

GENE-QM77

Intel® 3rd Generation
Core™ i7/i5 Mobile Processor
10/100/1000Base-TX Ethernet
2 USB3.0, 6 USB 2.0, 4 COM,
8-bit Digital I/O
2 SATA 6.0Gb/s (Optional RAID)
1 CFast™, 1 Mini Card, LPC

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Packing List

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

- 1 Cooler
- 1 DVD-ROM for Manual (in PDF Format) and Drivers
- 1 GENE-QM77

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

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Chapter

1

General Information

1.1 Introduction

The GENE-QM77 supports Intel® 3rd Generation Intel® Core™ i7/i5 Mobile processor which when paired with the Intel® QM77/HM76 chipset offers a high performance computing platform with low power consumption. This new product supports 204-pin DDR3 SODIMM at speeds of 1066/1333/1600 MHz, up to 8 GB.

One CFast™ and two SATA 6.0Gb/s (Optional RAID) interfaces provide ample storages. With dual Gigabit Ethernet, four COM ports, two USB3.0 and six USB2.0, the GENE-QM77 meets the requirements of today's demanding applications.

Display requirements are met with an abundance of interfaces such as CRT, DVI, and LVDS. The graphic engine adopts 3rd generation Intel® QM77/HM76 to offer high definition display function. In addition, it supports up to two 24-bit Dual-Channel LVDS, and one DVI.

With all of its integrated features, the GENE-QM77 strikes a balance of performance and price. This versatile product targets Industrial Automation, Entertainment, Networking, KIOSK/POS, Transportation, Banking, Healthcare and Digital Signage applications that require high performance and high reliability.

1.2 Features

- Intel® 3rd Generation Core™ i7/i5 Mobile Processor
- Intel® QM77/HM76
- 204-pin DDR3 1066/1333/1600 MHz SODIMM x 1, Up to 8 GB
- Gigabit Ethernet x 2
- CRT, 18/24-bit Dual-Channel LVDS LCD x 2, DVI x 1
- 2CH HD Audio
- SATA 6.0Gb/s x 2 (Optional RAID), CFast™ x 1
- USB3.0 x 2, USB2.0 x 6, COM x 4, 8-bit Digital I/O
- Mini Card x 1
- +12V Only Operation
- Supports iAMT with Intel® QM77

1.3 Specifications

System

- **Form Factor** 3.5"
- **Processor** Intel® 3rd Generation Core™i7/i5 Mobile processor
- **System Memory** 204-pin DDR3 1066/1333/1600 MHz SODIMM x 1, up to 8GB
- **Chipset** Intel® QM77/HM76
- **Ethernet** Intel® 82579LM & Realtek RTL-8111E, 10/100/1000Base-TX, RJ-45 x 2
- **BIOS** AMI BIOS-16MB SPI Flash
- **Wake On LAN** Yes
- **Watchdog Timer** Generates a time-out system reset
- **H/W Status Monitoring** Supports power supply voltages and temperature monitoring
- **Expansion Interface** Mini Card x 1, LPC
- **Battery** Lithium Battery
- **Power Requirement** +12V, AT/ATX
- **Board Size** 5.75" x 4" (146mm x 101.6mm)
- **Gross Weight** 0.88 lb (0.4Kg)
- **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, DVI/LCD simultaneous / dual view displays

- **Chipset** Intel® QM77/HM76 integrated
- **Memory** Shared system memory up to 512MB
- **Resolution** Up to 2048x1536 for CRT
Up to 1920 x 1200 for LCD, DVI
- **DVI** DVI x 1

I/O: ITE IT8728F + Fintek F81216D

- **Storage** SATA 6.0Gb/s x 2 , CFast™ x 1
- **Serial Port** RS-232 x 3
RS-232/422/485 (auto flow) x 1
- **USB** USB3.0 x 2, USB2.0 x 6
- **PS/2 Port** Keyboard x 1, Mouse x 1
- **Digital I/O** 8-bit Programmable
- **Audio** Line-in, Line-out, Mic-in

Chapter

2

**Quick
Installation
Guide**

2.1 Safety Precautions

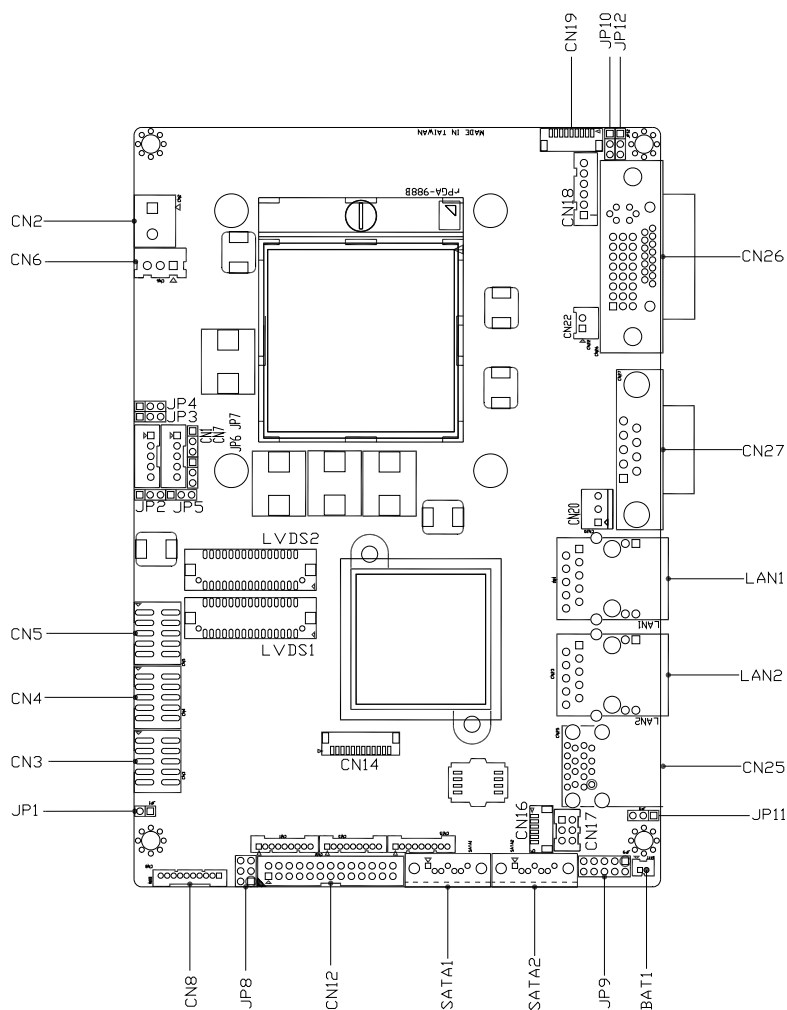
Warning!

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.

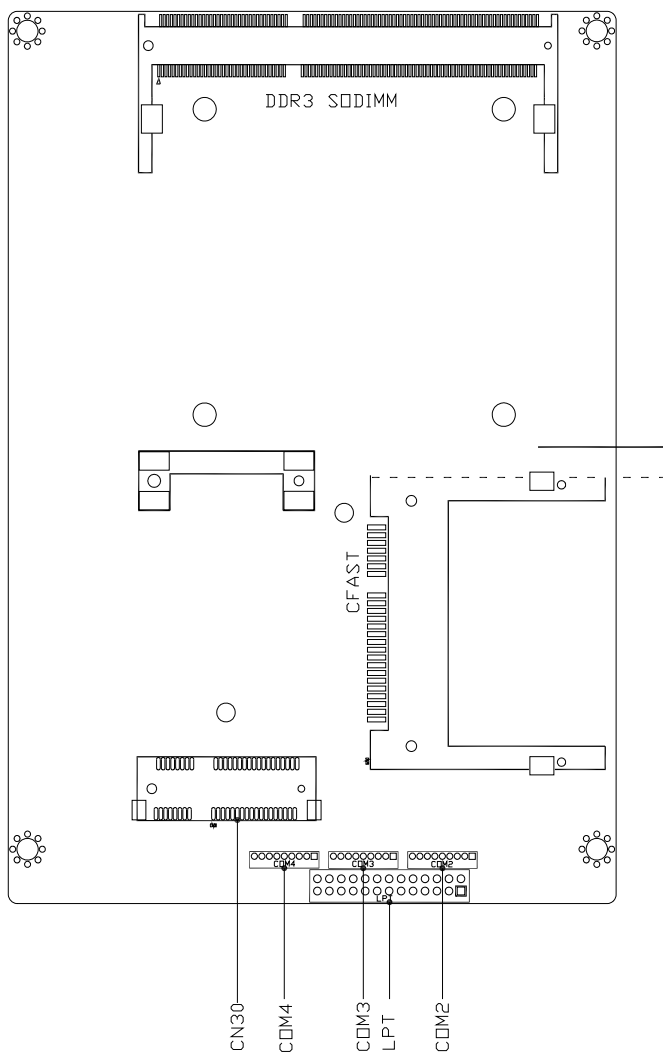
Caution!

