

GENE-LN05 Rev.B

Intel® Atom™N455/D525 Processors

Intel® 82567V & 82583V

for 10/100/1000Mbps

2 SATA 3.0 Gb/s, 1 CompactFlash™

6 COM, 7 USB2.0, Digital I/O

1 Mini Card/ SMBus/ LPC

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Packing List

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

- CD-ROM for manual (in PDF format) and drivers
- GENE-LN05 Rev.B with Active Cooler (D525 Version) or with Passive Cooler (N455 Version)

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 a new 3.5" SubCompact Board—GENE-LN05 Rev.B. The GENE-LN05 Rev.B is a cutting-edge product that provides high performance and low power consumption in the embedded market. GENE-LN05 Rev.B adopts the latest Intel® Atom processors and the system memory is deployed with SODIMM DDR3 up to 4 GB (D525 is up to 4 GB, N455 is up to 2 GB). In addition, Intel® 82567V & 82583V supports two 10/100/100Base-TX that allows faster network connection. This model applies one Mini Card and one LPC Bus expansions. Moreover, two SATA 3.0 Gb/s (optional RAID 0 & 1) and one Type2 CompactFlash™ storage is configured on the GENE-LN05 Rev.B. In addition to the diverse storages, GENE-LN05 Rev.B also equips seven USB2.0, six COM, one parallel, and one keyboard/mouse ports for flexible I/O expansions. There are no more worries about installing many necessary devices to complete the functions of your system.

The display of GENE-LN05 Rev.B supports CRT/LCD simultaneous/dual view displays and 18/24-bit single channel LVDS. Moreover, the GENE-LN05 Rev.B offers Wide Temperature Solution and the temperature range will be -40°C~85°C. This 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® Atom™ N455/D525 Processors Up To 1.8 GHz
- Intel® ICH8M
- DDR3 800 SODIMM, Max. 4 GB for D525; Max. 2 GB for N455
- Gigabit Ethernet x 2
- CRT, 18/24-bit Single Channel LVDS LCD
- 2CH HD Audio
- SATA 3.0Gb/s x 2 (Optional RAID 0 & 1), CompactFlash™ x 1
- USB 2.0 x 7, COM x 6, Parallel x 1, 8-bit Digital I/O
- Onboard 4/5/8-wire Resistive Touch Screen Controller
- Mini Card x 1
- +12V or +5V (Optional) Operation
- Onboard Trusted Platform Module (Optional)

1.3 Specifications

System

- Processor Intel® Atom™ N455/D525 1.8GHz Processors
- System Memory 204-pin DDR3 800 SODIMM x 1, Max. 4 GB for Intel® Atom™ D525; Max. 2 GB for Intel® Atom™ N455
- Chipset Intel® ICH8M
- I/O Chipset Nuvoton W83627DHG-P, Fintek F81216DG
- Ethernet Intel® 82567V & 82583V, 10/100/1000Base-TX, RJ-45 x 2
- BIOS AMI Plug & Play SPI BIOS – 2MB Flash
- Wake On LAN Yes
- Watchdog Timer Generates a time-out system reset
- H/W Monitor Supports power supply voltages and temperature monitoring
- Chipset
- Expansion Interface Mini Card x 1, LPC Bus
- Trusted Platform Infineon SLB 9635 TT 1.2 (Optional)
- Module (TPM)
- Battery Lithium battery
- Power Requirement +12V or +5V (Optional), AT/ATX

- 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)
 WiTAS 1: -4°F~ 158°F (-20°C~70°C)
 (TF-GENE-LN05W1-B10-01)
 WiTAS 2 : -40°F~ 185°F (-40°C~85°C)
 (TF-GENE-LN05W2-B10-01)
- 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[®] N455/D525 integrated
- Memory Shared system memory up to 224 MB/ DVMT4.0
- Resolution Up to 1920 x 1440 for CRT (D525)
 Up to 1280x1024 for CRT (N455)
 Up to 1366x768 or 1280 x 800 for LCD
- LCD Interface 18/24-bit single channel LVDS

I/O

- Storage SATA 3.0 Gb/s x 2,
 Type2 CompactFlash™ x 1
- Serial Port Serial Port :RS-232 x 5,

	RS-232/422/485 (auto flow) x 1 (AAEON recommends for the Serial Port to be at the 9600 baud rate during high temperature operation.)
● Parallel Port	SPP/EPP/ECP x 1
● USB Port	USB2.0 x 7
● PS/2 Port	Keyboard x 1, Mouse x 1
● Digital I/O	Supports 8-bit (Programmable)
● Audio	Line-in, Line-out, Mic-in
● Touch Screen	Supports 4/5/8-wire resistive touch screen

Note: For TF-GENE-LN05W2-B10-01, a thermal module for the DDR3 memory is recommended. We recommended using “Fujipoly: SARCON® XR-L” (1.2 watt/m-K) or better thermal pad for the thermal module.

Note 2: According to Intel EDS documents, the chipset supports the 4 types of DRAM as shown in the table below. Please choose your DRAM according to the EDS document to avoid compatibility issues.

- DDR3 DRAM Device Technology:
Standard 1-Gb and 2-Gb technologies and addressing are supported for x16/ x8 devices. There is no support for SODIMMs with different technologies or capacities on opposite sides of the same SODIMM. If one

side of a SODIMM is populated, the other side is either identical or empty.

- Supported DDR3 SODIMM module configurations.

Raw Card Type	DIMM Capacity	DRAM Device Tech.	DRAM Organization	# of DRAM Devices	# of Ranks	# of Banks
A	1 GB	1 Gb	64 M x 16	8	2	8
A	2 GB	2 Gb	128 M x 16	8	2	8
B	1 GB	1 Gb	128 M x 8	8	1	8
B	2 GB	2 Gb	256 M x 8	8	1	8

Chapter

2

**Quick
Installation
Guide**

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.

