

GENE-QM77 Rev.B

Intel® 3rd Generation Core™ i7-3555LE/
Celeron B847E 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 DVD-ROM for Manual (in PDF Format) and Drivers
- 1 GENE-QM77 Rev.B with Active Cooler

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 Rev.B supports Intel® Core™ i7-3555LE/ Celeron® B847E 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 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 (COM x 3 with HM76), two USB3.0 and six USB2.0, the GENE-QM77 Rev.B meets the requirements of today's demanding applications.

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

With all of its integrated features, the GENE-QM77 Rev.B strikes a balance of performance and price. This versatile product targets Industrial Automation, Entertainment, KIOSK/POS, Transportation, Banking, and Digital Signage.

1.2 Features

- Intel® Core™ i7-3555LE/ Celeron® B847E Processor
- Intel® QM77/HM76
- 204-pin DDR3 1333/1600 MHz SODIMM x 1, Up to 8 GB
- Gigabit Ethernet x 2
- CRT or DVI (optional), 18/24-bit Dual-Channel LVDS LCD x 2, HDMI 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 (COM x 3 with HM76), 8-bit Digital I/O
- Mini Card x 1
- +12V Only Operation
- Supports iAMT with Intel® QM77
- Onboard 4/5/8-wire Resistive Touch Screen Controller

1.3 Specifications

System

- **Form Factor** 3.5"
- **Processor** Intel® Core™i7-3555LE/ Celeron® B847E Mobile processor
- **System Memory** 204-pin DDR3 1333/1600 MHz SODIMM x 1, Max. 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
- **Trusted Platform Module** Infineon SLB 9635TT 1.2
- **Battery** Lithium Battery
- **Power Requirement** +12V, AT/ATX
- **Power Consumption** Intel® Core™ i7-3555LE 2.5GHz, DDR 1333 8G, 2.49A @ +12V
- **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, HDMI/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, HDMI, DVI
- **HDMI** HDMI x 1
- **DVI (Optional)** DVI x 1 (optional)

I/O: ITE IT8728F + Fintek F81216D

- **Storage** SATA 6.0Gb/s x 2 , CFast™ x 1
- **Serial Port** RS-232 x 3 (QM77)
RS-232 x 2 (HM76)
RS-232/422/485 (auto flow) x 1
- **Parallel Port** SPP/EPP/ECP x 1 (by BIOS setting)
- **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!

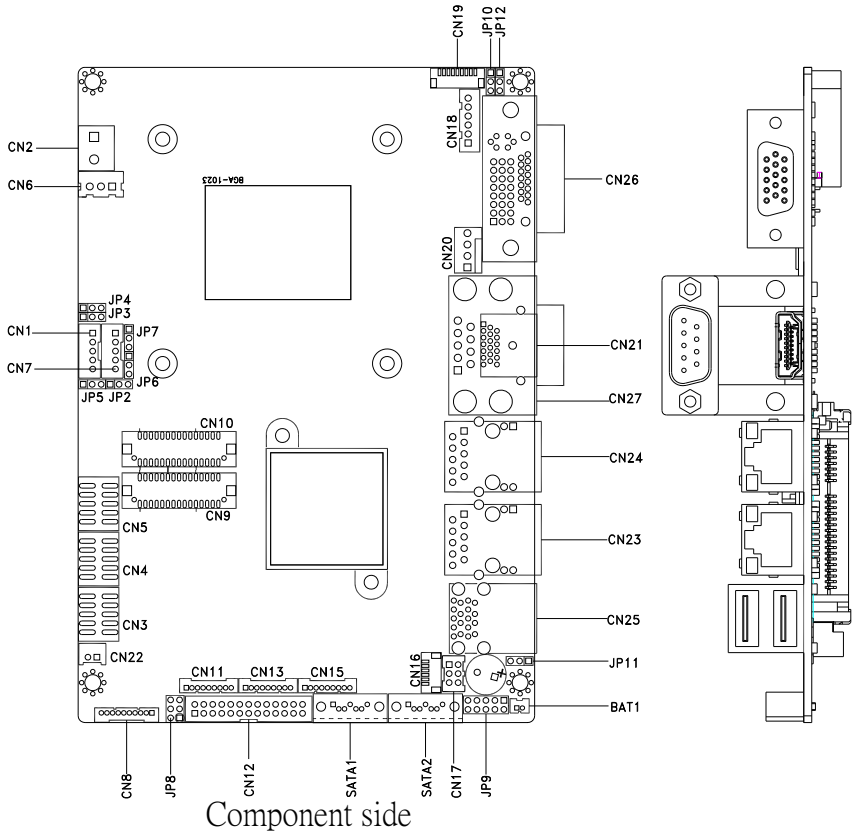
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Caution!

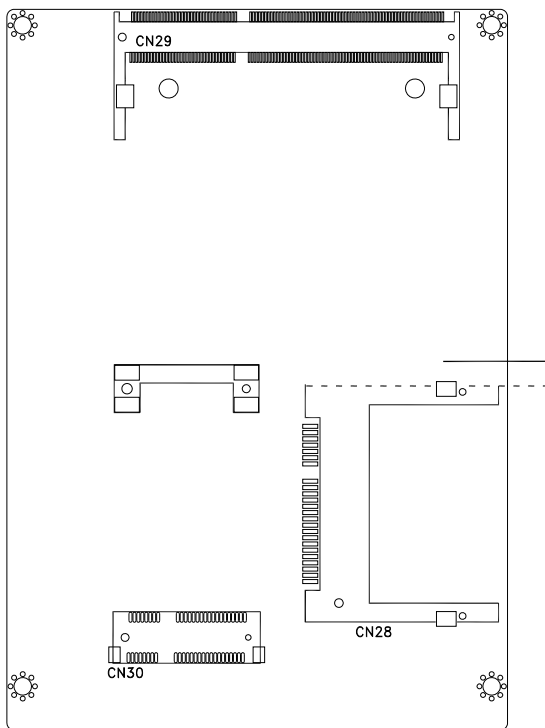
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

2.2 Location of Connectors and Jumpers

Component Side



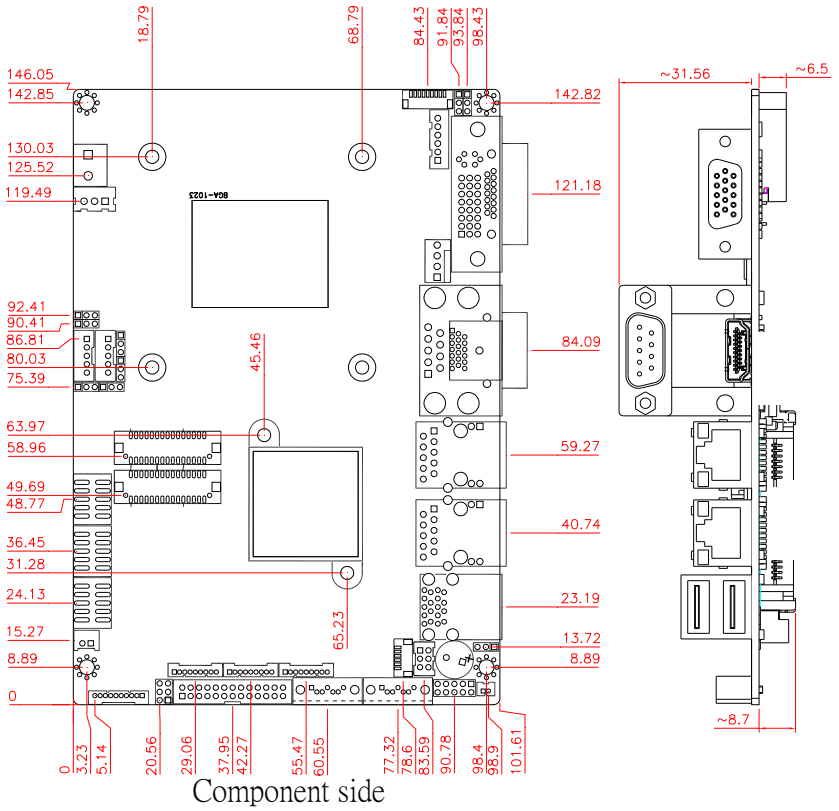
Solder Side



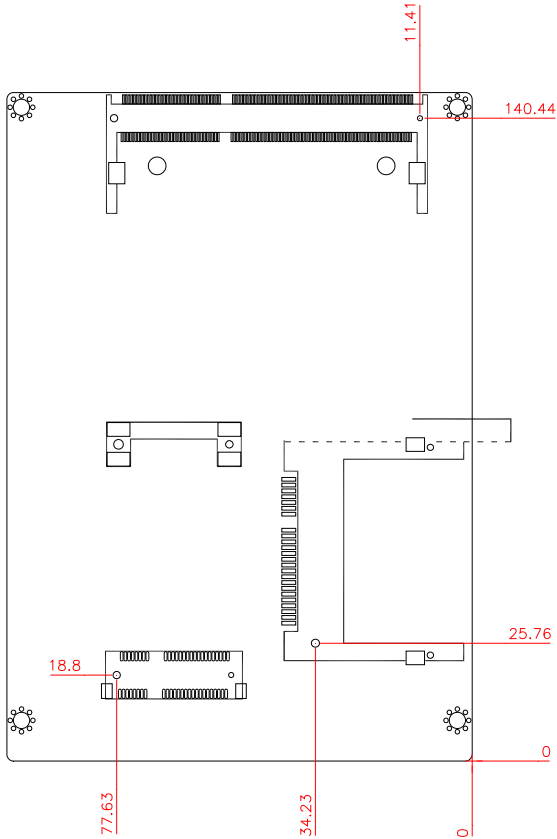
Solder side

2.3 Mechanical Drawing

Component Side



Solder 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:

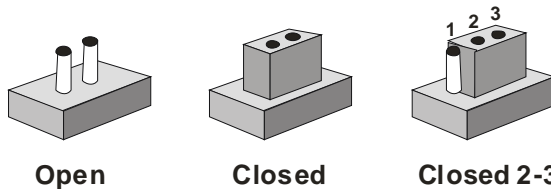
Label	Function
CN1	LVDS Port 1 Inverter / Backlight Connector
CN2	External +12V Input
CN3	USB 2.0 Ports 7 and 8
CN4	USB 2.0 Ports 5 and 6
CN5	USB 2.0 Ports 3 and 4
CN6	External +5VSB Input
CN7	LVDS Port 2 Inverter / Backlight Connector
CN8	Audio I/O Port
CN9	LVDS Port 1
CN10	LVDS Port 2
CN11	COM Port 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
CN21	HDMI Connector
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) (not available for HM76)
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.

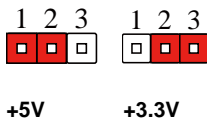


A pair of needle-nose pliers may be helpful when working with jumpers.

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.

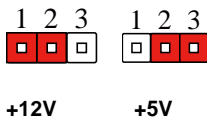
Generally, you simply need a standard cable to make most connections.

