IB70 Motherboard

Mini-ITX Fanless SBC with Bay Trail Intel ® Celeron Processor, LVDS, VGA, Dual Giga Ethernet, and Mini-PCIe Interface

V200

User Manual

PREFACE

This product can be used only in industrial-grade computers.

Copyright Notice

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Warranty

We warrant that each of its products will be free from material and workmanship defects for a period of one year from the invoice date. (Standard is one year, extended warranty will need to discuss with our sales representatives. If the customer discovers a defect, we will, at its option, repair or replace the defective product at no charge to the customer, provided it is returned during the warranty period of one year, with transportation charges prepaid. The returned product must be properly packaged in its original packaging to obtain warranty service.

If the serial number and the product shipping data differ by over 30 days, the in-warranty service will be made according to the shipping date. In the serial numbers the third and fourth two digits give the year of manufacture, and the fifth digit means the month (e. g., with A for October, B for November and C for December).

For example, the serial number 1W16Axxxxxxxx means October of year 2016.

Packing List

Before using this Motherboard, please make sure that all the items listed below are present in your package:

➢ IB70 Motherboard
➢ User Manual & Driver CD

Optional Accessories:

➢ Power Cord

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Customer Service

We provide a service guide as below for any problem by the following steps: First, contact your distributor, sales representative, or our customer service center for technical support if you need additional assistance. You need to prepare the following information before you call:

➢ Product serial number
➢ Peripheral attachments
➢ Software (OS, version, application software, etc.)
➢ Detailed problem description
➢ The exact wording of any error messages

In addition, free technical support is available from our engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products. Please do not hesitate to call or e-mail us.

Advisory Conventions

Three types of advisories are used throughout the user manual to provide helpful information or to alert you to the potential for hardware damage or personal injury. These are Notes, Important, Cautions, and Warnings. The following is an example of each type of advisory.

NOTE:

A note is used to emphasize helpful information

IMPORTANT:

An important note indicates information that is important for you to know.

CAUTION

A Caution alert indicates potential damage to hardware and explains how to avoid the potential problem.

WARNING!

An Electrical Shock Warning indicates the potential harm from electrical hazards and how to avoid the potential problem.

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 electronic 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.

Safety and Warranty

1. Please read these safety instructions carefully.
2. Please keep this user- manual for later reference.
3. Please disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
7. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
8. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
9. All cautions and warnings on the equipment should be noted.
10. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
11. If any of the following situations arises, get the equipment checked by service personnel:
    A. The power cord or plug is damaged.
    B. Liquid has penetrated into the equipment.
    C. The equipment has been exposed to moisture.
    D. The equipment does not work well, or you cannot get it to work according to the user's manual.
    E. The equipment has been dropped and damaged.
    F. The equipment has obvious signs of breakage.

Revision History

Version	Date	Note
1.0	2014.07.04	Initial Draft
1.1	2014.08.15	Block Diagram revision
1.2	2014.09.01	Add OS Selection
1.3	2015.05.08	Add USB 3.0 Driver Installation
1.4	2015.12.14	Corrected: PIN Assignments , BIOS Configuration, Driver Installations
1.5	2017.06.07	Revise LAN specification to Intel I210 Gbe

CONTENTS

1

General Information

This chapter includes the IB70 Motherboard background information.
Sections include:

CHAPTER 1

CHAPTER 1: GENERAL INFORMATION

1.1 Introduction

Thank you for choosing the IB 70 SBC motherboard. This motherboard is integrated with Bay Trail Intel® Celeron N2930 which offers a high performance computing platform with low power consumption. The new motherboard supports 204-pin SO-DIMM DDR3L at speeds of 1066/1333 MHz, up to 8GB.

One SATAII interface provides ample capacity. There is an advanced full set of I/O ports including one USB 3.0, five USB 2.0, two LAN ports and audio jack for microphone, line-in and line-out. In addition, the motherboard has Dual Gigabit Ethernet, four COM ports. Display requirements are met with rich interfaces, such as eDP, LVDS, and CRT. The graphic engine adopts Intel® SoC Integrated offer high definition display function, and it also supports 24-bit Dual-Channel LVDS.

With all of the integrated features, IB70 SBC is designed to satisfy most of the applications in the industrial computer market, such as Gaming, POS, KIOSK, Industrial Automation, and Programmable Control System. It is designed in a compact 3.5" form factor and measures 146mm x 102mm to meet the demanding performance requirements of today's business and industrial applications.

1.2 Features

- ➢ Mini-ITX Form Factor (170mm x 170mm)
- ➢ Supports Bay Trail Intel® Celeron N2930 1.83GHz processor
- ➢ System memory up to 8GB DDR3L 1066, SO-DIMM
- ➢ Intel® SoC Integrated
- ➢ Intel® HD Graphics Engine
- ➢ VGA, 18/24-bit Dual-Channel LVDS, eDP 1.3
- ➢ Intel® I210 GbE
- ➢ Mini PCIe (two for wireless, one for mSATA SSD), 4 x COM, 1 x USB 3.0, 7 x USB 2.0, 2 x SATA II, 12-bit GPIO
- ➢ DC 12V IN

1.3 Motherboard Specifications

Hardware:	
CPU Type	Intel® Celeron® Bay Trail-M N2930
CPU Speed	1.83GHz
Chipset	Intel® SoC Integrated
BIOS	AMI 64Mbit Flash
Graphic	Intel® Graphics Engine
LCD interface	Dual-Channel 18/24 bit LVDS Up to 1920 x 1080 @ 60Hz
Resolution	VGA mode: up to 1920 x 1200 @ 60Hz DVI: 1920 x 1200 @ 60Hz
LAN	2 x Giga LAN (Intel I210 GbE)
Memory Type	2 x SO-DIMM socket, supports up to 8GB DDR3 1066/1333
Super I/O	Fintek F81866
Audio	Realtek ALC886 HD Audio Codec
USB	8 ports, 1 x USB 3.0, 7 x USB 2.0 (4 x USB 2.0 pin-header)
Edge Connectors	1 x DC-IN Jack (+12V) 1 x VGA out connector 2 x Gigabit LAN RJ-45 1 x RS232/422/485 2 x RS232 3 x USB connector (1 x USB 3.0, 2 x USB 2.0) 2 x PS2 1 x Audio Jack(Line in, Line out, Mic in)
On Board Pin-Header Connectors	2 x SATA connector for SATAI/II 3.0 Gb/s 1 x 10 pins pin-header for Front Panel(2x5) 1 x 8 pins pin-header for 5V/12V external power 1 x 3 pins pin-header for CPU Fan 1 x 3 pins pin-header for System Fan 2 x 2 pins pin-header for 5V external power 1 x 2 pins pin-header for 12V external power 2 x 8 pins pin-header for USB (2X4) 1 x 10 pins Digital I/O(2x5) 1 x 10 pins pin-header for COM2 (2X5) 1 x 4-pin Power-input connector

	1 x 20 pins Connector for LVDS
	1 x 30 pins Connector for eDP
	1 x 3 pins digital panel backlight brightness controller
	1 x 7 pins digital panel inverter
	2 x 2 pins pin-header for Speaker
	1 x 20 pins pin-header for LPT port(2X10)
Power Connector	Input: 4-pin Power-input connector
Expansion Slots	2 x Mini PCIe slot
Form Factor	Mini-ITX
Dimensions	170mm x 170mm
Environmental	Operating temperature: 0°C to 60°C Operating Humidity: 10 ~ 90% relative humidity, non-condensing
Software Support:	
Drivers	Intel Chipset Driver Graphics Driver Audio Driver Ethernet Driver Intel Sideband Fabric Device (Intel MBI) Driver (Windows 8) Intel Trusted Engine Interface TXE Driver Fintek COM Port Driver USB 3.0 Driver (Windows 7)
SDK	Digital I/O SDK Watchdog SDK

Function block (V200)
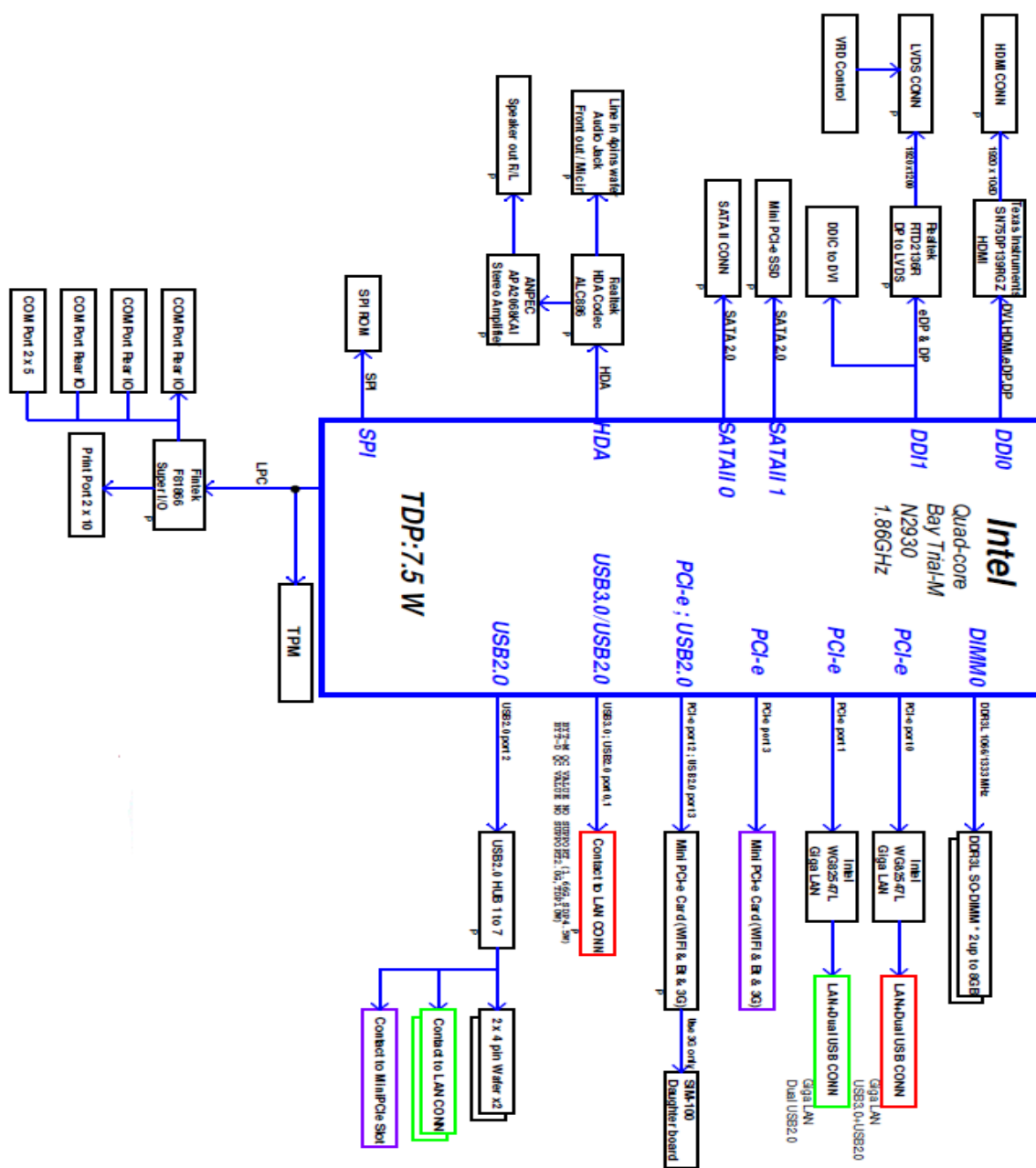
Board dimensions (V200)
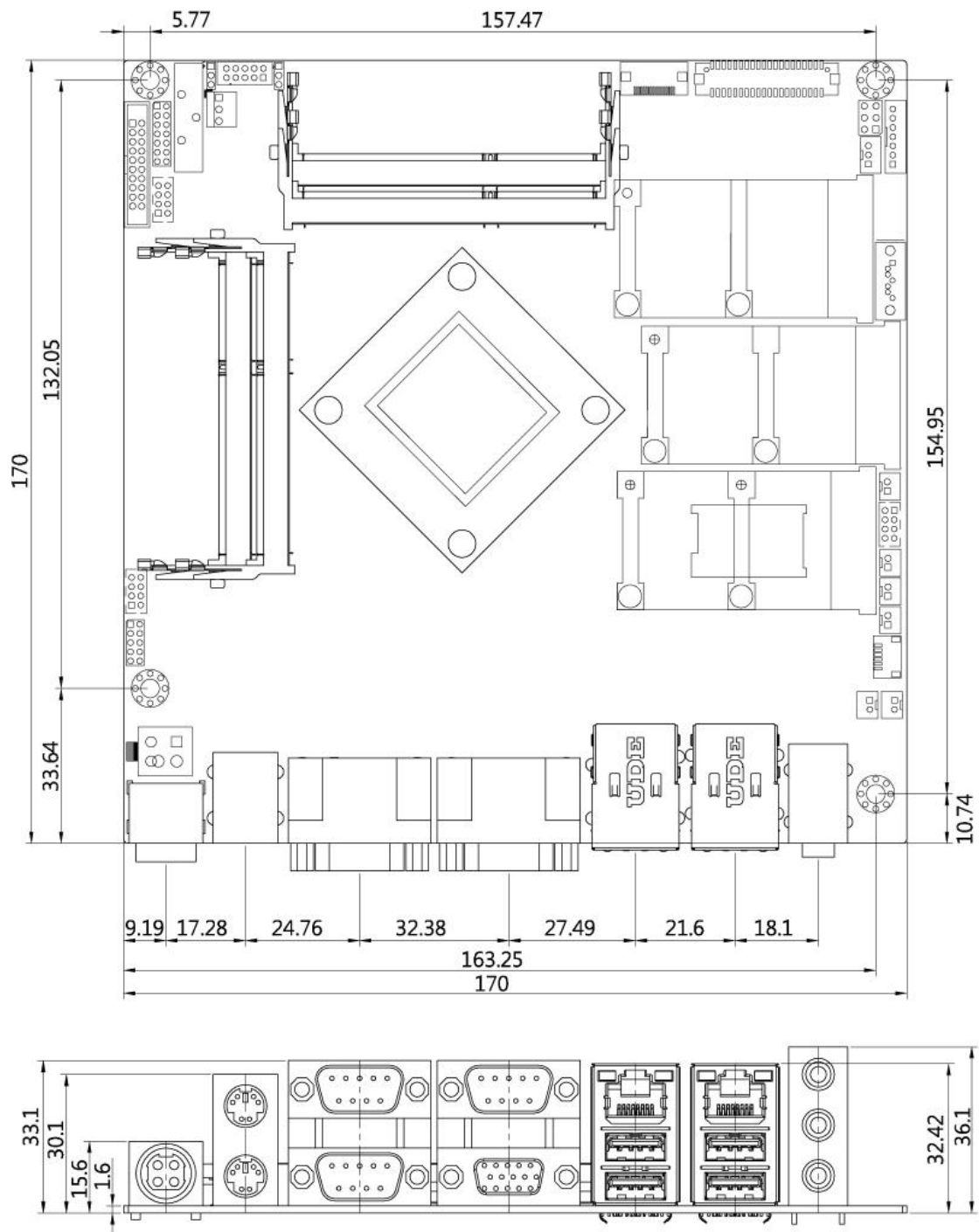
Hardware Installation

This chapter provides information on how to use jumpers and connectors on the IB70 SBC Motherboard. Be cautious while working with these modules. Please carefully read the content of this chapter in order to avoid any damages. The sections include:

CHAPTER **2**

2.1 Memory Module Installation

2.2 I / O Equipment Installation

2.3 Jumpers and Connectors

2.4 Jumper Settings

2.5 Connectors and Pin Assignment

CHAPTER 2: HADRWARE INSTALLATION

2.1 Memory Module (SO-DIMM) Installation

The IB70 SBC Motherboard provides one 204-pin SODIMM slot. The socket supports up to 4GB DDR3L 1066/1333 SDRAM. When installing the Memory device, please

follow the steps below：

Steps 1 Firmly insert the SO-DIMM at an angle of about 30-degree into the slot. Align the SO-DIMM with the slot until it is fully inserted. The notch on the SO-DIMM should match the break on the slot.

Step 2 Press downwards on SO-DIMM until the retaining clips at both ends fully snap closed and the SO-DIMM is properly seated.
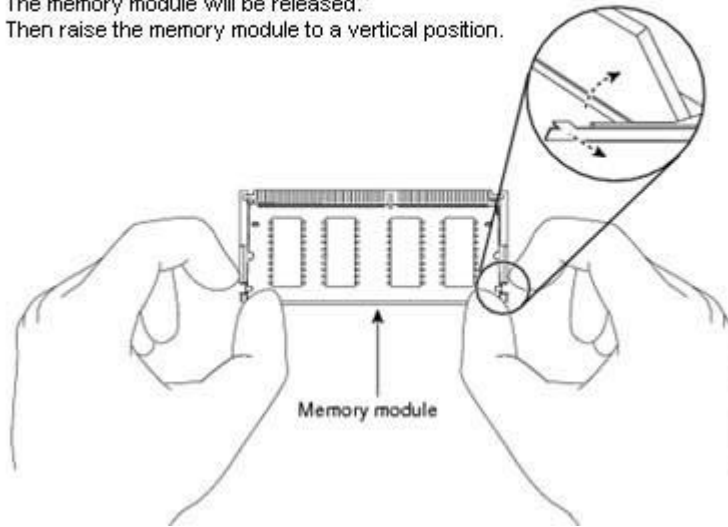
Caution! The SO-DIMM only fits in one correct orientation. It will cause permanent damage to the development board and the SO-DIMM if SO-DIMM is forced into the slot at the incorrect orientation.

2.2 I/O Equipment Installation

2.2.1 12V DC-IN

The Motherboard allows plugging 12V DC-IN jack on the board without another power module converter under power consumption by Intel® Celeron N2930 1.83GHz Processor with Intel SoC integrated.

2.2.2 Serial COM Ports

Three RS-232 connectors build in the rear I/O. One optional COM ports support RS-422/485. When an optional touch-screen is ordered with PPC, serial com port can connect to a serial or an optional touch-screen. You can change Serial COM Port settings trough Jumper Settings.

2.2.3 External VGA

The Motherboard has one VGA port that can be connected to an external CRT/ LCD monitor. Use VGA cable to connect to an external CRT / LCD monitor, and connect the power cable to the outlet. The VGA connector is a standard 15-pin D-SUB connector.

2.2.4 Ethernet Interface

The Motherboard is equipped with Intel I210 chipset which is fully compliant with the PCI 10/100/1000 Mbps Ethernet protocol compatible. It is supported by major network operating systems. The Ethernet ports provide two standard RJ-45 jacks.

2.2.5 USB Ports

Eight USB devices (One USB3.0, four with pin headers) may be connected to the system though an adapter cable. Various adapters may come with USB ports. USB usually connect the external system to the system. The USB ports support hot plug-in connection. Whatever, you should install the device driver before you use the device.

2.2.6 Audio Function

The Audio 7.1 channel capabilities are provided by a Realtek ALC886 chipset supporting digital audio outputs. The audio interface includes three jacks: line-in, line-out and mic in.

2.3 Jumpers and Connectors

2.3.1 Component Side
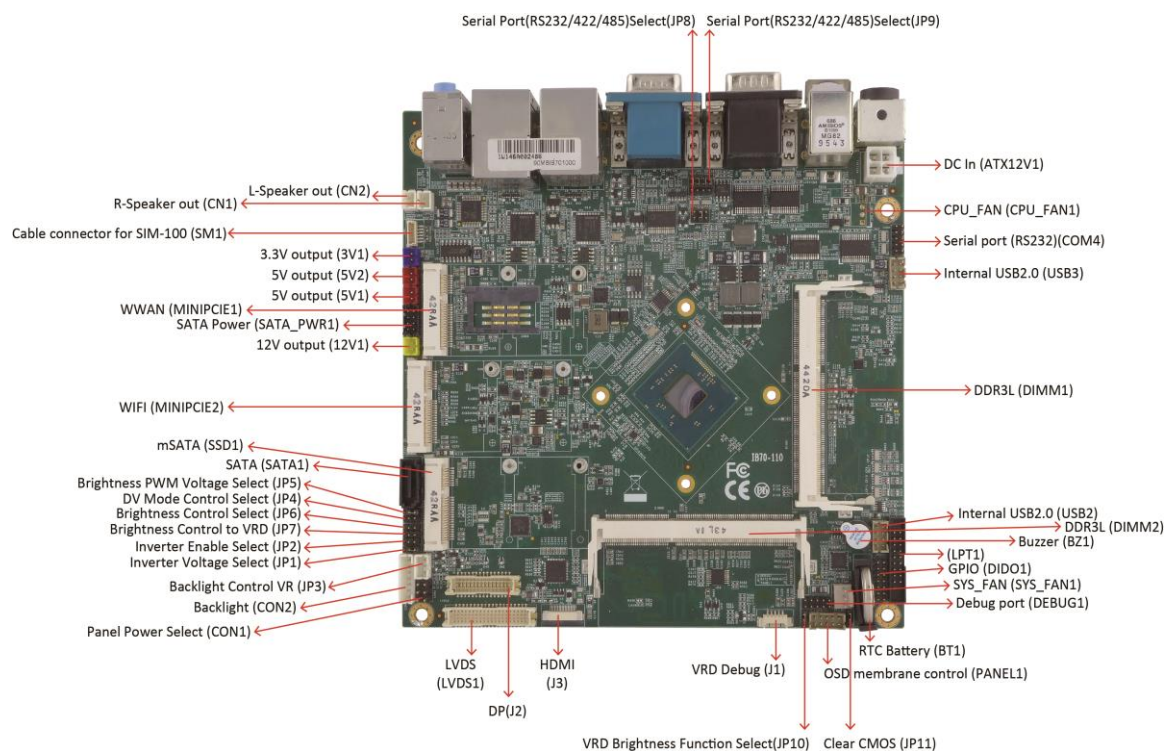
2.3.2 Solder Side
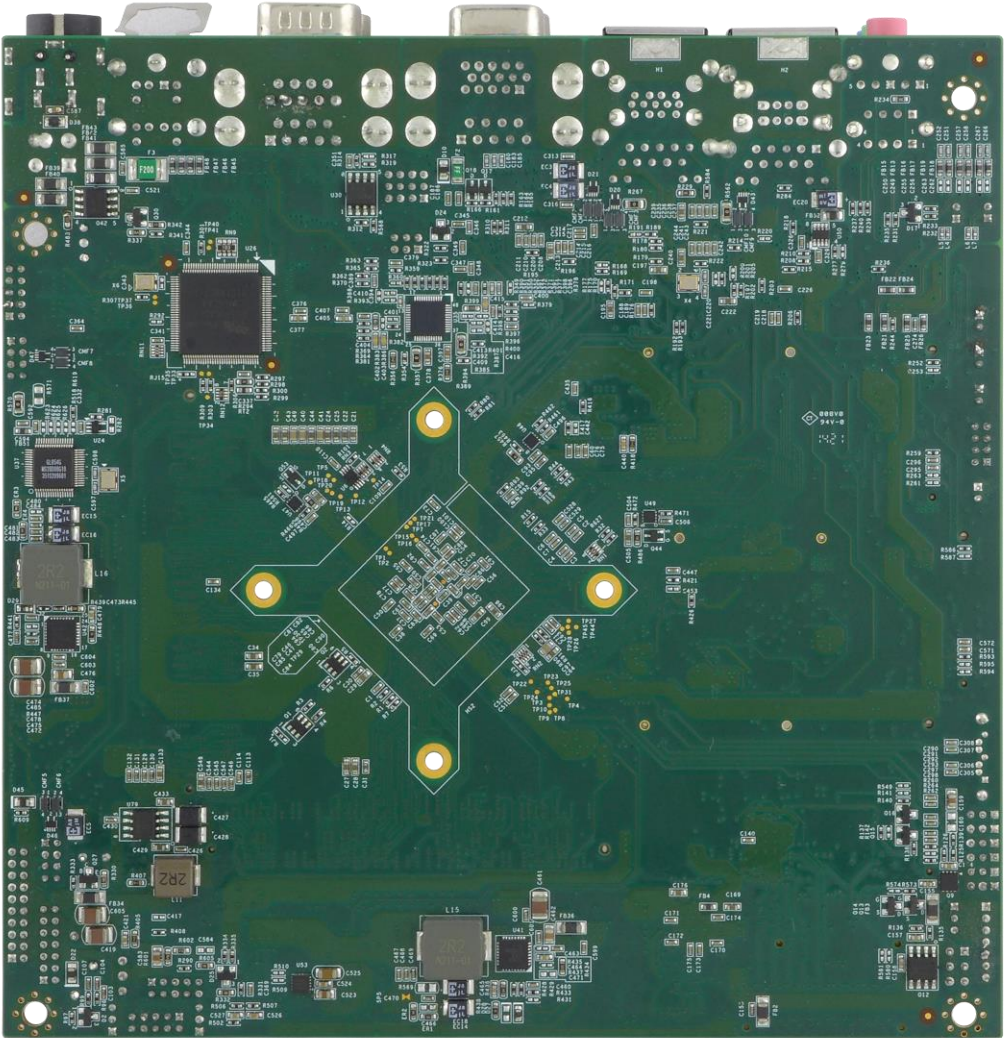
2.3.3 I/O Side
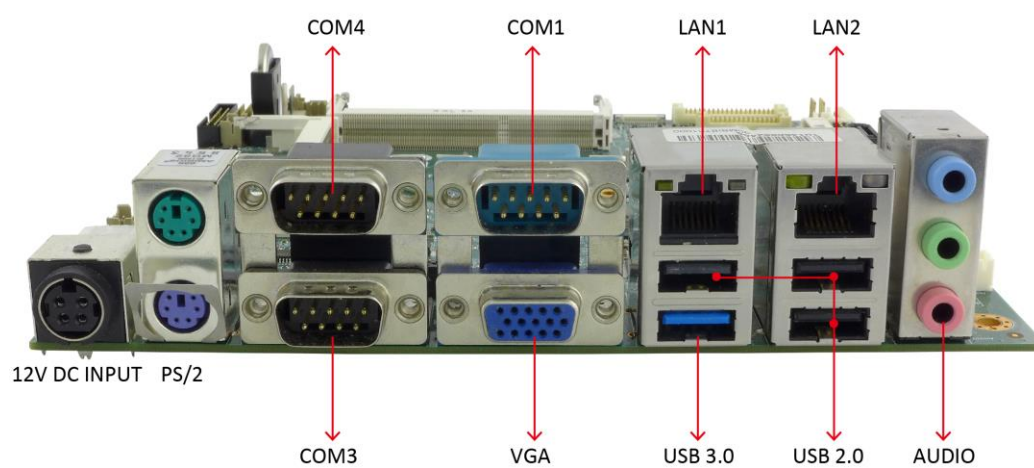
2.4 Jumper Settings

This section explains how to set jumpers for correct configuration of the motherboard.