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

Component Side

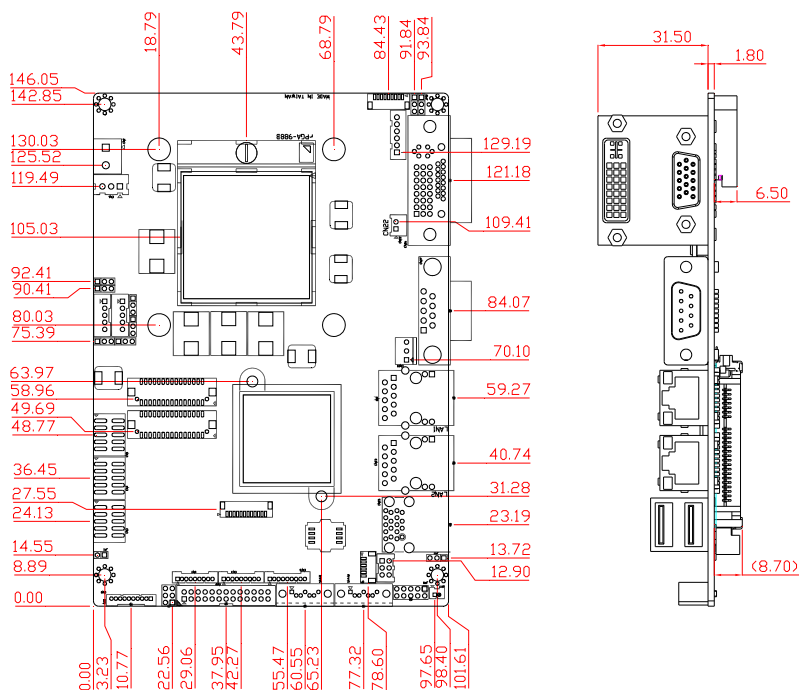


Solder Side

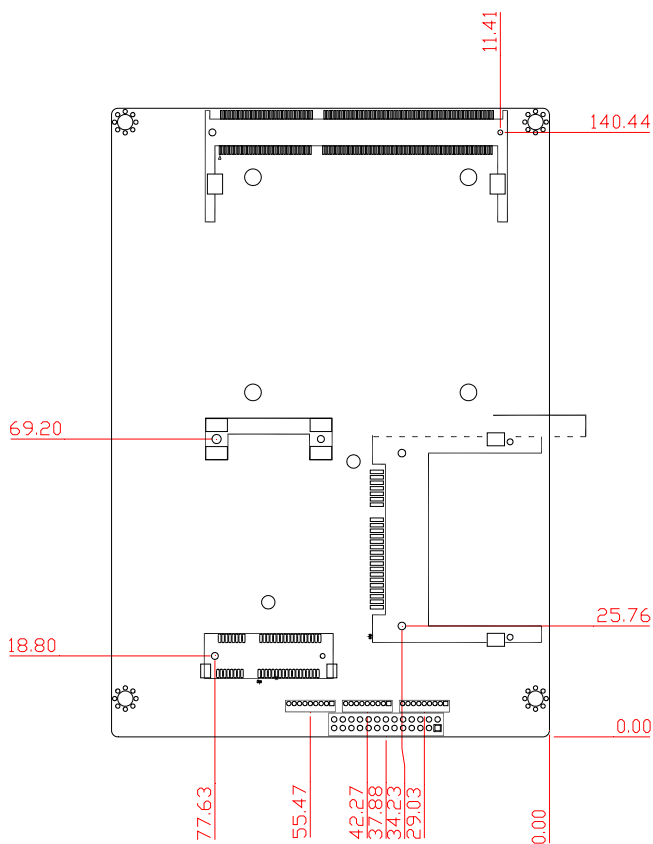


2.3 Mechanical Drawing

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:

Label	Function
JP2	LVDS Port 2 Operating VDD Selection
JP3	LVDS Port 1 Backlight Inverter VCC Selection
JP4	LVDS Port 2 Backlight Inverter VCC Selection
JP5	LVDS Port 1 Operating VDD Selection
JP6	LVDS Port 1 Backlight Lightness Control Mode Selection
JP7	LVDS Port 2 Backlight Lightness Control Mode Selection
JP8	COM2 Pin8 Function Selection
JP9	Front Panel Connector
JP10	Touch Screen 4/5/8-wire Mode Selection
JP11	Clear CMOS Jumper
JP12	AT/ATX Power Supply Mode 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:

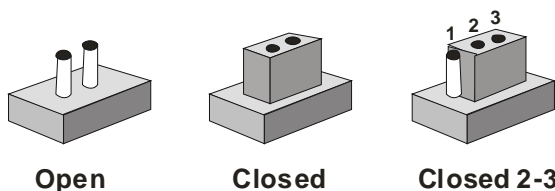
Label	Function
CN1	LVDS Port 1 Inverter / Backlight Connector
CN2	External +12V Input
CN3	USB 2.0 Ports 7 and 8
CN4	USB 2.0 Ports 5 and 6
CN5	USB 2.0 Ports 3 and 4
CN6	External +5VSB Input
CN7	LVDS Port 2 Inverter / Backlight Connector
CN8	Audio I/O Port
CN9	LVDS Port 1
CN10	LVDS Port 2
CN11	COM Port 2
CN12	LPT / Digital I/O Port
CN13	COM Port 3
CN14	LPC Port
CN15	COM Port 4
CN16	UIM Card Module
CN17	PS/2 Keyboard/Mouse Combo Port
CN18	+5VSB Output w/SMBus
CN19	Touch Screen Connector

CN20	CPU FAN
CN22	+5V Output for SATA HDD
CN23	Realtek LAN (RJ-45) Port
CN24	Intel LAN (RJ-45) Port
CN25	USB Ports 1 and 2
CN26	VGA / DVI Ports (depend on hardware configuration)
CN27	COM Port 1 (D-SUB 9)
CN28	CFast Slot
CN29	DDR3 SODIMM Slot
CN30	Mini Card Slot
SATA1	SATA Port1 Connector
SATA2	SATA Port 2 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.

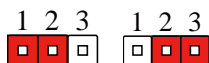


A pair of needle-nose pliers may be helpful when working with jumpers.

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 LVDS Port 2 Operating VDD Selection (JP2)

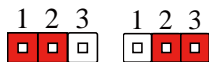


+5V

+3.3V

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

2.8 LVDS Port 1 Backlight Inverter VCC Selection (JP3)

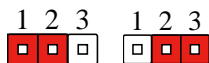


+12V

+5V

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

2.9 LVDS Port 2 Backlight Inverter VCC Selection (JP4)

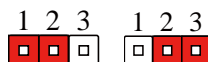


+12V

+5V

JP4	Function
1-2	+12V
2-3	+5V (Default)

2.10 LVDS Port 1 Operating VDD Selection (JP5)

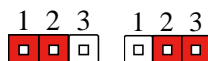


+5V

+3.3V

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

2.11 LVDS Port 1 Backlight Lightness Control Mode Selection (JP6)

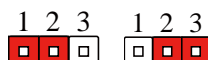


VR Mode

PWM Mode

JP6	Function
1-2	VR Mode (Default)
2-3	PWM Mode

2.12 LVDS Port 2 Backlight Lightness Control Mode Selection (JP7)

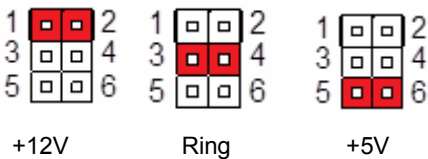


VR Mode

PWM Mode

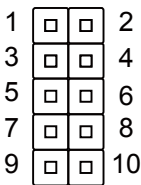
JP7	Function
1-2	VR Mode (Default)

2.13 COM2 Pin8 Function Selection (JP8)



JP8	Function
1-2	+12V
3-4	Ring (Default)
5-6	+5V

2.14 Front Panel Connector (JP9)



Pin	Signal
1	PWR_BTN-
2	PWR_BTN+
3	HDD_LED-
4	HDD_LED+
5	SPEAKER-
6	SPEAKER+
7	PWR_LED-

8	PWR_LED+
9	H/W RESET-
10	H/W RESET+

2.15 Touch Screen 4/5/8-Wire Selection (JP10)

**4/8-wire mode****5-wire mode**

JP10	Function
1-2	4/8-wire mode (Default)
2-3	5-wire mode

2.16 Clear CMOS (JP11)

**Normal****Clear CMOS**

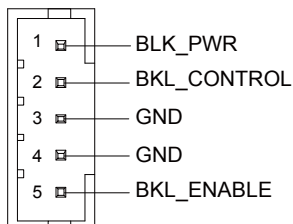
JP11	Function
1-2	Normal (Default)
2-3	Clear CMOS

2.17 AT/ATX Power Supply Mode Selection (JP12)

**AT Mode****ATX Mode**

JP12	Function
1-2	AT Mode (Default)
2-3	ATX Mode

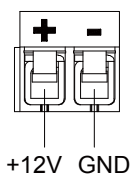
2.18 LVDS Port 1 Inverter/ Backlight Connector (CN1)



Pin	Pin Name	Signal Type	Signal Level
1	BKL_PWR	PWR	+5V / +12V
2	BKL_CONTROL	OUT	
3	GND	GND	
4	GND	GND	
5	BKL_ENABLE	OUT	+5V

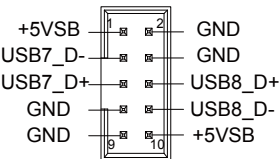
Note: LVDS1 BKL_PWR can be set to +5V or +12V by JP3.
LVDS1 BKL_CONTROL can be set by JP6.

2.19 External +12V Input (CN2)



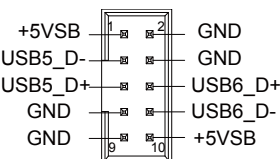
Pin	Pin Name	Signal Type	Signal Level
1	+12V	PWR	+12V
2	GND	GND	

2.20 USB2.0 Port 7 and Port 8 (CN3)



Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	GND	GND	
3	USB7_D-	DIFF	
4	GND	GND	
5	USB7_D+	DIFF	
6	USB8_D+	DIFF	
7	GND	GND	
8	USB8_D-	DIFF	
9	GND	GND	
10	+5VSB	PWR	+5V

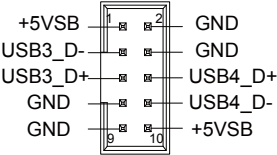
2.21 USB2.0 Port 5 and Port 6 (CN4)



Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	GND	GND	

3	USB5_D-	DIFF	
4	GND	GND	
5	USB5_D+	DIFF	
6	USB6_D+	DIFF	
7	GND	GND	
8	USB6_D-	DIFF	
9	GND	GND	
10	+5VSB	PWR	+5V

2.22 USB2.0 Port 3 and Port 4 (CN5)



Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	GND	GND	
3	USB3_D-	DIFF	
4	GND	GND	
5	USB3_D+	DIFF	
6	USB4_D+	DIFF	
7	GND	GND	
8	USB4_D-	DIFF	
9	GND	GND	

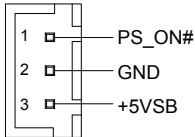
10

+5VSB

PWR

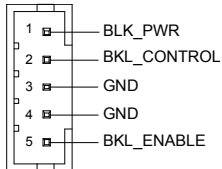
+5V

2.23 External +5VSB Input (CN6)



Pin	Pin Name	Signal Type	Signal Level
1	PS_ON#	OUT	+3.3V
2	GND	GND	
3	+5VSB	PWR	+5V

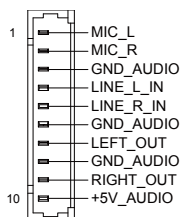
2.24 LVDS Port 2 Inverter/ Backlight Connector (CN7)



Pin	Pin Name	Signal Type	Signal Level
1	BKL_PWR	PWR	+5V / +12V
2	BKL_CONTROL	OUT	
3	GND	GND	
4	GND	GND	
5	BKL_ENABLE	OUT	+5V

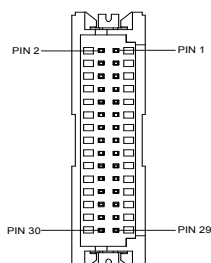
Note: LVDS2 BKL_PWR can be set to +5V or +12V by JP4.
LVDS2 BKL_CTL can be set by JP7.