2.7 LVDS Port 2 Operating VDD Selection (JP2)



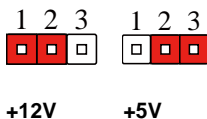
JP2	Function
1-2	+5V
2-3	+3.3V (Default)

2.8 LVDS Port 1 Backlight Inverter VCC Selection (JP3)



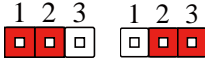
JP3	Function
1-2	+12V
2-3	+5V (Default)

2.9 LVDS Port 2 Backlight Inverter VCC Selection (JP4)



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

2.10 LVDS Port 1 Operating VDD Selection (JP5)

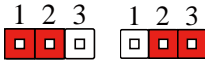


+5V

+3.3V

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

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

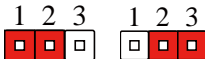


VR Mode

PWM Mode

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

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

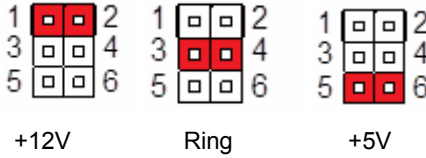


VR Mode

PWM Mode

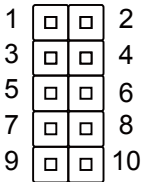
JP7	Function
1-2	VR Mode (Default)

2.13 COM2 Pin8 Function Selection (JP8)



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

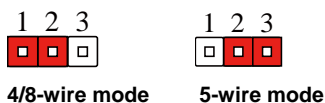
2.14 Front Panel Connector (JP9)



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)



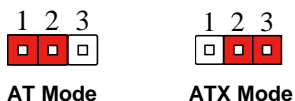
JP10	Function
1-2	4/8-wire mode (Default)
2-3	5-wire mode

2.16 Clear CMOS (JP11)



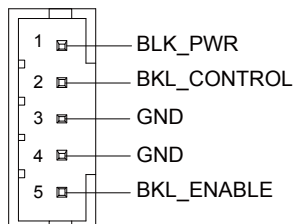
JP11	Function
1-2	Normal (Default)
2-3	Clear CMOS

2.17 AT/ATX Power Supply Mode Selection (JP12)



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

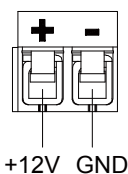
2.18 LVDS Port 1 Inverter/ Backlight Connector (CN1)



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

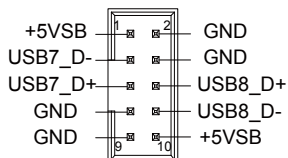
Note: LVDS1 BKL_PWR can be set to +5V or +12V by JP3.
LVDS1 BKL_CONTROL can be set by JP6.

2.19 External +12V Input (CN2)



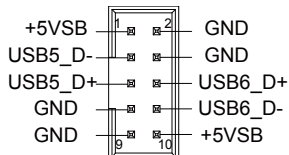
Pin	Pin Name	Signal Type	Signal Level
1	+12V	PWR	+12V
2	GND	GND	

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

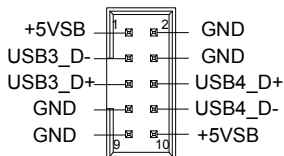
2.21 USB2.0 Port 5 and Port 6 (CN4)



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

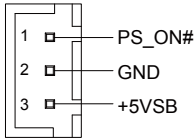
2.22 USB2.0 Port 3 and Port 4 (CN5)



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	

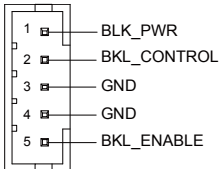
10	+5VSB	PWR	+5V
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2.23 External +5VSB Input (CN6)



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

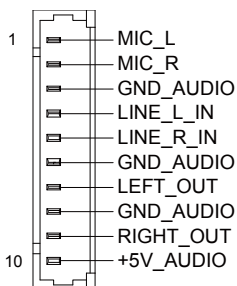
2.24 LVDS Port 2 Inverter/ Backlight Connector (CN7)



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

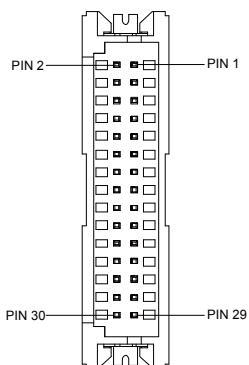
Note: LVDS2 BKL_PWR can be set to +5V or +12V by JP4.
LVDS2 BKL_CTL can be set by JP7.

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)

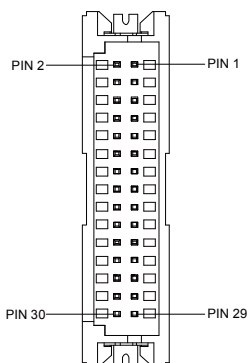


Pin	Pin Name	Signal Type	Signal Level
1	BKL_ENABLE	OUT	
2	BKL_CONTROL	OUT	
3	LCD_PWR	PWR	+3.3V/+5V
4	GND	GND	
5	LVDS_A_CLK-	DIFF	
6	LVDS_A_CLK+	DIFF	
7	LCD_PWR	PWR	+3.3V/+5V
8	GND	GND	
9	LVDS_DA0-	DIFF	
10	LVDS_DA0+	DIFF	
11	LVDS_DA1-	DIFF	
12	LVDS_DA1+	DIFF	
13	LVDS_DA2-	DIFF	

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)

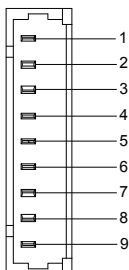


Pin	Pin Name	Signal Type	Signal Level
1	BKL_ENABLE	OUT	
2	BKL_CONTROL	OUT	
3	LCD_PWR	PWR	+3.3V/+5V
4	GND	GND	
5	LVDS_A_CLK-	DIFF	
6	LVDS_A_CLK+	DIFF	
7	LCD_PWR	PWR	+3.3V/+5V
8	GND	GND	
9	LVDS_DA0-	DIFF	
10	LVDS_DA0+	DIFF	
11	LVDS_DA1-	DIFF	
12	LVDS_DA1+	DIFF	

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	

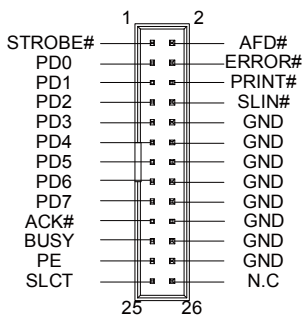
RS-485

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

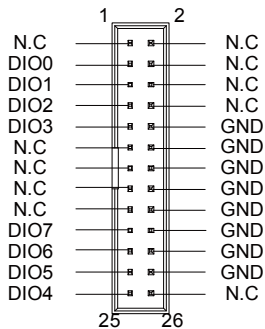


Pin	Pin Name	Signal Type	Signal Level
1	STROBE#	IN	
2	AFD#	I/O	
3	PD0	I/O	
4	ERROR#	IN	
5	PD1	I/O	
6	PRINT#	I/O	
7	PD2	I/O	
8	SLIN#	I/O	
9	PD3	I/O	
10	GND	GND	
11	PD4	I/O	
12	GND	GND	
13	PD5	I/O	

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

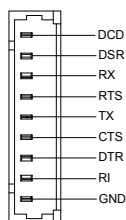


Pin	Pin Name	Signal Type	Signal Level
1	NC		
2	NC		
3	DIO0	I/O	+5V
4	NC		
5	DIO1	I/O	+5V
6	NC		
7	DIO2	I/O	+5V
8	NC		
9	DIO3	I/O	+5V
10	GND	GND	
11	NC		
12	GND	GND	
13	NC		
14	GND	GND	
15	NC		
16	GND	GND	
17	NC		
18	GND	GND	
19	DIO7	I/O	+5V
20	GND	GND	
21	DIO6	I/O	+5V
22	GND	GND	
23	DIO5	I/O	+5V

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

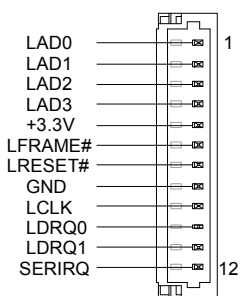
2.30 COM Port 3 Connector (CN13)



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	

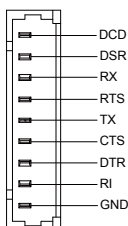
12

SERIRQ

I/O

+3.3V

2.32 COM Port 4 Connector (CN15)



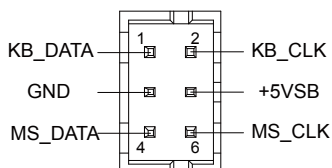
Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	DSR	IN	
3	RX	IN	
4	RTS	OUT	±9V
5	TX	OUT	±9V
6	CTS	IN	
7	DTR	OUT	±9V
8	RI	IN	
9	GND	GND	

2.33 UIM Card Module (CN16)



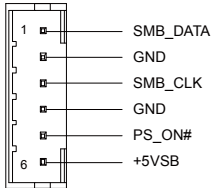
Pin	Pin Name	Signal Type	Signal Level
1	UIM_PWR	PWR	
2	UIM_RST	IN	
3	UIM_CLK	IN	
4	GND	GND	
5	UIM_VPP	PWR	
6	UIM_DATA	I/O	

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

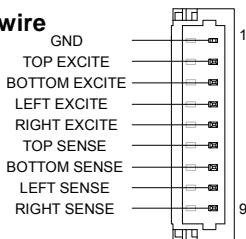
2.35 +5VSB Output w/SMBus (CN18)



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)

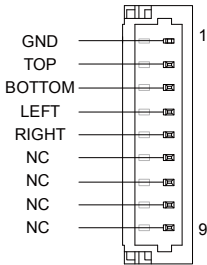
8-wire



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

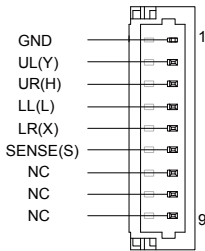
4	LEFT EXCITE	IN
5	RIGHT EXCITE	IN
6	TOP SENSE	IN
7	BOTTOM SENSE	IN
8	LEFT SENSE	IN
9	RIGHT SENSE	IN

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		

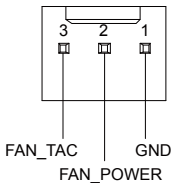
5-wire



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		

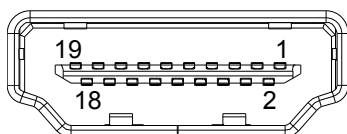
Note: Touch mode can be set by JP10

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	

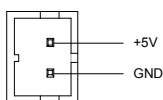
2.38 HDMI Connector (CN21)



Pin	Pin Name	Signal Type	Signal Level
1	TMDS_DAT2+	DIFF	
2	GND	GND	
3	TMDS_DAT2-	DIFF	
4	TMDS_DAT1+	DIFF	
5	GND	GND	
6	TMDS_DAT1-	DIFF	
7	TMDS_DAT0+	DIFF	
8	GND	GND	
9	TMDS_DAT0-	DIFF	
10	TMDS_CLK+	DIFF	
11	GND	GND	
12	TMDS_CLK-	DIFF	
13	NC		
14	NC		

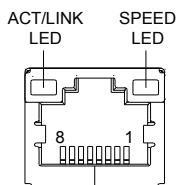
15	DDC_CLK	I/O	+5V
16	DDC_DATA	I/O	+5V
17	GND	GND	
18	+5V	I/O	+5V
19	HPLG_DETECT	IN	

2.39 +5V Output for SATA HDD (CN22)



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

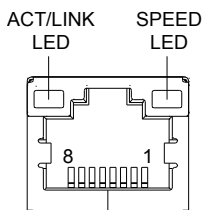
2.40 Realtek LAN (RJ-45) Port (CN23)



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

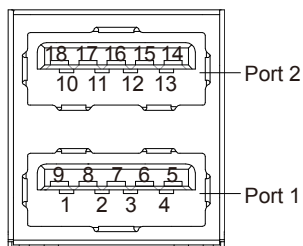
5	MDI2-	DIFF
6	MDI1-	DIFF
7	MDI3+	DIFF
8	MDI3-	DIFF

2.41 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	

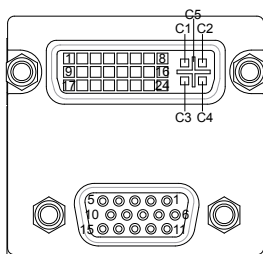
2.42 USB Port 1 and Port 2 (CN25)



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

2.43 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		

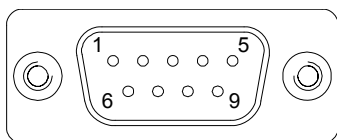
12	DDC_DATA	I/O	+5V
13	HSYNC	OUT	
14	VSYNC	OUT	
15	DDC_CLK	I/O	+5V

DVI

Pin	Pin Name	Signal Type	Signal Level
1	TMDS_DAT2+	DIFF	
2	TMDS_DAT2-	DIFF	
3	GND	GND	
4	NC	I/O	
5	NC	I/O	
6	DDC_CLK	I/O	+5V
7	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

2.44 COM Port 1 (D-SUB 9) (CN27) (not available for HM76)



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	

7	RTS	OUT	±9V
8	CTS	IN	
9	RI	IN	

2.45 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		

2.46 DDR3 SODIMM Slot (CN29)

Standard specification

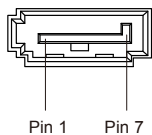
2.47 Mini Card Slot (CN30)

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

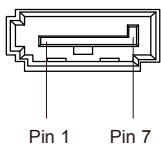
2.48 SATA Port 1 (SATA1)



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 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

Advanced BIOS Features Setup including TPM, ACPI, etc.

