EQM-BYT2

Intel® Bay Trail Qseven Module2

User's Manual

1st Ed – 20 October 2015

Part No.E2047BYT200R

Notice

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

Copyright Notice

Content

1. Getting Started

1.1 Safety Precautions

Warning!

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!

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

1.2 Packing List

- 1 x EQM-BYT2 Intel® Bay Trail Qseven Module2
- 4 x Screw

If any of the above items is damaged or missing, contact your retailer.

1.3 Document Amendment History

Revision	Date	By	Comment
1st	October 2015		Initial Release

1.4 Manual Objectives

This manual describes in details EQM-BYT2 QSeven Module.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to set up EQM-BYT2 QSeven Module or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors regarding this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

1.5 System Specifications

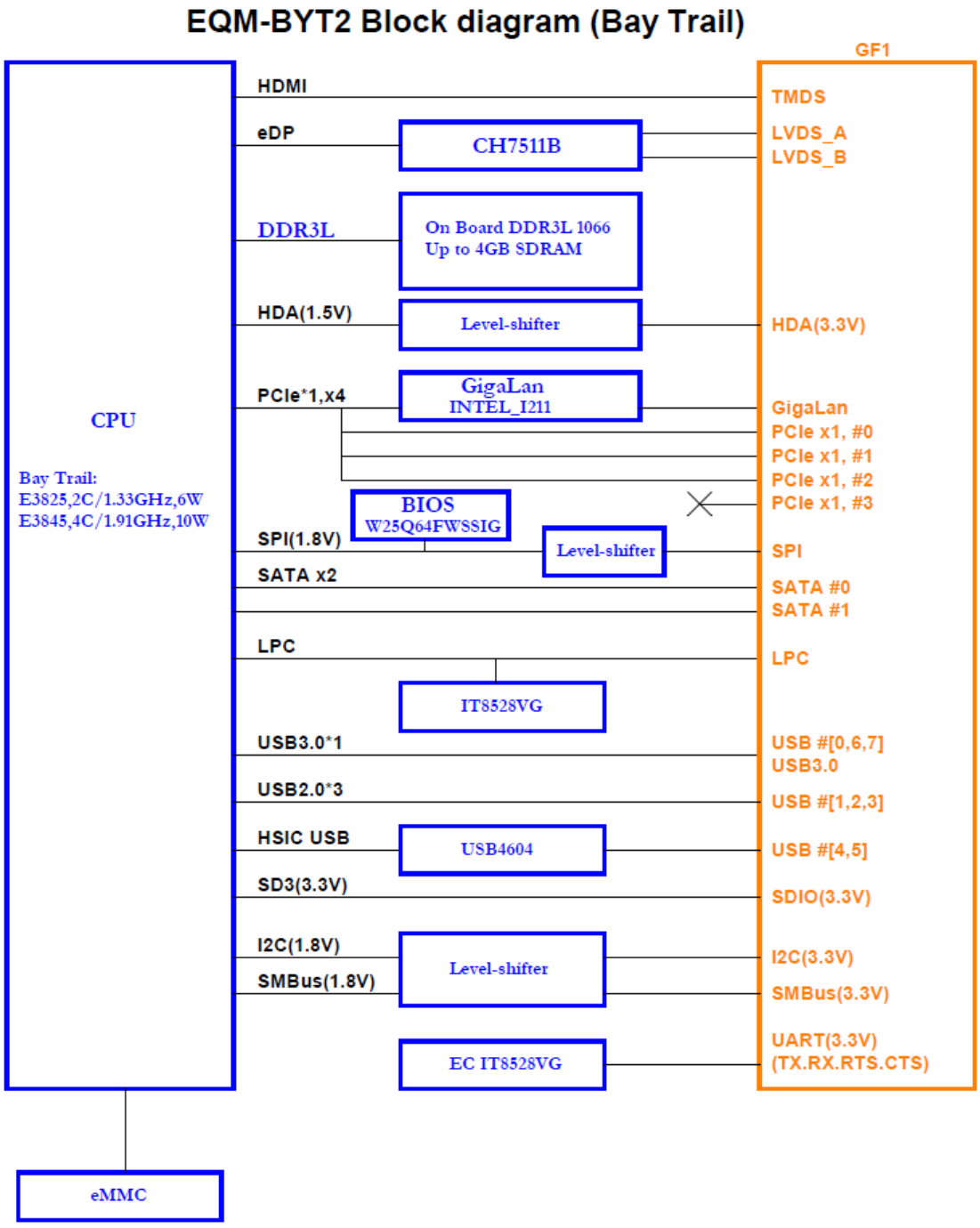
System	
CPU	Intel® Atom™ Bay Trail (E3825/ E3845)
BIOS	AMI 64Mbit SPI BIOS
I/O Chipset	IT8528VG
System Memory	2GB DDR3 (E3825) 4GB DDR3 (E3845)
eMMC	8GB eMMC, up to 32GB
I/O	
MIO	2 x SATA (not support Android) 3 x PCIe x 1 1 x SDIO 8bit 1 x MIPI CSI camera (Linux only)
USB	5 x USB 2.0 1 x USB 3.0
GPIO	LPC/ SMBus/ I2C/ UART
Display	
Chipset	Valleyview SoC integrated Graphics
Multiple Display	HDMI + LVDS
HDMI	HDMI (2560x1080 Resolution)
LCD Interface	Dual channel 24-bit LVDS
Audio	
AC97 Codec	HD audio I/F
Ethernet	
LAN Chip	Intel I210/ I211 GbE
Ethernet Interface	10/100/1000 Base-Tx Gigabit Ethernet Compatible
Mechanical & Environmental	
Power Requirement	+5V
ACPI	Single Power ATX Support S0, S3, S4, S5 ACPI 3.0 Compliant
Power Type	Qseven Power Spec
Operating Temp.	0°C to 60 °C -40°C to 75 °C optional
Storage Temp.	-40°C to 85°C
Operating Humidity	0% ~ 90% Relative Humidity, Non-condensing
Size (L x W) (Please consult product engineers for the production	70mm x 70mm

feasibility if the size is larger than 410x360mm or smaller than 80x70mm)	
Weight	TBD

Note: Specifications are subject to change without notice.

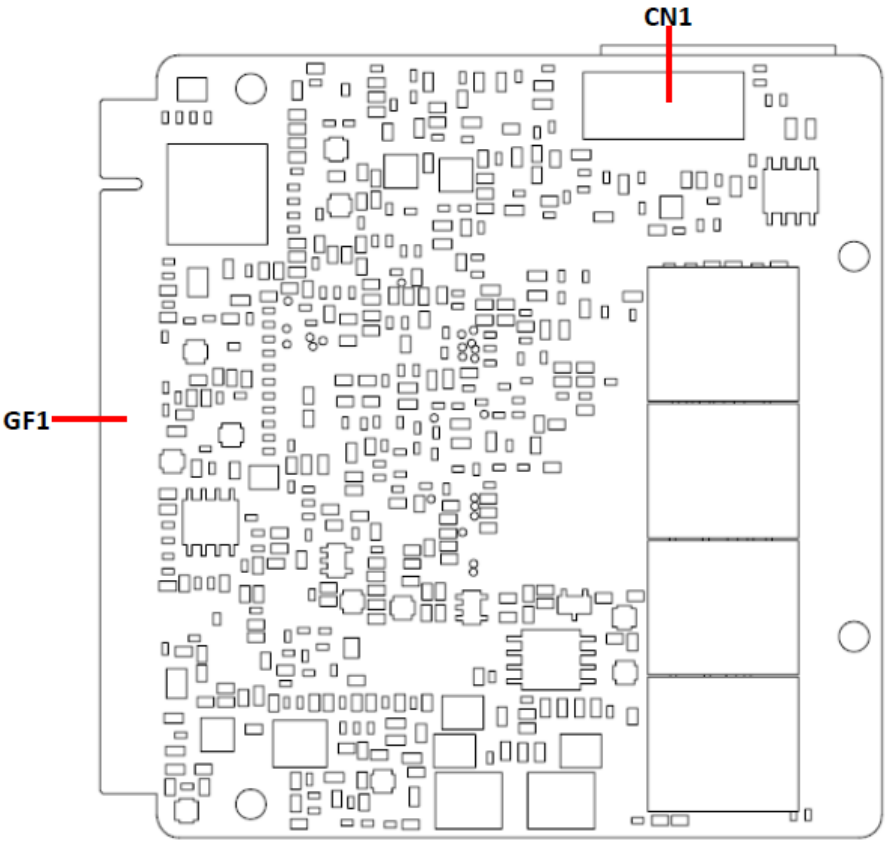
1.6 Architecture Overview—Block Diagram

The following block diagram shows the architecture and main components of EQM-BYT2 QSeven Module.



2. Hardware Configuration

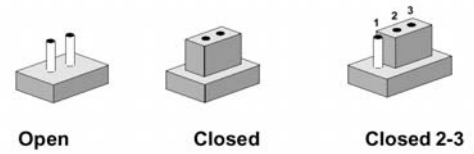
2.1 Product Overview



2.2 Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip. To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



The jumper settings are schematically depicted in this manual as follows:

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

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

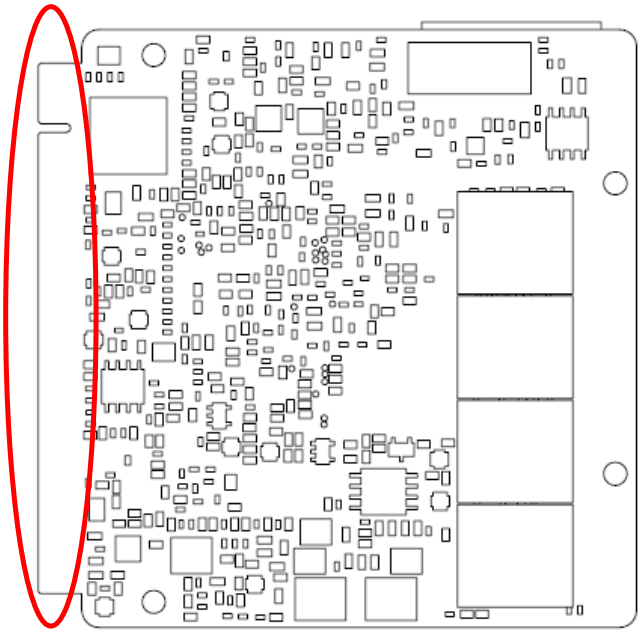
The following tables list the function of each of the board's jumpers and connectors.

Connectors

Label	Function	Note
GF1	QSeven connector	
CN1	Mini CSI camera	20 x 1 header, pitch 0.50mm

2.3 Setting Connectors

2.3.1 QSeven connector (GF1)



*Default

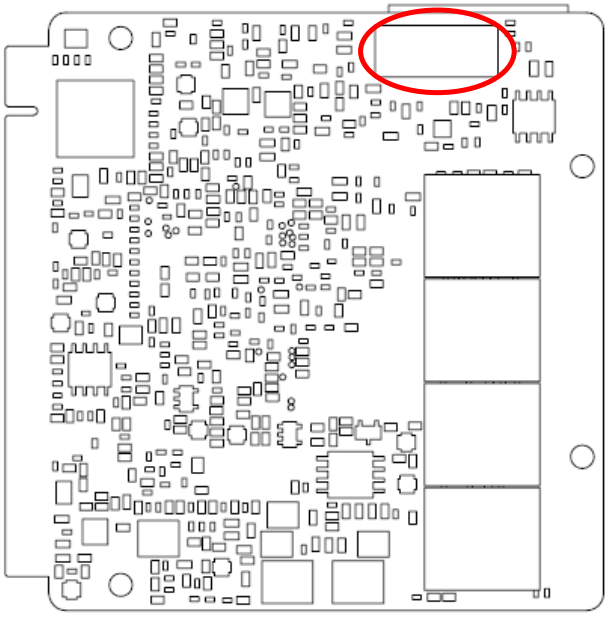
Signal	PIN	PIN	Signal
GND	1	2	GND
GBE_MDI3-	3	4	GBE_MDI2-
GBE_MDI3+	5	6	GBE_MDI2+
GBE_LINK100#	7	8	GBE_LINK1000#
GBE_MDI1-	9	10	GBE_MDI0-
GBE_MDI1+	11	12	GBE_MDI0+
NC	13	14	GBE_ACT#
NC	15	16	SUS_S5#
WAKE#	17	18	SUS_S3#
NC	19	20	PWRBTN#
SLP_BTN#	21	22	LID_BTN#
GND	23	24	GND
GND	25	26	PWGIN
BATLOW#	27	28	RSTBTN#
SATA0_TX+	29	30	SATA1_TX+
SATA0_TX-	31	32	SATA1_TX-
SATA_ACT#	33	34	GND
SATA0_RX+	35	36	SATA1_RX+
SATA0_RX-	37	38	SATA1_RX-

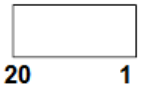
Signal	PIN	PIN	Signal
GND	39	40	GND
BIOS_DISABLE#	41	42	SDIO_CLK#
SDIO_CD#	43	44	NC
SDIO_CMD	45	46	SDIO_WP
SDIO_PWR#	47	48	SDIO_DAT1
SDIO_DAT0	49	50	SDIO_DAT3
SDIO_DAT2	51	52	NC
NC	53	54	NC
NC	55	56	NC
GND	57	58	GND
HDA_SYNC	59	60	SMB_CLK
HDA_RST#	61	62	SMB_DAT
HDA_BCLK	63	64	SMB_ALERT#
HDA_SDI	65	66	I2C_CLK
HDA_SDO	67	68	I2C_DAT
NC	69	70	WDTRIG#
THRMTRIP#	71	72	WDOUT
GND	73	74	GND
USB_P7-	75	76	USB_P6-
USB_P7+	77	78	USB_P6+
USB_6_7_OC#	79	80	USB_4_5_OC#
USB_P5-	81	82	USB_P4-
USB_P5+	83	84	USB_P4+
USB_2_3_OC#	85	86	USB_0_1_OC#
USB_P3-	87	88	USB_P2-
USB_P3+	89	90	USB_P2+
NC	91	92	NC
USB_P1-	93	94	USB_P0-
USB_P1+	95	96	USB_P0+
GND	97	98	GND
LVDS_A0+	99	100	LVDS_B0+
LVDS_A0-	101	102	LVDS_B0-
LVDS_A1+	103	104	LVDS_B1+

Signal	PIN	PIN	Signal
LVDS_A1-	105	106	LVDS_B1-
LVDS_A2+	107	108	LVDS_B2+
LVDS_A2-	109	110	LVDS_B2-
LVDS_PPEN	111	112	LVDS_BLEN
LVDS_A3+	113	114	LVDS_B3+
LVDS_A3-	115	116	LVDS_B3-
GND	117	118	GND
LVDS_A_CLK+	119	120	LVDS_B_CLK+
LVDS_A_CLK-	121	122	LVDS_B_CLK-
LVDS_BLT_CTRL	123	124	NC
NC	125	126	NC
NC	127	128	NC
NC	129	130	NC
DP_TXP3_HDMI_CLK_P	131	132	NC
DP_TXN3_HDMI_CLK_N	133	134	NC
GND	135	136	GND
DP_TXP1_HDMI_TXP_1	137	138	DP_AUXP
DP_TXN1_HDMI_TXN_1	139	140	DP_AUXN
GND	141	142	GND
DP_TXP2_HDMI_TXP_0	143	144	NC
DP_TXN2_HDMI_TXN_0	145	146	NC
GND	147	148	GND
DP_TXP0_HDMI_TXP_2	149	150	HDMI_DDC_SDA
DP_TXN0_HDMI_TXN_2	151	152	HDM_DDC_SCL
HDMI_HPD#	153	154	DP_HPD#
PCIE_CLK_REF+	155	156	PCIE_WAKE#
PCIE_CLK_REF-	157	158	PCIE_RST#
GND	159	160	GND
NC	161	162	NC
NC	163	164	NC
GND	165	166	GND
PCIE2_TX+	167	168	PCIE2_RX+
PCIE2_TX-	169	170	PCIE2_RX-

