PCM-QM77

Compact Board

User's Manual 3rd Ed

Last Updated: March 16, 2016

Copyright Notice

Acknowledgement

Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
● PCM-QM77	1
● 17592QM772 Cooler	1
● 1702150155 SATA cable	1
● 1709070500 SATA Power cable	1
● 9657666600 Jumper Cap	1
● Product DVD with User's Manual (in pdf) and drivers	1

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

About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the AAEON.com for the latest version of this document.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
7. Always disconnect this device from any AC supply before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from humidity.
11. Place the device on a solid surface during installation to prevent falls
12. Do not cover the openings on the device to ensure optimal heat dissipation.
13. Watch out for high temperatures when the system is running.
14. Do not touch the heat sink or heat spreader when the system is running
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.

17. If any of the following situations arises, please the contact our service personnel:
    i. Damaged power cord or plug
    ii. Liquid intrusion to the device
    iii. Exposure to moisture
    iv. Device is not working as expected or in a manner as described in this manual
    v. The device is dropped or damaged
    vi. Any obvious signs of damage displayed on the device
18. DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.

FCC Statement

This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte.
Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur. Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

China RoHS Requirements (CN)

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	O	O	O	O	O	O
外部信号连接器及线材	O	O	O	O	O	O

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。

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。

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。

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Main Board/ Daughter Board/ Backplane

Component	Poisonous or Hazardous Substances or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	O	O	O	O	O	O
Wires & Connectors for External Connections	O	O	O	O	O	O

O：The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.

X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.

Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only

Table of Contents

Chapter 1

Product Specifications

1.1 Specifications

System

Form Factor	5.25" Compact Board (203 mm x 146 mm)
Processor	Intel® 3rd Generation Intel® Core™ i7/i5/i3/Celeron® processor
System Memory	204-pin DDR3 SODIMM x 2, DDR3/L 1333/1600, up to 16GB
Chipset	Intel® QM77/HM76
I/O Chipset	Fintek 81866
Ethernet	Intel 82579LM Gigabit PHY x1 & Intel 82583V Gigabit x 1, RJ-45 x 2 co-lay with pin header Intel 82583V shared with Intel 82574L Support IEEE1588
BIOS	Plug & Play BIOS – 16MB 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 x1, mSATAx1, PCI x1 and PCI Express [x16] x1
Battery	Lithium Battery
Power Requirement	ATX/AT

(AT mode to control by jumper, and BIOS need to be set ACPI disabled)

- **Board Size** 8”(L) x5.75” (W) (203mm x 146mm)
- **Gross Weight** 0.88 lb (0.4 Kg)
- **Operating Temperature** 32°F~140°F (0°C~60°C)
- **Storage Temperature** -40°F~176°F (-40°C~80°C)
- **Operation Humidity** 0% ~ 90% relative humidity, non-condensing

Display

- **Chipset** Intel® QM77/HM76 integrated
- **Memory** Shared system memory up to 512MB
- **Resolution** Up to 2048 x 1536 for VGA

  Up to 1920 x 1200 for LVDS LCD, DVI
- **Display Combination** VGA/LCD, DVI/LCD simultaneous / dual view displays

I/O

- **Storage** SATA 6.0Gb/s x 2

  CFast™ x 1

  mSATA x 1
- **USB** USB 3.0 x 4

  USB 2.0 x 4
- **Serial Port** 10 COM ports:

  - Six 5x2 box header on internal (COM1~6) from Fintek 81866

- COM2/6: RS-232/422/RS485
- Four 5x2 box header on internal(COM7~10)
- COM 7 ~10: RS-232 from F81216D(Optional)

- DI/O: 16-bit Programmable
- Audio: Line-in, Line-out, Mic-in
- PS/2 Port: Keyboard x 1; Mouse x 1

*Note on OS

For Linux, AAEON suggests the following:

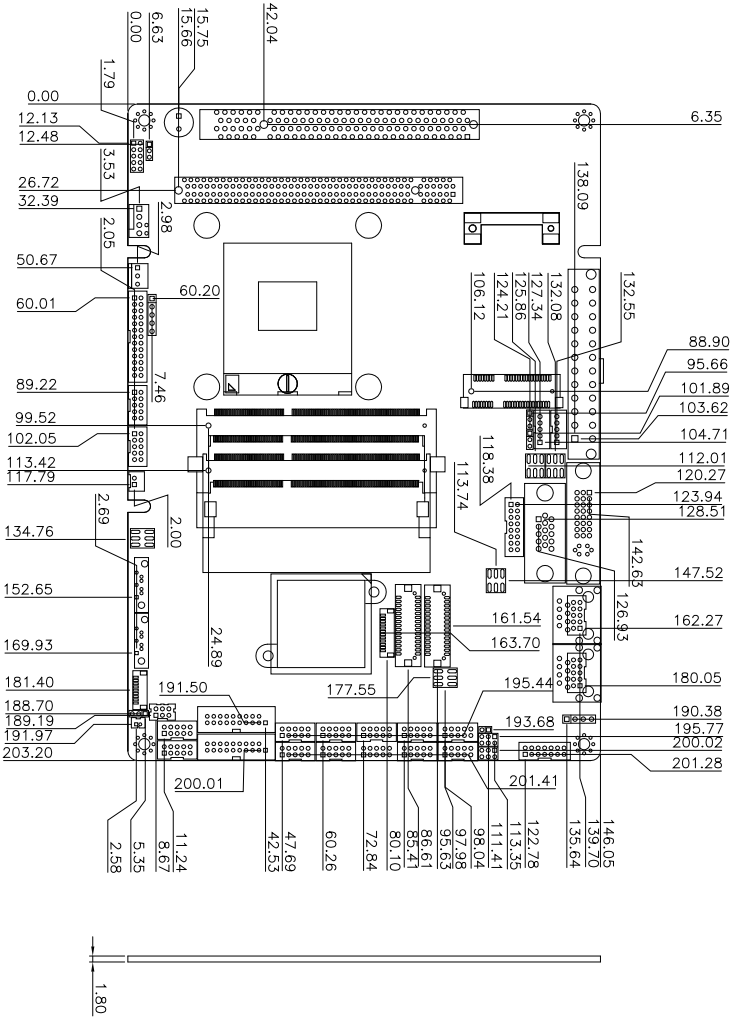
- Kernel 2.6.39 version or later: Set default BIOS/SATA operating mode to IDE
- Use Ubuntu 12.04 version or later for better display performance

Chapter 2

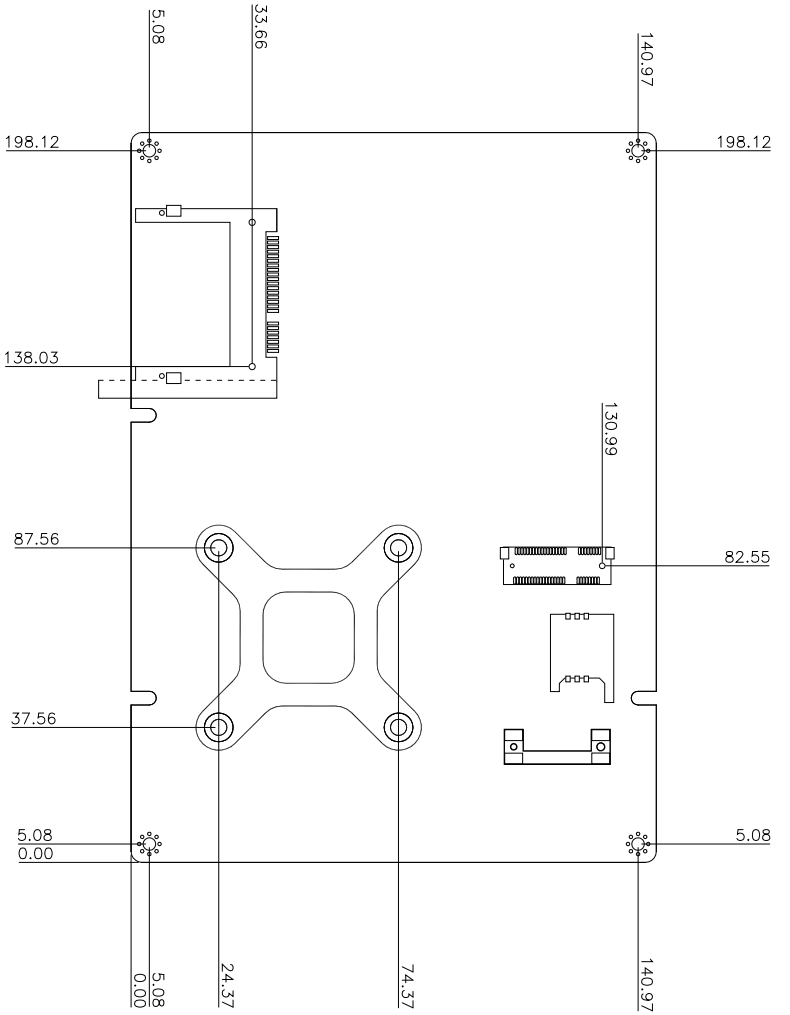
Hardware Information

2.1 Dimensions

Component Side

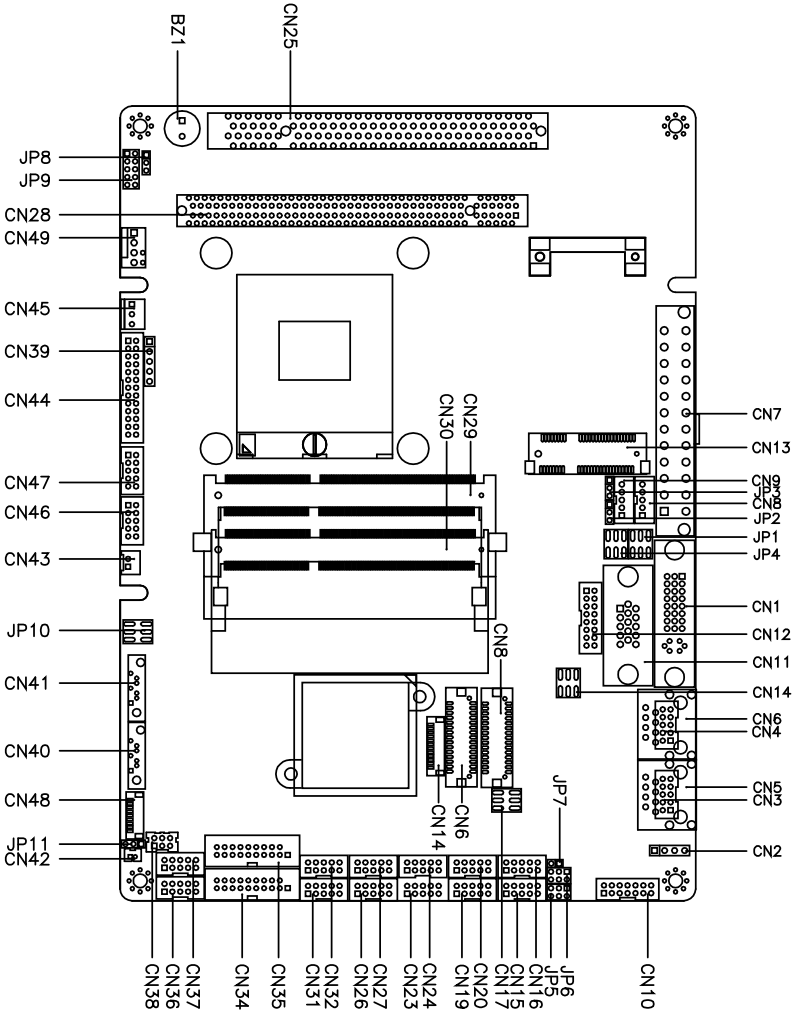


Solder Side

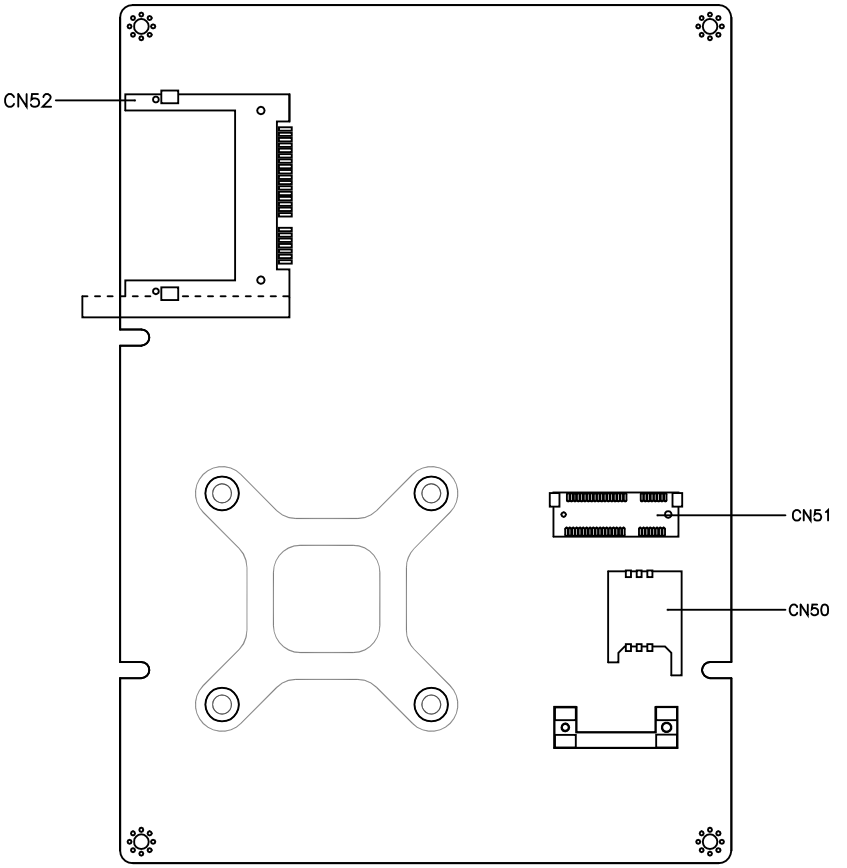

5.08
33.66
140.97
198.12
198.12
138.03
130.99
87.56
82.55
37.56
5.08
0.00
5.08
0.00
5.08
24.37
74.37
140.97

2.2 Jumpers and Connectors

Component Side



Solder Side

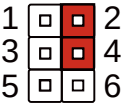


2.3 List of Jumpers

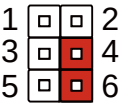
Please refer to the table below for all of the board's jumpers that you can configure for your application

Label	Function
JP1	LVDS Port 2 Operating VDD Selection and Backlight Inverter VCC Selection
JP2	LVDS Port 1 Backlight Lightness Control Mode Selection
JP3	LVDS Port 2 Backlight Lightness Control Mode Selection
JP4	LVDS Port 1 Operating VDD Selection and Backlight Inverter VCC Selection
JP5	COM6 Pin9 Function Selection
JP6	COM2 Pin9 Function Selection
JP8	AT/ATX Power Supply Mode Selection
JP9	Front Panel Connector
JP10	Clear ME and CMOS Jumper
JP11	Touch Screen 4/5-Wire Mode Selection (Optional)

2.3.1 LVDS Port 2 Operating VDD Selection (JP1)

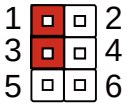


+3.3V (Default)

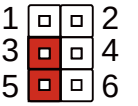


+5V

2.3.2 LVDS Port 2 Backlight Inverter VCC Selection (JP1)

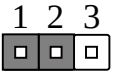


+12V

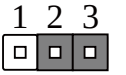


+5V (default)

2.3.3 LVDS Port 1 Backlight Lightness Control Mode Selection (JP2)

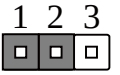


VR mode

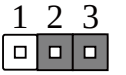


PWM mode (default)

2.3.4 LVDS Port 2 Backlight Lightness Control Mode Selection (JP3)



VR mode

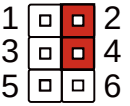


PWM mode (default)

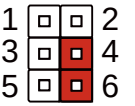
Note: 1. When LVDS Port2 normal backlight type is in PWM mode, the backlight level only supports 30%~100%.

2. When LVDS Port2 inverted backlight type is in PWM mode, the backlight level only supports 0%~70%.

2.3.5 LVDS Port 1 Operating VDD Selection (JP4)

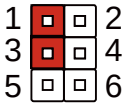


+3.3V (Default)

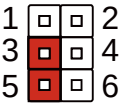


+5V

2.3.6 LVDS Port 1 Backlight Inverter VCC Selection (JP4)

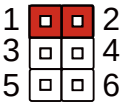


+12V

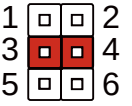


+5V (default)

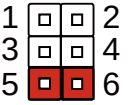
2.3.7 COM6 Pin9 Function Selection (JP5)



+12V

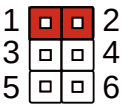


Ring (default)

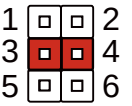


+5V

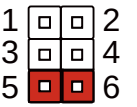
2.3.8 COM2 Pin9 Function Selection (JP6)



+12V

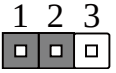


Ring (default)

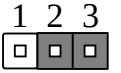


+5V

2.3.9 AT/ATX Power Supply Mode Selection (JP8)

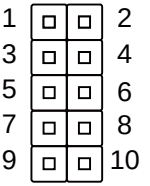


ATX mode (default)



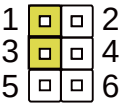
AT mode

2.3.10 Front Panel Connector (JP9)

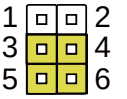


Pin	Signal
1	PWR_BTN-
2	PWR_BTN+
3	HDD_LED-
4	HDD_LED+
5	SPEAKER-
6	SPEAKER+
7	PWR_LED-
8	PWR_LED+
9	H/W RESET-
10	H/W RESET+

2.3.10 Clear ME Jumper (JP10)



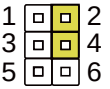
Normal (default)



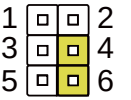
Clear ME

Note: Clear ME needs to be done after clearing COMS. Two jumpers are needed

2.3.11 Clear CMOS Jumper (JP10)

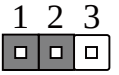


Normal (default)

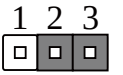


Clear CMOS

2.3.12 Touch Screen 4/5-Wire Mode Selection (JP11) (Optional)



4-wire mode (default)



5-wire mode

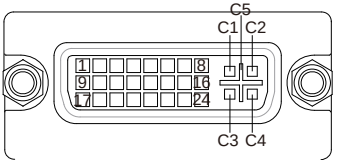
2.4 List of Connectors

Please refer to the table below for all of the board's connectors that you can configure for your application

Label	Function
CN1	DVI Connector
CN2	Stereo Audio Output Connector
CN3	Ethernet#2 Connector (Optional)
CN4	Ethernet#1 Connector (Optional)
CN5	RJ-45 Ethernet#2 Connector
CN6	RJ-45 Ethernet#1 Connector
CN7	ATX Power Connector
CN8	LVDS Port 2 Inverter / Backlight Connector
CN9	LVDS Port 1 Inverter / Backlight Connector
CN10	Audio In/Out/CD-in and MIC Connector
CN11	D-SUB CRT Connector (Optional)
CN12	CRT Connector
CN13	mSATA Slot
CN14	Ethernet#1 LED Indicator
CN15	COM Port 2
CN16	COM Port 1
CN17	Ethernet#2 LED Indicator
CN18	LVDS Port 2
CN19	COM Port 4
CN20	COM Port 3
CN21	LVDS Port 1
CN22	LPC Port
CN23	COM Port 6

CN24	COM Port 5
CN25	PCI Slot
CN26	COM Port 8
CN27	COM Port 7
CN28	PCI-Express〔x16〕Slot
CN29	DDR3 SO-DIMM Channel B Slot
CN30	DDR3 SO-DIMM Channel A Slot
CN31	COM Port 10
CN32	COM Port 9
CN34	USB 3.0 Ports 1 and 2
CN35	USB 3.0 Ports 3 and 4
CN36	USB 2.0 Ports 5 and 6
CN37	USB 2.0 Ports 7 and 8
CN38	PS/2 Keyboard/Mouse Combo Port
CN39	IrDA Connector (Optional)
CN40	SATA Port 2 Connector
CN41	SATA Port1 Connector
CN43	+5V Output for SATA HDD
CN44	LPT Connector
CN45	System Fan Connector
CN46	Digital IO Port 1 Connector
CN47	Digital IO Port 2 Connector
CN48	Touch Screen Connector (Optional)
CN49	CPU Fan Connector
CN50	UIM Card Connector
CN51	Mini-Card Slot
CN52	CFast Slot

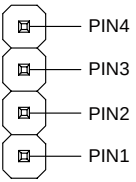
2.4.1 DVI Connector (CN1)



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	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		

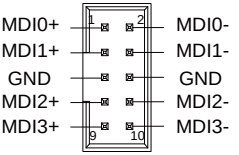
22	GND	GND
23	TMDS_CLK+	DIFF
24	TMDS_CLK-	DIFF
C1	RED	OUT
C2	GREEN	OUT
C3	BLUE	OUT
C4	HSYNC	OUT
C5	GND_ANALOG	GND

2.4.2 Stereo Audio Output Connector (CN2)



Pin	Pin Name	Signal Type	Signal Level
1	SPK_OUT_R+	OUT	
2	SPK_OUT_R-	OUT	
3	SPK_OUT_L+	OUT	
4	SPK_OUT_L-	OUT	

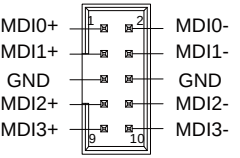
2.4.3 Ethernet#2 Connector (CN3) (Optional)



