USER'S MANUAL

PMB-881LF

Intel® Xeon® E3 / 2nd Gen. Core™ i3 / Pentium® CPU
ATX Motherboard
With VGA/Sound/2LAN

PMB-881LF M3

PMB-881LF Intel® Xeon® E3 / 2nd Gen. Core ™i3 / Pentium®
ATX Motherboard
With VGA/Sound/2LAN

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This operation manual is meant to assist users in installing and setting up the system. The information contained in this document is subject to change without prior any notice.

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CE NOTICE

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any change or modifications to the equipment not expressly approve by the party responsible for compliance could void your authority to operate such equipment.

CAUTION

Danger of explosion if 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.

Installation only by a trained electrician or only by an electrically trained person who knows all English Installation and Device Specifications which are to be applied.

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CHAPTER

1

INTRODUCTION

This chapter gives you the information for PMB-881LF. It also outlines the System specification.

Section includes:

- About This Manual
- System Specifications
- Safety Precautions

Experienced users can skip to chapter 2 on page 2-1 for Quick Start.

1-1. ABOUT THIS MANUAL

Thank you for purchasing our PMB-881LF Intel® Xeon® E3 / 2nd Gen. Core™ i3 / Pentium® CPU ATX Motherboard with VGA/Sound/2LAN, which is fully PC / AT compatible. PMB-881LF provides faster processing speed, greater expandability and can handle more task than before. This manual is designed to assist you how to install and set up the system. It contains four chapters. The user can apply this manual for configuration according to the following chapters:

Chapter 1 Introduction

This chapter introduces you to the background of this manual, and the specifications for this system. The final page of this chapter will indicate how to avoid damaging this board.

Chapter 2 Hardware Configuration

This chapter outlines the component locations and their functions. In the end of this chapter, you will learn how to set jumper and how to configure this card to meet your own needs.

Chapter 3 Software Utilities

This chapter contains helpful information for proper installations of the VGA utility, LAN utility, and Sound utility.

Chapter 4 AMI BIOS Setup

This chapter indicates you how to set up the BIOS configurations.

Appendix A Expansion Bus

This Appendix introduces you the PCI / Mini-PCIe expansion bus.

Appendix B Technical Summary

This section gives you the information about the Technical maps, Watchdog-timer configuration, and Flash BIOS Update.

1-2. SYSTEM SPECIFICATION

- **CPU**
  Intel Xeon® E3 / 2nd Gen. Core™ i3 / Pentium® CPU

- **CHIPSET**
  Intel® C206

- **MEMORY**
  4 x 240pins DDR3 DIMM socket
  Dual channel DDR3-1333/1066MHz, supports ECC, non-ECC

- **BIOS:**
  AMI BIOS (UEFI), with VGA BIOS

- **REAL TIME CLOCK:**
  Build in PCH

- **BUS SUPPORT:**
  4 x PCI, 1 x MiniPCIe, 2 x PCIe (4X), 1 x PCIe (16X)

- **DISPLAY:**
  Build-in processor
  Supports VGA, 2 x Display port (Protech Display Port definition)
  *Discrete graphic card is necessary for display if the chosen CPU doesn't have integrated graphics support.

- **SATA INTERFACE:**
  6 x S-ATA connector from PCH
  SATA1~2 support SATAIII (6.0Gb/s), SATA3~6 support SATAII (3.0Gb/s)
  Supports Raid 0/1/5/10

- **SERIAL PORT:**
  4 ports, COM1/3/4 for RS-232, COM2 for RS-232/422/485
  COM3/4 support output +5V or +12V, and use Jumper settings.

- **USB CONNECTOR:**
  12 ports, support USB 2.0
  4 ports on rear panel, 8 ports with box-header on board

- **LAN ADAPTER:**
  Dual ports, supports 10/100/1000Mbps
  LAN1: Intel 82579LM 1000BaseT PHY Ethernet
  LAN2: Intel 82583V 1000BaseT Ethernet
  Supports Wake-on-LAN

- **SOUND:**
  High Definition Audio
  Realtek ALC888S
  Supports Line-in/Line-out/MIC x 1

- **HARDWARE MONITORING FUNCTION:**
  Voltage, CPU Temperature and Cooling fan speed (CPU, System)

- **IRDA PORT:**
  1 x IrDA port, supports v1.0 SIR protocol

- **SPEAKER:**
  Internal buzzer

- **TPM FUNCTION:**
  1 x 20pin header on board, supports TPM1.2

- **PARALLEL PORT:**
  1 port, Bi-dircetion, SPP / EPP / ECP (D-SUB on edge)

- **DIGITAL I/O:**
  8in/8out (API)

- **LED INDICATOR:**
  1 x HDD LED, 1 x power LED

- **KEYBOARD/MOUSE:**
  1 x PS/2 port (KB/MS), combined with mini DIN connector on rear panel

- **WATCHDOG:**
  1~255sec.

- **POWER SUPPLY:**
  24pin ATX power supply

- **DMA CONTROLLER:**
  2 x 82C37

- **DMA CHANNELS:**
  7

- **INTERRUPT CONTROLLERS:**
  2 x 82C59

- **INTERRUPT LEVELS:**
  15

- **TEMPERATURE:**
  Operation temperature 0°~60°C
  Storage temperature -40°~85°C

- **HUMIDITY:**
  Operation humidity 0~95%
  Storage humidity 20~95%

- **BOARD DIMENSIONS:**
  305mm x 244mm

- **BOARD NET WEIGHT:**
  740gram

1-3. SAFETY PRECAUTIONS

Follow the messages below to avoid your systems from damage:

1. Keep your system away from static electricity on all occasions.

2. Prevent electric shock. Don't touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.

3. Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

CHAPTER

2

HARDWARE CONFIGURATION

** QUICK START **

Helpful information describes the jumper & connector settings, and component locations.

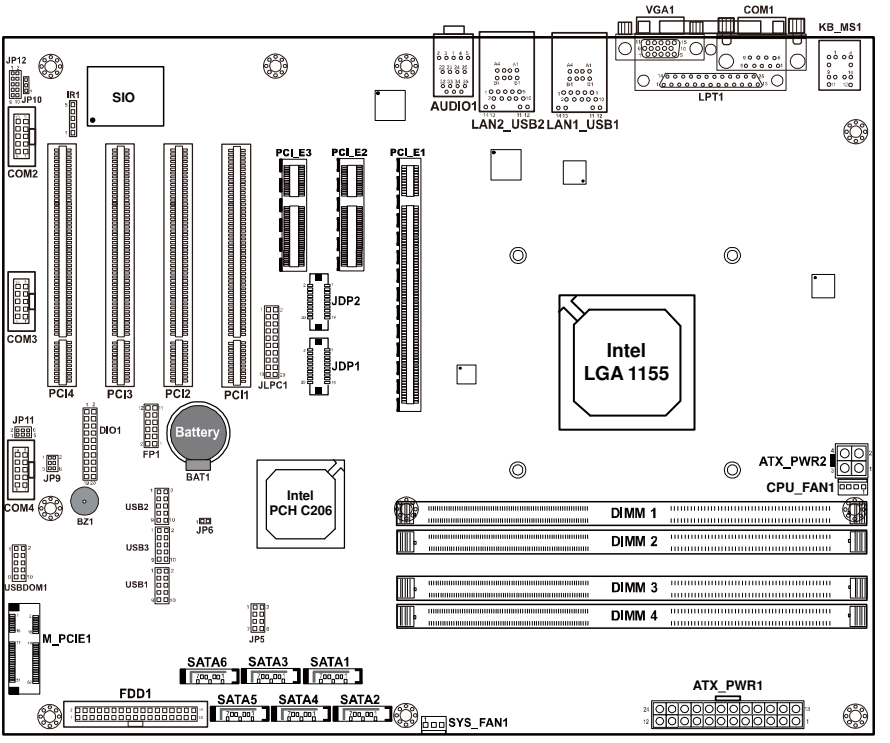
Section includes:

- Jumper & Connector Quick Reference Table
- Component Locations
- Configuration and Jumper settings
- Connector's Pin Assignments

2-1. JUMPER & CONNECTOR QUICK REFERENCE TABLE

COM Port Connector	COM1, COM2 COM3, COM4
COM3 Port RI/Voltage Selection	JP11
COM4 Port RI/Voltage Selection	JP9
RS232/422/485 (COM2) Selection	JP12
COM2 Auto Detect Selection	JP10
Keyboard/Mouse Connector	KB_MS1
Reset Connector	FP1 (5, 7)
Hard Disk Drive LED Connector	FP1 (1, 3)
ATX Power Button	FP1 (9, 11)
External Speaker Connector	FP1 (6, 8, 10, 12)
PLED Connector	FP1 (2, 4)
Clear CMOS Data Selection	JP6
CPU Fan Connector	CPU_FAN1
System Fan Connector	SYS_FAN1
TPM Connector	JLPC1
VGA Connector	VGA1
Serial ATA Connector	SATA1, SATA2, SATA3, SATA4, SATA5, SATA6
Printer Connector	LPT1
Universal Serial Bus Connector	USB1, USB2, USB3, USBDOM1
IrDA Connector	IR1
USB&LAN Connector	LAN1_USB1, LAN2_USB2
Display Port Connector	JDP1, JDP2
Digital Input/ Output Connector	DIO1
ATX Power Connector	ATX_PWR1
Sound Connector	AUDIO1

2-2. COMPONENT LOCATIONS



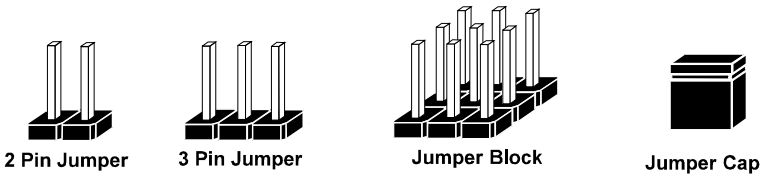
PMB-881LF Connector, Jumper and Component locations

2-3. HOW TO SET THE JUMPERS

You can configure your board by setting jumpers. Jumper is consists of two or three metal pins with a plastic base mounted on the card, and by using a small plastic "cap", Also known as the jumper cap (with a metal contact inside), you are able to connect the pins. So you can set-up your hardware configuration by "open" or "close" pins.

The jumper can be combined into sets that called jumper blocks. When the jumpers are all in the block, you have to put them together to set up the hardware configuration. The figure below shows how this looks like.

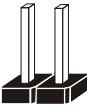
JUMPERS AND CAPS



If a jumper has three pins (for examples, labelled PIN1, PIN2, and PIN3), You can connect PIN1 & PIN2 to create one setting by shorting. You can either connect PIN2 & PIN3 to create another setting. The same jumper diagrams are applied all through this manual. The figure below shows what the manual diagrams look and what they represent.

JUMPER DIAGRAMS

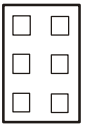
Jumper Cap looks like this



2 pin Jumper looks like this

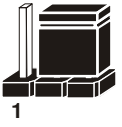
3 pin Jumper looks like this

Jumper Block looks like this

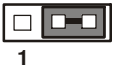


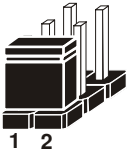
JUMPER SETTINGS

2 pin Jumper close(enabled) Looks like this

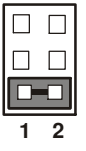


3 pin Jumper 2-3 pin close(enabled) Looks like this



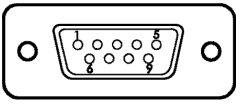


Jumper Block 1-2 pin close(enabled) Looks like this



2-4. COM PORT CONNECTOR

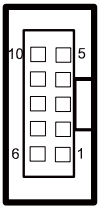
COM1: COM1 Connector
COM1 is fixed as RS-232.
The pin assignment is as follows:



COM1

PIN	ASSIGNMENT
1	COM1_DCD#
2	COM1_RX
3	COM1_TX
4	COM1_DTR#
5	GND
6	COM1_DSR#
7	COM1_RTS#
8	COM1_CTS#
9	COM1_RI#

COM2: COM2 Connector
The COM2 is selectable as RS-232/422/485.
The pin assignment is as follows:

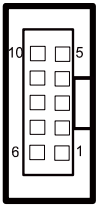


COM2

PIN	ASSIGNMENT		
	RS-232	RS-422	RS-485
1	COM2_DCD#	TX-	TX-
2	COM2_RX	TX+	TX+
3	COM2_TX	RX+	RX+
4	COM2_DTR#	RX-	RX-
5	GND	GND	GND
6	COM2_DSR#	RTS-	GND
7	COM2_RTS#	RTS+	GND
8	COM2_CTS#	CTS+	GND
9	COM2_RI#	CTS-	GND
10	NC	NC	NC

COM3: COM3 Connector
COM3 is fixed as RS-232.
The pin assignment is as follows:

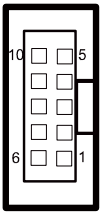
PIN	ASSIGNMENT
1	COM3_DCD#
2	COM3_RX
3	COM3_TX
4	COM3_DTR#
5	GND
6	COM3_DSR#
7	COM3_RTS#
8	COM3_CTS#
9	COM3_RI#
10	NC



COM3

COM4: COM4 Connector
COM4 is fixed as RS-232.
The pin assignment is as follows:

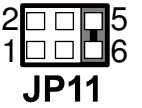
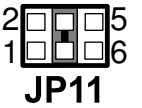
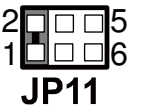
PIN	ASSIGNMENT
1	COM4_DCD#
2	COM4_RX
3	COM4_TX
4	COM4_DTR#
5	GND
6	COM4_DSR#
7	COM4_RTS#
8	COM4_CTS#
9	COM4_RI#
10	NC



COM4

2-5. COM3 RI & VOLTAGE SELECTION

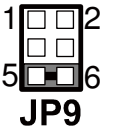
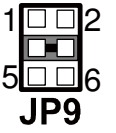
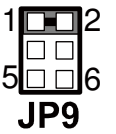
JP11: COM3 RI & Voltage Selection
The selections are as follows:

SELECTION	JUMPER SETTINGS	JUMPER ILLUSTRATION
5V	5-6	
12V	3-4	
RI	1-2	

***Manufacturing Default -- RI.

2-6. COM4 RI & VOLTAGE SELECTION

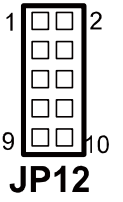
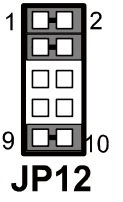
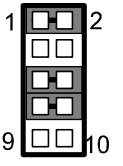
JP9: COM4 RI & Voltage Selection
The selections are as follows:

SELECTION	JUMPER SETTINGS	JUMPER ILLUSTRATION
5V	5-6	
12V	3-4	
RI	1-2	

***Manufacturing Default -- RI.

2-7. RS232/422/485 (COM2) SELECTION

JP12: RS-232/422/485 (COM2) Selection
This connector is used to set the COM2 function.
The jumper settings are as follows:

COM 2 Function	Jumper Settings (pin closed)	Jumper Illustrations
RS-232	All Open	 JP12
RS-422	1-2, 3-4, 9-10	 JP12
RS-485	1-2, 5-6, 7-8	 JP12

*** Manufacturing default -- RS-232.

2-8. COM2 AUTO DETECT SELECTION

JP10: COM2 Auto Detect selection
The selections are as follows:

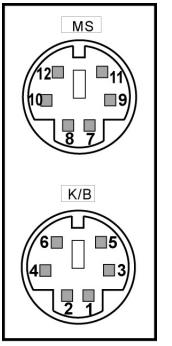
SELECTION	JUMPER SETTINGS	JUMPER ILLUSTRATION
NORMAL	1-2	JP10
AUTO GATING	2-3	JP10

***Manufacturing Default – Normal.

2-9. KEYBOARD AND PS/2 MOUSE CONNECTOR

KB_MS1: Keyboard and PS/2 Mouse Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	KBDATA
2	NC
3	GND
4	VCC5
5	KBCLK
6	NC
7	MSDATA
8	NC
9	GND
10	VCC5
11	MSCLK
12	NC

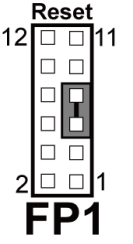


KB_MS1

2-10. RESET CONNECTOR

FP1 (5, 7): Reset Connector.
The pin assignment is as follows:

PIN	ASSIGNMENT
5	GND
7	RST_BTN

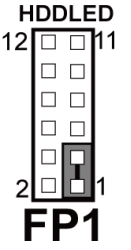


FP1

2-11. HARD DISK DRIVE LED CONNECTOR

FP1 (1, 3): Hard Disk Drive LED Connector
The pin assignment is as follows:

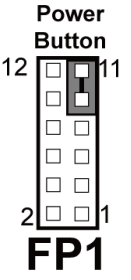
PIN	ASSIGNMENT
1	HD_LED+
3	HD_LED-



2-12. ATX POWER BUTTON

FP1 (9, 11): ATX Power Button
The pin assignment is as follows:

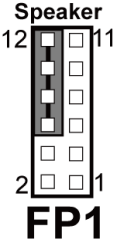
PIN	ASSIGNMENT
9	PWRBTNSW
11	GND



2-13. EXTERNAL SPEAKER CONNECTOR

FP1 (6, 8, 10, 12): External Speaker Connector
The pin assignment is as follows:

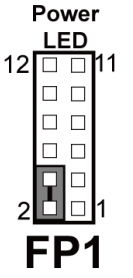
PIN	ASSIGNMENT
6	SPK_VCC
8	SPEAKER SIGNAL
10	SPEAKER SIGNAL
12	SPEAKER SIGNAL



2-14. PLED CONNECTOR

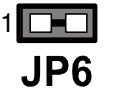
FP1 (2, 4) : PLED Connector
The pin assignment is as follows:

PIN	ASSIGNMENT
2	PW_LED+
4	PW_LED-



2-15. CLEAR CMOS DATA SELECTION

JP6: Clear CMOS Data Selection
The selections are as follows:

FUNCTION	JUMPER SETTING (pin closed)	JUMPER ILLUSTRATION
Normal	Open	
Clear CMOS	Close	

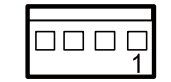
*** Manufacturing Default -- Normal.

Note: To clear CMOS data, user must power-off the computer and set the jumper to “Clear CMOS” as illustrated above. After five to six seconds, set the jumper back to “Normal” and power-on the computer.

