

ESM-BDW

5th Gen Intel® Core™ SoC Processor i7/i5/i3
Type6 COMe Compact Module

User's Manual

1st Ed – 03 July 2015

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Part No. E2047287000R

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THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRABLE OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.

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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.

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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

Before you begin installing your single board, please make sure that the following materials have been shipped:

- 1 x ESM-BDW COMe Module
- 1 x Driver/Utility DVD-ROM
- 4 x Screws



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

1.3 Document Amendment History

Revision	Date	By	Comment
1 st	July 2015	Avalue	Initial Release

1.4 Manual Objectives

This manual describes in details Avalue Technology ESM-BDW Single Board.

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 ESM-BDW series 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 NVRAM that make booting impossible. If this should happen, clear the NVRAM 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	5th Generation Low Power Intel® Core™ i7/i5/i3 and Celeron Processor System-on-Chip
BIOS	AMI uEFI 128M-bit Flash ROM
System Chipset	Intel Wildcat Point (WPT-LP) Chipset
System Memory	Two 204-pin DDR3 SODIMM socket, supports up to 16GB DDR3L 1333/1600 SDRAM
Watchdog Timer	H/W Reset, 1sec. – 65535sec. and 1sec./step
Expansion	4 PCIe x 1
I/O	
MIO	4 x Serial ATA ports 3.0 SMBus, I2C, LPC, UART, SDIO, Optional TPM 1.2/2.0
USB	8 x USB 2.0 , 2 x USB 3.0 ports
GPIO	4 Bit GPI/4 Bit GPO
EC	WDG/I2C/UART x 2 (2-wire) /HW monitor/FAN/8bit GPIO
Display	
Chipset	Intel Broadwell U-Series SOC intergrated
Resolution	eDP: eDP via CH7511B to LVDS, or eDP (Optional) DDI 1: support HDMI/DP/DVI DDI 2: DP via CH7517 to VGA, or DDI2 (BIOS SET)
Multiple Display	Dual display: VGA, LVDS (default) Triple display: VGA, LVDS, HDMI/DP/DVI
LVDS	Dual channel 18/24-bit LVDS Chrontel CH7511B (eDP to LVDS)
Resolution	DP: 3840 x 2160@60Hz
	HDMI: 4096 x 2304@24Hz
	eDP: 3840 x 2160@60Hz
	LVDS: 1920 x 1200
	VGA: 1920 x 1200
Audio	
AC97 Codec	Supports High Definition Audio interface
Ethernet	
LAN Chip	Intel I218LM GbE PHY
Ethernet Interface	10/100/1000 Base-Tx Gigabit Ethernet Compatible
Mechanical & Environmental	

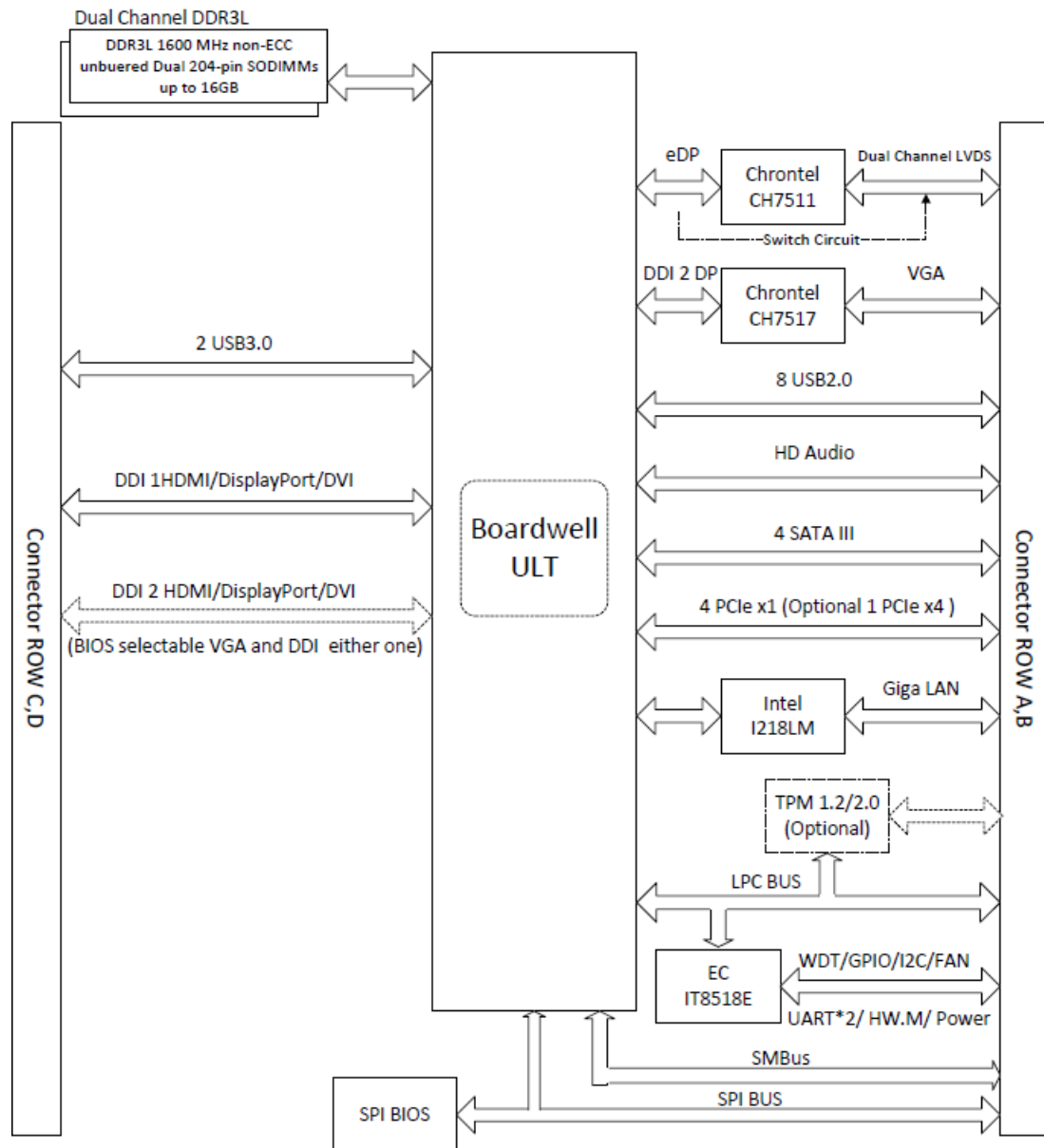
Power Requirement	+9 ~ +19V
ACPI	Single power ATX Support S0, S3, S4, S5 ACPI 3.0 Compliant
Power Type	AT/ATX
Operating Temp.	Standard: 0 to 60°C
Storage Temp.	-40°C to 75°C
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Size (L x W)	95 mm x 95 mm
Weight	0.44lbs (0.2kg)



Note: Specifications are subject to change without notice.

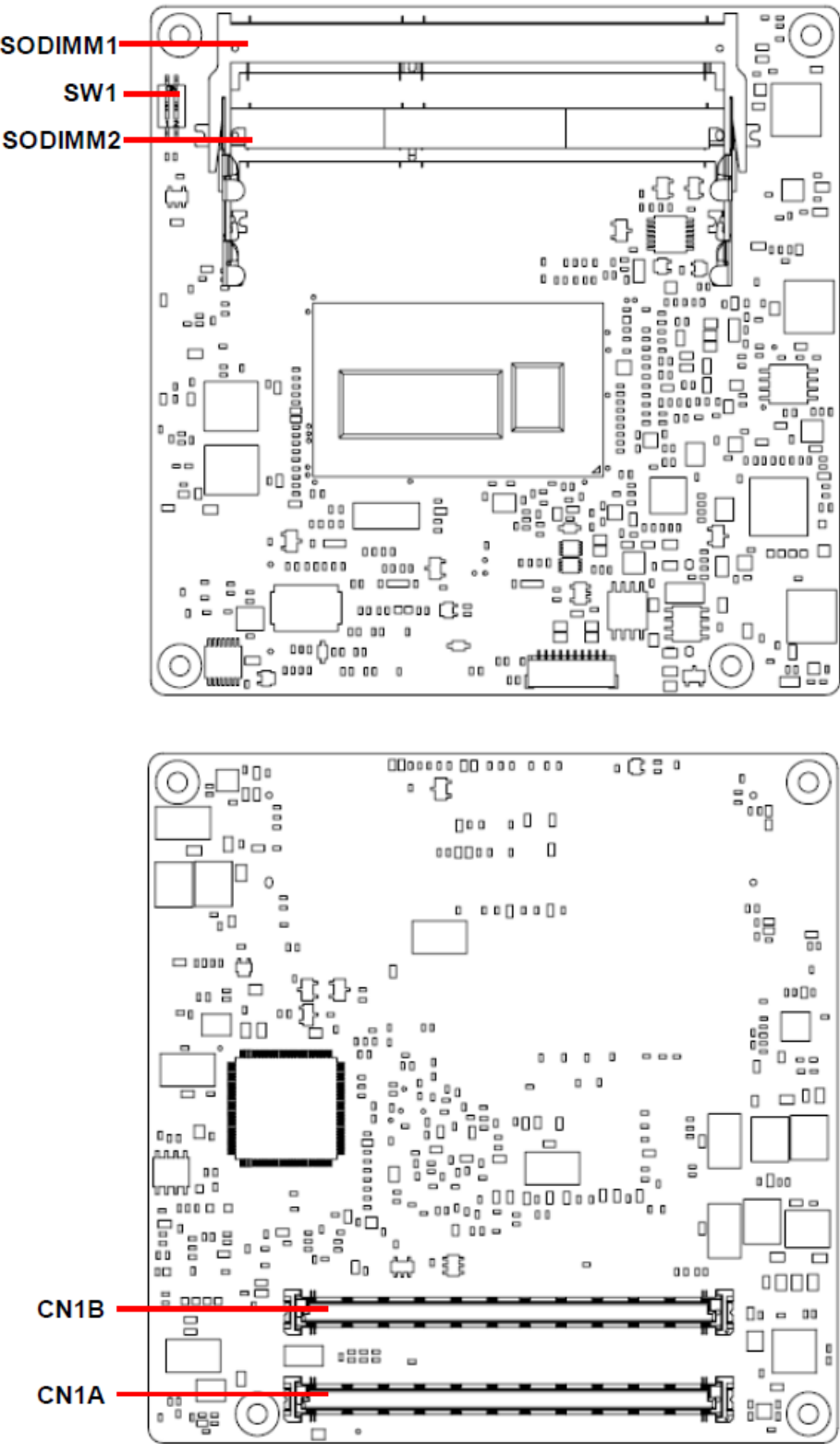
1.6 Architecture Overview—Block Diagram

The following block diagram shows the architecture and main components of ESM-BDW.



2. Hardware Configuration

2.1 Product Overview



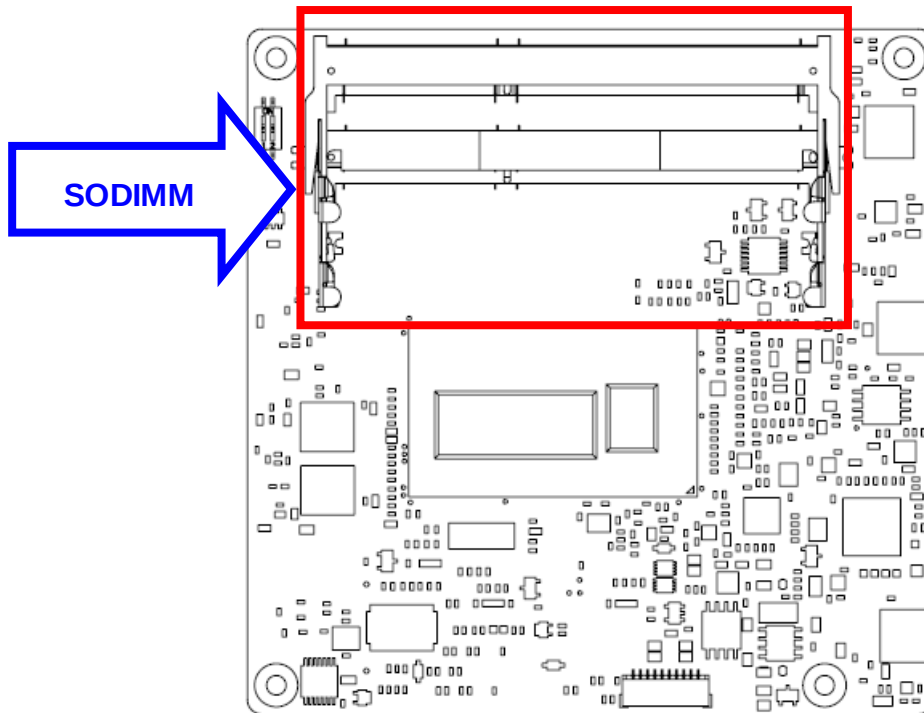
2.2 Installation Procedure

This chapter explains you the instructions of how to setup your system.

1. Turn off the power supply.
2. Insert the DIMM module (be careful with the orientation).
3. Insert all external cables for hard disk, keyboard, mouse, USB etc. except for flat panel. A CRT monitor must be connected in order to change NVRAM settings to support flat panel.
4. Connect power supply to the board via the ATXPWR.
5. Turn on the power.
6. Enter the BIOS setup by pressing the delete key during boot up. Use the "Save & Exit \ Restore Defaults" feature.
7. If TFT panel display is to be utilized, make sure the panel voltage is correctly set before connecting the display cable and turning on the power.

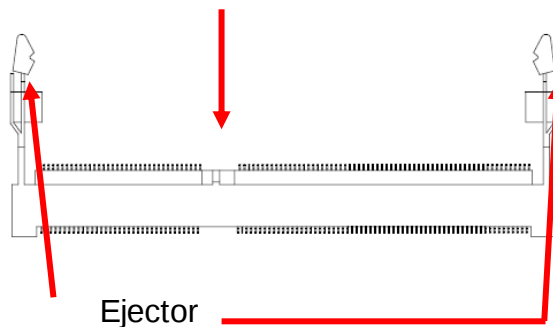
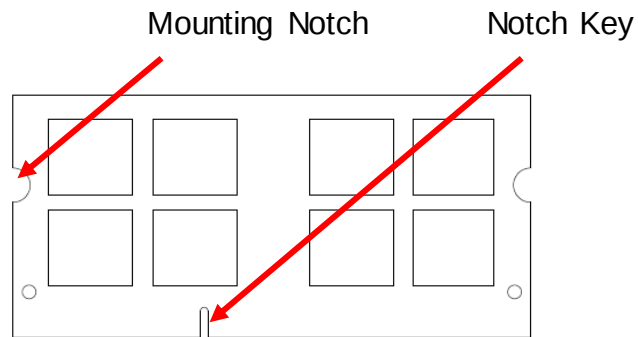
2.2.1 Main Memory

ESM-BDW provides two 204-pin DDR3 SODIMM socket, supports up to 16GB DDR3L 1333/1600 SDRAM, DIMM1 must be inserted when only a single memory is used.



Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to board and components.

- Locate the SODIMM socket on the board.
- Carefully hold two edges of the SODIMM module. avoid touching its connectors.
- Align the notch key on the module with the rib on the slot.
- Firmly press the modules into the socket which automatically snaps into the mounting notch. Do not force the SODIMM module in with extra force as the SODIMM module only fits in one direction.



204-pin DDR3L SODIMM

- To remove SODIMM modules, simultaneously push the two ejector tabs outward, then pull out the SODIMM module.



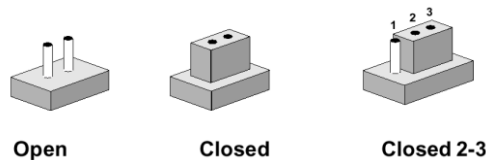
Note:

- (1) Please do not change any DDR3L SDRAM parameter in BIOS setup to increase your system's performance without acquiring technical information in advance.
- (2) Static electricity can damage the electronic components of the computer or optional boards. Before proceeding, ensure that you are discharged of static electricity by briefly touching a grounded metal object.

2.3 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.

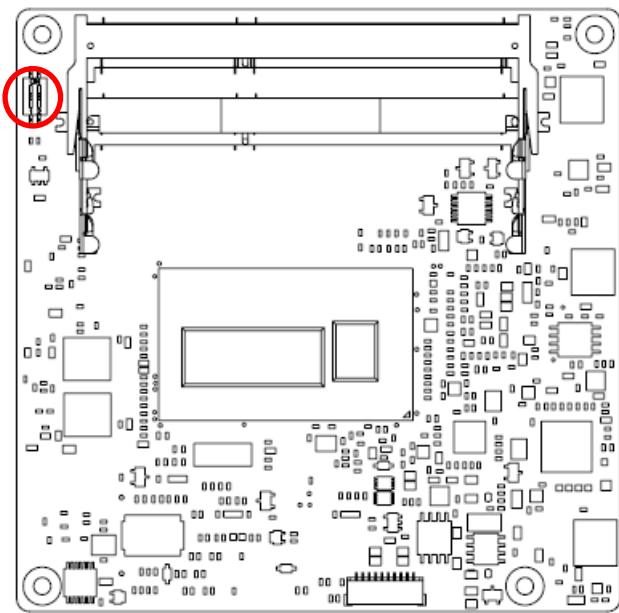
The following tables list the function of each of the board's connectors.

Connectors

Label	Function	Note
CN1A	COM Express connector 1	
CN1B	COM Express connector 2	
SODIMM1	204-pin DDR3L SDRAM DIMM socket	
SODIMM2	204-pin DDR3L SDRAM DIMM socket	
SW1	AT/ATX mode selector	

2.4 Setting Jumpers & Connectors

2.4.1 AT/ATX mode selector (SW1)

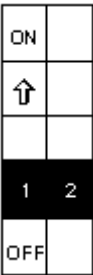


*Default

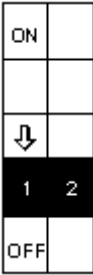
AT/ATX mode



AT mode



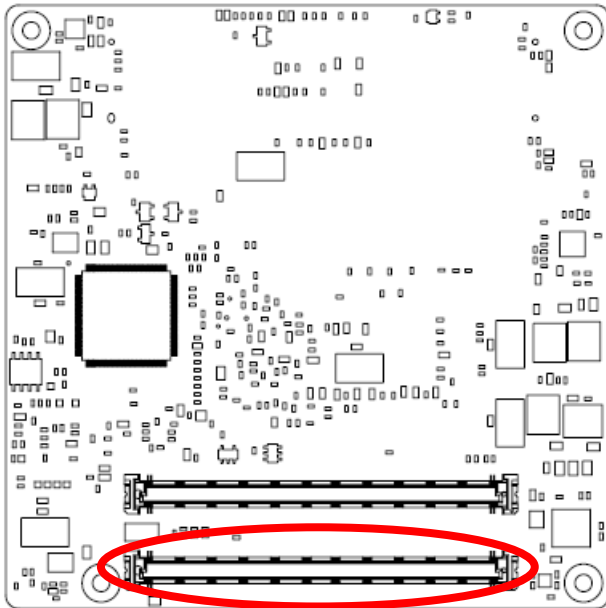
ATX mode*



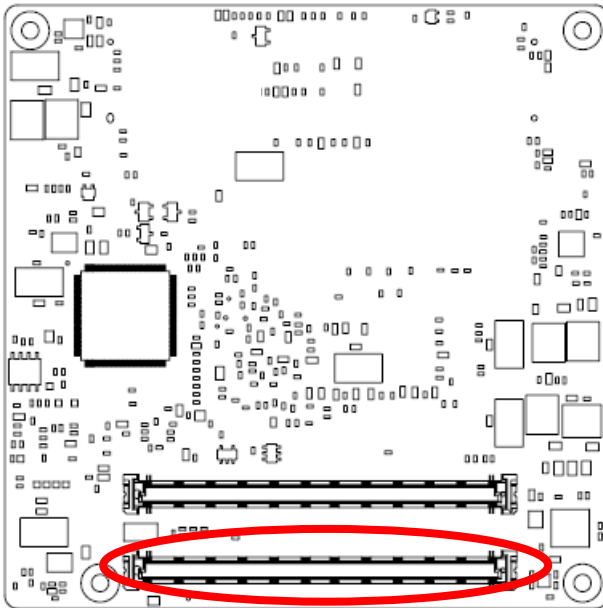
2.4.1.1 Signal Description –AT/ATX mode selection

AT/ATX mode	Description
AT mode on 12	Auto power on, no need to press Power button to enable power on/off
ATX mode on 12	Press the ATX power button to enable power on/off