Signal	PIN	PIN	Signal
UART_TX	171	172	UART_RTS
PCIE1_TX+	173	174	PCIE1_RX+
PCIE1_TX-	175	176	PCIE1_RX-
UART_RX	177	178	UART_CTS
PCIE0_TX+	179	180	PCIE0_RX+
PCIE0_TX-	181	182	PCIE0_RX-
GND	183	184	GND
LPC_AD0	185	186	LPC_AD1
LPC_AD2	187	188	LPC_AD3
LPC_CLK	189	190	LPC_FRAME#
SERIRQ	191	192	NC
VCC_RTC	193	194	SPKR
FAN_TACHOIN	195	196	FAN_PWMOUT
GND	197	198	GND
RSVD199	199	200	RSVD200
RSVD201	201	202	NC
RSVD203	203	204	NC
VCC_5V_SB1	205	206	VCC_5V_SB2
MFG_NC0	207	208	MFG_NC2
MFG_NC1	209	210	MFG_NC3
VCC1	211	212	VCC2
VCC3	213	214	VCC4
VCC5	215	216	VCC6
VCC7	217	218	VCC8
VCC9	219	220	VCC10
VCC11	221	222	VCC12
VCC13	223	224	VCC14
VCC15	225	226	VCC16
VCC17	227	228	VCC18
VCC19	229	230	VCC20

2.3.2 Mini CSI camera (CN1)





Signal	PIN
SOC_I2C3_DAT	1
SOC_I2C3_CLK	2
GND	3
CAM1_MCLK	4
GND	5
SOC_CAM1_RST_N	6
SOC_CAM1_PWRDN	7
GND	8
MCSI1_DAT1_P	9
MCSI1_DAT1_N	10
GND	11
MCSI1_DAT0_P	12
MCSI1_DAT0_N	13
GND	14
MCSI1_CLK_P	15
MCSI1_CLK_N	16
GND	17
+3.3V	18
+3.3V	19
+5V	20

3.BIOS Setup

3.1 Introduction

The BIOS setup program allows users to modify the basic system configuration. In this following chapter will describe how to access the BIOS setup program and the configuration options that may be changed.

3.2 Starting Setup

The AMI BIOS™ is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:
By pressing <Del> immediately after switching the system on, or
By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test).

Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to.

Press F1 to Continue, DEL to enter SETUP

3.3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Button	Description
↑	Move to previous item
↓	Move to next item
←	Move to the item in the left hand
→	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into NVRAM Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Previous Values.
F3 key	Optimized defaults
F4 key	Save & Exit Setup

- **Navigating Through The Menu Bar**
  Use the left and right arrow keys to choose the menu you want to be in.

Note: Some of the navigation keys differ from one screen to another.

- **To Display a Sub Menu**
  Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A "➢" pointer marks all sub menus.

3.4 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.

3.5 In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AMI BIOS supports an override to the CMOS settings which resets your system to its defaults.

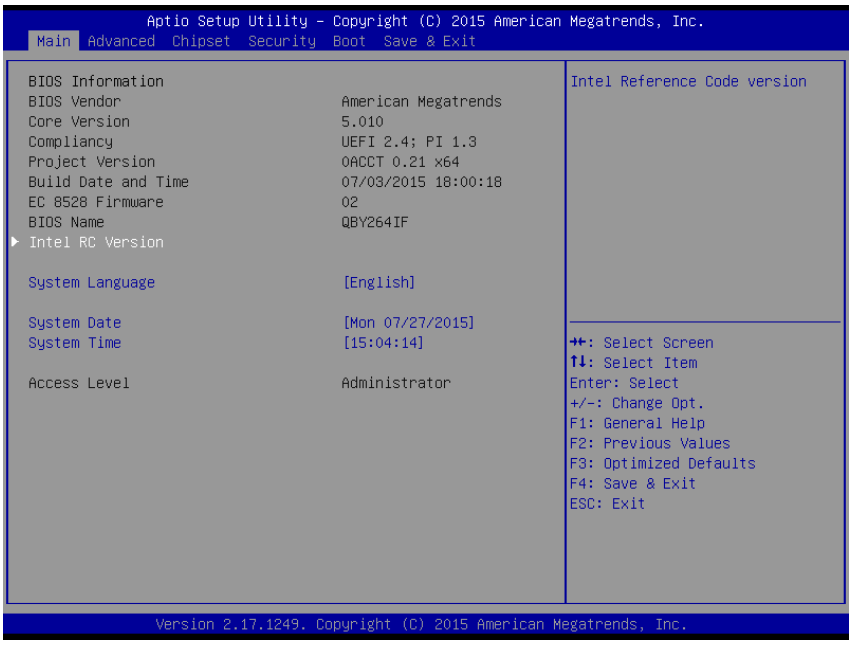
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

3.6 BIOS setup

Once you enter the AMI BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

3.6.1 Main Menu

This section allows you to record some basic hardware configurations in your computer and set the system clock.



3.6.1.1 System Language

Use this option to select system language

3.6.1.2 System Date

Use the system date option to set the system date. Manually enter the day, month and year.

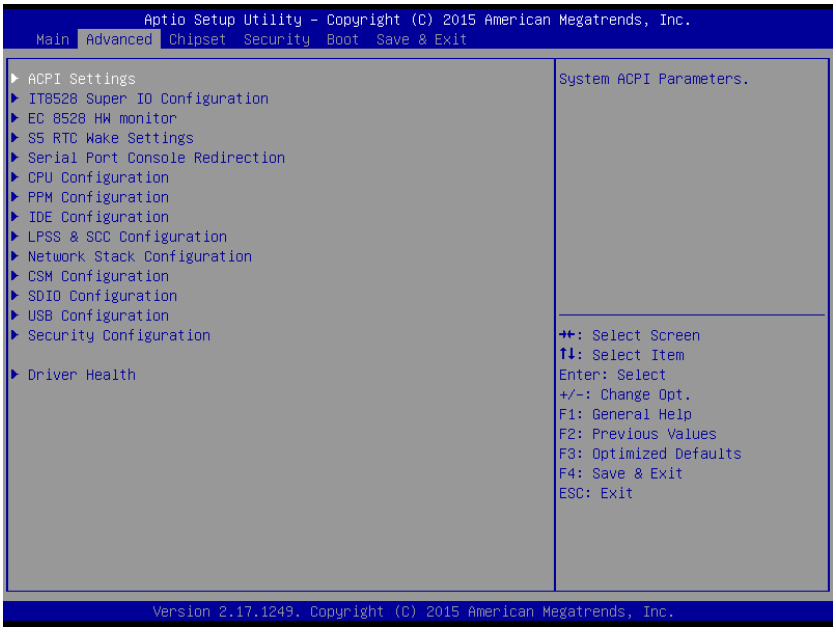
3.6.1.3 System Time

Use the system time option to set the system time. Manually enter the hours, minutes and seconds.

Note: BIOS setup screens shown in this chapter are for reference only, and may not exactly match what you see on your screen.

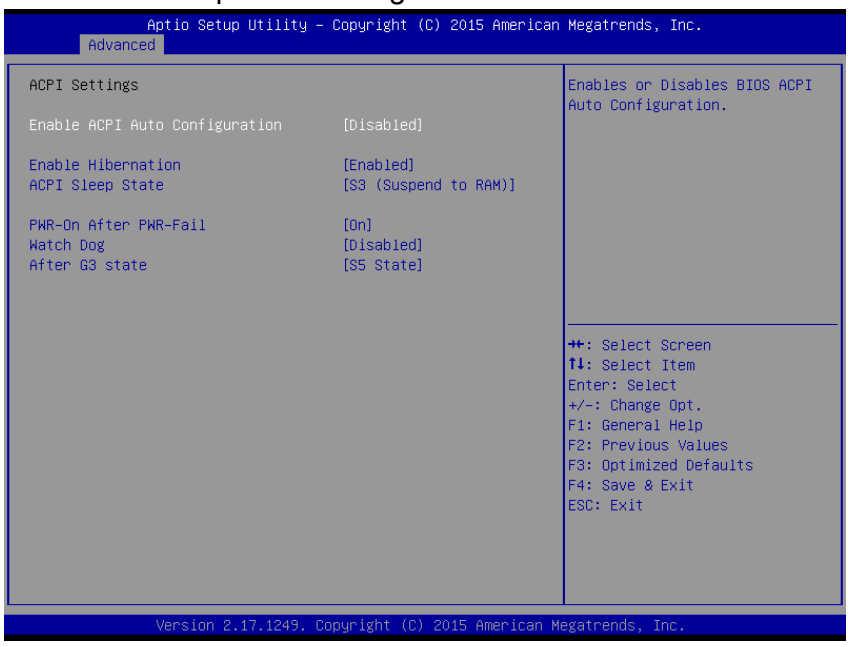
3.6.2 Advanced BIOS settings

This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.



3.6.2.1 ACPI Settings

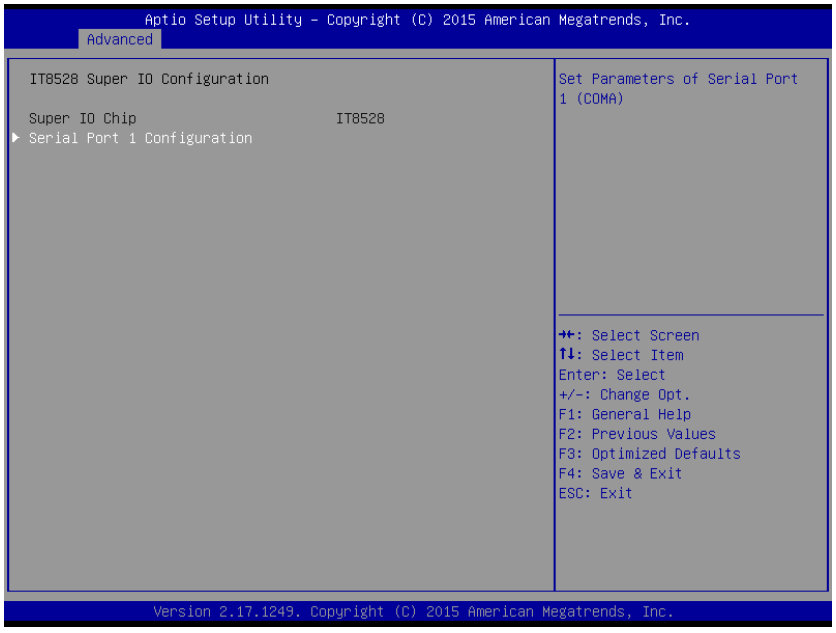
You can use this item to set up ACPI Configuration.



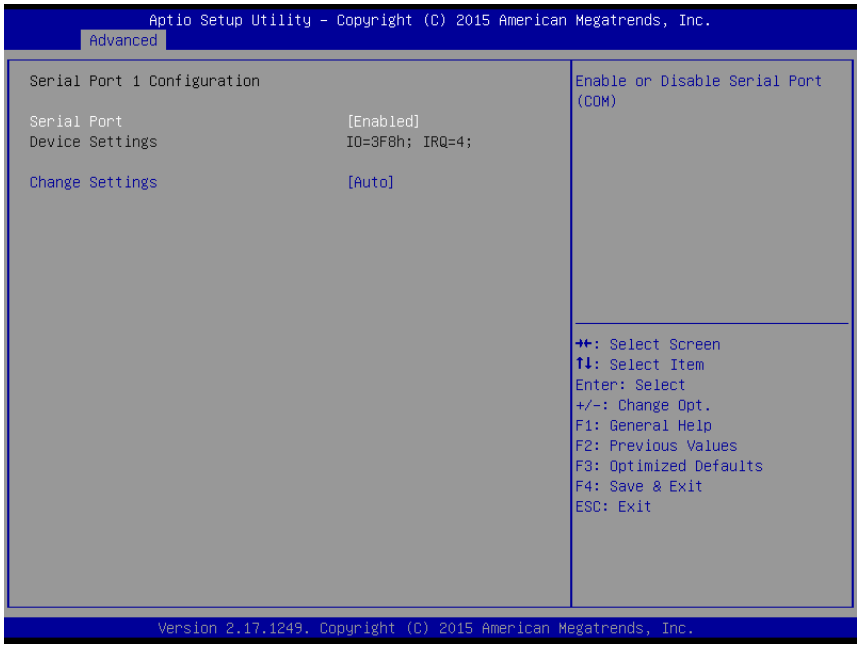
Item	Options	Description
Enable ACPI Auto Configuration	Disabled**[Default]**, Enabled	Enables or Disables BIOS ACPI Auto Configuration.

Enable Hibernation	Disabled, Enabled**[Default]**	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
ACPI Sleep State	Suspend Disabled, S3 (Suspend to RAM) **[Default]**	Select the highest ACPI sleep state the system will enter, when the SUSPEND button is pressed.
ErP Function	Disabled**[Default]**, Enabled	ErP Function (Deep S5).
PWR-On After PWR-Fail	Off On**[Default]**	AC loss resume.
Watch Dog	Disabled**[Default]** 30 sec 40 sec 50 sec 1 min 2 min 10 min 30 min	Select WatchDog.
After G3 state	S5 State**[Default]** S0 State	System will return to S0 or S5 state after G3.

3.6.2.2 IT8528 Super IO Configuration



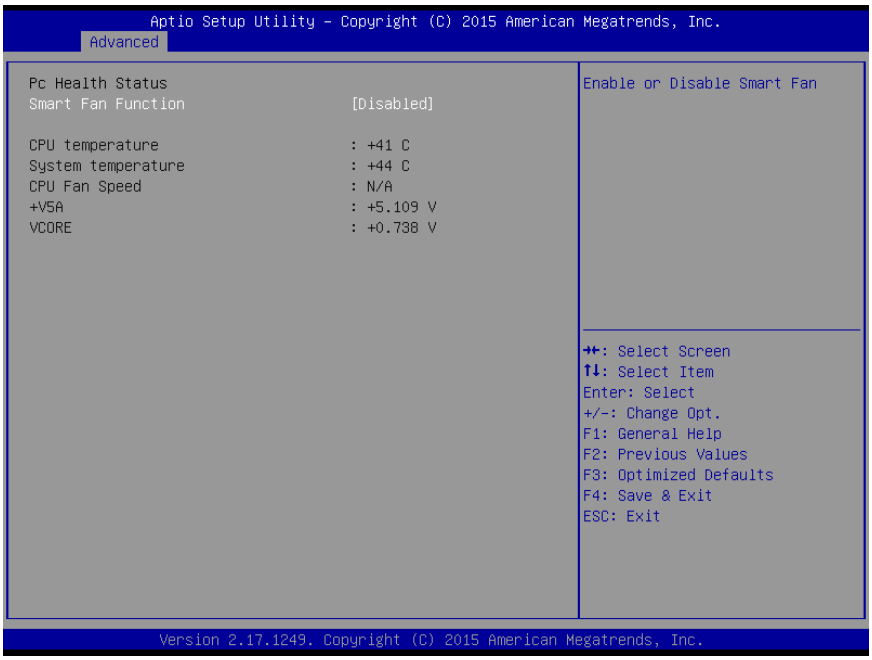
3.6.2.2.1 Serial Port 1 Configuration



Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).
Change Settings	Auto**[Default]** IO=3F8h; IRQ=4; IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	Select an optimal setting for Super IO device.