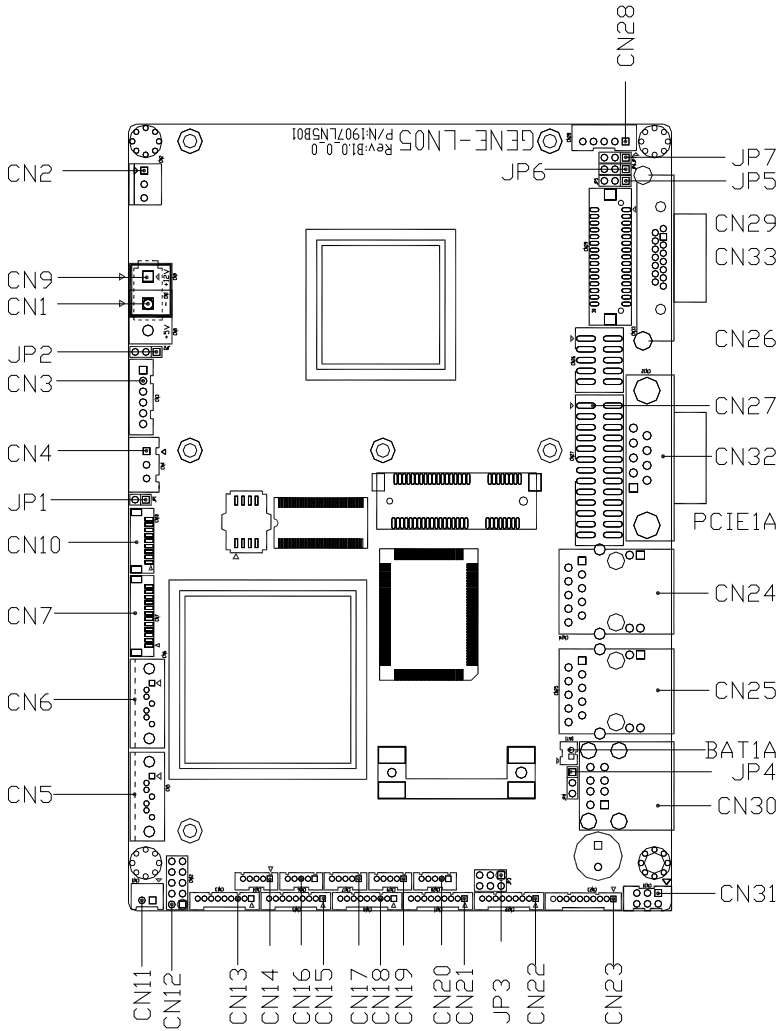
Caution!



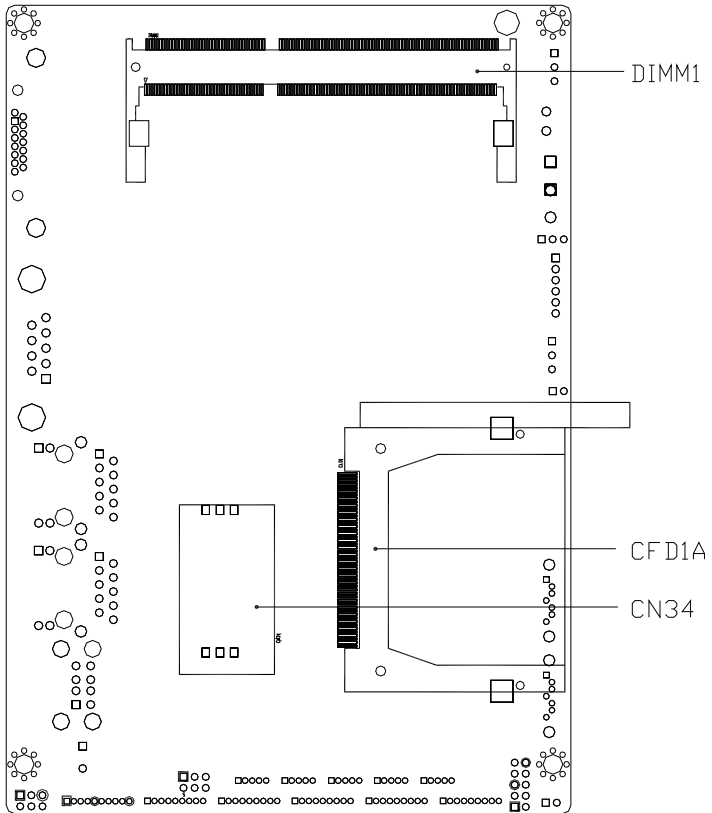
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

