ACS-2320

Intel 4th Gen. Core i Fanless Box PC

User Manual

Release Date	Revision
Mar. 2018	V1.4

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Revision History

Reversion	Date	Description
1.0	2016/02/16	Official Version
1.1	2016/03/07	Delete the ventilation holes. Update the product pictures and dimension drawing.
1.2	2016/03/29	Modify Storage Temperature Specification
1.3	2017/09/01	Add IP rating
1.4	2018/03/09	Modify Operating Temperature

Warning!_____

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

Disclaimer

This information in this document is subject to change without notice. In no event shall Aplex Technology Inc. be liable for damages of any kind, whether incidental or consequential, arising from either the use or misuse of information in this document or in any related materials.

Packing List

Accessories (as ticked) included in this package are:
☐ Adaptor ☐ Driver & manual CD disc ☐ Other._____(please specify)

Safety Precautions

Follow the messages below to prevent your systems from damage:

- Avoid your system from static electricity on all occasions.
- Prevent electric shock. Don‘t touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.
- Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

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Chapter 1 Getting Started

1.1 Features

- Intel 4th Gen. Core i3/i5 CPU Built-in
- Fanless Design
- Onboard 4GB DDR3L 1600MHz
- 9~36V DC Wide-ranging Power input
- 1 x 2.5” SATA3 HDD Space

1.2 Specifications

	ACS-2320
System	
CPU	Intel® Core™ i3/i5 CPU onboard
Chipset	SoC
Memory	Onboard 4GB DDR3L SDRAM
Outside IO Port	
Front I/O Ports	2 x USB 3.0 type A 2 x GbE LAN RJ-45 1 x RS-232/422/485 DB-9, Default RS-232, COM1 1 x RS-232 DB-9, COM2 1 x Audio Jack 1 x VGA 1 x 3-pin DC power input terminal 1 x 2-pin Connector for Power on/off Button Expansion slot for TB-528(optional)
Rear I/O Ports	1 x Power Button 4 x USB 2.0 type A Expansion Slot for Optional I/O
Storage Space	
Storage	1 x 2.5” SATA3 HDD bay for SATA3 HDD (Easy Accessible)
Expansion	
Expansion Slot	1 x Mini PCIe Slot Full Size
Power	
Power Input	9~36V DC

Power Consumption	MAX: 24W
Mechanical	
Construction	Plating Titanium Gray Aluminum Hearsink and Black Steel Chassis
Mounting	Wall Mount
Dimensions	247 x 149 x 68 mm
Net Weight	2.5 Kg
IP rating	IP 30
Environmental	
Operating Temperature	0~50°C / -20~60°C (option)
Storage Temperature	-40~85℃
Storage Humidity	10 to 90% @ 40℃, non-condensing
Certification	CE / FCC Class A
Operating System Support	Windows Embedded 8.1 Industry Pro, Windows 7 Pro for Embedded, WES7, WE8S

1.3 Dimensions

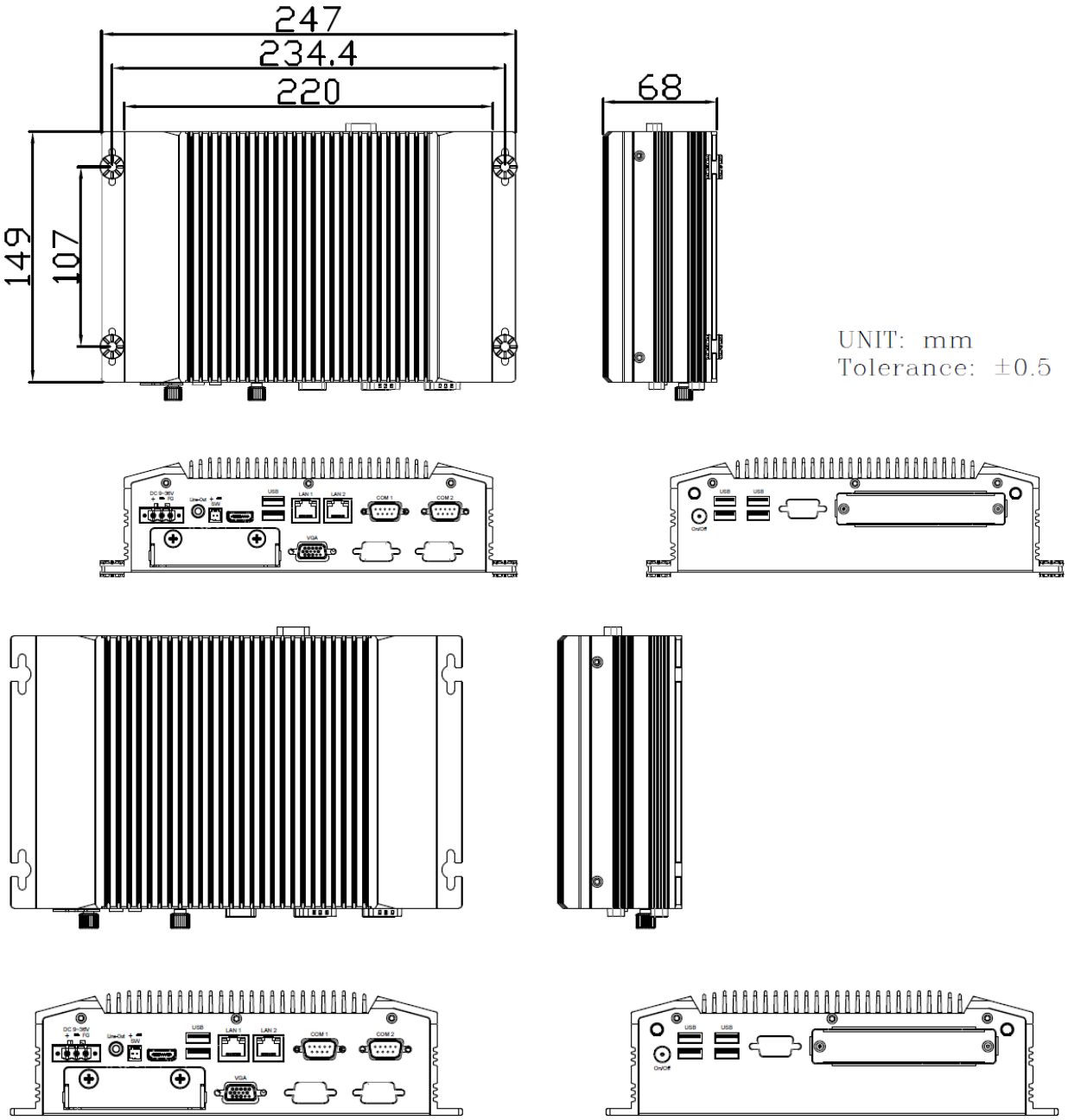


Figure 1.1: Dimensions of ACS-2320

1.4 Brief Description of ACS-2320

The ACS-2320 is a fanless design high-efficiency BOX PC, powered by Intel 4th Generation Core i3/i5 processor onboard and supports 4GB DDR3L 1600MHz memory onboard. It comes with 2 x USB 3.0, 4 x USB 2.0, 2 x LAN, 1 x VGA, 2 x COM ports, 1 x audio jack, and 1 x power button. It supports 1 x 2.5” SATA3 HDD space which is easy accessible design and 9~36V DC wide-ranging power input. The model has 1 x Mini-PCIe full size slot for expansion. The model is plating titanium gray aluminum heatsink and black steel chassis design, and can be wall mounted. The ACS-2320 works very well along with any of our display series and it absolutely can provide an easy way to perform control and field maintenance.

Figure 1.2: Overview of ACS-2320

Figure 1.3: I/O side view of ACS-2320

Chapter 2 Hardware

2.1 Motherboard Introduction

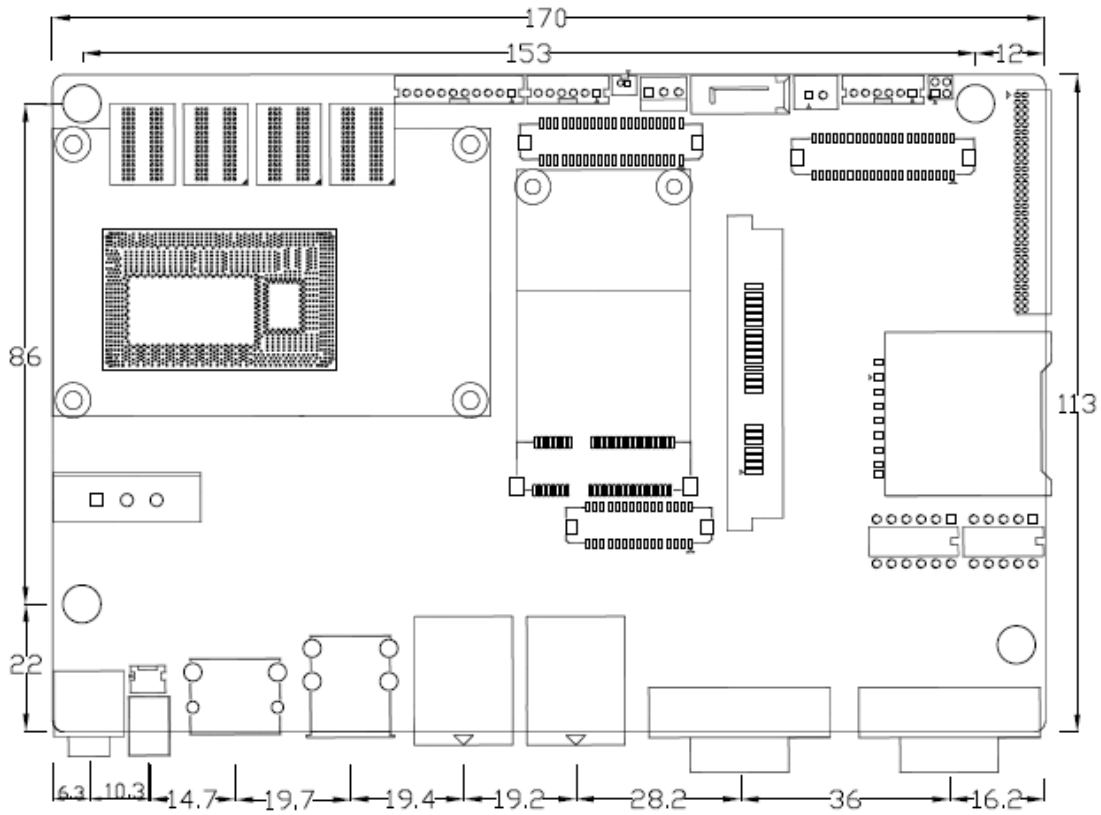
SBC-7110 is a 4" industrial motherboard developed on the basis of Intel Haswell-U Processors, which provides abundant peripheral interfaces to meet the needs of different customers. Also, it features dual GbE ports, 5-COM ports and one Mini PCIE configuration, one eDP port, one HDMI port, one LVDS interface. To satisfy the special needs of high-end customers, CN1 and CN2 and CN3 richer extension functions. The product is widely used in various sectors of industrial control.

2.2 Specifications

Specifications	
Board Size	170mm x 113mm
CPU Support	Intel® Core™ i3-4010U /1.7GHz (onboard) Intel® Core™ /i5-4310U /2.0 up to 3.00GHz (option） Intel® Core™ /i7-4510U /2.0 up to 3.10GHz (option）
Chipset	SoC
Memory Support	Onboard 4GB DDR3L SDRAM
Graphics	Intel® HD Graphics 4400
Display Mode	1 x HDMI Port 1 x LVDS (18/24-bit dual LVDS) 1 x eDP Port (EDP1, option)
Support Resolution	Up to 1920 x 1200 for HDMI Up to 1920 x 1200 for LVDS (PS8625) Up to 1920 x 1200 for eDP
Dual Display	HDMI + LVDS
Super I/O	ITE IT8518E Fintek F81216AD
BIOS	AMI/UEFI
Storage	1 x SATAIII Connector (7P) 1 x SATAIII Connector (7P+15P)

	1 x SD Slot
Ethernet	2 x PCIe Gbe LAN by Intel 82574L
USB	2 x USB 3.0 (type A)stack ports (USB3) (USB 3.0: USB3-1/USB3-2, USB 2.0: USB1/USB2) 2 x USB 2.0 Pin header for CN3 (USB3/USB4) 1 x USB 2.0 Pin header for CN2 (USB5) 1 x USB 2.0 Pin header for CN1 (USB7 or Touch, option) 1 x USB 2.0 for MPCIE1 (USB8)
Serial	1 x RS232/RS422/RS485 port, DB9 connector for external (COM1) Pin 9 w/5V/12V/Ring select 1 x RS232 port, DB9 connector for external (COM2) Pin 9 w/5V/12V/Ring select 2 x UART for CN3 (COM3,COM4) 1 x RS422/485 header for CN2 (IT8518E/COM5) 1 x RS422/485 header for CN2 (IT8518E/COM6,option)
Digital I/O	8-bit digital I/O by Pin header (CN2) 4-bit digital Input 4-bit digital Output 4-bit digital I/O by Pin header (CN3) 2-bit digital Input 2-bit digital Output
Battery	Support CR2477 Li battery by 2-pin header (BAT1/CMOS)
Smart Battery	1 x Smart battery Support 3 Serial Li battery by 10-pin header (BAT2)
Audio	Support Audio via Realtek ALC662-VD HD audio codec Support Line-in, Line-out, MIC by 2x6-pin header
Keyboard /Mouse	1 x PS2 keyboard/mouse by box pin header (CN3)
Expansion Bus	1 x mini-PCI-express slot 1 x PCI-express (CN3)
Touch Ctrl	1 x Touch ctrl header for TCH1 (ITE8518E/COM6) (JP4 setting：RS232 or USB 2.0)
Power Management	Wide Range DC9V~36V input 1 x 3-pin power input connector
Switches and	1 x Power on/off switch (BT1/BT2/CN2/CN3)

LED Indicators	1 x Reset (CN2) 1 x HDD LED status (CN2) 1 x Power LED status (CN1) 1 x Buzzer
External I/O port	2 x COM Ports (COM1/COM2) 2 x USB 3.0 Ports (stack) 2 x RJ45 GbE LAN Ports 1 x HDMI Port 1 x Stack audio Jack (Line out)
Watchdog Timer	*Software programmable 1–255 level by Super I/O (Reserve)*
Temperature	Operating: -20℃ to 70℃ Storage: -40℃ to 85℃
Humidity	10% - 90%, non-condensing, operating
Power Consumption	12V /1.33A (Intel I3-4010U processor with 4GB DDR3L DRAM) 12V /1.33A (Intel I5-4310U processor with 4GB DDR3L DRAM) 12V /1.33A (Intel I7-4510U processor with 4GB DDR3L DRAM)
EMI/EMS	Meet CE/FCC class A
TB-528CAN2	2 x CAN bus
	1 x SIM Card Socket
	1 x mini-PCI-express slot



(units :mm)

Figure 2.1: Motherboard Dimensions

2.3 Jumpers and Connectors Location

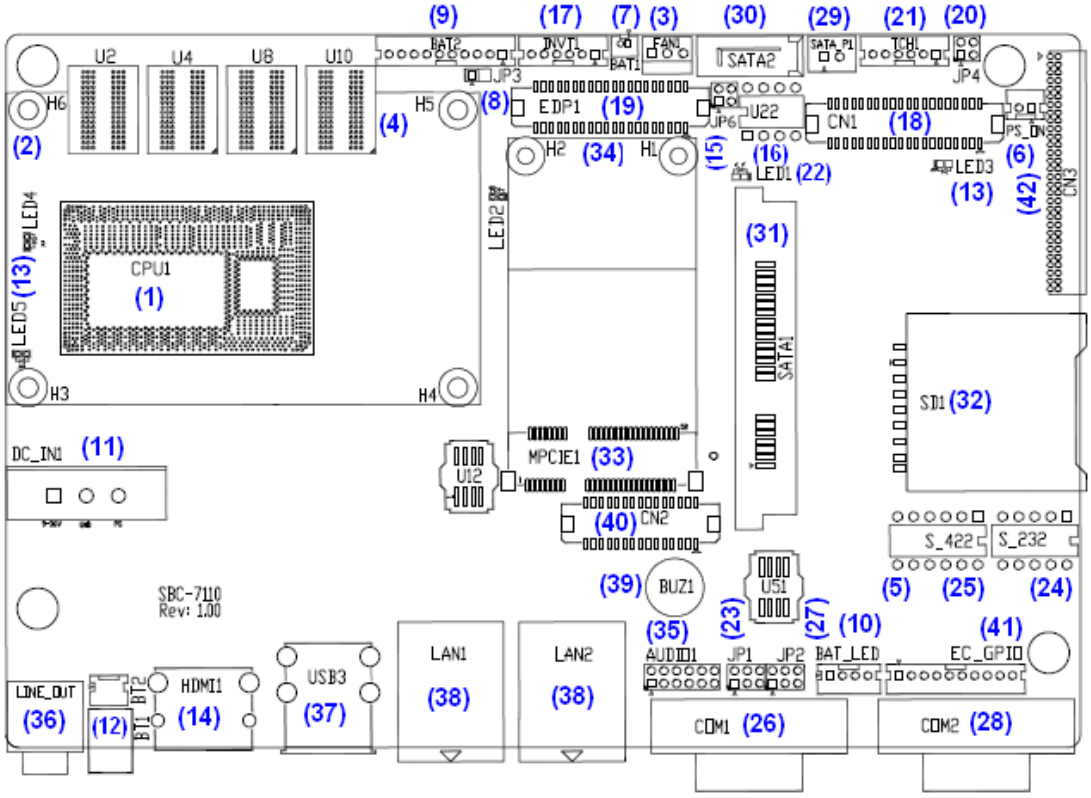


Figure 2.2: Jumpers and Connectors Location- Board Top

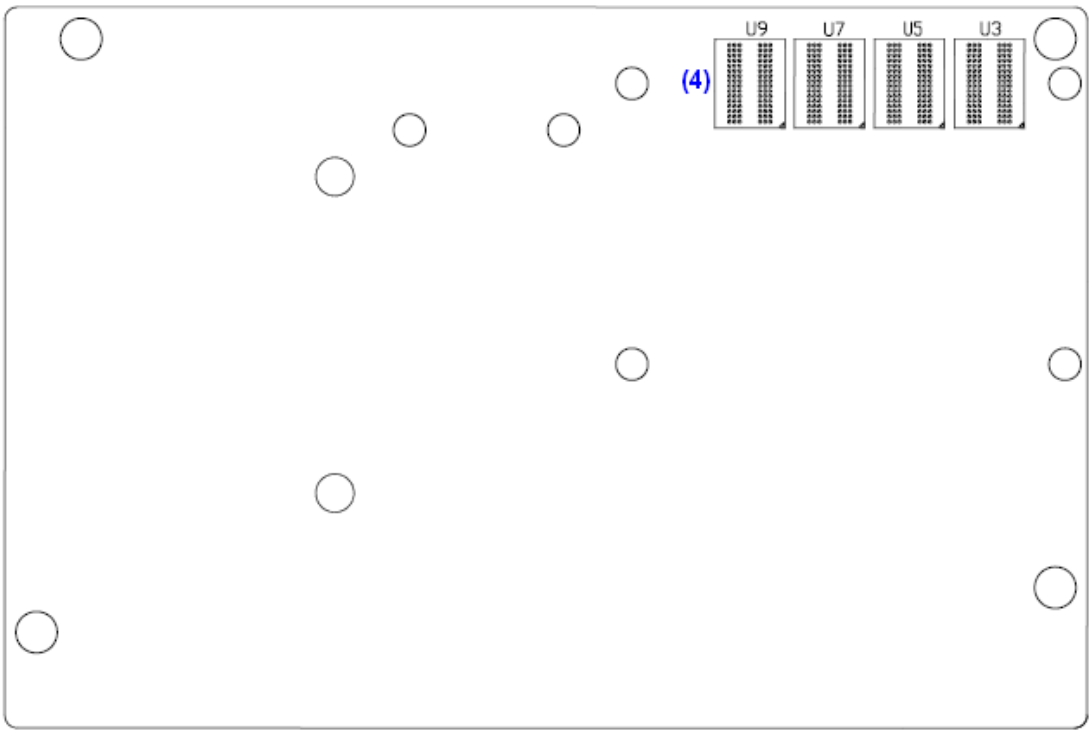


Figure 2.3: Jumpers and Connectors Location- Board Bottom

2.4 Jumpers Setting and Connectors

1. CPU1:

(FCBGA1168) onboard Intel Haswell-U Processors.