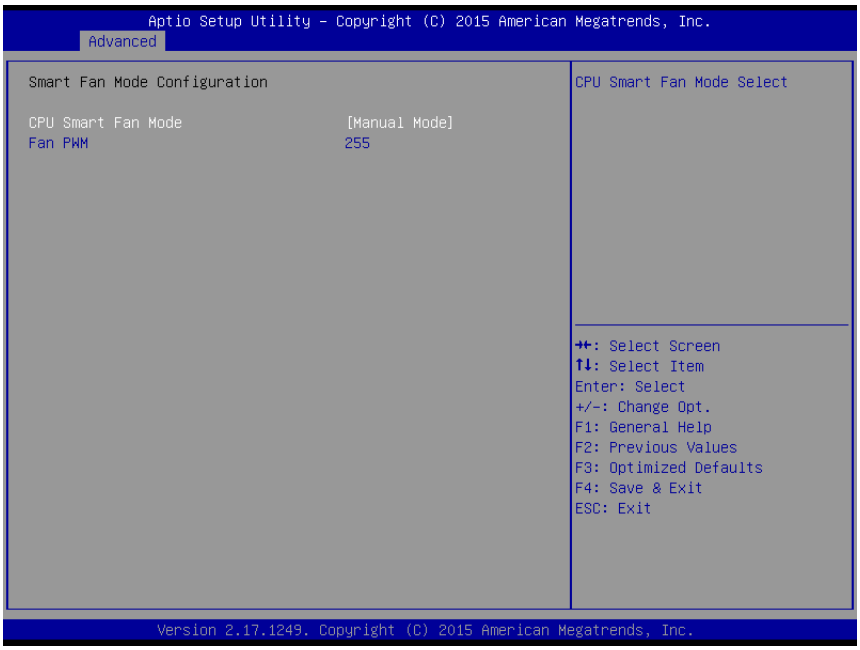
3.6.2.3 H/W Monitor

The H/W Monitor shows the operating temperature, fan speeds and system voltages.



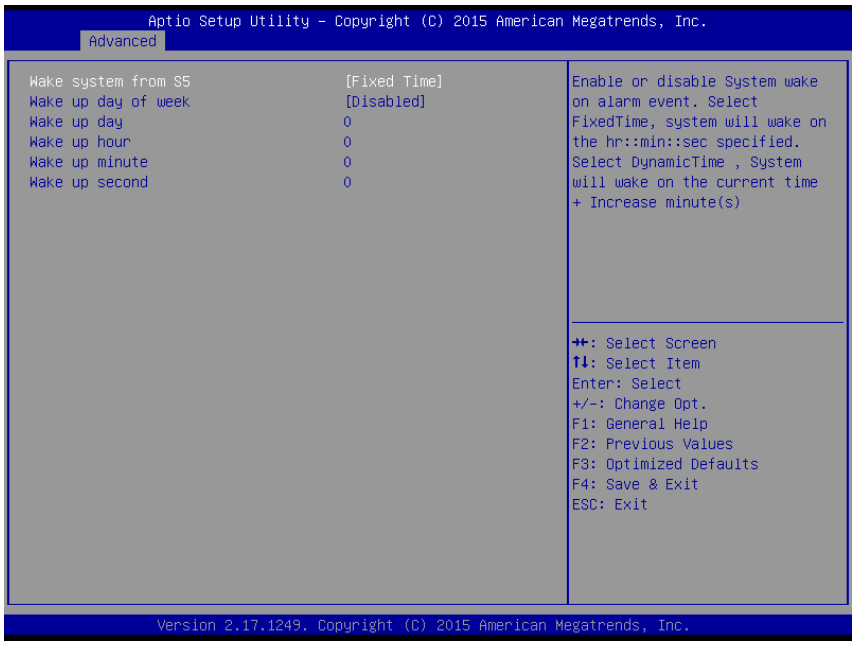
Item	Option	Description
Smart Fan Function	Enabled, Disabled**[Default]**	Enables or Disables Smart Fan

3.6.2.3.1 Smart Fan Mode Configuration



Item	Option	Description
CPU Smart Fan Mode	Manual Mode**[Default]**, Mode 01 Mode 02 Mode 03 Mode 04 Mode 05 Mode 06 Mode 07 Mode 08	CPU Smart Fan Mode Select.
Fan PWM	0-255**[Default]**	Fan PWM duty.

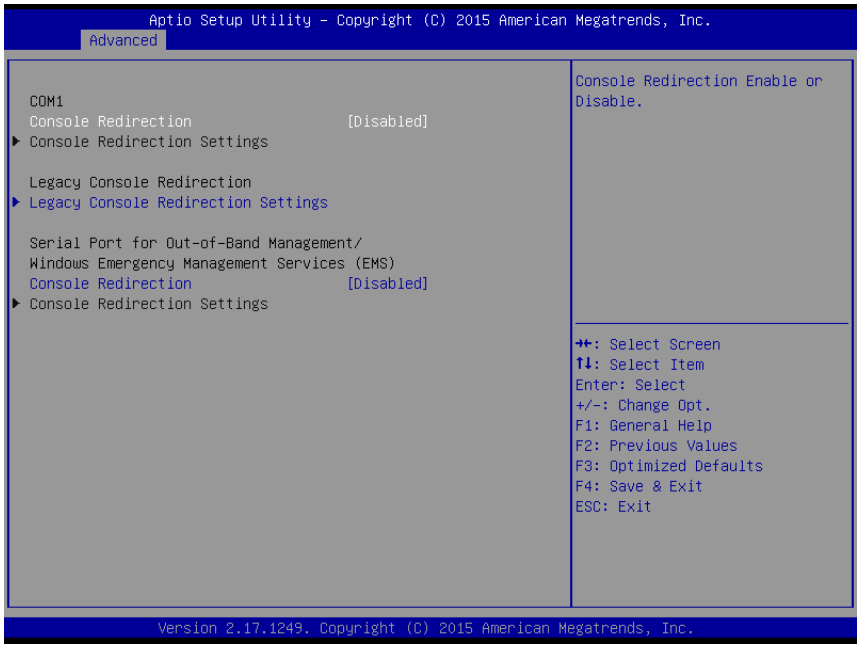
3.6.2.4 S5 RTC Wake settings



Item	Options	Description
Wake system from S5	Disabled**[Default]**, Fixed Time Dynamic Time	Enable or disable System wake on alarm event. Select Fixed Time, system will wake on the hr::min::sec specified. Select Dynamic Time, System will wake on the current time + Increase minute(s).
Wake up day of week	Disabled**[Default]**, Monday-Friday Monday-Saturday	Wake up day of week. (Monday-Friday) or (Monday-Saturday).
Wake up day	1-31	Select 0 for daily system wake up 1-31 for which day of the month that you would like the system to wake up.
Wake up hour	0-23	Select 0-23 For example enter 3 for 3am and 15 for 3pm.

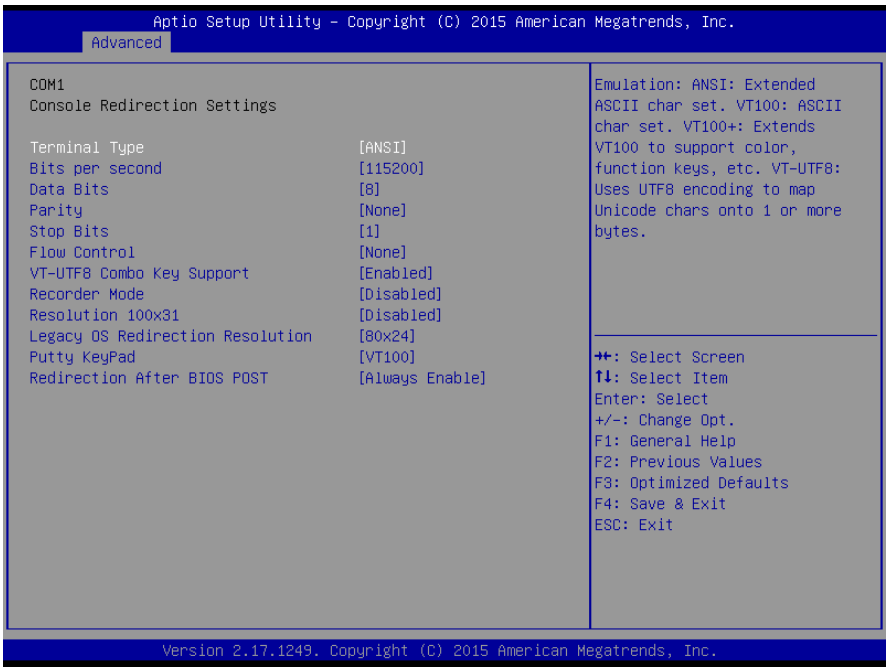
Wake up minute	0-60	Select 0-60 For example enter 3 for 3min.
Wake up second	0-60	Select 0-60 For example enter 3 for 3sec.

3.6.2.5 Serial Port Console Redirection



Item	Options	Description
Console Redirection	Disabled**[Default]**, Enabled	Console Redirection Enable or Disable.

3.6.2.5.1 COM1

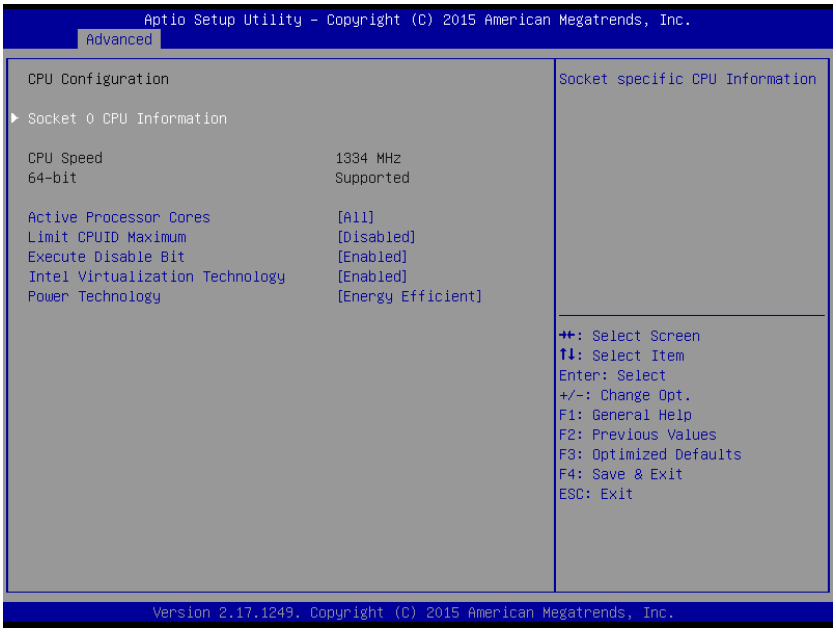


Item	Option	Description
Terminal Type	VT100 VT100+ VT-UTF8 ANSI**[Default]**	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Bits per second	9600 19200 38400 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**[Default]**	Data Bits.
Parity	None**[Default]** Even Odd Mark Space	A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 0. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.
Stop Bits	1**[Default]** 2	Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
Flow Control	None**[Default]** Hardware RTS/CTS	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can

		be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
VT-UTF8 Combo Key Support	Enabled**[Default]**, Disabled	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.
Recorder Mode	Enabled Disabled**[Default]**,	With this mode enabled only text will be sent. This is to capture Terminal data.
Resolution 100x31	Enabled Disabled**[Default]**,	Enables or disables extended terminal resolution.
Legacy OS Redirection Resolution	80x24**[Default]** 80x25	On Legacy OS, the Number of Rows and Columns supported redirection.
Putty KeyPad	VT100**[Default]** LINUX XTERMR6 SCO ESCN VT400	Select Function Key and KeyPad on Putty.
Redirection After BIOS POST	Always Enable**[Default]** BootLoader	The Settings specify if BootLoader is selected then Legacy console redirection is disabled before booting to Legacy OS. Default value is Always Enable which means Legacy console Redirection is enabled for Legacy OS.

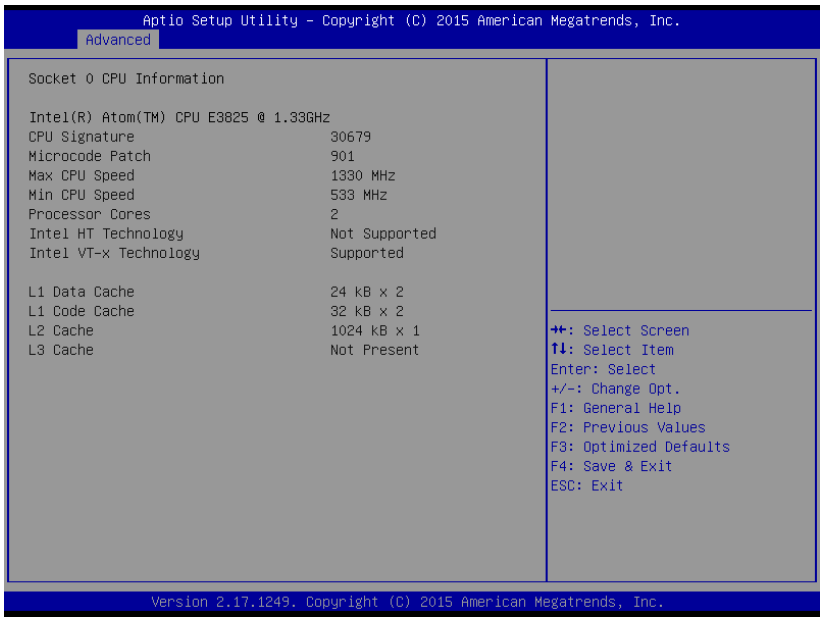
3.6.2.6 CPU Configuration

Use the CPU configuration menu to view detailed CPU specification and configure the CPU.

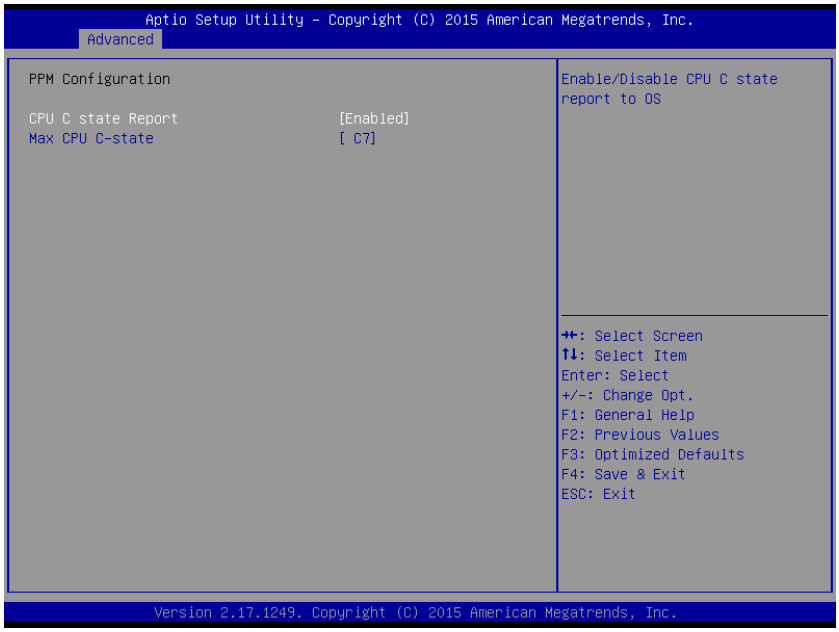


Item	Options	Description
Active Processor Cores	All**[Default]** 1	Number of cores to enable in each processor package.
Limit CPUID Maximum	Disabled**[Default]**, Enabled	Disabled for Windows XP.
Execute Disable Bit	Disabled, Enabled**[Default]**	XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.)
Intel Virtualization Technology	Disabled, Enabled**[Default]**	When enabled, a VMM can utilize the additional hardware capabilities provide by Vanderpool Technology.
Power Technology	Disable Energy Efficient**[Default]** Custom	Enable the power management features.