2.2 Location of Connectors and Jumpers

Component Side

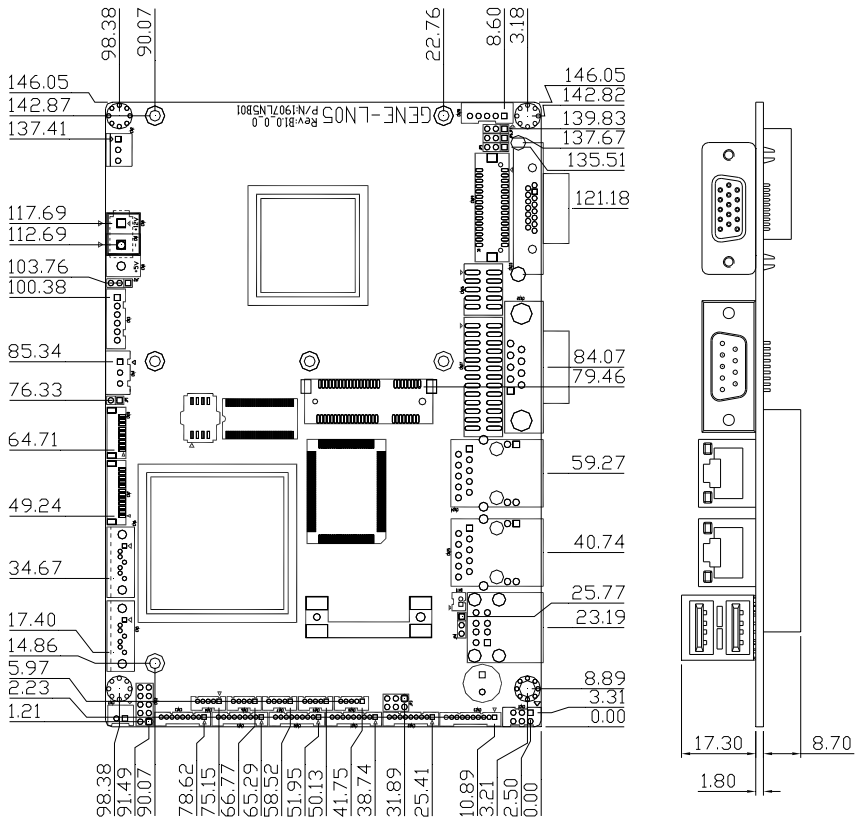


Solder Side

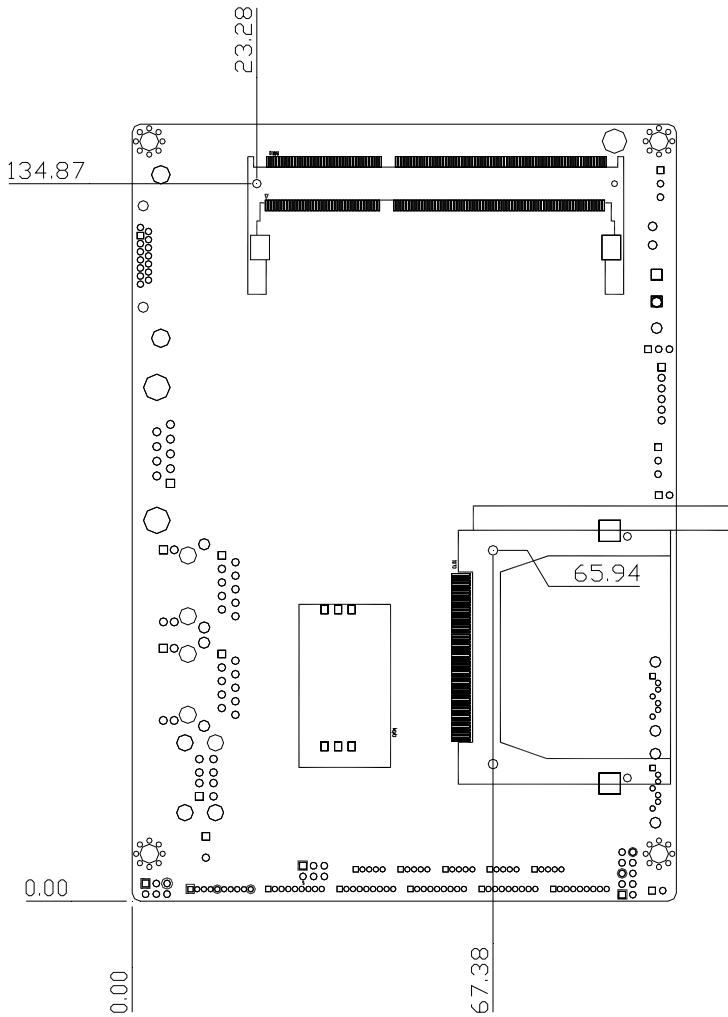


2.3 Mechanical Drawing

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:

(A1, A2 versions)

Label	Function
JP1	Touch Screen 4/5/8-wires Mode Selection
JP2	Auto Power Button Selection
JP3	COM2 RI/+5/+12V Selection
JP4	Clear CMOS
JP5	LVDS Backlight Bias/PWM Mode Selection
JP6	LVDS Operating Voltage Selection
JP7	LVDS Inverter 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:

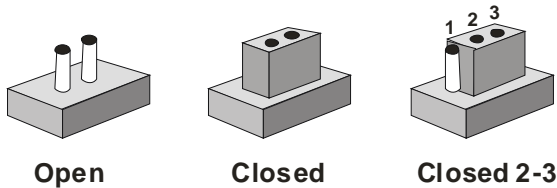
Label	Function
CN1	2-Pin ATX Power Connector (Optional)
CN2	CPU FAN
CN3	+5VSB Output w/ SMBus
CN4	External +5VSB Input
CN5	SATA Port #2
CN6	SATA Port #1
CN7	LPC Expansion I/F
CN8	External +5V Input (depends on power input configuration)
CN9	External +12V Input (depends on power input configuration)
CN10	Touch Screen
CN11	+5V Output for SATA HDD using
CN12	Front Panel
CN13	COM Port #6
CN14	USB Port #7
CN15	COM Port #5
CN16	USB Port #6
CN17	USB Port #5
CN18	COM Port #4
CN19	USB Port #4
CN20	USB Port #3