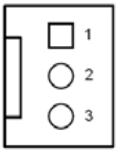
Model	Processor				
	Number	PBF	Cores/Threads	TDP	Remarks
SBC-7110-i34010-4G	I3-4010U	1.7GHz	2 / 4	15W	
SBC-7110-i34010P-4G	i3-4010U	1.7GHz	2 / 4	15W	Option
SBC-7110-i54310-4G	i5-4310U	2.0 up to 3.0GHz	2 / 4	15W	Option
SBC-7110-i54310P-4G	i5-4310U	2.0 up to 3.0GHz	2 / 4	15W	Option
SBC-7110-i74510-4G	i7-4510U	2.0 up to 3.1GHz	2 / 4	15W	Option
SBC-7110-i74510P-4G	I7-4510U	2.0 up to 3.1GHz	2 / 4	15W	option

2. H3/H4/H5/H6 (option):

CPU1 Heat Sink Screw holes, four screw holes for intel Haswell-U Processors Heat Sink assemble.

3. FAN1 (option):

(2.54mm Pitch 1x3 Pin Header), Fan connector, cooling fans can be connected directly for use. You may set the rotation condition of cooling fan in menu of BIOS CMOS Setup.



Pin#	Signal Name
1	Ground
2	VCC
3	Rotation detection

Note:

Output power of cooling fan must be limited under 5W.

4. U2/U3/U4/U5/U7/U8/U9/U10:

(FBGA96) onboard DDR3L Memory.

Model	Memory
SBC-7110-i34010-4G	4GB
SBC-7110-i34010P-4G	4GB (option)
SBC-7110-i54310-4G	4GB (option)
SBC-7110-i54310P-4G	4GB (option)
SBC-7110-i74510-4G	4GB (option)
SBC-7110-i74510P-4G	4GB (option)

5. S-422 (PIN6):

(Switch), ATX Power and Auto Power on jumper setting.

S-422(Switch)	Mode
Pin6 (Off)	ATX Power
Pin6 (On)	**Auto Power on (Default)**

6. PS_ON (option):

(2.0mm Pitch 1x2 Pin wafe Header), ATX Power and Auto Power on jumper setting.

Pin#	Mode
Open	ATX Power
Close 1-2	**Auto Power on (Default)**

7. BAT1:

(1.25mm Pitch 1x2 Wafer Pin Header) 3.0V Li battery is embedded to provide power for CMOS.

Pin#	Signal Name
Pin1	VBAT
Pin2	Ground

8. JP3:

(2.0mm Pitch 1x2 Pin Header) CMOS clear jumper, CMOS clear operation will permanently reset old BIOS settings to factory defaults.

JP3	CMOS
Open	NORMAL (Default)
Close 1-2	Clear CMOS

Procedures of CMOS clear:

a) Turn off the system and unplug the power cord from the power outlet.
b) To clear the CMOS settings, use the jumper cap to close pins 1 and 2 for about 3 seconds then reinstall the jumper clip back to pins open.
c) Power on the system again.
d) When entering the POST screen, press the <ESC> or <DEL> key to enter CMOS Setup Utility to load optimal defaults.
e) After the above operations, save changes and exit BIOS Setup.

9. BAT2:

(2.0mm Pitch 1x10 Wafer Pin Header), Smart battery Interface.

Pin#	Signal Name
Pin1	VCC_BAT1
Pin2	VCC_BAT1
Pin3	VCC_BAT1
Pin4	SMB_DAT_SW
Pin5	SMB_SCL_SW
Pin6	BAT1_TEMP
Pin7	Ground
Pin8	Ground
Pin9	Ground
Pin10	SET_BAT1_ON

Function	Specifications
Nominal voltage (3S1P)	11.1~12.6V
Charge voltage	12.6V
Charge current	0.5C

10. BAT_LED:

(2.0mm Pitch 1x4 Wafer Pin Header), The Charge status indicator for BAT2.

Pin1-Pin3: Charge LED status.

Pin2-Pin3: Discharge LED status.

Pin4-Pin3: EC LED status.

Pin#	Signal Name
Pin1	BAT2_LED+

Pin2	BAT2_LED-
Pin3	Ground
Pin4	RST_EC

11. DC_IN1:

(5.08mm Pitch 1x3 Pin Connector), DC9V~36V System power input connector.

Pin#	Signal Name
Pin1	DC+9V~36V
Pin2	Ground
Pin3	FG

Model	DC_IN1
SBC-7110-i34010U-4G	180°Connector
SBC-7110-I54310U-4G	180°Connector
SBC-7110-I74510U-4G	180°Connector
SBC-7110-I34010UP-4G	45°Connector
SBC-7110-I54310UP-4G	45°Connector
SBC-7110-I74510UP-4G	45°Connector

12. BT1/BT2:

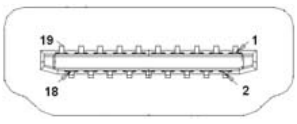
Power on/off button, They are used to connect power switch button. The two pins are disconnected under normal condition. You may short them temporarily to realize system startup & shutdown or awaken the system from sleep state.

13. LED2/LED3/LED4/LED5:

LED2: LED STATUS. Green LED for Motherboard EC status.
LED3: LED STATUS. Green LED for Power status.
LED4: LED STATUS. Green LED for Motherboard Standby Power Good status.
LED5: LED STATUS. Green LED for CPU1 status

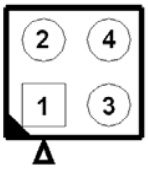
14. HDMI1:

(HDMI 19P Connector), High Definition Multimedia Interface connector.



15. JP6:

(2.0mm Pitch 2x2 Pin Header),LVDS jumper setting.



JP6	Function (CN1)
Pin1-Pin2 (Close)	Signal channel LVDS
Pin1-Pin2 (Open)	**Dual channel LVDS (Default)**
Pin3-Pin4 (Close)	**8/24 bit (Default)**
Pin3-Pin4 (Open)	6/18 bit

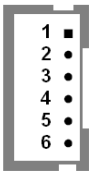
16. U22:

AT24C02-DIP8,The EEPROM IC（U22）is the set of LVDS resolution. If you need other resolution settings, please upgrade U22 data.

Model	LVDS resolution
SBC-7110-i34010U-XX SBC-7110-i54310U-XX SBC-7110-i74510U-XX	1280 x 1024 (Default)
	800 x 480 (option)
	800 x 600 (option)
	1024 x 768 (option)
	1920 x 1080 (option)
	……

17. INVT1:

(2.0mm Pitch 1x6 wafer Pin Header), Backlight control connector for LVDS.



Pin#	Signal Name
1	+DC12V_S0
2	+DC12V_S0
3	Ground
4	Ground
5	BKLT_EN_OUT
6	BKLT_CTRL

18. CN1:

(1.25mm Pitch 2x20 Connector, DF13-40P), For 18/24-bit LVDS output connector, Fully supported by Parad PS8625(DP to LVDS), the interface features dual channel 24-bit output. Low Voltage Differential Signaling, A high speed, low power data transmission standard used for display connections to LCD panels.

Function	Signal Name	Pin#	Pin#	Signal Name	Function
LVDS	12V_S0	2	1	12V_S0	LVDS
	BKLT_EN_OUT	4	3	BKLT_CTRL	
	Ground	6	5	Ground	
	LVDS_VDD5	8	7	LVDS_VDD5	
	LVDS_VDD3	10	9	LVDS_VDD3	
	Ground	12	11	Ground	
	LA_D0_P	14	13	LA_D0_N	
	LA_D1_P	16	15	LA_D1_N	
	LA_D2_P	18	17	LA_D2_N	
	LA_D3_P	20	19	LA_D3_N	
	LA_CLKP	22	21	LA_CLKN	
	LB_D0_P	24	23	LB_D0_N	
	LB_D1_P	26	25	LB_D1_N	
	LB_D2_P	28	27	LB_D2_N	
	LB_D3_P	30	29	LB_D3_N	
	LB_CLKP	32	31	LB_CLKN	
	Ground	34	33	Ground	USB7 (JP4 open)
USB7 (JP4 open)	USB7_P	36	35	USB7_N	
	5V_S5_USB	38	37	5V_S5_USB	
Power LED	PWR_LED+	40	39	Ground	Power LED

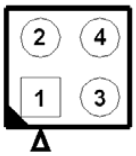
19. EDP1 (option)

Function	Signal Name	Pin#	Pin#	Signal Name	Function
	12V_S0_EDP	2	1	12V_S0_EDP	
	12V_S0_EDP	4	3	12V_S0_EDP	
	Ground	6	5	Ground	
	EDP_VDD5	8	7	EDP_VDD5	
	EDP_VDD3	10	9	EDP_VDD3	

EDP	Ground	12	11	Ground	EDP
	EDP_BKLT_EN	14	13	EDP_TXN_1	
	EDP_BKLT_CTRL	16	15	EDP_TXP_1	
	EDP_VDD_EN	18	17	Ground	
	EDP_TXN_2	20	19	EDP_TXN_0	
	EDP_TXP_2	22	21	EDP_TXP_0	
	Ground	24	23	Ground	
	EDP_TXN_3	26	25	EDP_AUX_N	
	EDP_TXP_3	28	27	EDP_AUX_P	
	EDP_DISP_UTIL	30	29	12C1_SCL	12C
	EDP_HP_CN	32	31	12C1_SDA	
	Ground	34	33	Ground	USB7 (option)
USB7 (option)	USB7_P	36	35	USB7_N	
	5V_S5_USB	38	37	5V_S5_USB	
Power LED	PWR_LED+	40	39	Ground	Power LED

20. JP4:

(2.0mm Pitch 2x2 wafer Pin Header), USB3(CN1) or Touch jumper setting.



JP4	Function	
	USB7 (CN1)	Touch (TCH1)
Close 3-4 (**default)**	-	Yes
Open 3-4 (option)	Yes	-
Open 1-2 (**default)**	-	

21. TCH1:

(2.0mm Pitch 1x6 wafer Pin Header), internal Touch controller connector.

Pin#	Signal Name
1	SENSE
2	X+
3	X-
4	Y+
5	Y-
6	GND_EARCH

22. LED1:

LED1: LED STATUS. Green LED for Touch Power status.

23. JP1:

(2.0mm Pitch 2x3 Pin Header), COM1 jumper setting, pin 1~6 are used to select signal out of pin 9 of COM1 port.

JP1 Pin#	Function
Close 1-2	**COM1 RI (Ring Indicator) (default)**
Close 3-4	COM1 Pin9: DC+5V (option)
Close 5-6	COM1 Pin9: DC+12V (option)

24. S_232

(Switch), COM1 jumper setting, it provides selectable RS232 or RS422 or RS485 serial signal output.

Function	S_232 Pin#
RS232 (Default)	**ON: Pin1, Pin2, Pin3, Pin4**
RS422 (option)	OFF: Pin1, Pin2, Pin3, Pin4
RS485 (option)	OFF: Pin1, Pin2, Pin3, Pin4

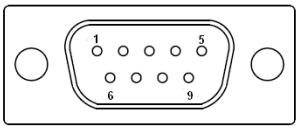
25. S_422:

(Switch), COM1 setting, it provides selectable RS232 or RS422 or RS485 serial signal output.

Function	S_422 Pin#
RS232 (Default)	**OFF: Pin1, Pin2, Pin3, Pin4, Pin5**
RS422 (option)	ON: Pin1, Pin2, Pin3, Pin4, Pin5
RS485 (option)	ON: Pin1, Pin2, Pin3, Pin4, Pin5

26. COM1

(Type DB9M), Rear serial port, standard DB9 Male serial port is provided to make a direct connection to serial devices. COM1 port is controlled by pins No. 1~6 of JP1, select output Signal RI or 5V or 12V, For details, please refer to description of JP1 and S_232 and S_422 setting.



RS232 (Default)	
Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	**JP1 select Setting (RI/5V/12V)**
BIOS Setup: Advanced/F81216 Super IO Configuration/Serial Port 0 Configuration 【RS-232】	

RS422 (option)	
Pin#	Signal Name
1	422_RX+
2	422_RX-
3	422_TX-
4	422_TX+
5	Ground
6	NC
7	NC
8	NC
9	NC
BIOS Setup: Advanced/F81216 Super IO Configuration/Serial Port 0 Configuration 【RS-422】	

RS485 (option)	
Pin#	Signal Name
1	NC
2	NC
3	485-
4	485+
5	Ground

6	NC
7	NC
8	NC
9	NC
BIOS Setup: Advanced/F81216 Super IO Configuration/Serial Port 0 Configuration 【RS-485】	

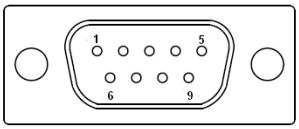
27. JP2:

(2.0mm Pitch 2x3 Pin Header), COM2 jumper setting, pin 1~6 are used to select signal out of pin 9 of COM2 port.

JP2 Pin#	Function
Close 1-2	**COM2 RI (Ring Indicator) (default)**
Close 3-4	COM2 Pin9: DC+5V (option)
Close 5-6	COM2 Pin9: DC+12V (option)

28. COM2:

(Type DB9M), Rear serial port, standard DB9 Male serial port is provided to make a direct connection to serial devices.



Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	**JP2 select Setting (RI/5V/12V)**

29. SATA_P:

(2.5mm Pitch 1x2 box Pin Header), One onboard 5V output connector are reserved to provide power for SATA devices.

Pin#	Signal Name
1	+DC5V
2	Ground

Note:

Output current of the connector must not be above 1A.

30. SATA2:

(SATA 7Pin), SATA Connectors, one SATA connector are provided, with transfer speed up to 6.0Gb/s.

31. SATA1:

(SATA 7Pin+15Pin), SATA Connectors, one SATA connector are provided, with transfer speed up to 6.0Gb/s.

32. SD1:

(SD card slot), Secure Digital Memory Card socket.

33. MPCIE1:

(Socket 52Pin), mini PCIe socket, it is located at the top, it supports mini PCIe devices with USB2.0 and LPC and SMBUS and PCIe signal. MPCIe card size is 30 x 50.95mm.

34. H1/H2:

MPCIE1 SCREW HOLES, H1 and H2 for mini PCIE card (30mm x 50.95mm) assemble.

35. AUDIO1:

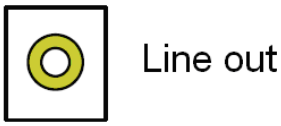
(2.0mm Pitch 2x6 Pin Header), Front Audio, An onboard Realtek ALC662-VD codec is used to provide high-quality audio I/O ports. Line Out can be connected to headphone or amplifier. Line In is used for the connection of external audio source via a Line in cable. MIC is the port for microphone input audio.

Signal Name	Pin#	Pin#	Signal Name
+5V	1	2	GND_AUD
LINE-OUT-L	3	4	LINE-OUT-R
FRONT_JD	5	6	LINE1_JD
LINE-IN-L	7	8	LINE-IN-R

MIC-IN-L	9	10	MIC-IN-R
GND_AUD	11	12	MIC1_JD

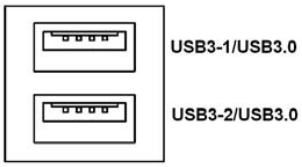
36. LINE_OUT:

(Diameter 3.5mm Jack), HD Audio port, An onboard Realtek ALC662-VD codec is used to provide high quality audio I/O ports. Line Out can be connected to a headphone or amplifier.



37. USB3:

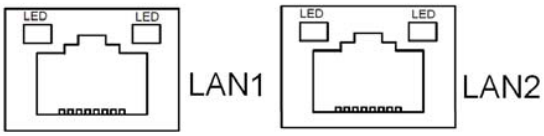
USB3-1/USB3-2: (Double stack USB type A), Rear USB connector, it provides up to two USB3.0 ports, High-speed USB 2.0 allows data transfers up to 480 Mb/s, USB3.0 allows data transfers up to 5.0Gb/s, support USB full-speed and low-speed signaling.



Each USB Type A Receptacle (2 Ports) Current limited value is 1.5A.
If the external USB device current exceeds 1.5A, please separate connectors into different Receptable.

38. LAN1/LAN2:

LAN1/LAN2: (RJ45 Connector), Rear LAN port, Two standard 10/100/1000M RJ-45 Ethernet ports are provided. Used intel 82574L chipset, LINK LED (green) and ACTIVE LED (yellow) respectively located at the left-hand and right-hand side of the Ethernet port indicate the activity and transmission state of LAN.



39. BUZ1:

Onboard buzzer.

40. CN2:

(DF13-30P Connector), For expand output connector, It provides eight GPIO, one RS422 or RS485, one USB2.0, one Power on/off, one Reset.

Function	Signal Name	Pin#	Pin#	Signal Name	Function
5V	5V_S5	2	1	5V_S5	5V
PCH_GPIO49	GPIO_IN2	4	3	GPIO_IN1	PCH_GPIO48
PCH_GPIO51	GPIO_IN4	6	5	GPIO_IN3	PCH_GPIO50
PCH_GPIO53	GPIO_OUT2	8	7	GPIO_OUT1	PCH_GPIO52
PCH_GPIO55	GPIO_OUT4	10	9	GPIO_OUT3	PCH_GPIO54
	Ground	12	11	Ground	
485 or 422 (COM5)	485+_422TX5+	14	13	485-_422TX5-	485 or 422 (COM5)
	422_RX5+	16	15	422_RX5-	
485 or 422 (COM6)	485+_422TX6+	18	17	485-_422TX6-	485 or 422 (COM6)
	422_RX6+	20	19	422_RX6-	
5V	5V_S0	22	21	HDD_LED+	HDD LED
USB2.0	5V_USB5	24	23	5V_USB5	USB2.0
	USB5_P	26	25	USB5_N	
	Ground	28	27	FP_RST-	RESET
Power auto on	PWRBTN_ON	30	29	Ground	
COM5 BIOS Setup: Advanced/Super IO Configuration/Serial Port0 Configuration 【RS-422】 Advanced/Super IO Configuration/Serial Port 0 Configuration【RS-485】 COM6 BIOS Setup： Advanced/Super IO Configuration/Serial Port 1 Configuration【RS-422】 Advanced/Super IO Configuration/Serial Port 1 Configuration【RS-485】					

41. EC_GPIO:

(2.0mm Pitch 1x10 Pin Header), For expand connector, It provides eight GPIO.