2.4.2 COM Express Connector 1 (CN1A)

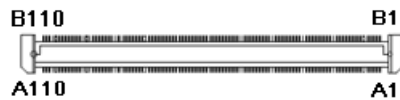
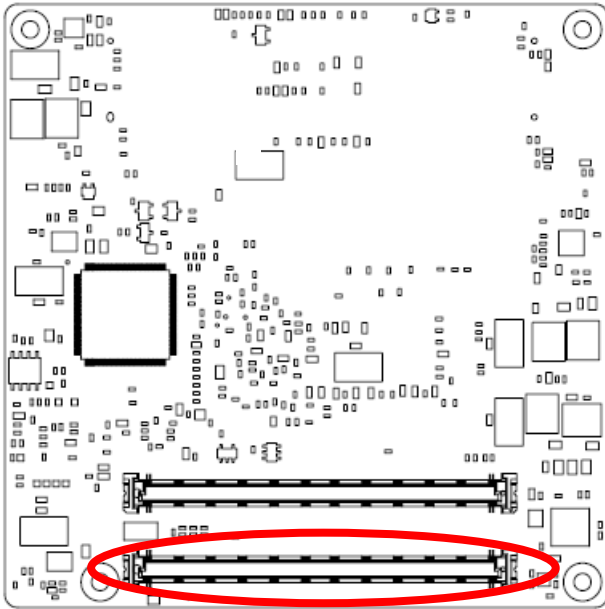


Signal	PIN	PIN	Signal
GND	A1	B1	GND
GBE0_MDI3-	A2	B2	GBE0_ACT#
GBE0_MDI3+	A3	B3	LPC_FRAME#
GBE0_LINK100#	A4	B4	LPC_AD0
GBE0_LINK1000#	A5	B5	LPC_AD1
GBE0_MDI2-	A6	B6	LPC_AD2
GBE0_MDI2+	A7	B7	LPC_AD3
GBE0_LINK#	A8	B8	NC
GBE0_MDI1-	A9	B9	NC
GBE0_MDI1+	A10	B10	LPC_CLK
GND	A11	B11	GND
GBE0_MDI0-	A12	B12	PWRBTN#
GBE0_MDI0+	A13	B13	SMB_CK
GBE0_CTREF	A14	B14	SMB_DAT
SUS_S3#	A15	B15	SMB_ALERT#
SATA0_TX+	A16	B16	SATA1_TX+
SATA0_TX-	A17	B17	SATA1_TX-
SUS_S4#	A18	B18	SUS_STAT#
SATA0_RX+	A19	B19	SATA1_RX+
SATA0_RX-	A20	B20	SATA1_RX-
GND	A21	B21	GND
SATA2_TX+	A22	B22	SATA3_TX+
SATA2_TX-	A23	B23	SATA3_TX-
SUS_S5#	A24	B24	PWR_OK
SATA2_RX+	A25	B25	SATA3_RX+
SATA2_RX-	A26	B26	SATA3_RX-
BATLOW#	A27	B27	WDT
(S)ATA_ACT#	A28	B28	NC
HDA_SYNC	A29	B29	HDA_SDIN1
HDA_RST#	A30	B30	HDA_SDIN0

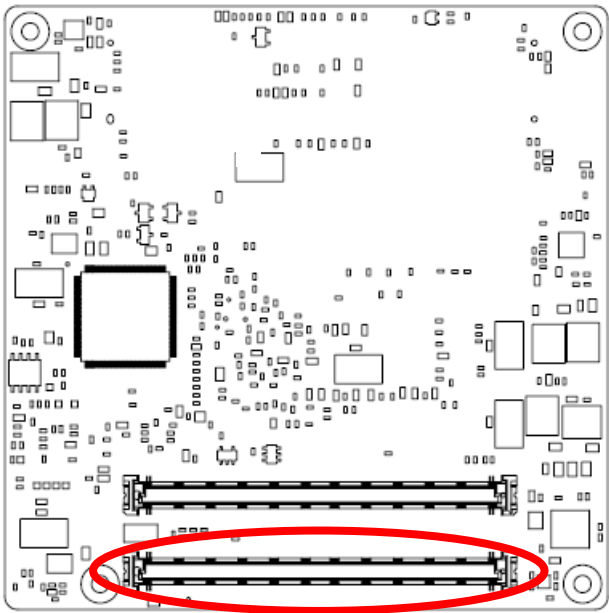


Signal	PIN	PIN	Signal
GND	A31	B31	GND
HDA_BITCLK	A32	B32	SPKR
HDA_SDOUT	A33	B33	I2C_CK
BIOS_DIS0#	A34	B34	I2C_DAT
THRMTRIP#	A35	B35	THRM#
USB6-	A36	B36	USB7-
USB6+	A37	B37	USB7+
USB_6_7_OC#	A38	B38	USB_4_5_OC#
USB4-	A39	B39	USB5-
USB4+	A40	B40	USB5+
GND	A41	B41	GND
USB2-	A42	B42	USB3-
USB2+	A43	B43	USB3+
USB_2_3_OC#	A44	B44	USB_0_1_OC#
USB0-	A45	B45	USB1-
USB0+	A46	B46	USB1+
VCC_RTC	A47	B47	EXCD1_PERST#
EXCD0_PERST#	A48	B48	EXCD1_CPPE#
EXCD0_CPPE#	A49	B49	SYS_RESET#
LPC_SERIRQ	A50	B50	CB_RESET#
GND	A51	B51	GND
NC	A52	B52	NC
NC	A53	B53	NC
GPI0/SD_DATA0	A54	B54	GPO1/SD_CMD
NC	A55	B55	NC
NC	A56	B56	NC
GND	A57	B57	GPO2/SD_WP
PCIE_TX3+	A58	B58	PCIE_RX3+
PCIE_TX3-	A59	B59	PCIE_RX3-
GND	A60	B60	GND

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Signal	PIN	PIN	Signal
PCIE_TX2+	A61	B61	PCIE_RX2+
PCIE_TX2-	A62	B62	PCIE_RX2-
GPI1/SD_DATA1	A63	B63	GPO3/SD_CD#
PCIE_TX1+	A64	B64	PCIE_RX1+
PCIE_TX1-	A65	B65	PCIE_RX1-
GND	A66	B66	WAKE0#
GPI2/SD_DATA2	A67	B67	WAKE1#
PCIE_TX0+	A68	B68	PCIE_RX0+
PCIE_TX0-	A69	B69	PCIE_RX0-
GND	A70	B70	GND
LVDS_A0+/eDP_TX2+	A71	B71	LVDS_B0+
LVDS_A0-/eDP_TX2-	A72	B72	LVDS_B0-
LVDS_A1+/eDP_TX1+	A73	B73	LVDS_B1+
LVDS_A1-/eDP_TX1-	A74	B74	LVDS_B1-
LVDS_A2+/eDP_TX0+	A75	B75	LVDS_B2+
LVDS_A2-/eDP_TX0-	A76	B76	LVDS_B2-
LVDS_VDD_EN /eDP_VDD_EN	A77	B77	LVDS_B3+
LVDS_A3+	A78	B78	LVDS_B3-
LVDS_A3-	A79	B79	LVDS_BKLT_EN /eDP_BKLT_EN
GND	A80	B80	GND
LVDS_A_CK+/eDP_TX3+	A81	B81	LVDS_B_CK+
LVDS_A_CK-/eDP_TX3-	A82	B82	LVDS_B_CK-
LVDS_I2C_CK/eDP_AUX+	A83	B83	LVDS_BKLT_CTRL /eDP_BKLT_CTRL
LVDS_I2C_DAT/eDP_AUX-	A84	B84	VCC_5V_SBY_1
GPI3/SD_DATA3	A85	B85	VCC_5V_SBY_2
RSVD1	A86	B86	VCC_5V_SBY_3
RSVD/eDP_HPD	A87	B87	VCC_5V_SBY_4
PCIE_CLK_REF+	A88	B88	BIOS_DIS1#
PCIE_CLK_REF--	A89	B89	VGA_RED
GND	A90	B90	GND



Signal	PIN	PIN	Signal
SPI_POWER	A91	B91	VGA_GRN
SPI_MISO	A92	B92	VGA_BLU
GPO0/SD_CLK	A93	B93	VGA_HSYNC
SPI_CLK	A94	B94	VGA_VSYNC
SPI_MOSI	A95	B95	VGA_I2C_CK
TPM_PP	A96	B96	VGA_I2C_DAT
TYPE10#	A97	B97	SPI_CS#
SER0_TX	A98	B98	NC
SER0_RX	A99	B99	NC
GND	A100	B100	GND
SER1_TX/CAN_TX	A101	B101	FAN_PWMOUT
SER1_RX/CAN_RX	A102	B102	FAN_TACHIN
LID#	A103	B103	SLEEP#
VCC	A104	B104	VCC
VCC	A105	B105	VCC
VCC	A106	B106	VCC
VCC	A107	B107	VCC
VCC	A108	B108	VCC
VCC	A109	B109	VCC
GND	A110	B110	GND

2.4.2.1 Signal Description – COM Express Connector 1 (CN1A)

2.4.2.1.1 Audio Signals

Signal	Signal Description
AC_HDA_SYNC	HD Audio Sync
AC_HDA_RST#	HD Audio Reset
AC_HDA_SDIN[0:1]	Audio CODEC Serial Data
AC_HDA_BITCLK	HD Audio Clock
AC_HDA_SDOUT	HD Audio Data

2.4.2.1.2 Gigabit Ethernet Signals

Signal	Signal Description			
GBE0_MD[0:3] +/-	Gigabit Ethernet Controller 0: Media Dependent Interface Differential Pairs 0,1,2,3. The MDI can operate in 1000, 100 and 10 Mbit / sec modes. Some pairs are unused in some modes, per the following:			
		1000B-T	100B-T	10B-T
	MDI[0]+/-	B1_DA+/-	TX+/-	TX+/-
	MDI[1]+/	B1_DB+/-	RX+/-	RX+/-
	MDI[2]+/	B1_DC+/-	X	X
	MDI[3]+/	B1_DD+/-	X	X
GBE0_ACT#	Gigabit Ethernet Controller 0 activity indicator, active low.			
GBE0_Link#	Gigabit Ethernet Controller 0 link indicator, active low.			
GBE0_Link100#	Gigabit Ethernet Controller 0 100 Mbit / sec link indicator, active low.			
GBE0_Lin1000#	Gigabit Ethernet Controller 0 1000 Mbit / sec link indicator, active low.			

2.4.2.1.3 GPIO Signals

Signal	Signal Description
GPI[0:4]	General purpose input pins.
GPO[0:4]	General purpose output pins.

2.4.2.1.4 Flat Panel LVDS Signals

Signal	Signal Description
LVDS_BKLT_CTRL	Controls panel digital power.

2.4.2.1.5 LPC Signals

Signal	Signal Description
LPC_FRAME#	LPC frame indicates the start of an LPC cycle
LPC_AD[0:3]	LPC multiplexed address, command and data bus
LPC_CLK	LPC clock output - 24MHz nominal
LPC_SERIRQ	LPC serial interrupt

2.4.2.1.6 Miscellaneous Signals

Signal	Signal Description							
SPKR	Output for audio enunciator - the "speaker" in PC-AT systems							
BIOS_DIS0# BIOS_DIS1#	Selection straps to determine the BIOS boot device							
	BIOS_DIS1#	BIOS_DIS0#	Chipset SPI CS1# Destination	Chipset SPI CS0# Destination	Carrier SPI_CS#	SPI Descriptor	Bios Entry	Ref Line
	1	1	Module	Module	High	Module	SPI0/SPI1	0
	1	0	Module	Module	High	Module	Carrier FWH	1
	0	1	Module	Carrier	SPI0	Carrier	SPI0/SPI1	2
	0	0	Carrier	Module	SPI1	Module	SPI0/SPI1	3

2.4.2.1.7 PCI Express Signals

Signal	Signal Description
PCIE_TX[0:3] +/-	PCI Express Differential Transmit Pair 0-3
PCIE_RX[0:3] +/-	PCI Express Differential Receive Pair 0-2
PCIE0_CK_REF+/-	Reference clock output for PCI Express lanes 0-3 and for PCI Express Graphics lanes 0-15

2.4.2.1.8 Power Signals

Signal	Signal Description
VCC_5V_SBY	Standby power input: +5.0V nominal. See Electrical Specifications for allowable input range. If VCC5_SBY is used, all available VCC_5V_SBY pins on the connector(s) must be used. Only used for standby and suspend functions. May be left unconnected if these functions are not used in the system design.
VCC_RTC	Real-time clock circuit-power input. Nominally +3.0V.

2.4.2.1.9 Power & System Management Signals

Signal	Signal Description
SUS_S3#	Indicates system is in Suspend to RAM state. Active low output.
SUS_S4#	Indicates system is in Suspend to Disk state. Active low output.
SUS_S5#	Indicates system is in Soft Off state.
BATLOW#	Indicates that external battery is low
PWRBTN#	Power button to bring system out of S5 (soft off), active on rising edge.
SMB_CK	System Management Bus bidirectional clock line.
SMB_DAT	System Management Bus bidirectional data line.
SMB_ALERT#	System Management Bus Alert - input can be used to generate an SMI# (System Management Interrupt) or to wake the system.
SUS_STAT#	Indicates imminent suspend operation.
PWR_OK	Power OK from main power supply
SYS_RESET#	Reset button input. Active low input.
WAKE0#	PCI Express wake up signal.
WAKE1#	General purpose wake up signal.

2.4.2.1.10 LVDS Signals

Signal	Signal Description
LVDS_I2C_CK	I2C clock output for LVDS display use.
LVDS_I2C_DAT	I2C data line for LVDS display use.

2.4.2.1.11 I2C Signals

Signal	Signal Description
I2C_CK	General purpose I2C port clock output.
I2C_DAT	General purpose I2C port data I/O line.

2.4.2.1.12 SATA Signals

Signal	Signal Description
SATA[0:3]_TX +/-	Serial ATA Channel 0-3 transmit differential pair.
SATA[0:3]_RX +/-	Serial ATA Channel 0-3 receive differential pair.
ATA_ACT#	ATA (parallel and serial) activity indicator, active low.

2.4.2.1.13 VGA Signals

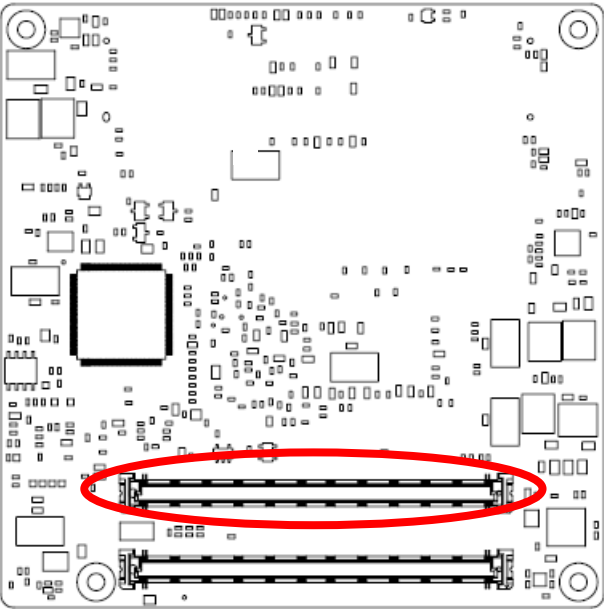
Signal	Signal Description
VGA_RED	Red for monitor. Analog DAC output.
VGA_GRN	Green for monitor. Analog DAC output.
VGA_BLU	Blue for monitor. Analog DAC output.
VGA_HSYNC	Horizontal sync output to VGA monitor
VGA_VSYNC	Vertical sync output to VGA monitor
VGA_I ² C_CLK	DDC clock line (I2C port dedicated to identify VGA monitor capabilities)
VGA_I ² C_DAT	DDC data line.

2.4.2.1.14 USB Signals

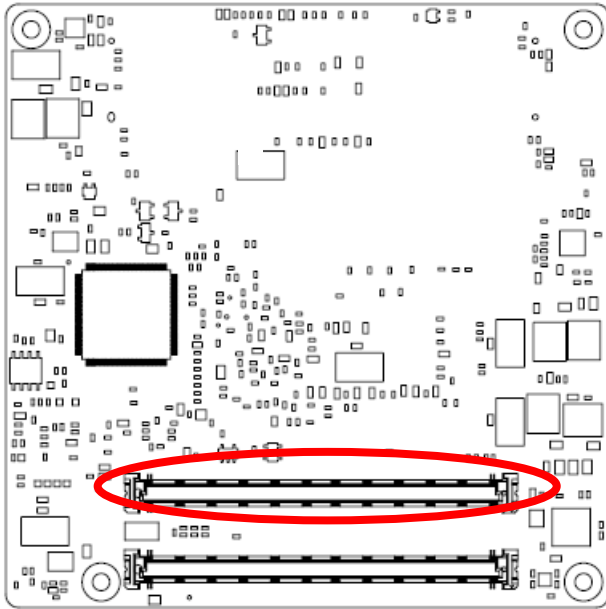
Signal	Signal Description
USB[0:7] +/-	USB differential pairs, channels 0 through 7
USB_0_1_OC#	USB over-current sense, USB channels 0 and 1
USB_2_3_OC#	USB over-current sense, USB channels 2 and 3
USB_4_5_OC#	USB over-current sense, USB channels 4 and 5
USB_6_7_OC#	USB over-current sense, USB channels 6 and 7

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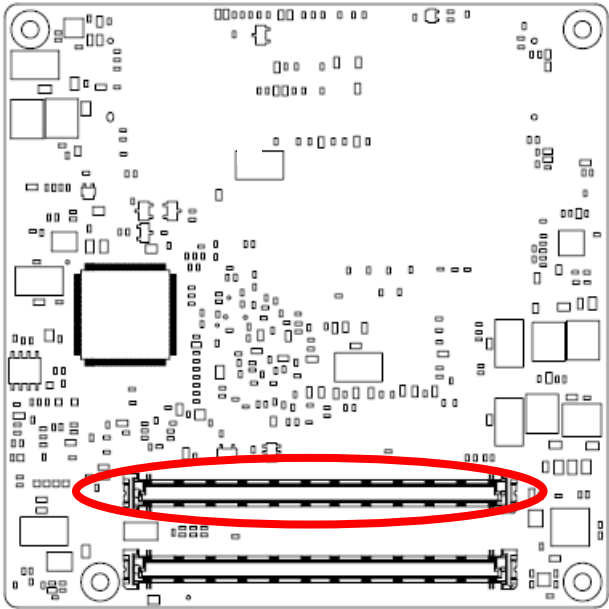
2.4.3 COM Express Connector 2 (CN1B)



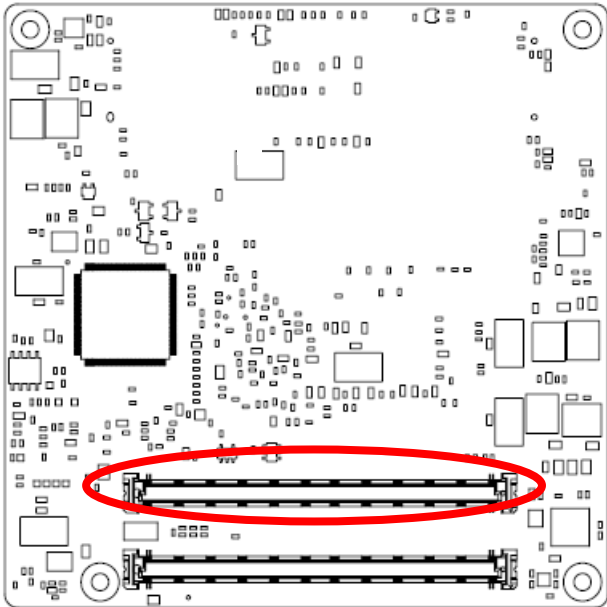
Signal	PIN	PIN	Signal
GND	C1	D1	GND
GND	C2	D2	GND
USB_SSRX0-	C3	D3	USB_SSTX0-
USB_SSRX0+	C4	D4	USB_SSTX0+
GND	C5	D5	GND
USB_SSRX1-	C6	D6	USB_SSTX1-
USB_SSRX1+	C7	D7	USB_SSTX1+
GND	C8	D8	GND
NC	C9	D9	NC
NC	C10	D10	NC
GND	C11	D11	GND
NC	C12	D12	NC
NC	C13	D13	NC
GND	C14	D14	GND
NC	C15	D15	DDI1_CTRLCLK_AUX+
NC	C16	D16	DDI1_CTRLDATA_AUX-
NC	C17	D17	NC
NC	C18	D18	NC
NC	C19	D19	NC
NC	C20	D20	NC
GND	C21	D21	GND
NC	C22	D22	NC
NC	C23	D23	NC
DDI1_HPD	C24	D24	NC
NC	C25	D25	NC
NC	C26	D26	DDI1_PAIR0+
NC	C27	D27	DDI1_PAIR0-
NC	C28	D28	NC
NC	C29	D29	DDI1_PAIR1+
NC	C30	D30	DDI1_PAIR1-



Signal	PIN	PIN	Signal
GND	C31	D31	GND
DDI2_CTRLCLK_AUX+	C32	D32	DDI1_PAIR2+
DDI2_CTRLCLK_AUX-	C33	D33	DDI1_PAIR2-
DDI2_DDC_AUX_SEL	C34	D34	DDI1_DDC_AUX_SEL
NC	C35	D35	RSVD23
NC	C36	D36	DDI1_PAIR3+
NC	C37	D37	DDI1_PAIR3-
NC	C38	D38	RSVD24
NC	C39	D39	DDI2_PAIR0+
NC	C40	D40	DDI2_PAIR0-
GND	C41	D41	GND
NC	C42	D42	DDI2_PAIR1+
NC	C43	D43	DDI2_PAIR1-
NC	C44	D44	DDI2_HPD
NC	C45	D45	NC
NC	C46	D46	DDI2_PAIR2+
NC	C47	D47	DDI2_PAIR2-
NC	C48	D48	NC
NC	C49	D49	DDI2_PAIR3+
NC	C50	D50	DDI2_PAIR3-
GND	C51	D51	GND
NC	C52	D52	NC
NC	C53	D53	NC
TYPE0#	C54	D54	NC
NC	C55	D55	NC
NC	C56	D56	NC
TYPE1#	C57	D57	TYPE2#
NC	C58	D58	NC
NC	C59	D59	NC
GND	C60	D60	GND



Signal	PIN	PIN	Signal
NC	C61	D61	NC
NC	C62	D62	NC
NC	C63	D63	NC
NC	C64	D64	NC
NC	C65	D65	NC
NC	C66	D66	NC
NC	C67	D67	GND
NC	C68	D68	NC
NC	C69	D69	NC
GND	C70	D70	GND
NC	C71	D71	NC
NC	C72	D72	NC
GND	C73	D73	GND
NC	C74	D74	NC
NC	C75	D75	NC
GND	C76	D76	GND
RSVD15	C77	D77	NC
NC	C78	D78	NC
NC	C79	D79	NC
GND	C80	D80	GND
NC	C81	D81	NC
NC	C82	D82	NC
RSVD16	C83	D83	NC
GND	C84	D84	GND
NC	C85	D85	NC
NC	C86	D86	NC
GND	C87	D87	GND
NC	C88	D88	NC
NC	C89	D89	NC
GND	C90	D90	GND



Signal	PIN	PIN	Signal
NC	C91	D91	NC
NC	C92	D92	NC
GND	C93	D93	GND
NC	C94	D94	NC
NC	C95	D95	NC
GND	C96	D96	GND
RSVD17	C97	D97	NC
NC	C98	D98	NC
NC	C99	D99	NC
GND	C100	D100	GND
NC	C101	D101	NC
NC	C102	D102	NC
GND	C103	D103	GND
VCC	C104	D104	VCC
VCC	C105	D105	VCC
VCC	C106	D106	VCC
VCC	C107	D107	VCC
VCC	C108	D108	VCC
VCC	C109	D109	VCC
GND	C110	D110	GND

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2.4.3.1 Signal Description – COM Express Connector 2 (CN1B)

2.4.3.1.1 USB3.0 Signals

Signal	Signal Description
USB_SSTX[0:1]+ USB_SSTX[0:1]-	Additional transmit signal differential pairs for the SuperSpeed USB data path.
USB_SSRX[0:1]+ USB_SSRX[0:1]-	Additional receive signal differential pairs for the SuperSpeed USB data path.