Chipset

Host bridge parameters.

Boot

Enables/disable quiet boot option.

Security

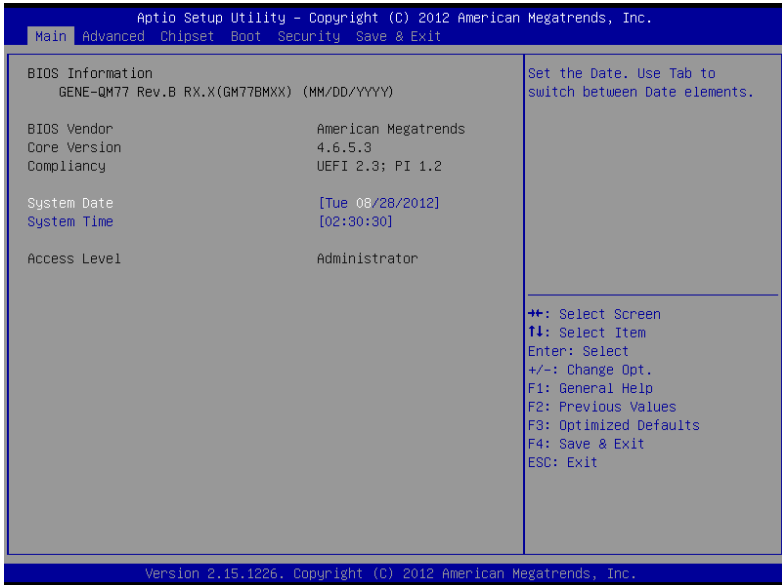
Set setup administrator password.

Save&Exit

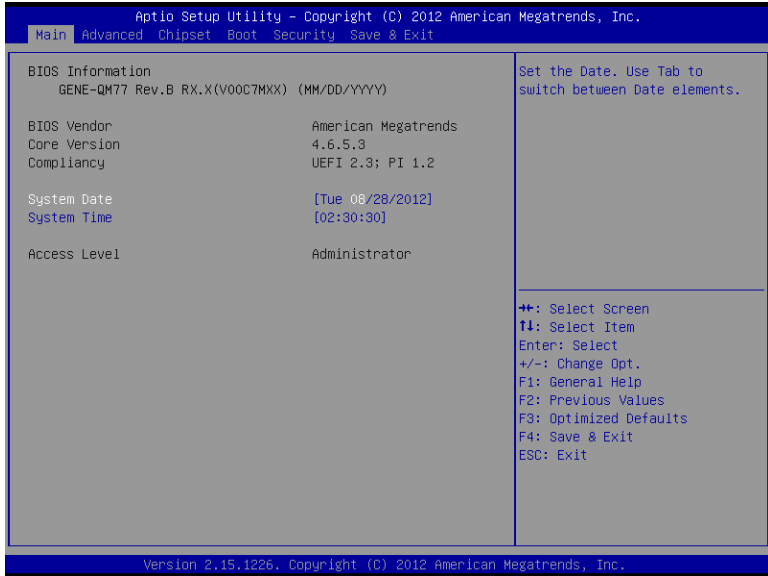
Exit system setup after saving the changes.

Setup Menu**Setup submenu: Main**

For QM77 Sku

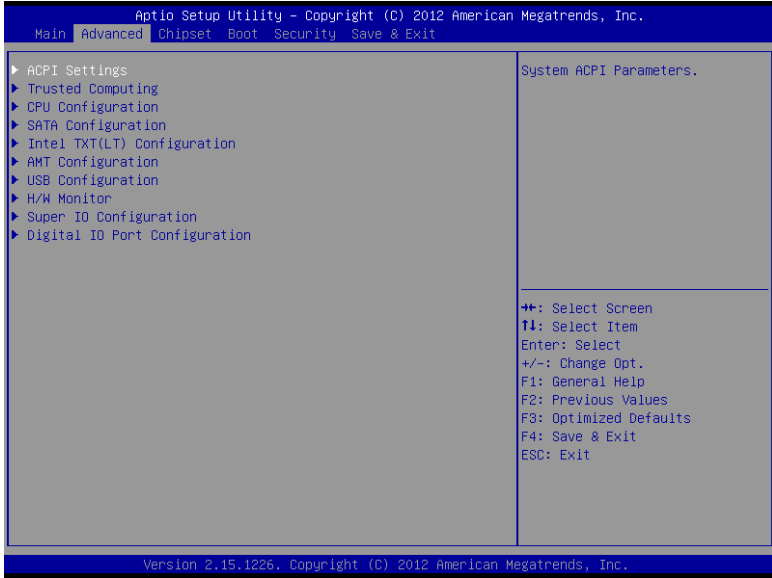


For HM76 Sku

Options summary: (**default setting**)

System Date	Day MM:DD:YYYY	
Change the month, year and century. The 'Day' is changed automatically.		
System Time	HH : MM : SS	
Change the clock of the system.		

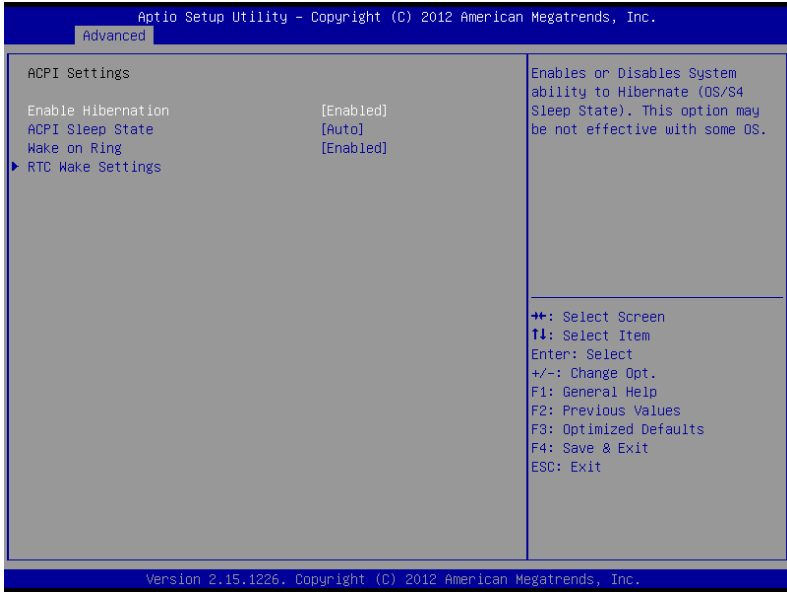
Setup submenu: Advanced

Options summary: (**default setting**)

ACPI Settings		
System ACPI Parameters		
Trusted Computing		
Trusted Computing Settings		
CPU Configuration		
CPU Configuration Parameters		
SATA Configuration		
SATA Device Options Settings		

Intel TXT(LT) Configuration		
Intel Trusted Execution Technology		
AMT Configuration		
AMT Configuration Parameters		
USB Configuration		
USB Configuration Parameters		
H/W Monitor		
Monitor hardware status		
Super IO Configuration		
Super IO Configuration Parameters		
Digital IO Port Configuration		
Set Input/Output of Digital IO Port Configuration		

ACPI Settings

Options summary: (**default setting**)

Enable Hibernation	Enabled	
	Disabled	
Enabled or disabled hibernate (OS/S4 Sleep State).		
ACPI Sleep State	Suspend Disabled	
	S1 only(CPU Stop Clock)	
	S3 only(Suspend to RAM)	
	Auto	

Select the ACPI state used for System Suspend

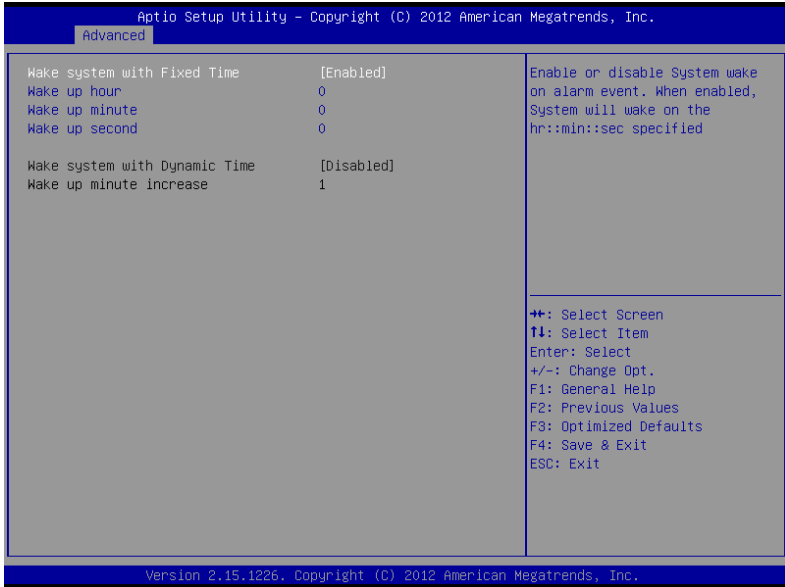
Wake on Ring	Enabled	
	Disabled	

Enabled or disabled wake on ring function.

RTC Wake Settings

Enable system to wake from S5 using RTC alarm.

RTC Wake Settings

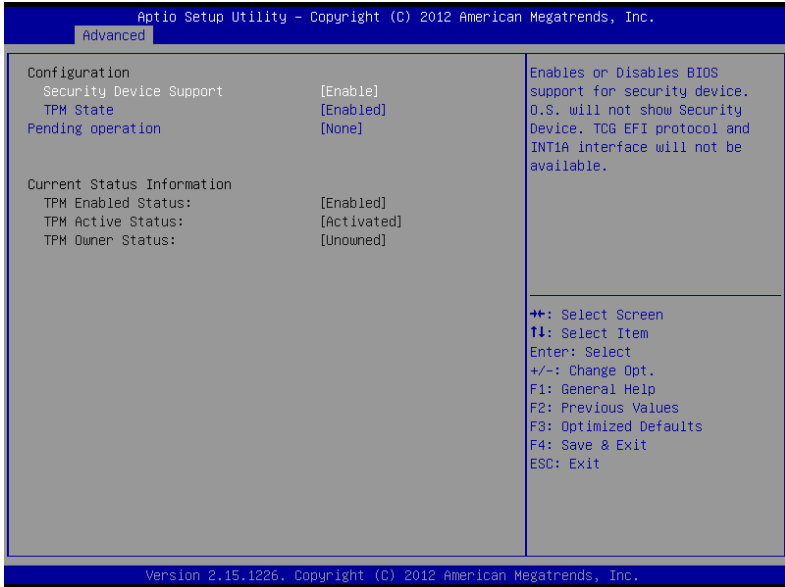


Options summary: (**default setting**)

Wake system with	Disabled	
Fixed Time	Enabled	
Enable or disable System wake on alarm event. Wake up time is setting by following settings.		
Wake up hour	0-23	
Wake up minute	0-59	
Wake up second	0-59	

Wake system with Dynamic Time	<i>Disabled</i>	
	Enabled	
Enable or disable System wake on alarm event. Wake up time is current time + Increase minutes.		
Wake up minute increase	1-5	

Trusted Computing

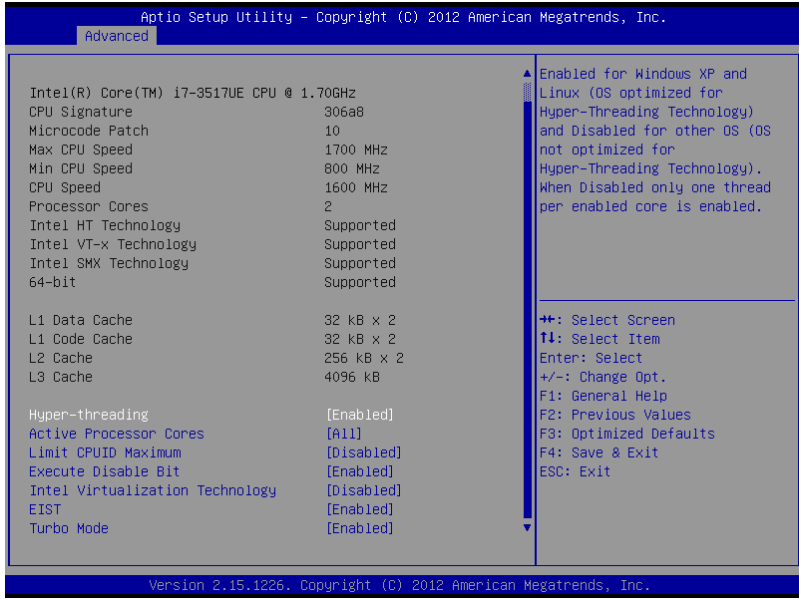


Options summary: (*default setting*)

Security Device Support	Disabled	
	Enabled	
En/Disable TPM support.		
TPM State	Disabled	
	Enabled	
En/Disable TPM functionality.		
Pending TPM Operation	None	
	Enable Take Ownership	

	Disable Take Ownership	
	TPM Clear	
Select one-time TPM operation. Item value returns to 'None' after next POST.		