2-16. CPU FAN CONNECTOR

CPU_FAN1: CPU Fan connector
The pin assignment is as follows:

PIN	ASSIGNMENT
1	GND
2	VCC12
3	FAN_TAC1
4	FAN_CTL1

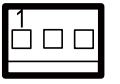


CPU_FAN1

2-17. SYSTEM FAN CONNECTOR

SYS_FAN1: System Fan connector
The pin assignment is as follows:

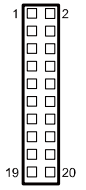
PIN	ASSIGNMENT
1	GND
2	VCC12
3	LPC1_FANIO2



SYS_FAN1

2-18. TPM CONNECTOR

JLPC1: TPM connector
The pin assignment is as follows:

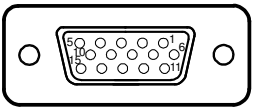


JLPC1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	CLK	2	GND
3	FRAME	4	NC
5	RESET	6	VCC5
7	LAD3	8	LAD2
9	VCC3	10	LAD1
11	LAD0	12	GND
13	SMBCLK	14	SMBDATA
15	3VSB	16	SERIRQ
17	GND	18	CLK RUN
19	SUS_TAT	20	DREQ0

2-19. VGA CONNECTOR

VGA1: VGA Connector



VGA1

PIN	ASSIGNMENT
1	CRTRED
2	CRTGREEN
3	CRTBLUE
4	NC
5	GND
6	CRT_ALWAYS_ON
7	GND
8	GND
9	CRTVCC_L
10	GND
11	NC
12	CRTDATA
13	HSYNC
14	VSYNC
15	CRTCLK

2-20. SERIAL ATA CONNECTOR

SATA1~SATA6: The PMB-881LF possesses Six Serial ATA Connector, SATA1~SATA6. The pin assignments are as follows:

SATA1:

PIN	ASSIGNMENT
1	GND
2	SATA_TXPC0
3	SATA_TXNC0
4	GND
5	SATA_RXNC0
6	SATA_RXPC0
7	GND

SATA2:

PIN	ASSIGNMENT
1	GND
2	SATA_TXPC1
3	SATA_TXNC1
4	GND
5	SATA_RXNC1
6	SATA_RXPC1
7	GND

SATA3:

PIN	ASSIGNMENT
1	GND
2	SATA_TXPC2
3	SATA_TXNC2
4	GND
5	SATA_RXNC2
6	SATA_RXPC2
7	GND

SATA4:

PIN	ASSIGNMENT
1	GND
2	SATA_TXPC3
3	SATA_TXNC3
4	GND
5	SATA_RXNC3
6	SATA_RXPC3
7	GND

SATA5:

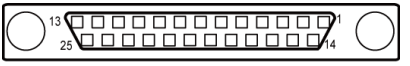
PIN	ASSIGNMENT
1	GND
2	SATA_TXPC4
3	SATA_TXNC4
4	GND
5	SATA_RXNC4
6	SATA_RXPC4
7	GND

SATA6:

PIN	ASSIGNMENT
1	GND
2	SATA_TXPC5
3	SATA_TXNC5
4	GND
5	SATA_RXNC5
6	SATA_RXPC5
7	GND

2-21. PRINTER CONNECTOR

LPT1: Printer Connector
As to link the Printer to the card, you need a cable to connect both DB25 connector and parallel port.
The pin assignments are as follow:



LPT1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	STB	14	AFD#
2	PDR0	15	ERR#
3	PDR1	16	INIT#
4	PDR2	17	SLIN#
5	PDR3	18	GND
6	PDR4	19	GND
7	PDR5	20	GND
8	PDR6	21	GND
9	PDR7	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT	26	NC

2-22. UNIVERSAL SERIAL BUS CONNECTOR

USB1: Universal Serial Bus Connector
The pin assignments are as follows:

USB1

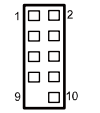
PIN	ASSIGNMENT
1	USB_67_VCC5
2	USB_67_VCC5
3	USBN6
4	USBN7
5	USBP6
6	USBP7
7	GND
8	GND
9	NC
10	GND

USB2: Universal Serial Bus Connector
The pin assignments are as follows:

USB2

PIN	ASSIGNMENT
1	USB_89_VCC5
2	USB_89_VCC5
3	USBN8
4	USBN9
5	USBP8
6	USBP9
7	GND
8	GND
9	NC
10	GND

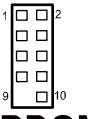
USB3: Universal Serial Bus Connector
The pin assignments are as follows:



USB3

PIN	ASSIGNMENT
1	USB_1011_VCC5
2	USB_1011_VCC5
3	USBN10
4	USBN10
5	USBP11
6	USBP11
7	GND
8	GND
9	NC
10	GND

USBDOM1: Universal Serial Bus Connector
The pin assignments are as follows:



USBDOM1

PIN	ASSIGNMENT
1	USB_45_VCC5
2	USB_45_VCC5
3	USBN4
4	USBN5
5	USBP4
6	USBP5
7	GND
8	GND
9	NC
10	GND

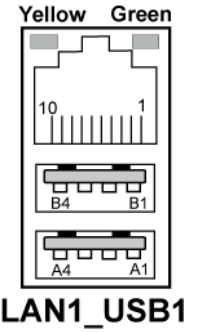
2-23. IRDA CONNECTOR

IR1: IrDA (Infrared) Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	VCC5
2	NC
3	IRRX
4	GND
5	IRTX

2-24. USB & LAN CONNECTOR

LAN1_USB1: USB & LAN Connector
The pin assignments are as follows:



LAN1_USB1

LAN Signal:

PIN	ASSIGNMENT
1	VCC_LAN1
2	LAN1_MDI_0P
3	LAN1_MDI_0N
4	LAN1_MDI_1P
5	LAN1_MDI_1N
6	LAN1_MDI_2P
7	LAN1_MDI_2N
8	LAN1_MDI_3P
9	LAN1_MDI_3N
10	COM_LAN1

LAN LED Indicator:
Left Side LED

RED Color On	Giga LAN Speed Indicator
Off	No LAN switch/ hub connected.

Right Side LED

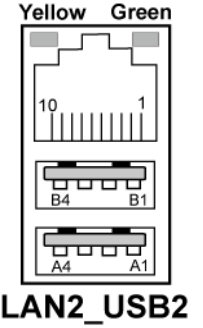
Orange Color Blinking	LAN Message Active
Off	No LAN Message Active

USB Signal:

PIN	ASSIGNMENT
A1	VCCUSB1
A2	USBP0N
A3	USBP0P
A4	GND
B1	VCCUSB0
B2	USBP1N
B3	USBP1P
B4	GND

LAN2_USB2: USB & LAN Connector

The pin assignments are as follows：



LAN2_USB2

LAN Signal:

PIN	ASSIGNMENT
1	VCC_LAN2
2	LAN2_MDI_0P
3	LAN2_MDI_0N
4	LAN2_MDI_1P
5	LAN2_MDI_1N
6	LAN2_MDI_2P
7	LAN2_MDI_2N
8	LAN2_MDI_3P
9	LAN2_MDI_3N
10	COM_LAN2

LAN LED Indicator:

Left Side LED

RED Color On	Giga LAN Speed Indicator
Off	No LAN switch/ hub connected.

Right Side LED

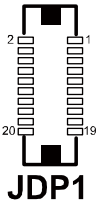
Orange Color Blinking	LAN Message Active
Off	No LAN Message Active

USB Signal:

PIN	ASSIGNMENT
A1	VCCUSB3
A2	USBP2N
A3	USBP2P
A4	GND
B1	VCCUSB2
B2	USBP3N
B3	USBP3P
B4	GND

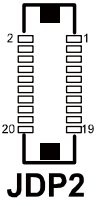
2-25. DISPLAY PORT CONNECTOR

JDP1: Display Port Connector
The pin assignments are as follows:



PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	DP_C_DATA0+	2	GND
3	DP_C_DATA0-	4	DP_C_DATA1+
5	GND	6	DP_C_DATA1-
7	DP_C_DATA2+	8	GND
9	DP_C_DATA2-	10	DP_C_DATA3+
11	GND	12	DP_C_DATA3-
13	DP_C_AUX_ENJ	14	GND
15	DP_C_AUX+	16	DP_C_HPD
17	DP_C_AUX-	18	DP_VCC3_3
19	DP_VCC5	20	DP_VCC3_3

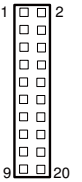
JDP2: Display Port Connector
The pin assignments are as follows:



PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	DP_D_DATA0+	2	GND
3	DP_D_DATA0-	4	DP_D_DATA1+
5	GND	6	DP_D_DATA1-
7	DP_D_DATA2+	8	GND
9	DP_D_DATA2-	10	DP_D_DATA3+
11	GND	12	DP_D_DATA3-
13	DP_D_AUX_ENJ	14	GND
15	DP_D_AUX+	16	DP_D_HPD
17	DP_D_AUX-	18	DP_VCC3_3
19	DP_VCC5	20	DP_VCC3_3

2-26. DIGITAL INPUT/OUTPUT CONNECTOR

DIO1: Digital I/O Connector
The pin assignments are as follows:

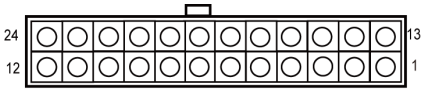


DIO1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC5	2	VCC12
3	DIN0	4	DOUT0
5	DIN1	6	DOUT1
7	DIN2	8	DOUT2
9	DIN3	10	DOUT3
11	DIN4	12	DOUT4
13	DIN5	14	DOUT5
15	DIN6	16	DOUT6
17	DIN7	18	DOUT7
19	GND	20	GND

2-27. ATX POWER CONNECTOR

ATX_PWR1: ATX Power Connector
The pin assignments are as follows:



ATX_PWR1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PSON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	POK	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

2-28. SOUND CONNECTOR

AUDIO1: Sound Connector, including Line-In, Line-Out & Mic. Also can support only MIC connector. The pin assignments are as follows:

Line-In

PIN	ASSIGNMENT
32	HD_LINE-L
33	GND
34	GND
35	HD_LINE-R

Line-Out

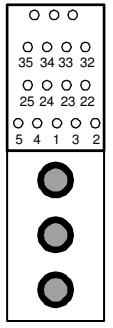
PIN	ASSIGNMENT
22	HD_OUT-L
23	NC
24	NC
25	HD_OUT-R

Mic-In

PIN	ASSIGNMENT
1	GND
2	HD_MIC1
3	HD_MIC_GND
4	NC
5	HD_MIC_VCC

SPDIF (Optional, the same port with Line-In)

PIN	ASSIGNMENT
42	GND
43	VCC_AUD
44	SPDIF OUT



AUDIO1

SOFTWARE UTILITIES

CHAPTER

3

This chapter comprises the detailed information of VGA driver, LAN driver, and Sound driver.

Section includes:

- Intel® Chipset Software Installation Utility
- VGA Driver Utility
- LAN Driver Utility
- SOUND Driver Utility
- ME Driver Utility

3-1. INTRODUCTION

Enclosed with our PMB-881LF package, you will find a CD ROM disk containing all types of drivers we have. As a PMB-881LF user, you will only need the some of files contained in the CD ROM disk, please take note of the following chart:

File name (Assume that CD ROM drive is D:)	Purpose
D:\Driver\FLASH	For BIOS update utility
D:\Driver\UTILITY	Intel® Chipset Device Software Installation Utility
D:\Driver\VGA	Intel® HD Graphics Family for VGA driver installation
D:\Driver\LAN	Intel® 82579LM and 82583V for LAN Driver installation
D:\Driver\SOUND	Realtek® ALC888S for Sound driver installation
D:\Driver\ME	For Intel Management Engine Interface
D:\Driver\Intel® Rapid Storage	Intel Matrix Storage Manager Utility
D:\Driver\F6Floppy	Intel F6 Floppy Utility

User should remember to install the Utility right after the OS fully installed.

3-2. INTEL® CHIPSET SOFTWARE INSTALLATION UTILITY

3-2-1. Introduction

The Intel® Chipset Device Software installs Windows* INF files to the target system. These files outline to the operating system how to configure the Intel® chipset components in order to ensure that the following features function properly:

- Core PCI and ISAPNP Services
- PCIe Support
- IDE/ATA33/ATA66/ATA100 Storage Support
- SATA Storage Support
- USB Support
- Identification of Intel(R) Chipset Components in the Device Manager

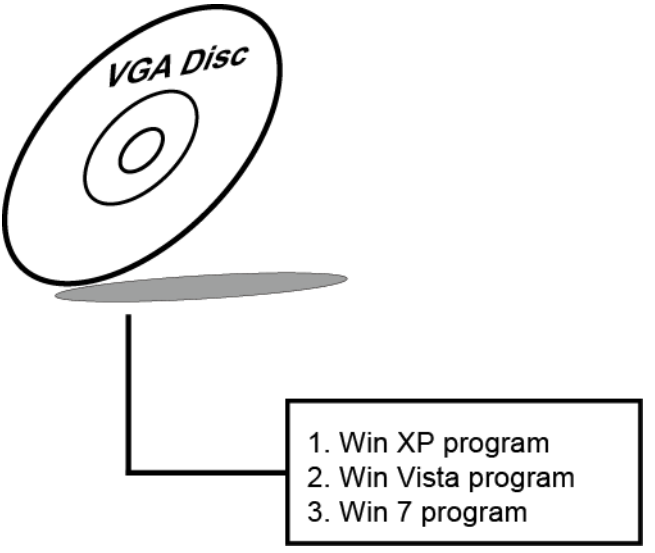
3-2-2. Installation of Utility for Windows XP/Vista/7/Server 2003

The Utility Pack is to be installed only for Windows XP, Windows Vista, Windows 7, and Windows Server 2003 program.
It should be installed right after the OS installation, kindly follow the following steps:

1. Place insert the Utility Disk into Floppy Disk Drive A/B or CD ROM drive.
2. Under Windows system, go to the directory where Utility Disc is located. e.g. :\DRIVER\UTILITY\infinst_autol.exe
3. Click infinst_autol.exe file for utility installation.
4. Follow the instructions on the screen to complete the installation.
5. Once installation is completed, shut down the system and restart in order for the changes to take effect.

3-3. VGA DRIVER UTILITY

The VGA interface is embedded with our PMB-881LF system to support CRT display. The following illustration briefly shows you the content of VGA driver in D:\Driver\VGA.



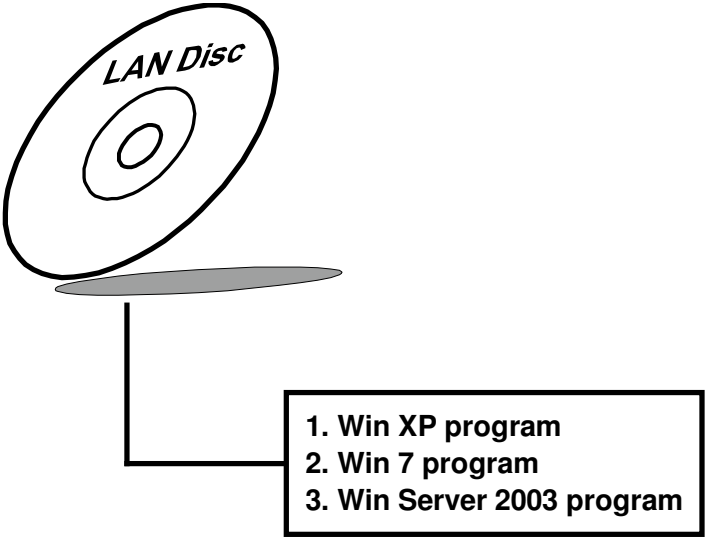
3-3-1. Installation of VGA Driver

1. Start the computer (Win XP/Vista/7).
2. Insert the Utility Disk into the CD ROM drive or drive A/B.
3. Open the VGA folder, for your system to choose an appropriate folder, and double-click "exe" file to install. e.g. d:\DRIVER\VGA\Your system\ ***.exe
   (If D is not your CD-ROM drive, substitute D with the correct drive letter.)
4. Follow the Wizard's on-screen instructions to complete the installation.

3-4. LAN DRIVER UTILITY

3-4-1. Introduction

The PMB-881LF is enhanced with LAN function that can support various network adapters. The content of the LAN driver is found as follows:

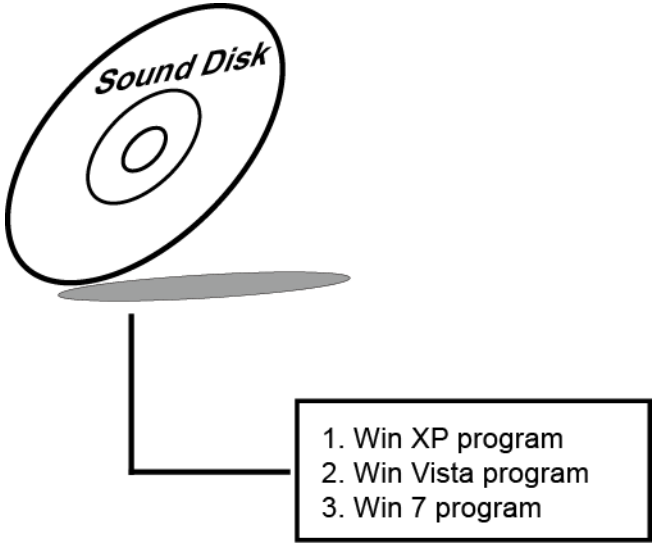


For more details on Installation procedure, please refer to Readme.txt file found on LAN DRIVER UTILITY.

3-5. SOUND DRIVER UTILITY

3-5-1. Introduction

The Audio chip enhanced in this system is fully compatible with Windows XP, Windows Vista and Windows 7. Below, you will find the content of the Sound driver:



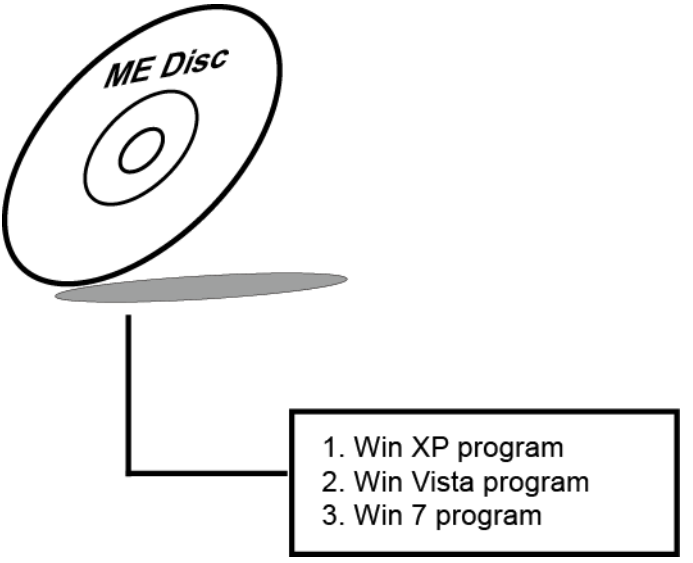
3-5-2. Installation Procedure for Windows XP/Vista/7

1. Open the SOUND folder. For your system to choose an appropriate folder, and Run the setup.exe program to start the installation.
   e.g. :\DRIVER\SOUND\Your system\setup.exe
   (If D is not your CD-ROM drive, substitute D with the correct drive letter.)
2. Click on [Next] to continue the procedure. If the Windows popup "Windows can't verify the publisher of this driver software" message, press "Install this driver software anyway" to continue the installation.
3. Finally, select to restart the system and press [Finish] to complete the installation.

3-6. INTEL ME DRIVER UTILITY

3-6-1. Introduction

The Intel ME components include the Intel Management and Security Status Application. The content of the ME driver is found as follows:



For more details on Installation procedure, please refer to Readme.txt file found on ME DRIVER UTILITY.

CHAPTER

4

AMI BIOS SETUP

This chapter shows how to set up the AMI BIOS.