Pin	Pin Name	Signal Type	Signal Level
1	MDI0+	DIFF	

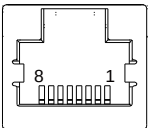
2	MDI0-	DIFF
3	MDI1+	DIFF
4	MDI1-	DIFF
5	GND	GND
6	GND	GND
7	MDI2+	DIFF
8	MDI2-	DIFF
9	MDI3+	DIFF
10	MDI3-	DIFF

2.4.4 Ethernet#1 Connector (CN4) (Optional)



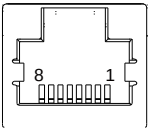
Pin	Pin Name	Signal Type	Signal Level
1	MDI0+	DIFF	
2	MDI0-	DIFF	
3	MDI1+	DIFF	
4	MDI1-	DIFF	
5	GND	GND	
6	GND	GND	
7	MDI2+	DIFF	
8	MDI2-	DIFF	
9	MDI3+	DIFF	
10	MDI3-	DIFF	

2.4.5 RJ-45 Ethernet#2 Connector (CN5)



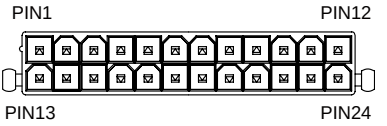
Pin	Pin Name	Signal Type	Signal Level
1	MDI0+	DIFF	
2	MDI0-	DIFF	
3	MDI1+	DIFF	
4	MDI2+	DIFF	
5	MDI2-	DIFF	
6	MDI1-	DIFF	
7	MDI3+	DIFF	
8	MDI3-	DIFF	

2.4.6 RJ-45 Ethernet#1 Connector (CN6)



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	

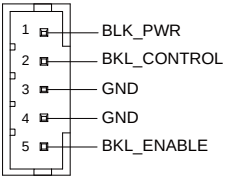
2.4.7 ATX Power Connector (CN7)



Pin	Pin Name	Signal Type	Signal Level
1	+3.3V	PWR	+3.3V
2	+3.3V	PWR	+3.3V
3	GND	GND	
4	+5V	PWR	+5V
5	GND	GND	
6	+5V	PWR	+5V
7	GND	GND	
8	PWR_OK		
9	+5VSB	PWR	+5V
10	+12V	PWR	+12V
11	+12V	PWR	+12V
12	+3.3V	PWR	+3.3V
13	+3.3V	PWR	+3.3V
14	-12V	PWR	-12V
15	GND	GND	
16	PS_ON#		
17	GND	GND	
18	GND	GND	
19	GND	GND	
20	NC		
21	+5V	PWR	+5V
22	+5V	PWR	+5V

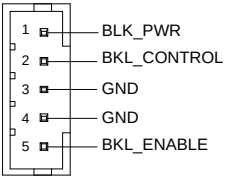
23	+5V	PWR	+5V
24	GND	GND	

2.4.8 LVDS Port 2 Inverter / Backlight Connector (CN8)



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

2.4.9 LVDS Port 1 Inverter / Backlight Connector (CN9)

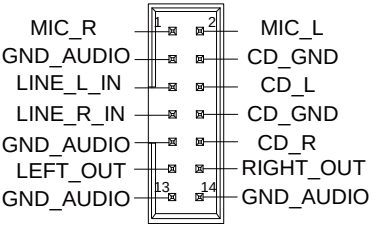


Pin	Pin Name	Signal Type	Signal Level
1	BKL_PWR	PWR	+5V / +12V
2	BKL_CONTROL	OUT	
3	GND	GND	
4	GND	GND	
5	BKL_ENABLE	OUT	+5V

Note: LVDS1 BKL_PWR can be set to +5V or +12V by JP4.

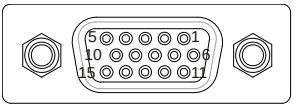
LVDS1 BKL_CONTROL can be set by JP2.

2.4.10 Audio In/Out/CD-in and MIC Connector (CN10)



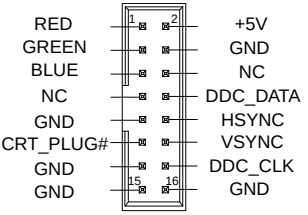
Pin	Pin Name	Signal Type	Signal Level
1	MIC_R	IN	
2	MIC_L	IN	
3	GND_AUDIO	GND	
4	CD_GND	GND	
5	LINE_L_IN	IN	
6	CD_L	IN	
7	LINE_R_IN	IN	
8	CD_GND	GND	
9	GND_AUDIO	GND	
10	CD_R	IN	
11	LEFT_OUT	OUT	
12	RIGHT_OUT	OUT	
13	GND_AUDIO	GND	
14	GND_AUDIO	GND	

2.4.11 D-SUB CRT Connector (CN11) (Optional)



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

2.4.12 CRT Connector (CN12)



Pin	Pin Name	Signal Type	Signal Level
1	RED	OUT	
2	+5V	PWR	+5V
3	GREEN	OUT	

4	GND	GND	
5	BLUE	OUT	
6	NC		
7	NC		
8	DDC_DATA	I/O	+5V
9	GND	GND	
10	HSYNC	OUT	
11	GND	GND	
12	VSYNC	OUT	
13	GND	GND	
14	DDC_CLK	I/O	+5V
15	GND	GND	
16	GND	GND	

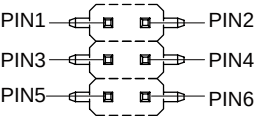
2.4.13 mSATA Slot (CN13)

Pin	Pin Name	Signal Type	Signal Level
1	NC		
2	+3.3V	PWR	+3.3V
3	NC		
4	GND	GND	
5	NC		
6	+1.5V	PWR	+1.5V
7	NC		
8	NC		
9	GND	GND	
10	NC		

11	NC		
12	NC		
13	NC		
14	NC		
15	GND	GND	
16	NC		
17	NC		
18	GND	GND	
19	NC		
20	NC		
21	GND	GND	
22	NC		
23	SATA_TX+	DIFF	
24	+3.3V	PWR	+3.3V
25	SATA_TX-	DIFF	
26	GND	GND	
27	GND	GND	
28	+1.5V	PWR	+1.5V
29	GND	GND	
30	SMB_CLK	I/O	+3.3V
31	SATA_RX-	DIFF	
32	SMB_DATA	I/O	+3.3V
33	SATA_RX+	DIFF	
34	GND	GND	
35	GND	GND	
36	NC		
37	GND	GND	

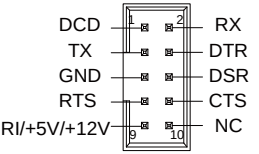
38	NC		
39	+3.3V	PWR	+3.3V
40	GND	GND	
41	+3.3V	PWR	+3.3V
42	NC		
43	GND	GND	
44	NC		
45	NC		
46	NC		
47	NC		
48	+1.5V	PWR	+1.5V
49	NC		
50	GND	GND	
51	NC		
52	+3.3V	PWR	+3.3V

2.4.14 Ethernet#1 LED Indicator (CN14)

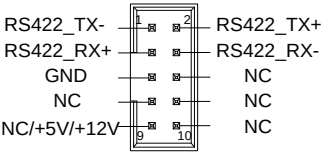


Pin	Pin Name	Signal Type	Signal Level
1	ACT_LED+	PWR	+5V
2	ACT_LED-	OUT	
3	100_LED+	PWR	+5V
4	100_LED-	OUT	
5	1000_LED+	PWR	+5V
6	1000_LED-	OUT	

2.4.15 COM Port 2 (CN15)

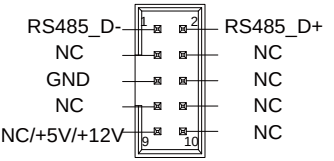


RS-232			
Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	RX	IN	
3	TX	OUT	±5V
4	DTR	OUT	±5V
5	GND	GND	
6	DSR	IN	
7	RTS	OUT	±5V
8	CTS	IN	
9	RI/+5V/+12V	IN/ PWR	+5V/+12V
10	NC		



RS-422			
Pin	Pin Name	Signal Type	Signal Level
1	RS422_TX-	OUT	±5V
2	RS422_TX+	OUT	±5V
3	RS422_RX+	IN	
4	RS422_RX-	IN	

5	GND	GND	
6	NC		
7	NC		
8	NC		
9	NC/+5V/+12V	PWR	+5V/+12V
10	NC		

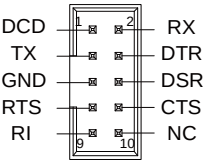


RS-485			
Pin	Pin Name	Signal Type	Signal Level
1	RS485_D-	I/O	±5V
2	RS485_D+	I/O	±5V
3	NC		
4	NC		
5	GND	GND	
6	NC		
7	NC		
8	NC		
9	NC/+5V/+12V	PWR	+5V/+12V
10	NC		

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

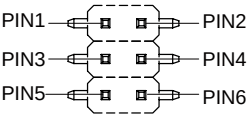
COM2 Pin 9 function can be set by JP6.

2.4.16 COM Port 1 (CN16)



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	
10	NC		

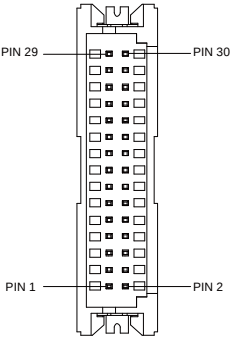
2.4.17 Ethernet#2 LED Indicator (CN17)



Pin	Pin Name	Signal Type	Signal Level
1	ACT_LED+	PWR	+5V
2	ACT_LED-	OUT	
3	100_LED+	PWR	+5V
4	100_LED-	OUT	
5	1000_LED+	PWR	+5V

6	1000_LED-	OUT

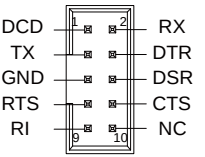
2.4.18 LVDS Port 2 (CN18)



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	

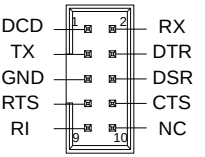
2.4.19 COM Port 4 (CN19)



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

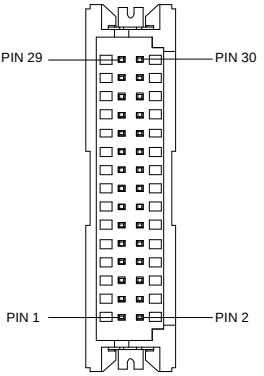
6	DSR	IN	
7	RTS	OUT	±9V
8	CTS	IN	
9	RI	IN	
10	NC		

2.4.20 COM Port 3 (CN20)



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	
10	NC		

2.4.21 LVDS Port 1 (CN21)

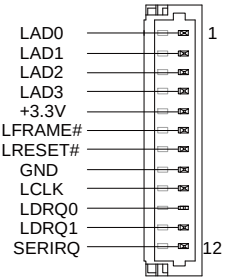


Pin	Pin Name	Signal Type	Signal Level
1	BKL_ENABLE	OUT	
2	BKL_CONTROL	OUT	
3	LCD_PWR	PWR	+3.3V/+5V
4	GND	GND	
5	LVDS_A_CLK-	DIFF	
6	LVDS_A_CLK+	DIFF	
7	LCD_PWR	PWR	+3.3V/+5V
8	GND	GND	
9	LVDS_DA0-	DIFF	
10	LVDS_DA0+	DIFF	
11	LVDS_DA1-	DIFF	
12	LVDS_DA1+	DIFF	
13	LVDS_DA2-	DIFF	
14	LVDS_DA2+	DIFF	
15	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 JP4.

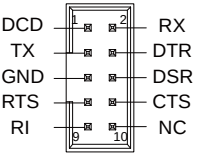
2.4.22 LPC Port (CN22)



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

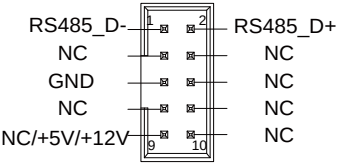
2.4.23 COM Port 6 (CN23)



RS-232			
Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	RX	IN	
3	TX	OUT	±5V
4	DTR	OUT	±5V
5	GND	GND	
6	DSR	IN	
7	RTS	OUT	±5V
8	CTS	IN	
9	RI/+5V/+12V	IN/ PWR	+5V/+12V

10	NC

RS-422			
Pin	Pin Name	Signal Type	Signal Level
1	RS422_TX-	OUT	±5V
2	RS422_TX+	OUT	±5V
3	RS422_RX+	IN	
4	RS422_RX-	IN	
5	GND	GND	
6	NC		
7	NC		
8	NC		
9	NC/+5V/+12V	PWR	+5V/+12V
10	NC		



RS-485			
Pin	Pin Name	Signal Type	Signal Level
1	RS485_D-	I/O	±5V
2	RS485_D+	I/O	±5V
3	NC		
4	NC		
5	GND	GND	
6	NC		
7	NC		

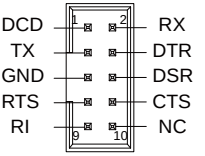
8	NC		
9	NC/+5V/+12V	PWR	+5V/+12V
10	NC		

Note: 1. COM6 RS-232/422/485 can be set by BIOS setting. Default is RS-232.

2. COM6 Pin 9 function can be set by JP5.

3. COM6/ IrDA Function can be set by BIOS setting. Default is COM6 Function.

2.4.24 COM Port 5 (CN24)

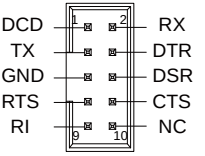


Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	RX	IN	
3	TX	OUT	±9V
4	DTR	OUT	±9V
5	GND	GND	
6	DSR	IN	
7	RTS	OUT	±9V
8	CTS	IN	
9	RI	IN	
10	NC		

2.4.25 PCI Slot (CN25)

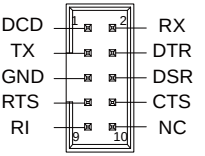
Standard specification

2.4.26 COM Port 8 (CN26)



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	
10	NC		

2.4.27 COM Port 7 (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	
7	RTS	OUT	±9V
8	CTS	IN	
9	RI	IN	
10	NC		

2.4.28 PCIe [x16] Slot (CN28)

Standard specification

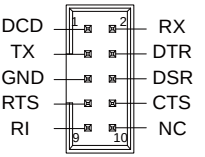
2.4.29 DDR3 SO-DIMM Channel B Slot (CN29)

Standard specification

2.4.30 DDR3 SO-DIMM Channel A Slot (CN30)

Standard specification

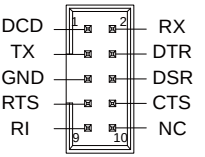
2.4.31 COM Port 10 (CN31)



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

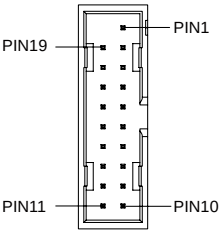
6	DSR	IN	
7	RTS	OUT	±9V
8	CTS	IN	
9	RI	IN	
10	NC		

2.4.32 COM Port 9 (CN32)



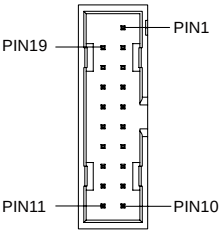
Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	RX	IN	
3	TX	OUT	±9V
4	DTR	OUT	±9V
5	GND	GND	
6	DSR	IN	
7	RTS	OUT	±9V
8	CTS	IN	
9	RI	IN	
10	NC		

2.4.33 USB 3.0 Ports 1 and 2 (CN34)



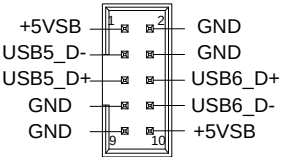
Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB1_SSRX–	DIFF	
3	USB1_SSRX+	DIFF	
4	GND	GND	
5	USB1_SSTX–	DIFF	
6	USB1_SSTX+	DIFF	
7	GND	GND	
8	USB1_D-	DIFF	
9	USB1_D+	DIFF	
10	NC		
11	USB2_D+	DIFF	
12	USB2_D-	DIFF	
13	GND	GND	
14	USB2_SSTX+	DIFF	
15	USB2_SSTX–	DIFF	
16	GND	GND	
17	USB2_SSRX+	DIFF	
18	USB2_SSRX–	DIFF	
19	+5VSB	PWR	+5V

2.4.34 USB 3.0 Ports 3 and 4 (CN35)



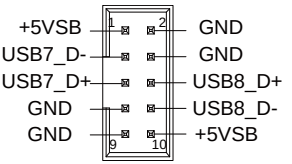
Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB3_SSRX–	DIFF	
3	USB3_SSRX+	DIFF	
4	GND	GND	
5	USB3_SSTX–	DIFF	
6	USB3_SSTX+	DIFF	
7	GND	GND	
8	USB3_D-	DIFF	
9	USB3_D+	DIFF	
10	NC		
11	USB4_D+	DIFF	
12	USB4_D-	DIFF	
13	GND	GND	
14	USB4_SSTX+	DIFF	
15	USB4_SSTX–	DIFF	
16	GND	GND	
17	USB4_SSRX+	DIFF	
18	USB4_SSRX–	DIFF	
19	+5VSB	PWR	+5V

2.4.35 USB 2.0 Ports 5 and 6 (CN36)



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

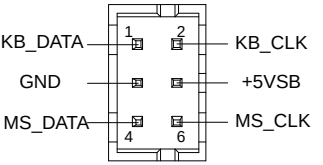
2.4.36 USB 2.0 Ports 7 and 8 (CN37)



Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	GND	GND	
3	USB7_D-	DIFF	
4	GND	GND	

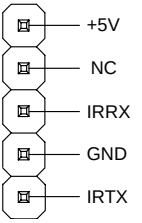
5	USB7_D+	DIFF	
6	USB8_D+	DIFF	
7	GND	GND	
8	USB8_D-	DIFF	
9	GND	GND	
10	+5VSB	PWR	+5V

2.4.37 PS/2 Keyboard/Mouse Combo Port (CN38)



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

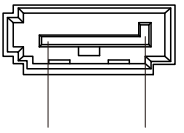
2.4.38 IrDA Connector (CN39) (Optional)



Pin	Pin Name	Signal Type	Signal Level
1	+5V	PWR	+5V
2	NC		
3	IRRX	IN	
4	GND	GND	
5	IRTX	OUT	

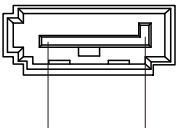
Note: COM6 / IrDA Function can be set by BIOS setting. Default is COM6

2.4.39 SATA Port 2 Connector (CN40)



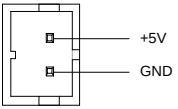
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	SATA_TX+	DIFF	
3	SATA_TX-	DIFF	
4	GND	GND	
5	SATA_RX-	DIFF	
6	SATA_RX+	DIFF	
7	GND	GND	

2.4.40 SATA Port 1 Connector (CN41)



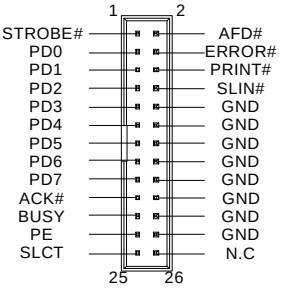
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	SATA_TX+	DIFF	
3	SATA_TX-	DIFF	
4	GND	GND	
5	SATA_RX-	DIFF	
6	SATA_RX+	DIFF	
7	GND	GND	

2.4.41 +5V Output for SATA HDD (CN43)



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

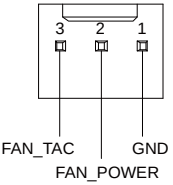
2.4.42 LPT Connector (CN44)



Pin	Pin Name	Signal Type	Signal Level
1	STROBE#	IN	

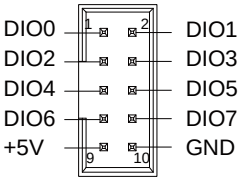
2	AFD#	I/O
3	PD0	I/O
4	ERROR#	IN
5	PD1	I/O
6	PRINT#	I/O
7	PD2	I/O
8	SLIN#	I/O
9	PD3	I/O
10	GND	GND
11	PD4	I/O
12	GND	GND
13	PD5	I/O
14	GND	GND
15	PD6	I/O
16	GND	GND
17	PD7	I/O
18	GND	GND
19	ACK#	IN
20	GND	GND
21	BUSY	IN
22	GND	GND
23	PE	IN
24	GND	GND
25	SLCT	IN
26	NC	

2.4.43 System Fan Connector (CN45)



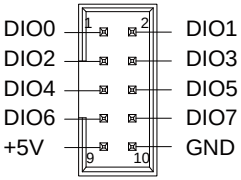
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	FAN_POWER	PWR	+12V
3	FAN_TAC	IN	

2.4.44 Digital IO Port 1 Connector (CN46)



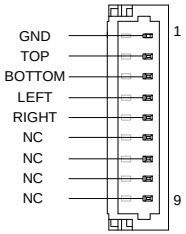
Pin	Pin Name	Signal Type	Signal Level
1	DIO0	I/O	+5V
2	DIO1	I/O	+5V
3	DIO2	I/O	+5V
4	DIO3	I/O	+5V
5	DIO4	I/O	+5V
6	DIO5	I/O	+5V
7	DIO6	I/O	+5V
8	DIO7	I/O	+5V
9	+5V	PWR	+5V
10	GND	GND	

2.4.45 Digital IO Port 2 Connector (CN47)



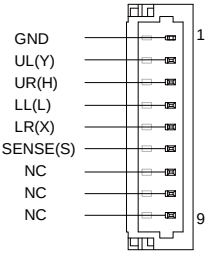
Pin	Pin Name	Signal Type	Signal Level
1	DIO0	I/O	+5V
2	DIO1	I/O	+5V
3	DIO2	I/O	+5V
4	DIO3	I/O	+5V
5	DIO4	I/O	+5V
6	DIO5	I/O	+5V
7	DIO6	I/O	+5V
8	DIO7	I/O	+5V
9	+5V	PWR	+5V
10	GND	GND	

2.4.46 Touch Screen Connector (CN48) (Optional)



4-wire			
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	

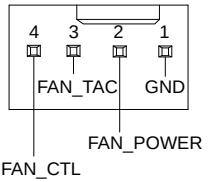
2	TOP	IN
3	BOTTOM	IN
4	LEFT	IN
5	RIGHT	IN
6	NC	
7	NC	
8	NC	
9	NC	



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 JP11

2.4.47 CPU FAN Connector (CN49)



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	FAN_POWER	PWR	+12V
3	FAN_TAC	IN	
4	FAN_CTL	OUT	+3.3V

2.4.48 UIM Card Connector (CN50)

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	

2.4.49 MiniCard Slot (CN51)

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

2.4.50 CFast Slot (CN52)

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		

Chapter 3

BIOS Setup

3.1 System Test and Initialization

The board uses certain routines to perform testing and initialization. If an error, fatal or non-fatal, is encountered, a few short beeps or an error message will be outputted. The board can usually continue the boot up sequence with non-fatal errors.

