PCOM-B630VG

COM Express Type VI with ECC Module

User's Manual

Version 1.0

.

Table of Contents

How to Use This Manual

The manual describes how to configure your PCOM-B630VG 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 Type 6, have not holds by PICMG (PCI Industrial Computer Manufacturer Group) yet but they will 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, HDMI, DP, DVI, and 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-B630 is Type VI COM Express Module board with ECC support equipped Intel Haswell Bridge BGA processor (Core i7 2.0GHz 4 Core、Core i5 1.8GHz 2 Core processor on-board), two DDR3L SO-DIMM sockets, one Gigabit Ethernet controller on it to provide expansion interfaces – PCI Express (x16 / x1), Three Multiple display ports (supports SDVO/HDMI/DP/DVI), SATA and so on.

1.2 Check List

The PCOM-B630VG series package should cover the following basic items

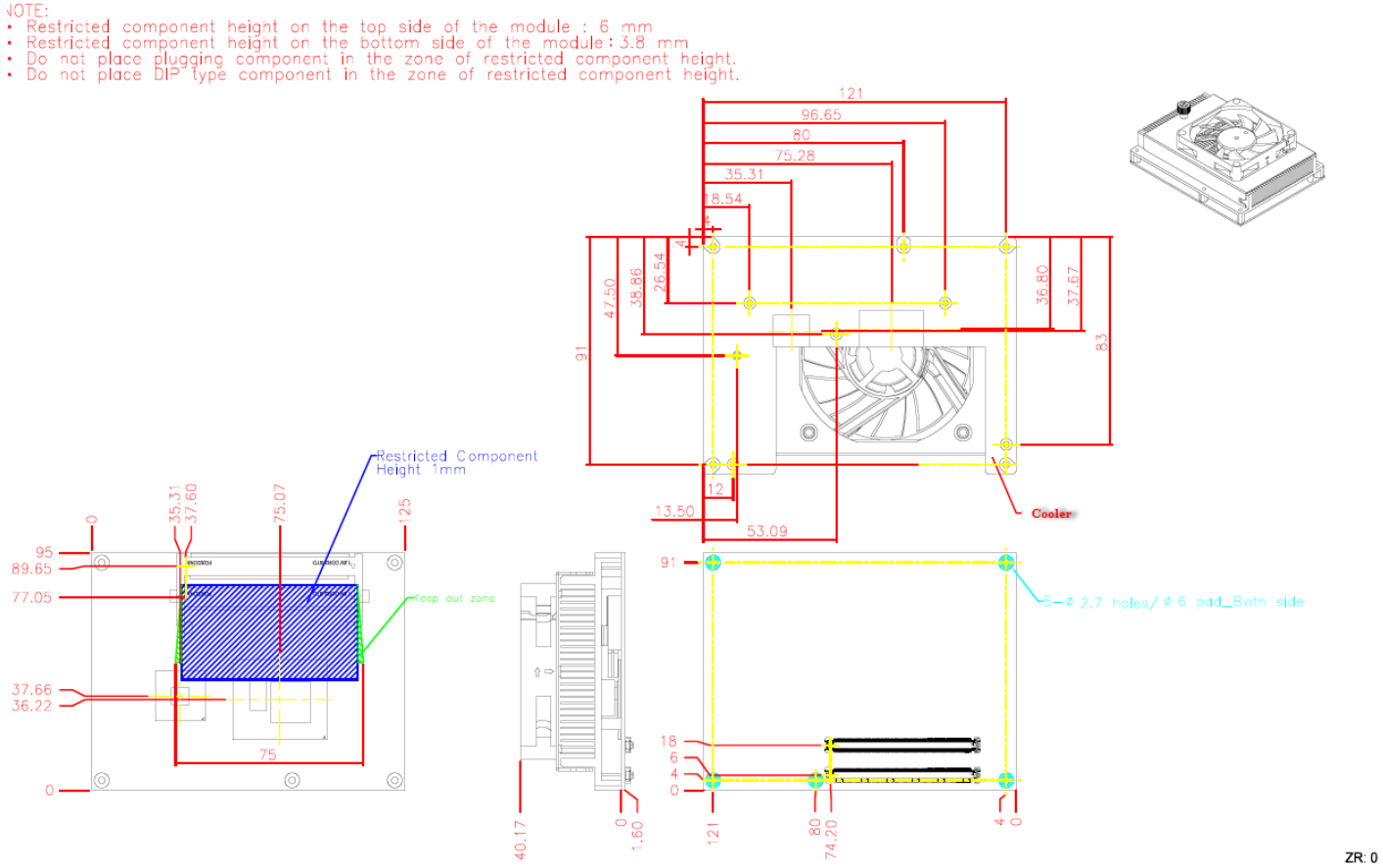
- ✓ One PCOM-B630VG module board

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

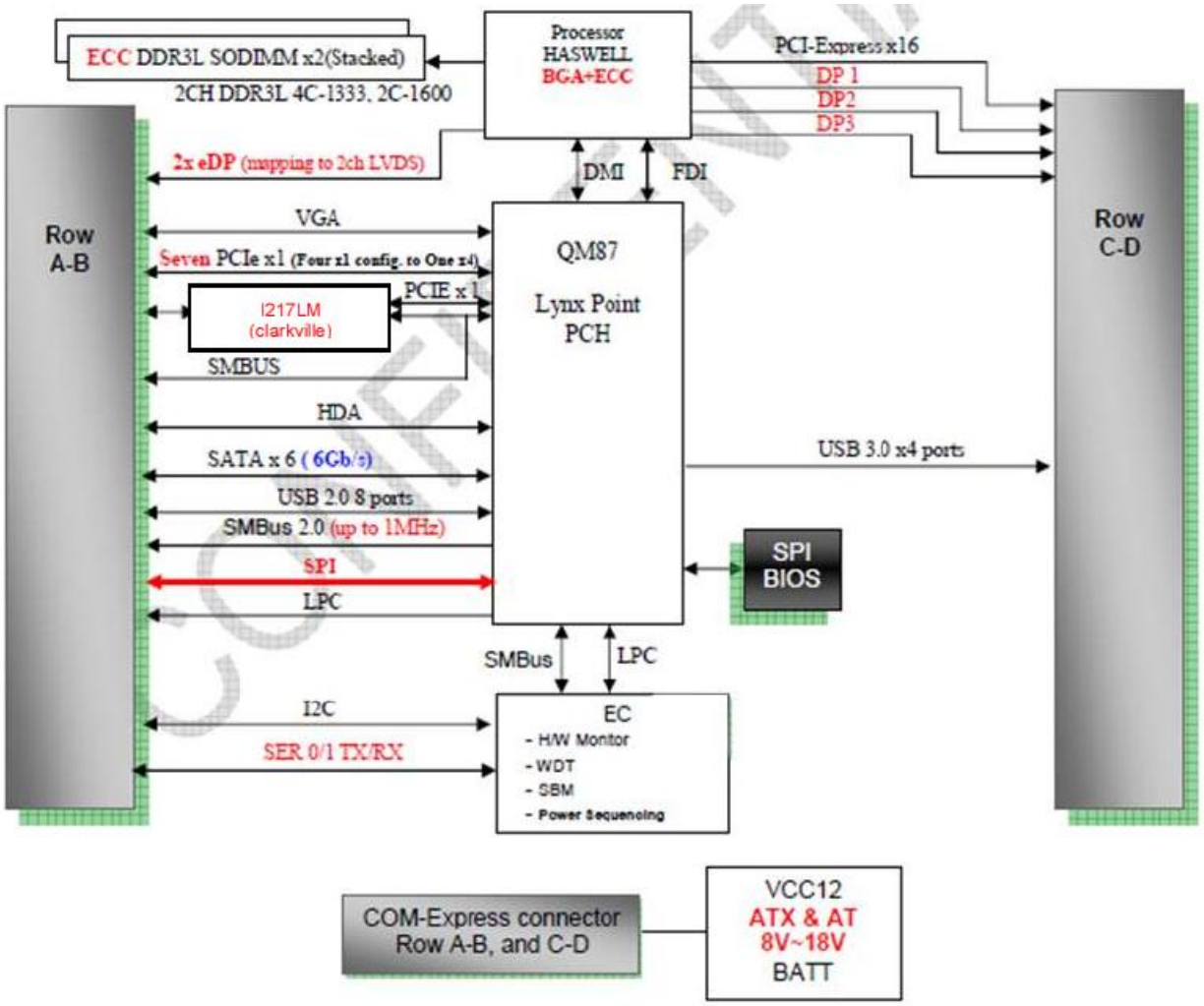
1.3 Product Specification

#	Requirement	Detailed Description
1	Form Factor	Type 6, Compact Form Factor Com Express
2	Processor	- Intel Haswell Bridge i7 2.0GHZ 6MB 4 Core (47W) - Intel Haswell Bridge i5 1.8GHZ 3MB 2 Core (37W)
3	Chipset	-Intel®QM87
4	Memory	-Support up to 16GB ECC DDR3L 1333/1600 MT/s SDRAM on two 204-pin SODIMM sockets.
5	BIOS	- AMI UEFI
6	Ethernet	I217LM Gigabit LAN x 1 (Support vPro, Jumbo frames, Energy Efficient Ethernet)
7	Graphic	Intel® HD Graphics 4600 supports DX11.1, OpenGL 3.2
8	Display	VGA: Resolution up to 2560x1600 DP: Resolution up to 2560x1600
9	PCI Express	7x PCI Express x1 Gen2 (5.0GT/s) 1x PCI Express x16 Gen3(8.0GT/s)
10	SATA	SATA 6.0Gb/s x 6
11	USB Port	8 x Universal Serial Bus 2.0(480 Mb/s bus comprehends the high-speed/ full-speed /low-speed data ranges), 4 of 8 USB2.0 support USB3.0.
12	Watchdog Timer	Programmable via S/W from 1 sec to 255 min
13	LPC	LPC Interface (4-bit-wide bus operating at 4 times the clock speed, 33.3MHz)
14	Hardware Monitoring	-ITE 8518 CPU, Voltage Temperature
15	Connector	COM Express Connector x2
16	Audio	Intel® High Definition Audio (2x channels delivering 192-KHz 32-bits, and 8x channels delivering 96-KHz 32-Bits)
17	Board Size	125x95mm
18	Environment	-Operation Temperature: 0 ~ 60° C -Relative Humidity: 5~95%

1.4 Mechanical Drawing

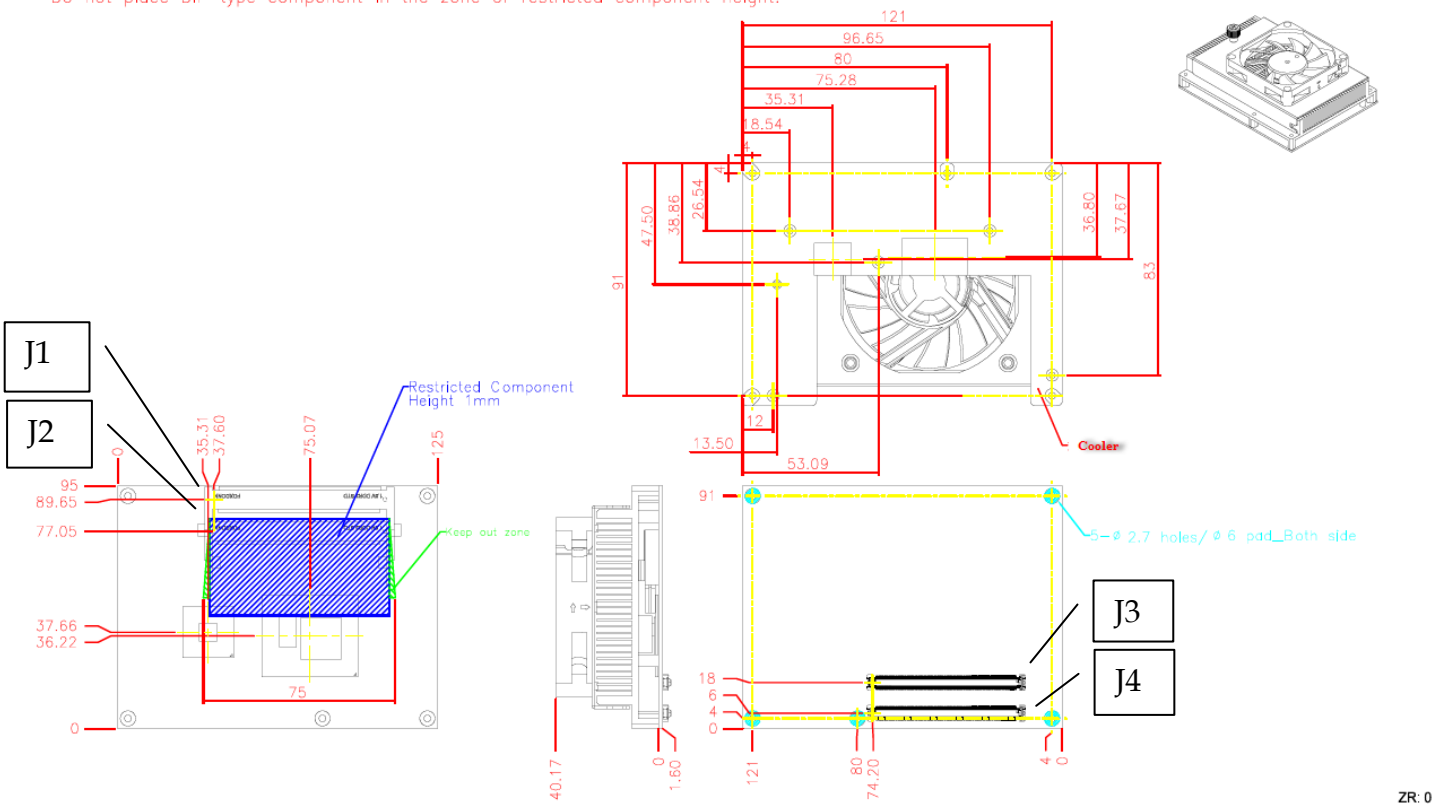


1.5 System Architecture



Chapter 2
Hardware Configuration

This chapter indicates connectors' Pin Assignment.



2.1 Connector Allocation

Connector Function List

Connector	Function	Remark
J1	DDR3 channel A connector.	
J2	DDR3 channel B connector.	
J3	COM Express connector raw C and D	
J4	COM Express connector raw A and B	

Pin Assignment of Connectors

J3				J4			
Row A		Row B		Row C		Row D	
Pin No	Signal Description	Pin No	Signal Description	Pin No	Signal Description	Pin No	Signal Description
A1	GND (FIXED)	B1	GND (FIXED)	C1	GND (FIXED)	D1	GND (FIXED)
A2	GBE0_MDI3-	B2	GBE0_ACT#	C2	GND	D2	GND
A3	GBE0_MDI3+	B3	LPC_FRAME #	C3	USB0_SSRX-	D3	USB0_SSTX-
A4	GBE0_LINK100#	B4	LPC_AD0	C4	USB0_SSRX+	D4	USB0_SSTX+

A5	GBE0_LINK1000#	B5	LPC_AD1	C5	GND	D5	GND
A6	GBE0_MDI2-	B6	LPC_AD2	C6	USB1_SSRX-	D6	USB1_SSTX-
A7	GBE0_MDI2+	B7	LPC_AD3	C7	USB1_SSRX+	D7	USB1_SSTX+
A8	GBE0_LINK#	B8	LPC_DRQ0#	C8	GND	D8	GND
A9	GBE0_MDI1-	B9	LPC_DRQ1#	C9	USB2_SSRX-	D9	USB2_SSTX-
A10	GBE0_MDI1+	B10	LPC_PCLK	C10	USB2_SSRX+	D10	USB2_SSTX+
A11	GND (FIXED)	B11	GND (FIXED)	C11	GND (FIXED)	D11	GND (FIXED)
A12	GBE0_MDI0-	B12	PWRBTN#	C12	USB3_SSRX-	D12	USB3_SSTX-
A13	GBE0_MDI0+	B13	SMB_CLK	C13	USB3_SSRX+	D13	USB3_SSTX+
A14	GBE0_CTREF	B14	SMB_DAT	C14	GND	D14	GND
A15	SUS_S3#	B15	SMB_ALERT#	C15	DP1_LANE6	D15	DP1_CTRLCLK_AUX
A16	SATA0_TX+	B16	SATA1_TX+	C16	DP1_LANE6#	D16	DP1_CTRLDATA_AUX#
A17	SATA0_TX-	B17	SATA1_TX-	C17	NC	D17	NC
A18	SUS_S4#	B18	SUS_STAT#	C18	NC	D18	NC
A19	SATA0_RX+	B19	SATA1_RX+	C19	PCIE_RX6+	D19	PCIE_TX6+
A20	SATA0_RX-	B20	SATA1_RX-	C20	PCIE_RX6-	D20	PCIE_TX6-
A21	GND (FIXED)	B21	GND (FIXED)	C21	GND (FIXED)	D21	GND (FIXED)
A22	SATA2_TX+	B22	SATA3_TX+	C22	NC	D22	NC
A23	SATA2_TX-	B23	SATA3_TX-	C23	NC	D23	NC
A24	SUS_S5#	B24	PWROK	C24	DP1_HDP	D24	NC
A25	SATA2_RX+	B25	SATA3_RX+	C25	DP1_LANE4	D25	NC
A26	SATA2_RX-	B26	SATA3_RX-	C26	DP1_LANE4#	D26	DP1_LANE0
A27	BATLOW#	B27	WDT	C27	NC	D27	DP1_LANE0#
A28	ATA_ACT#	B28	HDA_SDIN2	C28	NC	D28	NC
A29	HDA_SYNC	B29	HDA_SDIN1	C29	DP1_LANE5	D29	DP1_LANE1
A30	HDA_RST#	B30	HDA_SDIN0	C30	DP1_LANE5#	D30	DP1_LANE1#
A31	GND (FIXED)	B31	GND (FIXED)	C31	GND (FIXED)	D31	GND (FIXED)
A32	HDA_BITCLK	B32	SPKR	C32	DP2_CTRLCLK_AUX	D32	DP1_LANE2
A33	HDA_SDOUT	B33	I2C_CLK	C33	DP2_CTRLDATA_AUX#	D33	DP1_LANE2#
A34	BIOS_DIS0#	B34	I2C_DAT	C34	DP2_AUX_SEL	D34	DP1_AUX_SEL
A35	THRMTRIP#	B35	THRM#	C35	NC	D35	NC
A36	USB6-	B36	USB7-	C36	DP3_CTRLCLK_AUX	D36	DP1_LANE3
A37	USB6+	B37	USB7+	C37	DP3_CTRLDATA_AUX#	D37	DP1_LANE3#
A38	USB_6_7_OC#	B38	USB_4_5_OC#	C38	DP3_AUX_SEL	D38	NC