2.4.3.1.2 DDI Signals

Signal	Signal Description
DDI[1:2]_PAIR[0:3]+ DDI[1:2]_PAIR [0:3]-	Digital Display Interface 1 to 2 Pair[0:3] differential pairs
DDI[1:2]_DDC_AUX_SEL	Selects the function of DDI[1:2]_CTRLCLK_AUX+ and DDI[1:2]_CTRLDATA_AUX-. If this input is floating the AUX pair is used for the DP AUX+/- signals. If pulled-high the AUX pair contains the CTRLCLK and CTRLDATA signals.
DDI[1:2]_CTRLCLK_AUX+	DP AUX+function if DDI[1:2]_DDC_AUX_SEL is no connect HDMI/DVI 12C CTRLCLK if DDI[1:2]_DDC_AUX_SEL is pulled high
DDI[1:2]_CTRLDATA_AUX-	DP AUX-function if DDI[1:2]_DDC_AUX_SEL is no connect HDMI/DVI 12C CTRLDATA if DDI[1:2]_DDC_AUX_SEL is pulled high
DDI[1:2]_HPD	Digital Display Interface Hot-Plug Detect

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 NVRAM 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 or <F2> immediately after switching the system on, or

By pressing the or <F2> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test).

Press or <F2> 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 or restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

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
PGUP/HOME key	Go to Top of Screen
PGDN/END key	Go to Bottom of Screen
+ 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 Windows press <Esc> or <Enter> key.

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 NVRAM settings which resets your system to its defaults.

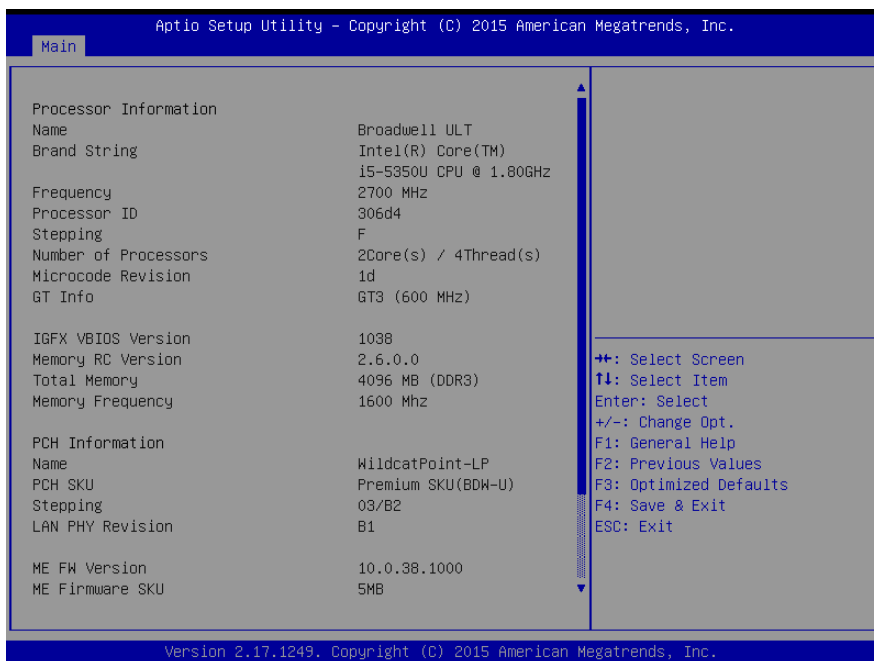
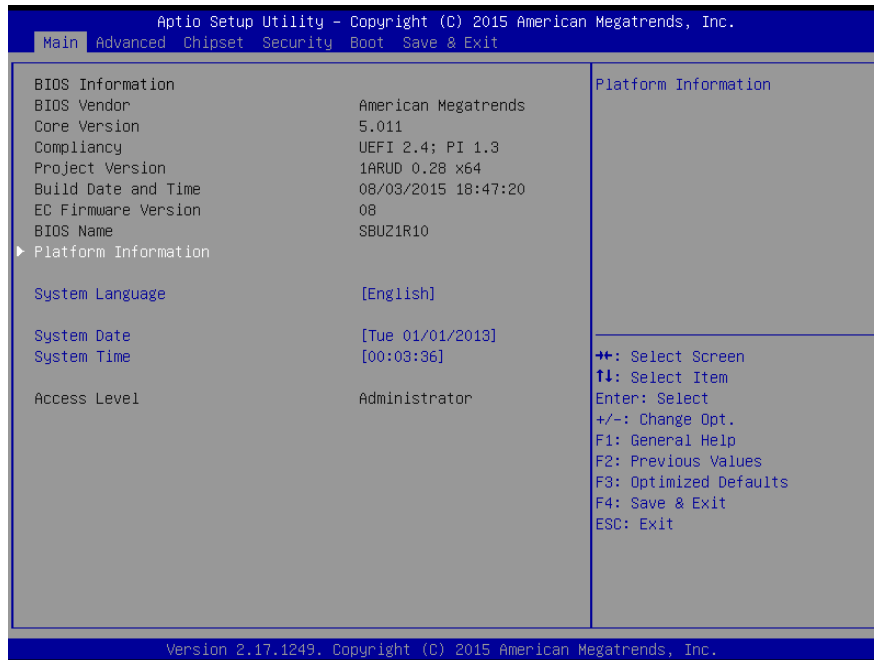
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance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

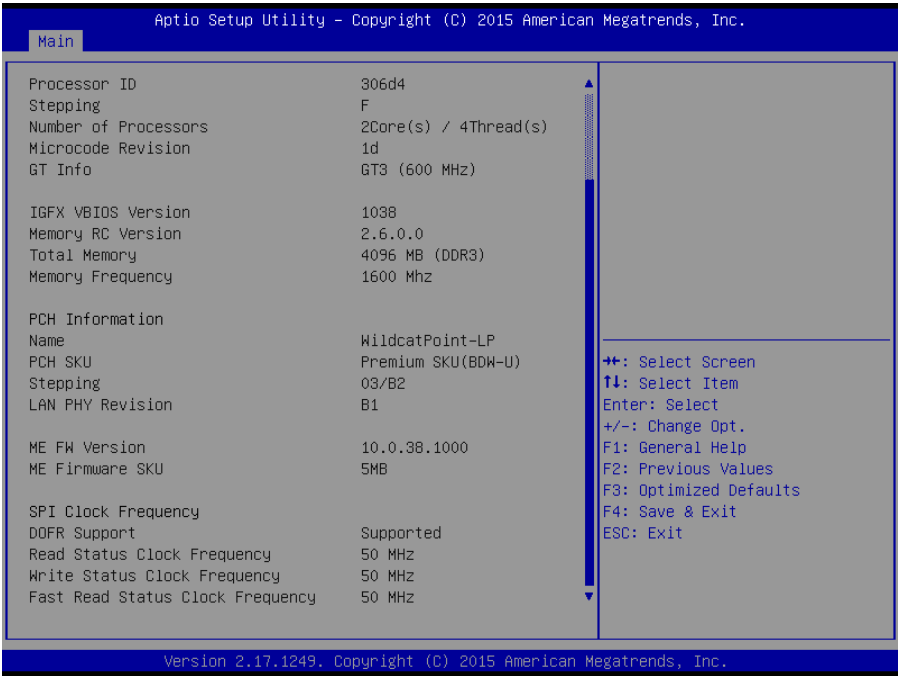
3.6 BIOS setup

Once you enter the 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

This option allows choosing the system default 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

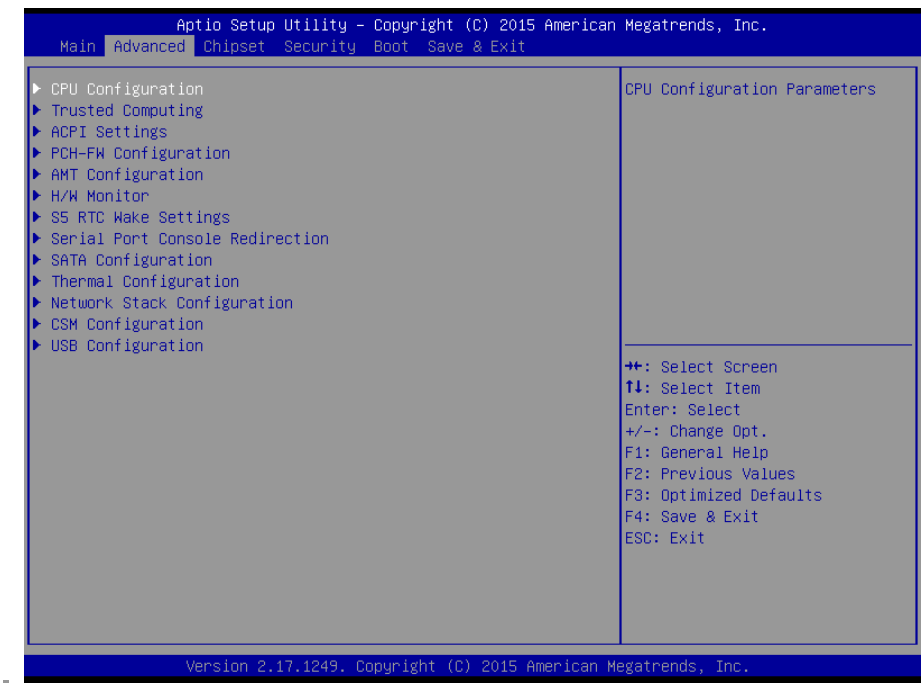
Use the system time option to set the system time. Manually enter the hours, minutes and seconds.



Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen. Visit the Avalue website (www.avalue.com.tw) to download the latest product and BIOS information.

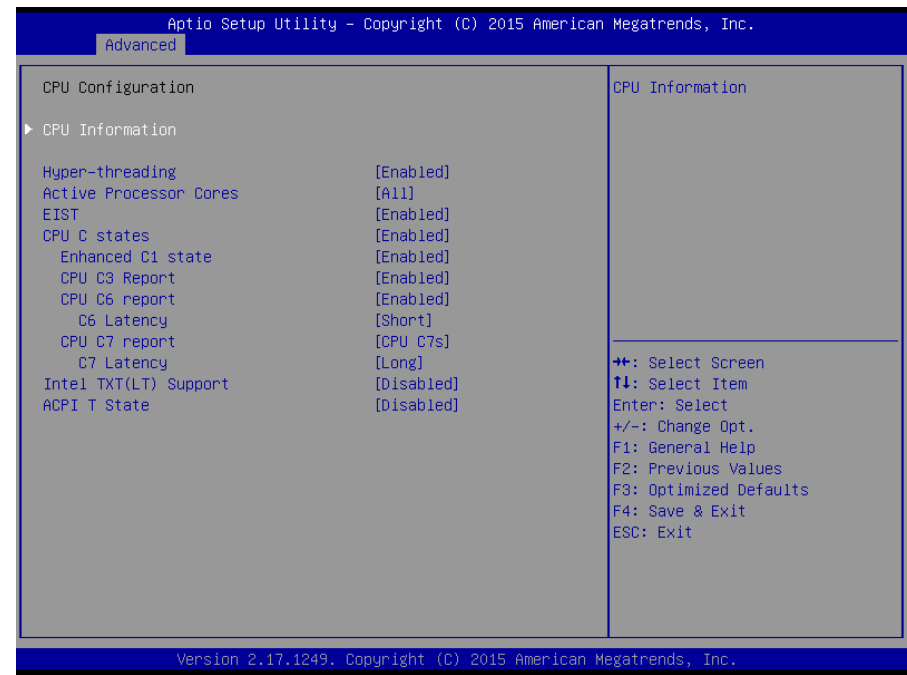
3.6.2 Advanced Menu

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



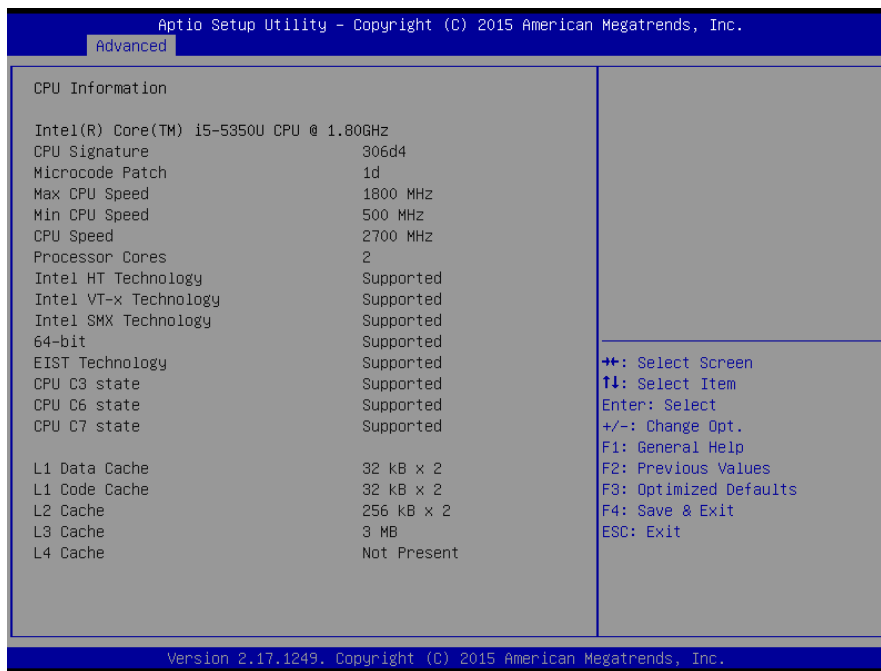
3.6.2.1 CPU Configuration

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

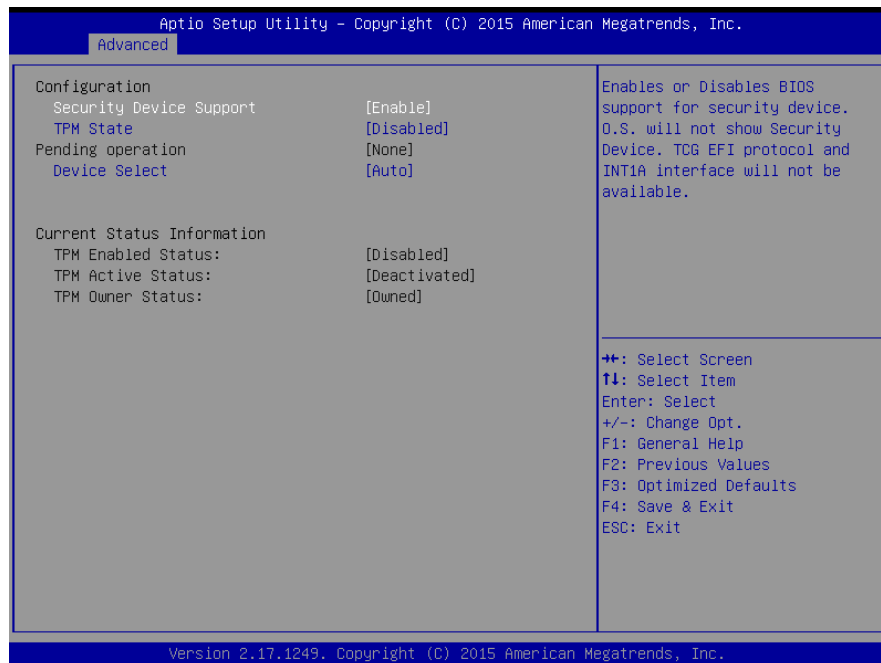


Item	Options	Description
Hyper-threading	Disabled, Enabled[Default]	Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled.
Active Processor Cores	All[Default], 1 2 3	Number of cores to enable in each processor package.
EIST	Disabled, Enabled[Default]	Enable/Disable Intel SpeedStep.
CPU C states	Disabled, Enabled[Default]	Enable or disable CPU C states.
Enhanced C1 state	Disabled, Enabled[Default]	Enhanced C1 state.
CPU C3/6/7 Report	Disabled, Enabled[Default]	Enable/Disable CPU C3/6/7 report to OS.
C6 Latency	Short[Default] Long	Configure Short/Long latency for C6.
C7 Latency	Short Long[Default]	Configure Short/Long latency for C7.
Intel TXT(LT) Support	Disabled[Default], Enabled	Enables or Disables Intel® TXT(LT) support.
ACPI T State	Disabled[Default], Enabled	Enable/Disable ACPI T state support.