The system configuration verification routines check the current system configuration against the values stored in the CMOS memory. If they do not match, an error message will be outputted, in which case you will 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:

- You are starting your system for the first time
- You have changed your system's hardware
- The CMOS memory has lost power and the configuration information is erased

The system's CMOS memory uses a backup battery for data retention, which is to be replaced once emptied.

3.2 AMI BIOS Setup

The AMI BIOS ROM has a pre-installed Setup program that allows users to modify basic system configurations, which is stored in the battery-backed CMOS RAM and BIOS NVRAM so that the information is retained when the power is turned off.

To enter BIOS Setup, press <Del> or <F2> immediately while your computer is powering up.

The function for each interface can be found below.

Main – Date and time can be set here. Press <Tab> to switch between date elements

Advanced – Enable/ Disable boot option for legacy network devices

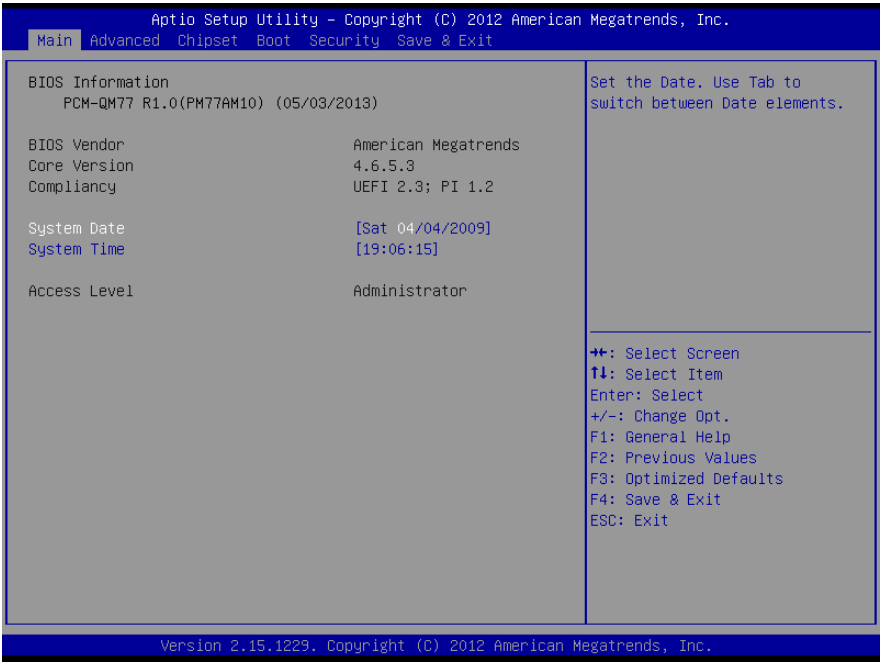
Chipset – For hosting bridge parameters

Boot – Enable/ Disable quiet Boot Option

Security – The setup administrator password can be set here

Save & Exit –Save your changes and exit the program

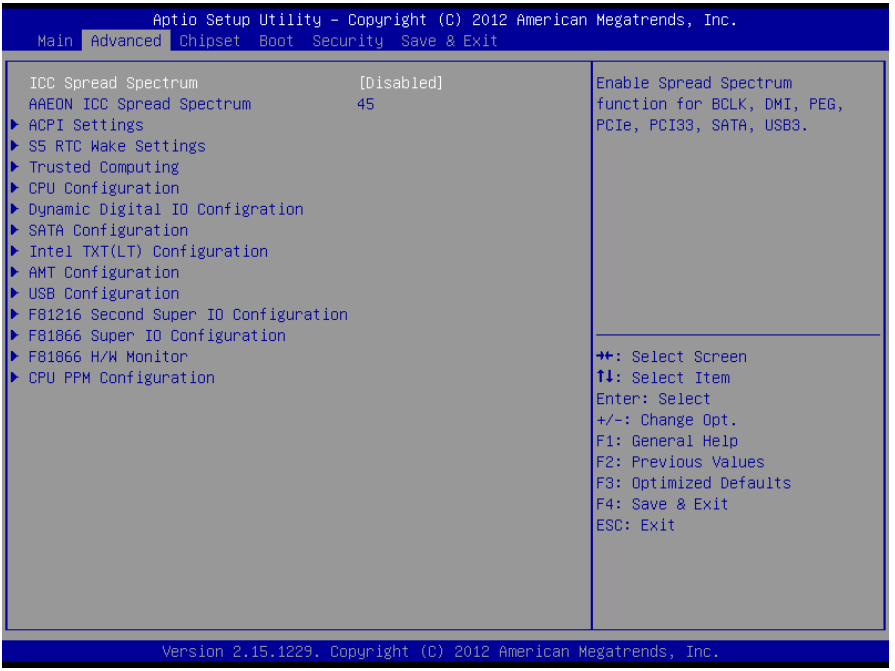
3.3 Setup submenu: Main



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.		

3.4 Setup submenu: Advanced

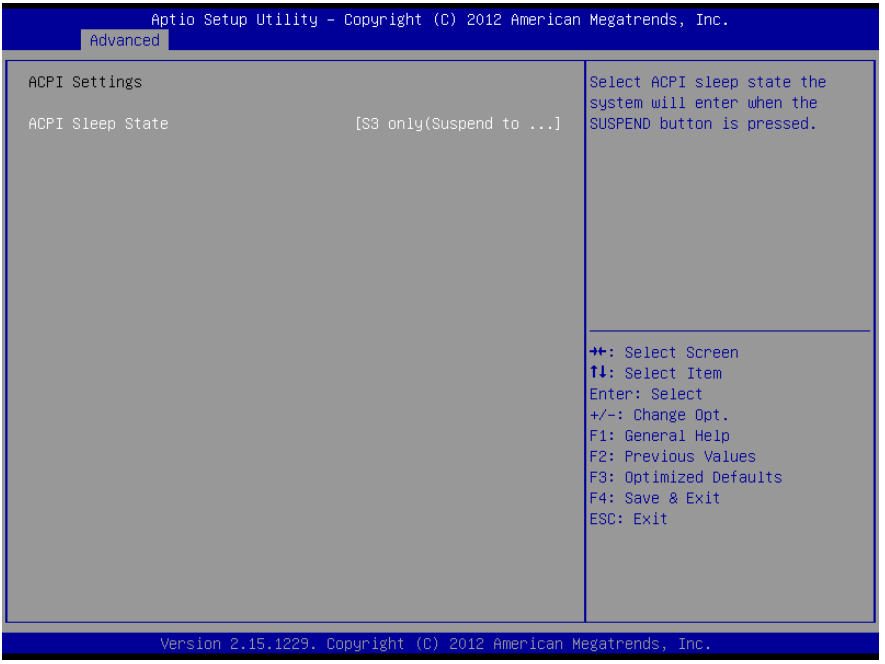


Options summary: (**default setting**)

ICC Spread Spectrum	**Disabled**	
	Enabled	
Spread Spectrum Support		
AAEON ICC Spread Spectrum	45	
AAEON ICC Spread Spectrum default value		
ACPI Settings		
System ACPI Parameters		
S5 RTC Wake Settings		
Enable system to wake from S5 using RTC alarm.		
Trusted Computing		

Trusted Computing Settings		
CPU Configuration		
CPU Configuration Parameters		
Dynamic Digital IO Configuration		
DIO setting		
SATA Configuration		
SATA Device Options Settings		
Intel TXT(LT) Configuration		
Intel Trusted Execution Technology		
AMT Configuration		
AMT Configuration Parameters		
USB Configuration		
USB Configuration Parameters		
F81216 Second Super IO Configuration		
Second IO Configuration Parameters		
F81866 Super IO Configuration		
Super IO Configuration Parameters		
F81866 H/W Monitor		
Monitor hardware status		
CPU PPM Configuration		
CPU PPM Configuration Parameters		

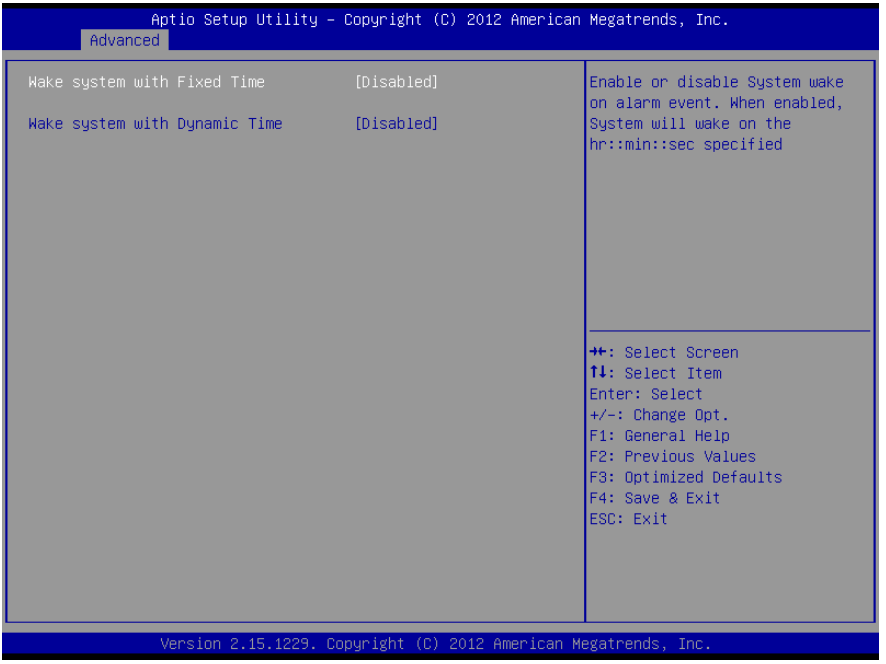
3.4.1 Advanced: ACPI Management



Options summary: (**default setting**)

ACPI Sleep State	Suspend Disabled	
	S1 only(CPU Stop Clock)	
	S3 only(Suspend to RAM)	
	Both S1 and S3 available for OS to choose from	
Select the ACPI state used for System Suspend		

3.4.2 Advanced: RTC Wake Settings



Options summary: (**default setting**)

Wake system with Fixed Time	**Disabled**	
	Enabled	
Enable or disable System wake on alarm event. Wake up time is setting by following settings.		
Wake up day	0-31	
Select 0 for daily system wake up		
Wake up hour	0-23	
Wake up minute	0-59	

Wake up second	0-59	
Wake system with Dynamic Time	**Disabled** Enabled	
Enable or disable System wake on alarm event. Wake up time is current time + Increase minutes.		
Wake up minute increase	1-5	

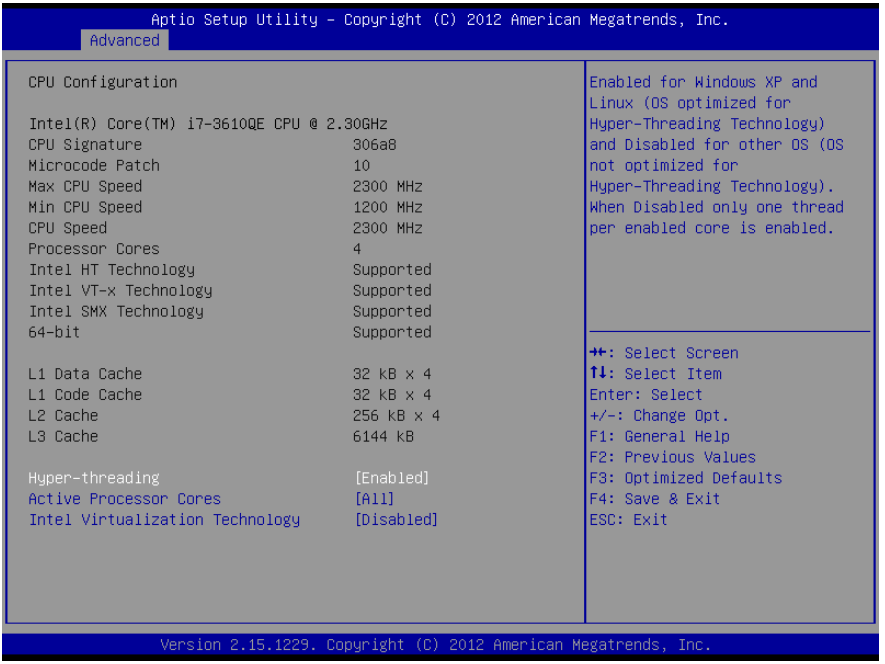
3.4.3 Advanced: Trusted Computing

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.

3.4.4 Advanced: CPU Configuration

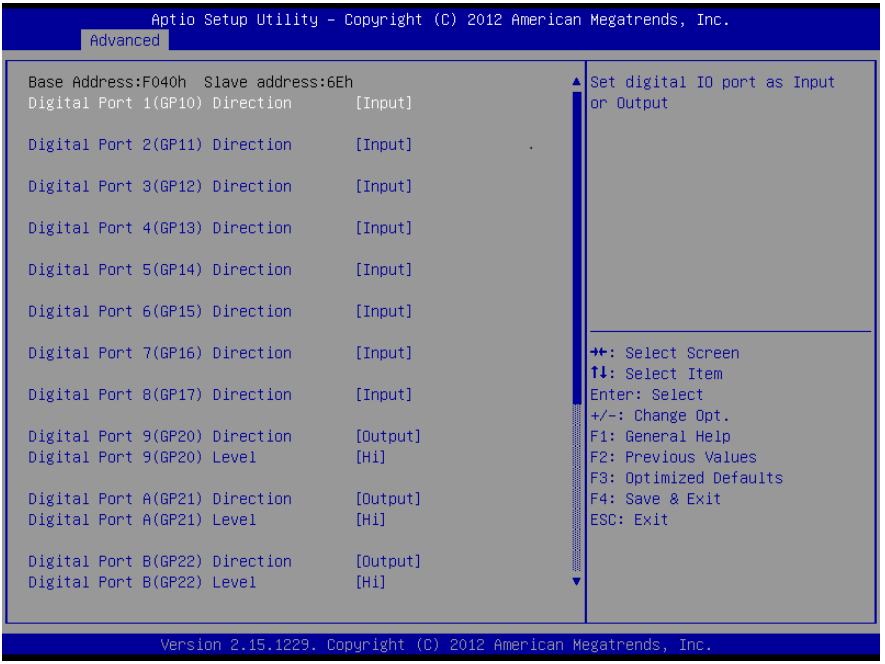


Options summary: (**default setting**)

Hyper-Threading	Disabled	
	Enabled	
En/Disable CPU Hyper-Threading function		
Active Processor Cores	**ALL**	
	1 to Max CPU cores	
Number of CPU cores to be active.		
Intel Virtualization Technology	**Disabled**	
	Enabled	

En/Disable Intel VT-x function

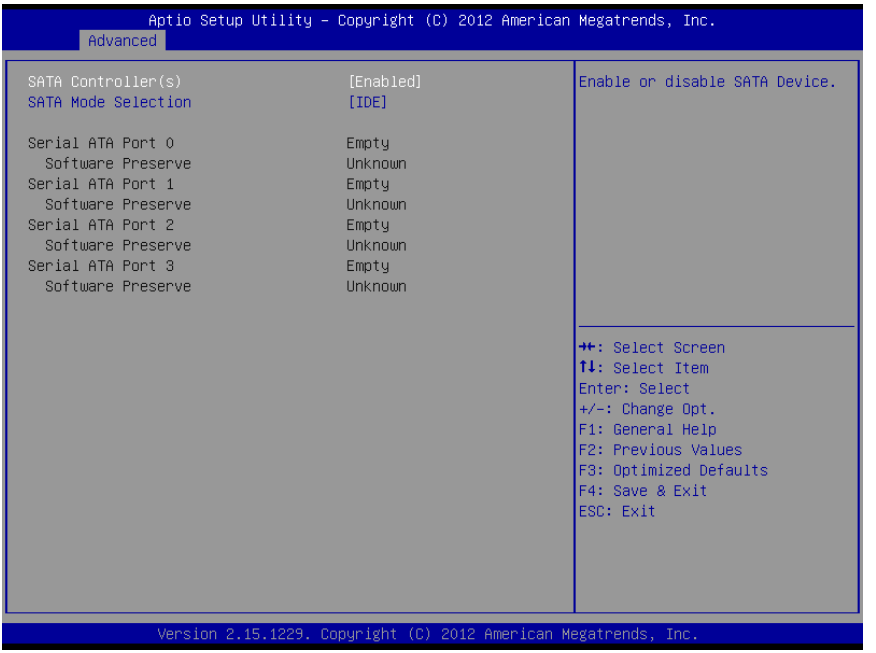
3.4.5 Advanced: Dynamic Digital IO Configuration



Options summary: (**default setting**)

Digital Port X(GPXX) Direction	Input	
	Output	
Set GPIOx as Input or Output		
Digital Port X(GPXX) Levels	Hi	
	Low	
Set GPIO output level when used as output pin		

3.4.6 Advanced: SATA Configuration



Options summary: (**default setting**)

SATA Controller(s)	Disabled	
	Enabled	
En/Disable SATA controller		
Configure SATA as	**IDE**	
	AHCI	
	RAID	
Configure SATA controller operating as IDE/AHCI/RAID mode.		
SATA Controller Speed	Gen1	
	Gen2	
	Gen3	

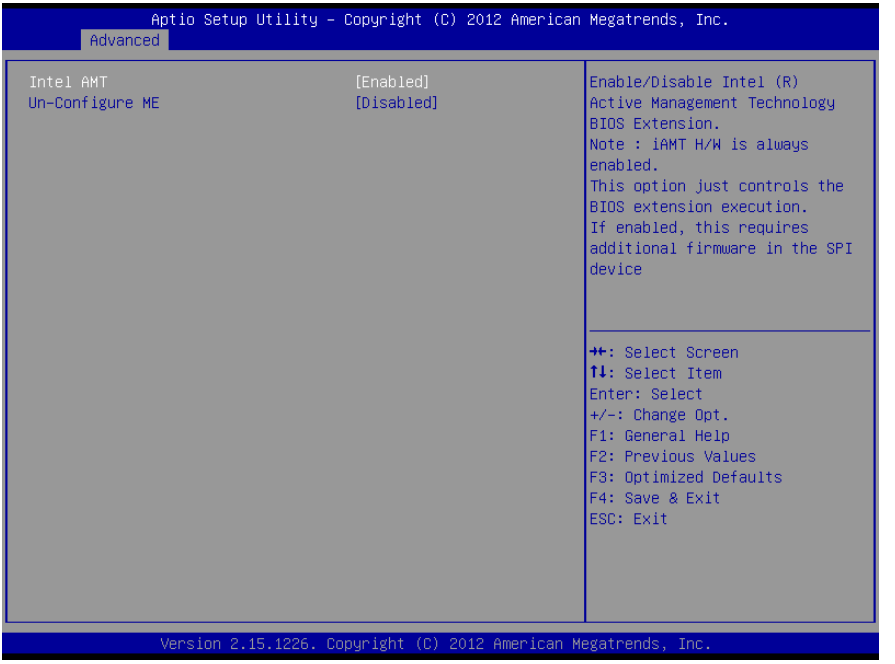
Indicates the maximum speed the SATA controller can support.		
Port X	Disabled	
	Enabled	
En/Disable the selected port.		
Hot Plug	**Disabled**	
	Enabled	
En/Disable Hot Plug feature for specified port.		

3.4.7 Advanced: Intel TXT (LT) Configuration

Options summary: (**default setting**)

Intel TXT(LT) Support	**Disabled**	
	Enabled	
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.		

