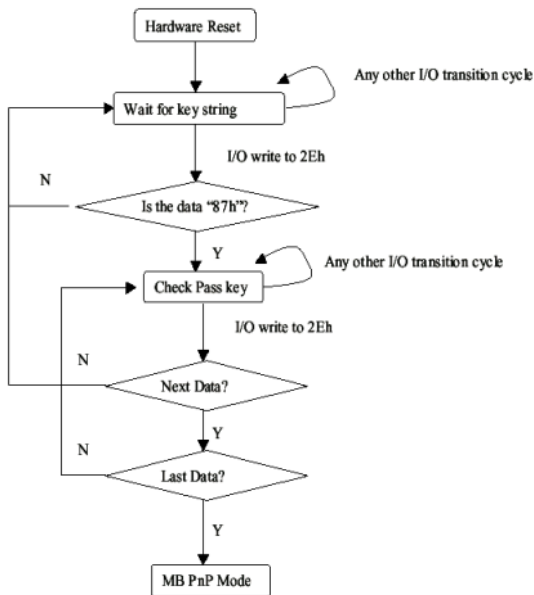
Programming the Watchdog Timer

A.1 Programming

GENE-9455 utilizes ITE 8781 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 8781 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	NA	Configure Control

07h	71h	R/W	00h	Watch Dog Timer Control Register
07h	72h	R/W	001s0000b	Watch Dog Timer Configuration Register
07h	73h	R/W	38h	Watch Dog Timer Time-out Value (LSB) Register
07h	74h	R/W	00h	Watch Dog Timer Time-out Value (MSB) 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.

Watch Dog Timer 1, 2, 3 Control Register (Index=71h,81h,91h Default=00h)

Bit	Description
7	WDT Timeout Enable(WTE) 1: Disable. 0: Enable.
6	WDT Reset upon Mouse Interrupt(WRKMI) 0: Disable. 1: Enable.
5	WDT Reset upon Keyboard Interrupt(WRKBI) 0: Disable. 1: Enable.
4	Reserved
3-2	Reserved
1	Force Time-out(FTO) This bit is self-clearing.
0	WDT Status(WS) 1: WDT value reaches 0. 0: WDT value is not 0.

Watch Dog Timer 1, 2, 3 Configuration Register (Index=72h, 82h, 92h Default=001s0000b)

Bit	Description
7	WDT Time-out Value Select 1 (WTVS) 1: Second 0: Minute
6	WDT Output through KRST (Pulse) Enable(WOKE) 1: Enable 0: Disable
5	WDT Time-out value Extra select(WTVES) 1: 64ms x WDT Timer-out value (default = 4s) 0: Determined by WDT Time-out value select 1 (bit 7 of this register)
4	WDT Output through PWROK (Pulse) Enable(WOPE) 1: Enable 0: Disable During LRESET#, this bit is selected by JP7 power-on strapping option
3-0	Select interrupt level^{Note1} for WDT(SIL)

Watch Dog Timer 1,2,3 Time-Out Value (LSB) Register (Index=73h,83h,93h, Default=38h)

Bit	Description
7-0	WDT Time-out Value 7-0(WTV)

Watch Dog Timer 1,2,3 Time-Out Value (MSB) Register (Index=74h,84h,94h Default=00h)

Bit	Description
7-0	WDT Time-out Value 15-8(WTV)

A.2 ITE8781 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,81h

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 - 000000CF7]	PCI bus
[00000010 - 0000001F]	Motherboard resources
[00000020 - 00000021]	Programmable interrupt controller
[00000022 - 0000003F]	Motherboard resources
[00000040 - 00000043]	System timer
[00000044 - 0000005F]	Motherboard resources
[00000061 - 00000061]	System speaker
[00000062 - 00000063]	Motherboard resources
[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
[000000CD - 000000DF]	Direct memory access controller
[000000E0 - 000000EF]	Motherboard resources
[000000FD - 000000FF]	Numeric data processor
[000001F0 - 000001F7]	Primary IDE Channel
[00000274 - 00000277]	ISAPNP Read Data Port
[00000279 - 00000279]	ISAPNP Read Data Port
[000002E8 - 000002EF]	Communications Port (COM4)
[000002F8 - 000002FF]	Communications Port (COM2)
[000003B0 - 000003BB]	Mobile Intel(R) 945 Express Chipset Family
[000003C0 - 000003DF]	Mobile Intel(R) 945 Express Chipset Family
[000003E8 - 000003EF]	Communications Port (COM3)
[000003F6 - 000003F6]	Primary IDE Channel
[000003F8 - 000003FF]	Communications Port (COM1)
[00000400 - 000004BF]	Motherboard resources
[000004D0 - 000004D1]	Motherboard resources
[00000500 - 0000051F]	Intel(R) 82801G (ICH7 Family) SMBus Controller - 27DA
[00000880 - 0000088F]	Motherboard resources
[00000A79 - 00000A79]	ISAPNP Read Data Port
[00000D00 - 0000FFFF]	PCI bus
[0000B000 - 0000BFFF]	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
[0000BF00 - 0000BF1F]	Intel(R) 82574L Gigabit Network Connection
[0000C000 - 0000CFFF]	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
[0000CF00 - 0000CF1F]	Intel(R) 82574L Gigabit Network Connection #2
[0000F000 - 0000F0FF]	Realtek AC'97 Audio
[0000F300 - 0000F30F]	Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
[0000F400 - 0000F403]	Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
[0000F500 - 0000F507]	Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
[0000F600 - 0000F603]	Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
[0000F700 - 0000F707]	Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
[0000F800 - 0000F80F]	Intel(R) 82801G (ICH7 Family) Ultra ATA Storage Controllers - 27DF
[0000FA00 - 0000FA3F]	Realtek AC'97 Audio
[0000FB00 - 0000FB1F]	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CB
[0000FC00 - 0000FC1F]	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CA
[0000FD00 - 0000FD1F]	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9
[0000FE00 - 0000FE1F]	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8
[0000FF00 - 0000FF07]	Mobile Intel(R) 945 Express Chipset Family