A39	USB4-	B39	USB5-	C39	DP3_LANE0	D39	DP2_LANE0
A40	USB4+	B40	USB5+	C40	DP3_LANE0 #	D40	DP2_LANE0 #
A41	GND (FIXED)	B41	GND (FIXED)	C41	GND (FIXED)	D41	GND (FIXED)
A42	USB2-	B42	USB3-	C42	DP3_LANE1	D42	DP2_LANE1
A43	USB2+	B43	USB3+	C43	DP3_LANE1 #	D43	DP2_LANE1 #
A44	USB_2_3_OC #	B44	USB_0_1_OC #	C44	DP3_HPD	D44	DP2_HPD
A45	USB0-	B45	USB1-	C45	NC	D45	NC
A46	USB0+	B46	USB1+	C46	DP3_LANE2	D46	DP2_LANE2
A47	VCC_RTC	B47	EXCD1_PERST#	C47	DP3_LANE2 #	D47	DP2_LANE2 #
A48	EXCD0_PERST#	B48	EXCD1_CPPE #	C48	NC	D48	NC
A49	EXCD0_CPPE #	B49	SYS_RST#	C49	DP3_LANE3	D49	DP2_LANE3
A50	LPC_SERIRQ	B50	CB_RESET#	C50	DP3_LANE3 #	D50	DP2_LANE3 #
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	NC	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	NC	D57	NC
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	NC	D63	NC
A64	PCIE_TX1+	B64	PCIE_RX1+	C64	NC	D64	NC
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	NC	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	GND	D73	GND
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_VDDEN	B77	LVDS_B3+	C77	NC	D77	NC
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_CLKA+	B81	LVDS_CLKB+	C81	PEG_RX9+	D81	PEG_TX9+
A82	LVDS_CLKA-	B82	LVDS_CLKB-	C82	PEG_RX9-	D82	PEG_TX9-
A83	LVDS_I2CCK	B83	LVDS_BKLT_CTRL	C83	NC	D83	NC
A84	LVDS_I2CDAT	B84	VCC_5V_SBY	C84	GND	D84	GND
A85	GPI3	B85	VCC_5V_SBY	C85	PEG_RX10+	D85	PEG_TX10+
A86	NC	B86	VCC_5V_SBY	C86	PEG_RX10-	D86	PEG_TX10-
A87	NC	B87	VCC_5V_SBY	C87	GND	D87	GND
A88	PCIE0_CK_REF+	B88	BIOS_DIS1#	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_DDC_CLK	C95	PEG_RX13-	D95	PEG_TX13-
A96	NC	B96	VGA_DDC_DAT	C96	GND	D96	GND
A97	TYPE10#	B97	SPI_CS#	C97	NC	D97	NC
A98	SER0_TX	B98	NC	C98	PEG_RX14+	D98	PEG_TX14+
A99	SER0_RX	B99	NC	C99	PEG_RX14-	D99	PEG_TX14-
A100	GND (FIXED)	B100	GND (FIXED)	C100	GND (FIXED)	D100	GND (FIXED)
A101	SER1_TX	B101	FAN_PWNOUT	C101	PEG_RX15+	D101	PEG_TX15+
A102	SER1_RX	B102	FAN_TACHIN	C102	PEG_RX15-	D102	PEG_TX15-
A103	LID#	B103	SLEEP#	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

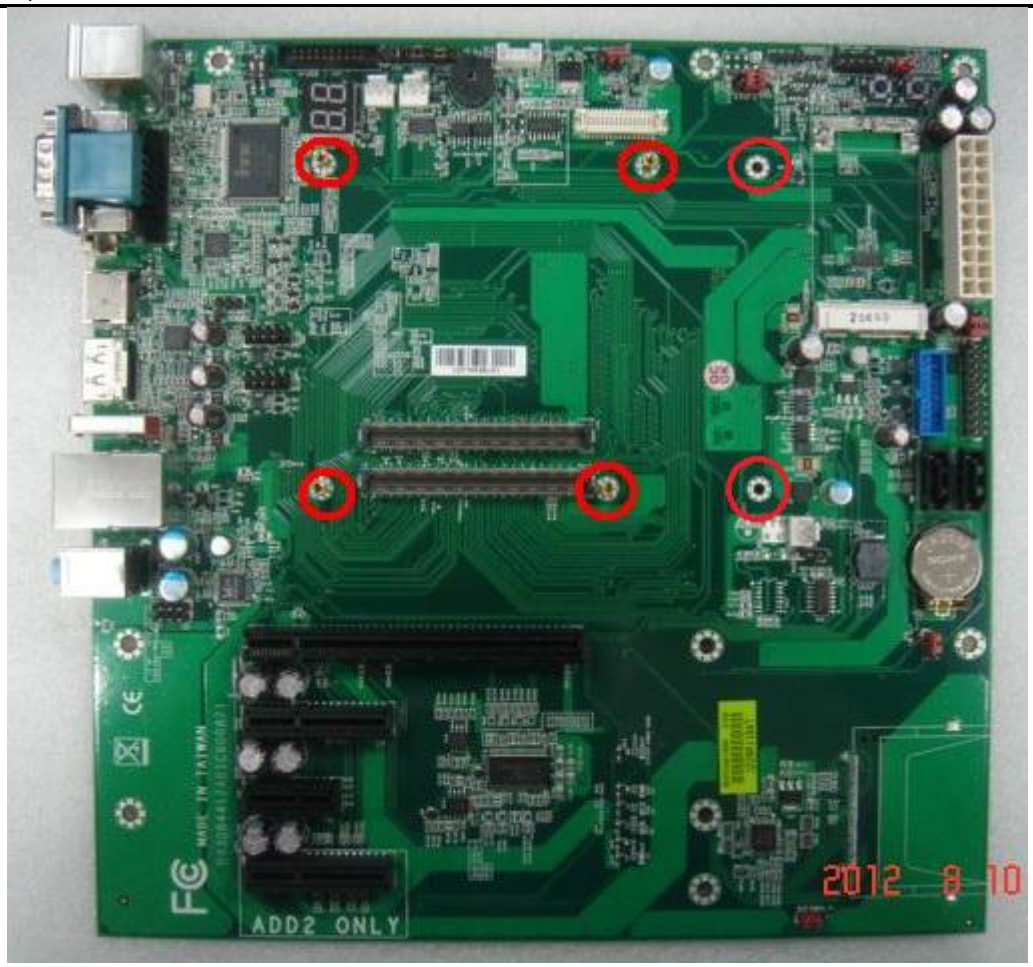
A110	GND (FIXED)	B110	GND (FIXED)	C110	GND (FIXED)	D110	GND (FIXED)

Chapter 3
System Installation

This chapter provides you with instructions to set up your system. The additional information is enclosed to help you set up onboard PCI device and handle Watch Dog Timer (WDT) and operation of GPIO in software programming.

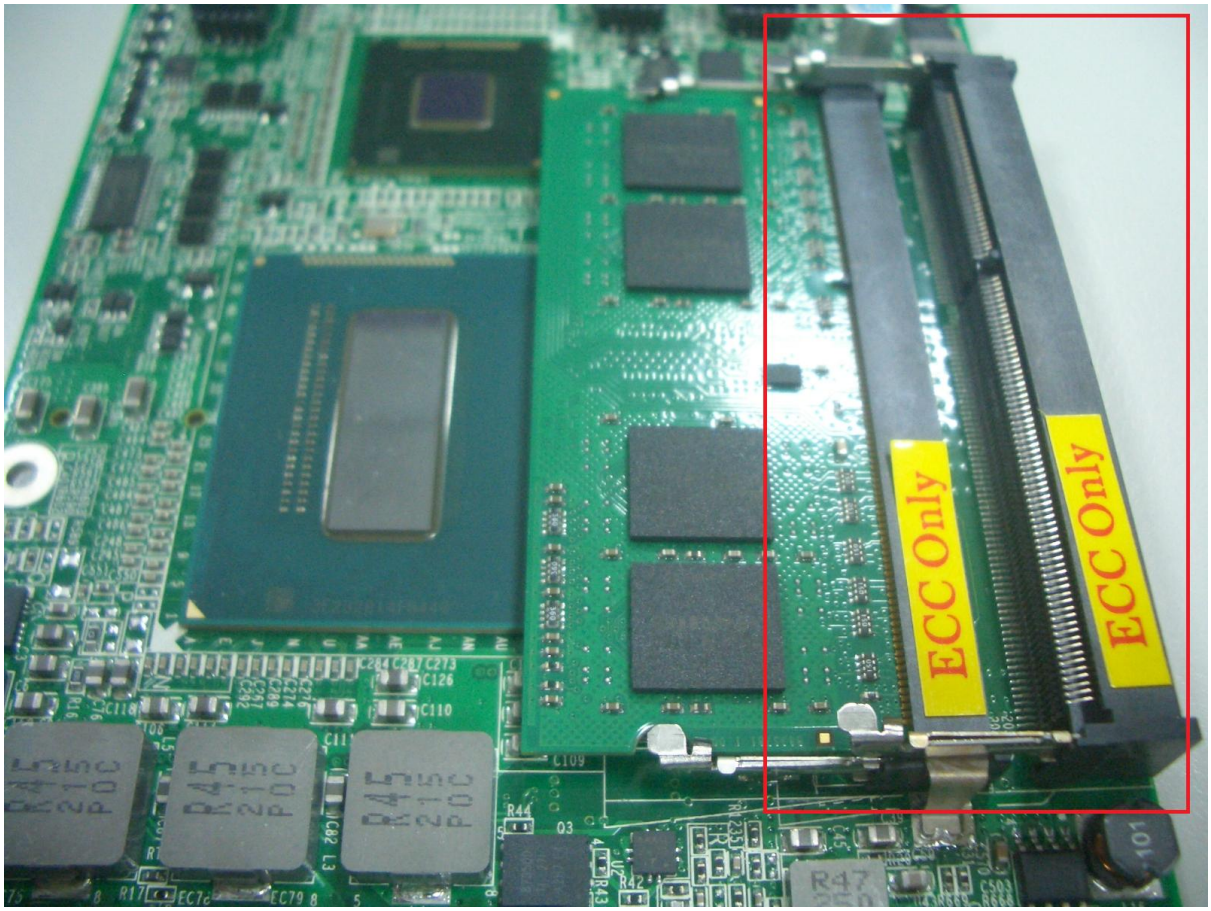
3.1 Install PCOM-B630VGVG with a Carrier Board PCOM-C600

Place PCOM-C600 in a flat surface and screw on the four (4) cooper pillars.



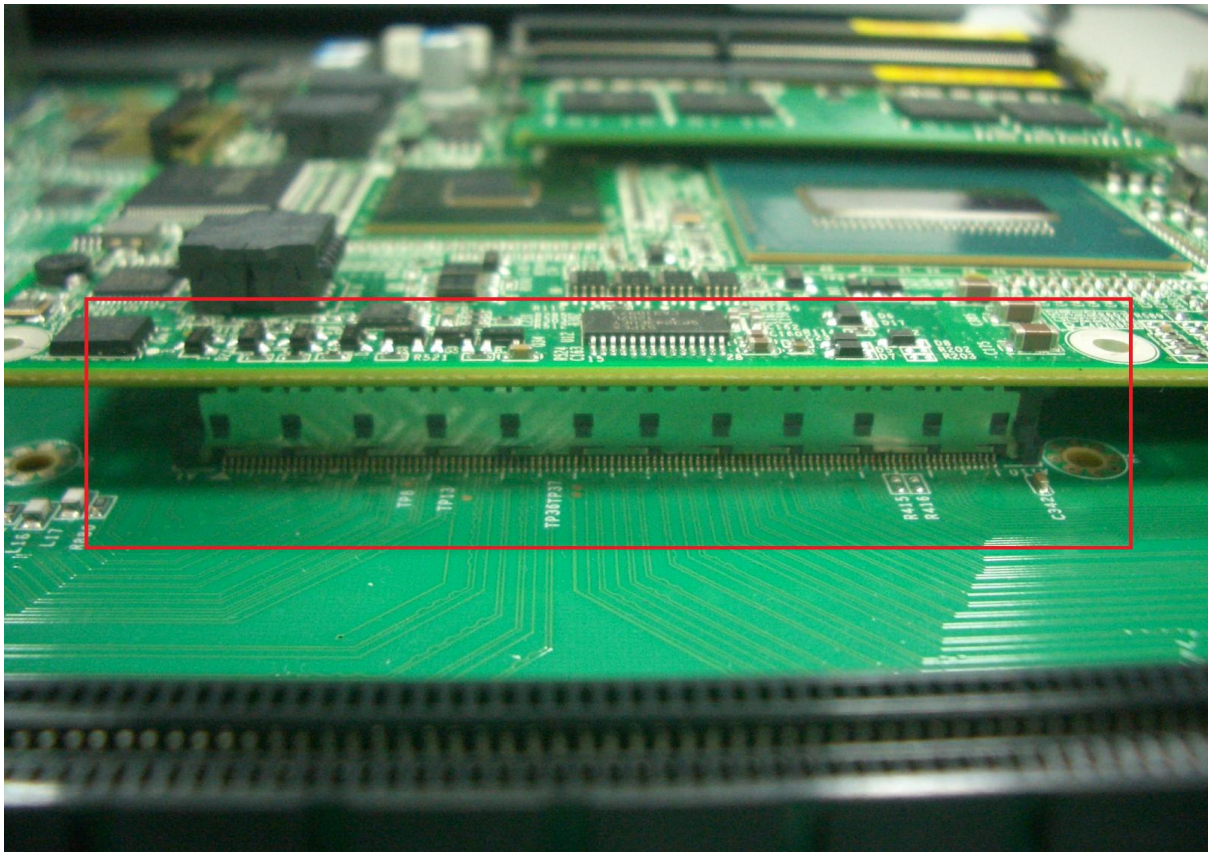
Do the same with PCOM-B630VG and Make Sure the Memory DDR3L SO-DIMM Module is ECC

Insert the ECC DDR3L SO-DIMM Memory Module in the right direction and make sure be well installed.

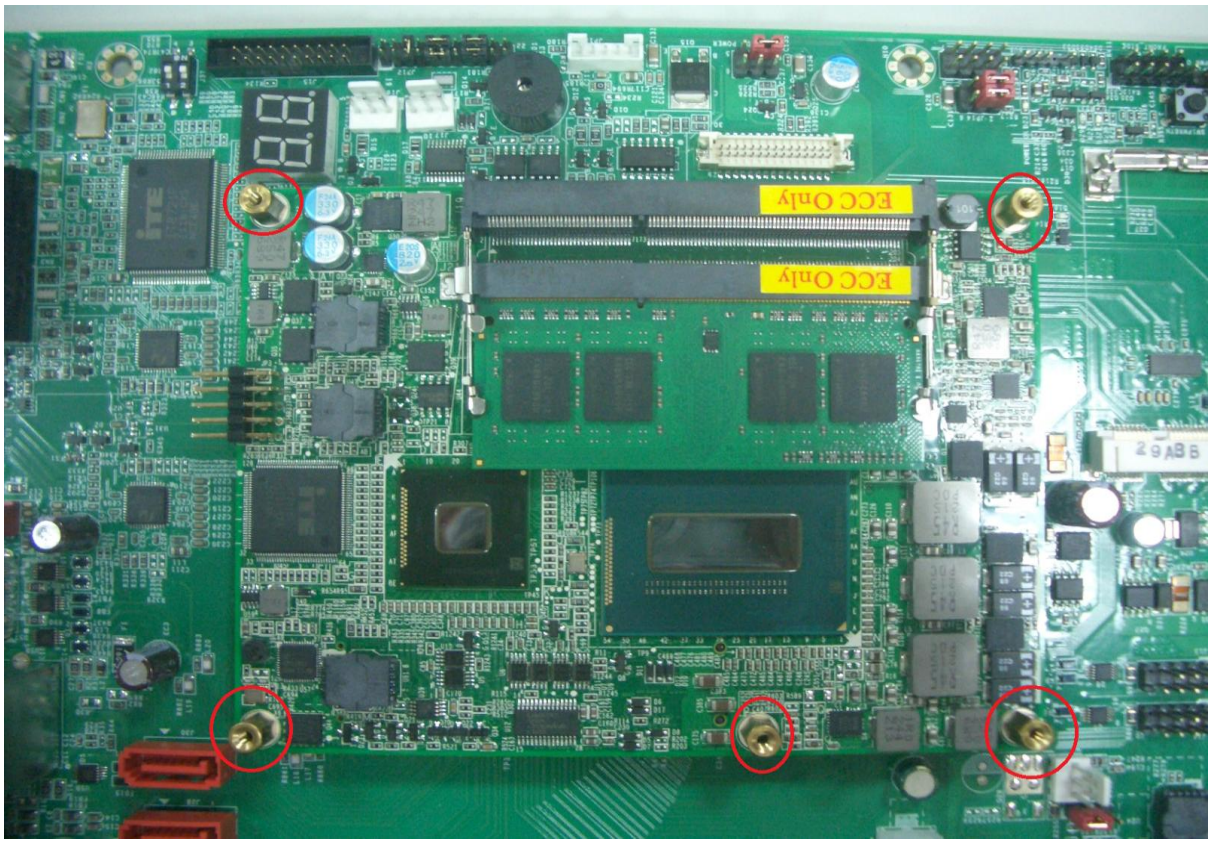


Then mount the PCOM-B630VGVG onto PCOM-C600

Make sure that row connector is well installed



Then screw on the four (4) cooper pillars to fix the PCOM-B630VGVG



3.2 Main Memory

PCOM-B630VGVG provide 2 x 204 pin DIMM sockets (Dual Channel) which supports Dual channel 1066/1333 DDR3L-SO-DIMM as main memory, ECC (Error Checking and Correcting). The maximum memory can be up to 16GB. 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 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.

Note:

To insure the system stability, please do not change any of DRAM parameters in BIOS setup to modify system the performance without acquired technical information.

3.3 Installing the Module upon the Carrier Board then into the Chassis

To install your PCOM-B630VGVG into standard chassis or proprietary environment, please perform the following:

Step 1: Install well the PCOM-B630VGVG upon the Carrier Board, Cooler in its correct position.
Step 2: Check all jumpers setting on proper position.
Step 3: Place the Carrier Board into the chassis and screw with the correct place.
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 3.3.4 to install INF/VGA/LAN/Audio drivers.

3.3.1 Chipset Component Driver

PCOM-B630VGVG uses Intel Haswell QM87 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 XP, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in PCOM-B630VGVG CD-title.

3.3.2 Intel® Integrated Graphics Controller

PCOM-B630VGVG uses Intel® PCH integrated graphic chipset to gain an outstanding graphic performance. PCOM-B630VGVG supports DVI-D, HDMI dual display. This combination makes PCOM-B630VGVG be an excellent piece of multimedia hardware. There are three native displays support: Display Port CH A (2560 x 1600, 60Hz) / Display Port CH B (1920 x 1200, 60Hz) / Other Ports (HDMI/1920 x1200, 60Hz).

Drivers Support

Please find the Graphic drivers in the PCOM-B630VGVG CD-title. Drivers support, Windows XP/Win7.