3.6.2.1.1 CPU Information



3.6.2.2 Trusted Computing

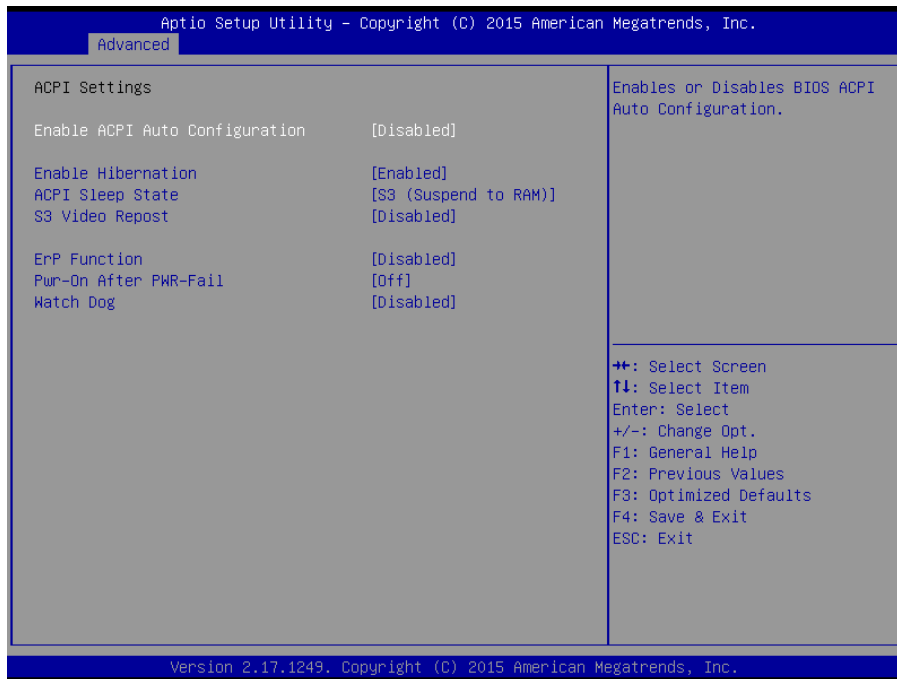


Item	Options	Description
Security Device Support	Disabled Enabled[Default]	Enable or Disable BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
TPM State	Disabled[Default] Enabled	Enable/Disable Security Device. NOTE: Your Computer will reboot during restart in order to change State of the Device.
Device Select	TPM 1.2 TPM 2.0	TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM

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	Auto [Default]	2.0 device, Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated. Note: TPM 2.0 is an option. If H/W TPM 2.0 function is required, please contact your distributor or our contact window.
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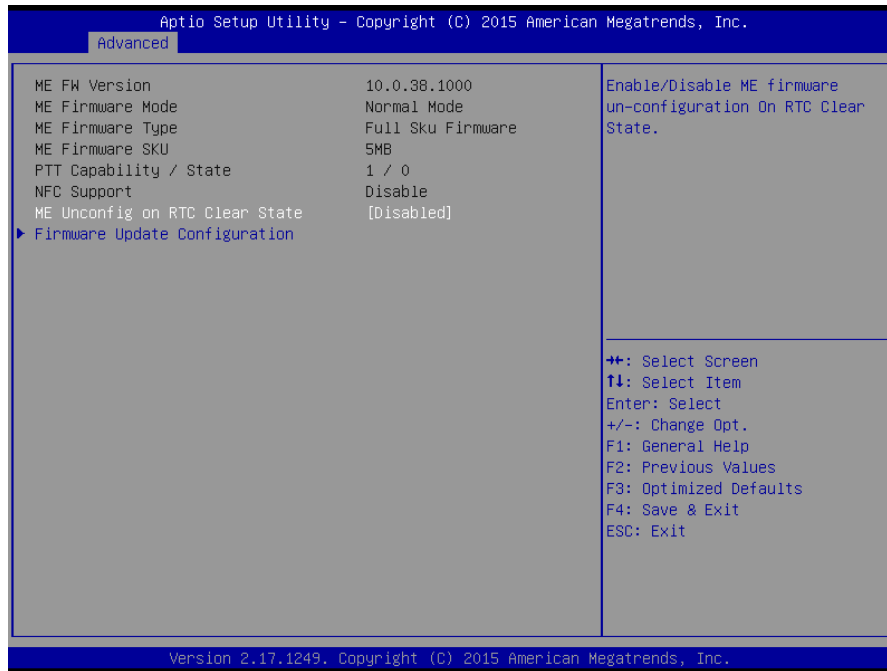
3.6.2.3 APCI Settings



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.
APCI Sleep State	Suspend Disabled S3 (Suspend to RAM) [Default]	Select ACPI sleep state the system will enter when the SUSPEND button is pressed.
S3 Video Repost	Disabled [Default] Enabled	Enable or Disable S3 Video Repost.
ErP Function	Disabled [Default] Enabled	ErP Function (Deep S5).
PWR-On After PWR-Fail	Off [Default] On Last state	AC loss resume.
Watch Dog	Disabled [Default] 30 sec 40 sec 50 sec	Select WatchDog.

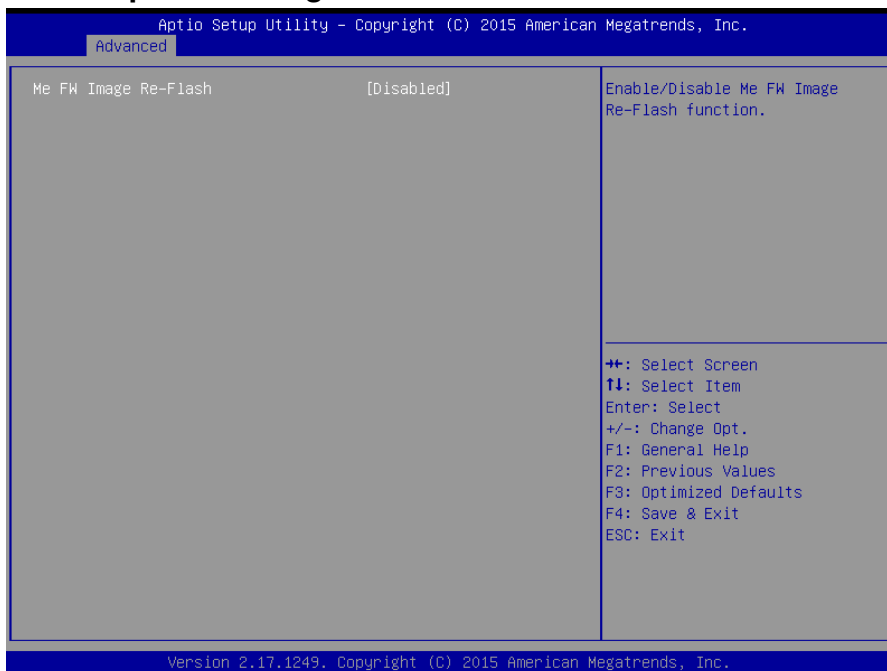
	1 min	
	2 min	
	10 min	
	30 min	

3.6.2.4 PCH-FW Configuration



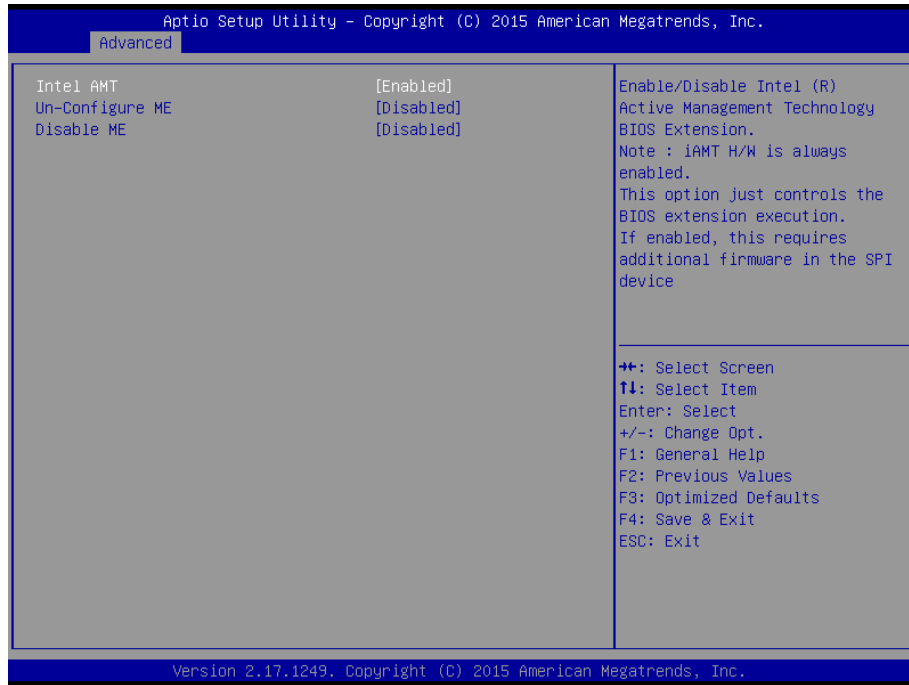
Item	Options	Description
ME Unconfig on RTC Clear State	Disabled[Default] Enabled	Enable/Disable ME firmware un-configuration On RTC Clear State.

3.6.2.4.1 Firmware Update Configuration



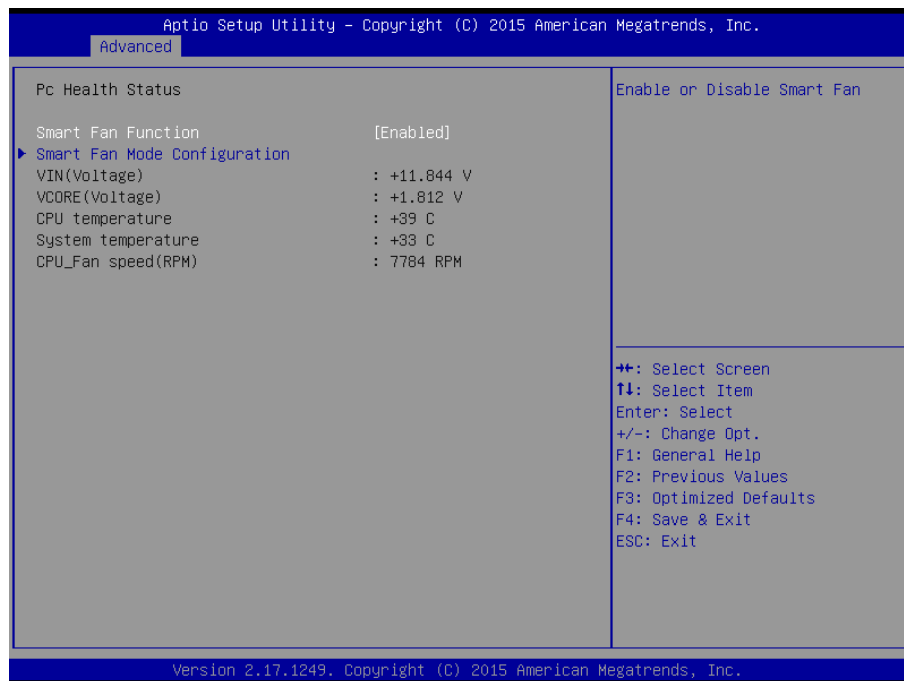
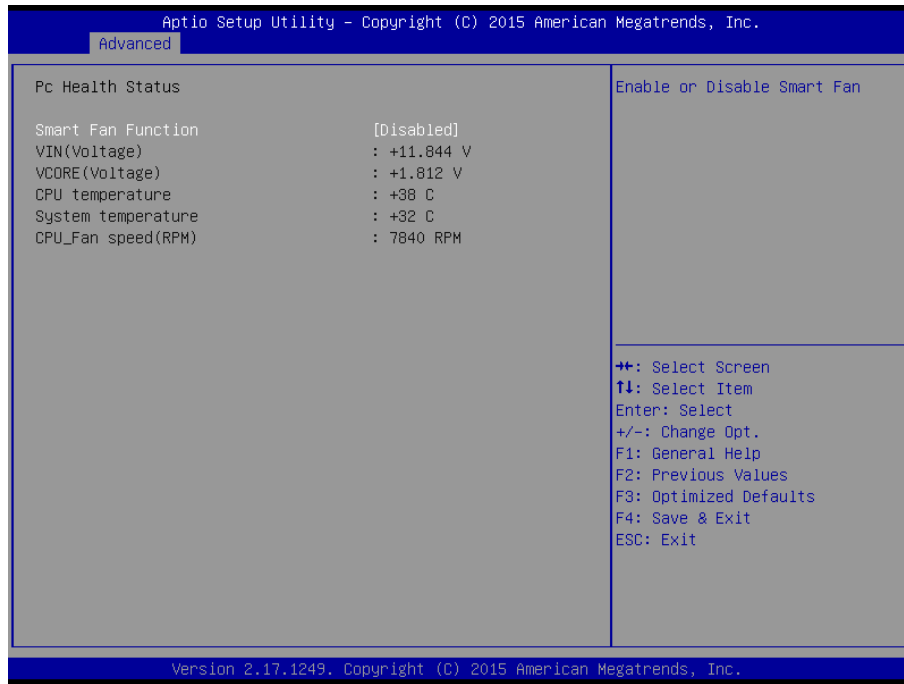
Item	Options	Description
Me FW Image Re-Flash	Disabled[Default] Enabled	Enable/Disable Me FW Image Re-Flash function.

3.6.2.5 AMT Configuration



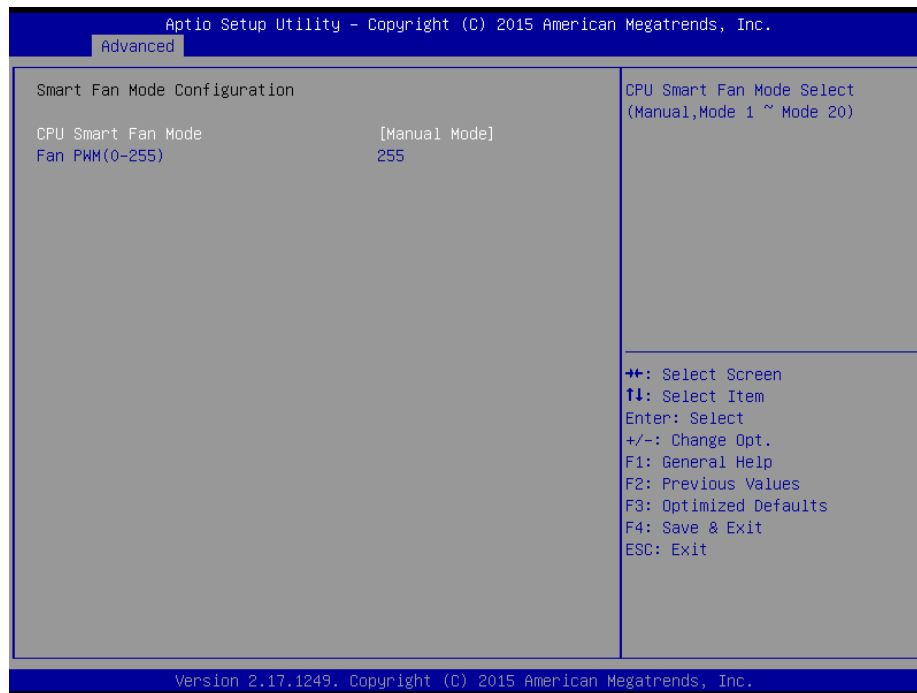
Item	Options	Description
Intel AMT	Disabled Enabled[Default],	Enable/Disable Intel® Active Management Technology BIOS Extension. Note: iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device.
Un-Configure ME	Disabled[Default], Enabled	OEMFlag Bit 15: Un-Configure ME without password.
Disable ME	Disabled[Default], Enabled	Set ME to Soft Temporary Disabled.

3.6.2.6 H/W Monitor



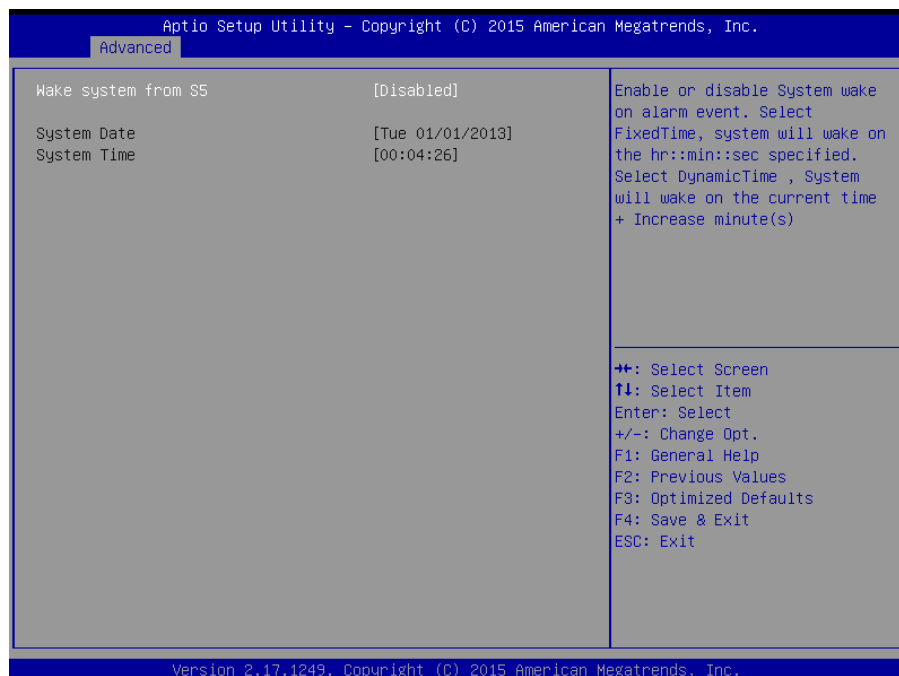
Item	Options	Description
Smart Fan Function	Disabled[Default] Enabled,	Enable or Disable Smart Fan.

3.6.2.6.1 Smart Fan Mode Configuration



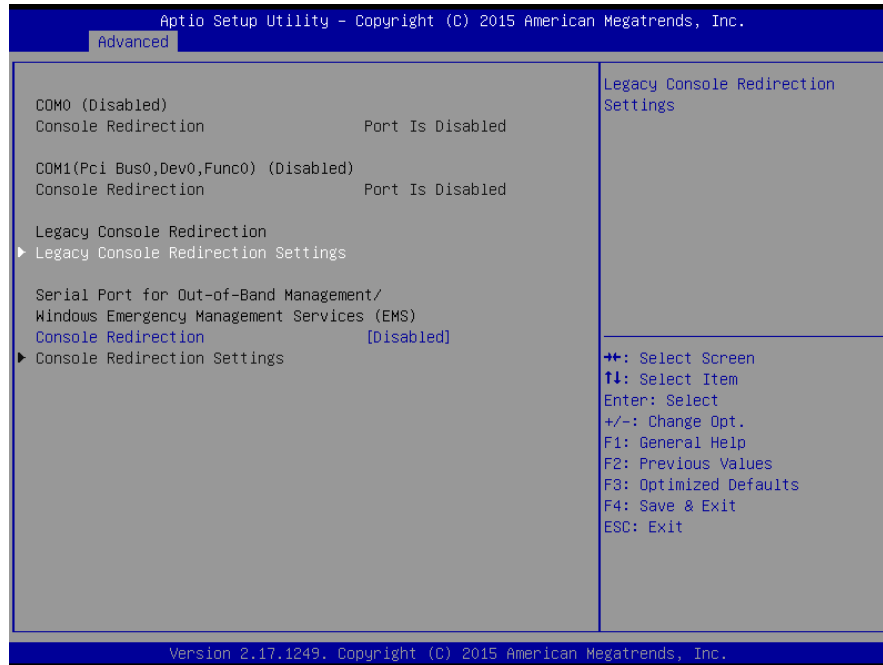
Item	Option	Description
CPU Smart Fan Mode	Manual Mode[Default], Mode01/02/03/04/05/06/07/08/09 /10/11/12/13/14/15/16/17/18/19/20	CPU Smart Fan Mode Select. (Manual, Mode 1 ~ Mode 20)
Fan PWM	0-255[Default]	Fan PWM duty. (0-255)

3.6.2.7 S5 RTC Wake Settings



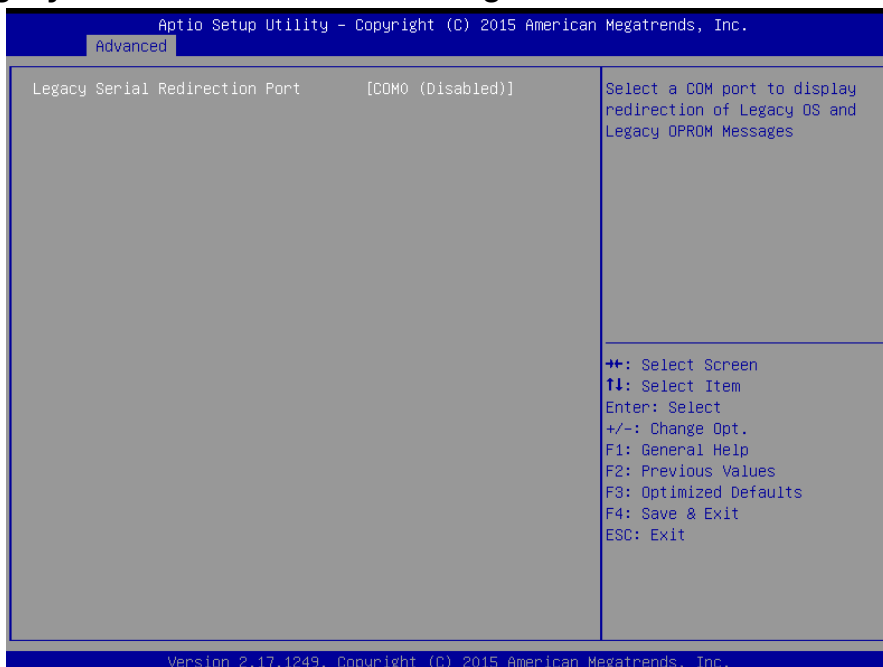
Item	Options	Description
Wake system from S5	Disabled[Default], Fixed Time Dynamic Time	Enable or disable System wake on alarm event. Select Fixed Time, system will wake on the hr::min::sec specified. Select Dynamic Time, System will wake on the current time + Increase minute(s).