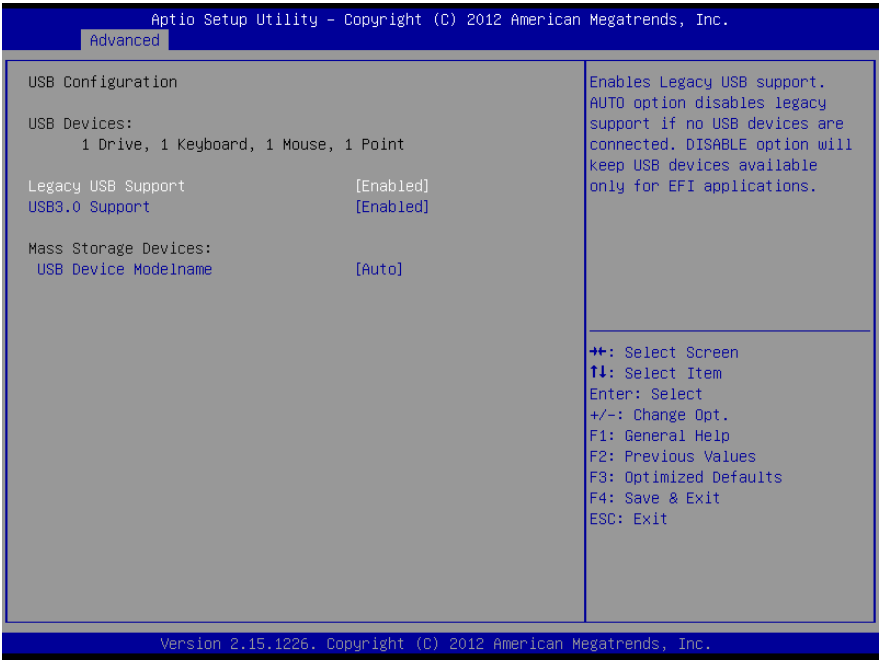
3.4.8 Advanced: AMT Configuration



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		

3.4.9 Advanced: USB Configuration

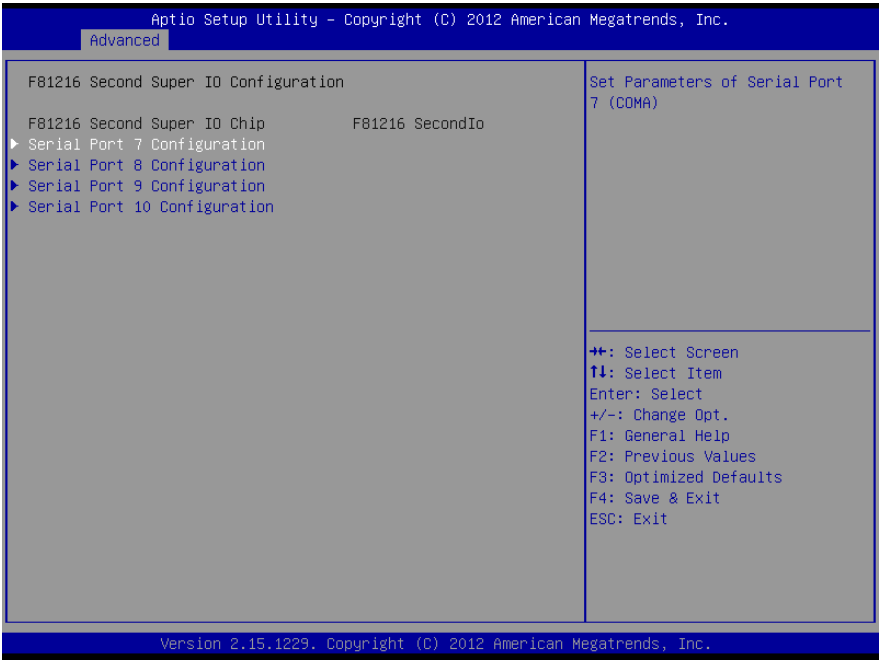


Options summary: (**default setting**)

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)		

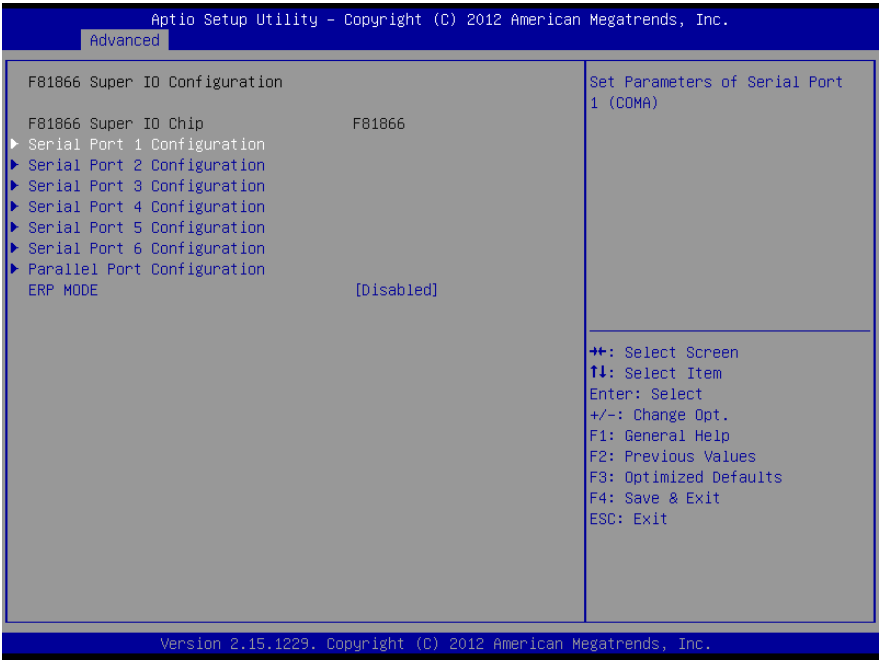
3.4.10 Advanced: F81216 Second Super IO Configuration



Options summary: (**default setting**)

Serial Port 7/8/9/10 Configuration		
Set Parameters of Serial Port 7/8/9/10		

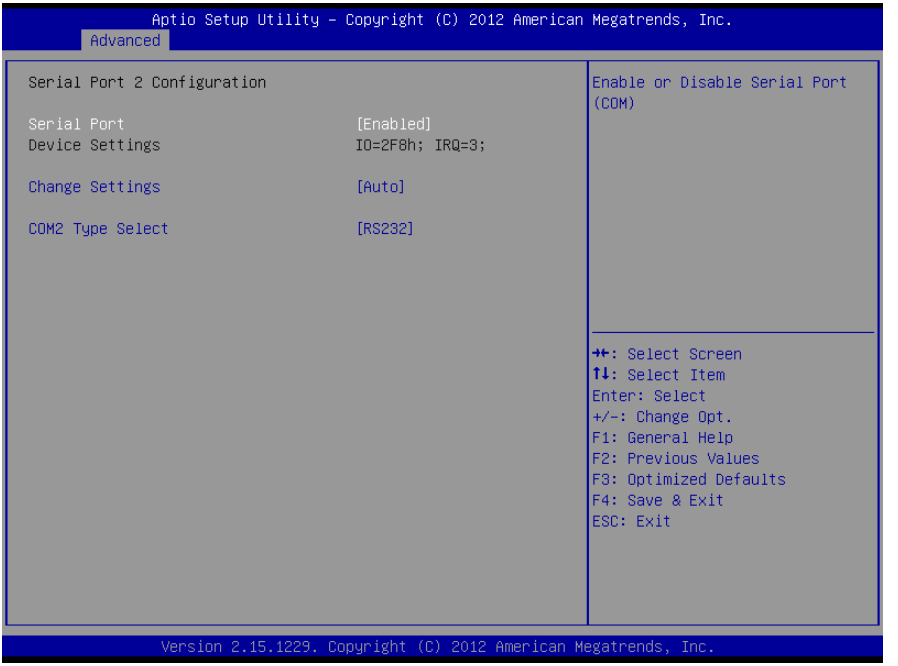
3.4.11 Advanced: Super IO Configuration



Options summary: (**default setting**)

Serial Port 1/2/3/4/5/6 Configuration		
Set Parameters of Serial Port 1/2/3/4/5/6		
Parallel Port Configuration		
Set Parameters of Parallel Port.		
ERP MODE	**Disabled**	
	ERP	
Configure ERP Power Control.		

3.4.11.1 Super IO Configuration: Serial Port X Configuration

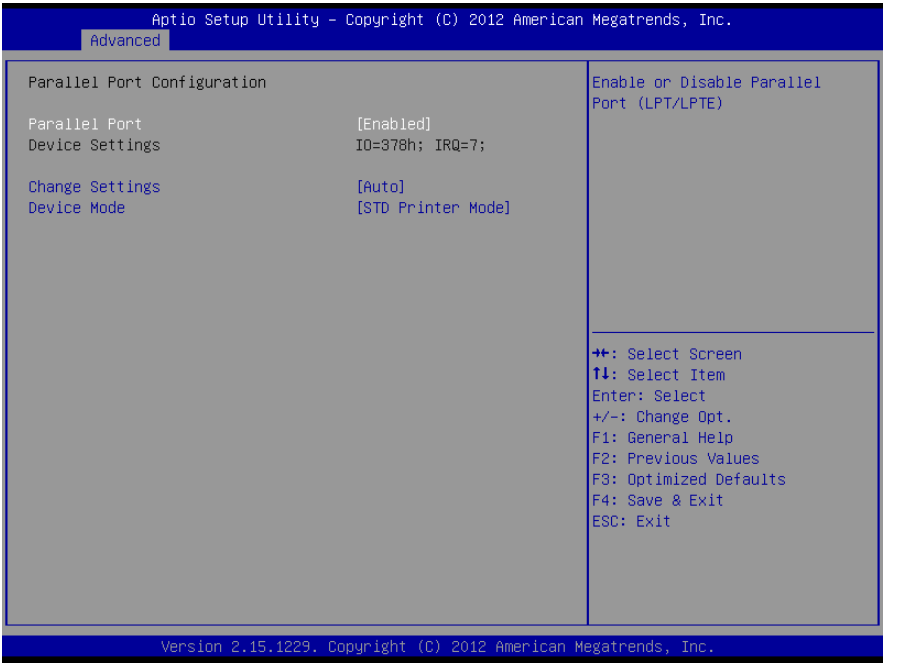


Options summary: (**default setting**)

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 COM2/6 operated as RS232, RS422 or RS485.		

3.4.12 Advanced: Parallel Port Configuration

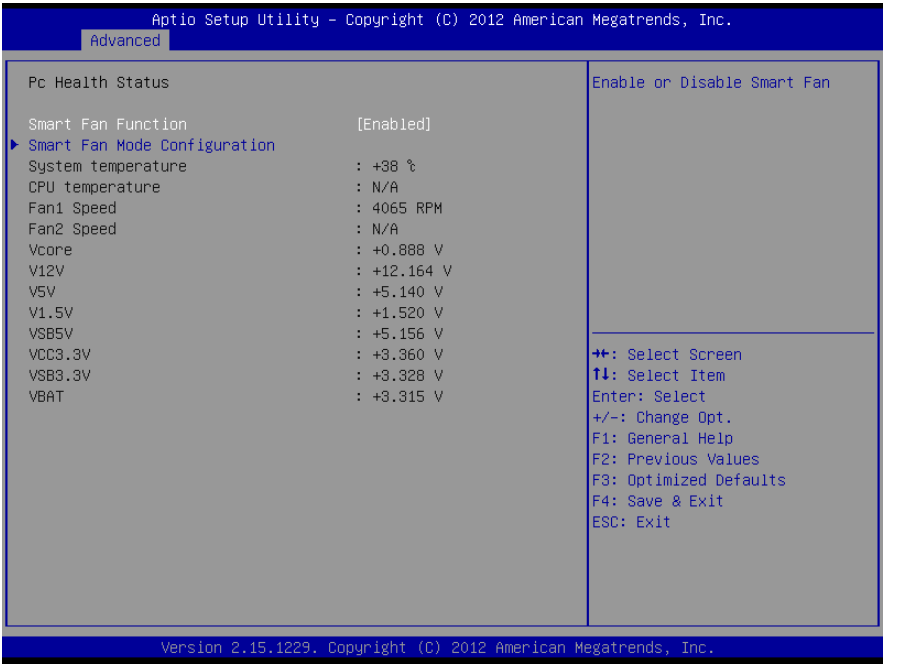


Options summary: (**default setting**)

Parallel Port	**Disabled**	
	Enabled	
En/Disable parallel port.		
Change Settings	**Auto**	
	IO=378h; IRQ=7;	
	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	**STD Printer Mode**	

	SPP Mode	
	EPP-1.9 and SPP Mode	
	EPP-1.7 and SPP Mode	
	ECP Mode	
	ECP and EPP 1.9 Mode	
	ECP and EPP 1.7 Mode	
Change the Printer Port mode		

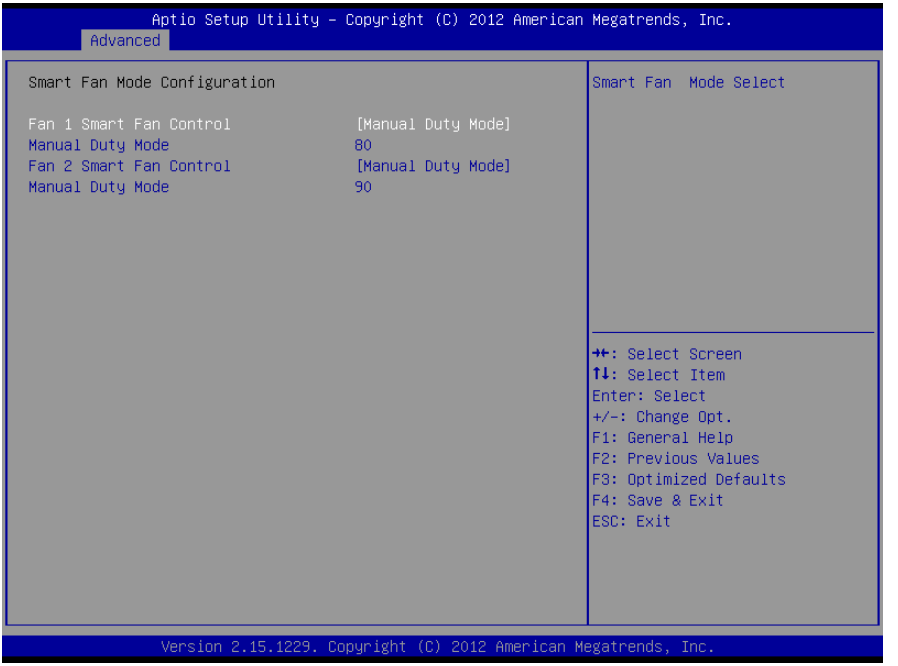
3.4.13 Advanced: F81866 H/W Monitor



Options summary: (**default setting**)

Smart Fan Function	Disabled	
	Enabled	
Enable or Disable Smart Fan		
Smart Fan Mode configuration		
Smart Fan Mode select		

3.4.14 Advanced: Smart Fan Configuration



Options summary: (**default setting**)

Fan 1/2 Smart Fan Control	**Manual Duty Mode**	
	Auto Duty-Cycle Mode	
Manual Duty Mode: Manually controlling the fan with a given control PWM. Auto Duty-Cycle Mode: Automatically controlling the fan with given parameters.		
Manual Duty Mode	1 to 100, default is **80/90**	
Fan Speed value between 1 to 100		
Temperature 1/2/3/4	1 to 100, default is **60/50/40/30**	
Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100		

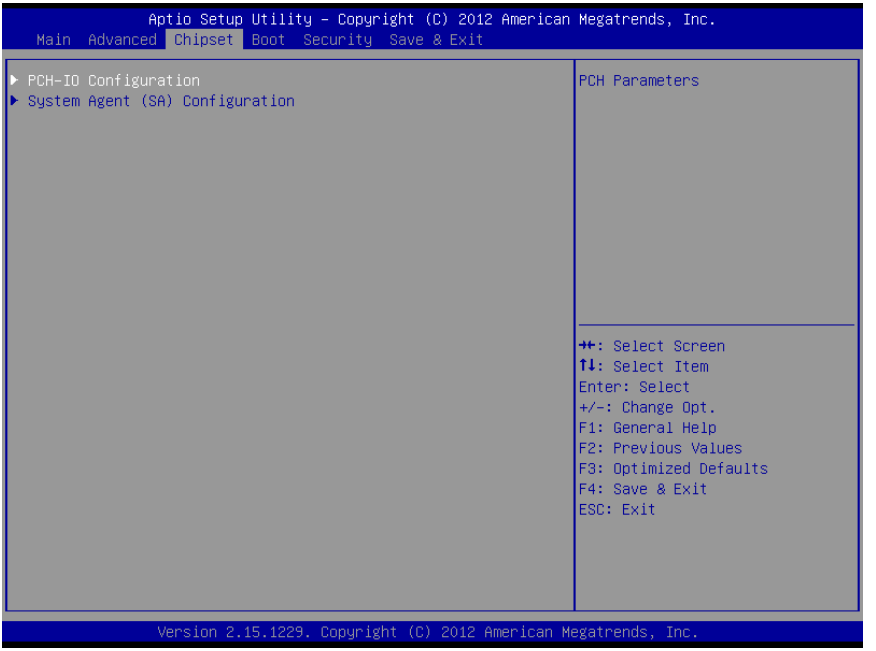
Duty Cycle 0/1/2/3/4	1 to 100, default is 100/85/70/60/50	
Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100		

3.4.15 Advanced: CPU PPM Configuration

Options summary: (**default setting**)

EIST	Disabled	
	Enabled	
Enable/Disable Intel SpeedStep		
Turbo Mode	Disabled	
	Enabled	
Turbo Mode enable/disable		

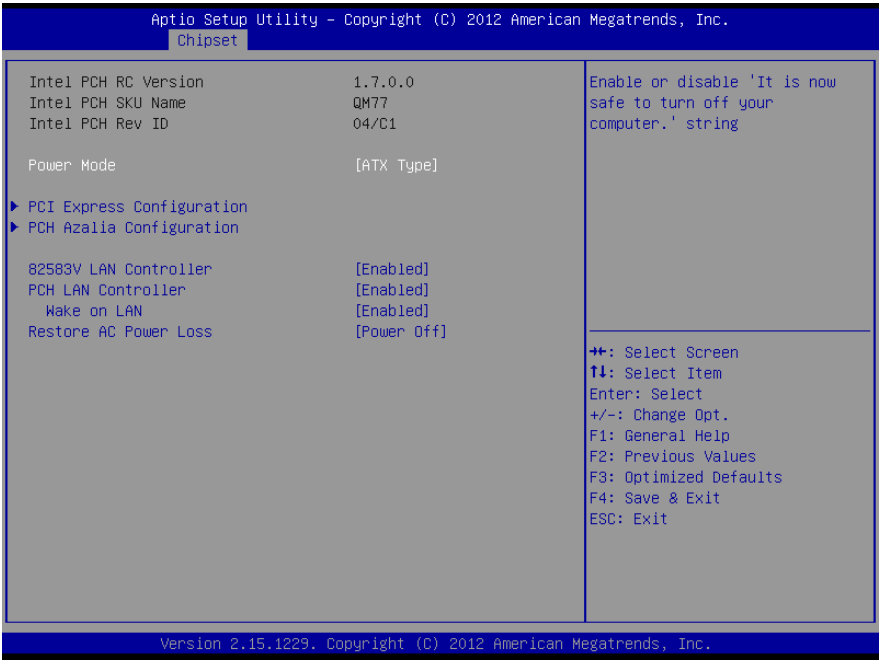
3.5 Setup submenu: Chipset



Options summary: (**default setting**)

PCH-IO Configuration		
South Bridge Parameters		
System Agent (SA) Configuration		
SA Parameters		

3.5.1 Chipset: PCH-IO Configuration

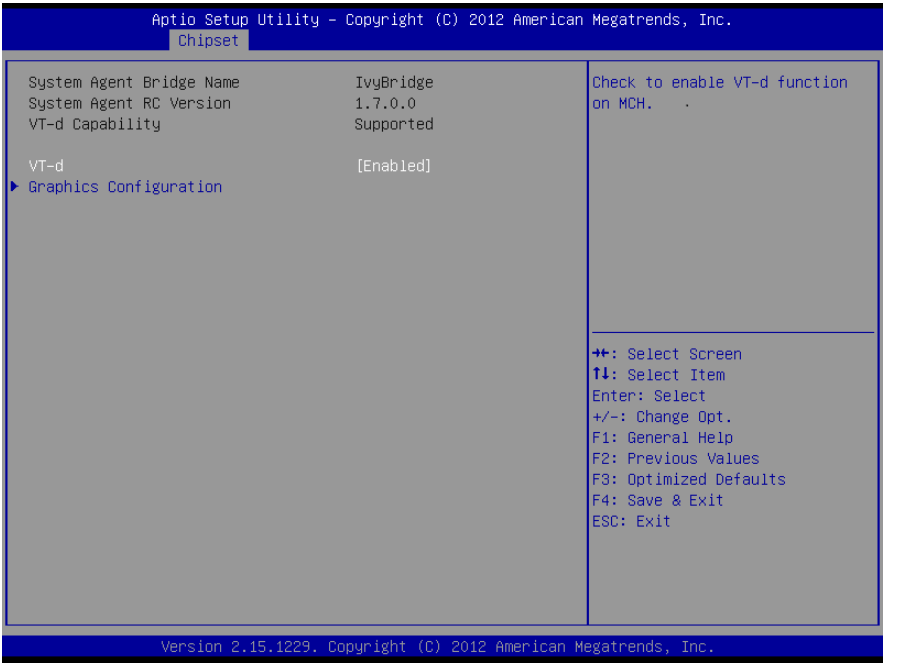


Options summary: (**default setting**)

Power Mode	**ATX Type**	
	AT Type	
Enable or disable 'It is now safe to turn off your computer.' string		
PCI Express Configuration		
PCI Express Configuration settings		
PCH Azaliz Configuration		
PCH Azaliz Configuration settings		
82583V LAN Controller	**Enabled**	

	Disabled	
En/Disabled Intel 82583V NIC		
PCH LAN Controller	**Enabled**	
	Disabled	
En/Disabled onboard NIC		
Wake on LAN	**Enabled**	
	Disabled	
En/Disabled integrated LAN to wake the system. (The Wake on LAN cannot be disabled if ME is on at Sx state.		
Restore AC Power Loss	**Power Off**	
	Power On	
	Last State	
Select AC power state when power is re-applied after a power failure		

