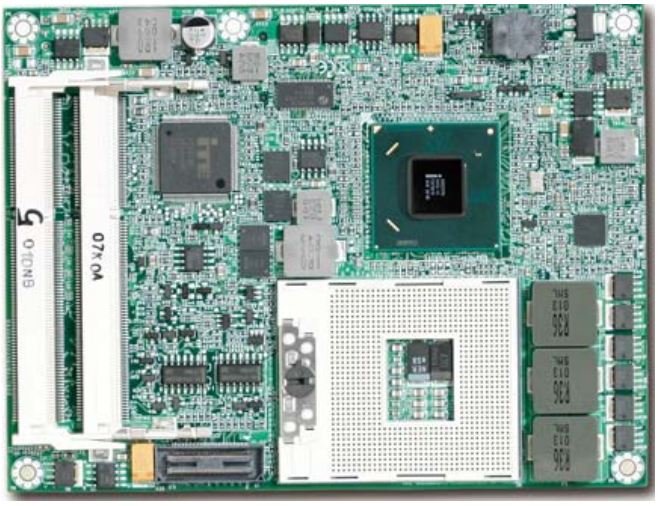
PCOM-B217VG-II

COM Express Type II Module

User's Manual



Version 1.0

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Table of Contents

How to Use This Manual

The manual describes how to configure your PCOM-B217VG-VI-ECC to meet various operating requirements. It is divided into five chapters, with each chapter addressing a basic concept and operation of this COM Express Module.

Chapter 1 : System Overview. Presents what you have in the box and give you an overview of the product specifications and basic system architecture for this model of single board computer.

Chapter 2 : Hardware Configuration. Shows the definition and location of Jumpers and Connectors that you can easily configure your system.

Chapter 3 : System Installation. Describes how to properly mount the CPU, main memory to get a safe installation and provides a programming guide of Watch Dog Timer function.

Chapter 4 : BIOS Setup Information. Specifies the meaning of each setup parameters, how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give users some guidelines of trouble-shooting.

The content of this manual and EC declaration document is subject to change without prior notice. These changes will be incorporated in new editions of the document. **Portwell** may make supplement or change in the products described in this document at any time.

Updates to this manual, technical clarification, and answers to frequently asked questions will be shown on the following web site: http://www.portwell.com.tw

Chapter 1
System Overview

1.1 Introduction

COM Express, a standard that holds by PICMG (PCI Industrial Computer Manufacturer Group) defines new industrial computer platform in "Module board" and "Carrier board" architecture. The "Module board" equipped processor or its socket, chipset, memory or memory socket and single Ethernet controller on it. The On-The-Shelf Module board allows users to create their own Carrier board easily and quickly since most critical parts are ready on Module board. COM Express Module board offers expansion interfaces such as PCI Express, PCI, SATA, IDE, LPC, LVDS, Audio etc. that could support variety functions depending on Carrier board design.

The Carrier board was customized design to fit in different mechanical requirements. In the meanwhile, its variety functions were also customized to meet the application. Compares to the platform that designed from nothing, COM Express architecture platform only needs to develop Carrier board. Users could keep their know-how which related to their core competence in the Carrier board.

PCOM-B217VG are all type II COM Express Module board equipped Intel Sandy Bridge PGA processor, two DDR3 SO-DIMM sockets **(PCOM-B217VG support non-ECC memory only)**, one Gigabit Ethernet controller on it to provide expansion interfaces –PCI Express (x16 / x1), PCI (supports four devices), SATA and so on.

Implement PCOM-B217VG that with turbo boost can maximize CPU and graphic performance for your demand.

1.2 Check List

The PCOM-B217VG-II series package should cover the following basic items

- ✓ One PCOM-B217VG-II module board

If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

1.3 Product Specification

- **Main processor**

-Support Intel Embedded Processor
- DMI x4 Link: 5GT/s (Full-Duplex)

- **BIOS**

AMI UEFI Aptio system BIOS in SPI ROM with 4MB Flash ROM with easy upgrade function ACPI, DMI, Green function and Plug and Play Compatible

- **Main Memory**

Two SO-DIMM sockets support dual channel ECC DDR3 1067/1333 up to 16GB
(PCOM-B217VG-VI-ECC support non-ECC memory only)

- **L2 Cache Memory**

Build-in processor

- **Chipset**

Intel QM67 chipset

- **Expansion Interfaces**

- PCI Express
•One PCI Express x16 link
•Six PCI Express x1 link
- LVDS
•Supports 25 to 112MHz single/dual channel LVDS interface
•Single channel LVDS interface support: 1 x 18 bpp OR 24 bpp, compatible with VESA LVDS color mapping.
•Dual channel LVDS interface support: 2 x 18 bpp OR 24 bpp, compatible with SPWG(Standard Panels Working Group) v.3.5 specification
- TV-out
•no TV-out supported
- SDVO (Serial Digital Video Output)
•no SDVO port supported
- VGA
•Up to 2048 x 1536 mode support
- Ethernet
• Intel 82579LM Gigabit Ethernet controller is equipped, 4 MDI pairs on Row A- B
- IDE Interface
•Support one enhanced IDE channel with PIO mode 4 ultra DMA/33/66/100
- SATA Interface
•Support Two SATA 3.0 ports, Two SATA 2.0 ports
- USB Interface
•Support eight USB 2.0 ports

- **Outline Dimension (L X W):**

95mm (3.74″) X 125mm (4.92″)

- **Operating Temperature:**

0°C ~ 60°C (32°F ~ 140°F)

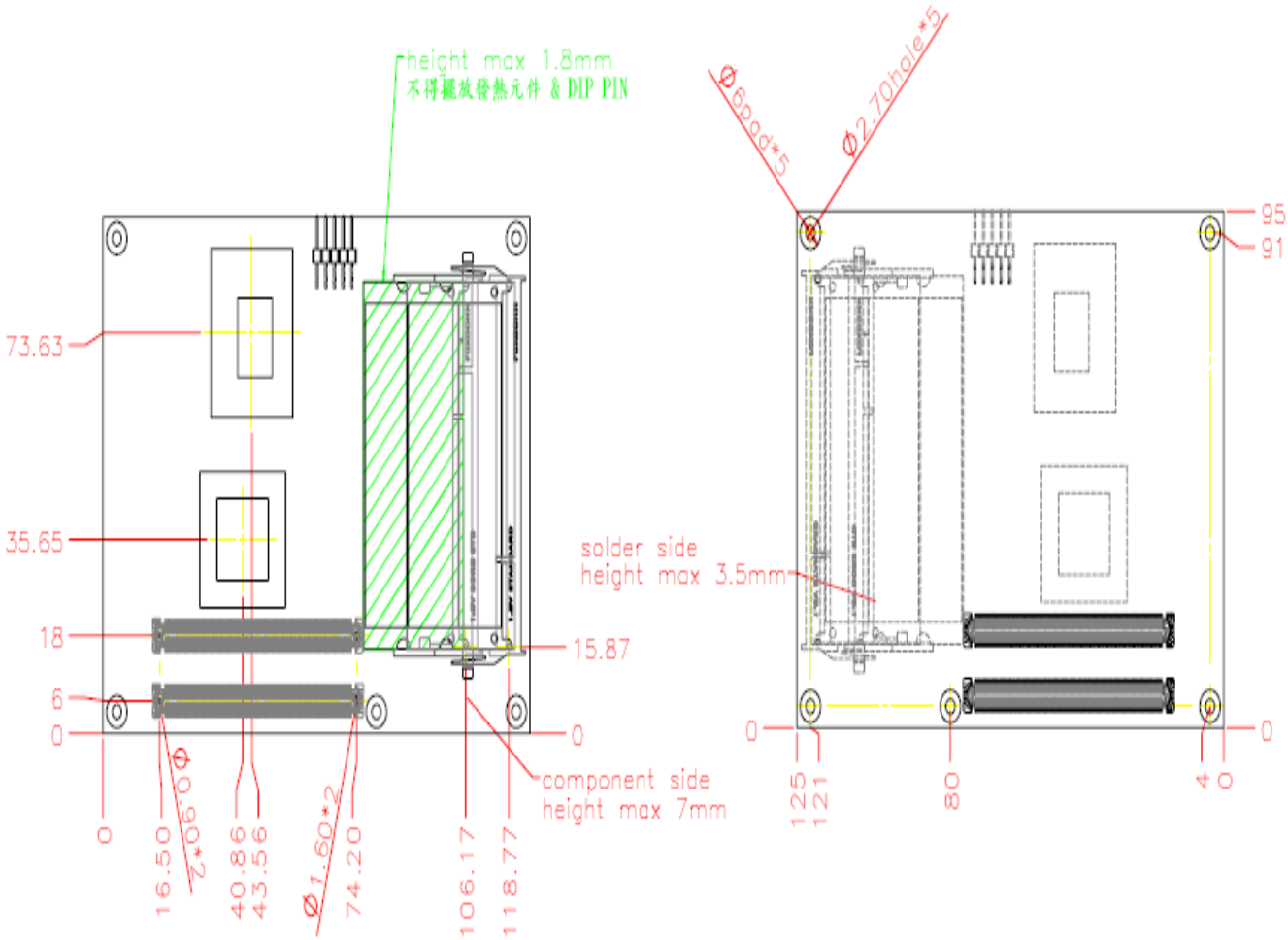
- **Storage Temperature:**

-20°C ~ 80°C

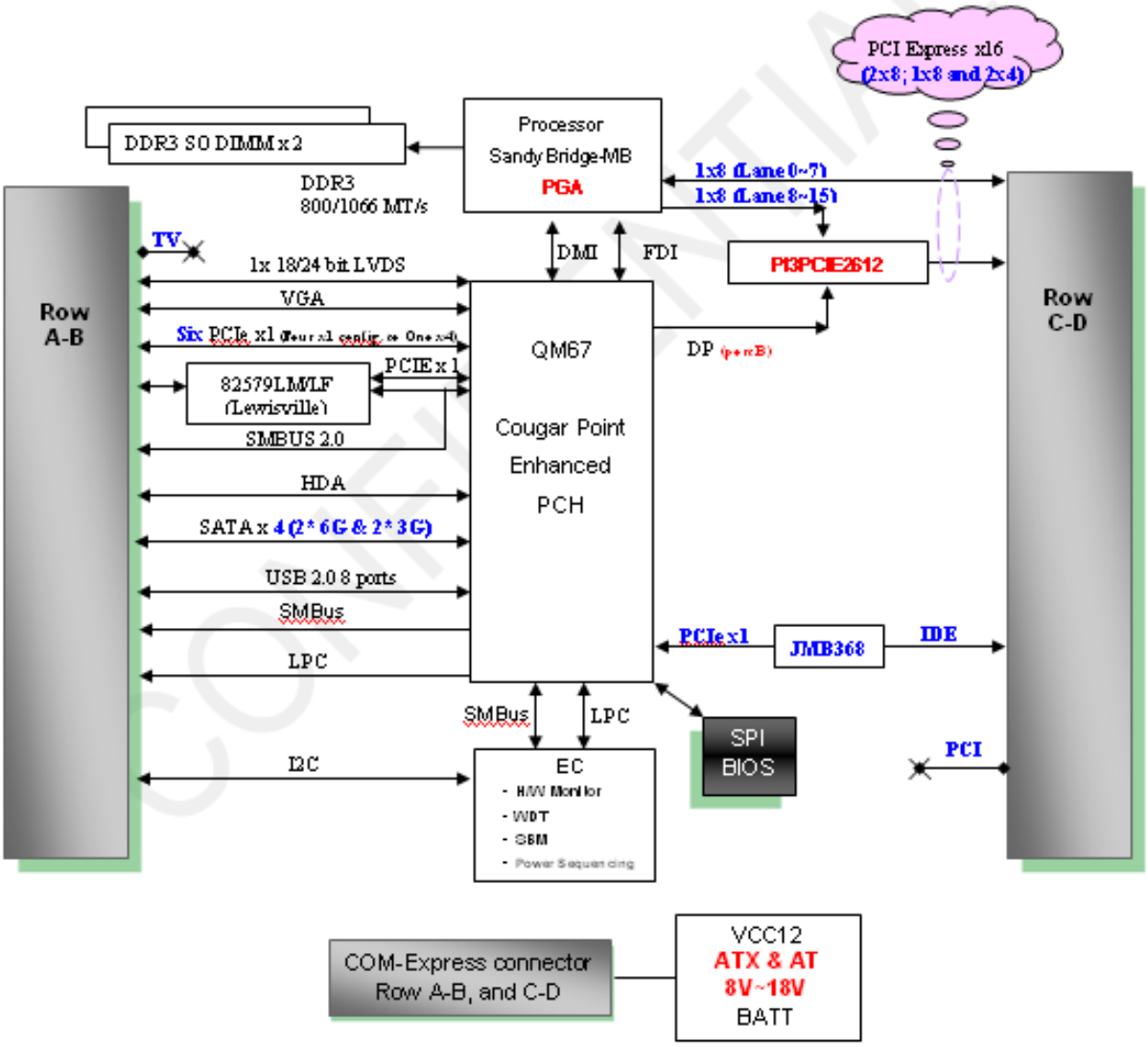
- **Relative Humidity:**

5% ~ 90%, non-condensing

1.4 Mechanical Drawing



1.5 System Architecture



Chapter 2
Hardware Configuration

This chapter indicates jumpers', headers' and connectors' locations. Users may find useful information related to hardware settings in this chapter. The default settings are indicated with a star sign (★).

2.1 Jumper Setting

In order to customize PCOM-B217VG-II's features for users, in the following sections, **Short** means covering a jumper cap over jumper pins; **Open** or **N/C** (Not Connected) means removing a jumper cap from jumper pins. Users can refer to Figure 2-1 and Figure 2-2 for the Jumper locations.

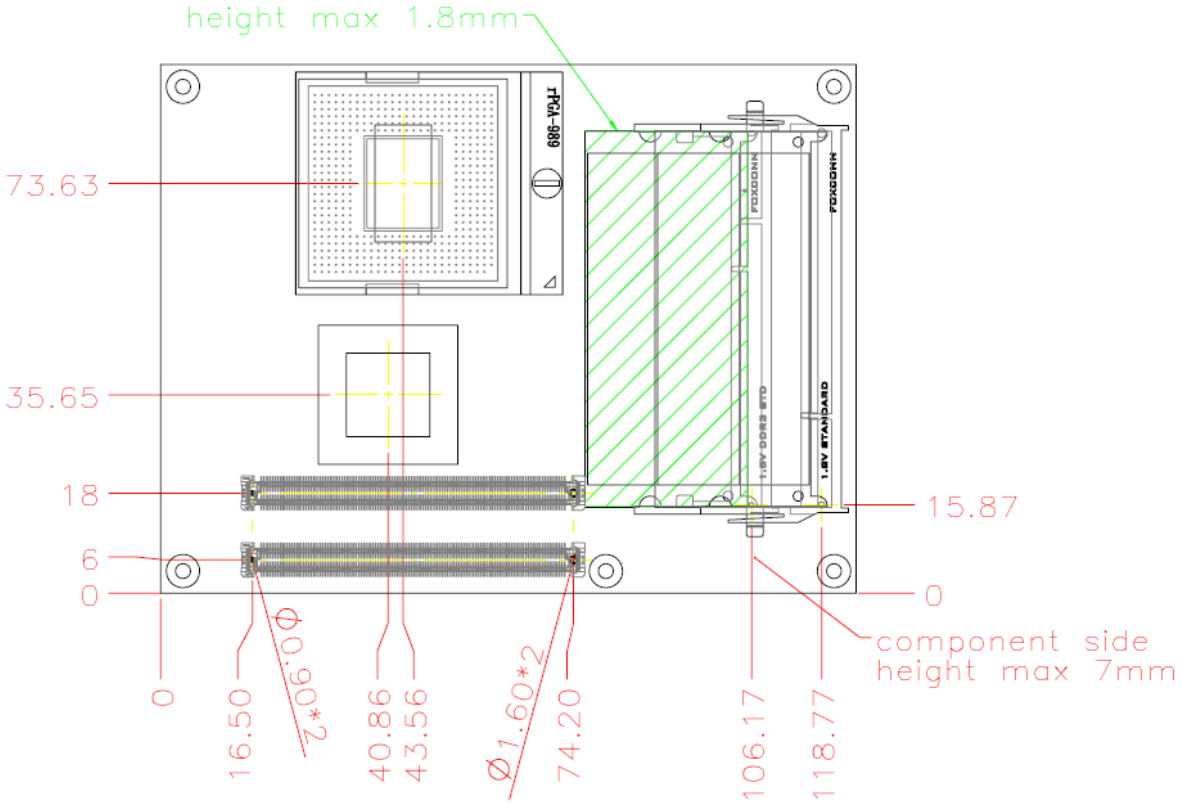


Figure 2-1 PCOM-B217VG-II Top-side Connector Location

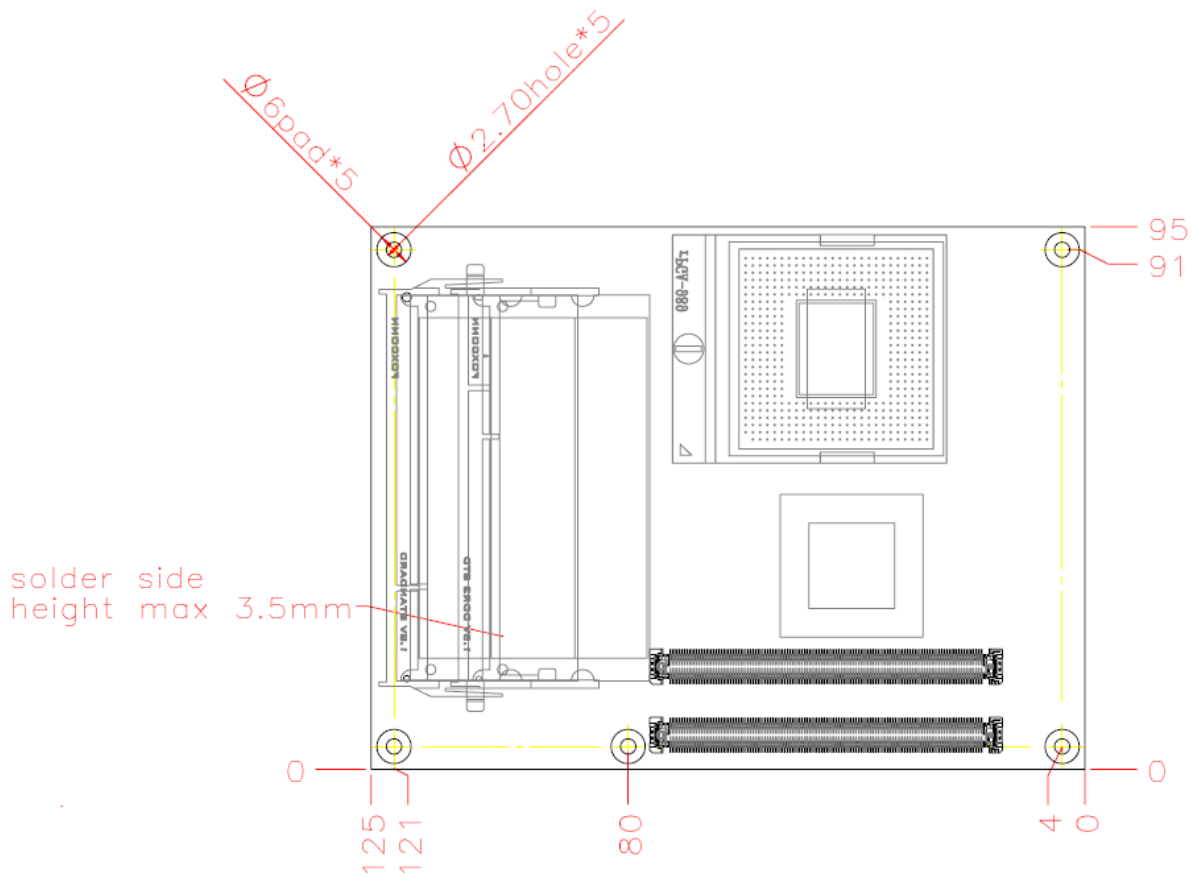


Figure 2-2 PCOM-B217VG-II Bottom-side Connector Location

2.2 Connector Allocation

Connector Function List

U1	CPU Socket
U8,U9	DDR3 SO-DIMM Memory Socket
U20	SPI Socket
U42	EC Socket
J4,J5	COMEXPRESS Interface Connector

SW1 (HW Strapping)	ON	OFF
Pin1-8 (CFG5) Pin2-7 (CFG6)	11:(Default)x16 10:x8,x8 01:00Reserved 00: x8,x4,x4	
Pin 3-6 (ATX_DETECT)	Enable	Disable
Pin4-5 (BIOS_DISABLE#)	Enable	Disable

Pin Assignment of Connectors

J5				J4			
Row A		Row B		Row C		Row D	
Pin	Signal Description	Pin	Signal Description	Pin	Signal	Pin	Signal
A1	GND (FIXED)	B1	GND (FIXED)	C1	GND (FIXED)	D1	GND (FIXED)
A2	GBE0_MDI3-	B2	GBE0_ACT#	C2	IDE_D7	D2	IDE_D5
A3	GBE0_MDI3+	B3	LPC_FRAME#	C3	IDE_D6	D3	IDE_D10
A4	GBE0_LINK100#	B4	LPC_AD0	C4	IDE_D3	D4	IDE_D11
A5	GBE0_LINK1000#	B5	LPC_AD1	C5	IDE_D15	D5	IDE_D12
A6	GBE0_MDI2-	B6	LPC_AD2	C6	IDE_D8	D6	IDE_D4
A7	GBE0_MDI2+	B7	LPC_AD3	C7	IDE_D9	D7	IDE_D0
A8	GBE0_LINK#	B8	LPC_DRQ0#	C8	IDE_D2	D8	IDE_REQ
A9	GBE0_MDI1-	B9	LPC_DRQ1#	C9	IDE_D13	D9	IDE_IOW#
A10	GBE0_MDI1+	B10	LPC_CLK	C10	IDE_D1	D10	IDE_ACK#
A11	GND (FIXED)	B11	GND (FIXED)	C11	GND (FIXED)	D11	GND (FIXED)
A12	GBE0_MDI0-	B12	PWRBTN#	C12	IDE_D14	D12	IDE_IRQ
A13	GBE0_MDI0+	B13	SMB_CK	C13	IDE_IORDY	D13	IDE_A0
A14	GBE0_CTREF	B14	SMB_DAT	C14	IDE_IOR#	D14	IDE_A1
A15	SUS_S3#	B15	SMB_ALERT#	C15	PCI_PME#	D15	IDE_A2

A16	SATA0_TX+	B16	SATA1_TX+	C16	PCI_GNT2#	D16	IDE_CS1#
A17	SATA0_TX-	B17	SATA1_TX-	C17	PCI_REQ2#	D17	IDE_CS3#
A18	SUS_S4#	B18	SUS_STAT#	C18	PCI_GNT1#	D18	IDE_RESET#
A19	SATA0_RX+	B19	SATA1_RX+	C19	PCI_REQ1#	D19	PCI_GNT3#
A20	SATA0_RX-	B20	SATA1_RX-	C20	PCI_GNT0#	D20	PCI_REQ3#
A21	GND (FIXED)	B21	GND (FIXED)	C21	GND (FIXED)	D21	GND (FIXED)
A22	SATA2_TX+	B22	SATA3_TX+	C22	PCI_REQ0#	D22	PCI_AD1
A23	SATA2_TX-	B23	SATA3_TX-	C23	PCI_RESET#	D23	PCI_AD3
A24	SUS_S5#	B24	PWR_OK	C24	PCI_AD0	D24	PCI_AD5
A25	SATA2_RX+	B25	SATA3_RX+	C25	PCI_AD2	D25	PCI_AD7
A26	SATA2_RX-	B26	SATA3_RX-	C26	PCI_AD4	D26	PCI_C/BE0#
A27	BATLOW#	B27	WDT	C27	PCI_AD6	D27	PCI_AD9
A28	(S)ATA_ACT#	B28	AC/HDA_SDIN2	C28	PCI_AD8	D28	PCI_AD11
A29	AC/HDA_SYNC	B29	AC/HDA_SDIN1	C29	PCI_AD10	D29	PCI_AD13
A30	AC/HDA_RST#	B30	AC/HDA_SDIN0	C30	PCI_AD12	D30	PCI_AD15
A31	GND (FIXED)	B31	GND (FIXED)	C31	GND (FIXED)	D31	GND (FIXED)
A32	AC/HDA_BITCLK	B32	SPKR	C32	PCI_AD14	D32	PCI_PAR
A33	AC/HDA_SDOUT	B33	I2C_CK	C33	PCI_C/BE2#	D33	PCI_SERR#
A34	BIOS_DIS0#	B34	I2C_DAT	C34	PCI_PERR#	D34	PCI_STOP#
A35	THRMTRIP#	B35	THRM#	C35	PCI_LOCK#	D35	PCI_TRDY#
A36	USB6-	B36	USB7-	C36	PCI_DEVSEL#	D36	PCI_FRAME#
A37	USB6+	B37	USB7+	C37	PCI_IRDY#	D37	PCI_AD16
A38	USB_6_7_OC#	B38	USB_4_5_OC#	C38	PCI_C/BE2#	D38	PCI_AD18
A39	USB4-	B39	USB5-	C39	PCI_AD17	D39	PCI_AD20
A40	USB4+	B40	USB5+	C40	PCI_AD19	D40	PCI_AD22
A41	GND (FIXED)	B41	GND (FIXED)	C41	GND (FIXED)	D41	GND (FIXED)
A42	USB2-	B42	USB3-	C42	PCI_AD21	D42	PCI_AD24
A43	USB2+	B43	USB3+	C43	PCI_AD23	D43	PCI_AD26
A44	USB_2_3_OC#	B44	USB_0_1_OC#	C44	PCI_C/BE3#	D44	PCI_AD28
A45	USB0-	B45	USB1-	C45	PCI_AD25	D45	PCI_AD30
A46	USB0+	B46	USB1+	C46	PCI_AD27	D46	PCI_IRQC#
A47	VCC_RTC	B47	EXCD1_PERST#	C47	PCI_AD29	D47	PCI_IRQD#
A48	EXCD0_PERST#	B48	EXCD1_CPPE#	C48	PCI_AD31	D48	PCI_CLKRUN#
A49	EXCD0_CPPE#	B49	SYS_RESET#	C49	PCI_IRQA#	D49	PCI_M66EN
A50	LPC_SERIRQ	B50	CB_RESET#	C50	PCI_IRQB#	D50	PCI_CLK
A51	GND (FIXED)	B51	GND (FIXED)	C51	GND (FIXED)	D51	GND (FIXED)
A52	PCIE_TX5+	B52	PCIE_RX5+	C52	PEG_RX0+	D52	PEG_TX0+
A53	PCIE_TX5-	B53	PCIE_RX5-	C53	PEG_RX0-	D53	PEG_TX0-
A54	GPI0	B54	GPO1	C54	TYPE0#	D54	PEG_LANE_RV#
A55	PCIE_TX4+	B55	PCIE_RX4+	C55	PEG_RX1+	D55	PEG_TX1+
A56	PCIE_TX4-	B56	PCIE_RX4-	C56	PEG_RX1-	D56	PEG_TX1-