Pin#	Signal Name
1	Ground
2	EC_GPIO1
3	EC_GPIO2
4	EC_GPIO3
5	EC_GPIO4
6	EC_GPIO5
7	EC_GPIO6
8	EC_GPIO7
9	EC_GPIO8
10	3.3V_ALLS_EC

42. CN3:

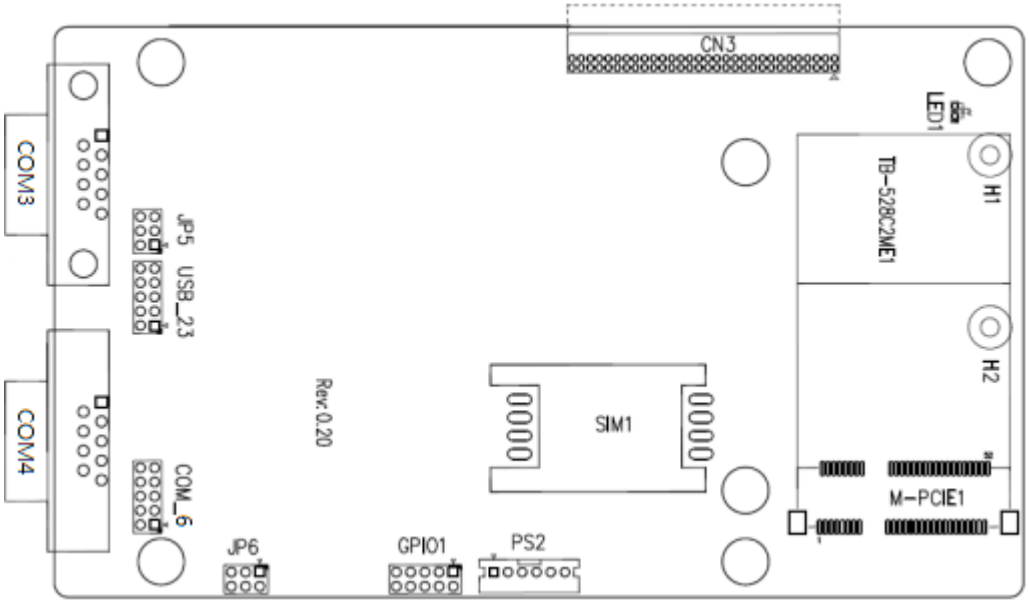
(1.27mm Pitch 2X30 Female Header), For expand output connector,It provides four GPIO, two USB 2.0,one PS/2 mouse, one PS/2 keyboard, two uart, one PCIex1, one SMbus. It's connected to the TB-528 riser Card

Function	Signal Name	Pin#	Pin#	Signal Name	Function
	5V_S5_USB	1	2	5V_S5_USB	
	5V_S5_USB	3	4	5V_S5_SB	
	USB34_OC	5	6	PSON_ATX-	
USB3	USB3_N	7	8	USB3_P	USB3
USB4	USB4_N	9	10	USB4_P	USB4
	Ground	11	12	Ground	
PS/2 MS	PS2_MSCLK	13	14	PS2_MSDATA	PS/2 MS
PS/2 KB	PS2_KBCLK	15	16	PS2_KBDATA	PS/2 KB
COM4 (UART)	COM4_RI	17	18	COM4_DCD-	COM4 (UART)
	COM4_TXD	19	20	COM4_RXD	
	COM4_DTR	21	22	COM4_RTS-	
	COM4_DSR	23	24	COM4_CTS-	
	Ground	25	26	Ground	
COM3 (UART)	COM3_RI	27	28	COM3_DCD-	COM3 (UART)
	COM3_TXD	29	30	COM3_RXD	
	COM3_DTR	31	32	COM3_RTS-	
	COM3_DSR	33	34	COM3_CTS-	
GPIO56	PCH_GPIO56	35	36	PCH_GPIO58	GPIO58
GPIO57	PCH_GPIO57	37	38	PCH_GPIO59	GPIO59
	Ground	39	40	Ground	
PCIE	PCIE1_TX_N0	41	42	PE1_TX_P0	PCIE
	PCIE1_RX_N0	43	44	PE1_RX_P0	
	Ground	45	46	Ground	
	CLK_100M_PE1_N	47	48	CLK_100M_PE1_P	
	PCIE1_WAKE_N	49	50	PLT_RST_BUF2-	
SMBUS	SMB_CLK_S5	51	52	SMB_DATA_S5	SMBUS
PCIE	CLKREQ_PE1-	53	54	Ground	
	3P3V_S5	55	56	PWRBTN_ON-	Power Auto on
	3P3V_S5	57	58	3P3V_S5	
12V	12V_S0	59	60	12V_S0	12V

43. TB-528C2ME1 (option):

SBC-7110 Riser Card, TB-528C2ME1 CN3 connect to SBC-7110 CN3 pin Header.

TB-528C2ME1 Top:



CN3:

(1.27mm Pitch 2x30 Pin Header), connect to SBC-7110 CN3 pin Header.

M-PCIE1:

(Socket 52Pin), mini PCIe socket, it is located at the top, it supports mini PCIe devices with **USB2.0 (USB3),** Smbus, SIM and PCIe signal. MPCIE card size is 30 x 30mm or 30 x 50.95mm.

Signal Name	Function support
PCIe 1X	Yes
USB2.0 (USB2)	Yes
SMBus	Yes
SIM	Yes

H1/H2:

MPCIE1 SCREW HOLES, H2 for mini PCIE card (30mm x 30mm) assemble. H1 for mini PCIE card (30mm x 50.95mm) assemble.

LED1:

Mini PCIe devices LED Status.

SIM1:

(SIM Socket 6 Pin), Support SIM Card devices.

PS2:

(2.0mm Pitch 1x6 Pin Wafer), PS/2 keyboard and mouse port, the port can be connected to PS/2 keyboard or mouse via a dedicated cable for direct used.

Pin#	Signal Name
1	KBDATA
2	MSDATA
3	Ground
4	+5V
5	KBCLK
6	MSCLK

GPIO1:

(2.0mm Pitch 2x5 Pin Header), General-purpose input/output port, it provides a group of self-programming interfaces to customers for flexible use.

Signal Name	Pin#	Pin#	Signal Name
Ground	1	2	NC
NC	3	4	SMB_DATA_R
SMB_CLK_R	5	6	PCH-GPIO56
PCH-GPIO57	7	8	PCH-GPIO59
PCH-GPIO58	9	10	+5V

USB_23:

(2.0mm Pitch 2x5 Pin Header), Front USB connector, it provides one USB port via a dedicated USB cable, speed up to 480Mb/s.

Signal Name	Pin#	Pin#	Signal Name
5V_USB23	1	2	5V_USB23
USB4_N	3	4	**USB3_N (option, NC)**
USB4_P	5	6	**USB3_P (option, NC)**
Ground	7	8	Ground
NC	9	10	Ground

Note:

Before connection, make sure that pinout of the USB Cable is in accordance with that of the said tables. Any inconformity may cause system down and even hardware damages.

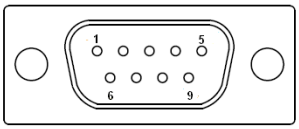
JP5:

(2.0mm Pitch 2x3 Pin Header), COM3 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM3 port.

JP5 Pin#	Function
Close 1-2	**RI (Ring Indicator) (default)**
Close 3-4	COM3 Pin9=+5V (option)
Close 5-6	COM3 Pin9=+12V (option)

COM3:

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM3 port is controlled by pins No. 1~6 of **JP5,** select output Signal RI or 5V or 12V, for details, please refer to description of JP5.



Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP5 Setting: **Pin1-2: RI (Ring Indicator) (default)** Pin3-4: 5V Standby power (option) Pin5-6: 12V Standby power (option)

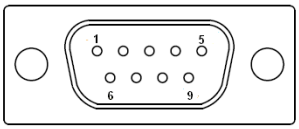
JP6:

(2.0mm Pitch 2x3 Pin Header), COM4 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM4 port.

JP6 Pin#	Function
Close 1-2	**RI (Ring Indicator) (default)**
Close 3-4	COM4 Pin9=+5V (option)
Close 5-6	COM4 Pin9=+12V (option)

COM4:

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM4 port is controlled by pins No.1~6 of **JP6,** select output Signal RI or 5V or 12V, for details, please refer to description of JP6.



Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP6 Setting: **Pin1-2: RI (Ring Indicator) (default)** Pin3-4: 5V Standby power (option) Pin5-6: 12V Standby power (option)

COM_6 (option):

(2.0mm Pitch 2x5 Pin Header), COM4 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

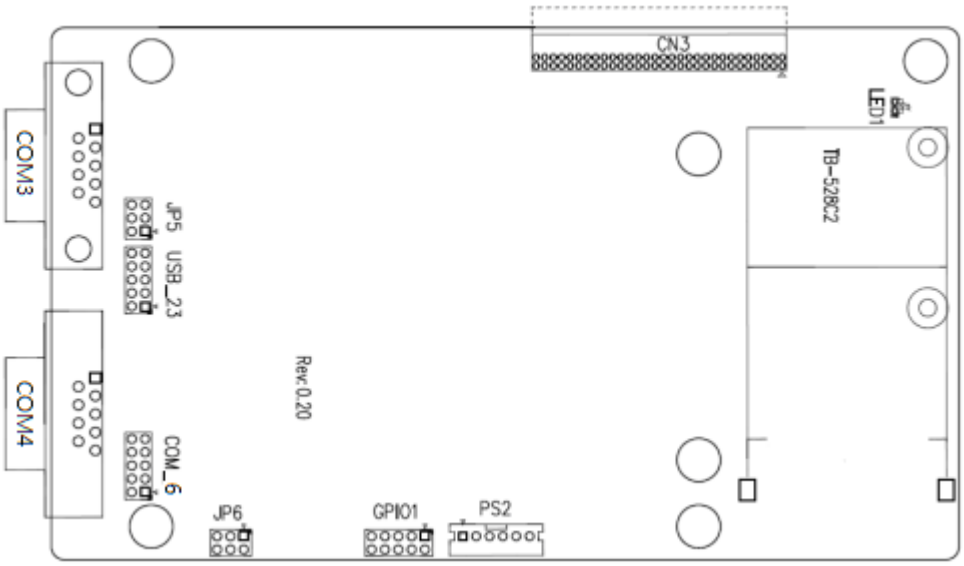
Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR

Ground	5	6	DSR
RTS	7	8	CTS
JP6 Setting: RI/5V/12V	9	10	NC

44. TB-528C2 (option):

SBC-7110 Riser Card, TB-528C2 CN3 connect to SBC-7110 CN3 pin Header.

TB-528C2 Top:



CN3:

(1.27mm Pitch 2 x 30 Pin Header), connect to SBC-7110 CN3 pin Header.

LED1:

Mini PCIe devices LED Status.

PS2:

(2.0mm Pitch 1x6 Pin Wafer), PS/2 keyboard and mouse port, the port can be connected to PS/2 keyboard or mouse via a dedicated cable for direct used.

Pin#	Signal Name
1	KBDATA
2	MSDATA
3	Ground
4	+5V
5	KBCLK
6	MSCLK

GPIO1:

(2.0mm Pitch 2x5 Pin Header), General-purpose input/output port, it provides a group of self-programming interfaces to customers for flexible use.

Signal Name	Pin#	Pin#	Signal Name
Ground	1	2	NC
NC	3	4	SMB_DATA_R
SMB_CLK_R	5	6	PCH-GPIO56
PCH-GPIO57	7	8	PCH-GPIO59
PCH-GPIO58	9	10	+5V

USB_23:

(2.0mm Pitch 2x5 Pin Header), Front USB connector, it provides one USB port via a dedicated USB cable, speed up to 480Mb/s.

Signal Name	Pin#	Pin#	Signal Name
5V_USB23	1	2	5V_USB23
USB4_N	3	4	USB3_N
USB4_P	5	6	USB3_P
Ground	7	8	Ground
NC	9	10	Ground

Note:

Before connection, make sure that pinout of the USB Cable is in accordance with that of the said tables. Any inconformity may cause system down and even hardware damages.

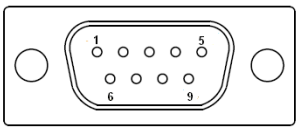
JP5:

(2.0mm Pitch 2x3 Pin Header), COM3 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM3 port.

JP5 Pin#	Function	
Close 1-2	**RI (Ring Indicator)**	**(default)**
Close 3-4	COM3 Pin9=+5V	(option)
Close 5-6	COM3 Pin9=+12V	(option)

COM3:

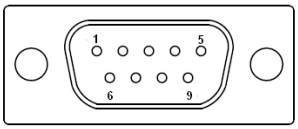
(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM3 port is controlled by pins No.1~6 of **JP5**, select output Signal RI or 5V or 12v, for details, please refer to description of JP5.



Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP5 Setting: **Pin1-2: RI (Ring Indicator) (default)** Pin3-4: 5V Standby power (option) Pin5-6: 12V Standby power (option)

COM4：

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM4 port is controlled by pins No.1~6 of **JP6**, select output Signal RI or 5V or 12v, for details, please refer to description of JP6.



Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP6 Setting: **Pin1-2: RI (Ring Indicator) (default)** Pin3-4: 5V Standby power (option) Pin5-6: 12V Standby power (option)

COM_6 (option) :

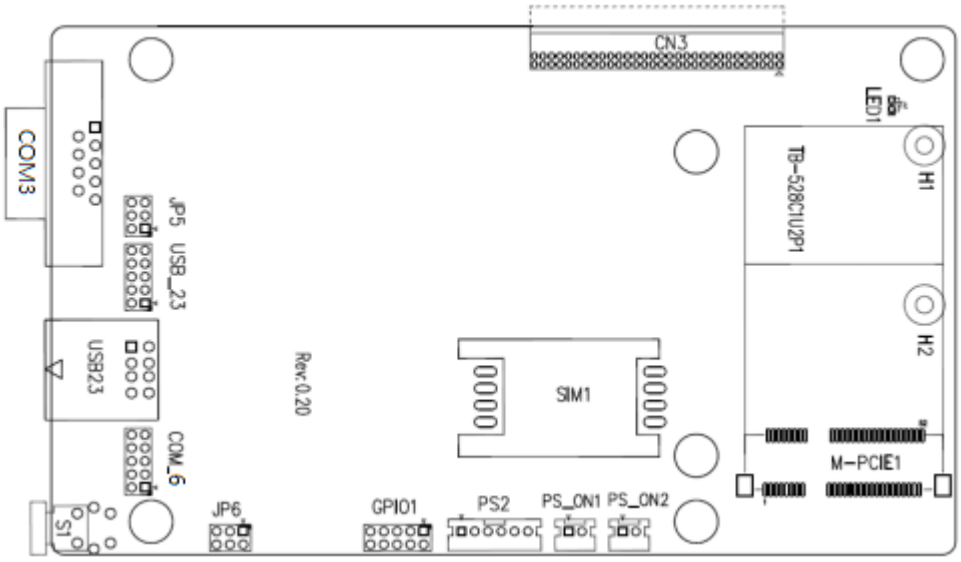
(2.0mm Pitch 2X5 Pin Header), COM4 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
Ground	5	6	DSR
RTS	7	8	CTS
JP6 Setting: RI/5V/12V	9	10	NC

45. TB-528C1U2P1/TB-528C1U2 (option):

SBC-7110 Riser Card, TB-528C1U2P1 CN3 connect to SBC-7110 CN3 pin Header.

TB-528C1U2P1 Top：



CN3:

(1.27mm Pitch 2X30 Pin Header), connect to SBC-7110 CN3 pin Header.

M-PCIE1：

(Socket 52Pin), mini PCIe socket, it is located at the top, it supports mini PCIe devices with Smbus, SIM and PCIe signal. MPCIe card size is 30x30mm or 30x50.95mm.

Signal Name	Function support
PCIe 1X	Yes
USB2.0 (USB3)	**NC (option)**
SMBus	Yes
SIM	Yes

H1/H2:

MPCIE1 SCREW HOLES, H2 for mini PCIE card (30mmx30mm) assemble. H1 for mini PCIE card (30mmx50.95mm) assemble.

LED1：

Mini PCIe devices LED Status.

SIM1（option）：

(SIM Socket 6 Pin), Support SIM Card devices.

PS_ON1：

(2.0mm Pitch 1X2 Pin Wafer), ATX Power and Auto Power on jumper setting**.**

PS_ON	Mode
Close 1-2	**Auto Power on (Default)**
Open 1-2	ATX Power

PS_ON2（option）：

(2.0mm Pitch 1X2 Pin Wafer).

PS2：

(2.0mm Pitch 1X6 Pin Wafer), PS/2 keyboard and mouse port, the port can be connected to PS/2 keyboard or mouse via a dedicated cable for direct used.

Pin#	Signal Name
1	KBDATA
2	MSDATA
3	Ground
4	+5V
5	KBCLK
6	MSCLK

GPIO1：

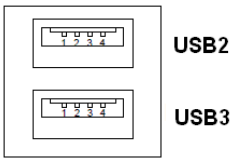
(2.0mm Pitch 2x5 Pin Header), General-purpose input/output port, it provides a group of self-programming interfaces to customers for flexible use.

Signal Name	Pin#	Pin#	Signal Name
Ground	1	2	NC

NC	3	4	SMB_DATA_R
SMB_CLK_R	5	6	PCH-GPIO56
PCH-GPIO57	7	8	PCH-GPIO59
PCH-GPIO58	9	10	+5V

USB23(SBC-7110 USB3/USB4)：

(Double stack USB type A), Rear USB connector, it provides up to 2 USB2.0 ports, speed up to 480Mb/s.



USB_23（option）：

(2.0mm Pitch 2x5 Pin Header), Front USB connector, it provides one USB port via a dedicated USB cable, speed up to 480Mb/s.

Signal Name	Pin#	Pin#	Signal Name
5V_USB23	1	2	5V_USB23
USB4_N	3	4	USB3_N
USB4_P	5	6	USB3_P
Ground	7	8	Ground
NC	9	10	Ground

Note:

Before connection, make sure that pinout of the USB Cable is in accordance with that of the said tables. Any inconformity may cause system down and even hardware damages.

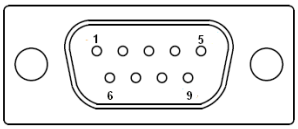
JP5：

(2.0mm Pitch 2x3 Pin Header), COM3 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM3 port.

JP5 Pin#	Function
Close 1-2	**RI (Ring Indicator) (default)**
Close 3-4	COM3 Pin9: +5V (option)
Close 5-6	COM3 Pin9: +12V (option)

COM3:

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM3 port is controlled by pins No.1~6 of **JP5**, select output Signal RI or 5V or 12v, for details, please refer to description of JP5.



Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP5 Setting: **Pin1-2: RI (Ring Indicator) (default)** Pin3-4: 5V Standby power (option) Pin5-6: 12V Standby power (option)

JP6：

(2.0mm Pitch 2x3 Pin Header), COM_6 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM_6 port.

JP6 Pin#	Function
Close 1-2	**RI (Ring Indicator) (default)**
Close 3-4	COM_6 Pin9: +5V (option)
Close 5-6	COM_6 Pin9: +12V (option)

COM_6：

(2.0mm Pitch 2X5 Pin Header), COM4 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR

Ground	5	6	DSR
RTS	7	8	CTS
JP6 Setting: RI/5V/12V	9	10	NC

S1：

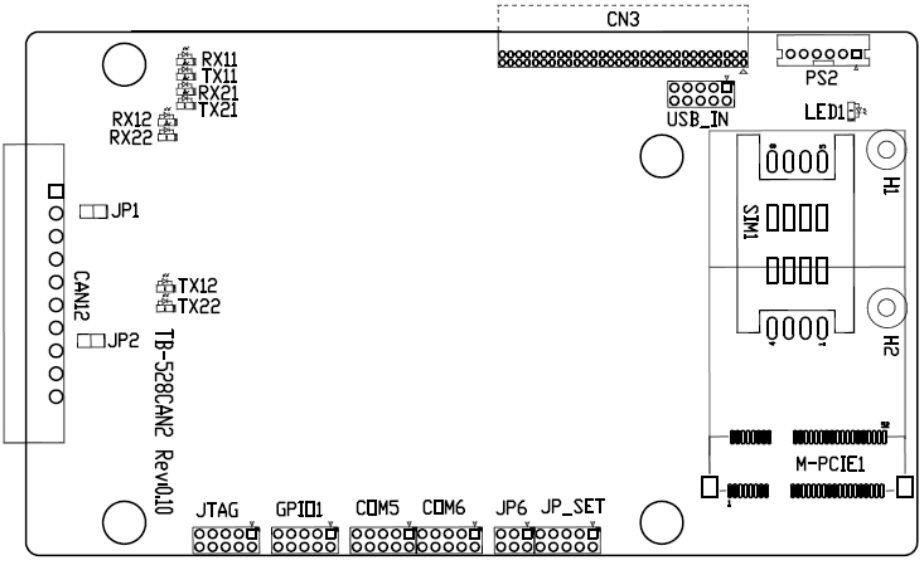
PWR BT: POWER on/off Button, They are used to connect power switch button. The two pins are disconnected under normal condition. You may short them temporarily to realize system startup & shutdown or awaken the system from sleep state.