CPU Configuration



Options summary: (*default setting*)

Hyper-Threading	Disabled	
	Enabled	
En/Disable CPU Hyper-Threading function		
Active Processor	ALL	
Cores	1 to Max CPU cores	
Number of CPU cores to be active.		
Limit CPUID	Disabled	
Maximum	Enabled	
Disabled for Windows XP		

Execute Disable Bit	Disabled	
	Enabled	
En/Disable XD bit for supporting OS		
Intel Virtualization Technology	Disabled	
	Enabled	
En/Disable Intel VT-x function		
EIST	Disabled	
	Enabled	
En/Disable Intel SpeedStep		
Turbo Mode	Disabled	
	Enabled	
En/Disable Intel Turbo Mode		

Note: The CPU's temperature may increase and impact the whole system thermal when turbo boosting in turbo mode. Users need to make sure the margin of the system thermal in critical environments.

SATA Configuration

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Advanced

SATA Controller(s)	[Enabled]	Enable or disable SATA Device.
SATA Mode Selection	[AHCI]	
Serial ATA Port 1	Empty	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Port 1	[Enabled]	
Hot Plug	[Disabled]	
Serial ATA Port 2	Empty	
Port 2	[Enabled]	
Hot Plug	[Disabled]	
CFast Slot	Empty	
Slot	[Enabled]	
Hot Plug	[Disabled]	
MiniCard Slot	Empty	
Slot	[Enabled]	
Hot Plug	[Disabled]	

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Options summary: (**default setting**)

SATA Controller(s)	Disabled	
	Enabled	
En/Disable SATA controller		
Configure SATA as	IDE	
	AHCI	
	RAID	Available for QM77 Sku
Configure SATA controller operating as IDE/AHCI/RAID mode.		
Port 1/Port 2/CFast	Disabled	
Slot/Minicard Slot	Enabled	

En/Disable the selected port.

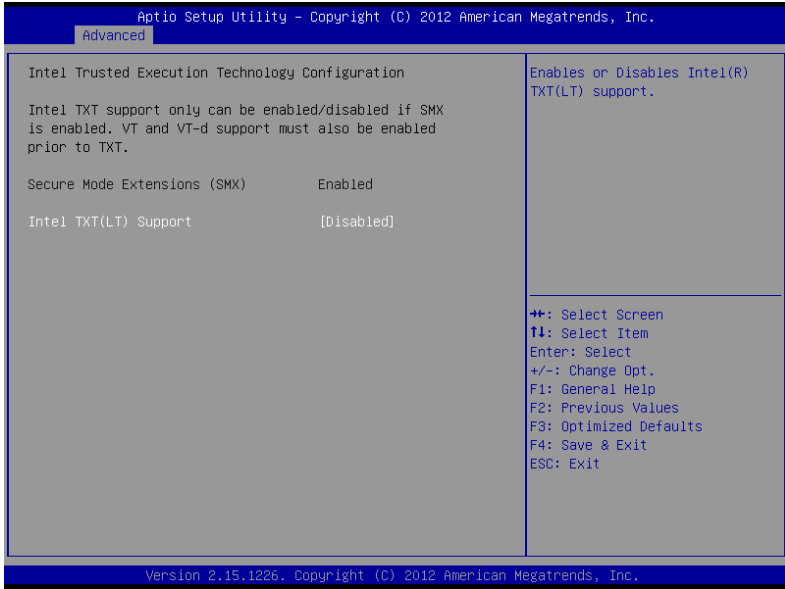
Hot Plug

Disabled

Enabled

En/Disable Hot Plug feature for specified port.

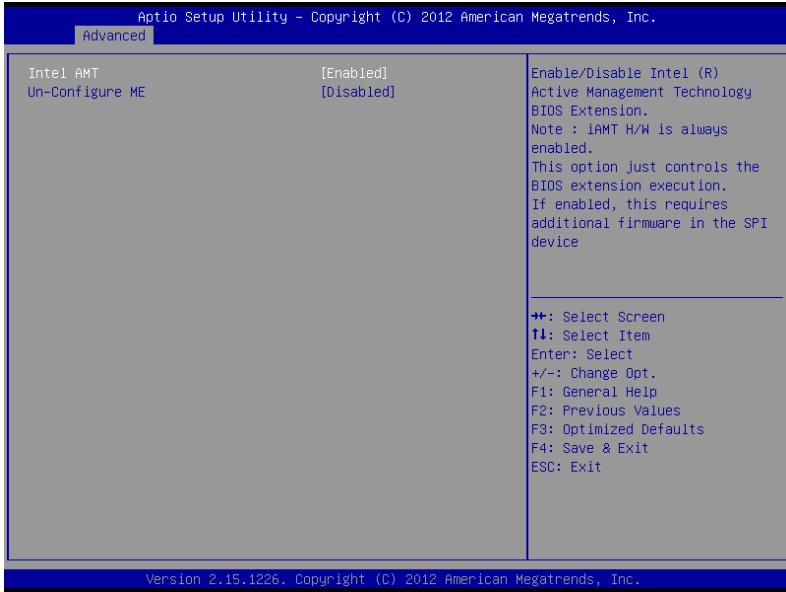
Intel TXT(LT) Configuration



Options summary: (*default setting*)

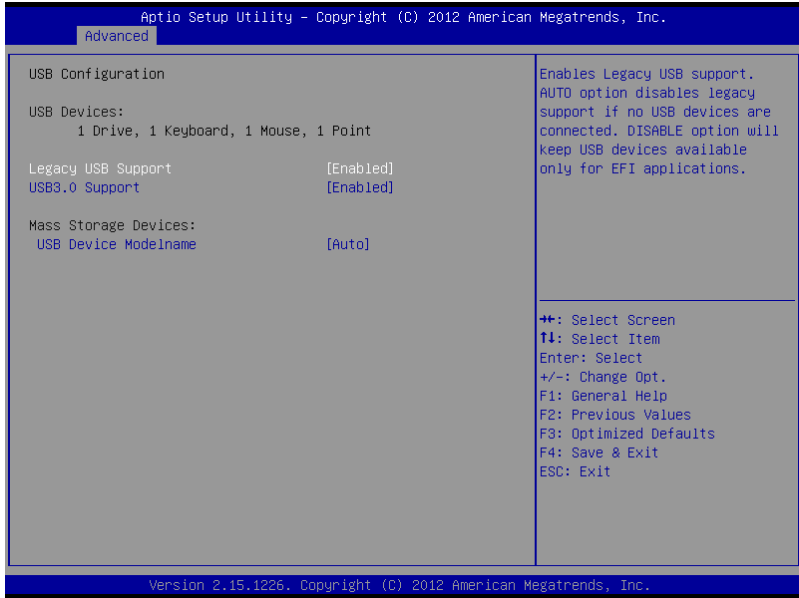
Intel TXT(LT) Support	Disabled	
	Enabled	
<p>En/Disable Intel TXT function. This function only can be enabled/disabled if SMX, VT-x and VT-d support are enabled prior to it.</p>		

AMT Configuration (for QM77 Sku)

Options summary: (**default setting**)

Intel AMT	Enabled	
	Disabled	
En/Disable Intel® Active Management Technology BIOS Extension. Note: iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device		
Un-Configure ME	Enabled	
	Disabled	
OEMFlag Bit 15: Un-Configure ME without password		

USB Configuration



Options summary: (*default setting*)

Legacy USB Support	Enabled	
	Disabled	
	Auto	
Enables BIOS Support for Legacy USB Support. When enabled, USB can be functional in legacy environment like DOS. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI application		
USB3.0 Support	Enabled	
	Disabled	

Enables BIOS Support for USB3.0 (XHCI). When disabled, PCH USB3.0 controller will also be disabled.

Device Name
(Emulation Type)

Auto

Floppy

Forced FDD

Hard Disk

CD-ROM

If Auto. USB devices less than 530MB will be emulated as Floppy and remaining as Floppy and remaining as hard drive. Forced FDD option can be used to force a HDD formatted drive to boot as FDD(Ex. ZIP drive)

H/W Monitor

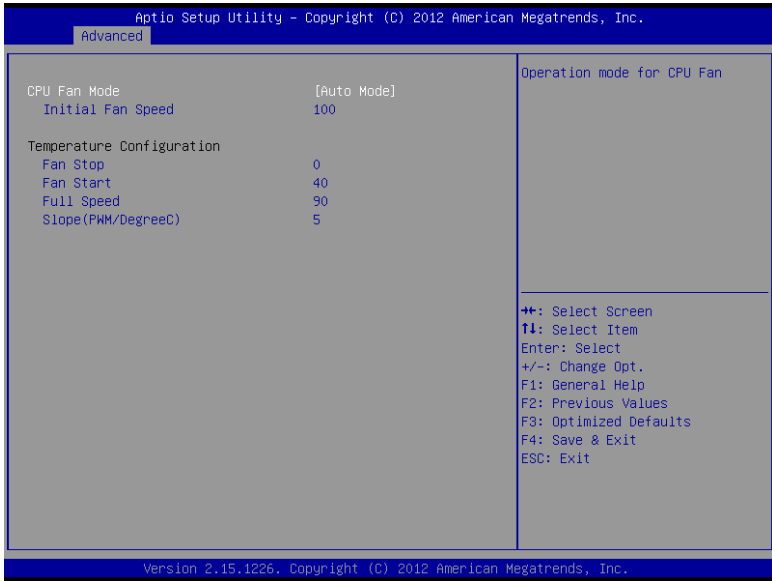
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Advanced

Pc Health Status		CPU Fan Configuration
CPU Temperature	: +40 C	
PCH Temperature	: +35 C	
System Temperature	: +23 C	
CPU FAN Speed	: 5037 RPM	
CPU_VCORE	: +0.864 V	
VCC_DIMM	: +1.500 V	
12V	: +11.904 V	
5V	: +5.110 V	
3.3V	: +3.276 V	
5VSB	: +5.020 V	
VBAT	: +3.240 V	
▶ CPU Fan Control		↔: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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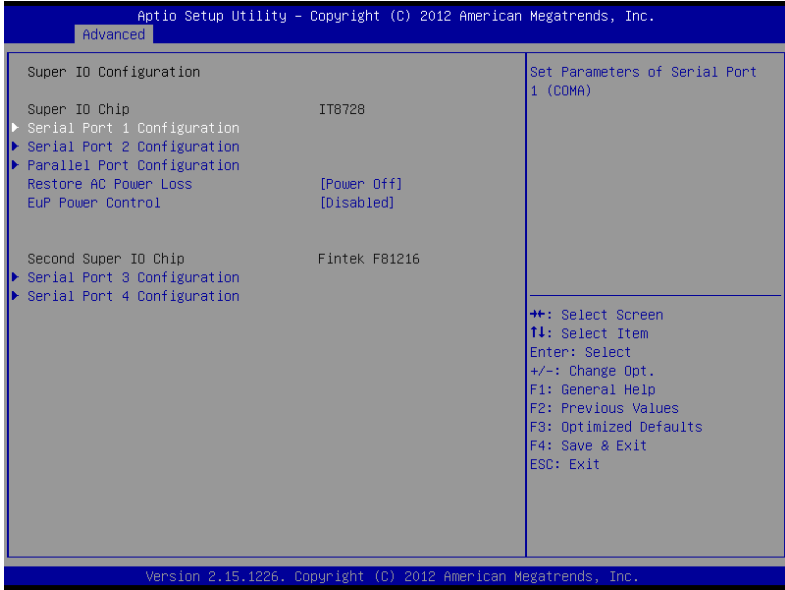
CPU Fan Control