A57	GND	B57	GPO2	C57	TYPE1#	D57	TYPE2#
A58	PCIE_TX3+	B58	PCIE_RX3+	C58	PEG_RX2+	D58	PEG_TX2+
A59	PCIE_TX3-	B59	PCIE_RX3-	C59	PEG_RX2-	D59	PEG_TX2-
A60	GND (FIXED)	B60	GND (FIXED)	C60	GND (FIXED)	D60	GND (FIXED)
A61	PCIE_TX2+	B61	PCIE_RX2+	C61	PEG_RX3+	D61	PEG_TX3+
A62	PCIE_TX2-	B62	PCIE_RX2-	C62	PEG_RX3-	D62	PEG_TX3-
A63	GPI1	B63	GPO3	C63	RSVD	D63	RSVD
A64	PCIE_TX1+	B64	PCIE_RX1+	C64	RSVD	D64	RSVD
A65	PCIE_TX1-	B65	PCIE_RX1-	C65	PEG_RX4+	D65	PEG_TX4+
A66	GND	B66	WAKE0#	C66	PEG_RX4-	D66	PEG_TX4-
A67	GPI2	B67	WAKE1#	C67	RSVD	D67	GND
A68	PCIE_TX0+	B68	PCIE_RX0+	C68	PEG_RX5+	D68	PEG_TX5+
A69	PCIE_TX0-	B69	PCIE_RX0-	C69	PEG_RX5-	D69	PEG_TX5-
A70	GND (FIXED)	B70	GND (FIXED)	C70	GND (FIXED)	D70	GND (FIXED)
A71	LVDS_A0+	B71	LVDS_B0+	C71	PEG_RX6+	D71	PEG_TX6+
A72	LVDS_A0-	B72	LVDS_B0-	C72	PEG_RX6-	D72	PEG_TX6-
A73	LVDS_A1+	B73	LVDS_B1+	C73	SDVO_DATA	D73	SDVO_CLK
A74	LVDS_A1-	B74	LVDS_B1-	C74	PEG_RX7+	D74	PEG_TX7+
A75	LVDS_A2+	B75	LVDS_B2+	C75	PEG_RX7-	D75	PEG_TX7-
A76	LVDS_A2-	B76	LVDS_B2-	C76	GND	D76	GND
A77	LVDS_VDD_EN	B77	LVDS_B3+	C77	RSVD	D77	IDE_CBLID#
A78	LVDS_A3+	B78	LVDS_B3-	C78	PEG_RX8+	D78	PEG_TX8+
A79	LVDS_A3-	B79	LVDS_BKLT_EN	C79	PEG_RX8-	D79	PEG_TX8-
A80	GND (FIXED)	B80	GND (FIXED)	C80	GND (FIXED)	D80	GND (FIXED)
A81	LVDS_A_CK+	B81	LVDS_B_CK+	C81	PEG_RX9+	D81	PEG_TX9+
A82	LVDS_A_CK-	B82	LVDS_B_CK-	C82	PEG_RX9-	D82	PEG_TX9-
A83	LVDS_I2C_CK	B83	LVDS_BKLT_CTRL	C83	RSVD	D83	RSVD
A84	LVDS_I2C_DAT	B84	VCC_5V_SBY	C84	GND	D84	GND
A85	GPI3	B85	VCC_5V_SBY	C85	PEG_RX10+	D85	PEG_TX10+
A86	KBD_RST#	B86	VCC_5V_SBY	C86	PEG_RX10-	D86	PEG_TX10-
A87	KBD_A20GATE	B87	VCC_5V_SBY	C87	GND	D87	GND
A88	PCIE0_CK_REF+	B88	SPI_DIS#	C88	PEG_RX11+	D88	PEG_TX11+
A89	PCIE0_CK_REF-	B89	VGA_RED	C89	PEG_RX11-	D89	PEG_TX11-
A90	GND (FIXED)	B90	GND (FIXED)	C90	GND (FIXED)	D90	GND (FIXED)
A91	SPI_POWER	B91	VGA_GRN	C91	PEG_RX12+	D91	PEG_TX12+
A92	SPI_MISO	B92	VGA_BLU	C92	PEG_RX12-	D92	PEG_TX12-
A93	GPO0	B93	VGA_HSYNC	C93	GND	D93	GND
A94	SPI_CLK	B94	VGA_VSYNC	C94	PEG_RX13+	D94	PEG_TX13+
A95	SPI_MOSI	B95	VGA_I2C_CK	C95	PEG_RX13-	D95	PEG_TX13-
A96	GND	B96	VGA_I2C_DAT	C96	GND	D96	GND
A97	TYPE10#	B97	SPI_CS#	C97	RSVD	D97	PEG_ENABLE#

A98	RSVD	B98	RSVD	C98	PEG_RX14+	D98	PEG_TX14+
A99	RSVD	B99	RSVD	C99	PEG_RX14-	D99	PEG_TX14-
A100	GND (FIXED)	B100	GND (FIXED)	C100	GND (FIXED)	D100	GND (FIXED)
A101	RSVD	B101	RSVD	C101	PEG_RX15+	D101	PEG_TX15+
A102	RSVD	B102	RSVD	C102	PEG_RX15-	D102	PEG_TX15-
A103	RSVD	B103	RSVD	C103	GND	D103	GND
A104	VCC_12V	B104	VCC_12V	C104	VCC_12V	D104	VCC_12V
A105	VCC_12V	B105	VCC_12V	C105	VCC_12V	D105	VCC_12V
A106	VCC_12V	B106	VCC_12V	C106	VCC_12V	D106	VCC_12V
A107	VCC_12V	B107	VCC_12V	C107	VCC_12V	D107	VCC_12V
A108	VCC_12V	B108	VCC_12V	C108	VCC_12V	D108	VCC_12V
A109	VCC_12V	B109	VCC_12V	C109	VCC_12V	D109	VCC_12V
A110	GND (FIXED)	B110	GND (FIXED)	C110	GND (FIXED)	D110	GND (FIXED)

Chapter 3
System Installation

This chapter provides instructions to set up the system. The additional information is enclosed to help you set up onboard PCI devices

3.1 Intel® i7/i5/i3 PGA

Intel® Core(TM) i7-2710QE (6M Cache, 2.10GHz, Max TDP 45W)
Intel® Core(TM) i5-2510E (3M Cache, 2.50GHz, Max TDP 35W)
Intel® Core(TM) i3-2330E (3M Cache, 2.20GHz, Max TDP 35W)

3.2 Main Memory

PCOM-B217VG-II provides 2 x 204pin SO-DIMM sockets which supports 1067/1333 DDR3-SDRAM as main memory, ECC (Error Checking and Correcting). The maximum memory can be up to 8GB. Memory clock and related settings can be detected by BIOS via SPD interface.

For system compatibility and stability, do not use memory module without brand. Memory configuration can be set to either one double-sided DIMM in one DIMM socket or two single-sided SO-DIMM in both sockets.

Beware of the connection and lock integrity from memory module to socket. Inserting improperly it will affect the system reliability.
Before locking, make sure that all modules have been fully inserted into the card slots.

3.3 Installing the Single Board Computer

To install your PCOM-B217VG-II into standard chassis or proprietary environment, please perform the following:

Step 1 : Check all jumpers setting on proper position

Step 2 : Install and configure CPU and memory module on right position
Step 3 : Place PCOM-B217VG-II into the dedicated position in the system
Step 4 : Attach cables to existing peripheral devices and secure it

WARNING
Please ensure that SBC is properly inserted and fixed by mechanism.

Note:
Please refer to section 3.3.1 to 3.3.7 to install INF/VGA/LAN/Audio drivers.

3.3.1 Chipset Component Driver

PCOM-B217VG-II uses state-of-art Intel® QM67 chipset. It's a new chipset that some old operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows 2000 /XP, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in PCOM-B217VG-II CD-title

3.3.2 Intel Integrated Graphics

PCOM-B217VG-II has integrated HD Graphic derived from Intel® Core(TM) 0series CPU (i5/i7) technology. It is the most advanced design to gain an outstanding graphic performance. Shared 128 accompany it to 256MB system DDR3-SDRAM with Total Graphics Memory. PCOM-B217VG-II supports VGA, DVI, LVDS and LVDS dual display. This combination makes PCOM-B217VG-II an excellent piece of multimedia hardware.

With no additional video adaptor, this onboard video will usually be the system display output. By adjusting the BIOS setting to disable on-board VGA, an add-on PCI-Express by 1 VGA card can take over the system display.

Drivers Support

Please find all the drivers in the PCOM-B217VG-II CD-title. Drivers support Windows-2000, Windows XP.

3.3.3 Intel® PROSet Gigabit Ethernet Controller

Drivers Support
Please find INTEL 82579LM LAN driver in /Ethernet directory of PCOM-B217VG-II CD-title. The drivers support Windows 2000/XP/Vista /Win7.

3.3.4 Audio Controller

Please find Intel® High Definition Audio driver form PCOM-B217VG-II CD-title. The drivers support Windows 2000/XP/Vista/Win7.

3.3.5 Intel® Active Management Technology (Intel® AMT)

Please find the latest Intel® 6.0 driver from PCOM-B217VG-II CD-title. The drivers support Windows 2000/XP/Vista/Win7.

3.4 Clear CMOS Operation

There is no backup battery designed on PCOM-B217VG-II, all setting will reset to default when disconnecting PCM-B217VG-II with carrier board.

Chapter 4
BIOS Setup Information

PCOM-B217VG-II is equipped with the AMI BIOS stored in Flash ROM. These BIOS has a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in CMOS RAM so that it is retained during power-off periods. When system is turned on, PCOM-B217VG-II communicates with peripheral devices and checks its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start up.

4.1 Entering Setup -- Launch System Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <Del> key will enter BIOS setup screen.

Press <Del> to enter SETUP

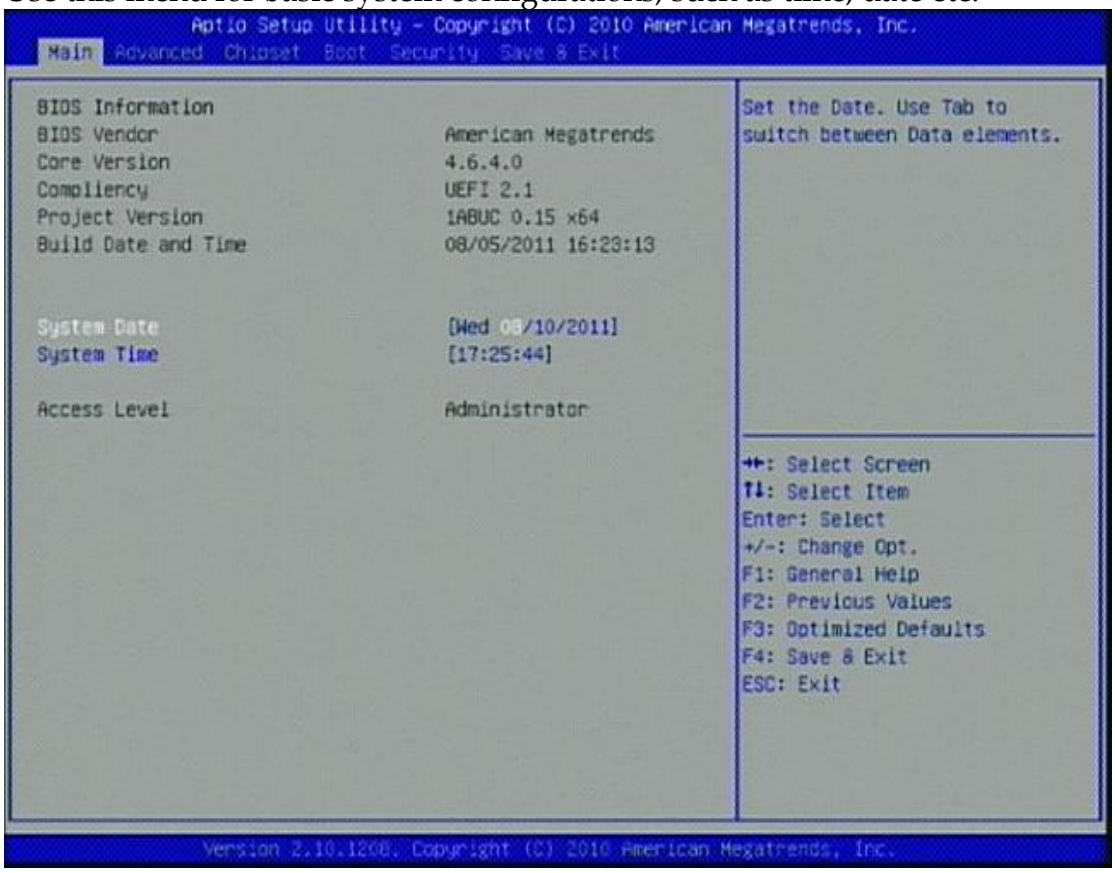
If the message disappears before responding and still wish to enter Setup, please restart the system by turning it OFF and On or pressing the RESET button. It can be also restarted by pressing <Ctrl>, <Alt>, and <Delete> keys on keyboard simultaneously.

Press <F1> to Run SETUP or Resume

The BIOS setup program provides a General Help screen. The menu can be easily called up from any menu by pressing <F1>. The Help screen lists all the possible keys to use and the selections for the highlighted item. Press <Esc> to exit the Help screen.

4.2 Main

Use this menu for basic system configurations, such as time, date etc.



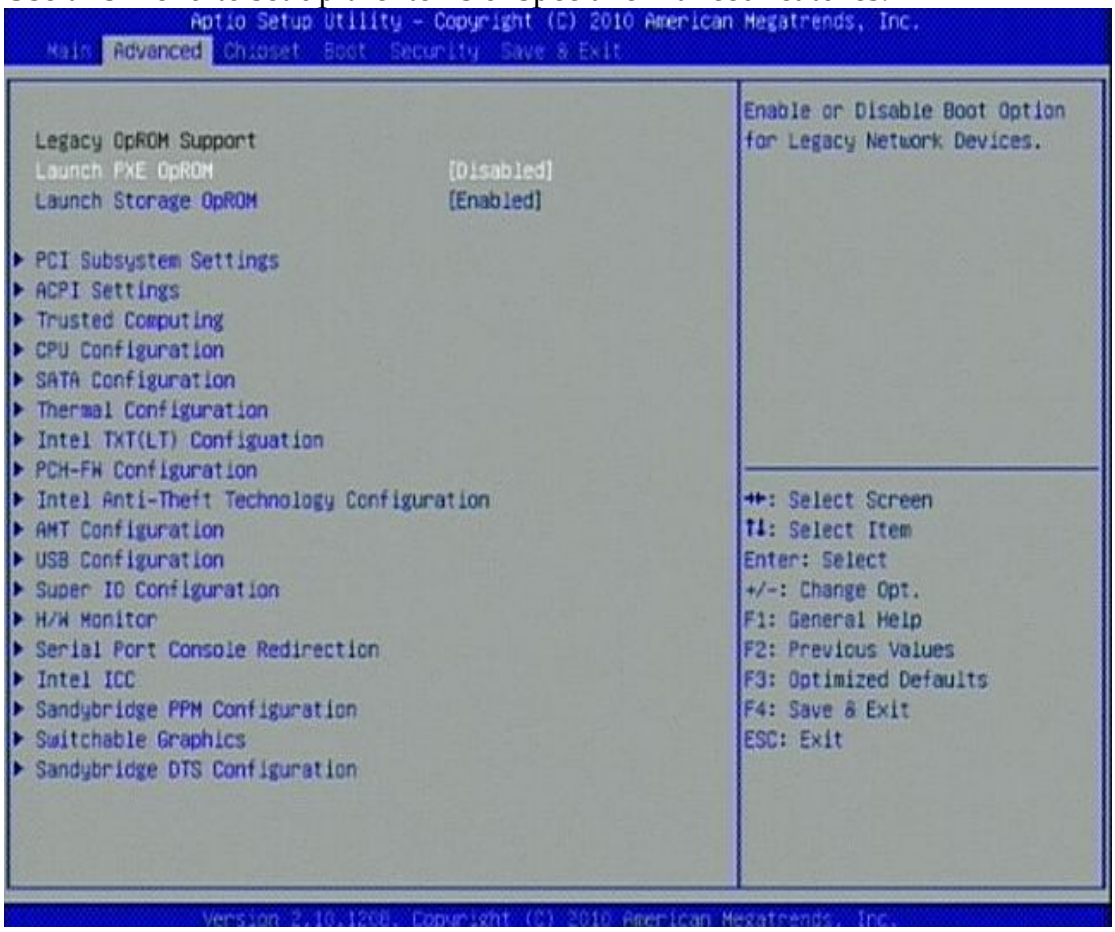
BIOS Information
These items show the firmware of your system. Read only.

System Time
The time format is <Hour> <Minute> <Second>. Use [+] or [−] to configure system Time.

System Date
The date format is <Day>, <Month> <Date> <Year>. Use [+] or [−] to configure system Date.

4.3 Advanced

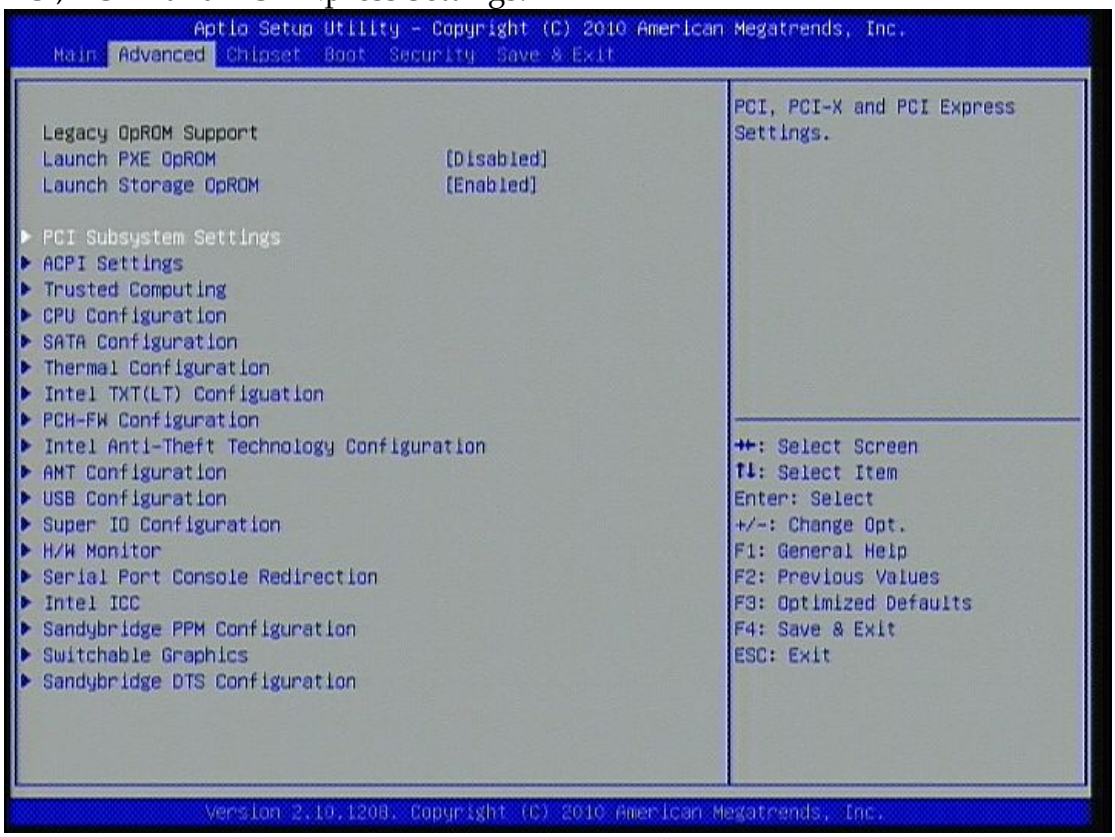
Use this menu to set up the items of special enhanced features.



Launch PXE OpROM
Enable or Disable Boot Option for Legacy Network Devices.

Launch Storage OpROM
Enable or Disable Boot Option for Mass Storage Devices with Option ROM

PCI Subsystem Settings
PCI, PCI-X and PCI Express Settings.



PCI ROM Priority
In case of multiple Option ROMs (Legacy and EFI Compatible), specifies what PCI Option ROM to Launch.
The choice: Legacy ROM, EFI Compatible ROM

PCI Latency Timer
Value to be programmed into PCI Latency Timer Register.
The choice: 32、64、96、128、160、192、224、248 PCI Bus Clocks

VGA Palette Snoop
Enables or Disables VGA Palette Registers Snooping.

PERR# Generation
Enables or Disables PCI Device to Generate PEER#.

SERR# Generation
Enables or Disables PCI Device to Generate SEER#.

Relaxed Ordering
Enables or Disables PCI Express Device Relaxed Ordering.

Extended Tag
If ENABLED allows Device to use 8-bit Tag field as a requester.

No Snoop
Enables or Disables PCI Express Device No Snoop option.

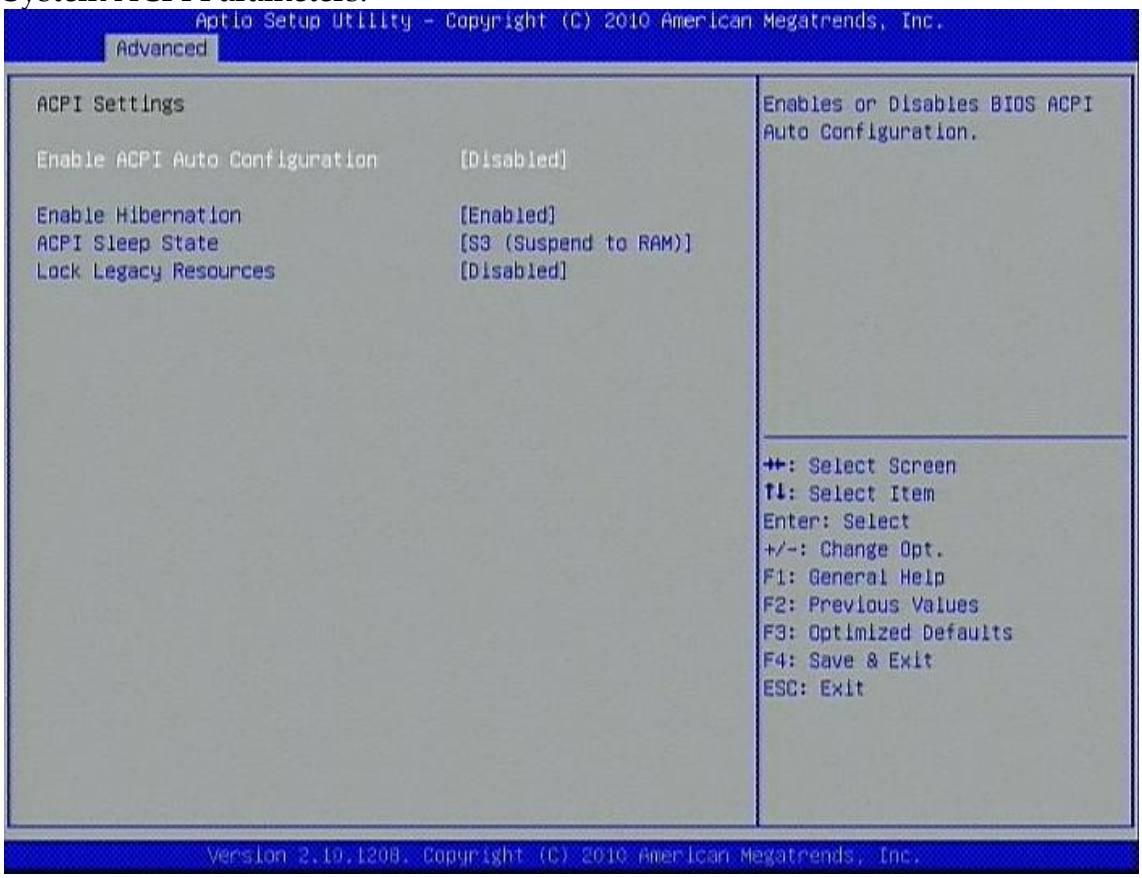
Maximum Payload
Set Maximum Payload of PCI Express Device or allow system BIOS to select the value.
The choice: Auto、128、256、512、1024、2048、4096 Bytes

Maximum Read Request
Set Maximum Read Request Size of PCI Express Device or allow system BIOS to select the value.
The choice: Auto、128、256、512、1024、2048、4096 Bytes

ASPM Support
Set the ASPM Level:
Force L0 – Force all links to L0 State
AUTO – BIOS auto configure
DISABLE – Disables ASPM

Extended Synch
If ENABLED allows generation of Extended Synchronization patterns.

