



ACS-2310/2311

Intel Celeron N2930 Fanless BOX PC

User Manual

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Revision History

Reversion	Date	Description
1.0	2016/02/16	Official Version
1.1	2017/06/03	<ul style="list-style-type: none">● Add ACS-2311 BOX PC● Modify motherboard
1.2	2017/09/01	<ul style="list-style-type: none">● Add IP rating
1.3	2018/03/09	<ul style="list-style-type: none">● Modify operating temperature
1.4	2018/05/18	<ul style="list-style-type: none">● Add SIM slot description

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 Apex 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.

Caution

**Risk of explosion if the battery is replaced with an incorrect type.
Batteries should be recycled where possible. Disposal of used batteries must be in accordance with local environmental regulations.**

Packing List

Accessories (as ticked) included in this package are:
<input type="checkbox"/> Adaptor
<input type="checkbox"/> Driver & manual CD disc
<input type="checkbox"/> 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® Celeron® Processor N2930 1.83 GHz
- Fanless and extendable I/O Design
- 1 x SO-DIMM DDR3L 1333MHz, up to 8GB
- Wide-ranging DC 9~36V Power Input
- Ultra Slim design
- 1 x 2.5" SATA2 HDD Space

1.2 Specifications

System		
Model name	ACS-2310	ACS-2311
Processor	Intel Celeron N2930 1.83GHz Processor	
System Chipset	SoC	
System Memory	1 x 204-pin SO-DIMM slot up to 8GB DDR3L 1333MHz	
Outside I/O		
USB	2 x USB3.0 type A 4 x USB2.0 type A	
Serial/Parallel	1 x RS-232/422/485 DB-9, COM1 (Default RS-232) 2 x RS-232 DB-9, COM2 and COM3	1 x RS-232/422/485 DB-9, COM1 (Default RS-232) 1 x RS-232 DB-9, COM2
LAN	2 x GbE LAN RJ-45	
VGA	1 x VGA	
HDMI	1 x HDMI	
Audio	1 x Line-out	
Power	1 x power button with LED light 1 x 3-pin DC power input terminal block	
Options I/O		
Options	None	Either one: 1 x RS-232, DB-9, COM3 1 x GPIO 8-bits digital I/O port
Storage		
Storage	1 x 2.5" SATA2 HDD Bay(easy accessible design only for ACS-2311)	

Expansion		
Expansion Slots	1 x Mini-PCIe slot full size 1 x Mini-PCIe slot full size (shared with mSATA)	
Power		
Power Input	DC 9~36V	
Power Consumption	MAX: 19W	MAX: 17W
Mechanical		
Construction	Plating Titanium Gray Aluminum Heatsink and Black Steel Chassis	
Dimension	180 x 130 x 35.5 mm	180 x 130 x 55 mm
Net Weight	1 Kg	1.3 kg
Mounting	Wall mount	Wall mount Din rail for option
IP rating	IP 30	
Environmental		
Operating Temperature	0~50 °C / -20~60°C (option)	
Storage Temperature	-30~70 °C	
Storage Temperature	10%~90%@ 40°C, non-condensing	
Certificate	CE / FCC Class A	
Operating System Support	Windows Embedded 8.1 Industry Pro, Windows 7 Professional for Embedded, Windows Embedded Standard 7, Windows Embedded 8 Standard Windows 10 IoT Enterprise 2016 LTSC Entry	

1.3 Dimensions

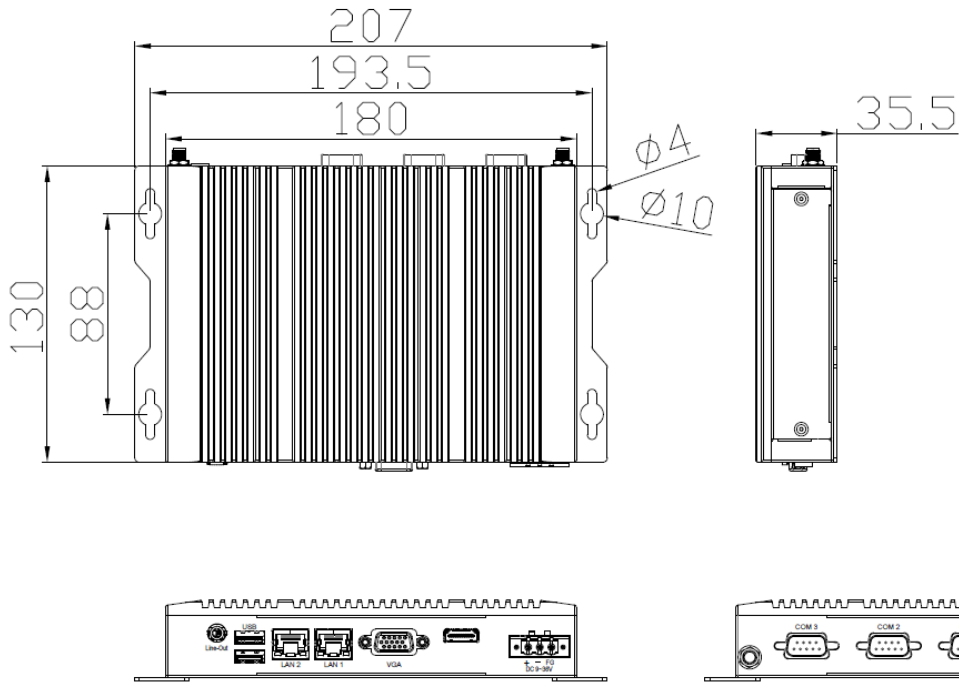


Figure 1.1: Dimensions of ACS-2310

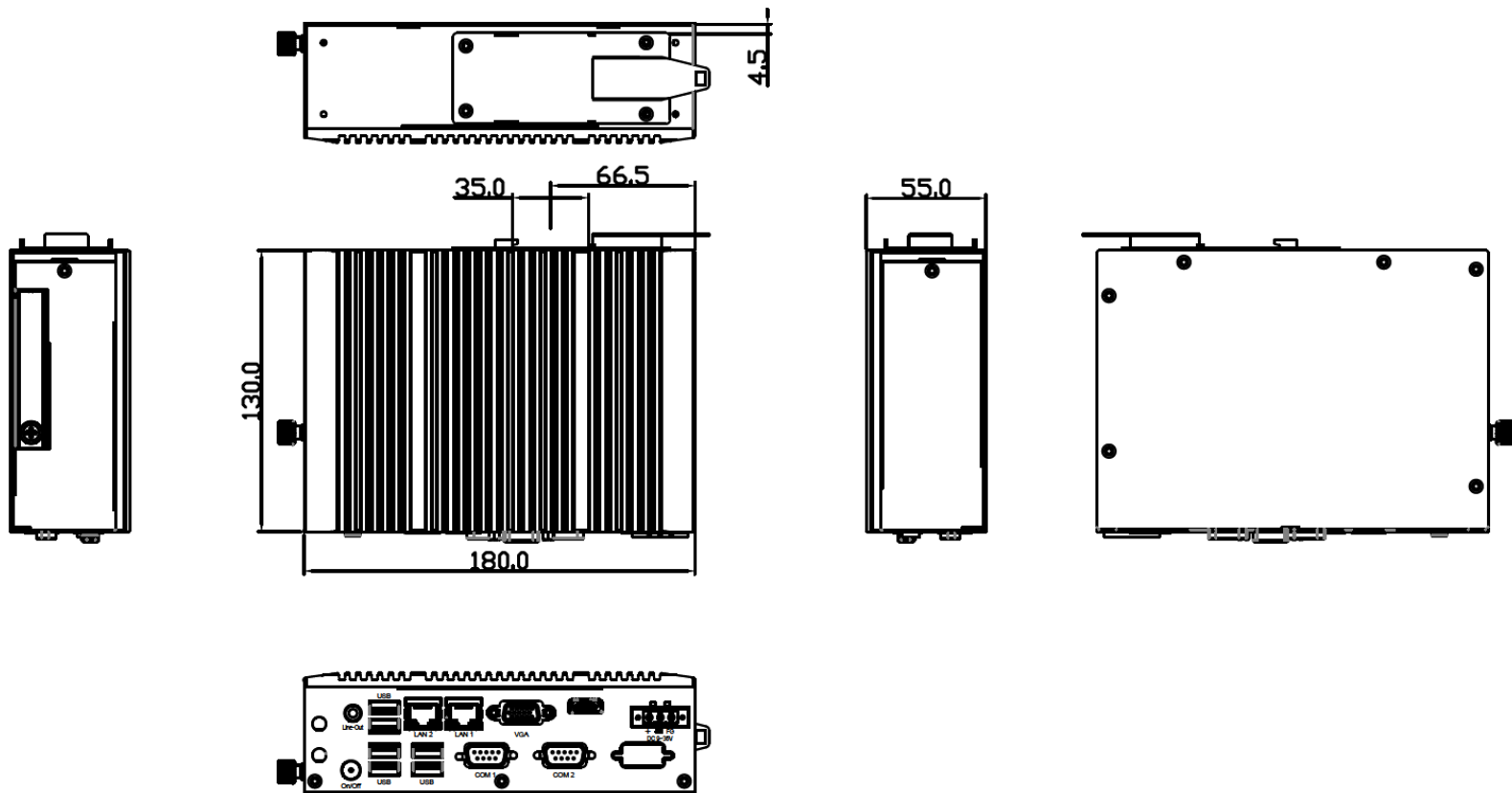


Figure 1.2: Dimensions of ACS-2311 (Din rail mount)