CN21	COM Port #3
CN22	COM Port #2
CN23	Audio Line-In/Out and MIC Connector
CN24	RJ-45 Ethernet #2
CN25	RJ-45 Ethernet #1
CN26	Digital I/O
CN27	Parallel Port
CN28	LVDS Inverter Connector
CN29	LVDS Output
CN30	USB Port #1 and #2
CN31	PS/2 Keyboard & Mouse
CN32	COM Port #1
CN33	Analog CRT Display
CN34	SIM Card Socket
CFD1	Compact Flash Disk
PCIE1	Mini-Card Slot #1
DIMM1	DDR3 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 Touch Screen 4/5/8-wire Mode Selection (JP1)

JP1	Function
1-2 Closed	4/8-wire (Default)
1-2 Open	5-wire

2.8 Auto Power Button Selection (JP2)

JP2	Function
1-2	Enable (Default)
2-3	Disable

2.9 COM2 RI/+5V/+12V Selection (JP3)

JP3	Function
1-2	+12V
3-4	+5V
5-6	RI (Default)

2.10 Clear CMOS (JP4)

JP4	Function
1-2	Normal (Default)
2-3	Clear CMOS

2.11 LVDS Backlight Bias/PWM Mode Selection (JP5)

JP5	Function
1-2	Bias (Default)
2-3	PWM Control

2.12 LVDS Operating Voltage Selection (JP6)

JP6	Function
1-2	+5V
2-3	+3.3V (Default)

2.13 LVDS Inverter Voltage Selection (JP7)

JP7	Function
1-2	+12V
2-3	+5V (Default)

2.14 2-Pin ATX Power Connector (CN1) (Optional)

Pin	Signal
1	+12V
2	Ground

2.15 CPU FAN Connector (CN2)

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

2.16 +5VSB Output With SMBUS (CN3)

Pin	Signal
1	SMBDATA
2	Ground
3	SMBCLK
4	Ground

5	PERSON#
6	+5 Volt. Standby

2.17 External +5VSB Input (CN4)

Pin	Signal
1	PERSON#
2	Ground
3	+5V Standby

2.18 SATA Port # 2 (CN5)

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

2.19 SATA Port # 1 (CN6)

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

2.20 LPC Expansion I/F (CN7)

Pin	Signal
1	LAD0
2	LAD1
3	LAD2
4	LAD3
5	+3.3 Volt.
6	LFRAME#
7	LRESET#
8	Ground
9	LPC_CLK
10	LDRQ#0
11	LDRQ#1
12	SERIRQ

2.21 External +5V Input –depends on the power input configuration (CN8)

DC Terminal

Pin	Signal
1	Ground
2	+5V

2.22 External +12V Input–depends on the power input configuration (CN9)

DC Terminal

Pin	Signal
1	+12V
2	Ground

2.23 Touch Screen Connector (CN10)

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

2.24 +5V Output For SATA HDD (CN11)

Pin	Signal
1	+5V (800mA)
2	Ground

2.25 Front Panel (CN12)

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

2.26 COM Port #6 (CN13)

Pin	Signal	Pin	Signal
1	DCDF	2	DSRF

3	RXF	4	RTSF
5	TXF	6	CTSF
7	DTRF	8	RIF
9	Ground	10	N/C

2.27 USB Port #7 (CN14)

Pin	Signal
1	+5V Standby
2	Data6-
3	Data6+
4	Ground
5	Ground

2.28 COM Port #5 (CN15)

Pin	Signal	Pin	Signal
1	DCDE	2	DSRE
3	RXE	4	RTSE
5	TXE	6	CTSE
7	DTRE	8	RIE
9	Ground	10	N/C

2.29 USB Port #6 (CN16)

Pin	Signal
1	+5V Standby
2	Data5-
3	Data5+
4	Ground
5	Ground

2.30 USB Port #5 (CN17)

Pin	Signal
1	+5V Standby
2	Data4-
3	Data4+
4	Ground
5	Ground

2.31 COM Port #4 (CN18)

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

2.32 USB Port #4 (CN19)

Pin	Signal
1	+5V Standby
2	Data3-
3	Data3+
4	Ground
5	Ground

2.33 USB Port #3 (CN20)

Pin	Signal
1	+5V Standby
2	Data2-

3	Data2+
4	Ground
5	Ground

2.34 COM Port #3 (CN21)

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

2.35 COM Port #2 (CN22)

RS-232 Mode

Pin	Signal	Pin	Signal
1	DCDB	2	DSRB
3	RXB	4	RTSB
5	TXB	6	CTSB
7	DTRB	8	RIB / +5V / (+12V)
9	Ground	10	N/C

RS-422 Mode

Pin	Signal	Pin	Signal
1	TXD-	2	N/C
3	RXD+	4	N/C
5	TXD+	6	N/C
7	RXD-	8	N/C / +5V / (+12V)
9	Ground	10	N/C

RS-485 Mode

Pin	Signal	Pin	Signal
1	TXD-	2	N/C
3	N/C	4	N/C
5	TXD+	6	N/C
7	N/C	8	N/C / +5V/ (+12V)
9	Ground	10	N/C

2.36 Audio Line-In/Out and MIC Connector (CN23)

Pin	Signal
1	MIC_L
2	MIC_R
3	Ground
4	Line IN_L
5	Line IN_R
6	Ground
7	Line OUT_L
8	Ground
9	Line OUT_R
10	+5V

2.37 RJ-45 Ethernet #2 (CN24)

Pin	Signal	Pin	Signal
R1	MDIO0+	R2	MDIO0-
R3	MDIO1+	R4	MDIO1-
R5	TCD0	R6	TCD1
R7	MDIO2+	R8	MDIO2-
R9	MDIO3+	R10	MDIO3-