ACPI settings
System ACPI Parameters.



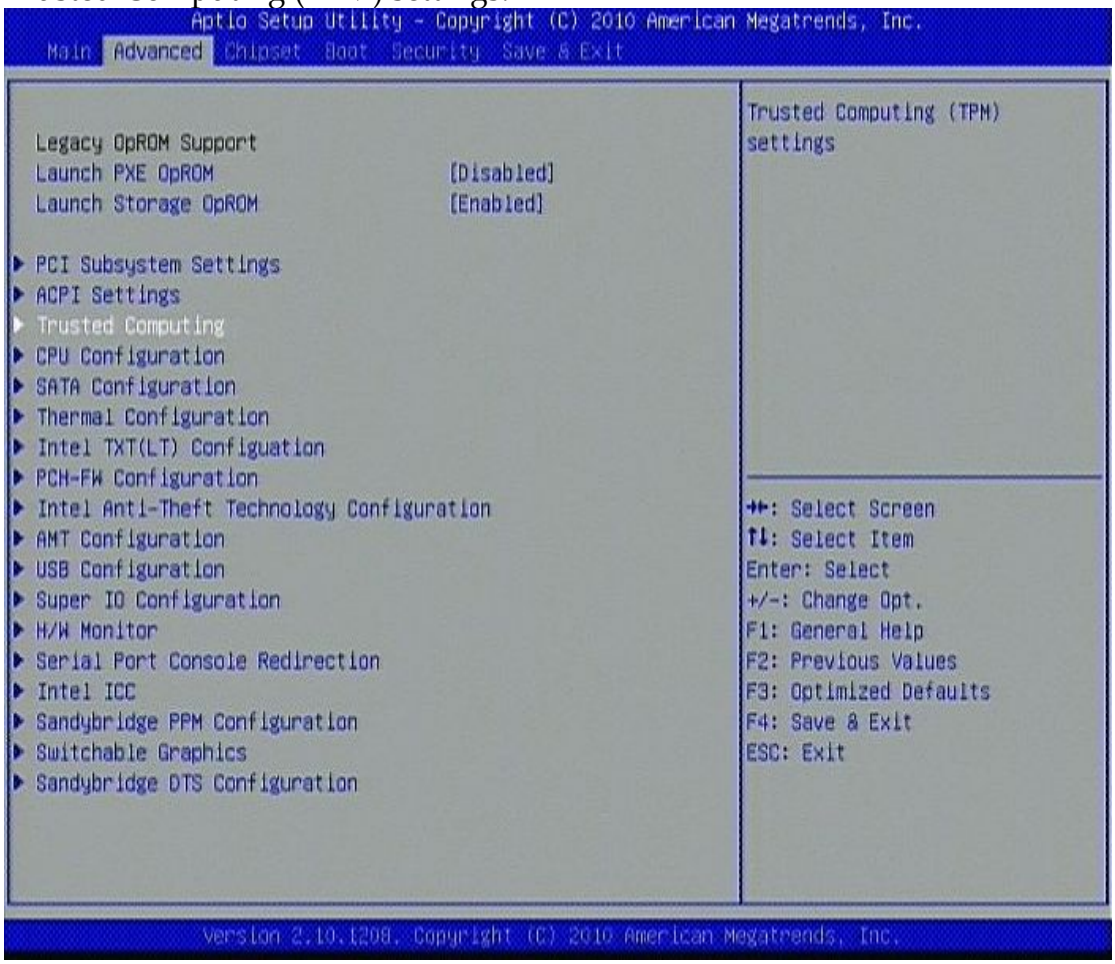
Enable ACPI Auto Configuration
Enables or Disables BIOS ACPI Auto Configuration.

Enable Hibernation
Enables or Disable System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

ACPI Sleep State
Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
The choice: Suspend Disabled, S1 (CPU Stop Clock), S3 (Suspend to RAM)

Lock Legacy Resources
Enables or Disable Lock of Legacy Resources.

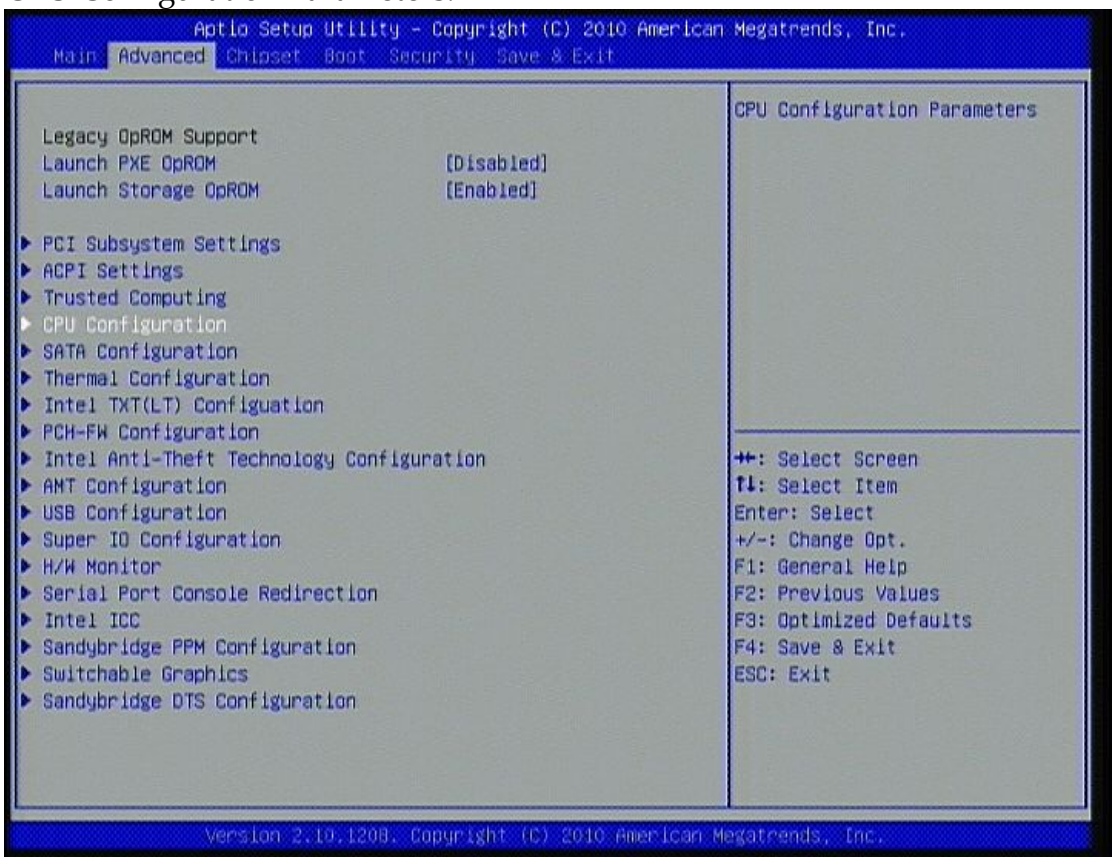
Trusted Computing
Trusted Computing (TPM) settings.



TPM SUPPORT
Enables or Disable TPM support. O.S. will not show TPM. Reset of platform is required.

CPU Configuration

CPU Configuration Parameters.



Hyper-threading

Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper- Threading Technology). When Disabled only one thread per enabled core is enabled.

Active Processor Cores

Number of cores to enable in each processor package.

Limit CPUID maximum

Disabled for Windows XP.

Execute Disable Bit

XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 Sp1, Windows XP SP2, SuSE Linux 9.2 RedHat Enterprise 3 Update 3.).

Hardware Prefetcher

To turn on/off the Mid Level Cache (L2) streamer prefetcher.

Adjacent Cache Line Prefetch

To turn on/off prefetching of adjacent cache lines.

Intel Virtualization Technology
When enabled, VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

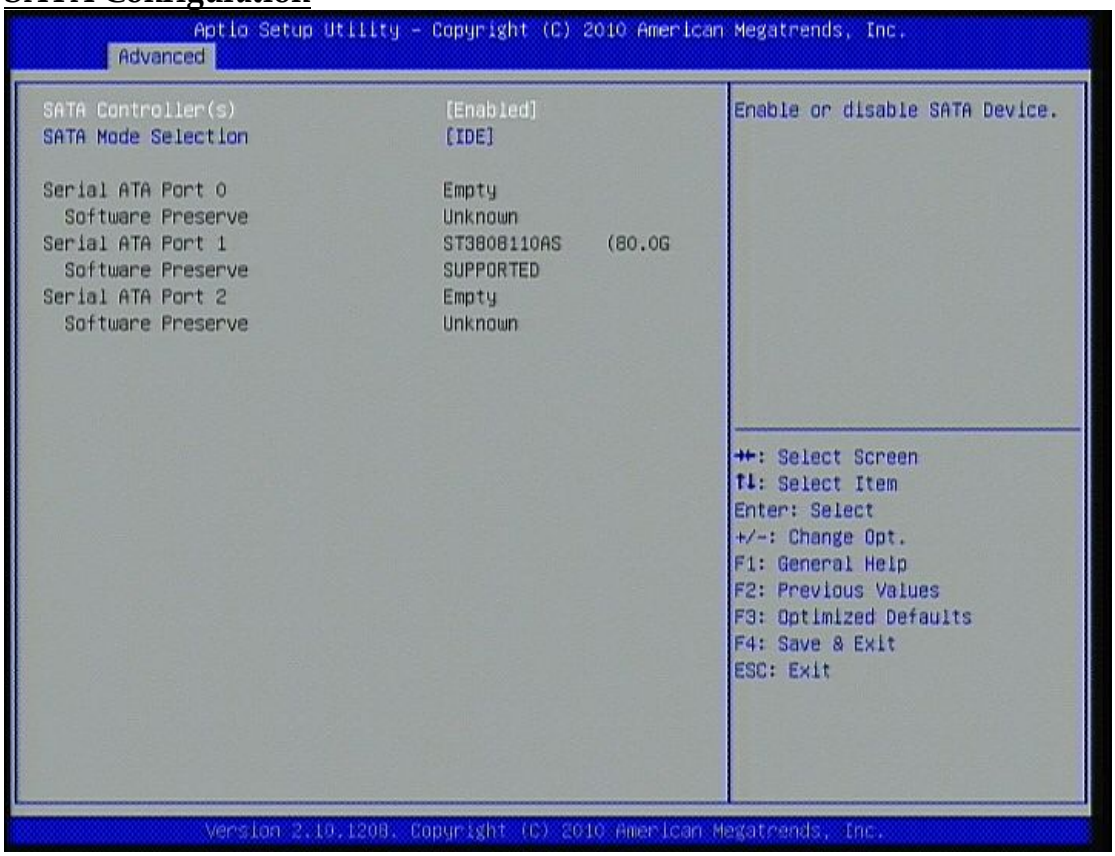
Local x2APIC
Enable Local x2APIC. Some 0Ses do not support this.

Long duration power limit
Long duration power limit in Watts.

Long duration maintained limit
Time window which the long duration power is maintained.

Short duration power limit
Short duration power limit in Watts.

SATA Configuration

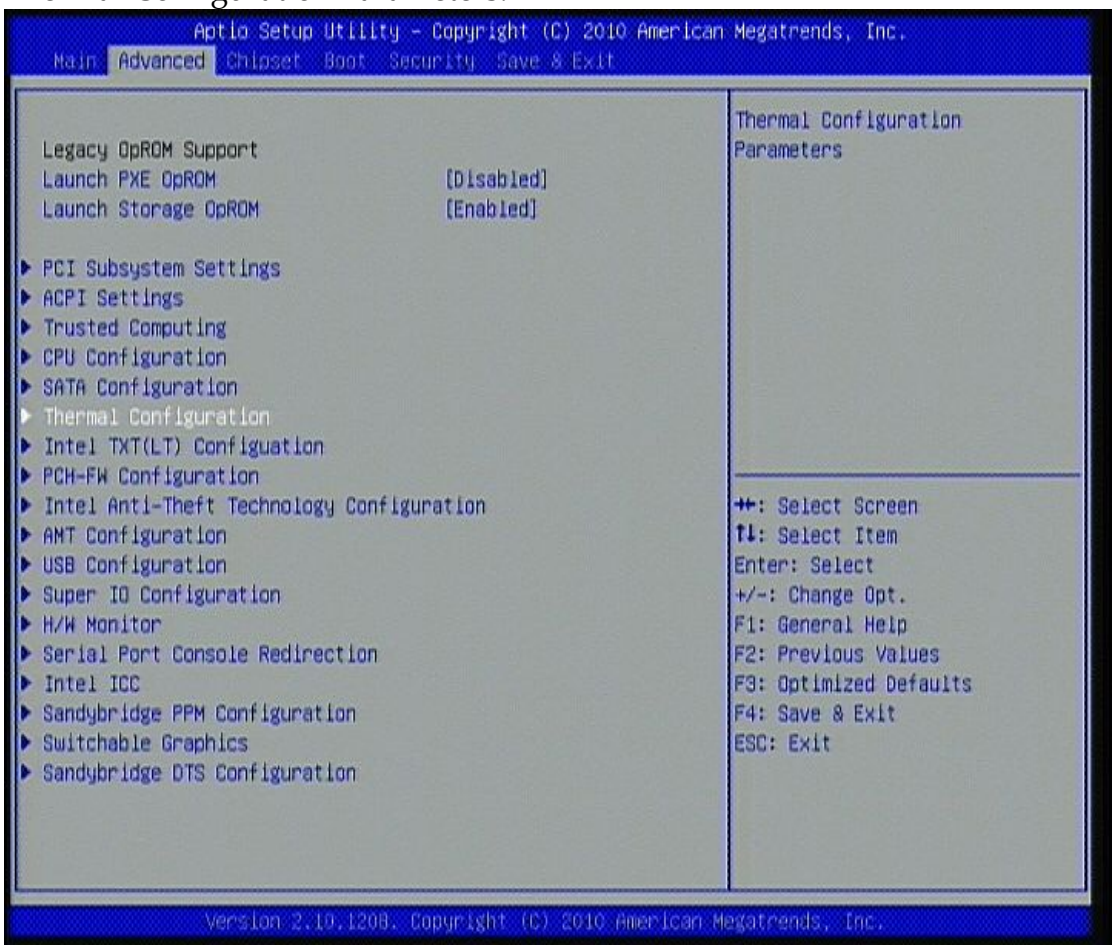


SATA Controller(s)
Enable or disable SATA Device.

SATA Mode Selection
Determines how SATA controller(s) operate.
The choice: IDE, AHCI, RAID

Thermal Configuration

Thermal Configuration Parameters.



Critical Trip Point

This value controls the temperature of the ACPI Critical Trip Point - the point in which the OS will shut the system off.

Note: 100C is the Plan of Record (POR) for all Intel mobile processors.

The choice: POR、15C、23C、31C、39C、47C、55C、63C、71C、79C、87C、95C、103C、111C、119C

Active Trip Point Hi Fan Speed

The value controls the temperature of the ACPI Active Trip Point – the point in which the OS will turn the processor fan on high.

The choice: Disabled、15C、23C、31C、39C、47C、55C、63C、71C、79C、87C、95C、103C、111C、119C.

Active Trip Point 0 Fan Speed

Active Trip Point 0 Fan Speed in percentage. Value must be between 0 (Fan off) – 100 (Max fan speed). This is the speed at which fan will run when Active Trip Point 0 is crossed.

Active Trip Point L0 Fan Speed
The value controls the temperature of the ACPI Active Trip Point – the point in which the OS will turn the processor fan on low
The choice: Disabled、15C、23C、31C、39C、47C、55C、63C、71C、79C、87C、95C、103C、111C、119C.

Active Trip Point 1 Fan Speed
Active Trip Point 1 Fan Speed in percentage. Value must be between 0 (Fan off) – 100 (Max fan speed). This is the speed at which fan will run when Active Trip 1 is crossed

Passive Trip Point
The value controls the temperature of the ACPI Passive Trip Point – the point in which the OS will begin throttling the processor.
The choice: Disabled、15C、23C、31C、39C、47C、55C、63C、71C、79C、87C、95C、103C、111C、119C.

Passive TC1 Value
The value sets the TC1 value for the ACPI Passive Cooling Formula. Range 1 - 16

Passive TC2 Value
The value sets the TC2 value for the ACPI Passive Cooling Formula. Range 1 - 16

Passive TSP Value
This item sets the TSP value for the ACPI Passive Cooling Formula. It represents in tenths of a second how often the OS will read the temperature when passive cooling is enabled. Range 2 - 32

ME SMBus Thermal Reporting
Enable or disable ME SMBus Thermal Reporting Configuration.

SMBus Buffer Length
SMBus Block Read message length for EC.
The choice: 1, 2, 5, 9, 10, 14, 20

Thermal Reporting EC PEC
Enable Packet Error Checking (PEC) for SMBus Block Read.

DIMM1 TS READ
DIMM1 Thermal Sensor Read Enable.

DIMM2 TS READ
DIMM2 Thermal Sensor Read Enable.

DIMM3 TS READ
DIMM3 Thermal Sensor Read Enable.

DIMM4 TS READ
DIMM4 Thermal Sensor Read Enable.

PCH Thermal Device
Enable or disable PCH Thermal Device (D31:F6)

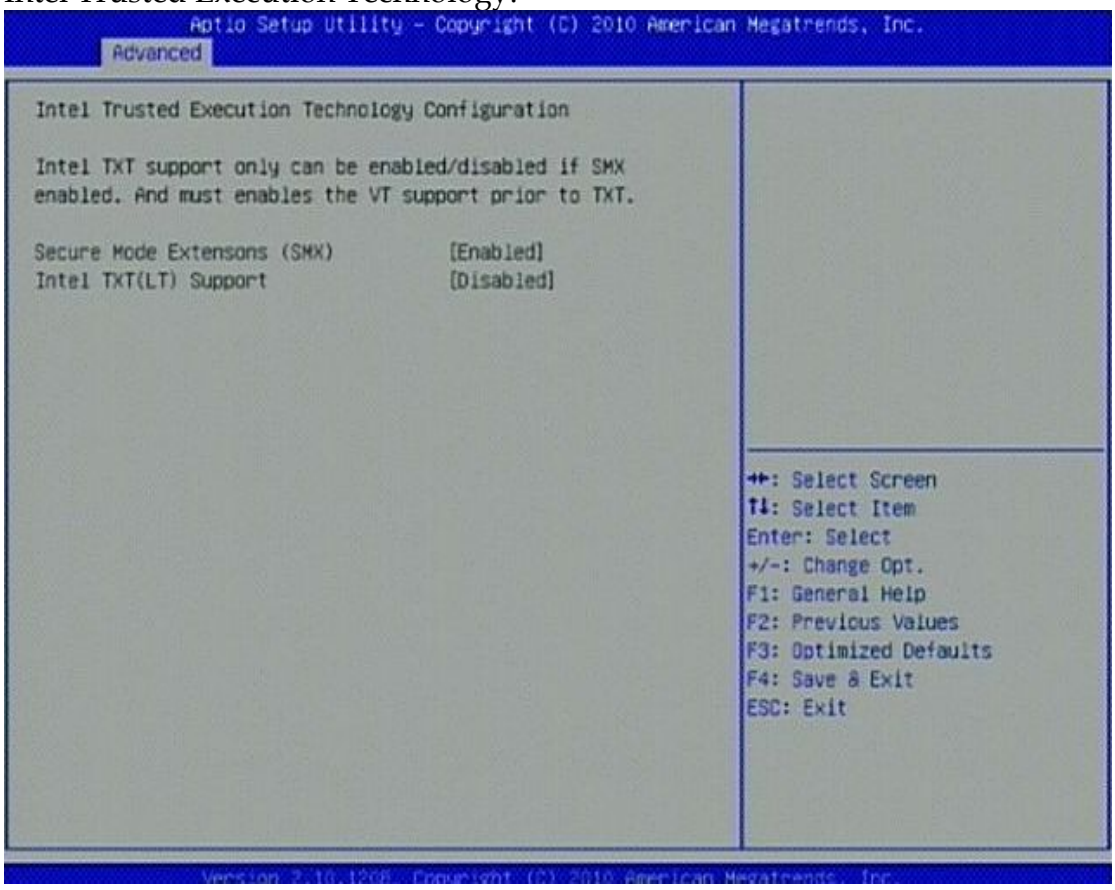
MCH Temp Read
MCH Temperature Read Enable.

PCH Temp Read
PCH Temperature Read Enable.

CPU Energy Read
CPU Energy Read Enable.

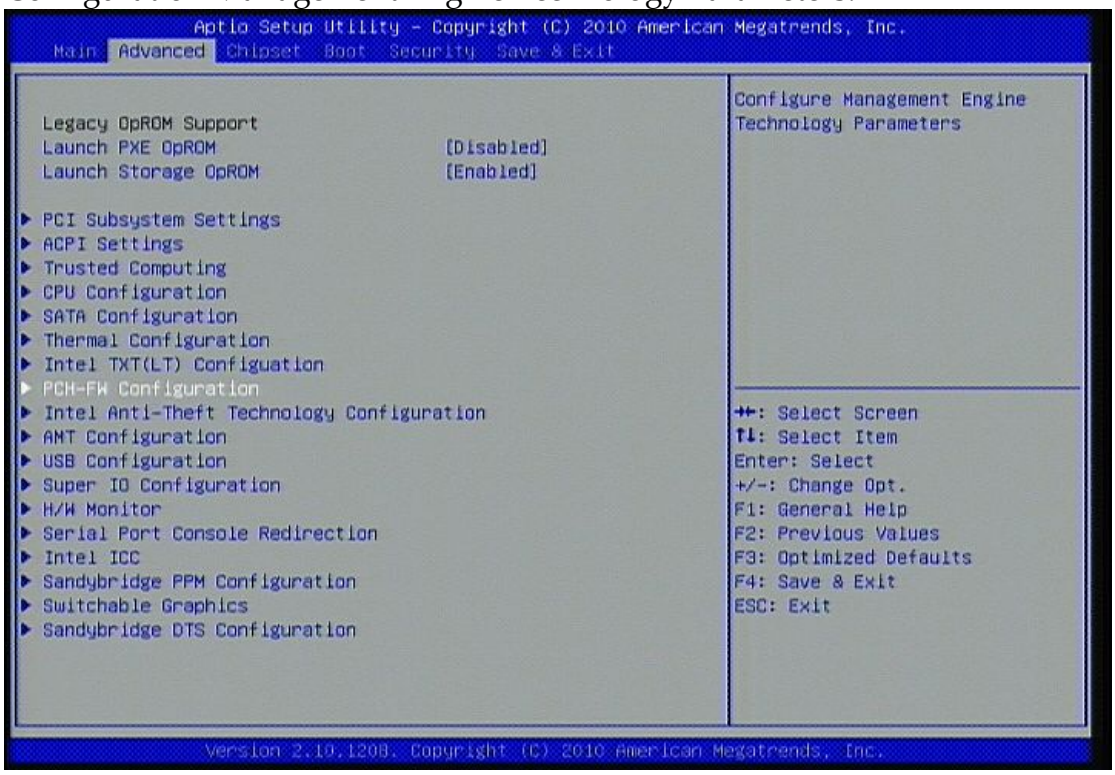
CPU Temp Read
CPU Temperature Read Enable.

Intel TXT (LT) Configuration
Intel Trusted Execution Technology.



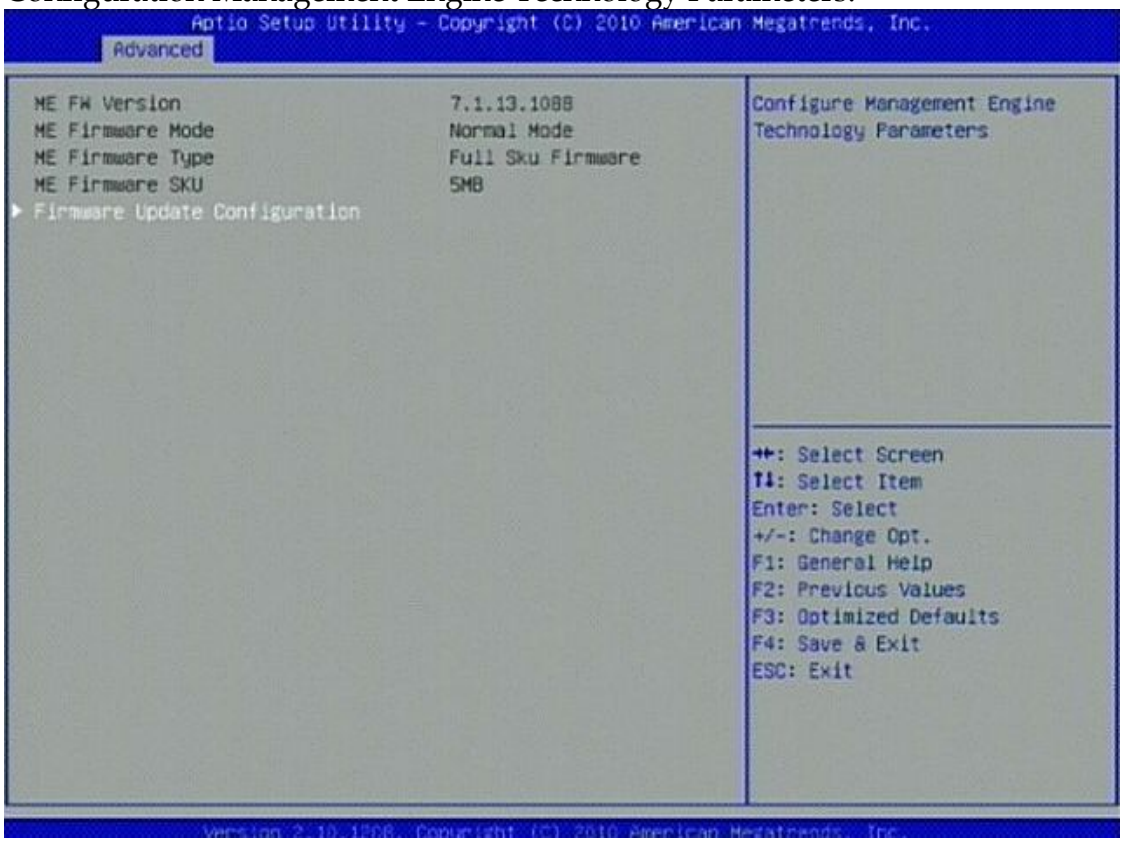
PCH-FW Configuration

Configuration Management Engine Technology Parameters.