2.25 Audio I/O Port Connector (CN8)



Pin	Pin Name	Signal Type	Signal Level
1	MIC_L	IN	
2	MIC_R	IN	
3	GND_AUDIO	GND	
4	LINE_L_IN	IN	
5	LINE_R_IN	IN	
6	GND_AUDIO	GND	
7	LEFT_OUT	OUT	
8	GND_AUDIO	GND	
9	RIGHT_OUT	OUT	
10	+5V_AUDIO	PWR	+5V

2.26 LVDS Port 1 Connector (CN9)

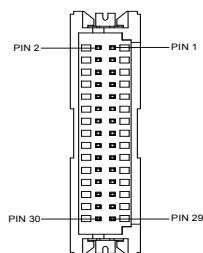


Pin	Pin Name	Signal Type	Signal Level
1	BKL_ENABLE	OUT	
2	BKL_CONTROL	OUT	
3	LCD_PWR	PWR	+3.3V/+5V
4	GND	GND	
5	LVDS_A_CLK-	DIFF	
6	LVDS_A_CLK+	DIFF	
7	LCD_PWR	PWR	+3.3V/+5V
8	GND	GND	
9	LVDS_DA0-	DIFF	
10	LVDS_DA0+	DIFF	
11	LVDS_DA1-	DIFF	
12	LVDS_DA1+	DIFF	
13	LVDS_DA2-	DIFF	
14	LVDS_DA2+	DIFF	
15	LVDS_DA3-	DIFF	
16	LVDS_DA3+	DIFF	
17	DDC_DATA	I/O	+3.3V
18	DDC_CLK	I/O	+3.3V
19	LVDS_DB0-	DIFF	
20	LVDS_DB0+	DIFF	
21	LVDS_DB1-	DIFF	
22	LVDS_DB1+	DIFF	
23	LVDS_DB2-	DIFF	

24	LVDS_DB2+	DIFF	
25	LVDS_DB3-	DIFF	
26	LVDS_DB3+	DIFF	
27	LCD_PWR	PWR	+3.3V/+5V
28	GND	GND	
29	LVDS_B_CLK-	DIFF	
30	LVDS_B_CLK+	DIFF	

Note: LVDS1 LCD_PWR can be set to +3.3V or +5V by JP5.

2.27 LVDS Port 2 Connector (CN10)

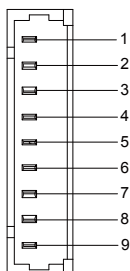


Pin	Pin Name	Signal Type	Signal Level
1	BKL_ENABLE	OUT	
2	BKL_CONTROL	OUT	
3	LCD_PWR	PWR	+3.3V/+5V
4	GND	GND	
5	LVDS_A_CLK-	DIFF	
6	LVDS_A_CLK+	DIFF	
7	LCD_PWR	PWR	+3.3V/+5V
8	GND	GND	

9	LVDS_DA0-	DIFF	
10	LVDS_DA0+	DIFF	
11	LVDS_DA1-	DIFF	
12	LVDS_DA1+	DIFF	
13	LVDS_DA2-	DIFF	
14	LVDS_DA2+	DIFF	
15	LVDS_DA3-	DIFF	
16	LVDS_DA3+	DIFF	
17	DDC_DATA	I/O	+3.3V
18	DDC_CLK	I/O	+3.3V
19	LVDS_DB0-	DIFF	
20	LVDS_DB0+	DIFF	
21	LVDS_DB1-	DIFF	
22	LVDS_DB1+	DIFF	
23	LVDS_DB2-	DIFF	
24	LVDS_DB2+	DIFF	
25	LVDS_DB3-	DIFF	
26	LVDS_DB3+	DIFF	
27	LCD_PWR	PWR	+3.3V/+5V
28	GND	GND	
29	LVDS_B_CLK-	DIFF	
30	LVDS_B_CLK+	DIFF	

Note: LVDS2 LCD_PWR can be set to +3.3V or +5V by JP2.

2.28 COM Port 2 Connector (CN11)



RS-232

Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	DSR	IN	
3	RX	IN	
4	RTS	OUT	±9V
5	TX	OUT	±9V
6	CTS	IN	
7	DTR	OUT	±9V
8	RI/+5V/+12V	IN/ PWR	+5V/+12V
9	GND	GND	

RS-422

Pin	Pin Name	Signal Type	Signal Level
1	RS422_TX-	OUT	±5V
2	NC		

3	RS422_RX+	IN	
4	NC		
5	RS422_TX+	OUT	±5V
6	NC		
7	RS422_RX-	IN	
8	NC/+5V/+12V	PWR	+5V/+12V
9	GND	GND	

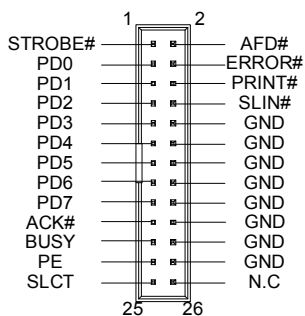
RS-485

Pin	Pin Name	Signal Type	Signal Level
1	RS485_D-	I/O	±5V
2	NC		
3	NC		
4	NC		
5	RS485_D+	I/O	±5V
6	NC		
7	NC		
8	NC/+5V/+12V	PWR	+5V/+12V
9	GND	GND	

Note: COM2 RS-232/422/485 can be set by BIOS setting. Default is RS-232.
Pin 8 function can be set by JP8.

2.29 LPT/ Digital I/O Port Connector (CN12)

LPT Mode

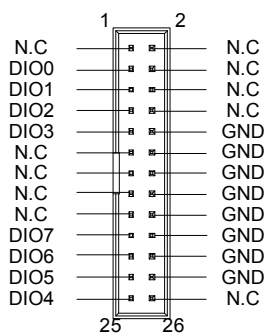


Pin	Pin Name	Signal Type	Signal Level
1	STROBE#	IN	
2	AFD#	I/O	
3	PD0	I/O	
4	ERROR#	IN	
5	PD1	I/O	
6	PRINT#	I/O	
7	PD2	I/O	
8	SLIN#	I/O	
9	PD3	I/O	
10	GND	GND	
11	PD4	I/O	
12	GND	GND	
13	PD5	I/O	

14	GND	GND
15	PD6	I/O
16	GND	GND
17	PD7	I/O
18	GND	GND
19	ACK#	IN
20	GND	GND
21	BUSY	IN
22	GND	GND
23	PE	IN
24	GND	GND
25	SLCT	IN
26	NC	

Note: LPT / Digital IO can be set by BIOS setting. Default is LPT Function

DIO Mode

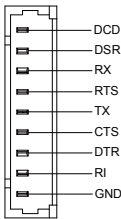


Pin	Pin Name	Signal Type	Signal Level
1	NC		
2	NC		
3	DIO0	I/O	+5V
4	NC		
5	DIO1	I/O	+5V
6	NC		
7	DIO2	I/O	+5V
8	NC		
9	DIO3	I/O	+5V
10	GND	GND	
11	NC		
12	GND	GND	
13	NC		
14	GND	GND	
15	NC		
16	GND	GND	
17	NC		
18	GND	GND	
19	DIO7	I/O	+5V
20	GND	GND	
21	DIO6	I/O	+5V
22	GND	GND	
23	DIO5	I/O	+5V

24	GND	GND	
25	DIO4	I/O	+5V
26	NC		

GPIO Port # / Pin Name	Location (Pin #)	I/O Port Access Address
Port 1/DIO0	3	Bit 0 of 0xA06
Port 2/DIO1	5	Bit 1 of 0xA06
Port 3/DIO2	7	Bit 2 of 0xA06
Port 4/DIO3	9	Bit 3 of 0xA06
Port 5/DIO4	25	Bit 0 of 0xA07
Port 6/DIO5	23	Bit 1 of 0xA07
Port 7/DIO6	21	Bit 2 of 0xA07
Port 8/DIO7	19	Bit 3 of 0xA07

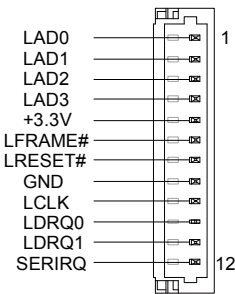
2.30 COM Port 3 Connector (CN13)



Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	DSR	IN	
3	RX	IN	
4	RTS	OUT	±9V
5	TX	OUT	±9V

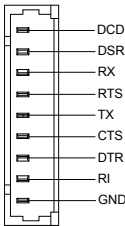
6	CTS	IN	
7	DTR	OUT	±9V
8	RI	IN	
9	GND	GND	

2.31 LPC Port Connector (CN14)



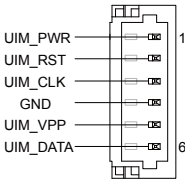
Pin	Pin Name	Signal Type	Signal Level
1	LAD0	I/O	+3.3V
2	LAD1	I/O	+3.3V
3	LAD2	I/O	+3.3V
4	LAD3	I/O	+3.3V
5	+3.3V	PWR	+3.3V
6	LFRAME#	IN	
7	LRESET#	OUT	+3.3V
8	GND	GND	
9	LCLK	OUT	
10	LDRQ0	IN	
11	LDRQ1	IN	

2.32 COM Port 4 Connector (CN15)



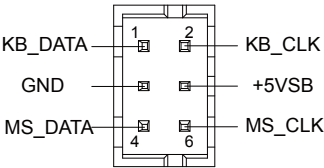
Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	DSR	IN	
3	RX	IN	
4	RTS	OUT	±9V
5	TX	OUT	±9V
6	CTS	IN	
7	DTR	OUT	±9V
8	RI	IN	
9	GND	GND	

2.33 UIM Card Module (CN16)



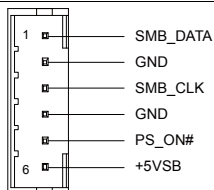
Pin	Pin Name	Signal Type	Signal Level
1	UIM_PWR	PWR	
2	UIM_RST	IN	
3	UIM_CLK	IN	
4	GND	GND	
5	UIM_VPP	PWR	
6	UIM_DATA	I/O	