Section includes:

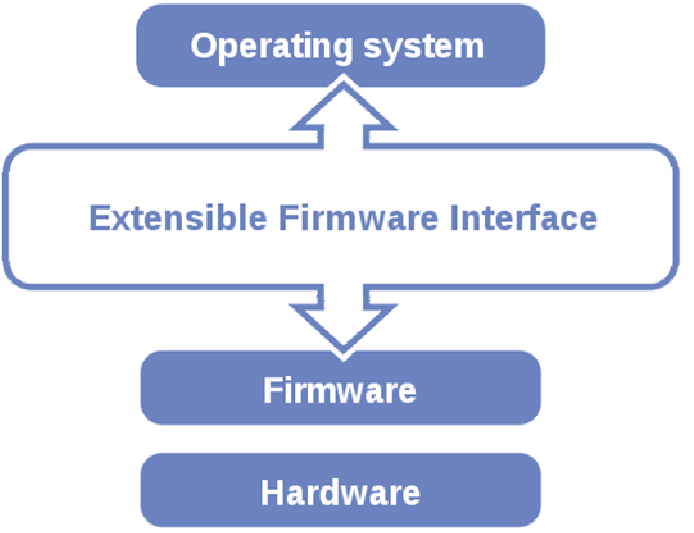
- Introduction
- Entering Setup
- Main
- Advanced
- Chipset
- Boot
- Security
- Save & Exit

4-1. INTRODUCTION

The board PMB-881LF uses an AMI Aptio BIOS that is stored in the Serial Peripheral Interface Flash Memory (SPI Flash) and can be updated. The SPI Flash contains the BIOS Setup program, Power-on Self-Test (POST), the PCI auto-configuration utility, LAN EEPROM information, and Plug and Play support.

Aptio is AMI's BIOS firmware based on the UEFI (Unified Extensible Firmware Interface) Specifications and the Intel Platform Innovation Framework for EFI. The UEFI specification defines an interface between an operating system and platform firmware. The interface consists of data tables that contain platform-related information, boot service calls, and runtime service calls that are available to the operating system and its loader. These provide standard environment for booting an operating system and running pre-boot applications.

Following illustration shows Extensible Firmware Interface's position in the software stack.



EFI BIOS provides an user interface allow users the ability to modify hardware configuration, e.g. change system date and time, enable or disable a system component, decide bootable device priorities, setup personal password, etc., which is convenient for modifications and customization of the computer system and allows technicians another method for finding solutions if hardware has any problems.

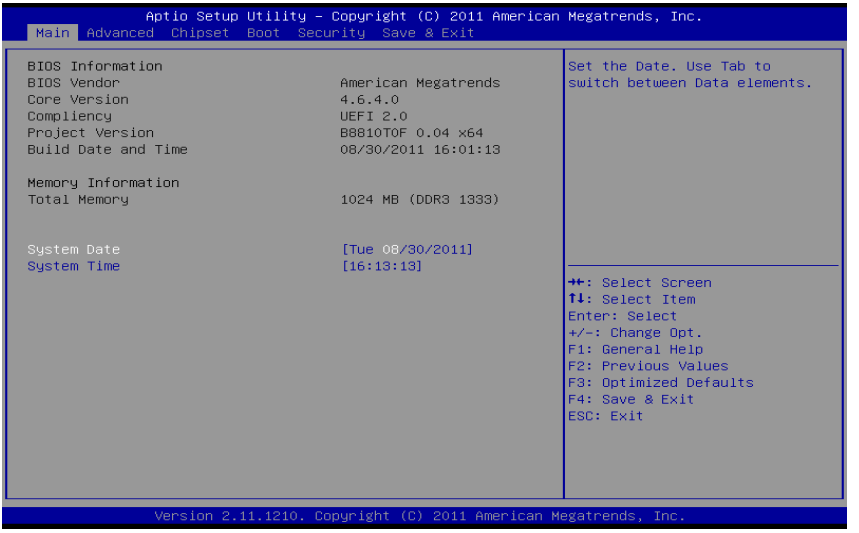
The BIOS Setup program can be used to view and change the BIOS settings for the computer. The BIOS Setup program is accessed by pressing the <Del> or <F2> key after the POST memory test begins and before the operating system boot begins. The settings are shown below.

4-2. ENTERING SETUP

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines and the following message will appear on the lower screen:

POST screen

As long as this message is present on the screen you may press the <Del> key (the one that shares the decimal point at the bottom of the number keypad) to access the Setup program. In a moment, the main menu of the Aptio Setup Utility will appear on the screen:



Setup program initial screen

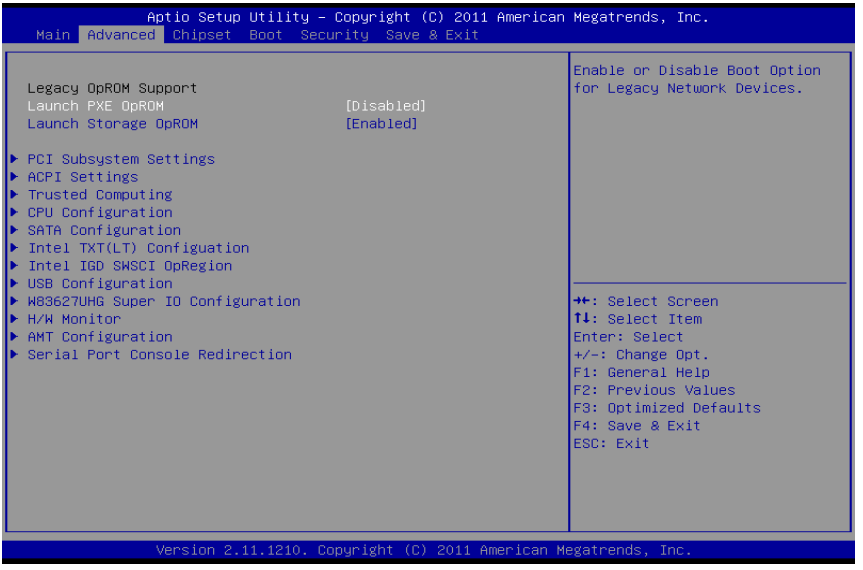
You may move the cursor by up/down keys to highlight the individual menu items. As you highlight each item, a brief description of the highlighted selection will appear at the bottom of the screen.

4-3. Main

Main Screen

BIOS Setting	Options	Description/Purpose
BIOS Vendor	No changeable options	Displays the BIOS vendor.
Core Version	No changeable options	Displays the current BIOS core version.
Project Version	No changeable options	Displays the version of the BIOS currently installed on the platform.
Build Date	No changeable options	Displays the date of current BIOS version.
Total Memory	No changeable options	Displays the current memory installed amount and type.
System Date	month, day, year	Specifies the current date.
System Time	hour, minute, second	Specifies the current time.

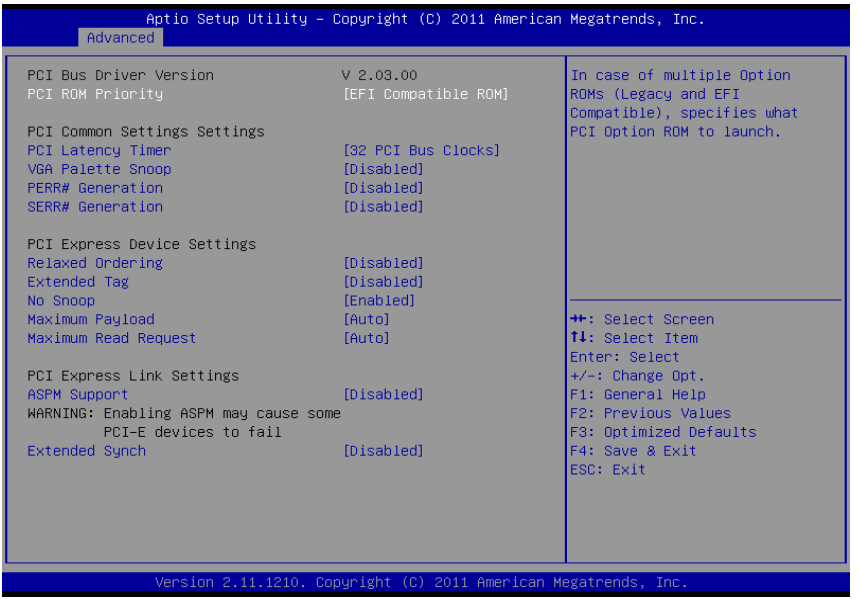
4-4. Advanced



Advanced Screen

BIOS Setting	Options	Description/Purpose
Launch PXE OpROM	-Disabled -Enabled	Enables or disables the boot option for legacy network devices.
Launch Storage OpROM	-Disabled -Enabled	Enables or disables the boot option for legacy mass storage devices with option ROM.

4-4.1. Advanced – PCI Subsystems Settings

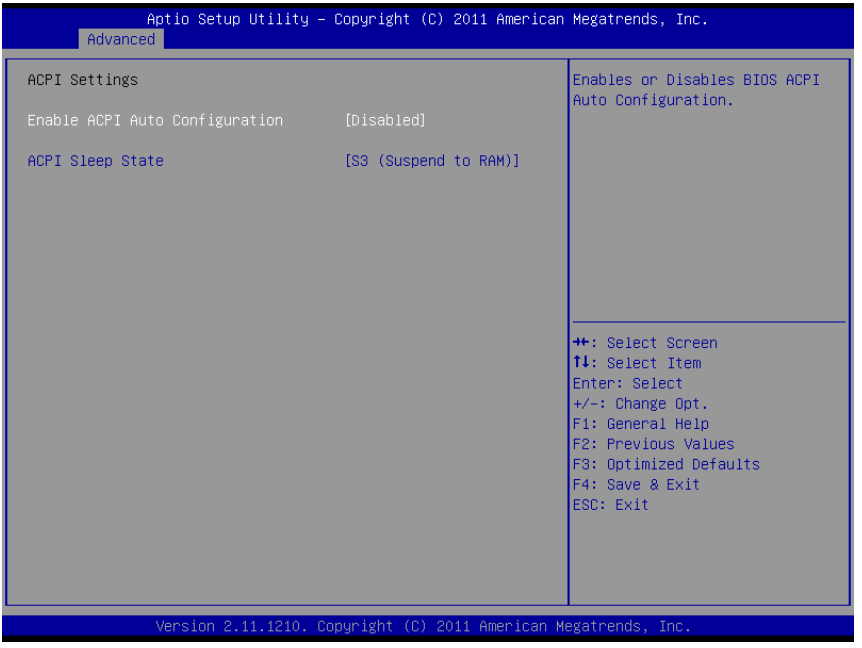


BIOS Setting	Options	Description/Purpose
PCI Bus Driver Version	No changeable options	Displays the current PCI bus driver version.
PCI ROM Priority	-Legacy ROM -EFI Compatible ROM	Specifies which PCI ROM is used if there are multiple ROM available.
PCI Common Settings	No changeable options	
PCI Latency Timer	- 32 PCI Bus Clocks - 64 PCI Bus Clocks - 96 PCI Bus Clocks -128 PCI Bus Clocks -160 PCI Bus Clocks -192 PCI Bus Clocks -224 PCI Bus Clocks -248 PCI Bus Clocks	Sets PCI latency time.

BIOS Setting	Options	Description/Purpose
VGA Palette Snoop	-Disabled -Enabled	Enabling this feature turns on this pallete "snoop". Some special VGA cards need to be able to look at the video card's VGA pallete to determine what colors are currently in use.
PERR# Generation	-Disabled -Enabled	Enables or disables generation of PERR# signals (data parity errors) used to signal the detection of a parity error related to a data phase.
SERR# Generation	-Disabled -Enabled	Enables or disables generation of SERR# signals (unrecoverable errors) which are reported to the system and handled by system software.
PCI Express Device Settings	No changeable options	
Relaxed Ordering	-Disabled -Enabled	Enables or disables relaxed ordering feature which allows transactions that do not have any order of completion requirements to complete more efficiently.
Extended Tag	-Disabled -Enabled	Enables or disables extended tag support for maximum value of outstanding requests possible per components from 32 to 2048.
No Snoop	-Disabled -Enabled	Enables or disables no snoop feature to allow host bridge does not snoop the processor chache for non-cachable transactions. It can leads to improved performance during accesses to non-cachable memory.
Maximum Payload	-Auto - 128 Bytes - 256 Bytes - 512 Bytes -1024 Bytes -2048 Bytes -4096 Bytes	Maxium payload size supported specifies the size that the function supports for TLPs (Transaction Layer Packets).

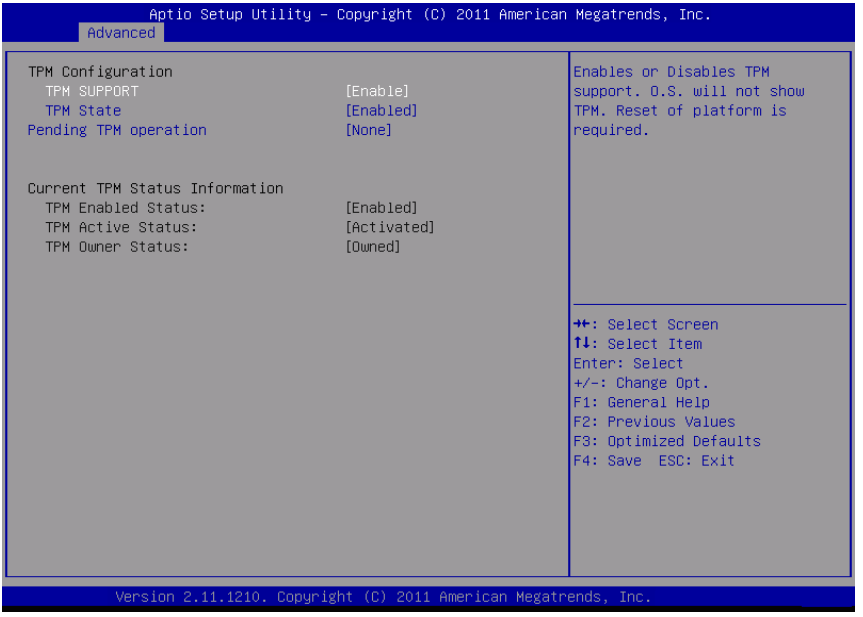
BIOS Setting	Options	Description/Purpose
Maximum Read Request	-Auto - 128 Bytes - 256 Bytes - 512 Bytes -1024 Bytes -2048 Bytes -4096 Bytes	Maxium read request size specifies the size for the device when acting as the requestor. The device must not generate read requests with a size larger this value.
PCI Express Link Settings	No changeable options	
ASPM Support	-Disabled -Auto -Force L0	Specifies mode for Active State Power Management (ASPM), hardware-based link power conservation mechanism. **Force L0** standby mode applies to a single direction on the link.
Extended Synch	-Disabled -Enabled	Enabling extended synch feature forces the transmission of additional ordered sets when exiting the L0 state and when in the recovery state. This mode provides external devices monitoring the link time to achieve bit symbol lock before the link enter L0 state and resumes communication.

4-4.2. Advanced - ACPI Settings



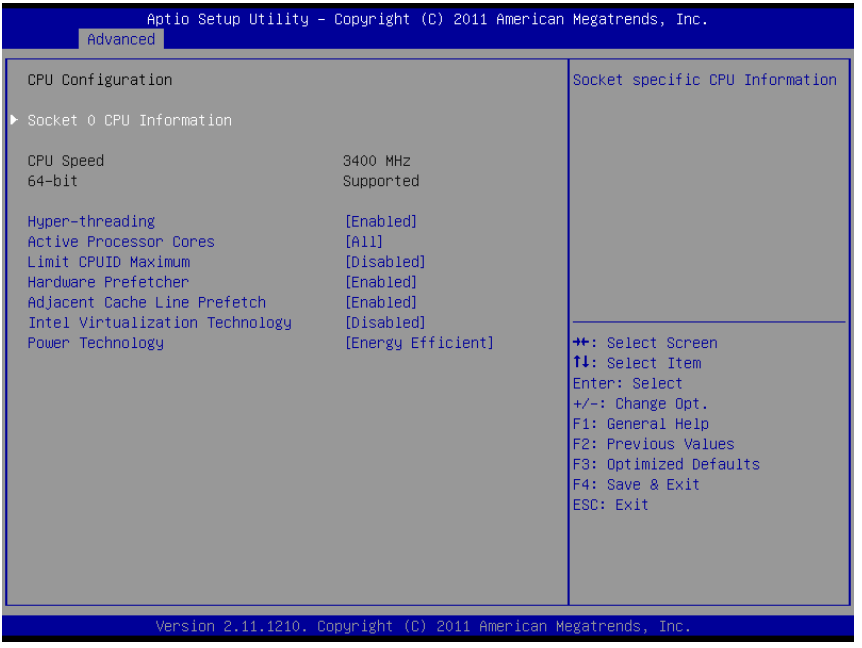
BIOS Setting	Options	Description/Purpose
Enable ACPI Auto Configuration	-Disabled -Enabled	Enables Advanced Configuration and Power Interface automatic configuration. When enabled, option ACPI Sleep State option is not available.
ACPI Sleep State	-Suspend Disabled -S1 (CPU Stop Clock) -S3 (Suspend to RAM)	Specifies the ACPI sleep state. **Disabled** disables ACPI sleep feature. **S1** mode allows the CPU stop executing instructions. **S3** allows the platform to enter Sleep (also known as Standby or Suspend to RAM) mode.

4-4.3. Advanced -Trusted Computing



BIOS Setting	Options	Description/Purpose
TPM Support	-Disable -Enable	Allows to active support for Trusted Platform Module.
TPM State	-Disable -Enable	Allows to enable TPM.
Pending TPM Operation	-None -Enable Take Ownership -Disable Take Ownership -TPM Clear	Enables to applied several options on TPM.
TPM Enabled Status	No changeable options	Reports if TPM is enabled.
TPM Active Status	No changeable options	Reports the current TPM active status.
TPM Owner Status	No changeable options	Reports the current TPM ownership status.

4-4.4. Advanced – CPU Configuration

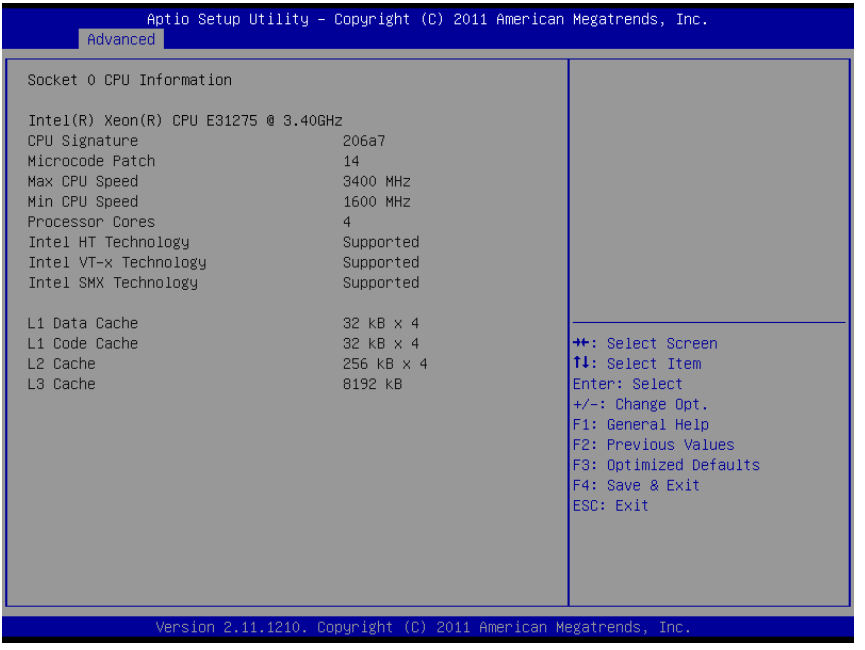


BIOS Setting	Options	Description/Purpose
CPU Speed	No changeable options	Displays the current processor frequency
64-bit	No changeable options	Reports if 64-bit is supported by processor.
Hyper-threading	-disabled -enabled	When disabled, only one thread per active core will operate.
Active Processor Cores	-All -1 -2	Indicates the number of cores to enable in processor.
Limit CPUID Maximum	-disabled -enabled	Enables for legacy operating systems to boot processors with extended CPUID functions.
Hardware Prefetcher	-disabled -enabled	Hardware prefetcher looks into the stream of data. Data is prefetched into L2 cache from external memory.