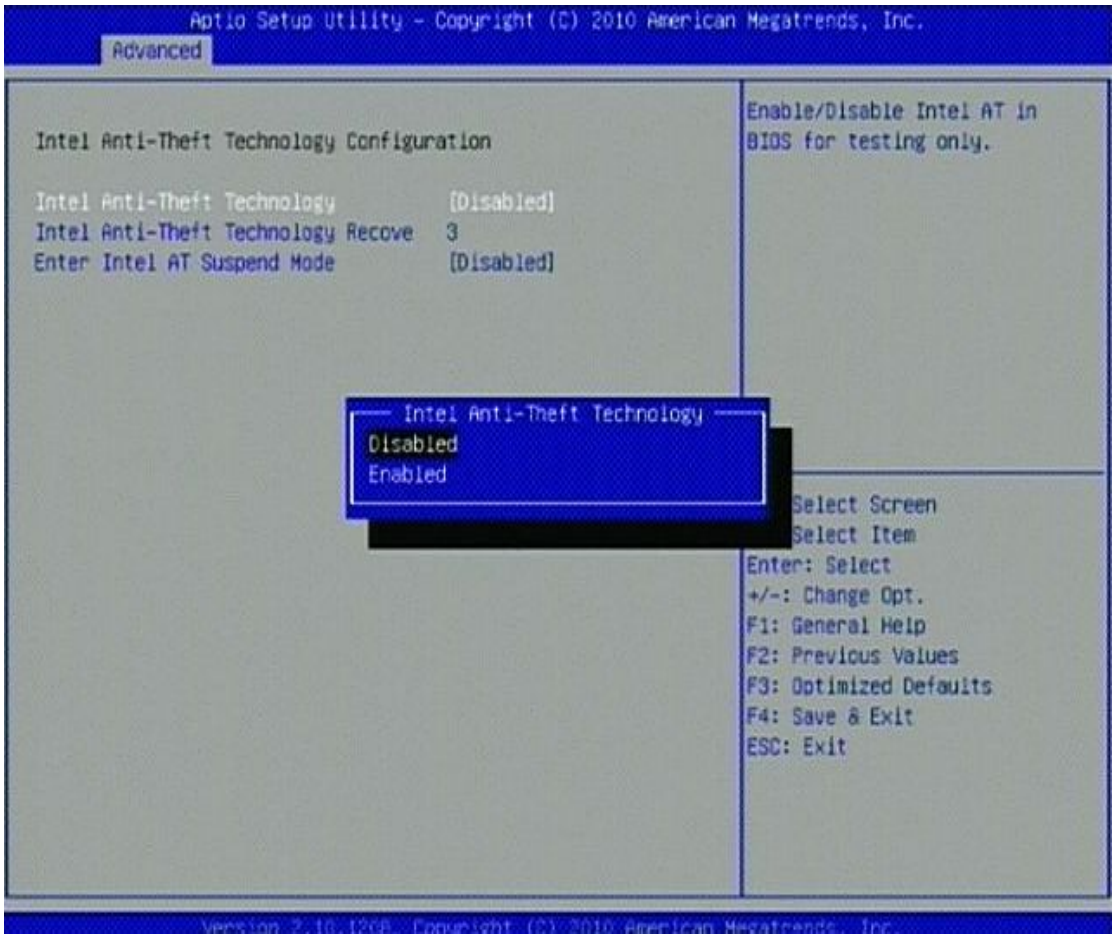
Firmware Update Configuration

Configuration Management Engine Technology Parameters.



Me FW Image Re-Flash
Enable/disable Me FW Image Re-Flash function.

Intel Anti-Theft Technology Configuration
Disabling Intel AT Allow user to login to platform. This is strictly for testing only. This does not disable AT Services in ME.



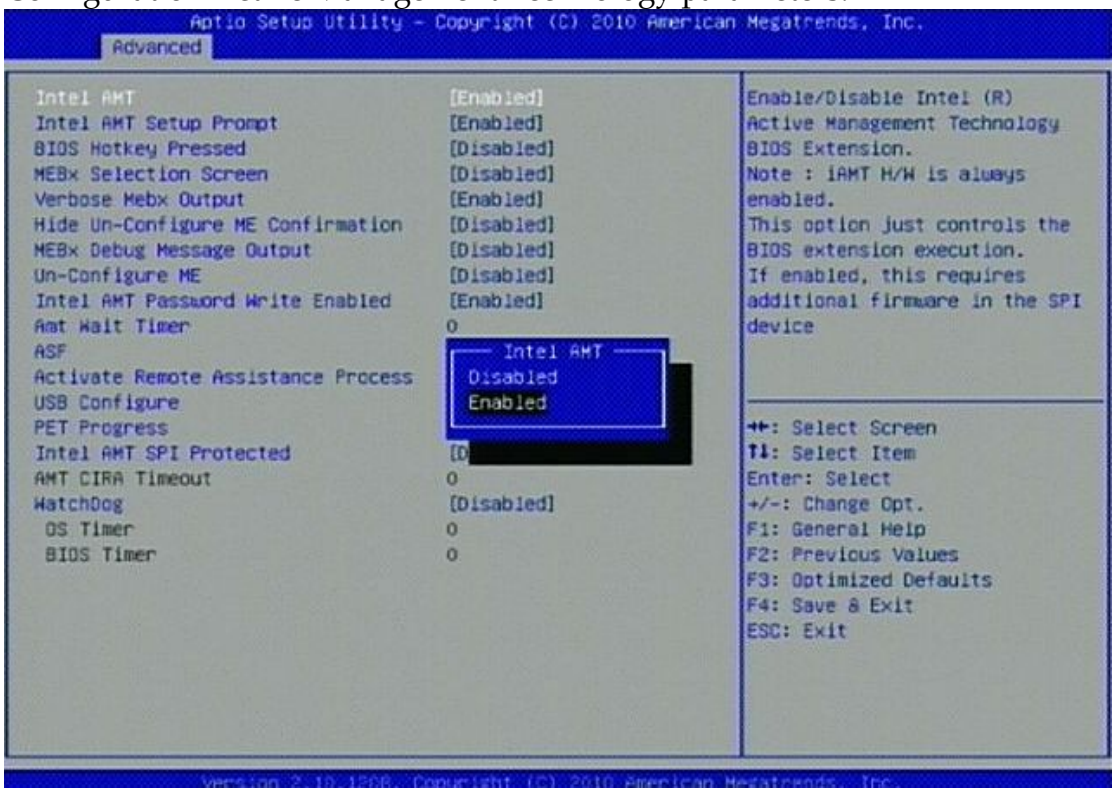
Intel Anti-Theft Technology
Enable/Disable Intel AT in BIOS for testing only.

Intel Anti-Theft Technology Recove
Set the number of times Recovery attemped will be allowed. Range: 1- 64

Enter Intel AT Suspend Mode
Request that platform enter Intel AT Suspend Mode.

AMT Configuration

Configuration Active Management Technology parameters.



Intel AMT

Enable/Disable Intel(R) Active Management Technology BIOS Extension.
Note: iAMT H/W is always enabled. This option just controls the BIOS extension.
If enabled, this requires additional firmware in the SPI device.

Intel AMT Setup Prompt

OEMFLag Bit 0: Enable/Disable Intel AMT Setup Prompt to wait for hot-key to enter setup.

BIOS Hotkey Pressed

OEMFLag Bit 1: Enable/Disable BIOS hotkey press.

MEBx Selection Screen

OEMFLag Bit 2: Enable/Disable MEBx selection screen.

Verbose Mebx Output

OEMFLag Bit 3: Enable/Disable Verbose Mebx Output.

Hide Un-Configure ME Confirmation

OEMFLag Bit 6: Hide Un-Configure ME without password Confirmation Prompt.

MEBx Debug Message Output

OEMFLag Bit 14: Enable MEBx debug message Output.

Un-Configure ME
OEMFLag Bit 15: Un-Configure ME without password..

Intel AMT Password Write Enabled
Enable/Disable Intel AMT Password Write. Password is writeable when set Enable.

Amt Wait Timer
Set timer to wait before sending ASF_GET_BOOT_OPTIONS.

ASF
Enable/Disable Alert Specification Format.

Activate Remote Assistance Process
Trigger CIRA boot.

USB Configure
Enable/Disable USB Configure function.

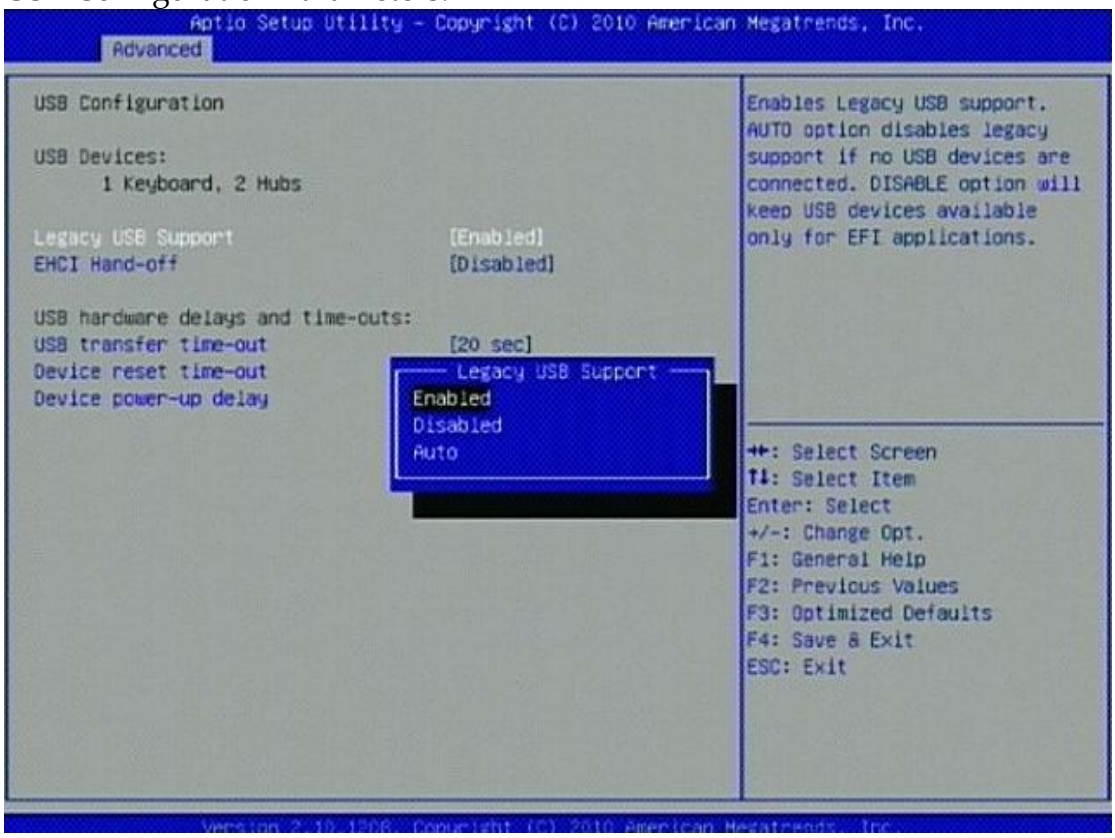
PET Progress
User can Enable/Disable PET Events progress to receive PET events or not.

Intel AMT SPI Protected
Enable/Disable Intel AMT SPI write protect.

WatchDog
Enable/Disable WatchDog Timer.

USB Configuration

USB Configuration Parameters.



Legacy USB Support

Enable Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications

EHCI Hand-off

This is a workaround for 0Ses without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

USB transfer time-out

The time-out value for Control, Bulk, and Interrupt transfers.
The choice: 1 sec, 5 sec, 10 sec, 20 sec

Device reset time-out

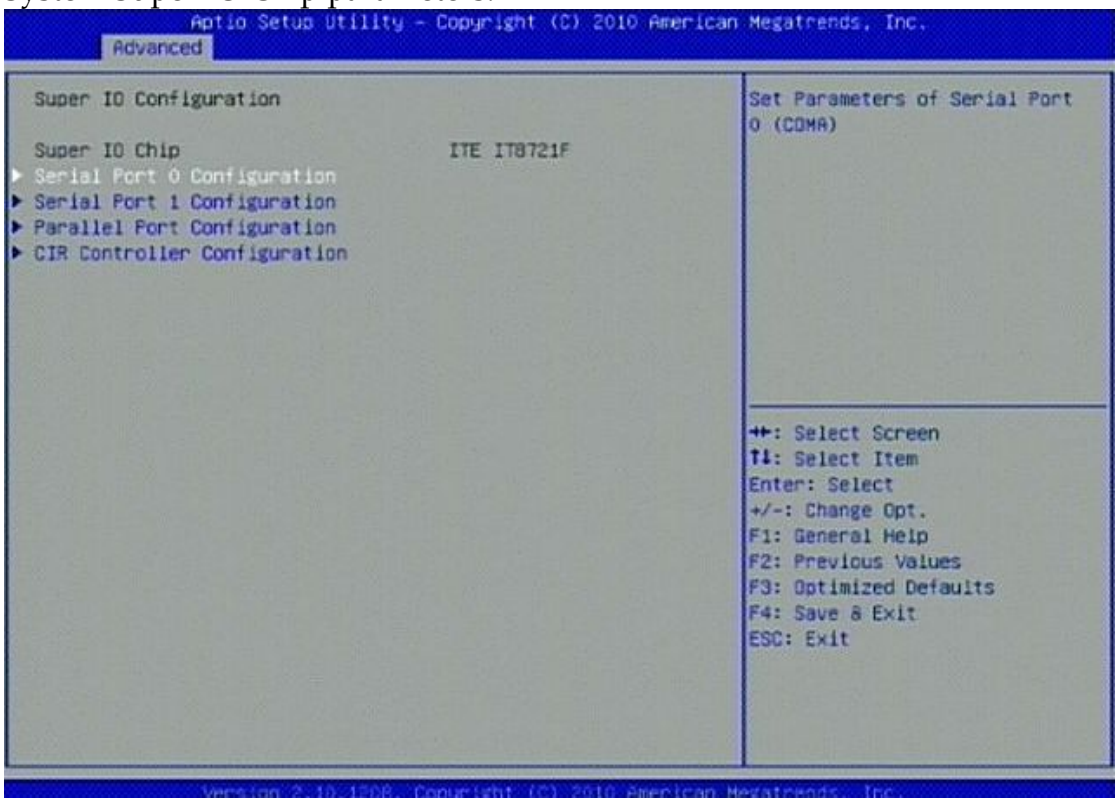
USB mass storage device Start Unit Command time-out.
The choice: 10 sec, 20 sec, 30 sec, 40 sec

Device power-up delay

USB mass storage device Start Unit Command time-out.

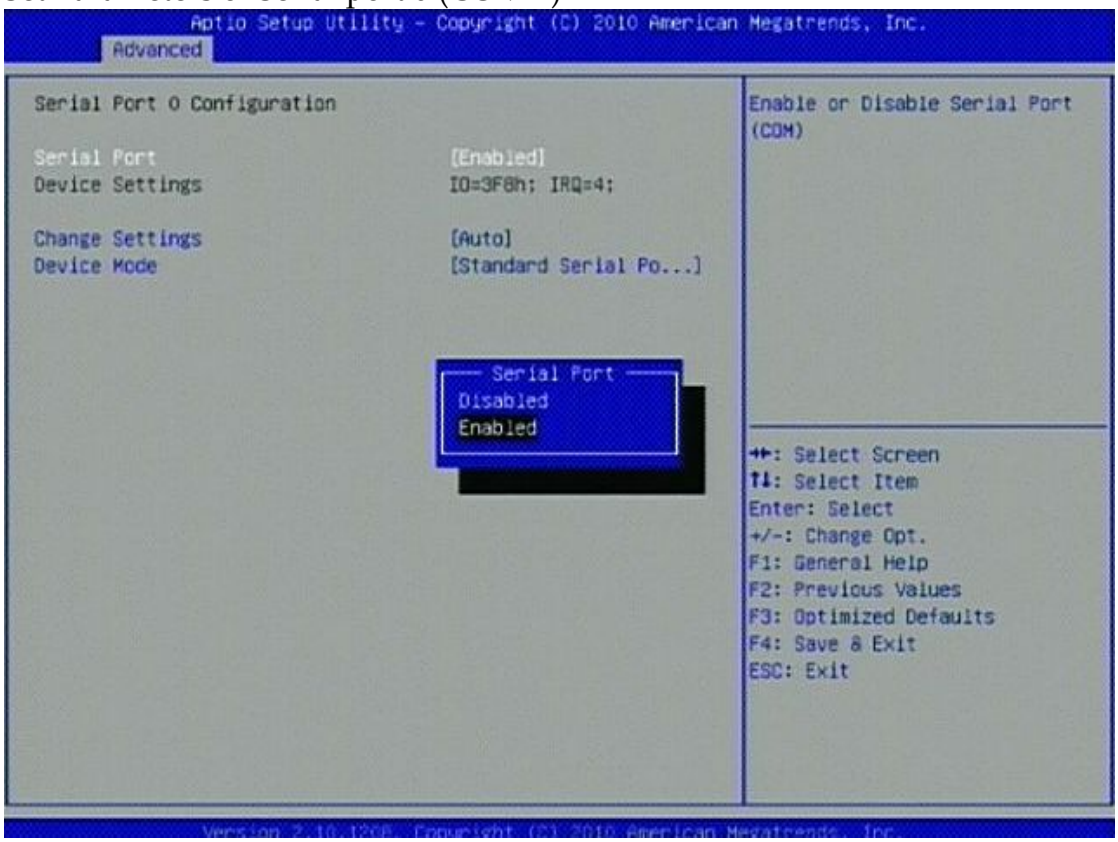
Super IO Configuration

System Super IO Chip parameters.



Serial Port 0 Configuration

Set Parameters of Serial port 0 (COMA)

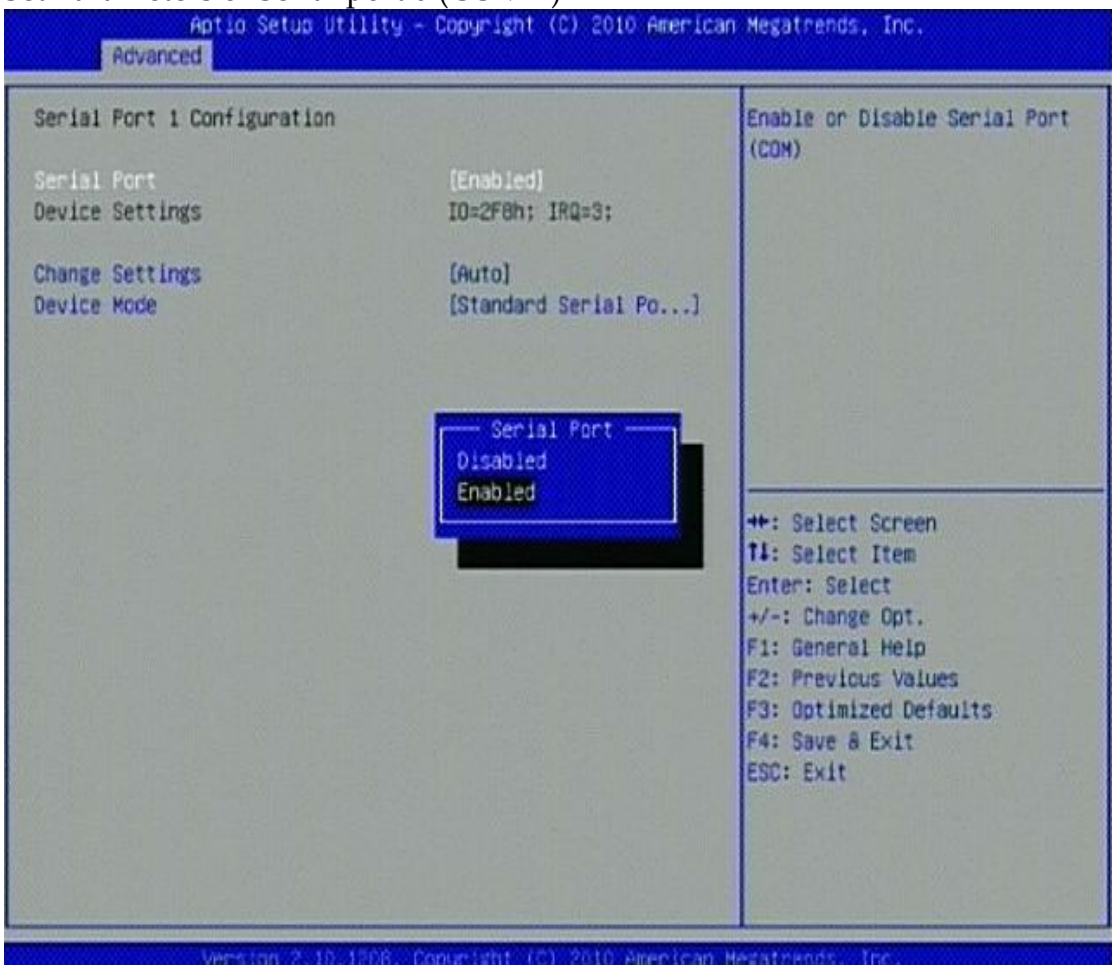


Serial Port
Enable or Disable Serial Port (COM).

Change Settings
Select an optimal setting for Super IO device.
AUTO
IO=3F8h; IRQ=4;
IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;
IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;
IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

Device Mode
Change the Serial Port mode. Select <High Speed> or <Normal mode> mode
The Choice: Standard Serial Port Mode, IrDA 1.0 (HP SIR) Mode, ASKIR Mode

Serial Port 0 Configuration
Set Parameters of Serial port 0 (COMA)

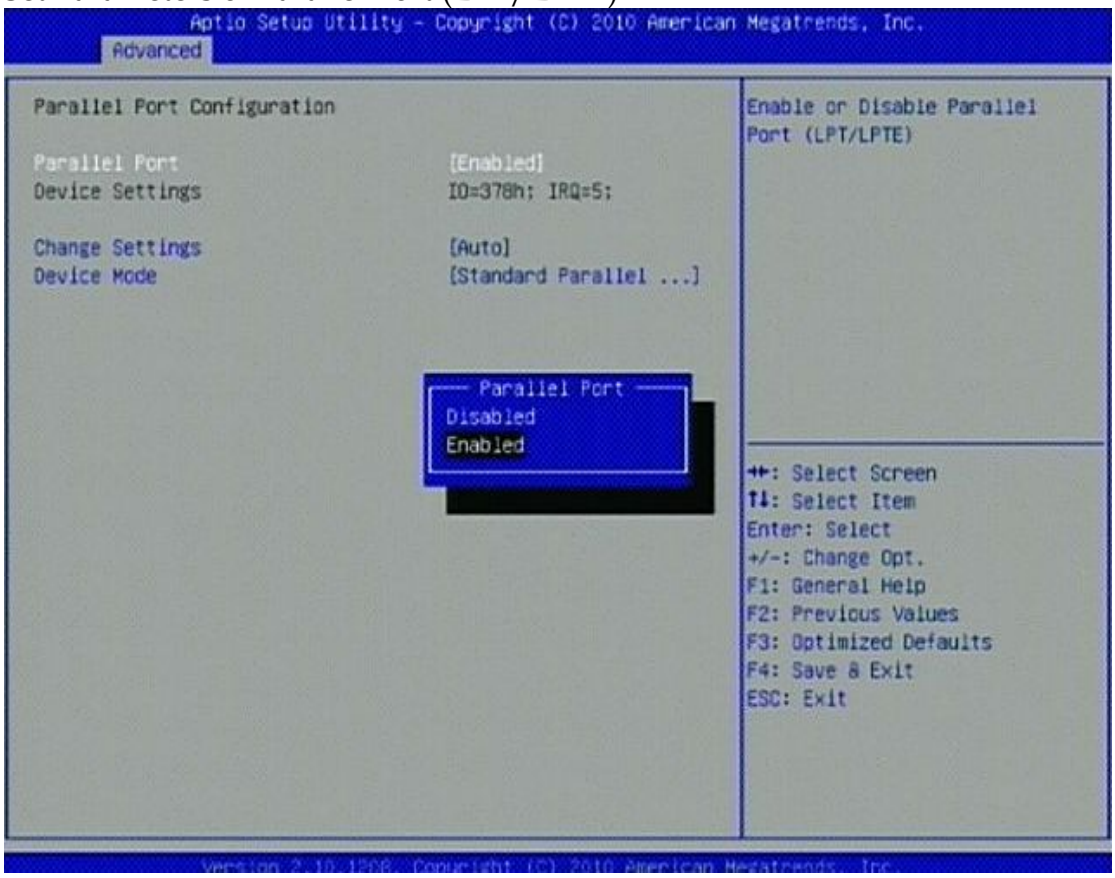


Serial Port
Enable or Disable Serial Port (COM).