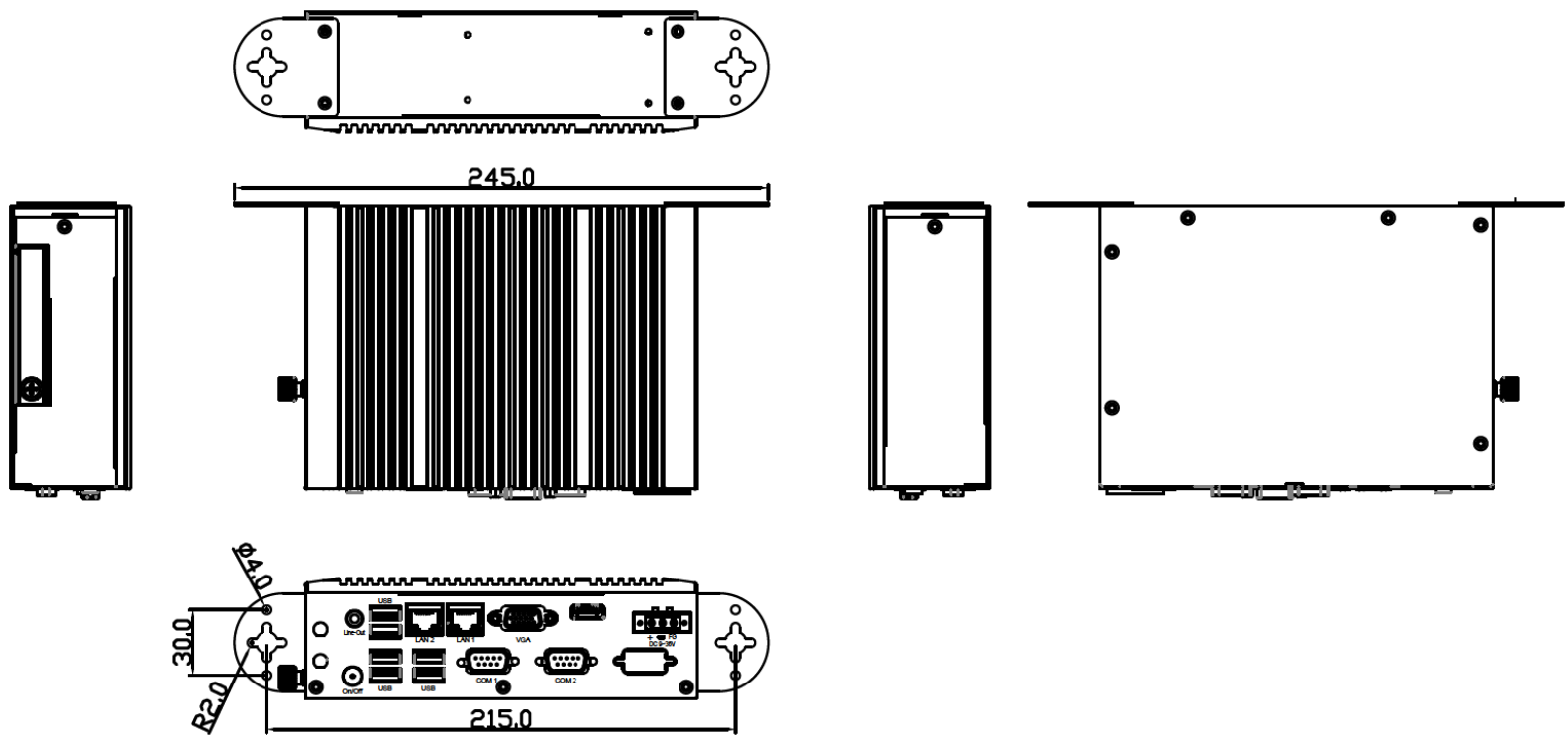


Figure 1.3: Dimensions of ACS-2311 (Wall mount)

1.4 Brief Description of ACS-2310/2311

The ACS-2310/2311 is a fanless design high-efficiency ultra slim BOX PC, powered by Intel Celeron N2930 1.83GHz processor and supports 1 x SO-DIMM DDR3L 1333MHz up to 8G memory. It comes with 2 x USB 3.0, 1 x VGA, 2 x LAN, 1 x line out, 4 x USB 2.0, and so on. It supports 1 x 2.5" SATA2 HDD space and DC 9~36V wide-ranging power input. The model has 1 x Mini-PCIe full size slot and 1 x Mini-PCIe slot full size (shared with mSATA) for expansion. The model is plating titanium gray aluminum heatsink and black steel chassis design. The ACS-2310/2311 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 1.4: Front View of ACS-2310



Figure 1.5: Rear View of ACS-2310



Figure 1.6: Overview of ACS-2311

Chapter 2

Motherboard

SBC-7116 is a 3.5" industrial motherboard developed on the basis of Intel BayTrail, which provides abundant peripheral interfaces to meet the needs of different customers. Also, it features two GbE ports, 4-COM ports and one Mini PCIE and one mSATA configuration. To satisfy the special needs of high-end customers, Due to its compact size, the product is widely used in various sectors of industrial control.

2.1 Specifications

Specifications	
Board Size	147mm x 102mm
CPU Support	Intel Celeron N2930 up to 2.16GHz <i>Intel Celeron J1900 up to 2.42GHz (option)</i>
Chipset	SOC
Memory Support	1x SO-DIMM (204pins), up to 8GB DDR3L 1333MHz FSB
Graphics	Integrated Intel HD Graphics 313/854 MHz (N2930) Integrated Intel HD Graphics 688/854 MHz (J1900)
Display Mode	1x HDMI interface 1x DB15 VGA interface 1x 18/24 bit dual channel LVDS interface
Support Resolution	Up to 1920 x 1200 for HDMI Up to 1920 x 1200 for VGA Up to 1920 x 1200 for LVDS (PS8625)
Three Display	HDMI + VGA HDMI + LVDS (option) VGA + LVDS (option)
Super I/O	Nuvoton NCT6106D
BIOS	AMI/UEFI BIOS
Storage	1x SATAII Connector (7Pin) 1x mSATA Connector (52Pin)
Ethernet	2x GbE ports by RJ-45 with intel 82583V controller
USB	2x USB 3.0 (type A) stack ports (HUB/USB30) 4x USB 2.0, 2x5 Pin header (USB3_4/USB5_6) 1x USB 2.0 for M-PCIE1 (USB2) 1x USB 2.0 for M-SATA (option, USB3 co-lay)
Serial	1x RS232/422/485, 2x5 Pin header, Pin9 with 5V/12V/RI (COM1) 1x RS232, 2x5 Pin header, Pin9 with 5V/12V/RI (COM2) 2x RS232, 2x5 Pin header, Pin9 with RI (COM3/COM4)
Digital I/O	8-bit digital I/O by Pin header

	4-bit digital Input 4-bit digital Output
Battery	Support CR2477 Li battery by 2-pin header (1000mAh)
Audio	Support Audio via Realtek ALC269-VB HD audio codec 1x Stack audio Jack (Line out) Line in/Line out/Mic by 2 x 6 Pin header 1x 4Pin Wafer Connector, Amplifier 2 channel output (SPK1)
SIM	1x SIM Card Holder, 1x 6Pin Wafer by SIM1 via TB-557S01 (option)
Power Management	1x 2-pin power input connector (Wide range DC+9V~36V)
Switches and LED Indicators	Power on/off switch by FP1 Reset switch by FP1 Power LED status by FP1 HDD LED status by FP1
Expansion	1x mini PCIe slot (full, PCIe/USB2.0/SIM/SMBus)
Temperature	Operating: -20°C to 70°C Storage: -40°C to 85°C
Humidity	10% - 90%, non-condensing, operating
Power Consumption	12V/0.70A (Intel N2930 2.16 GHz Processor with 2GB DDR3L/HDD) 12V/0.75A (Intel J1900 2.42 GHz Processor with 2GB DDR3L/HDD)
EMI/EMS	Meet CE/FCC class A