3.6.2.6.1 Socket 0 CPU Information

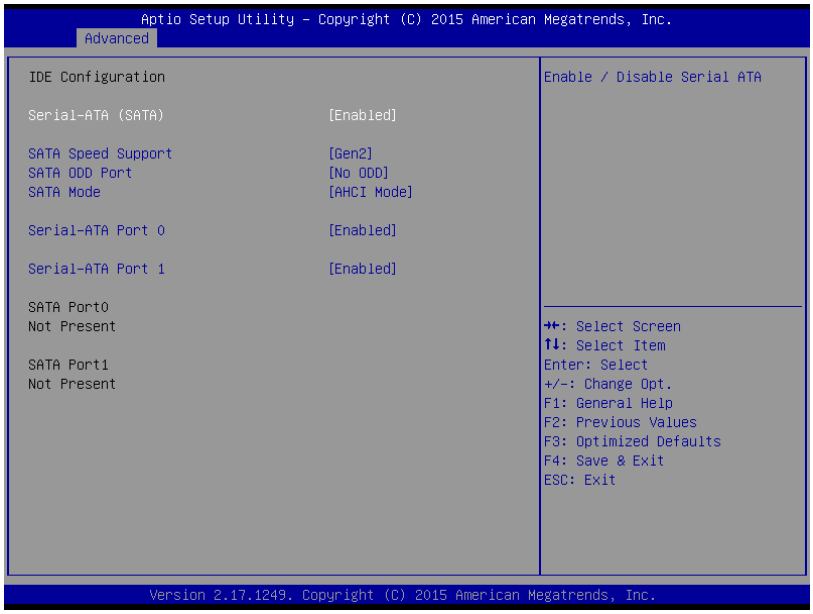


3.6.2.7 PPM configuration



Item	Option	Description
CPU C state Report	Enabled**[Default]** Disabled	Enable/Disable CPU C State report to OS.
Max CPU C-state	C7**[Default]** C6 C1	This option controls Max C state that the processor will support.

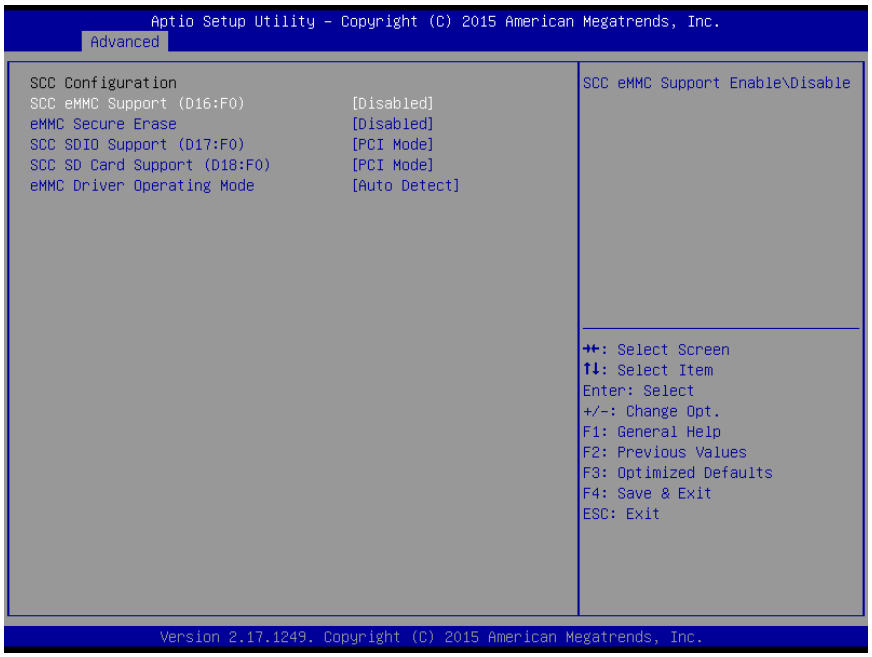
3.6.2.8 IDE Configuration



EQM-BYT2

Item	Options	Description
Serial-ATA (SATA)	Enabled**[Default]** Disabled	Enable/Disable Serial ATA.
SATA Speed Support	Gen1 Gen2**[Default]**	SATA Speed Support Gen1 or Gen2.
SATA ODD Port	Port0 ODD Port1 ODD No ODD**[Default]**	SATA ODD is Port0 or Port1.
SATA Mode	IDE Mode AHCI Mode**[Default]**	Select IDE/AHCI.
Serial-ATA Port 0/1	Enabled**[Default]** Disabled	Enable/Disable Serial ATA Port 0/1.

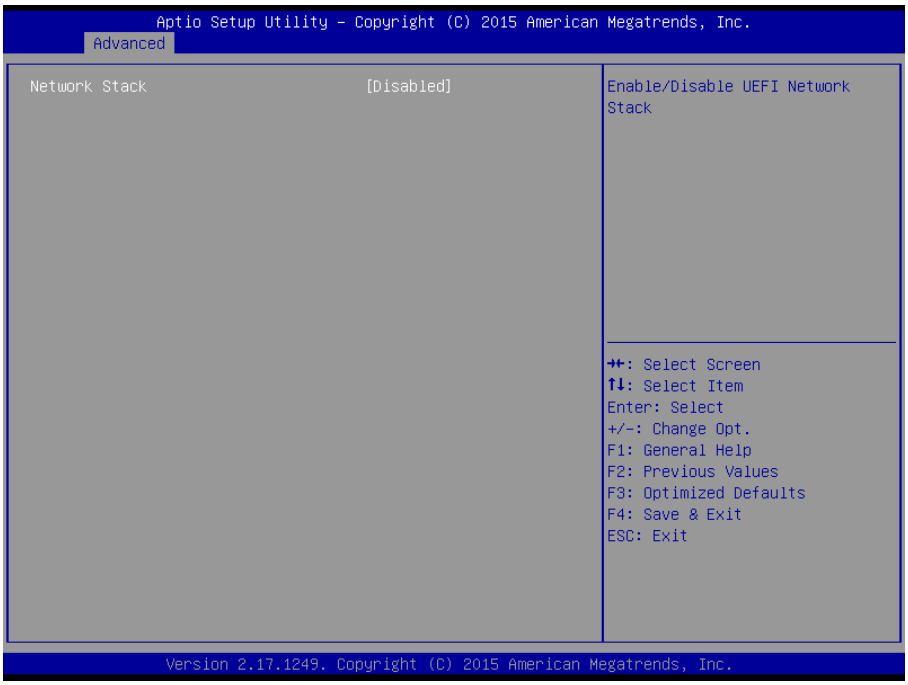
3.6.2.9 LPSS & SCC Configuration

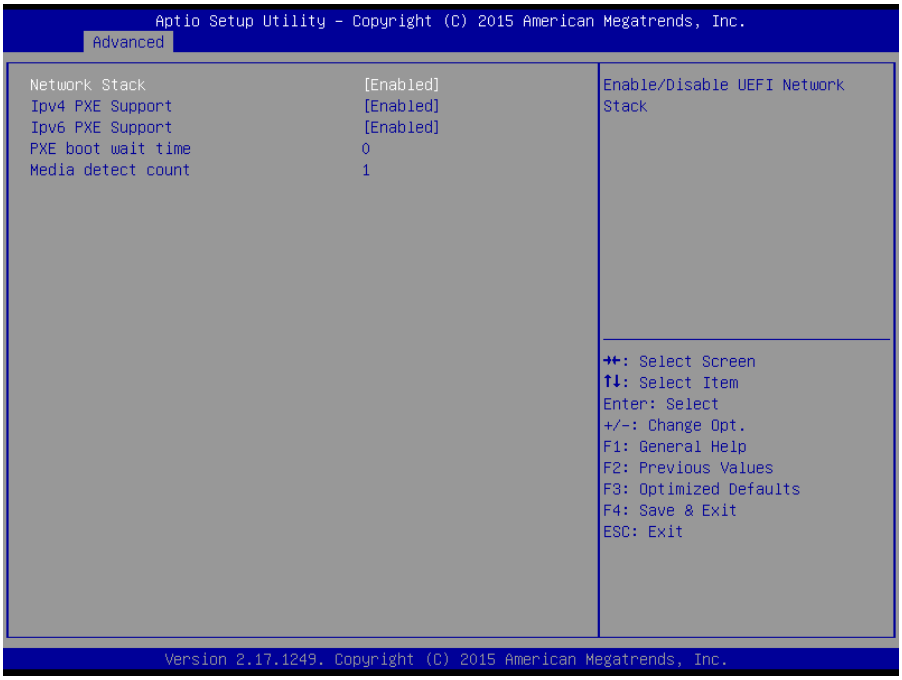


Item	Options	Description
LPSS & SCC Devices Mode	ACPI Mode**[Default]** PCI Mode	LPSS SCC Device Mode Settings.
SCC eMMC Support	Enable eMMC 4.5 Support Enable eMMC 4.41 Support eMMC AUTO MODE**[Default]** Disabled	SCC eMMC Support Enable/Disable.
SCC eMMC 4.5 DDR50 Support	Enabled**[Default]** Disabled	SCC eMMC 4.5 DDR50 Support Enable/Disable.
SCC eMMC 4.5 HS200 Support	Enabled**[Default]** Disabled	SCC eMMC 4.5 HS200 Support Enable/Disable.
SCC SDIO Support	Enabled**[Default]** Disabled	SCC SDIO Support Enable/Disable.
SCC SD Card Support	Enabled**[Default]** Disabled	SCC SD Card Support Enable/Disable.

SDR25 Support for SDCard	Enabled Disabled**[Default]**	Disable/Enable SDR25 Capability in SD Card controller.
DDR50 Support for SDCard	Enabled Disabled**[Default]**	Disable/Enable DDR50 Capability in SD Card controller.

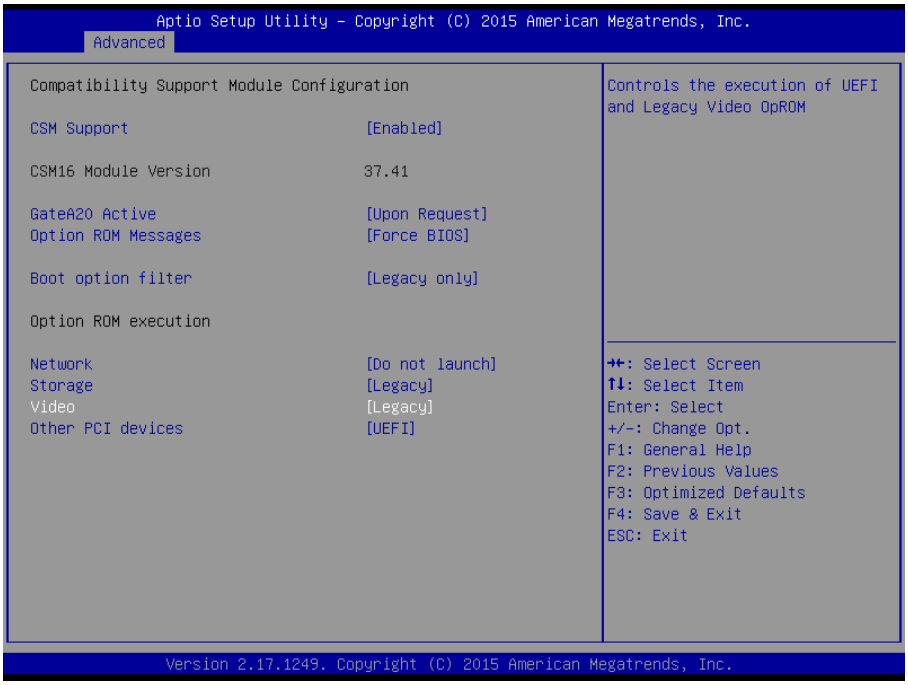
3.6.2.10 Network Stack Configuration





Item	Options	Description
Network Stack	Enabled Disabled**[Default]**	Enable/Disable UEFI Network Stack.
Ipv4 PXE Support	Enabled**[Default]** Disabled	Enable Ipv4 PXE Boot Support. If disabled IPV4 PXE boot option will not be created.
Ipv6 PXE Support	Enabled**[Default]** Disabled	Enable Ipv6 PXE Boot Support. If disabled IPV6 PXE boot option will not be created.
PXE boot wait time	0	Wait time to press ESC key to about the PXE boot.
Media detect count	0-1	Number of times presence of media will be checked.

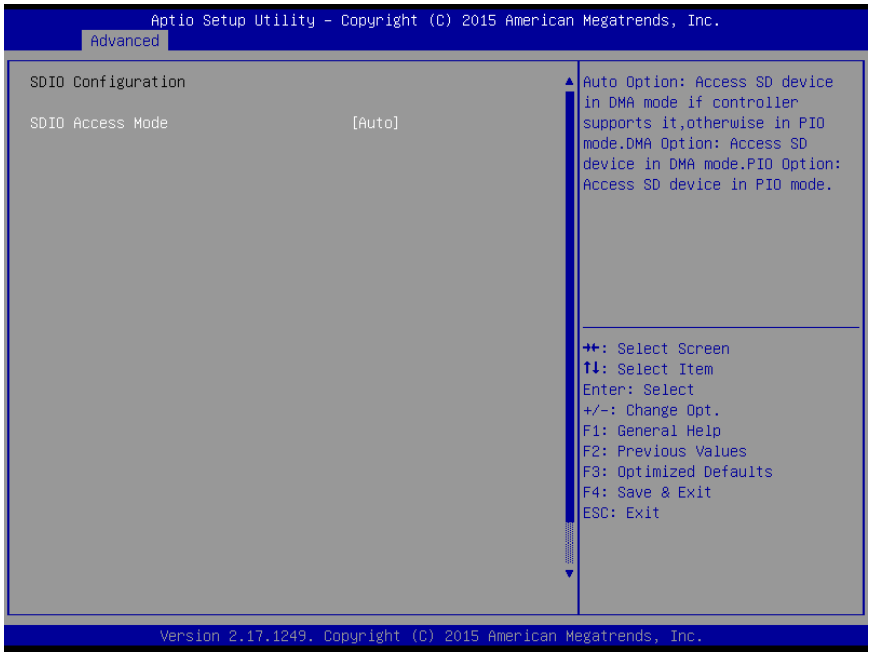
3.6.2.11 CSM Configuration



Item	Options	Description
CSM Support	Enabled**[Default]** Disabled,	Enable/Disable CSM Support.
GateA20 Active	Upon Request**[Default]** Always	UPON REQUEST – GA20 can be disabled using BIOS services. ALWAYS – go not allow disabling GA20; this option is useful when any RT code is executed above 1MB.
Option ROM Messages	Force BIOS**[Default]** Keep Current	Set display mode for Option ROM.
Boot option filter	UEFI and Legacy Legacy only**[Default]** UEFI only	This option controls Legacy/UEFI ROMs priority.