3.6.2.8 Serial Port Console Redirection



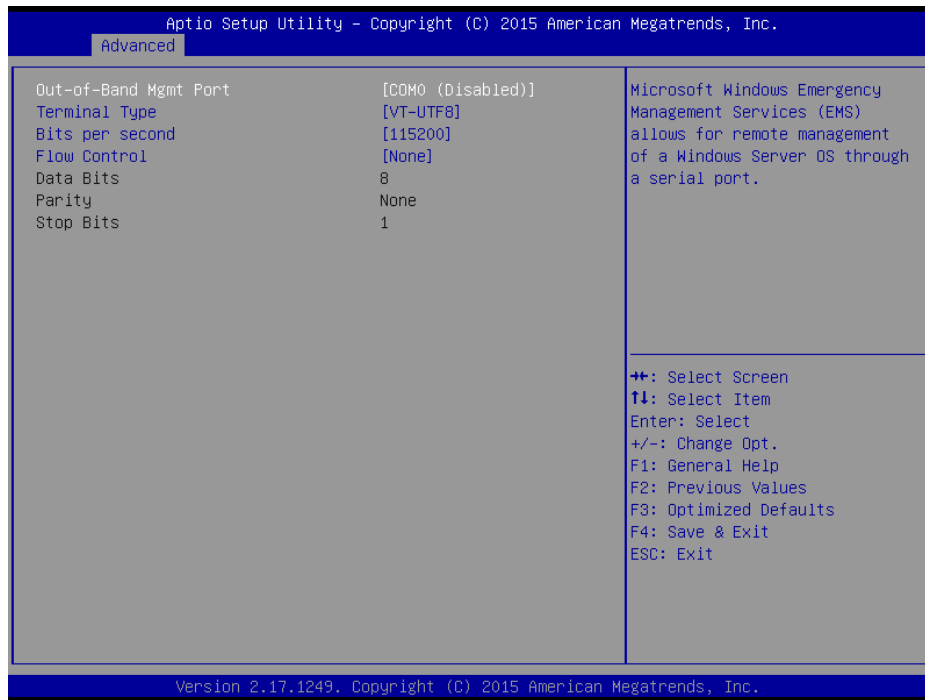
Item	Options	Description
Console Redirection	Disabled[Default], Enabled	Console Redirection Enable or Disable.

3.6.2.8.1 Legacy Console Redirection Settings



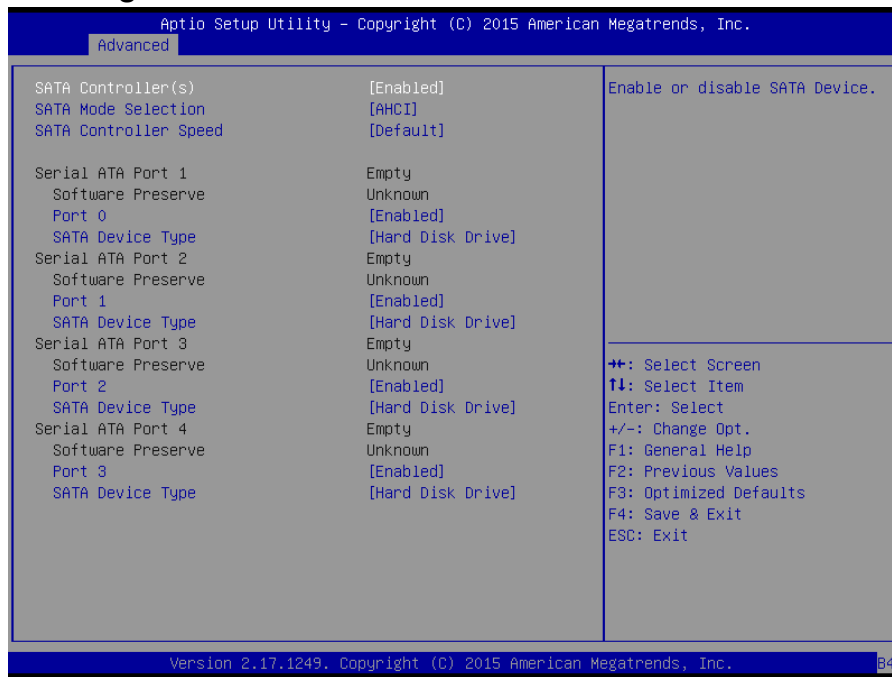
Item	Option	Description
Legacy Serial Redirection Port	COM0[Default],	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.

3.6.2.8.2 Console Redirection Settings



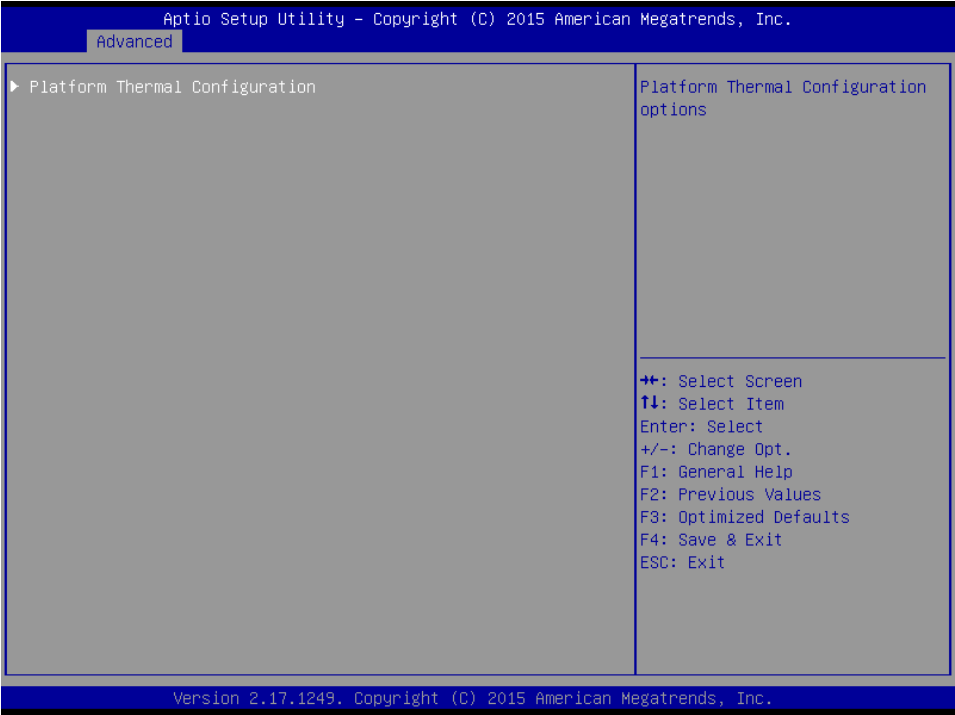
Item	Option	Description
Out-of-Band Mgmt Port	COM0[Default],	Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.
Terminal Type	VT100 VT100+ VT-UTF8[Default] ANSI	VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings page, for more Help with Terminal Type/Emulation.
Bits per second	9600 19200 57600 115200[Default]	Selects serial port transmission speed. The speed must be matched on the other side, Long or noisy lines may require lower speeds.
Flow Control	None[Default] Hardware RTS/CTS Software Xon/Xoff	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.

3.6.2.9 SATA Configuration

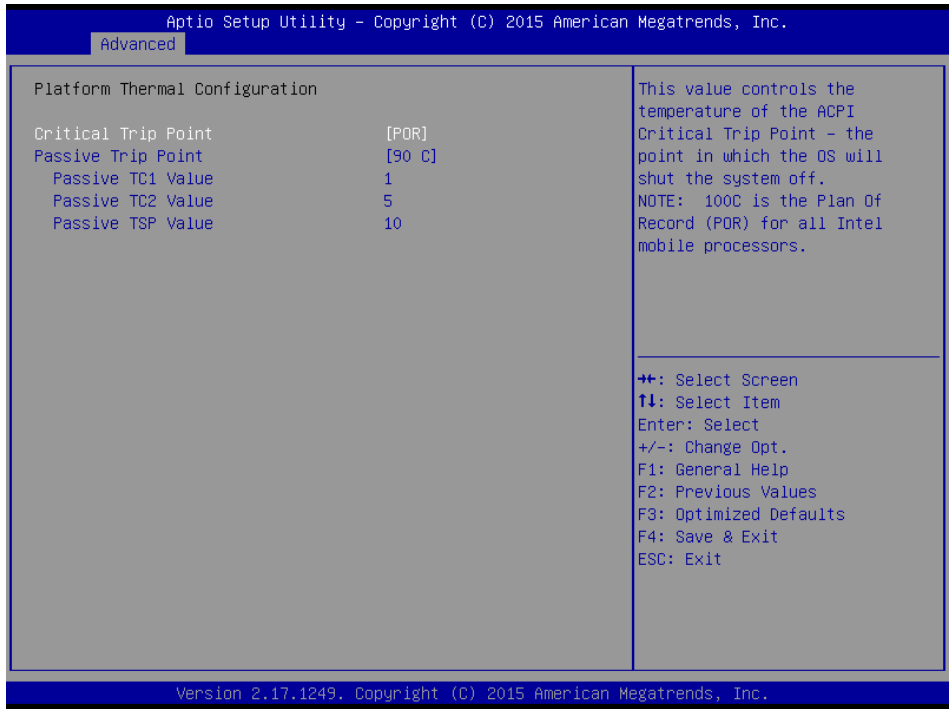


Item	Options	Description
SATA Controller(s)	Disabled Enabled[Default]	Enable or disable SATA Device.
SATA Mode Selection	IDE AHCI[Default]	Determines how SATA controller(s) operate.
SATA Controller Speed	Default[Default] Gen1 Gen2 Gen3	Indicates the maximum speed the SATA controller can support.
Port 1/2/3/4	Disabled Enabled[Default]	Enable or Disable SATA Port.
SATA Device Type	Hard Disk Drive[Default] Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

3.6.2.10 Thermal Configuration



3.6.2.10.1 Platform Thermal Configuration



Item	Options	Description
Critical Trip Point	POR[Default]	This value controls the temperature of the ACPI Critical Trip Point – the point in which the OS will shut the system off. NOTE:100C is the Plan Of Record (POR) for all Intel mobile processors.
	80C	
	90C	
	100C	
	110C	

Passive Trip Point	Disabled, 80C 90C[Default] 100C 110C	This value controls the temperature of the ACPI Passive Trip Point – the point in which the OS will begin throttling the processor.
Passive TC1 Value	1-16 1[Default]	This value sets the TC1 value for the ACPI Passive Cooling Formula. Range 1 – 16.
Passive TC2 Value	1-16 5[Default]	This value sets the TC2 value for the ACPI Passive Cooling Formula. Range 1 – 16.
Passive TSP Value	2 – 32 10[Default],	This item sets the TSP value for the ACPI Passive Cooling Formula. It represents in tenths of a second how often the OS will read the temperature when passive cooling is enabled. Range 2 – 32.

3.6.2.11 Network Stack Configuration

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Advanced

Network Stack	[Disabled]	Enable/Disable UEFI Network Stack
		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Version 2.17.1249. Copyright (C) 2015 American Megatrends, Inc.

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Advanced

Network Stack	[Enabled]	Enable/Disable UEFI Network Stack
Ipv4 PXE Support	[Enabled]	
Ipv6 PXE Support	[Enabled]	
PXE boot wait time	0	
Media detect count	1	
		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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Item	Options	Description
Network Stack	Disabled[Default] Enabled	Enable/Disable UEFI Network Stack.
Ipv4 PXE Support	Disabled Enabled[Default]	Enable Ipv4 PXE Boot Support. If disabled IPV4 PXE boot option will not be created.
Ipv6 PXE Support	Disabled Enabled[Default]	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 abort the PXE boot.
Media detect count	0-1	Number of times presence of media will be checked.

3.6.2.12 CSM Configuration

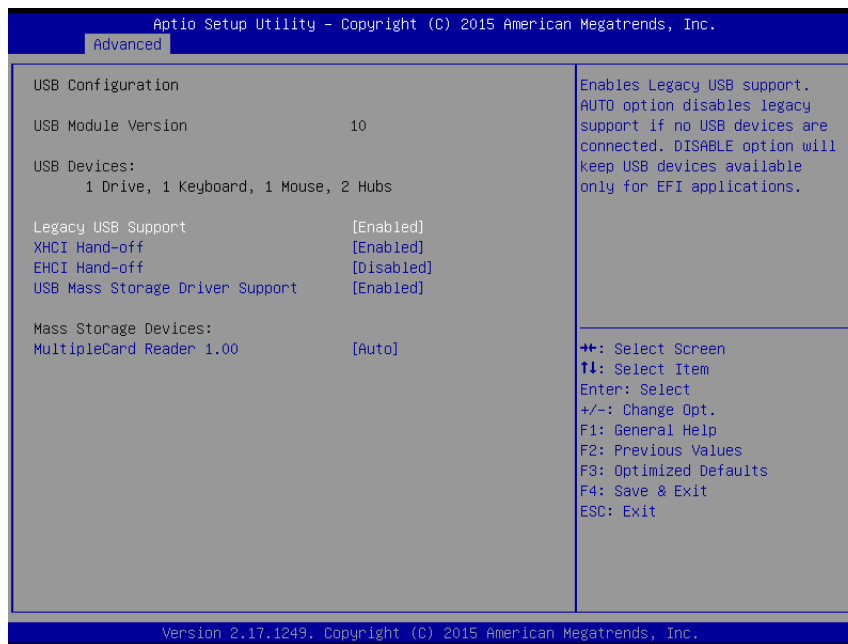


Item	Options	Description
CSM Support	Disabled, Enabled[Default]	Enable/Disable CSM Support.
GateA20 Active	Upon Request[Default] Always	UPON REQUEST – GA20 can be disabled using BIOS services. ALWAYS – go not allow disabling GA20; this option is useful when any RT code is executed above 1MB.
Option ROM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

Network	Do not launch UEFI Legacy [Default]	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.

3.6.2.13 USB Configuration

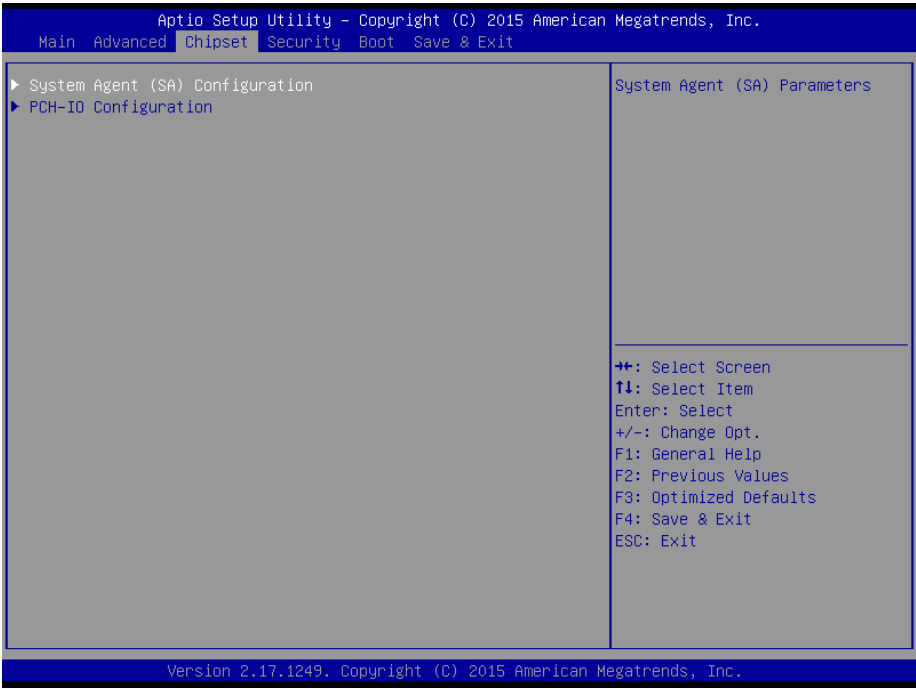
The USB Configuration menu helps read USB information and configures USB settings.



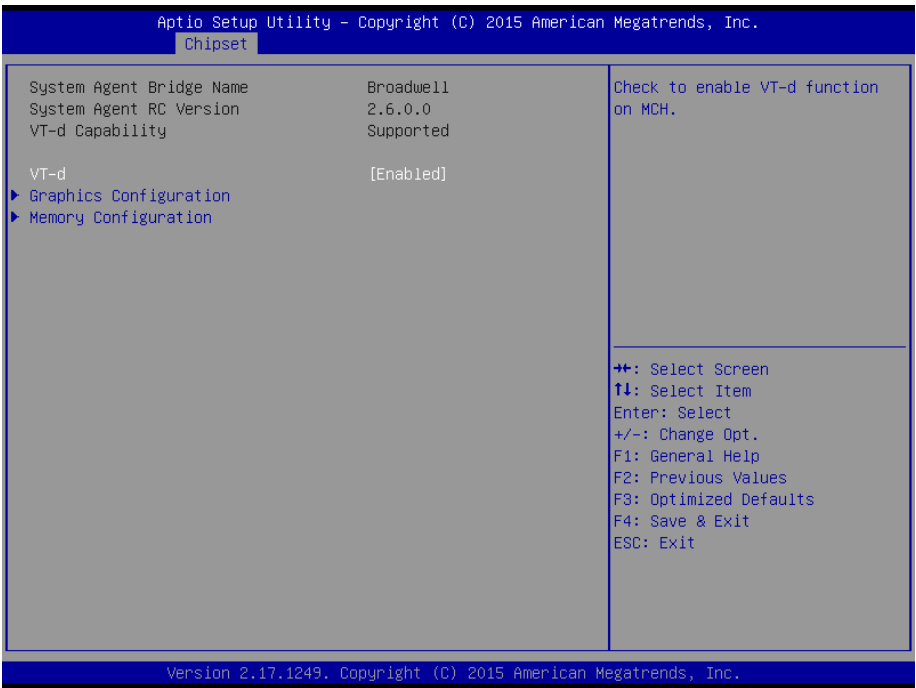
Item	Options	Description
Legacy USB Support	Enabled [Default] Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled [Default] Disabled	This is a workaround 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.

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3.6.3 Chipset

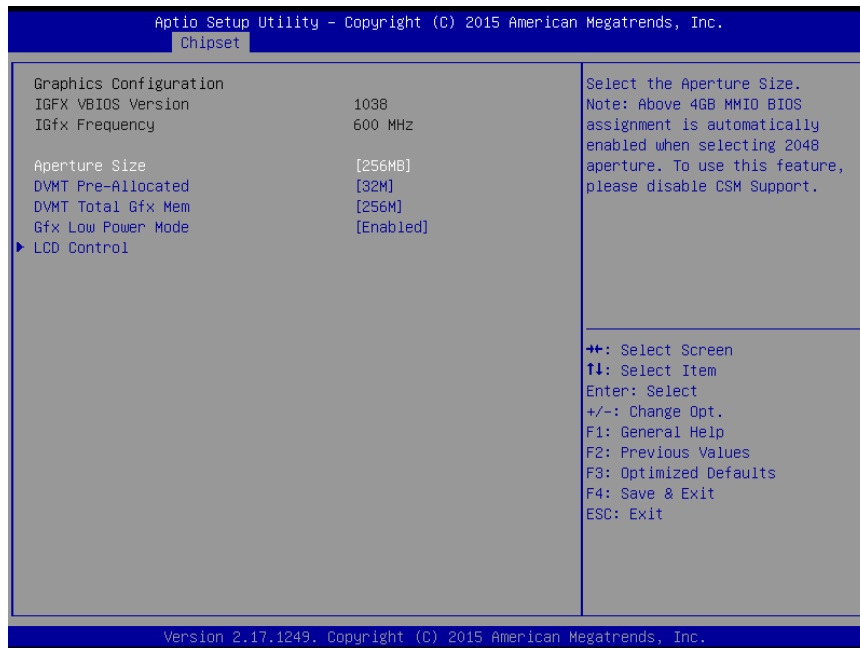


3.6.3.1 System Agent (SA) Configuration



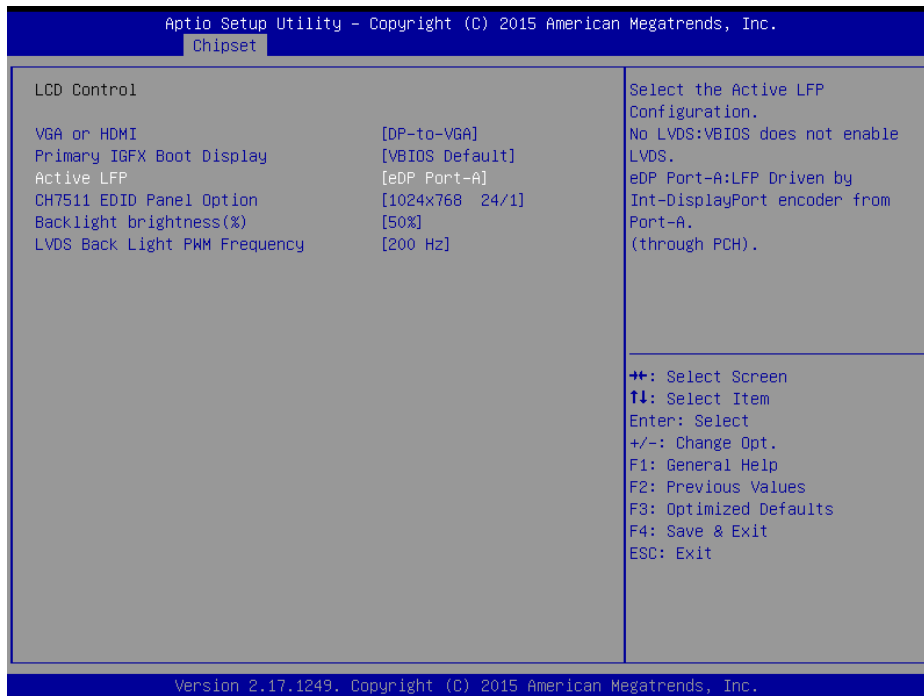
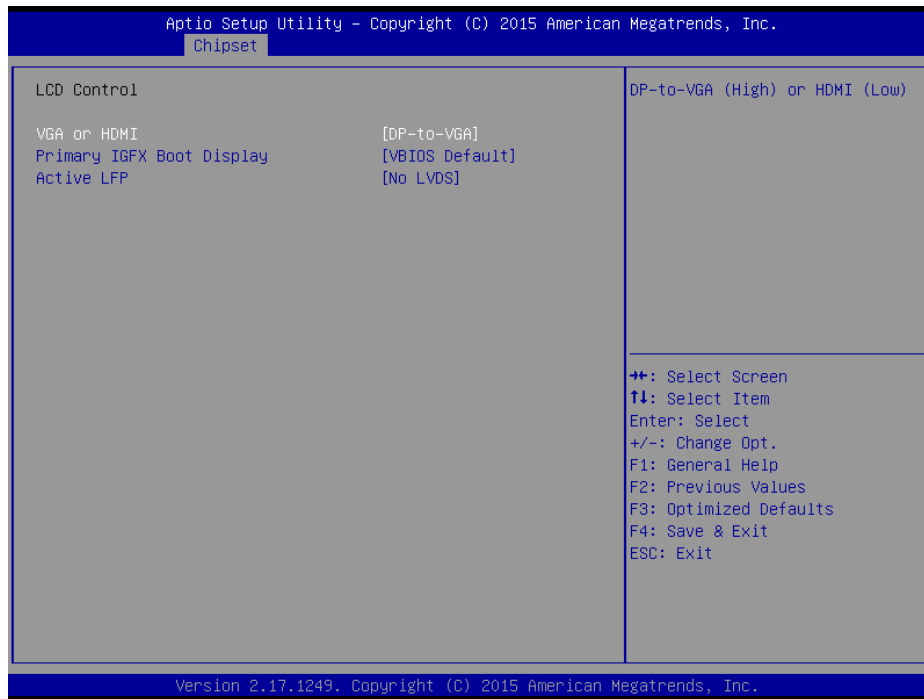
Item	Option	Description
VT-d	Disabled Enabled[Default]	Check to enable VT-d function on MCH.