2.2 Board Dimensions

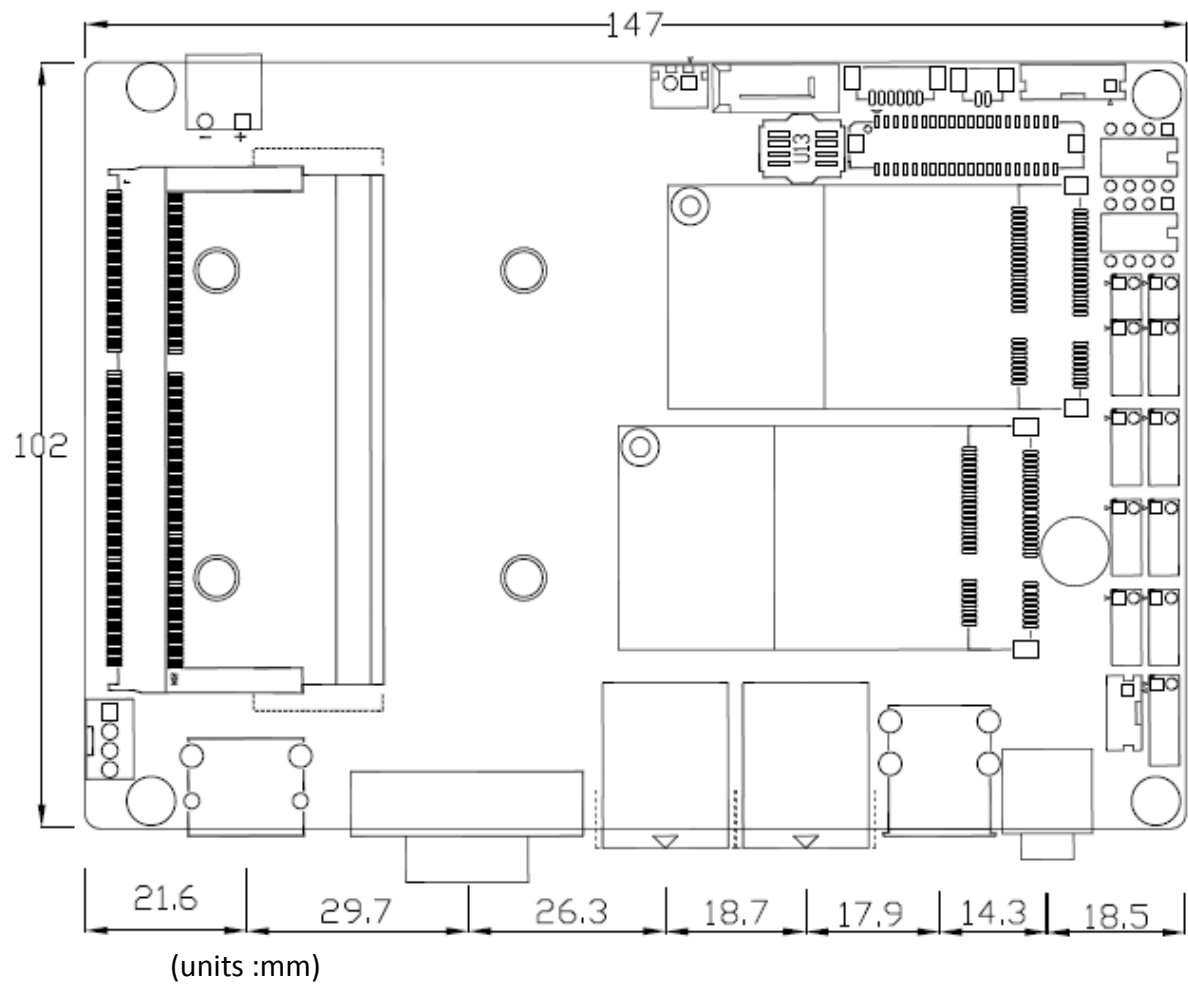


Figure 2.1: Dimensions of motherboard SBC-7116

2.3 Jumpers and Connectors Location

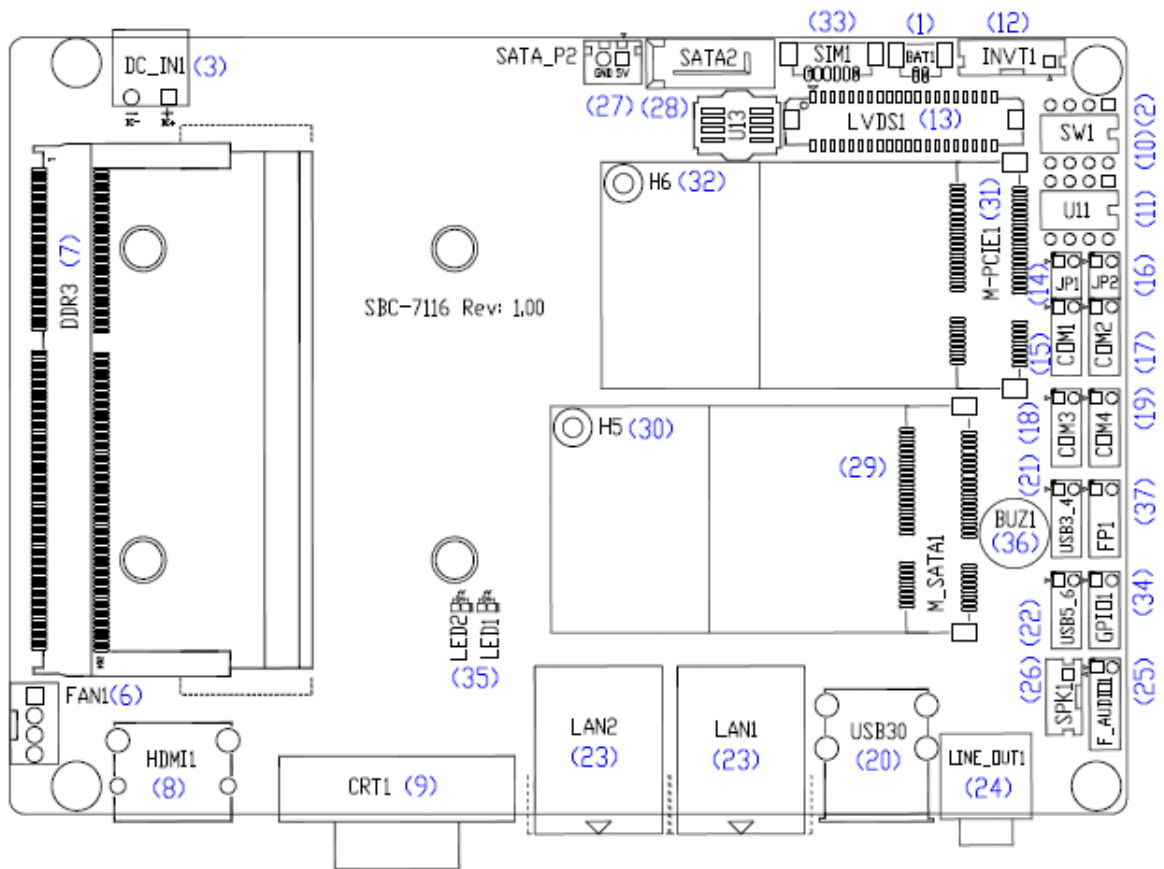


Figure 2.2: Top of motherboard SBC-7116

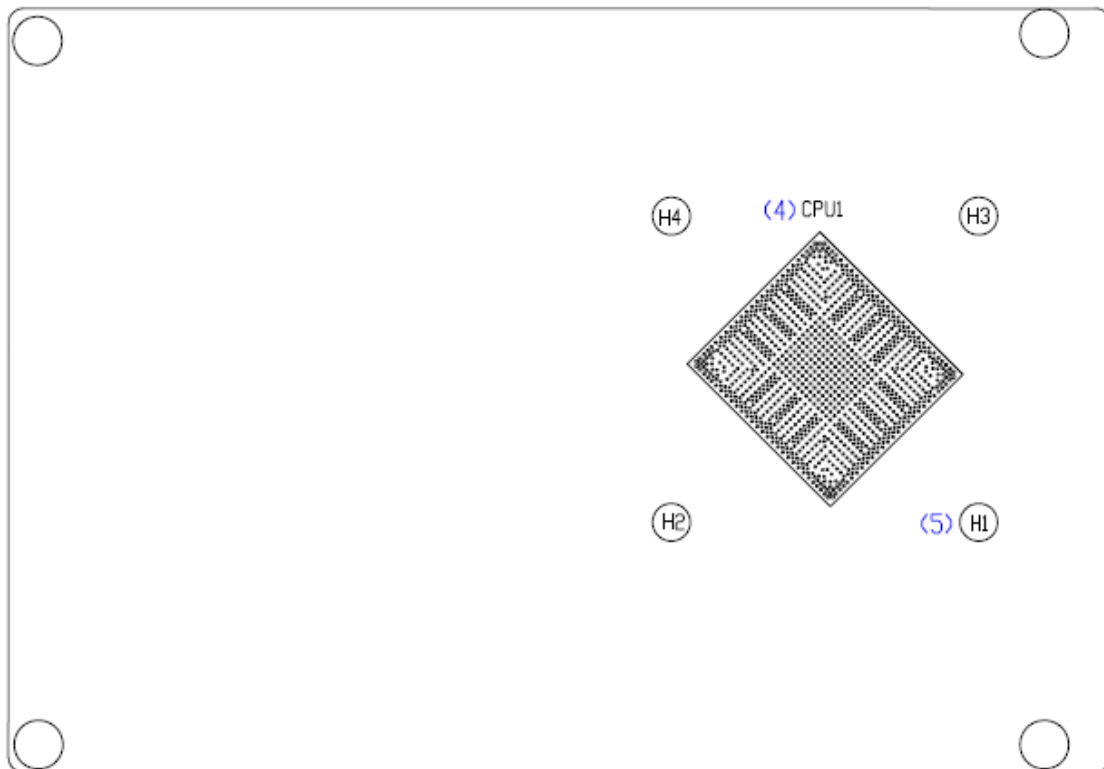


Figure 2.3: Bottom of motherboard SBC-7116

2.4 Jumpers Setting and Connectors

1. BAT1 :

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

Pin#	Signal Name
Pin1	Ground
Pin2	VCC_RTC

2. SW1(1 , 2):

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

SW1	Mode
Pin1 on	Auto Power on (Default)
Pin1 off	ATX Power (option)

CMOS clear swich, CMOS clear operation will permanently reset old BIOS settings to factory defaults.

SW1	CMOS
Pin2 OFF	NORMAL (Default)
Pin2 ON	Clear CMOS

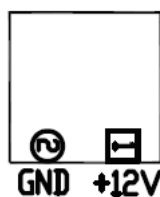


Procedures of CMOS clear:

- Turn off the system and unplug the power cord from the power outlet.
- To clear the CMOS settings, use the switch to Pin2 on for about 3 seconds then move the switch Pin2 off.
- Power on the system again.
- When entering the POST screen, press the key to enter CMOS Setup Utility to load optimal defaults.
- After the above operations, save changes and exit BIOS Setup.

3. DC IN1:

(5.08mm Pitch 1x2 Pin Connector),DC12V System power input connector ◦



Pin#	Power Input (DC_IN1)
Pin1	DC9~36V
Pin2	Ground

4. CPU1:

(FCBGA1170), onboard Intel Bay trail-I/M Processors.

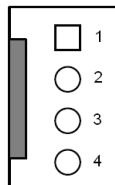
Model	Processor				
	Number	PBF	Cores/ Threads	TDP	Remarks
SBC-7116-N2930	N2930	2.16GHz	4 / 4	4.5/7.5W	
SBC-7116-J1900	J1900	2.42GHz	4 / 4	10W	option

5. H1/H2/H3/H4(CPU SCREW HOLES):

CPU FAN SCREW HOLES, Four screw holes for fixed CPU Cooler assemble.

6. FAN1:

(2.54mm Pitch 1x4 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(12V_S0)
3	CPU_FANTACH
4	CPU_FANPWM



Note:

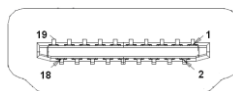
Output power of cooling fan must be limited under 5W.

7. DDR3:

(SO-DIMM 204Pin socket), DDR3L memory socket, the socket is located at the top of the board and supports 204Pin 1.35V DDR3L 1333MHz FSB SO-DIMM memory module up to 8GB.

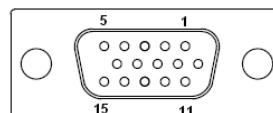
8. HDMI1:

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



9. CRT1:

(CRT Connector DB15), Video Graphic Array Port, provide high-quality video output.



10. SW1(PIN3 , PIN4):

(Switch),18bit or 24bit LVDS setting.

SW1	Mode
Pin3 on	Single Channel LVDS
Pin3 off	Dual Channel LVDS
Pin4 on	18bit LVDS
Pin4 off	24bit LVDS

11. U11:

AT24C02-DIP8,The EEPROM IC (U11) is the set of LVDS resolution.

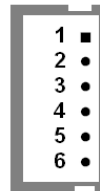
If you need other resolution settings, please upgrade U11 data.

Model	LVDS resolution
SBC-7116-N2930 SBC-7116-J1900	1280*1024 (Default)
	800*480 (option)
	800*600 (option)
	1024*768 (option)
	1920*1080 (option)

12. INVT1:

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

LVDS.



Pin#	Signal Name
1	+DC12V
2	+DC12V
3	Ground
4	Ground
5	BKLT_EN_OUT
6	BKLT_CTRL

13. LVDS1 :

(1.25mm Pitch 2x20 Connector,DF13-40P),For 18/24-bit LVDS output connector,Fully supported by Parad PS8625(DDI1 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.

Signal Name	Pin#	Pin#	Signal Name
VDD5	2	1	VDD5
Ground	4	3	Ground
VDD3	6	5	VDD3
LB_D0_N	8	7	LA_D0_N
LB_D0_P	10	9	LA_D0_P
Ground	12	11	Ground
LB_D1_N	14	13	LA_D1_N
LA_D1_P	16	15	LA_D1_P
Ground	18	17	Ground
LB_D2_N	20	19	LA_D2_N
LB_D2_P	22	21	LA_D2_P
Ground	24	23	Ground
LB_CLK_N	26	25	LA_CLK_N
LB_CLK_P	28	27	LA_CLK_P
Ground	30	29	Ground
LVDS_DDC_DATA	32	31	LVDS_DDC_CLK
Ground	34	33	Ground
LB_D3_N	36	35	LA_D3_N
LB_D3_P	38	37	LA_D3_P
NC	40	39	NC

14. 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 Pin9 RI (Ring Indicator) (default)
Close 3-4	COM1 Pin9 = +5V/1A (option)
Close 5-6	COM1 Pin9 = +12V/1A (option)

15. COM1:

(2.0mm Pitch 2X5 Pin Header), COM1 Port, standard RS232 ports are provided. They can be used directly via COM cable connection.