Network	Do not launch**[Default]** UEFI Legacy	Controls the execution of UEFI and Legacy PXE OpROM.
Storage	Do not launch UEFI Legacy**[Default]**	Controls the execution of UEFI and Legacy Storage OpROM.
Video	Do not launch UEFI Legacy**[Default]**	Controls the execution of UEFI and Legacy Video OpROM.
Other PCI devices	Do not launch UEFI**[Default]** Legacy	Determines OpROM execution policy for devices other than Network, Storage, or Video.

3.6.2.12 SDIO Configuration



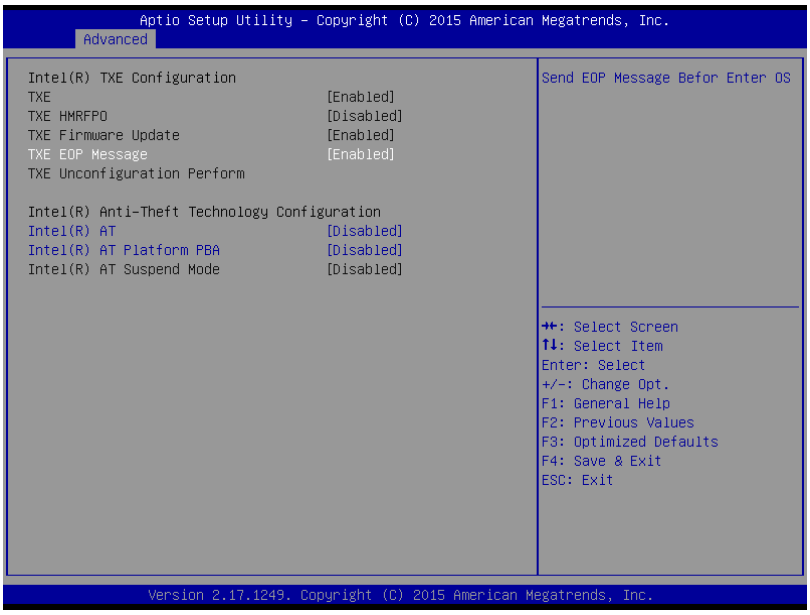
Item	Options	Description
SDIO Access Mode	Auto**[Default]** DMA PIO	Auto Option: Access SD device in DMA mode if controller supports it, otherwise in PIO mode. DMA Option: Access SD device in DMA mode. PIO Option: Access SD device in PIO mode.

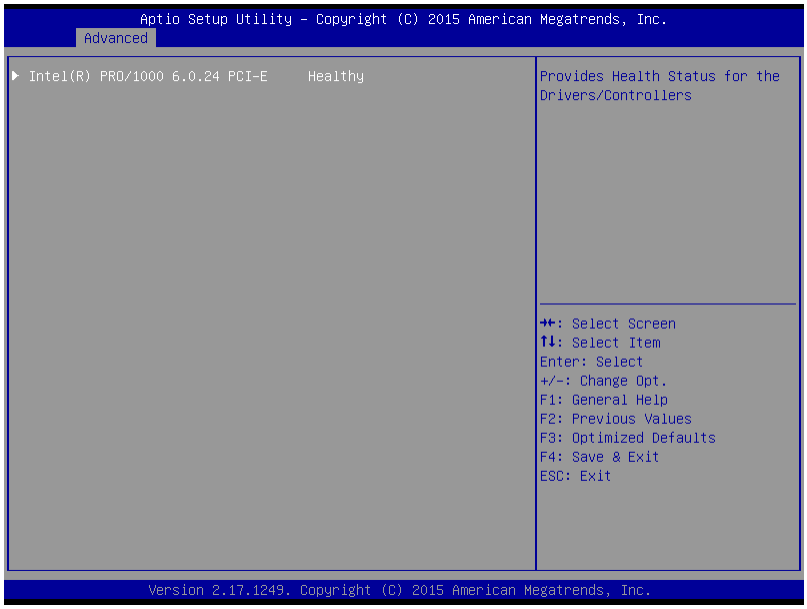
3.6.2.13 USB Configuration

The USB configuration menu is used to read USB configuration information and configure USB.

Item	Options	Description
Legacy USB Support	Enabled**[Default]** Disabled Auto	Enables Legacy USB support. AUTO disables legacy support if no USB devices are connected. DISABLE will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled**[Default]** Disabled	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
EHCI Hand-off	Enabled Disabled**[Default]**	This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.
USB Mass Storage Driver Support	Enabled**[Default]** Disabled	Enable/Disable USB Mass Storage Driver Support.
USB transfer time-out	1sec / 5sec 10sec / 20sec**[Default]**	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10sec / 20sec**[Default]** 30sec / 40sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto**[Default]** Manual	Maximum time the device will take before it properly reports itself to the Host Controller. “Auto” uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.
Mass Storage Devices	Auto**[Default]** Floppy Forced FDD Hard Disk CD-ROM	Mass storage device emulation type. ‘AUTO’ enumerates devices according to their media format. Optical drives are emulated as ‘CDROM’, drives with no media will be emulated according to a drive type.

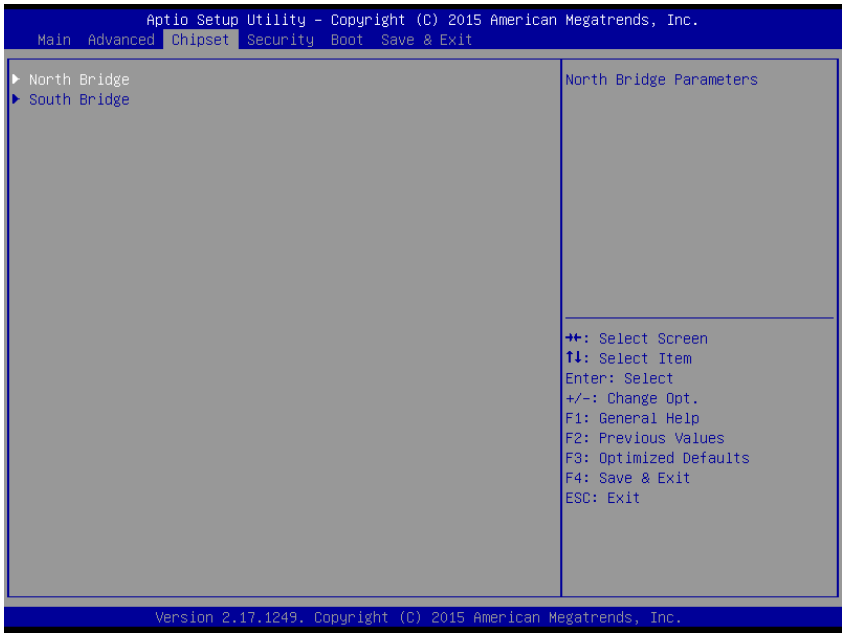
3.6.2.14 Security Configuration



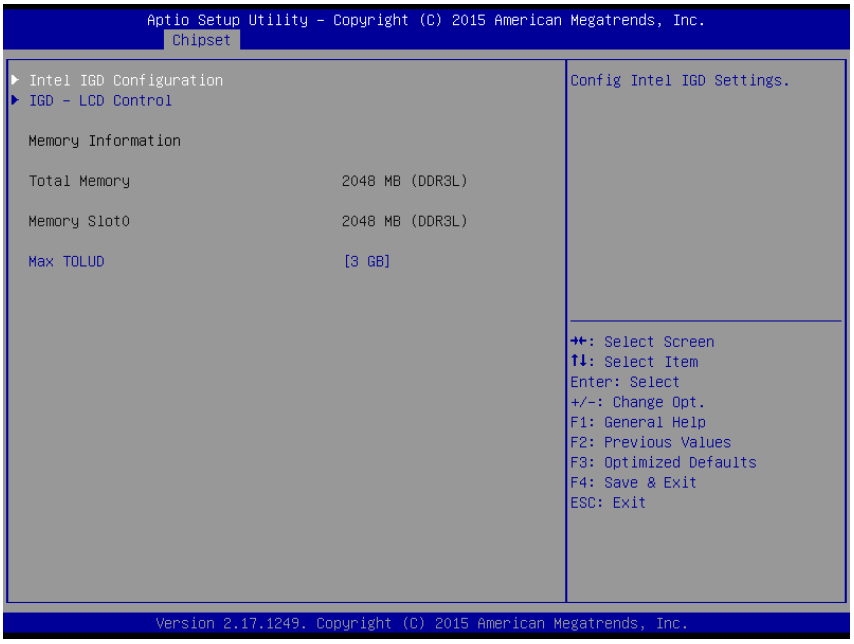


Item	Options	Description
TXE EOP Message	Enabled**[Default]** Disabled	Send EOP Message Before Enter OS.
Intel® AT	Enabled Disabled**[Default]**	Enable/Disable BIOS AT Code from Running.
Intel® AT Platform PBA	Enabled Disabled**[Default]**	Enable/Disable BIOS AT Code from Running.

3.6.3 Chipset

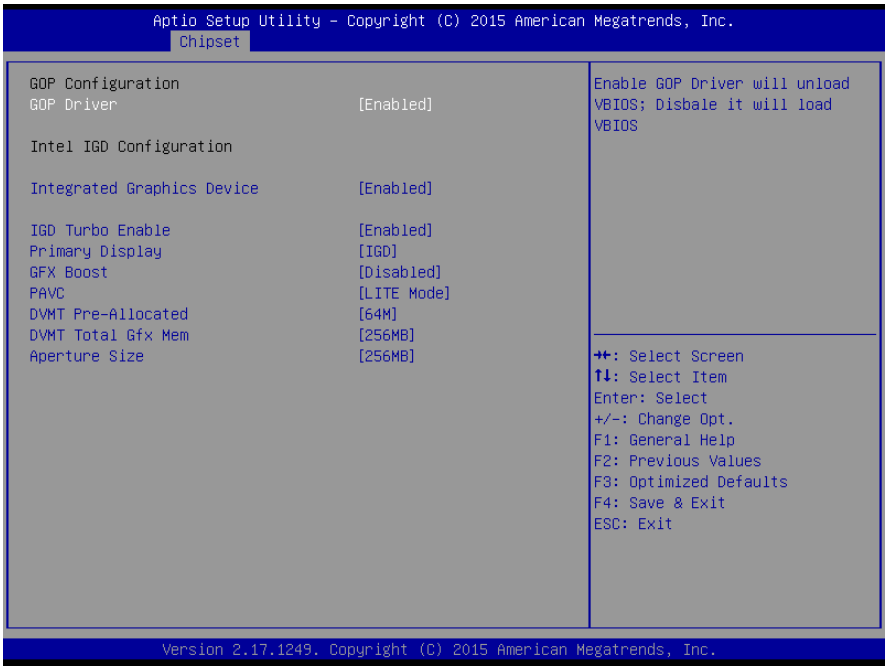


3.6.3.1 North Bridge



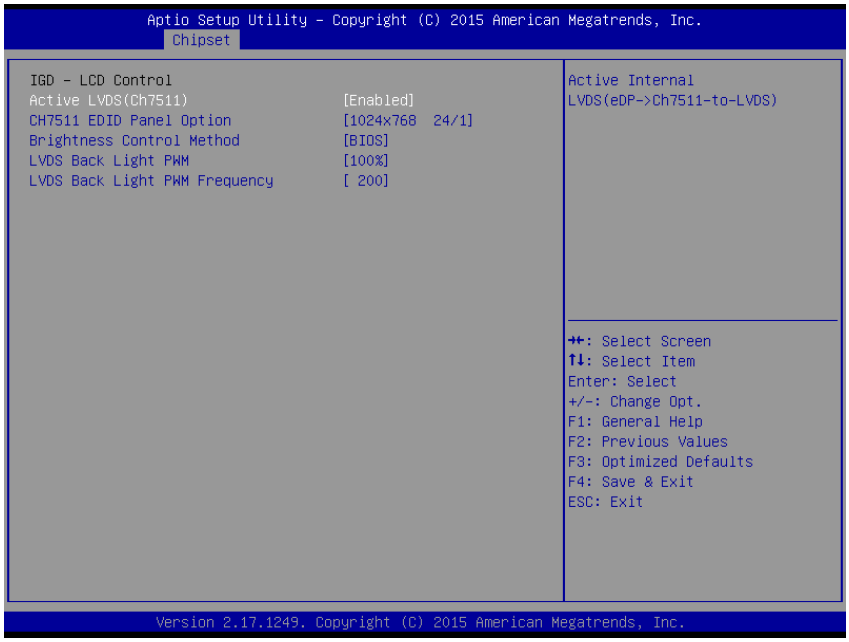
Item	Option	Description
Max TOLUD	Dynamic 2 GB 2.25 GB 2.5 GB 2.75 GB 3 GB**[Default]**	Maximum Value of TOLUD.

3.6.3.1.1 Intel IGD Configuration



Item	Option	Description
GOP Driver	Enabled**[Default]** Disabled	Enable GOP Driver will unload VBIOS; Disable it will load VBIOS.
Integrated Graphics Device	Enabled**[Default]** Disabled	Enable: Enable Integrated Graphics Device (IGD) when selected as the Primary Video Adaptor. Disable: Always disable IGD.
IGD Turbo Enable	Enabled**[Default]** Disabled	Enable: IGD Turbo Enable. Disable: IGD Turbo Disable.
Primary Display	Auto IGD**[Default]** PCIe	Select which of IGD/PCI Graphics device should be Primary Display.
GFX Boost	Enabled Disabled**[Default]**	Enable/Disable GFX Boost.
PAVC	Disabled LITE Mode**[Default]** SERPENT Mode	Enable/Disable Protected Audio Video Control.
DVMT Pre-Allocated	64M**[Default]**/96M128M/160M/192M/ 224M/256M/288M/320M/352M/ 384M/416M/448M/ 480M/512M	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 DVMT 5.0 Total Graphics Memory size used by the Internal Graphics Device.
Aperture Size	128MB 256MB**[Default]**	Select the Aperture Size.

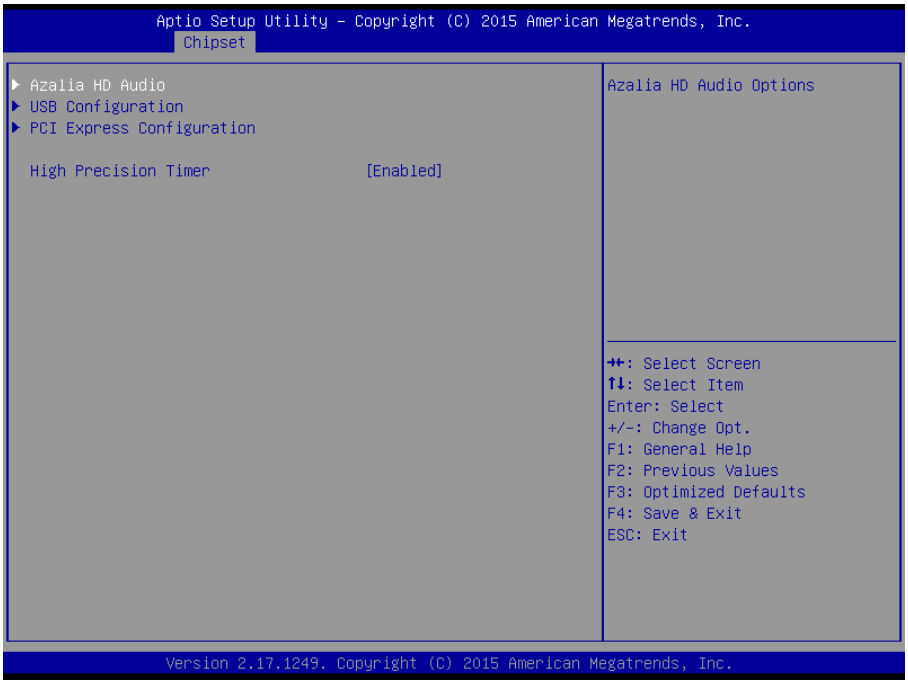
3.6.3.1.2 IGD-LCD Control



Item	Option	Description
Active LVDS (Ch7511)	Enabled**[Default]** Disabled	Active Internal LVDS(eDP->Ch7511-to-LVDS).
CH7511 EDID Panel Option	1024x768 24/1**[Default]** 800x600 18/1 1024x768 18/1 1366x768 18/1 1024x600 18/1 1280x800 18/1 1920x1200 24/2 640x480 18/1 800x480 18/1 1920x1080 18/2 1280x1024 24/2 1440x900 18/2 1600x1200 24/2 1366x768 24/1 1920x1080 24/2 1680x1050 24/2	Port1-EDP to LVDS(Chrotel 7511) Panel EDID Option.
Brightness Control Method	BIOS**[Default]** OS Brightness bar	LVDS Brightness Control Method. 1.BIOS 2.OS Brightness bar.
LVDS Back Light PWM	00% 25% 50% 75% 100%**[Default]**	Select LVDS back light PWM duty.
LVDS Back Light PWM Frequency	200**[Default]** 300 400 500 700 1k	Select LVDS back light PWM Frequency.