3.6.3.1.1 Graphics Configuration



Item	Option	Description
Aperture Size	128MB 256MB[Default] 512MB 1024MB 2048MB 4096MB MAX	Select the Aperture Size. Note: Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048 aperture. To use this feature, please disable CSM Support.
DVMT Pre-Allocated	32M[Default]/64M/96M/128M/160M/ 192M/224M/256M/288M/320M/352M/ 384M/416M/448M/480M/512M/ 1024M/2016M	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.
GFx Low Power Mode	Disabled Enabled[Default]	This option is applicable for SFF only.

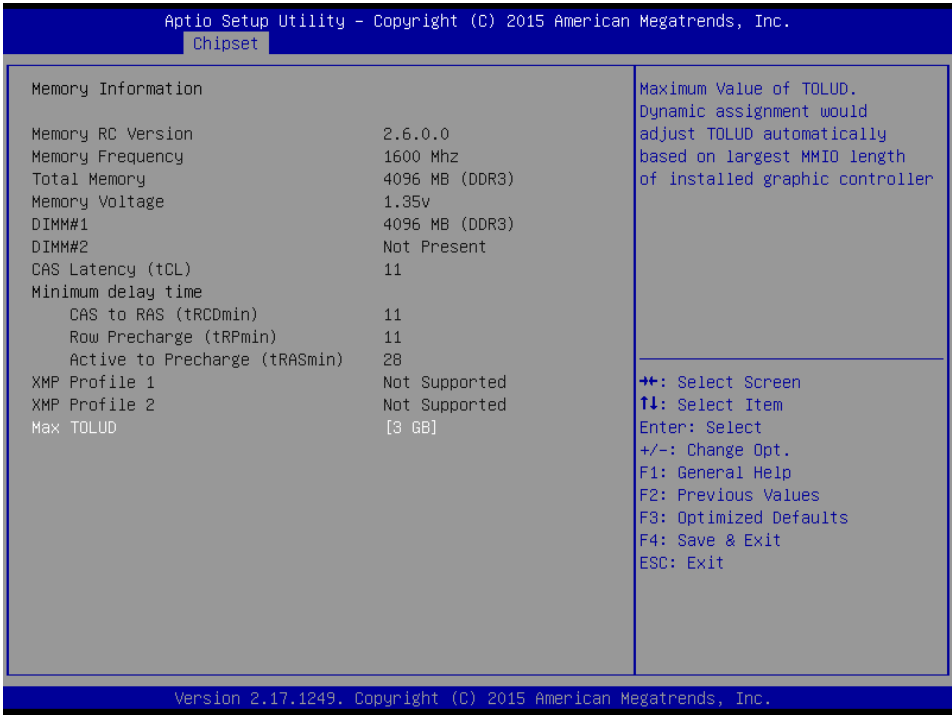
3.6.3.1.1.1 LCD Control



Item	Option	Description
VGA or HDMI	DP-to-VGA[Default] HDMI	DP-to-VGA (High) or HDMI (Low).
Primary IGFX Boot Display	VBIOs Default[Default] HDMI* DP-to-VGA* LVDS	Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your

	ADD2	selection. VGA modes will be supported only on primary display. Note: These two options ("HDMI" & "DP-to-VGA") will not exist at the same time. They depend on the option of feature "VGA or HDMI".
Active LFP	No LVDS[Default] eDP Port-A	Select the Active LFP Configuration. No LVDS: VBIOS does not enable LVDS. eDP Port-A:LFP Driven by Int-DisplayPort encoder from Port-A. (through PCH).
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.
Backlight brightness (%)	00% 25% 50%[Default] 75% 100%	Select LVDS back light PWM duty.
LVDS Back Light PWM Frequency	200Hz[Default] 300Hz 400Hz 500Hz 700 Hz 1kHz 2kHz 3kHz 5kHz 10kHz 20kHz	Select LVDS back light PWM Frequency.

3.6.3.1.2 Memory Configuration



Item	Option	Description
Max TOLUD	Dynamic	Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller.
	1 GB	
	1.25 GB	
	1.5 GB	
	1.75 GB	
	2 GB	
	2.25 GB	
	2.5 GB	
	2.75 GB	
	3 GB[Default]	
	3.25 GB	

3.6.3.2 PCH-IO Configuration

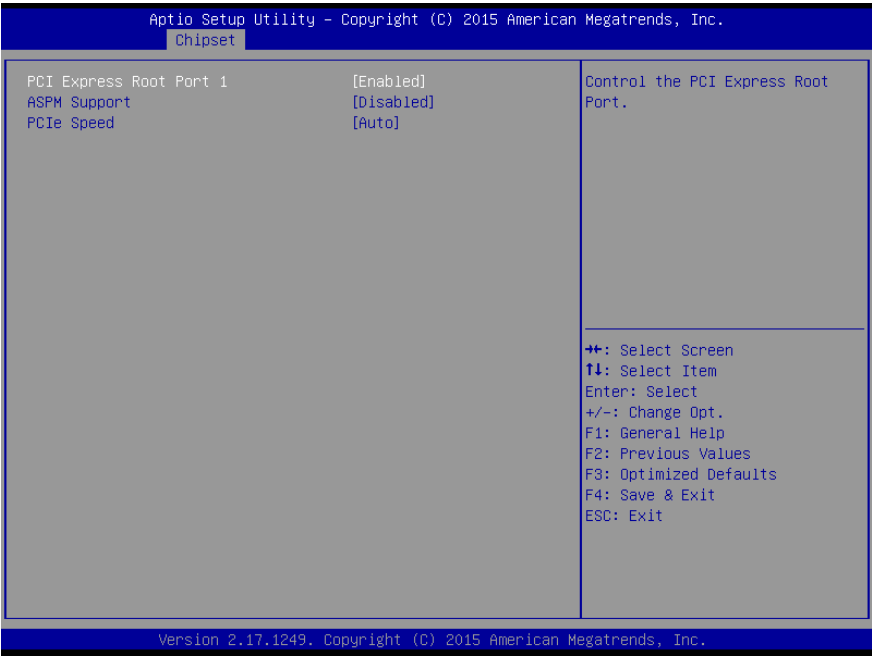


Item	Option	Description
PCH LAN(PHY) Controller	Disabled Enabled [Default]	Enable or disable LAN1 NIC.

3.6.3.2.1 PCI Express Configuration

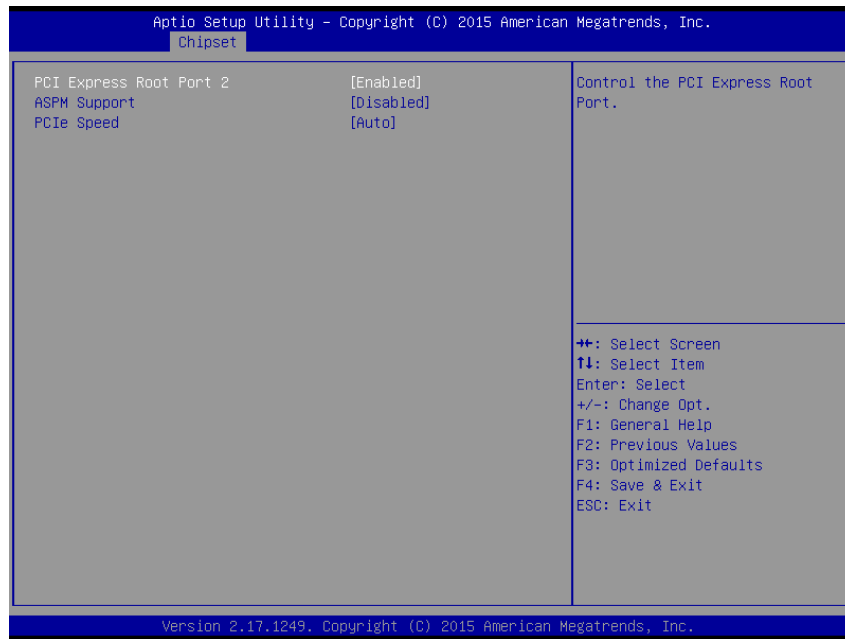


3.6.3.2.1.1 PCI Express Root Port 1



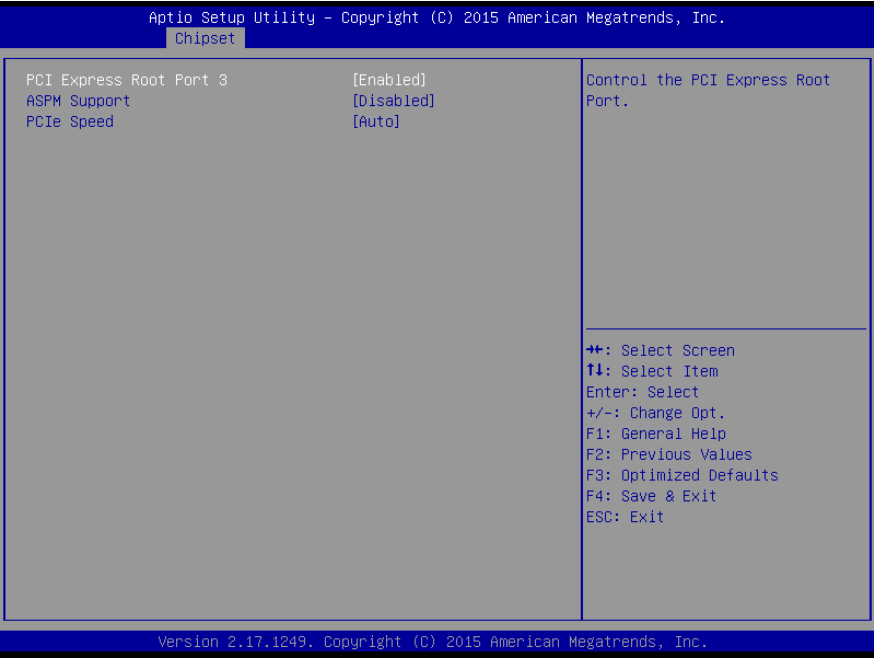
Item	Option	Description
PCI Express Root Port 1	Enabled[Default], Disabled	Control the PCI Express Root Port.
ASPM Support	Disabled[Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
PCIe Speed	Auto[Default] Gen1 Gen2	Select PCI Express port speed.

3.6.3.2.1.2 PCI Express Root Port 2



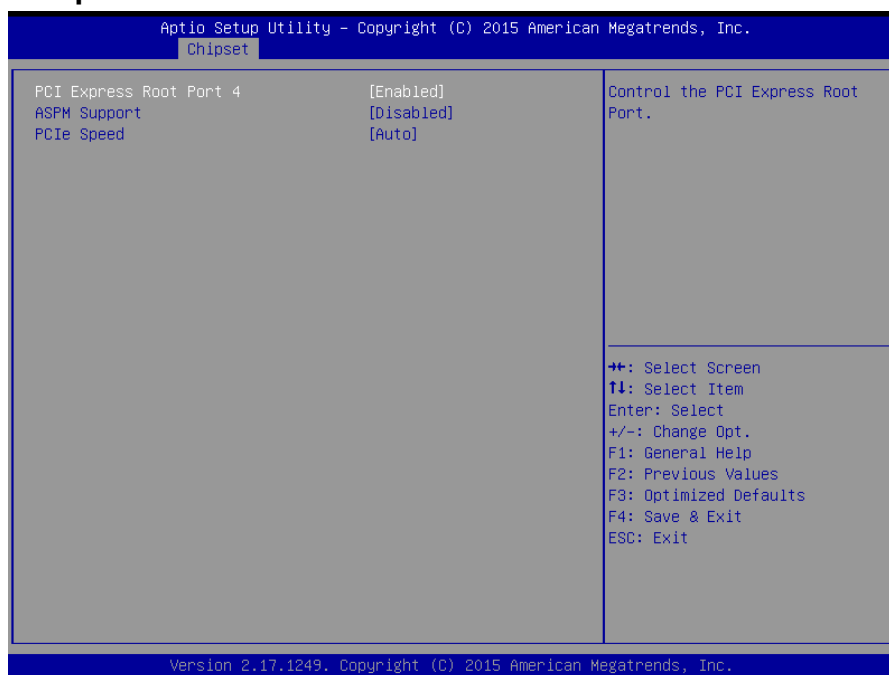
Item	Option	Description
PCI Express Root Port 2	Enabled[Default], Disabled	Control the PCI Express Root Port.
ASPM Support	Disabled[Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
PCIe Speed	Auto[Default] Gen1 Gen2	Select PCI Express port speed.

3.6.3.2.1.3 PCI Express Root Port 3



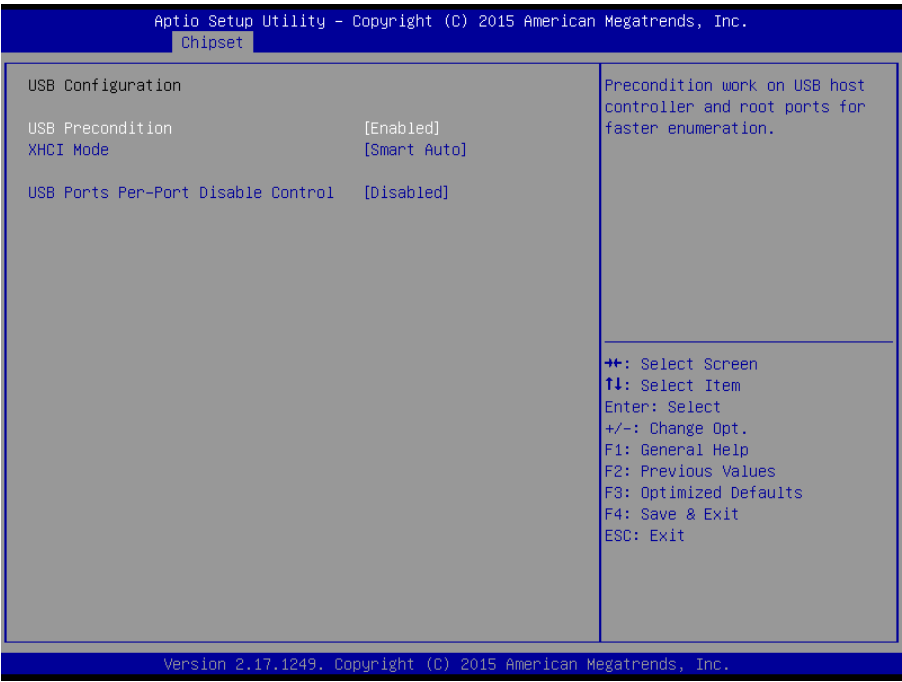
Item	Option	Description
PCI Express Root Port 3	Enabled[Default], Disabled	Control the PCI Express Root Port.
ASPM Support	Disabled[Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
PCIe Speed	Auto[Default] Gen1 Gen2	Select PCI Express port speed.

3.6.3.2.1.4 PCI Express Root Port 4



Item	Option	Description
PCI Express Root Port 4	Enabled[Default], Disabled	Control the PCI Express Root Port.
ASPM Support	Disabled[Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
PCIe Speed	Auto[Default] Gen1 Gen2	Select PCI Express port speed.

3.6.3.2.2 USB Configuration



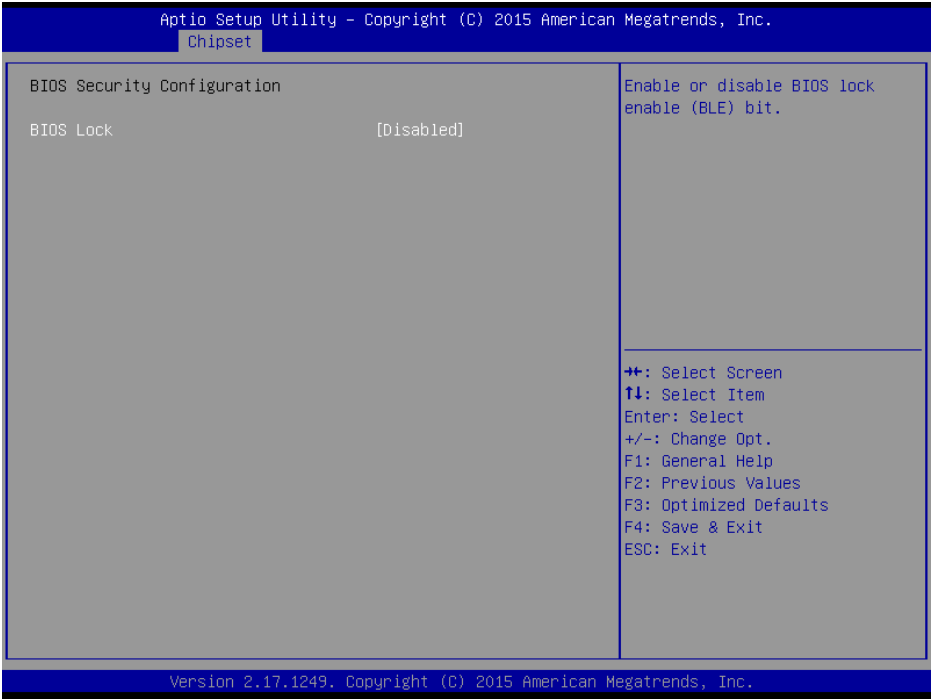
Item	Option	Description
USB Precondition	Enabled[Default], Disabled	Precondition work on USB host controller and root ports for faster enumeration.
XHCI Mode	Smart Auto[Default], Auto Enabled Disabled	Mode of operation of xHCI controller.
USB Ports Per-Port Disable Control	Enabled, Disabled[Default]	Control each of the USB ports (0~8) disabling.

3.6.3.2.3 PCH Azalia Configuration



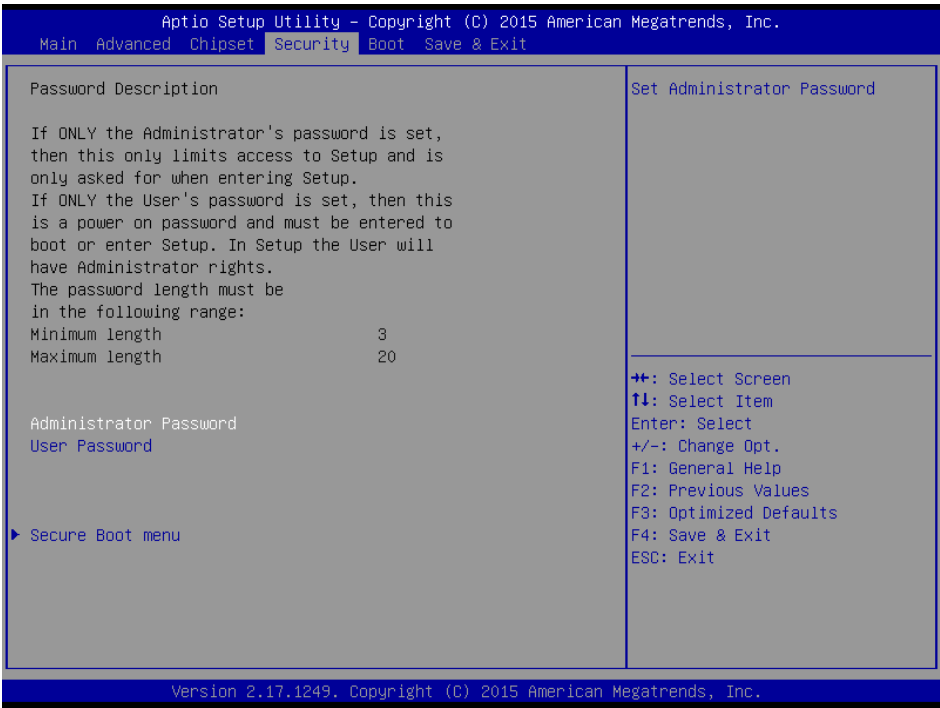
Item	Option	Description
Azalia	Disabled Enabled [Default] Auto	Control Detection of the Azalia device. Disabled = Azalia will be unconditionally disabled Enabled = Azalia will be unconditionally Enabled Auto = Azalia will be enabled if present, disabled otherwise.
Amplifier Gain	15.3 dB [Default] , 21.1 dB 27.2 dB 31.8 dB	Select Amplifier Gain (dB).