Change Settings
Select an optimal setting for Super IO device.
AUTO
IO=2F8h; IRQ=3;
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;

Device Mode
Change the Serial Port mode. Select <High Speed> or <Normal mode> mode
The Choice: Standard Serial Port Mode, IrDA 1.0 (HP SIR) Mode, ASKIR Mode

Parallel Port Configuration
Set Parameters of Parallel Port (LPT/LPTE)

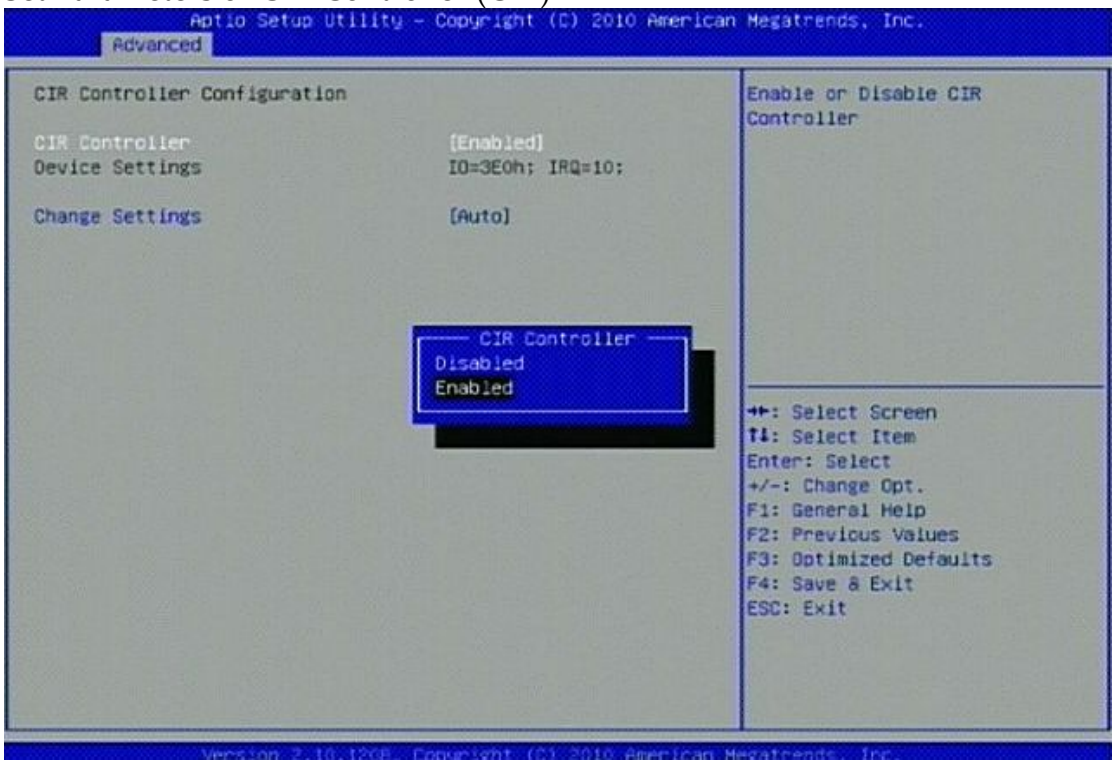


Parallel Port
Enable or Disable Parallel Port (LPT/LPTE)

Change Settings
Select an optimal setting for Super IO device.
AUTO
IO=278h; IRQ=5;
IO=378h; IRQ=5, 6, 7, 10, 11, 12;
IO=278h; IRQ=5, 6, 7, 10, 11, 12;
IO=38ch; IRQ=5, 6, 7, 10, 11, 12;
IO=378h;
IO=278h;
IO=38ch;

Device Mode
Change the Printer Port mode.
The Choice: Standard Parallel Port Mode, EPP Mode, ECP Mode, ECP Mode & ECP mode

CIR Controller Configuration
Set Parameters of CIR Controller (CIR)



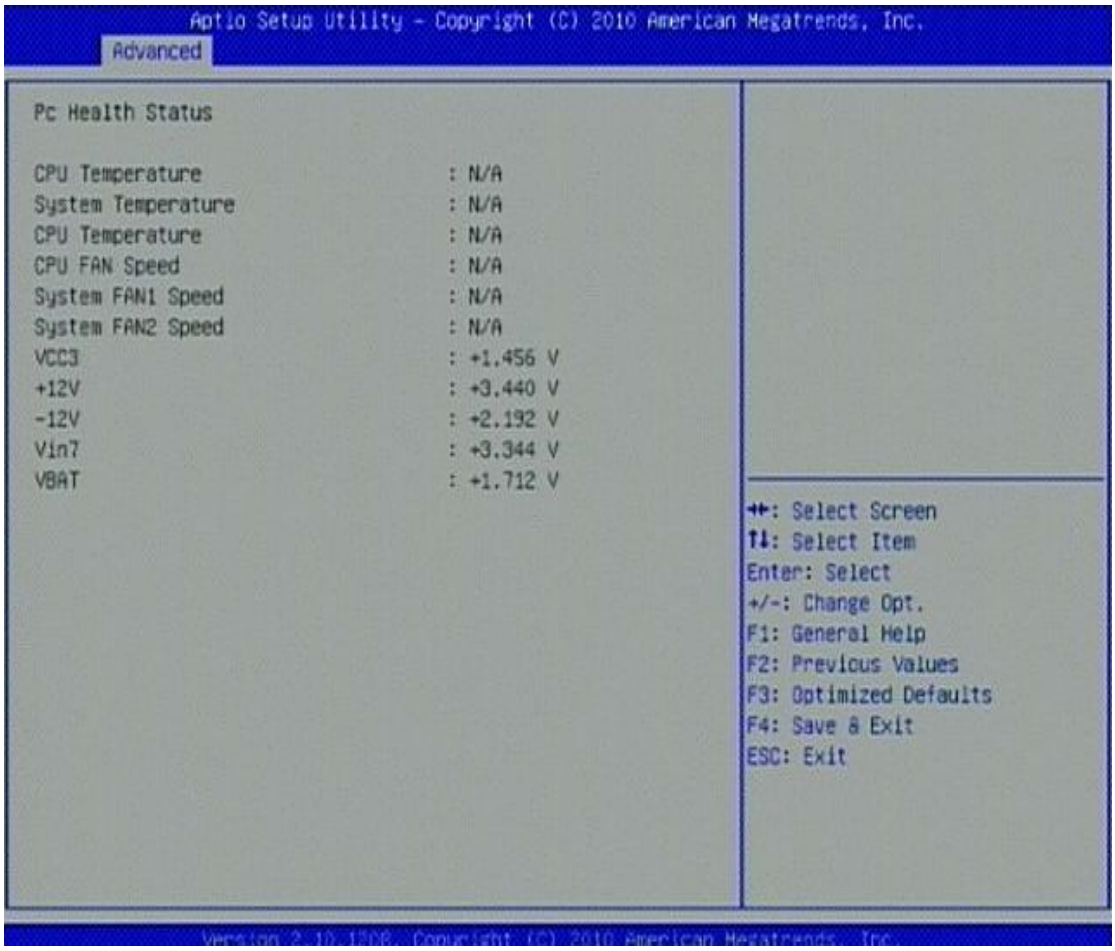
CIR Controller
Enable or Disable CIR Controller

Change Settings

AUTO
IO=3E0h; IRQ=10;
IO=3E0h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;
IO=2E0h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;
IO=298h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

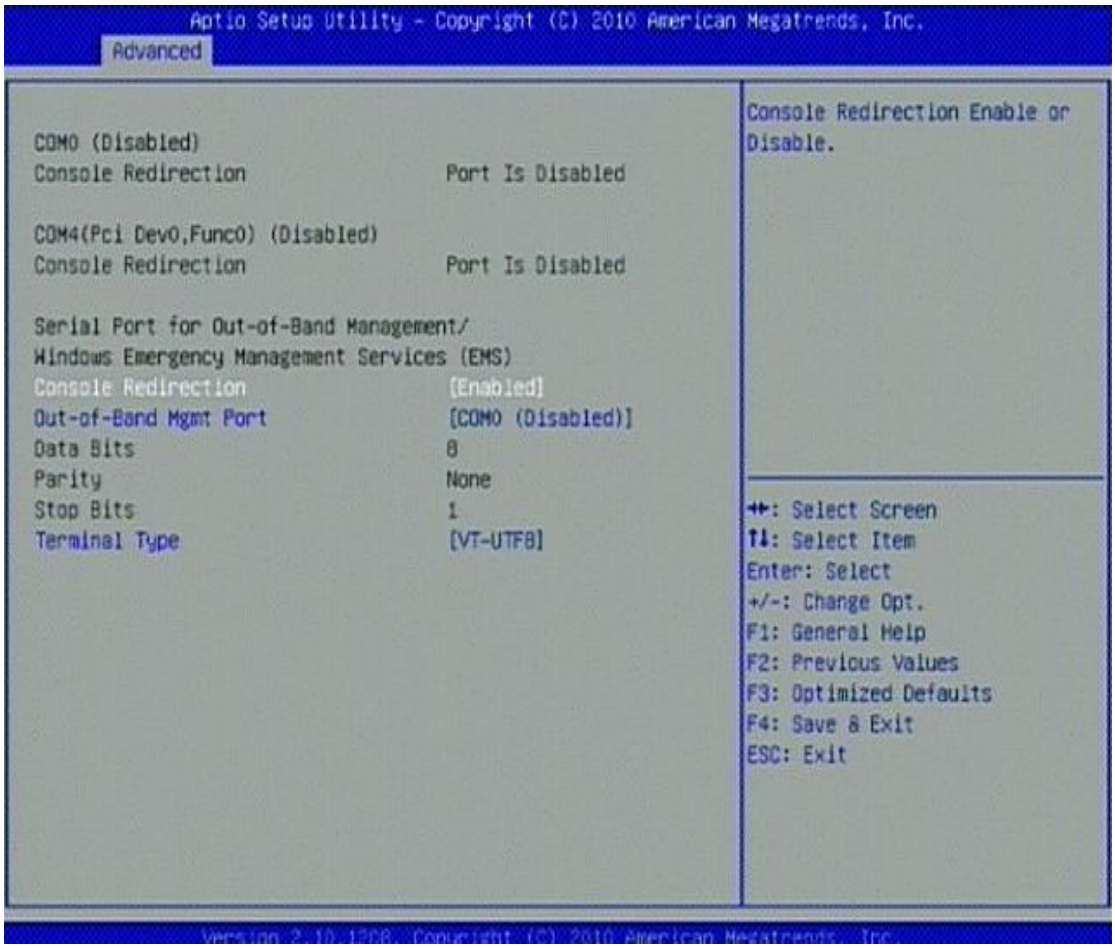
H/W Monitor

Monitor Hardware status



Serial Port Console Redirection

Serial Port Console Redirection



Console Redirection

Console Redirection Enable or Disable

Out-of-Bard Mgmt Port

Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.

The choice: COM0 (Disabled), COM4 (PCI Dev0, Func0) (Disabled)

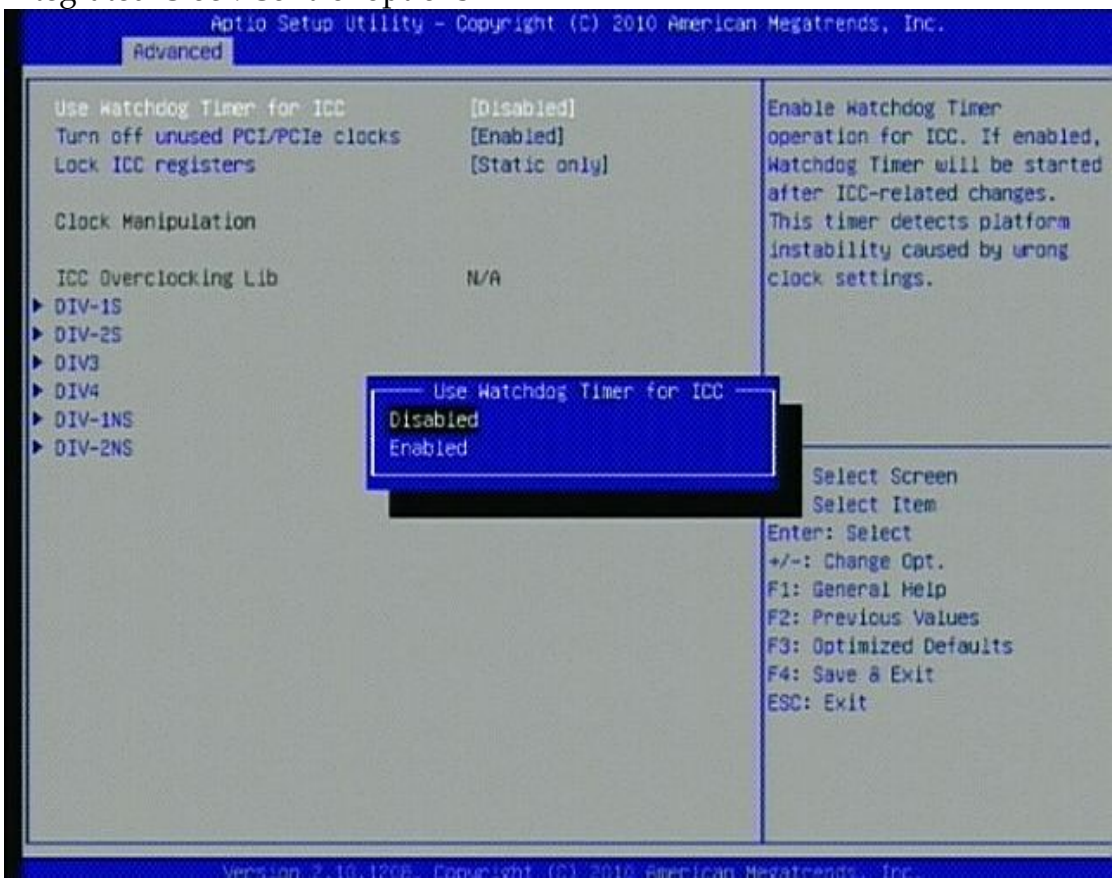
Terminal

VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in console Redirection Settings page, for more Help with Terminal Type/Emulation.

The choice: VT100, VT100+, VT-UTF8, ANSI

Intel ICC

Integrated Clock Control options



Use Watchdog Timer for ICC

Enable Watchdog Timer operation for ICC. If enabled, Watchdog Timer will be started after ICC-related changes. This timer detects platform instability caused by wrong clock steeings.

Turn off unused PCI/PCIe clocks

Disabled: all clocks turned on. Enable: clocks for empty PCI/PCEe slots will be turned off to save power. Platform must be powered off for changes to take effect.

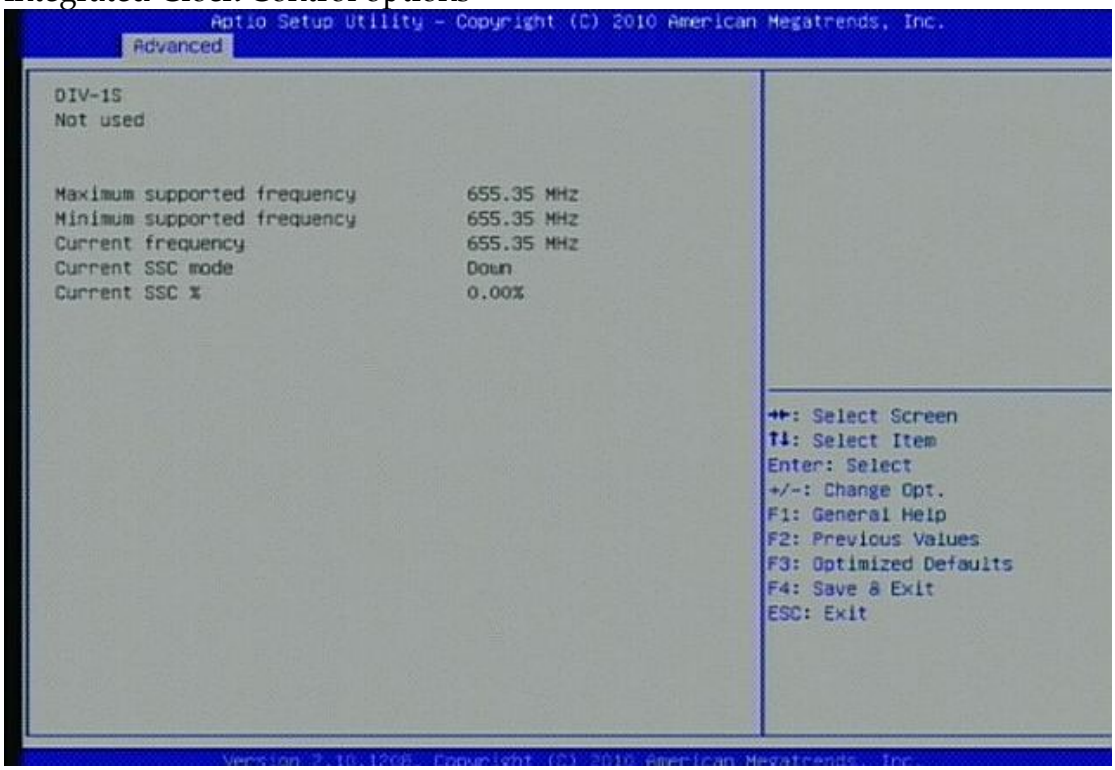
Lock ICC registers

All registers: all ICC registers will be locked. Static only – only static ICC registers will be locked.

The choice: Static only, All registers

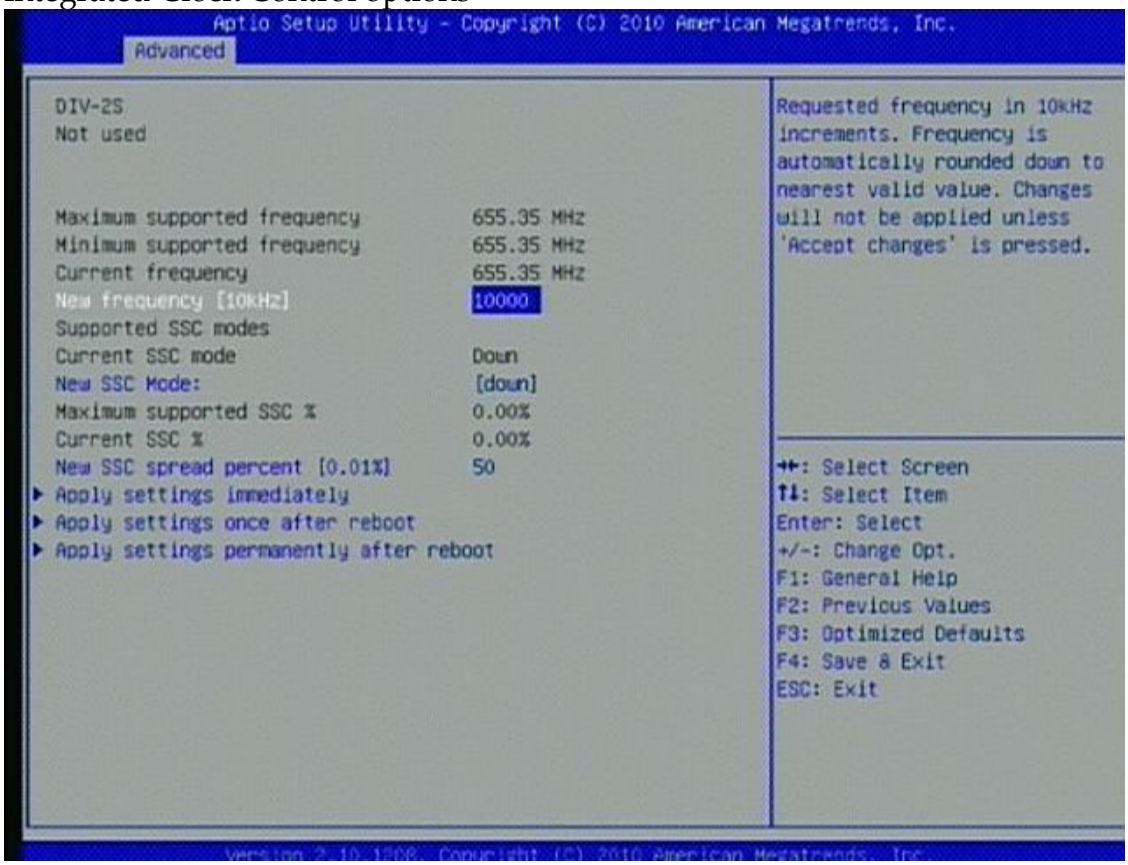
DIV-1S

Integrated Clock Control options



DIV-2S

Integrated Clock Control options



New frequency [10kHz]
Requested frequency in 10kHz increments. Frenquency is automatically rounded down to nearest valid value. Changes will no be applied unless "Accept changes" is pressed.

New SSC Mode
Requested SSC mode. Changes will not be applied unless "Accept changes" is pressed.
The choice: up, center, down

Apply settings immediately
Changes will be applied immediately, but forgotten after reboot. This mode of making changes is more likely to cause platform instability and spontaneous restart.

Apply settings once after reboot
Changes will be applied once, after the next reboot, and then forgotten. Use it to try changes that are too aggressive for immediate application.

Apply settings permanently after reboot
Changes will be applied permanently, starting after the next reboot. Use it to provide changes that are verified and safe.

DIV-3
Integrated Clock Control options

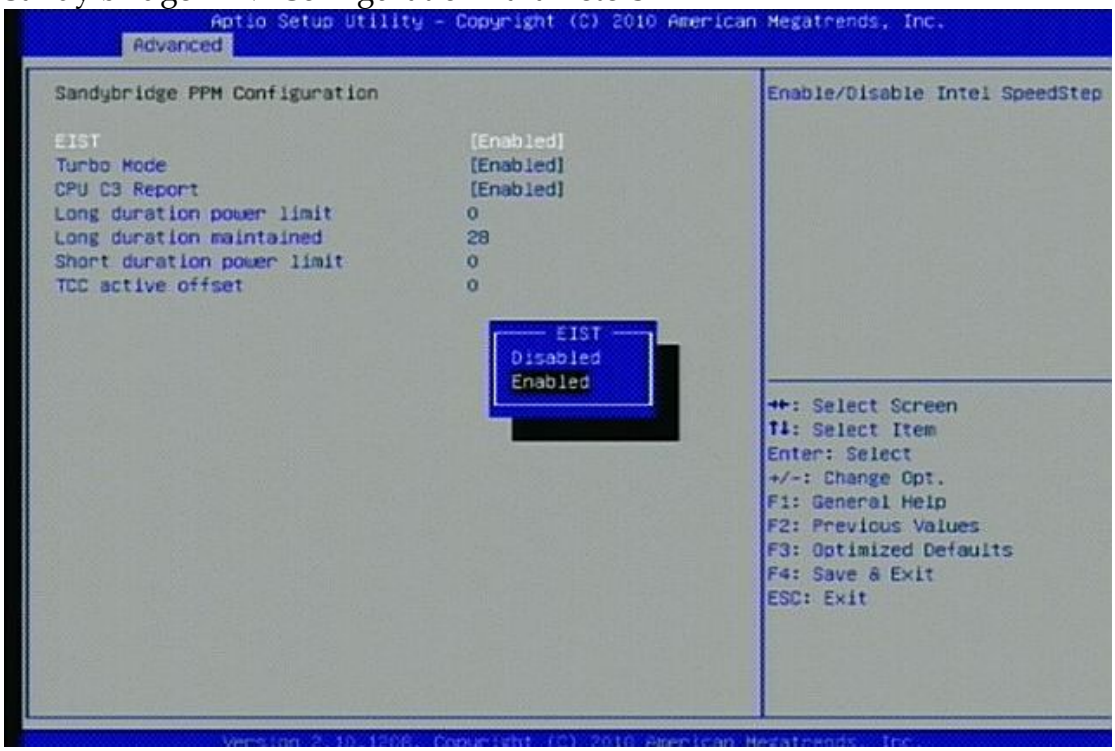
DIV-4
Integrated Clock Control options

DIV-1NS
Integrated Clock Control options

DIV-2NS
Integrated Clock Control options

Sandybridge PPM Configuration

Sandy bridge PPM Configuration Parameters



EIST

Enable/Disable Intel SpeedStep

Turbo Mode

Turbo Mode

CPU C3 Report

Enable/Disable CPU C3(ACPI C2) report to OS

Long duration power limit

Long duration power limit in watts, 0 means use factory default.

Long duration maintained

Time window which the long duration power is maintained.