BIOS Setting	Options	Description/Purpose
Adjacent Cache Line Prefetch	-disabled -enabled	Enables Adjanced cache line prefetch feature in order to effectivelly hide memory latency and improve application performance.
Intel Virtualization Technology	-disabled -enabled	Enables or disables Intel Virtualization Technology (VT-x). Takes affect only after power cycling.
Power Technology	-Disabled -Energy Efficient -Custom	Enable the power management features.
EIST	-disabled -enabled	Allows processor to dynamically transition speed and voltage states using Enhanced Intel SpeedStep Technology.
Turbo Mode	-disabled -enabled	Allows processor to make use of Intel Turbo Boost technology. When enabled, it dynamically changes CPU clock speed depending on demand and current processor's operating state and limit.
P-STATE Coordination	-HW_ALL -SW_ALL -SW_ANY	Specifies which mode of power-performance states is applied. In **HW_ALL** mode, processor is responsible for coordinating P-State among logical processors dependencies. In **SW_ALL** the OS power manager takes care of P-State coordination between logical processors and must initiate the transition on all of those processors. In **SW_ANY** mode, the OS power manager may initiate the transition on any of those logical processor.
CPU C3 Report	-Disabled -ACPI C-2 -ACPI C3	Enable/Disable CPU C3(ACPI C2) report to OS.
CPU C6 Report	-Enabled -Disabled	Enable/Disable CPU C6 (ACPI C3) report to OS.

BIOS Setting	Options	Description/Purpose
Package C State limit	-C0 -C2 -C6 -C7 -No Limit	Package C State limit

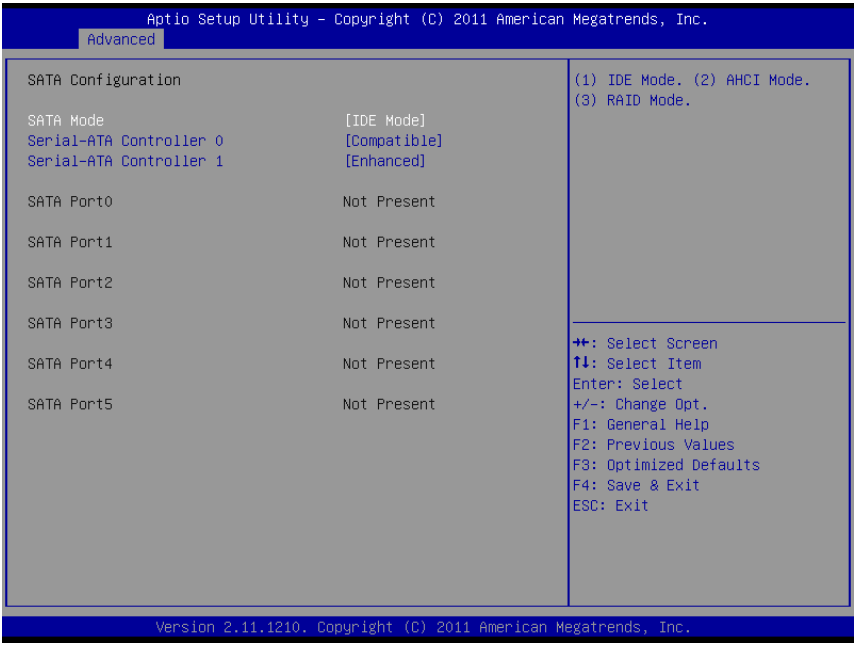
4-4.4.1. Advanced – CPU Configuration – Socket 0 CPU Information



BIOS Setting	Options	Description/Purpose
CPU Signature	No changeable options	Reports the CPU Signature
Microcode Patch	No changeable options	Reports the CPU Microcode Patch Version.
Max CPU Speed	No changeable options	Reports the Max CPU Speed.
Min CPU Speed	No changeable options	Reports the Min CPU Speed

BIOS Setting	Options	Description/Purpose
Processor Cores	No changeable options	Displays number of physical cores in processor.
Intel HT Technology	No changeable options	Reports if Intel Hyper-Threading Technology is supported by processor
Intel VT-x Technology	No changeable options	Reports if Intel VT-x Technology is supported by processor.
Intel SMX Technology	No changeable options	Reports if Intel SMX Technology is supported by processor.
L1 Data Cache	No changeable options	Displays number of L1 Data Cache
L1 Code Cache	No changeable options	Displays number of L1 Code Cache
L2 Cache	No changeable options	Displays number of L2 Cache.
L3 Cache	No changeable options	Displays number of L3 Cache.

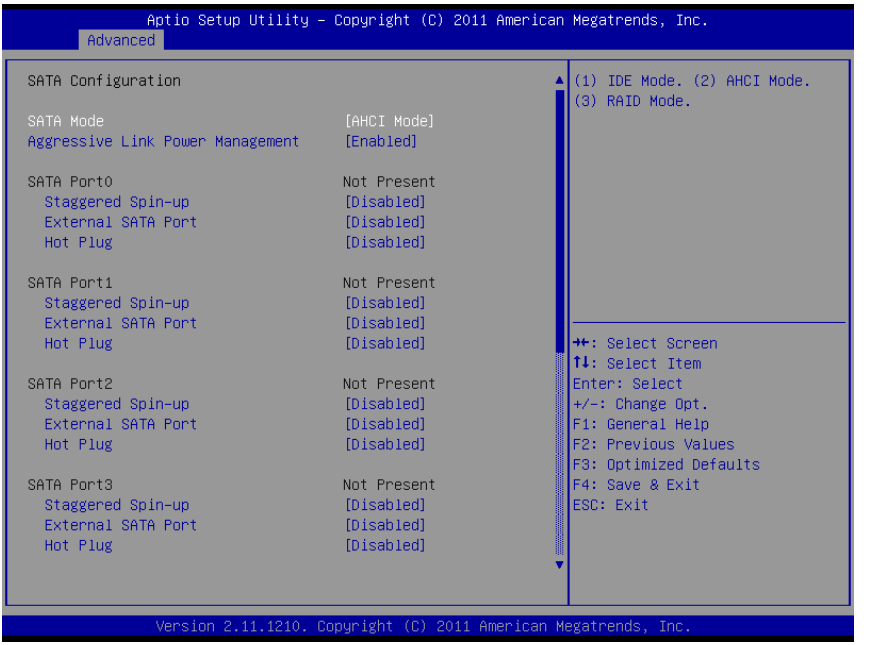
4-4.5. Advanced – SATA Configuration



BIOS Setting	Options	Description/Purpose
SATA Mode	-disable -IDE Mode -AHCI Mode -RAID Mode	Configures SATA as following: **IDE** Mode **AHCI** Mode allows to take advantage of Advanced Host Controller Interface features such as NCQ (Native Command Queuing), Hot plug, etc., without the option to use RAID. **RAID** Mode enables RAID (Redundant Array of Inexpensive Disks) which may require to install the RAID driver during OS installation.

BIOS Setting	Options	Description/Purpose
Serial-ATA Controller 0	-disable -Enhanced -Compatible	Specifies the integrated IDE controller 0. **Disabled** disables the integrated IDE controller. **Enhanced** enables all SATA and PATA resources. **Compatible** enables up to two IDE channels for OS requiring legacy IDE operation.
Serial-ATA Controller 1	-disable -Enhanced	Specifies the integrated IDE controller 1. **Disabled** disables the integrated IDE controller. **Enhanced** enables all SATA and PATA resources.
SATA Port0	[drive]	Displays the drive installed on this SATA port. Shows [Not Present] if no drive is installed.
SATA Port1	[drive]	Displays the drive installed on this SATA port. Shows [Not Present] if no drive is installed.
SATA Port2	[drive]	Displays the drive installed on this SATA port. Shows [Not Present] if no drive is installed.
SATA Port3	[drive]	Displays the drive installed on this SATA port. Shows [Not Present] if no drive is installed.
SATA Port4	[drive]	Displays the drive installed on this SATA port. Shows [Not Present] if no drive is installed.
SATA Port5	[drive]	Displays the drive installed on this SATA port. Shows [Not Present] if no drive is installed.

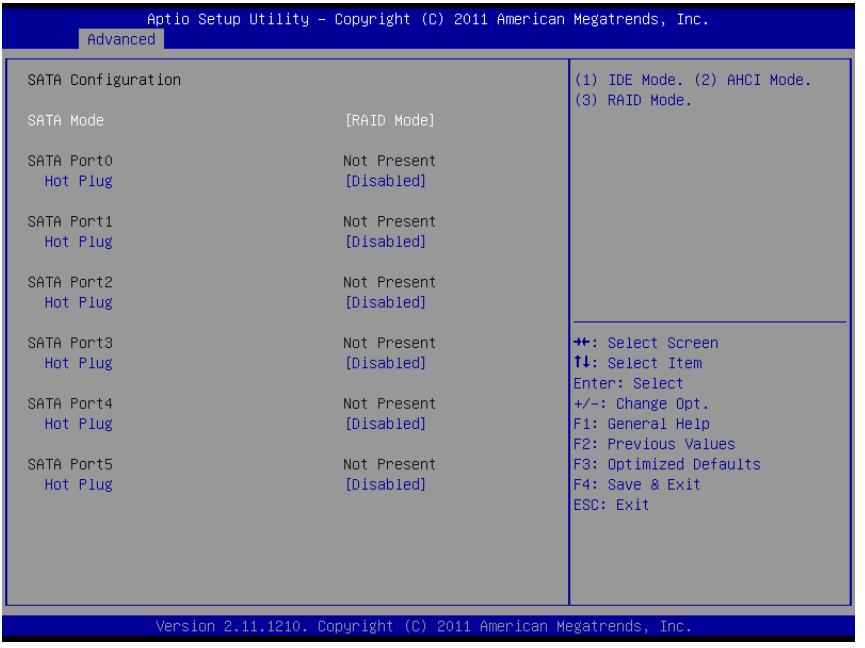
4-4.5.1. Advanced – SATA Configuration – AHCI Mode



BIOS Setting	Options	Description/Purpose
Port 0 Hot Plug	-disable -enable	Enables or disables support hot plug feature on port 0.
Port 1 Hot Plug	-disable -enable	Enables or disables support hot plug feature on port 1.
Port 2 Hot Plug	-disable -enable	Enables or disables support hot plug feature on port 2.
Port 3 Hot Plug	-disable -enable	Enables or disables support hot plug feature on port 3.
Port 4 Hot Plug	-disable -enable	Enables or disables support hot plug feature on port 4.
Port 5 Hot Plug	-disable -enable	Enables or disables support hot plug feature on port 5.

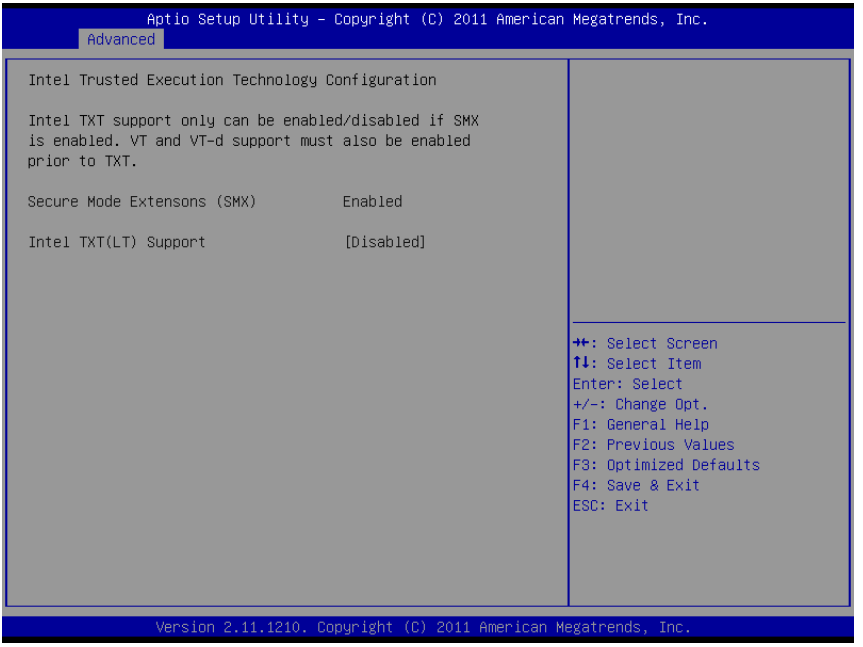
BIOS Setting	Options	Description/Purpose
External SATA Port 0	-disable -enable	Configures SATA port 0 as external SATA port.
External SATA Port 1	-disable -enable	Configures SATA port 1 as external SATA port.
External SATA Port 2	-disable -enable	Configures SATA port 2 as external SATA port.
External SATA Port 3	-disable -enable	Configures SATA port 3 as external SATA port.
External SATA Port 4	-disable -enable	Configures SATA port 4 as external SATA port.
External SATA Port 5	-disable -enable	Configures SATA port 5 as external SATA port.

4-4.5.2. Advanced – SATA Configuration – RAID Mode



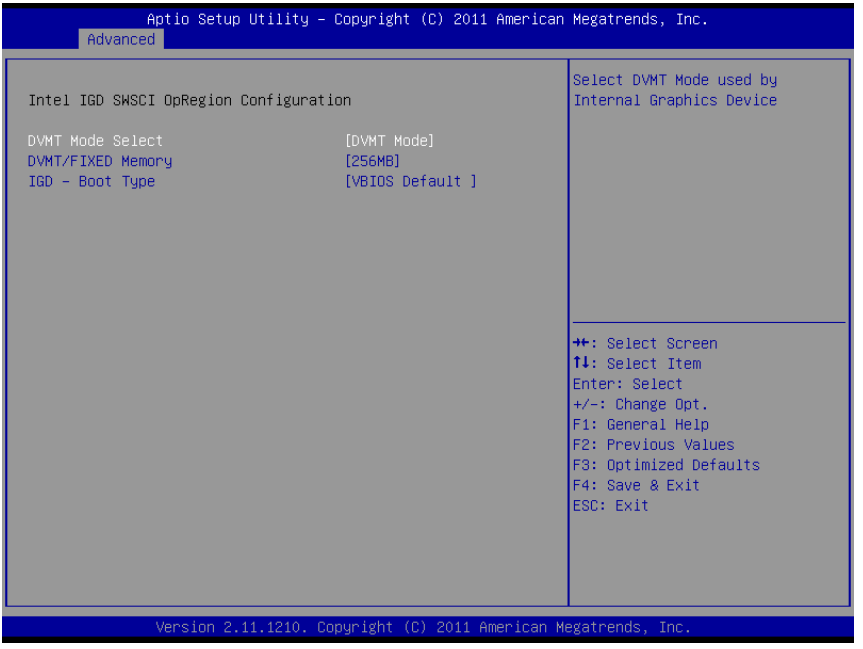
BIOS Setting	Options	Description/Purpose
Port 0 Hot Plug	-disable -enable	Enables or disables support hot plug feature on port 0.
Port 1 Hot Plug	-disable -enable	Enables or disables support hot plug feature on port 1.
Port 2 Hot Plug	-disable -enable	Enables or disables support hot plug feature on port 2.
Port 3 Hot Plug	-disable -enable	Enables or disables support hot plug feature on port 3.
Port 4 Hot Plug	-disable -enable	Enables or disables support hot plug feature on port 4.
Port 5 Hot Plug	-disable -enable	Enables or disables support hot plug feature on port 5.

4-4.6. Advanced – Intel TXT(LT) Configuration



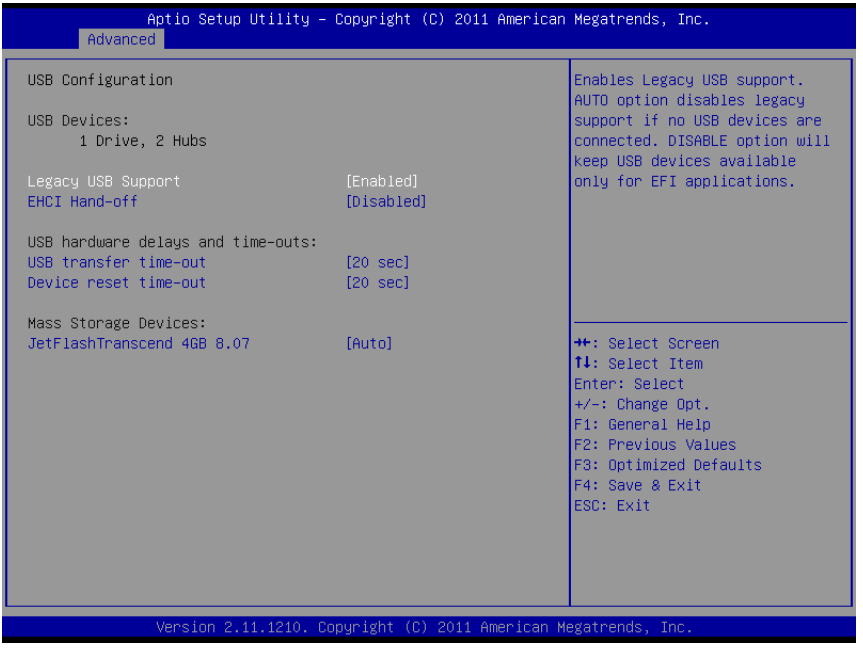
BIOS Setting	Options	Description/Purpose
SMX Feature Support	No changeable options	Reports if processor supports Safer Mode Extensions instructions (SMX).
Intel TXT(LT) Support	-disabled -enabled	Enables or disables Intel Trusted Execution Technology. Takes affect only after power cycling.

4-4.7. Advanced – Intel IGD SWSCI OpRegion



BIOS Setting	Options	Description/Purpose
DVMT Mode Select	-Fixed Mode -DVMT Mode	Select DVMT Mode used by Internal Graphics Device.
DVMT/FIXED Memory	-128MB -256MB -Maximum	Intel Dynamic Video Memory Technology allows additional memory to be allocated for graphics usage based on application need. Once the application is closed, the memory that was allocated for graphics usage is then released and made available for system use.
IGD - Boot Type	-VBIOS Default	Specifies which graphics output is used on system boot.