PWR LED: POWER LED status.

S1	Model
Yes	TB-528C1U2P1
No	TB-528C1U2

46. TB -528CAN2 R0.10 (option)

SBC-7110 Riser Card, TB-528CAN2 CN3 connect to SBC-7110 CN3 pin Header. It provides two CAN-bus Interface. TB-528CAN2 Top：



CN3：

(1.27mm Pitch 2X30 Pin Header), connect to SBC-7110 CN3 pin Header.

M-PCIE1：

(Socket 52Pin), mini PCIe socket, it is located at the top, it supports mini PCIe devices with Smbus, USB2.0,SIM and PCIe signal. MPCIe card size is 30x30mm or 30x50.95mm.

Signal Name	Function support
PCIe 1X	Yes
USB2.0 (USB2)	Yes
SMBus	Yes
SIM	Yes

H1/H2:

MPCIE1 SCREW HOLES, H2 for mini PCIE card (30mmx30mm) assemble. H1 for mini PCIE card (30mmx50.95mm) assemble.

LED1：

Mini PCIe devices LED Status.

SIM1 (option)：

(SIM Socket 6 Pin), Support SIM Card devices.

PS2：

(2.0mm Pitch 1X6 Pin Wafer), PS/2 keyboard and mouse port, the port can be connected to PS/2 keyboard or mouse via a dedicated cable for direct used.

Pin#	Signal Name
1	KBDATA
2	MSDATA
3	Ground
4	+5V
5	KBCLK
6	MSCLK

USB_IN（option）：

(2.0mm Pitch 2x5 Pin Header) ,Front USB connector, it provides two USB port via a dedicated USB cable, speed up to 480Mb/s.

Signal Name	Pin#	Pin#	Signal Name
5V_USB34	1	2	5V_USB34
NC (USB4_N)	3	4	NC (USB3_N)
NC (USB4_P)	5	6	NC (USB3_P)
Ground	7	8	Ground
NC	9	10	Ground

Note:

Before connection, make sure that pinout of the USB Cable is in accordance with that of the said tables. Any inconformity may cause system down and even hardware damages.

JP_SET（option）：

(2.0mm Pitch 2x5 Pin Header).

Signal Name	Pin#	Pin#	Signal Name
3P3V_S5_USB	1	2	3P3V_S5
3P3V_S5_USB	3	4	3P3V_S5
3P3V_S5_USB	5	6	3P3V_S5
PSON_ATX	7	8	Ground
PSON_ATX	9	10	Ground

JP6：

(2.0mm Pitch 2x3 Pin Header), COM6 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM4 port.

JP6 Pin#	Function	
Close 1-2	**RI (Ring Indicator)**	**(default)**
Close 3-4	COM4 Pin9: +5V	(option)
Close 5-6	COM4 Pin9: +12V	(option)

COM4：

(2.0mm Pitch 2X5 Pin Header), COM4 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
Ground	5	6	DSR
RTS	7	8	CTS
JP6 Setting: RI/5V/12V	9	10	NC

COM3：

(2.0mm Pitch 2X5 Pin Header), COM3 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
Ground	5	6	DSR
RTS	7	8	CTS
RI	9	10	NC

GPIO1：

(2.0mm Pitch 2x5 Pin Header), General-purpose input/output port, it provides a group of self-programming interfaces to customers for flexible use.

Signal Name	Pin#	Pin#	Signal Name
Ground	1	2	NC
NC	3	4	SMB_DATA_R
SMB_CLK_R	5	6	PCH-GPIO56
PCH-GPIO57	7	8	PCH-GPIO59
PCH-GPIO58	9	10	+5V

JTAG：

(2.0mm Pitch 2x5 Pin Header), Reserve.

JP1：

(2.0mm Pitch 1x2 Pin Header), Reserve.

JP2：

(2.0mm Pitch 1x2 Pin Header), Reserve.

CAN1/CAN2：

(3.5mm Pitch 1x10 Pin connector), it provides two CAN-bus Interface.

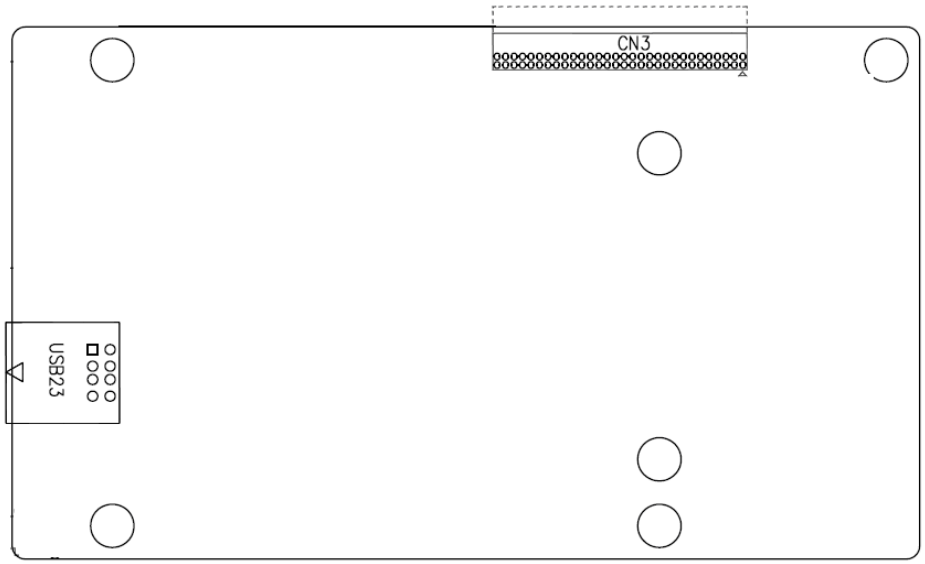
Pin#	Channel	Signal Name	Function
1	CAN2	CANL2	CAN bus Signal L
2		R2-	Terminal resistor R-(internally connected to CANL2)
3		FG	Shield cable (FG)
4		R2+	Terminal resistor R+(internally connected to CANH2)
5		CANH2	CAN bus Signal H
6	CAN1	CANL1	CAN bus Signal L
7		R1-	Terminal resistor R-(internally connected to CANL1)
8		FG	Shield cable (FG)
9		R1+	Terminal resistor R+(internally connected to CANH1)
10		CANH1	CAN bus Signal H

【See TB-528AN2 Manual】

47. TB-528U2 (option)

SBC-7110 Riser Card, TB-528U2 CN3 connect to SBC-7110 CN3 pin Header.

TB-528U2 Top：

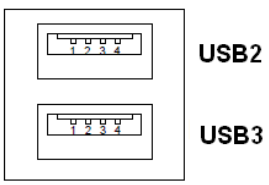


CN3：

(1.27mm Pitch 2X30 Pin Header), connect to SBC-7110 CN3 pin Header.

USB23(SBC-7110 USB3/USB4)：

(Double stack USB type A), Rear USB connector, it provides up to 2 USB2.0 ports, speed up to 480Mb/s.



Chapter 3 BIOS Setup

3.1 Operations after POST Screen

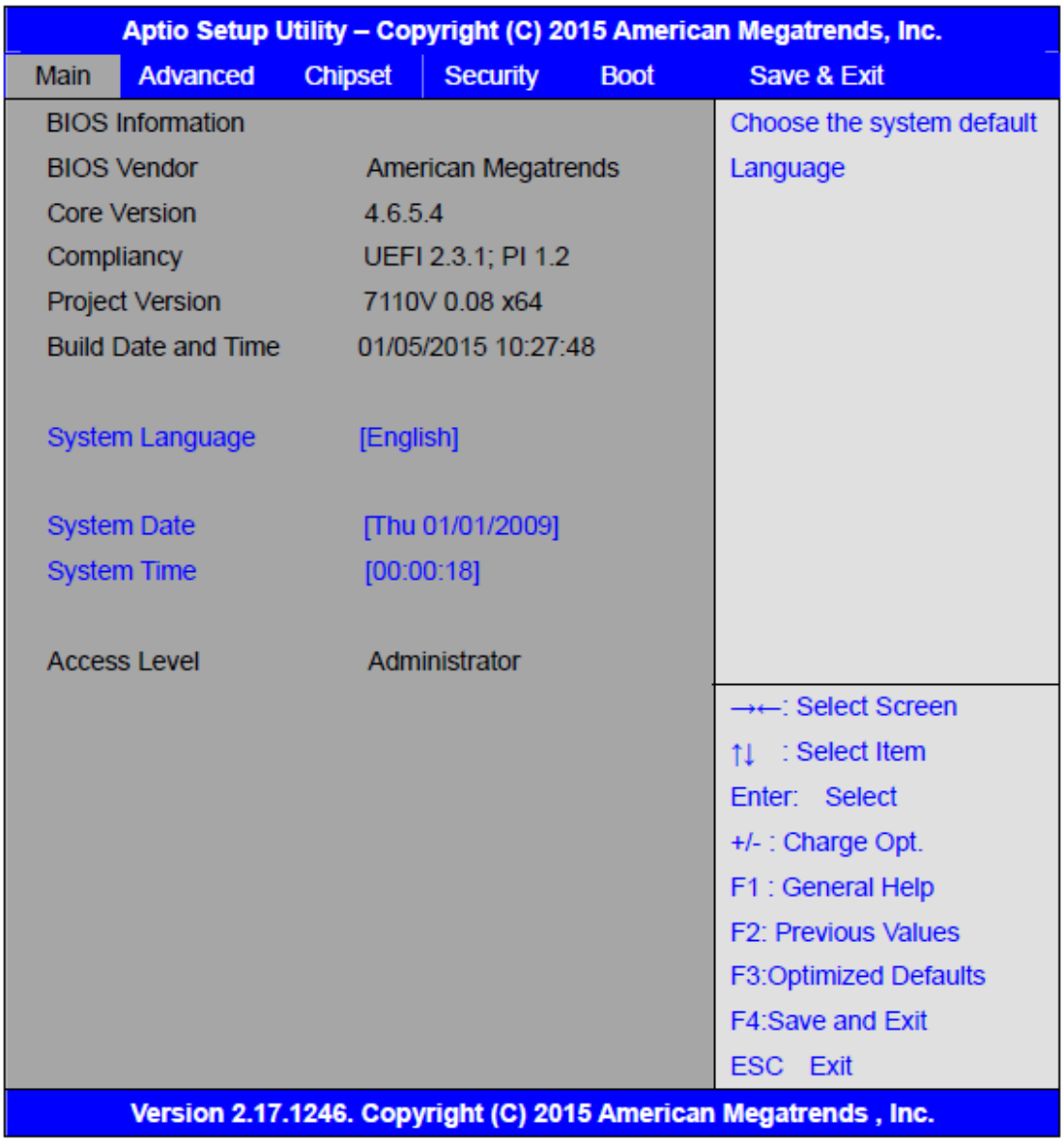
After CMOS discharge or BIOS flashing operation, press [Delete] key to enter CMOS Setup.

After optimizing and exiting CMOS Setup, the POST screen displayed for the first time is as follows and includes basic information on BIOS, CPU, memory, and storage devices.

3.2 BIOS Setup Utility

Press [Delete] key to enter BIOS Setup utility during POST, and then a main menu containing system summary information will appear.

3.3 Main Settings



System Time:

Set the system time, the time format is:

Hour :	0 to 23
Minute :	0 to 59
Second :	0 to 59

System Date:

Set the system date, the date format is:

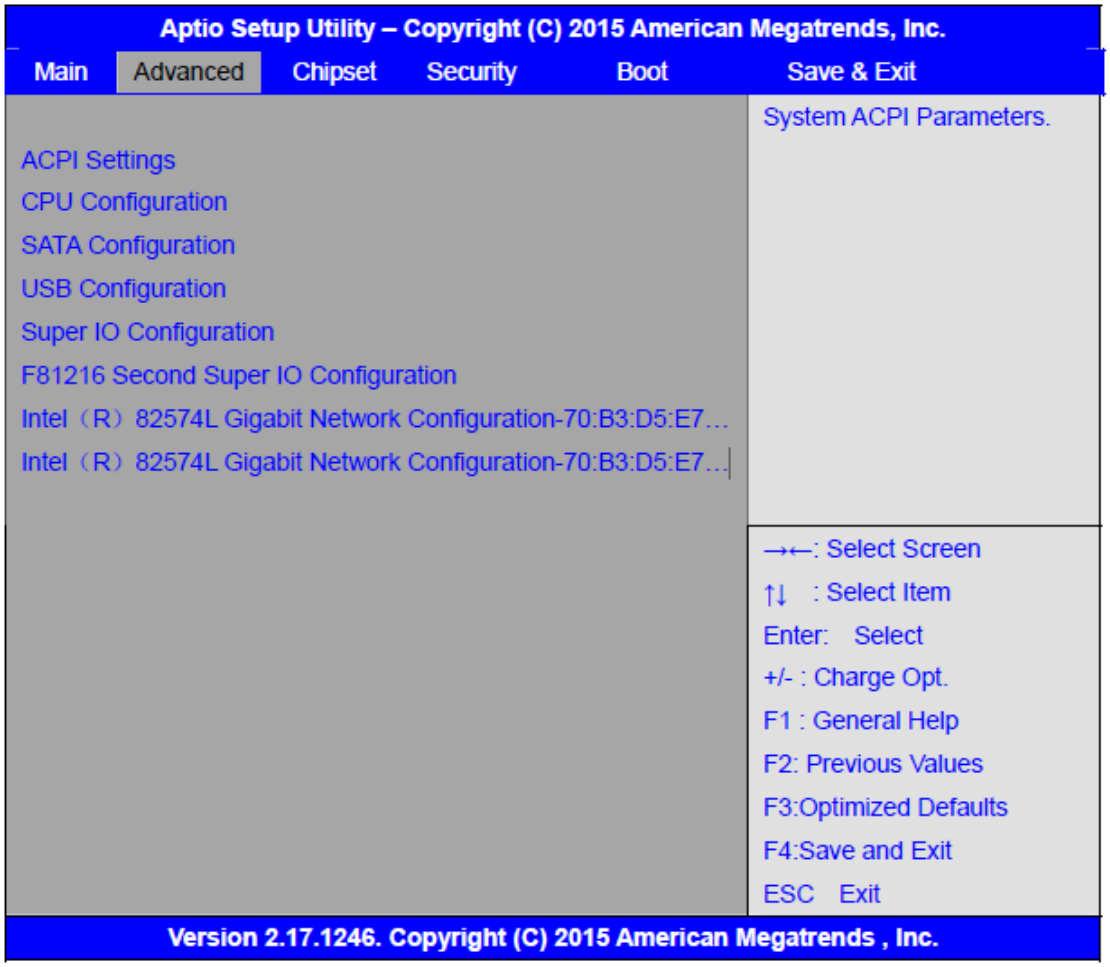
Day: Note that the 'Day' automatically changes when you set the date.

Month: 01 to 12

Date: 01 to 31

Year: 1998 to 2099

3.4 Advanced Settings



3.4.1 ACPI Settings

Enable ACPI Auto Conf:

[Disabled]

[Enabled]

Enable Hibernation:

[Enabled]

[Disabled]

ACPI Sleep State:

[S1 only (CPU Stop Clock)]

[S3 (Suspend to RAM)]

[Suspend Disabled]

[Both S1 and S3 available for OS to choose from]

Lock Legacy Resources:

[Disabled]

[Enabled]

S3 Video Repost:

[Disabled]

[Enabled]

ACPI Low Power SO Idle:

[Disabled]

[Enabled]

3.4.2 CPU Configuration

Intel(R) Core(TM) i5-4310U @ 2.00GHz

CPU Signature	40651
Processor Family	6
Microcode Patch	17
FSB Speed	100 MHz
Max CPU Speed	2000 MHz
Mix CPU Speed	800 MHz
CPU Speed	2400 MHz
Processor Cores	2
Intel HT Technology	Supported
Intel HT-X Technology	Supported
Intel SMX Technology	Supported
64-bit	Supported
EIST Technology	Supported
CPU C3 State	Supported
CPU C6 State	Supported
CPU C7 State	Supported
L1 Date Cache	32KB x 2
L1 Code Cache	32KB x 2
L2 Cache	256KB x 2
L3 Cache	3072KB
Hyper-threading	[Enabled]
Active Processor Cores	[Enabled]
Overclocking lock	[All]
Limit CPUID Maximum	[Disabled]
Execute Disabled Bit	[Enabled]
Intel Virtualization Technology	[Enabled]
Hardware Prefetcher	[Enabled]
Asjacent Cache Line Prefetch	[Enabled]
CPU AES	[Enabled]
Boot Performance mode	[Turbo Performance]

EIST [Enabled]
Turbo Mode [Enabled]
……

3.4.3 SATA Configuration

SATA Configuration(S)
[Enabled]
[Disabled]
SATA Mode Selection
[AHCI]
[RAID]
SATA Test Mode
[Disabled]
[Enabled]
Aggressive LPM Support
[Enabled]
[Disabled]
SATA Controller Speed
[Default]
[Gen1]
[Gen2]
[Gen3]

Software Feature Mask Configuration

Serial ATA Port 0 Empty
Software Preserve Unknown

Serial ATA Port 1 Empty
Software Preserve Unknown
…….