RS232 (Default):			
Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
Ground	5	6	DSR
RTS	7	8	CTS
RI (5V/12V)	9	10	NC

BIOS Setup :
Advanced/NCT6106D Super IO Configuration/Serial Port 1 Configuration **【RS-232】**

RS422 (option):	
Pin#	Signal Name
1	422_TX-
2	422_TX+
3	422_RX+
4	422_RX-
5	Ground
6	NC
7	NC
8	NC
9	NC
10	NC

BIOS Setup :
Advanced/NCT6106D Super IO Configuration/Serial Port 1 Configuration **【RS-422】**

RS485 (option):	
Pin#	Signal Name
1	485-
2	485+
3	NC
4	NC
5	Ground
6	NC
7	NC
8	NC
9	NC
10	NC

BIOS Setup :
Advanced/NCT6106D Super IO Configuration/Serial Port 1 Configuration **【RS-485】**

16. 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 Pin9 RI (Ring Indicator) (default)
Close 3-4	COM2 Pin9 = +5V/1A (option)
Close 5-6	COM2 Pin9 = +12V/1A (option)

17. COM2:

(2.0mm Pitch 2X5 Pin Header),COM2 Port, standard RS232 ports 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 (5V/12V)	9	10	NC

18. COM3:

(2.0mm Pitch 2X5 Pin Header),COM3 Port, standard RS232 ports 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

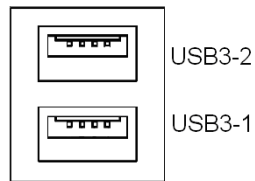
19. COM4:

(2.0mm Pitch 2X5 Pin Header),COM4 Port, standard RS232 ports 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

20. USB30:

E-USB3-1/E-USB3-2 : (Double stack USB typeA),Rear USB 3.0 connector, it provides up to 2 USB3.0 ports,USB 3.0 allows data transfers up to 5.0Gb/s ,support USB2.0 and full-speed and low-speed signaling.



Each USB Type A Receptacle (2 Ports) Current limited value is 2.0A. If the external USB device current exceeds 2.0A, please separate connectors into different Receptacle.

21. USB3 4:

(2.0mm Pitch 2x5 Pin Header), USB2.0 connector, it provides two USB ports via a dedicated USB cable, speed up to 480Mb/s.

Function	Signal Name	Pin#	Pin#	Signal Name	Function
USB3	5V_USB0304	1	2	5V_USB0304	USB4
	USB3_DN	3	4	USB4_DN	
	USB3_DP	5	6	USB4_DP	
	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.

Each USB Type A Receptacle (2 Ports) Current limited value is 2.0A. If the external USB device current exceeds 2.0A, please separate connectors into different Receptacle.

22. USB5 6:

(2.0mm Pitch 2x5 Pin Header), USB2.0 connector, it provides two USB ports via a dedicated USB cable, speed up to 480Mb/s.

Function	Signal Name	Pin#	Pin#	Signal Name	Function
USB5	5V_USB0506	1	2	5V_USB0506	USB6
	E2-USB5_DN	3	4	E2-USB6_DN	
	E2-USB5_DP	5	6	E2-USB6_DP	
	Ground	7	8	Ground	
	NC	9	10	Ground	



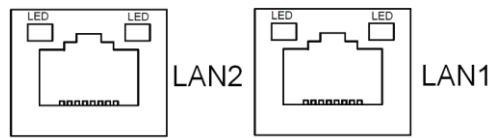
Note:

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.

Each USB Type A Receptacle (2 Ports) Current limited value is 2.0A. If the external USB device current exceeds 2.0A, please separate connectors into different Receptacle.

23. LAN1/LAN2:

(RJ45 Connector), Rear LAN port, Two standard 10/100/1000M RJ-45 Ethernet ports are provided. Used Intel 82583V chipset.



24. LINE OUT1:

(Diameter 3.5mm Three stack Jack), High Definition Audio port, An onboard Realtek ALC269-VB codec is used to provide high quality audio I/O ports.



Line out

25. F AUDIO1:

(2.0mm Pitch 2x6 Pin Header), Front Audio, An onboard Realtek ALC269-VB codec is used to provide high-quality audio I/O ports. Line Out can be connected to a 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	LINE_JD
LINE-IN-L	7	8	LINE-IN-R
MIC-IN-L	9	10	MIC-IN-R
GND_AUD	11	12	MIC1_JD

26. SPK1:

(2.0mm Pitch 1x4 Wafer Pin Header),support a stereo Class-D Speaker Amplifier with 2 watt per channel output power

Pin#	Signal Name
1	SPK_OUTL_P
2	SPK_OUTL_N
3	SPK_OUTR_N
4	SPK_OUTR_P

27. SATA P2:

(2.5mm Pitch 1x2 Wafer Pin Header), Two onboard 5V output connectors are reserved to provide power for SATA devices.

Pin#	Signal Name
1	+DC5V_S0
2	Ground



Note:

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

28. SATA2:

(SATA 7P), SATA Connectors, one SATA connectors are provided, SATA2 transfer speed up to 3.0Gb/s.

29. M SATA1:

(50.95mmx30mm Socket 52Pin), mSATA socket, it is located at the top, it supports mini PCIe devices with LPCbus and SMBus and mSATA signal. **B2 mSATA bus** for flash disk signal.

Function	Support
Mini SATA	●
LPC bus	●
SMBus	●
USB2.0 (USB3)	○ (co-lay, Option)

30. H5:

M SATA1 SCREW HOLES.

H5 for mini MSATA card (50.95mmx30mm Socket 52 Pin) assemble.

31. M-PCIE1:

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

Function	Support
Mini PCIe	●
SIM Signal	●
SMBus	●
USB2.0 (USB2)	●

32. H6:

M-PCIE1 SCREW HOLES, H6 for mini PCIE card (30mmx50.95mm) assemble.

33. SIM1:

(2.0mm Pitch 1x6 Pin Wafer Header), Support SIM Card devices.

Pin#	Signal Name
1	SIM_VCC
2	Ground
3	SIM_RST
4	NC
5	SIM_CLK
6	SIM_IO

34. GPIO1:

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

Signal Name	Function	Pin#		Function	Signal Name
Ground	Ground	1	2	GPIO_OUT1	6106/GP20
6106/GP21	GPIO_OUT2	3	4	GPIO_OUT3	6106/GP22
6106/GP23	GPIO_OUT4	5	6	GPIO_IN1	6106/GP24
6106/GP25	GPIO_IN2	7	8	GPIO_IN3	6106/GP26
6106/GP27	GPIO_IN4	9	10	+5V_S5	5V Power

35. LED1/LED2:

LED1 STATUS. Green LED for Motherboard Power status.

LED2 STATUS. Green LED for Motherboard Standby Power Good status.

36. BUZZER1:

Onboard buzzer.

37. FP1:

(2.0mm Pitch 2X5 Pin Header), Front panel connector.

Signal Name	Pin#	Pin#	Signal Name
HDD_LED+	1	2	POWER LED+
HDD LED-	3	4	Ground
Ground	5	6	SW+
RESET+	7	8	Ground
BUZZER+	9	10	BUZZER-

Pin1-3: **HDD LED**, They are used to connect hard disk activity LED. The LED blinks when the hard disk is reading or writing data.

Pin2-4: **POWER LED**, They are used to connect power LED. When the system is powered on or under S0/S1 state, the LED is normally on; when the system is under S4/S5 state, the LED is off.

Pin5-6: **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.

Pin7-8: **RESET Button**, They are used to connect reset button. The two pins are dis-connected under normal condition. You may short them temporarily to realize system reset.

Pin9-10: **BUZZER**, They are used to connect buzzer.



Note:

When connecting LEDs and buzzer, pay special attention to the signal polarity. Make sure that the connector pins have a one-to-one correspondence with chassis wiring, or it may cause boot up failure.

3.1 Operations after POST Screen

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

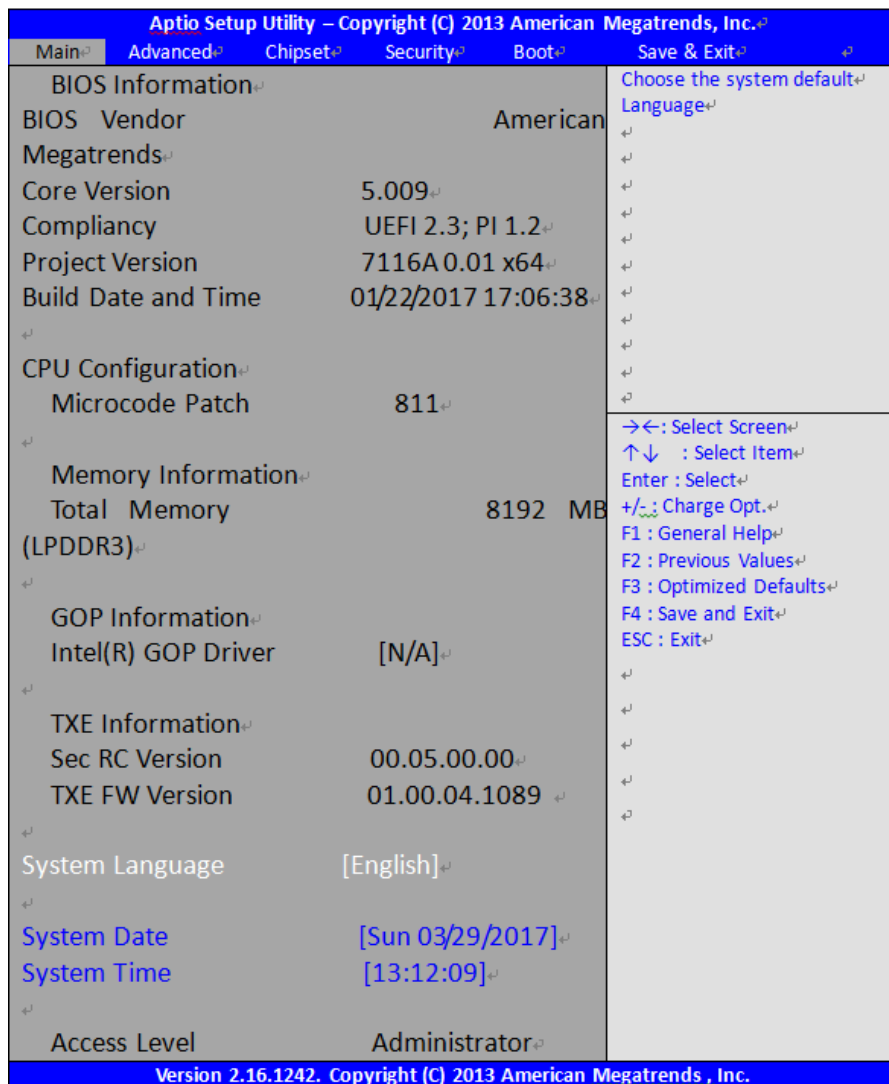


After optimizing and exiting CMOS Setup

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:

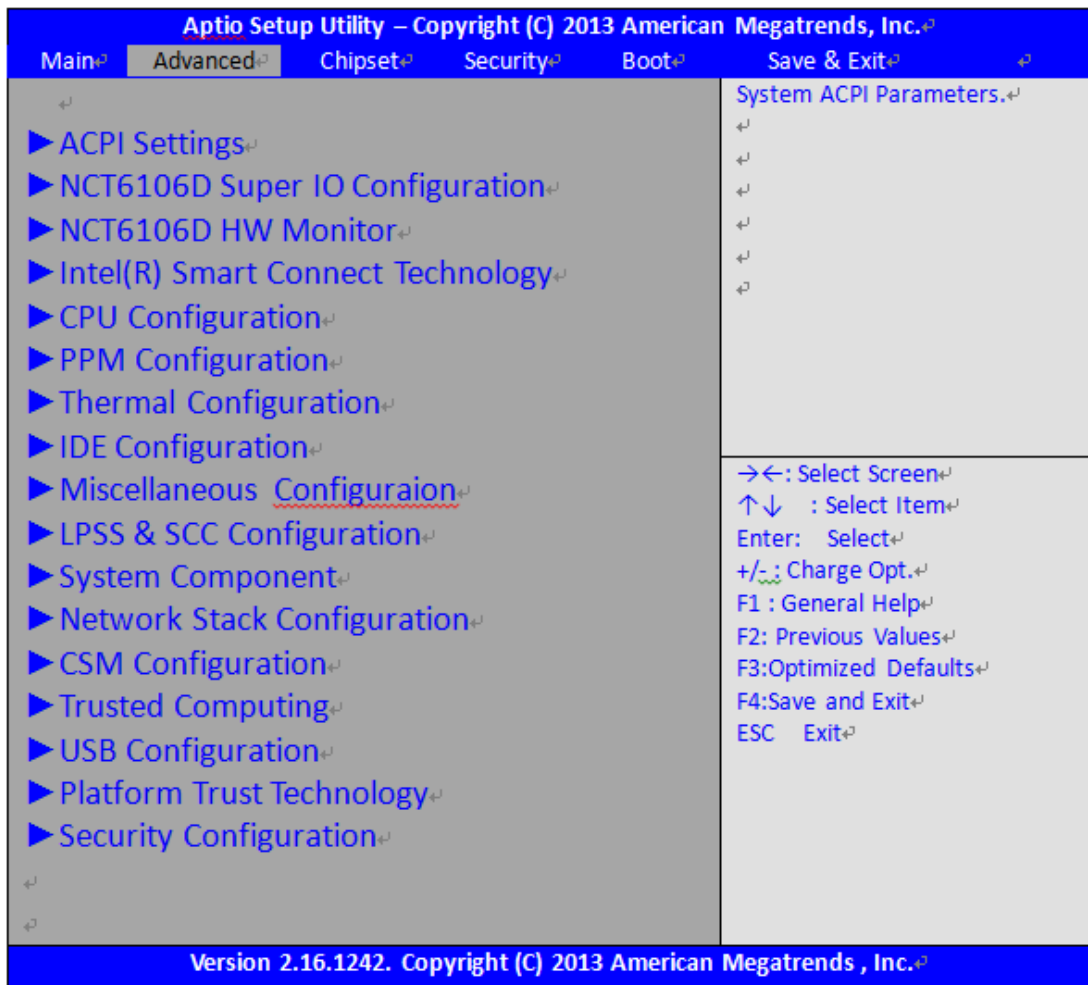
Day: Note that the 'Day' automatically changes when you set the date.

Month: 01 to 12

Date: 01 to 31

Year: 1998 to 2099

3.4 Advanced Settings



3.4.1 ACPI Settings

Enable ACPI Auto Configuration:

[Disabled]
[Enabled]

Enable Hibernation:

[Enabled]
[Disabled]

ACPI Sleep State:

[S3 (Suspend to RAM)]
[Suspend Disabled]

Lock Legacy Resources:

[Disabled]
[Enabled]

3.4.2 NCT6106D Super IO Configuration

Super IO Chip NCT6106D
Serial Port 1 Configuration

Serial port

[Enabled]

[Disabled]

Device Settings IO=3F8h ; IRQ=4 ;

Change Settings

[Auto]

[IO=3F8h ; IRQ=4]

[IO=3F8h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

[IO=2F8h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

[IO=3E8h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

[IO=2E8h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

COM1 Mode Selection

[RS-232]

[RS-485]

[RS-422]

Serial Port 2 Configuration

Serial port

[Enabled]

[Disabled]

Device Settings IO=2F8h;IRQ=3;

Change Settings

[Auto]

[IO=2F8h ;IRQ=3]

[IO=3F8h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

[IO=2F8h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

[IO=3E8h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

[IO=2E8h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

Serial Port 3 Configuration

Serial port

[Enabled]

[Disabled]

Device Settings IO=3E8h;IRQ=5;

Change Settings

[Auto]

[IO=3E8h;IRQ=7]

[IO=3E8h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

[IO=2E8h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

[IO=2F0h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

[IO=2E0h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

Serial Port 4 Configuration

Serial port

[Enabled]

[Disabled]

Device Settings

IO=2E8h ; IRQ=3 ;

Change Settings

[Auto]

[IO=2E8h;IRQ=7]

[IO=3E8h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

[IO=2E8h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

[IO=2F0h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

[IO=2E0h ;IRQ=3,4,5,6,7,9,10,11,12 ;]

3.4.3 NCT6106D HW Monitor

Pc Health Status

System Temperature : +39 C

CPU Fan Speed : N/A

VCORE : +0.832 V

12V : +12.055V

5V : +5.200V

1.35V : +1.358V

3.4.4 Intel(R) Smart Connect Technology

ISCT Support

[Enabled]

[Disabled]

3.4.5 CPU Configuration

Socket 0 CPU Information

Intel(R) Celeron(R) CPU J1900 @ 1.99GHz
CPU Signature 30678
Microcode Patch 811
Max CPU Speed 1990MHz
Min CPU Speed 1334MHz
Processor Cores 4
Intel HT Technology Not Supported
Intel VT-x Technology Supported

L1 Data Cache 24KB x 4
L1 Code Cache 32KB x 4
L2 Cache 1024KB x 2
L3 Cache Not Present

CPU Thermal Configuration

DTS
[Enabled]
[Disabled]

CPU Speed 2001MHz
64-bit Supported

Active Processor Cores

[All]
[1]

Limit CUID Maximum

[Disabled]
[Enabled]

Execute Disable Bit

[Enabled]
[Disabled]

Hardware Prefetcher

[Enabled]
[Disabled]

Adjacent Cache Line Prefetch

[Enabled]
[Disabled]

Intel Virtualization Technology

[Enabled]
[Disabled]

Power Technology

[Energy Efficient]
[Disable]
[Custom]

3.4.6 PPM Configuration

EIST

[Enabled]
[Disabled]

CPU c state Report

[Enabled]
[Disabled]

Max CPU C-state

[C7]
[C6]
[C1]

SOix

[Enabled]
[Disabled]

3.4.7 Thermal Configuration Parameters

Critical Trip Point [90C]

Passive Trip Point [85C]

Dynamic Platform&Thermal Framework
DPTF

[Disabled]
[Enabled]

CPU Sensor Participant

Critical [70C]

Passive [60C]

Ambient Sensor Participant

Critical [70C]

Passive [60C]

DDR Sensor Participant

Critical [70C]

Passive [60C]

Super Debug [Disabled]

Current Logical Processor [Disabled]

Start P-State [P0]

Step size [25%]

Power Control Setting [CORE offlining]

Performance Control Setting [CORE offlining]

DPPM [Enabled]

3.4.8 IDE Configuration

Serial-ATA(SATA)

[Enabled]

[Disabled]

SATA Test Mode

[Enabled]

[Disabled]

SATA Speed Support

[Gen2]

[Gen1]

SATA ODD Port

[No ODD]

[Port0 ODD]

[Port1 ODD]

SATA Mode

[AHCI Mode]

[IDE Mode]

Serial-ATA Port 0

[Enabled]

[Disabled]

SATA Port0 HotPlug

[Enabled]

[Disabled]

Serial-ATA Port 1

[Enabled]

[Disabled]

SATA Port1 HotPlug

[Enabled]

[Disabled]

SATA Port 0

Not Present

SATA Port1

Not Present

3.4.9 Miscellaneous Configuration

High Precision Timer

[Enabled]

[Disabled]

Boot Timer with HPET Timer

[Enabled]

[Disabled]

[Enabled]
[Disabled]

PCI Express Dynamic Clock Gating

OS Selection

[Windows 8.X]
[Android]
[Windows 7]

3.4.10 LPSS & SCC Configuration

LPSS & SCC Devices Mode

[ACPI mode]
[PCI mode]

[Disabled]
[Enabled]

SCC Configuration
SCC eMMC Support

[Disabled]
[Enabled]

eMMC Secure Erase

[Disabled]
[Enabled]

SCC SDIO Support

[Disabled]
[Enabled]

SCC SD Card Support

[Disabled]

SDR25 Support for SDCard

[Disabled]

DDR50 Support for SDCard

[Disabled]
[Enabled]

MIPI HSI Support

[Disabled]
[Enabled]

LPSS Configuration
LPSS DMA #1 Support

[Disabled]
[Enabled]

LPSS DMA #2 Support

[Disabled]
[Enabled]

LPSS I2C #1 Support

[Disabled]
[Enabled]

LPSS I2C #2 Support

	LPSS I2C #3 Support
[Disabled] [Enabled]	
	LPSS I2C #4 Support
[Disabled] [Enabled]	
	LPSS I2C #5 Support
[Disabled] [Enabled]	
	LPSS I2C #6 Support
[Disabled] [Enabled]	
	LPSS I2C #7 Support
[Disabled] [Enabled]	
	I2C touch Device Address
[AUTO] [0x4B] [0x4A]	
	LPSS HSUART #1 Support
[Disabled] [Enabled]	
	LPSS HSUART #2 Support
[Disabled] [Enabled]	
	LPSS PWM #1 Support
[Disabled] [Enabled]	
	LPSS PWM #2 Support
[Disabled] [Enabled]	
	LPSS SPISupport
[Disabled] [Enabled]	

3.4.11 System Component

PMIC Configuration
PMIC ACPI OBJECT

[Disabled]
[Enabled]