Options summary: (**default setting**)

CPU Fan Mode	Fixed Mode	
	Auto Mode	
Fixed Mode: Manually controlling the fan with a given control PWM.		
Auto Mode: Automatically controlling the fan with given parameters.		
Initial Fan Speed	0 to 100, default is 100	
Fan Speed value between 0(stop) to 100(full speed)		
Fan Stop	0 to 100, default is 0	
Fan stops when temperature is lower than the given value in Degree C		

Fan Start	0 to 100, default is 40	
Fan starts when temperature is higher than the given value in Degree C		
Full Speed	0 to 100, default is 90	
Fan runs in full speed when temperature is higher than the given value in Degree C		
Slope(PWM/Degree C)	0 to 15, default is 5	
Slope[1-15] PWM/Degree C for Fan Speed Control		

Super IO Configuration



Options summary: (*default setting*)

Serial Port 1/2/3/4 Configuration		
Set Parameters of Serial Port 1/2/3/4		
Parallel Port Configuration		
Set Parameters of Parallel Port.		
Restore AC Power Loss	Power Off	
	Power On	
	Last State	

Select AC power state when power is re-applied after a power failure.

EuP Power Control

Disabled

Enabled

Configure Energy-using Product(EuP) Power Control.

Serial Port 1 Configuration (not available for HM76)

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Advanced

Serial Port 1 Configuration	Enable or Disable Serial Port (COM)
Serial Port [Enabled]	
Device Settings IO=3F8h; IRQ=4;	
Change Settings [Auto]	

++: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F2: Previous Values
 F3: Optimized Defaults
 F4: Save & Exit
 ESC: Exit

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Options summary: (**default setting**)

Serial Port	Disabled	
	Enabled	
En/Disable specified serial port.		
Change Settings	Auto	
	IO=3F8h; IRQ=4;	
	IO=3F8h; IRQ=3,4,5,7,10,11,12;	
	IO=2F8h; IRQ=3,4,5,7,10,11,12;	

	IO=3E8h; IRQ=3,4,5,7,10,11,12;	
	IO=2E8h; IRQ=3,4,5,7,10,11,12;	
Select a resource setting for Super IO device.		

Serial Port 2 Configuration

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Advanced

Serial Port 2 Configuration		Enable or Disable Serial Port (COM)
Serial Port	[Enabled]	
Device Settings	IO=2F8h; IRQ=3;	
Change Settings	[Auto]	
Device Type	[RS232]	

++: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F2: Previous Values
 F3: Optimized Defaults
 F4: Save & Exit
 ESC: Exit

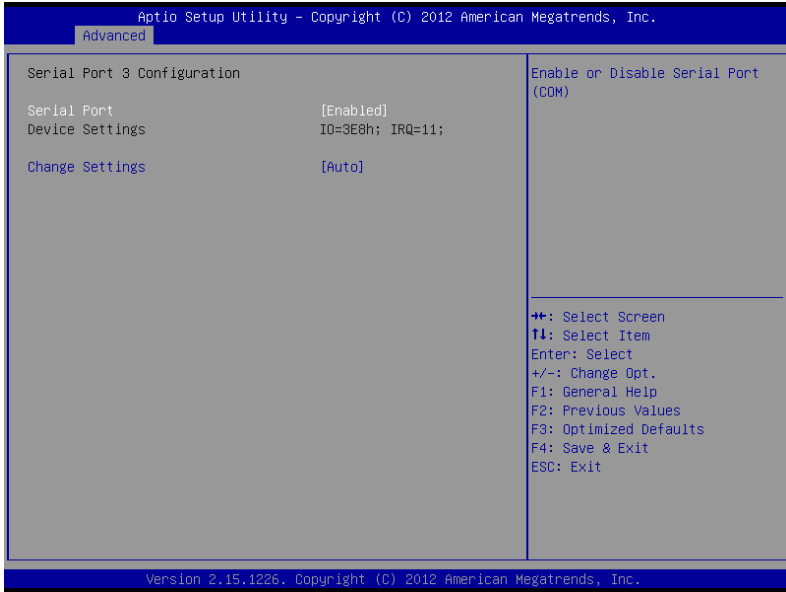
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Options summary: (**default setting**)

Serial Port	Disabled	
	Enabled	
En/Disable specified serial port.		
Change Settings	Auto	
	IO=2F8h; IRQ=3;	
	IO=3F8h; IRQ=3,4,5,7,10,11,12;	
	IO=2F8h; IRQ=3,4,5,7,10,11,12;	

	IO=3E8h; IRQ=3,4,5,7,10,11,12;	
	IO=2E8h; IRQ=3,4,5,7,10,11,12;	
Select a resource setting for Super IO device.		
Device Type	RS232	
	RS422	
	RS485	
Configure COM2 operated as RS232, RS422 or RS485.		

Serial Port 3 Configuration

Options summary: (**default setting**)

Serial Port	Disabled	
	Enabled	
En/Disable specified serial port.		
Change Settings	Auto	
	IO=3E8h; IRQ=11;	
	IO=3F8h; IRQ=3,4,5,7,10,11,12;	
	IO=2F8h; IRQ=3,4,5,7,10,11,12;	

	IO=3E8h; IRQ=3,4,5,7,10,11,12;	
	IO=2E8h; IRQ=3,4,5,7,10,11,12;	
Select a resource setting for Super IO device.		

Serial Port 4 Configuration

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Advanced

Serial Port 4 Configuration	Enable or Disable Serial Port (COM)
Serial Port [Enabled]	
Device Settings IO=2E8h; IRQ=10;	
Change Settings [Auto]	

++: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F2: Previous Values
 F3: Optimized Defaults
 F4: Save & Exit
 ESC: Exit

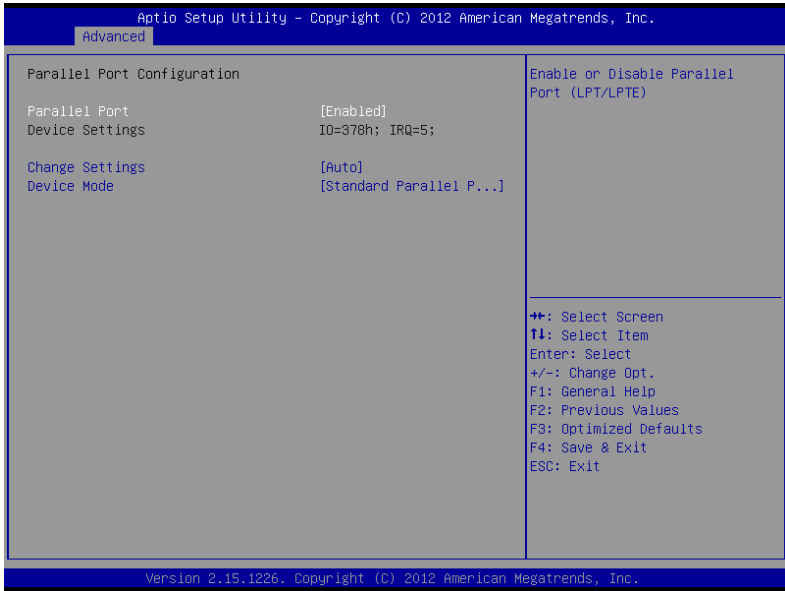
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Options summary: (**default setting**)

Serial Port	Disabled	
	Enabled	
En/Disable specified serial port.		
Change Settings	Auto	
	IO=2E8h; IRQ=10;	
	IO=3F8h; IRQ=3,4,5,7,10,11,12;	
	IO=2F8h; IRQ=3,4,5,7,10,11,12;	

	IO=3E8h; IRQ=3,4,5,7,10,11,12;	
	IO=2E8h; IRQ=3,4,5,7,10,11,12;	
Select a resource setting for Super IO device.		

Parallel Port Configuration

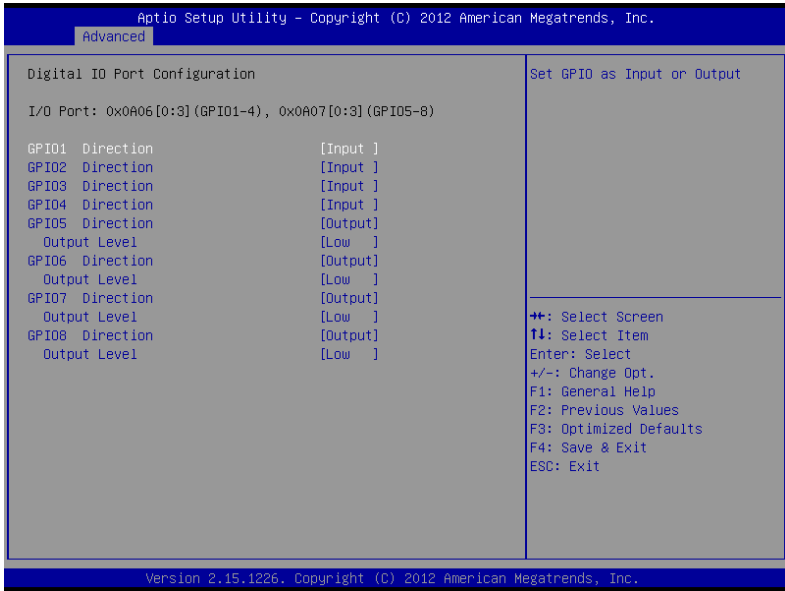


Options summary: (*default setting*)

Parallel Port	<i>Disabled</i>	
	Enabled	
En/Disable parallel port.		
Change Settings	<i>Auto</i>	
	IO=378h; IRQ=5;	
	IO=378h; IRQ=5,7,10,11,12;	
	IO=278h; IRQ=5,7,10,11,12;	

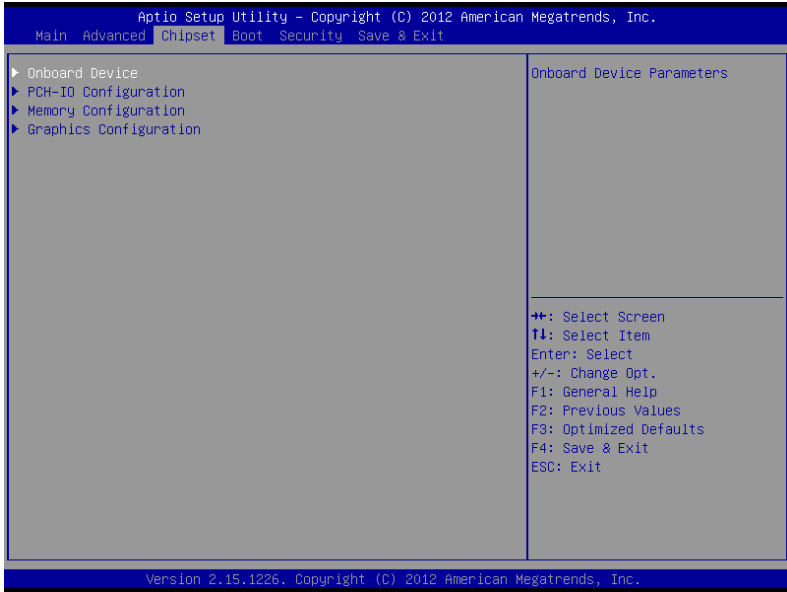
	IO=3BCh; IRQ=5,7,10,11,12;	
Select a resource setting for Super IO device.		
Device Mode	Standard Parallel Port	
	EPP Mode	
	ECP Mode	
	EPP Mode & ECP Mode	
Change the Printer Port mode		