2.34 PS/2 Keyboard/Mouse Combo Port Connector (CN17)



Pin	Pin Name	Signal Type	Signal Level
1	KB_DATA	I/O	+5V
2	KB_CLK	I/O	+5V
3	GND	GND	
4	+5VSB	PWR	+5V
5	MS_DATA	I/O	+5V
6	MS_CLK	I/O	+5V

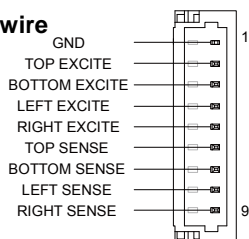
2.35 +5VSB Output w/SMBus (CN18)



Pin	Pin Name	Signal Type	Signal Level
1	SMB_DATA	I/O	+3.3V
2	GND	GND	
3	SMB_CLK	I/O	+3.3V
4	GND	GND	
5	PS_ON#	OUT	+3.3V
6	+5VSB	PWR	+5V

2.36 Touch Screen Connector (CN19)

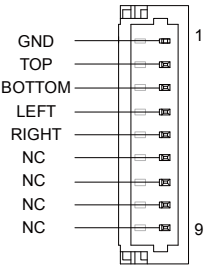
8-wire



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	TOP EXCITE	IN	
3	BOTTOM EXCITE	IN	

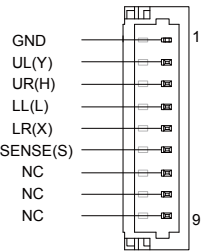
4	LEFT EXCITE	IN
5	RIGHT EXCITE	IN
6	TOP SENSE	IN
7	BOTTOM SENSE	IN
8	LEFT SENSE	IN
9	RIGHT SENSE	IN

4-wire



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	TOP	IN	
3	BOTTOM	IN	
4	LEFT	IN	
5	RIGHT	IN	
6	NC		
7	NC		
8	NC		
9	NC		

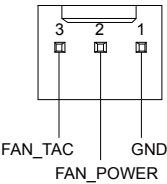
5-wire



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	UL(Y)	IN	
3	UR(H)	IN	
4	LL(L)	IN	
5	LR(X)	IN	
6	SENSE(S)	IN	
7	NC		
8	NC		
9	NC		

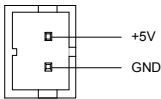
Note: Touch mode can be set by JP10

2.37 CPU FAN Connector (CN20)



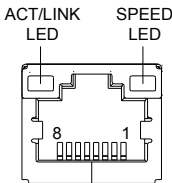
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	FAN_POWER	PWR	+5V
3	FAN_TAC	IN	

2.38 +5V Output for SATA HDD (CN22)



Pin	Pin Name	Signal Type	Signal Level
1	+5V	PWR	+5V
2	GND	GND	

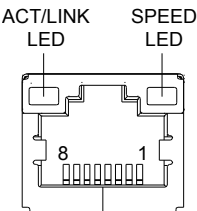
2.39 Realtek LAN (RJ-45) Port (CN23)



Pin	Pin Name	Signal Type	Signal Level
1	MDI0+	DIFF	
2	MDI0-	DIFF	
3	MDI1+	DIFF	
4	MDI2+	DIFF	

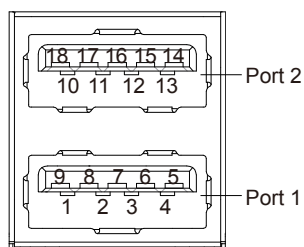
5	MDI2-	DIFF
6	MDI1-	DIFF
7	MDI3+	DIFF
8	MDI3-	DIFF

2.40 Intel LAN (RJ-45) Port (CN24)



Pin	Pin Name	Signal Type	Signal Level
1	MDI0+	DIFF	
2	MDI0-	DIFF	
3	MDI1+	DIFF	
4	MDI2+	DIFF	
5	MDI2-	DIFF	
6	MDI1-	DIFF	
7	MDI3+	DIFF	
8	MDI3-	DIFF	

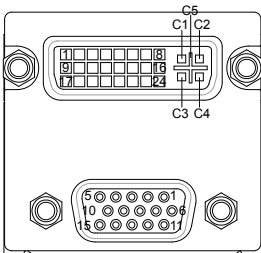
2.41 USB Port 1 and Port 2 (CN25)



Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB1_D-	DIFF	
3	USB1_D+	DIFF	
4	GND	GND	
5	USB1_SSRX-	DIFF	
6	USB1_SSRX+	DIFF	
7	GND	GND	
8	USB1_SSTX-	DIFF	
9	USB1_SSTX+	DIFF	
10	+5VSB	PWR	+5V
11	USB2_D-	DIFF	
12	USB2_D+	DIFF	
13	GND	GND	
14	USB2_SSRX-	DIFF	
15	USB2_SSRX+	DIFF	

16	GND	GND
17	USB2_SSTX-	DIFF
18	USB2_SSTX+	DIFF

2.42 VGA / DVI Ports (depend on hardware configuration) (CN26)



VGA

Pin	Pin Name	Signal Type	Signal Level
1	RED	OUT	
2	GREEN	OUT	
3	BLUE	OUT	
4	NC		
5	GND	GND	
6	RED_GND_RTN	GND	
7	GREEN_GND_RTN	GND	
8	BLUE_GND_RTN	GND	
9	+5V	PWR	+5V
10	GND	GND	
11	NC		

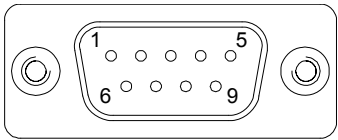
12	DDC_DATA	I/O	+5V
13	HSYNC	OUT	
14	VSYNC	OUT	
15	DDC_CLK	I/O	+5V

DVI

Pin	Pin Name	Signal Type	Signal Level
1	TMDS_DAT2+	DIFF	
2	TMDS_DAT2-	DIFF	
3	GND	GND	
4	VGA_DDC_CLK	I/O	
5	VGA_DDC_DATA	I/O	
6	DVI_DDC_CLK	I/O	+5V
7	DVI_DDC_DATA	I/O	+5V
8	VSYNC	OUT	
9	TMDS_DAT1-	DIFF	
10	TMDS_DAT1+	DIFF	
11	GND	GND	
12	TMDS_DAT3-	DIFF	
13	TMDS_DAT3+	DIFF	
14	+5V	PWR	+5V
15	GND	GND	
16	HPLG_DETECT	IN	
17	TMDS_DAT0-	DIFF	

18	TMDS_DAT0+	DIFF
19	GND	GND
20	NC	
21	NC	
22	GND	GND
23	TMDS_CLK+	DIFF
24	TMDS_CLK-	DIFF
C1	RED	OUT
C2	GREEN	OUT
C3	BLUE	OUT
C4	HSYNC	OUT
C5	GND_ANALOG	GND

2.43 COM Port 1 (D-SUB 9) (CN27)



Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	RX	IN	
3	TX	OUT	±9V
4	DTR	OUT	±9V
5	GND	GND	
6	DSR	IN	

SubCompact Board		GENE-QM77	
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7	RTS	OUT	±9V
8	CTS	IN	
9	RI	IN	

2.44 CFast Slot (CN28)

Pin	Pin Name	Signal Type	Signal Level
S1	GND	GND	
S2	SATA_TX+	DIFF	
S3	SATA_TX-	DIFF	
S4	GND	GND	
S5	SATA_RX-	DIFF	
S6	SATA_RX+	DIFF	
S7	GND	GND	
PC1	NC		
PC2	GND	GND	
PC3	NC		
PC4	NC		
PC5	NC		
PC6	NC		
PC7	GND	GND	
PC8	NC		
PC9	NC		
PC10	NC		
PC11	NC		

PC12	NC		
PC13	+3.3V	PWR	+3.3V
PC14	+3.3V	PWR	+3.3V
PC15	GND	GND	
PC16	GND	GND	
PC17	NC		

2.45 DDR3 SODIMM Slot (CN29)

Standard specification

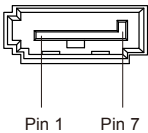
2.46 Mini Card Slot (CN30)

Pin	Pin Name	Signal Type	Signal Level
1	PCIE_WAKE#	IN	
2	+3.3VSB	PWR	+3.3V
3	NC		
4	GND	GND	
5	NC		
6	+1.5V	PWR	+1.5V
7	PCIE_CLK_REQ#	IN	
8	UIM_PWR	PWR	
9	GND	GND	
10	UIM_DATA	I/O	
11	PCIE_REF_CLK-	DIFF	
12	UIM_CLK	IN	

13	PCIE_REF_CLK+	DIFF	
14	UIM_RST	IN	
15	GND	GND	
16	UIM_VPP	PWR	
17	NC		
18	GND	GND	
19	NC		
20	W_DISABLE#	OUT	+3.3V
21	GND	GND	
22	PCIE_RST#	OUT	+3.3V
23	PCIE_RX-	DIFF	
24	+3.3VSB	PWR	+3.3V
25	PCIE_RX+	DIFF	
26	GND	GND	
27	GND	GND	
28	+1.5V	PWR	+1.5V
29	GND	GND	
30	SMB_CLK	I/O	+3.3V
31	PCIE_TX-	DIFF	
32	SMB_DATA	I/O	+3.3V
33	PCIE_TX+	DIFF	
34	GND	GND	
35	GND	GND	
36	USB_D-	DIFF	

37	GND	GND	
38	USB_D+	DIFF	
39	+3.3VSB	PWR	+3.3V
40	GND	GND	
41	+3.3VSB	PWR	+3.3V
42	NC		
43	GND	GND	
44	NC		
45	NC		
46	NC		
47	NC		
48	+1.5V	PWR	+1.5V
49	NC		
50	GND	GND	
51	NC		
52	+3.3VSB	PWR	+3.3V

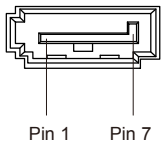
2.47 SATA Port 1 (SATA1)



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	SATA_TX+	DIFF	

3	SATA_TX-	DIFF
4	GND	GND
5	SATA_RX-	DIFF
6	SATA_RX+	DIFF
7	GND	GND

2.48 SATA Port 2 (SATA2)



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	SATA_TX+	DIFF	
3	SATA_TX-	DIFF	
4	GND	GND	
5	SATA_RX-	DIFF	
6	SATA_RX+	DIFF	
7	GND	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

**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-QM77 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

Advanced BIOS Features Setup including TPM, ACPI, etc.

Chipset

Host bridge parameters.

Boot

Enables/disable quiet boot option.

Security

Set setup administrator password.

Save&Exit

Exit system setup after saving the changes.