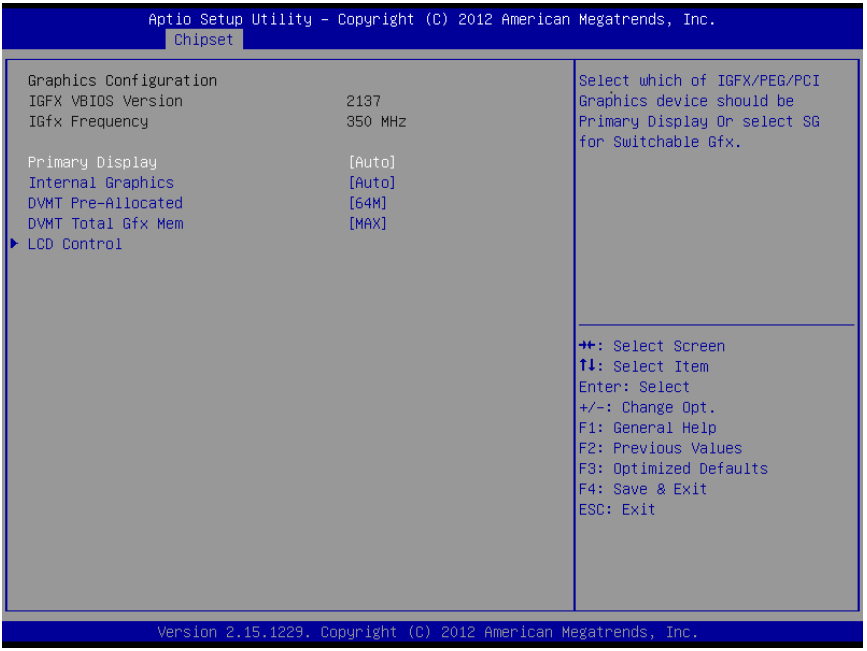
3.5.2 Chipset: System Agent (SA) Configuration



Options summary: (**default setting**)

VT-d	**Disabled**	
	Enabled	
Check to enable VT-d function on MCH		
Graphics Configuration		
Config Graphics Settings		

3.5.2.1 System Agent (SA) Configuration: Graphics Configuration

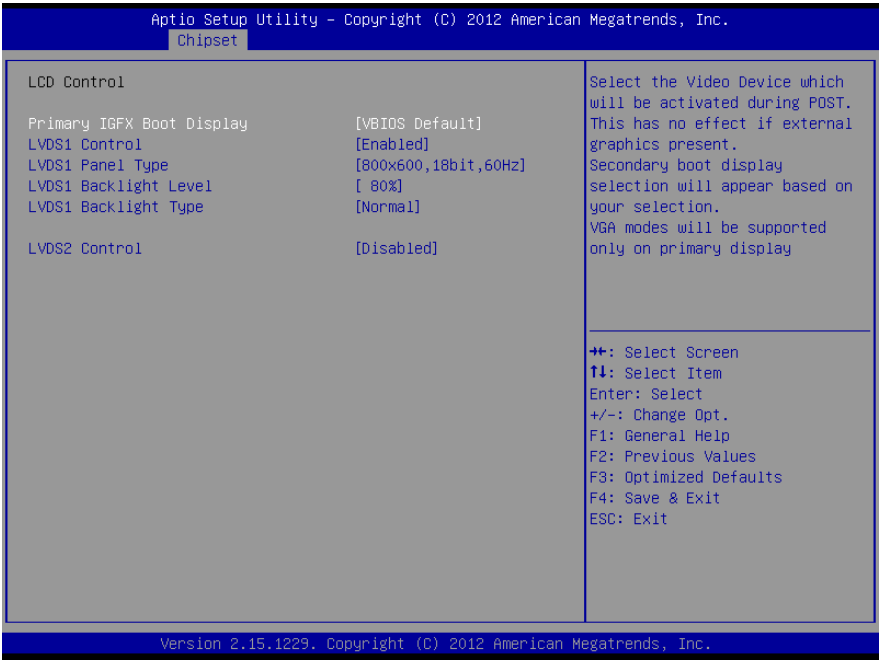


Options summary: (**default setting**)

Primary Display	**Auto**	
	IGFX	
	PEG	
	PCI	
Select graphic adapters to boot		
Internal Graphics	**Auto**	
	Disabled	
	Enabled	
En/Disabled internal graphics device		
DVMT Pre-Allocated	**64MB**	

	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.		

3.5.2.2 Graphics Configuration: LCD Control



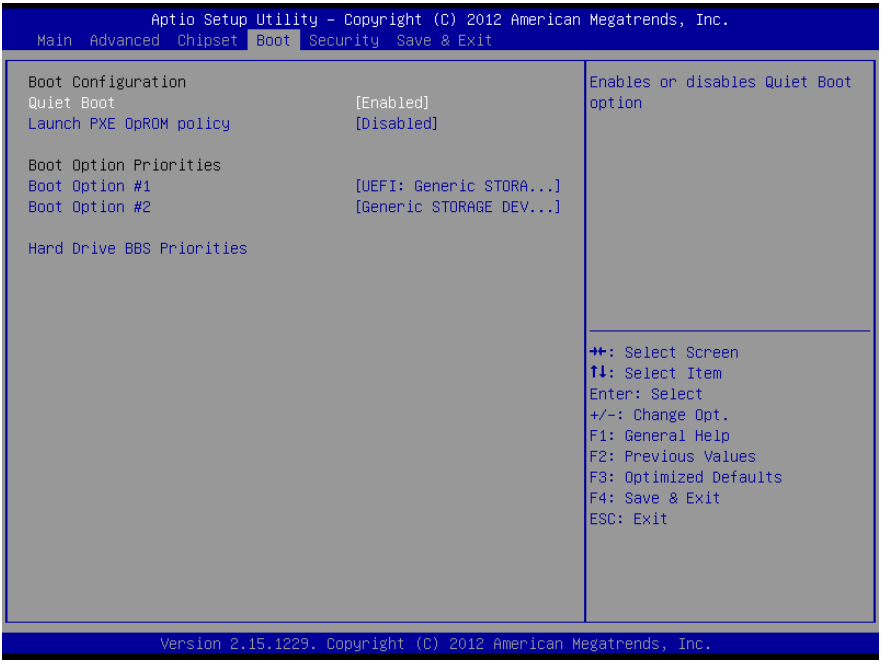
Options summary: (**default setting**)

Primary IGFX Boot Display	**VBIOS**	
	CRT	
	DVI	
	LVDS	
	LVDS2	
	CRT+LVDS1	
Select Primary IGFX boot display device		
LVDS1 Control	Disabled	
	Enabled	
Enable or Disable Internal LVDS		

LVDS2 Control	**Disabled**	
	Enabled	
Enable or Disable Onboard CH7511		
LVDS1/LVDS2 Panel Type	640x480,18-Bit,60Hz	
	800x480,18-Bit,60Hz	
	800x600,18-Bit,60Hz	
	1024x600,18-Bit,60Hz	
	1024x768,18-Bit,60Hz	
	1024x768,24-Bit,60Hz	
	1280x768,24-Bit,60Hz	
	1280x1024,48-Bit,60Hz	
	1366x768,24-Bit,60Hz	
	1440x900,24Bit,60Hz	
	1600x1200,48-Bit,60Hz	
	1920x1080,48-Bit,60Hz	
	640x480,24-Bit,60Hz	
	800x600,24-Bit,60Hz	
	1280x768,18-Bit,60Hz	
Select panel native resolution.		
LVDS1/LVDS2 Backlight Type	Inverted	
	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 Backlight Level	100%	
	90%	
	80%	

	70%	
	60%	
	50%	
	40%	
	30%	
	20%	
	10%	
	0%	
Select Backlight Level		

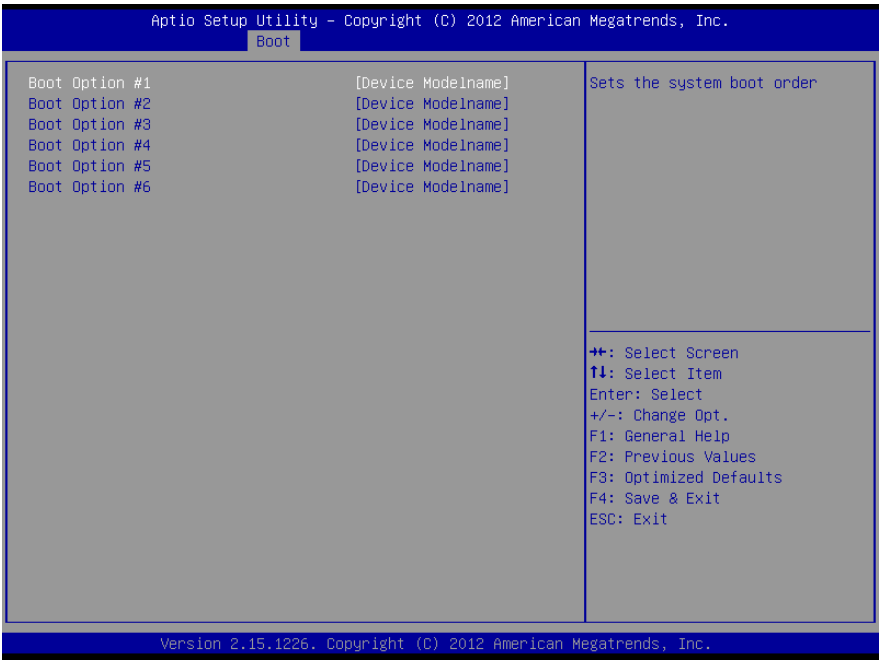
3.6 Setup submenu: Boot



Options summary: (**default setting**)

Quiet Boot	Disabled	
	Enabled	
En/Disable showing boot logo.		
Launch PXE OpROM policy	**Disabled**	
	Enabled	
En/Disable PXE boot for LAN		
Boot Option #X/ XXXX Drive BBS Priorities		
The order of boot priorities.		

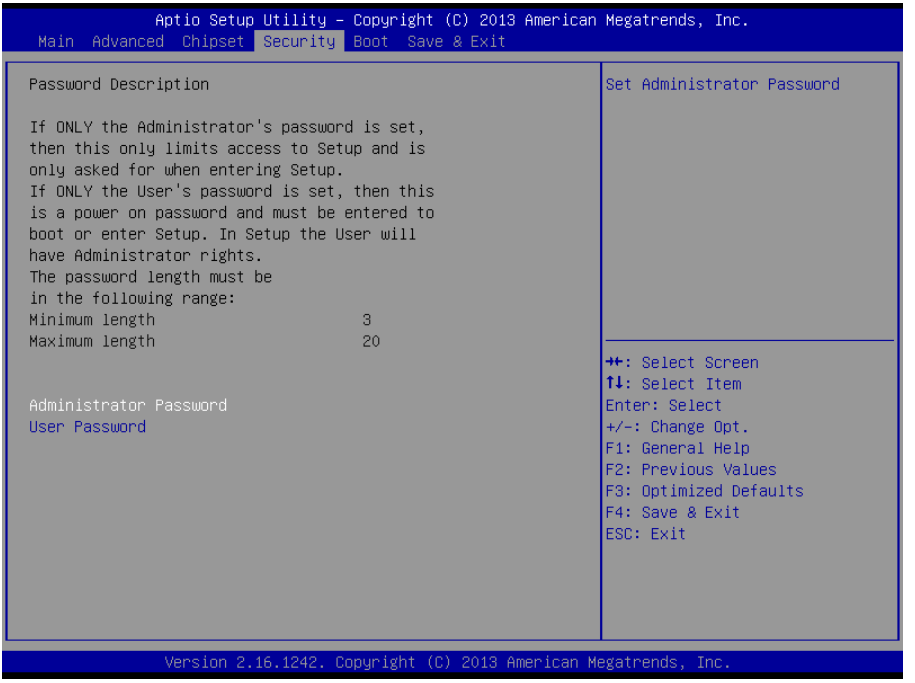
3.6.1 Boot: BBS Priorities



Options summary: (**default setting**)

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

3.7 Setup submenu: Security



Options summary: (**default setting**)

Administrator Password/	Not set	
User Password		

Change User/Administrator Password

You can set a User Password once an Administrator Password is set. The password will be required during boot up, or when the user enters the Setup utility. Please Note that a User Password does not provide access to many of the features in the Setup utility.

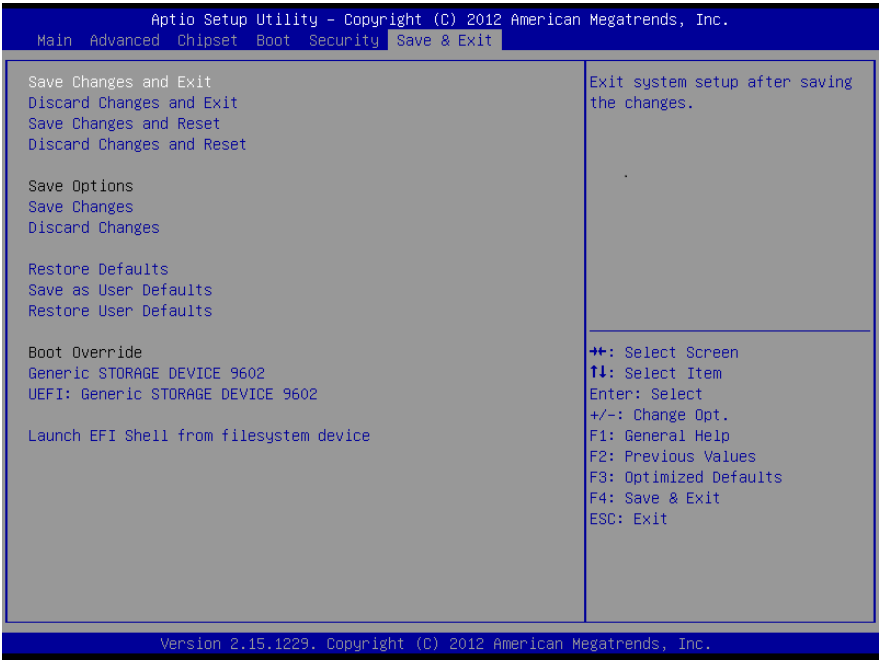
Select the password you wish to set, press Enter to open a dialog box to enter

your password (you can enter no more than six letters or numbers). Press Enter to confirm your entry, after which you will be prompted to retype your password for a final confirmation. Press Enter again after you have retyped it correctly.

Removing the Password

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

3.8 Setup submenu: Save & Exit



Options summary: (**default setting**)

Save Changes and Exit		
Exit system setup after saving the changes		
Discard Changes and Exit		
Exit system setup without saving any changes		
Save Changes and Reset		
Reset the system after saving the changes		
Discard Changes and Reset		
Save Changes		
Save Changes done so far to any of the setup options.		

Chapter 4

Drivers Installation

4.1 Product CD/DVD

The PCM-QM77 comes with a product DVD that contains all the drivers and utilities you need to setup your product. Insert the DVD and follow the steps in the autorun program to install the drivers.

In case the program does not start, follow the sequence below to install the drivers.

Step 1 – Install Chipset Drivers

1. Open the **Step 1 – Chipset** folder and select your OS
2. Open the **infinst_autol.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 2 – Install Graphics Driver

1. Open the **STEP2 - VGA** folder and select your OS
2. Open the **Setup.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Note 1:

- This motherboard supports VGA and LVDS display devices. In Single Display mode. 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 you are using Windows® XP, you have to install the driver of dotNet Framework first (**dotnetfx35.exe** in **dotNet Framwork** folder).

Step 3 – Install LAN Driver

1. Open the **STEP3 – LAN** folder and select your OS
2. Open the **.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 4 – Install Audio Driver

1. Open the **STEP4 – TXE** folder and select your OS
2. Open the **.exe** file in the folder
3. Follow the instructions
1. Drivers will be installed automatically

Step 5 – Install ME Driver

1. Open the **STEP5 – ME SW** folder and select your OS
2. Open the **Setup.exe** file in the folder
3. Follow the instructions
2. Drivers will be installed automatically

Step 6 – Install RAID & AHDI Drivers

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

Step 7 – Install TPM Driver

1. Open the **STEP7 – TPM** folder and select your OS
2. Open the **Setup.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 8 – Install Touch Driver

1. Open the **STEP8 – Touch** folder and select your OS
2. Open the **Setup.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 9 – Install USB 3.0 Drivers (Windows 7 only)

1. Open the **STEP5 - USB3.0** folder followed by **Setup.exe**
2. Follow the instructions
3. Drivers will be installed automatically

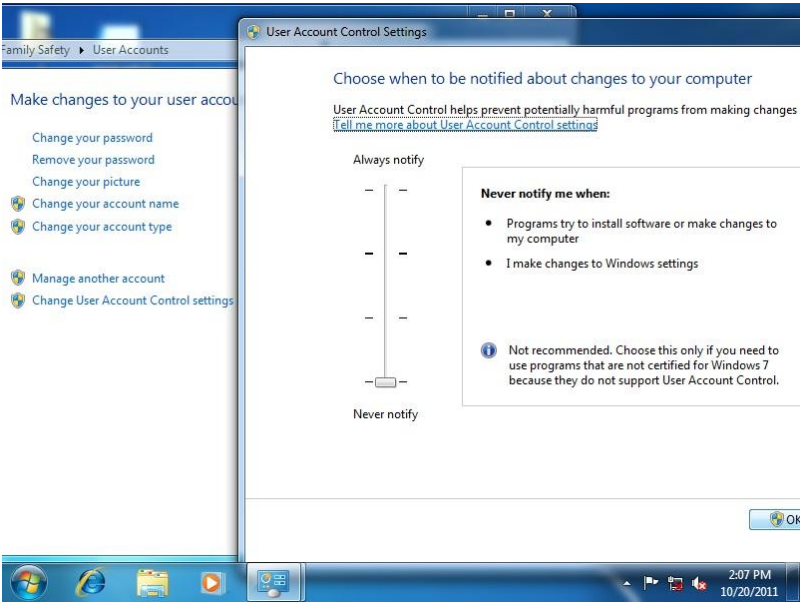
Step 10 – Serial Port Drivers (Optional)

For Windows XP

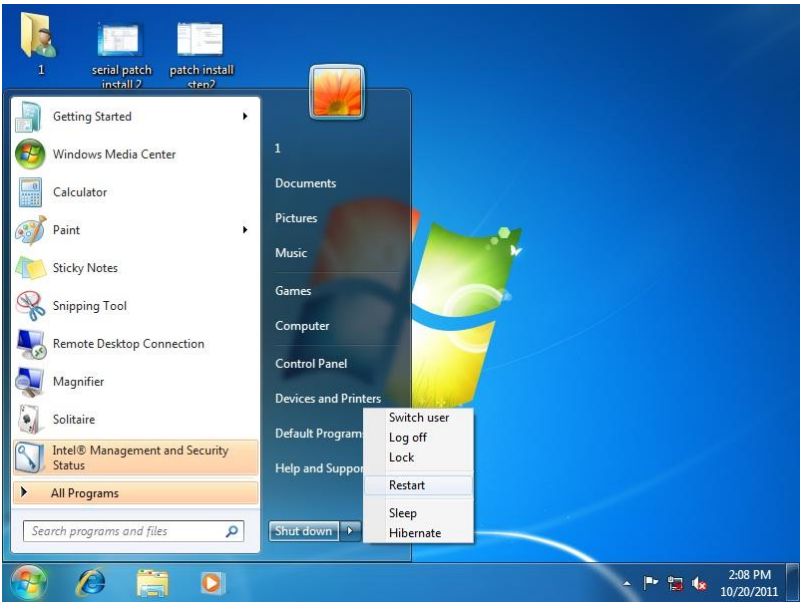
1. Open the **STEP10 – Serial Port Driver (Optional)** folder and select your OS
2. Open the **Setup.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

For Windows 7:

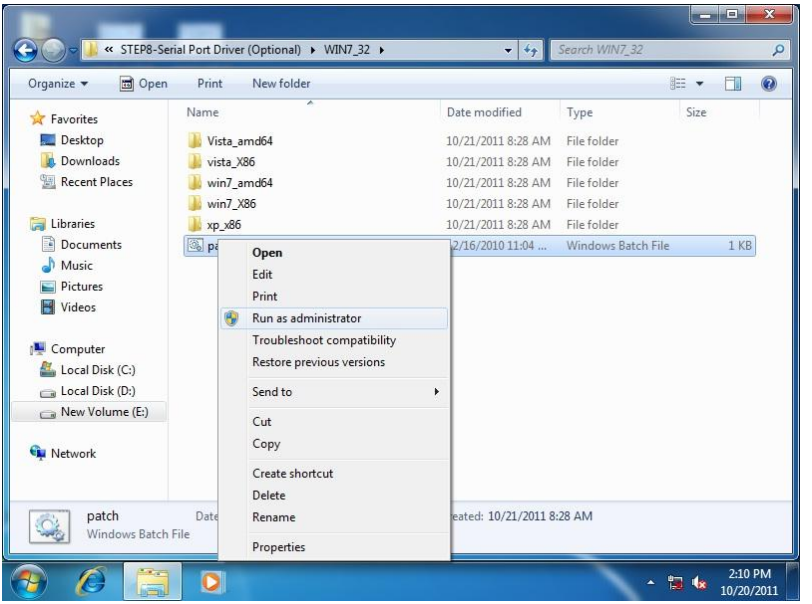
1. Change User Account Control settings to **Never notify**



2. Reboot and log in as administrator



3. Run patch.bat as administrator



Appendix A

Watchdog Timer Programming

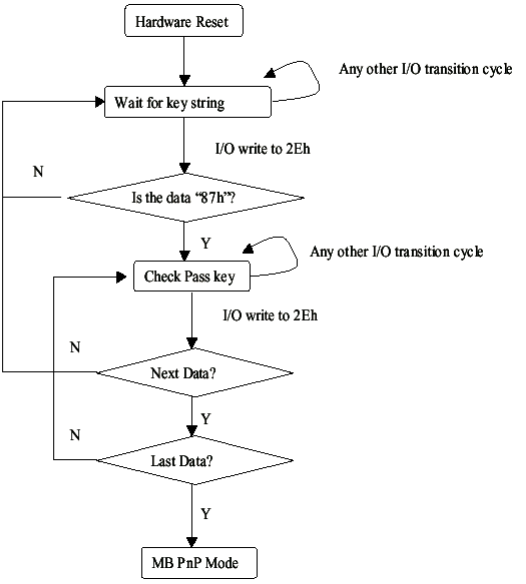
A.1 Watchdog Timer Registers

PCM-QM77 Rev.B utilizes Fintek 81666 chipset as its watchdog timer controller.