L1	SPD100_LED	L2	SPD1K_LED
L3	ACT_LED	L4	+3.3V

2.38 RJ-45 Ethernet #1 (CN25)

Pin	Signal	Pin	Signal
R1	GPHY_MDIO0+	R2	GPHY_MDIO0-
R3	GPHY_MDIO1+	R4	GPHY_MDIO1-
R5	TCD0	R6	TCD1
R7	GPHY_MDIO2+	R8	GPHY_MDIO2-
R9	GPHY_MDIO3+	R10	GPHY_MDIO3-
L1	SPD100_LED	L2	SPD1K_LED
L3	ACT_LED	L4	+3.3V

2.39 Digital I/O Connector (CN26)

Note: The max. rating of Pin 1 ~ Pin 8 is 3.3V@8mA

The max. rating of Pin 9 is 3.3V@0.5A

This connector offers 4-pair of digital I/O functions .

BIOS using the I2C Bus to read/write internal DIO registers and the Serial Bus address is 0x6E.

The pin definitions are illustrated below:

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	+3.3V	10	Ground

BIOS Setting (I2C address)	Connector Definition	Address(Register)		F75111 GPIO Setting
		Output	Input	
Port 1 @6Eh	Pin 1	21h/Bit 0	22h/Bit 0	U69 Pin 6 (GPIO 20)
Port 2 @6Eh	Pin 2	21h/Bit 1	22h/Bit 1	U69 Pin 7 (GPIO 21)
Port 3 @6Eh	Pin 3	21h/Bit 2	22h/Bit 2	U69 Pin 8 (GPIO 22)
Port 4 @6Eh	Pin 4	21h/Bit 3	22h/Bit 3	U69 Pin 24(GPIO 23)
Port 5 @6Eh	Pin 5	21h/Bit 4	22h/Bit 4	U69 Pin 23(GPIO 24)
Port 6 @6Eh	Pin 6	21h/Bit 5	22h/Bit 5	U69 Pin 22(GPIO 25)
Port 7 @6Eh	Pin 7	21h/Bit 6	22h/Bit 6	U69 Pin 21(GPIO 26)
Port 8 @6Eh	Pin 8	21h/Bit 7	22h/Bit 7	U69 Pin 20(GPIO 27)

2.40 Parallel Port (CN27)

Pin	Signal	Pin	Signal
1	STB	2	AFD#
3	D0	4	ERROR#
5	D1	6	PINIT#
7	D2	8	SLIN#
9	D3	10	Ground
11	D4	12	Ground
13	D5	14	Ground
15	D6	16	Ground
17	D7	18	Ground
19	ACK#	20	Ground
21	BUSY	22	Ground
23	PE	24	Ground
25	SLCT	26	N/C

2.41 LVDS Inverter Connector (CN28)

Pin	Signal
1	+5V / +12V (1A)
2	Brightness Control
3	Ground
4	Ground
5	Backlight Enable

2.42 LVDS Output (CN29)

Pin	Signal	Pin	Signal
1	Back-Light Enable	2	Back-Light Control
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	LA_DATA#_3 (Optional)	16	LA_DATA_3 (Optional)
17	N/C	18	N/C
19	N/C	20	N/C
21	N/C	22	N/C
23	N/C	24	N/C
25	N/C	26	N/C
27	LCD Volt.	28	Ground
29	N/C	30	N/C

2.43 USB Port 1 & 2 (CN30)

Pin	Signal	Pin	Signal
1	+5V Standby	5	+5V Standby
2	Data0-	6	Data1-
3	Data0+	7	Data1+
4	Ground	8	Ground

2.44 PS/2 Keyboard & Mouse (CN31)

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

2.45 COM Port #1 (CN32)

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

2.46 CRT Display Connector (CN33)

Pin	Signal	Pin	Signal
1	RED	2	GREEN
3	BLUE	4	N/C
5	GREEN	6	Ground
7	Ground	8	Ground

9	+5 Volt.	10	CRT_PLUG#
11	N/C	12	DDCDATA
13	HSYNC	14	VSYNC
15	DDCCLK		

2.47 SIM Card Socket (CN34)

Pin	Signal	Pin	Signal
1	UIM_PWR	2	UIM_RST
3	UIM_CLK	4	Ground
5	UIM_VPP	6	UIM_DATA

2.48 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	+3.3V
12	Ground	37	INT_IRQ14
13	+3.3V	38	+3.3V
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	+3.3V
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

2.49 Mini-Card Slot #1 (PCIE1)

Pin	Signal	Pin	Signal
1	PCIE_WAKE#	2	+3.3V Standby
3	N/C	4	Ground
5	N/C	6	+1.5V
7	CLKREQ#	8	UIM_PWR
9	Ground	10	UIM_DATA
11	MCARD_CLK#	12	UIM_CLK
13	MCARD_CLK	14	UIM_RESET
15	Ground	16	UIM_VPP
17	N/C	18	Ground
19	N/C	20	W_DISABLE#
21	Ground	22	PCIE_RST#
23	PCIE_RXN1	24	+3.3V Standby
25	PCIE_RXP1	26	Ground
27	Ground	28	+1.5V
29	Ground	30	SMBCLK

31	PCIE_TXN1	32	SMBDATA
33	PCIE_TXP1	34	Ground
35	Ground	36	USB_Data8-
37	Ground	38	USB_Data8+
39	+3.3V Standby	40	Ground
41	+3.3V Standby	42	N/C
43	Ground	44	N/C
45	N/C	46	N/C
47	N/C	48	+1.5V
49	N/C	50	Ground
51	N/C	52	+3.3V Standby

2.50 DDR3 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

**AMI
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.

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-LN05 Rev.B 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 AMI BIOS Setup

AMI 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 or <F2> immediately. This will allow you to enter Setup.