PNP Setting

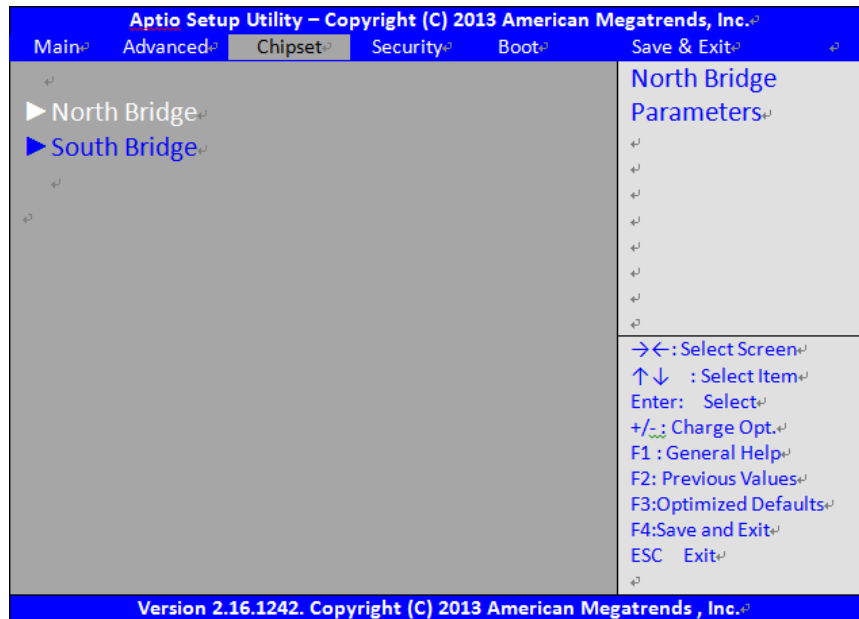
[Disabled]
[AUTO]
[AX STEPPING]
[BX STEPPING]

	Witt Setting	
[Disabled] [Enabled]		
	3.4.12 Network Stack Configuration	
	Network Stack	
[Disabled] [Enabled]		
	3.4.13 CSM Configuration	
	Compatibility Support Module Configuration	
	CSM Support	
[Disabled] [Enabled]		
	CSM16 Module Version	07.74
	GateA20 Active	
[Upon Request] [Always]		
	Option ROM Messages	
[Force BIOS] [Keep Current]		
	INT19 Trap Response	
[Immediate] [Postponed]		
	Boot option filter	
[UEFI and Legacy] [Legacy only] [UEFI only]		
	Option ROM execution	
	Network	
[Do not launch] [UEFI] [Legacy]		
	Storage	
[Do not launch] [UEFI] [Legacy]		

	Video	
[Do not launch]		
[UEFI]		
[Legacy]		
	Other PCI devices	
[UEFI]		
[Legacy]		
	3.4.14 Trusted Computing	
	Configuration	
	Security Device Support	
[Disabled]		
[Enabled]		
	Current Status Information	
	NO Security Device Found	
	3.4.15 USB Configuration	
	USB Module Version	8.11.01
	USB Devices:	
	1 Keyboard,1 Mouse,2 Hubs	
	Legacy USB Support	
[Disabled]		
[Enabled]		
	XHCI Hand-off	
[Disabled]		
[Enabled]		
	EHCI Hand-off	
[Disabled]		
[Enabled]		
	USB Mass Storage Driver Support	
[Disabled]		
[Enabled]		
	USB hardware delays and time-outs:	
	USB transfer time-out	
[1 sec]		
[5 sec]		
[10 sec]		
[20 sec]		
	Device reset time-out	
[10 sec]		
[20 sec]		
[30 sec]		
[40 sec]		

	Device power-up delay
[Auto]	
[Manual]	
	3.4.16 Platform Trust Technology
	TPM Configuraion
	fTPM
[Disabled]	
[Enabled]	
	3.4.17 Security Configuration
	Intel(R) TXE Configuration
	TXE
[Disabled]	
[Enabled]	
	TXE HMRFP0
[Disabled]	
[Enabled]	
	TXE Firmware Update
[Disabled]	
[Enabled]	
	TXE EOP Message
[Disabled]	
[Enabled]	
	TXE Unconfiguration Perform
	Intel(R) Anti-Theft Technology Configuration
	Intel(R) AT
[Disabled]	
[Enabled]	
	Intel(R) AT Platform PBA
[Disabled]	
[Enabled]	
	Intel(R) AT Suspend Mode
[Disabled]	

3.5 Chipset Settings



3.5.1 North Bridge

▶ Intel IGD Configuration

GOP Configuration
 GOP Driver

[Enabled]
 [Disabled]

Intel IGD Configuration
 Integrated Graphics Device

[Enabled]
 [Disabled]

IGD Turbo Enable

[Enabled]
 [Disabled]

Primary Display [IGD]
 GFX Boost

[Enabled]
[Disabled]

PAVC [LITE Mode]
 DVMT Pre-Allocated [64M]
 DVMT Total Gfx Mem [256MB]
 Aperture Size [256MB]
 DOP CG

[Enabled]
 [Disabled]

	GTT Size	[2MB]
[Enabled] [Disabled]	IGD Thermal	
[Enabled] [Disabled]	Spread Spectrum clock	
[Enabled] [Disabled]	ISP Enable/Disable	
[Enabled] [Disabled]	ISP PCI Device Selection	
[Enabled] [Disabled]	Vcc,Vnn Configuration for Power state2: Vcc_Vnn Config for Power state2	
	► IGD-LCD Control	
[Off] [On]	Force Lid Status	
[Enabled] [Disabled]	BIA ALS Support	[Auto]
	IGD Flat Panel Panel Scaling	[Auto] [Auto]
	► Graphics Power Management Control	
[Enabled] [Disabled]	Graphics Power Management Control RC6(Render Standby)	
	Memory Information	
MB(LPDDR3)	Total Memory	8192
MB(LPDDR3)	Memory Slot0	8192
	Memory Slot2	Not Present

**BIOS Control Backlight Level
Max TOLUD**

**[Level 7]
[Dynamic]**

3.5.2 South Bridge

▶ Azalia HD Audio

Audio Configuration
LPE Audio Support

[Enabled]
[Disabled]

Audio Controller

[Enabled]
[Disabled]

Azalia VCI Enable

[Enabled]
[Disabled]

Azalia Docking Support Enable

[Enabled]
[Disabled]

Azalia PME Enable

[Enabled]
[Disabled]

Azalia HDMI Codec

[Enabled]
[Disabled]

HDMI Port B

[Enabled]
[Disabled]

HDMI Port C

[Enabled]
[Disabled]

▶ USB Configuration

USB OTG Support

[Enabled]
[Disabled]

USB VBUS

[On]
[Off]

	XHCI Mode	
[Smart Auto]		
	USB2 Link Power Management	
[Enabled]		
[Disabled]		
	USB 2.0(ENCI) Support	
[Disabled]		
	USB Per Port Control	
[Enabled]		
[Disabled]		
	USB Port 0	
[Enabled]		
[Disabled]		
	USB Port 1	
[Enabled]		
[Disabled]		
	USB Port 2	
[Enabled]		
[Disabled]		
	USB Port 3	
[Enabled]		
[Disabled]		
	► PCI Express Configuration	
	PCI Express Port 0	
[Enabled]		
[Disabled]		
	Hot Plug	
[Enabled]		
[Disabled]		
	Speed	[Auto]
	Extra Bus Reserved	1
	Reserved Memory	10
	Reserved Memory Alignment	1
	Prefetchable Memory	10
	Prefetchable Memory Alignment	1
	Reserved I/O	4
	PCI Express Port 1	
[Enabled]		
[Disabled]		

	Hot Plug	
[Enabled] [Disabled]		
	Speed	[Auto]
	Extra Bus Reserved	0
	Reserved Memory	10
	Reserved Memory Alignment	1
	Prefetchable Memory	10
	Prefetchable Memory Alignment	1
	Reserved I/O	4
	PCI Express Port 2	
[Enabled] [Disabled]		
	Hot Plug	
[Enabled] [Disabled]		
	Speed	[Auto]
	Extra Bus Reserved	0
	Reserved Memory	10
	Reserved Memory Alignment	1
	Prefetchable Memory	10
	Prefetchable Memory Alignment	1
	Reserved I/O	4
	PCI Express Port 3	
[Enabled] [Disabled]		
	Hot Plug	
[Enabled] [Disabled]		
	Speed	[Auto]
	Extra Bus Reserved	0
	Reserved Memory	10
	Reserved Memory Alignment	1
	Prefetchable Memory	10
	Prefetchable Memory Alignment	1
	Reserved I/O	4
	High precision Timer	
[Enabled] [Disabled]		

[Power Off] {Power On} [Last State]	Restore AC Power Loss
[PWM] [DC]	LCD PWM DC Mode
[Quiet] [Continuous]	Serial IRQ Mode
[Enabled] [Disabled]	Global SMI Lock
[Enabled] [Disabled]	BIOS Read/Write Protection

3.6 Security Settings



3.6.1 Administrator Password



3.6.2 User Password

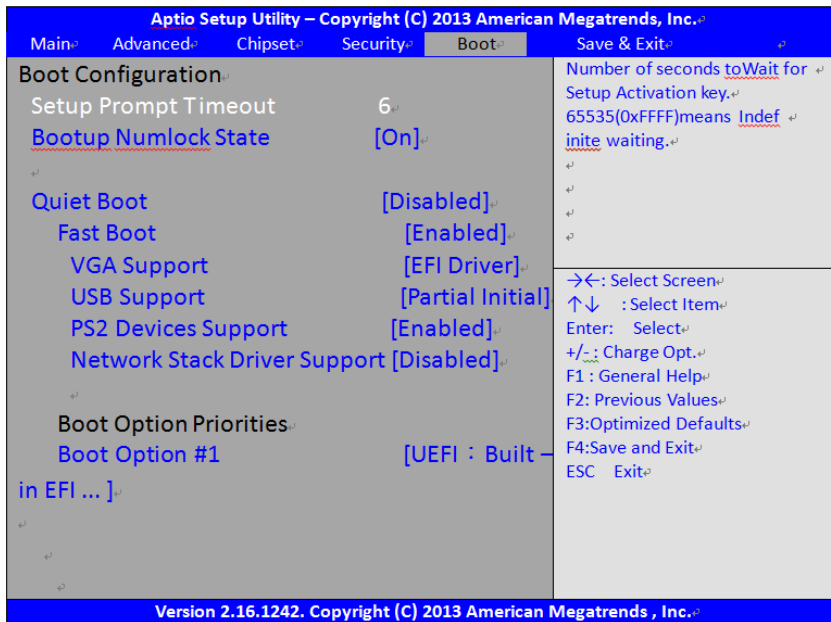


Type the password with up to 20 characters and then press **<Enter>** key. This will clear all previously typed CMOS passwords. You will be requested to confirm the password. Type the password again and press **<Enter>** key. You may press **<Esc>** key to abandon password entry operation.

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.