3.4.4 USB Configuration

USB Configuration
USB Module Version 8.10.31
USB Devices:
1 Keyboard, 1 Mouse, 1 Hubs
Legacy USB Support:

[Enabled]
[Disabled]
XHCI Hand-off:
[Enabled]
[Disabled]
EHCI Hand-off:
[Disabled]
[Enabled]
USB Mass Storage Driver Support
[Enabled]
[Disabled]
USB hardware delays and time-outs:
USB transfer time-out:
[20 sec]
[10 sec]
[5 sec]
[1 sec]
Device reset time-out:
[20 sec]
[10 sec]
[30 sec]
[40 sec]
Device power-up delay
[Auto]
[Manual]

3.4.5 Super IO Configuration

Super IO chip IT8518/IT8519
Serial Port 0 Configuration (COM5)
Device Mode Selection:
[RS-485]
[RS-422]
Serial Port 1 Configuration (COM6)
Device Mode Selection:
[RS-485]
[RS-422]

3.4.6 F81216 Second Super IO Configuration

Super IO chip F81216 Second IO

Serial Port 0 Configuration

UART1 Mode Selection:

[RS-232]

[RS-485]

[RS-422]

Serial Port 1 Configuration

Change Settings [Auto]

Serial Port 2 Configuration

Change Settings [Auto]

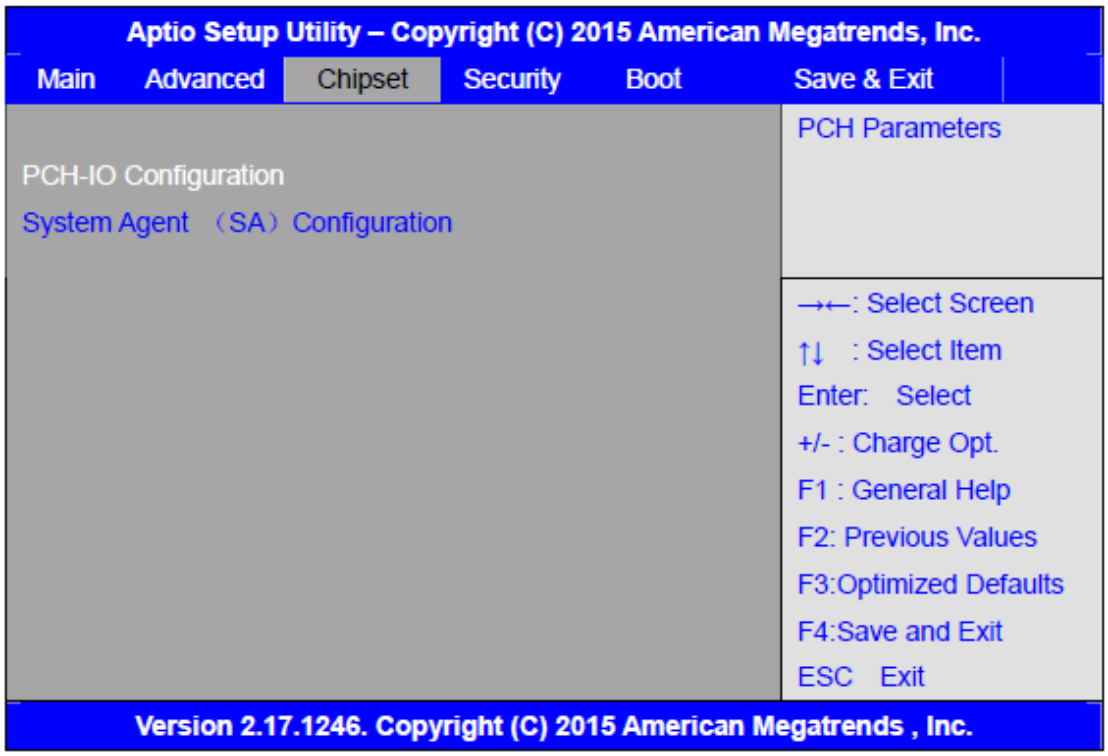
Serial Port 3 Configuration

Change Settings [Auto]

3.4.7 Intel (R) 82574L Gigabit Network Configuration-70:B3:D5:E7

3.4.8 Intel (R) 82574L Gigabit Network Configuration-70:B3:D5:E7

3.5 Chipset Settings



3.5.1 PCH-IO Configuration

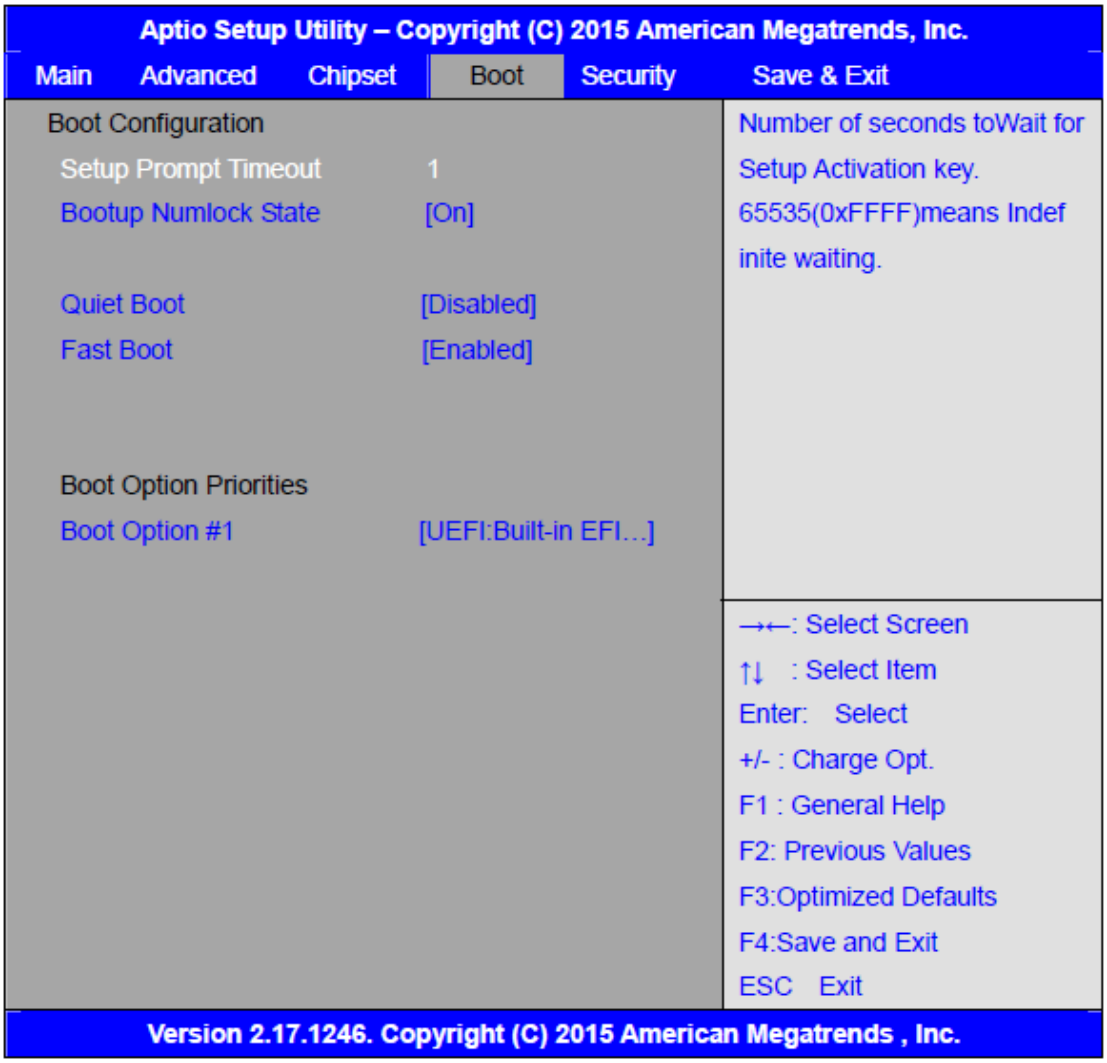
Intel PCH RC Version 1.8.0.0
Intel PCH SKU Name Premium SKU
Intel PCH Rev ID 04/B2

PCH Express Configuration
- PCI Express Clock Gating [Enabled]
- DMI Link ASPM Control [Enabled]
- DMI Link Extended Synch Control [Disabled]
- PCIe-USB Glitch W/A [Disabled]
- PCIE Root Port Function Swapping [Disabled]
- Subtractive Decode [Disabled]
- PCI Express Root Port 1
- PCI Express Root Port 2
- PCI Express Root Port 3
- PCI Express Root Port 4
- PCI Express Root Port 5
- PCI Express Root Port 6

USB Configuration
- USB Precondition [Disabled]
- XHCI Mode
- XHCI Idle L1
- BTCG
- USB Ports Per-Port Disabled Control [Disabled]

Restore AC Power Loss [Power off]

3.6 Boot Settings



3.6.1 Administrator Password

3.6.2 User Password

Type the password with up to 20 characters and then press ⮜Enter⮞ key. This will clear all previously typed CMOS passwords. You will be requested to confirm the password. Type the password again and press ⮜Enter⮞ key. You may press ⮜Esc⮞ key to abandon password entry operation.

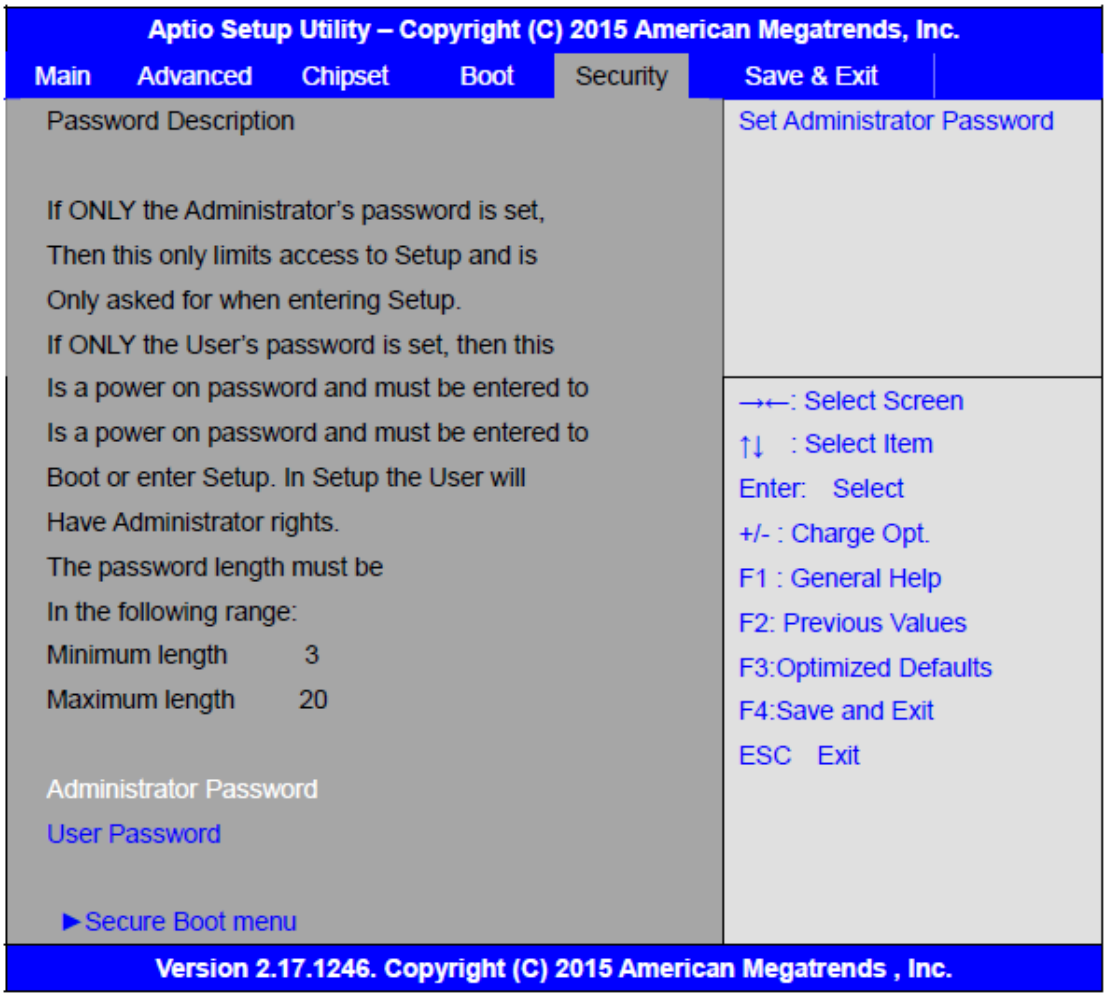
To clear the password, just press ⮜Enter⮞ key when password input window pops

up. A confirmation message will be shown on the screen as to whether the password will be disabled. You will have direct access to BIOS setup without typing any password after system reboot once the password is disabled.

Once the password feature is used, you will be requested to type the password each time you enter BIOS setup. This will prevent unauthorized persons from changing your system configurations.

Also, the feature is capable of requesting users to enter the password prior to system boot to control unauthorized access to your computer. Users may enable the feature in Security Option of Advanced BIOS Features. If Security Option is set to System, you will be requested to enter the password before system boot and when entering BIOS setup; if Security Option is set to Setup, you will be requested for password for entering BIOS setup.

3.7 Security Settings



Setup Prompt Timeout [1]

Bootup Numlock State

[On]

[off]

Quiet Boot

[Disabled]

[Enabled]

Fast Boot

[Disabled]

[Enabled]

Boot Option Priorities

Boot Option #1

Sets the system boot order

Hard Drive BBS Priorities [SATA PM:*** …]

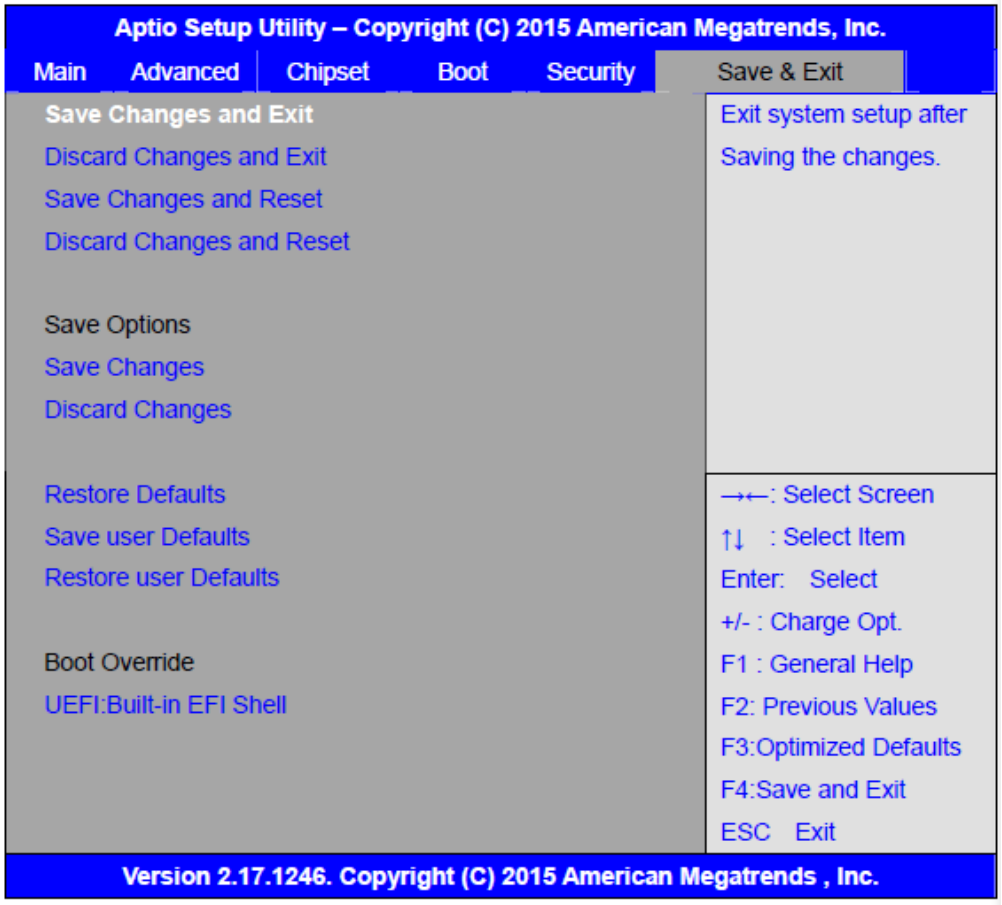
Boot Option #1

SATA PM:***…

******

Disabled

3.8 Save & Exit Settings



Save Changes and Exit

Save & Exit Setup save Configuration and exit ?

[Yes]

[No]

Discard Changes and Ext

Exit Without Saving Quit without saving?

[Yes]

[No]

Save Changes and Reset

Save & reset Save Configuration and reset?

[Yes]

[No]

Discard Changes and Reset

Reset Without Saving Reset without saving?

[Yes]

[No]

Save Changes

Save Setup Values Save configuration?

[Yes]

[No]

Discard Changes

Load Previous Values Load Previous Values?

[Yes]

[No]

Restore Defaults

Load Optimized Defaults Load optimized Defaults?

[Yes]

[No]

Save user Defaults

Save Values as User Defaults Save configuration?

[Yes]

[No]

Restore user Defaults

Restore User Defaults Restore User Defaults?

[Yes]

[No]

Chapter 4 Installation of Drivers

This chapter describes the installation procedures for software and drivers under the windows 7. The software and drivers are included with the motherboard. The contents include **Intel CORE TM SoC chipset driver, VGA driver, LAN drivers, Audio driver, USB 3.0 Driver, Intel® MEI Driver Installation instructions are given below.**

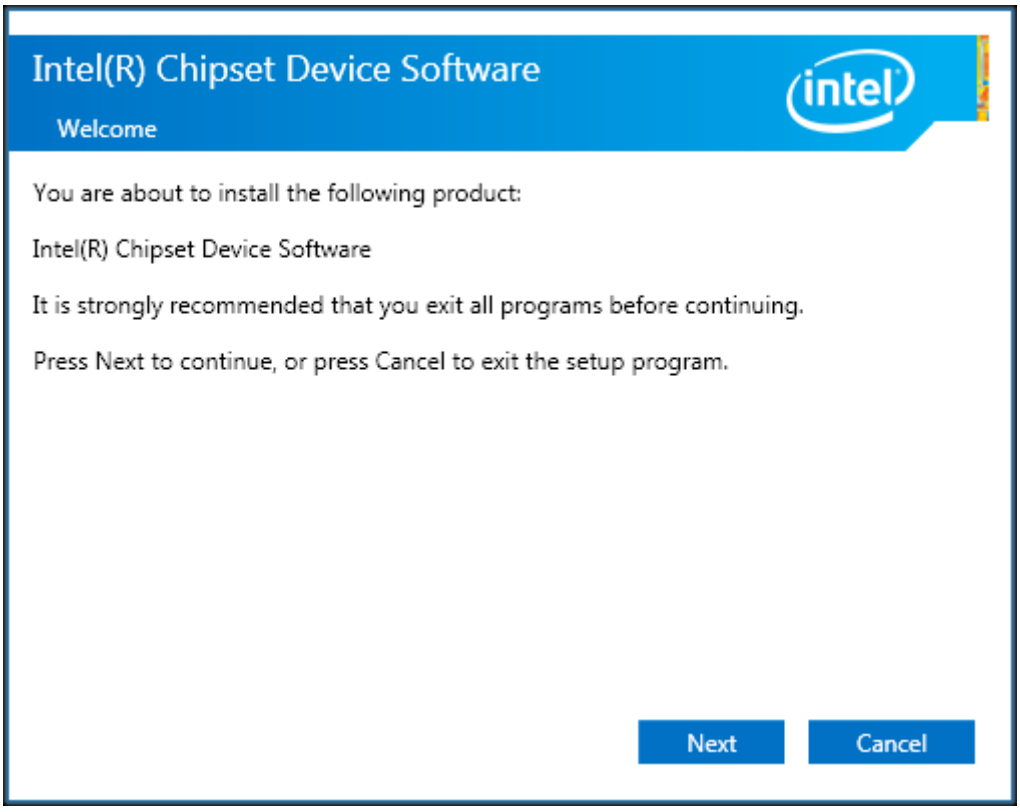
Important Note:
After installing your Windows operating system, you must install first the Intel Chipset Software Installation Utility before proceeding with the installation of drivers.

4.1 Intel(R) CORE TM SoC Chipset

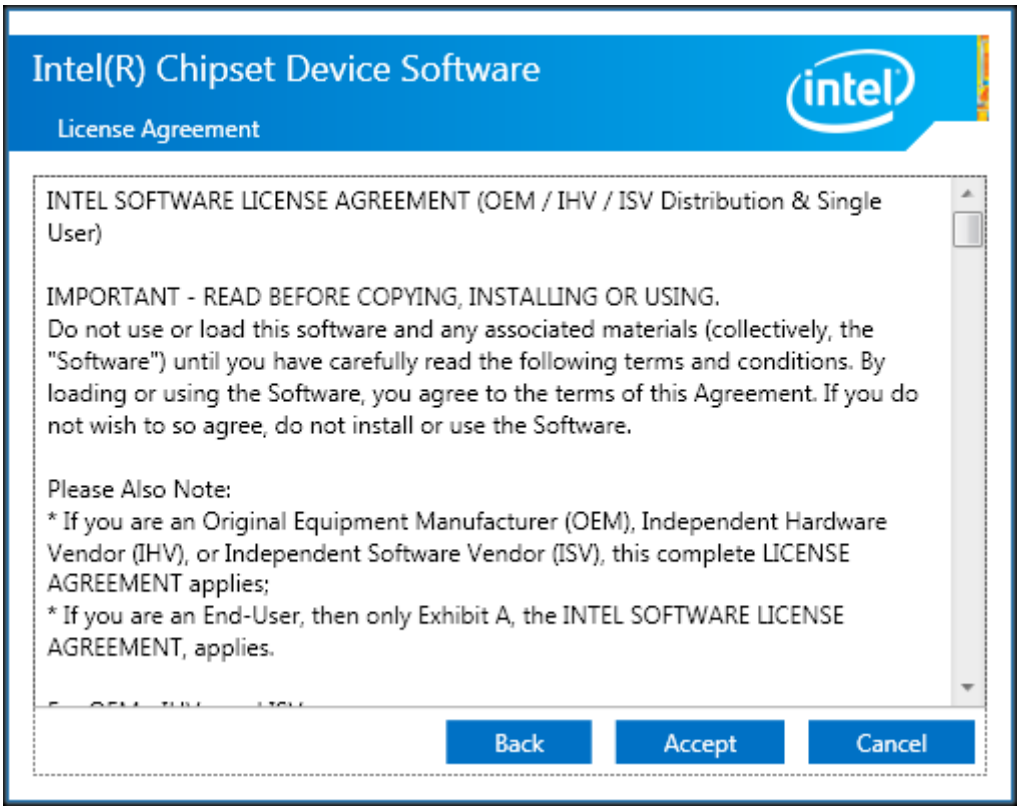
To install the Intel chipset driver, please follow the steps below.