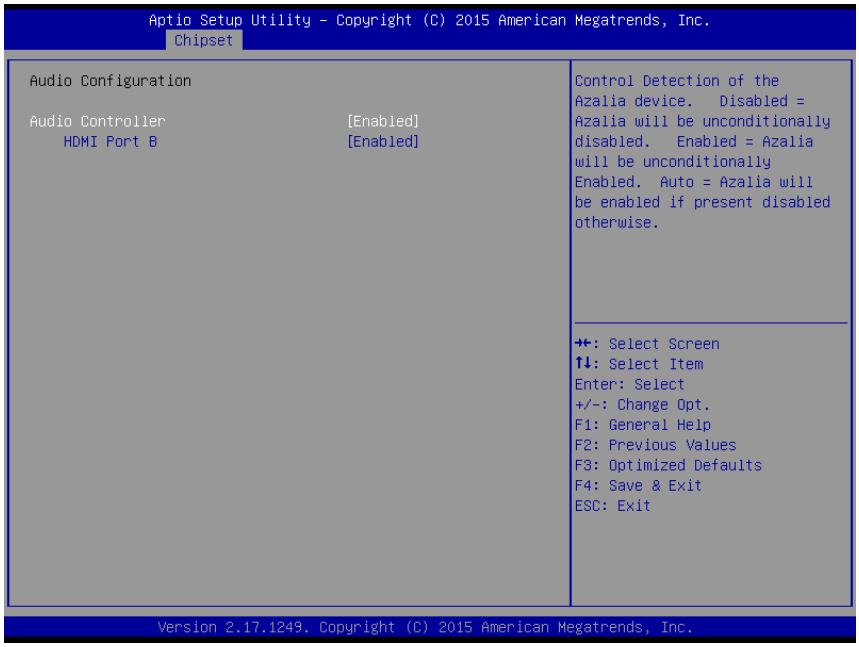
	2k 3k 5k	

3.6.3.2 South Bridge



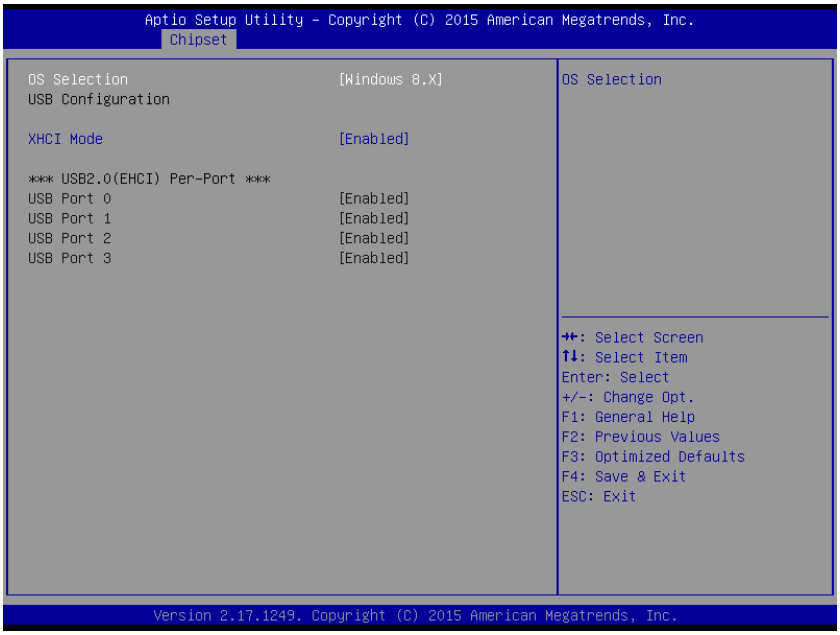
Item	Option	Description
High Precision Timer	Enabled**[Default]** Disabled	Enable or Disable the High Precision Event Timer.

3.6.3.2.1 Azalia HD Audio



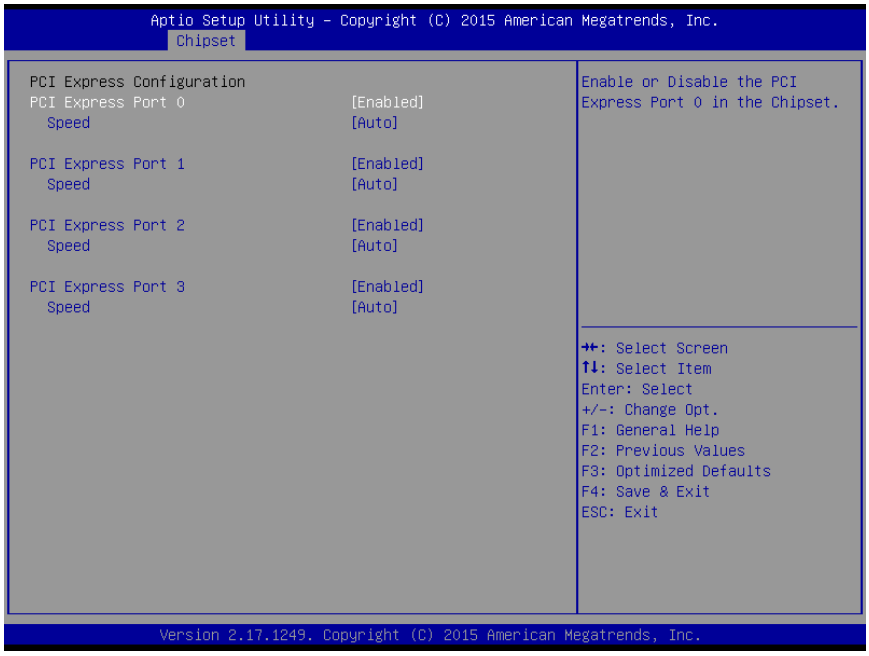
Item	Option	Description
Audio Controller	Enabled**[Default]** Disabled	Control Detection of the Azalia device. Disabled = Azalia will be unconditionally disabled. Enabled = Azalia will be unconditionally Enabled. Auto = Azalia will be enabled if present disabled otherwise
HDMI Port B	Enabled**[Default]** Disabled	Enable/Disable HDMI Port B.

3.6.3.2.2 USB Configuration



Item	Option	Description
OS Selection	Windows 8.X**[Default]** Android Window 7	OS Selection.
XHCI Mode	Enabled**[Default]** Disabled	Mode of operation of xHCI controller.

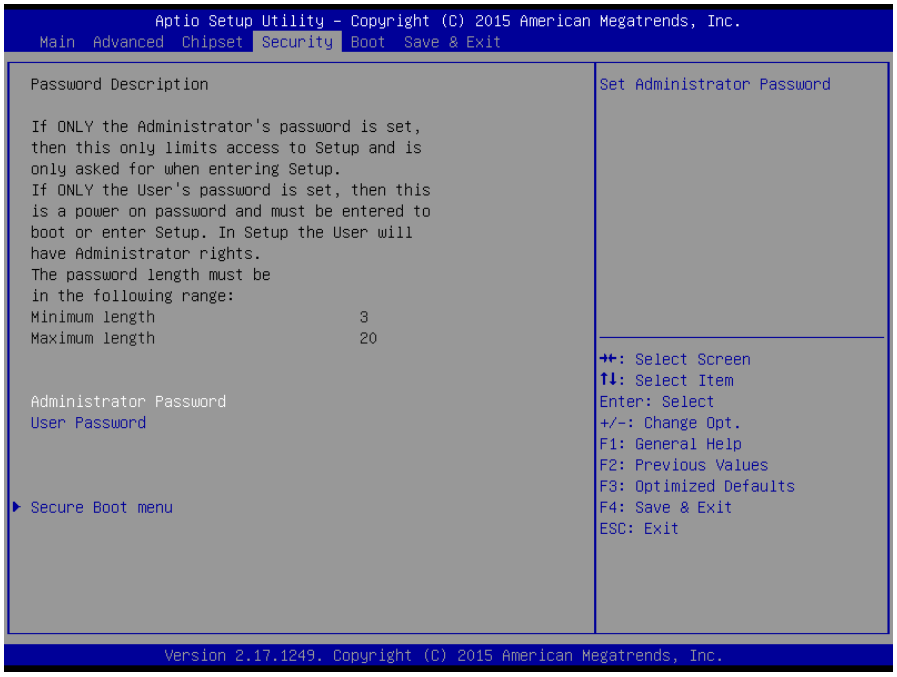
3.6.3.2.3 PCI Express Configuration



Item	Option	Description
PCI Express Port 0/1/2/3	Enabled**[Default]** Disabled	Enable or Disable the PCI Express Port 0/1/2/3 in the Chipset.
Speed	Auto**[Default]** Gen 2 Gen 1	Configure PCIe Port Speed.

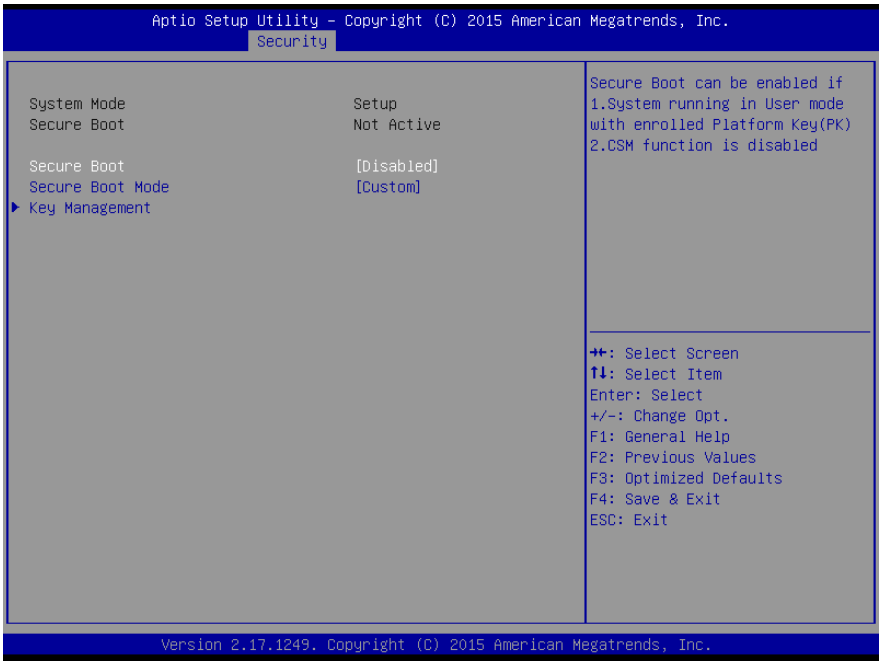
3.6.4 Security

Use the Security menu to set system and user password.



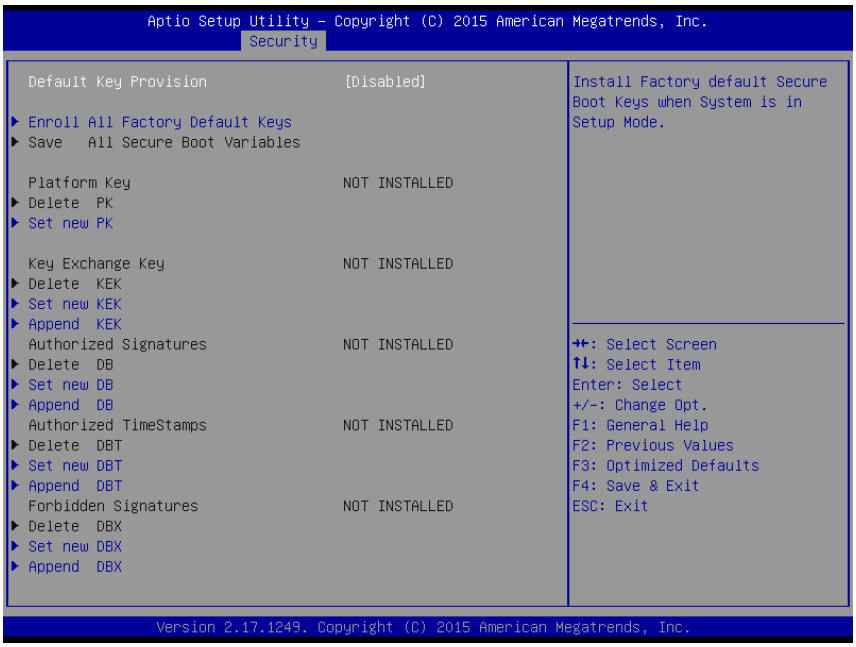
Item	Description
Administrator Password	This setting specifies a password that must be entered to access the BIOS Setup Utility. If only the Administrator's password is set, then this only limits access to the BIOS setup program and is only asked for when entering the BIOS setup program. By default, no password is specified.
User Password	This setting specifies a password that must be entered to access the BIOS Setup Utility or to boot the system. If only the User's password is set, then this is a power on password and must be entered to boot or enter the BIOS setup program. In the BIOS setup program, the User will have Administrator rights. By default, no password is specified.

3.6.4.1 Secure Boot menu



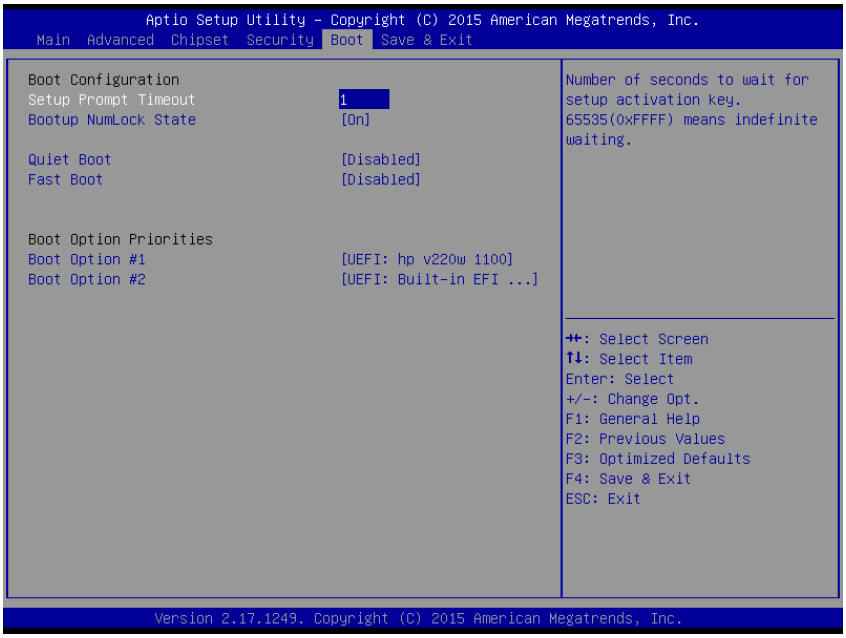
Item	Option	Description
Secure Boot	Enabled Disabled**[Default]**	Secure Boot can be enabled if 1. System running in User mode with enrolled Platform Key (PK)2. CSM function is disabled.
Secure Boot Mode	Standard Custom**[Default]**	Secure Boot mode selector. 'Custom' Mode enables users to change Image Execution policy and manage Secure Boot Keys.