	NOTE:
	A pair of needle nose pliers may be helpful when working with jumpers. 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. Generally, you simply need a standard cable to make most connections.

The jumper setting diagram is shown below. When the jumper cap is placed on both pins, the jumper is SHORT. The illustration below shows a 3-pin jumper; pins 1 and 2 are short. If you remove the jumper cap, the jumper is OPEN.
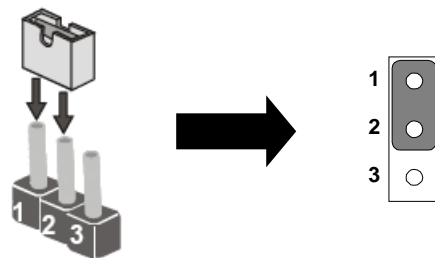
2.4.1 Jumper List

The following table shows the function of each of the board's jumpers.

Label	Function	Note
JP1	Inverter Voltage Select	1x3 header, pitch 2.0mm
JP2	Inverter Enable Select	1x3 header, pitch 2.0mm
JP3	Backlight Control VR	1x3 Wafer, pitch 2.0mm
JP4	DC Mode Control Select	1x3 header, pitch 2.0mm
JP5	Brightness PWM Voltage Selector	1x3 header, pitch 2.0mm
JP6	Brightness Control Select	1x3 header, pitch 2.0mm
JP7	Brightness Control To VRD	1x3 header, pitch 2.0mm
JP8	Serial Port(RS232/422/485)Select	2x3 header, pitch 2.0mm
JP9	Serial Port(RS232/422/485)Select	3x4 header, pitch 2.0mm
JP10	VRD Brightness Function Select	1x3 header, pitch 2.0mm
JP11	Clear CMOS	1x3 header, pitch 2.0mm

2.4.2 Setting Jumpers

JP1: Inverter Voltage Select
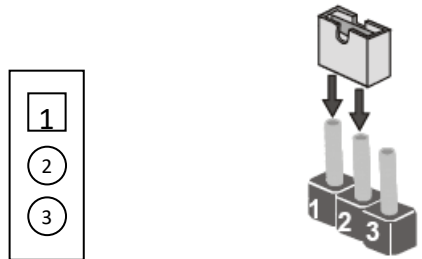
Setting	Function
1-2*	5 V
2-3	12 V

*Default

JP2: Inverter Enable Select
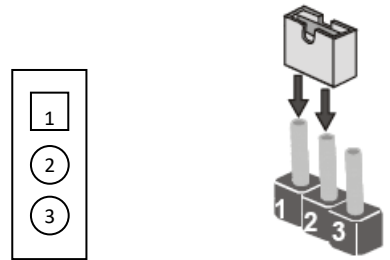
Setting	Function
1-2*	Control to BLON
2-3	Normal (Always)

*Default

JP3: Backlight Control VR
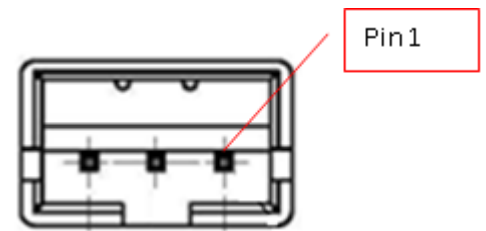
Pin №	Name	Pin №	Name
1	+5V	2	Black Light Control
3	GND		

JP4: DC Mode Control Selector
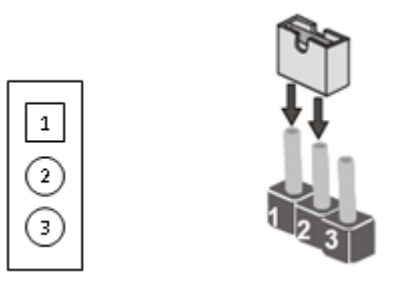
Setting	Function
1-2	VR knob Control to VRD
2-3*	VR knob Control to SBC

*Default

JP5: From SoC Brightness PWM Voltage Selector
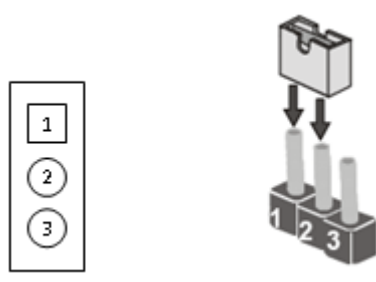
Setting	Function
1-2*	+ 3.3V
2-3	+ 5.0V

*Default

JP6: Brightness Control Selector
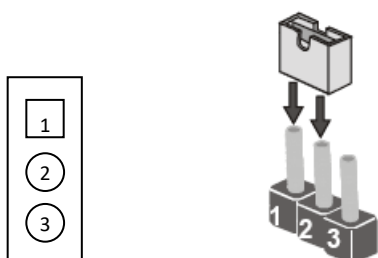
Setting	Function
1-2	Adjust by VR Knob
2-3*	PWM Mode

*Default

JP7: Brightness Control to VRD Selector
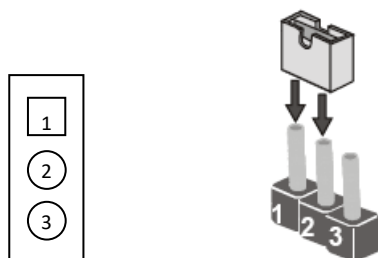
Setting	Function
1-2	WM to DC mode by
2-3*	VRD Control Mode

*Default

JP8/JP9: COM Serial Port (RS232/422/485) Select

Please refer to JP8/JP9 settings below.

	RS232	RS422	RS485
JP8	1-2	3-4	5-6
JP9	1-2	2-3	2-3
	4-5	5-6	5-6
	7-8	8-9	8-9
	10-11	11-12	11-12

For example: At the picture below you can see RS-232, RS-422, RS-485 (J8/J9) jumper setting. To select RS-232 set Jumper 8 Pin 1-2 to the SHORT position, and Jumper 9 Pin1-2, 4-5, 7-8, 10-11 to the SHORT position.
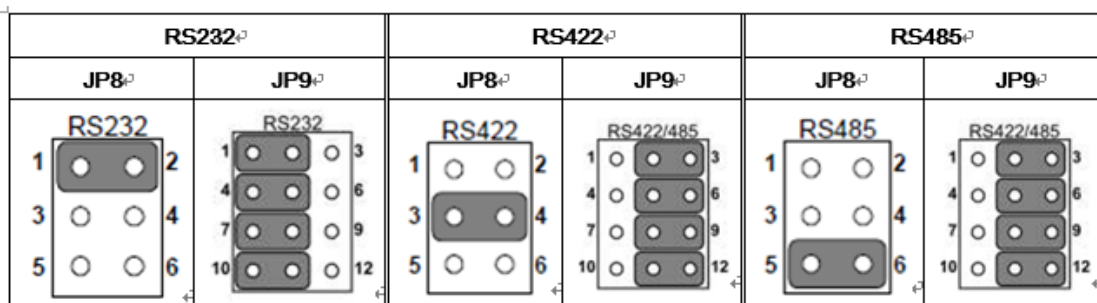
JP10: VRD Brightness Control Select
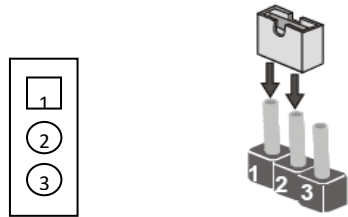
Setting	Function
1-2	VRD REVERSE -
2-3*	VRD FORWARD +
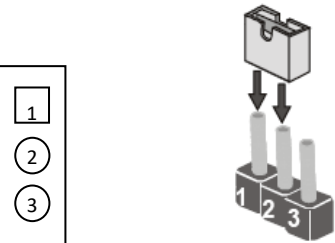
*Default

JP11: Clear CMOS

Setting	Function
1-2	Clear CMOS
2-3*	Normal

*Default

2.5 Connectors and Pin Assignment

2.5.1 Front Side Setting Description

The table below shows each of front side connectors and its functions.

Label	Function	Note
BT1	RTC Battery	2P Wafer, pitch 1.25mm
CN1	R-Speaker out	1x2 Wafer, pitch 2.0mm
CN2	L-Speaker out	1x2 Wafer, pitch 2.0mm
CON1	Panel Power Select	2x3 header, pitch 2.54mm
CON2	Backlight	1x7 Wafer, pitch 2.0mm
COM4	Serial port (RS232)	2x5 header, pitch 2.0mm
CPU_FAN	CPU _FAN1	3P Wafer, pitch 2.54mm
DC In	ATX12V1	1x2P Wafer, pitch 3.96mm
DEBUG1	DEBUG PORT	2x5 header, pitch 2.0mm
DIMM1	DDR3L	204pin,SODIMM slot
DIMM2	DDR3L	204pin,SODIMM slot
DIDO1	GPIO	2x7 header, pitch 2.0mm
J1	VRD Debug	1x5 Wafer, pitch 1.25mm
J2	DP	2x10 Wafer, pitch 1.25mm
J3	HDMI	FFC 18 pin , pitch 0.5mm
LVDS1	LVDS	2x20 Wafer, pitch 1.25mm
LPT1	Parallel Port	2x10 header, pitch 2.0mm
MINI PCIE1	WWAN	Mini-PCIe slot
MINI PCIE2	WIFI	Mini-PCIe slot
SATA1	SATA	SATA Connector
SATA_PWR1	SATA Power	2x4 Wafer, pitch 2.0mm
SIM1	Cable connector for SIM-100	6P Wafer, pitch 1.0mm
SSD1	mSATA	Mini-PCIe slot

USB2	Internal USB2.0	2x4 Wafer, pitch 2.0mm
USB3	Internal USB2.0	2x4 Wafer, pitch 2.0mm
3V1	3.3V output	1x2 Wafer, pitch 2.0mm
5V1	5V output	1x2 Wafer, pitch 2.0mm
5V2	5V output	1x2 Wafer, pitch 2.0mm
12V1	12V output	1x2 Wafer, pitch 2.0mm
PANEL1	OSD membrane control	2x5 Wafer, pitch 2.0mm
SYS_FAN	SYS_FAN1	3P Wafer, pitch 2.54mm

BT1: RTC Battery
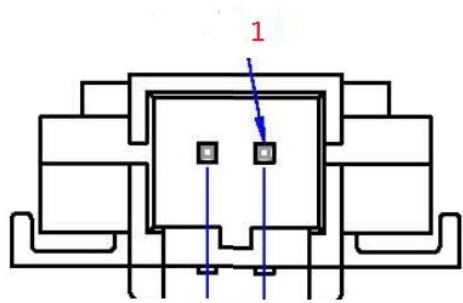
Pin №	Name	Pin №	Name
1	BAT	2	GND

CN1: R-Speaker Out
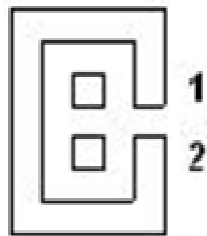
Pin №	Name
1	ROUT-
2	ROUT+

CN2: L-Speaker Out
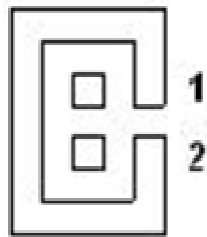
Pin №	Name
1	LOUT-
2	LOUT+

CON1: Panel Power Select
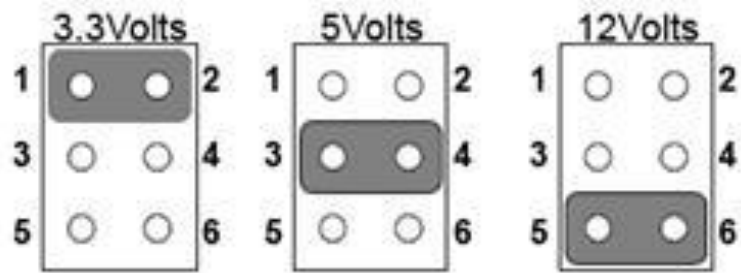
Pin №	Name
1-2*	+3.3V
3-4	+5V
5-6	+12V

CON2: Backlight
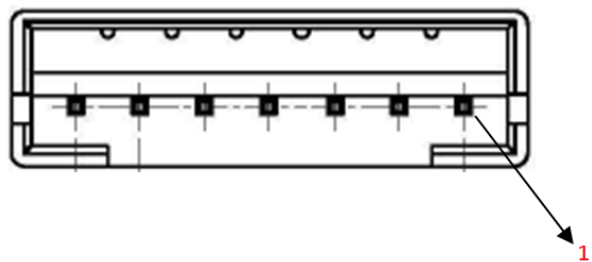
Pin №	Name	Pin №	Name
1	Backlight Power	2	Backlight Power
3	Backlight Power	4	GND
5	Brightness Adjust	6	GND
7	Backlight Enable		

Note: Please refer to JP1 settings to select POWER RATING

COM4: Serial port (RS-232)
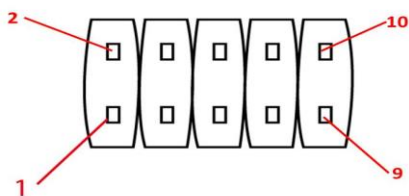
Pin №	Name	Pin №	Name
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	GND

CPU_FAN1: CPU FAN
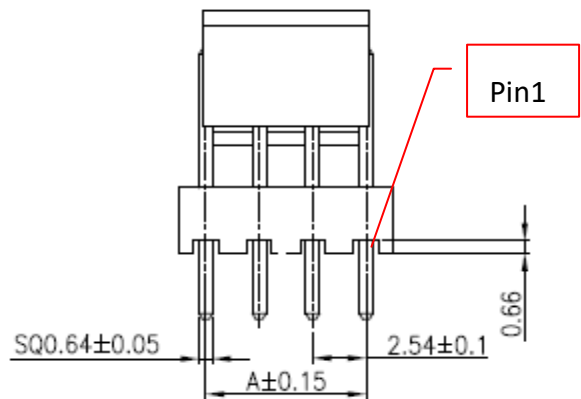
Pin №	Name	Pin №	Name
1	GND	2	+12V
3	SENSE		

ATX12V1: DC-In
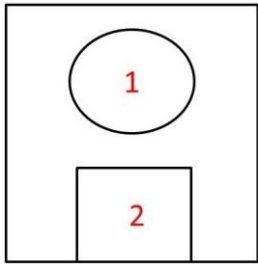
Pin №	Name	Pin №	Name
1	+12V	2	GND
3*	GND		

Note: Pin 3 is not visible for user

Debug 1: Debug Port
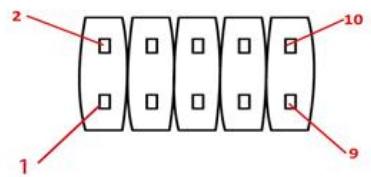
Pin №	Name	Pin №	Name
1	LPC_AD0	2	+3.3V
3	LPC_AD1	4	GND
5	LPC_AD2	6	LPC_FRAME
7	LPC_AD3	8	GND
9	RESET	10	CLOCK

DIMM1: DDR3
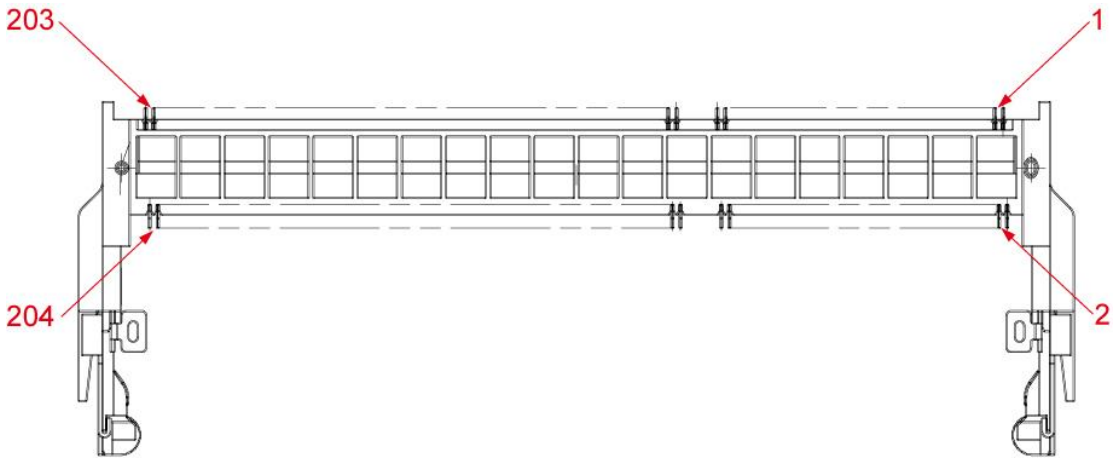
DIMM2: DDR3
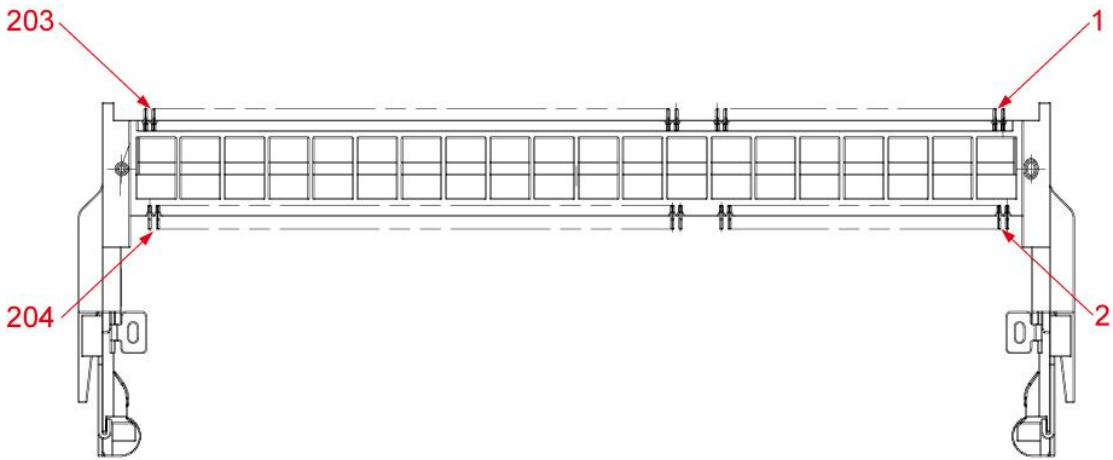
DIDO1: GPIO
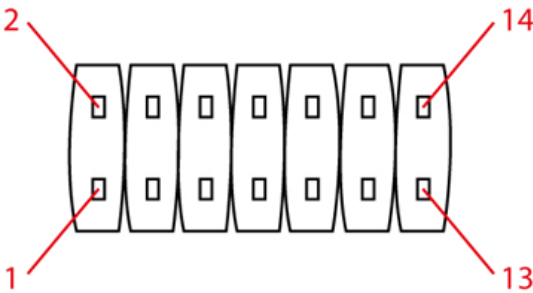
Pin №	Name	Pin №	Name
1	GND	2	+5V
3	DOUT3	4	DOUT1
5	DOUT2	6	DOUT0
7	DINT3	8	DINT1
9	DINT2	10	DINT0
11	DIN4	12	DOUT4
13	DIN5	14	DOUT5

J1: VRD Debug
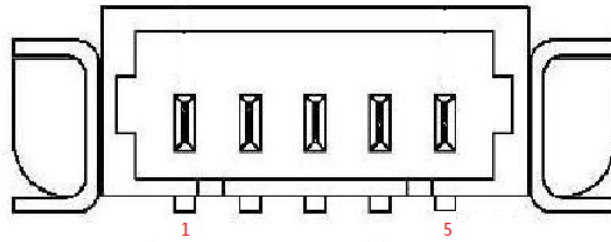
Pin №	Name	Pin №	Name
1	+3.3V	2	DATA
3	CLOCK	4	RESET
5	GND		

J2: DP
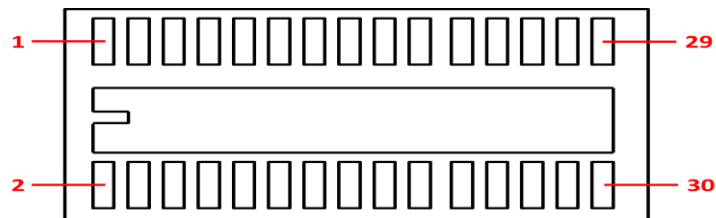
Pin №	Name	Pin №	Name
1	DDI1_AUX_DN	2	SMB_DATA
3	DDI1_AUX_DP	4	SMB_CLK
5	GND	6	GND
7	DDI1_TX3_DN	8	NC
9	DDI1_TX3_DP	10	NC
11	GND	12	EDP_HPD
13	DDI1_TX2_DN	14	GND
15	DDI1_TX2_DP	16	GND
17	GND	18	GND
19	DDI1_TX1_DN	20	GND
21	DDI1_TX1_DP	22	LCDVDD
23	GND	24	LCDVDD
25	DDI1_TX0_DN	26	LCDVDD
27	DDI1_TX0_DP	28	LCDVDD
29	GND	30	NC

Note: Please refer to CON1 settings to select POWER RATING

J3: HDMI
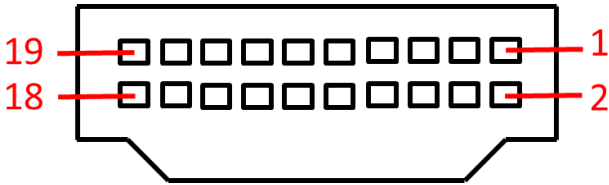
Pin №	Name	Pin №	Name
1	TMDS_DATA2+	2	GND
3	TMDS_DATA2-	4	TMDS_DATA1+
5	GND	6	TMDS_DATA1-
7	TMDS_DATA0+	8	GND
9	TMDS_DATA0-	10	TMDS_CLOCK+
11	GND	12	TMDS_CLOCK-
13	CEC	14	NC
15	DDC_CLOCK	16	DDC_DATA
17	GND	18	5V
19	Hot Plug Detect		

LVDS1: LVDS
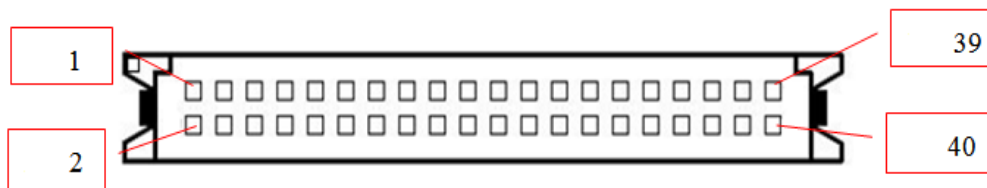
Pin №	Signal Name	Pin №	Signal Name
1	LCDVDD	2	LVDS0_TX0_N
3	LCDVDD	4	LVDS0_TX0_P
5	LCDVDD	6	LVDS0_TX1_N
7	GND	8	LVDS0_TX1_P
9	GND	10	LVDS0_TX2_N
11	GND	12	LVDS0_TX2_P
13	GND	14	LVDS0_CLK_N
15	GND	16	LVDS0_CLK_P
17	GND	18	LVDS0_TX3_N
19	GND	20	LVDS0_TX3_P
21	GND	22	LVDS1_TX0_N
23	GND	24	LVDS1_TX0_P
25	GND	26	LVDS1_TX1_N
27	GND	28	LVDS1_TX1_P
29	GND	30	LVDS1_TX2_N
31	GND	32	LVDS1_TX2_P
33	GND	34	LVDS1_CLK_N
35	GND	36	LVDS1_CLK_P
37	GND	38	LVDS1_TX3_N
39	GND	40	LVDS1_TX3_P

* Note: Please refer to CON1 settings to select POWER RATING

LPT1: LPT
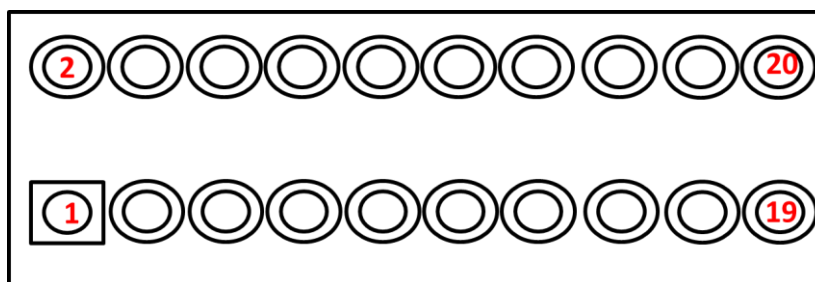
Pin №	Name	Pin №	Name
1	LPT_STB#	2	LPT_PD0
3	LPT_PD1	4	LPT_PD2
5	LPT_PD3	6	LPT_PD4
7	LPT_PD5	8	LPT_PD6
9	LPT_PD7	10	ACK#
11	Busy	12	PE
13	SLCT	14	LPT_AFD#
15	ERR#	16	LPT_INIT#
17	LPT_SLIN#	18-25	GND

MINI PCIE1: WWAN

Pin №	Name	Pin №	Name
1	PCIE_WAKE#	2	+3.3V
3	NC	4	GND
5	BT_EN	6	+1.5V
7	CLK_OE#	8	USIM_PWR
9	GND	10	USIM_DATA
11	PCIE_CLKM	12	USIM_CLOCK
13	PCIE_CLKP	14	USIM_RESET
15	GND	16	USIM_VPP

17	NC	18	GND
19	NC	20	Wireless_ENABLE
21	GND	22	PCIE_RESET
23	PCIE_RXM	24	+3.3V
25	PCIE_RXP	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PCIE_TXM	32	SMB_DATA
33	PCIE_TXP	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	+3.3V	40	GND
41	+3.3V	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+1.5V
49	NC	50	GND
51	+3.3V	52	+3.3V

MINI PCIE2: WIFI

Pin №	Name	Pin №	Name
1	PCIE_WAKE#	2	3.3V
3	NC	4	GND
5	BT_EN	6	+1.5V
7	CLK_SLOT2_OE#	8	NC
9	GND	10	NC
11	CLK_PCIE_SLOT2_N	12	NC
13	CLK_PCIE_SLOT2_P	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	3G_EN
21	GND	22	PCIE_RESET
23	PCIE2_RXN2	24	+3.3V
25	PCIE2_RXP2	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PCIE2_TXN2	32	SMB_DATA
33	PCIE2_TXP2	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	3.3V	40	GND
41	3.3V	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+1.5 V
49	NC	50	GND
51	3.3V	52	3.3V
M1	GND	M2	GND

SATA1: SATA
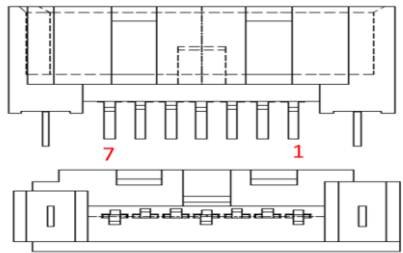
Pin №	Name	Pin №	Name
1	GND	2	SATA_TXP
3	SATA_TXN	4	GND
5	SATA_RXN	6	SATA_RXP
7	GND		