Short duration power limit

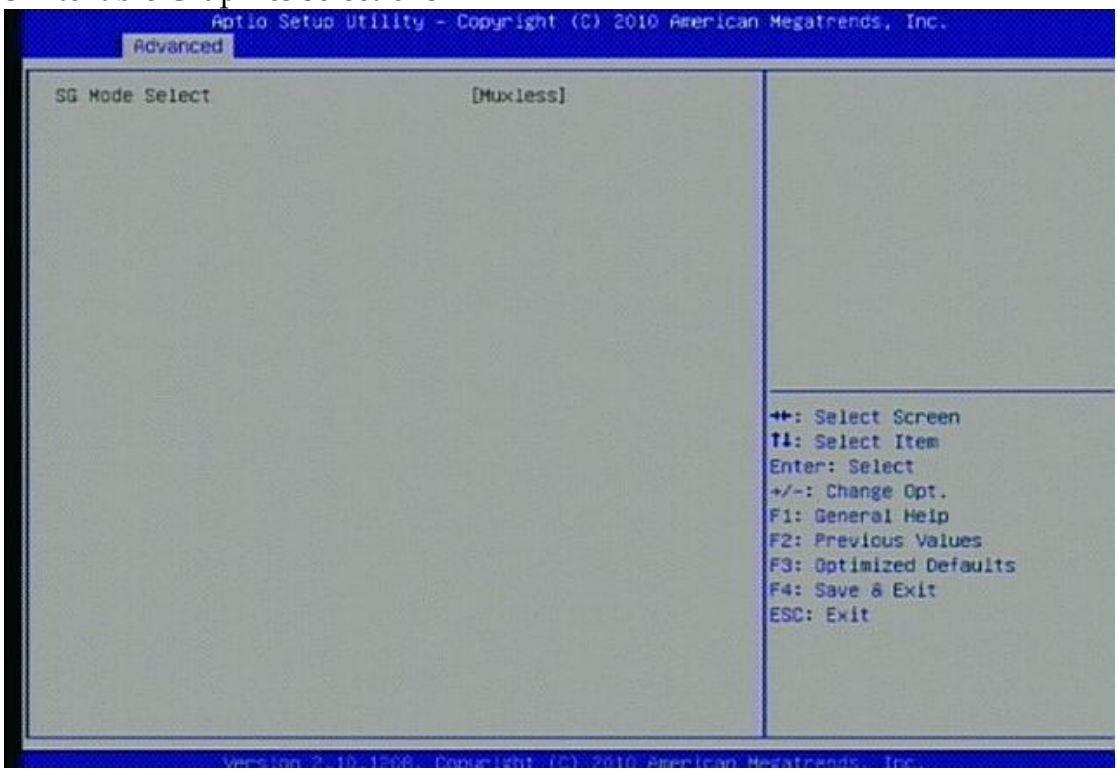
Short duration power limit in watts, 0 means use factory default.

TCC active offset

Offset from factory TCC activation temperature.

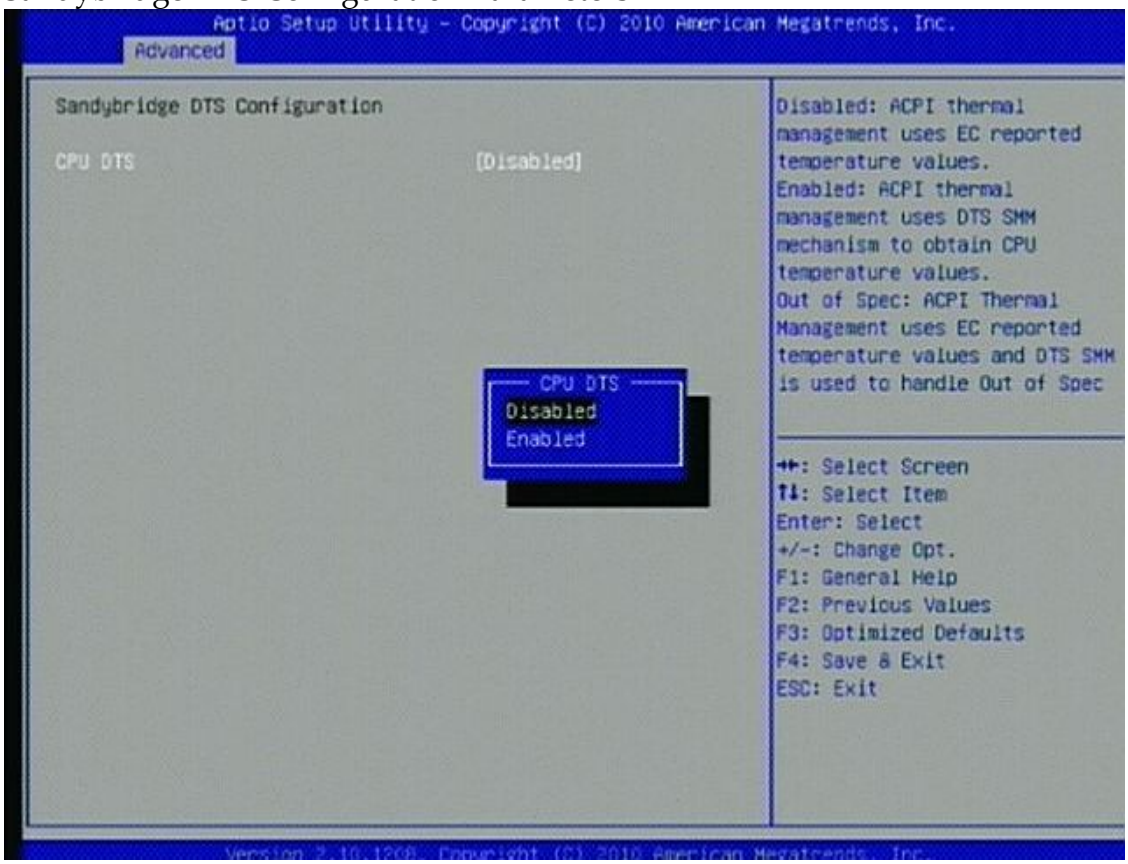
Switchable Graphics

Switchable Graphics selections



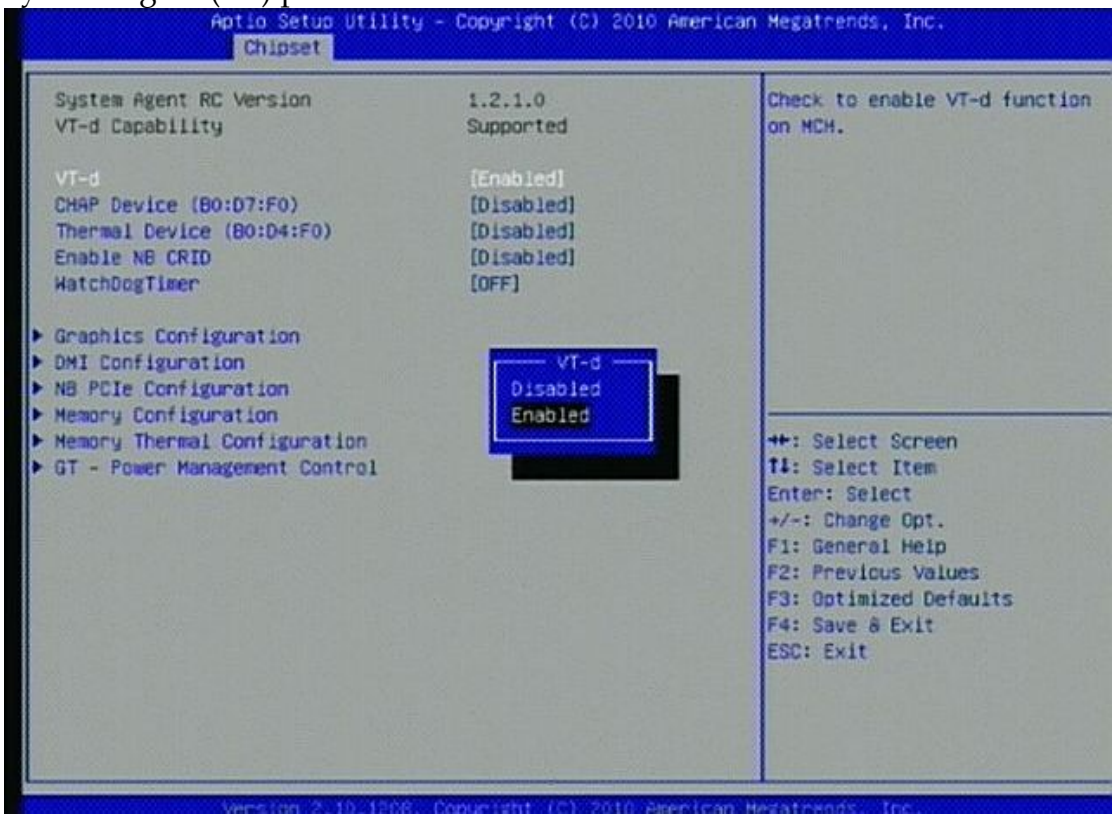
Sandybridge DTS Configuration

Sandybridge DTS Configuration Parameters



CPU DTS
Disabled: ACPI thermal management uses EC reported temperature values.
Enabled: ACPI thermal management uses DTS SMM mechanism to obtain CPU temperature value. Out of Spec: ACPI Thermal Management uses EC reported temperature values and DTS SMM is used to handle Out of Spec.

System Agent (SA) Configuration
System Agent (SA) parameters



VT-d
Check to enable VT-d function on MCH

CHAP Device (B0:D7:F0)
Enable or disable SA CHAP Device.

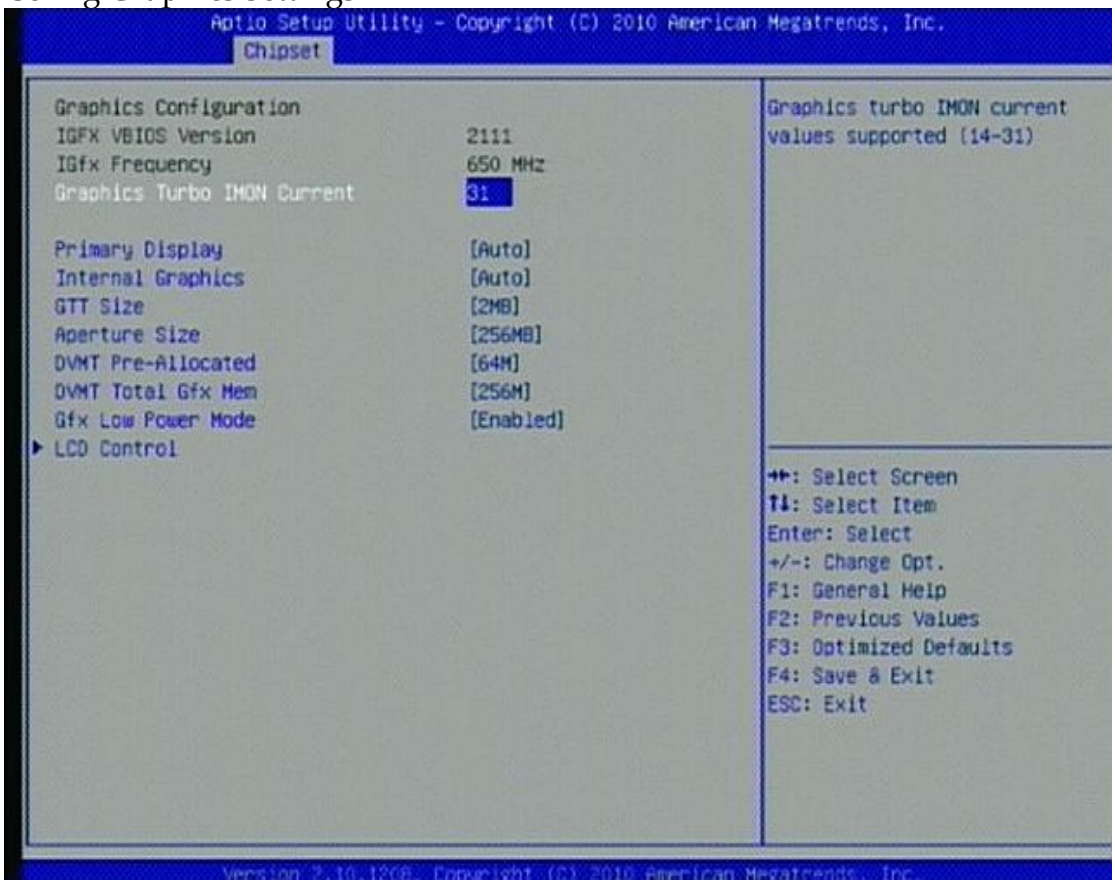
Thermal Device (B0:D4:F0)
Enable or disable SA Thermal Device.

Enable NB CRID
Enable or disable NB CRID WorkAround.

WatchDogTimer
WatchDogTimer settings.

Graphics Configuration

Config Graphics Settings



Graphics Turbo IMON Current

Graphics turbo IMON current values supported (14-31)

Primary Display

Select which of IGFX/PEG/PCI Graphics device should be Primary Display or select SG for Switchable Gfx.
The choice: Auto, IGFX, PEG, PCI, SG

Internal Graphics

Keep IGD enabled based on the setup options.
The choice: Auto, Disabled, Enabled

GTT Size

Select the GTT Size
The choice: 1MB, 2MB

Aperture Size

Select the Aperture Size
The choice: 128MB, 256MB, 512MB

DVMT Pre-Allocated

Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

The choice: 0M, 32M, 64M, 96M, 128M, 160M,192M, 224M, 256M, 288M, 320M, 352M, 384M, 416M, 448M, 480M, 512M

DVMT Total Gfx Mem

Select DVMT 5.0 Total Graphic Memory size used by the Internal Graphics Device.

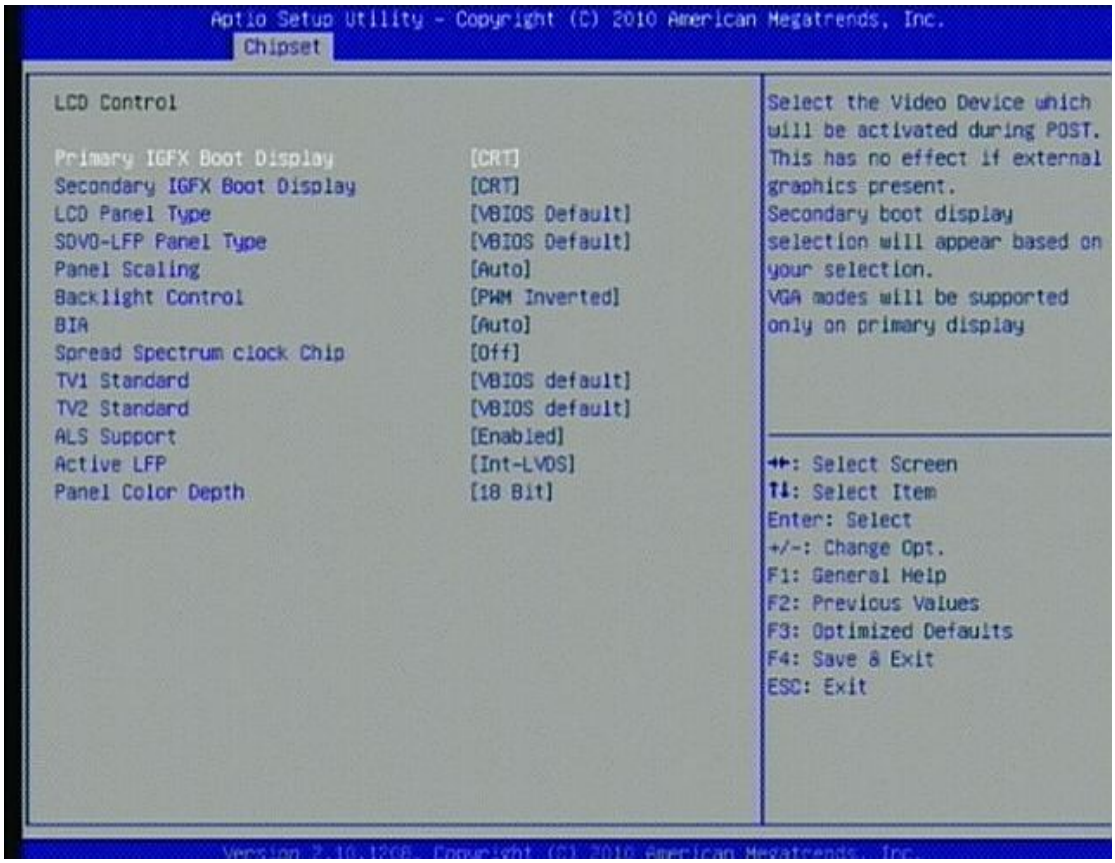
The Choice: 128M, 256M, MAX

Gfx Low power Mode

This option is applicable for SFF only.

LCD Control

LCD Control



Primacy IGFX Boot Display

Select the video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display.

The choice: CRT, LVDS, HDMI/DP, DVI

Secondary IGFX Boot Display
Select Secondary Display Device
The Choice: Disable, CRT, LVDS, HDMI/DP, DVI

LCD Panel Type
Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.

SDVO-LFP Panel Type
Select SDVO panel used by Internal Graphics Device by selecting the appropriate setup item.

Panel Scaling
Select the LCD panel scaling option used by the Internal Graphics Device.

Backlight Control
Back Light Control Setting

BIA
Auto: GMCH VBT Default
Level n: Enable with Selected Aggressiveness Level.

Spread Spectrum clock Chip
Hardware: Spread is controlled by chip ; Software: Spread is controlled by BIOS

TV1 Standard
Select the ability to configure a TV Format

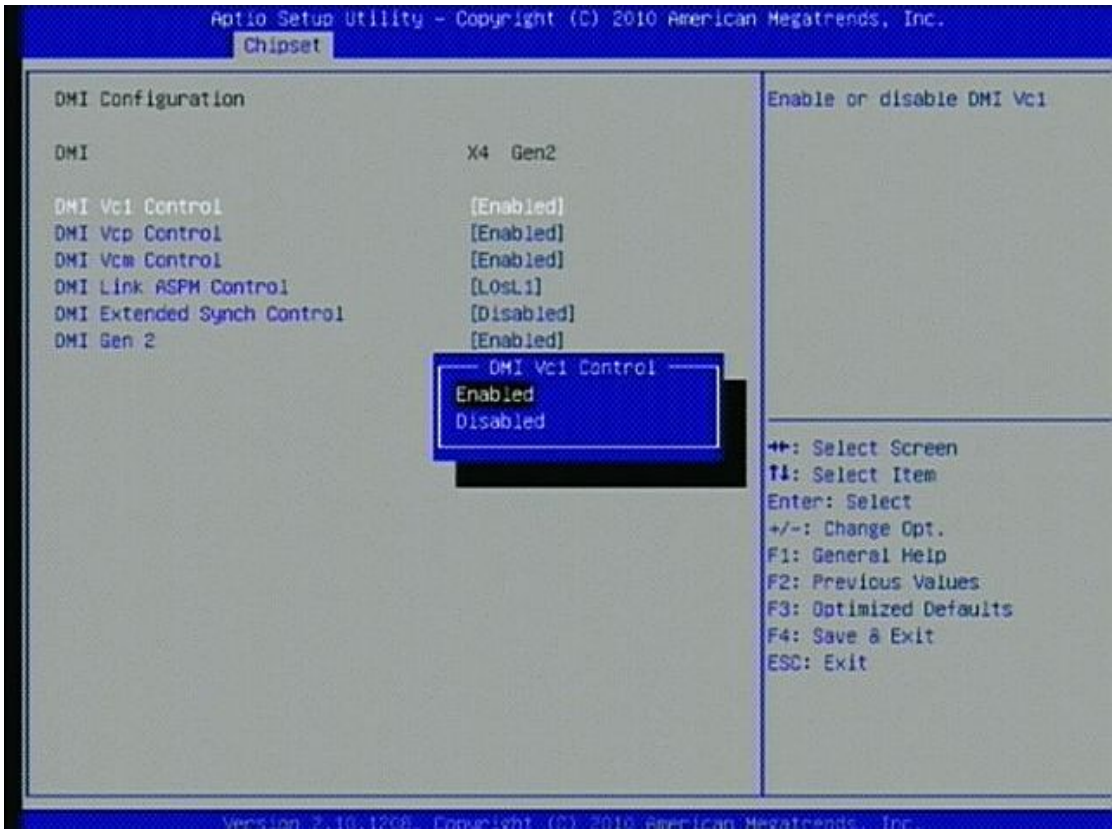
TV2 Standard
Select the ability to configure a TV Minor Format

ALS Support
Valid only for ACPI.
Legacy = ALS Support through the IGD INT10 function,
ACPI = ALS support through an ACPI ALS driver.

Active LFP
Select the Active LFP Configuration.
No LVDS: VBIOS does not enable LVDS.
Int-LVDS: VBIOS enables LVDS driver by Integrated encoder.
SDVO LVDS: VBIOS enables LVDS driver by SDVO encoder.
eDP Port-A: LFP Driven by Int-DisplaypPort encoder from Port-A.

Panel Color Depth
Select the LFP Panel Color Depth
The choice: 18 Bit, 24 Bit

DMI Configuration
Control various DMI functions.



DMI Vc1 Control
Enable or disable DMI Vc1

DMI Vcp Control
Enable or disable DMI Vcp

DMI Vcm Control
Enable or disable DMI Vcm

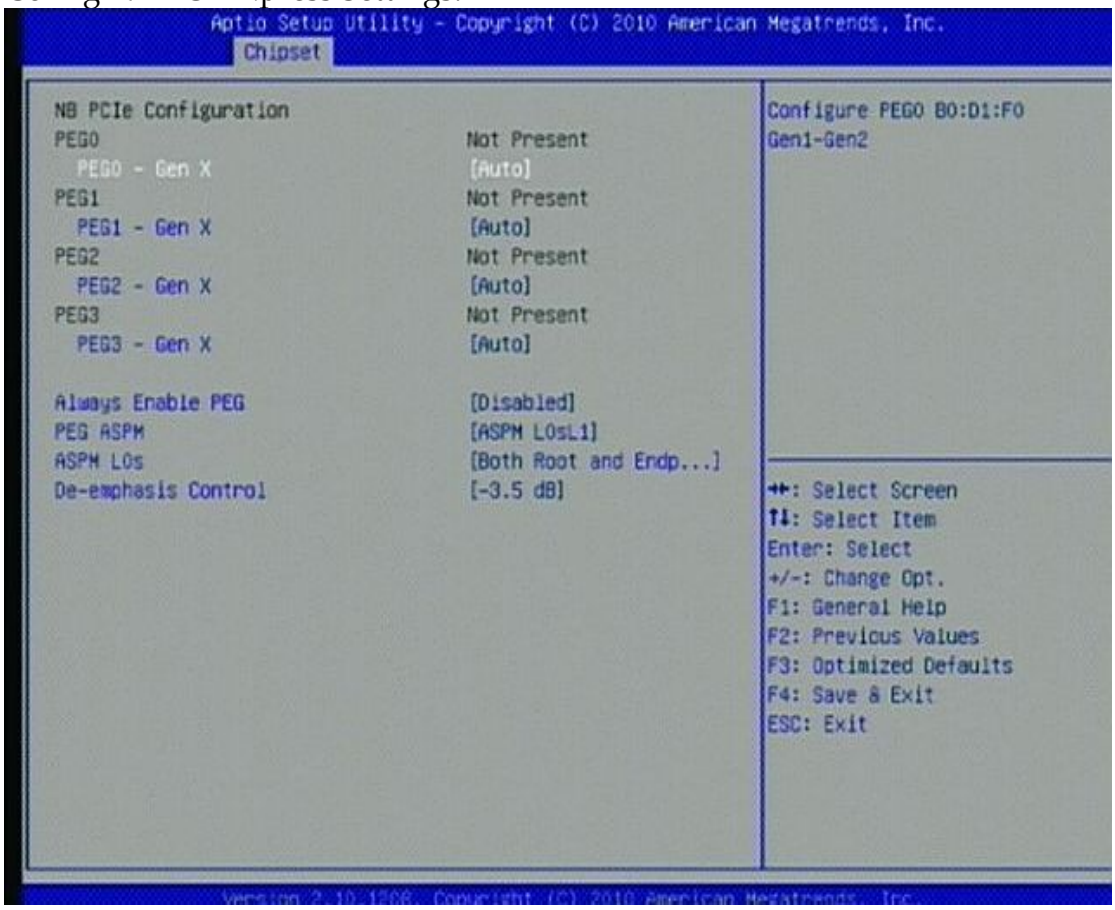
DMI Link ASPM Control
Enable or disable the control of Active State Power Management on SA side of the DMI Link.
The choice: Disable, L0s, L1, L0sL1

DMI Extended Synch Control
Enable DMI Extended Synchronization.

DMI Gen 2
Enable or disable DMI Gen 2

NB PCIe Configuration

Config NB PCI Express Settings.



PEG0– Gen X

Configure PEG0 B0:D1:F0 Gen1-Gen2

PEG1 – Gen X

Configure PEG1 B0:D1:F1 Gen1-Gen2

PEG2 – Gen X

Configure PEG2 B0:D1:F2 Gen1-Gen2

PEG3 – Gen X

Configure PEG3 B0:D6:F0 Gen1-Gen2

Always Enable PEG

To enable the PEG slot.