Below are the procedures to complete its configuration and the AAEON intial 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 Fintek 81666 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.

```
-o 4e 87
-o 4e 87            ( enable configuration )
```

(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

Write exit key 0xAA to the index port.

```
-o 4e aa            ( disable configuration )
```

Watch Dog Timer 1, 2, 3 Control Register (Index=F5h,F6h,FAh Default=00h)

7.8.4 Watchdog Control Configuration Register 1 — Index F5h

Bit	Name	R/W	Reset	Default	Description
7	Reserved	R	-	0	Reserved
6	WDTMOUT_STS	R/W	5VSB	0	If watchdog timeout event occurred, this bit will be set to 1. Write a 1 to this bit will clear it to 0.
5	WD_EN	R/W	5VSB	0	If this bit is set to 1, the counting of watchdog time is enabled.
4	WD_PULSE	R/W	5VSB	0	Select output mode (0: level, 1: pulse) of RSTOUT# by setting this bit.
3	WD_UNIT	R/W	5VSB	0	Select time unit (0: 1sec, 1: 60 sec) of watchdog timer by setting this bit.
2	WD_HACTIVE	R/W	5VSB	0	Select output polarity of RSTOUT# (1: high active, 0: low active) by setting this bit.
1-0	WD_PSWIDTH	R/W	5VSB	0	Select output pulse width of RSTOUT# 0: 1 ms 1: 25 ms 2: 125 ms 3: 5 sec

7.8.5 Watchdog Timer Configuration Register 2 — Index F6h

Bit	Name	R/W	Reset	Default	Description
7-0	WD_TIME	R/W	5VSB	0	Time of watchdog timer (0~255)

7.8.6 Watchdog PME Enable Configuration Register 2 — Index FAh

Bit	Name	R/W	Reset	Default	Description
7	WDT_PME	R	5VSB	0	0: No WDT PME occurred. 1: WDT PME occurred. The WDT PME is occurred one unit before WDT timeout.
6	WDT_PME_EN	R/W	5VSB	0	0: Disable Watchdog PME. 1: enable Watchdog PME.
5	Reserved	R	-	0	Reserved
4	WDT_CLK_SEL	R/W	5VSB	1	WDT Clock Source Select 0: Internal 1KHz clock. 1: 1KHZ clock driven by CLKIN.
3-1	Reserved	R	-	0	Reserved
0	WDOUT_EN	R/W	5VSB	0	0: disable Watchdog time out output via WDTRST#. 1: enable Watchdog time out output via WDTRST#.

A.2 F81866 Watchdog Timer Initial Program

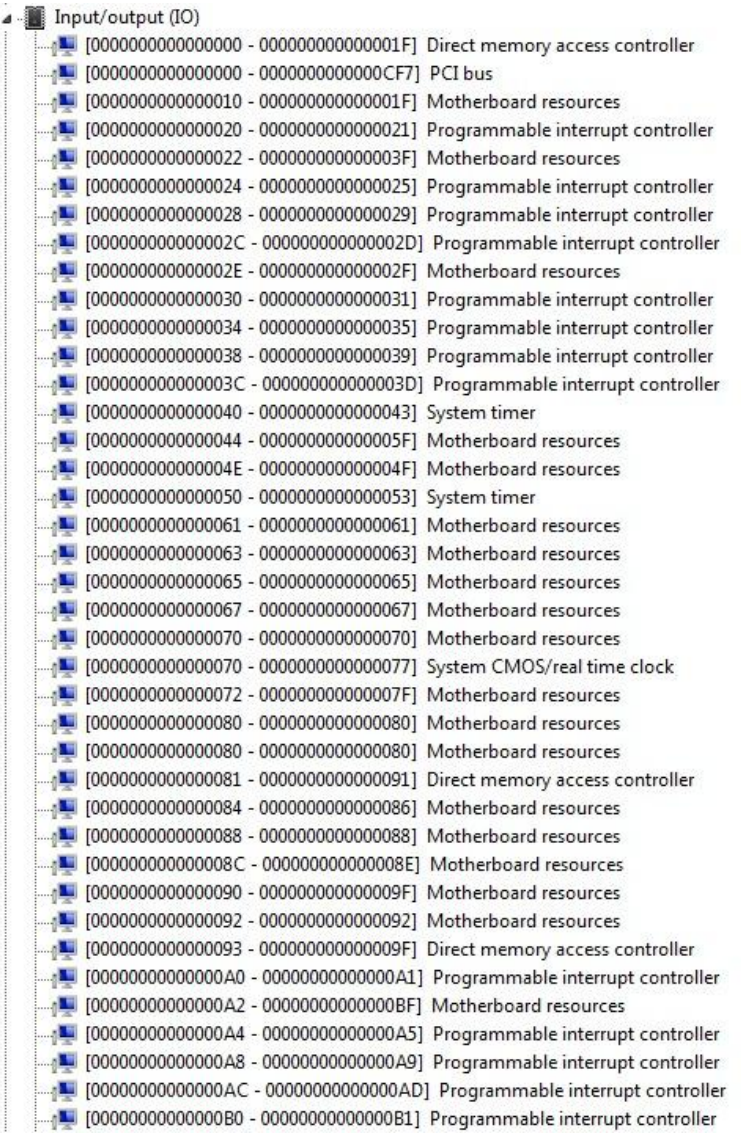
```
Main(){
aaeonSuperIOOpen();
aaeonWdtSetCountMode(BOOL bMinute); // Set wdt count mode
aaeonWdtSetTimeoutCount(BYTE tTimeout); // Set wdt timer
aaeonWdtSetEnable(BOOL bEnable); // Enable wdt
aaeonSuperIOClose();
}

Void aaeonSuperIOOpen(){       // Config F81866 Entry key
        aaeonioWritePortByte(F81866_INDEX, 0x87);
        aaeonioWritePortByte(F81866_INDEX, 0x87);
}

Void aaeonWdtSetCountMode(BOOL bMinute){
   BYTE WDT_CONTROL = f81866ReadByte(F81866_WDT_CONTROL_REG);
   if(bMinute)
        f81866WriteByte(F81866_WDT_CONTROL_REG, WDT_CONTROL | 0x08);
   else
        f81866WriteByte(F81866_WDT_CONTROL_REG, WDT_CONTROL & 0xF7);
}



Void aaeonWdtSetTimeoutCount(BYTE tTimeout){
   f81866SetLdn(0x07);
   f81866WriteByte(F81866_WDT_TIME_REG, tTimeout);
}
```

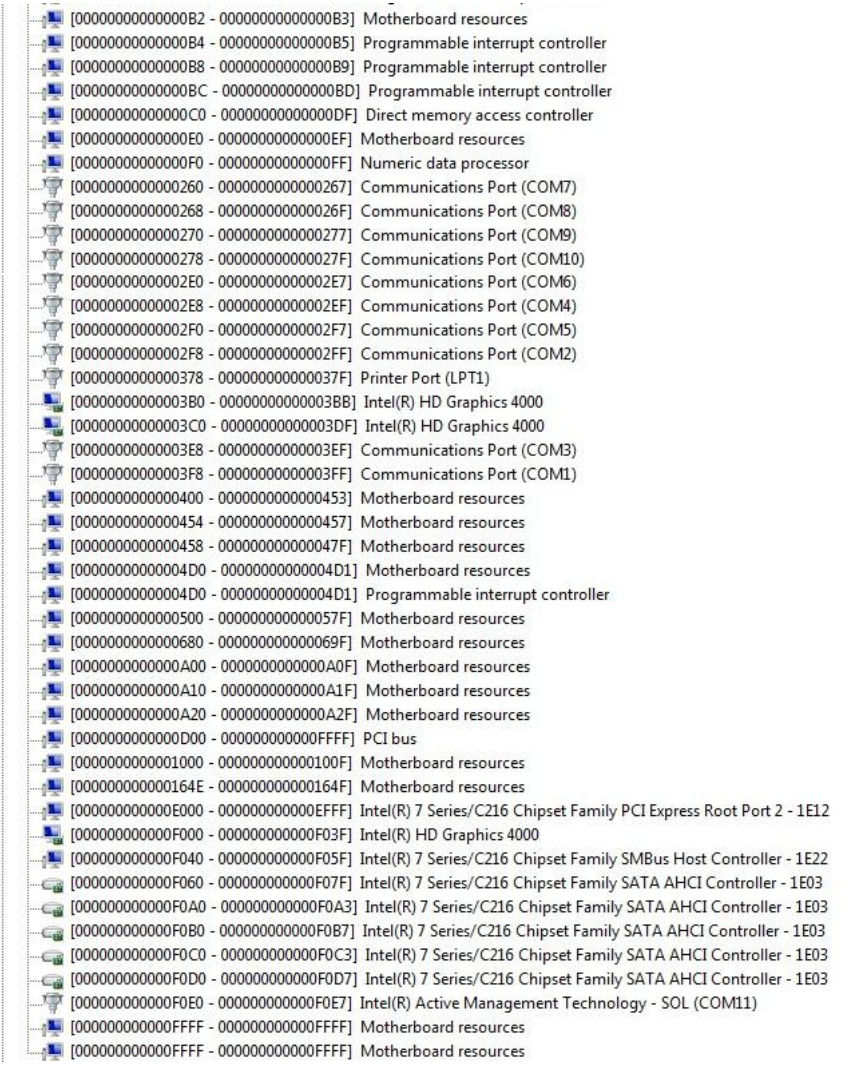
```
Void aaeonWdtSetEnable(BOOL bEnable){
    f81866SetLdn(0x07);
    if(bEnable){
        f81866WriteByte(0x30, 0x01);
         WDT_BASE_ADDR =
         (f81866ReadByte(F81866_WDT_BASEADDR_REG_MSB) << 8)
         | f81866ReadByte(F81866_WDT_BASEADDR_REG_LSB);
         WDT_STATUS = f81866ReadByte(F81866_WDT_CONTROL_REG);
         f81866WriteByte(F81866_WDT_CONTROL_REG, WDT_STATUS | 0x20);
         WDT_STATUS = f81866ReadByte(F81866_WDT_PME_REG);
         f81866WriteByte(F81866_WDT_PME_REG, WDT_STATUS | 0x01);
    }else{
        f81866WriteByte(0x30, 0x00);
        WDT_BASE_ADDR = 0;
        WDT_STATUS = f81866ReadByte(F81866_WDT_CONTROL_REG);
        f81866WriteByte(F81866_WDT_CONTROL_REG, WDT_STATUS & 0xDF);
        WDT_STATUS = f81866ReadByte(F81866_WDT_PME_REG);
        f81866WriteByte(F81866_WDT_PME_REG, WDT_STATUS & 0xFE);
    }
}
Void aaeonSuperIOClose(){
        aaeonioWritePortByte(F81866_INDEX, 0xaa);
}
```

Appendix B

I/O Information

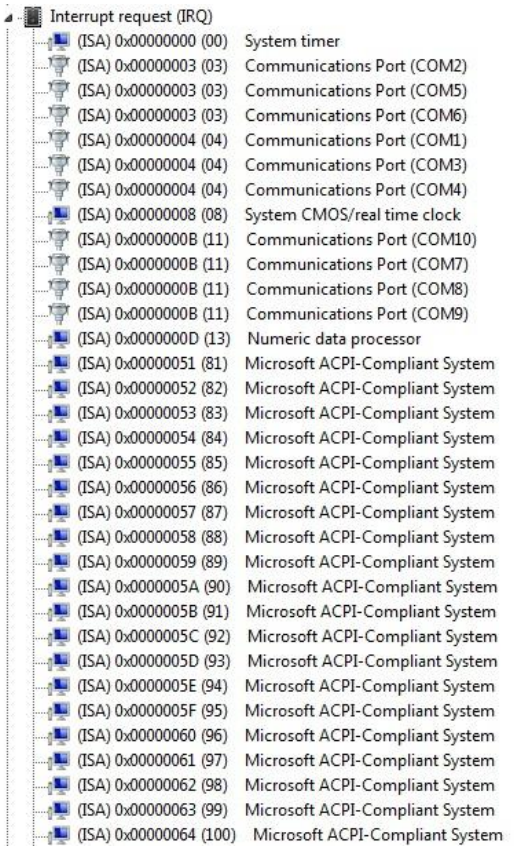
B.1 I/O Address Map

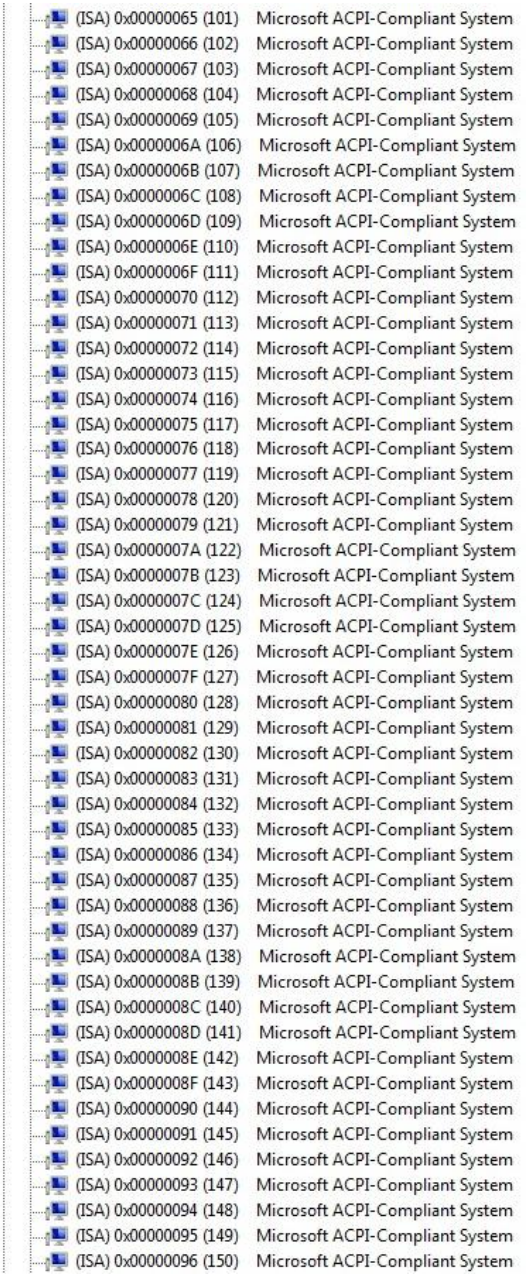



[00000000000000B2 - 00000000000000B3] Motherboard resources
[00000000000000B4 - 00000000000000B5] Programmable interrupt controller
[00000000000000B8 - 00000000000000B9] Programmable interrupt controller
[00000000000000BC - 00000000000000BD] Programmable interrupt controller
[00000000000000C0 - 00000000000000DF] Direct memory access controller
[00000000000000E0 - 00000000000000EF] Motherboard resources
[00000000000000F0 - 00000000000000FF] Numeric data processor
[0000000000000260 - 0000000000000267] Communications Port (COM7)
[0000000000000268 - 000000000000026F] Communications Port (COM8)
[0000000000000270 - 0000000000000277] Communications Port (COM9)
[0000000000000278 - 000000000000027F] Communications Port (COM10)
[00000000000002E0 - 00000000000002E7] Communications Port (COM6)
[00000000000002E8 - 00000000000002EF] Communications Port (COM4)
[00000000000002F0 - 00000000000002F7] Communications Port (COM5)
[00000000000002F8 - 00000000000002FF] Communications Port (COM2)
[0000000000000378 - 000000000000037F] Printer Port (LPT1)
[00000000000003B0 - 00000000000003BB] Intel(R) HD Graphics 4000
[00000000000003C0 - 00000000000003DF] Intel(R) HD Graphics 4000
[00000000000003E8 - 00000000000003EF] Communications Port (COM3)
[00000000000003F8 - 00000000000003FF] Communications Port (COM1)
[0000000000000400 - 0000000000000453] Motherboard resources
[0000000000000454 - 0000000000000457] Motherboard resources
[0000000000000458 - 000000000000047F] Motherboard resources
[00000000000004D0 - 00000000000004D1] Motherboard resources
[00000000000004D0 - 00000000000004D1] Programmable interrupt controller
[0000000000000500 - 000000000000057F] Motherboard resources
[0000000000000680 - 000000000000069F] Motherboard resources
[0000000000000A00 - 0000000000000A0F] Motherboard resources
[0000000000000A10 - 0000000000000A1F] Motherboard resources
[0000000000000A20 - 0000000000000A2F] Motherboard resources
[0000000000000D00 - 0000000000000FFFF] PCI bus
[0000000000001000 - 000000000000100F] Motherboard resources
[000000000000164E - 000000000000164F] Motherboard resources
[000000000000E000 - 000000000000EFFF] Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 2 - 1E12
[000000000000F000 - 000000000000F03F] Intel(R) HD Graphics 4000
[000000000000F040 - 000000000000F05F] Intel(R) 7 Series/C216 Chipset Family SMBus Host Controller - 1E22
[000000000000F060 - 000000000000F07F] Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E03
[000000000000F0A0 - 000000000000F0A3] Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E03
[000000000000F0B0 - 000000000000F0B7] Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E03
[000000000000F0C0 - 000000000000F0C3] Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E03
[000000000000F0D0 - 000000000000F0D7] Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E03
[000000000000F0E0 - 000000000000F0E7] Intel(R) Active Management Technology - SOL (COM11)
[000000000000FFFF - 000000000000FFFF] Motherboard resources
[000000000000FFFF - 000000000000FFFF] Motherboard resources

B.2 Memory Address Map

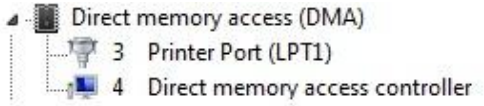
B.3 IRQ Mapping Chart




(ISA) 0x00000065 (101) Microsoft ACPI-Compliant System
(ISA) 0x00000066 (102) Microsoft ACPI-Compliant System
(ISA) 0x00000067 (103) Microsoft ACPI-Compliant System
(ISA) 0x00000068 (104) Microsoft ACPI-Compliant System
(ISA) 0x00000069 (105) Microsoft ACPI-Compliant System
(ISA) 0x0000006A (106) Microsoft ACPI-Compliant System
(ISA) 0x0000006B (107) Microsoft ACPI-Compliant System
(ISA) 0x0000006C (108) Microsoft ACPI-Compliant System
(ISA) 0x0000006D (109) Microsoft ACPI-Compliant System
(ISA) 0x0000006E (110) Microsoft ACPI-Compliant System
(ISA) 0x0000006F (111) Microsoft ACPI-Compliant System
(ISA) 0x00000070 (112) Microsoft ACPI-Compliant System
(ISA) 0x00000071 (113) Microsoft ACPI-Compliant System
(ISA) 0x00000072 (114) Microsoft ACPI-Compliant System
(ISA) 0x00000073 (115) Microsoft ACPI-Compliant System
(ISA) 0x00000074 (116) Microsoft ACPI-Compliant System
(ISA) 0x00000075 (117) Microsoft ACPI-Compliant System
(ISA) 0x00000076 (118) Microsoft ACPI-Compliant System
(ISA) 0x00000077 (119) Microsoft ACPI-Compliant System
(ISA) 0x00000078 (120) Microsoft ACPI-Compliant System
(ISA) 0x00000079 (121) Microsoft ACPI-Compliant System
(ISA) 0x0000007A (122) Microsoft ACPI-Compliant System
(ISA) 0x0000007B (123) Microsoft ACPI-Compliant System
(ISA) 0x0000007C (124) Microsoft ACPI-Compliant System
(ISA) 0x0000007D (125) Microsoft ACPI-Compliant System
(ISA) 0x0000007E (126) Microsoft ACPI-Compliant System
(ISA) 0x0000007F (127) Microsoft ACPI-Compliant System
(ISA) 0x00000080 (128) Microsoft ACPI-Compliant System
(ISA) 0x00000081 (129) Microsoft ACPI-Compliant System
(ISA) 0x00000082 (130) Microsoft ACPI-Compliant System
(ISA) 0x00000083 (131) Microsoft ACPI-Compliant System
(ISA) 0x00000084 (132) Microsoft ACPI-Compliant System
(ISA) 0x00000085 (133) Microsoft ACPI-Compliant System
(ISA) 0x00000086 (134) Microsoft ACPI-Compliant System
(ISA) 0x00000087 (135) Microsoft ACPI-Compliant System
(ISA) 0x00000088 (136) Microsoft ACPI-Compliant System
(ISA) 0x00000089 (137) Microsoft ACPI-Compliant System
(ISA) 0x0000008A (138) Microsoft ACPI-Compliant System
(ISA) 0x0000008B (139) Microsoft ACPI-Compliant System
(ISA) 0x0000008C (140) Microsoft ACPI-Compliant System
(ISA) 0x0000008D (141) Microsoft ACPI-Compliant System
(ISA) 0x0000008E (142) Microsoft ACPI-Compliant System
(ISA) 0x0000008F (143) Microsoft ACPI-Compliant System
(ISA) 0x00000090 (144) Microsoft ACPI-Compliant System
(ISA) 0x00000091 (145) Microsoft ACPI-Compliant System
(ISA) 0x00000092 (146) Microsoft ACPI-Compliant System
(ISA) 0x00000093 (147) Microsoft ACPI-Compliant System
(ISA) 0x00000094 (148) Microsoft ACPI-Compliant System
(ISA) 0x00000095 (149) Microsoft ACPI-Compliant System
(ISA) 0x00000096 (150) Microsoft ACPI-Compliant System