SATA_PWR1: SATA Power
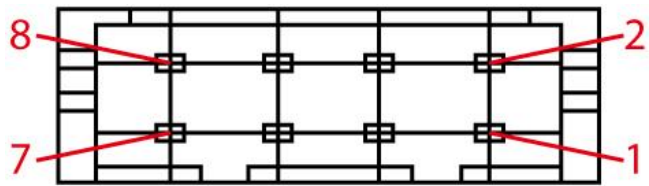
Pin №	Name	Pin №	Name
1	+12V	2	+12V
3	GND	4	GND
5	GND	6	GND
7	+5V	8	+5V

SIM1: Cable connector for SIM-100
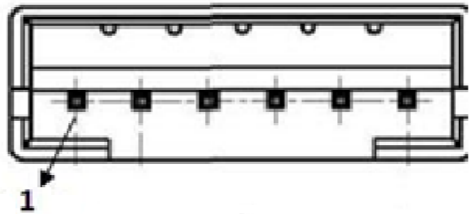
Pin №	Name	Pin №	Name
1	VREG_USIM	2	SIM_RESET
3	SIM_CLK	4	GND
5	SIM_VPP	6	SIM_DATA

SSD1: mSATA

Pin №	Name	Pin №	Name
1	NC	2	+3.3V
3	NC	4	GND
5	NC	6	+1.5V
7	NC	8	NC
9	GND	10	NC
11	NC	12	NC
13	NC	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	NC
21	GND	22	NC
23	SATA_RXP	24	+3.3V
25	SATA_RXN	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_Clock
31	SATA_TXN	32	SMB_Data
33	SATA_TXP	34	GND
35	GND	36	NC
37	GND	38	NC
39	+3.3V	40	GND
41	+3.3V	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+1.5V
49	SSD_LED#	50	GND
51	NC	52	+3.3V

USB2: Internal USB2.0
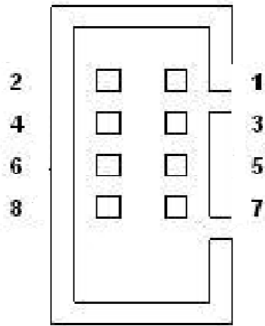
Pin №	Name	Pin №	Name
1	+5V	2	+5V
3	USB_D-	4	USB_D-
5	USB_D+	6	USB_D+
7	GND	8	GND

USB3: Internal USB2.0
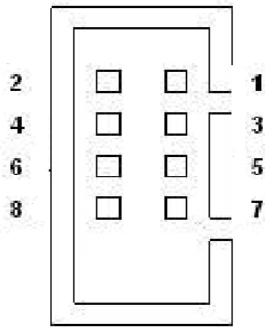
Pin №	Name	Pin №	Name
1	+5V	2	+5V
3	USB_D-	4	USB_D-
5	USB_D+	6	USB_D+
7	GND	8	GND

3V1: 3.3V Output
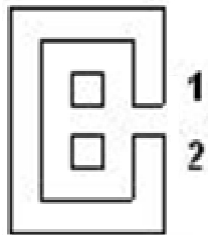
Pin №	Name
1	+3.3V
2	GND

5V1: 5V Output
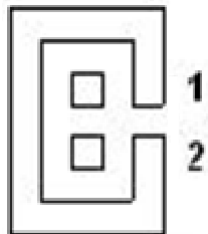
Pin №	Name
1	+5V
2	GND

5V2: 5V output
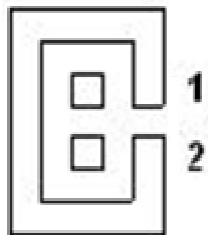
Pin №	Name
1	+5V
2	GND

12V1: 12V Output
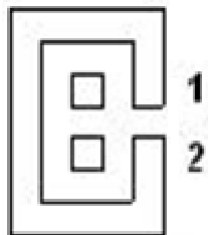
Pin №	Name
1	+12V
2	GND

Panel1: OSD Membrane Control
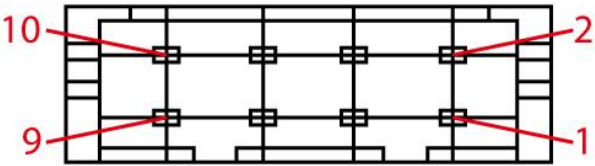
Pin №	Name	Pin №	Name
1	+5V	2	+3.3V
3	GND	4	HDD_LED
5	PWRBTN#	6	GND
7	GND/ Backlight ADJ+	8	Reset
9	NC/Backlight ADJ-	10	+5V

NOTE: Backlight ADJ+ / Backlight ADJ- optional functions

SYS_FAN: SYS_FAN1
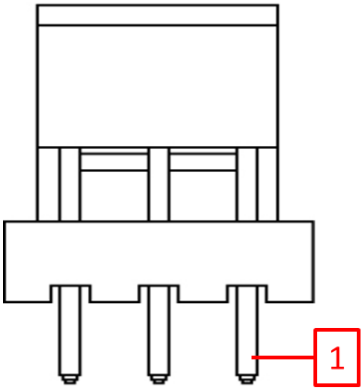
Pin №	Name	Pin №	Name
1	GND	2	+12V
3	SENSE		

2.5.2 I/O Side Setting Description

The table below shows each of I/O side connectors and its functions.

Label	Function	Note
AUDIO	Line In/Line Out/Mic	AUDIO
COM1	Serial port (RS232/422/485)	D-Sub 9
COM3/ COM4	Serial port (RS232/422/485)	D-Sub 9
LAN1, LAN2	Gigabit Ethernet	RJ45+LED
PS/2	Mouse/Keyboard	MiniDIN-6P
USB	USB 2.0 / USB 3.0	USB Type A
VGA	Video Graphics Array	D-Sub 15

Audio: Line In/Line Out/Mic
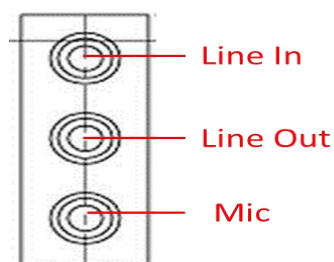
COM1: D-Sub 9
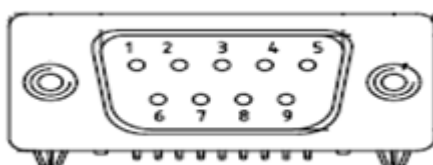
Pin №	RS232	RS422	RS485
1	DCD	TxD-	D-
2	RXD	TxD+	D+
3	TXD	RxD+	NC
4	DTR	RxD-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

COM3, COM4: Serial port (232)
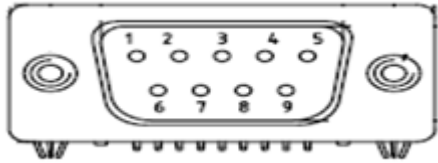
Pin №	Name	Pin №	Name
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	GND

LAN1, LAN2: Gigabit Ethernet
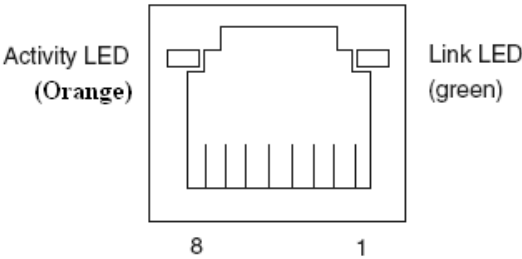
Pin №	Name	Pin №	Name
1	TX1+	2	TX1-
3	TX2+	4	TX2-
5	TX3+	6	TX3-
7	TX4+	8	TX4-

PS/2: Mouse/Keyboard
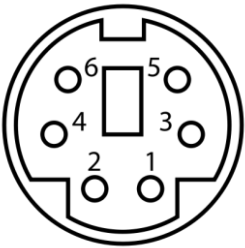
Pin №	Name	Pin №	Name
1	+DATA	2	Reserved
3	GND	4	Vcc
5	+CLK	6	Reserved

2 USB: USB 2.0 / USB 3.0
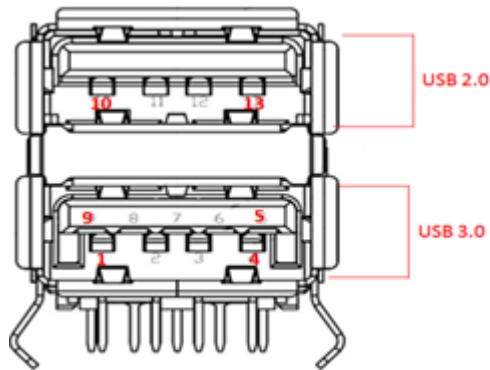
Pin №	Name	Pin №	Name
1	+5V	2	USB_D-
3	USB_D+	4	GND
5	STDA_SSRX-	6	STDA_SSRX+
7	GND_DRAIN	8	STDA_SSTX-
9	STDA_SSTX+	10	+5V
11	USB_D-	12	USB_D+
13	GND		

VGA: Video Graphic Array
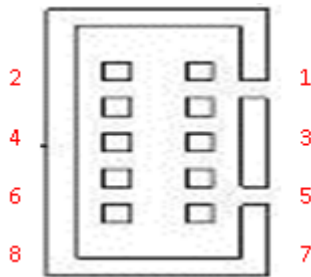
Pin №	Name	Pin №	Name
1	DDC_DATA	2	+5V
3	DDC_CLOCK	4	RED
5	Horizontal Sync	6	GREEN
7	Vertical Sync	8	BLUE
9	GND	10	GND

AMI BIOS Setup

This chapter contains BIOS Configuration and OS
Recovery information.

3.1 When and How to Use BIOS Setup

3.2 BIOS Functions

3.3 Using Recovery Wizard to Restore Computer

CHAPTER 3

CHAPTER 3: AMI BIOS SETUP

3.1 When and How to Use BIOS Setup

The BIOS Setup allows users to modify system configurations. To enter the BIOS setup, you need to connect an external USB keyboard, press Del key when the prompt appears on the screen during start up. The prompt screen shows only few seconds so need press Del key quickly.

> **IMPORTANT:**
> Updated BIOS version may be published after the manual released. Check the latest version of BIOS on the website.

You may need to run BIOS setup utility for reasons listed below:

1. Error message on screen indicates to check BIOS setup
2. Restoring the factory default settings.
3. Modifying the specific hardware specifications
4. Necessity to optimize specifications

BIOS Navigation Keys

The following keys are enabled **during POST**:

Key	Function
Del	Enters the BIOS setup menu.
F7	Display the boot menu. Lists all bootable devices that are connected to the system. With cursor ↑and cursor ↓and by pressing <ENTER>, select the device used for the boot.
Pause	Pressing the [Pause] key stops the POST. Press any other key to resume the POST.

The following Keys can be used **after entering the BIOS Setup**.

Key	Function
F1	General Help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit
Esc	Exit
+/-	Change Opt.
Enter	Select or execute command
Cursor ↑	Moves to the previous item
Cursor ↓	Goes to the next item
Cursor ←	Moves to the previous item

Cursor →	Goes to the next item

	NOTE: You can press the F1, F2, F3, F4, –/+, and Esc keys by connecting a USB keyboard to your computer.

3.2 BIOS Functions

3.2.1 Main Menu

The Main menu displays the basic information about yoursystem including BIOS version, processor RC version, system language, time, and date.

When you enter BIOS setup, the first menu that appears on the screen is the main menu.It contains the system information including BIOS version, processor RC version, system language, time, and date.

<F1> General help. If you need any help regarding BIOS settings, simply press <F1>, the help screen provide information on BIOS navigation, and possible selections of highlighted items. Press **<Esc>** to exit General Help screen.

```
               Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
     Main  Advanced  Chipset  Security  Boot  Save & Exit

     BIOS Information                                        Choose the system default
     BIOS Vendor                     American Megatrends     language
     Core Version                    5.010
     Compliancy                      UEFI 2.4; PI 1.3
     Project Version                 IB70V119 x64
     Build Date and Time             07/09/2015 11:18:43

     CPU Configuration
     Microcode Patch                 815

     Memory Information
     Total Memory                    4096 MB (LPDDR3)

     TXE Information                                         →←: Select Screen
     Sec RC Version                  00.05.00.00             ↑↓: Select Item
     TXE FW Version                  01.00.04.1089           Enter: Select
                                                             +/-: Change Opt.
     System Language                 [English]               F1: General Help
                                                             F2: Previous Values
     System Date                     [Fri 01/30/2032]        F3: Optimized Defaults
     System Time                     [10:12:42]              F4: Save & Exit
                                                             ESC: Exit
     Access Level                    Administrator



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```

BIOS Setting	Description	Setting Option	Effect
System Language	Displays the system language. [English] is set up by default.	Adjustment of the language	Set the language in other language. The language in this device is English.
System Date/Time	This is current date setting. The time is maintained by the battery when the device is turned off.	Date and time changes.	Set the date in the format [mm/dd/yyyy]; The time in the format: [hh/mm/ss]
Access Level	The current user access settings	Changes to the level of access	Administrator is set up by the default

3.2.2 Advanced Menu

The advanced menu also uses to set configuration of the CPU and other system devices. There are sub menus on the left frame of the screen.

⚠️	**CAUTION** Handle advanced BIOS settings page with caution. Any changes can affect the operation of your computer.

```
                Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
         Main  Advanced  Chipset  Security  Boot  Save & Exit

    ▶ ACPI Settings                                          System ACPI Parameters.
    ▶ F81866 Super IO Configuration
    ▶ Hardware Monitor
    ▶ S5 RTC Wake Settings
    ▶ CPU Configuration
    ▶ PPM Configuration
    ▶ Thermal Configuration
    ▶ IDE Configuration
    ▶ Miscellaneous Configuration
    ▶ CSM Configuration
    ▶ USB Configuration
    ▶ Platform Trust Technology
    ▶ Security Configuration

    ▶ Intel(R) 82574L Gigabit Network Connection - 00:03:E1:92...
    ▶ Intel(R) 82574L Gigabit Network Connection - 00:03:E1:92...
                                                            →←: 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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```

BIOS Setting	Description	Setting Option	Effect
ACPI Settings	Configures ACPI settings	Enter	Opens submenu
F81866 Super IO Configuration	Configures IO settings	Enter	Opens submenu
Hardware Monitor	Configures Hardware Monitor settings	Enter	Opens submenu
S5 RTC Wake Settings	Configures RTC Wake parameters	Enter	Opens submenu
CPU Configuration	Configures CPU settings	Enter	Opens submenu
PPM Configuration	Configures PPM settings	Enter	Opens submenu
Thermal Configuration	Configures Thermal Parameters	Enter	Opens submenu
IDE Configuration	This option sets the operating mode of the standard IDE controller chipset.	Enter	Opens submenu
Miscellaneous Configuration	This option sets Miscellaneous Configuration	Enter	Opens submenu
CSM Configuration	This option sets the Compatibility Support Module (CSM) , a component of the UEFI firmware that provides legacy BIOS compatibility	Enter	Opens submenu
USB Configuration	Configures USB settings	Enter	Opens submenu
Platform Trust Technology	This option sets Platform Trust Technology parameters	Enter	Opens submenu
Security Configuration	This option sets Security parameters	Enter	Opens submenu
Intel Gigabit Network Connection	Configures Gigabit Network Connection settings	Enter	Opens submenu

For items marked ► press **<Enter>** for more options.

ACPI Settings

Advanced Configuration and Power Interface (ACPI) settings allow to control how the power switch operates. The power supply can be adjusted for power requirements. You can use the screen to select options of ACPI configuration. A description of the selected items will appear on the right side of the screen.

```
            Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
       Advanced

    ACPI Settings                                       Enables or Disables BIOS ACPI
                                                        Auto Configuration.
    Enable ACPI Auto Configuration      [Disabled]

    Enable Hibernation                  [Enabled]
    ACPI Sleep State                    [S3 (Suspend to RAM)]
    Lock Legacy Resources               [Disabled]




                                                        ↔: 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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```

BIOS Setting	Description	Setting Option	Effect
Enable ACPI Auto Configuration	BIOS ACPI Auto Configuration	Enable/ Disable	Enables or Disables this function
Enable Hibernation	Control hibernation	Enable/ Disable	Enables or Disables this function
ACPI Sleep State	This option allows you to specify which mode will be used during the transition to energy saving mode	S1 (POS)/ S3 (Suspend to RAM)	Select ACPI Sleeping State Mode
Lock Legacy Resources	This option enables or disables lock of legacy resources	Enable/ Disable	Enables or Disables this function

Super IO Configuration

You can use the screen to select options for Super IO Configuration, and change the value of the option selected. A description of the selected item appears on the right side of the screen. For items marked with ►, please press **<Enter>** for more options.

Serial Port 1~5

Use these items to set parameters related to serial port 1~5.
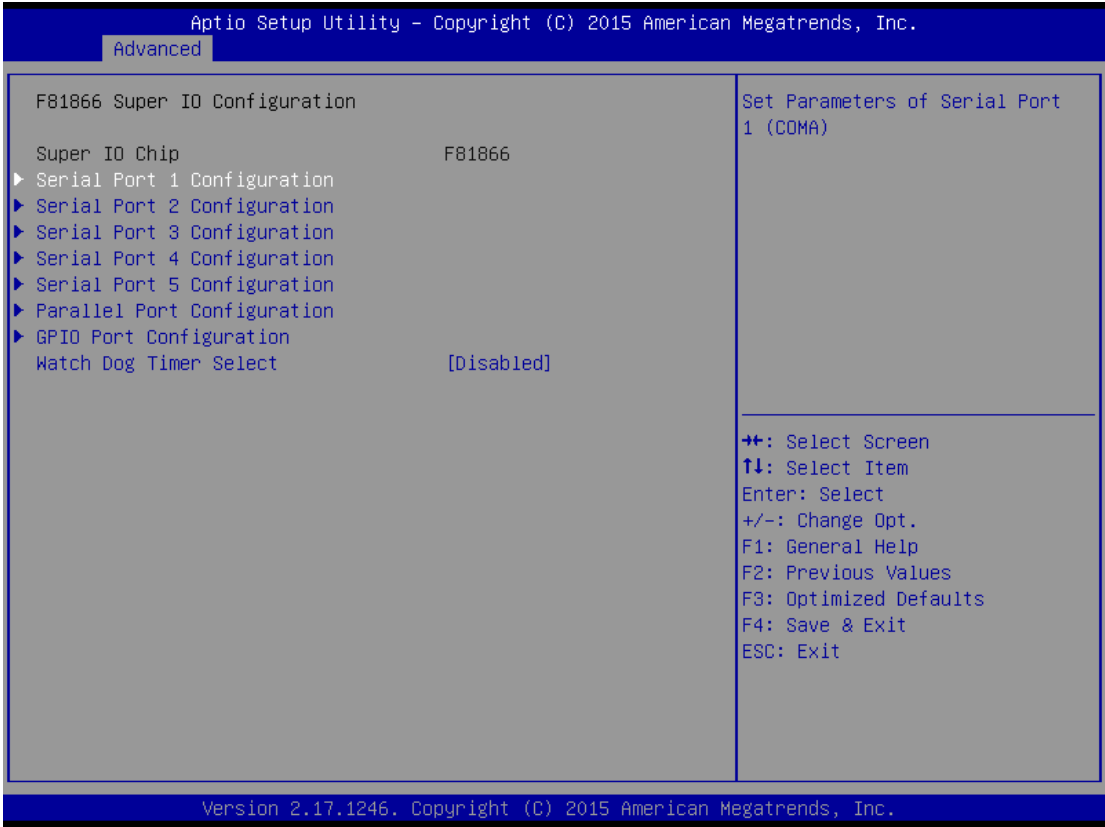
GPI0 Port Configuration

You can use the screen to change **GPI0 Port setting**. Use these items to set parameters related to **PIN3-PIN14 Control**.

```
              Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
          Advanced

        GPIO Port Configuration

        PIN 3 Control                    [Input]
        PIN 4 Control                    [Input]
        PIN 5 Control                    [Input]
        PIN 6 Control                    [Input]
        PIN 7 Control                    [Input]
        PIN 8 Control                    [Input]
        PIN 9 Control                    [Input]
        PIN 10 Control                   [Input]
        PIN 11 Control                   [Input]
        PIN 12 Control                   [Input]
        PIN 13 Control                   [Input]
        PIN 14 Control                   [Input]
                                                          →←: 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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```

Watch Dog Time Select

You can either disable **Watch Dog Time Select**, or set up the time.Use **<Arrow>** keys to navigate and please press **<Enter>** to select the item.

```
              Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
          Advanced

        F81866 Super IO Configuration

        Super IO Chip                    F81866
      ▶ Serial Port 1 Configuration
      ▶ Serial Port 2 Configuration
      ▶ Serial Port 3 Configuration ┌─── Watch Dog Timer Select ───┐
      ▶ Serial Port 4 Configuration │ Disabled                     │
      ▶ Serial Port 5 Configuration │ 1 Min                        │
      ▶ Parallel Port Configuration │ 2 Min                        │
      ▶ GPIO Port Configuration     │ 3 Min                        │
        Watch Dog Timer Select      │ 4 Min                        │
                                    │ 5 Min                        │
                                    │ 6 Min                        │  ←: Select Screen
                                    │ 7 Min                        │  ↓: Select Item
                                    │ 8 Min                        │  nter: Select
                                    │ 9 Min                        │  /-: Change Opt.
                                    │ 10 Min                       │  1: General Help
                                    └──────────────────────────────┘  2: Previous Values
                                                                     3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit

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```

Hardware Monitor

You can check PC Health Status parameters such as system temperature, fan speed etc.

```
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  Advanced

 Pc Health Status

 System temperature1              : +28 C
 Fan1 Speed                       : N/A
 Fan2 Speed                       : N/A
 VIN1                             : +0.800 V
 VIN2                             : +12.144 V
 VIN3                             : +3.408 V
 VIN4                             : +5.160 V
 VCC3V                            : +3.424 V
 VSB3V                            : +3.424 V
 VSB5V                            : +5.208 V
 VBAT                             : +3.392 V
                                             →←: 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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```

S5 RTC Wake Settings

Wake system from S5 enables or disables system wake on alarm event. It allows you to wake up the system in a certain time.

```
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  Advanced

 Wake system from S5            [Disabled]    Enable or disable System wake
                                              on alarm event. Select
                                              FixedTime, system will wake on
                                              the hr::min::sec specified.
                                              Select DynamicTime , System
                                              will wake on the current time
                                              + Increase minute(s)




                                              →←: 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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```

Wake system from S5 after fixed time setting

Select **Fixed Time** to set the system to wake on the specified time.

Use Navigation Keys ⬆ ⬇ to switch among the items: Day, Hour, Minute and Second. Type the desired value in the selected item.

For example, if you want the system to start up automatically at 15:30:30, the 10th day of each month, then you should enter 10, 15, 30, and 30 from top to bottom.

```
Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
  Advanced

 Wake system from S5          [Fixed Time]        Enable or disable System wake
 Wake up hour                  0                   on alarm event. Select
 Wake up minute                0                   FixedTime, system will wake on
 Wake up second                0                   the hr::min::sec specified.
                                                   Select DynamicTime , System
                                                   will wake on the current time
                                                   + Increase minute(s)

              ┌─── Wake system from S5 ───┐
              │ Disabled                  │
              │ Fixed Time                │
              │ Dynamic Time              │       →←: 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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```

Wake system from S5 after dynamic time setting

Select **Dynamic Time** to set the system to wake on the current time + increase minute (s).

```
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    Advanced

  Wake system from S5               [Dynamic Time]        Enable or disable System wake
  Wake up minute increase           1                     on alarm event. Select
                                                          FixedTime, system will wake on
                                                          the hr::min::sec specified.
                                                          Select DynamicTime , System
                                                          will wake on the current time
                                                          + Increase minute(s)


                        ┌─── Wake system from S5 ───┐
                        │ Disabled                  │
                        │ Fixed Time                │
                        │ Dynamic Time              │      →←: 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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```

CPU Configuration

Press **<Enter>** to view current CPU configuration and make settings for the following sub-items.