Chapter

4

Driver Installation

The GENE-QM77 comes with an AutoRun DVD-ROM that contains all drivers and utilities that can help you to install the driver automatically.

Insert the driver DVD, the driver DVD-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 LAN1 Driver (Intel® LAN Chip)
- Step 4 – Install LAN2 Driver (Realtek LAN Chip)
- Step 5 – Install Audio Driver
- Step 6 – Install ME Driver
- Step 7 – Install RAID & AHCI Driver
- Step 8 – Install TPM Driver
- Step 9 – Install Touch Driver
- Step 10 – Install USB3.0 Driver (Windows® 7 only)

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the GENE-QM77 DVD-ROM into the DVD-ROM drive. And install the drivers from Step 1 to Step 10 in order.

Step 1 – Install Chipset Driver

1. Click on the **STEP 1-CHIPSET** folder and select the OS folder your system is
2. Double click on the **infinst_autol.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 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

Note 1:

- This motherboard supports VGA and LVDS display devices. In Single Display mode, use the hot keys to switch between VGA to LVDS device or vice versa. By default, press **<Ctrl>+<Alt>+<F1>** to switch to VGA device and press **<Ctrl>+<Alt>+<F3>** to switch to LVDS device.
- Before removing the current display device, connect the display device that you want to use, and then press the hot keys to switch to that device.

Note 2: If the OS is Windows® XP, you have to install the driver of dotNet Framework first. Simply click on **dotnetfx35.exe** located in **dotNet Framework** folder.

Step 3 –Install LAN1 Driver (Intel® LAN Chip)

1. Click on the **STEP3-LAN1** 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 LAN2 Driver (Realtek LAN Chip)

1. Click on the **STEP4-LAN2** 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 5 –Install Audio Driver

1. Click on the **STEP5-AUDIO** 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 ME Driver

1. Click on the **STEP6-ME SW** 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 7 – Install RAID & AHDI Driver

Please refer to the **Appendix D RAID & AHDI Settings**

Step 8 – Install TPM Driver

1. Click on the **STEP8-TPM** 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 9 –Install Touch Driver

1. Click on the **STEP9-TOUCH** 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 10 –Install USB3.0 Driver (Windows 7 only)

1. Click on the **STEP10-USB3.0** 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

Appendix

A

Programming the Watchdog Timer

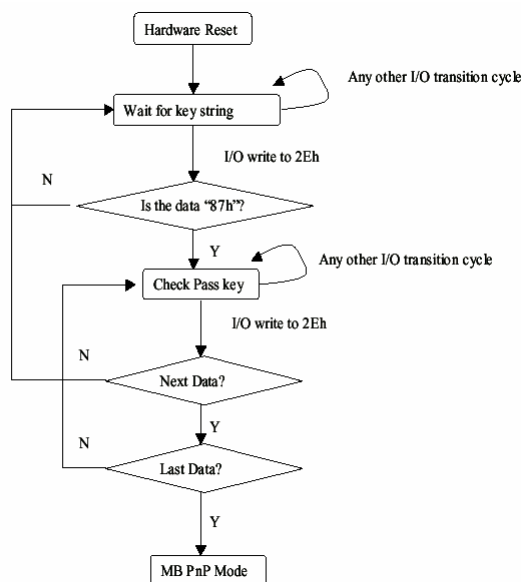
A.1 Programming

GENE-QM77 utilizes ITE IT8728F 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 8728F 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 ITE8728F 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























Input/output (I/O)	
[00000000 - 0000001F]	Direct memory access controller
[00000000 - 000000CF7]	PCI Bus
[00000010 - 0000001F]	Motherboard resources
[00000020 - 00000021]	Programmable interrupt controller
[00000022 - 0000003F]	Motherboard resources
[00000024 - 00000025]	Programmable interrupt controller
[00000028 - 00000029]	Programmable interrupt controller
[0000002C - 0000002D]	Programmable interrupt controller
[0000002E - 0000002F]	Motherboard resources
[00000030 - 00000031]	Programmable interrupt controller
[00000034 - 00000035]	Programmable interrupt controller
[00000038 - 00000039]	Programmable interrupt controller
[0000003C - 0000003D]	Programmable interrupt controller
[00000040 - 00000043]	System timer
[00000044 - 0000005F]	Motherboard resources
[0000004E - 0000004F]	Motherboard resources
[00000050 - 00000053]	System timer
[00000060 - 00000060]	Standard PS/2 Keyboard
[00000061 - 00000061]	Motherboard resources
[00000062 - 00000063]	Motherboard resources
[00000063 - 00000063]	Motherboard resources
[00000064 - 00000064]	Standard PS/2 Keyboard
[00000065 - 00000065]	Motherboard resources
[00000065 - 0000006F]	Motherboard resources
[00000067 - 00000067]	Motherboard resources
[00000070 - 00000070]	Motherboard resources
[00000070 - 00000077]	System CMOS/real time clock
[00000072 - 0000007F]	Motherboard resources
[00000080 - 00000080]	Motherboard resources
[00000080 - 00000080]	Motherboard resources
[00000081 - 00000091]	Direct memory access controller
[00000084 - 00000086]	Motherboard resources
[00000088 - 00000088]	Motherboard resources
[0000008C - 0000008E]	Motherboard resources
[00000090 - 0000009F]	Motherboard resources
[00000092 - 00000092]	Motherboard resources
[00000093 - 0000009F]	Direct memory access controller
[000000A0 - 000000A1]	Programmable interrupt controller
[000000A2 - 000000BF]	Motherboard resources
[000000A4 - 000000A5]	Programmable interrupt controller
[000000A8 - 000000A9]	Programmable interrupt controller
[000000AC - 000000AD]	Programmable interrupt controller

	[000000B0 - 000000B1] Programmable interrupt controller
	[000000B2 - 000000B3] Motherboard resources
	[000000B4 - 000000B5] Programmable interrupt controller
	[000000B8 - 000000B9] Programmable interrupt controller
	[000000BC - 000000BD] Programmable interrupt controller
	[000000C0 - 000000DF] Direct memory access controller
	[000000E0 - 000000EF] Motherboard resources
	[000000F0 - 000000FF] Numeric data processor
	[00000200 - 0000020F] Motherboard resources
	[000002E8 - 000002EF] Communications Port (COM4)
	[000002F8 - 000002FF] Communications Port (COM2)
	[00000378 - 0000037F] Printer Port (LPT1)
	[000003B0 - 000003BB] Intel(R) HD Graphics 4000
	[000003C0 - 000003DF] Intel(R) HD Graphics 4000
	[000003E8 - 000003EF] Communications Port (COM3)
	[000003F8 - 000003FF] Communications Port (COM1)
	[00000400 - 00000453] Motherboard resources
	[00000454 - 00000457] Motherboard resources
	[00000458 - 0000047F] Motherboard resources
	[000004D0 - 000004D1] Motherboard resources
	[000004D0 - 000004D1] Programmable interrupt controller
	[00000500 - 0000057F] Motherboard resources
	[00000680 - 0000069F] Motherboard resources
	[00000A00 - 00000A1F] Motherboard resources
	[00000A20 - 00000A2F] Motherboard resources
	[00000A30 - 00000A3F] Motherboard resources
	[00000D00 - 0000FFFF] PCI Bus
	[00001000 - 00001003] Motherboard resources
	[0000164E - 0000164F] Motherboard resources
	[0000E000 - 0000E0FF] Realtek PCIe GBE Family Controller
	[0000E000 - 0000EFFF] Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 2 - 1E12
	[0000F000 - 0000F03F] Intel(R) HD Graphics 4000
	[0000F040 - 0000F05F] Intel(R) 7 Series/C216 Chipset Family SMBus Host Controller - 1E22
	[0000F060 - 0000F07F] Intel(R) 7 Series Chipset Family SATA AHCI Controller
	[0000F0A0 - 0000F0A3] Intel(R) 7 Series Chipset Family SATA AHCI Controller
	[0000F0B0 - 0000F0B7] Intel(R) 7 Series Chipset Family SATA AHCI Controller
	[0000F0C0 - 0000F0C3] Intel(R) 7 Series Chipset Family SATA AHCI Controller
	[0000F0D0 - 0000F0D7] Intel(R) 7 Series Chipset Family SATA AHCI Controller
	[0000F0E0 - 0000F0E7] Intel(R) Active Management Technology - SOL (COM5)
	[0000FFFF - 0000FFFF] Motherboard resources


B.2 Memory Address Map

Memory	
[000A0000 - 000BFFFF]	Intel(R) HD Graphics 4000
[000A0000 - 000BFFFF]	PCI Bus
[000D0000 - 000D3FFF]	PCI Bus
[000D4000 - 000D7FFF]	PCI Bus
[000D8000 - 000DBFFF]	PCI Bus
[000DC000 - 000DFFFF]	PCI Bus
[000E0000 - 000E3FFF]	PCI Bus
[000E4000 - 000E7FFF]	PCI Bus
[20000000 - 201FFFFFF]	System board
[40004000 - 40004FFF]	System board
[DFA00000 - DFA00FFF]	Motherboard resources
[DFA00000 - FEAFFFFFF]	PCI Bus
[E0000000 - EFFFFFFF]	Intel(R) HD Graphics 4000
[F0000000 - F003FFF]	Realtek PCIe GBE Family Controller
[F0000000 - F00FFFF]	Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 2 - 1E12
[F7800000 - F78FFFF]	Intel(R) HD Graphics 4000
[F7C00000 - F7C0FFFF]	Realtek PCIe GBE Family Controller
[F7C00000 - F7CFFFF]	Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 2 - 1E12
[F7D00000 - F7D1FFFF]	Intel(R) 82579LM Gigabit Network Connection
[F7D20000 - F7D2FFFF]	Intel(R) USB 3.0 eXtensible Host Controller
[F7D30000 - F7D33FFF]	High Definition Audio Controller
[F7D35000 - F7D350FF]	Intel(R) 7 Series/C216 Chipset Family SMBus Host Controller - 1E22
[F7D36000 - F7D367FF]	Intel(R) 7 Series Chipset Family SATA AHCI Controller
[F7D37000 - F7D373FF]	Intel(R) 7 Series/C216 Chipset Family USB Enhanced Host Controller - 1E26
[F7D38000 - F7D383FF]	Intel(R) 7 Series/C216 Chipset Family USB Enhanced Host Controller - 1E2D
[F7D39000 - F7D39FFF]	Intel(R) 82579LM Gigabit Network Connection
[F7D3A000 - F7D3AFFF]	Intel(R) Active Management Technology - SOL (COM5)
[F7D3C000 - F7D3C00F]	Intel(R) Management Engine Interface
[F8000000 - FBFFFFFF]	Motherboard resources
[FED00000 - FED003FF]	High precision event timer
[FED10000 - FED17FFF]	Motherboard resources
[FED18000 - FED18FFF]	Motherboard resources
[FED19000 - FED19FFF]	Motherboard resources
[FED1C000 - FED1FFFF]	Motherboard resources
[FED20000 - FED3FFFF]	Motherboard resources
[FED40000 - FED44FFF]	Trusted Platform Module 1.2
[FED45000 - FED8FFFF]	Motherboard resources
[FED90000 - FED93FFF]	Motherboard resources
[FEE00000 - FEEFFFFFF]	Motherboard resources
[FF000000 - FFFFFFFF]	Intel(R) 82802 Firmware Hub Device
[FF000000 - FFFFFFFF]	Motherboard resources