(ISA) 0x00000097 (151) Microsoft ACPI-Compliant System
(ISA) 0x00000098 (152) Microsoft ACPI-Compliant System
(ISA) 0x00000099 (153) Microsoft ACPI-Compliant System
(ISA) 0x0000009A (154) Microsoft ACPI-Compliant System
(ISA) 0x0000009B (155) Microsoft ACPI-Compliant System
(ISA) 0x0000009C (156) Microsoft ACPI-Compliant System
(ISA) 0x0000009D (157) Microsoft ACPI-Compliant System
(ISA) 0x0000009E (158) Microsoft ACPI-Compliant System
(ISA) 0x0000009F (159) Microsoft ACPI-Compliant System
(ISA) 0x000000A0 (160) Microsoft ACPI-Compliant System
(ISA) 0x000000A1 (161) Microsoft ACPI-Compliant System
(ISA) 0x000000A2 (162) Microsoft ACPI-Compliant System
(ISA) 0x000000A3 (163) Microsoft ACPI-Compliant System
(ISA) 0x000000A4 (164) Microsoft ACPI-Compliant System
(ISA) 0x000000A5 (165) Microsoft ACPI-Compliant System
(ISA) 0x000000A6 (166) Microsoft ACPI-Compliant System
(ISA) 0x000000A7 (167) Microsoft ACPI-Compliant System
(ISA) 0x000000A8 (168) Microsoft ACPI-Compliant System
(ISA) 0x000000A9 (169) Microsoft ACPI-Compliant System
(ISA) 0x000000AA (170) Microsoft ACPI-Compliant System
(ISA) 0x000000AB (171) Microsoft ACPI-Compliant System
(ISA) 0x000000AC (172) Microsoft ACPI-Compliant System
(ISA) 0x000000AD (173) Microsoft ACPI-Compliant System
(ISA) 0x000000AE (174) Microsoft ACPI-Compliant System
(ISA) 0x000000AF (175) Microsoft ACPI-Compliant System
(ISA) 0x000000B0 (176) Microsoft ACPI-Compliant System
(ISA) 0x000000B1 (177) Microsoft ACPI-Compliant System
(ISA) 0x000000B2 (178) Microsoft ACPI-Compliant System
(ISA) 0x000000B3 (179) Microsoft ACPI-Compliant System
(ISA) 0x000000B4 (180) Microsoft ACPI-Compliant System
(ISA) 0x000000B5 (181) Microsoft ACPI-Compliant System
(ISA) 0x000000B6 (182) Microsoft ACPI-Compliant System
(ISA) 0x000000B7 (183) Microsoft ACPI-Compliant System
(ISA) 0x000000B8 (184) Microsoft ACPI-Compliant System
(ISA) 0x000000B9 (185) Microsoft ACPI-Compliant System
(ISA) 0x000000BA (186) Microsoft ACPI-Compliant System
(ISA) 0x000000BB (187) Microsoft ACPI-Compliant System
(ISA) 0x000000BC (188) Microsoft ACPI-Compliant System
(ISA) 0x000000BD (189) Microsoft ACPI-Compliant System
(ISA) 0x000000BE (190) Microsoft ACPI-Compliant System
(PCI) 0x0000000A (10) 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) 7 Series/C216 Chipset Family PCI Express Root Port 5 - 1E18
(PCI) 0x00000010 (16) Intel(R) Management Engine Interface
(PCI) 0x00000010 (16) PCI standard PCI-to-PCI bridge
(PCI) 0x00000011 (17) Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 2 - 1E12
(PCI) 0x00000013 (19) Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E03
(PCI) 0x00000013 (19) Intel(R) Active Management Technology - SOL (COM11)
(PCI) 0x00000016 (22) High Definition Audio Controller
(PCI) 0x00000017 (23) Intel(R) 7 Series/C216 Chipset Family USB Enhanced Host Controller - 1E26
(PCI) 0xFFFFFFFB (-5) Intel(R) 82583V Gigabit Network Connection
(PCI) 0xFFFFFFFC (-4) Intel(R) 82579LM Gigabit Network Connection
(PCI) 0xFFFFFFFD (-3) Intel(R) USB 3.0 eXtensible Host Controller
(PCI) 0xFFFFFFFE (-2) Intel(R) HD Graphics 4000

B.4 DMA Channel Assignments



Appendix C

Mating Connectors

C.1 List of Mating Connectors and Cables

Connector Label	Function	Mating Connector		Available Cable	Cable P/N
		Vendor	Model no		
CN2	Audio Speaker Connector	JIH VEI	21B12564-04S10B-01G-6/3	N/A	N/A
CN3	Ethernet#2 Connector (Reserved)	PINREX	52A-90-10GB00	LAN Cable	1700100201
CN4	Ethernet#1 Connector (Reserved)	PINREX	52A-90-10GB00	LAN Cable	1700100201
CN8	LVDS#2 Inverter Connector	PINREX	721-81-05TW00	N/A	N/A
CN9	LVDS#1 Inverter Connector	PINREX	721-81-05TW00	N/A	N/A
CN10	Audio Connector	PINREX	52A-90-14GB00	Audio Cable	1700140510
CN12	CRT Connector	Astron	26-4101-208-1G-R	CRT Cable	1701160201
CN15	COM Port 2 Connector	PINREX	52A-90-10GB00	Serial Port	1701100206
CN16	COM Port 1 Connector	PINREX	52A-90-10GB00	Serial Port	1701100206
CN18	LVDS#2 Connector	E-call	0110-01-553-300	N/A	N/A
CN19	COM Port 4 Connector	PINREX	52A-90-10GB00	Serial Port	1701100206
CN20	COM Port 3 Connector	PINREX	52A-90-10GB00	Serial Port	1701100206
CN21	LVDS#1 Connector	E-call	0110-01-553-300	N/A	N/A
CN22	LPC Port	PINREX	710-73-12TW01	AAEON LPC Cable	1703120130

CN23	COM Port 6 Connector	PINREX	52A-90-10GB00	Serial Port	1701100206
CN24	COM Port 5 Connector	PINREX	52A-90-10GB00	Serial Port	1701100206
CN26	COM Port 8 Connector	PINREX	52A-90-10GB00	Serial Port	1701100206
CN27	COM Port 7 Connector	PINREX	52A-90-10GB00	Serial Port	1701100206
CN31	COM Port 10 Connector	PINREX	52A-90-10GB00	Serial Port	1701100206
CN32	COM Port 9 Connector	PINREX	52A-90-10GB00	Serial Port	1701100206
CN34	USB 3.0 Port #1, #2 Connector	PINREX	52X-40-20GV52	USB 3.0 Cable	1700190450
CN35	USB 3.0 Port #3, #4 Connector	PINREX	52X-40-20GV52	USB 3.0 Cable	1700190450
CN36	USB Port #5, #6 Connector	PINREX	52A-90-10GB00	USB Cable	1709100201
CN37	USB Port #7, #8 Connector	PINREX	52A-90-10GB00	USB Cable	1709100201
CN38	P/S2 KB/MS Connector	PINREX	725-81-06TW00	P/S2 KB/MS Cable	1700060152
CN39	IrDA Connector	JIH VEI	21B12564-05S10B-01G-6/3	N/A	N/A
CN40	SATA Port1	PINREX	770-83-07SV29	SATA Cable	1709070500
CN41	SATA Port0	PINREX	770-83-07SV29	SATA Cable	1709070500
CN42	External RTC Connector	PINREX	712-71-02TW01	Battery Cable	1750119001M
CN43	+5Vout Connector	PINREX	721-81-02TW00	2 Pins For HDD Power	1702150155
CN44	LPT Connector	PINREX	52A-90-26GB00	Parallel Port	1701260200

				Cable	
CN45	System Fan Connector	CATCH	1190-700-03S	N/A	N/A
CN46	DIO #1 Connector	PINREX	52A-90-10GB00	N/A	N/A
CN47	DIO #2 Connector	PINREX	52A-90-10GB00	N/A	N/A
CN48	Touch Screen Connector	PINREX	710-73-09TW01	N/A	N/A
CN49	CPU Fan Connector	CATCH	1190-700-042	N/A	N/A

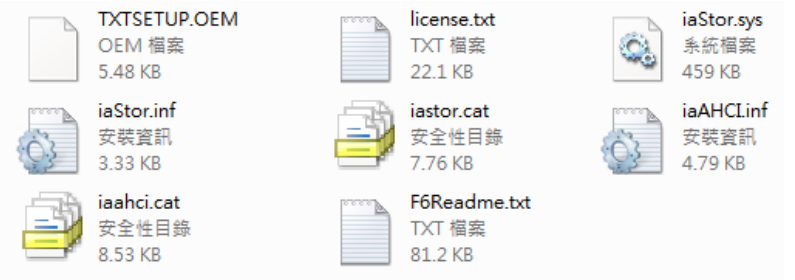
Appendix D

RAID & AHCI Settings

D.1 Setting RAID

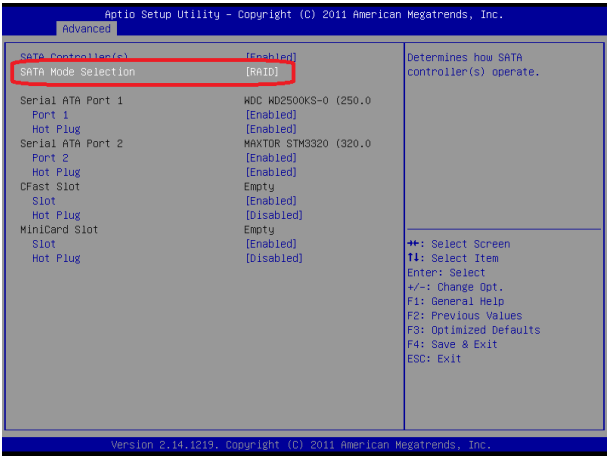
OS installation to SETUP RAID Mode

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

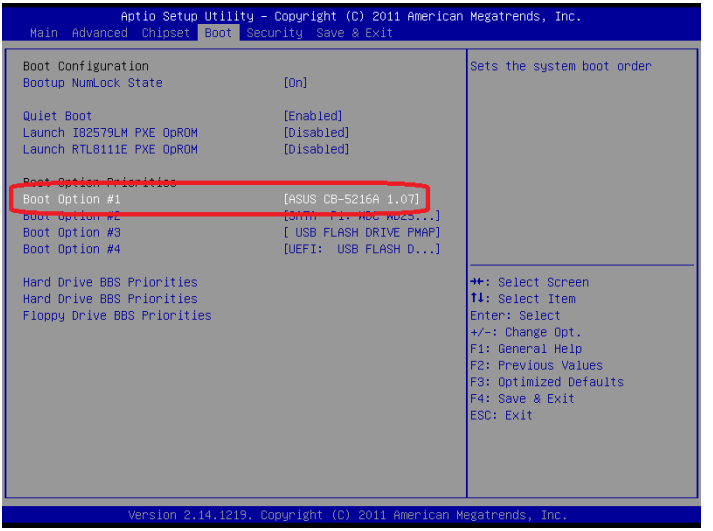


Step 2: Connect the USB Floppy drive to the board and insert the diskette from previous step.

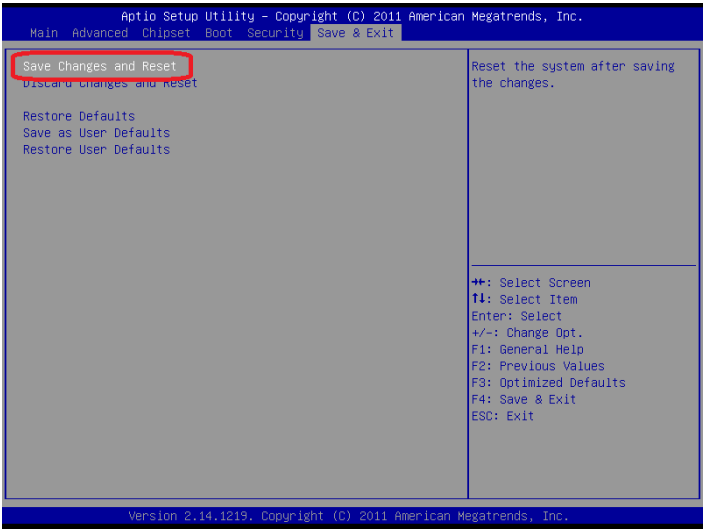
Step 3: Configure SATA Controller to RAID mode in **BIOS SETUP Menu: Advanced -> SATA Configuration -> SATA Mode -> RAID Mode**



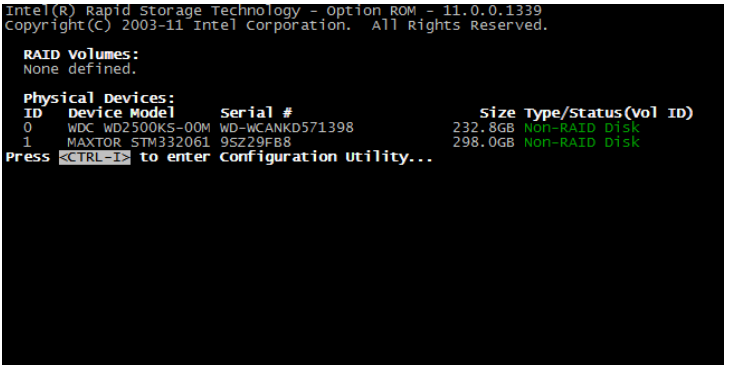
Step 4: Configure DVD/CD-ROM drive as the first boot device.



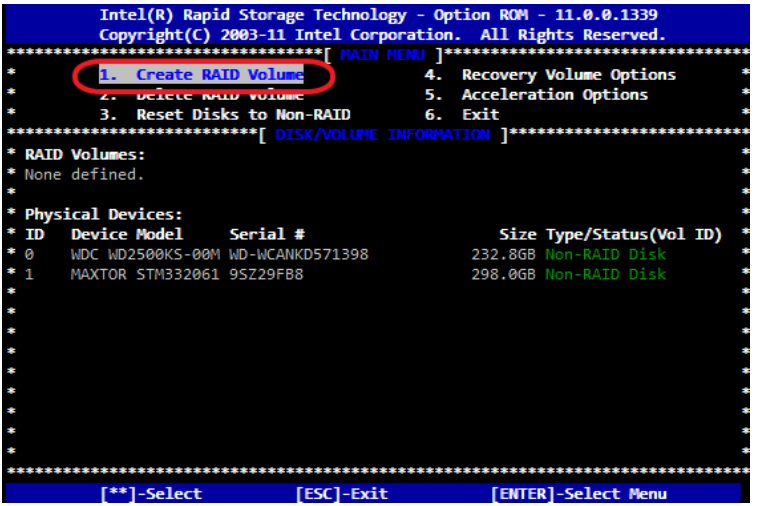
Step 5: Save changes and exit BIOS SETUP



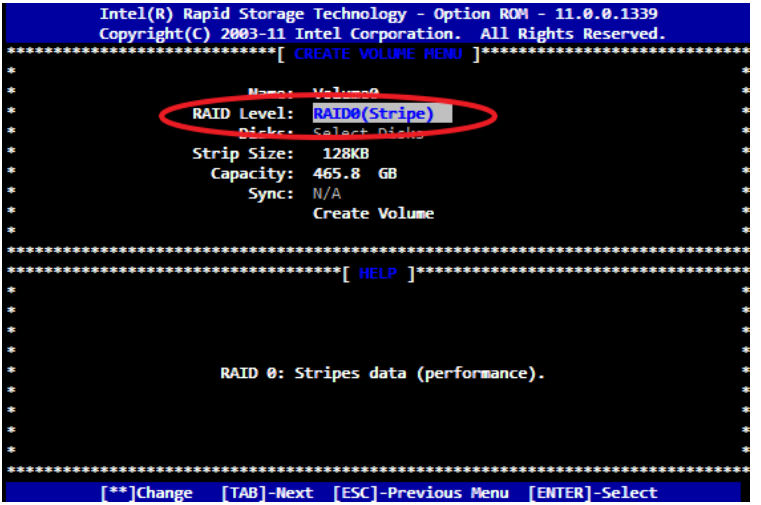
Step 6: Press CTRL-I to enter RAID Configuration Utility



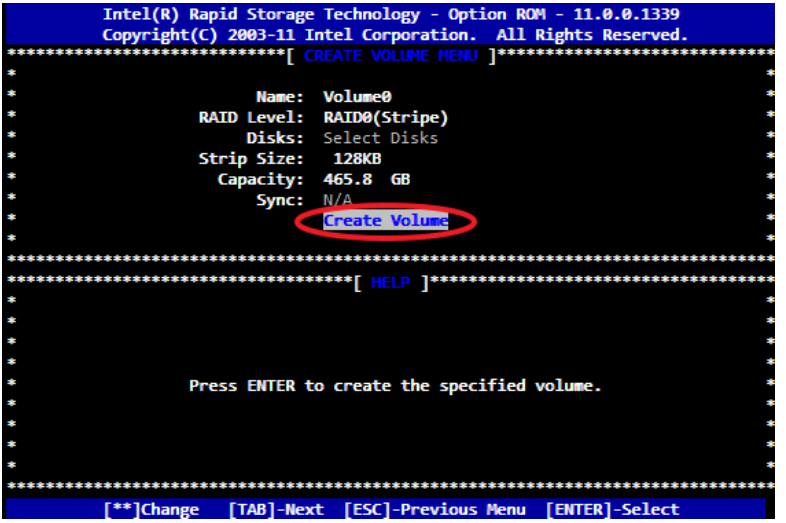
Step 7: Choose "1. Create RAID Volume"

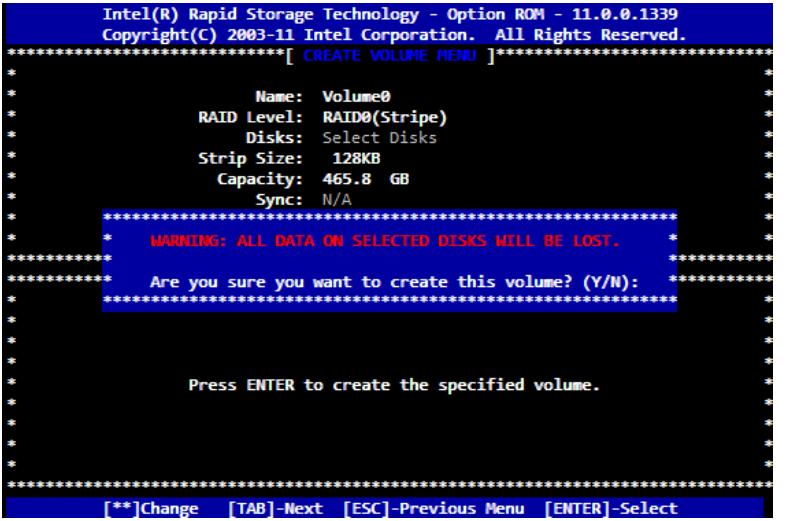


Step 8 – Configure RAID parameters for the system



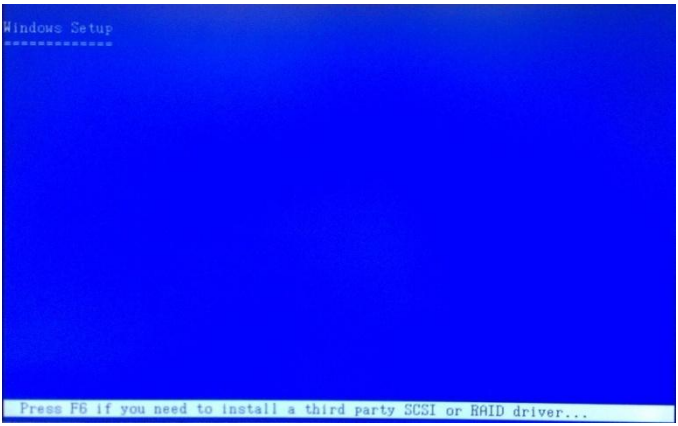
Step 9 – Choose **"Create Volume"** and confirmed in next warning message.