```
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    Advanced

  CPU Configuration                                       Socket specific CPU Information

  ▶ Socket 0 CPU Information
  ▶ CPU Thermal Configuration

  CPU Speed                        1834 MHz
  64-bit                           Supported

  Limit CPUID Maximum              [Disabled]
  Execute Disable Bit              [Enabled]
  Intel Virtualization Technology  [Enabled]
  Power Technology                 [Energy Efficient]


                                                          →←: 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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```
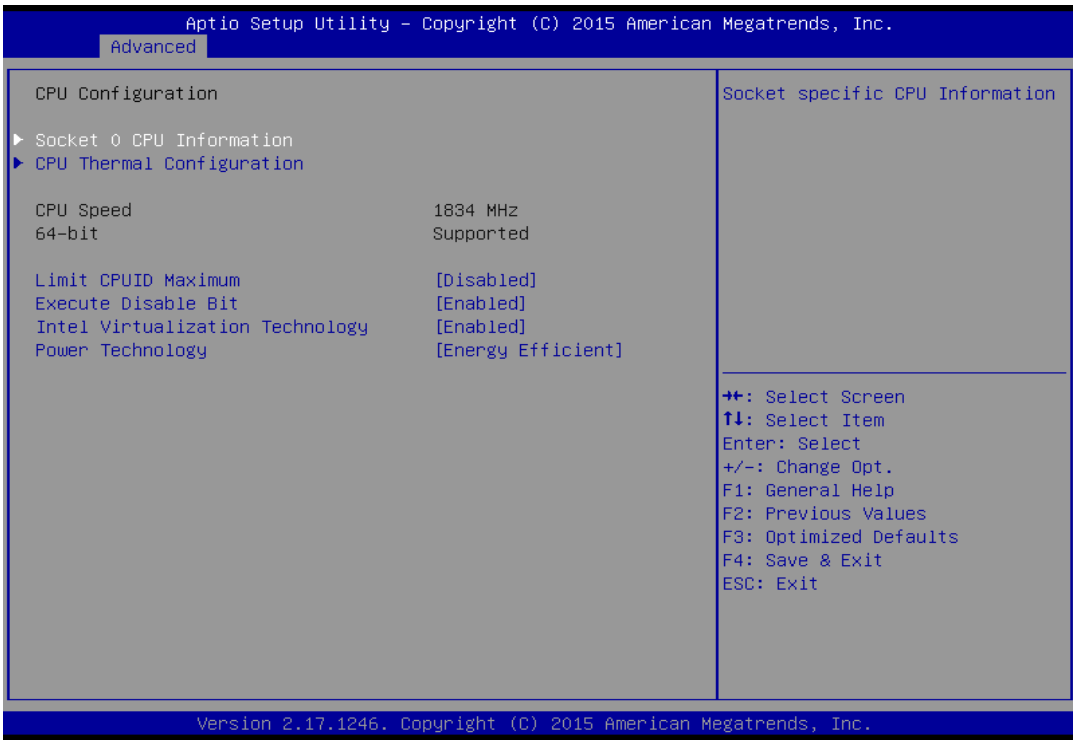
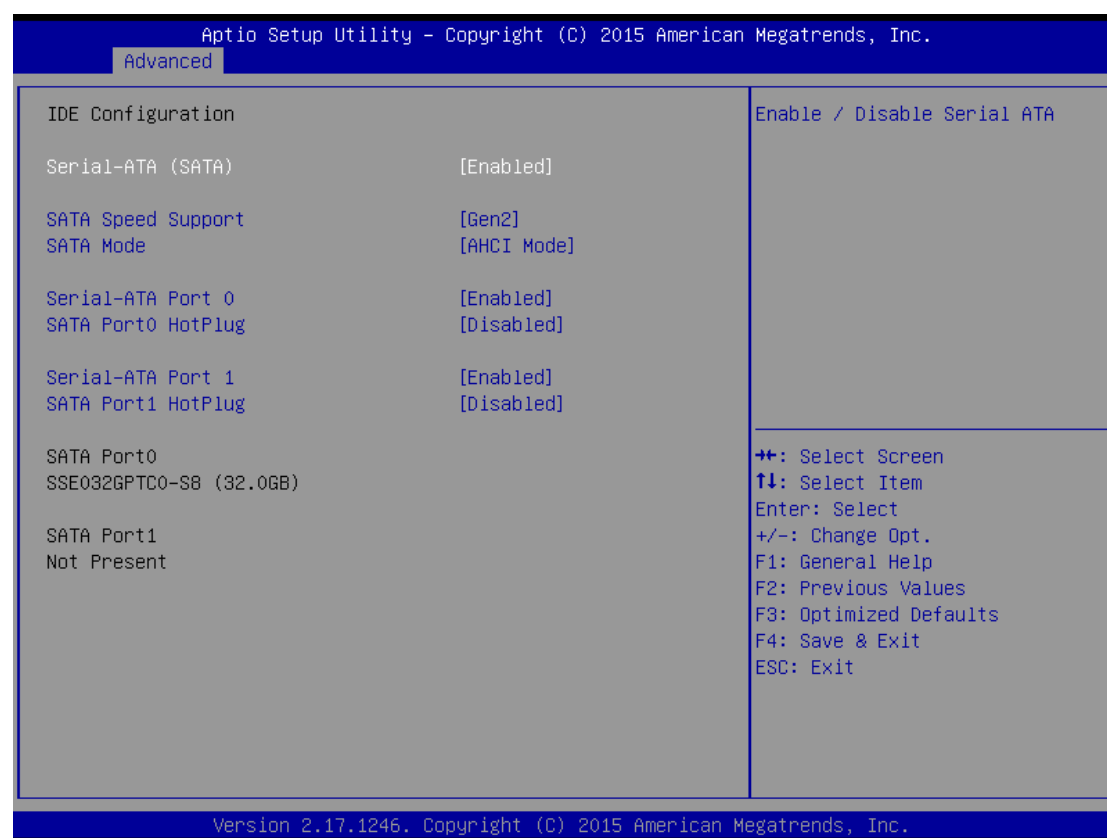| BIOS Setting	Description	Setting Option	Effect
Socket CPU Information	This item contains socket specific CPU information.	Displays Socket CPU Information	Displays Socket CPU Information
CPU Thermal Configuration	Thermal control	Auto/Disabled	Auto/Disable this function
Limit CPUID Maximum	Limits CPIID Maximum	Disabled/Enabled	Enable/Disable this function
Execute Disable Bit	Execute Disable Bit	Disabled/Enabled	Enable/Disable this function
Intel Virtualization Technology	Allows to run recent OS and applications	Enabled/Disabled	Enable/Disable this function
Power Technology	Control the performance and power management functions of the processors	Disabled	Disable this function
		Energy Efficient	Work on energy efficient mode

PPM Configuration

```
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         Advanced

  PPM Configuration                                            Enable/Disable CPU C state
                                                               report to OS
  CPU C state Report                    [Enabled]
  Max CPU C-state                       [ C7]




                                                               ↔: 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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```

BIOS Setting	Description	Setting Option	Effect
CPU C State Report	Shows CPU C State Report	Enabled/ Disabled	Enable or Disable CPU C state report to OS
Max CPU C-State	Allows to enter power-saving mode in order to save energy	C1E, C3, C6, C7, Auto	Enable or Disable CPU C Max CPU S-Sate

Thermal Configuration

```
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         Advanced

 Thermal Configuration Parameters                          This value controls the
 Critical Trip Point              [90 C]                   temperature of the ACPI
 Passive Trip Point               [85 C]                   critical Trip Point in which
                                                           the OS will shut the system
                                                           off.



                                                           ++: 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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```

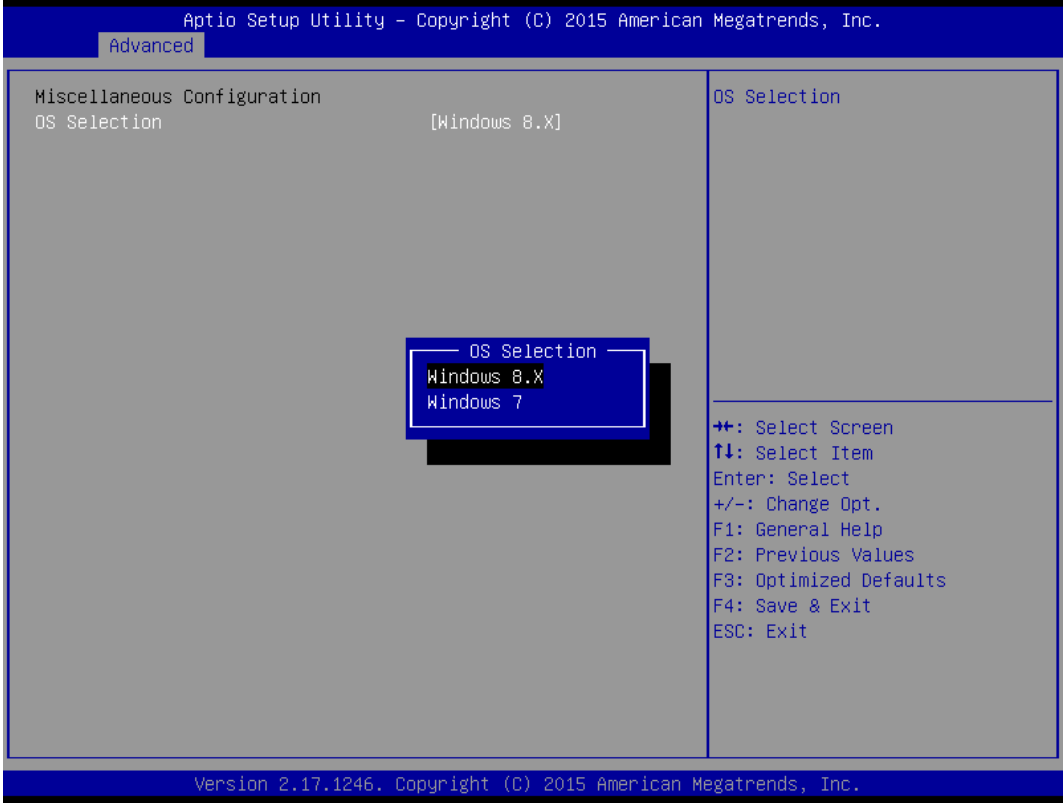| BIOS Setting	Description	Setting Option	Effect
Critical Trip Point	Allows you to set the critical temperature of the processor chip which automatically reduce the frequency of the processor or turn on throttling (skipping beats).	Temperature range	Select the temp.
Passive Trip Point	Allows you to set the passive trip temperature of the processor chip	Temperature range	Select the temp.

IDE Configuration


```
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 Advanced

 IDE Configuration                                          Enable / Disable Serial ATA

 Serial-ATA (SATA)                  [Enabled]

 SATA Speed Support                 [Gen2]
 SATA Mode                          [AHCI Mode]

 Serial-ATA Port 0                  [Enabled]
 SATA Port0 HotPlug                 [Disabled]

 Serial-ATA Port 1                  [Enabled]
 SATA Port1 HotPlug                 [Disabled]

 SATA Port0                                                 →←: Select Screen
 SSE032GPTC0-S8 (32.0GB)                                    ↑↓: Select Item
                                                            Enter: Select
 SATA Port1                                                 +/-: Change Opt.
 Not Present                                                F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit

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```

BIOS Setting	Description	Setting Option	Effect
Serial- ATA (SATA)	Responsible for supporting chipset drives with SATA interface.	Enabled/ Disabled	Enable or disable this function
SATA Speed Support	Allows forcing the speed limit SATA II ports standard IDE / SATA-controller chipset.	Gen1	The maximum speed will be limited to 150 MB/s
		Gen2	The maximum speed will be limited to 300 MB/s
		Disabled	Disables manual configuration of SATA II ports (mode will be selected based on the specifications of connected drives)
SATA Mode	This option specifies the operation mode of modern IDE / SATA-controller	[AHCI]	Selecting this option allows you to take full advantage of the

	chipset		extended host controller SATA II
		[IDE]	SATA controller will operate in a mechanism similar to a conventional IDE-controller
		[RAID]	Allows combining hard drives in RAID-arrays in order to improve the reliability of data storage, or to increase the speed.
Serial- ATA Port 0	The option turns on or off Port 0 of SATA channels of standard IDE / SATA-controller chipset.	Enabled/ Disabled	Turn on (Enabled) or turn off (Disabled) Port 0
SATA Port0 HotPlug	This feature that allows you to attach and remove a SATA Port0	Enabled/ Disabled	Enable or disable this function
Serial- ATA Port 1	The option turns on or off Port 1 of SATA channels of standard IDE / SATA-controller chipset.	Enabled/ Disabled	Turn on (Enabled) or turn off (Disabled) Port 1
SATA Port1 HotPlug	This feature that allows you to attach and remove a SATA Port1	Enabled/ Disabled	Enable or disable this function

Miscellaneous Configuration

OS Selection

This item allows users to select the proper Operating System.

```
         Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
     Advanced

  Miscellaneous Configuration                              OS Selection
  OS Selection                      [Windows 8.X]




                        ┌──── OS Selection ────┐
                        │ Windows 8.X          │
                        │ Windows 7            │        →←: 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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```
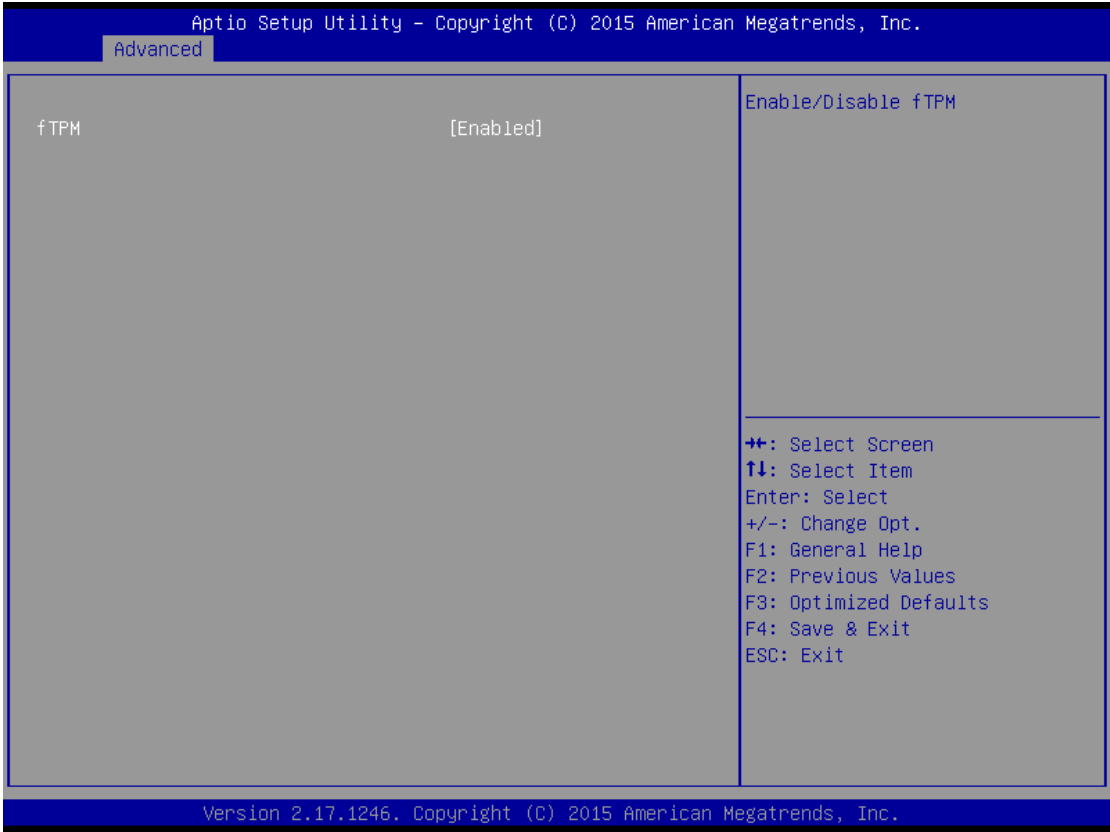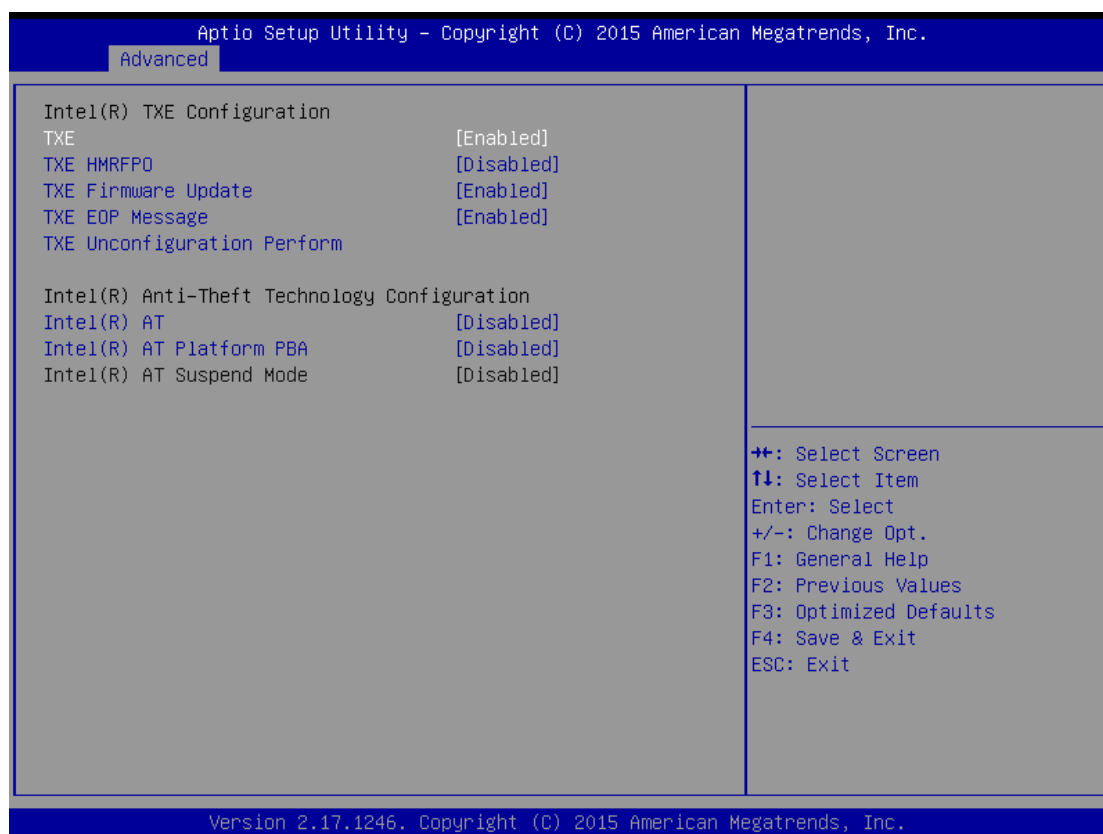
BIOS Setting	Description	Setting Option	Effect
Windows 8.X	Allows user to choose the proper OS.	Enter	Use Windows 8.X
Windows 7	Allows user to choose the proper OS.	Enter	Use Windows 7

CSM Configuration

```
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         Advanced

Compatibility Support Module Configuration                    Enable/Disable CSM Support.

CSM Support                          [Enabled]

CSM16 Module Version                 07.76

GateA20 Active                       [Upon Request]
Option ROM Messages                  [Force BIOS]

Boot option filter                   [Legacy only]

Option ROM execution

Network                              [Legacy]          ++: Select Screen
Storage                              [Legacy]          ↑↓: Select Item
Video                                [Legacy]          Enter: Select
Other PCI devices                    [UEFI]            +/-: Change Opt.
                                                       F1: General Help
                                                       F2: Previous Values
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit




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```

BIOS Setting	Description	Setting Option	Effect
CSM Support	The Compatibility Support Module (CSM) is a component of the UEFI firmware that provides legacy BIOS compatibility by emulating a BIOS environment, allowing legacy operating systems and some option ROMs that do not support UEFI to still be used.	Enabled/ Disabled	Enable or disable the Compatibility Support Module
GetaA20 Active	Activate GetaA20	Upon Request	Enable or disable this function
Option ROM Messages	Receiving ROM Messages Settings	Force BIOS	Set ROM messages parameters
Network	Specifies which Network option	UEFI	Only UEFI

	ROM is booted		option ROMs are booted
		Legacy	
Storage	Specifies which Storage option ROM is booted	UEFI	Only UEFI option ROMs are booted
		Legacy	Only Legacy option ROMs are booted
Video	Specifies which Video option ROM is booted	UEFI	Only UEFI option ROMs are booted
		Legacy	Only Legacy option ROMs are booted
Other PCI Devices	Specifies which option ROM is booted for devices other than the network, storage or video	UEFI	Only UEFI option ROMs are booted
		Legacy	Only Legacy option ROMs are booted

USB Configuration

```
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   Advanced

   USB Configuration                                          Enables Legacy USB support.
                                                              AUTO option disables legacy
   USB Module Version              8.11.02                    support if no USB devices are
                                                              connected. DISABLE option will
   USB Devices:                                               keep USB devices available
         1 Drive, 1 Keyboard, 1 Mouse, 3 Hubs                 only for EFI applications.

   Legacy USB Support              [Enabled]
   USB Mass Storage Driver Support [Enabled]

   USB hardware delays and time-outs:
   USB transfer time-out           [20 sec]
   Device reset time-out           [20 sec]                  ─────────────────────────────
   Device power-up delay           [Auto]
                                                             ↔: Select Screen
   Mass Storage Devices:                                     ↑↓: Select Item
   JetFlashTranscend 8GB 8.07      [Auto]                    Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit



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```

BIOS Setting	Description	Setting Option	Effect
Legacy USB Support	User can enable or disable USB port.	Disable	Will keep USB devices available only for EFI applications.
		Enable	Enable all the USB devices
USB 3.0 Support	User can enable or disable USB 3.0 (XHCI) controller support.	Enable	Enable USB 3.0 is enable
		Disable	USB 3.0 is disable
XHCI Hand-off	This is a workaround for OSs without XHCI hand- off support.	Disable	Disables this function
		Enable	Enables this function
EHCI Hand-off	This is a workaround for OSs without ECHI hand- off support.	Disable	Disables this function
		Enable	Enables this function
USB mass storage driver support	User can Enable or disable USB mass storage driver support.	Disable	Disables this function
		Enable	Enables this function
USB Transfer time- out	The time-out value for control, bulk, and interrupt transfers.	1 Sec 5 Sec 10 Sec 20 Sec	Depends on the time-out value
Device Reset time- out	USB mass storage device start unit command time- out.	10 Sec 20 Sec 30 Sec 40 Sec	Depends on the time-out value
Device power-up delay	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 100 ms, for a Hub port the delay is taken from Hub descriptor

Platform Trust Technology

```
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   Advanced

                                                             Enable/Disable fTPM

    fTPM                            [Enabled]




                                                             →←: 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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```

BIOS Setting	Description	Setting Option	Effect
fTPM	Trusted Platform Module parameters	Enabled/Disabled	Enables or disables this function

Security Configuration

```
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      Advanced

   Intel(R) TXE Configuration
   TXE                            [Enabled]
   TXE HMRFPO                     [Disabled]
   TXE Firmware Update            [Enabled]
   TXE EOP Message                [Enabled]
   TXE Unconfiguration Perform

   Intel(R) Anti-Theft Technology Configuration
   Intel(R) AT                    [Disabled]
   Intel(R) AT Platform PBA       [Disabled]
   Intel(R) AT Suspend Mode       [Disabled]

                                                   ++: 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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```

BIOS Setting	Description	Setting Option	Effect
TXE	Trusted Execution Technology parameters	Enabled/ Disabled	Enables or disables this function
TXE HMRFPO	TXE HMRFPO parameters	Enabled/ Disabled	Enables or disables this function
TXE Firmware Update	TXE Firmware Update parameters	Enabled/ Disabled	Enables or disables this function
TXE EOP Message	TXE EOP Message parameters	Enabled/ Disabled	Enables or disables this function
Intel ® AT	Intel ® AT parameters	Enabled/ Disabled	Enables or disables this function
Intel ® AT Platform PBA	Intel ® AT Platform PBA parameters	Enabled/ Disabled	Enables or disables this function

3.2.3 Chipset Menu

Chipset Menu includes displays about PCI Express Settings,

►USB Configuration

Displays USB Configuration Settings

►PCI Express Configuration

BIOS Setting	Description	Setting Option	Effect
High Precious Timer	Allow to set up High Precious Timer settings	Enabled/ Disabled	Enables/ Disables this function
Restore AC Power Loss	This function allows to set up booting options after a power failure	Power on/ Power off	Boot automatically after a power failure
Serial IRQ Mode	When working with personal computer hardware, installing and removing devices, the system relies on interrupt requests.	Continuous	Allow user to set up desired IRQ Mode