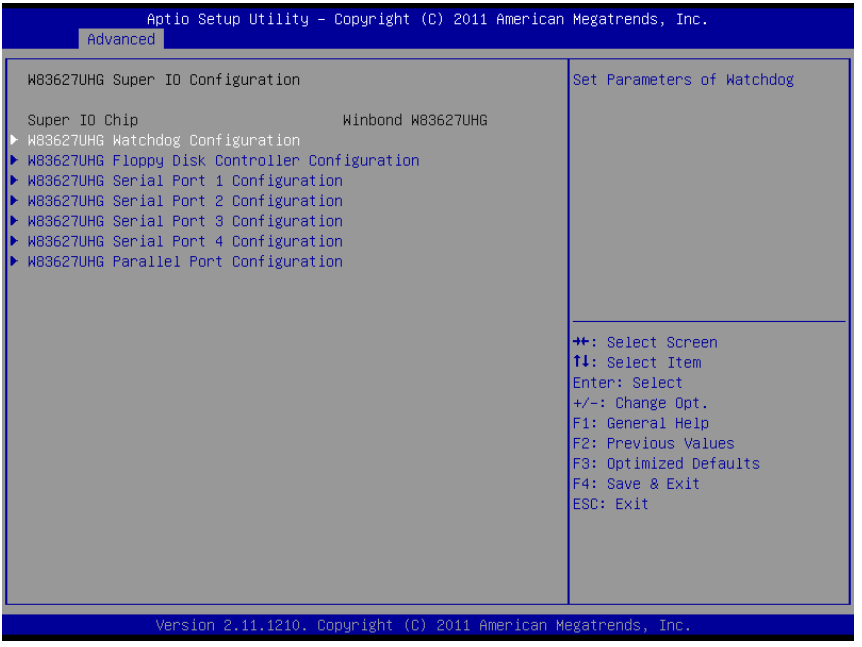
4-4.8. Advanced – USB Configuration



BIOS Setting	Options	Description/Purpose
USB Devices	No changeable options	Displays number of available USB devices.
Legacy USB Support	-disabled -enabled -Auto	Enables support for legacy USB.
EHCI Hand-off	-disabled -enabled	When enabled it allows BIOS support control of the EHCI controller and the OS handoff synchronization capatability.
USB transfer time-out	-1 sec -5 sec -10 sec -20 sec	Specifies the value for USB transfer time-out.

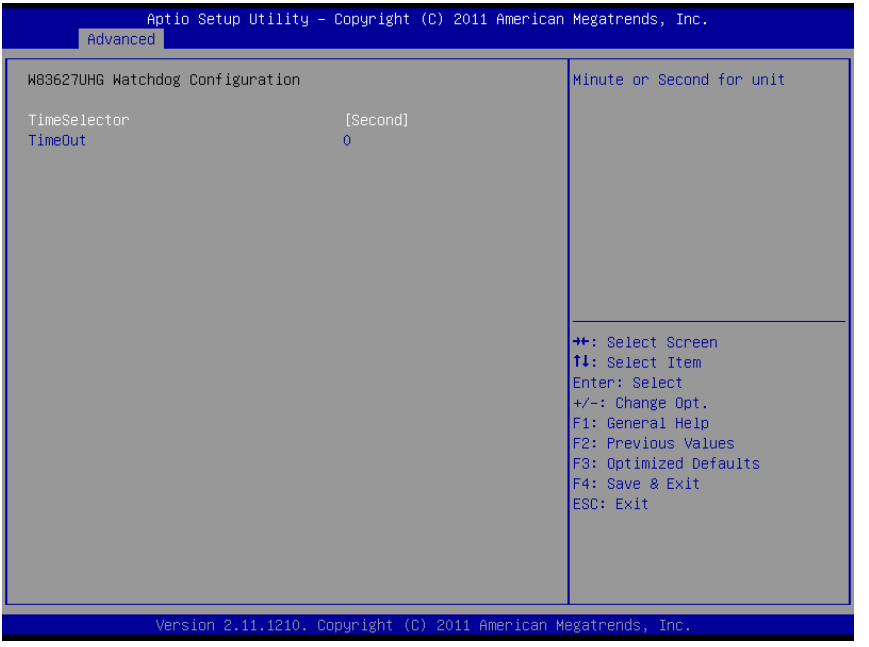
BIOS Setting	Options	Description/Purpose
Device Reset timeout	-10 sec -20 sec -30 sec -40 sec	Specifies the value for device reset timeout.

4-4.9. Advanced – W83627UHG Super IO Configuration



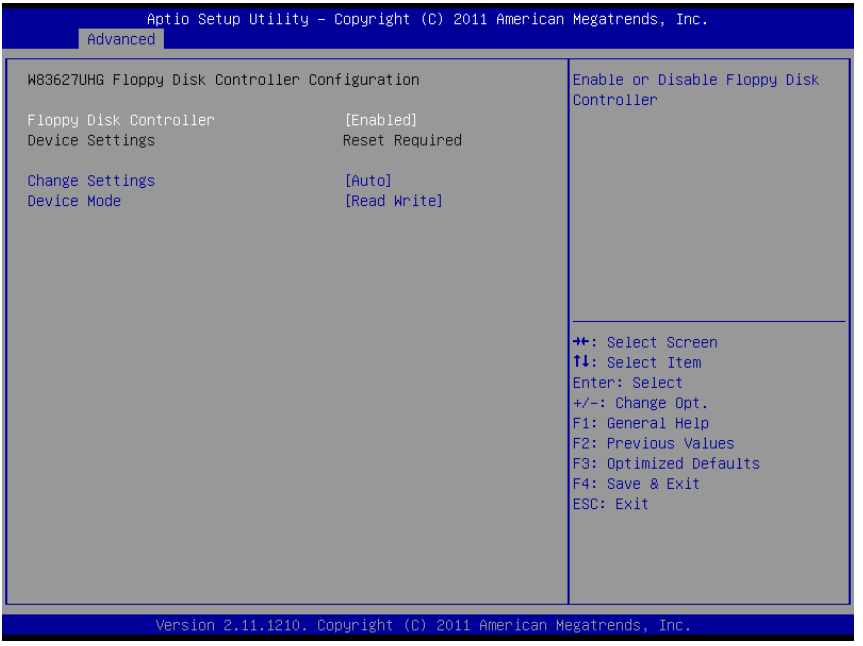
BIOS Setting	Options	Description/Purpose
Super IO Chip	No changeable options	Displays the super IO chip model and its manufacturer.

4-4.9.1. Advanced – W83627UHG Super IO Configuration – Watchdog Configuration



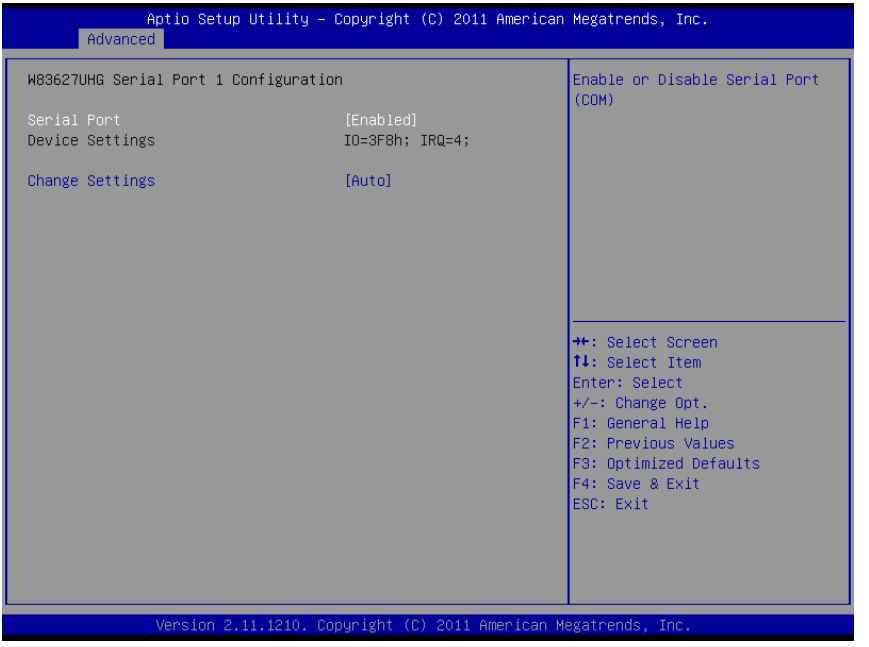
BIOS Setting	Options	Description/Purpose
TimeSelector	-Minute -Second	Selects unit for watchdog timer.
TimeOut	multiple options ranging from 0 to 255	Sets the desired value for watchdog timer.

4-4.9.2. Advanced – W83627UHG Super IO Configuration – Floppy Disk Controller Configuration



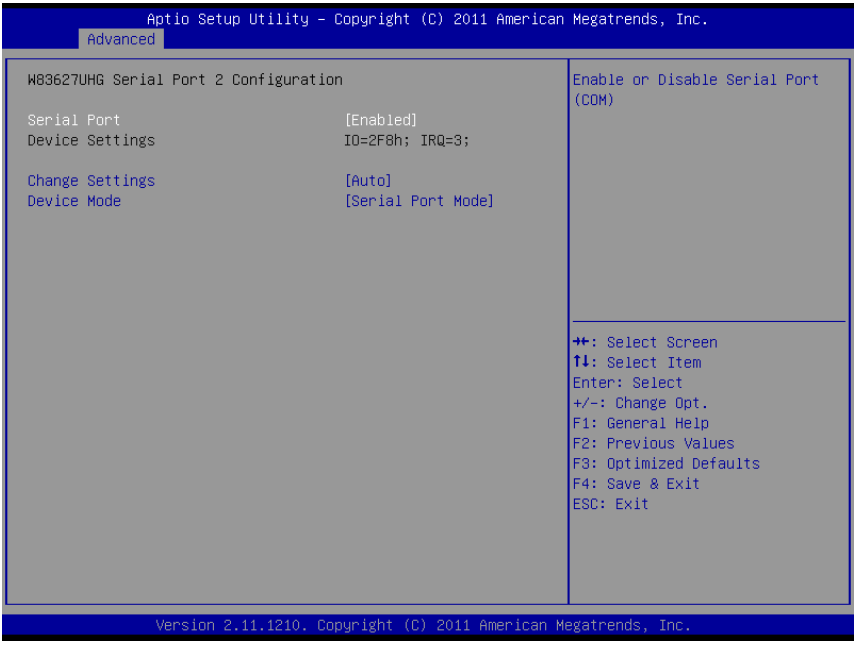
BIOS Setting	Options	Description/Purpose
Floppy Disk Controller	-Enabled -Disabled	Enable or Disable Floppy Disk Controller.
Change Settings	-Auto -IO=3F0h; IRQ=6; DMA=2; -IO=3F0h; IRQ=3,4,5,6,7,10,11,12; DMA=2,3; -IO=370h; IRQ=3,4,5,6,7,10,11,12; DMA=2,3;	Select an iptimal settins for Super IO Device.
Device Mode	-Read Write -Write Protect	Change Mode of Floppy Disk Controller. Select <Read Write> mode for Normal operatuion. Select <Write Protect> mode for readonly operation.

4-4.9.3. Advanced – W83627UHG Super IO Configuration – Serial Port 1 Configuration



BIOS Setting	Options	Description/Purpose
Serial Port	-disabled -enabled	Configures the serial port 1.
Device Settings	No changeable options	Reports the current serial port 1 setting.
Change Settings	-Auto -IO=3F8h; IRQ=4 -IO=3F8h; IRQ=3,4,5,6,7,10,11,12 -IO=2F8h; IRQ=3,4,5,6,7,10,11,12 -IO=3E8h; IRQ=3,4,5,6,7,10,11,12 -IO=2E8h; IRQ=3,4,5,6,7,10,11,12	Specifies the base I/O address and interrupt request for the serial port 1 if enabled.

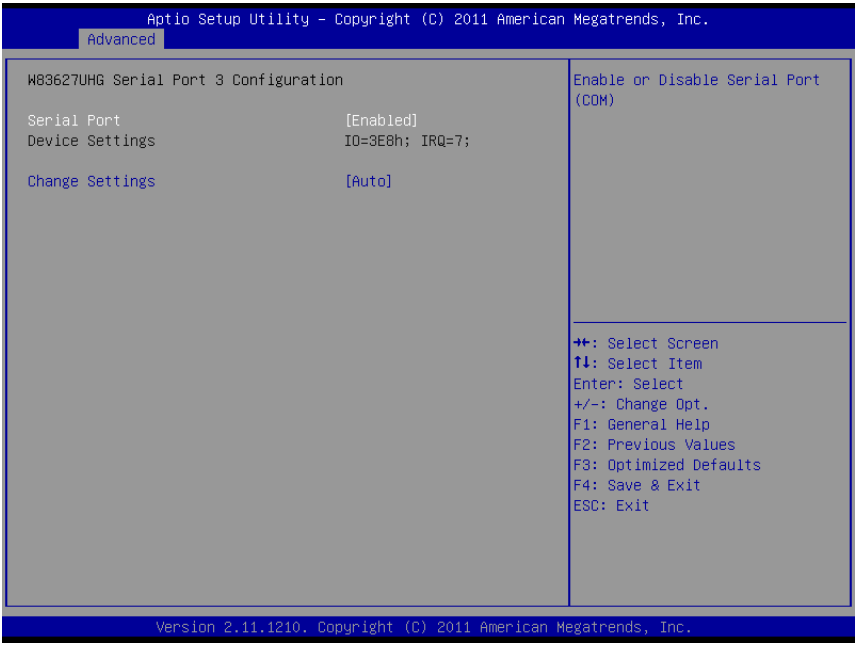
4-4.9.4. Advanced – W83627UHG Super IO Configuration – Serial Port 2 Configuration



BIOS Setting	Options	Description/Purpose
Serial Port	-disabled -enabled	Configures the serial port 2.
Device Settings	No changeable options	Reports the current serial port 2 setting.
Change Settings	-Auto -IO=3F8h; IRQ=4 -IO=3F8h; IRQ=3,4,5,6,7,10,11,12 -IO=2F8h; IRQ=3,4,5,6,7,10,11,12 -IO=3E8h; IRQ=3,4,5,6,7,10,11,12 -IO=2E8h; IRQ=3,4,5,6,7,10,11,12	Specifies the base I/O address and interrupt request for the serial port 2 if enabled.

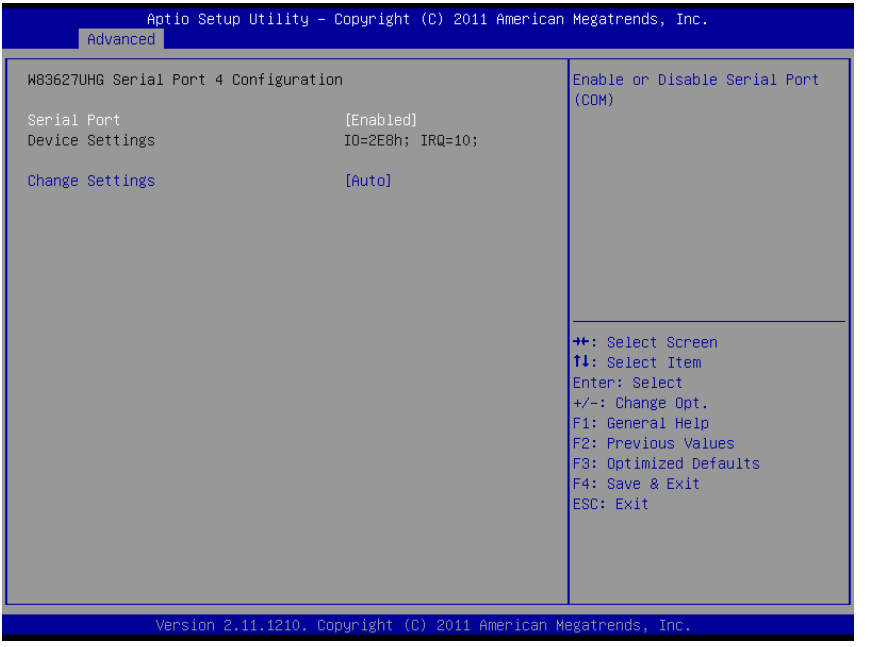
BIOS Setting	Options	Description/Purpose
Device Mode	-Serial Port Mode -IrDA Mode -ASK-IR Mode	Configures the serial port 2 mode. **Serial Port Mode** default settings for the serial port 2. **IrDA** (Infrared Data Association) general infrared protocol. **ASK-IR** (Amplitude Shift Keyed IR) infrared protocol developed by Sharp.

4-4.9.5. Advanced – W83627UHG Super IO Configuration – Serial Port 3 Configuration



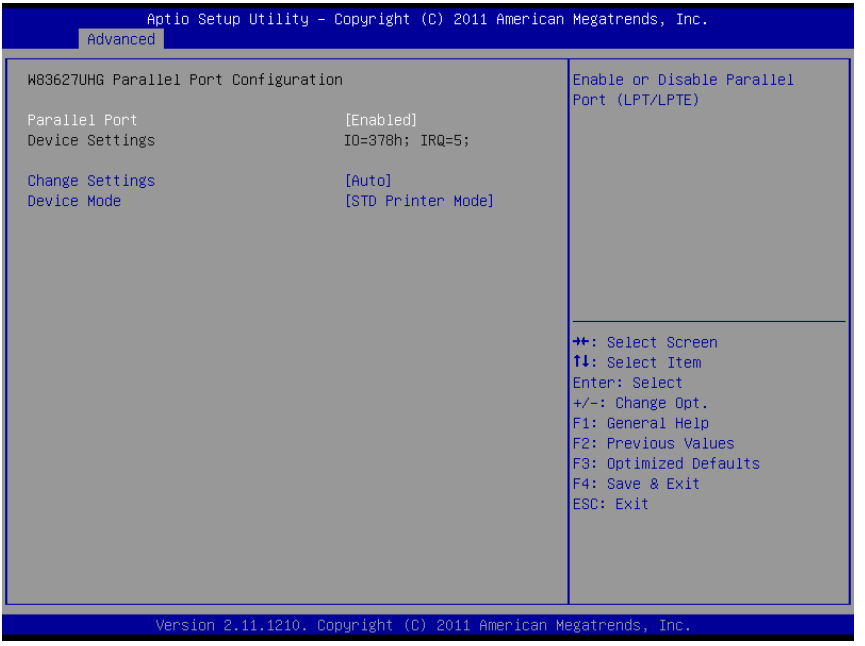
BIOS Setting	Options	Description/Purpose
Serial Port	-disabled -enabled	Configures the serial port 3.
Device Settings	No changeable options	Reports the current serial port 3 setting.
Change Settings	-Auto -IO=3F8h; IRQ=4 -IO=3F8h; IRQ=3,4,5,6,7,10,11,12 -IO=2F8h; IRQ=3,4,5,6,7,10,11,12 -IO=3E8h; IRQ=3,4,5,6,7,10,11,12 -IO=2E8h; IRQ=3,4,5,6,7,10,11,12	Specifies the base I/O address and interrupt request for the serial port 3 if enabled.

4-4.9.6. Advanced – W83627UHG Super IO Configuration – Serial Port 4 Configuration



BIOS Setting	Options	Description/Purpose
Serial Port	-disabled -enabled	Configures the serial port 4.
Device Settings	No changeable options	Reports the current serial port 4 setting.
Change Settings	-Auto -IO=3F8h; IRQ=4 -IO=3F8h; IRQ=3,4,5,6,7,10,11,12 -IO=2F8h; IRQ=3,4,5,6,7,10,11,12 -IO=3E8h; IRQ=3,4,5,6,7,10,11,12 -IO=2E8h; IRQ=3,4,5,6,7,10,11,12	Specifies the base I/O address and interrupt request for the serial port 4 if enabled.