B.3 IRQ Mapping Chart

Interrupt request (IRQ)	
	(ISA) 0x00000000 (00) System timer
	(ISA) 0x00000001 (01) Standard PS/2 Keyboard
	(ISA) 0x00000003 (03) Communications Port (COM2)
	(ISA) 0x00000004 (04) Communications Port (COM1)
	(ISA) 0x00000008 (08) System CMOS/real time clock
	(ISA) 0x0000000A (10) Communications Port (COM4)
	(ISA) 0x0000000B (11) Communications Port (COM3)
	(ISA) 0x0000000C (12) Microsoft PS/2 Mouse
	(ISA) 0x0000000D (13) Numeric data processor
	(PCI) 0x0000000F (15) Intel(R) 7 Series/C216 Chipset Family SMBus Host Controller - 1E22
	(PCI) 0x00000010 (16) Intel(R) 7 Series/C216 Chipset Family USB Enhanced Host Controller - 1E2D
	(PCI) 0x00000010 (16) Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 1 - 1E10
	(PCI) 0x00000010 (16) Intel(R) Management Engine Interface
	(PCI) 0x00000011 (17) Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 2 - 1E12
	(PCI) 0x00000013 (19) Intel(R) Active Management Technology - SOL (COM5)
	(PCI) 0x00000016 (22) High Definition Audio Controller
	(PCI) 0x00000017 (23) Intel(R) 7 Series/C216 Chipset Family USB Enhanced Host Controller - 1E26
	(PCI) 0xFFFFFFF6 (-6) Realtek PCIe GBE Family Controller
	(PCI) 0xFFFFFFF5 (-5) Intel(R) 82579LM Gigabit Network Connection
	(PCI) 0xFFFFFFF4 (-4) Intel(R) USB 3.0 eXtensible Host Controller
	(PCI) 0xFFFFFFF3 (-3) Intel(R) HD Graphics 4000
	(PCI) 0xFFFFFFF2 (-2) Intel(R) 7 Series Chipset Family SATA AHCI Controller

B.4 DMA Channel Assignments

Direct memory access (DMA)	
	4 Direct memory access controller

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 number		
CN1	LVDS#1 Inverter Connector	JST	PHR-5	N/A	N/A
CN2	+12V Vin Connector	N/A	N/A	Power Cable	1702002010
CN3	USB Port #7, #8 Connector	Molex	51110-1050	USB Cable	1709100201
CN4	USB Port #5, #6 Connector	Molex	51110-1050	USB Cable	1709100201
CN5	USB Port #3, #4 Connector	Molex	51110-1050	USB Cable	1709100201
CN6	External +5VSB Power Input and PS_ON#	JST	XHP-3	ATX Cable	170220020B
CN7	LVDS#2 Inverter Connector	JST	PHR-5	N/A	N/A
CN8	Audio Connector	Molex	51021-1000	Audio Cable	1709100254
CN9	LVDS#1 Connector	HIROSE	DF13-30DS-1.25C	N/A	N/A
CN10	LVDS#2 Connector	HIROSE	DF13-30DS-1.25C	N/A	N/A
CN11	COM Port 2 Connector	Molex	51021-0900	Serial Port Cable	1701090150
CN12	LPT / Digital IO Port	Molex	51110-2650	Parallel Port Cable	1701260200
CN13	COM Port 3 Connector	Molex	51021-0900	Serial Port Cable	1701090150

CN14	LPC Port	JST	SHR-12V-S-B	AAEON LPC Cable	1703120130
CN15	COM Port 4 Connector	Molex	51021-0900	Serial Port Cable	1701090150
CN16	UIM Connector	Molex	51021-0600	N/A	N/A
CN17	P/S2 KB/MS Connector	JST	PHDR-06VS	P/S2 KB/MS Cable	1700060152
CN18	External AUX Power and PS_ON#	JST	PHR-6	N/A	N/A
CN19	Touch Screen Connector	JST	SHR-9V-S-B	N/A	N/A
CN20	CPU Fan Connector	Molex	22-01-2035	N/A	N/A
CN22	+5Vout Connector	JST	PHR-2	2 Pins For HDD Power	1702150155
BAT1	External RTC Connector	Molex	51021-0200	Battery Cable	175011901C

Appendix

D

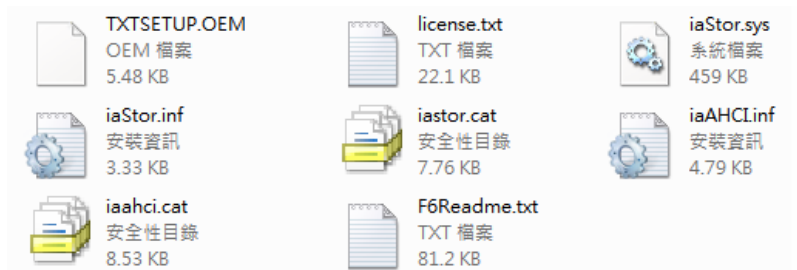
**RAID & AHCI
Settings**

D.1 Setting RAID

OS installation to SETUP RAID Mode

Step 1: Extract the **f6fly-x86.zip** from “Driver CD ->

Step7-RAID&AHCI\WinXP_32” and copy below files to diskette.

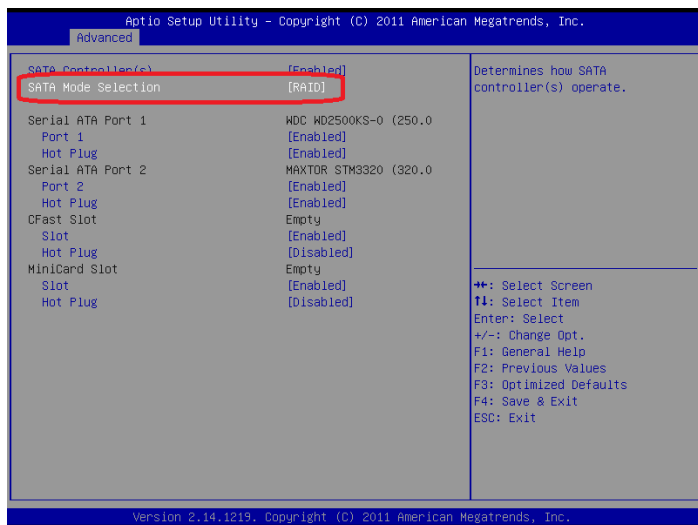


Step 2: Connect the USB Floppy drive to the board and insert the diskette from previous step.

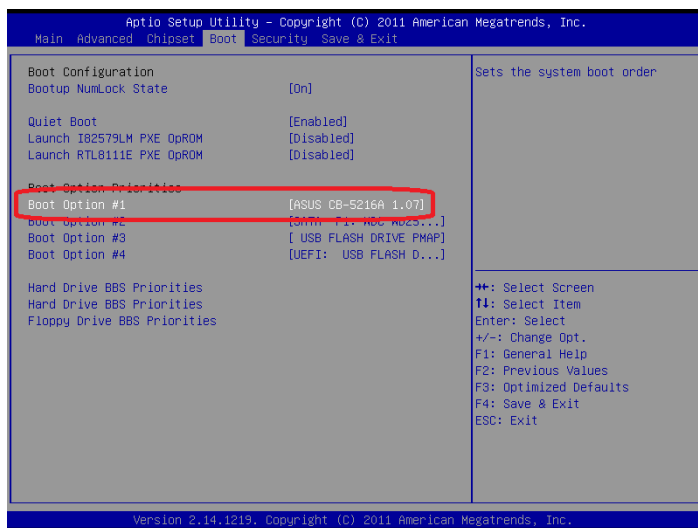


Step 3: Configure SATA Controller to RAID mode in **BIOS SETUP Menu**:

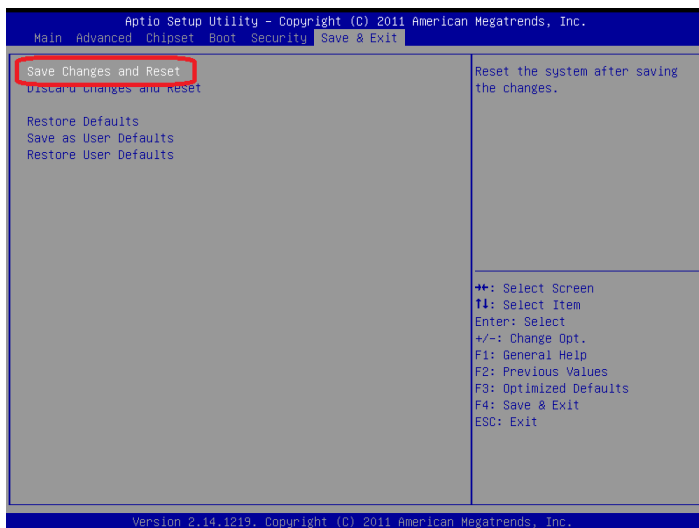
Advanced -> SATA Configuration -> SATA Mode -> RAID Mode



Step 4: Configure DVD/CD-ROM drive as the first boot device.