3.2.4 Security Menu

In the Security menu, users can set administrator password, user password, and HDD security configuration.

```
          Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
     Main  Advanced  Chipset  Security  Boot  Save & Exit

    Password Description                                  Set Administrator Password

    If ONLY the Administrator's password is set,
    then this only limits access to Setup and is
    only asked for when entering Setup.
    If ONLY the User's password is set, then this
    is a power on password and must be entered to
    boot or enter Setup. In Setup the User will
    have Administrator rights.
    The password length must be
    in the following range:
    Minimum length                 3
    Maximum length                20
                                                         ++: Select Screen
                                                         ↑↓: Select Item
    Administrator Password                               Enter: Select
    User Password                                        +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
    HDD Security Configuration:                          F3: Optimized Defaults
    P0:ADATA XM13 3                                      F4: Save & Exit
                                                         ESC: Exit
  ▶ Secure Boot menu



          Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

BIOS Setting	Description	Setting Option	Effect
Administrator Password	Displays whether or not an administrator password has been set.	Enter	Enter password
User Password	Display whether or not a user Password has been set.	Enter	Enter password

3.2.5 Boot Configuration

The Boot menu sets the sequence of the devices to be searched for the operating system. The bootable devices will be automatically detected during POST and shown here, allowing you to set the sequence that the BIOS use to look for a boot device from which to load the operating system.
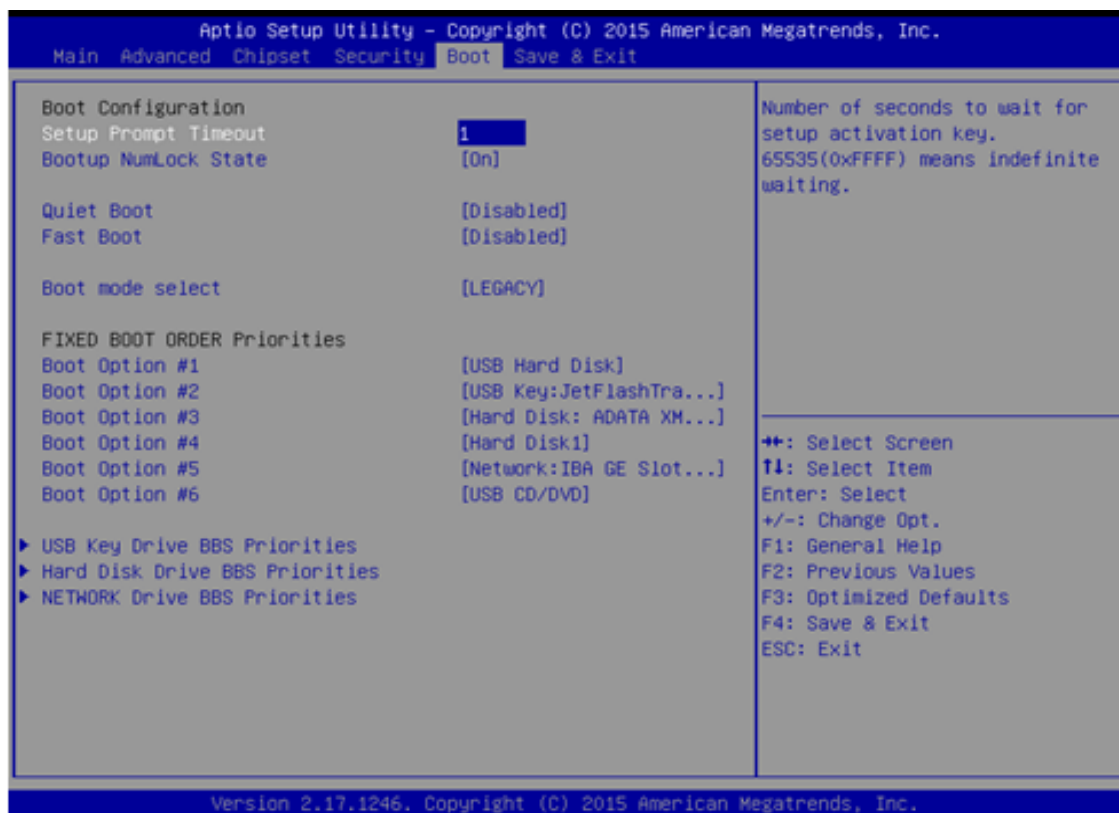
BIOS Setting	Description	Setting Option	Effect
Setup Prompt Timeout	Allows user to configure the number of seconds to stay in BIOS setup prompt screen.	Enter	Set the prompt timeout
Boot NumLock State	Enables or disables NumLock feature on the numeric keypad of the keyboard after the POST (Default: On).	On	Remains On
		Off	Remains OFF
Quite Boot	Determines if POST message or OEM logo (default = Black background) is displayed.	Disabled	Disables this function
		Enabled	Enables this function

Fast Boot	Enables or disables Fast Boot to shorten the OS boot process. (Default: Disabled).	Disabled	Disables this function
		Enabled	Enables this function
Boot Option Priorities	Specifies the overall boot order from the available devices	Ex: Boot Option#1 (hard drive)	Hard drive as the first priority
Hard Drive BBS Priorities	Specifies the boot order for a specific device type, such as hard drives, optical drives, floppy disk drives, and devices that support Boot from LAN function	Enter	Enter the submenu that present the devices of the same type are connected.

3.2.6 Save & Exit

The Exit menu displays a way how to exit BIOS Setup utility. After finishing your settings, you must save and exit for changes to be applied.

| BIOS Setting | Description | Setting | Effect |

		Option	
Save Changes and Exit	This saves the changes to the CMOS and exits the BIOS Setup program.	<YES>	Save changes
Discard Changes and Exi	This exits the BIOS Setup without saving the changes made in BIOS Setup to the CMOS.	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup Main Menu