Main

Set the date, use tab to switch between date elements.

Advanced

Enable/disable boot option for legacy network devices.

Chipset

host bridge parameters.

Boot

Enables/disables quiet boot option.

Security

Set setup administrator password.

Save&Exit

Exit system setup after saving the changes.

Chapter

4

**Driver
Installation**

The GENE-LN05 Rev.B 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 Chipset Driver

Step 2 – Install VGA Driver

Step 3 – Install LAN Driver

Step 4 – Install Audio Driver

Step 5 – Install TPM Driver (Optional)

Step 6 – Install Touch Driver (Optional)

Step 7 – Install Rapid Storage Technology Driver (Optional)

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the GENE-LN05 Rev.B CD-ROM into the CD-ROM drive.
And install the drivers from Step 1 to Step 7 in order.

Step 1 – Install Chipset Driver

1. Click on the **STEP1-CHIPSET** folder and double click on the ***ininst_autol.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 **STEP2-VGA** 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 **STEP3-LAN** folder and select the **WDM** folder
2. Double click on the **PROWin32.exe** file
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 **STEP4-AUDIO** 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 TPM Driver (Optional)

1. Click on the **STEP5-TPM (Option)** 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 6 –Install Touch Driver (Optional)

1. Click on the **STEP6-TOUCH (Option)** folder and select the OS folder your system is
2. Double click on the **.exe** located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 7 –Install Rapid Storage Technology Driver (Optional)

1. Click on the **STEP7-RAPID STORAGE (Option)** 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

Appendix

A

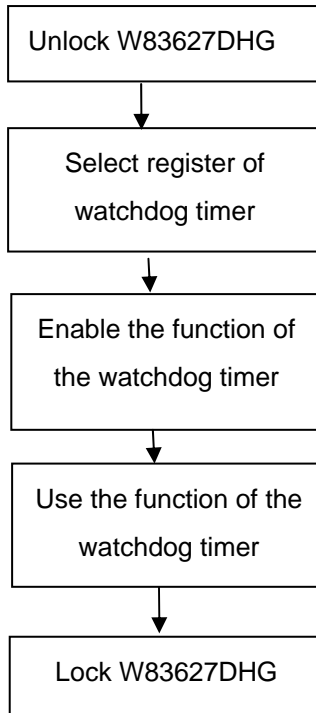
Programming the Watchdog Timer

A.1 Programming

GENE-LN05 Rev.B utilizes W83627DHG-P 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



There are three steps to complete the configuration setup:

- (1) Enter the W83627DHG config Mode
- (2) Modify the data of configuration registers

- (3) Exit the W83627DHG config Mode. Undesired result may occur if the config Mode is not exited normally.

(1) Enter the W83627DHG config Mode

To enter the W83627DHG config Mode, two 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 two write operations to the Special Address port (2EH). The different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

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

(2) Modify the Data of the Registers

All configuration registers can be accessed after entering the config 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 W83627DHG config Mode

The exit key is provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
0aah:	2Eh	2Fh

WatchDog Timer Register I (Index=F5h, Default=00h)

CRF5 (PLED and KBC P20 Control Mode Register)

Bit 7-5 : select PLED mode

= 000 Power LED pin is driven high.

= 001 Power LED pin outputs 0.5Hz pulse with 50% duty cycle.

= 010 Power LED pin is driven low.

= 011 Power LED pin outputs 2Hz pulse with 50% duty cycle.

= 100 Power LED pin outputs 1Hz pulse with 50% duty cycle.

= 101 Power LED pin outputs 4Hz pulse with 50% duty cycle.

= 110 Power LED pin outputs 0.25Hz pulse with 50% duty cycle.

=111 Power LED pin outputs 0.25Hz pulse with 50% duty cycle..

Bit 4 : WDTO# count mode is 1000 times faster.

= 0 Disable.

= 1 Enable.

Bit 3 : select WDTO# count mode.

= 0 second

= 1 minute

Bit 2 : Enable the rising edge of keyboard Reset (P20) to force Time-out event.

= 0 Disable

= 1 Enable

Bit 1 : Disable / Enable the WDTO# output low pulse to the KBRST# pin (PIN60)

= 0 Disable

= 1 Enable

Bit 0 : Reserved.

WatchDog Timer Register II (Index=F6h, Default=00h)

- Bit 7-0** = 0 x 00 Time-out Disable
 = 0 x 01 Time-out occurs after 1 second/minute
 = 0 x 02 Time-out occurs after 2 second/minutes
 = 0 x 03 Time-out occurs after 3 second/minutes

 = 0 x FF Time-out occurs after 255 second/minutes

WatchDog Timer Register III (Index=F7h, Default=00h)

- Bit 7** : Mouse interrupt reset Enable or Disable
 = 1 Watchdog Timer is reset upon a Mouse interrupt
 = 0 Watchdog Timer is not affected by Mouse interrupt
- Bit 6** : Keyboard interrupt reset Enable or Disable
 = 1 Watchdog Timer is reset upon a Keyboard interrupt
 = 0 Watchdog Timer is not affected by Keyboard interrupt
- Bit 5** : Force Watchdog Timer Time-out. Write Only

- = 1 Force Watchdog Timer time-out event: this bit is self-clearing
- Bit 4** : Watchdog Timer Status. R/W
- = 1 Watchdog Timer time-out occurred
- = 0 Watchdog Timer counting
- Bit 3-0** : These bits select IRQ resource for Watchdog. Setting of 2 selects SMI.