Digital IO Port Configuration

Options summary: (**default setting**)

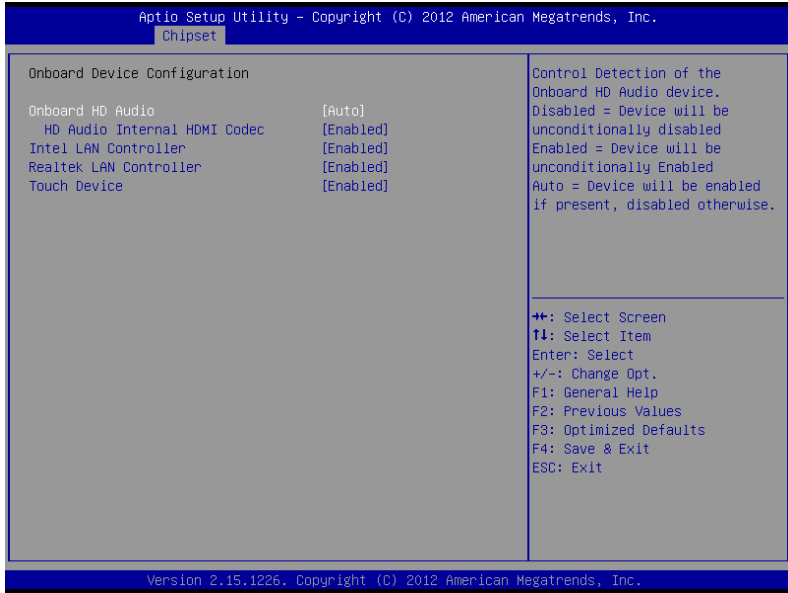
GPIO1-GPIO4 Direction	Input	
	Output	
Set GPIOx as Input or Output		
GPIO5-GPIO8 Direction	Input	
	Output	
Set GPIOx as Input or Output		
Output Level	Hi	
	Low	
Set GPIO output level when used as output pin		

Setup submenu: Chipset

Options summary: (**default setting**)

Onboard Device		
Configure Onboard Devices		
PCI-IO Configuration		
South Bridge Parameters		
Memory Configuration		
Memory Parameters		
Graphic Configuration		
Graphic Parameters		

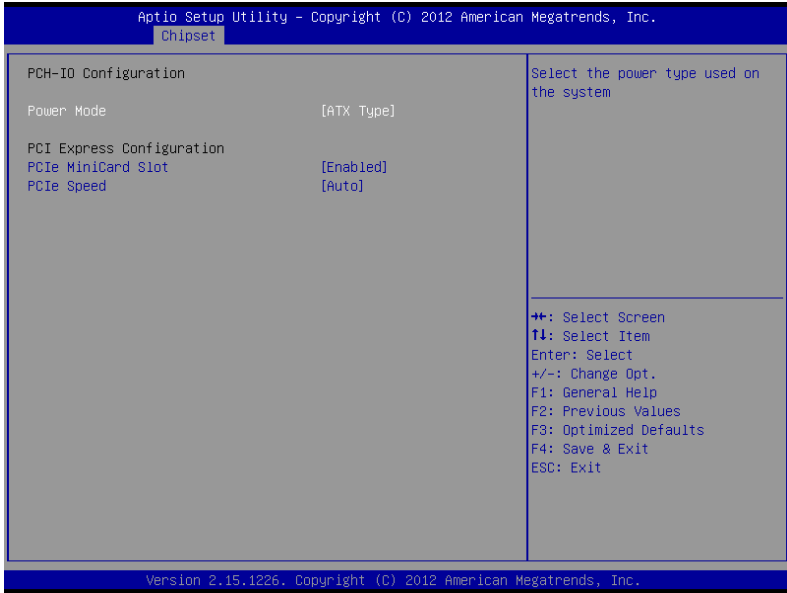
Onboard Device

Options summary: (**default setting**)

Onboard HD Audio	Disabled	
	Enabled	
	Auto	
En/Disabled HD Audio controller.		
HD Audio Internal	Enabled	
HDMI Codec	Disabled	
En/Disabled internal HDMI codec for HD Audio.		
Intel LAN Controller	Enabled	
	Disabled	

En/Disabled Intel i82579 NIC		
Realtek LAN Controller	Enabled	
	Disabled	
En/Disabled Realtek RTL8111E NIC		
Touch Device	Enabled	
	Disabled	
Enable or Disable Touch device		

PCH-IO Configuration



Options summary: (*default setting*)

Power Mode	128MB	
	256MB	
Select the power type used on the system		
PCIe Mini Card Slot	Disabled	
	Enabled	
Control the PCI Express Root Port.		
PCIe Speed	Auto	
	Gen1	
	Gen2	

Select PCI Express port speed. Some PCIe cards must set to Gen1 for operation.

Memory Configuration

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Chipset

Memory Timing Information		Maximum Memory Frequency Selections in Mhz.
Memory Frequency	1333 Mhz	
CAS Latency (tCL)	9	
CAS to RAS (trCDmin)	9	
Row Precharge (trPmin)	9	
Active to Precharge (tRASmin)	24	
Write Recovery (tWRmin)	10	
Refresh Recovery (trFCmin)	107	
Row Active to Row Active (trRDmin)	4	
Internal Write to Read Command (tW)	5	
Internal Read to Precharge Command	5	
Four Activate Window (tFAWmin)	20	
Memory Timing Configuration		++: Select Screen !: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Memory Frequency Limiter	[1333]	
tCL	9	
trCD	9	
trP	9	
trAS	24	
tWR	10	
trFC	107	
trRD	4	
tWTR	5	
trTP	5	
tFAW	20	

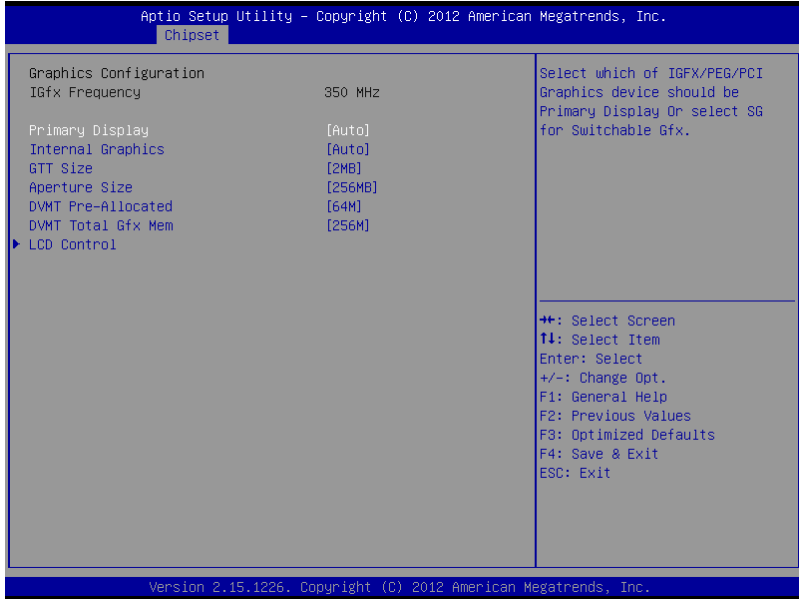
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Options summary: (*default setting*)

DIMM Profile	Default DIMM profile	
	XMP Profile 1	
	XMP Profile 2	
Select DIMM timing profile that should be used		
Memory Frequency	Auto	
Limiter	1067	
	1333	
	1600	
Maximum Memory Frequency Selections in Mhz.		

Max TOLUD	<i>Dynamic</i>	
	1 GB	
	1.25 GB	
	1.5 GB	
	1.75 GB	
	2 GB	
	2.25 GB	
	2.5 GB	
	2.75 GB	
	3 GB	
	3.25 GB	
	Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of install graphic controller.	

Graphic Configuration

Options summary: (**default setting**)

Primary Display	Auto	
	IGFX	
	PCI	
Select graphic adapters to boot		
Internal Graphics	Auto	
	Disabled	
	Enabled	
En/Disabled internal graphics device		
GTT Size	1MB	

	2MB	
Select the GTT Size		
Aperture Size	128MB	
	256MB	
	512MB	
Select the Aperture Size		
DVMT	64MB	
Pre-Allocated	32MB~1024MB	
Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.		
DVMT Total Gfx Mem	128MB	
	256MB	
	Max	
Select DVMT 5.0 Total Graphic Memory size used by the Internal Graphics Device.		

LCD Control

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Chipset		
LCD Control		Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display
Primary IGFX Boot Display	[Auto Detect]	
Onboard LVDS1(Internal)	[Enabled]	
Onboard LVDS2(CH7511)	[Enabled]	
LVDS1 Panel Type	[1024x768 18-Bit]	
LVDS1 Backlight Type	[Normal]	
LVDS1 Backlight Level	[50%]	
LVDS2 Panel Type	[1024x768 18-Bit]	
LVDS2 Backlight Type	[Normal]	
LVDS2 Backlight Level	[50%]	
		** : Select Screen ! : Select Item Enter : Select +/- : Change Opt. F1 : General Help F2 : Previous Values F3 : Optimized Defaults F4 : Save & Exit ESC : Exit
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Options summary: (**default setting**)

Primary IGFX Boot Display	Auto Detect	
	CRT	
	LVDS1	
	LVDS2	
	DVI	
	CRT+LVDS1	

Select Primary IGFX boot display device

Note1: CRT, DVI and CRT+LVDS1 are not available in some Suks.

Note2: LVDS1 is the default main display device when this item has been set to "Auto Detect" and enabled LVDS1.

In this case, DVI/HDMI will not display in DOS system unless user sets this item to DVI or HDMI manually.

Onboard LVDS1	Enabled	
	Disabled	

Enable or Disable Internal LVDS

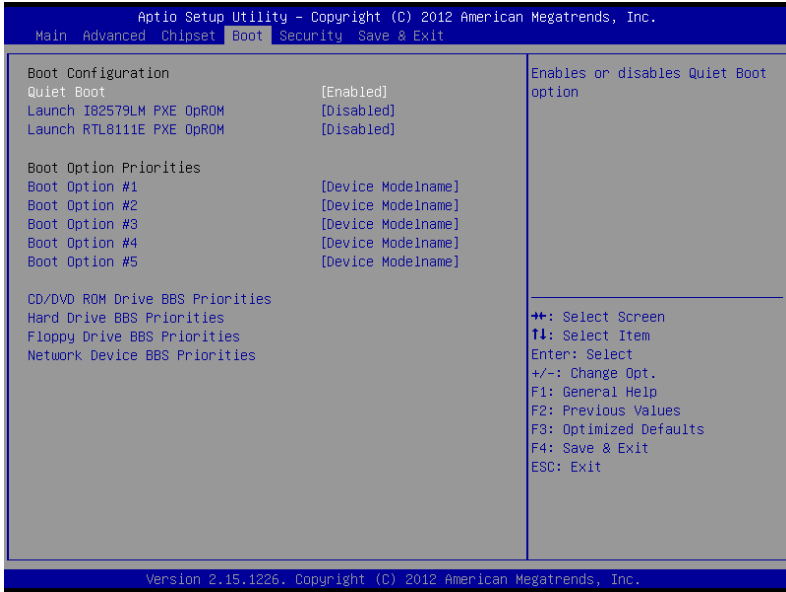
Onboard LVDS2	Enabled	
	Disabled	

Enable or Disable Onboard CH7511

LVDS1/LVDS2 Panel Type	640x480	18-Bit	
	800x600	18-Bit	
	1024x768	18-Bit	
	800x480	18-Bit	
	1024x600	18-Bit	
	1280x768	18-Bit	
	640x480	24-Bit	
	800x600	24-Bit	
	1024x768	24-Bit	
	1280x1024	48-Bit	
	1280x768	24-Bit	
	1366x768	24-Bit	

	1440x900 48-Bit	
	1600x1200 48-Bit	
	1920x1080 48-Bit	
	1920x1200 48-Bit	
Select panel native resolution.		
LVDS1/LVDS2	Inverted	
Backlight Type	Normal	
Select Backlight control type.		
Inverted: Brightest for low PWM duty cycle and low voltage.		
Normal: Brightest for high PWM duty cycle and high voltage.		
LVDS1/LVDS2	100%	
Backlight Level	90%	
	80%	
	70%	
	60%	
	50%	
	40%	
	30%	
	20%	
	10%	
	0%	
	Select Backlight Level	

Setup submenu: Boot

Options summary: (**default setting**)

Quiet Boot	Disabled	
	Enabled	
En/Disable showing boot logo.		
Launch I82579LM/ RTL8111E PXE OpROM	Disabled	
	Enabled	
En/Disable PXE boot for I82579LM/RTL8111E LAN		

Boot Option #X/ XXXX Drive BBS Priorities		
The order of boot priorities.		