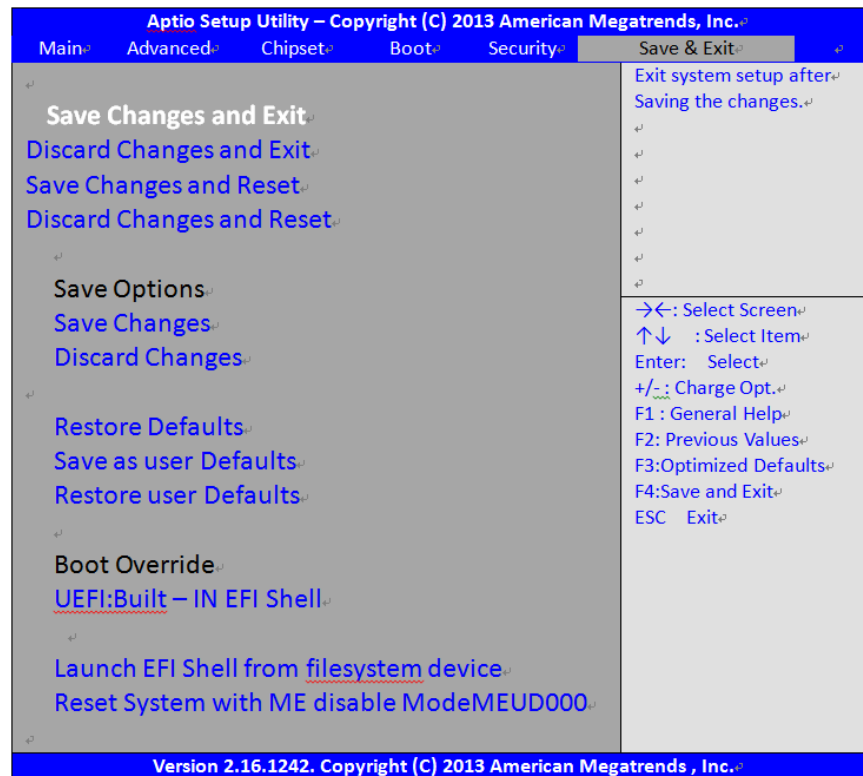
Once the password feature is used, you will be requested to type the password each time you enter BIOS setup. This will prevent unauthorized persons from changing your system configurations. Also, the feature is capable of requesting users to enter the password prior to system boot to control unauthorized 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 Boot Settings



Setup Prompt Timeout	[6]
Bootup Numlock State	[On]
Quiet Boot	[Disabled]
Fast Boot	[Enabled]
VGA Support	[EFI Driver]
USB Support	[Partial Initial]
PS2 Devices Support	[Enabled]
Network Stack Driver Support	[Disabled]
Boot Option Priorities	
Boot Option #1	[UEFI : Built in EFI ...]

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

Reset the system after Saving The changes?

[Yes]

[No]

Discard Changes and Reset

Reset system setup without Saving any changes?

[Yes]

[No]

Save Changes

Save Setup done so far to any of the setup options?

[Yes]

[No]

Discard Changes

Discard Changes done so far to any of the setup options?

[Yes]

[No]

Restore Defaults

Restore /Load Defaults values for all the setup options?

[Yes]

[No]

Save as user Defaults

Save the changes done so far as User Defaults?

[Yes]

[No]

Restore user Defaults

Restore the User Defaults to all the setup options?

[Yes]

[No]

Boot Override

UEFI:Built – in EFI Shell

Launch EFI Shell from filesystem device

WARNING Not Found

[ok]

Reset System with ME disable ModelMEUD000

Chapter 4 Installation of Drivers

This chapter describes the installation procedures for software and drivers under the windows 8.1/10. The software and drivers are included with the motherboard. The contents include **Intel chipset driver, VGA driver, Audio driver, and TXE 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.



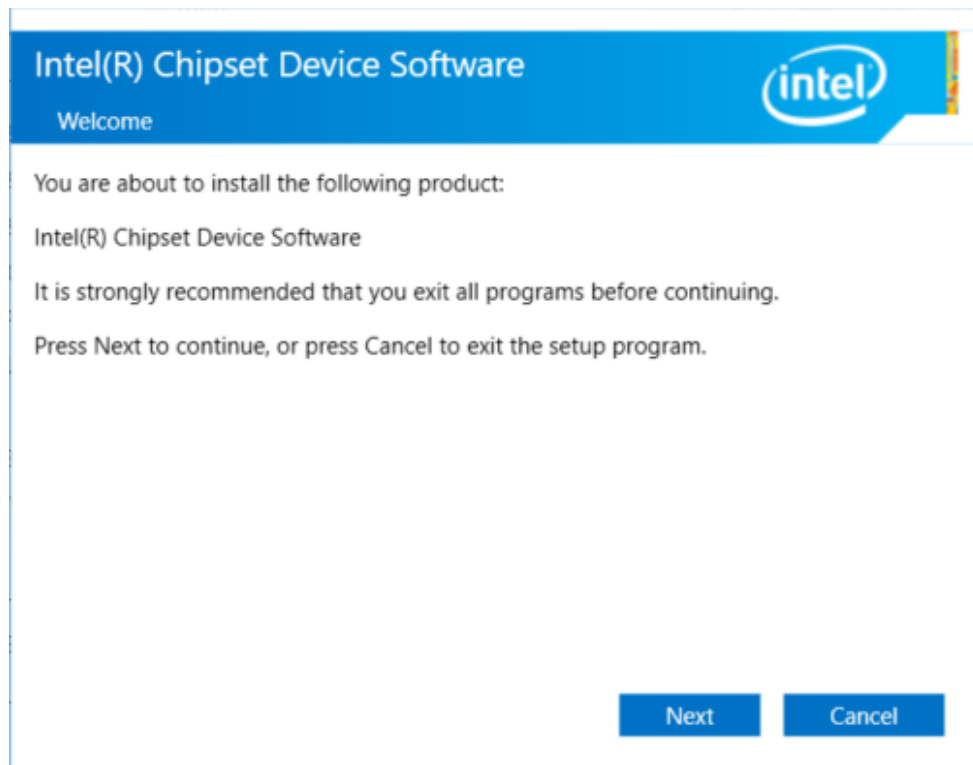
4.1 Intel(R) Atom™ SoC Chipset

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

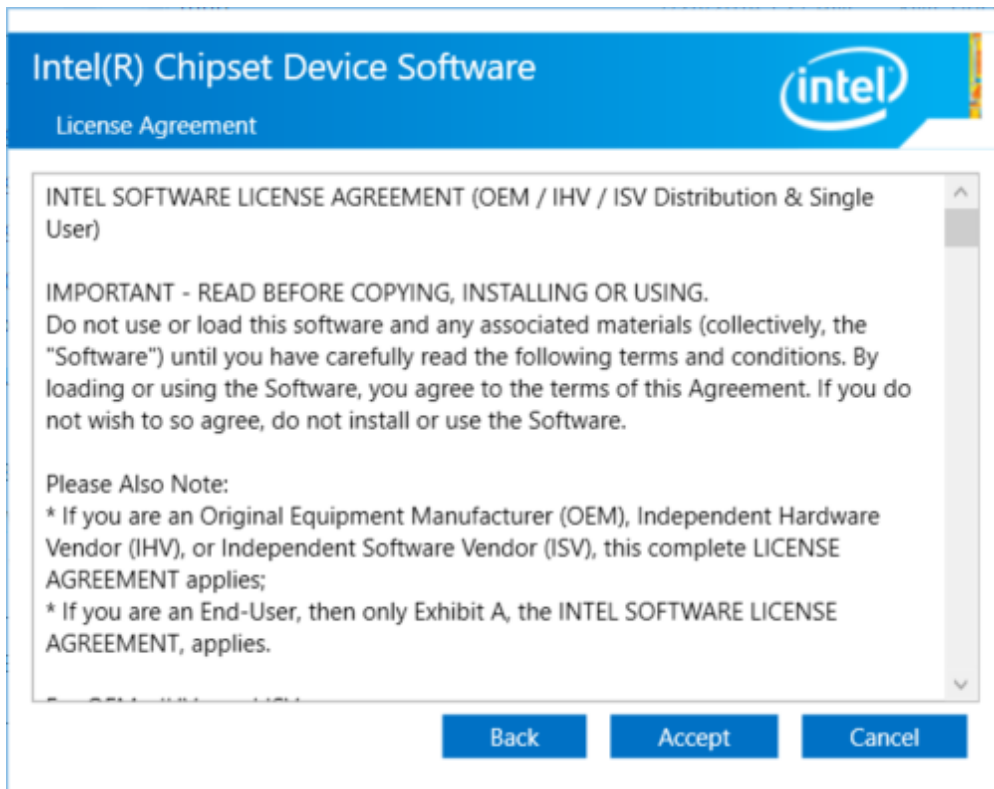
Step 1. Select **Intel (R) Atom™ SoC Chipset** from the list



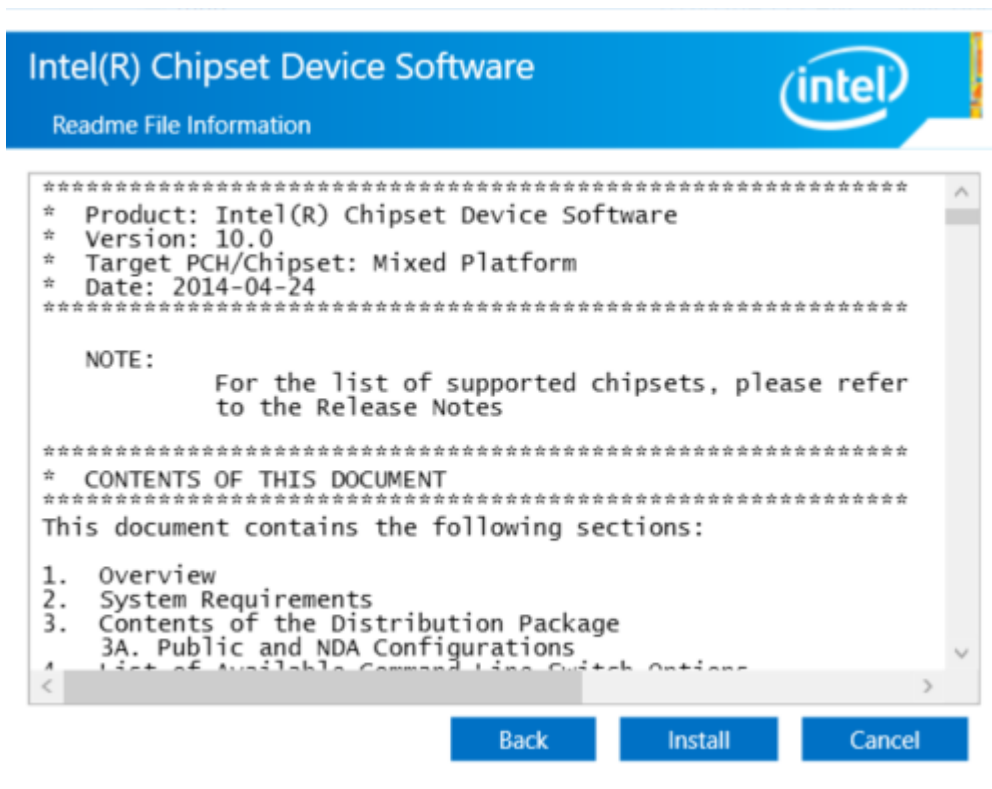
Step 2. Here is welcome page. Please make sure you save and exit all programs before install. Click **Next**.