3.3.3 Gigabit Ethernet Controller

PCOM-B630VGVG itself is a Module Card, the Ethernet port will support one auto-negotiating 10/100/1000 Base-T Ethernet interface to the Carrier

Drivers Support

Please find Intel 82579LM and 82574L LAN drivers in /Ethernet directory of PCOM-B630VGVG CD-title. The drivers support Windows XP/Win7.

3.3.4 Audio Controller

Please find ALC886 (High Definition Audio driver) form PCOM-B630VGVG CD-title. The drivers support Windows XP/Win7.

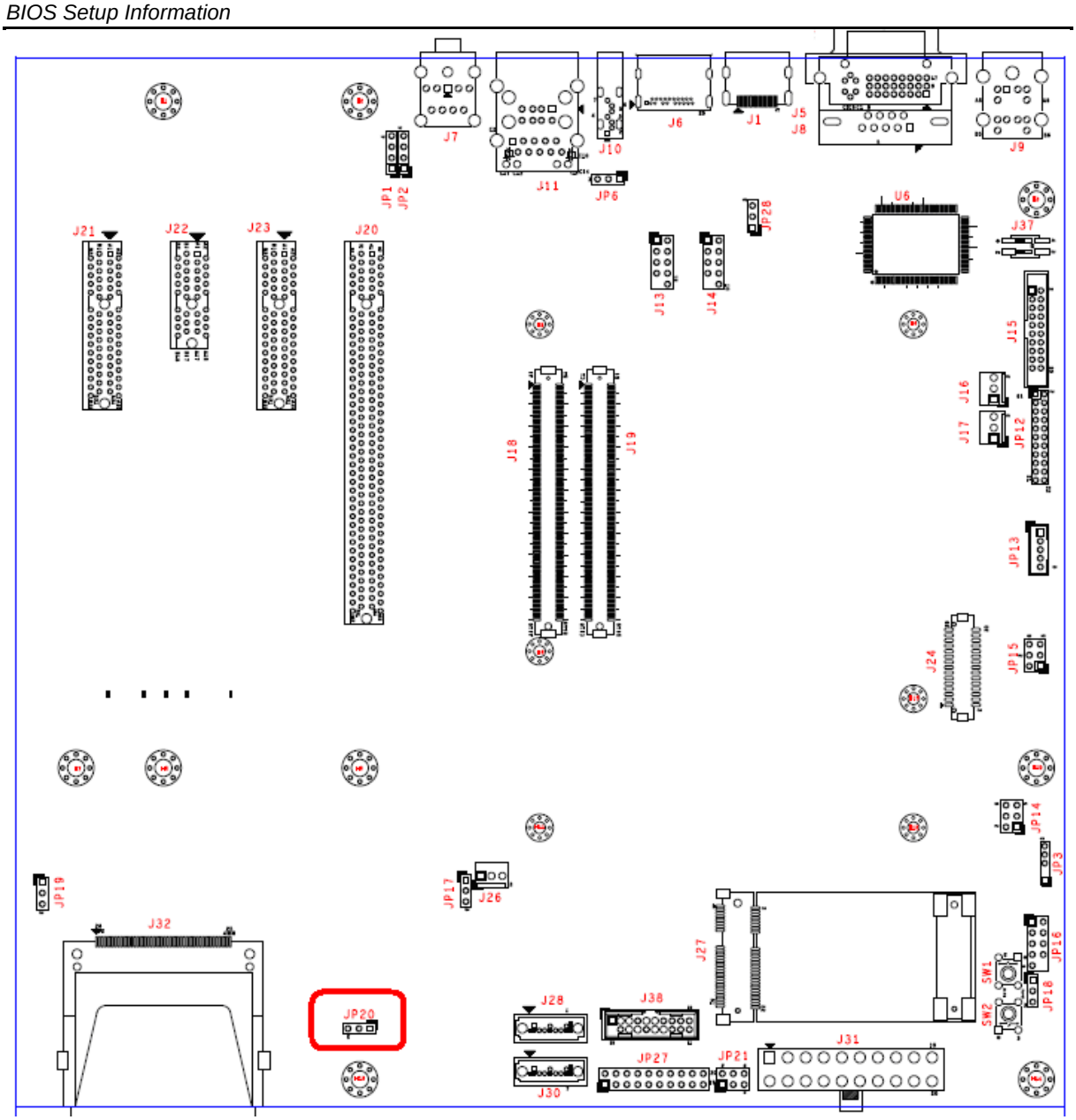
3.4 Clear CMOS Operation

The following table indicates how to enable/disable Clear CMOS Function hardware circuit by putting jumpers at proper position. As we know PCOM-B630VGVG is a Module Card, we are taking an example with Portwell evaluative Carrier PCOM-C600.

3.4.1: CLEAR CMOS

JP20: CMOS Setting

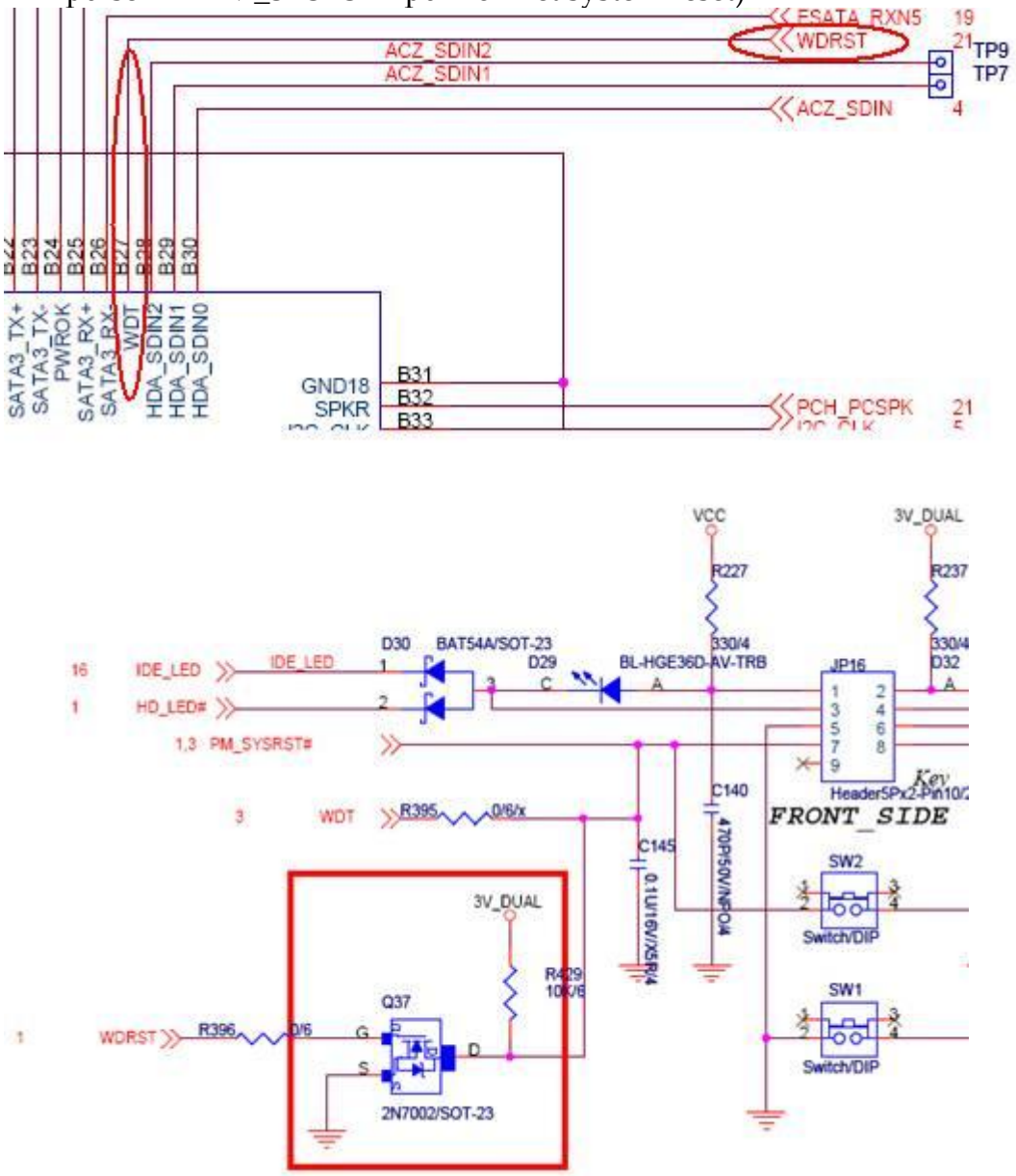
	Jumper Setting Describe
*1-2	Default ★
2-3	Clean CMOS



3.5 WDT Function

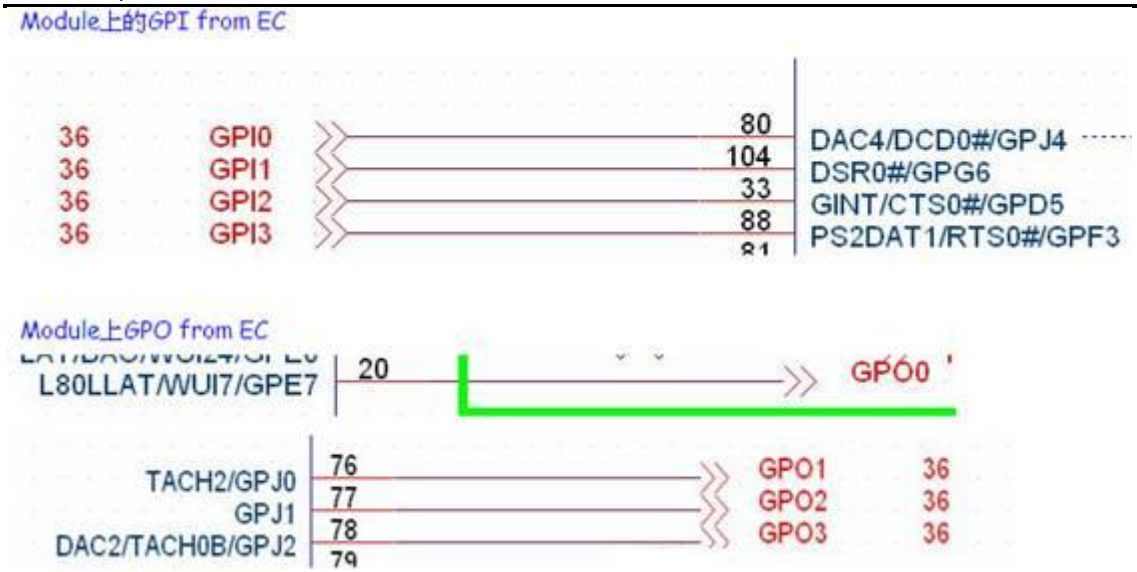
- B219 Module WDT from EC

- C600 Carrier WDT to Header (When WDRST switch on and produce a high pulse will PM_SYSRST# pull low let system reset)

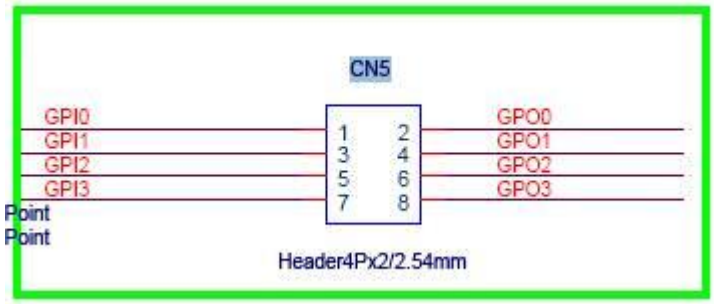


3.6 GPIO

B219 Module GPIO from EC



C600 Carrier GPIO to Header,



Chapter 4
BIOS Setup Information

PCOM-B630VG uses phoenix BIOS structure 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-B630VG communicates with peripheral devices on the carrier board 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.

2.2 Entering Setup -- Launch System Setup

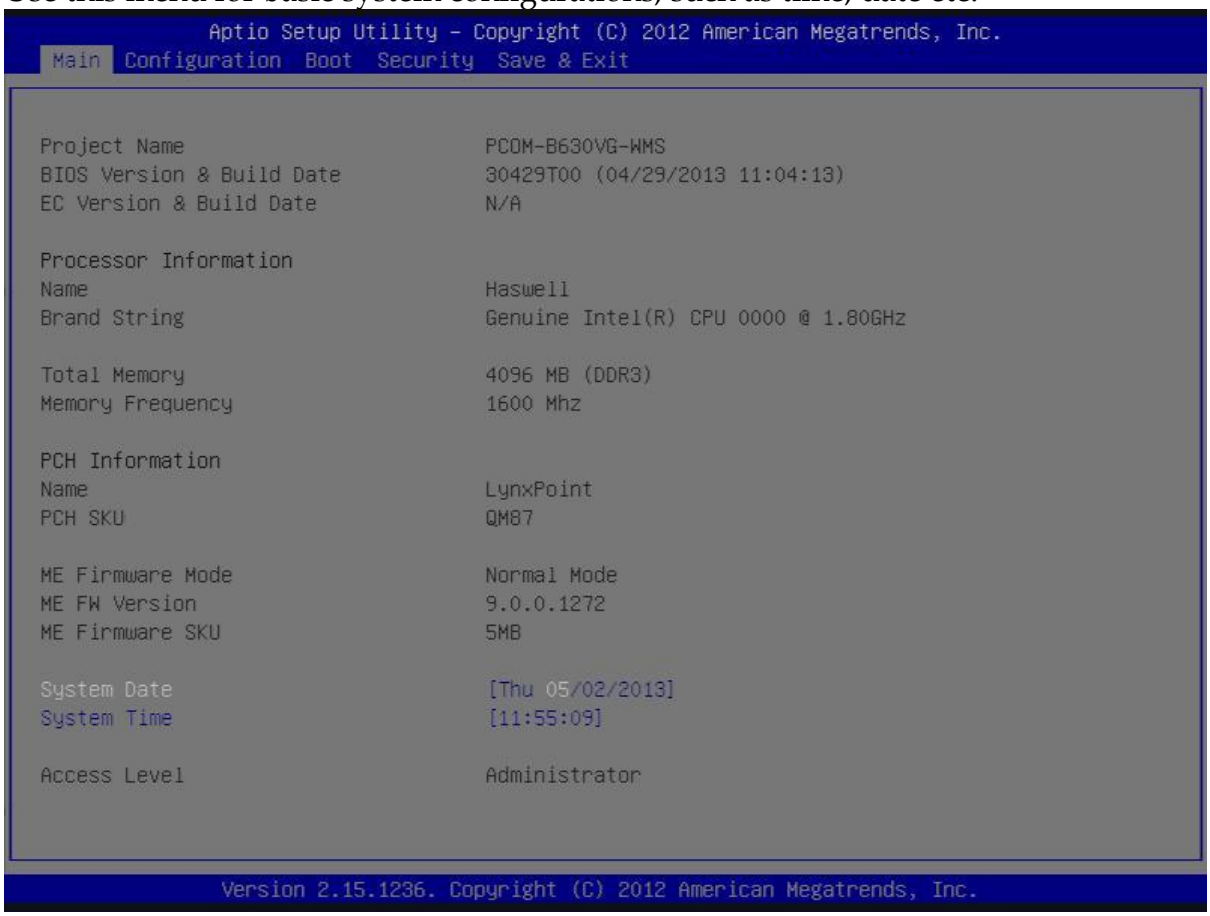
Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <DEL> key will enter BIOS setup screen.

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.

2.3 Main

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



Build Time, Processor Brand Name, Processor Speed, Install Memory, etc

These items show the firmware and memory specifications of your system. Read only.

Build Time

The BIOS Release Date.

Processor Brand Name / Processor Speed

This value will change depend of different CPUs. And please make sure the Processor that you'll install will be compatible with PCOM-B630VG User's Manual

System Date

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

System Time

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

Access Level

Read only.

2.4 System Setup Utility

To enter the system setup utility, press <F1> on either the main keyboard or Console Redirection host computer's keyboard during POST.

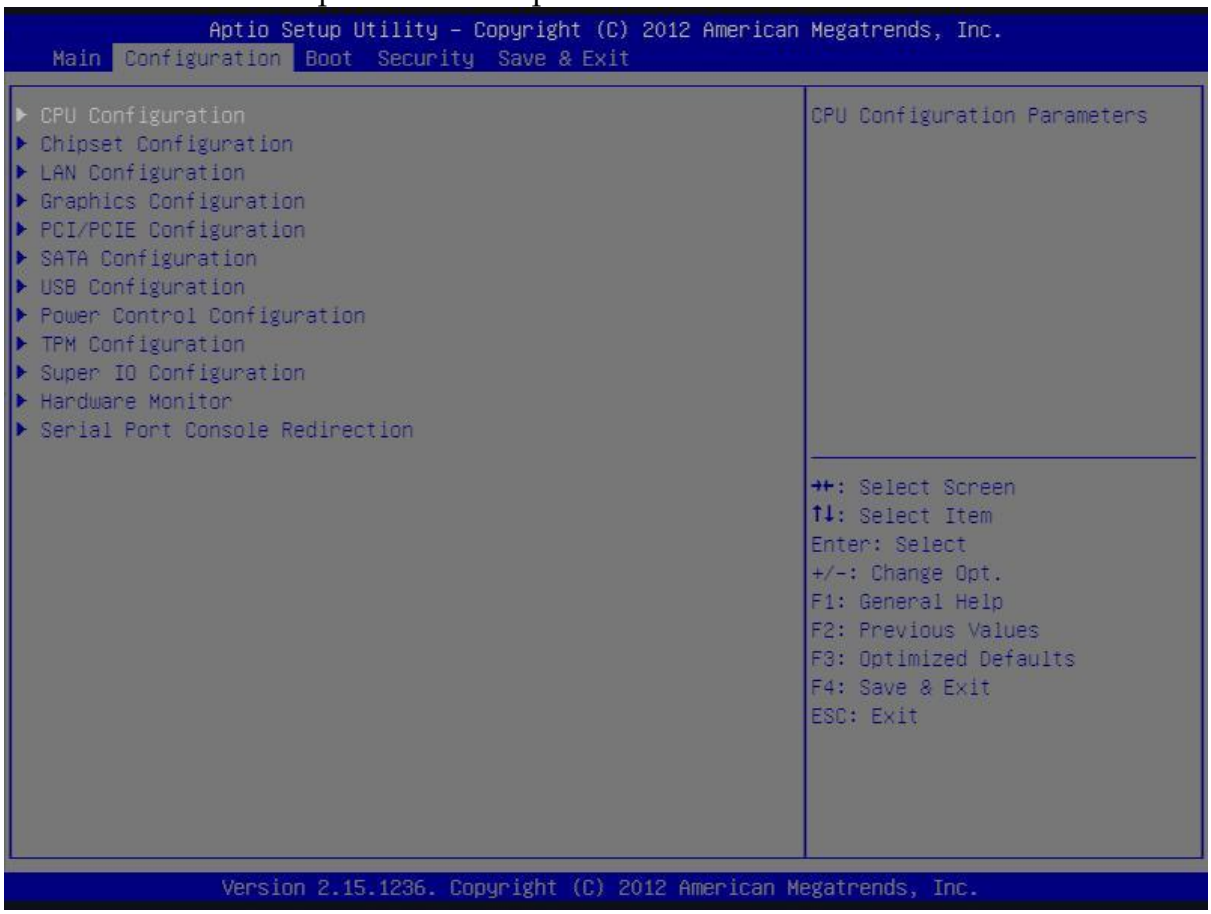
Table 1 Lists the available menus in the system setup utility. Each menu is equivalent to a functional group and consists of all correlated BIOS settings.