Step 5: Save changes and exit BIOS SETUP

Step 6: Press **CTRL-I** to enter RAID Configuration Utility

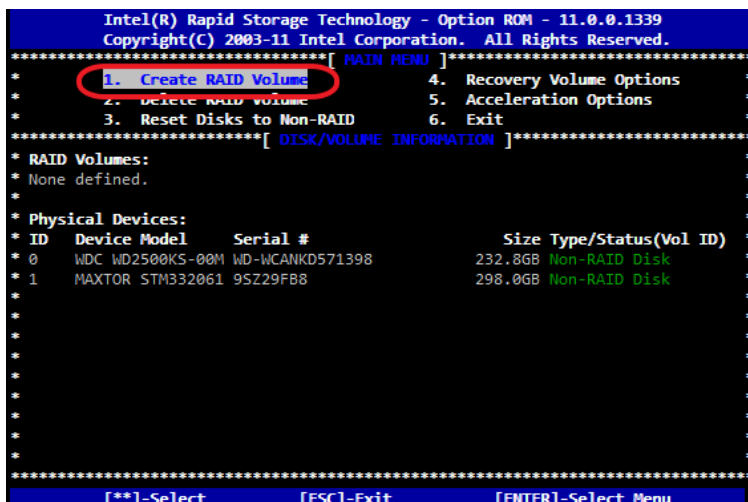
```
Intel(R) Rapid Storage Technology - Option ROM - 11.0.0.1339
Copyright(C) 2003-11 Intel Corporation. All Rights Reserved.

RAID Volumes:
None defined.

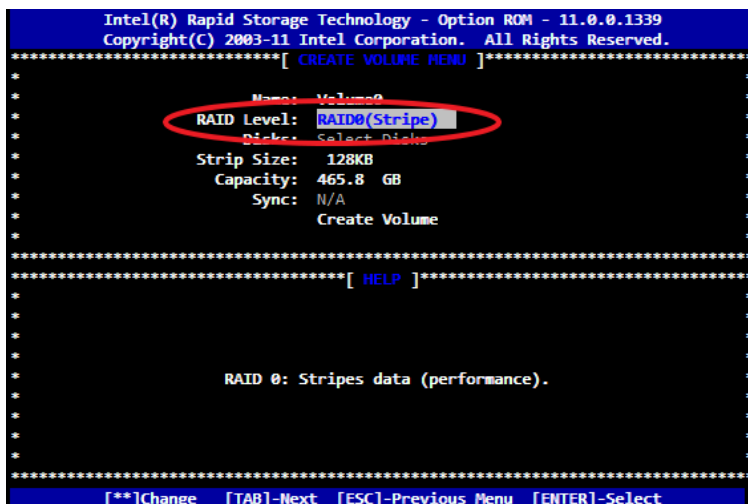
Physical Devices:
ID Device Model Serial # Size Type/Status(vol ID)
0 WDC WD2500KS-00M WD-WCANKD571398 232.8GB Non-RAID Disk
1 MAXTOR STM332061 9S229FB8 298.0GB Non-RAID Disk

Press <CTRL-I> to enter Configuration Utility...
```

Step 7: Choose “1. Create RAID Volume”



Step 8 – Configure RAID parameters for the system



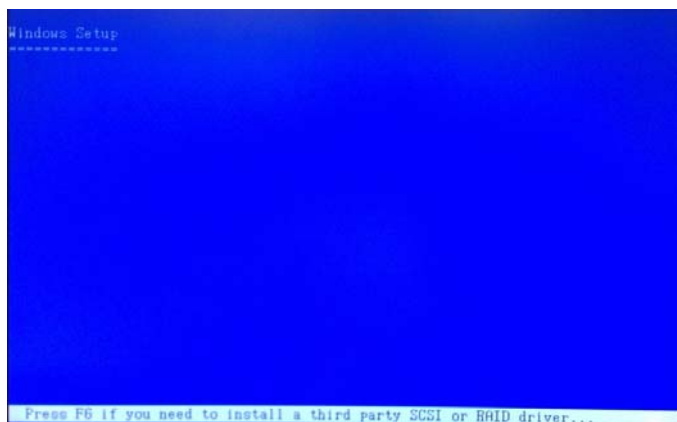
Step 9 – Choose “**Create Volume**” and confirmed in next warning message.

```
Intel(R) Rapid Storage Technology - Option ROM - 11.0.0.1339
Copyright(C) 2003-11 Intel Corporation. All Rights Reserved.
*****[ CREATE VOLUME MENU ]*****
*
*      Name: Volume0
*      RAID Level: RAID0(Stripe)
*      Disks: Select Disks
*      Strip Size: 128KB
*      Capacity: 465.8 GB
*      Sync: N/A
*      Create Volume
*
*****[ HELP ]*****
*
*      Press ENTER to create the specified volume.
*
*****
[**]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select
```

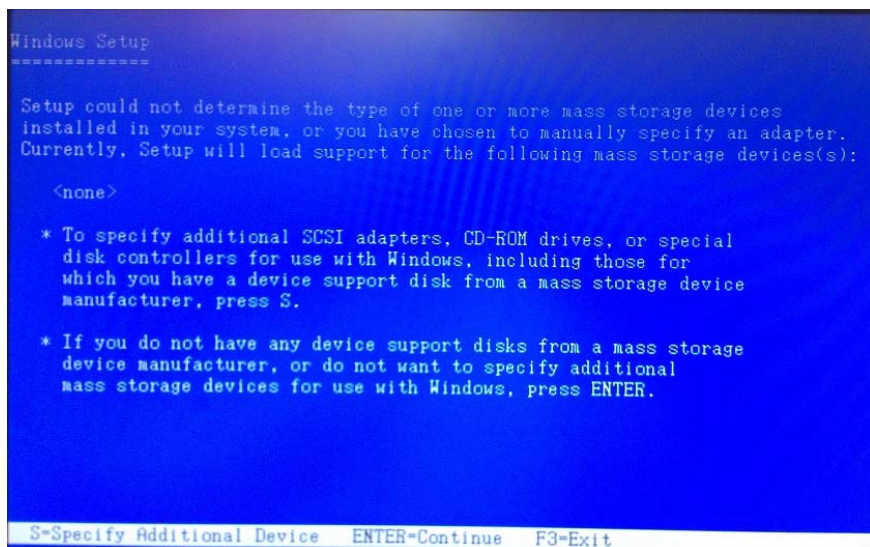
```
Intel(R) Rapid Storage Technology - Option ROM - 11.0.0.1339
Copyright(C) 2003-11 Intel Corporation. All Rights Reserved.
*****[ CREATE VOLUME MENU ]*****
*
*      Name: Volume0
*      RAID Level: RAID0(Stripe)
*      Disks: Select Disks
*      Strip Size: 128KB
*      Capacity: 465.8 GB
*      Sync: N/A
*
*****
*      WARNING: ALL DATA ON SELECTED DISKS WILL BE LOST.
*
*****
*      Are you sure you want to create this volume? (Y/N):
*
*****
*      Press ENTER to create the specified volume.
*
*****
[**]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select
```

Step 10 – Exit RAID Configuration Utility and Reboot to DVD/CD-ROM device to install OS

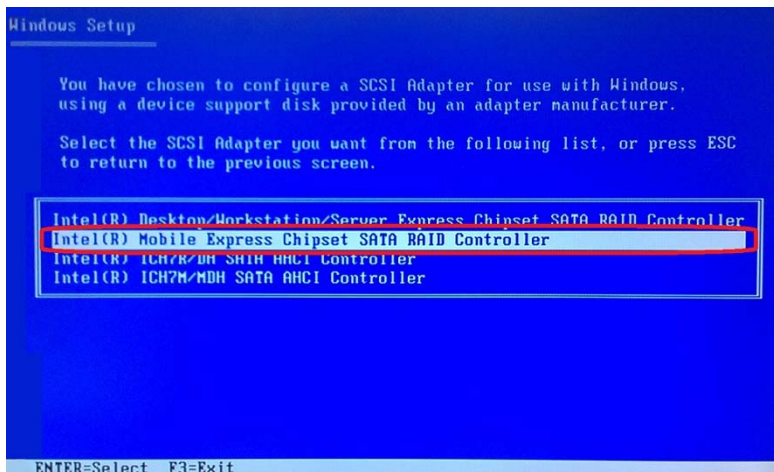
Step 11 – Press “**F6**” to install RAID driver



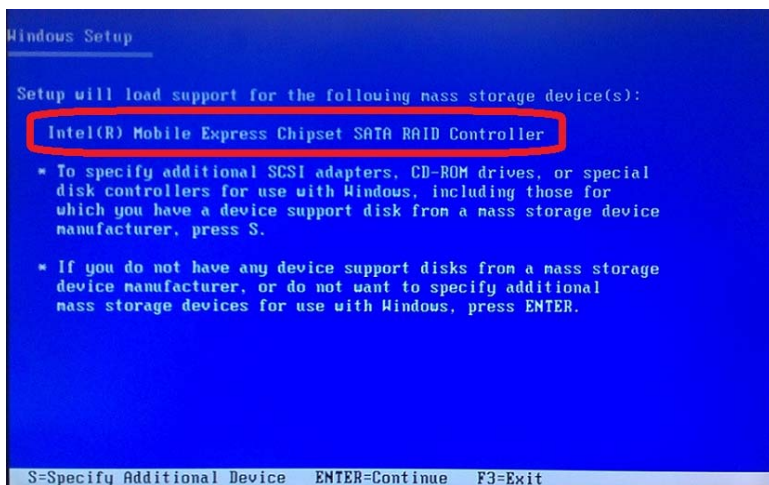
Step 12 – Press “**S**” to install RAID driver



Step 13 – Choose “**Intel(R) Mobile Express Chipset SATA RAID Controller**”



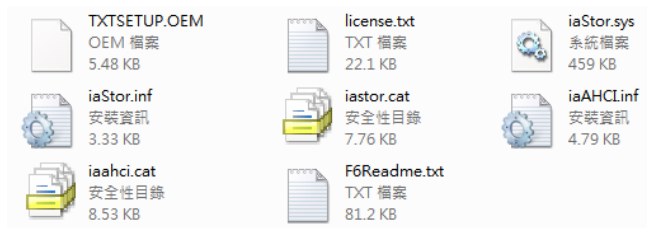
Step 14 – It will show the model you selected and then press “**ENTER**”. Windows Setup will continue to install OS.



D.2 Setting AHCI

OS installation to SETUP AHCI Mode

Step 1: Extract the **f6fly-x86.zip** from “Driver CD -> Step7 - RAID&AHCI\WinXP_32” and copy below files to diskette.