A.2 W83627DHG Watchdog Timer Initial Program

Example: Setting 10 sec. as Watchdog timeout interval

;/;;

Mov dx,2eh ;Enter W83627DHG config mode

Mov al,87h (out 87h to 2eh twice)

Out dx,al

Out dx,al

;/;;

Mov al,07h

Out dx,al

Inc dx

Mov al,08h ;Select Logical Device 8 (GPIO Port
2)

Out dx,al

;/;;

Dec dx

Mov al,30h ;CR30 (GP20~GP27)

Out dx,al

Inc dx

Mov al,01h ;Activate GPIO2

Out dx,al


```
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;/
Dec dx
Mov al,0f5h           ;CRF5 (PLED mode register)
Out dx,al
Inc dx
In al,dx
And al,not 08h       ;Set second as counting unit
Out dx,al
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;/
Dec dx
Mov al,0f6h           ; CRF6
Out dx,al
Inc dx
Mov al,10            ;Set timeout interval as 10 sec.
Out dx,al
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;/
Dec dx                ;Exit W83627DHG config mode
Mov al,0aah           (out 0aah to 2eh once)
Out dx,al
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;/
```





























Appendix

B

I/O Information

B.1 I/O Address Map

Input/output (IO)	
[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 PS/2 Keyboard
[00000061 - 00000061]	System speaker
[00000062 - 00000063]	Motherboard resources
[00000064 - 00000064]	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000065 - 0000006D]	Motherboard resources
[00000070 - 00000071]	System CMOS/real time clock
[00000072 - 0000007F]	Motherboard resources
[00000080 - 00000080]	Motherboard resources
[00000081 - 00000083]	Direct memory access controller
[00000084 - 00000086]	Motherboard resources
[00000087 - 00000087]	Direct memory access controller
[00000088 - 00000088]	Motherboard resources
[00000089 - 0000008B]	Direct memory access controller
[0000008C - 0000008E]	Motherboard resources
[0000008F - 0000008F]	Direct memory access controller
[00000090 - 0000009F]	Motherboard resources
[000000A0 - 000000A1]	Programmable interrupt controller
[000000A2 - 000000BF]	Motherboard resources
[000000C0 - 000000DF]	Direct memory access controller
[000000E0 - 000000EF]	Motherboard resources
[000000F0 - 000000FF]	Numeric data processor
[00000170 - 00000177]	Secondary IDE Channel
[000001F0 - 000001F7]	Primary IDE Channel
[00000274 - 00000277]	ISAPNP Read Data Port
[00000279 - 00000279]	ISAPNP Read Data Port
[00000295 - 000002A4]	Motherboard resources
[000002E0 - 000002E7]	Communications Port (COM5)
[000002E8 - 000002EF]	Communications Port (COM4)
[000002F0 - 000002F7]	Communications Port (COM6)
[000002F8 - 000002FF]	Communications Port (COM2)
[00000376 - 00000376]	Secondary IDE Channel

	[00000378 - 0000037F] Printer Port (LPT1)
	[00000380 - 000003BB] Intel(R) Graphics Media Accelerator 3150
	[000003C0 - 000003DF] Intel(R) Graphics Media Accelerator 3150
	[000003E8 - 000003EF] Communications Port (COM3)
	[000003F6 - 000003F6] Primary IDE Channel
	[000003F8 - 000003FF] Communications Port (COM1)
	[00000480 - 000004BF] Motherboard resources
	[000004D0 - 000004D1] Motherboard resources
	[00000800 - 0000087F] Motherboard resources
	[00000A79 - 00000A79] ISAPNP Read Data Port
	[00000D00 - 0000FFFF] PCI bus
	[0000E000 - 0000E01F] Intel(R) 82583V Gigabit Network Connection
	[0000E000 - 0000EFFF] Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
	[0000F000 - 0000F01F] Intel(R) ICH8 Family SMBus Controller - 283E
	[0000F020 - 0000F03F] Intel(R) ICH8 Family USB Universal Host Controller - 2832
	[0000F040 - 0000F05F] Intel(R) ICH8 Family USB Universal Host Controller - 2831
	[0000F060 - 0000F07F] Intel(R) ICH8 Family USB Universal Host Controller - 2830
	[0000F080 - 0000F09F] Intel(R) ICH8 Family USB Universal Host Controller - 2835
	[0000F0A0 - 0000F0BF] Intel(R) ICH8 Family USB Universal Host Controller - 2834
	[0000F0C0 - 0000F0DF] Intel(R) 82567V-3 Gigabit Network Connection
	[0000F0E0 - 0000F0EF] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F0F0 - 0000F0FF] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F100 - 0000F103] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F110 - 0000F117] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F120 - 0000F123] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F130 - 0000F137] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F140 - 0000F14F] Intel(R) ICH8M Ultra ATA Storage Controllers - 2850
	[0000F190 - 0000F197] Intel(R) Graphics Media Accelerator 3150