Table 1. System Setup Utility menus

Menu	Usage
Main	Display a summary of the system and configure the system date and time.
Configuration	Configure the system interfaces, system management, power management, thermal management, and other system characteristics.
Boot	Configure boot device priority settings.
Security	Configure user authentication requirements.
Save & Exit	Save changes and exit the system setup utility, or restore default settings.

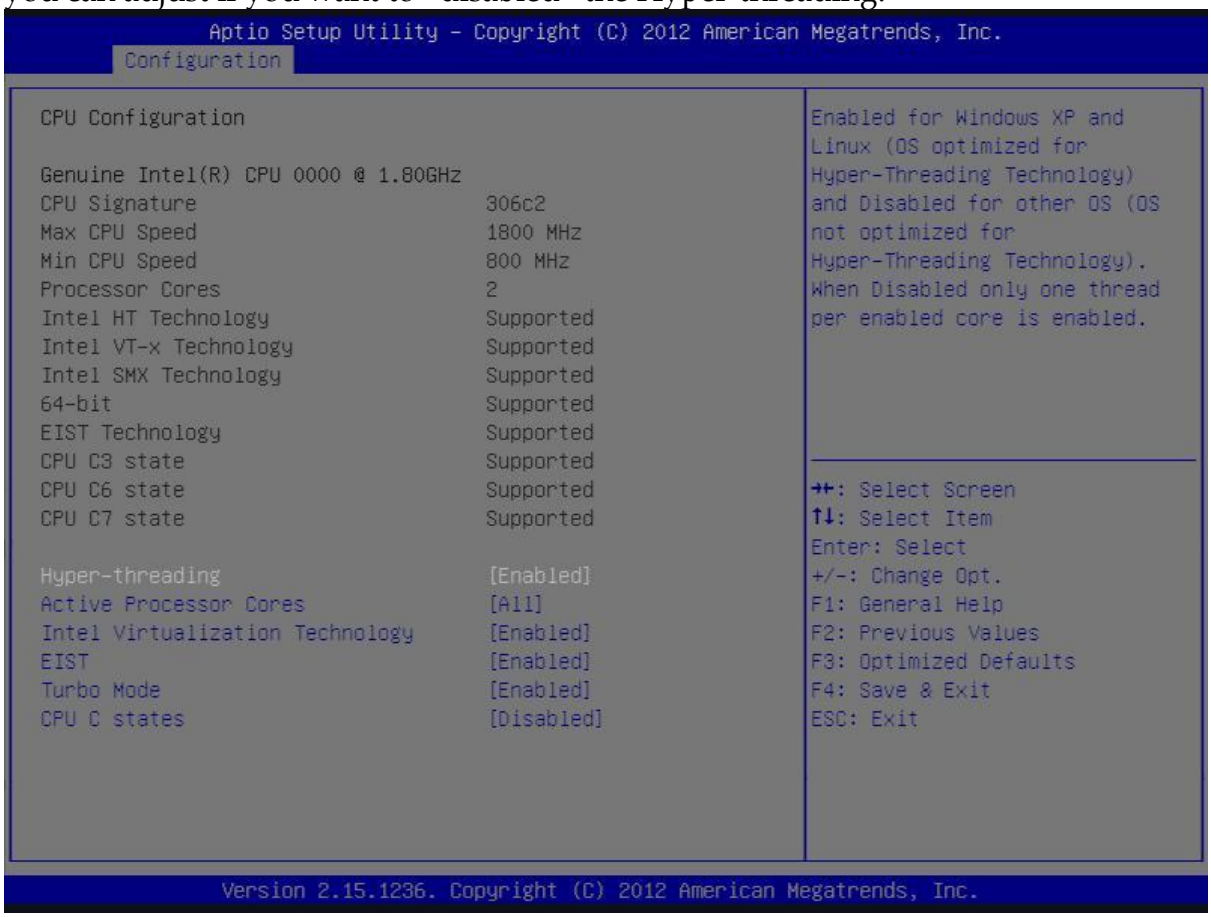
4.4 Configuration

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



CPU Configuration

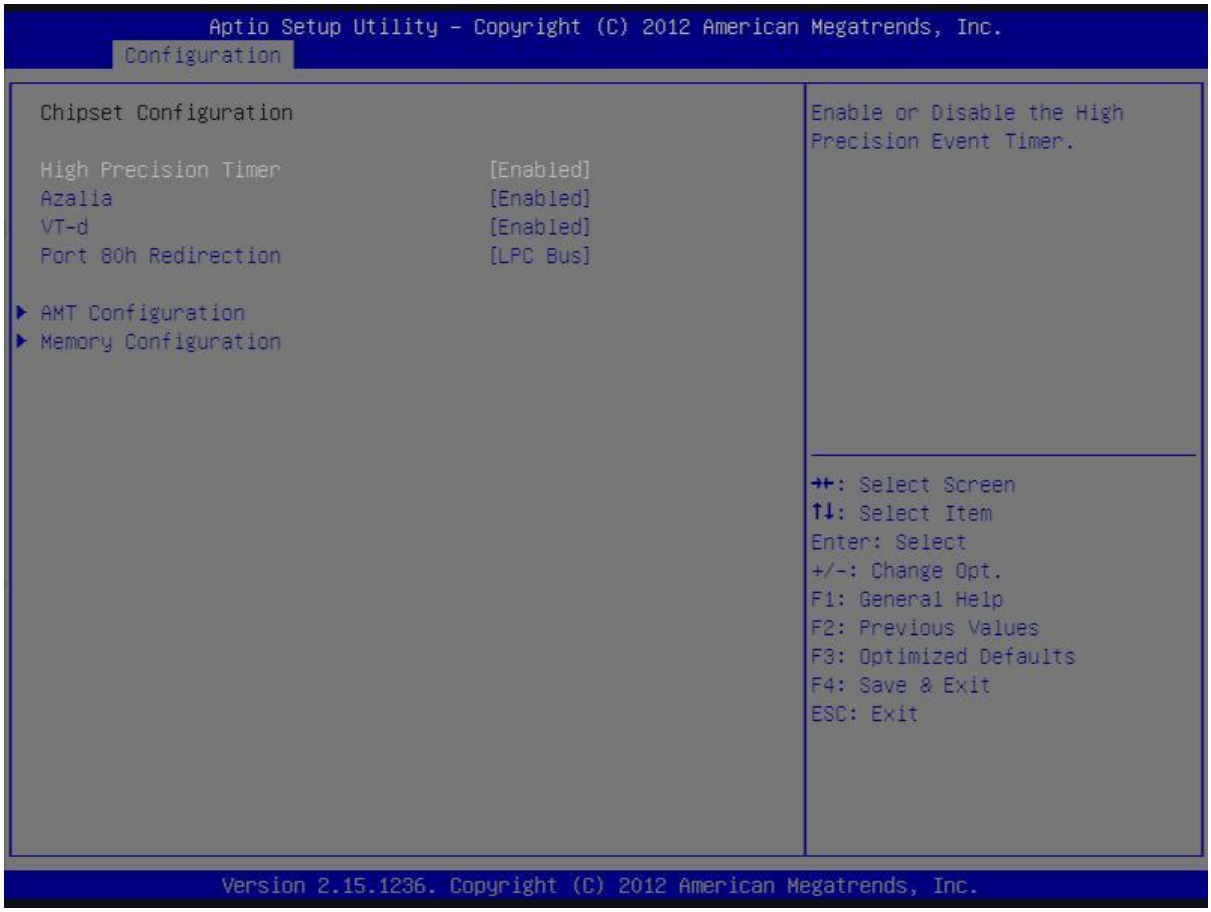
It is not necessary to make any change just take the default value.
Here you'll see the Max Processor Speed/Processor Cores/Intel HT technology then you can adjust if you want to "disabled" the Hyper-threading.



BIOS Item	Usage	Item-Specific Help
Hyper-threading	-Disabled -Enabled ★ Default	Enabled for Windows XP / Linux and Disabled for other OS
Active Processor Cores	-All ★ Default -1	Select the number of physical cores to enable in each processor package
Intel Virtualization Technology	-Disabled ★ Default -Enabled	N/A
EIST	-Disabled -Enabled ★ Default	N/A
Turbo Mode	-Disabled -Enabled ★ Default	N/A
CPU C states	-Disabled ★ Default -Enabled	N/A

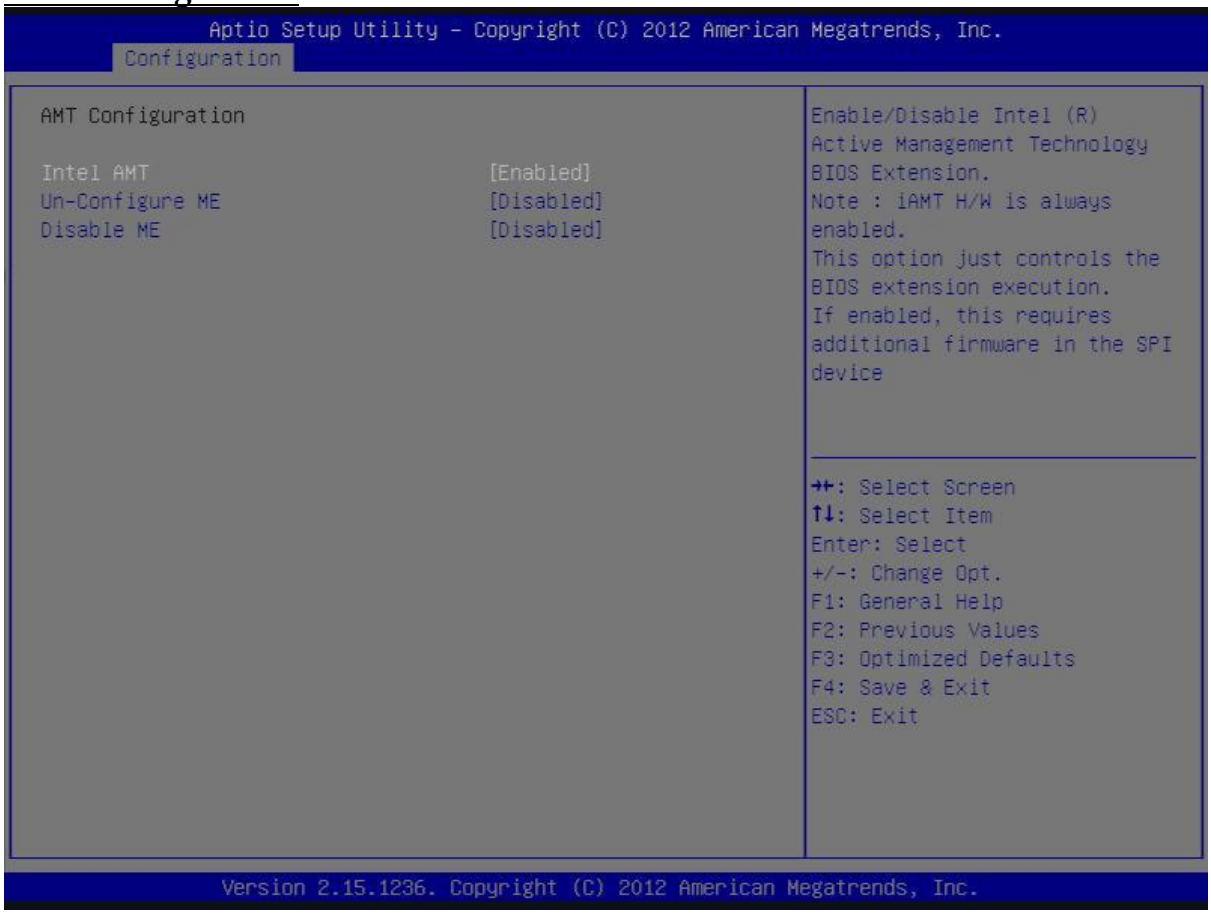
Chipset Configuration

It is not necessary to make any change just take the default value.



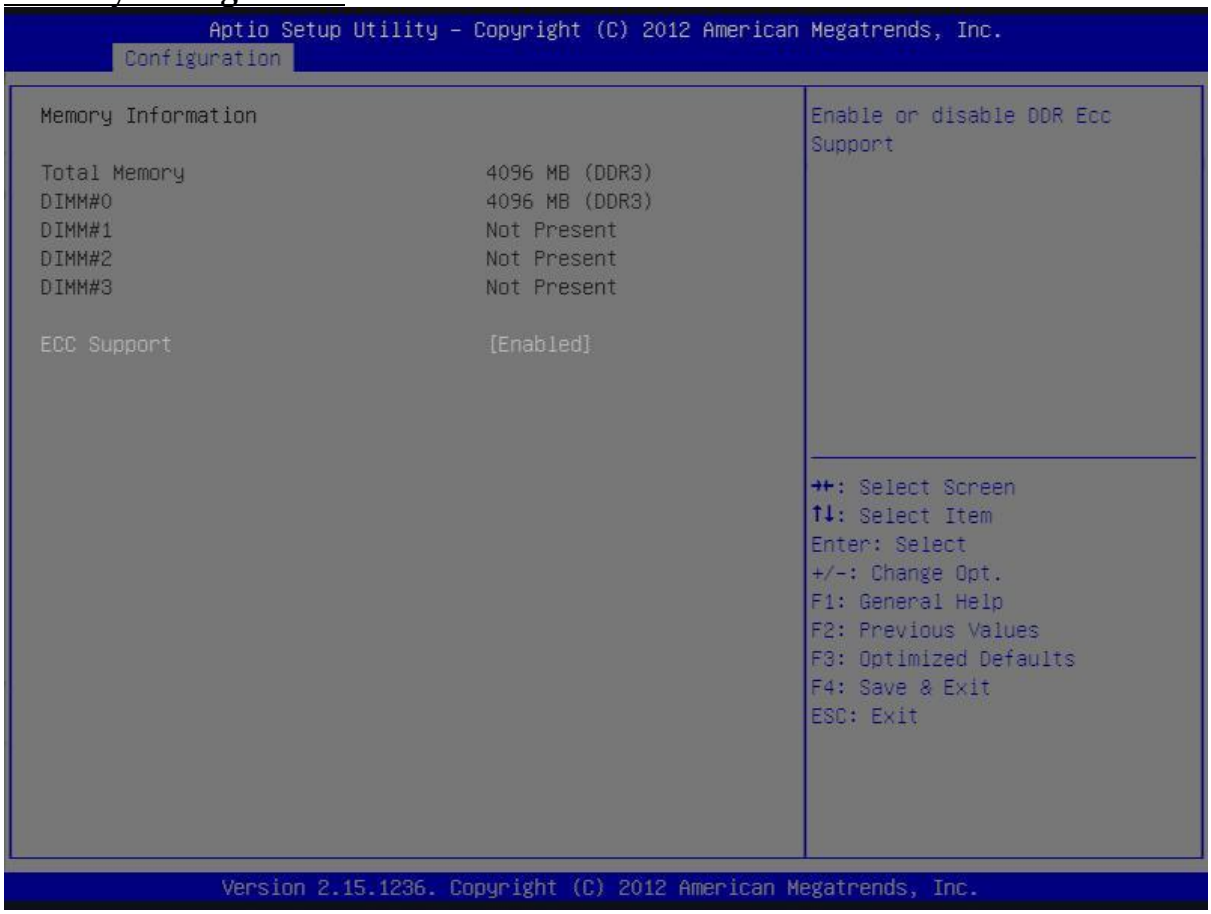
BIOS Item	Usage	Item-Specific Help
High Precision Timer	-Disabled -Enabled★ Default	
Azalia	-Disabled -Enabled★ Default	
VT-d	-Disabled ★ Default -Enabled	Enabled/Disabled VT-d function on MCH
Port 80h Redirection	-LPC Bus -PCIE Bus	

AMT Configuration



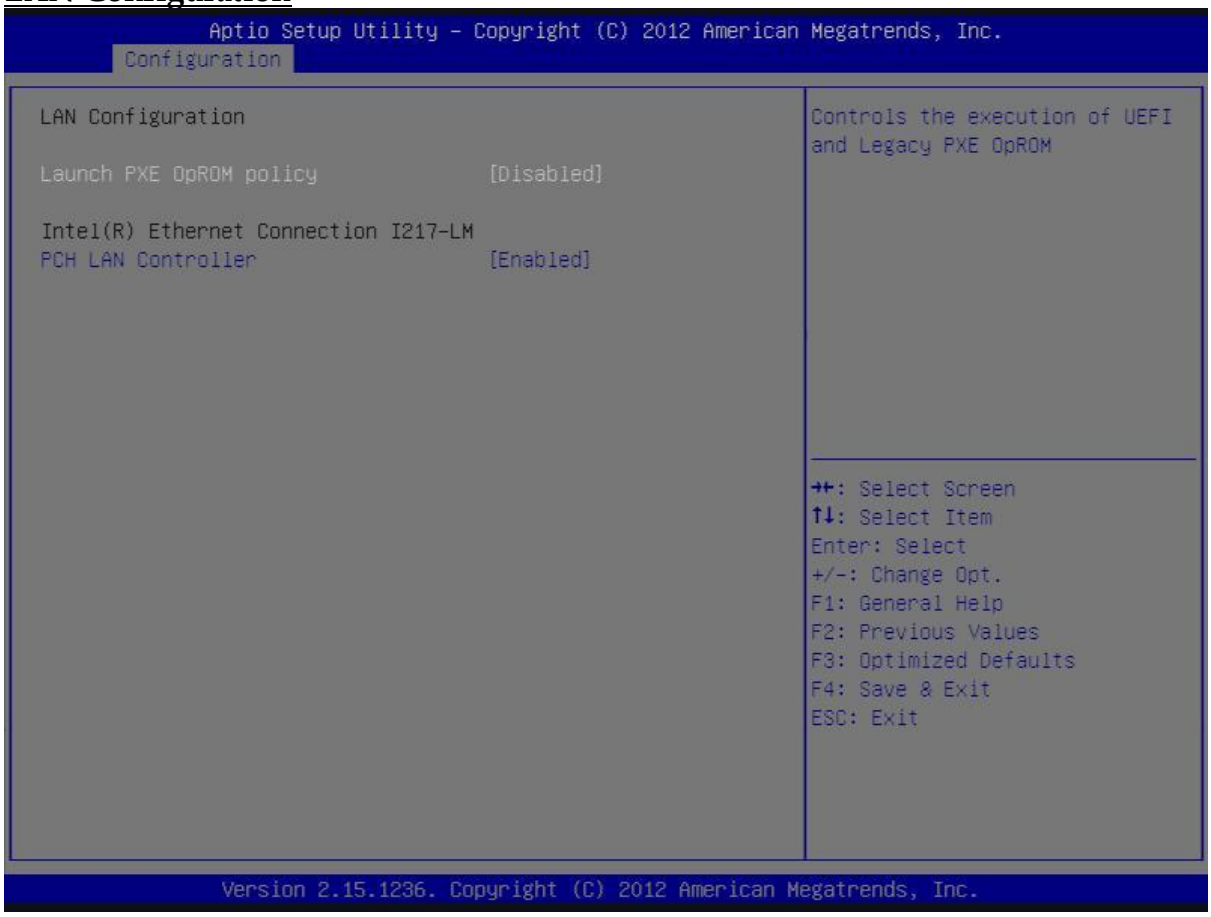
BIOS Item	Usage	Item-Specific Help
Intel AMT	-Disabled -Enabled ★ Default	Disables/Enabled iAMT function
Un-Configure ME	-Disabled ★ Default -Enabled	
Disable ME	-Disabled ★ Default -Enabled	