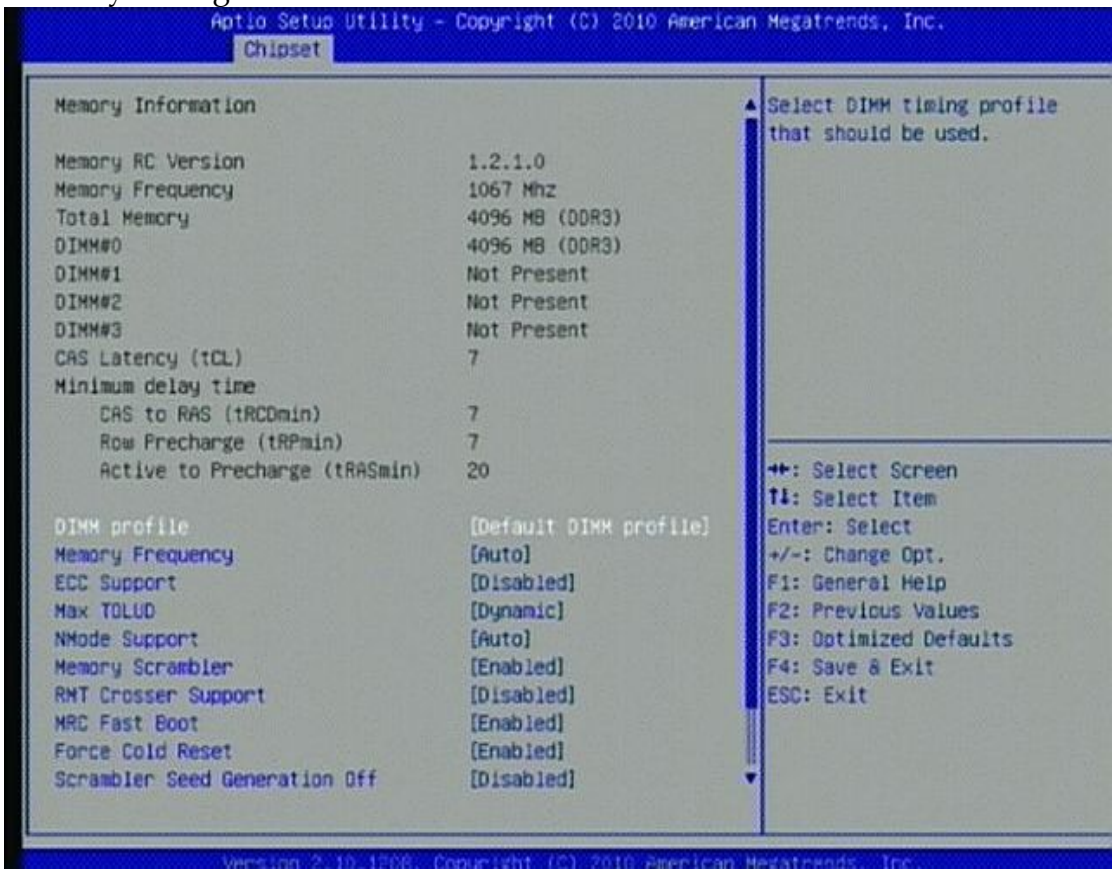
PEG ASPM

Control ASPM support for the PEG Device. This has no effect if PEG is not the currently active device.

ASPM L0s
Enable PCIe ASPM L0s.
The choice: Root Port Only, Endpoint Port Only, Both Root And Endpoint Ports

De-emphasis Control
Configure the De-emphasis control on PEG
The choice: -6 dB, -3.5 dB

Memory Configuration
Memory Configuration Parameters



DIMM profile
Select DIMM timing profile that should be used.

Memory Frequency
Maximum Memory Frequency Selections in Mhz.

ECC Support
Enable or disable DDR ECC Support.

Max TOLUD
Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller

NMomde Support
NMode Support Option.

Memory Scrambler
Enable or disable Memory Scrambler support.

RMT Crosser Support
Enable or disable RmtCrosserEnable support.

MRC Fast Boot
Enable or disable MRC fast boot.

Force Cold Reset
Force cold reset or choose MRC cold reset mode, when cold boot is required during MRC execution. Note: If ME 5.0MB is present. Force cold reset is required!

Scrambler Seed Generation Off
Control Memory Scrambler Seed Generation. Enable – do not generation scrambler seed. Disable – Generation scrambler seed always.

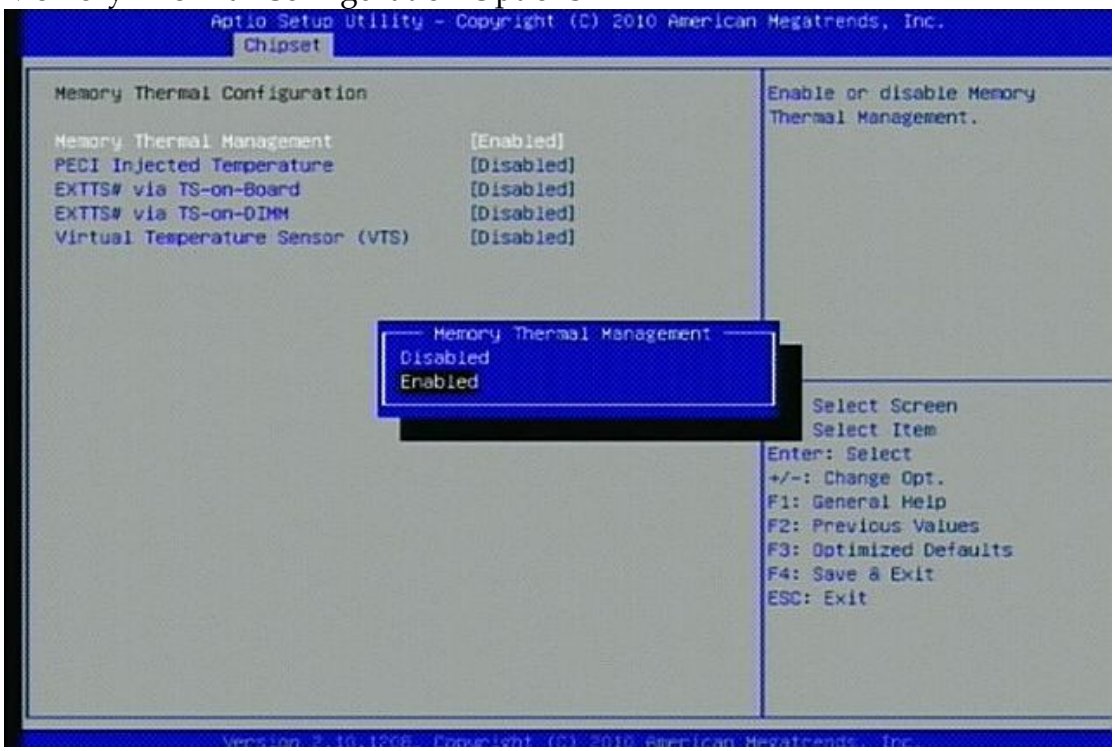
Memory Remap
Enable or disable memory remap above 4G.

Channel A DIMM control
Enable or disable dims on channel A
The choice: Enable Both DIMMs, Disable DIMM0, Disable DIMM1, Disable Both DIMMs

Channel B DIMM control
Enable or disable dims on channel B
The choice: Enable Both DIMMs, Disable DIMM0, Disable DIMM1, Disable Both DIMMs

Memory Thermal Configuration

Memory Thermal Configuration Options



Memory Thermal Management

Enable or disable Memory Thermal Management.

PECI Injected Temperature

Enable or disable memory temperature to be injected to the processor via PECI.

EXTTS# via TS-on-Board

Enable or disable routing TS-on-Board ALERT# and THERW# to EXTTS# pins on the PCH.

EXTTS# via TS-on-DIMM

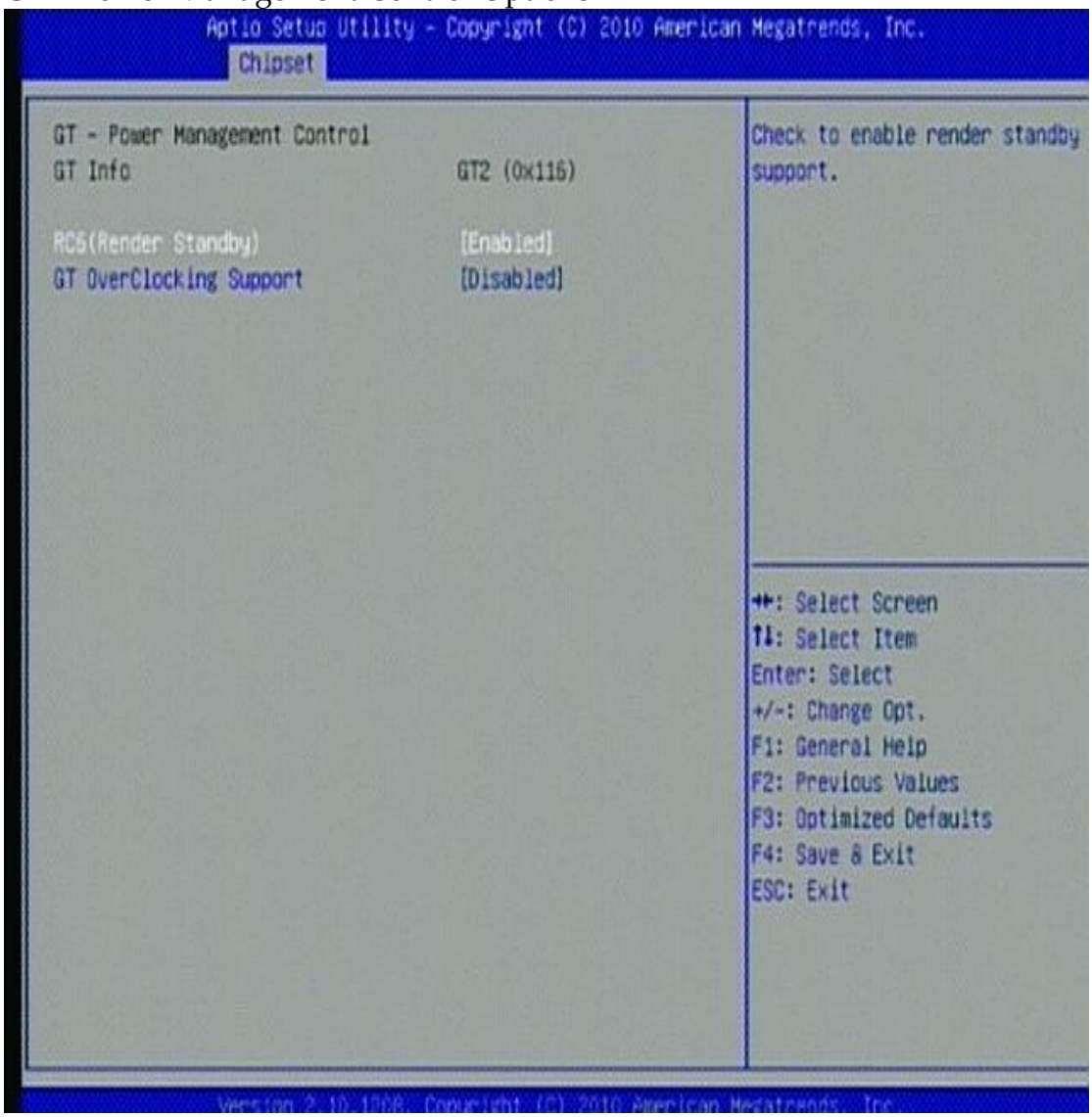
Enable or disable routing TS-on-DIMM ALERT# to EXTTS# pin on the PCH.

Virtual Temperature Sensor (VTS)

Enable or disable Virtual Temperature Sensor (VTS).

GT – Power Management Control

GT – Power Management Control Options



RC6 (Render Standby)

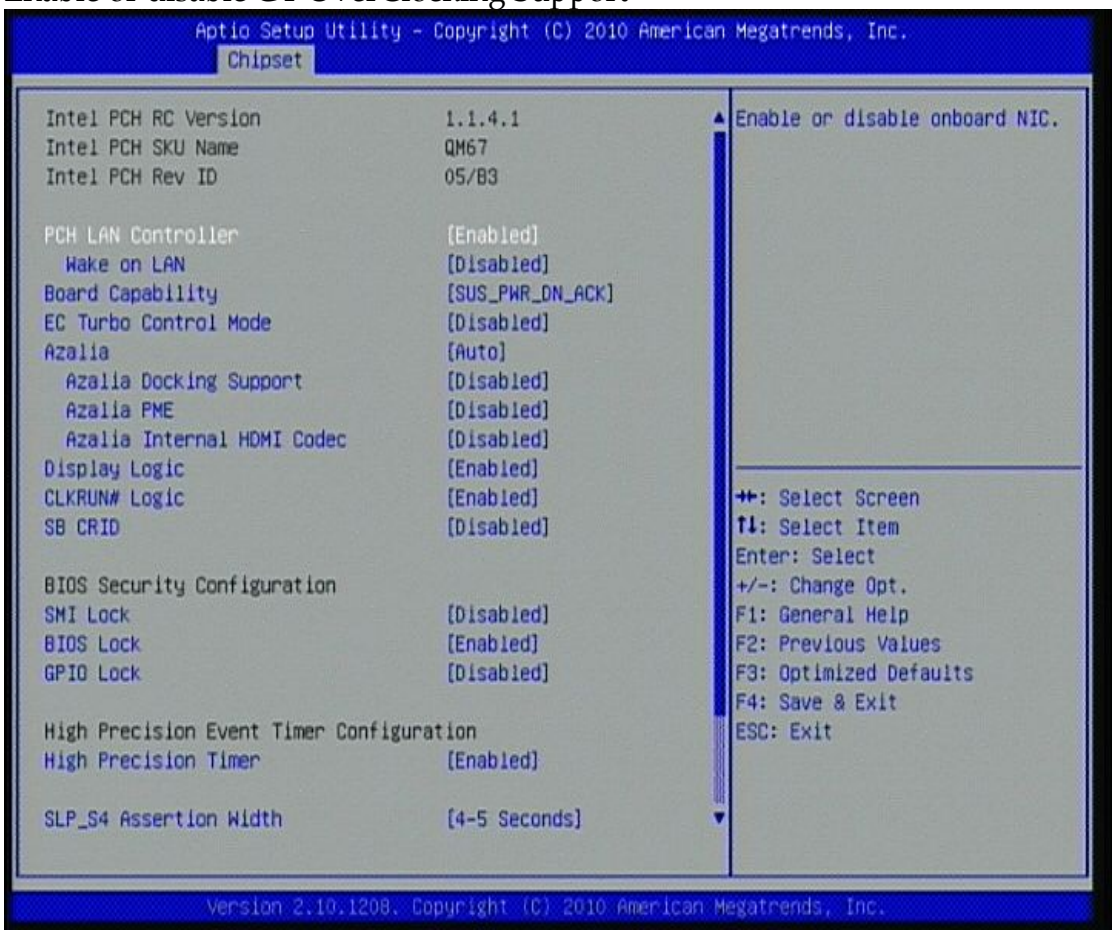
Check to enable render standby support.

GT OverClocking Support

Enable or disable GT OverClocking Support

PCH-IO Configuration

Enable or disable GT OverClocking Support



PCH LAN Controller

Enable or disable onboard NIC

Wake on LAN

Enable or disable integrated LAN to wake the system.

Board Capability

Board Capability – SUS_PWR_ON_ACK -> Send Disabled to PCH, DeepSx -> Show DeepSx Policies

EC Turbo Control Mode

Enable or disable EC Turbo Control mode.

Azalia

Control Detection of the Azalia device.
Disable = Azalia will be unconditionally disabled
Enable = Azalia will be unconditionally Enabled
Auto Azalia will be enabled if present, disable otherwise.

Azalia Docking Support

Enable or disable Azalia Docking Support of Audio Controller.

Azalia PME
Enable or disable Power Management Capability of Audio Controller.

Azalia Internal HDMI Codec
Enable or disable Internal HDMI codec for Azalia.

Display Logic
Enable or disable the PCH Display logic.

CLKRUN# Logic
Enable the CLKRUN# logic to stop the PCI Clocks.

SB CRID
Enable or disable SB Compatible Revision ID.

SMI Lock
Enable or disable SMI lockdown.

BIOIS Lock
Enable or disable BIOS Interface lockdown.

GPIO Lock
Enable or disable GPIO lockdown.

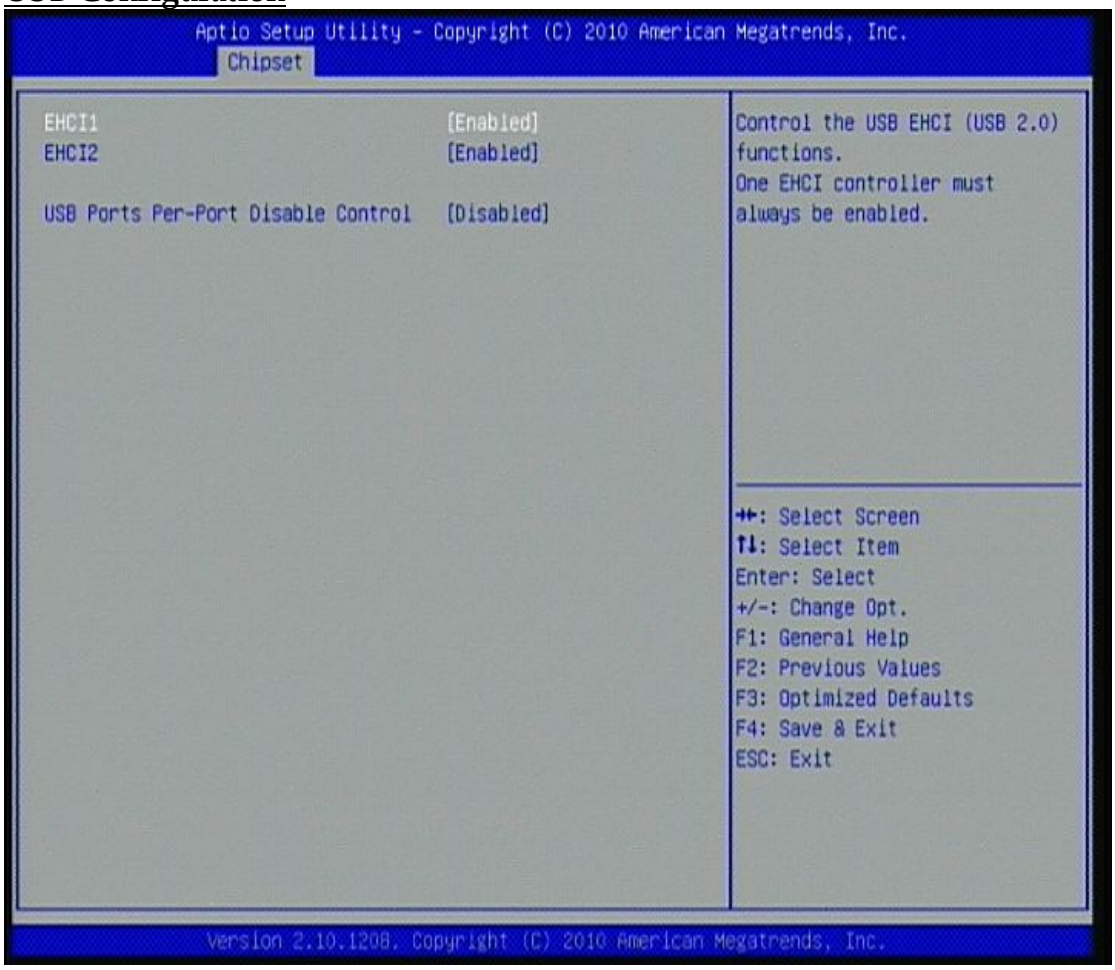
High precision Timer
Enable or disable the High Precision Event Timer.

SLP_S4 Assertion Width
Select a minimum assertion width of the SLP_S4 signal

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

Set NAND Management Override
Option to Override NAND Management to allow driver or 3rd parties software to configure the NAND module after POST.

USB Configuration



EHCI 1

Control the USB EHCI (USB 2.0) functions.
One EHCI controller must always be enabled.

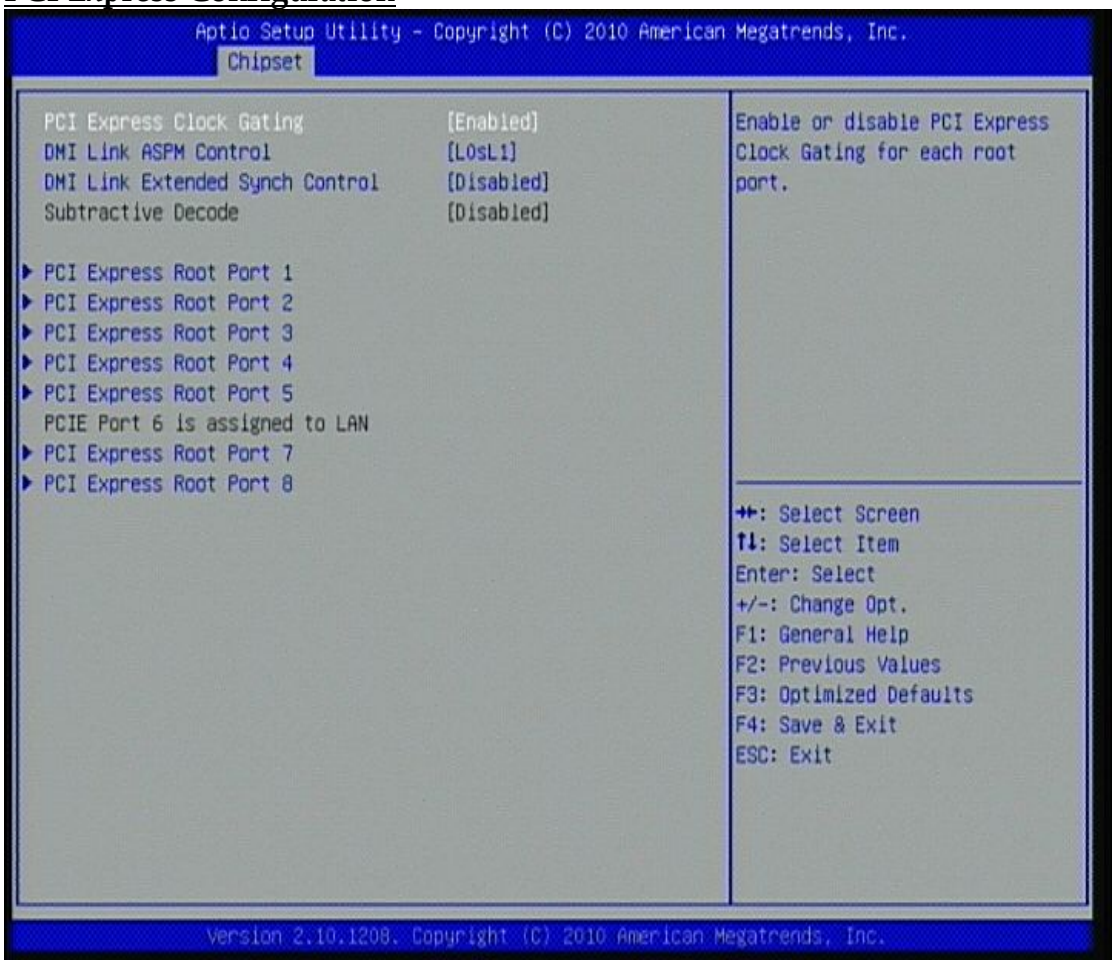
EHCI 2

Control the USB EHCI (USB 2.0) functions.
One EHCI controller must always be enabled.

USB Ports Per-Port Disable Control

Control each of the USB ports (0~9) disabling.

PCI Express Configuration



PCI Express Clock Gating

Enable or disable PCI Express Clock Gating for each root port.

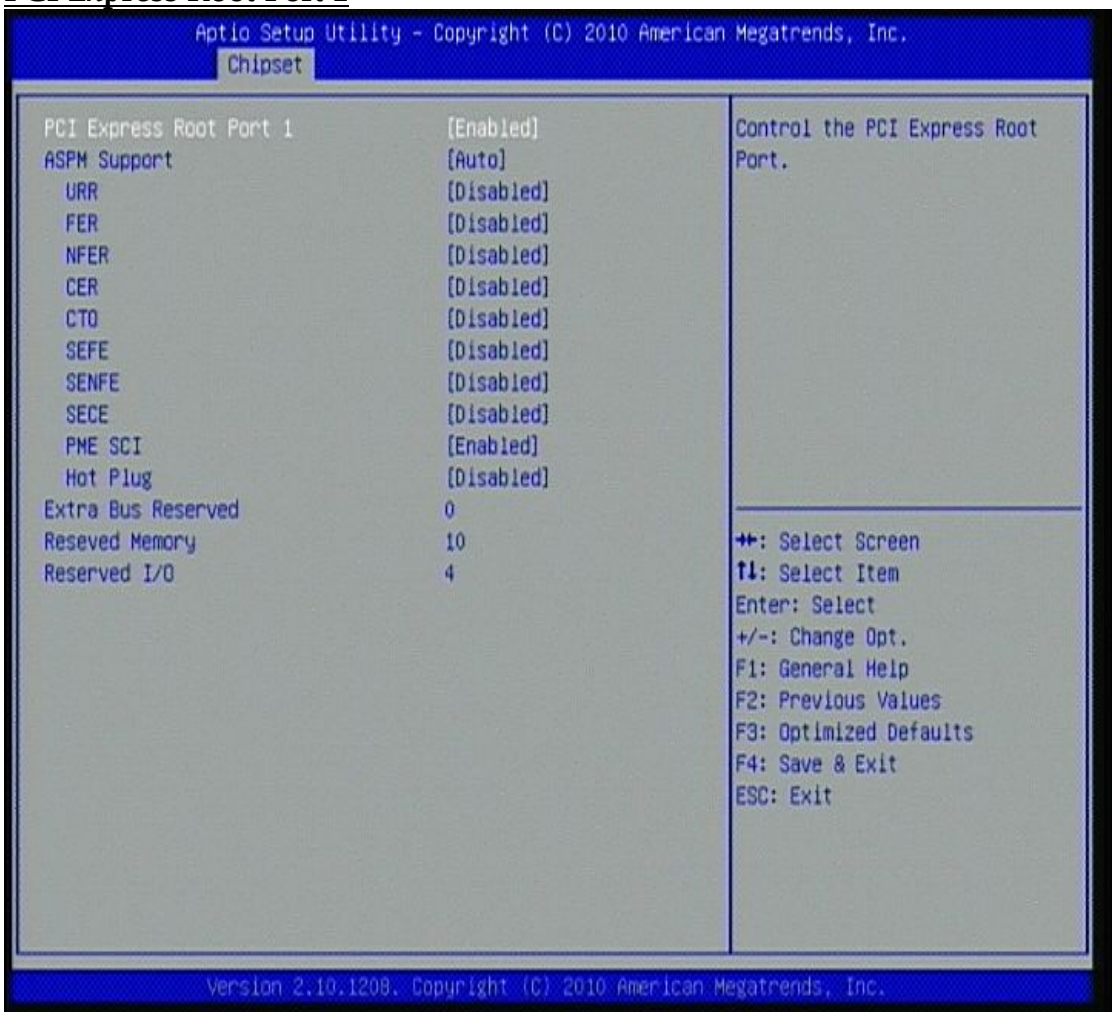
DMI Link ASPM Control

The control of Active State Power Management on both NB side and SB side of the DMI Link

DMI Link Extended Synch Control

The control of Extended Synch on SB side of the DMI Link

PCI Express Root Port 1



PCI Express Root Port 1
Control the PCI Express Root Port.