BBS Priorities

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Boot

Boot Option #1	[Device ModelName]	Sets the system boot order
Boot Option #2	[Device ModelName]	
Boot Option #3	[Device ModelName]	
Boot Option #4	[Device ModelName]	
Boot Option #5	[Device ModelName]	
Boot Option #6	[Device ModelName]	

++: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F2: Previous Values
 F3: Optimized Defaults
 F4: Save & Exit
 ESC: Exit

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Options summary: (**default setting**)

Boot Option #x	Disabled	
	Device name	
Sets the system boot order		

You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

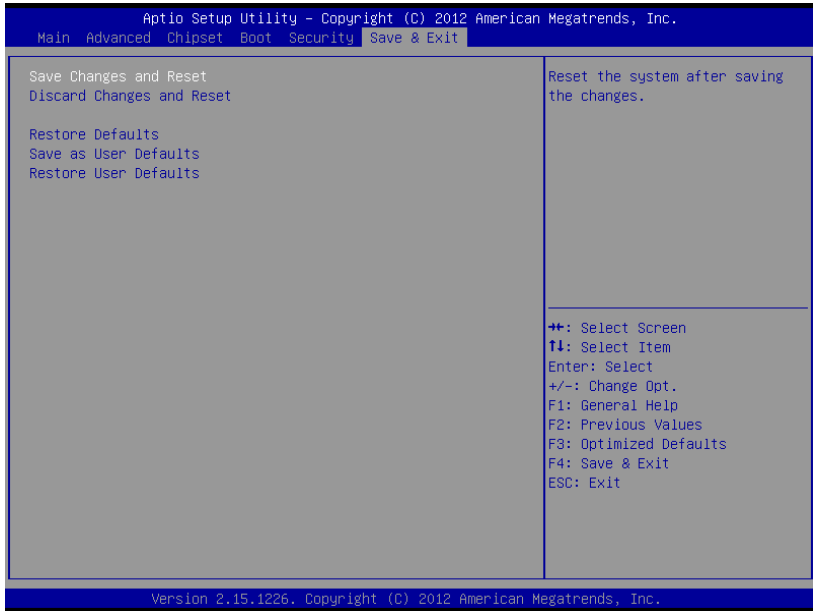
Install the Password:

Press Enter on this item, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

Removing the Password:

Highlight this item and type in the current password. At the next dialog box press Enter to disable password protection.

Setup submenu: Exit

Options summary: (**default setting**)

Save Changes and Reset		
Reset the system after saving the changes		
Discard Changes and Reset		
Reset system setup without saving any changes		
Restore Defaults		
Restore/Load Default values for all the setup options.		
Save as User Defaults		

Save the changes done so far as User Defaults

Restore User Defaults

Restore the User Defaults to all the setup options

Chapter

4

**Driver
Installation**

The GENE-QM77 Rev.B 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 (Realtek LAN Chip)
- Step 4 – Install LAN2 Driver (Intel® 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 Rev.B 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 LAN Driver (Realtek LAN Chip)

1. Click on the **STEP3-LAN(Realtek)** 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 4 –Install LAN Driver (Intel® LAN Chip)

1. Click on the **STEP4-LAN(Intel)** 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 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 & AHCI Driver

Please refer to the **Appendix D RAID & AHCI 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

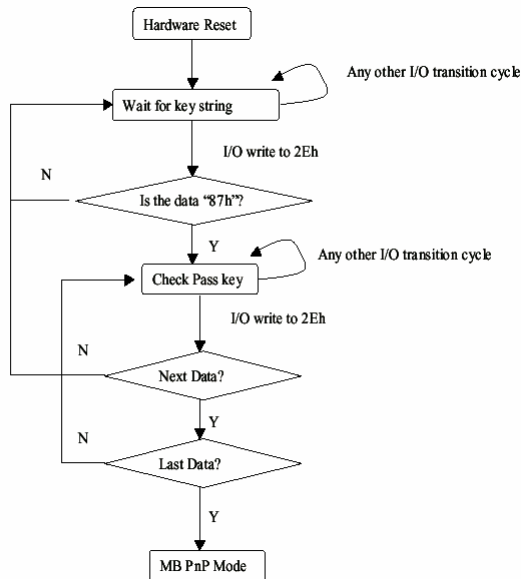
A.1 Programming

GENE-QM77 Rev.B 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 (IO)	
[00000000 - 0000001F]	Direct memory access controller
[00000000 - 00000CF7]	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 - FEAF0FFF]	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 - F7BFFFF]	Intel(R) HD Graphics 4000
[F7C00000 - F7C0FFF]	Realtek PCIe GBE Family Controller
[F7C00000 - F7CFFFF]	Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 2 - 1E12
[F7D00000 - F7D1FFF]	Intel(R) 82579LM Gigabit Network Connection
[F7D20000 - F7D2FFF]	Intel(R) USB 3.0 eXtensible Host Controller
[F7D30000 - F7D33FF]	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 - FEEFFFFF]	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	XHP-3	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

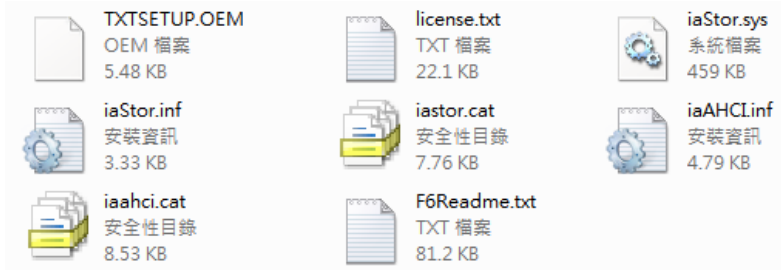
RAID & AHCI Settings

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.

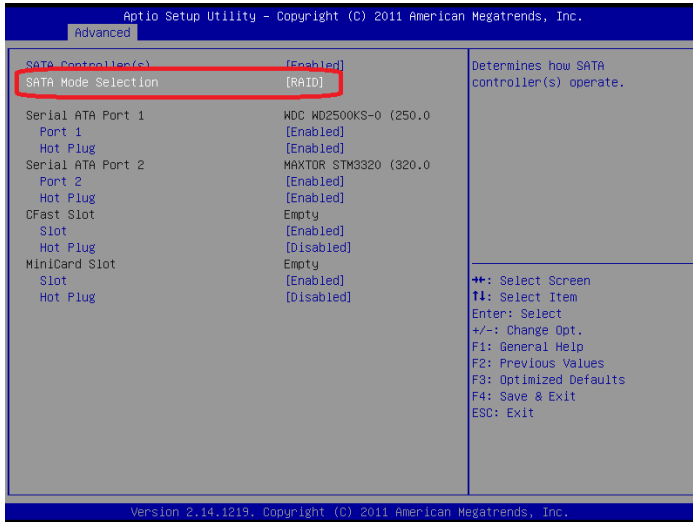


Step 2: Connect the USB Floppy drive to the board and insert the diskette from previous step.

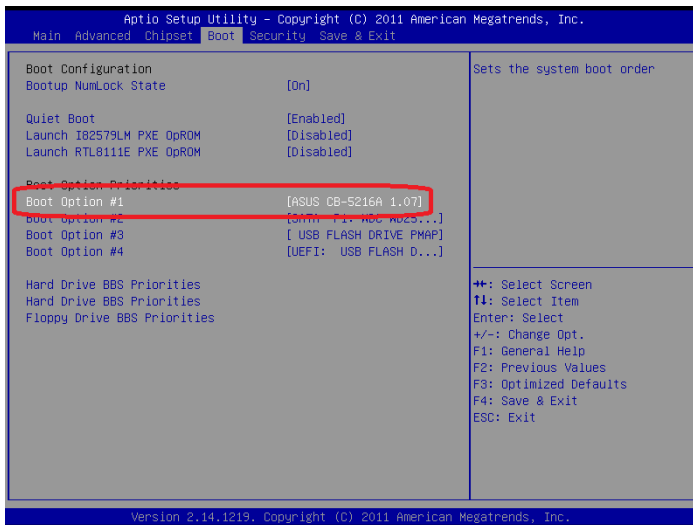


Step 3: Configure SATA Controller to RAID mode in **BIOS SETUP Menu**:

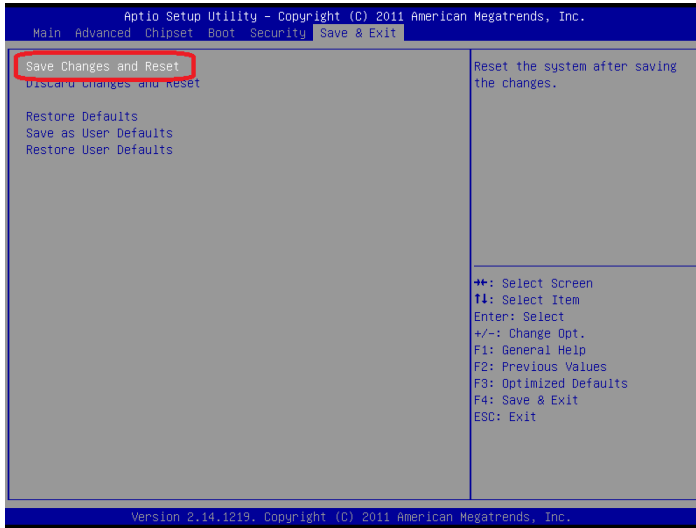
Advanced -> SATA Configuration -> SATA Mode -> RAID Mode



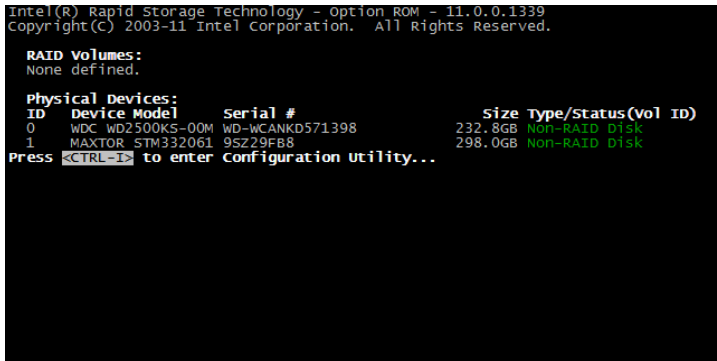
Step 4: Configure DVD/CD-ROM drive as the first boot device.