Memory Configuration



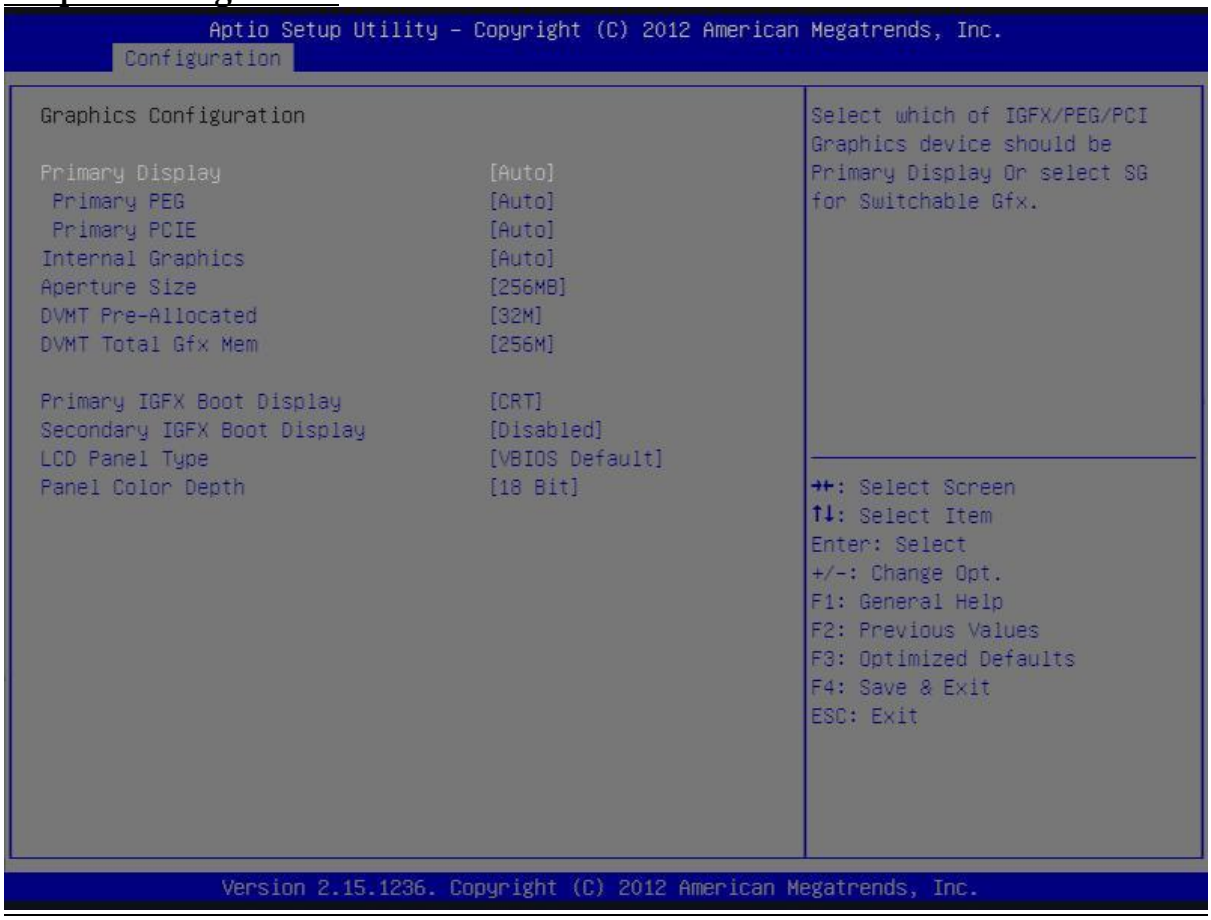
BIOS Item	Usage	Item-Specific Help
ECC Support	-Disabled -Enabled ★ Default	Enable/Disable memory ECC support

LAN Configuration



BIOS Item	Usage	Item-Specific Help
Launch PXE OpROM Policy	-Disabled ★ Default -Enabled	
PCH LAN Controller	-Disabled -Enabled ★ Default	

Graphic Configuration



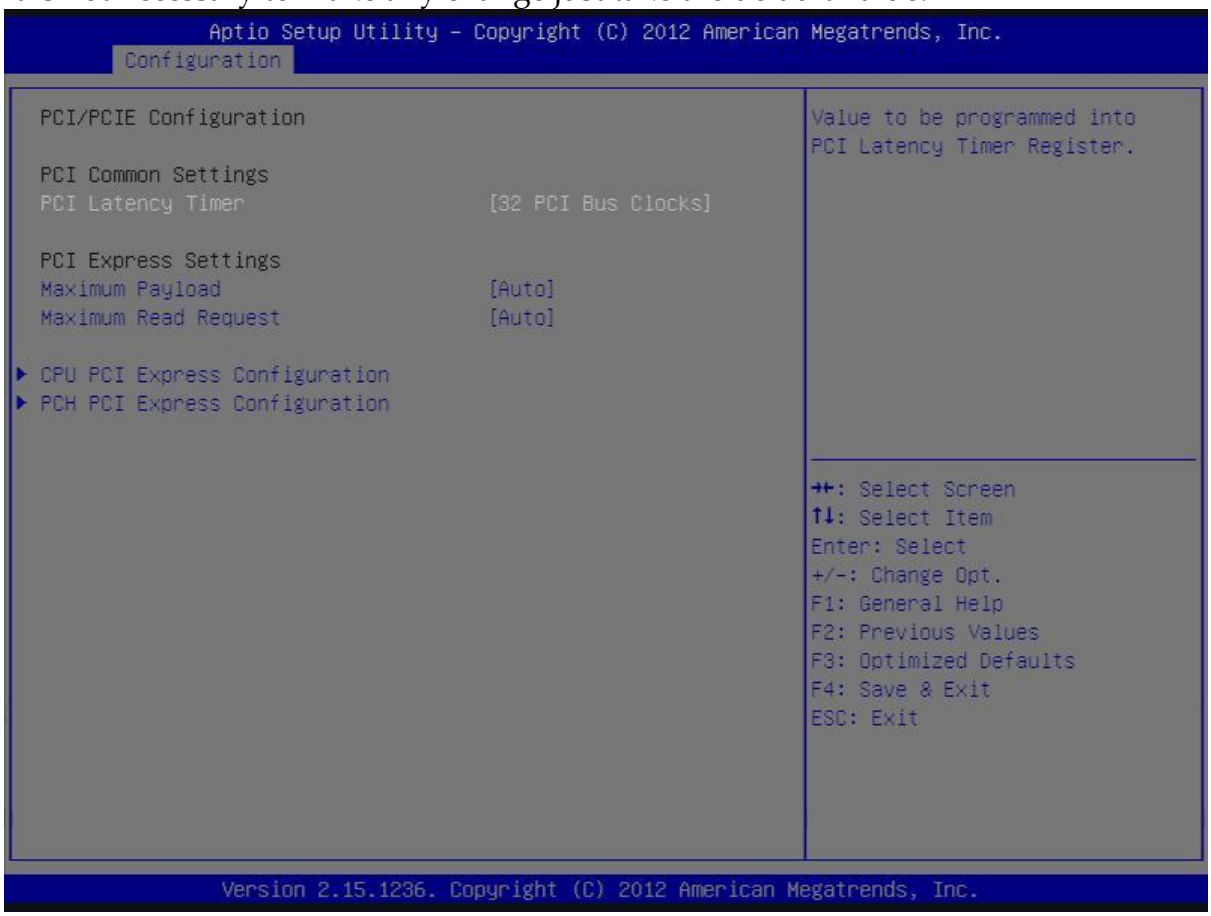
BIOS Item	Usage	Item-Specific Help
Primary Display	-Auto ★ Default -IGFX -PEG -PCIE	Select which of IGFX/PEG/PCI Graphics should be Primary Display or select Secondary Display for switchable Graphics
Primary PEG	-Auto -PEG11 -PEG12	
Primary PCIE	-Auto -PCIE1 -PCIE2 -PCIE3 -PCIE4 -PCIE5 -PCIE6 -PCIE7	
Internal Graphics	-Auto ★ Default -Disabled -Enabled	Keep IGD Enabled based on the setup options

Aperture	-128MB -256MB ★ Default -512MB	Select the Aperture Size
DVMT Pre-Allocated	-32M ★ Default -64M -96M -128M -160M -192M -224M -256M -288M -320M -352M -384M -416M -448M -480M -512M -1024M	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the internal Graphics Device
DVMT Total Gfx Mem	-128MB -256MB ★ Default -MAX	Select DVMT5.0 Total Graphics Memory size used by the Internal Graphics Device
Primary IGFX Boot Display	-VBIOS Default -CRT -EFP -LFP -EFP2 -LFP2 -EFP3	
LCD Panel Type	-VBIOS Default -640x480 -800x600 -1024x768 -1280x1024 -1400x1050 -1600x1200 -1366x768 -1680x1050 -1920x1200 -1440x900 -1600x900 -1280x800 -1920x1080 -2048x1536	

Panel Color Depth	-18Bit ★ Default -24Bir	

PCI/PCIE Configuration

It is not necessary to make any change just take the default value.



BIOS Item	Usage	Item-Specific Help
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	
Maximum Payload	-Auto -128 Bytes -256 Bytes -512 Bytes -1024 Bytes -2048 Bytes -4096 Bytes	
Maximum Read Request	-Auto -128 Bytes -256 Bytes -512 Bytes	

	-1024 Bytes -2048 Bytes -4096 Bytes	

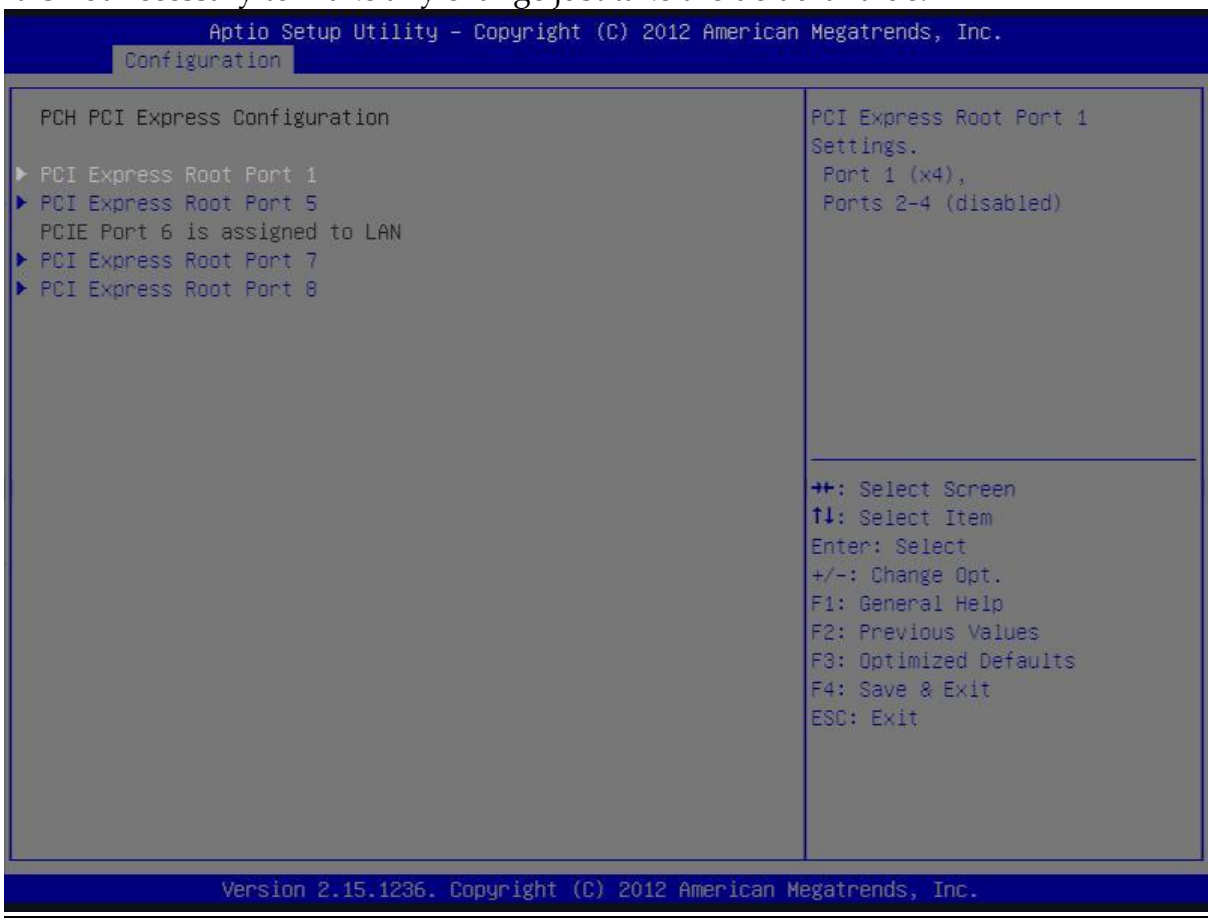
CPU PCI Express Configuration

It is not necessary to make any change just take the default value.

BIOS Item	Usage	Item-Specific Help
PEG0~PEG2 – Gen X	-Auto -Gen1 -Gen2 -Gen3	
PEG0~PEG2 - ASPM	-Disabled -Auto -ASPM L0s -ASPM L1 -ASPM L0sL1	
Enable PEG	-Disable -Enable -Auto	

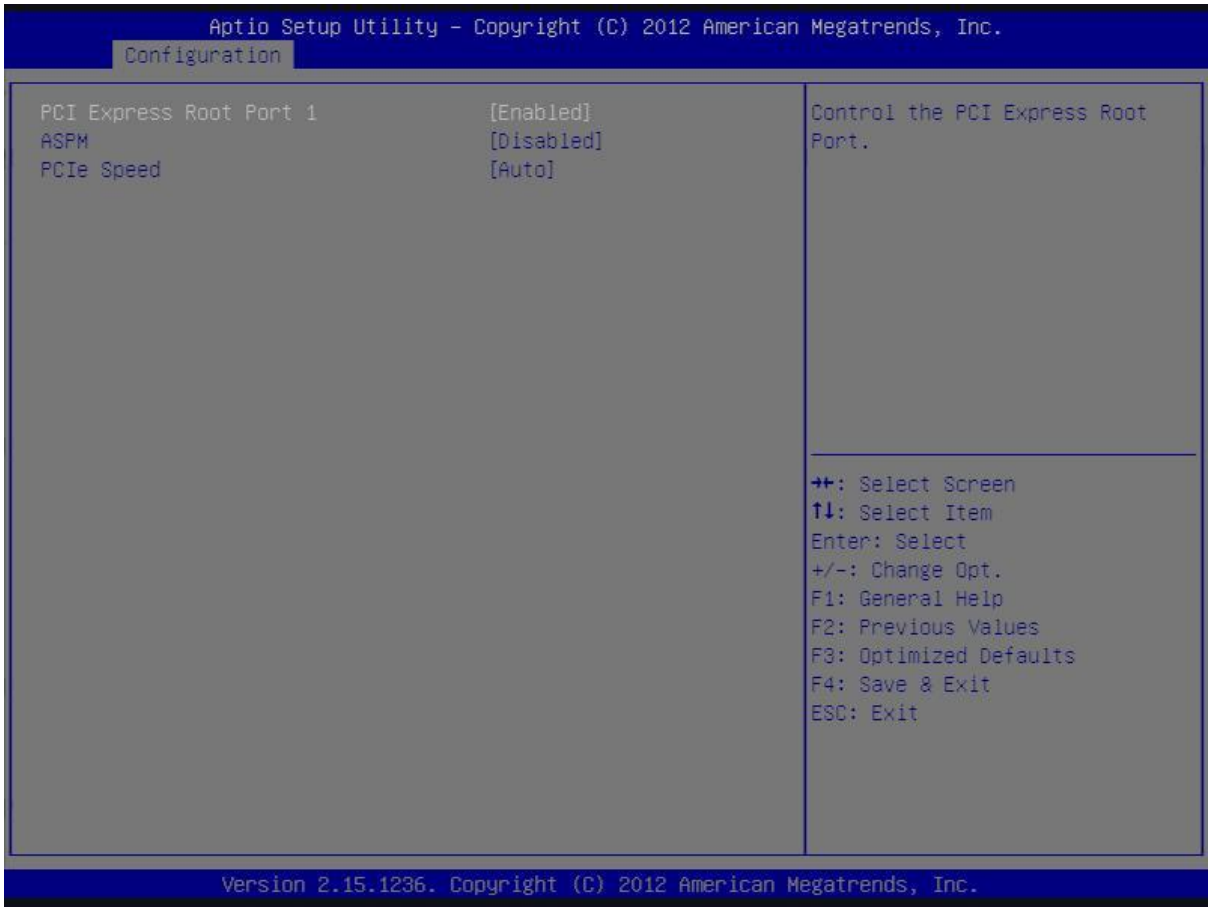
PCH PCI Express Configuration

It is not necessary to make any change just take the default value.