Step 1. Select **Intel (R) CORE TM SoC Chipset** from the list

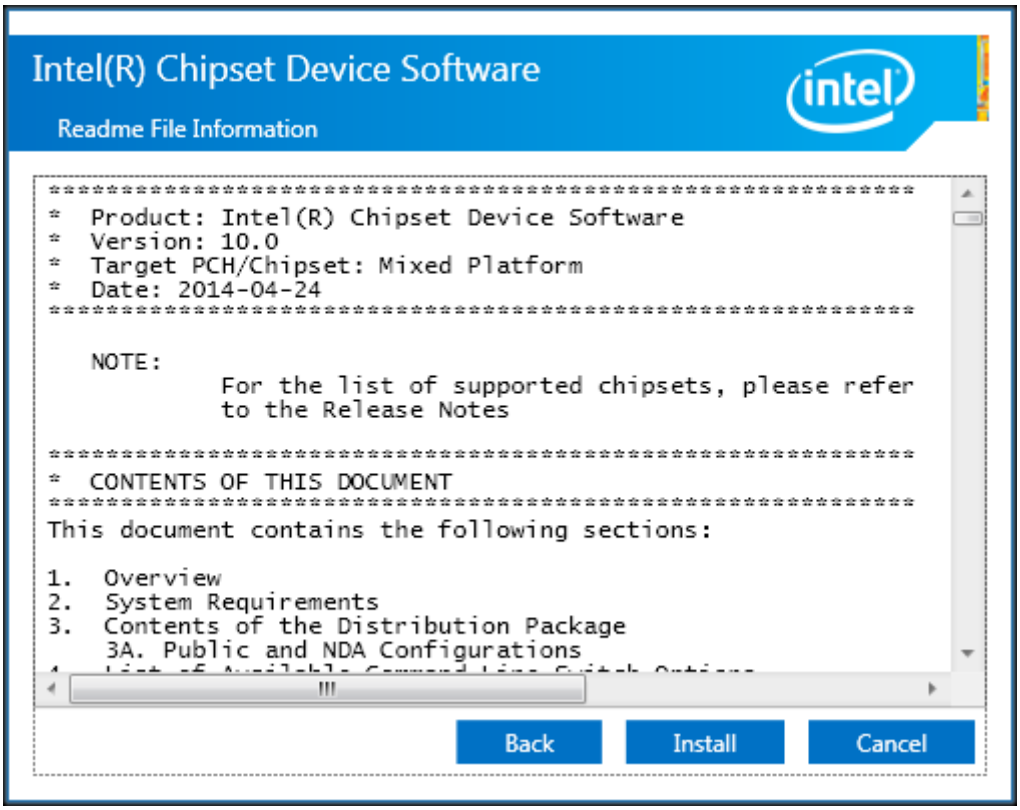
Step 2. Click **Next** to setup program.



Step 3. Read the license agreement. Click **Accept** to accept all of the terms of the license agreement.



Step 4. Click **Install** to begin the installation.



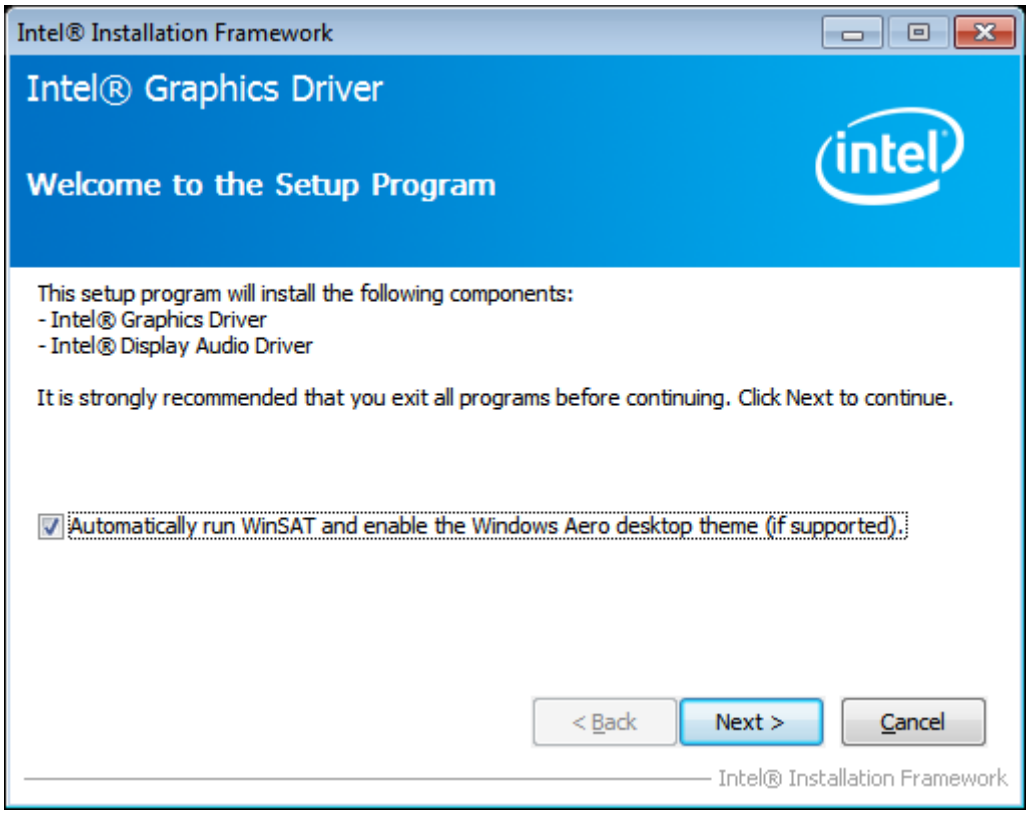
Step 5. Click **Finish** to complete the setup process.

4.2 Intel(R) VGA Chipset

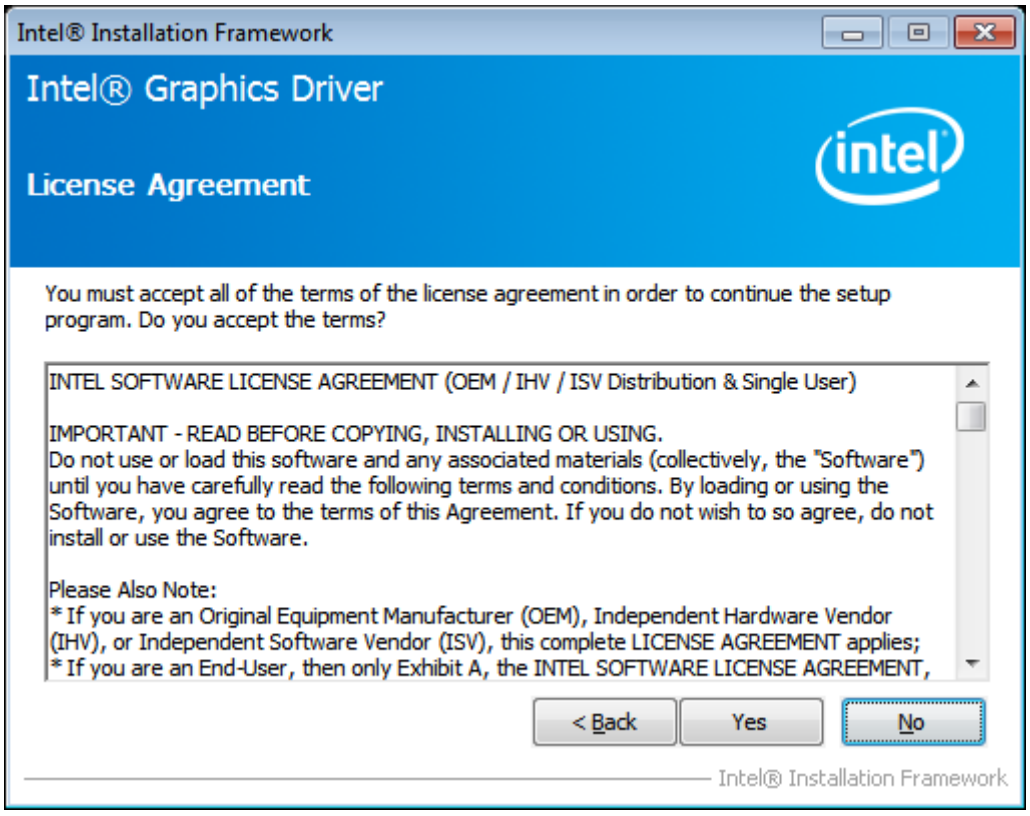
To install the VGA drivers, follow the steps below to proceed with the installation.

Step 1.Select **Intel(R) VGA Chipset** from the list.

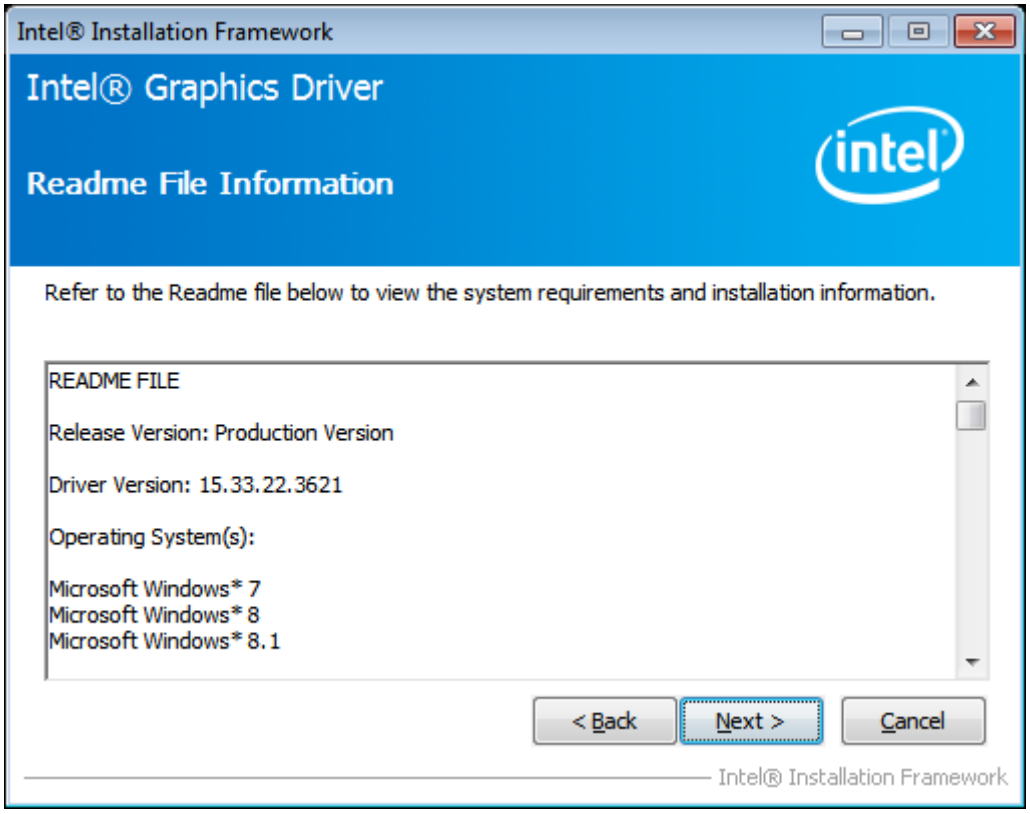
Step 2. Click **Automatically run WinSAT and enable the Windows Aero desktop theme(if supported).** Click **Next.**



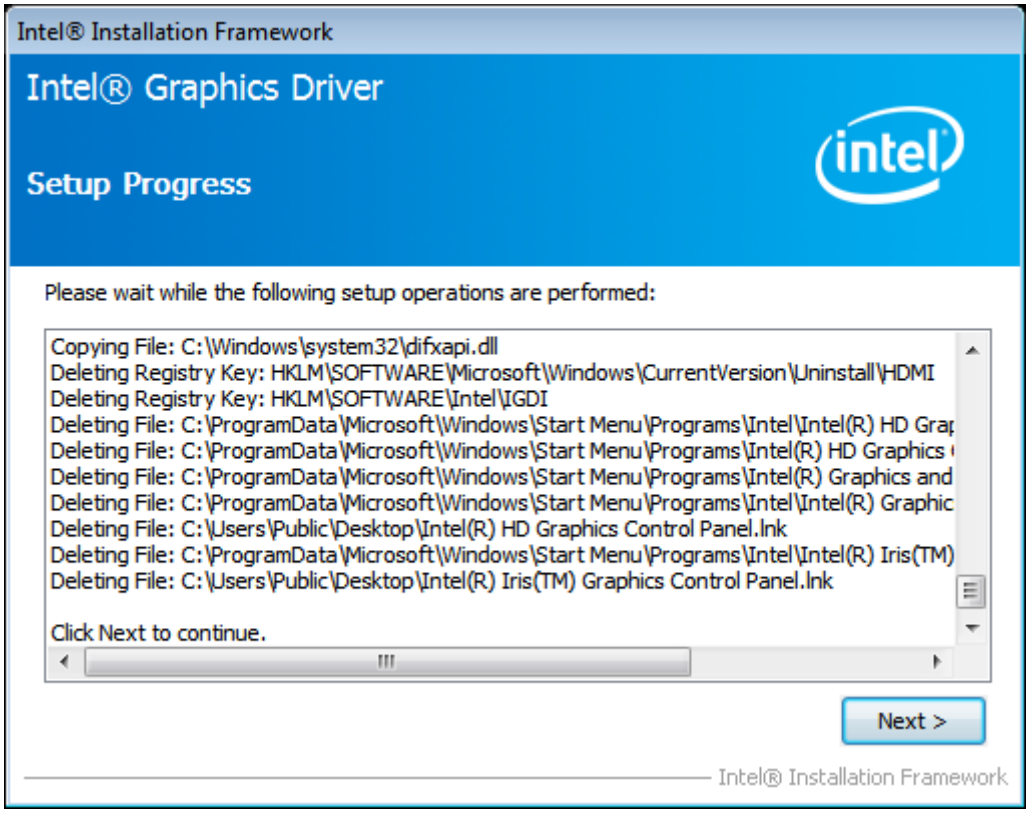
Step 3. Read license agreement. Click **Yes.**



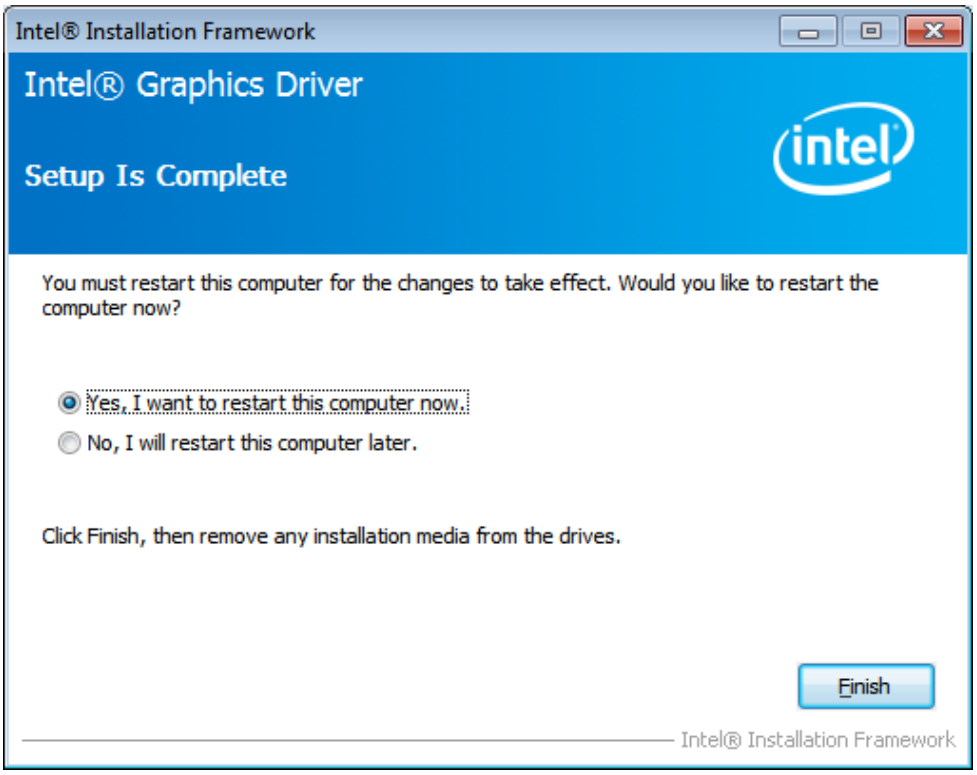
Step 4. Click **Next** to continue.



Step 5. Click **Next** to continue.



Step 6. Select **Yes, I want to restart this computer now.** Then click **Finish** to complete the installation.

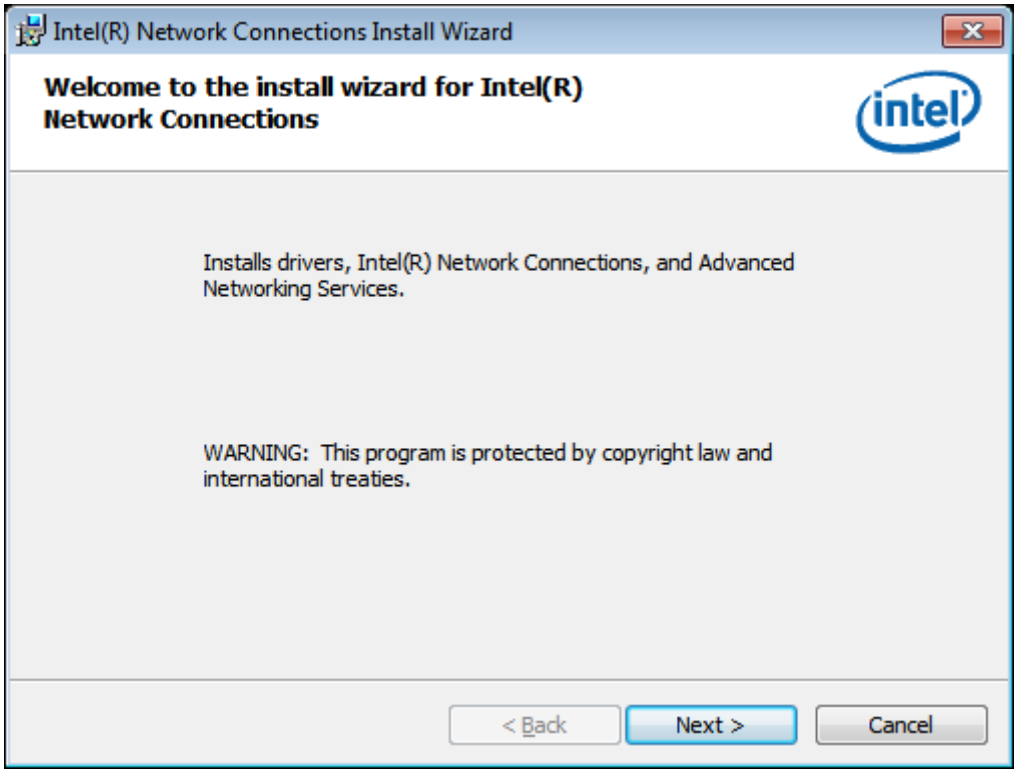


4.3 Intel(R) LAN Driver

To install the Intel (R) LAN driver, please follow the steps below.