ASPM Support
Set the ASPM Level: Force L0 – Force all links to L0 state : AUTO – BIOS auto configure : DISABLE – Disables ASPM

URR
Enable or disable PCI Express Unsupported Request Reporting.

FER
Enable or disable PCI Express Device Fatal Error Reporting.

NFER
Enable or disable PCI Express Device Non-Fatal Error Reporting.

CER
Enable or disable PCI Express Device Correctable Error Reporting.

CER
Enable or disable PCI Express Device Correctable Error Reporting.

CTO
Enable or disable PCI Express Completion Timer T0.

SEFE
Enable or disable Root PCI Express System Error on Fatal Error.

SENFE
Enable or disable Root PCI Express System Error on Non-Fatal Error.

SECE
Enable or disable Root PCI Express System Error on Correctable Error.

PME SCI
Enable or disable PCI Express PME SCI.

Hot Plug
Enable or disable PCI Express Hot Plug.

Extra Bus Reserved
Extra Bus Reserved (0-7) for bridges behind this Root Bridge.

Reserved Memory
Reserved Memory and prefetchable Memory (0-20MB) Range for this Root Bridge

Reserved I/O
Reserved I/O (4K/8K/12K/16K/20K) Range for this Root Bridge

PCI Express Root Port 2
Control the PCI Express Root Port.

ASPM Support
Set the ASPM Level: Force L0 – Force all links to L0 state : AUTO – BIOS auto configure : DISABLE – Disables ASPM

URR
Enable or disable PCI Express Unsupported Request Reporting.

FER
Enable or disable PCI Express Device Fatal Error Reporting.

NFER
Enable or disable PCI Express Device Non-Fatal Error Reporting.

CER
Enable or disable PCI Express Device Correctable Error Reporting.

CER
Enable or disable PCI Express Device Correctable Error Reporting.

CTO
Enable or disable PCI Express Completion Timer T0.

SEFE
Enable or disable Root PCI Express System Error on Fatal Error.

SENFE
Enable or disable Root PCI Express System Error on Non-Fatal Error.

SECE
Enable or disable Root PCI Express System Error on Correctable Error.

PME SCI
Enable or disable PCI Express PME SCI.

Hot Plug
Enable or disable PCI Express Hot Plug.

Extra Bus Reserved
Extra Bus Reserved (0-7) for bridges behind this Root Bridge.

Reserved Memory
Reserved Memory and prefetchable Memory (0-20MB) Range for this Root Bridge

Reserved I/O
Reserved I/O (4K/8K/12K/16K/20K) Range for this Root Bridge

PCI Express Root Port 3
Control the PCI Express Root Port.

ASPM Support
Set the ASPM Level: Force L0 – Force all links to L0 state : AUTO – BIOS auto configure : DISABLE – Disables ASPM

URR
Enable or disable PCI Express Unsupported Request Reporting.

FER
Enable or disable PCI Express Device Fatal Error Reporting.

NFER
Enable or disable PCI Express Device Non-Fatal Error Reporting.

CER
Enable or disable PCI Express Device Correctable Error Reporting.

CER
Enable or disable PCI Express Device Correctable Error Reporting.

CTO
Enable or disable PCI Express Completion Timer T0.

SEFE
Enable or disable Root PCI Express System Error on Fatal Error.

SENFE
Enable or disable Root PCI Express System Error on Non-Fatal Error.

SECE
Enable or disable Root PCI Express System Error on Correctable Error.

PME SCI
Enable or disable PCI Express PME SCI.

Hot Plug
Enable or disable PCI Express Hot Plug.

Extra Bus Reserved
Extra Bus Reserved (0-7) for bridges behind this Root Bridge.

Reserved Memory
Reserved Memory and prefetchable Memory (0-20MB) Range for this Root Bridge

Reserved I/O
Reserved I/O (4K/8K/12K/16K/20K) Range for this Root Bridge

PCI Express Root Port 4
Control the PCI Express Root Port.

ASPM Support
Set the ASPM Level: Force L0 – Force all links to L0 state : AUTO – BIOS auto configure : DISABLE – Disables ASPM

URR
Enable or disable PCI Express Unsupported Request Reporting.

FER
Enable or disable PCI Express Device Fatal Error Reporting.

NFER
Enable or disable PCI Express Device Non-Fatal Error Reporting.

CER
Enable or disable PCI Express Device Correctable Error Reporting.

CER
Enable or disable PCI Express Device Correctable Error Reporting.

CTO
Enable or disable PCI Express Completion Timer T0.

SEFE
Enable or disable Root PCI Express System Error on Fatal Error.

SENFE
Enable or disable Root PCI Express System Error on Non-Fatal Error.

SECE
Enable or disable Root PCI Express System Error on Correctable Error.

PME SCI
Enable or disable PCI Express PME SCI.

Hot Plug
Enable or disable PCI Express Hot Plug.

Extra Bus Reserved
Extra Bus Reserved (0-7) for bridges behind this Root Bridge.

Reserved Memory
Reserved Memory and prefetchable Memory (0-20MB) Range for this Root Bridge

Reserved I/O
Reserved I/O (4K/8K/12K/16K/20K) Range for this Root Bridge

PCI Express Root Port 5
Control the PCI Express Root Port.

ASPM Support
Set the ASPM Level: Force L0 – Force all links to L0 state : AUTO – BIOS auto configure : DISABLE – Disables ASPM

URR
Enable or disable PCI Express Unsupported Request Reporting.

FER
Enable or disable PCI Express Device Fatal Error Reporting.

NFER
Enable or disable PCI Express Device Non-Fatal Error Reporting.

CER
Enable or disable PCI Express Device Correctable Error Reporting.

CER
Enable or disable PCI Express Device Correctable Error Reporting.

CTO
Enable or disable PCI Express Completion Timer T0.

SEFE
Enable or disable Root PCI Express System Error on Fatal Error.

SENFE
Enable or disable Root PCI Express System Error on Non-Fatal Error.

SECE
Enable or disable Root PCI Express System Error on Correctable Error.

PME SCI
Enable or disable PCI Express PME SCI.

Hot Plug
Enable or disable PCI Express Hot Plug.

Extra Bus Reserved
Extra Bus Reserved (0-7) for bridges behind this Root Bridge.

Reserved Memory
Reserved Memory and prefetchable Memory (0-20MB) Range for this Root Bridge

Reserved I/O
Reserved I/O (4K/8K/12K/16K/20K) Range for this Root Bridge

PCI Express Root Port 7
Control the PCI Express Root Port.

ASPM Support
Set the ASPM Level: Force L0 – Force all links to L0 state : AUTO – BIOS auto configure : DISABLE – Disables ASPM

URR
Enable or disable PCI Express Unsupported Request Reporting.

FER
Enable or disable PCI Express Device Fatal Error Reporting.

NFER
Enable or disable PCI Express Device Non-Fatal Error Reporting.

CER
Enable or disable PCI Express Device Correctable Error Reporting.

CER
Enable or disable PCI Express Device Correctable Error Reporting.

CTO
Enable or disable PCI Express Completion Timer T0.

SEFE
Enable or disable Root PCI Express System Error on Fatal Error.

SENFE
Enable or disable Root PCI Express System Error on Non-Fatal Error.

SECE
Enable or disable Root PCI Express System Error on Correctable Error.

PME SCI
Enable or disable PCI Express PME SCI.

Hot Plug
Enable or disable PCI Express Hot Plug.

Extra Bus Reserved
Extra Bus Reserved (0-7) for bridges behind this Root Bridge.

Reserved Memory
Reserved Memory and prefetchable Memory (0-20MB) Range for this Root Bridge

Reserved I/O
Reserved I/O (4K/8K/12K/16K/20K) Range for this Root Bridge

PCI Express Root Port 8
Control the PCI Express Root Port.

ASPM Support
Set the ASPM Level: Force L0 – Force all links to L0 state : AUTO – BIOS auto configure : DISABLE – Disables ASPM

URR
Enable or disable PCI Express Unsupported Request Reporting.

FER
Enable or disable PCI Express Device Fatal Error Reporting.

NFER
Enable or disable PCI Express Device Non-Fatal Error Reporting.

CER
Enable or disable PCI Express Device Correctable Error Reporting.

CER
Enable or disable PCI Express Device Correctable Error Reporting.

CTO
Enable or disable PCI Express Completion Timer T0.

SEFE
Enable or disable Root PCI Express System Error on Fatal Error.

SENFE
Enable or disable Root PCI Express System Error on Non-Fatal Error.

SECE
Enable or disable Root PCI Express System Error on Correctable Error.

PME SCI
Enable or disable PCI Express PME SCI.

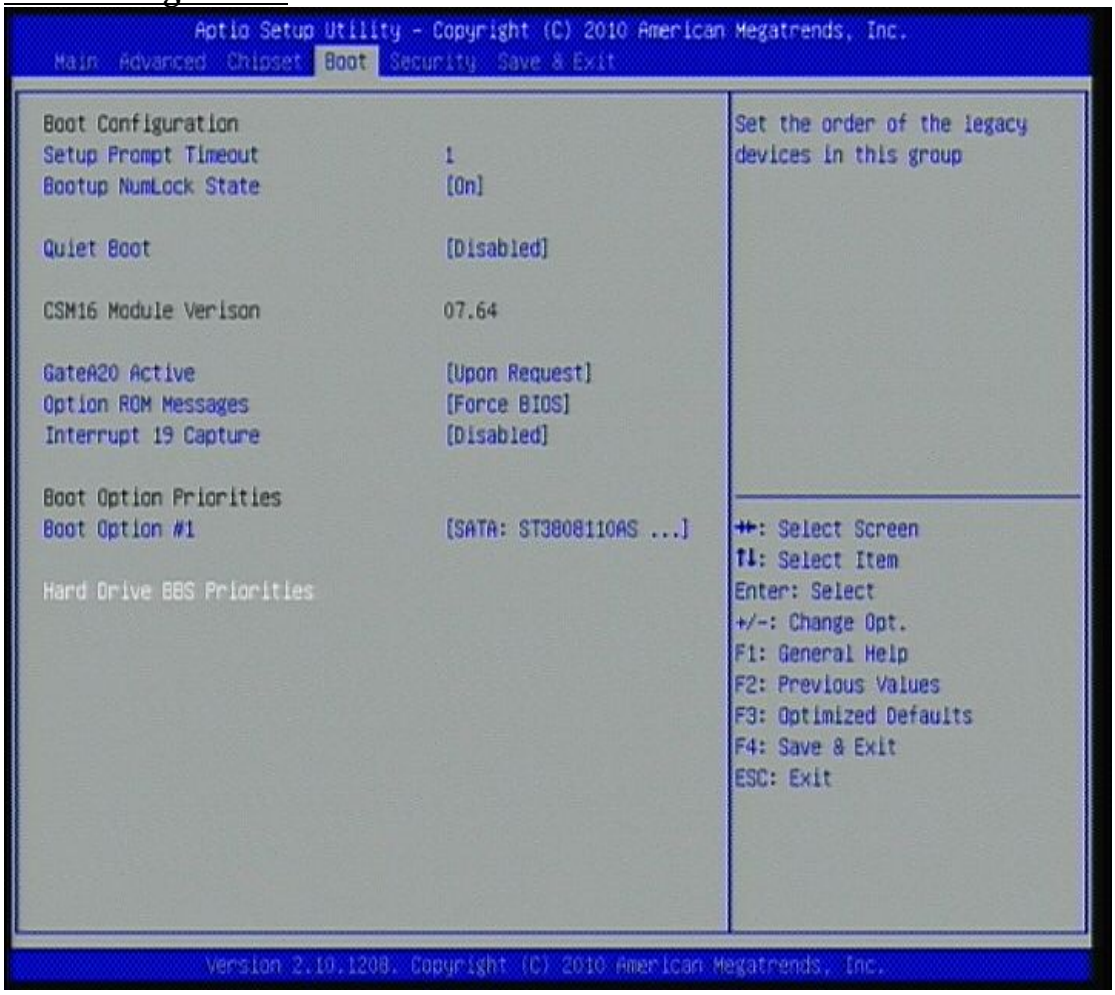
Hot Plug
Enable or disable PCI Express Hot Plug.

Extra Bus Reserved
Extra Bus Reserved (0-7) for bridges behind this Root Bridge.

Reserved Memory
Reserved Memory and prefetchable Memory (0-20MB) Range for this Root Bridge

Reserved I/O
Reserved I/O (4K/8K/12K/16K/20K) Range for this Root Bridge

Boot Configuration



Setup Prompt Timeout
Number of seconds to wait for setup activation key.
65535(0xFFFF) means indefinite waiting.

Boot NumLock State
Select the keyboard NumLock state

Quiet Boot
Enable or disable Quiet Boot option

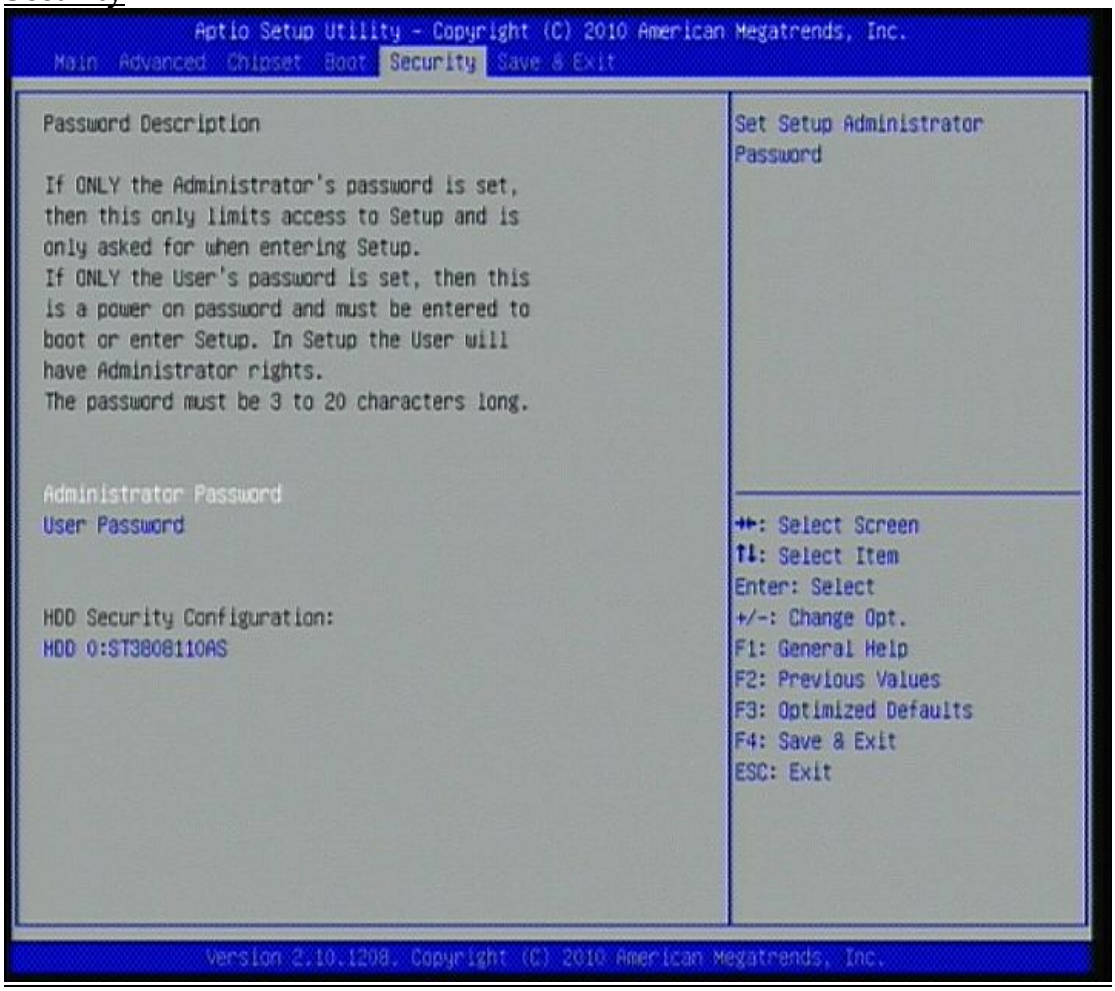
GateA20 Active
UPON REQUEST- GA20 can be disabled using BIOS services.
ALWAYS – do not allow disabling GA20 ; this option is useful when any RT code is executed above 1MB.

Option ROM Messages
Set display mode for Option ROM

Interrupt 19 Capture
Enable: Allows Option ROMs to trap Int 19

Boot Option #1
Sets the system boot order

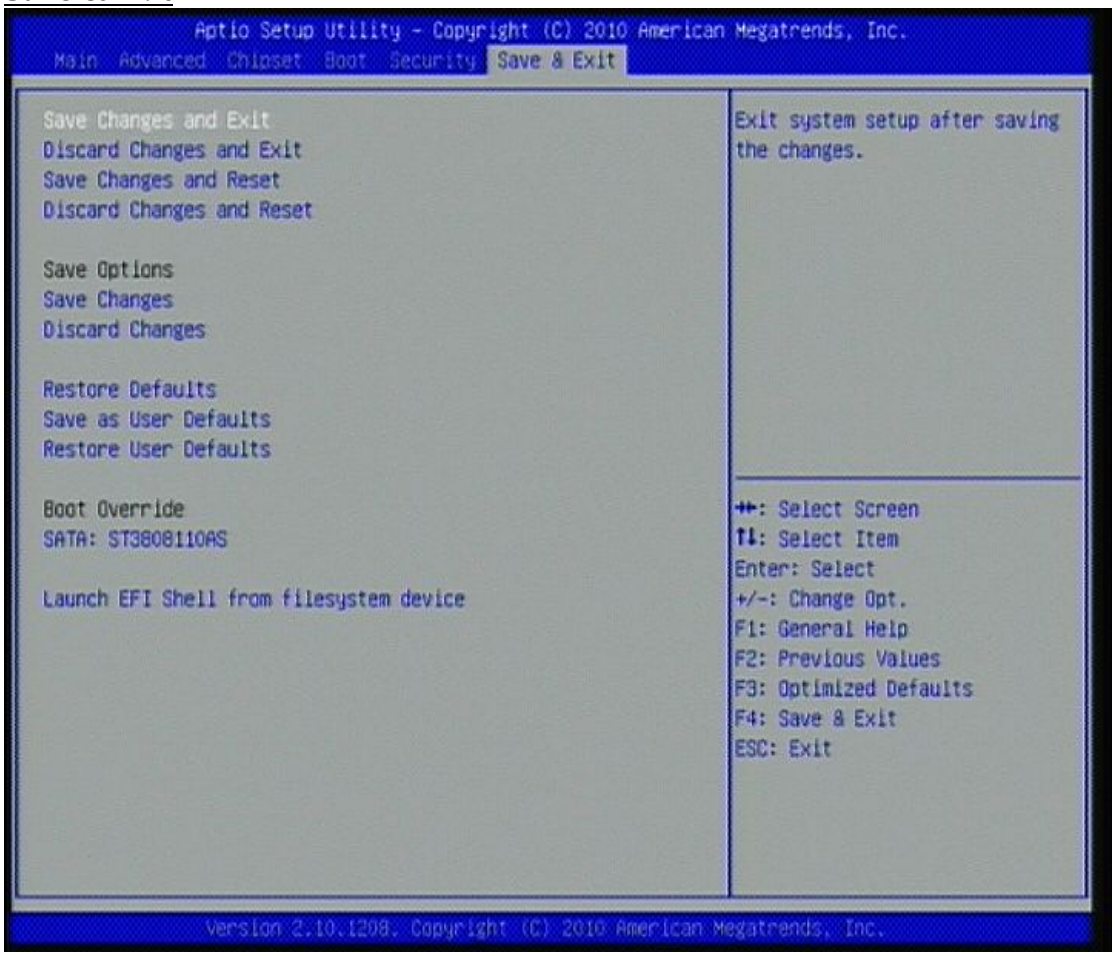
Security



Administrator Password
Set Setup Administrator Password

User Password
Set User password

Save & Exit



Save Changes and Exit
Exit system setup after saving the changes.

Discard Changes and Exit
Exit system setup without saving the changes.

Save Changes and Reset
Reset the system after saving the changes.

Discard Changes and Reset
Reset the system without saving the changes.

Save Changes
Save Changes done so far to any of the setup options.

Discard Changes
Discard Changes done so far to any of the setup options.

Restore Defaults
Restore/Load Default Values for all the setup options.

Save as User Defaults
Save the changes done so far as User Defaults.

Restore User Defaults
Restore the User Defaults to all the setup options.

Lanch EFI Shell from filesystem device
Attempts to Launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices

Chapter 5
Troubleshooting

This chapter provides a few useful tips to quickly get PCOM-B217VG-II running with success. As basic hardware installation has been addressed in Chapter 2, this chapter will primarily focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

5.1 Hardware Quick Installation

This chapter provides a few useful tips to quickly get PCOM-B217VG-II Series running with success. As basic hardware installation has been addressed in Chapter 2, this chapter will primarily focus on system integration issues, in terms of BIOS setting.

5.2 BIOS Setting

To make sure that you have a successful start with PCOM-B217VG-II, it is recommended, when going with the boot-up sequence, to hit "DEL" key and enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

Loading the default optimal setting

When prompted with the main setup menu, please scroll down to "**Load Optimal Defaults**", press "Enter" and "Y" to load in default optimal BIOS setup. This will force your BIOS setting back to the initial factory configuration. It is recommended to do this so you can be sure the system is running with the BIOS setting that Portwell has highly endorsed. As a matter of fact, users can load the default BIOS setting any time when system appears to be unstable in boot up sequence.

Auto Detect Hard Disks

In the BIOS => Standard CMOS setup menu, pick up any one from Primary/Secondary Master/Slave IDE ports, and press "Enter". Setup the selected IDE port and its access mode to "Auto". This will force system to automatically pick up the IDE devices that are being connected each time system boots up.

Improper disable operation

There are too many occasions where users disable a certain device/feature in one application through BIOS setting. These variables may not be set back to the original values when needed. These devices/features will certainly fail to be detected.

When the above conditions happen, it is strongly recommended to check the BIOS settings. Make sure certain items are set as they should be. These include the COM1/ COM2 ports, USB ports, external cache, on-board VGA and Ethernet.

It is also very common that users would like to disable a certain device/port to release IRQ resource. A few good examples are

Disable COM1 serial port to release IRQ #4

Disable COM2 serial port to release IRQ #3
Etc…

A quick review of the basic IRQ mapping is given below for your reference.

	Interrupt Request Lines IRQ		
	IRQ#	*Current Use*	*Default Use*
	IRQ 0	System ROM	System Timer
	IRQ 1	System ROM	Keyboard Event
	IRQ 2	【Unassigned】	Usable IRQ
	IRQ 3	System ROM	COM2
	IRQ 4	System ROM	COM1
	IRQ 5	【Unassigned】	Usable IRQ
	IRQ 6	System ROM	Diskette Event
	IRQ 7	【Unassigned】	Usable IRQ
	IRQ 8	System ROM	Real-Time Clock
	IRQ 9	【Unassigned】	Usable IRQ
	IRQ 10	【Unassigned】	Usable IRQ
	IRQ 11	Video ROM	Usable IRQ
	IRQ 12	System ROM	IBM Mouse Event
	IRQ 13	System ROM	Coprocessor Error
	IRQ 14	System ROM	Hard Disk Event
	IRQ 15	【Unassigned】	Usable IRQ

It is then very easy to find out which IRQ resource is ready for additional peripherals. If IRQ resource is not enough, please disable some devices listed above to release further IRQ numbers.

System Memory Address Map

Each On-board device in the system is assigned a set of memory addresses, which also can be identical of the device. The following table lists the system memory address used for your reference.

5.3 System Memory Address Map

Memory Area	Size	Description
0000-003F	1K	Interrupt Area
0040-004F	0.3K	BIOS Data Area
0050-006F	0.5K	System Data
0070-0E2E	54K	DOS
0E2F-0F6B	5K	Program Area
0F6C-9BBF	561K	【Available】
First Meg -- Conventional memory end at 623K --		
9BC0-9CFF	5K	Extended BIOS Area
9D00-9FFF	12K	Unused
A000-AFFF	64K	VGA Graphics
B000-B7FF	32K	Unused
B800-BFFF	32K	VGA Text
C000-CFBF	59K	Video ROM
CFC0-EFFF	133K	Unused
F000-FFFF	64K	System ROM
HMA	64K	First 64K Extended