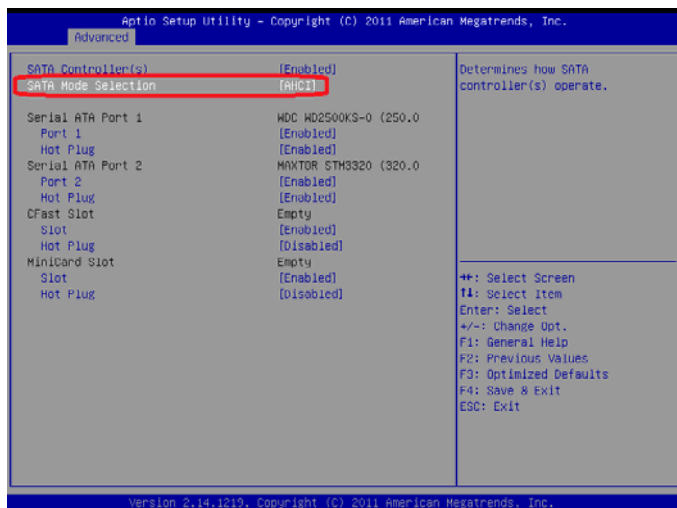


Step 2: Connect the USB Floppy drive to the board and insert the diskette from previous step.

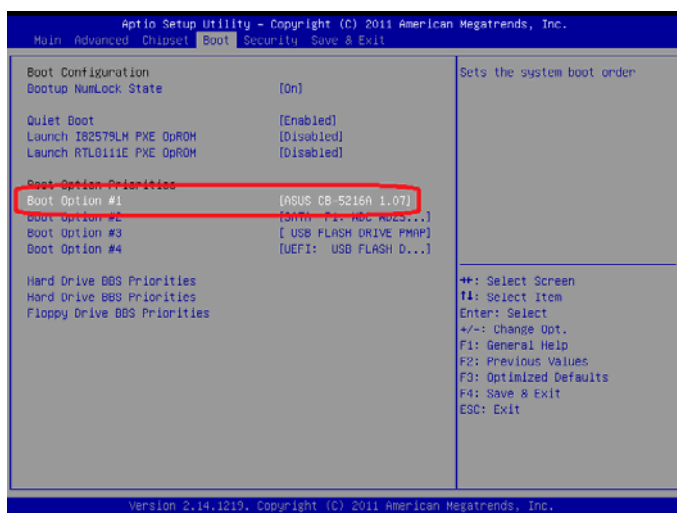


Step 3: Configure SATA Controller to RAID mode in **BIOS SETUP Menu**:

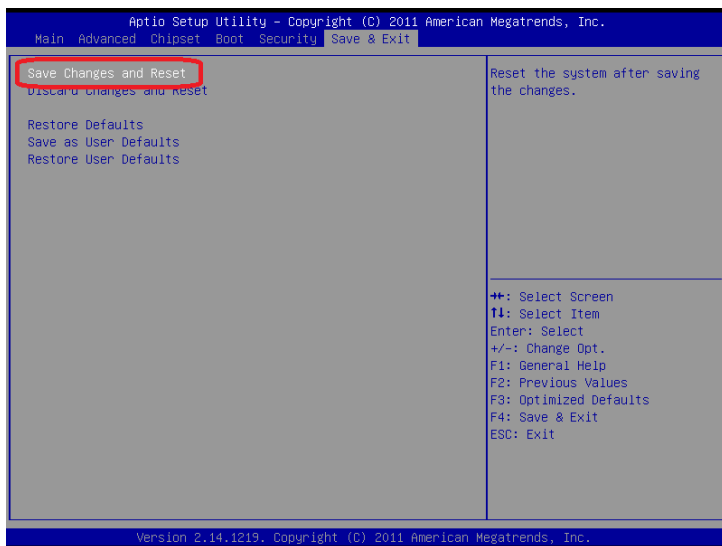
Advanced -> SATA Configuration -> SATA Mode -> AHCI Mode



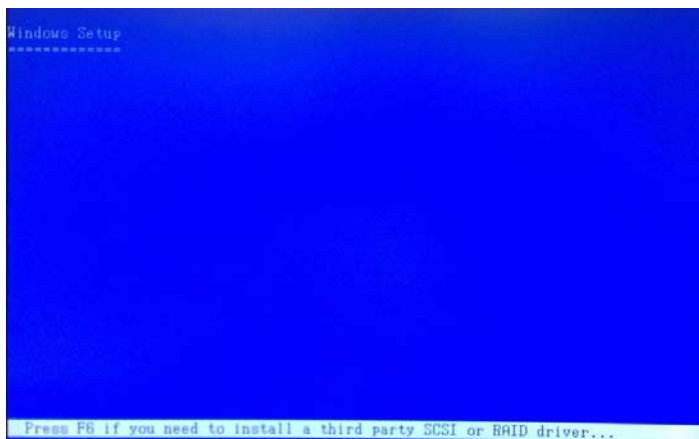
Step 4: Configure DVD/CD-ROM drive as the first boot device.



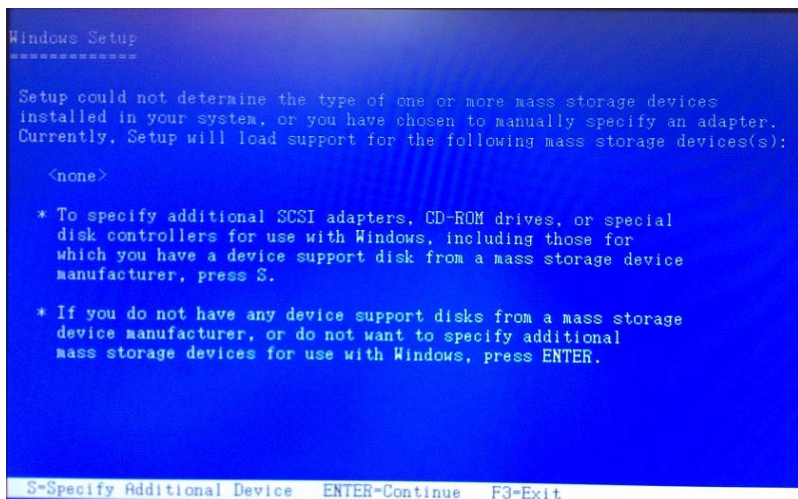
Step 5: Save changes and exit BIOS SETUP



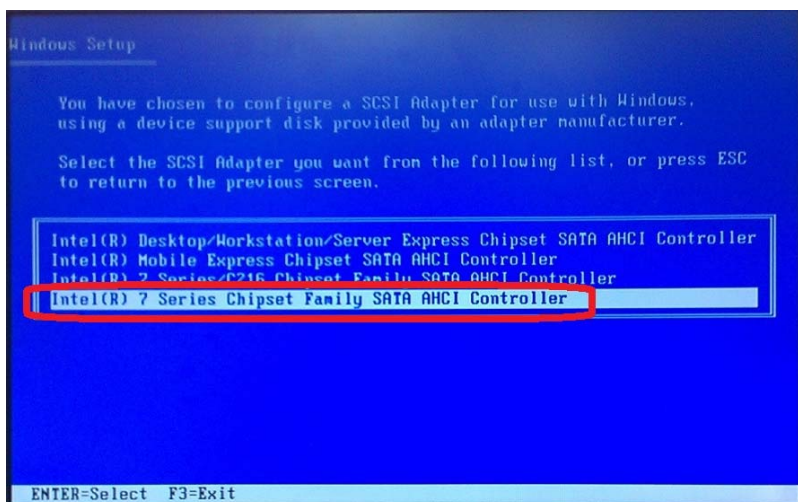
Step 6 – Boot to DVD/CD-ROM device to install OS

Step 7 – Press “**F6**” to install AHCI driver

Step 8 – Press “S” to install AHCI driver

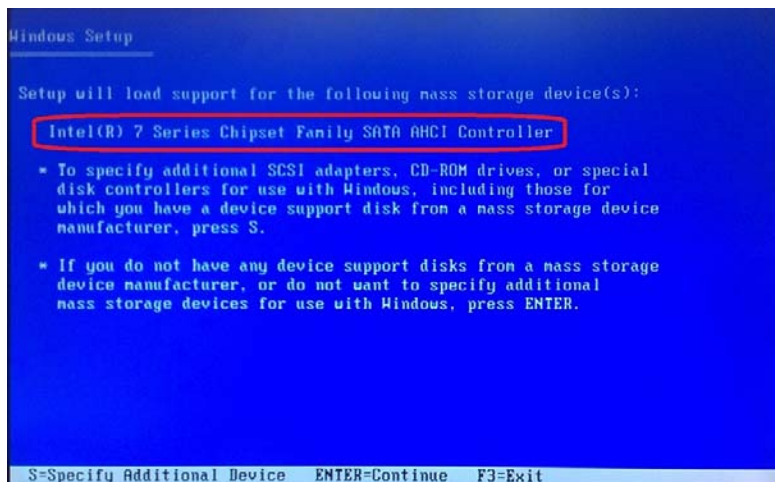


Step 9 – Choose “Intel(R) 7 Series Chipset Family SATA AHCI Controller”



Step 10 – It will show the model you selected and then press "ENTER".

Windows Setup will continue to install OS.



Appendix

E

**Electrical Specifications
for I/O Ports**

E.1 Electrical Specifications for I/O Ports

I/O	Reference	Signal Name	Rate Output
LVDS Port 1 Inverter / Backlight Connector	CN1	VDD	+5V/2A or +12V/2A
LVDS Port 2 Inverter / Backlight Connector	CN7	VDD	+5V/2A or +12V/2A
USB 2.0 Ports 7 and 8	CN3	+5V	
USB 2.0 Ports 5 and 6	CN4	+5V	+5V/0.5A (per channel)
USB 2.0 Ports 3 and 4	CN5	+5V	
USB Ports 1 and 2	CN25	VCC	+5V/1A (per channel)
Audio I/O Port	CN8	+5V	+5V/1A
LVDS Port 1	CN9	VCC	+3.3V/1A or +5V/1A
LVDS Port 2	CN10	VCC	+3.3V/1A or +5V/1A
COM Port 2	CN11	+5V/+12V	+5V/1A or +12V/1A
Digital IO Port	CN12	D0~D7	+5V/(Open drain)
PS/2 Keyboard/Mouse Combo Port	CN17	+5V	+5V/1A
CPU FAN	CN20	VDD	+12V/0.5A
+5V Output for SATA HDD	CN22	+5V	+5V/1A
VGA / DVI Ports (depend on hardware configuration)	CN26	VGA: +5V DVI : +5V	+5V/1A (reserved) +5V/0.5A

CFast Slot	CN28	+3.3V	+3.3V/0.5A
Mini Card Slot	CN30	+3.3VSB +1.5V	+3.3V/1.1A +1.5V/0.375A
LPC Port	CN14	+3.3VCC	+3.3V/0.5A