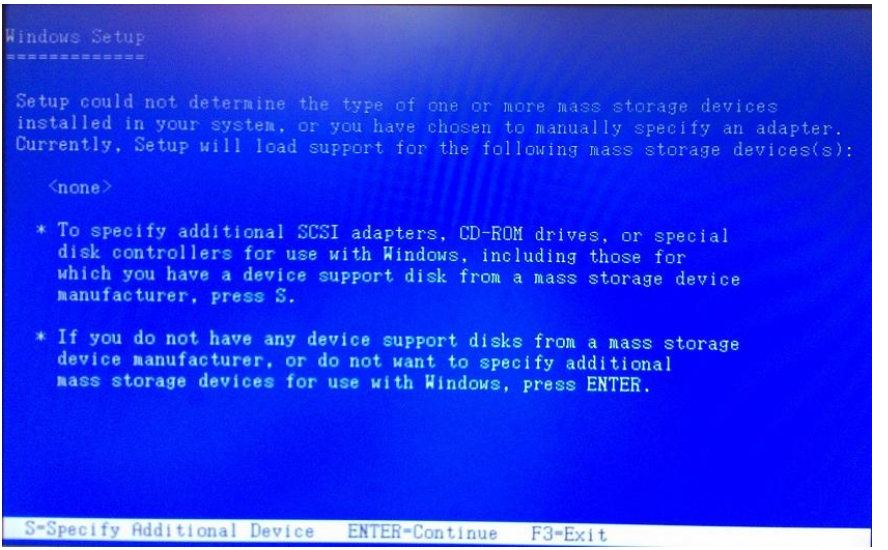


Step 10 – Exit RAID Configuration Utility and Reboot to DVD/CD-ROM device to install OS

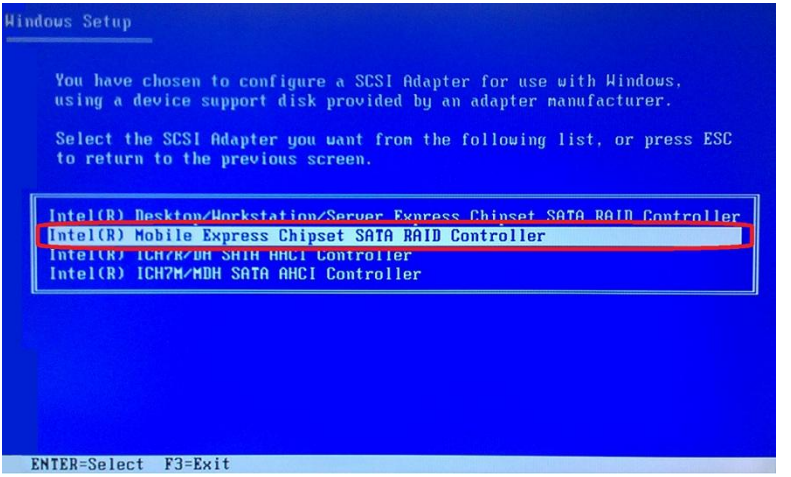
Step 11 – Press **"F6"** to install RAID driver



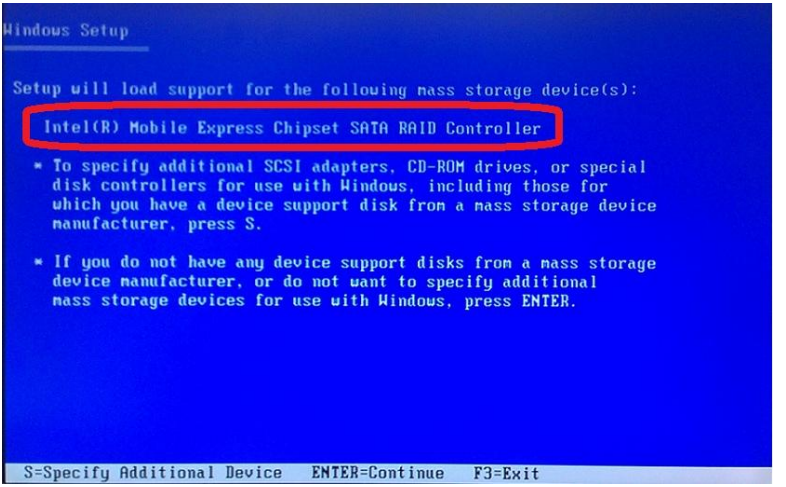
Step 12 – Press **"S"** to install RAID driver



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



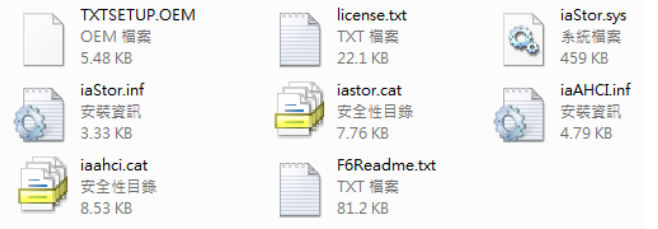
Step 14 – It will show the model you selected and then press **"ENTER"**. Windows Setup will continue to install OS.



D.2 Setting AHCI

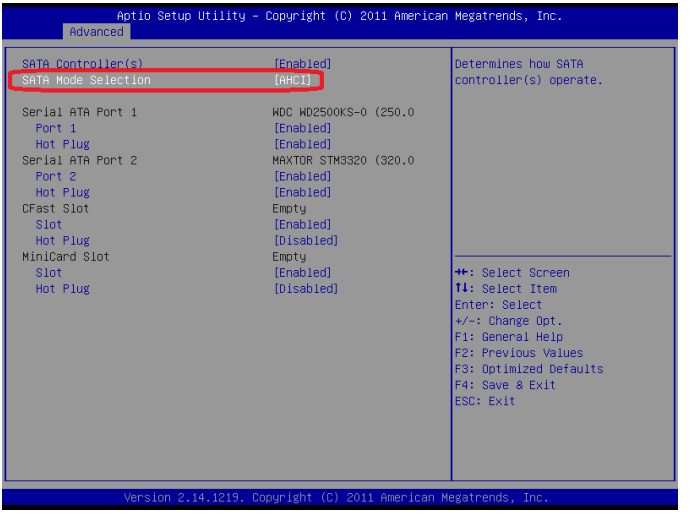
OS installation to SETUP AHCI Mode

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

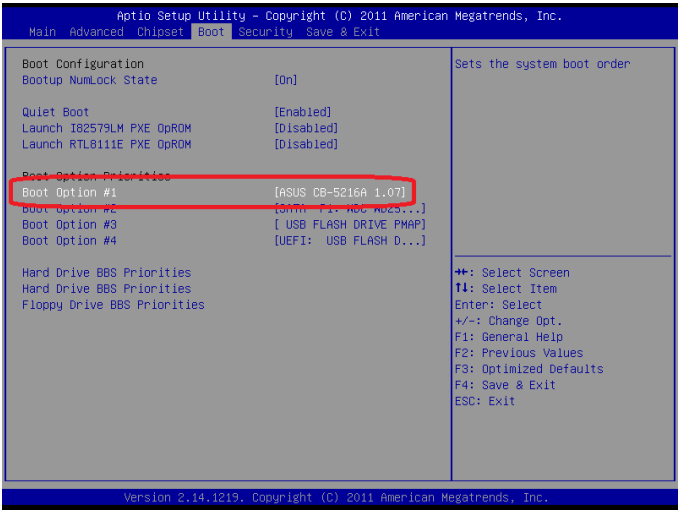


Step 2: Connect the USB Floppy drive to the board and insert the diskette from previous step.

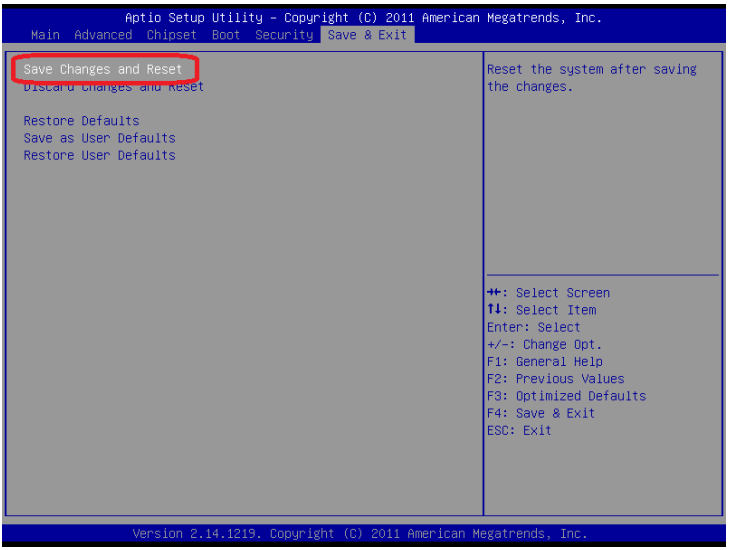
Step 3: Configure SATA Controller to RAID mode in **BIOS SETUP Menu: Advanced -> SATA Configuration -> SATA Mode -> AHCI Mode**



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

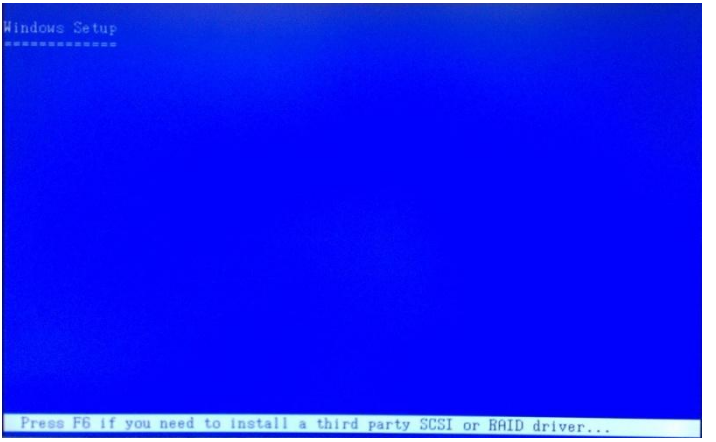


Step 5: Save changes and exit BIOS SETUP

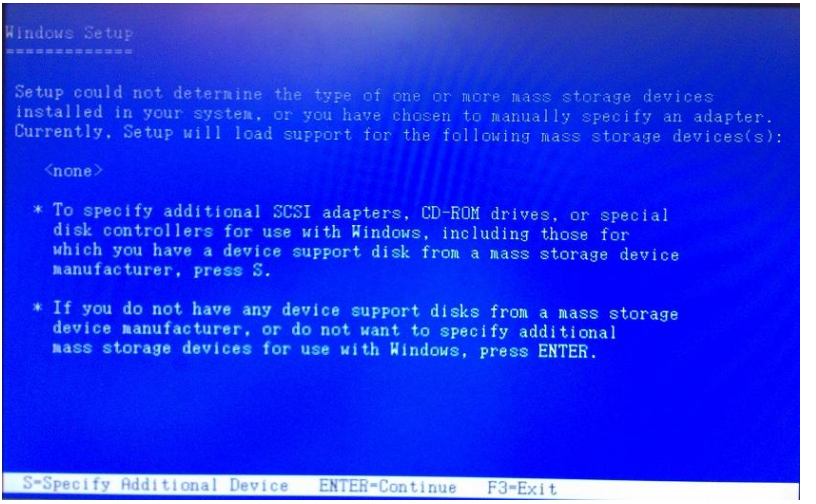


Step 6 – Boot to DVD/CD-ROM device to install OS

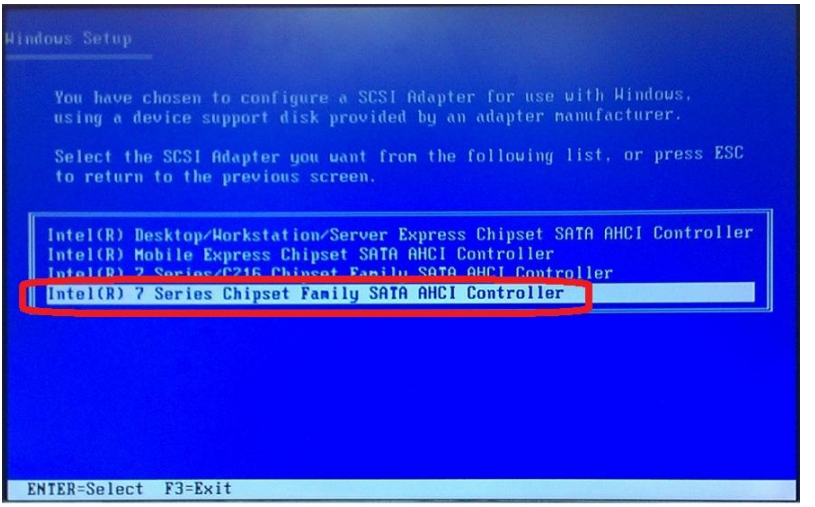
Step 7 – Press **"F6"** to install AHCI driver



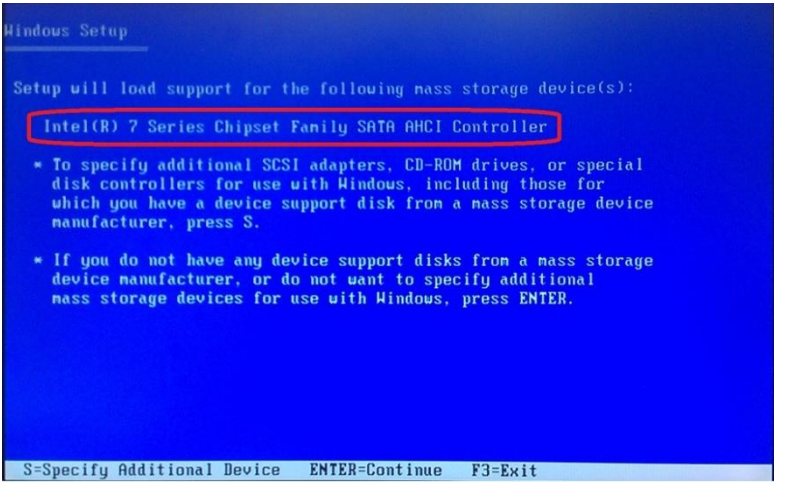
Step 8 – Press **"S"** to install AHCI driver



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
DVI Ports	CN1	+5V	+5V/0.5A
LVDS Port 2 Inverter / Backlight Connector	CN8	BKL_PWR	+5V/2A or +12V/2A
LVDS Port 1 Inverter / Backlight Connector	CN9	BKL_PWR	+5V/2A or +12V/2A
VGA Ports	CN11/CN12	+5V	+5V/1A (reserved)
mSATA	CN13	+3.3V	+3.3V/1A
COM Port 2	CN15	+5V/+12V	+5V/0.5A or +12V/0.5A
LVDS Port 2	CN18	LCD_PWR	+3.3V/1A or +5V/1A
LVDS Port 1	CN21	LCD_PWR	+3.3V/1A or +5V/1A
LPC Port	CN22	+3.3V	+3.3V/0.5A
COM Port6	CN23	+5V/+12V	+5V/0.5A or +12V/0.5A
PCI	CN25	+3.3V +5V +12V -12V	+3.3V/7.6A +5V/5A +12V/0.5A -12V/0.1A
PCI-Express〔x16〕	CN28	+3.3V +12V +3.3VSB	+3.3V/3A +12V/5.5A +3.3V/0.375A
USB Ports 1 and 2	CN34	+5VSB	+5V/1A (per channel)
USB Ports 3 and 4	CN35	+5VSB	
USB 2.0 Ports 5 and 6	CN36	+5VSB	+5V/0.5A (per channel)
USB 2.0 Ports 7 and 8	CN37	+5VSB	
PS/2 Keyboard/Mouse	CN38	+5VSB	+5V/1A

Combo Port			
IrDA Connector	CN39	+5V	+5V/0.5A
+5V Output for SATA HDD	CN43	+5V	+5V/1A
System FAN	CN45	FAN_POWER	+12V/0.5A
Digital IO Port1	CN46	DIO0~DIO7 +5V	+5V/(Open drain) +5V/1A
Digital IO Port2	CN47	DIO0~DIO7 +5V	+5V/(Open drain) +5V/1A
CPU FAN	CN49	FAN_POWER	+12V/0.5A
Mini-Card Slot	CN51	+3.3VSB +1.5V	+3.3V/1.1A +1.5V/0.375A
CFast Slot	CN52	+3.3V	+3.3V/0.5A

Appendix F

Digital I/O Ports

F.1 Digital I/O Ports

The F75111 provides one serial access interface, I2C Bus, to read/write internal registers.

The address of Serial Bus is 0x6E (0110_1110)

The related register for configuring DIO is list as follows:

Configuration and Control Register-Index 01h

Power-on default [7:0]=0000_1000b

Bit	Name	R/W	PWR	Description
7	INIT	R/W	VSB3V	Software reset for all registers including Test Mode registers. Users use only.
6	Reserved	R/W	VSB3V	
5	EN_WDT10	R/W	VSB3V	Enable Reset Out. If set to 1, enable WDTOUT10# output. Default is disable.
4	Reserved	R/W	VSB3V	
3	Reserved	R/W	VSB3V	
2	Reserved	R/W	VSB3V	
1	SMART_POWR_MAGEMENT	R/W	VSB3V	Set this bit to 1 will enable auto power down mode, when all function are idle then 20ms the chip will auto power down, it will wakeup when GPIO state change or read write register
0	SOFT_POWR_DOWN	R/W	VSB3V	Set this bit to 1 will power down all of the analog block and stop internal clock, write 0 to clear this bit or when GPIO state change will auto clear this bit to 0.

GPIO2x Output Control Register-Index 20h

Power-on default [7:0]=0000_0000b

Bit	Name	R/W	PWR	Description
7	GP27_OCTRL	R/W	VSB3V	GPIO 27 output control. Set to 1 for output function. Set to 0 for input function (default).
6	GP26_OCTRL	R/W	VSB3V	GPIO 26 output control. Set to 1 for output function. Set to 0 for input function (default).
5	GP25_OCTRL	R/W	VSB3V	GPIO 25 output control. Set to 1 for output function. Set to 0 for input function (default).
4	GP24_OCTRL	R/W	VSB3V	GPIO 24 output control. Set to 1 for output function. Set to 0 for input function (default).
3	GP23_OCTRL	R/W	VSB3V	GPIO 23 output control. Set to 1 for output function. Set to 0 for input function (default).
2	GP22_OCTRL	R/W	VSB3V	GPIO 22 output control. Set to 1 for output function. Set to 0 for input function (default).
1	GP21_OCTRL	R/W	VSB3V	GPIO 21 output control. Set to 1 for output function. Set to 0 for input function (default).
0	GP20_OCTRL	R/W	VSB3V	GPIO 20 output control. Set to 1 for output function. Set to 0 for input function (default).

GPIO2x Output Data Register-Index 21h

Power-on default [7:0]=0000_0000b

Bit	Name	R/W	PWR	Description
7	GP27_ODATA	R/W	VSB3V	GPIO 27 output data.
6	GP26_ODATA	R/W	VSB3V	GPIO 26 output data.
5	GP25_ODATA	R/W	VSB3V	GPIO 25 output data.
4	GP24_ODATA	R/W	VSB3V	GPIO 24 output data.
3	GP23_ODATA	R/W	VSB3V	GPIO 23 output data.

2	GP22_ODATA	R/W	VSB3V	GPIO 22 output data.
1	GP21_ODATA	R/W	VSB3V	GPIO 21 output data.
0	GP20_ODATA	R/W	VSB3V	GPIO 20 output data.

GPIO2x Input Status Register-Index 22h

Power-on default [7:0]=xxxx_xxxxb

Bit	Name	R/W	PWR	Description
7	GP27_PSTS	RO	VSB3V	Read the GPIO27 data on the pin.
6	GP26_PSTS	RO	VSB3V	Read the GPIO26 data on the pin.
5	GP25_PSTS	RO	VSB3V	Read the GPIO25 data on the pin.
4	GP24_PSTS	RO	VSB3V	Read the GPIO24 data on the pin.
3	GP23_PSTS	RO	VSB3V	Read the GPIO23 data on the pin.
2	GP22_PSTS	RO	VSB3V	Read the GPIO22 data on the pin.
1	GP21_PSTS	RO	VSB3V	Read the GPIO21 data on the pin.
0	GP20_PSTS	RO	VSB3V	Read the GPIO20 data on the pin.

The following is a sample code for 8 input

```
.MODEL          SMALL
.CODE

begin:
                mov   cl,01h
                mov   al,80h
                call    CT_I2CWriteByte
                call    Delay5ms

            mov       al,00h
```

```
                mov   cl,20h
                call    CT_I2CWriteByte

                mov   cl,22h
                call    CT_I2CReadByte

;Input : CL - register index
;           CH - device ID
;Output : AL - Value read

Ct_I2CReadByte    Proc   Near
                mov   ch,06eh
                mov       dx, 0f040h + 00h      ; Host Control Register
               mov       al, 0ffh                    ; Clear previous commands
               out       dx, al

                call    Delay5ms

                mov       dx, 0f040h + 04h      ; Transmit Slave Address Register
                inc     ch                    ; Set the slave address and
                mov   al, ch                  ; prepare for a READ command
                out       dx, al

                mov       dx, 0f040h + 03h      ; Host Command Register
                mov       al, cl                      ; offset to read
                out       dx, al

                mov   dx, 0f040h + 05h
```

```
                xor         al, al                  ; Clear old data
                out         dx, al

                  mov         dx, 0f040h + 02h      ; Host Control Reegister
                  mov         al, 48h   ; Start a byte access
                  out         dx, al

                  call    CT_Chk_SMBus_Ready
                  mov         dx, 0f040h + 05h
                  in          al, dx

                  ret
Ct_I2CReadByte    Endp

;Input : CL - register index
;          CH - device ID
;          AL - Value to write
;Output: none

Ct_I2CWriteByte    Proc   Near
                  mov   ch,06eh
                  xchg  ah, al
                  mov         dx, 0f040h + 00h      ; Host Control Register
                mov         al, 0ffh                ; Clear previous commands
                out         dx, al

                  call    Delay5ms
```

```
                mov     dx, 0f040h + 04h      ; Transmit Slave Address Register
                mov   al, ch                  ; Set the slave address and
                out     dx, al                ; prepare for a WRITE command

                mov     dx, 0f040h + 03h      ; Host Command Register
                mov     al, cl                ; offset to write
                out     dx, al

                mov   dx, 0f040h + 05h
                mov   al, ah
              out     dx, al

                mov     dx, 0f040h + 00h      ; Host Control Register
                mov     al, 48h   ; Start a byte access
                out     dx, al

                call    CT_Chk_SMBus_Ready
                ret
Ct_I2CWriteByte    Endp

; Wait until the busy bit clears, indicating that the SMBUS
; activity has concluded.

CT_Chk_SMBus_Ready    Proc   Near
                mov   dx,0f040h+ 0;status port
                clc
                mov   cx,0800h
Chk_I2c_OK:
```

```
                in      al,dx           ;get status
                call    Delay5ms

                out     dx,al           ;clear status
                call    Delay5ms

                test    al, 02H                 ;termination of command ?
                jnz     short Clear_final

                and     al, NOT 40H ;mask INUSE bit
                or      al,al           ;status OK ?
                jz      short Clear_final

                test    al,04h          ;device error
                jnz     short SMBus_Err

                loop    short Chk_I2c_OK
        ;SMbus error due to timeout
SMBus_Err:

                stc
                ret
Clear_final:
                clc
                ret
CT_Chk_SMBus_Ready      Endp

END     begin
```