3.6.4.1.1 Key Management



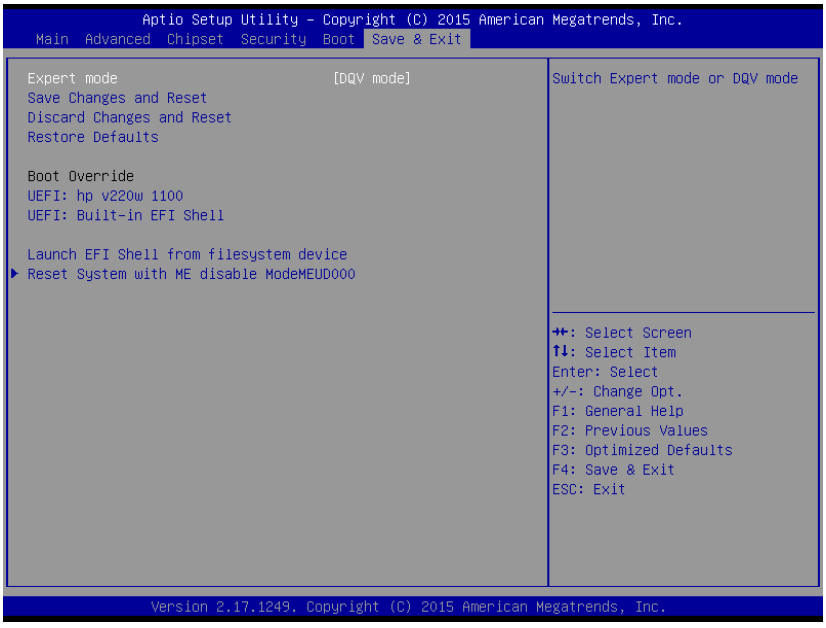
Item	Option	Description
Default Key Provision	Enabled Disabled**[Default]**	Install Factory default Secure Boot Keys when System is in Setup Mode.

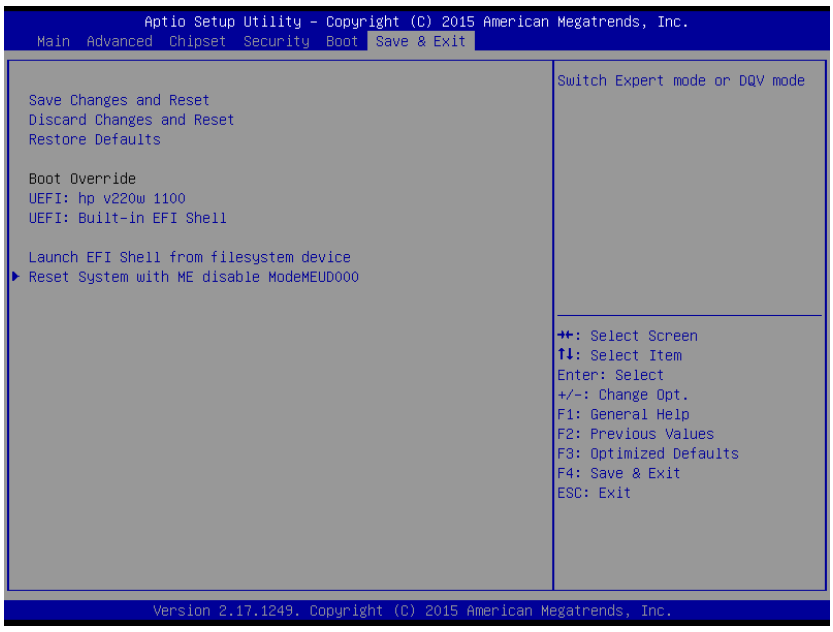
3.6.5 Boot settings



Item	Option	Description
Setup Prompt Timeout	1~65535	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On**[Default]** Off	Select the keyboard NumLock state
Quiet Boot	Enabled Disabled**[Default]**	Enables or Disables Quiet Boot Option
Fast Boot	Enabled Disabled**[Default]**	Enables or Disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options
Boot Option #1/2	Sets the system boot order	

3.6.6 Save & Exit





3.6.6.1 Expert mode

Switch Expert mode or DQV mode.
Option: DQV mode **[Default]**, Expert mode.

3.6.6.2 Save Changes and Reset

Reset the system after saving the changes.

3.6.6.3 Discard Changes and Reset

Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The setup program then exits and reboots the controller.

3.6.6.4 Restore Defaults

This option restores all BIOS settings to the factory default. This option is useful if the controller exhibits unpredictable behavior due to an incorrect or inappropriate BIOS setting.

3.6.6.5 Launch EFI Shell from filesystem device

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

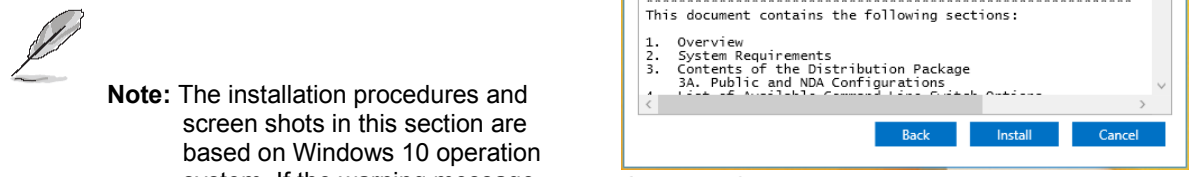
4. Drivers Installation

Note: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

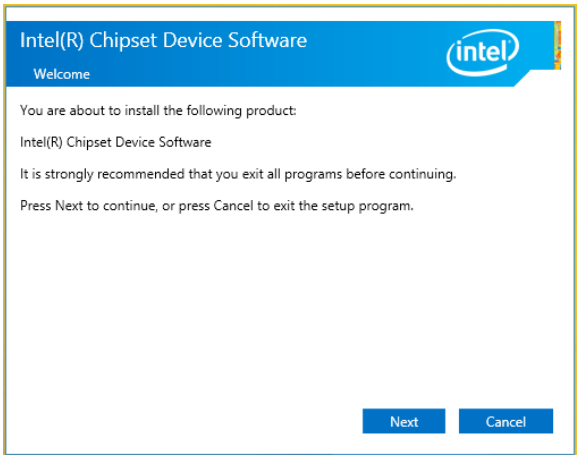
4.1 Install Chipset Driver

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of the products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\Driver_Chipset\Intel\EQM-BYT2**.

Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.

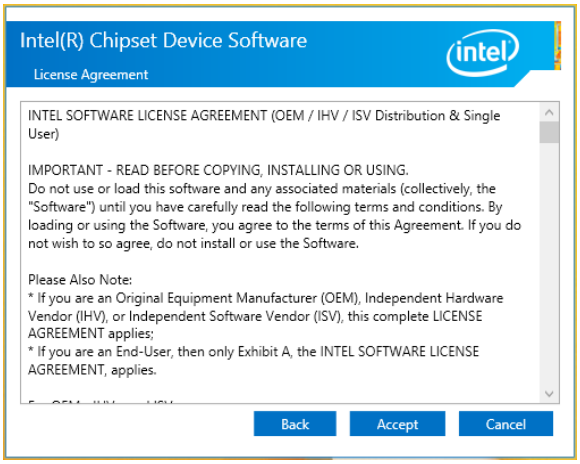


Step 3. Click **Install**.



Step 1. Click **Next** to start installation.

Step 4. Click **Finish** to complete installation.

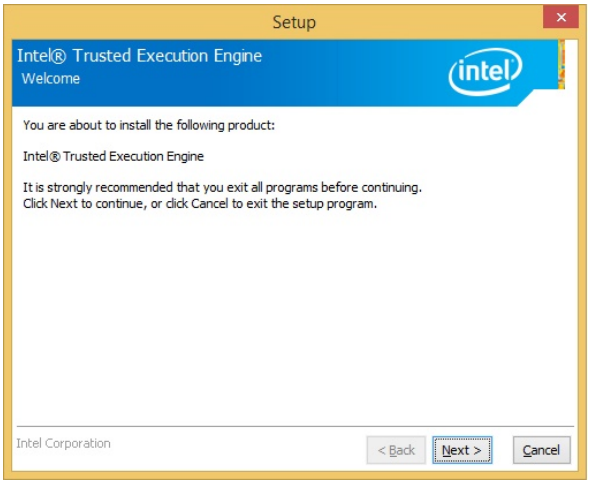


Step2. Click **Accept**.

4.2 Install TXE Driver

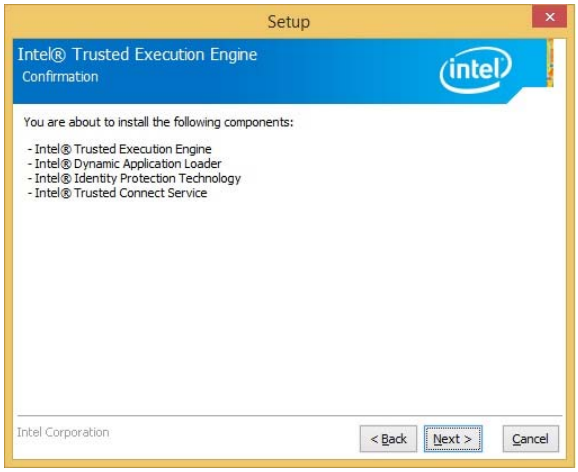
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of the products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\Utility\EQM-BYT2_TXE**.

Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.

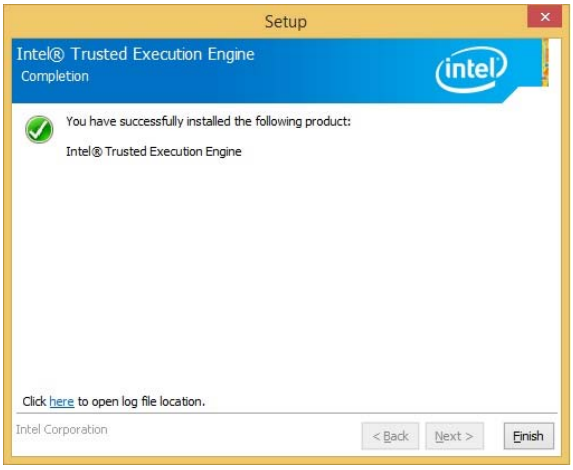


Step1. Click **Next** to start installation.

Step 2. Click **Next**.



Step 3. Click **Next** to proceed setup.

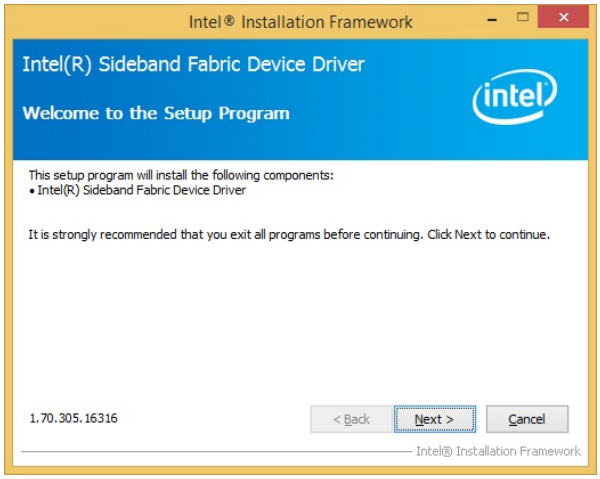


Step 4. Click **Finish** to complete setup.

4.3 Install MBI Driver

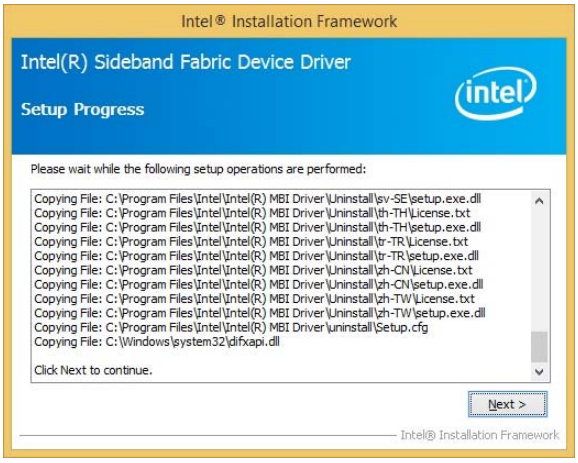
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of the products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\Utility\EQM-BYT2_MBI**.

Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



Step1. Click **Next** to start installation.

Step 2. Click **Yes**.



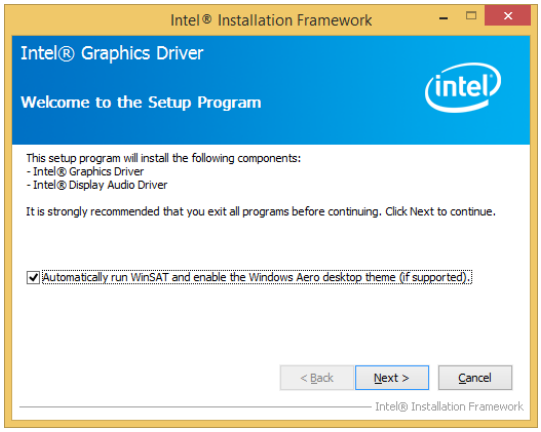
Step 3. Click **Next**.

Step 4. Click **Finish** to complete setup.

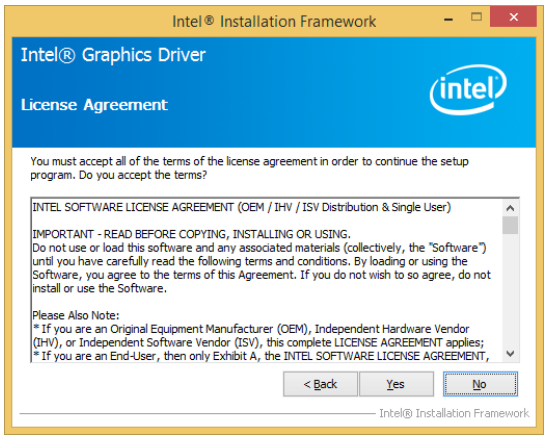
4.4 Install VGA Driver

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of the products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\VGA\EQM-BYT2**.

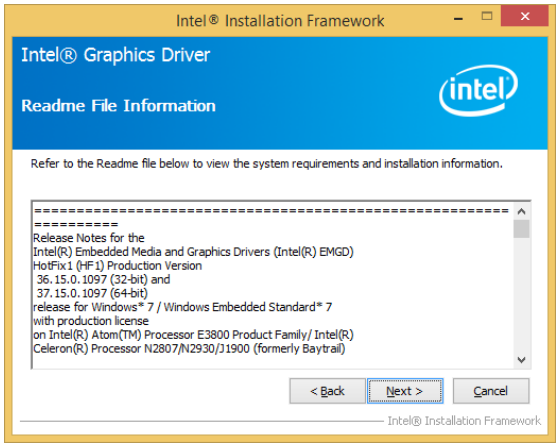
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



Step 1. Click **Next** to continue installation.