Save Changes and Reset	Reset the system after saving the changes.	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup Main Menu
Discard Changes and Reset	Reset system setup without saving any changes	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup Main Menu
Save Changes	Save changes done so far to any of the setup options.	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup Main Menu
Discard Changes	Discard changes done so far to any of the setup options.	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup Main Menu
Restore Default	Restore/load default values for all the setup options.	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup Main Menu
Save as User Defaults	Save the changes done so far as User defaults.	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup

			Main Menu
Restore User Defaults	Restore the User Defaults to all the setup options.	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup Main Menu

3.3 Using Recovery Wizard to Restore Computer

Bay Trail Intel® Celeron N2930 series computer has a dedicate recovery partition stored on the hard drive of the PC to enable quick one-key recovery process. This partition occupies about 11GB of the storage space, and comes built-in to each IB70 series PC.

Before starting the recovery process, be sure to backup all user data, as all data will be lost after the recovery process.

Follow the procedure below to enable quick one-key recovery procedure:

- Plug-in the AC adapter to Bay Trail series computer. Make sure the computer stays plugged in to power source during the recovery process.
- Turn on the computer, and when the boot screen shows up, press the **F6** to initiate the Recovery Wizard.
- The following screen shows the Recovery Wizard. Click Recovery button to continue.

A warning message about data loss will show up. Make sure the data is backed up before recovery, and click **Yes** to continue.
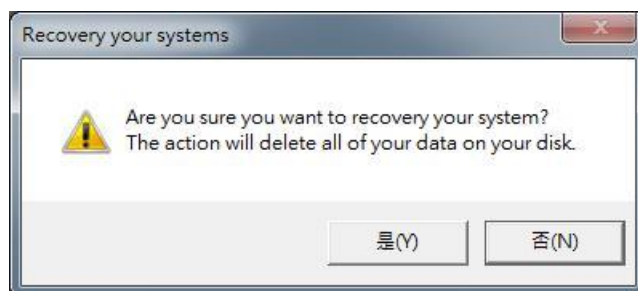
Wait the recovery process to complete. During the recovery process, a command prompt will show up to indicate the percent of recovery process complete. The tablet computer will restart automatically after recovery completed.

Driver Installation

This chapter offers information on all of the recommend driver installation.

Sections include:

4.1 Intel Chipset Driver
4.2 Graphics Driver
4.3 Audio Driver
4.4 Ethernet Driver
4.5 Intel Sideband Fabric Device (MBI) (Windows 8)
4.6 Intel Trusted Engine Interface (TXE)
4.7 Fintek COM Port Driver
4.8 USB 3.0 Driver (Windows 7)

CHAPTER 4

CHAPTER 4: DRIVER INSTALLATION

4.1 Intel Chipset Driver

Step 1 Insert the CD that comes with the motherboard. Open the file document "Chipset Driver" and click on "infinst_auto.exe" to install the driver.
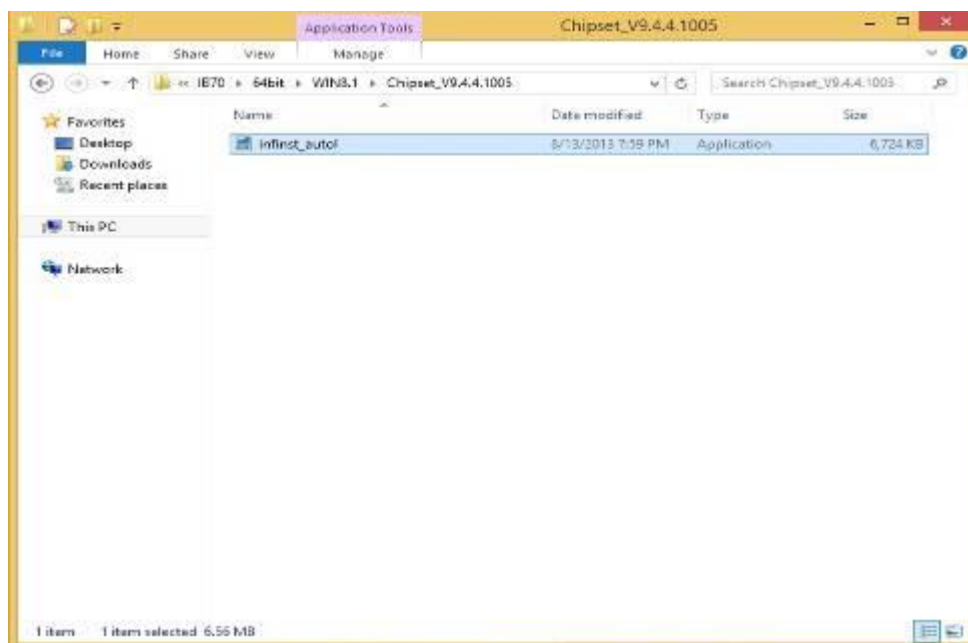
Step 2 Click "Next" to continue the installation.

Step 3 Click "Yes" to agree with the license terms.

Step 4 Click "Next" to continue.
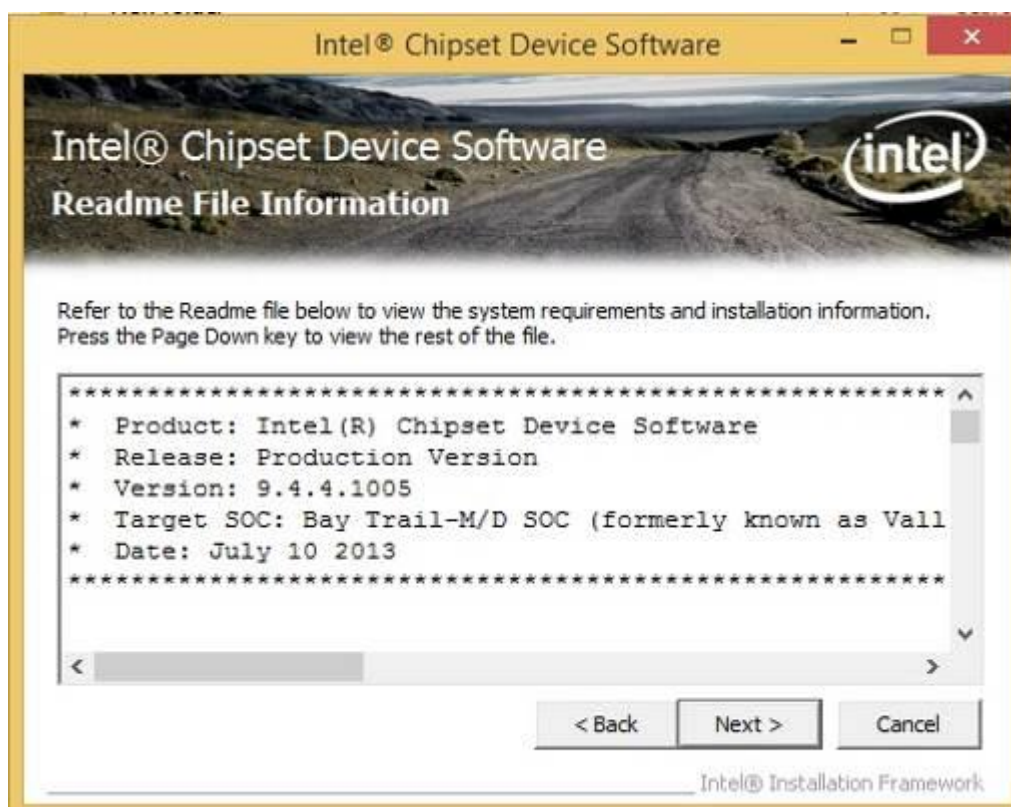
Step 5 Please wait for the following operations to be performed.

Step 6 Click "Next" to continue.

Step 7 Select "Yes, I want to restart this computer now", and click "Next" to finish the installation.
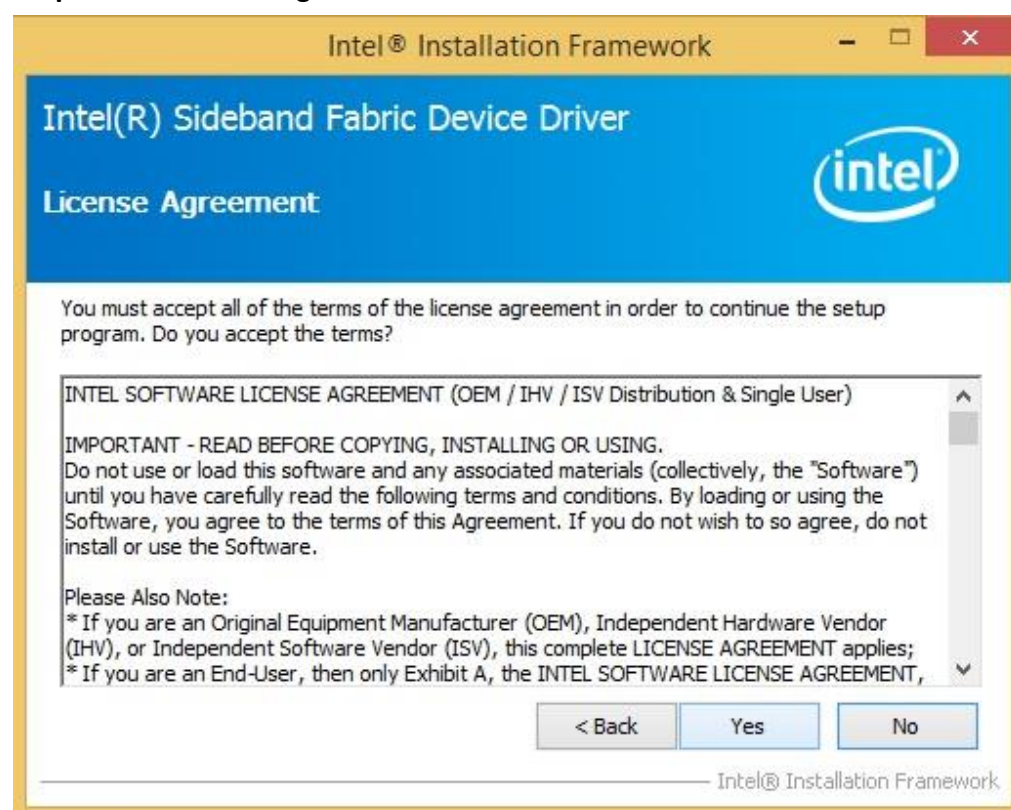
4.2 Graphics Driver

Step 1 Insert the CD that comes with the motherboard. Open the file document "Graphics Driver" and click "Setup.exe" to install the driver.
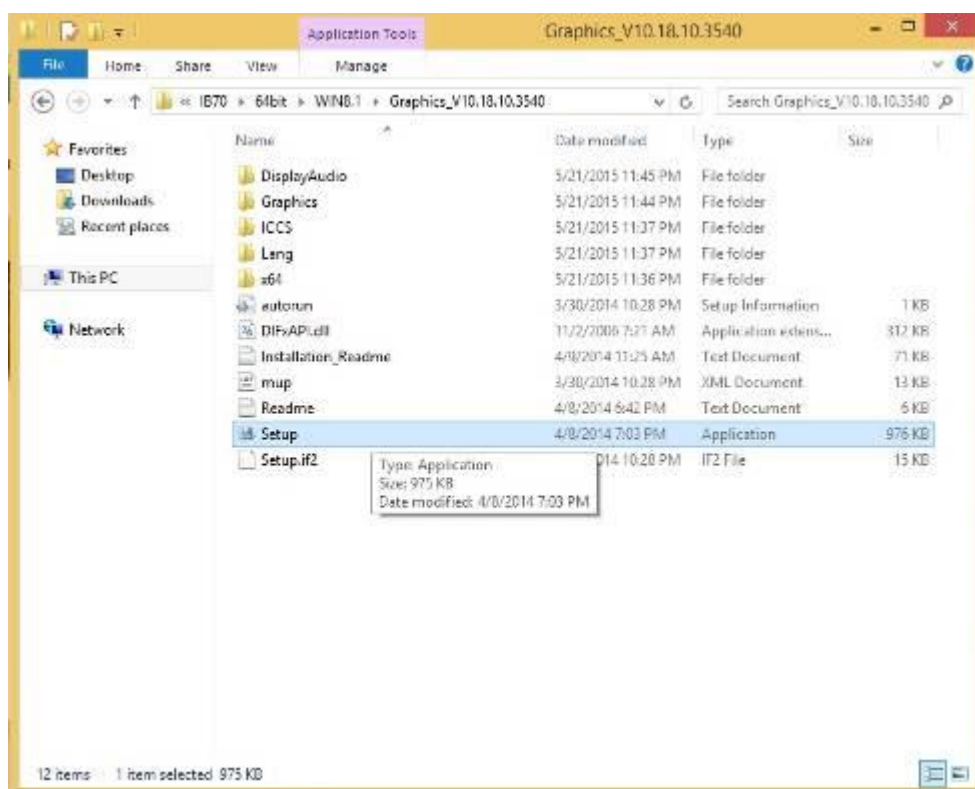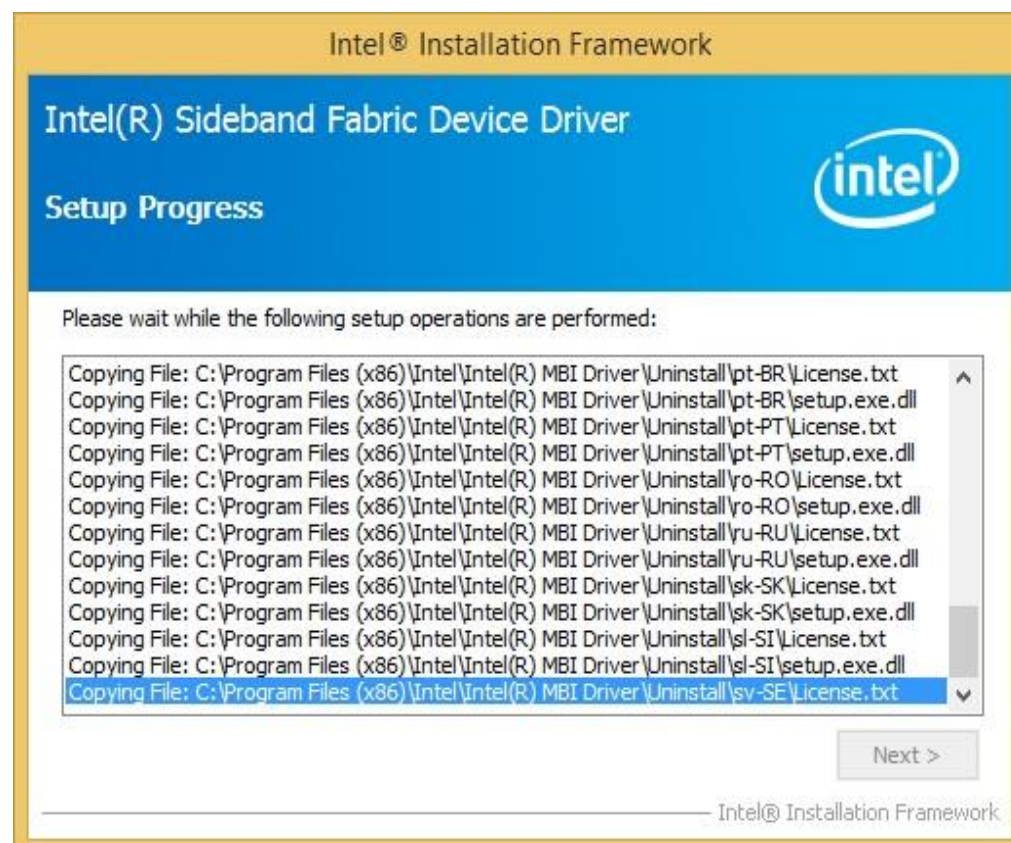

Step 2 Click "Next" to continue the installation.

Step 3 Click "Yes" to agree with the license terms.
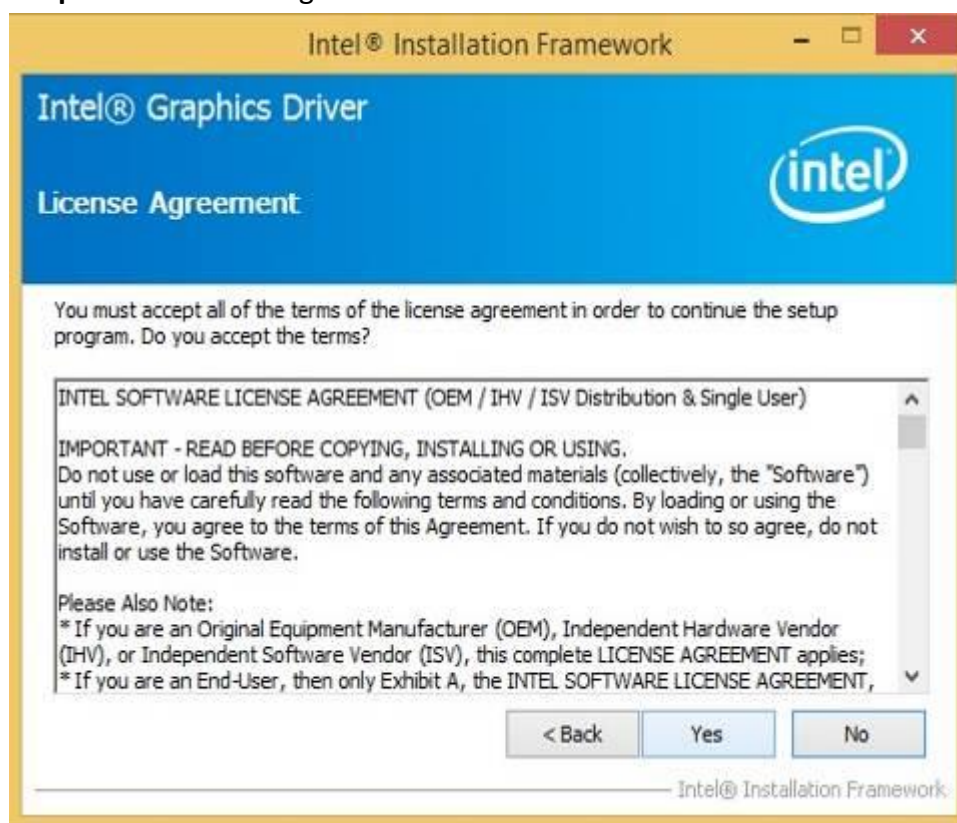
Step 4 Click "Next" to continue the installation.
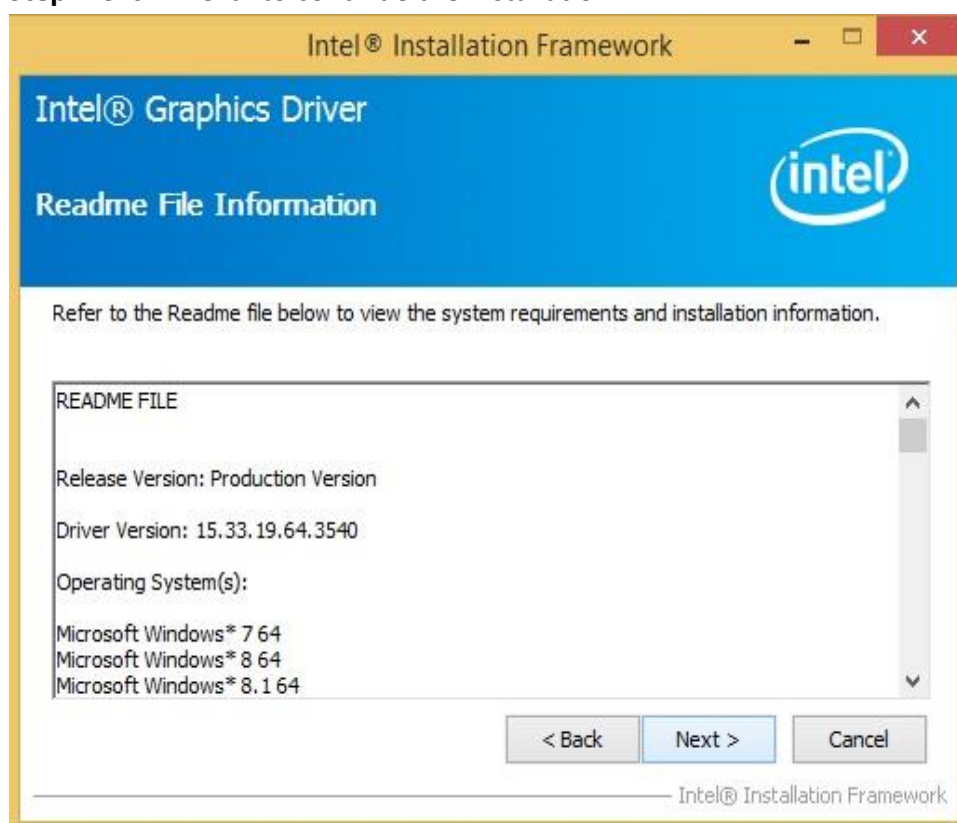