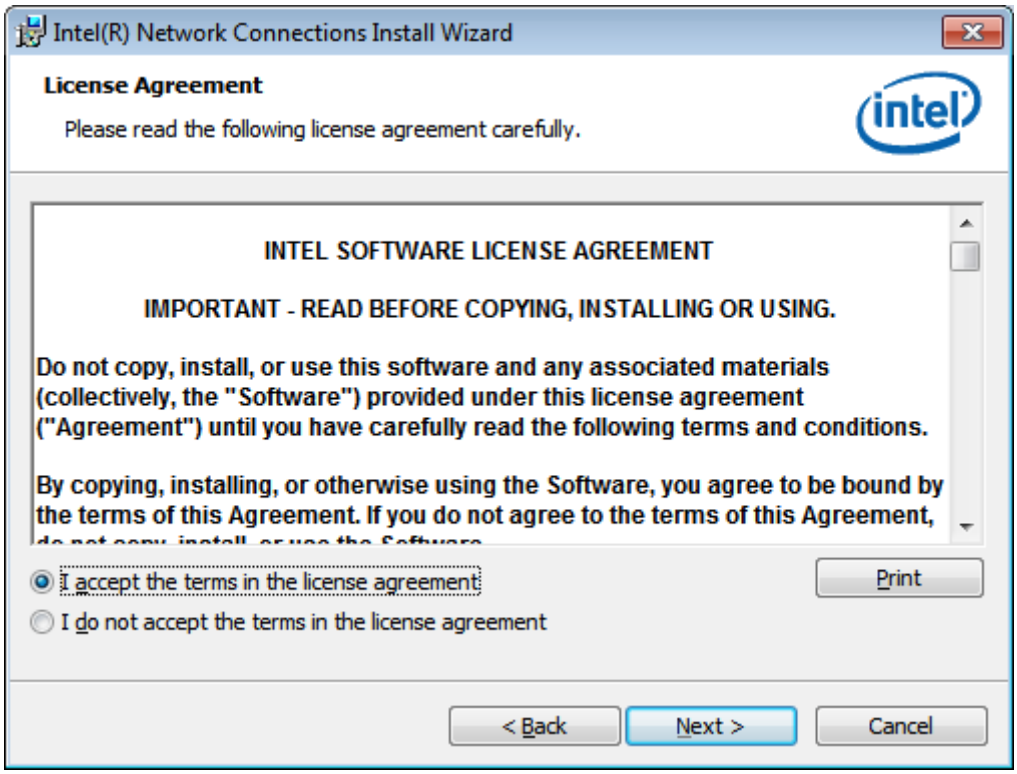
Step 1. Select **Intel(R) 82574L LAN Driver** from the list**.**

Step 2. . Click **Next.**

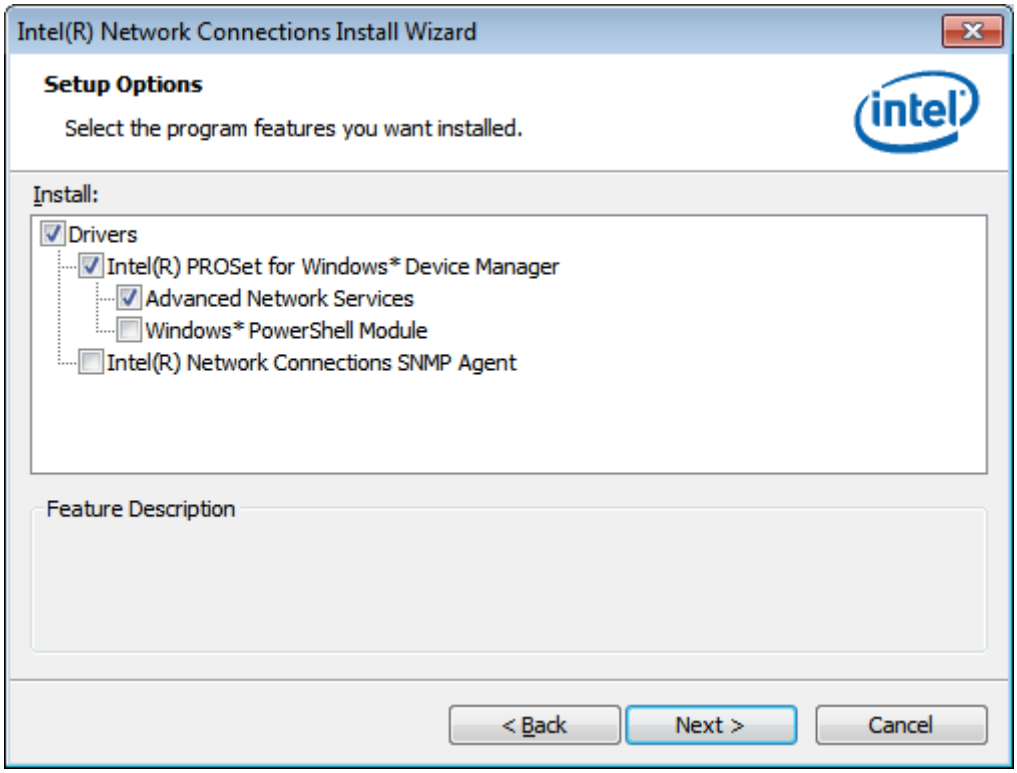


Step 3. Read license agreement. Click **I accept the terms in the license agreement.**

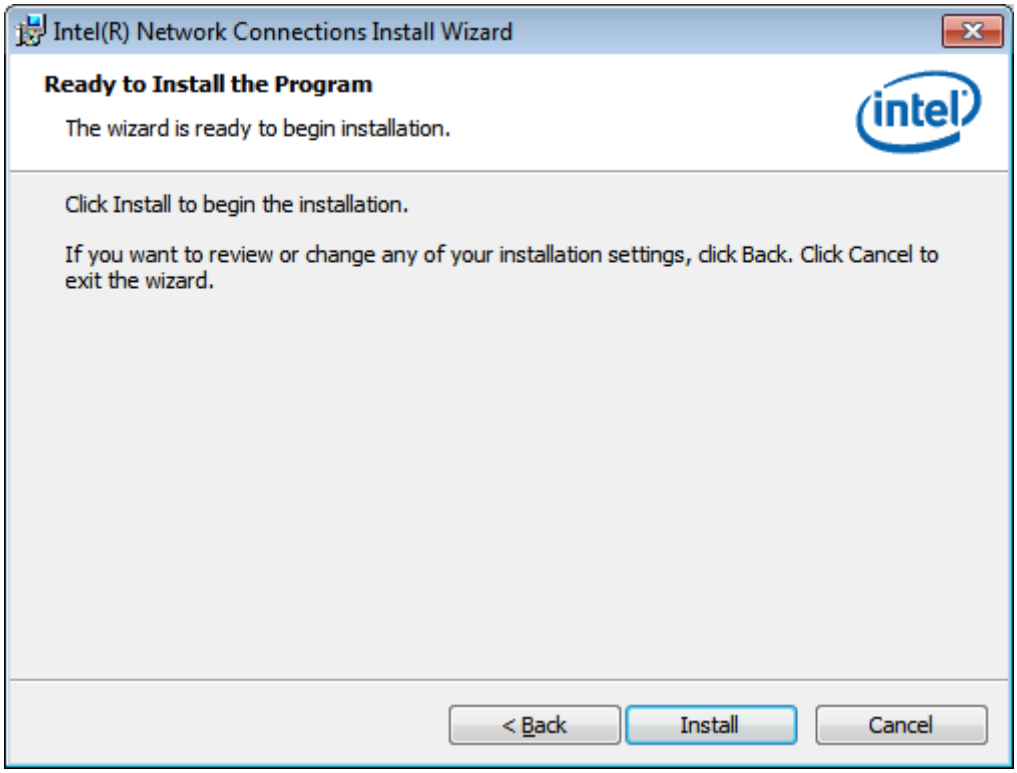
Click **Next.**



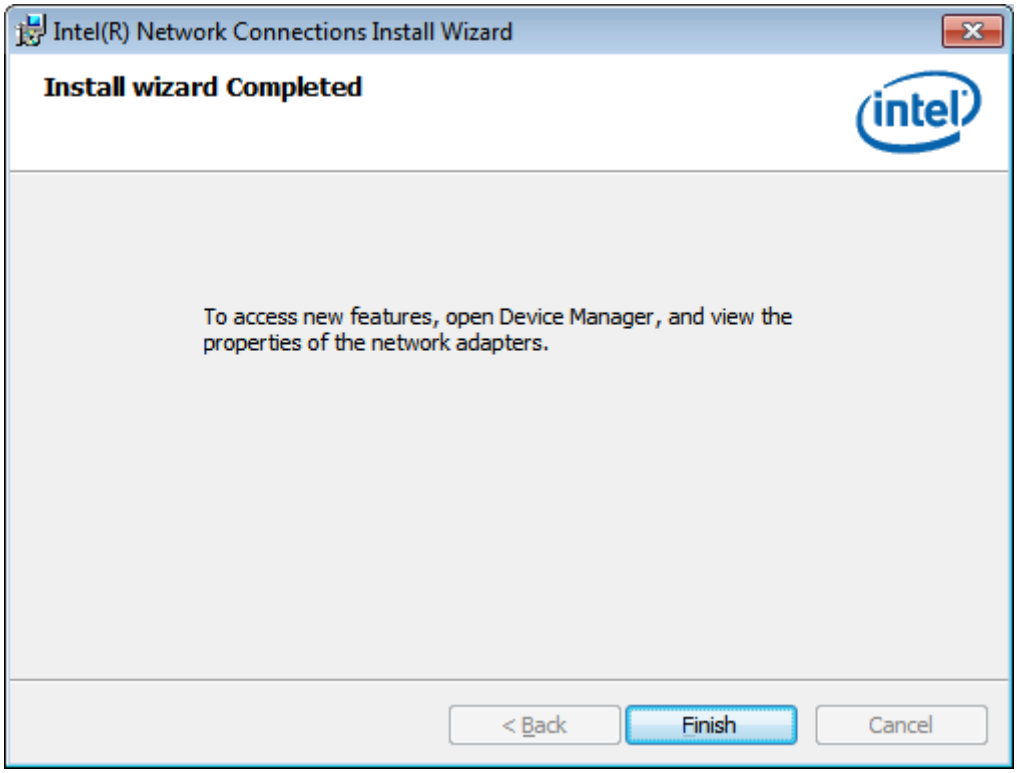
Step 4. Click **Next** to continue.



Step 5. Click **Install** to begin the installation.



Step 6. Click **Finish** to exit the wizard.

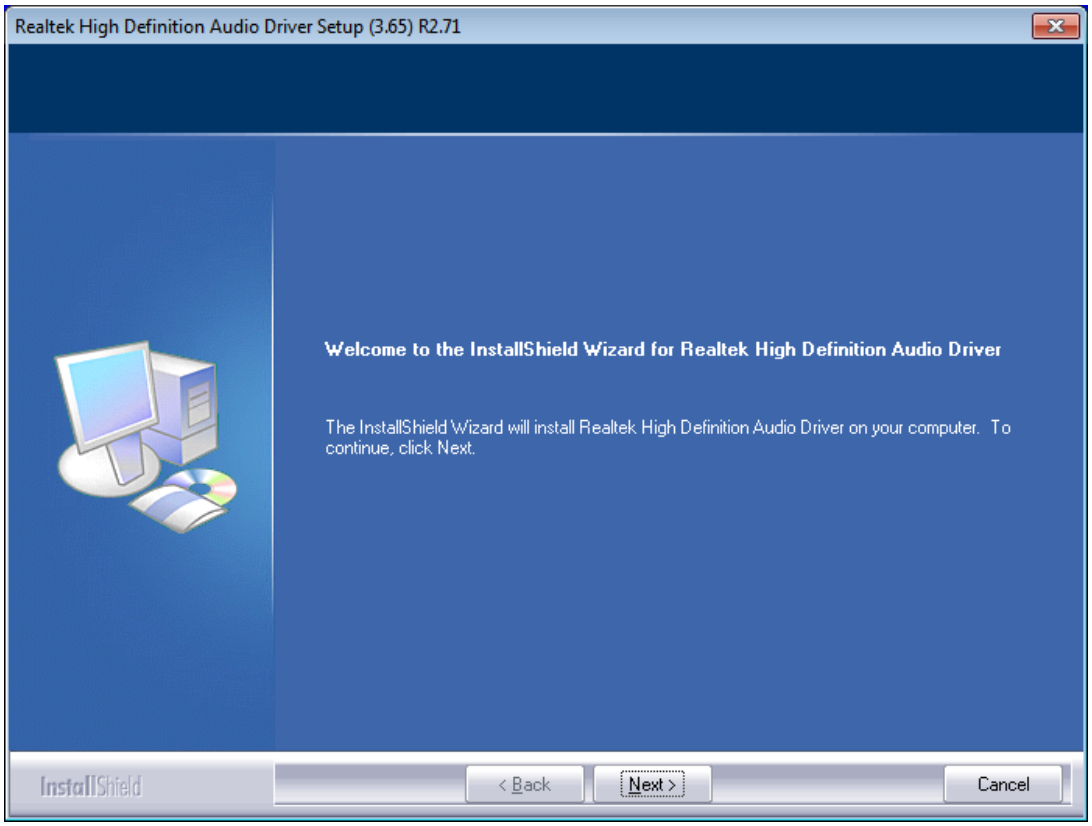


4.4 Realtek ALC662 HD Audio Driver

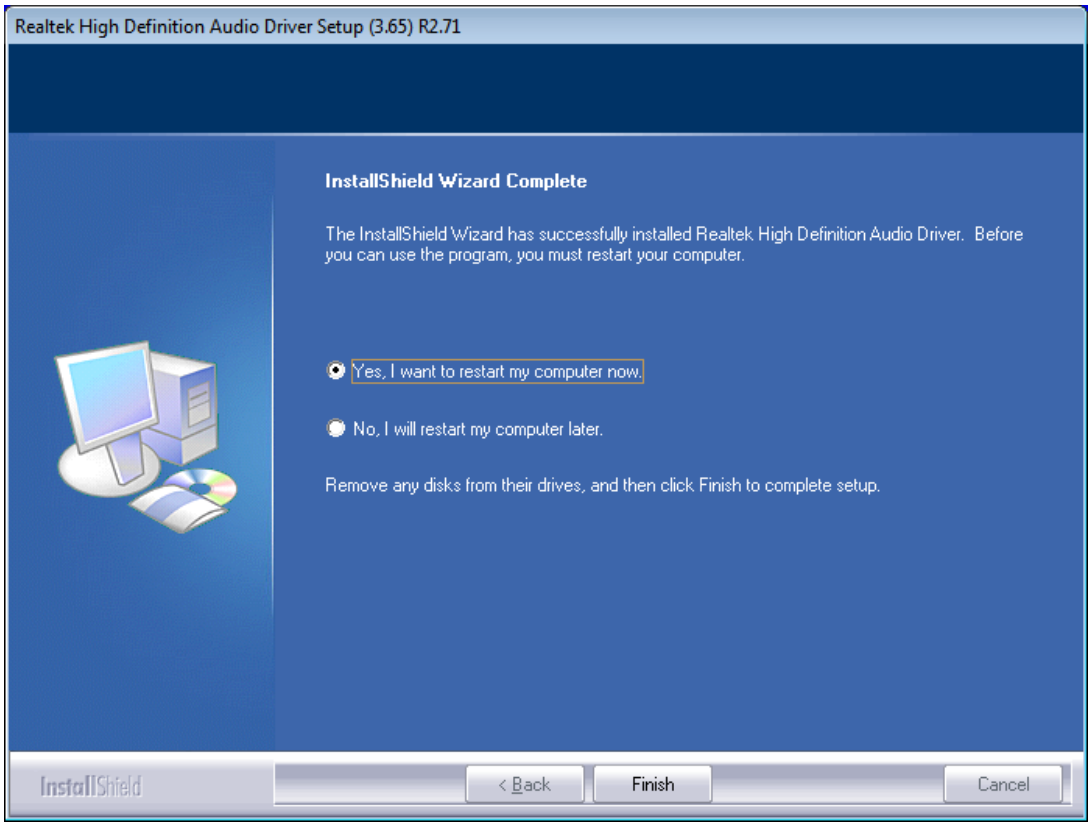
To install the Realtek ALC662 HD Audio Driver, please follow the steps below.

Step 1. Select **Realtek AL662 HD Audio Driver** from the list

Step 2. Click **Next** to continue.



Step 3. Click **Yes, I want to restart my computer now**. Click **Finish** to complete the installation.