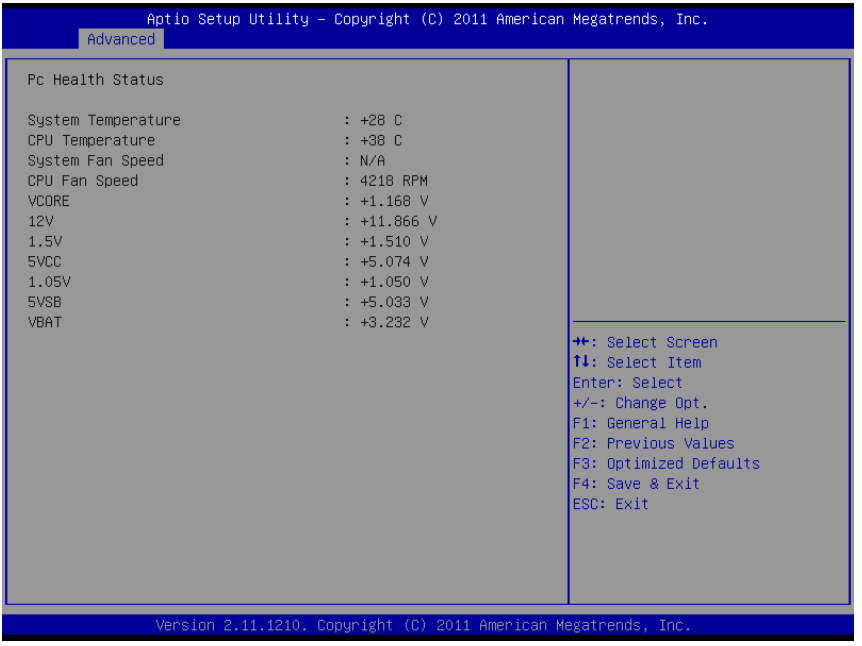
4-4.9.7. Advanced – W83627UHG Super IO Configuration – Parallel Port Configuration



BIOS Setting	Options	Description/Purpose
Parallel Port	-disabled -enabled	Configures the parallel port.
Device Settings	No changeable options	Reports the current parallel port setting.
Change Settings	-Auto -IO=378h; IRQ=5 -IO=378h; IRQ=5,6,7,10,11,12 -IO=278h; IRQ=5,6,7,10,11,12 -IO=3BCh; IRQ=5,6,7,10,11,12 -IO=378h; -IO=278h; -IO=3BCh;	Specifies the base I/O address and interrupt request for the parallel port if enabled.

BIOS Setting	Options	Description/Purpose
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	Selects the mode for the parallel port. Not available if the parallel port is disabled. **SPP** is Standard Parallel Port mode, a bi-directional mode for printers. **EPP** is Enhanced Parallel Port mode, a high-speed bi-directional mode for non-printer peripherals. **ECP** is Enhanced Capability Port mode, a high-speed bi-directional mode for printers and scanners.

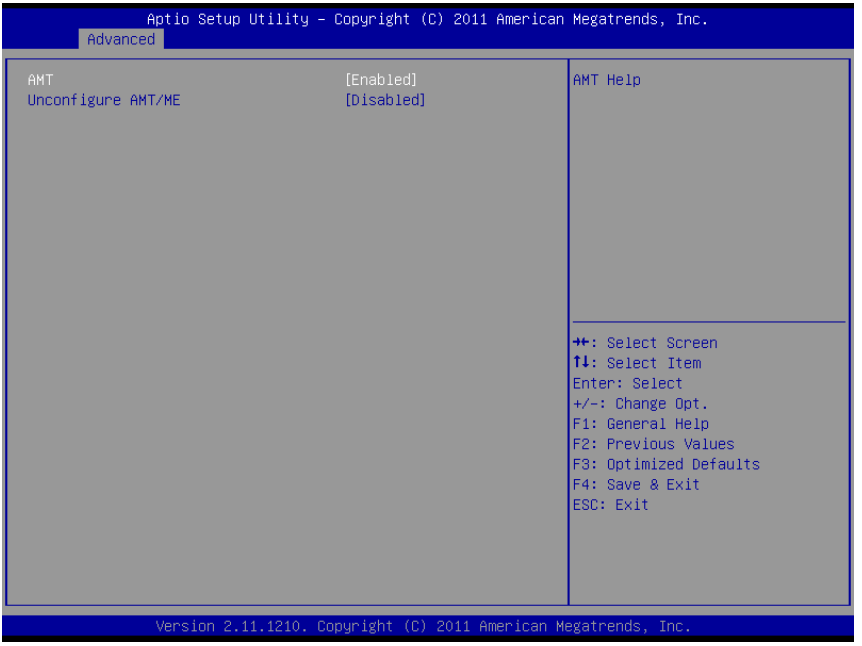
4-4.10. Advanced –H/W Monitor



BIOS Setting	Options	Description/Purpose
System Temperature	No changeable options	Displays temperature in the remote thermal sensor zone.
CPU Temperature	No changeable options	Displays processor's temperature.
System Fan Speed	No changeable options	Displays fan speed of the chassis fan.
CPU Fan Speed	No changeable options	Displays fan speed of the CPU fan.
VCORE	No changeable options	Displays voltage level of the +VCORE in supply.
12V	No changeable options	Displays voltage level of the +12V in supply.
1.5V	No changeable options	Displays voltage level of the +1.5V in supply.
5VCC	No changeable options	Displays voltage level of the +5V in supply.

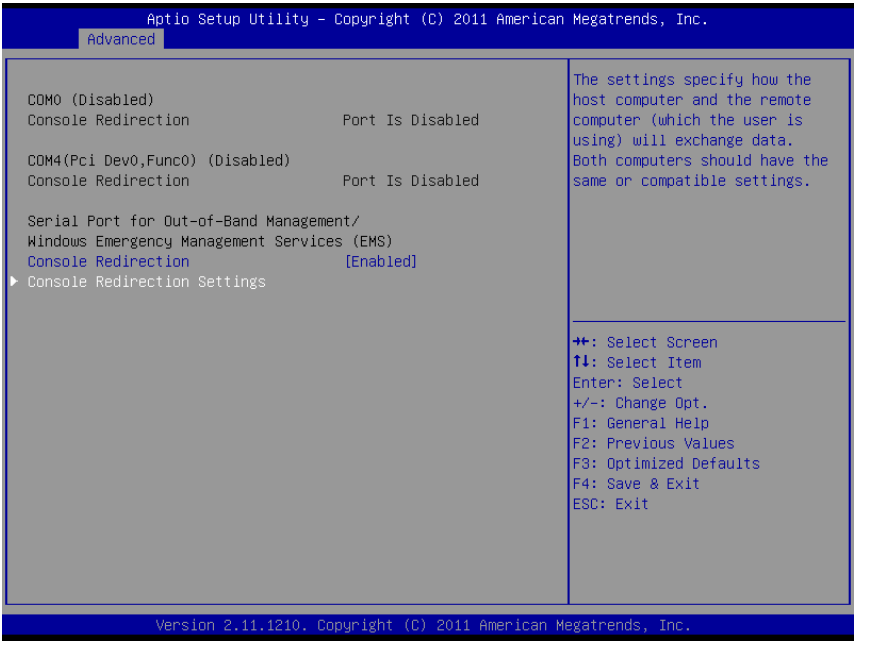
BIOS Setting	Options	Description/Purpose
1.05V	No changeable options	Displays voltage level of the +1.5V in supply.
5VSB	No changeable options	Displays voltage level of the +5VSB in supply.
VBAT	No changeable options	Displays voltage level of the backup CMOS battery.

4-4.11. Advanced – AMT Configuration

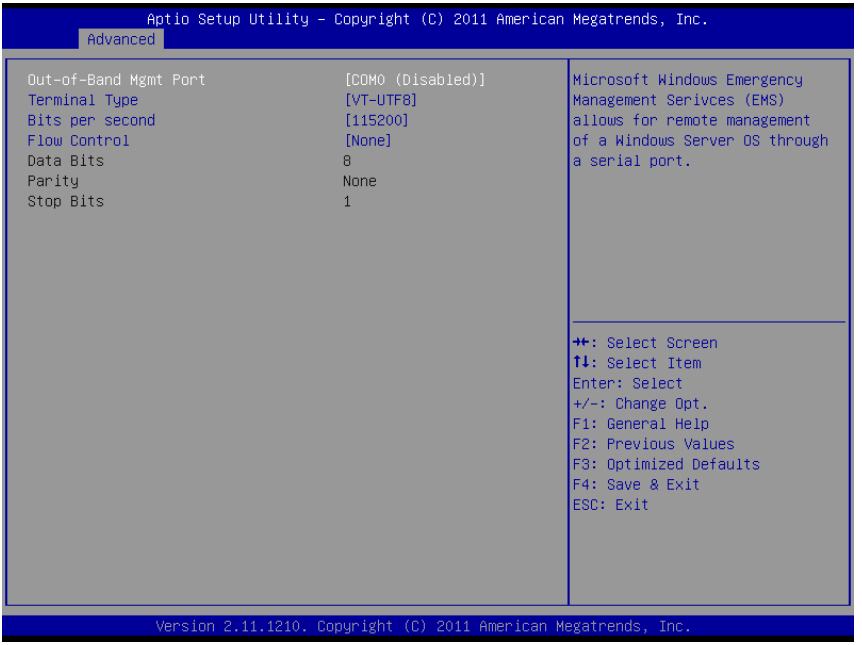


BIOS Setting	Options	Description/Purpose
AMT	-disabled -enabled	Enables Intel Active Management Technology (Intel AMT) functionality.
Unconfigure AMT/ME	-disabled -enabled	Allows to unconfigure Intel ME after BIOS POST process is completed.

4-4.12. Advanced – Serial Port Console Redirection



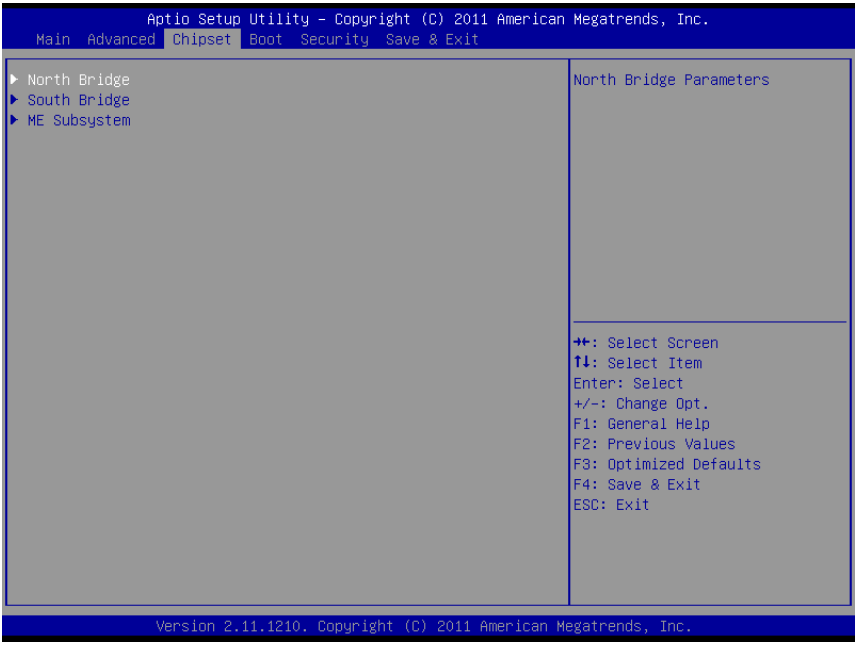
BIOS Setting	Options	Description/Purpose
Console Redirection	-disabled -enabled	Enables or disables console redirection feature.



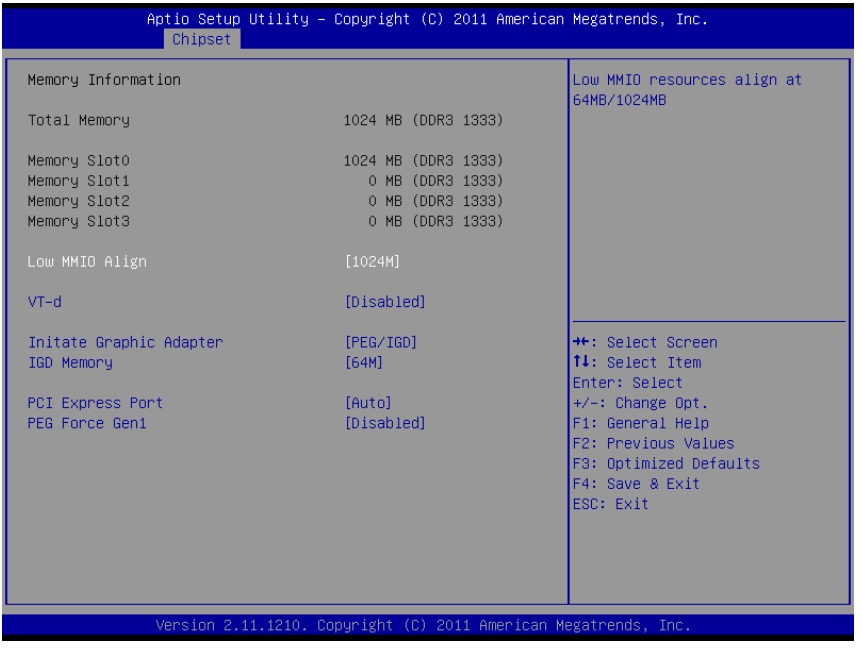
BIOS Setting	Options	Description/Purpose
Out-of Band Mgmt Port	-COM0 -COM4(PCI Dev0,Func0)	Microsoft Windows Emergency Management Sevices allows for remote management of a Windows Server OS. through a serial port.
Terminal Type	-[VT100] -[VT100+] -[VT-UTF8] -ANSI	Specifies which remote terminal emulation standard is in use.
Bits per second	-9600 -19200 -57600 -115200	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

BIOS Setting	Options	Description/Purpose
Flow Control	-None -Hardware RTS/CTS -Software Xon/Xoff	Flow control can prevent data loss from buffer overflow. When speding data, if the recieving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start'signal can be sent to re-start the flow. Hareware flow control uses two wires to send start/stop signals.

4-5. Chipset


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
North Bridge
South Bridge
ME Subsystem
North Bridge Parameters
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.

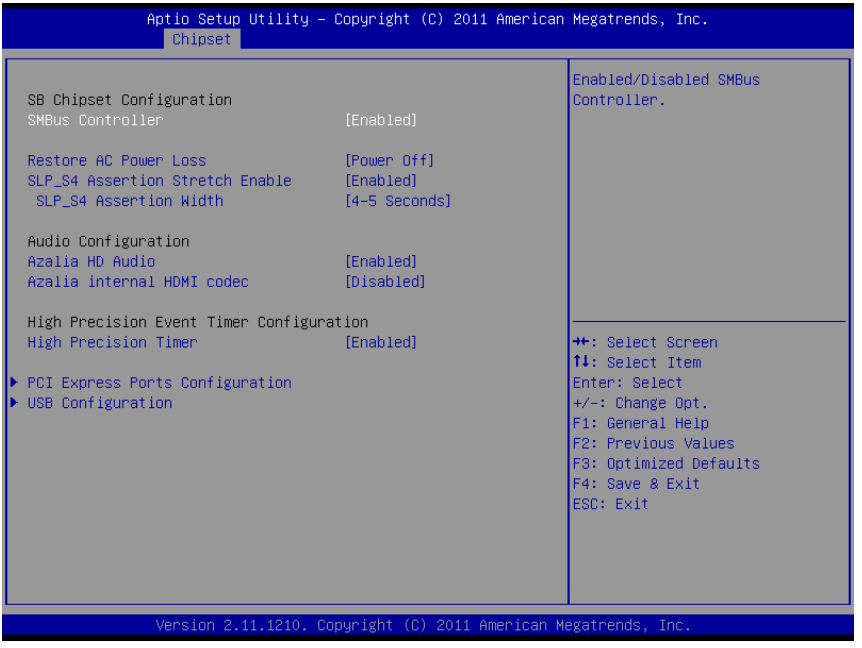
4-5.1. Chipset – North Bridge



BIOS Setting	Options	Description/Purpose
Total Memory	No changeable options	Displays the total amount of RAM.
Memory Slot0	No changeable options	Display the amount of RAM installed in first memory slot.
Memory Slot1	No changeable options	not available
Memory Slot2	No changeable options	Display the amount of RAM installed in second memory slot.
Memory Slot3	No changeable options	not available
Low MMIO Align	-64M -1024M	Selects the different remapping size.
VT-d	-disabled -enabled	Enables or disables Intel VT for directed I/O (Intel VT-d).

BIOS Setting	Options	Description/Purpose
Initiate Graphic Adapter	-IGD -PCI/IGD -PCI/PEG -PEG/IGD -PEG/PCI	Allows selecting a specific video controller or their combination as the display device that will be active when the system boots.
IGD Memory	-disable -32M -64M -96M -128M …. -512M	Establishes the maximum amount of system memory that the operating system can use for video memory.
PCI Express Prot	-disabled -enabled -Auto	Enable/Disable/Auto PCI-E port.
PEG Force Gen1	-disabled -enabled	If enabled, it will force the maximum speed of PCI Express card to Generation 1 mode, even if the card supports Generation 2.

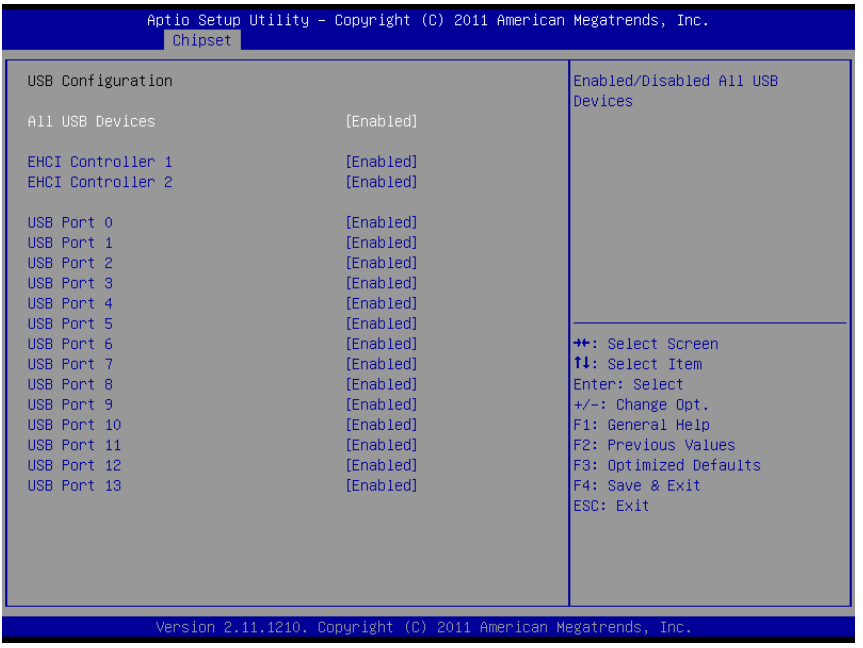
4-5.2. Chipset – South Bridge



BIOS Setting	Options	Description/Purpose
SMBus Controller	-disabled -enabled	Enables or disables the system bus controller. It monitors system's temperature and voltage.
Restore AC Power Loss	-Power Off -Power On -Last State	Determines the mode of operation in case of power loss. **Power Off** keeps the power off till the power button is pressed. **Power On** restores power to the computer. **Last State** restores the previous power state before power loss happened.
SLP_S4 Assertion Stretch Enable	-disabled -enabled	When enabled it sets the value specified by SLP_S4 Assertion Width option.