3.6.3.2.4 BIOS Security Configuration



Item	Option	Description
BIOS Lock	Enabled, Disabled[Default]	Enable or disable BIOS lock enable (BLE) bit.

3.6.4 Security



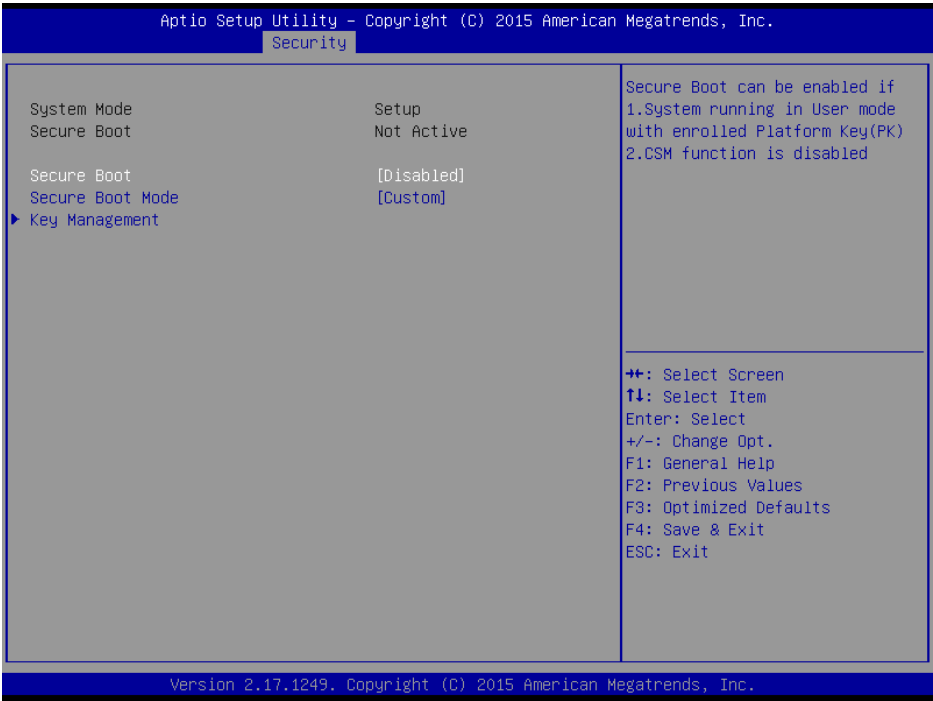
● Administrator Password

Set setup Administrator Password

● User Password

Set User Password

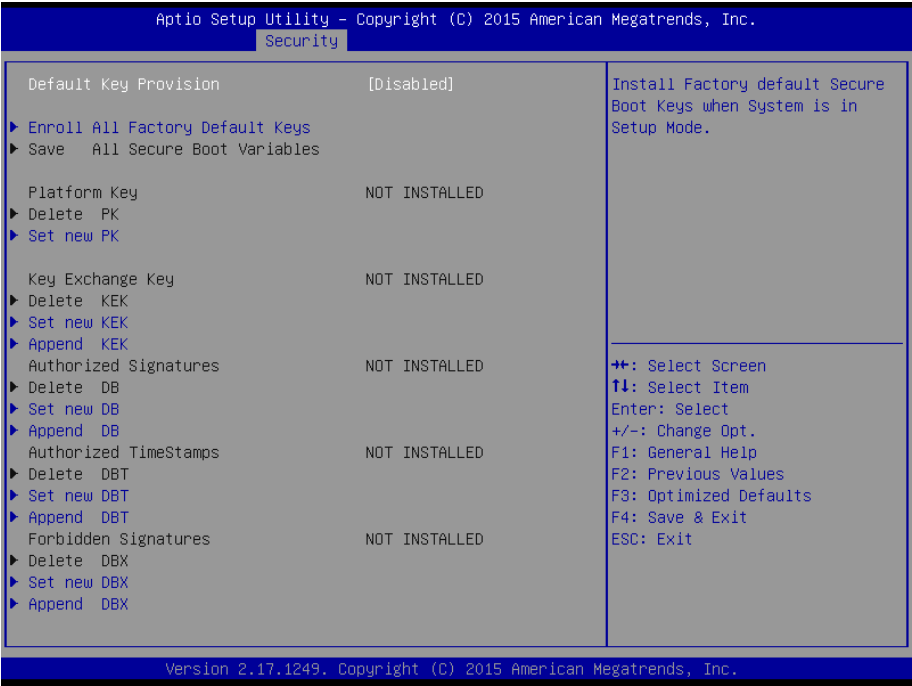
3.6.4.1 Secure Boot menu



Item	Option	Description
Secure Boot	Disabled[Default] Enabled	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.

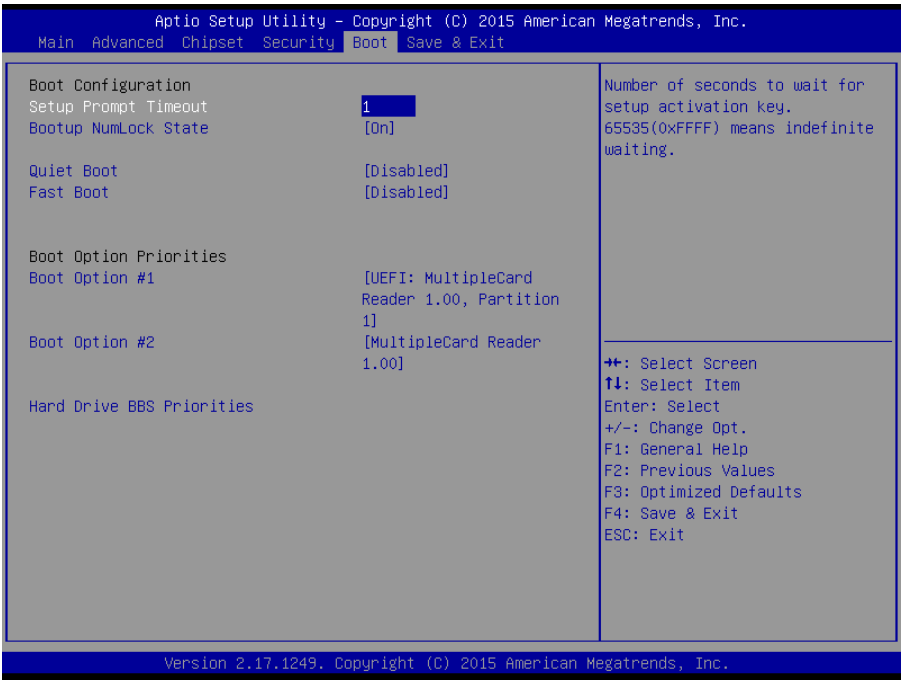
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3.6.4.1.1 Key Management



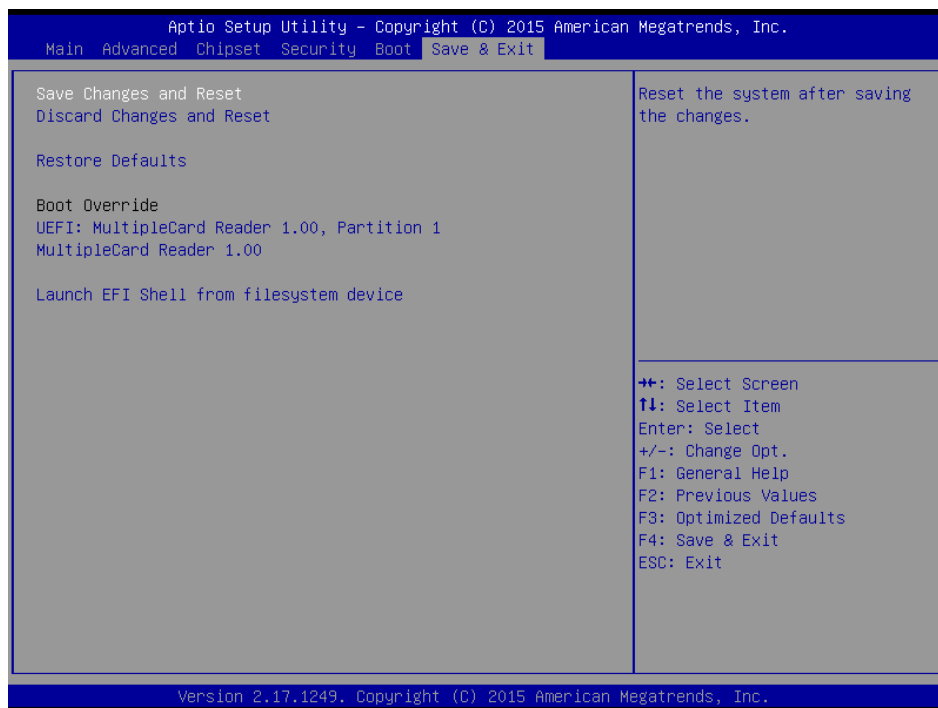
Item	Option	Description
Default Key Provision	Enabled, Disabled[Default]	Install Factory default Secure Boot Keys when System is in Setup Mode.

3.6.5 Boot



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	Disabled[Default] Enabled	Enables or disables Quiet Boot option
Fast Boot	Disabled[Default] Enabled	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 and exit



3.6.6.1 Save Changes and Reset

Reset the system after saving the changes.

3.6.6.2 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.

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3.6.6.3 *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.

3.6.6.4 *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

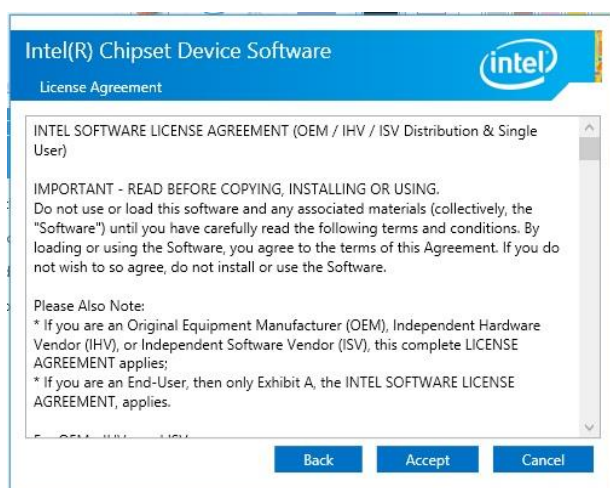
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to `\\Driver_Chipset\\Intel\\ESM-BDW`.



Note: The installation procedures and screen shots in this section are based on Windows 8 operation system. If the warning message appears while the installation process, click Continue to go on.



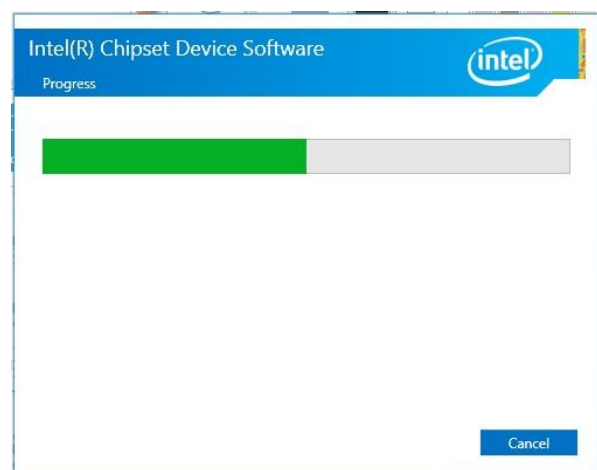
Step1. Click **Next**.



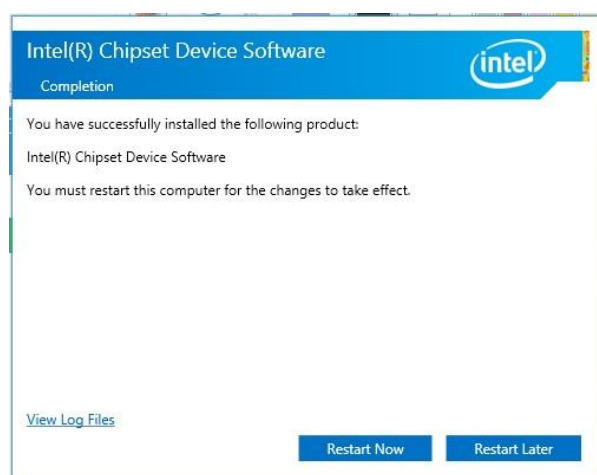
Step 2. Click **Accept**.



Step 3. Click **Accept**.



Step 4. Wait while installing.



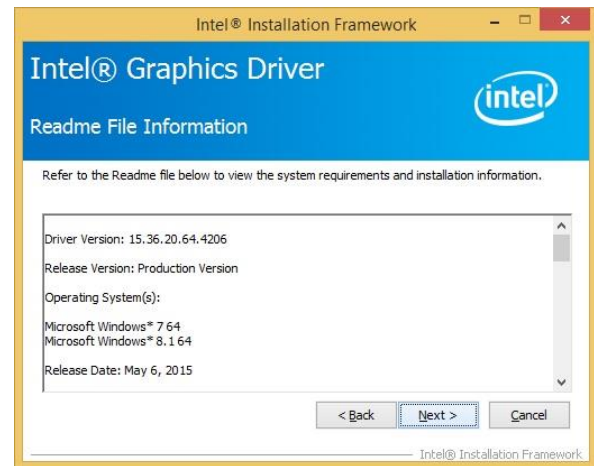
Step 5. Click **Restart Now** to complete setup.

4.2 Install Display Driver

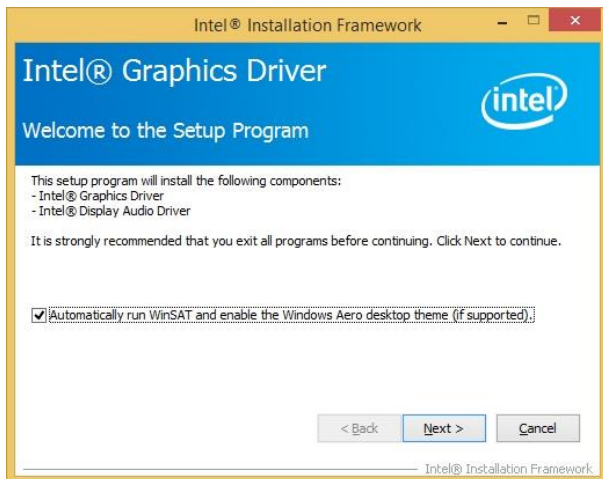
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **IVGAESM-BDW**.



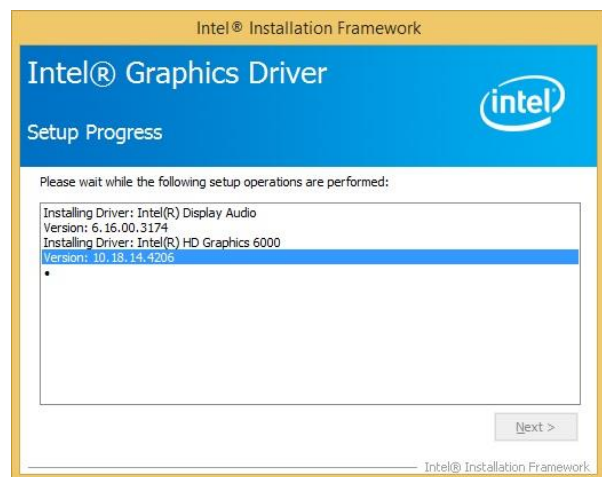
Note: The installation procedures and screen shots in this section are based on Windows 8 operation system.



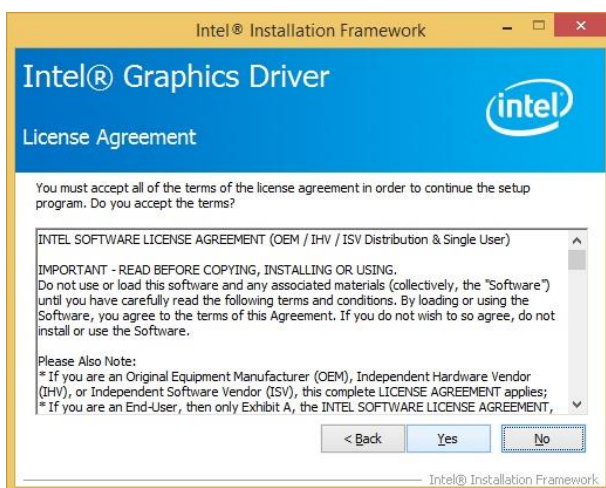
Step 3. Click Next.



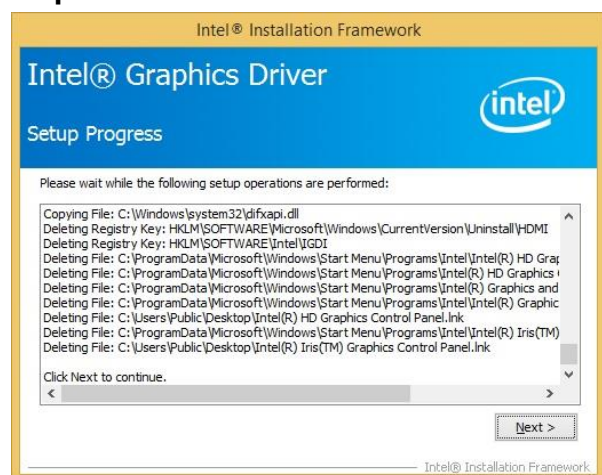
Step 1. Click Next to continue installation.



Step 4. Click Next.

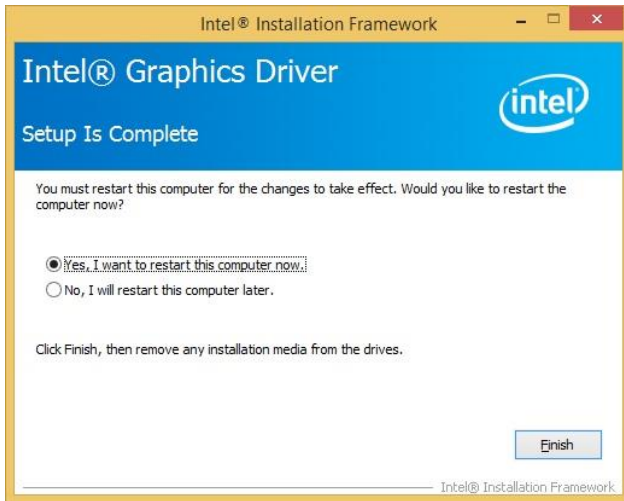


Step 2. Click Yes to accept license agreement.



Step 5. Click Next.

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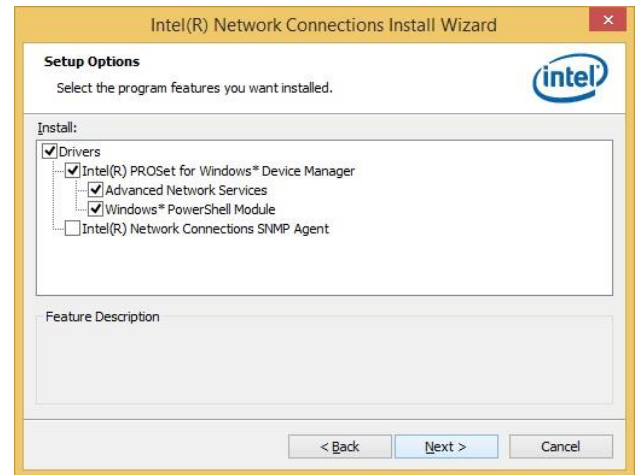
Step 6. Click **Finish** to complete setup.

4.3 Install LAN Driver (For Intel I218LM)

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to
\\Driver_Gigabit\\Intel\\I218LM\\ESM-BDW_LAN.



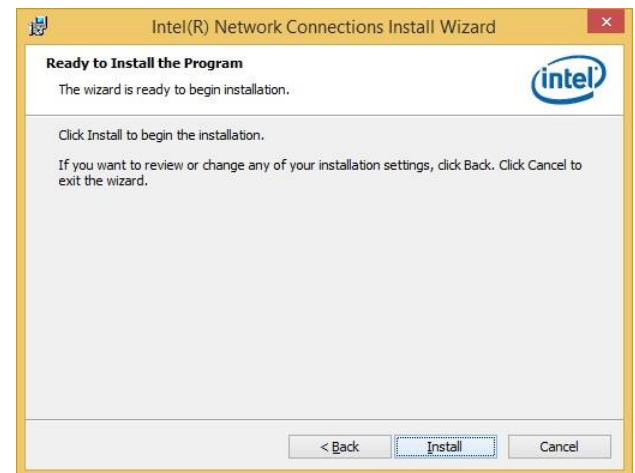
Note: The installation procedures and screen shots in this section are based on Windows 8 operation system.