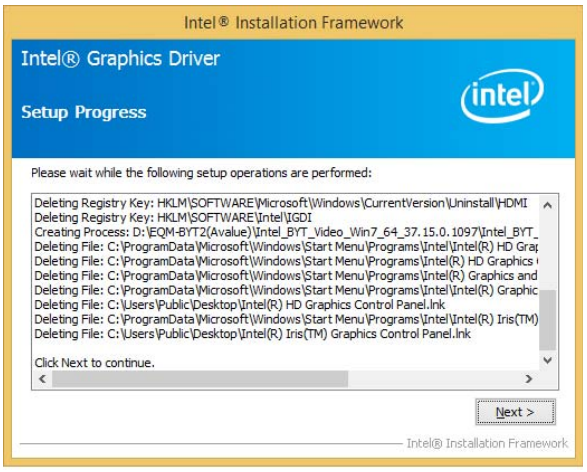
Step 2. Click **Yes** to accept license agreement.



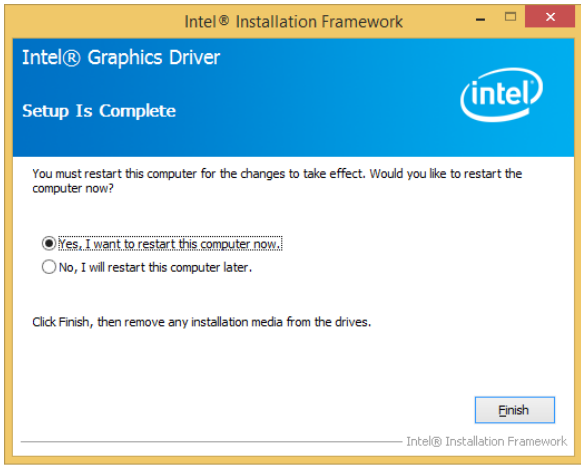
Step 3. Click **Next**.

Step 4. Click **Install**.

Step 5. Click **Install**.



Step 6. Click **Next**.

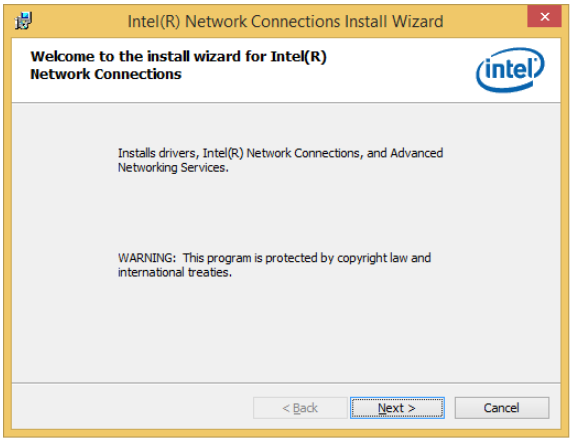


Step 7. Click **Finish** to complete installation.

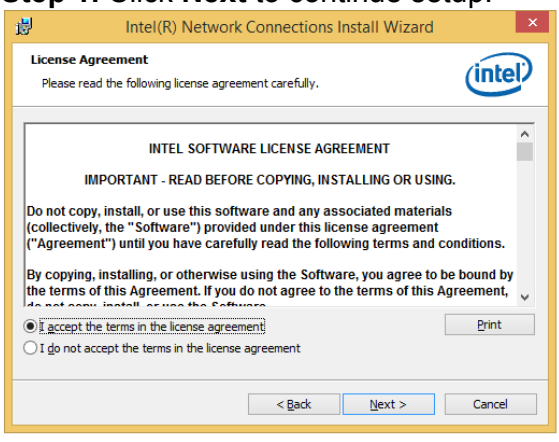
4.5 Install Ethernet Driver (For Intel I211)

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of the products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\Driver_Gigabit\Intel\I211\EQM-BYT2_LAN**.

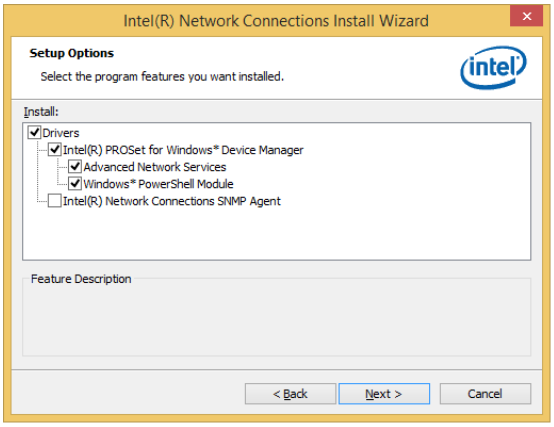
Note: The installation procedures and screen shots in this section are based on Windows 7 operation system.



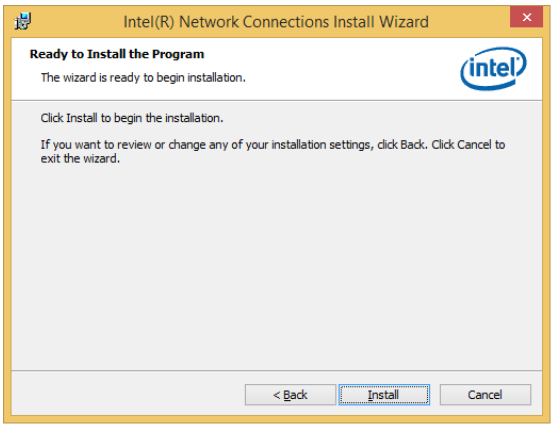
Step 1. Click **Next** to continue setup.



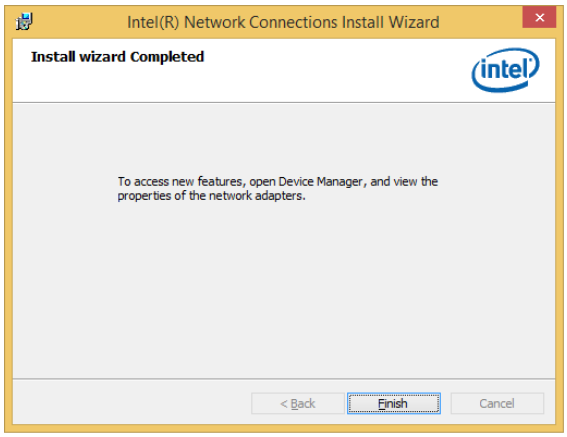
Step 2. Click **Next**.



Step 3. Click **Next**.



Step 4. Click **Install** to proceed.

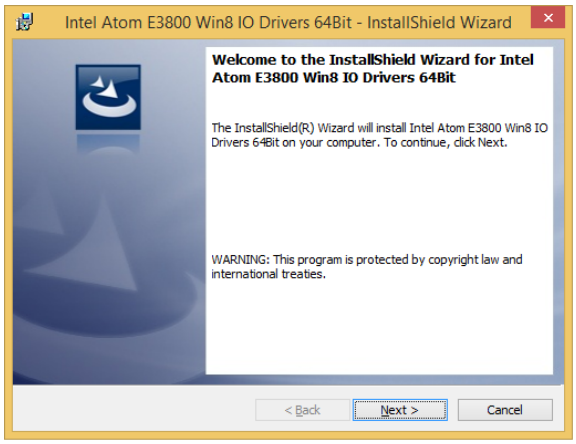


Step 5. Click **Install**.

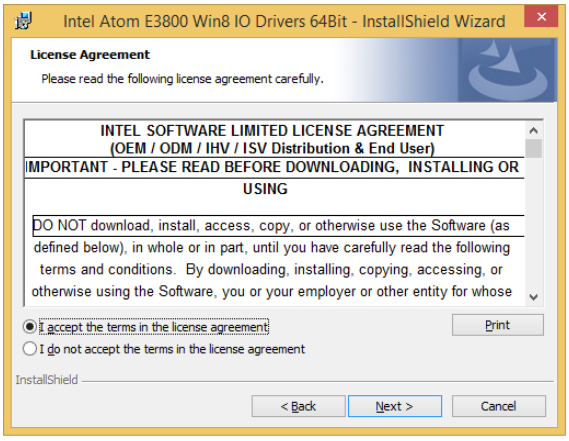
4.6 Install Serial IO Driver

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of the products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\Utility\EQM-BYT2_Serial IO**.

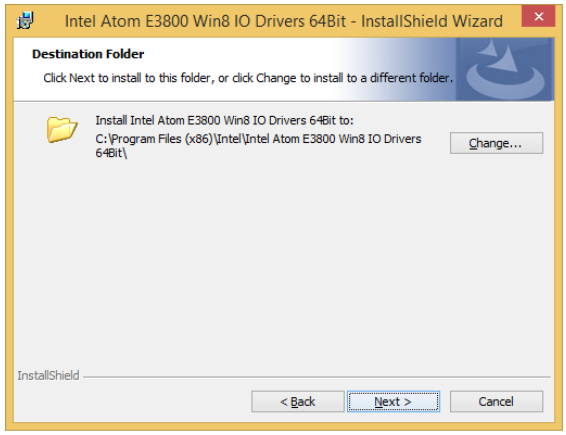
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



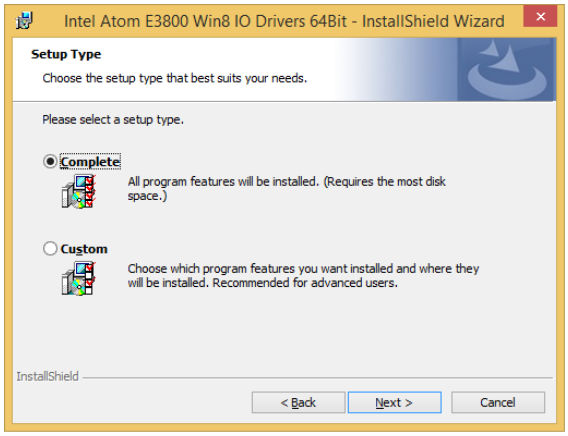
Step 1. Click **Next** to continue installation.



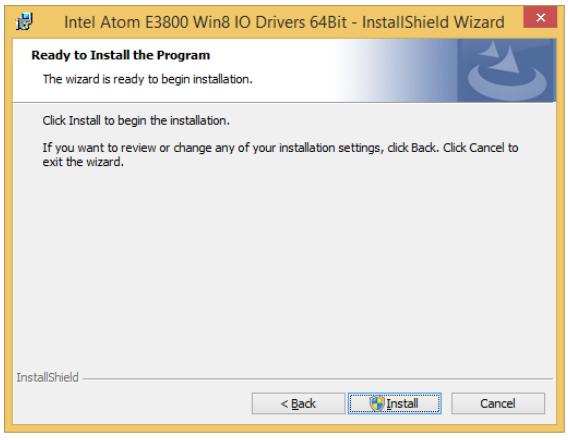
Step 2. Click **Next**.



Step 3. Click **Next**.



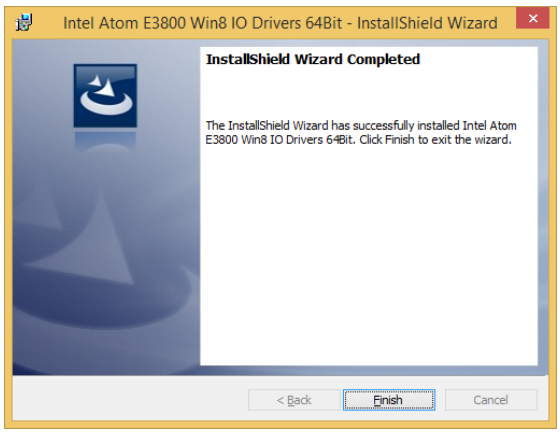
Step 4. Click **Next**.



Step 5. Click **Install**.

Step 6. Click **Install**.

Step 7. Click **OK**.

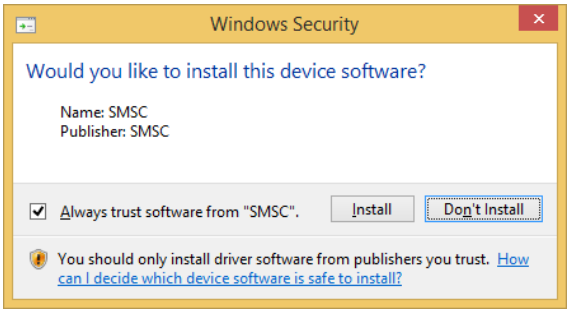


Step 8. Click **Finish** to complete installation.

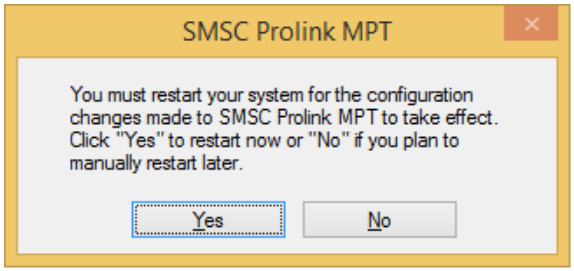
4.7 Install SMSC Driver

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of the products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\Utility\EQM-BYT2_SMSC**.

Note: The installation procedures and screen shots in this section are based on Windows 7 operation system. If the warning message appears while the installation process, click Continue to go on.

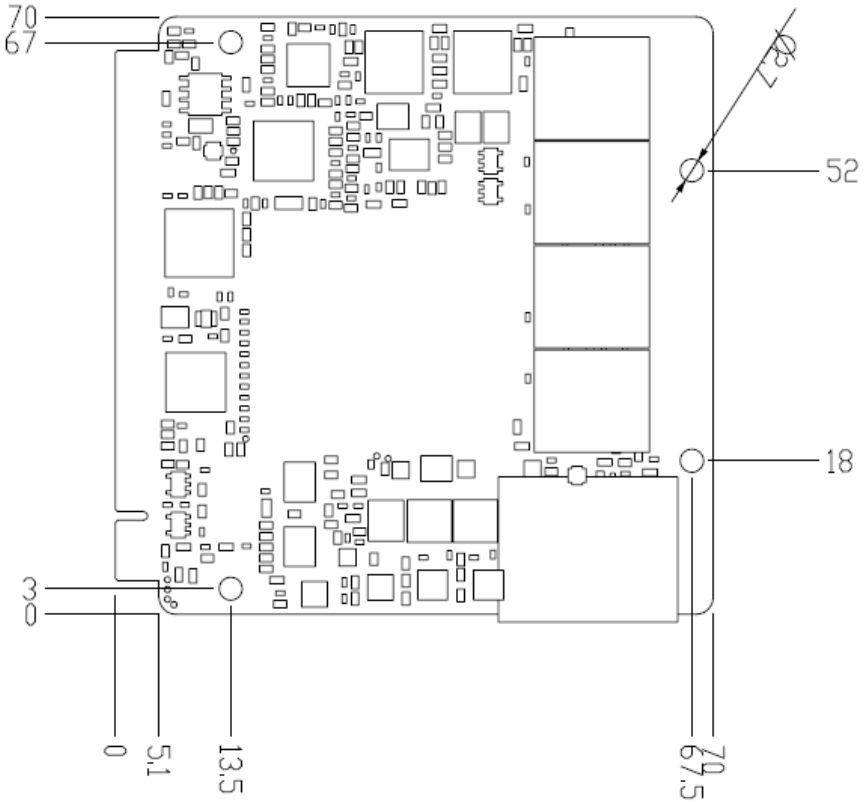


Step1. Click **Install** to start installation.



Step 2. Click **Yes** to complete setup.

4. Mechanical Drawing



Unit: mm