BIOS Setting	Options	Description/Purpose
SLP_S4 Assertion Width	-1-2 Seconds -2-3 Seconds -3-4 Seconds -4-5 Seconds	Sets the minimum assertion width of the SLP_S4# signal (power plane control) to guarantee the DRAM has been safely power-cycled.
Azalia HD Audio	-Disabled -Enabled	Enabled/Disabled Azalia HD Audio
Azalia internal HDMI codec	-Disabled -Enabled	Enabled/Disabled Internal HDMI codec for Azalia.
High Precision Event Timer Configuration	-disabled -enabled	Enables or disables High Precision Even Timer support.

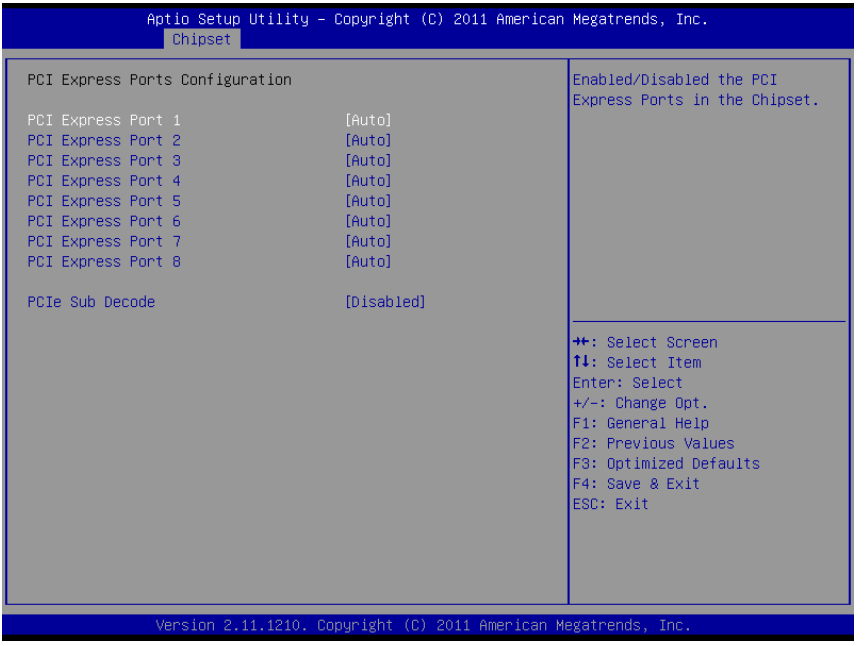
4-5.2.1. Chipset – South Bridge – USB Configuration



BIOS Setting	Options	Description/Purpose
All USB Devices	-disabled -enabled	Enables or disables all USB devices.
EHCI Controller 1	-disabled -enabled	Enables Enhanced Host Controller Interface 1 for high-speed USB functions (USB 2.0).
EHCI Controller 2	-disabled -enabled	Enables Enhanced Host Controller Interface 2 for high-speed USB functions (USB 2.0).
USB Port 0	-disabled -enabled	Enables or disables USB Port 0 functionality.
USB Port 1	-disabled -enabled	Enables or disables USB Port 1 functionality.
USB Port 2	-disabled -enabled	Enables or disables USB Port 2.

BIOS Setting	Options	Description/Purpose
USB Port 3	-disabled -enabled	Enables or disables USB Port 3 functionality.
USB Port 4	-disabled -enabled	Enables or disables USB Port 4 functionality.
USB Port 5	-disabled -enabled	Enables or disables USB Port 5 functionality.
USB Port 8	-disabled -enabled	Enables or disables USB Port 8 functionality.
USB Port 9	-disabled -enabled	Enables or disables USB Port 9 functionality.
USB Port 10	-disabled -enabled	Enables or disables USB Port 10 functionality.
USB Port 11	-disabled -enabled	Enables or disables USB Port 11 functionality.
USB Port 12	-disabled -enabled	Enables or disables USB Port 12 functionality.
USB Port 13	-disabled -enabled	Enables or disables USB Port 13 functionality.

4-5.2.2. Chipset – South Bridge – USB Configuration (RMH Support Disabled)

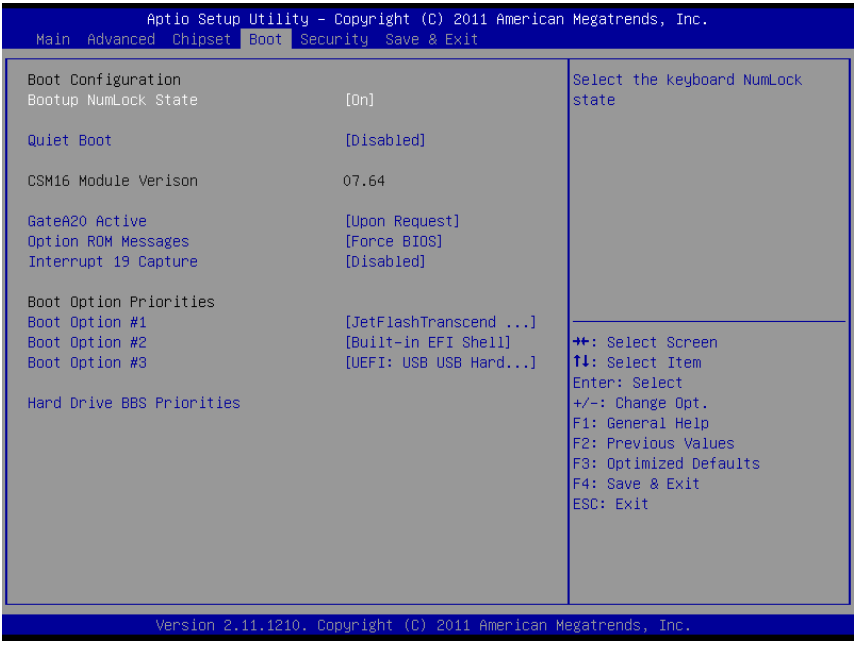


BIOS Setting	Options	Description/Purpose
PCI Express Port 1~8	-Disabled -Enabled -Auto	Disabled/Enabled/Auto the PCI Express Ports in the chipset
PCI-e Sub Decode	-Disabled -Enabled	Enabled/Disable PCI-E Sub Decode port.(This option is availablewhen Subtractive Decode Agent Enable.

4-5.3. Chipset – ME Subsystem

BIOS Setting	Options	Description/Purpose
ME Version	No changeable options	Displays the current Intel Management Engine version.
ME Subsystem	-disabled -enabled	Enables Intel Management Engine (Intel ME) functionality. Takes affect only after power cycling.
End of Post Message	-disabled -enabled	Enables end of post messages for Intel ME.
Execute MEBx	-disabled -enabled	Enables Intel Management Engine BIOS extension (MEBx).

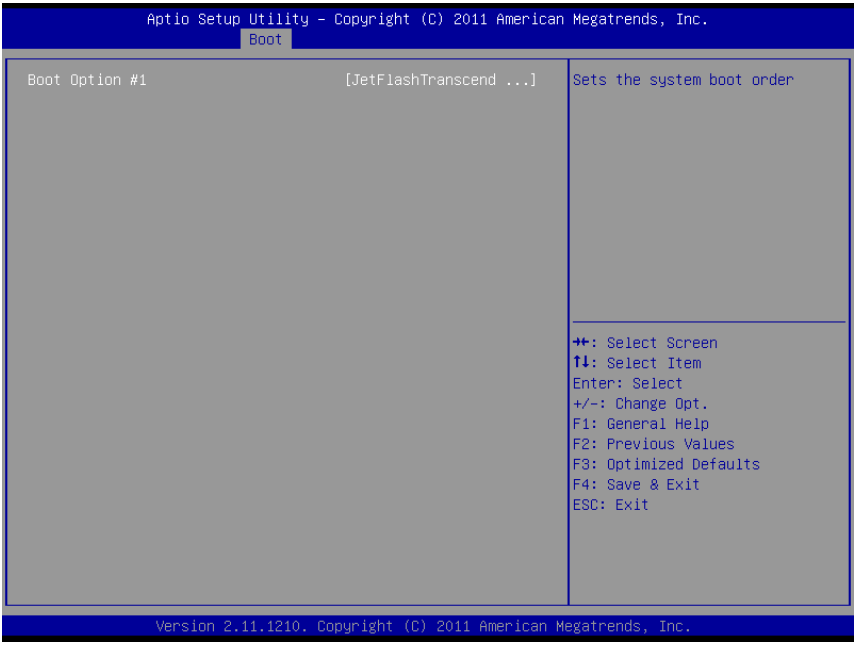
4-6. Boot



BIOS Setting	Options	Description/Purpose
Bootup NumLock Status	-On -Off	Specifies the power-on state of the numlock feature on the numeric keypad of keyboard.
Quiet Boot	-disabled -enabled	When quiet boot is enabled, it displays OEM logo instead of POST messages during boot.
CSM16 Module Version	No changeable options	Displays the current Compatibility Support Module version.
GateA20 Active	-Upon Request -Always	Specifies Gate-A20 logic gate status. At boot time, Gate-A20 is enabled when counting and testing of all the system's memory and disabled before transferring control to OS.

BIOS Setting	Options	Description/Purpose
Option ROM Messages	-Force BIOS -Keep Current	Allows the POST screen to display Option ROM messages.
Interrupt 19 Capture	-disabled -enabled	When enabled it allows host adapters ROM BIOS to capture Interrupt 19 during the boot process and eventually boot from disk(s) connected to those adapters.
Boot Option #1~#3	-[drive(s)] -disabled	Allows to set boot option listed in Hard Drive BBS Priorities.

4-6.1. Boot – Hard Drive BBS Priorities

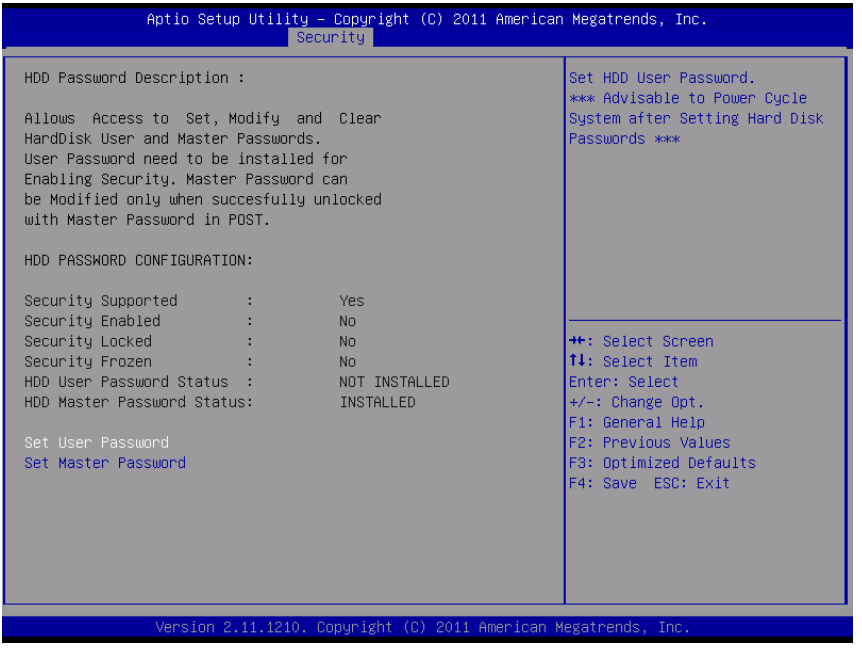


BIOS Setting	Options	Description/Purpose
Boot Option #1	-[drive(s)] -disabled	Allows setting the boot order of available drive(s).

4-7. Security

BIOS Setting	Options	Description/Purpose
Administrator Password	Password can be up to 20 alphanumeric characters.	Specifies the administrator password.
User Password	Password can be up to 20 alphanumeric characters.	Specifies the user password.

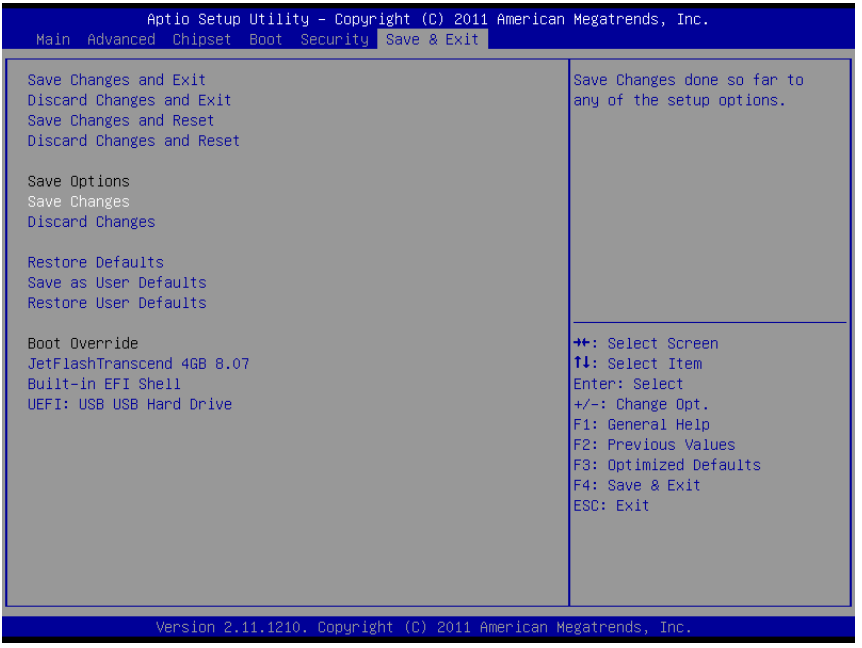
4-7.1. Security – HDD 0: [drive]



BIOS Setting	Options	Description/Purpose
Security Supported	No changeable options	Reports if there is security feature available.
Security Enabled	No changeable options	Reports if there is security feature enabled.
Security Locked	No changeable options	Reports if there is security feature locked.
Security Frozen	No changeable options	Reports if there is security feature frozen.
HDD User Password Status	No changeable options	Reports if there is HDD User Passoword installed.
HDD Master Password Status	No changeable options	Reports if there is HDD Master Passoword installed.
Set User Password	Password can be up to 32 alphanumeric characters.	Specifies the user password.

BIOS Setting	Options	Description/Purpose
Set Master Password	Password can be up to 32 alphanumeric characters.	Specifies the master password.

4-8. Save & Exit



BIOS Setting	Options	Description/Purpose
Save Changes and Exit	No changeable options	Exits and saves the changes in CMOS SRAM.
Discard Changes and Exit	No changeable options	Exits without saving any changes made in BIOS settings.
Save Changes and Reset	No changeable options	Saves the changes in CMOS SRAM and resets.
Discard Changes and Reset	No changeable options	Resets without saving any changes made in BIOS settings.
Save Changes	No changeable options	Saves the changes done in BIOS settings so far.
Discard Changes	No changeable options	Discards the changes done in BIOS settings so far.

BIOS Setting	Options	Description/Purpose
Restore Defaults	No changeable options	Loads the optimized defaults for BIOS settings.
Save as User Defaults	No changeable options	Saves the current values as user defaults.
Restore User Defaults	No changeable options	Loads the user defaults for BIOS settings.
Boot Override	-[drive(s)]	Forces to boot from selected [drive(s)].

EXPANSION BUS

APPENDIX

A

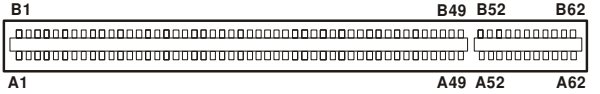
This appendix indicates the pin assignments.

Section includes:

- PCI BUS Pin Assignment
- Mini-PCIe BUS Pin Assignment

PCI BUS PIN ASSIGNMENT

Like ISA-BUS connector, the PCI-BUS edge connector is also divided into two sets: one consists of 98-pin; the other consists of 22-pin.
The pin assignments are as follows:



B		A		B		A	
PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT
B1	-12V	A1	TRST#	B31	+3.3V	A31	AD18
B2	TCK	A2	+12V	B32	AD17	A32	AD16
B3	GND	A3	TMS	B33	C/BE2#	A33	+3.3V
B4	TDO	A4	TDI	B34	GND	A34	FRAME#
B5	+5V	A5	+5V	B35	IRDY#	A35	GND
B6	+5V	A6	INTA#	B36	+3.3V	A36	TRDY#
B7	INTB#	A7	INTC#	B37	DEVSEL#	A37	GND
B8	INTD#	A8	+5V	B38	GND	A38	STOP#
B9	REQ3#	A9	CLKC	B39	LOCK#	A39	+3.3V
B10	REQ1#	A10	+5V(I/O)	B40	PERR#	A40	SDONE
B11	GNT3#	A11	CLKD	B41	+3.3V	A41	SB0#
B12	GND	A12	GND	B42	SERR#	A42	GND
B13	GND	A13	GND	B43	+3.3V	A43	PAR
B14	CLKA	A14	GNT1#	B44	C/BE1#	A44	AD15
B15	GND	A15	RST#	B45	AD14	A45	+3.3V
B16	CLKB	A16	+5V(I/O)	B46	GND	A46	AD13
B17	GND	A17	GNT0#	B47	AD12	A47	AD11
B18	REQ0#	A18	GND	B48	AD10	A48	GND
B19	+5V(I/O)	A19	REQ2#	B49	GND	A49	AD09
B20	AD31	A20	AD30	B52	AD08	A52	C/BE0#
B21	AD29	A21	+3.3V	B53	AD07	A53	+3.3V
B22	GND	A22	AD28	B54	+3.3V	A54	AD06
B23	AD27	A23	AD26	B55	AD05	A55	AD04
B24	AD25	A24	GND	B56	AD03	A56	GND
B25	+3.3V	A25	AD24	B57	GND	A57	AD02
B26	C/BE3#	A26	GNT2#	B58	AD01	A58	AD00
B27	AD23	A27	+3.3V	B59	+5V(I/O)	A59	+5V(I/O)
B28	GND	A28	AD22	B60	ACK64#	A60	REQ64#
B29	AD21	A29	AD20	B61	+5V	A61	+5V
B30	AD19	A30	GND	B62	+5V	A62	+5V

MINI-PCIe BUS CONNECTOR PIN ASSIGNMENT

You will find a Mini-PCIe connector in our PMB-881LF.
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	WAKE#	2	+3.3V
3	Reserved	4	GND
5	Reserved	6	+1.5V
7	CLKREQ#	8	Reserved
9	GND	10	Reserved
11	REFCLK-	12	Reserved
13	REFCLK+	14	Reserved
15	GND	16	Reserved
17	Reserved	18	GND
19	Reserved	20	Reserved
21	GND	22	PERST#
23	PERn0	24	+3.3Vaux
25	PERp0	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PETn0	32	SMB_DATA
33	PETp0	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	+3.3V	40	GND
41	+3.3V	42	Reserved
43	GND	44	Reserved
45	CLINK_CLK_WLAN	46	Reserved
47	CLINK_DATA_WLAN	48	+1.5V
49	CLINK_RST_WlAN	50	GND
51	Reserved	52	+3.3V

TECHNICAL SUMMARY

APPENDIX

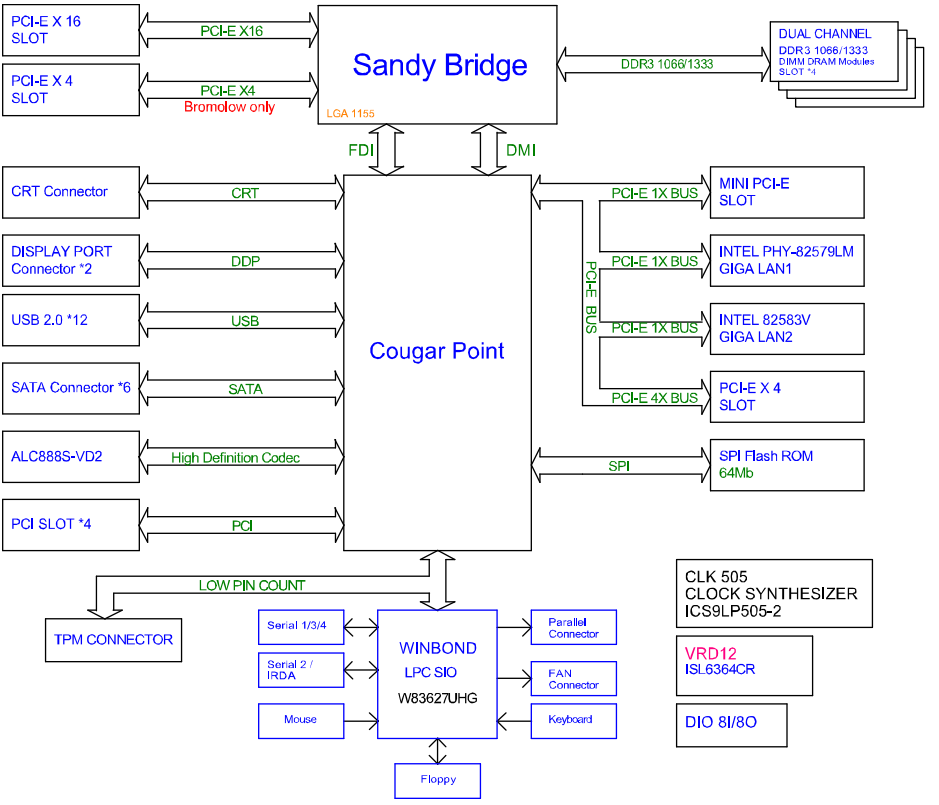
B

This section introduce you the maps concisely.