Step 5 Click "Next" to continue the installation.
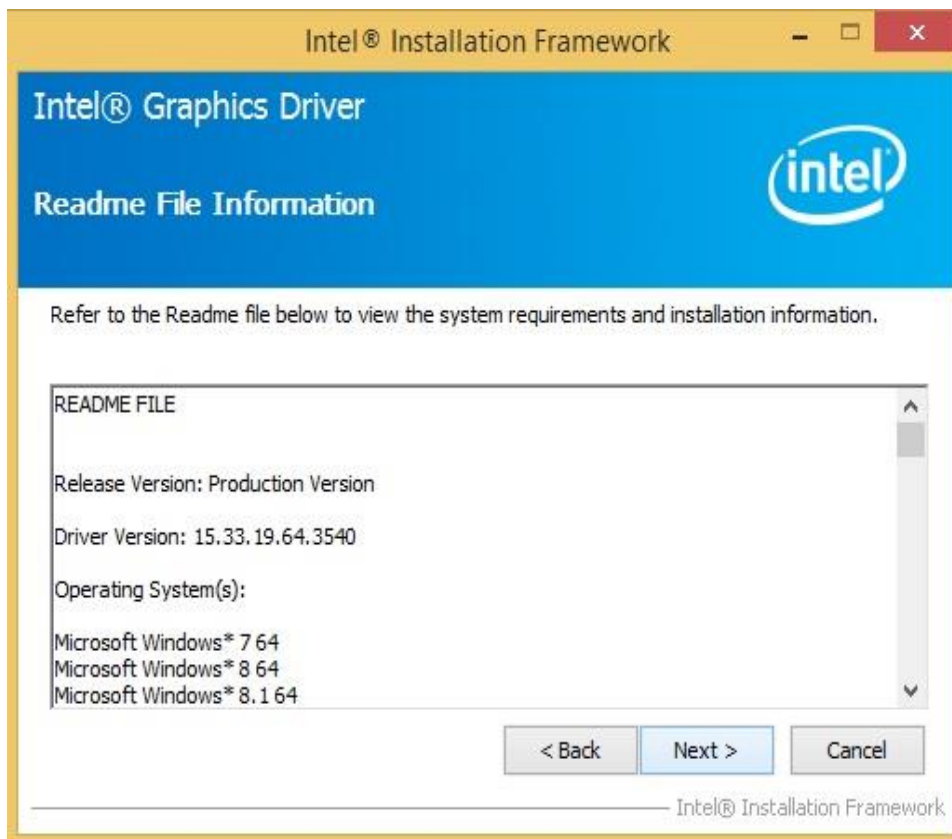
Step 6 Click "Next" to continue the installation.
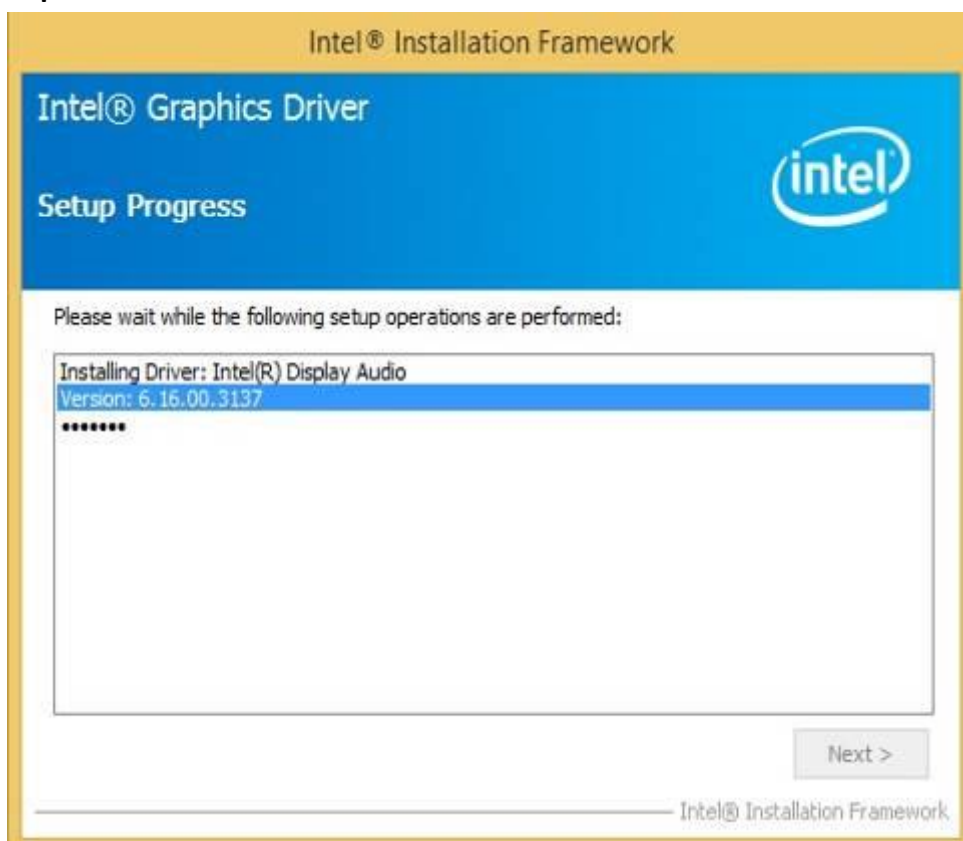
A warning message will appear on the screen, click on "install this driver software anyway" to continue the installation.
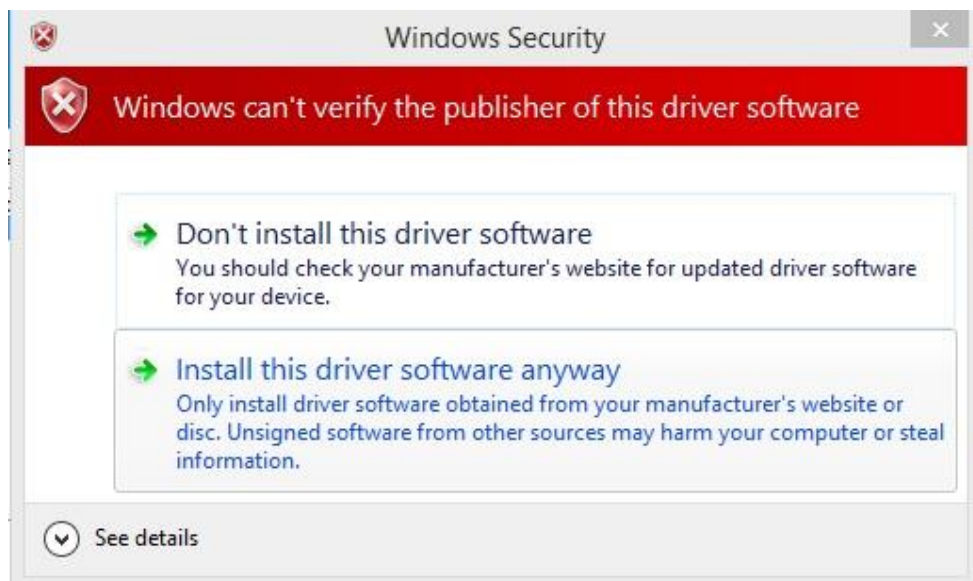
Step 7 Please wait for the following operations to be performed.
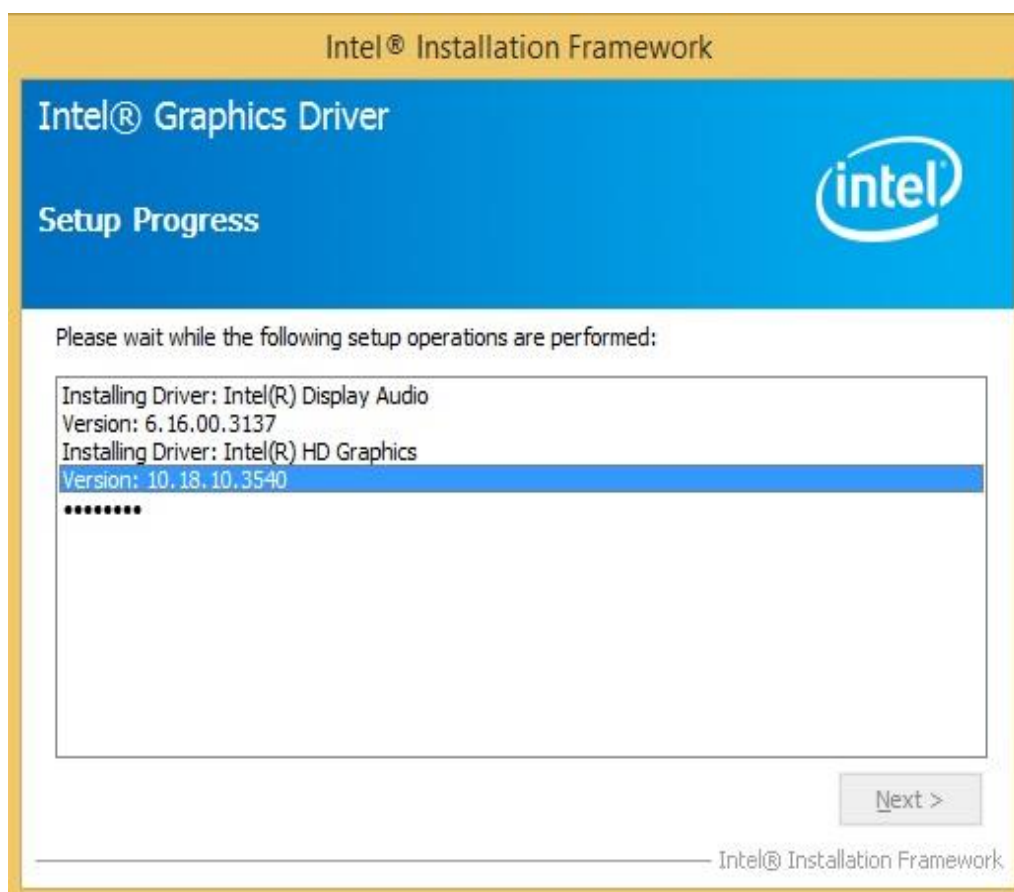
Step 8 Click "Next" to continue the installation.
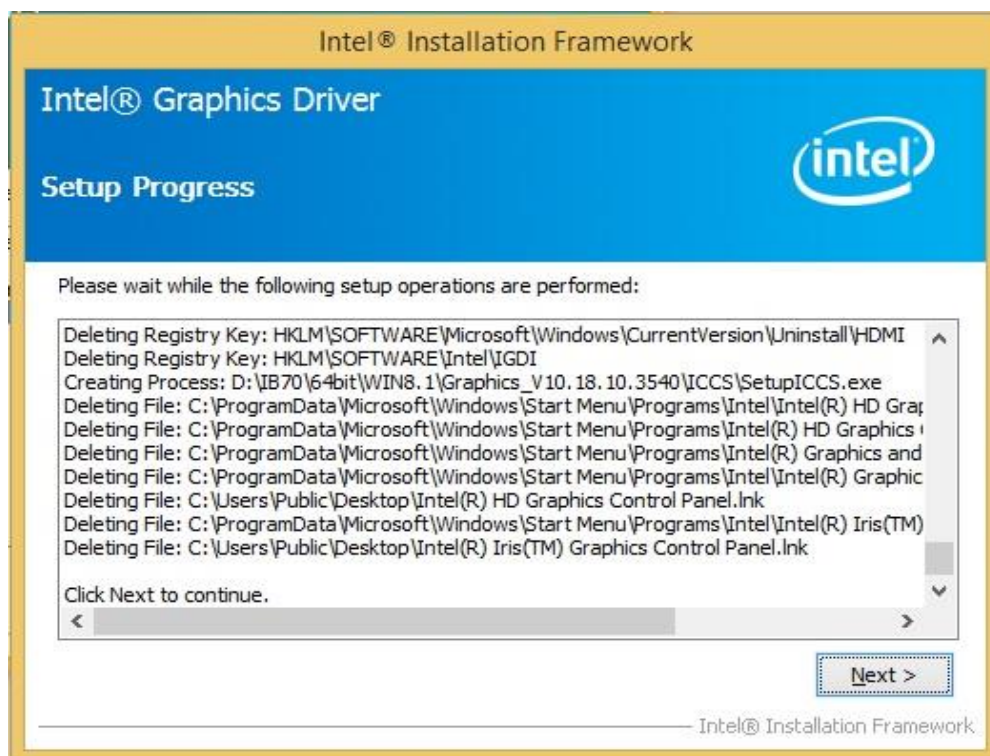
Step 9 Click "Yes, I want to restart this computer now" to finish the installation and restart the computer.
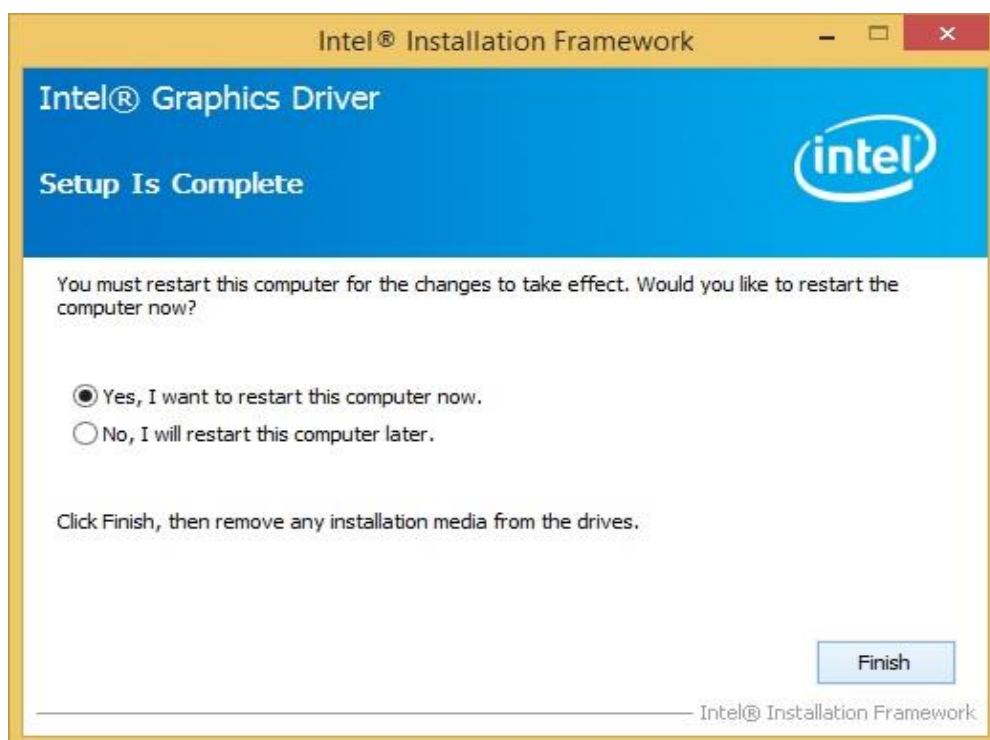
4.3 Audio Driver

Step 1 Insert the CD that comes with the motherboard. Open the file document "Audio Driver" and click on "Setup.exe" to install the driver.
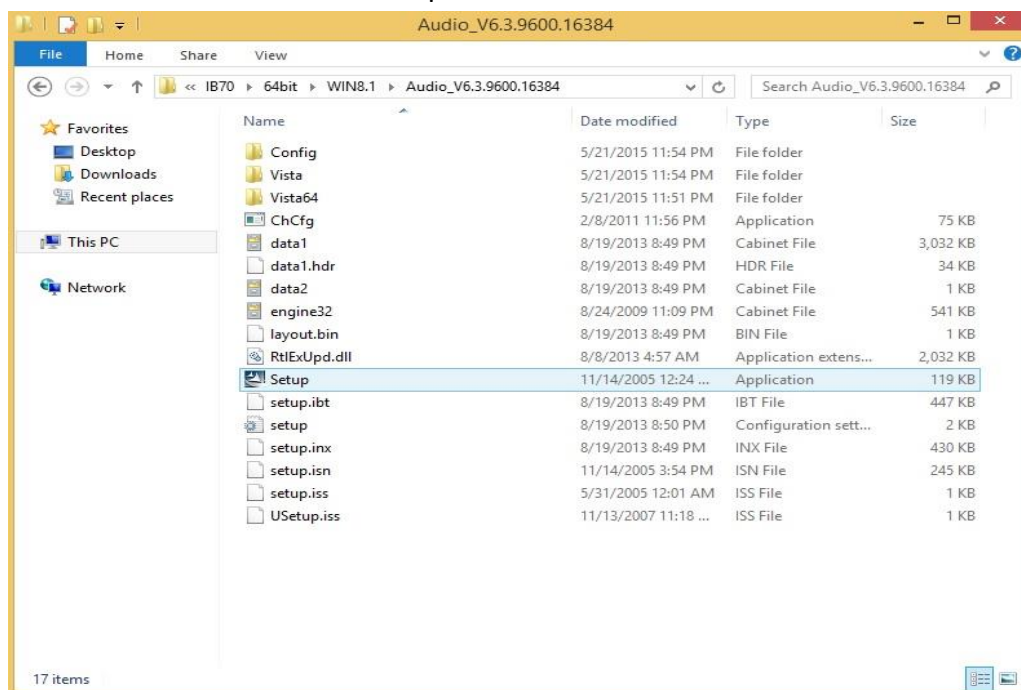
Step 2 Wait while setup is preparing the installation.
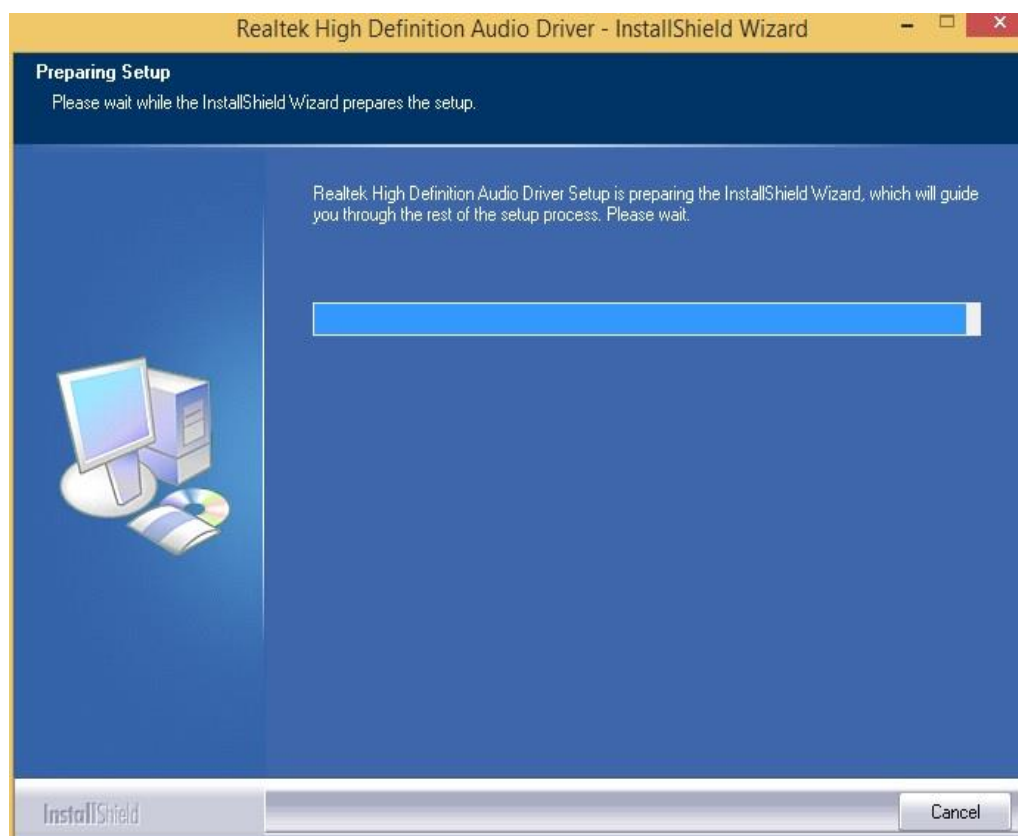
Step 3 Click Next to continue the installation.
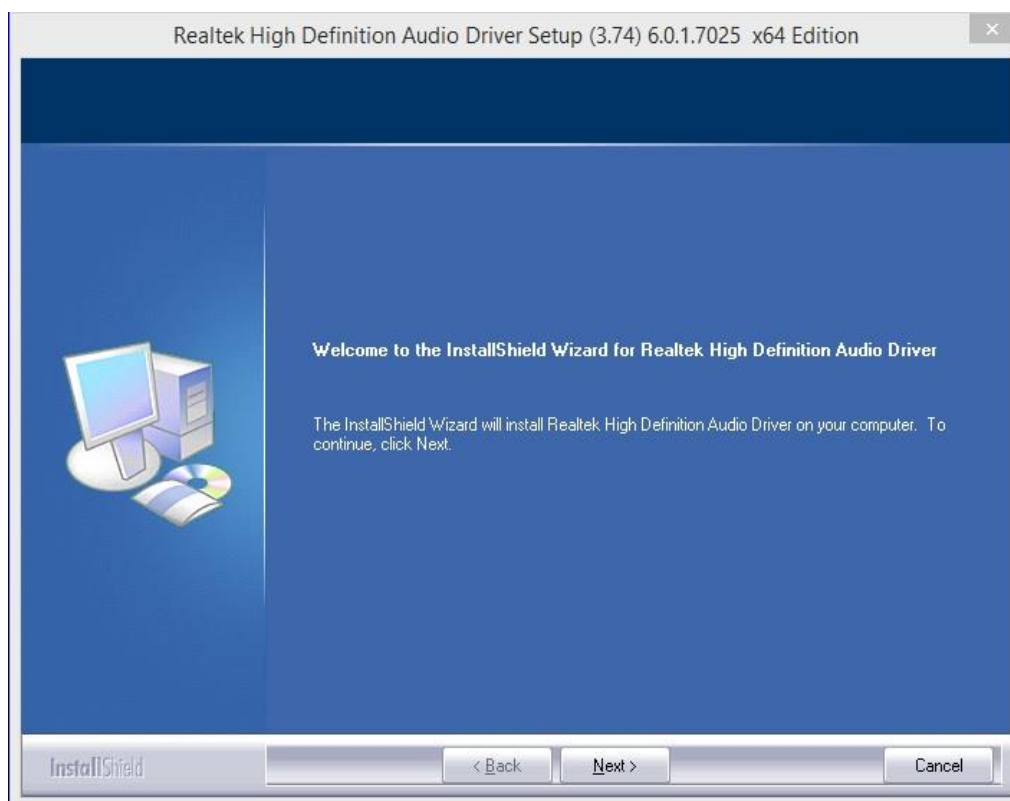
Step 4 Please wait for the driver to configure your new software installation.
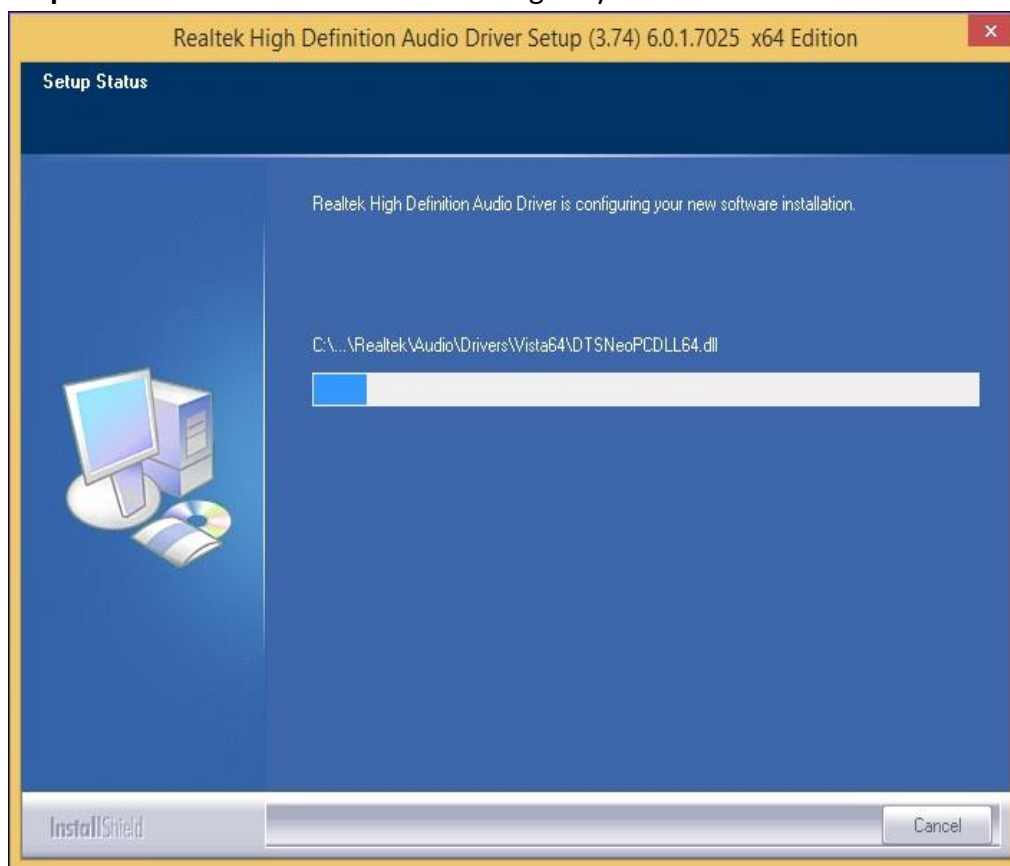
Step 5 Windows security warning message will pop-up, mark "Always trust software from "Realtek Semiconductor Corp" and click Install.

Step 6 Select "Yes, I want to restart my computer now", and then press finish to complete the installation.
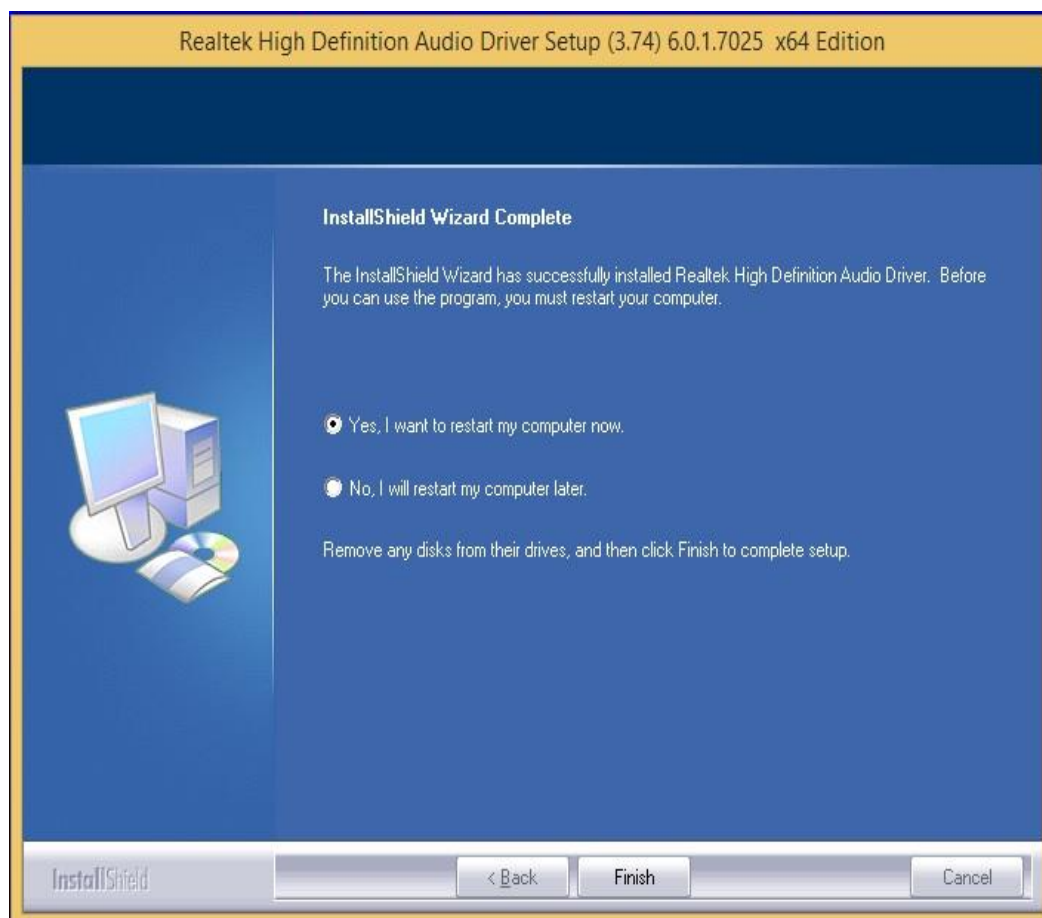
4.4 Ethernet Driver

The users must confirm which operating system is used on the IH32 Motherboard before installing the Ethernet drivers. Follow the steps below to complete the installation of the Intel® I210IT Gigabit-LAN Controller + I218LM Gigabit-LAN drivers. You will quickly complete the installation.

Step 1 Insert the driver CD and select the "LAN Driver" folder.

Name	Date modified	Type	Size
PROWinx64_19.0	3/27/2014 5:27 PM	Application	32,522 KB

!1.7 MB
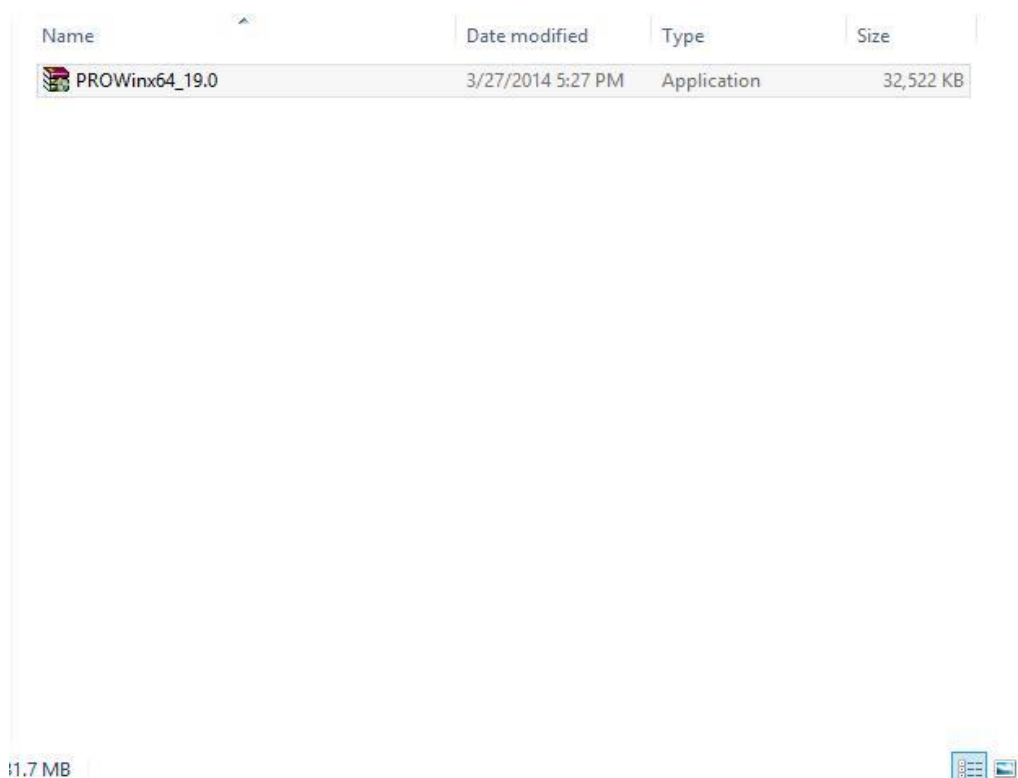
Step 2 Extract the "PROWinX64_19.0" file and click "Next" to install the driver.
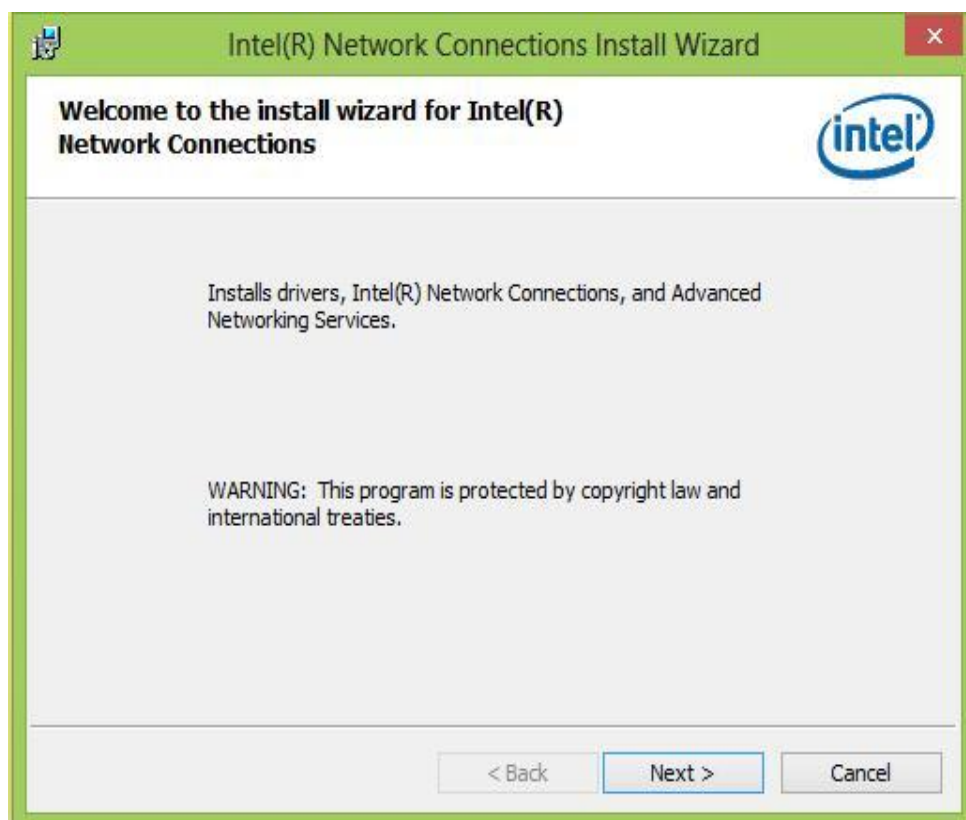
Step3 Click "Next" to agree with the license terms.
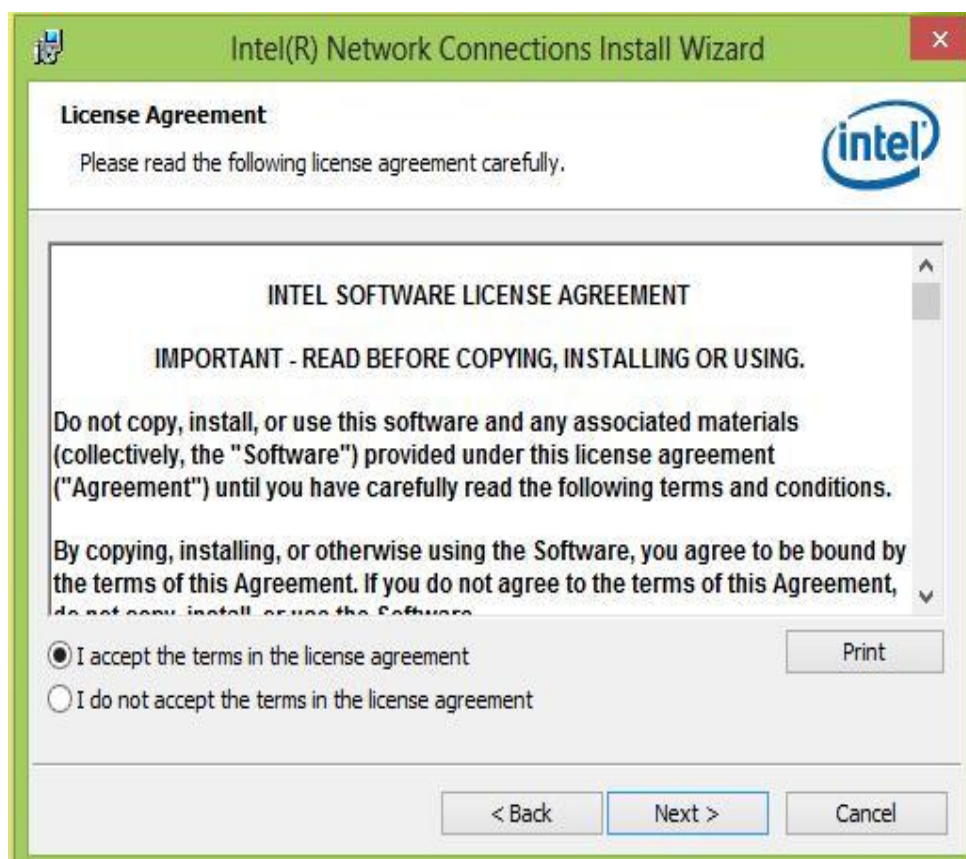
Step 4 Click "Next" to install the driver.
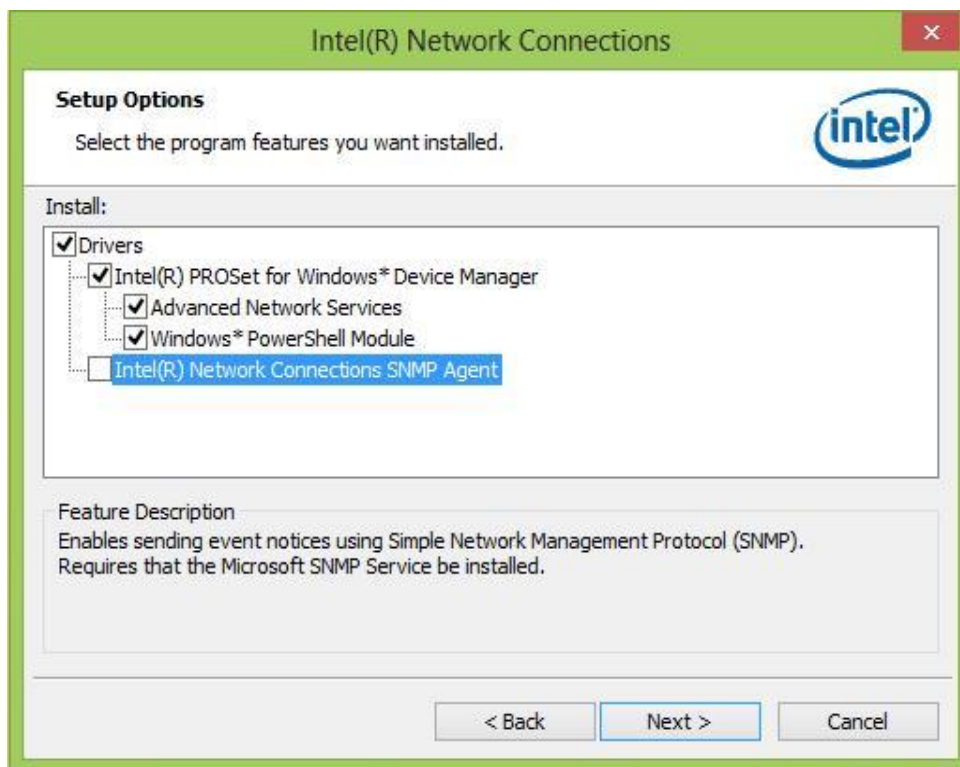
Step 5 Click "Finish" to complete the driver installation.
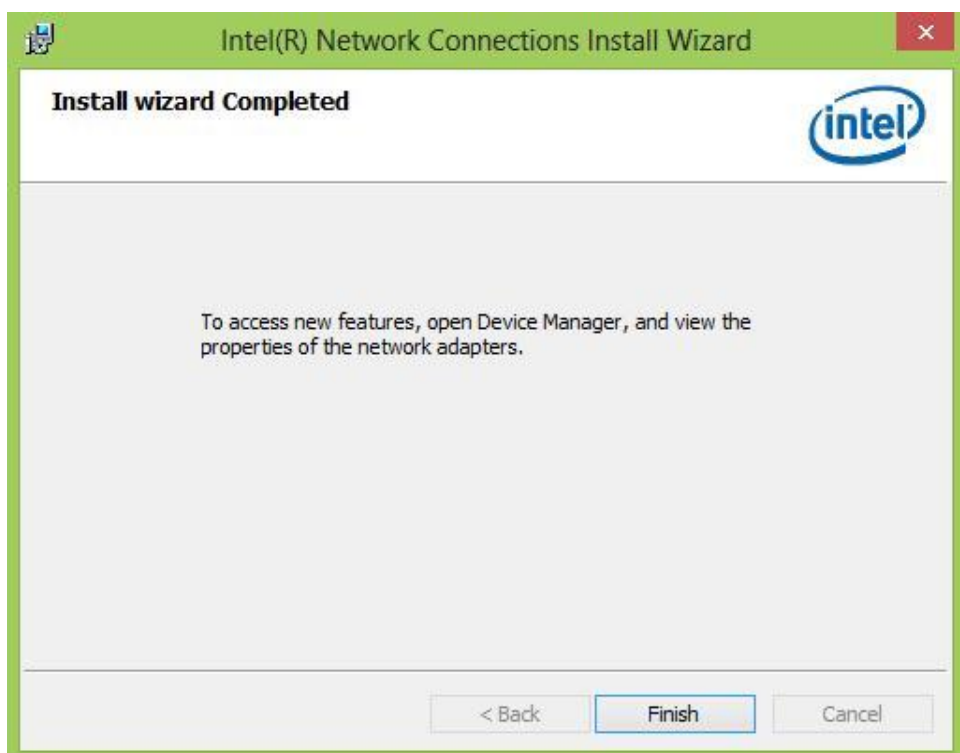
4.5 Intel Sideband Fabric Device (Intel MBI) Driver (Windows 8)

Step 1 Insert the CD that comes with the motherboard. Open the file document "MBI" and click on "Setup.exe" to install the driver.
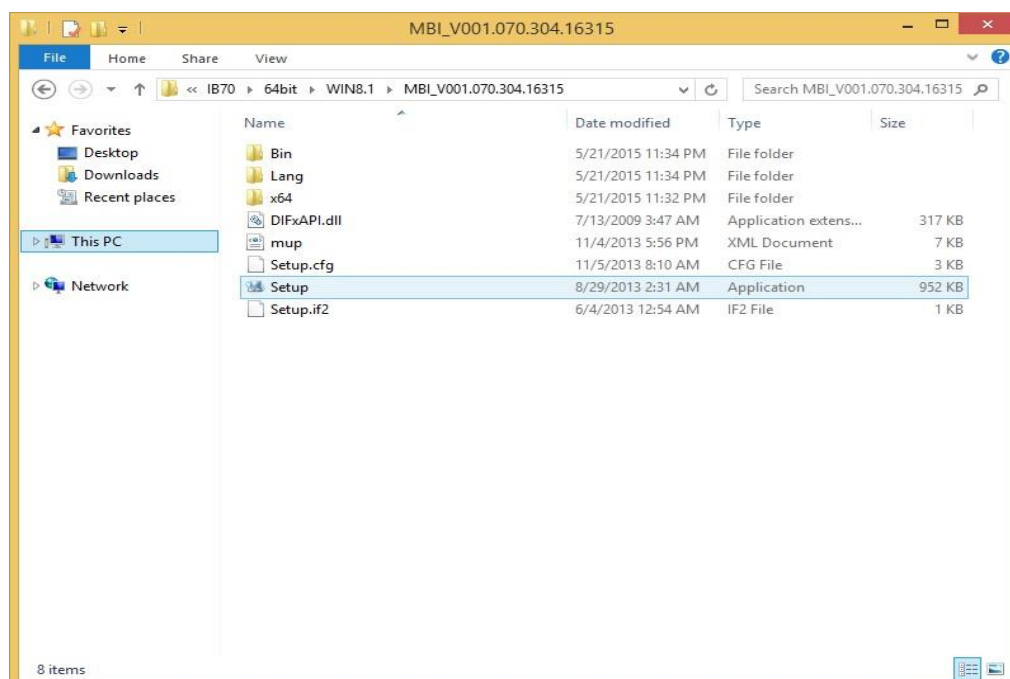
**Step 2** Click "Next" to continue the driver installation.
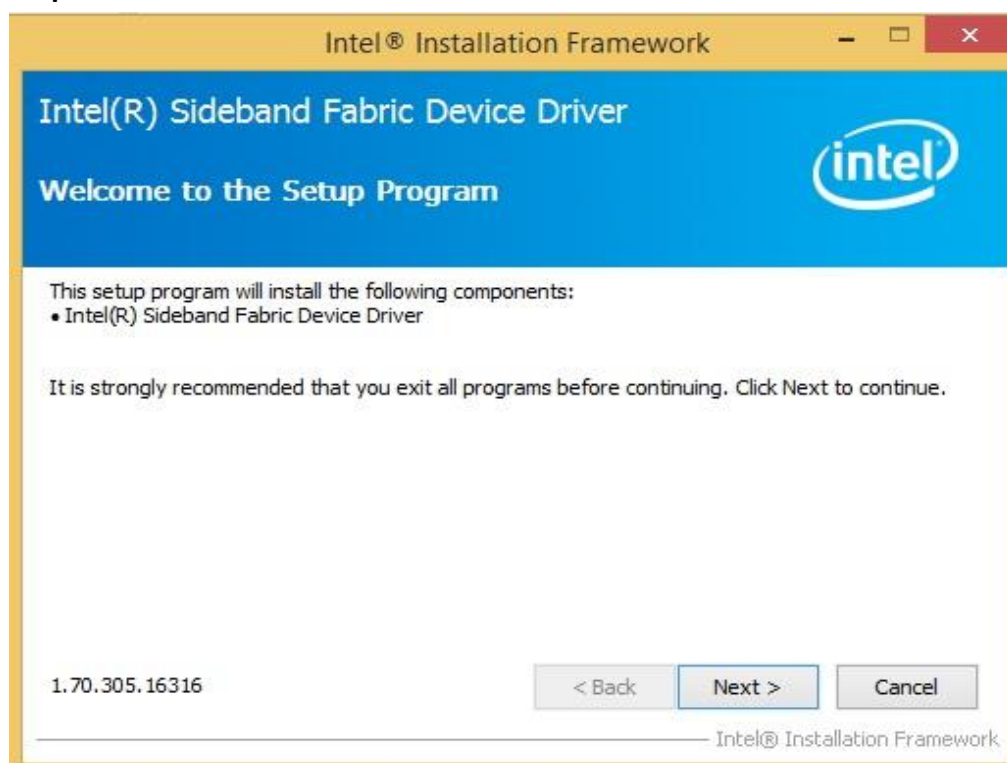
Step 3 Click "Yes" to agree with the license terms.

Step 4 Please wait while the following setup operations are performed.

Step 5 It may take some time for the following setup operations to be performed.
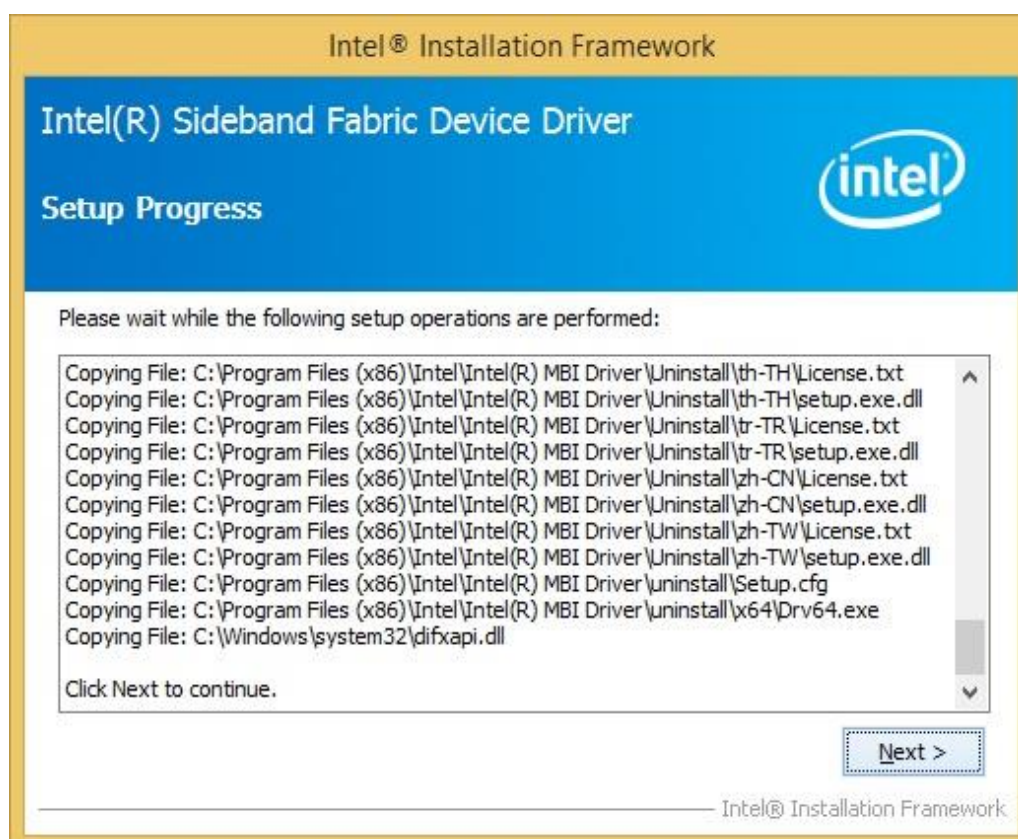
Step 6 Select "Yes, I want to restart this computer now", and then click Finish to complete the installation.
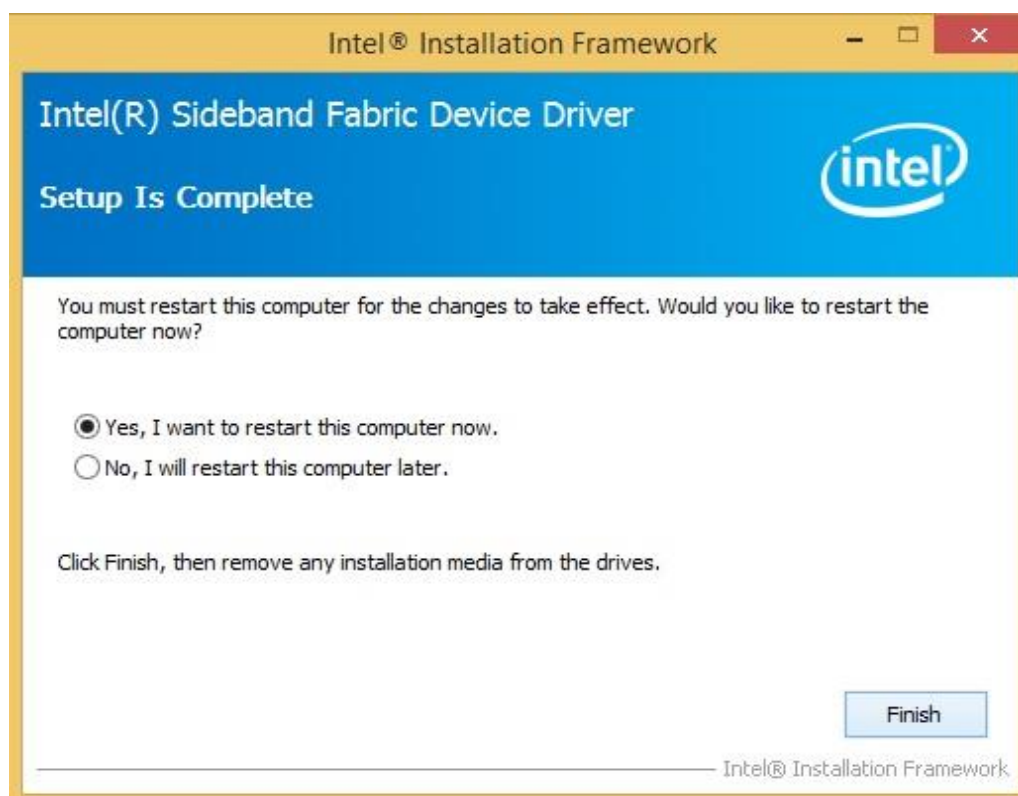
4.6 Intel Trusted Engine Interface (TXE)

Step 1 Insert the CD that comes with the motherboard. Open the file document "TXE" and click on "Setup TXE.exe" to install driver.
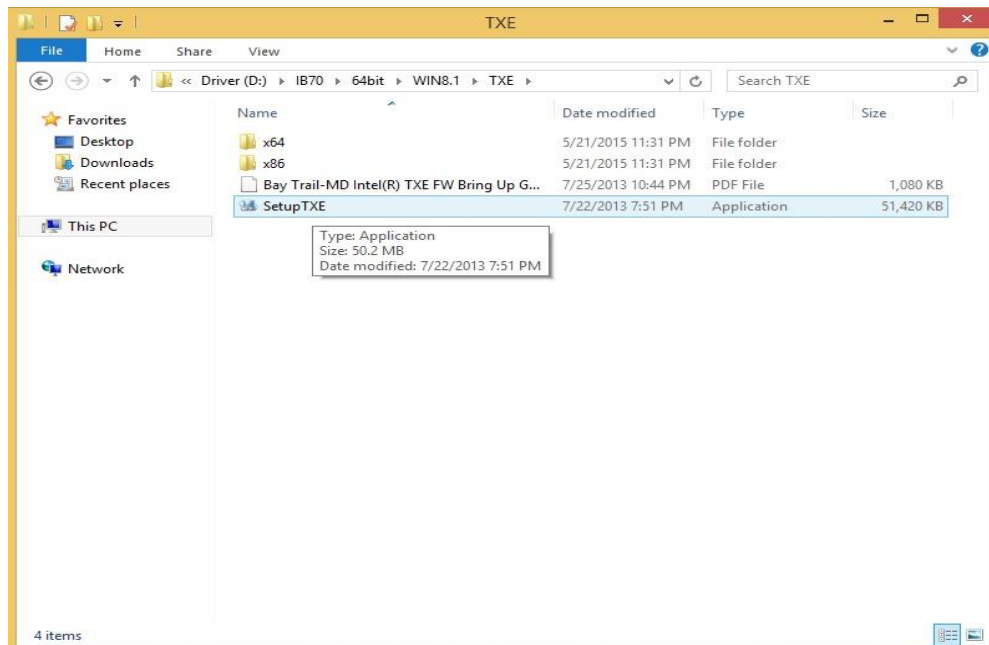
Step 2 Click "Next' to continue the installation.
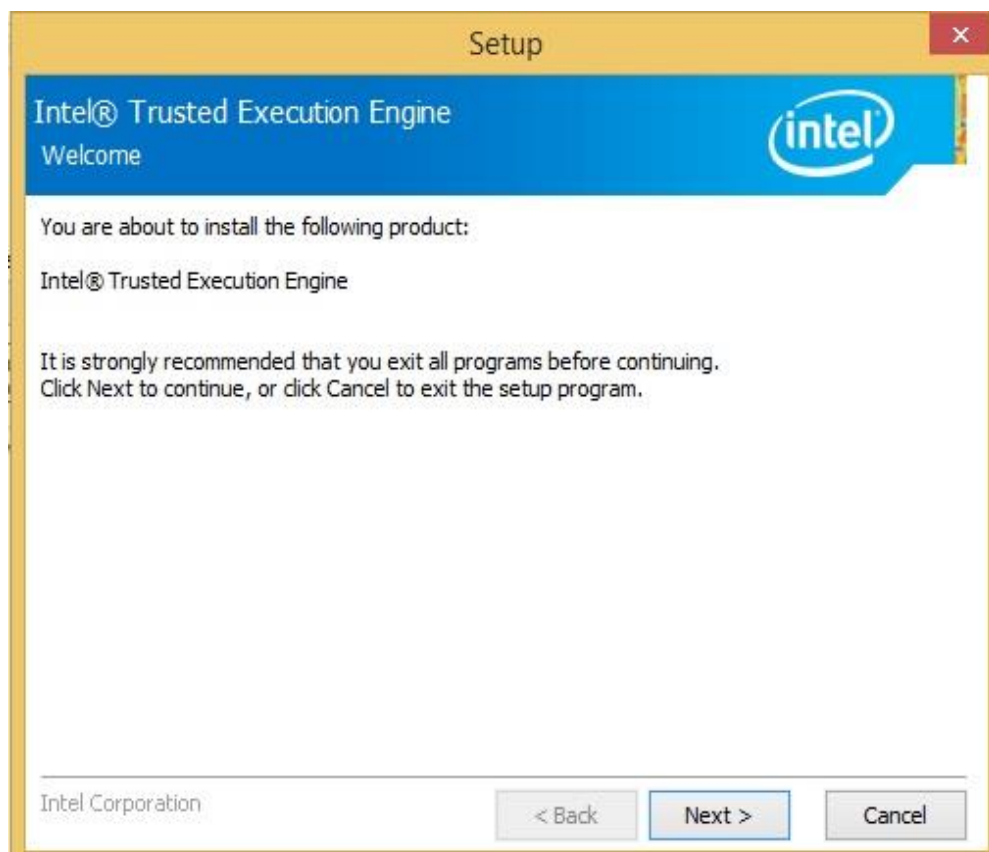
Step 3 Click "Next" to agree with the license terms.

Step 4 Click "Next" to continue the installation.
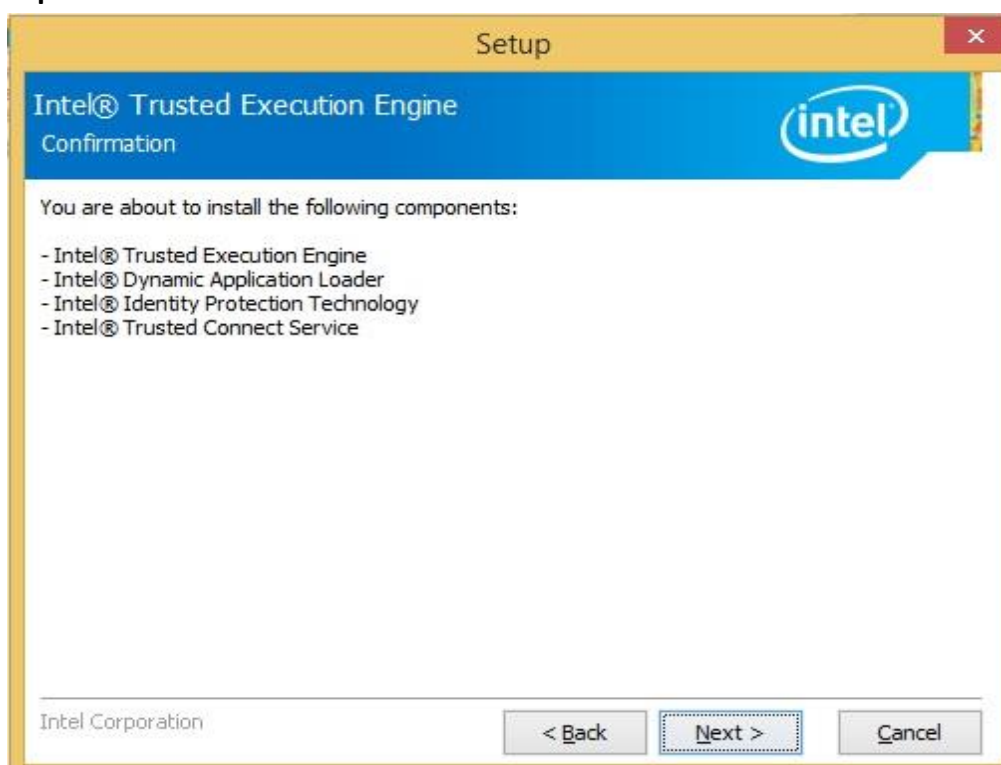
Step 5 Please wait while the product is being installed.
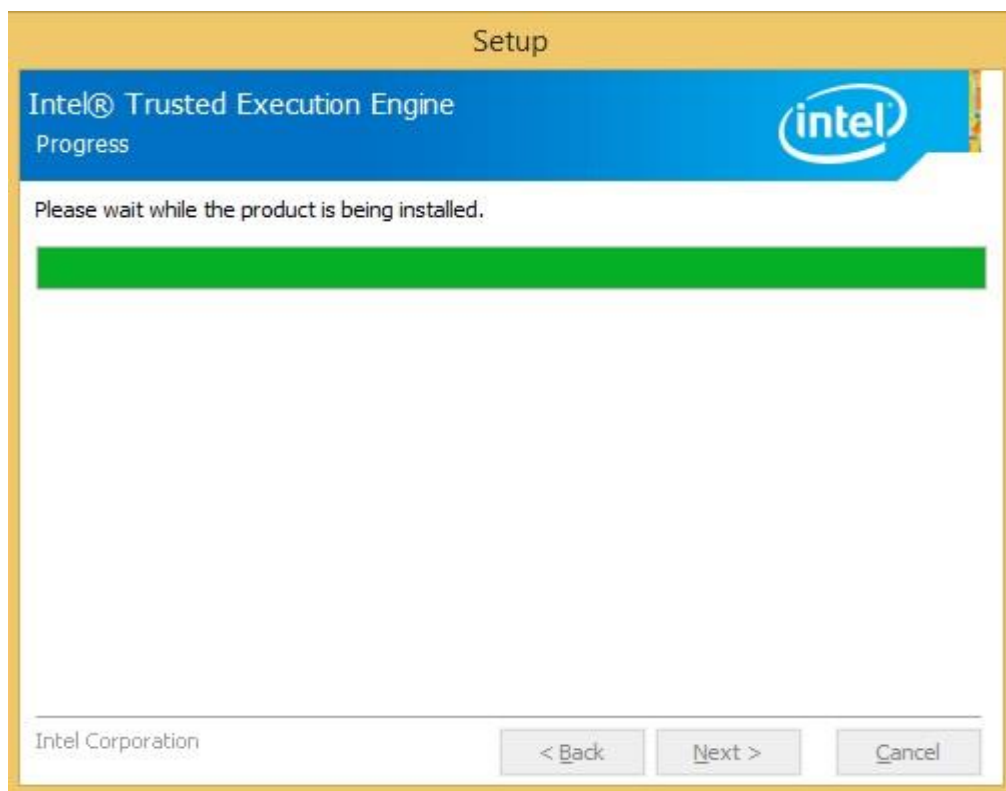