B.2.1st MB Memory Address Map

Address Range	Device Name
[00000000 - 0009FFFF]	System board
[000A0000 - 000BFFFF]	Mobile Intel(R) 945 Express Chipset Family
[000A0000 - 000BFFFF]	PCI bus
[000C0000 - 000DFFFF]	PCI bus
[000E0000 - 000EFFFF]	System board
[000F0000 - 000FFFFFFF]	System board
[00100000 - 3F6DFFFF]	System board
[3F6E0000 - 3F6FFFFFFF]	System board
[3F700000 - FEBFFFFFFF]	PCI bus
[D0000000 - DFFFFFFF]	Mobile Intel(R) 945 Express Chipset Family
[E0000000 - EFFFFFFF]	Motherboard resources
[FD800000 - FD8FFFFFFF]	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
[FD900000 - FD9FFFFFFF]	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
[FD9C0000 - FD9DFFFF]	Intel(R) 82574L Gigabit Network Connection
[FD9FC000 - FD9FFFFFFF]	Intel(R) 82574L Gigabit Network Connection
[FDA00000 - FDAFFFFFFF]	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
[FDD00000 - FDDFFFFFFF]	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
[FDDC0000 - FDDDFFFF]	Intel(R) 82574L Gigabit Network Connection #2
[FDDFC000 - FDDFFFFFFF]	Intel(R) 82574L Gigabit Network Connection #2
[FDF00000 - FDF7FFFF]	Mobile Intel(R) 945 Express Chipset Family
[FDF80000 - FDFBFFFF]	Mobile Intel(R) 945 Express Chipset Family
[FDFFC000 - FDFFC3FF]	Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
[FDFFD000 - FDFFD0FF]	Realtek AC'97 Audio
[FDFFE000 - FDFFE1FF]	Realtek AC'97 Audio
[FDFFF000 - FDFFF3FF]	Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC
[FEB80000 - FEBFFFFFFF]	Mobile Intel(R) 945 Express Chipset Family
[FEC00000 - FEC00FFF]	System board
[FED13000 - FED1DFFF]	System board
[FED20000 - FED8FFFF]	System board
[FEE00000 - FEE00FFF]	System board
[FFB00000 - FFB7FFFF]	System board
[FFB80000 - FFBFFFFFFF]	Intel(R) 82802 Firmware Hub Device
[FFF00000 - FFFFFFFF]	System board

B.3 IRQ Mapping Chart

Device	IRQ
Interrupt request (IRQ)	
(ISA) 0 System timer	0
(ISA) 3 Communications Port (COM2)	3
(ISA) 4 Communications Port (COM1)	4
(ISA) 8 System CMOS/real time clock	8
(ISA) 9 Microsoft ACPI-Compliant System	9
(ISA) 10 Communications Port (COM4)	10
(ISA) 11 Communications Port (COM3)	11
(ISA) 13 Numeric data processor	13
(ISA) 14 Primary IDE Channel	14
(PCI) 15 Intel(R) 82801G (ICH7 Family) SMBus Controller - 27DA	15
(PCI) 16 Intel(R) 82574L Gigabit Network Connection #2	16
(PCI) 16 Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0	16
(PCI) 16 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CB	16
(PCI) 16 Mobile Intel(R) 945 Express Chipset Family	16
(PCI) 17 Intel(R) 82574L Gigabit Network Connection	17
(PCI) 17 Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2	17
(PCI) 17 Realtek AC'97 Audio	17
(PCI) 18 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CA	18
(PCI) 19 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9	19
(PCI) 19 Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4	19
(PCI) 23 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8	23
(PCI) 23 Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC	23

B.4 DMA Channel Assignments

AAEON-3C2C950DC	
Direct memory access (DMA)	
4 Direct memory access controller	
+	Input/output (IO)
+	Interrupt request (IRQ)
+	Memory

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	Audio Connector	Catch	052-D200-14P	Audio Cable	1700140510
CN2	Expansion Slot	Hirose	0.6mm Pitch 140 pins (Hirose FX8C-140P- SV6(93)	N/A	N/A
CN3	Keyboard / Mouse Connector	Catch	A003-290	KB/MS Cable	1700060152
CN5	Touch Screen Connector	LIAN TAY	H746-09		N/A
CN6	IDE Connector	Catch	B016-009-2	IDE Cable	1701440500
CN9	USB Port 3,4 Connector	Neltron	2026B-10	USB Cable	1709100201
CN10	TV-out Connector	Astron	27-24041-20 4-1G-TB1-R	TV Cable	1700080180
CN13	LVDS Connector	HIROSE	DF13-30DS- 1.25C		N/A
CN14	LVDS Inverter Connector	HoBase	2002-H-5		N/A
CN16	COM Port 2 Connector	Neltron	2026B-10	Serial Port Cable	1701100206
CN17	COM Port 3 Connector	Neltron	2026B-10	Serial Port Cable	1701100206

CN18	COM Port 4 Connector	Neltron	2026B-10	Serial Port Cable	1701100206
CN20	Digital I/O Connector	Neltron	2026B-10		N/A
CN22	ATX Connector	Catch	2418HJ-06	ATX External 5VSB Cable	1702200205
CN24	+5V Power Input Connector	Neltron	8980-04		N/A
CN25	CPU Fan Connector	Catch	1190-700-03 S	N/A	N/A
CN26	+5V/+12V Output Connector	HoBase	2543-H-4	SATA Power Cable	1702151200