Section includes:

- Block Diagram
- Interrupt Map
- DMA Channels Map
- Memory Map
- I/O Map
- Watchdog Timer Configuration
- Flash BIOS Update

BLOCK DIAGRAM



INTERRUPT MAP

IRQ	ASSIGNMENT
IRQ 0	System timer
IRQ 1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
IRQ 3	Communications Port (COM2)
IRQ 4	Communications Port (COM1)
IRQ 6	Standard FDC controller
IRQ 7	Communications Port (COM3)
IRQ 8	System CMOS/real time clock
IRQ 9	Microsoft ACPI-Compliant System
IRQ 10	Communications Port (COM4)
IRQ 10	Intel(R) 6 Series/C200 Series Chipset Family SMBus Controller - 1C22
IRQ 12	Microsoft PS/2 Mouse
IRQ 13	Numeric data processor
IRQ 15	Secondary IDE Channel
IRQ 16	Intel(R) HD Graphics Family
IRQ 16	Intel(R) Management Engine Interface
IRQ 16	Intel(R) 6 Series/C200 Series Chipset Family USB Enhanced Host Controller - 1C2D
IRQ 17	Intel(R) Active Management Technology - SOL (COM5)
IRQ 17	Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 1 - 1C10
IRQ 18	Standard dual channel PCI IDE controller
IRQ 18	Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 3 - 1C14
IRQ 18	Intel(R) 82583V Gigabit Network Connection
IRQ 19	Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
IRQ 20	Intel(R) 82579LM Gigabit Network Connection
IRQ 22	Microsoft UAA Bus Driver for High Definition Audio
IRQ 23	Intel(R) 6 Series/C200 Series Chipset Family USB Enhanced Host Controller - 1C26

DMA CHANNELS MAP

Timer Channel	Assignment
Channel 2	Standard FDC Controller
Channel 4	Direct memory access controller

MEMORY MAP

MEMORY MAP	ASSIGNMENT
0xFE000000-0xFE3FFFFF	Intel(R) HD Graphics Family
0xD0000000-0xDFFFFFFF	Intel(R) HD Graphics Family
0xFE529000-0xFE52900F	Intel(R) Management Engine Interface
0xFE528000-0xFE528FFF	Intel(R) Active Management Technology - SOL (COM5)
0xFE500000-0xFE51FFFF	Intel(R) 82579LM Gigabit Network Connection
0xFE527000-0xFE527FFF	Intel(R) 82579LM Gigabit Network Connection
0xFE526000-0xFE5263FF	Intel(R) 6 Series/C200 Series Chipset Family USB Enhanced Host Controller - 1C2D
0xFE520000-0xFE523FFF	Microsoft UAA Bus Driver for High Definition Audio
0xFE400000-0xFE4FFFFF	Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 3 - 1C14
0xFE400000-0xFE4FFFFF	Intel(R) 82583V Gigabit Network Connection
0xFE420000-0xFE423FFF	Intel(R) 82583V Gigabit Network Connection
0xFE525000-0xFE5253FF	Intel(R) 6 Series/C200 Series Chipset Family USB Enhanced Host Controller - 1C26
0xFE524000-0xFE5240FF	Intel(R) 6 Series/C200 Series Chipset Family SMBus Controller - 1C22
0xFED10000-0xFED19FFF	System board
0xE0000000-0xEFFFFFFF	System board
0xFED90000-0xFED93FFF	System board
0xFED20000-0xFED3FFFF	System board
0xFEE00000-0xFEE0FFFF	System board
0xFED1C000-0xFED1FFFF	System board
0xFEC00000-0xFECFFFFF	System board
0xFED08000-0xFED08FFF	System board
0xFF000000-0xFFFFFFFF	System board
0xFED00000-0xFED003FF	High precision event timer
0xA0000-0xBFFFF	PCI bus
0xA0000-0xBFFFF	Intel(R) HD Graphics Family
0xC0000-0xDFFFF	PCI bus
0x3DA00000-0xFFFFFFFF	PCI bus

I/O MAP

I/O MAP	ASSIGNMENT
0x00000000-0x000003AF	PCI bus
0x00000000-0x000003AF	Direct memory access controller
0x00000010-0x0000001F	Motherboard resources
0x00000020-0x00000021	Programmable interrupt controller
0x00000022-0x0000003F	Motherboard resources
0x00000040-0x00000043	System timer
0x00000044-0x0000005F	Motherboard resources
0x00000060-0x00000060	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
0x00000061-0x00000061	System speaker
0x00000062-0x00000063	Motherboard resources
0x00000064-0x00000064	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
0x00000065-0x0000006F	Motherboard resources
0x00000070-0x00000071	System CMOS/real time clock
0x00000072-0x0000007F	Motherboard resources
0x00000080-0x00000080	Motherboard resources
0x00000081-0x00000083	Direct memory access controller
0x00000084-0x00000086	Motherboard resources
0x00000087-0x00000087	Direct memory access controller
0x00000088-0x00000088	Motherboard resources
0x00000089-0x0000008B	Direct memory access controller
0x0000008C-0x0000008E	Motherboard resources
0x0000008F-0x0000008F	Direct memory access controller
0x00000090-0x0000009F	Motherboard resources
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A2-0x000000BF	Motherboard resources
0x000000C0-0x000000DF	Direct memory access controller
0x000000E0-0x000000EF	Motherboard resources
0x000000F0-0x000000FF	Numeric data processor
0x00000170-0x00000177	Secondary IDE Channel
0x000001F0-0x000001F7	Primary IDE Channel
0x00000274-0x00000277	ISAPNP Read Data Port
0x00000279-0x00000279	ISAPNP Read Data Port
0x00000295-0x00000296	Motherboard resources
0x000002E8-0x000002EF	Communications Port (COM4)
0x000002F8-0x000002FF	Communications Port (COM2)

I/O MAP	ASSIGNMENT
0x00000376-0x00000376	Secondary IDE Channel
0x00000378-0x0000037F	Printer Port (LPT1)
0x000003B0-0x000003DF	PCI bus
0x000003B0-0x000003DF	Intel(R) HD Graphics Family
0x000003C0-0x000003DF	Intel(R) HD Graphics Family
0x000003E0-0x00000CF7	PCI bus
0x000003E8-0x000003EF	Communications Port (COM3)
0x000003F0-0x000003F5	Standard FDC controller
0x000003F6-0x000003F6	Primary IDE Channel
0x000003F7-0x000003F7	Standard FDC controller
0x000003F8-0x000003FF	Communications Port (COM1)
0x00000400-0x00000453	System board
0x00000454-0x00000457	Motherboard resources
0x00000458-0x0000047F	System board
0x000004D0-0x000004D1	Motherboard resources
0x00000500-0x0000057F	System board
0x00000778-0x0000077F	Motherboard resources
0x00000A79-0x00000A79	ISAPNP Read Data Port
0x00000D00-0x0000FFFF	PCI bus
0x00001180-0x0000119F	System board
0x0000E000-0x0000EFFF	Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 3 - 1C14
0x0000E000-0x0000EFFF	Intel(R) 82583V Gigabit Network Connection
0x0000F000-0x0000F03F	Intel(R) HD Graphics Family
0x0000F040-0x0000F05F	Intel(R) 6 Series/C200 Series Chipset Family SMBus Controller - 1C22
0x0000F060-0x0000F07F	Intel(R) 82579LM Gigabit Network Connection
0x0000F080-0x0000F08F	Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
0x0000F090-0x0000F09F	Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
0x0000F0A0-0x0000F0A3	Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
0x0000F0B0-0x0000F0B7	Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
0x0000F0C0-0x0000F0C3	Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
0x0000F0D0-0x0000F0D7	Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08

I/O MAP	ASSIGNMENT
0x0000F0E0-0x0000F0EF	Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00
0x0000F0F0-0x0000F0FF	Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00
0x0000F140-0x0000F147	Intel(R) Active Management Technology - SOL (COM5)
0x0000F150-0x0000F15F	Standard dual channel PCI IDE controller
0x0000F160-0x0000F163	Standard dual channel PCI IDE controller
0x0000F170-0x0000F177	Standard dual channel PCI IDE controller
0x0000F180-0x0000F183	Standard dual channel PCI IDE controller
0x0000F190-0x0000F197	Standard dual channel PCI IDE controller

WATCHDOG TIMER CONFIGURATION

The I/O port address of the watchdog timer is 2E (hex) and 2F (hex). 2E (hex) is the address port. 2F (hex) is the data port. User must first assign the address of register by writing address value into address port 2E (hex), then write/read data to/from the assigned register through data port 2F (hex).

Configuration Sequence

To program W83627UHG configuration registers, the following configuration sequence must be followed:
(1) Enter the extended function mode
(2) Configure the configuration registers
(3) Exit the extended function mode

(1) Enter the extended function mode

To place the chip into the Extended Function Mode, two successive writes of 0x87 must be applied to Extended Function Enable Registers (EFERs, i.e. 2Eh or 4Eh).

(2) Configure the configuration registers

The chip selects the Logical Device and activates the desired Logical Devices through Extended Function Index Register (EFIR) and Extended Function Data Register (EFDR). The EFIR is located at the same address as the EFER, and the EFDR is located at address (EFIR+1). First, write the Logical Device Number (i.e. 0x07) to the EFIR and then write the number of the desired Logical Device to the EFDR. If accessing the Chip (Global) Control Registers, this step is not required. Secondly, write the address of the desired configuration register within the Logical Device to the EFIR and then write (or read) the desired configuration register through the EFDR.

(3) Exit the extended function mode

To exit the Extended Function Mode, writing 0xAA to the EFER is required. Once the chip exits the Extended Function Mode, it is in the normal running mode and is ready to enter the configuration mode.

Example Program

Enable watchdog timer and set 30 sec. as timeout interval

```
;------ Enter to extended function mode ------------------------------------------------------
Mov     dx,     2eh
Mov     al,     87h
Out     dx,     al
Out     dx,     al
;------ Select Logical Device 8 of watchdog timer ----------------------------------------
Mov     al,     07h
Out     dx,     al
Inc     dx
Mov     al,     08h
Out     dx,     al
;------ Set second as counting unit ------------------------------------------------------------
Dec     dx
Mov     al,     0f5h
Out     dx,     al
Inc     dx
In      al,     dx
And     al,     not 08h
Out     dx,     al
;------ Set timeout interval as 30seconds and start counting ----------------------------------
Dec     dx
Mov     al,     0f6h
Out     dx,     al
Inc     dx
Mov     al,     30
Out     dx,     al
;------ Exit the extended function mode ------------------------------------------------------
Dec     dx
Mov     al,     0aah
Out     dx,     al
```

FLASH BIOS UPDATE

A. Before System BIOS update

1. Prepare a bootable media (ex. USB storage device) which can boot system to DOS prompt.
2. Download and save the BIOS file (ex. B8810P01.bin) to the bootable device.
3. Copy AMI flash utility – AFUDOS.exe (v2.35) into bootable device.

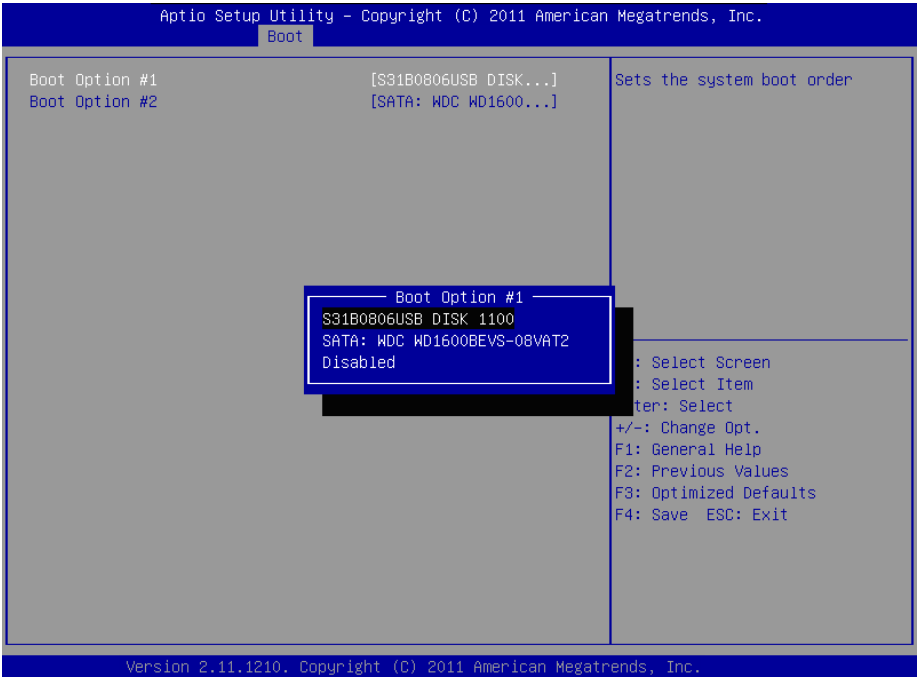
```
C:\B881>dir

 Volume in drive C is EFI_DUET
 Volume Serial Number is 3CCE-A150
 Directory of C:\B881

.              <DIR>        12-14-10  5:48p
..             <DIR>        12-14-10  5:48p
AFUDOS   EXE       159,008  03-04-10  4:16p
README   TXT         2,684  03-04-10  2:33p
AFUDOS   TXT         2,906  03-04-10  3:02p
B8810P01 BIN     8,388,608  08-30-11  3:32p
         4 file(s)      8,553,206 bytes
         2 dir(s)     787,197,952 bytes free

C:\B881>
```

4. Make sure the target system can first boot to the bootable device.
   (1) Connect the bootable USB device.
   (2) Turn on the computer and press <F2> or <Del> key during boot to enter BIOS Setup.
   (3) System will go into the BIOS setup menu.
   (4) Select [Boot] menu.
   (5) Select [Hard Drive BBS Priorities], set the USB bootable device to be the 1st boot device.
   (6) Press <F4> key to save configuration and exit the BIOS setup menu.



B. AFUDOS command for system BIOS update

AFUDOS.exe is the AMI firmware update utility; the command line is shown as below:

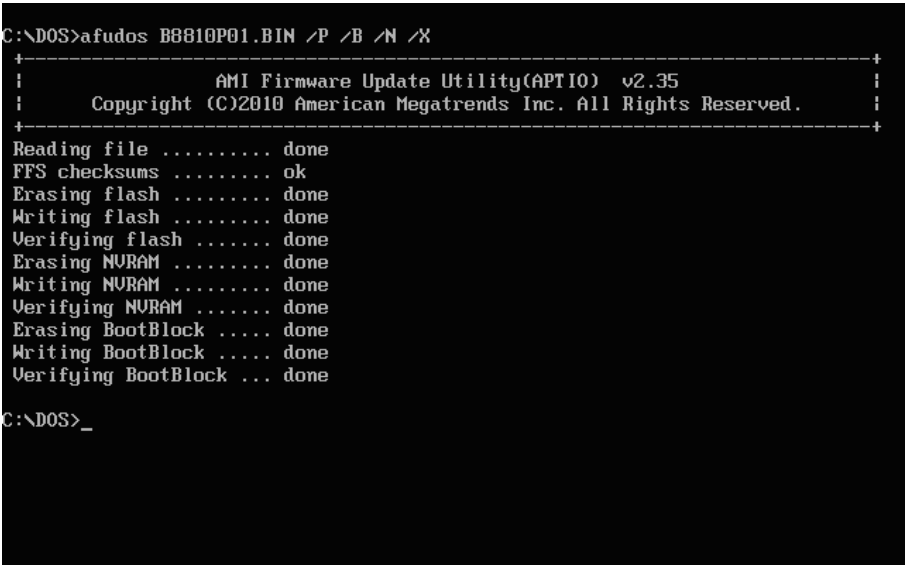
AFUDOS <ROM File Name> [option1] [option2]….

User can type "AFUDOS/ ?" to see all the definition of each control options. The recommended options for BIOS ROM update include following parameters:

/P: Program main BIOS image.
/B: Program Boot Block.
/N: Program NVRAM.
/X: Don't check ROM ID.

C. BIOS update procedure

1. Use the bootable USB storage to boot up system into the DOS command prompt.
2. Type "**AFUDOS B881xxxx.bin /p /b /n /x"** and press enter to start the flash procedure.
   (Note that xxxx means the BIOS revision part, ex. 0P01…)
3. During the update procedure, you will see the BIOS update process status and its percentage. Beware! Do not turn off system power or reset your computer if the whole procedure are not complete yet, or it may crash the BIOS ROM and make system unable to boot up next time.
4. After BIOS update procedures is complete, the messages should be like the figure shown below.



5. User can restart the system and boot up with new BIOS now.
6. Update is complete after restart.

7. Verify during following boot that the BIOS version displayed at initialization screen has changed.