B.2 1st MB Memory Address Map

Address Range	Device
[000A0000 - 000BFFFF]	Intel(R) Graphics Media Accelerator 3150
[000A0000 - 000BFFFF]	PCI bus
[1F700000 - FFFFFFFF]	PCI bus
[E0000000 - EFFFFFFF]	Intel(R) Graphics Media Accelerator 3150
[F0000000 - F3FFFFFF]	System board
[FE800000 - FE8FFFFFF]	Intel(R) Graphics Media Accelerator 3150
[FE900000 - FE91FFFF]	Intel(R) 82583V Gigabit Network Connection
[FE900000 - FE9FFFFFF]	Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
[FE920000 - FE923FFF]	Intel(R) 82583V Gigabit Network Connection
[FEA00000 - FEA7FFFF]	Intel(R) Graphics Media Accelerator 3150
[FEA80000 - FEAFFFFFF]	Intel(R) Graphics Media Accelerator 3150
[FEB00000 - FEB1FFFF]	Intel(R) 82567V-3 Gigabit Network Connection
[FEB20000 - FEB23FFF]	Microsoft UAA Bus Driver for High Definition Audio
[FEB24000 - FEB240FF]	Intel(R) ICH8 Family SMBus Controller - 283E
[FEB25000 - FEB253FF]	Intel(R) ICH8 Family USB2 Enhanced Host Controller - 2836
[FEB26000 - FEB263FF]	Intel(R) ICH8 Family USB2 Enhanced Host Controller - 283A
[FEB27000 - FEB27FFF]	Intel(R) 82567V-3 Gigabit Network Connection
[FEC00000 - FEC0FFFF]	Motherboard resources
[FED14000 - FED19FFF]	System board
[FED1C000 - FED1FFFF]	Motherboard resources
[FED20000 - FED8FFFF]	Motherboard resources
[FEE00000 - FEE00FFF]	Motherboard resources
[FFE00000 - FFFFFFFF]	Motherboard resources

B.3 IRQ Mapping Chart

IRQ	Device
(ISA) 0	System timer
(ISA) 1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
(ISA) 3	Communications Port (COM2)
(ISA) 4	Communications Port (COM1)
(ISA) 8	System CMOS/real time clock
(ISA) 9	Microsoft ACPI-Compliant System
(ISA) 10	Communications Port (COM3)
(ISA) 10	Communications Port (COM4)
(ISA) 10	Communications Port (COM5)
(ISA) 10	Communications Port (COM6)
(ISA) 12	Microsoft PS/2 Mouse
(ISA) 13	Numeric data processor
(ISA) 14	Primary IDE Channel
(ISA) 15	Secondary IDE Channel
(PCI) 7	Intel(R) ICH8 Family SMBus Controller - 283E
(PCI) 16	Intel(R) 82583V Gigabit Network Connection
(PCI) 16	Intel(R) Graphics Media Accelerator 3150
(PCI) 16	Intel(R) ICH8 Family USB Universal Host Controller - 2834
(PCI) 18	Intel(R) ICH8 Family USB Universal Host Controller - 2832
(PCI) 18	Intel(R) ICH8 Family USB2 Enhanced Host Controller - 283A
(PCI) 18	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
(PCI) 19	Intel(R) ICH8 Family USB Universal Host Controller - 2831
(PCI) 21	Intel(R) ICH8 Family USB Universal Host Controller - 2835
(PCI) 21	Microsoft UAA Bus Driver for High Definition Audio
(PCI) 22	Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
(PCI) 23	Intel(R) 82567V-3 Gigabit Network Connection
(PCI) 23	Intel(R) ICH8 Family USB Universal Host Controller - 2830
(PCI) 23	Intel(R) ICH8 Family USB2 Enhanced Host Controller - 2836

Memory

B.4 DMA Channel Assignments

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.		
CN2	CPU Fan Connector	Catch	1190-700-03 S	N/A	N/A
CN3	+5VSB Output w/ SMBus	JST	PHR-6	N/A	N/A
CN4	External +5VSB Power Input and PS_ON#	JST	XHP-3	ATX Cable	170220020B
CN5	SATA Port 2	Molex	0887505318	SATA Cable	1709070500
CN6	SATA Port 1	Molex	0887505318	SATA Cable	1709070500
CN7	LPC Expansion I/F	JST	SHR-12V-S-B	N/A	N/A
CN8	External 5V Input	Molex	19211-0003	Power Cable	170204010P
CN9	External 12V Input	Molex	19211-0003	Power Cable	170204010R
CN10	Touch Screen	JST	SHR-9V-S-B	N/A	N/A
CN11	+5V Output for SATA HDD using	JST	PHR-2	2 Pins For SATA Power	1702150155
CN13	COM Port #6	Molex	51021-0900	UART Wafer Cable	1701090150
CN14	USB Port #7	Molex	51021-0500	USB Wafer Cable	1700050207
CN15	COM Port #5	Molex	51021-0900	UART Wafer Cable	1701090150

CN16	USB Port #6	Molex	51021-0500	USB Wafer Cable	1700050207
CN17	USB Port #5	Molex	51021-0500	USB Wafer Cable	1700050207
CN18	COM Port #4	Molex	51021-0900	UART Wafer Cable	1701090150
CN19	USB Port #4	Molex	51021-0500	USB Wafer Cable	1700050207
CN20	USB Port #3	Molex	51021-0500	USB Wafer Cable	1700050207
CN21	COM Port #3	Molex	51021-0900	UART Wafer Cable	1701090150
CN22	COM Port #2	Molex	51021-0900	UART Wafer Cable	1701090150
CN23	Audio Line In/Out and MIC Connector	Molex	51021-1000	Audio Cable	1709100254
CN24	RJ-45 Ethernet #2	Molex	90075-0141	N/A	N/A
CN25	RJ-45 Ethernet #1	Molex	90075-0141	N/A	N/A
CN26	Digital I/O	Molex	51110-1050	N/A	N/A
CN27	Parallel Port	Molex	51110-2650	Parallel Cable	1701260200
CN28	LVDS Inverter Control	JST	PHR-5	N/A	N/A
CN29	LVDS Output	HIROSE	DF13-30DS-1.25C	N/A	N/A
CN31	PS/2 Keyboard & Mouse	JST	PHDR-06VS	KB/MS Cable	1700060157
BAT1	External RTC Connector	Molex	51021-0200	Battery Cable	175011901C