PCI Express Root Port 1/5/7/8 (Only take Port 1 as an example)

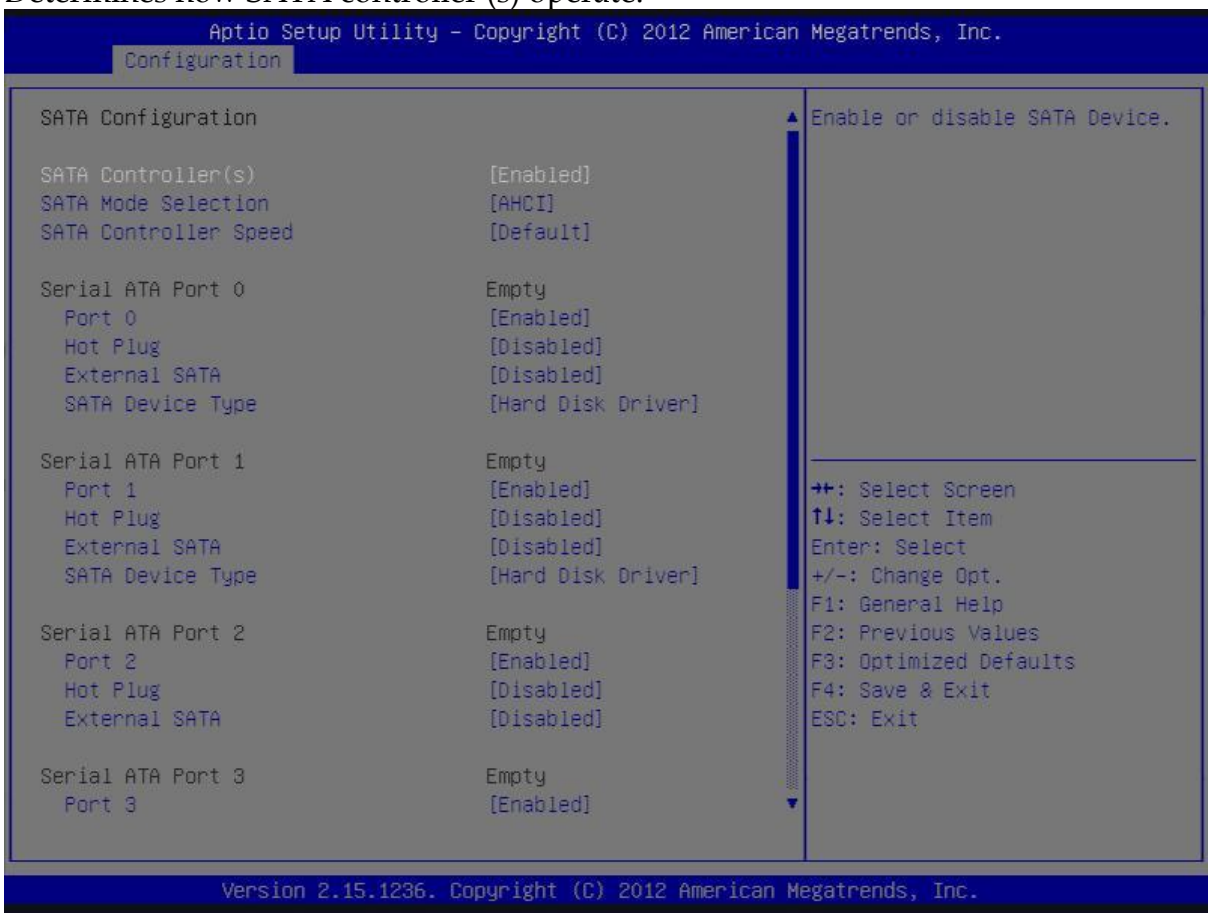
It is not necessary to make any change just take the default value.



BIOS Item	Usage	Item-Specific Help
PCI Express Root Port 1/5/7/8	-Disabled -Enabled ★ Default	Control PCI Express root port
ASPM	-Disabled ★ Default -L0S -L1 -L0S And L1 -Auto	Control PCIe Active State Power Management setting
PCIe Speed	-Auto ★ Default -Gen1 -Gen2	Select PCIe Speed to Gen1 or Gen2

SATA Configuration

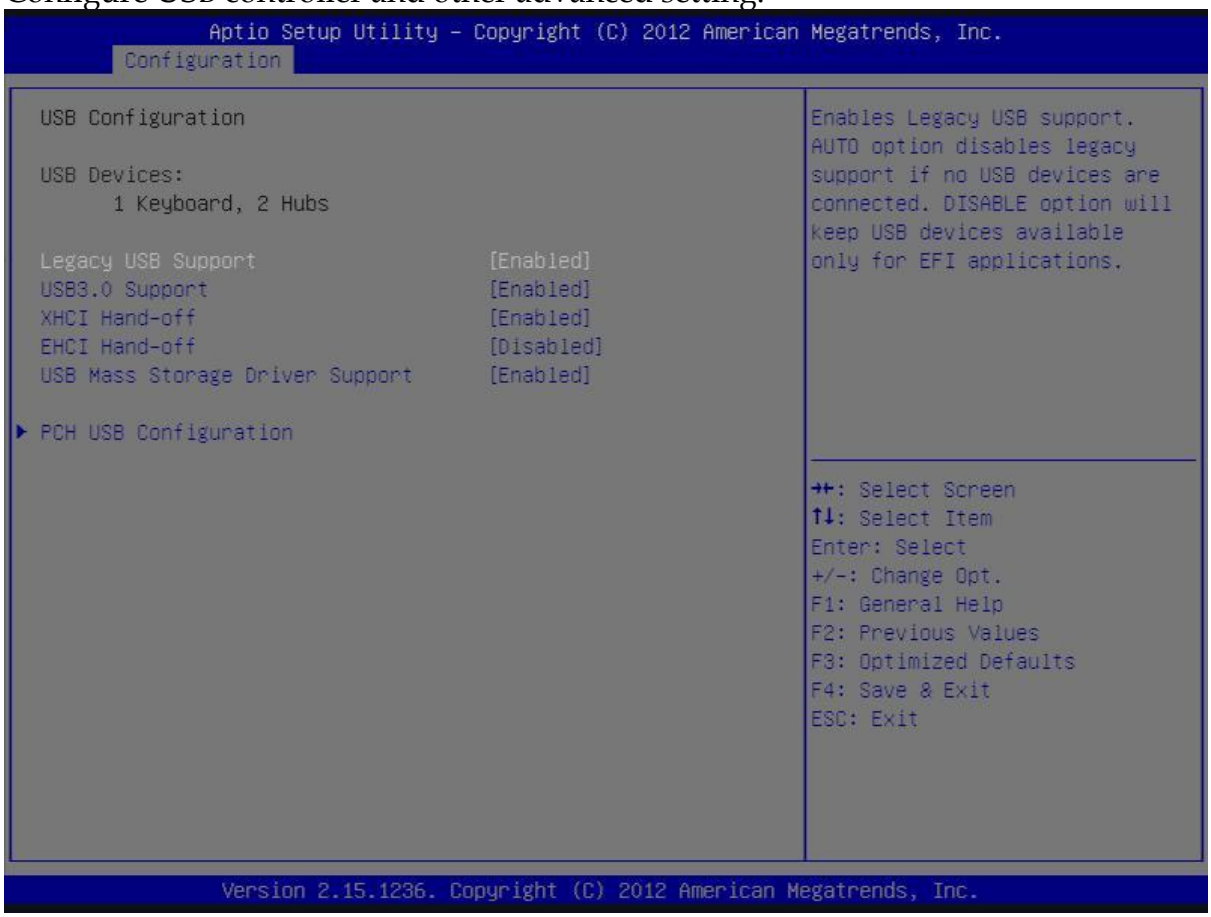
Determines how SATA controller (s) operate.



BIOS Item	Usage	Item-Specific Help
SATA Controller(s)	-Enabled ★ Default -Disabled	Determines how SATA controller (s) operate
SATA Mode Selection	-Disabled -IDE -AHCI -RAID	Determines how SATA controller (s) operate
SATA Controller Speed	-Default -Gen1 -Gen2 -Gen3	
Port 0~5	-Disabled -Enabled	
Hot Plug	-Disabled -Enabled	
External SATA	-Disabled -Enabled	

USB Configuration

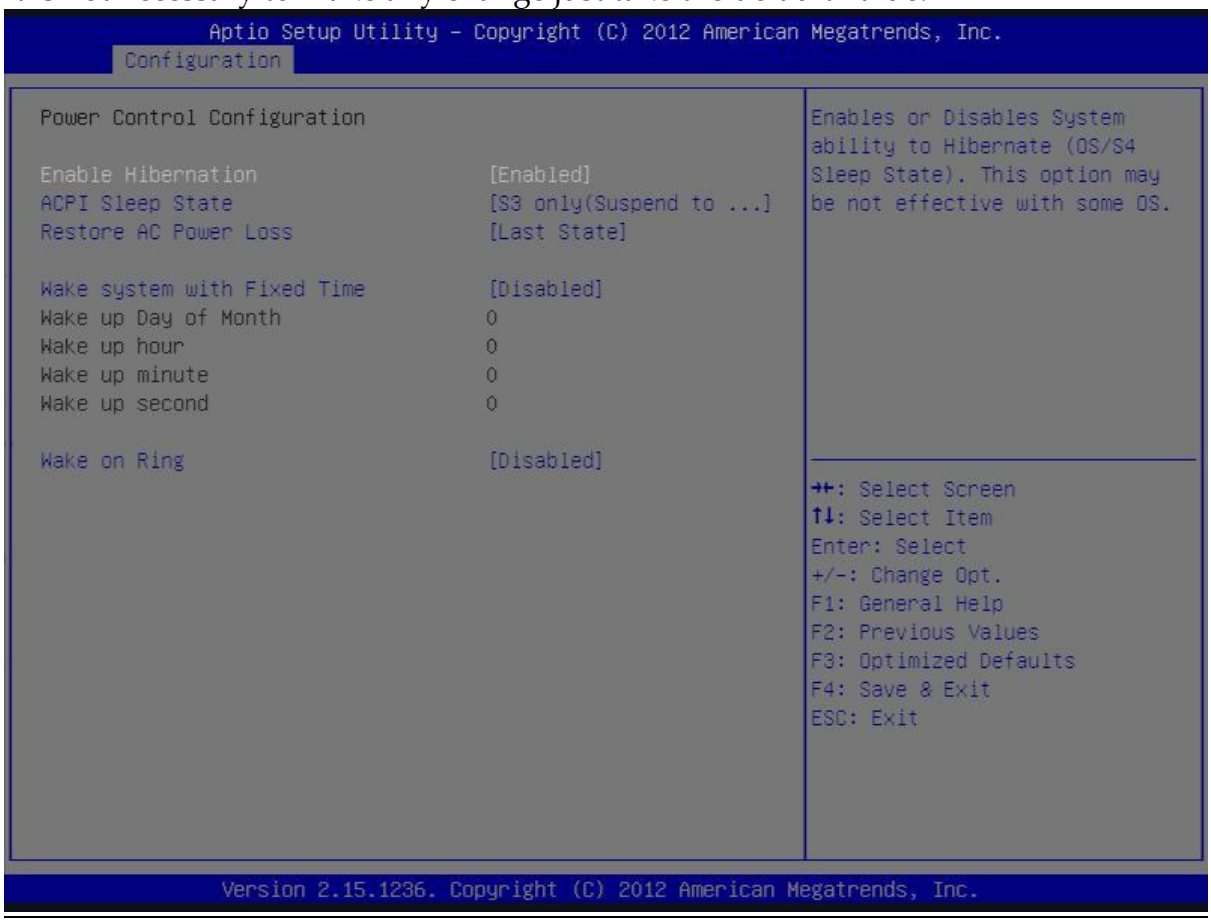
Configure USB controller and other advanced setting.



BIOS Item	Usage	Item-Specific Help
Legacy USB support	-Enabled ★ Default -Disabled	Enables 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.
USB3.0 Support	-Enabled ★ Default -Disabled	
XHCI Hand-off	-Enabled ★ Default -Disabled	
EHCI Hand-off	-Enabled -Disabled★ Default	
USB Mass Storage Driver Support	-Enabled ★ Default -Disabled	
PCH USB Configuration -USB Ports per-Port 0~13 Disable	-Disabled ★ Default -Enabled	Control each of the USB ports disabling

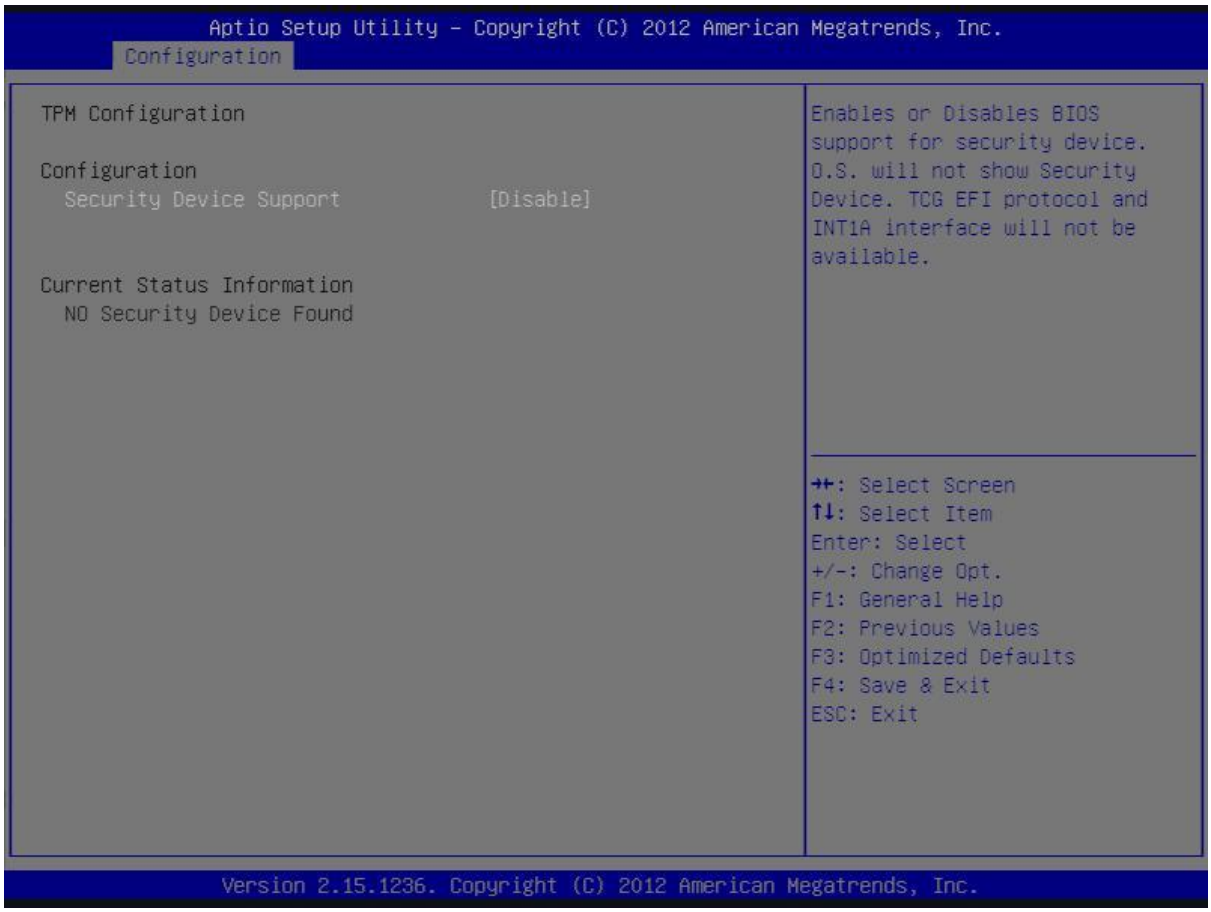
Power Control Configuration

It is not necessary to make any change just take the default value.



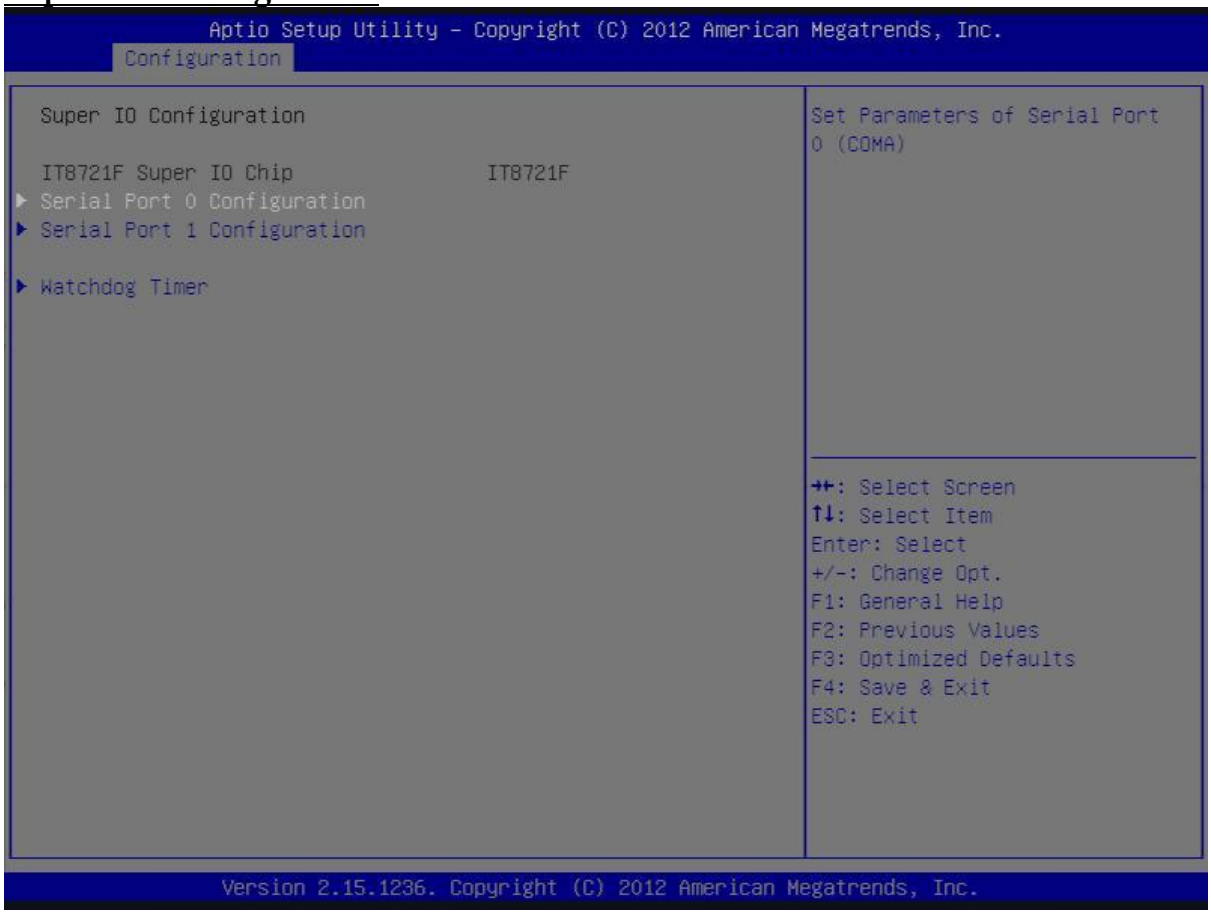
BIOS Item	Usage	Item-Specific Help
Enable Hinernation	-Disabled -Enabled	Enable or Disable Hibernate Funtion
ACPI Sleep State	-S3 Only★ Default -S1 Only	Select the highest ACPI sleep state when the SUSPEND button is pressed
Restore AC power loss	-Power Off -Power On -Last State	Select AC Power state when power is re-applied after a power failure
Wake system with Fixed Time	-Disabled ★ Default -Enabled	Enable or disable System wake on alarm event. When enabled, System will wake on the hr:min:sec specified
Wake on Ring	-Disabled ★ Default -Enabled	N/A