Step 6 Click "Finish" to complete the installation.
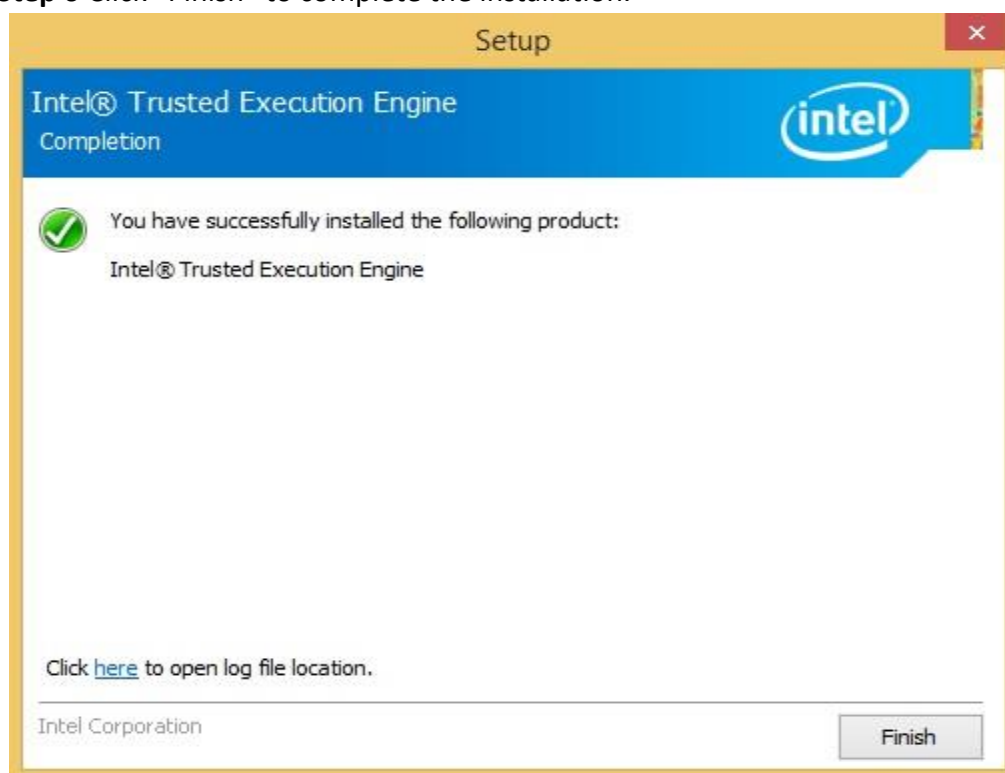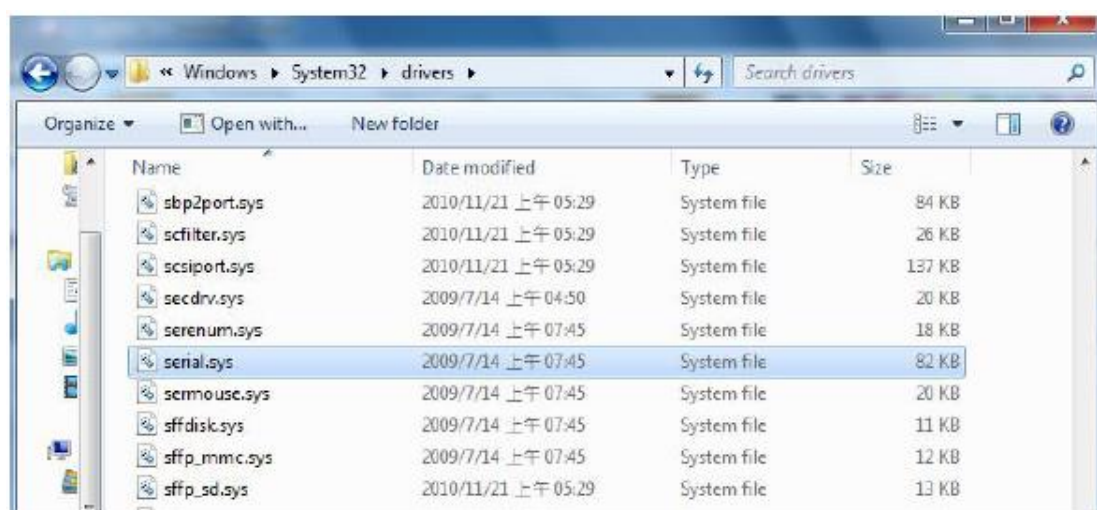
4.7 Fintek COM Port Driver

STEP 1 If the system is WIN7 please firstly close UAC (Refer following "Disabling User Account Control (UAC) in Windows 7")

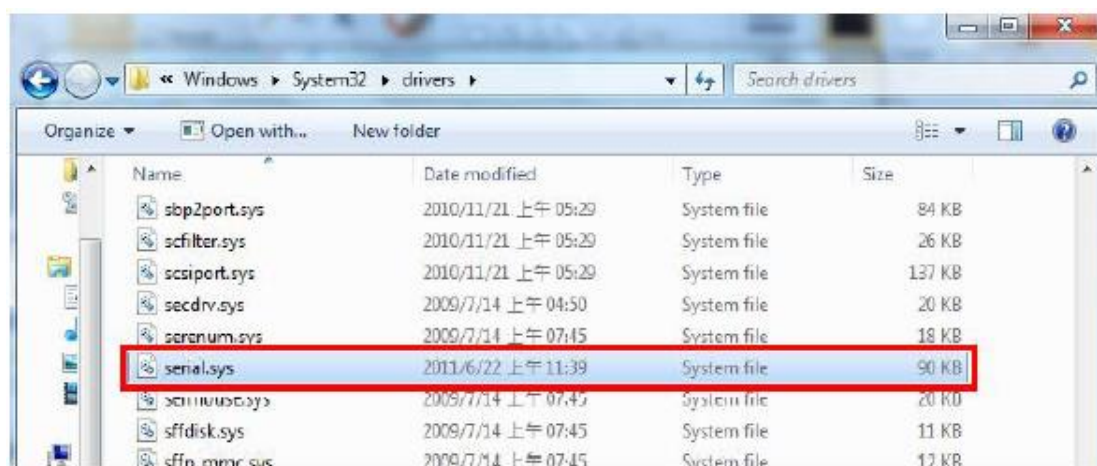**STEP 2** Extract the Patch_0408.zip to a folder.

STEP 3 Double-click batch file (patch.bat) will install driver.

STEP 4 Check driver install success.
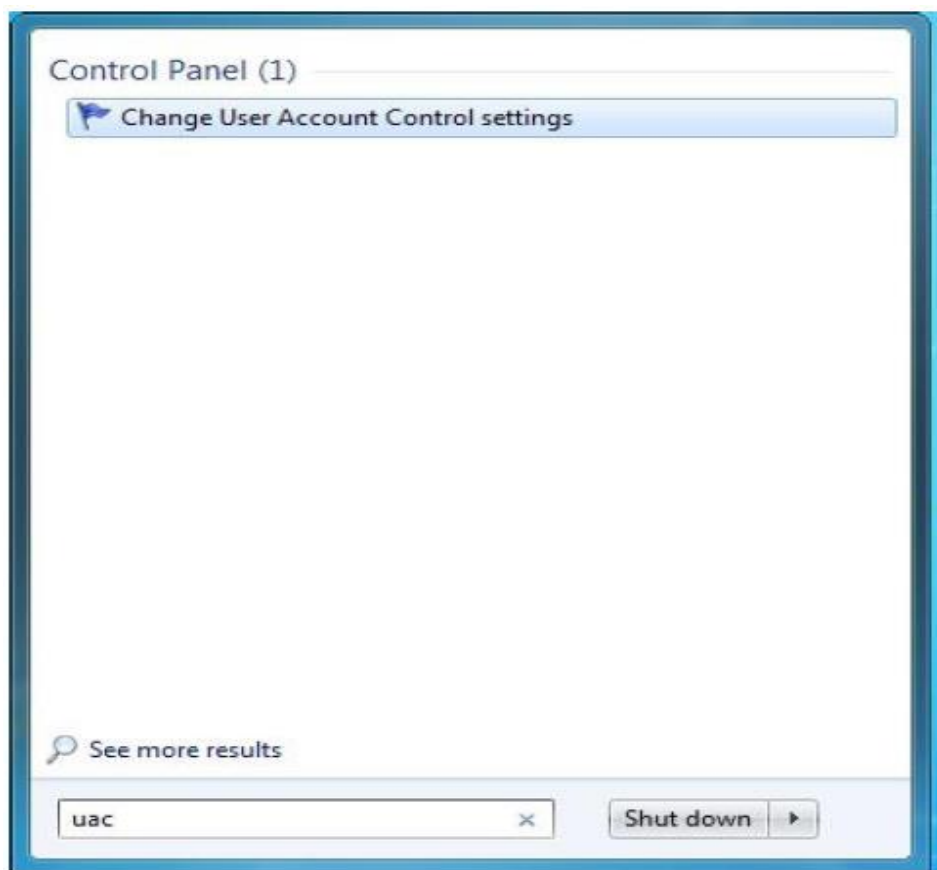
Before the update or update fail.

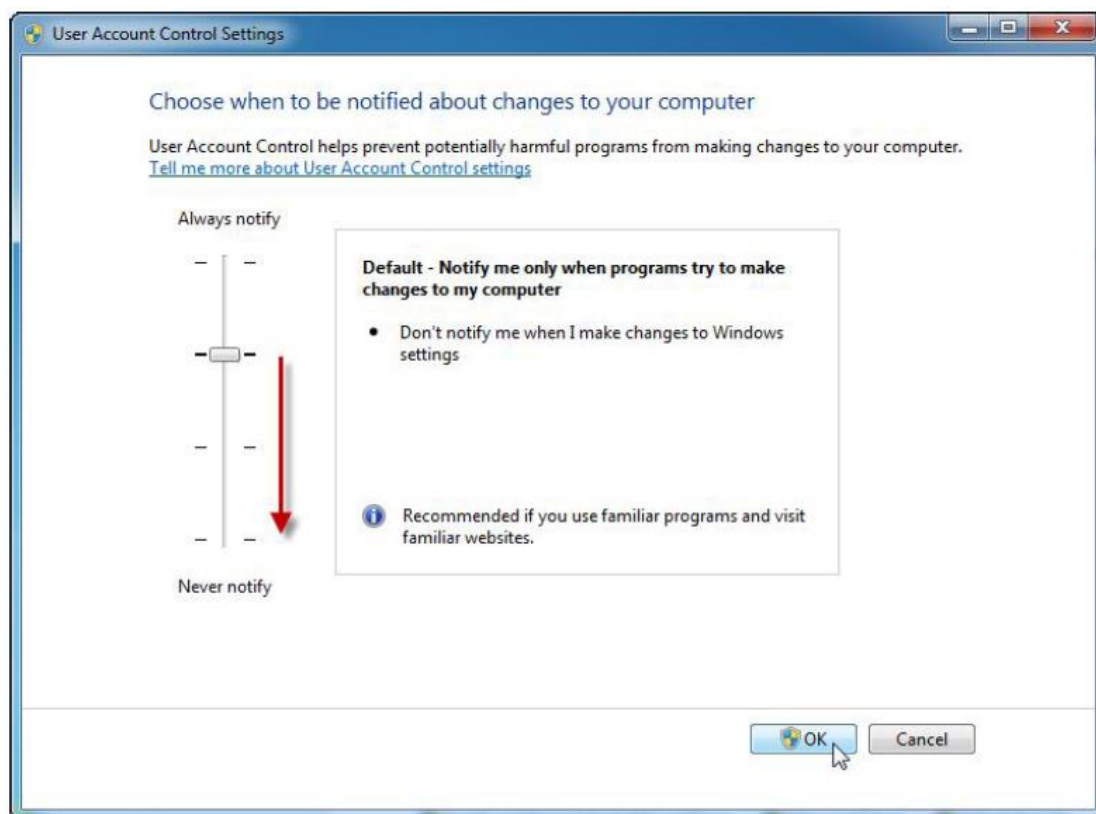
After the update and update success.

STEP 5 You will need to restart your computer for driver install success.

Type in this command from the Run menu:

C:\Windows\System32\UserAccountControlSettings.exe or uac

To turn off UAC, move the slider to the Never notify position, and then click OK. If you're prompted for an administrator password or confirmation, type the password or provide confirmation.

To turn UAC back on, move the slider to choose when you want to be notified, and then click OK. If you're prompted for an administrator password or confirmation, type the password or provide confirmation.

You will need to restart your computer for UAC to be turned off.

4.8 USB 3.0 Driver (Windows 7)
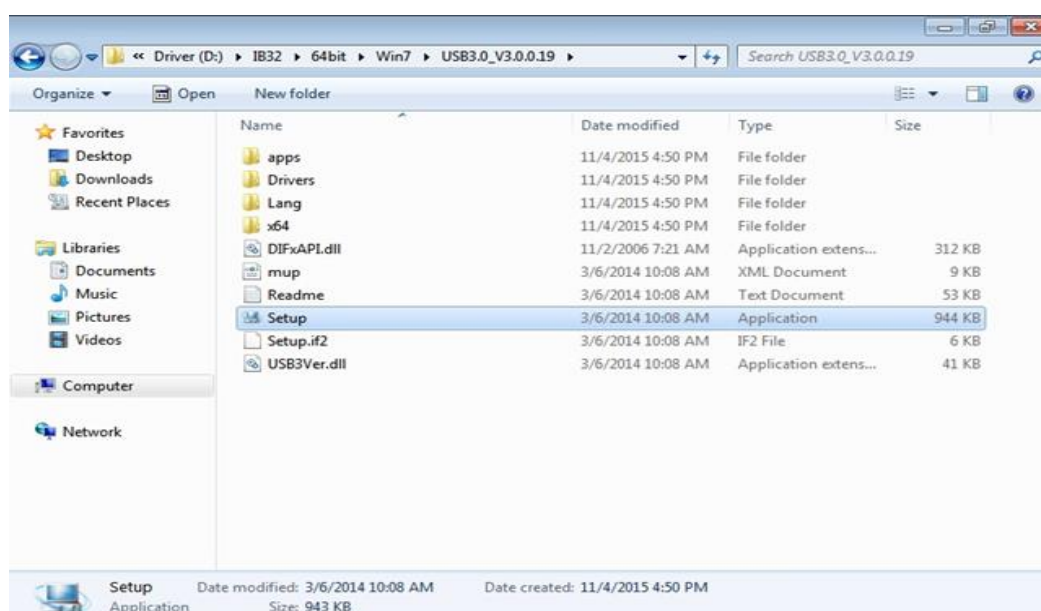
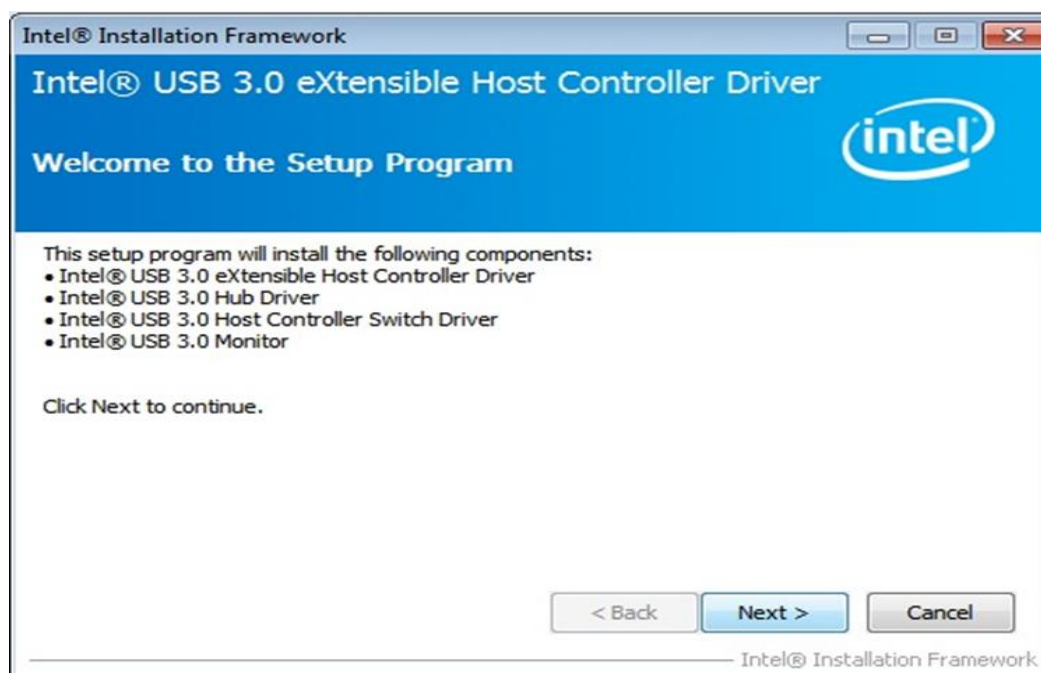|	NOTE: If the operating system of the device is Windows Embedded 8.1 Industry or Windows Embedded 8 Standard, users can skip this installation.

Step 1 Locate the hard drive directory where the driver files are stored with the browser or the explore feature of Windows*.

Step 2 Double click the "Setup.exe" from this directory.

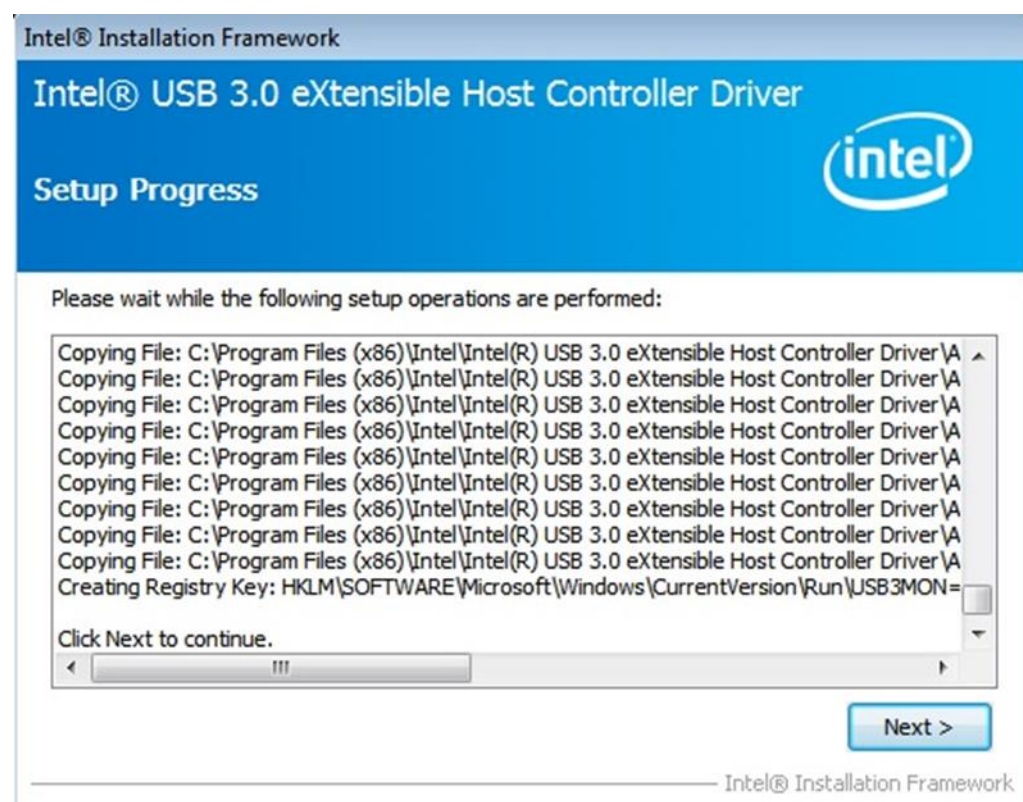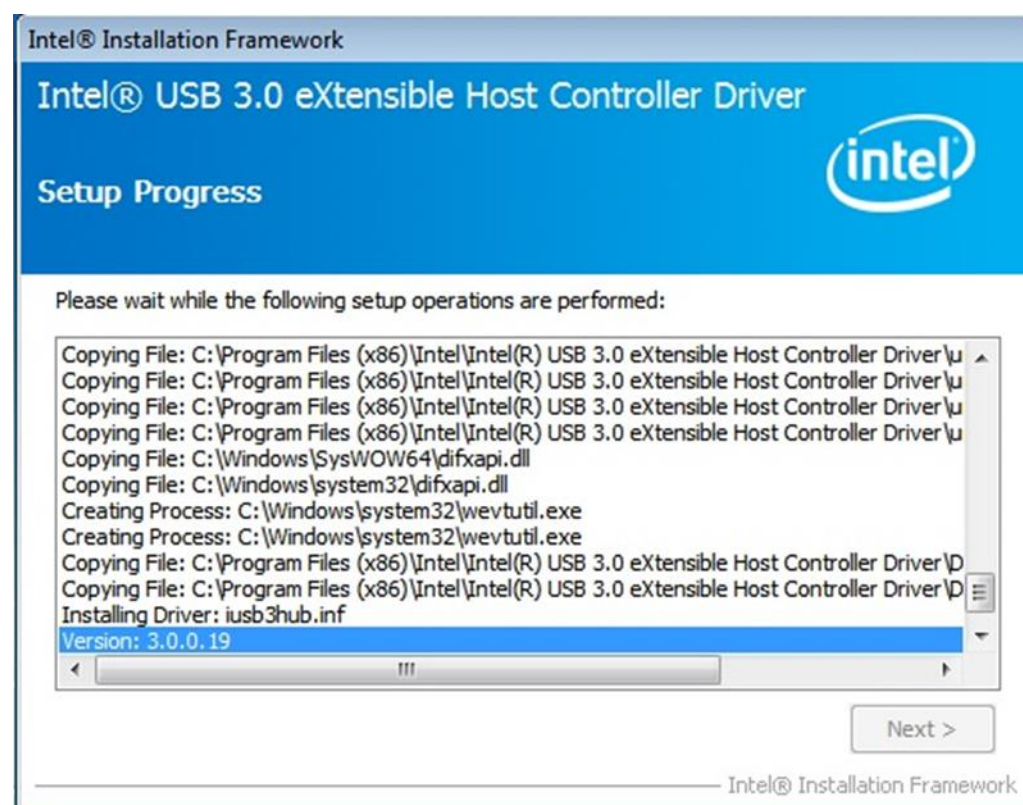

Step 3 Click "Next" to continue

Step 4 Read License Agreement and click "Yes" to proceed.

Intel® Installation Framework

Intel® USB 3.0 eXtensible Host Controller Driver

License Agreement

You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?

INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)

IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.

Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,

[< Back] [Yes] [No]

Intel® Installation Framework

Step 5 Review Readme File Information and click "Next" to proceed.

Intel® Installation Framework

Intel® USB 3.0 eXtensible Host Controller Driver

Readme File Information

Refer to the Readme file below to view the system requirements and installation information.

```
***** WARNING *****
Do not run this driver's installer (Setup.exe) from a USB storage
device (ie. external USB hard drive or USB thumb drive). For proper
installation, please copy driver files to a local hard drive folder
and run from there.

***********************************************************
*
* Production Version Releases
*
* Microsoft Windows* 7
*
```

[< Back] [Next >] [Cancel]

Intel® Installation Framework

Step 6 When the Setup Progress is complete click "Next" to proceed.

Step 7 Lastly, Click "Yes, I want to restart this computer now" to finish and then restart your computer.

CHAPTER **5**

Technical Support Documents

This chapter includes SDK list for this User Manual.

5.1 Digital I/O SDK

5.2 Watchdog SDK

CHAPTER 5: TECHNICAL SUPPORT

SDK List

You can download SDK from our download center, please click the link below.
https://www.dropbox.com/s/l3lkIrmiqy2lip6/SDK.rar?dl=0

5.1 Digital I/O SDK

To find the Digital I/O Sample code, please refer to the IB70 driver CD SDK or contact us.

5.2 Watchdog SDK

To find the Watchdog Sample code, please refer to the IB70 driver CD SDK or contact us.