Step 3. Click Next.



Step 1. Click Next to continue installation.



Step 4. Click Install.



Step 2. Click Next.



Step 5. Wait while installing.

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Step 6. Wait while installing.



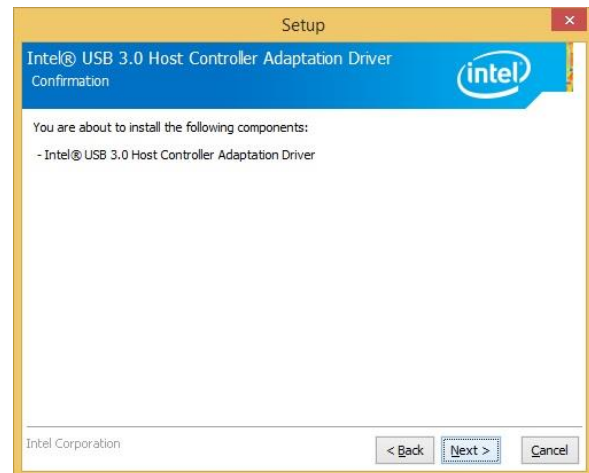
Step 7. Click **Finish** to complete setup.

4.4 Install USB 3.0 Driver

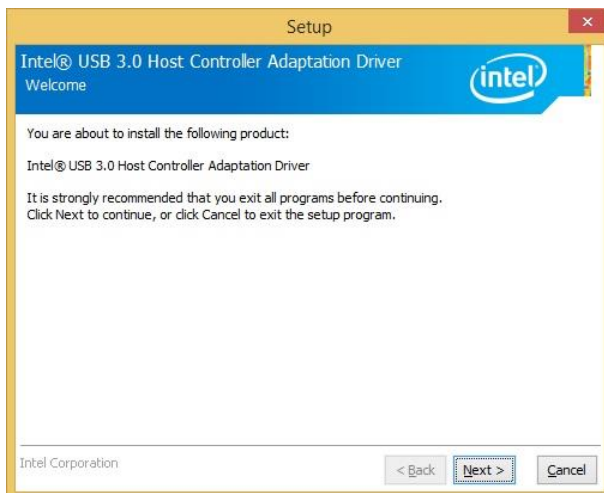
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to `Utility\ESM-BDW_USB3.0`.



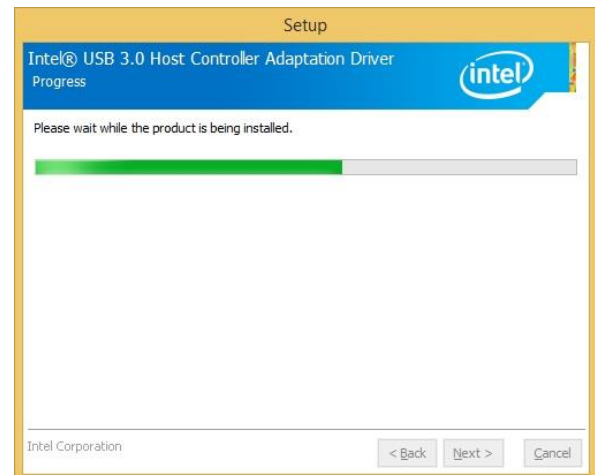
Note: The installation procedures and screen shots in this section are based on Windows 8 operation system. If the warning message appears while the installation process, click Continue to go on.



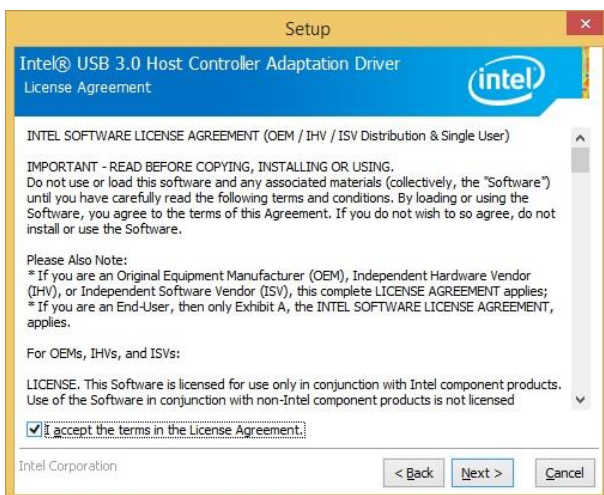
Step 3. Click **Next** to continue installation.



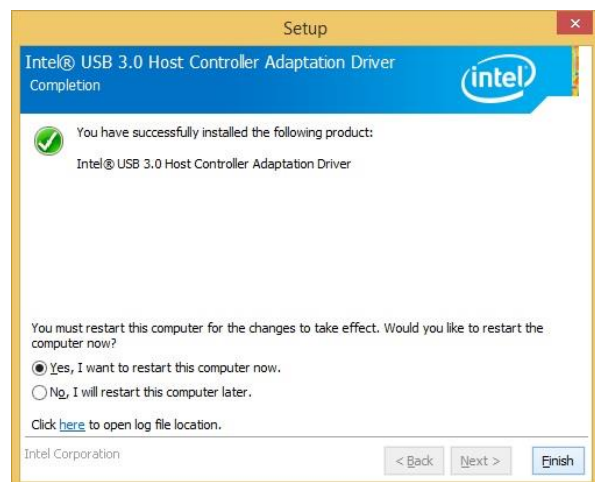
Step1. Click **Next** to start installation.



Step 4. Wait while installing.



Step 2. Click **Next**.



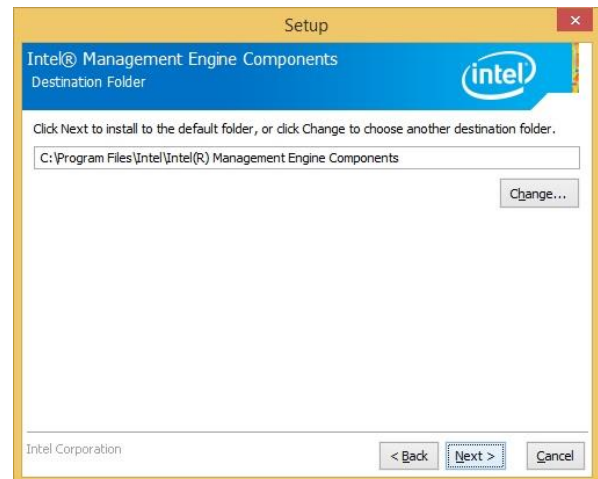
Step 5. Click **Finish** to complete setup.

4.5 Install ME Driver

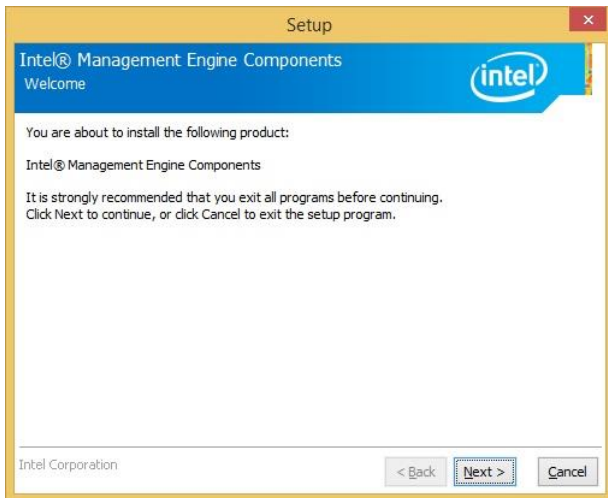
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to \Utility\ESM-BDW_ME.



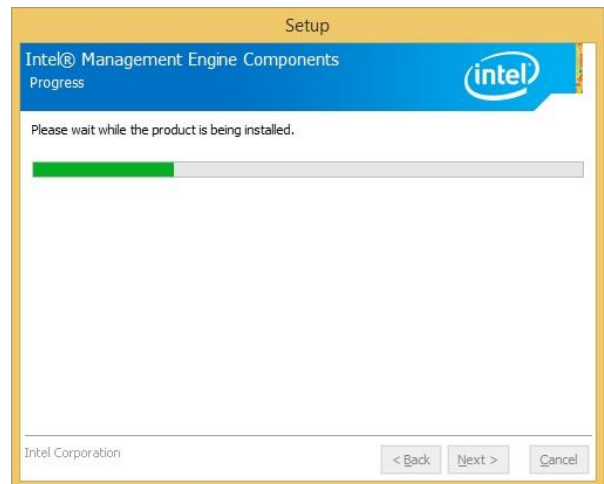
Note: The installation procedures and screen shots in this section are based on Windows 8 operation system. If the warning message appears while the installation process, click Continue to go on.



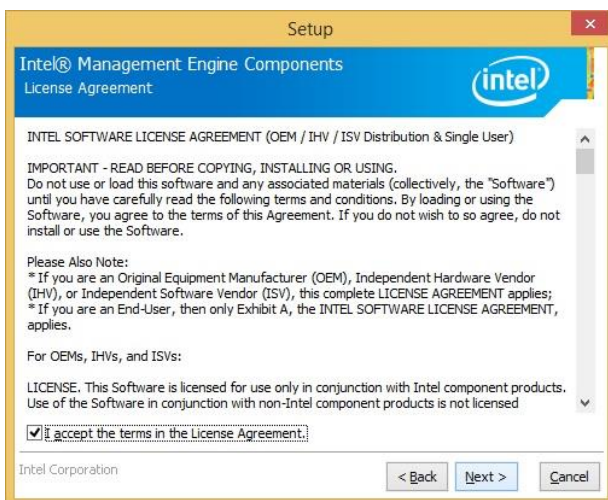
Step 3. Click **Next** to continue installation.



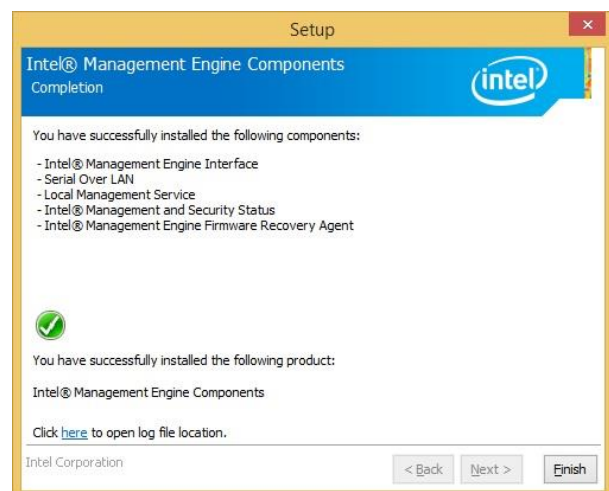
Step1. Click **Next** to start installation.



Step 4. Wait while installing.



Step 2. Click **Next**.



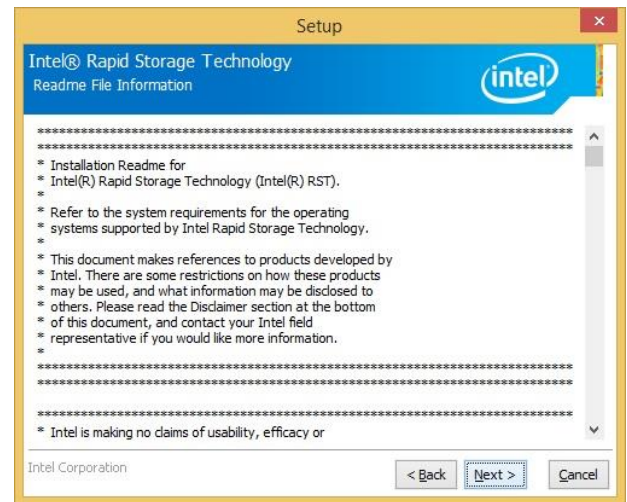
Step 5. Click **Finish** to complete setup.

4.6 Install IRST Driver

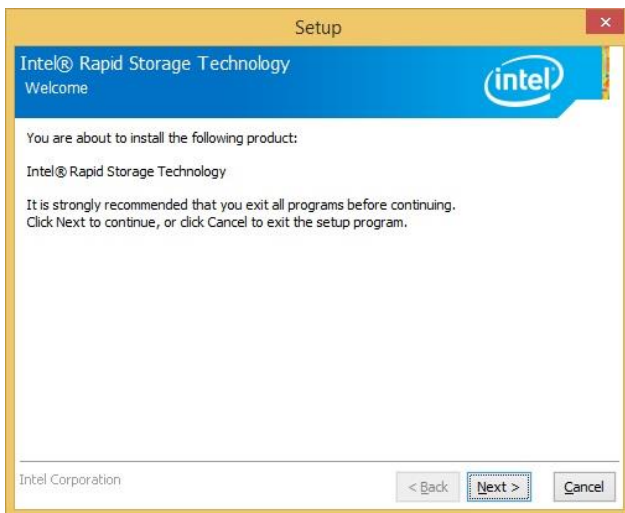
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to \Utility\ESM-BDW_IRST.



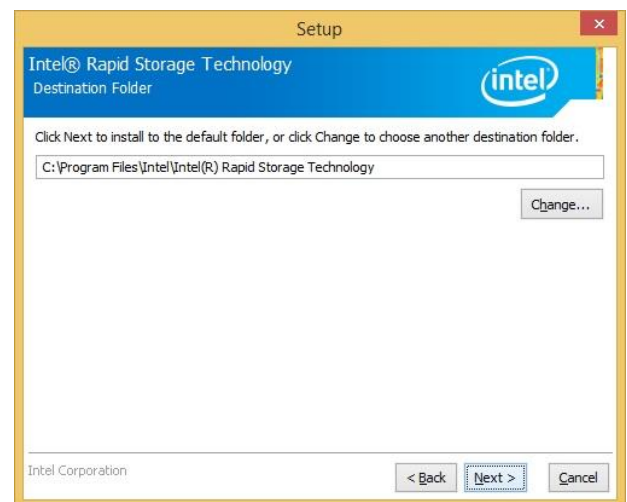
Note: The installation procedures and screen shots in this section are based on Windows 8 operation system.



Step 3. Click Next.



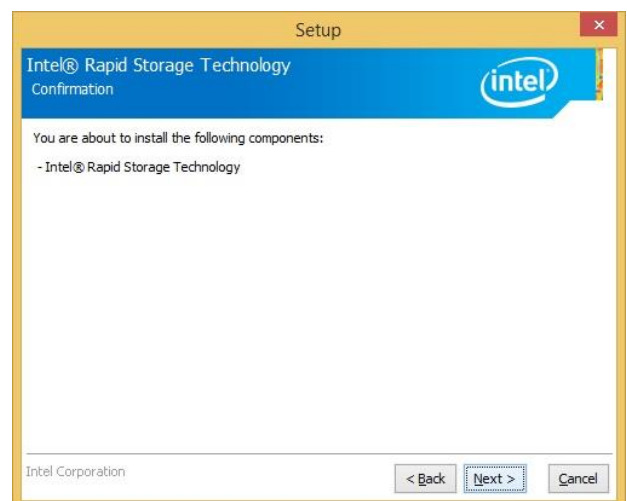
Step 1. Click Next to continue installation.



Step 4. Click Next.

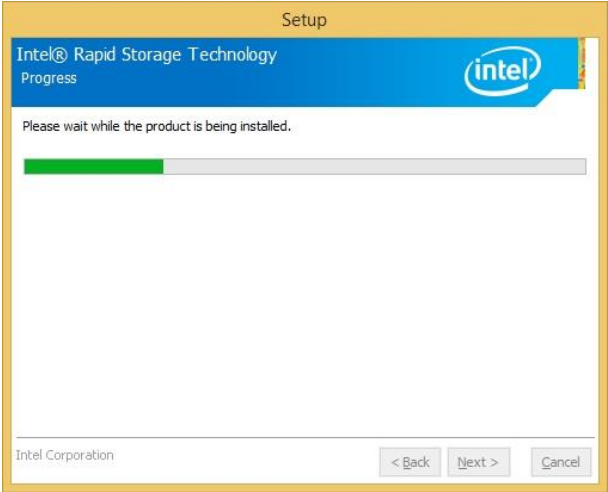


Step 2. Click Next.

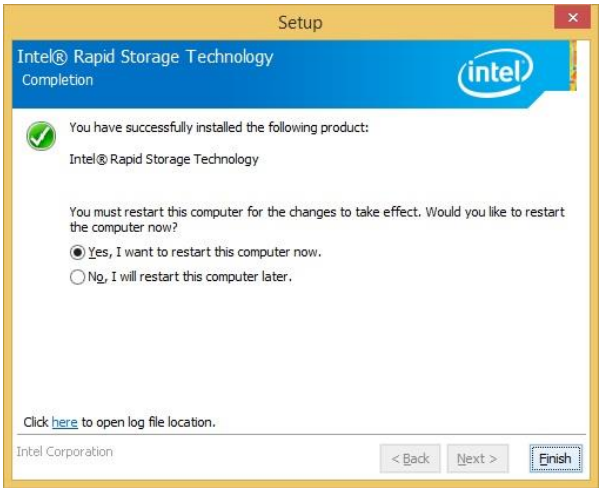


Step 5. Click Next.

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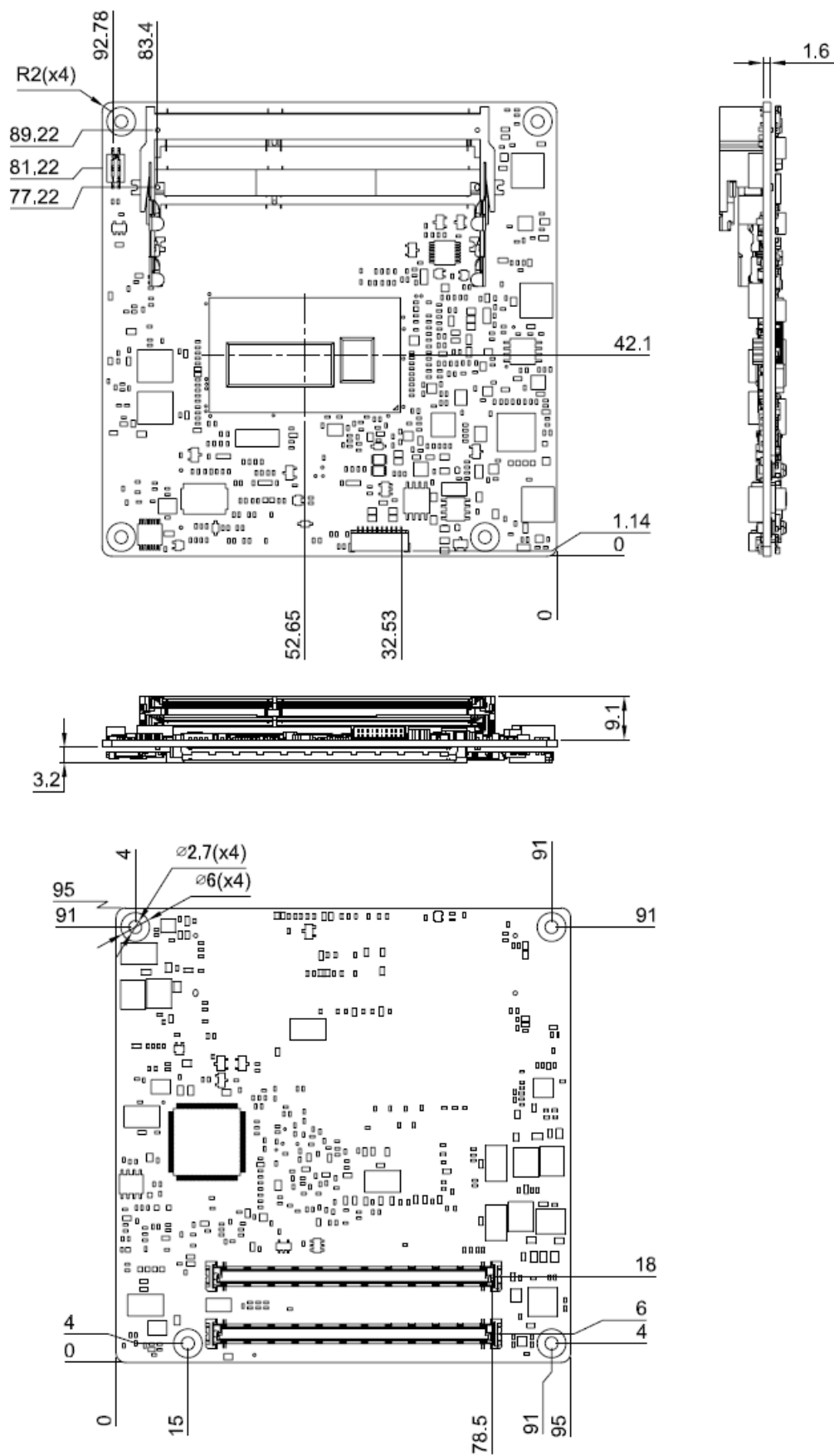


Step 6. Wait while installing.



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

5. Mechanical Drawing



Unit: mm