TPM Configuration

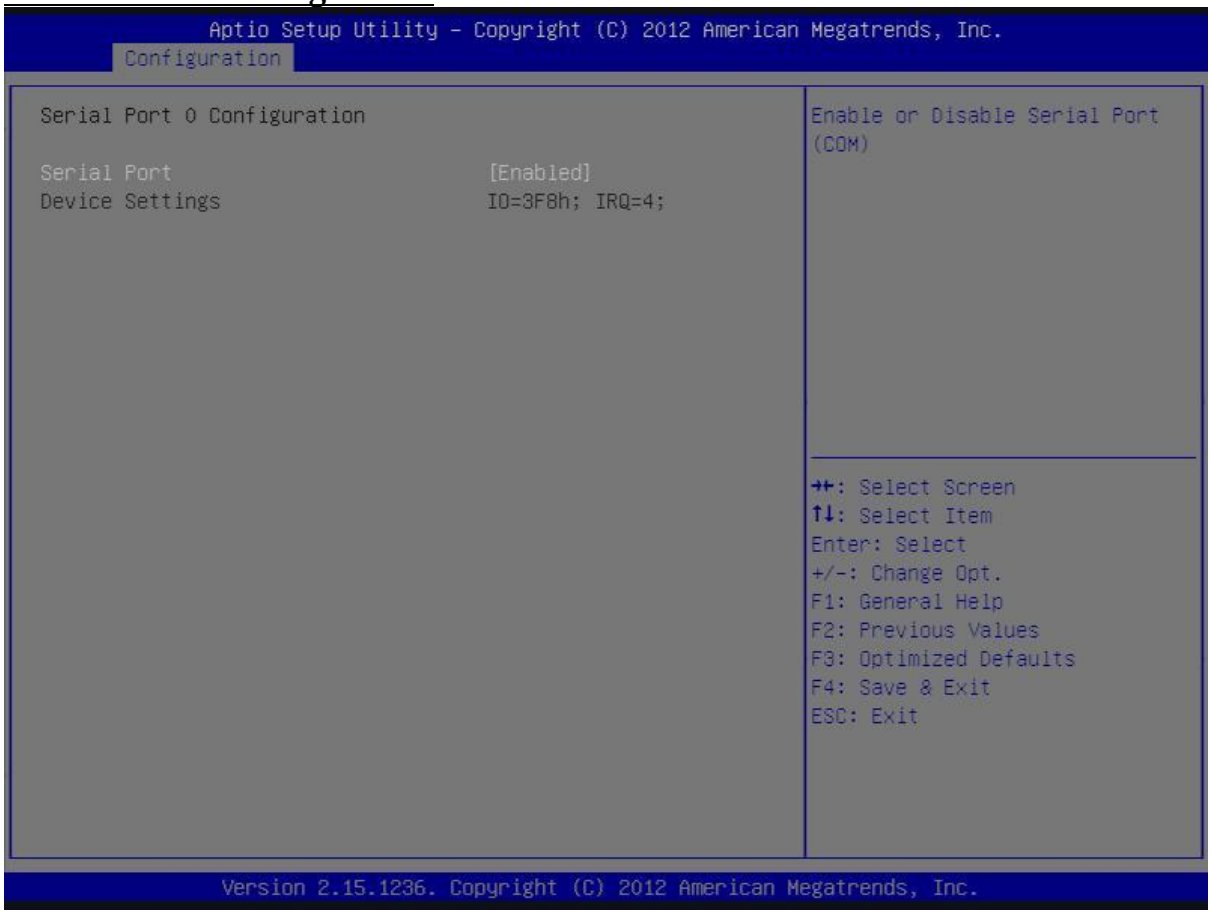


BIOS Item	Usage	Item-Specific Help
Security Device Support	-Disabled ★ Default -Enabled	Enabled/Disabled TPM Function

Super IO Configuration

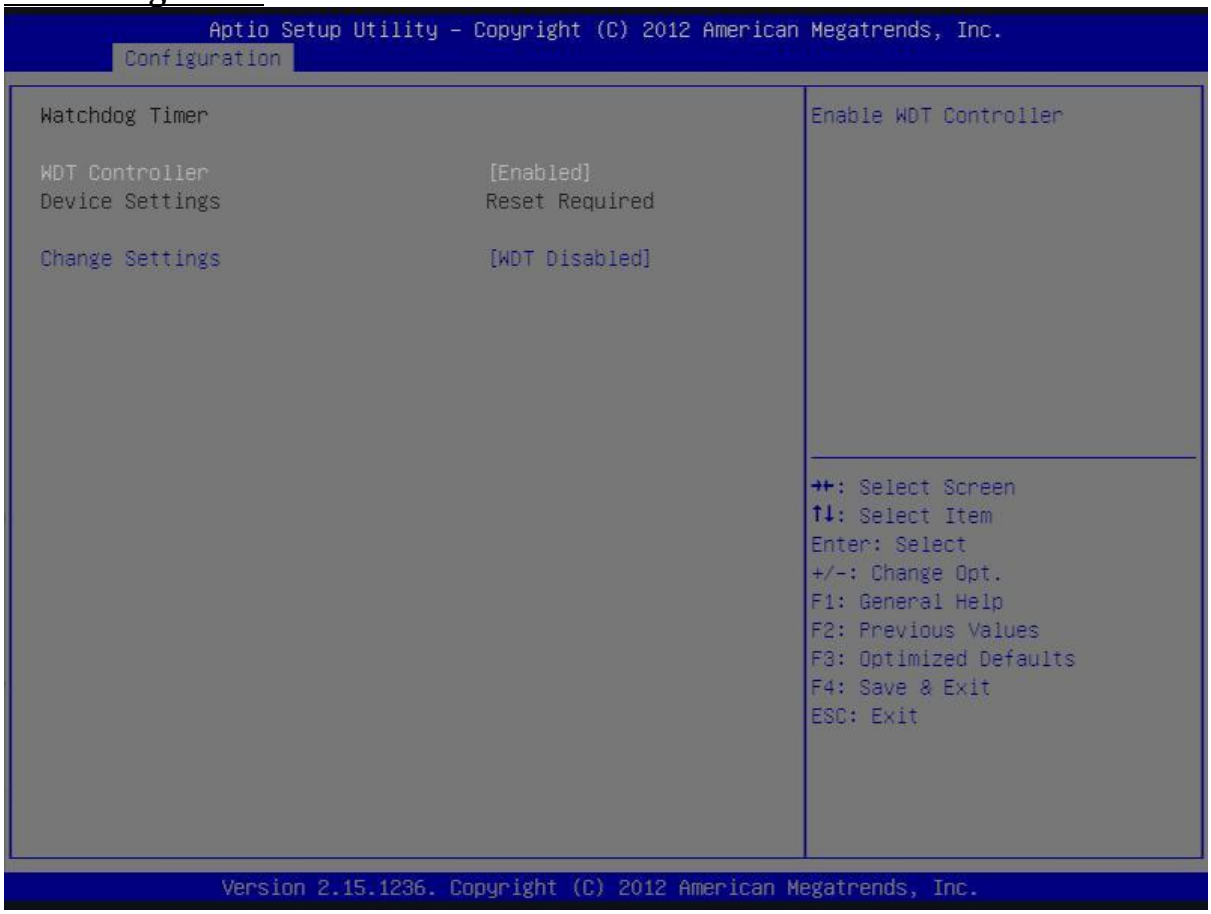


Serial Port 0~1 Configuration



BIOS Item	Usage	Item-Specific Help
Serial Port	-Disable -Enable★ Default	Setting Serial Port 1 IRQ

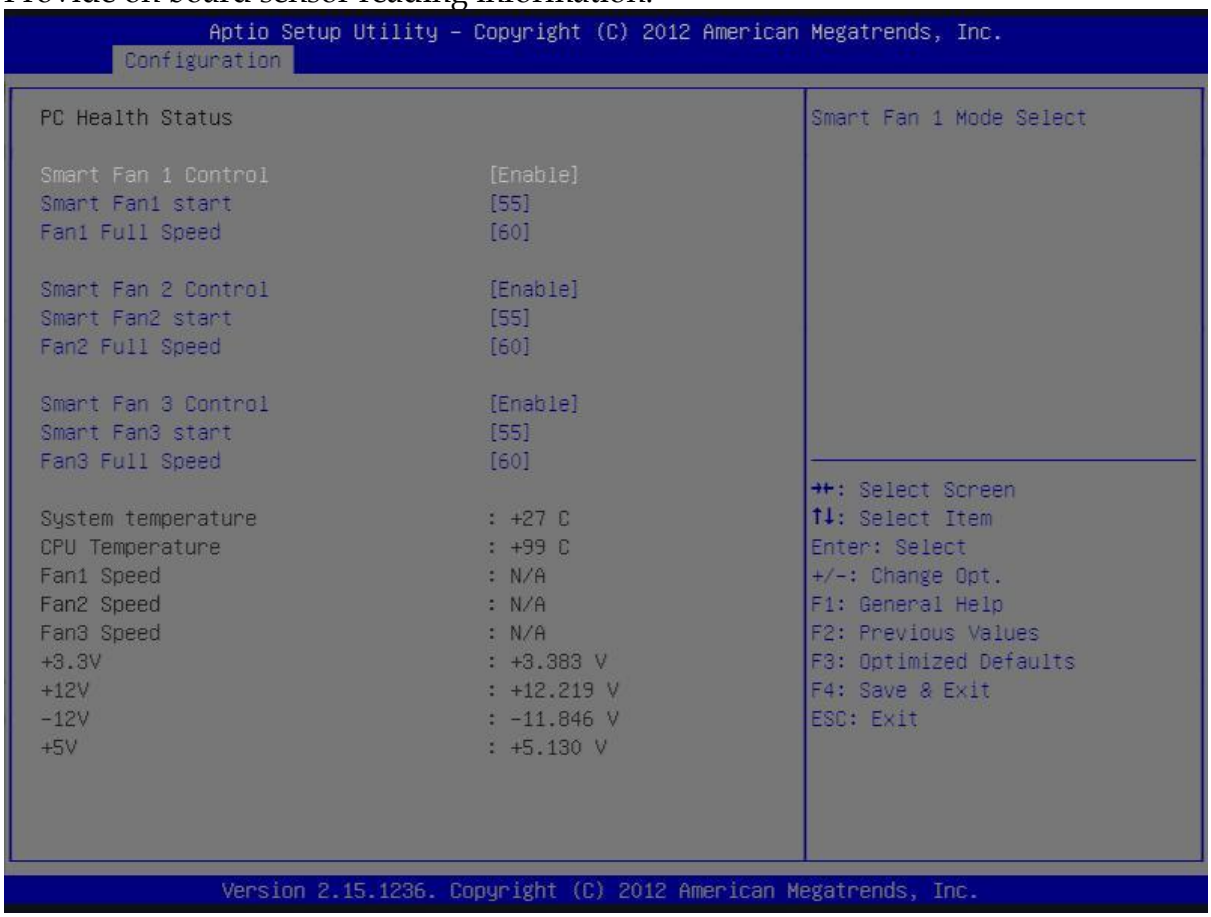
Watch Dog Timer



BIOS Item	Usage	Item-Specific Help
WDT Controller	-Disable -Enabled	
Change Settings	-WDT Disabled -10 Seconds -20 Seconds -30 Seconds -40 Seconds -50 Seconds -60 Seconds	

Hardware Monitor

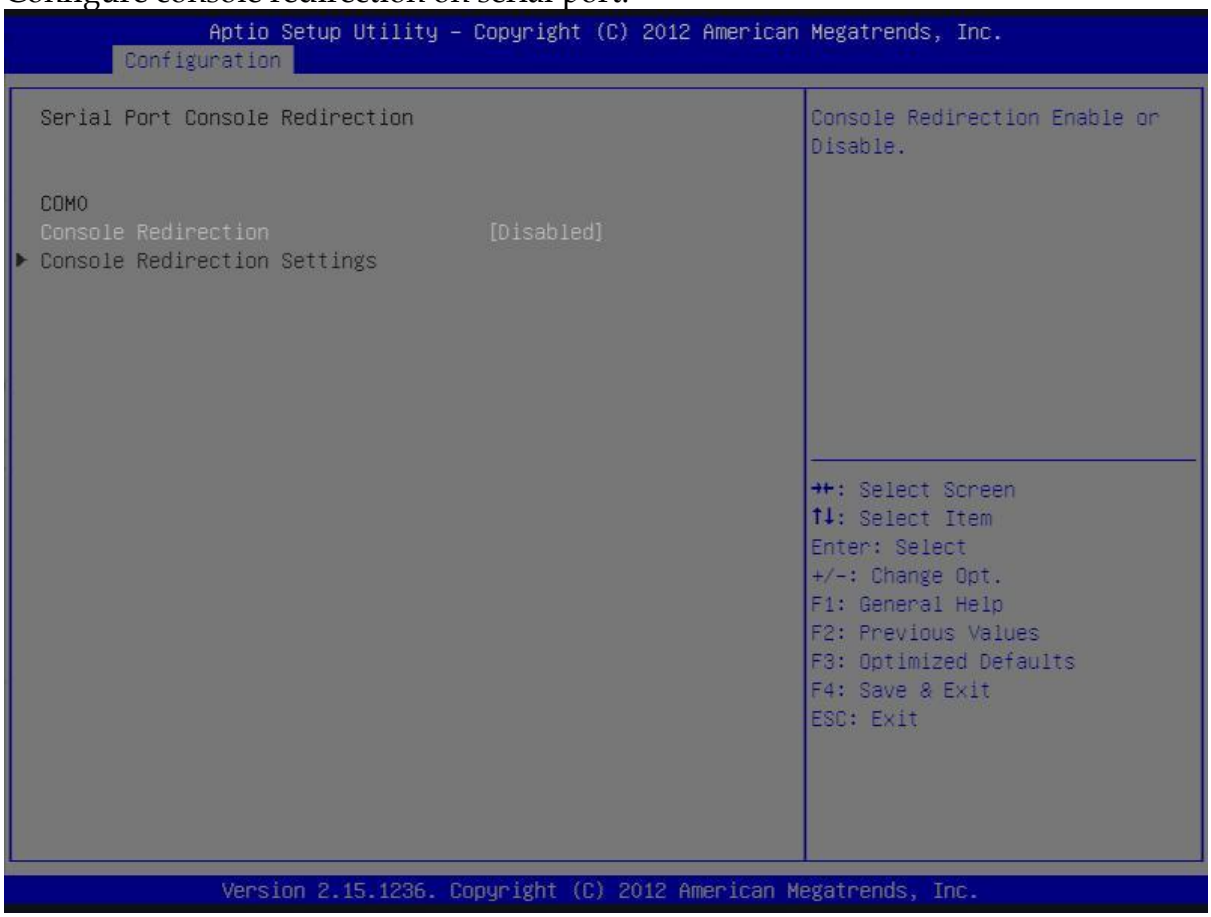
Provide on board sensor reading information.



BIOS Item	Usage	Item-Specific Help
Smart Fan1~3 Control	-Disable -Enable ★ Default	Disable / Enable Smart Fan function
Smart Fan1~3 start	25, 30, 35, 40, 45, 50, 55, 60, 65, 70	
Fan1~3 Full Speed	60, 65, 70, 75	

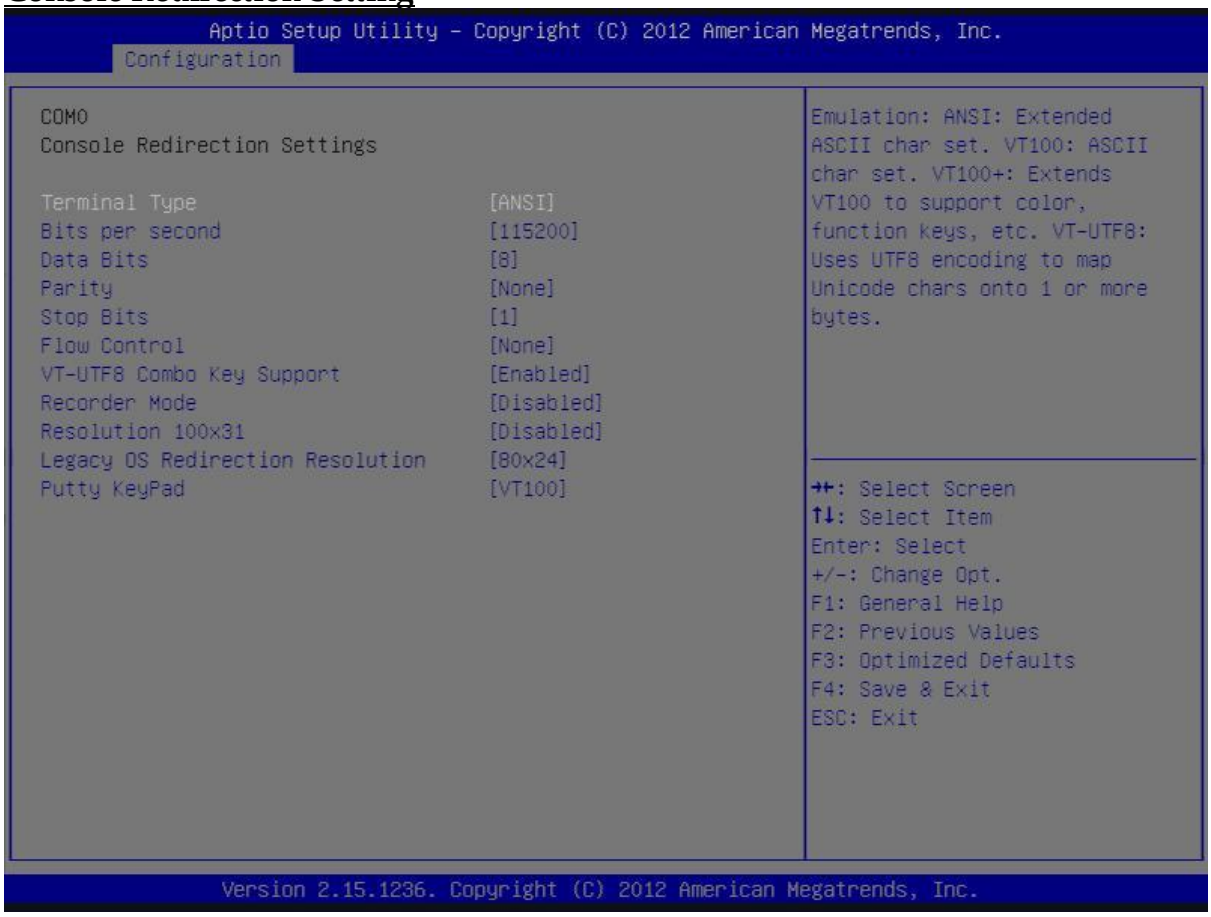
Serial Port Console Configuration

Configure console redirection on serial port.