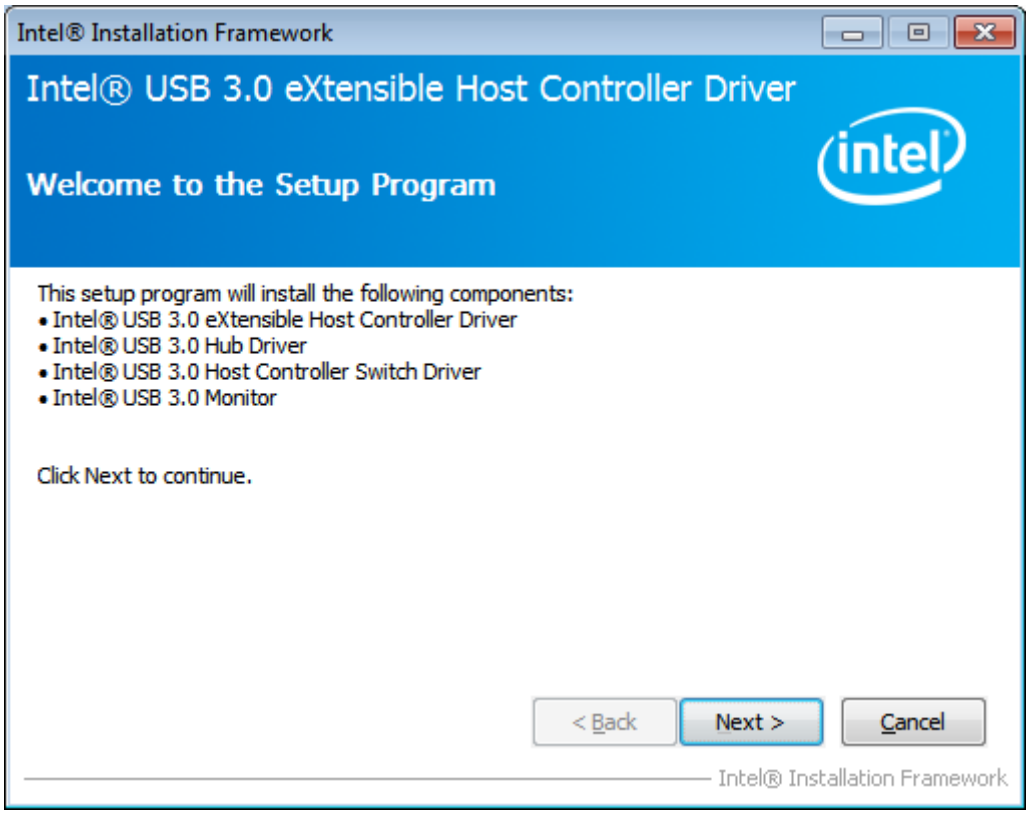


4.5 USB 3.0 Driver

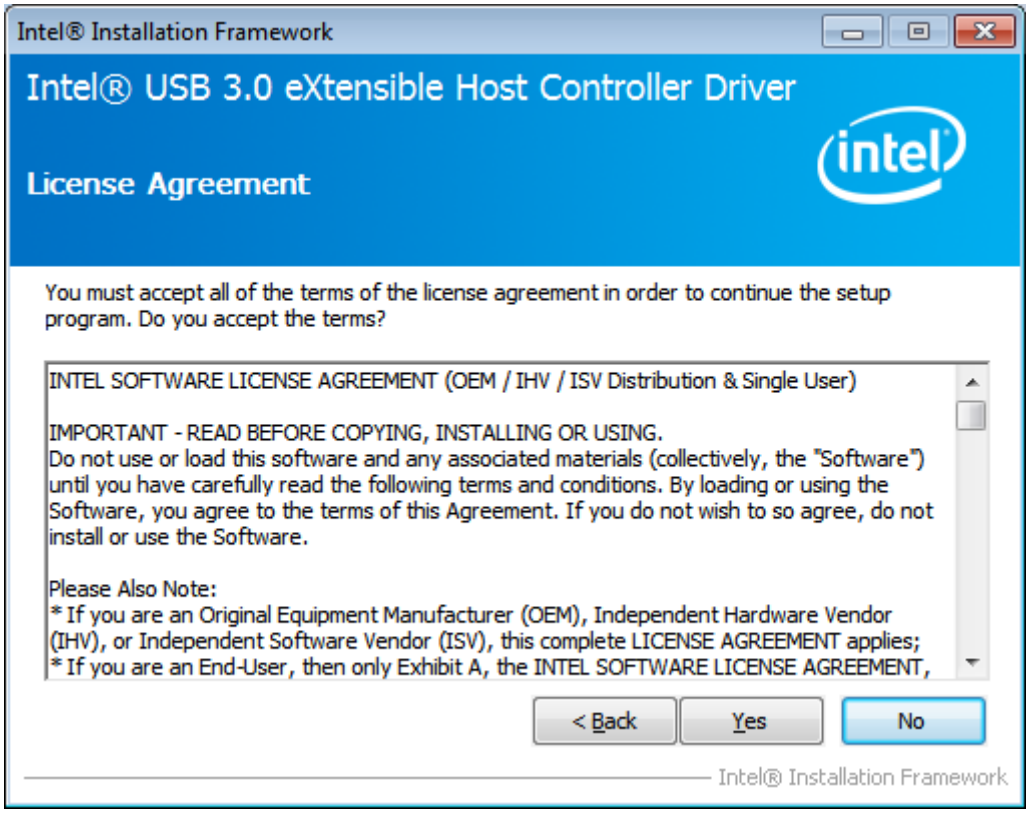
To install the USB 3.0 Driver, please follow the steps below.

Step 1. Select **USB 3.0 Driver** from the list

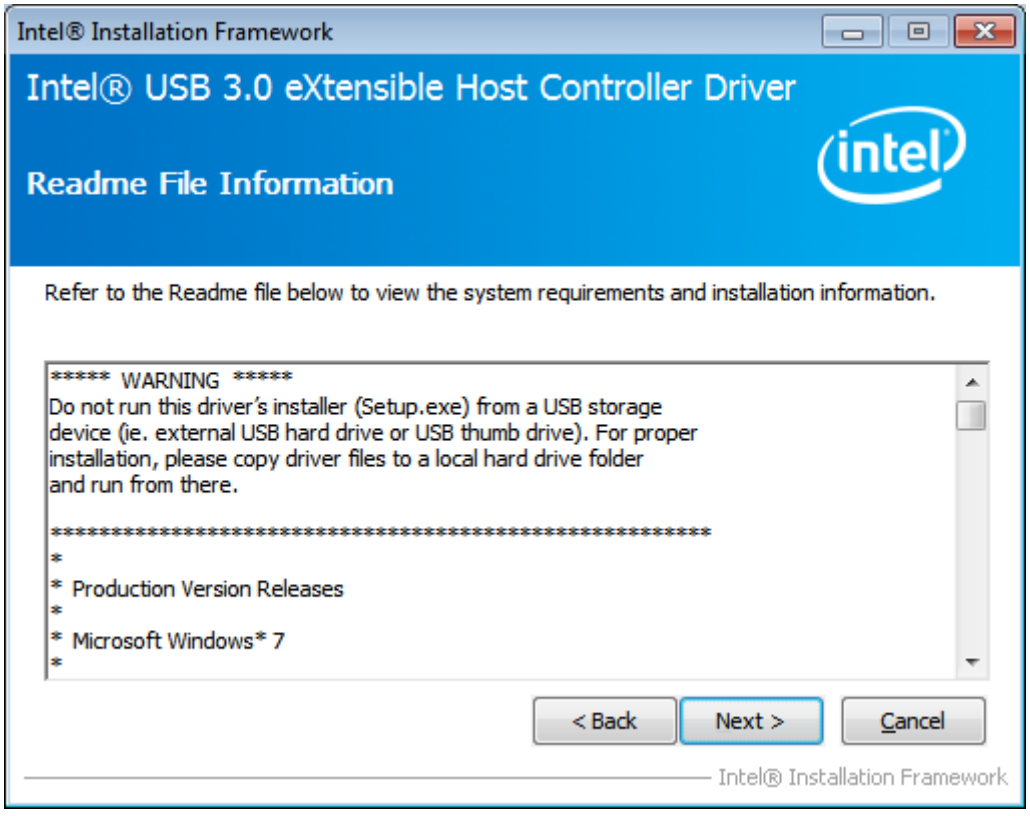
Step 2. Click **Next** to continue.



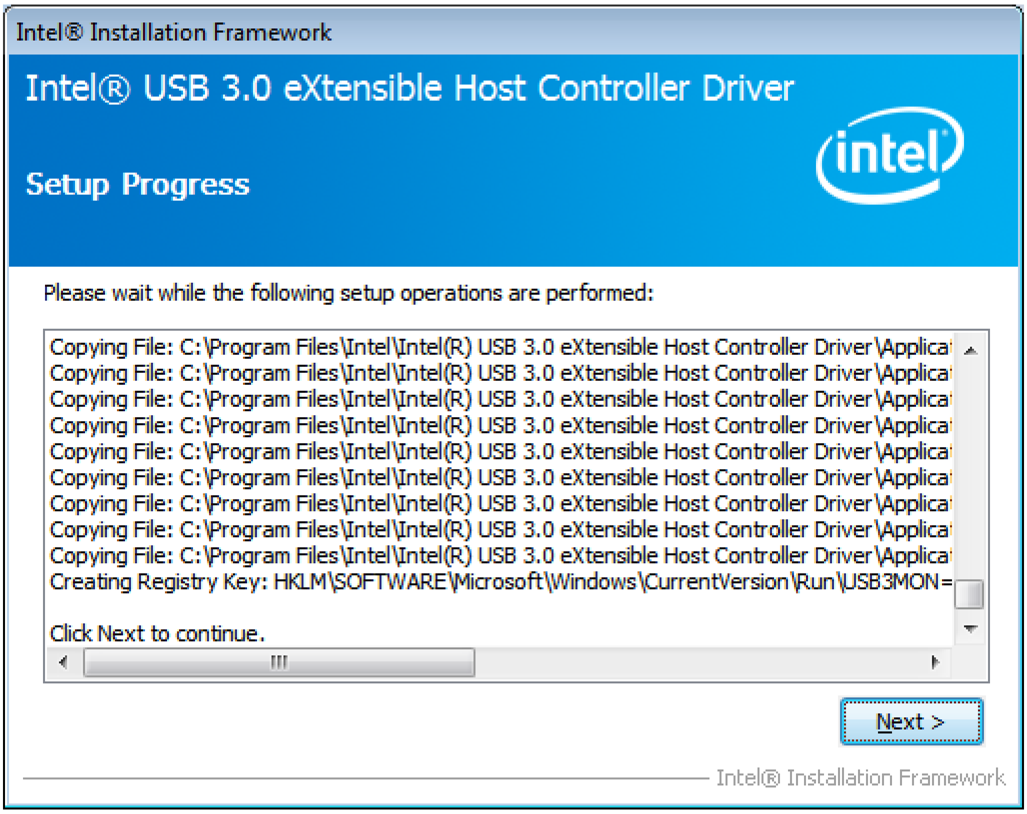
Step 3. Read the license agreement. Then click **Yes** to continue.



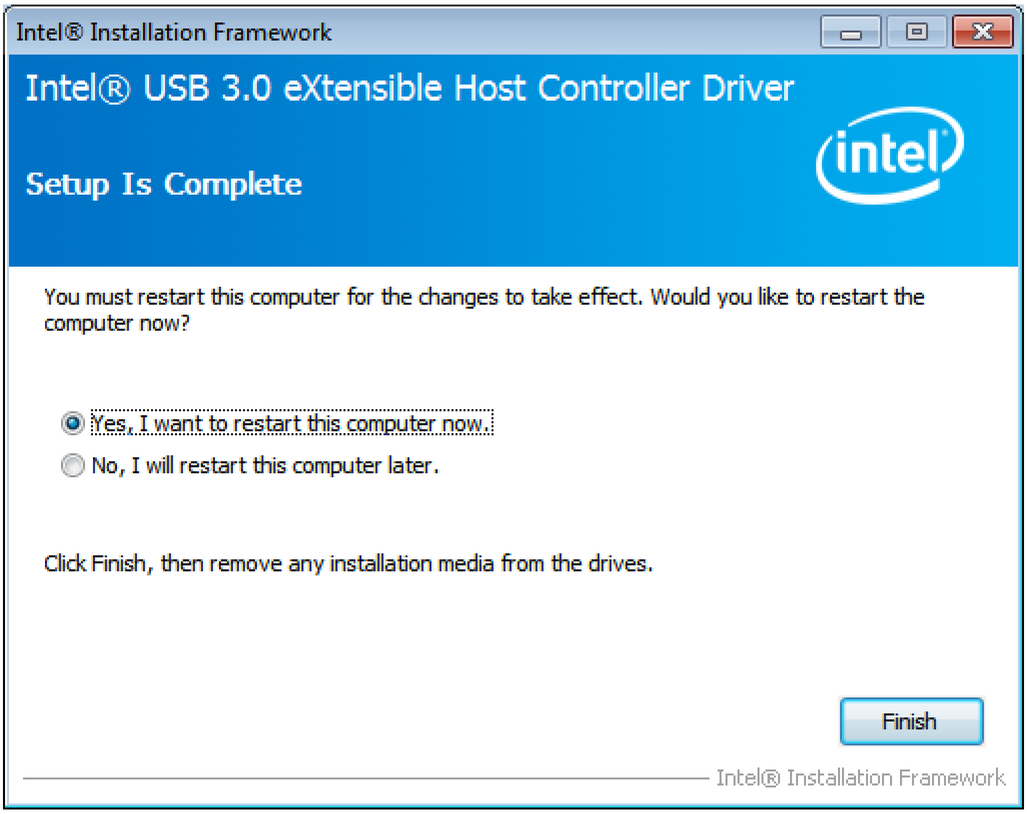
Step 4. Click **Next** to continue.



Step 5. Click **Next** to continue.



Step 6. Select **Yes, I want to restart this computer now.** Then click **Finish** to complete the installation.

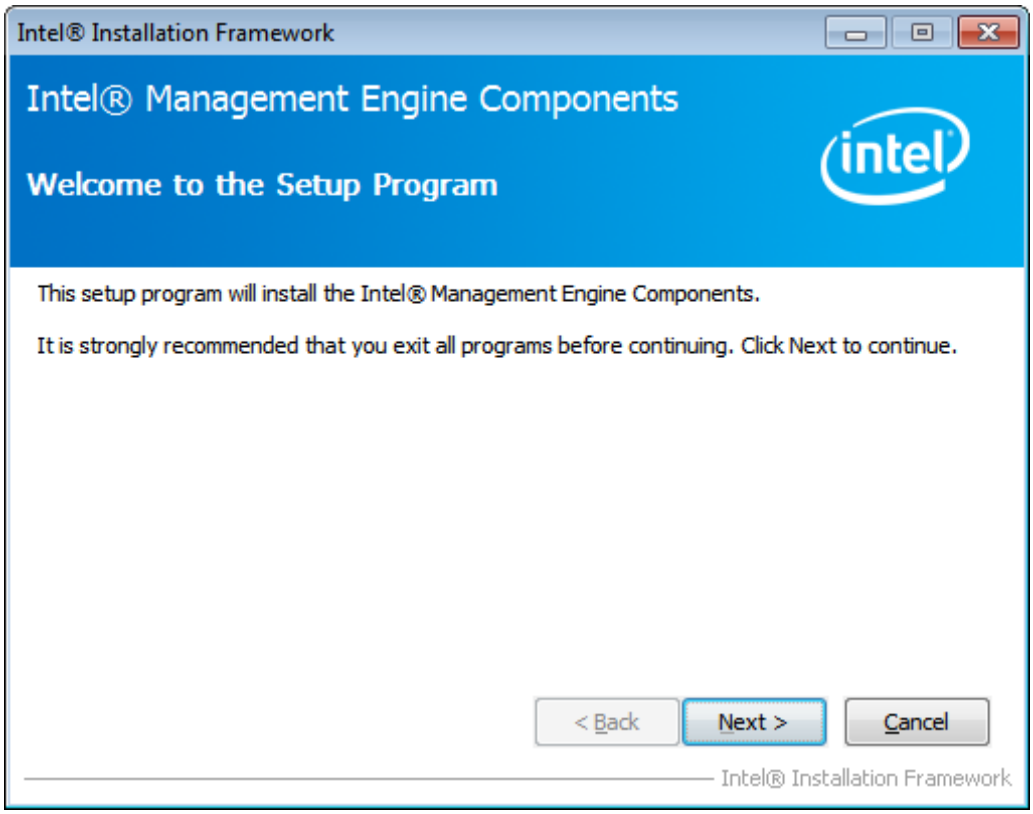


4.6 Intel(R) MEI Driver

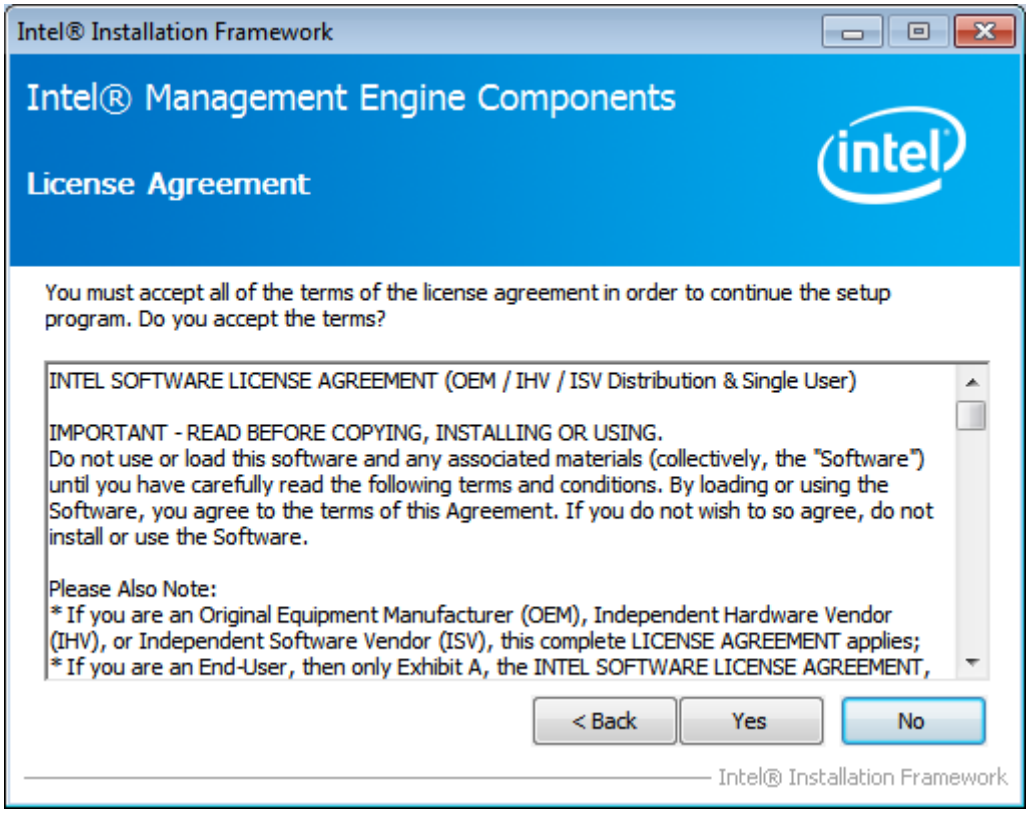
To install the Intel(R) MEI Driver, please follow the steps below.

Step 1. Select **Intel(R) MEI Driver** from the list.

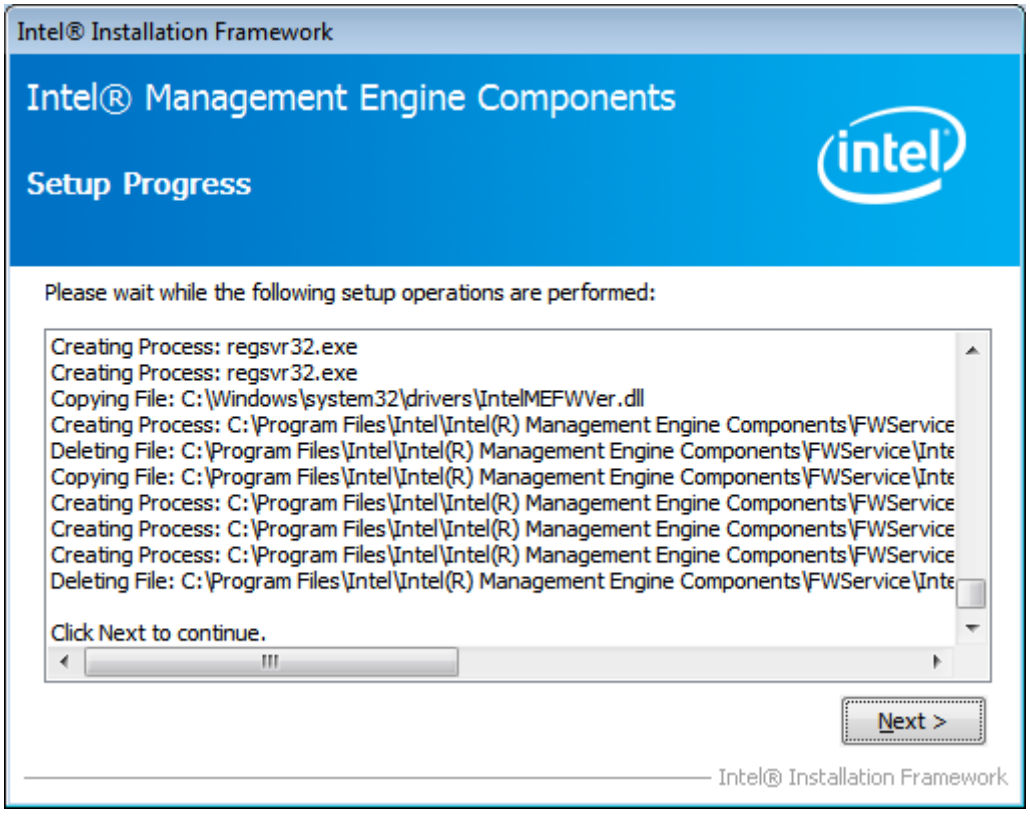
Step 2. Click **Next** to continue.



Step 3. Read the License Agreement and then click **Yes** to continue.



Step 4. Click **Next** to continue.



Step 5. Select **Yes, I want to restart this computer now.** Then click **Finish** to complete the installation.