Step 5: Save changes and exit BIOS SETUP



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



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 *****

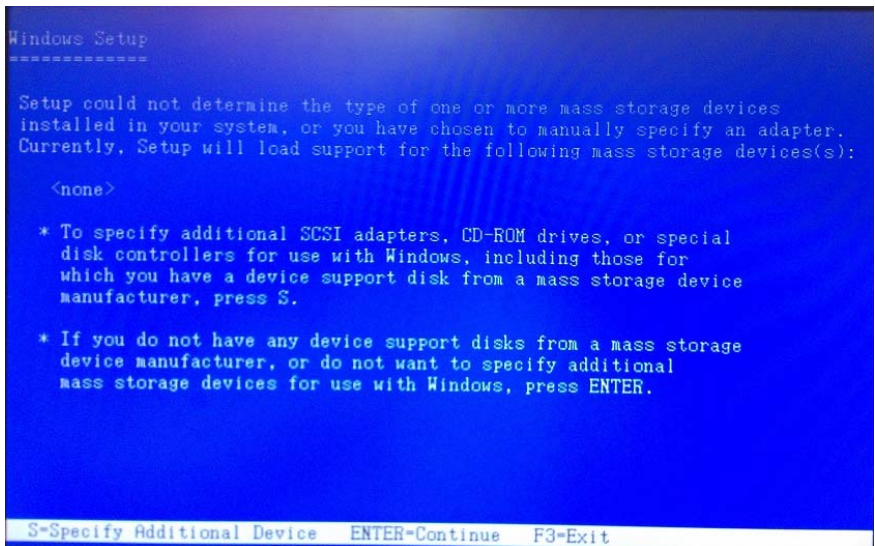
Intel(R) Rapid Storage Technology - Option ROM - 11.0.0.1339
Copyright(C) 2003-11 Intel Corporation. All Rights Reserved.
***** [ CREATE VOLUME MENU ] *****
*
*          Name: Volume0
*      RAID Level: RAID0(Stripe)
*          Disks: Select Disks
*      Strip Size: 128KB
*      Capacity: 465.8 GB
*          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

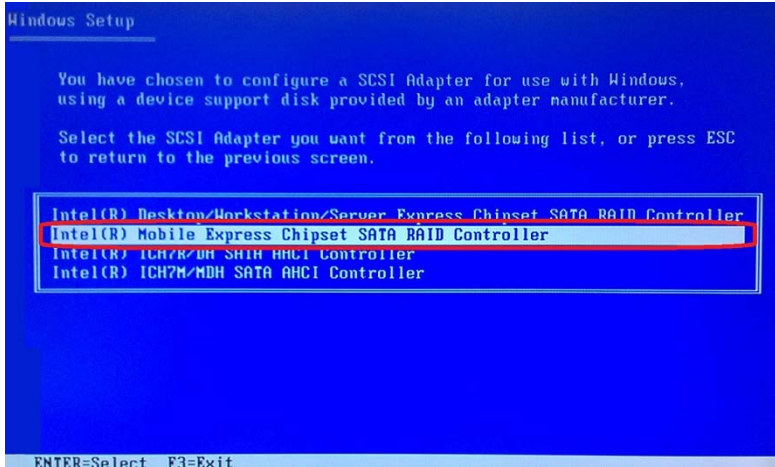
Step 11 – Press “F6” to install RAID driver



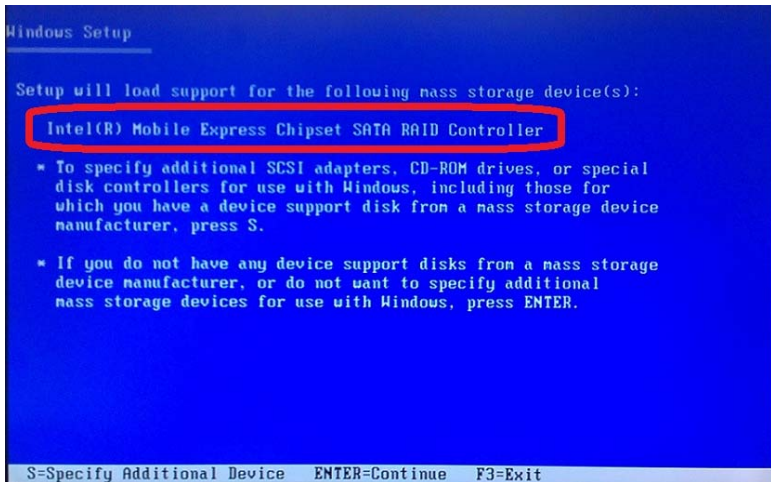
Step 12 – Press “S” to install RAID driver



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



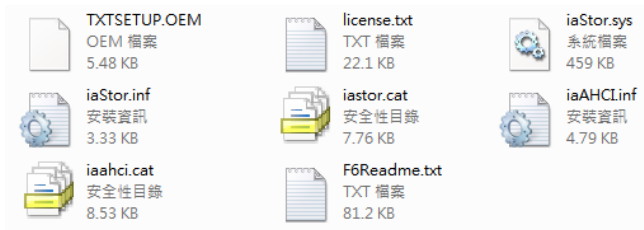
Step 14 – It will show the model you selected and then press “ENTER”. Windows Setup will continue to install OS.



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.

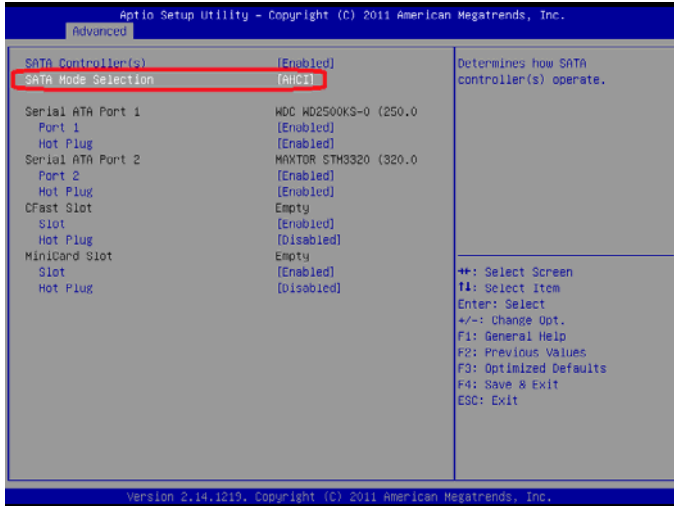


Step 2: Connect the USB Floppy drive to the board and insert the diskette from previous step.

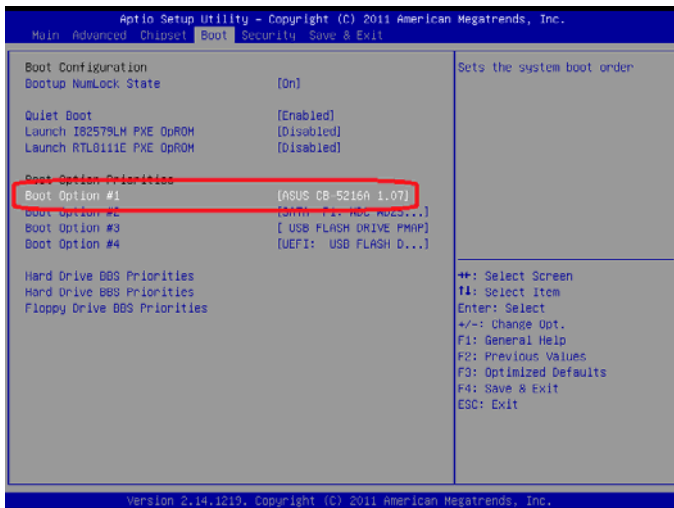


Step 3: Configure SATA Controller to RAID mode in **BIOS SETUP Menu**:

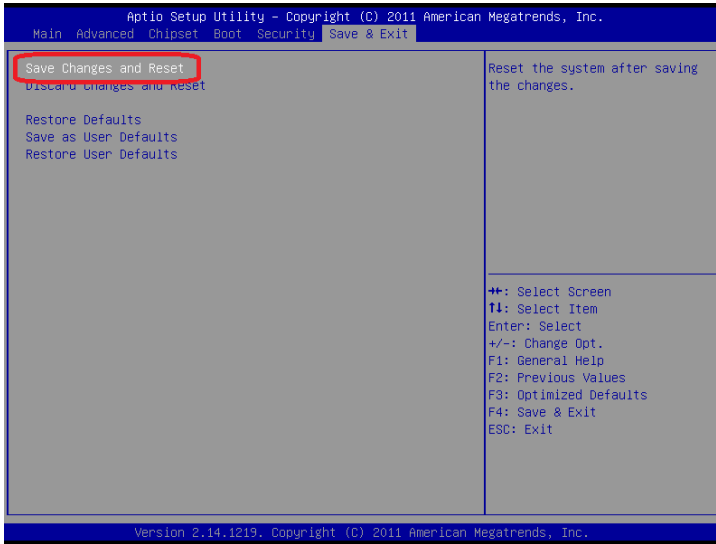
Advanced -> SATA Configuration -> SATA Mode -> AHCI Mode



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

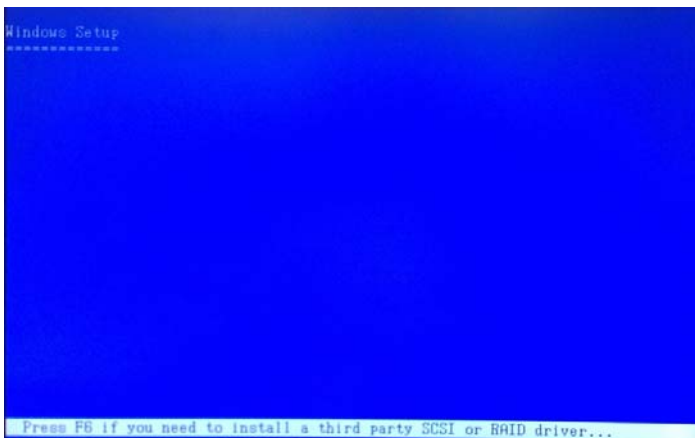


Step 5: Save changes and exit BIOS SETUP

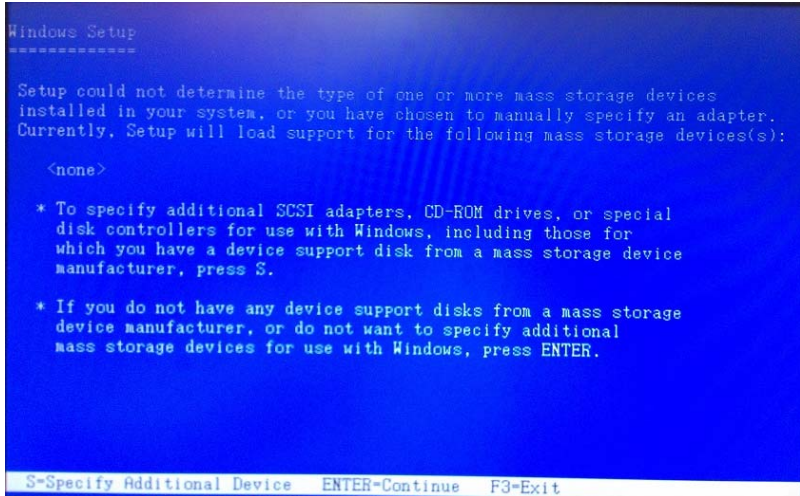


Step 6 – Boot to DVD/CD-ROM device to install OS

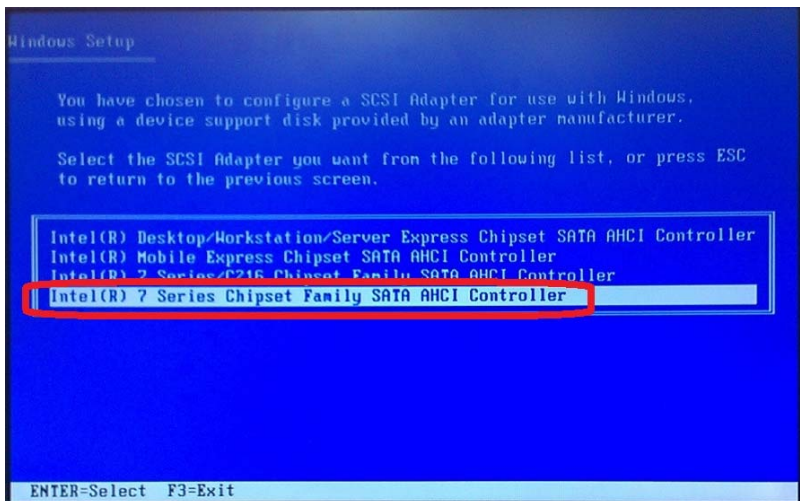
Step 7 – Press “**F6**” to install AHCI driver



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
HDMI	CN21	+5V	+5V/0.5A
+5V Output for SATA HDD	CN22	+5V	+5V/1A
VGA / DVI Ports (depend on hardware)	CN26	VGA: +5V DVI : +5V	+5V/1A (reserved) +5V/0.5A

configuration)			
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