BIOS Item	Usage	Item-Specific Help
Serial Port 1 Console Redirection	-Disabled ★ Default -Enabled	Control Console Redirection enable/disable

Console Redirection Setting

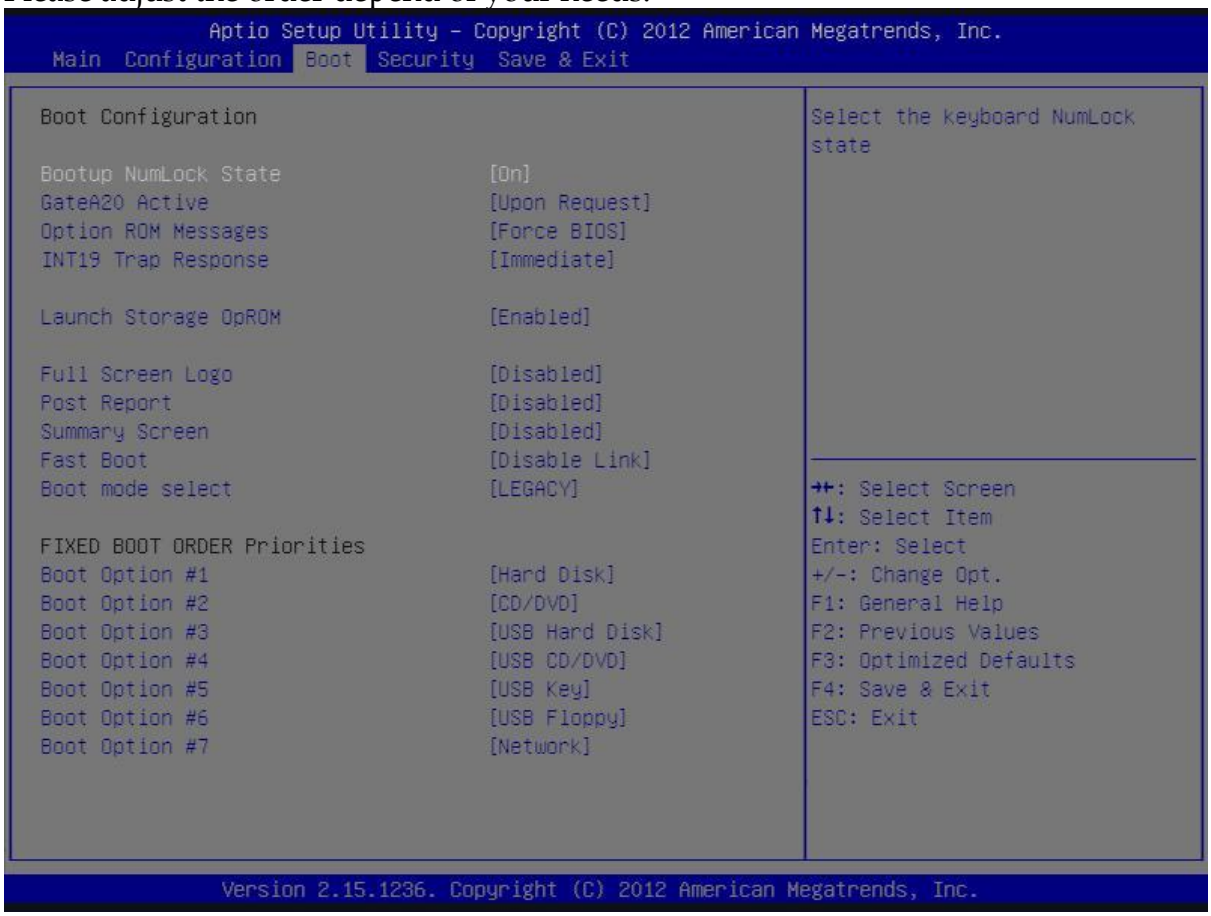


BIOS Item	Usage	Item-Specific Help
Terminal Type	-VT100 -VT100+ -VT-UTF8 -ANSI ★ Default	Control Console Reirection enable/disable
Bits per second	-9600 -19200 -57600 -115200 ★ Default	Select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds
Data Bits	-7 -8	
Parity	-None -Even -Odd -Mark -Space	
Stop Bits	-1 -2	
Flow Control	-None ★ Default -Hardware RTS/CTS	None – No flow control RTS/CTS – Hardware

	-Software Xon/Xoff	flow control XON/XOFF – Software flow control
VT-UTF8 Combo Key Support	-Disabled -Enabled ★ Default	
Recorder Mode	-Disabled ★ Default -Enabled	
Resolution 100x31	-Disabled ★ Default -Enabled	
Legacy OS Redirection Resolution	-80x24 -80x25	
Putty KeyPad	-VT100 -LINUX -XTERMR6 -SCO -ESCN -VT400	

4.5 Boot

Boot Priority Order:
Please adjust the order depend of your needs.



Boot NumLock State
Selects Power-on state for NumLock.
Choices: OFF, ON.

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.
Choices: Upon Request, Always.

Option ROM Messages
Set Display mode for Option ROM.
This item is used to determine the display mode when an optional ROM is
initialized during POST. When set to [Force BIOS], the display mode used by AMI BIOS is used. Select [Keep Current] if you want to use the display mode of
optional ROM.
Choices: Force BIOS, Keep Current.

Interrupt 19 Capture
Enabled: Allows Option ROMs to trap Int 19.
Interrupt 19 is the software interrupt that handles the boot disk function. When Enabled, this BIOS feature allows the ROM BIOS of these host adaptors to "capture" Interrupt 19 during the boot process so that drives attached to these adaptors can function as bootable disks. In addition, it allows you to gain access to the host adaptor's ROM setup utility, if one is available.
When Disabled, the ROM BIOS of these host adaptors will not be able to "capture" Interrupt 19. Therefore, you will not be able to boot operating systems from any bootable disks attached to these host adaptors. Nor will you be able to gain access to their ROM setup utilities.
Choices: Disabled, Enabled.

Launch Storage OpROM
Choices: Disabled, Enabled.

Full Screen Logo
Choices: Disabled, Enabled.

Post Report
Choices: Disabled, Enabled.

Summary Screen
Choices: Disabled, Enabled.

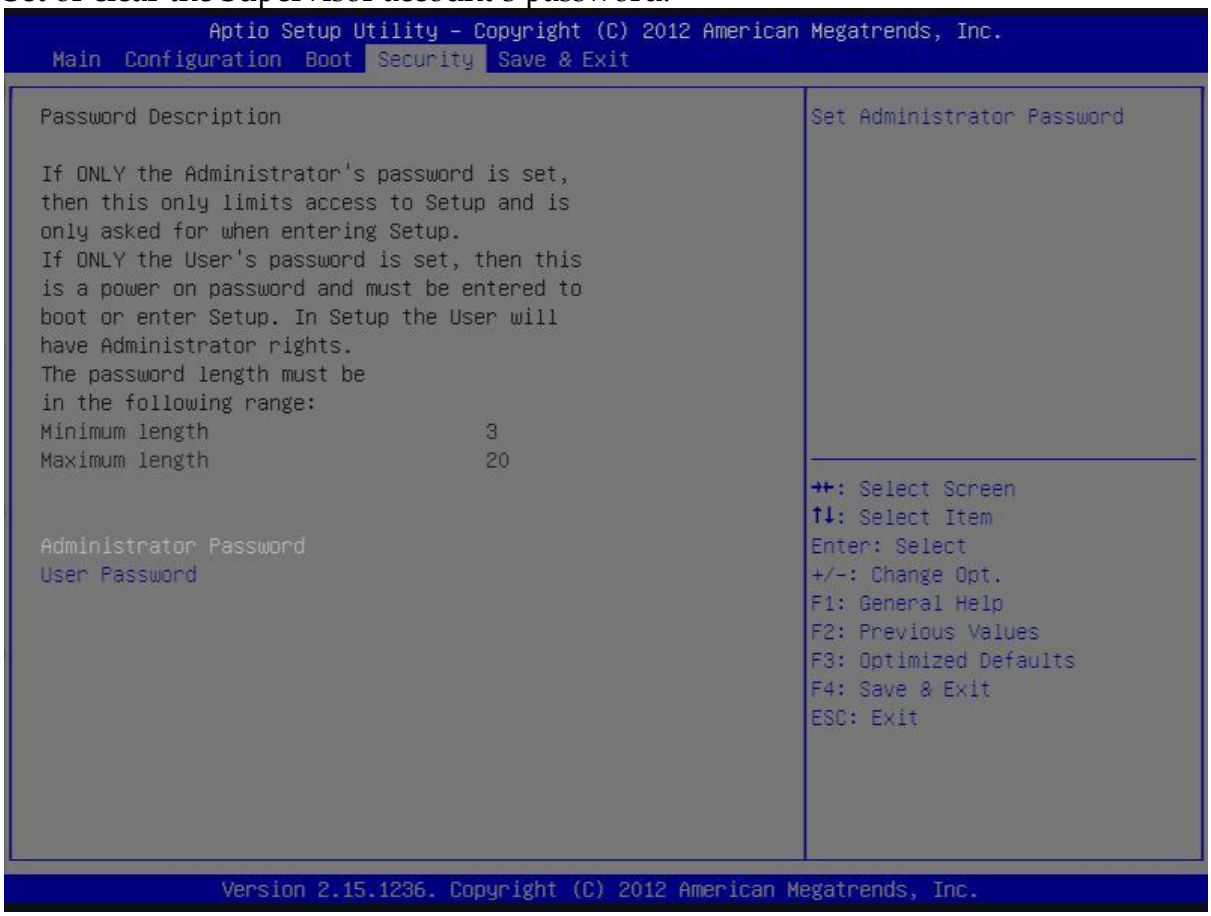
Fast Boot
Choices: Disabled link, Enabled.

Boot mode Select
Choices: LEGACY, UEFI.

Boot Option #1 ~#7
Sets the system boot order.
Choices: Built-in EFI Shell, other bootable devices, Disabled.

4.6 Security

Set or clear the Supervisor account's password.



Administrator Password

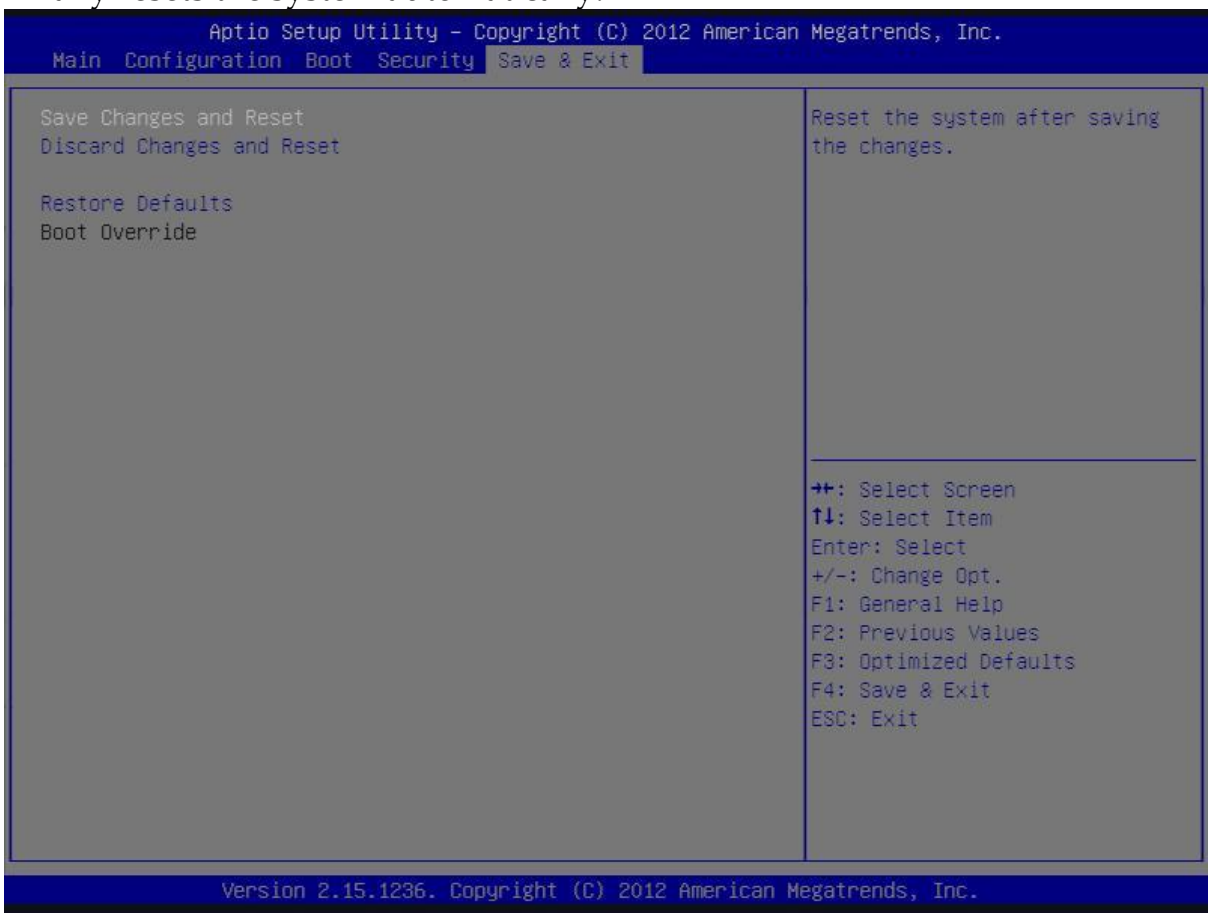
Set Setup Administrator Password

User Password

Set User password

■ 4.7 Exit

Equal to F10, save all changes of all menu, then exit setup configure driver. Finally resets the system automatically.



Save Changes and Exit

Exit system setup after saving the changes

Discard Changes and Reset

Reset the system without saving the changes.

Restore Defaults

Restore/Load Default Values for all the setup options.

Chapter 5
Troubleshooting

This chapter provides a few useful tips to quickly get PCOM-B630VG 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

ATX Power Setting

Unlike other Single board computer, PCOM-B630VG supports ATX only. Therefore, there is no other setting that really needs to be set up. However, there are only two connectors that must be connected—J26 (Cooler Power Pin Power Pin) & 20 pins ATX Power Connector.

Serial ATA Hard Disk Setting for IDE/AHCI (Reference from PCOM-C600)

Unlike IDE bus, each Serial ATA channel can only connect to one SATA hard disk at a time; there are total two connectors, J28 & J30 two ports on-board (those 2 Masters in Non-AHCI mode), these two support 6Gb, J10 will be an e-SATA which support 3Gb / another Mini-PCIe support a mSATA feature support 3Gb, because SATA hard disk doesn't require setting up Master and Slave, which can reduce mistake of hardware installation. All you need to operate IDE and AHCI application for system, please follow up setting guide in BIOS programming (Table 5-1); Furthermore, you can consult chapter 4.3 Advanced "SATA Configuration" part of the" SATA Mode".

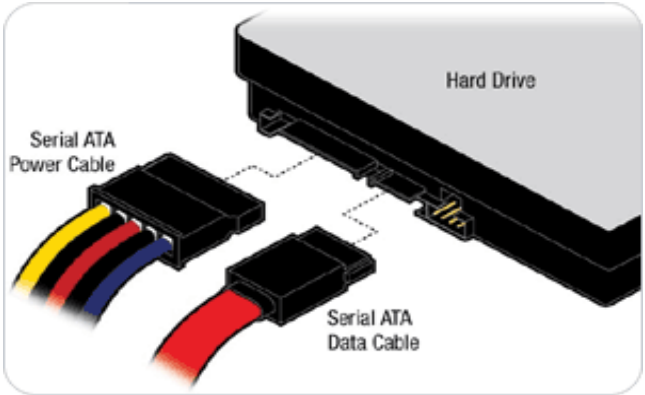


Table. 5-1 SATA Mode setting guide

System BIOS Main Menu

Configuration

SATA Configuration …… [Press enter]

SATA Mode…… [IDE Mode/AHCI Mode]

5.2 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the devices cables required before turning on ATX power. 204-pin DDR3 SO-DIMM Memory, keyboard, mouse, SATA hard disk, VGA connector, device power cables, ATX accessories are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

To make sure that you have a successful start with PCOM-B630VG, it is recommended, when going with the boot-up sequence, to hit "F2" 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 "**Restore Defaults**", press "**Enter**" and select "**Yes**" 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.

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 Serial Port1/ Serial Port 2 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 Serial Port1 to release IRQ #4
Disable Serial Port2 to release IRQ #3
Etc…

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

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.

5.3 FAQ

Symptom: SBC keeps beeping, and no screen has shown.

Solution: In fact, each beep sound represents different definition of error message. Please refer to table as following:

Beep sounds	Meaning	Action
One long beep with one short beeps	DRAM error	Change DRAM or reinstall it
One long beep constantly	DRAM error	Change DRAM or reinstall it
One long beep with two short beeps	Monitor or Display Card error	Please check Monitor connector whether it inserts properly
Beep rapidly	Power error warning	Please check Power mode setting

Information & Support

Question: I forget my password of system BIOS, what am I supposed to do?

Answer: You can simply short 2-3 pins on JP20 to clean your password.

Question: How to update the BIOS file of the PCOM-B630VG?

Answer: 1. Please visit web site of the Portwell download center as below hyperlink and register an account.
http://www.portwell.com.tw/support/newmember.php
2. Input your User name and password to log in the download center.
3. Select the "Search download" to input the keyword "PCOM-B630VG".
4. Find the "BIOS "page to download the ROM file and flash utility.
5. Execute the zip file to root of the bootable USB pen drive.
6. Insert your bootable USB pen drive in carrier board and power-on.
7. Input the "AFUDOS XXXXX.ROM -p -b -n" to start to update BIOS. ("XXXXX" is the file name of the ROM file.)

8. Switch "Off" the Power Supply when you finished the update process.

9. To short the JP9 jumper from 1-2 short to 2-3 short 5 seconds then set back to 1-2 short. (Clear CMOS)

10. Switch "ON" the Power Supply then press the "del" key to BIOS to load "Restore Defaults" and then select "Save Changes and Exit" option.

Note:

Please visit our technical web site at
http://www.portwell.com.tw
For additional technical information, which is not covered in this manual, you can mail to tsd@mail.portwell.com.tw or you can also send mail to our sales, they will be very delighted to forward them to us.

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.

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-9BFF	562K	【Available】
First Meg	-- Conventional memory end at 624K --	
9C00-9D3F	5K	Extended BIOS Area
9D40-9FFF	11K	Unused
A000-AFFF	64K	VGA Graphics
B000-B7FF	32K	Unused
B800-BFFF	32K	VGA Text
C000-CD7F	54K	Video ROM
CD80-EFFF	138K	Unused
F000-FFFF	64K	System ROM
HMA	64K	First 64K Extended

Interrupt Request Lines (IRQ)

Peripheral devices can use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

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