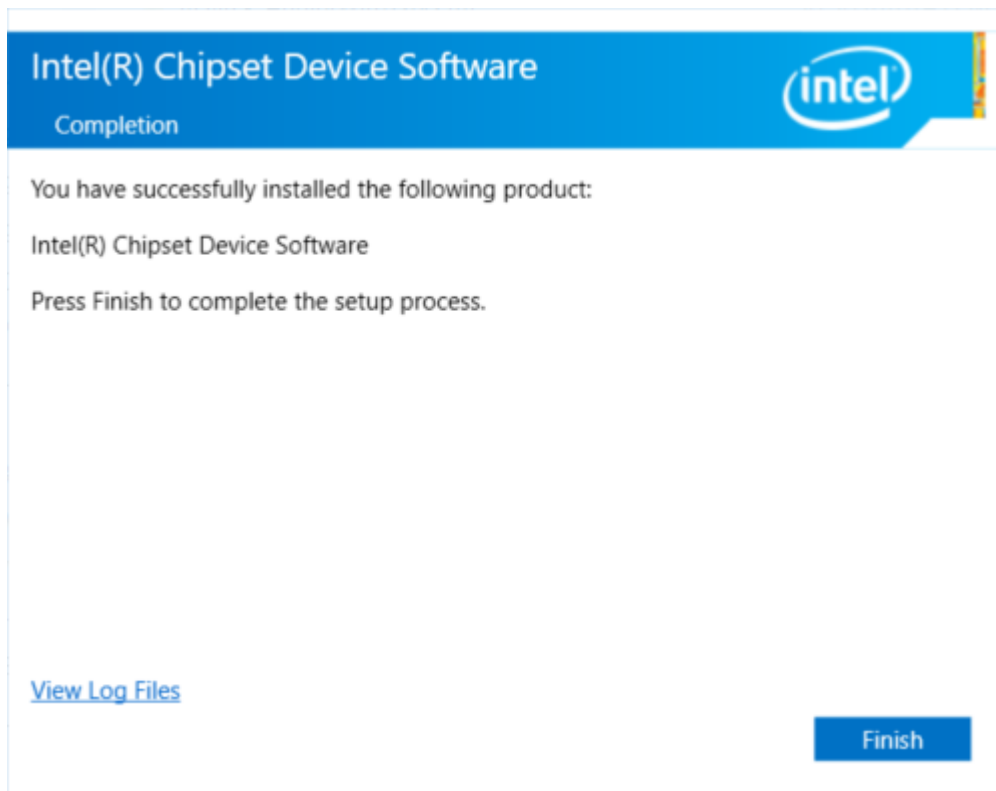
Step 3. Read the license agreement. Click **Accept** to accept all of the terms of the license agreement.



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



Step 5. Click **Finish** to exit the wizard.



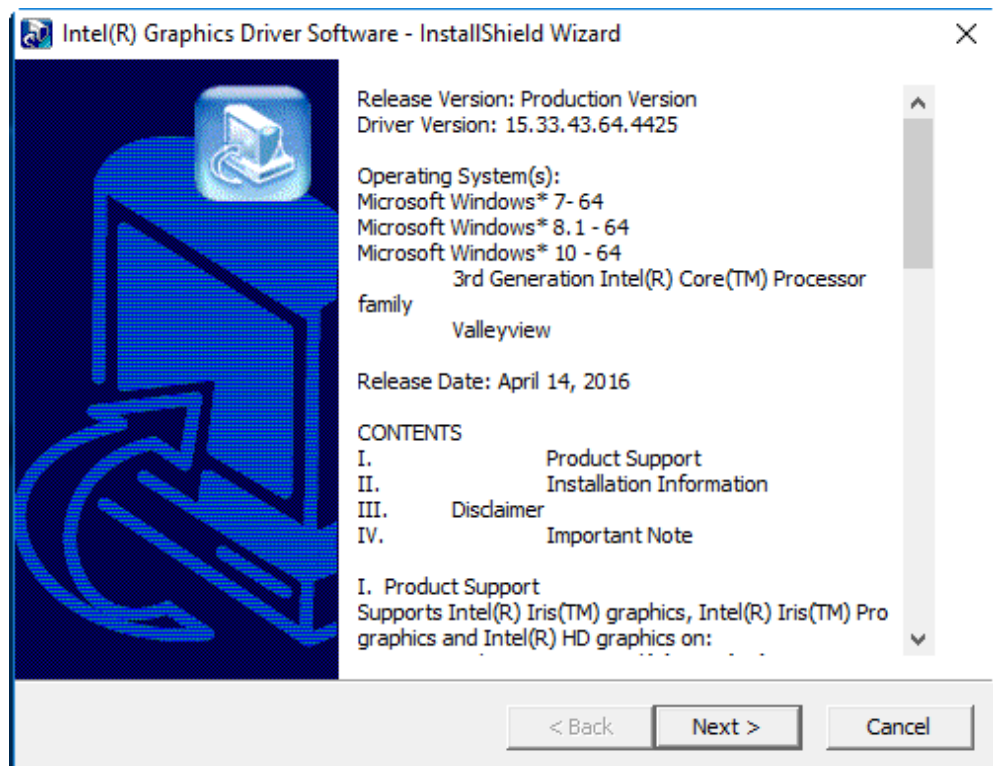
4.2 Intel(R) VGA Chipset

To install the Intel (R) VGA Chipset, please follow the steps below.

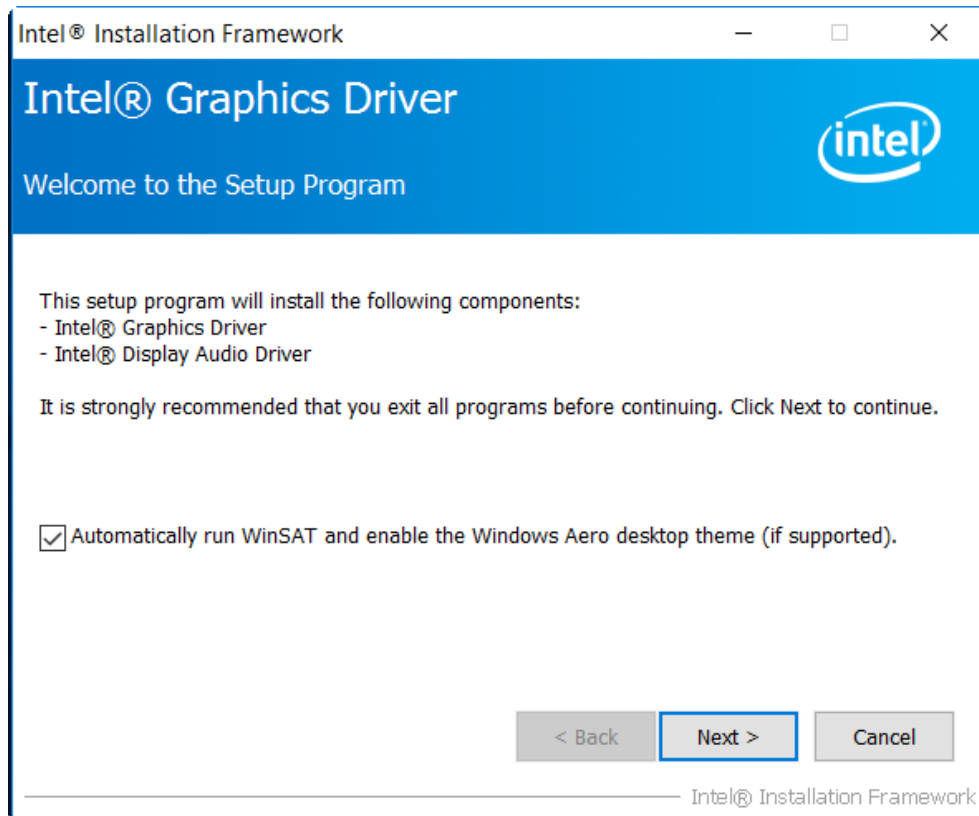
Step 1. Select **Intel(R) VGA Chipset** from the list.



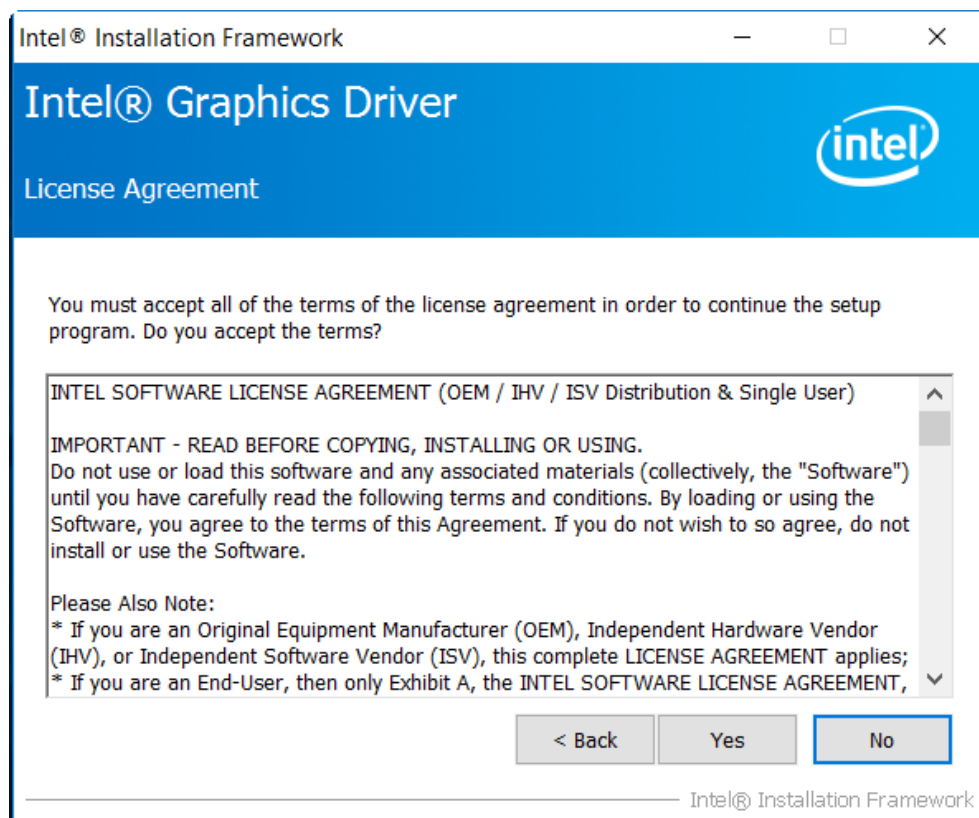
Step 2. . Click **Next**.



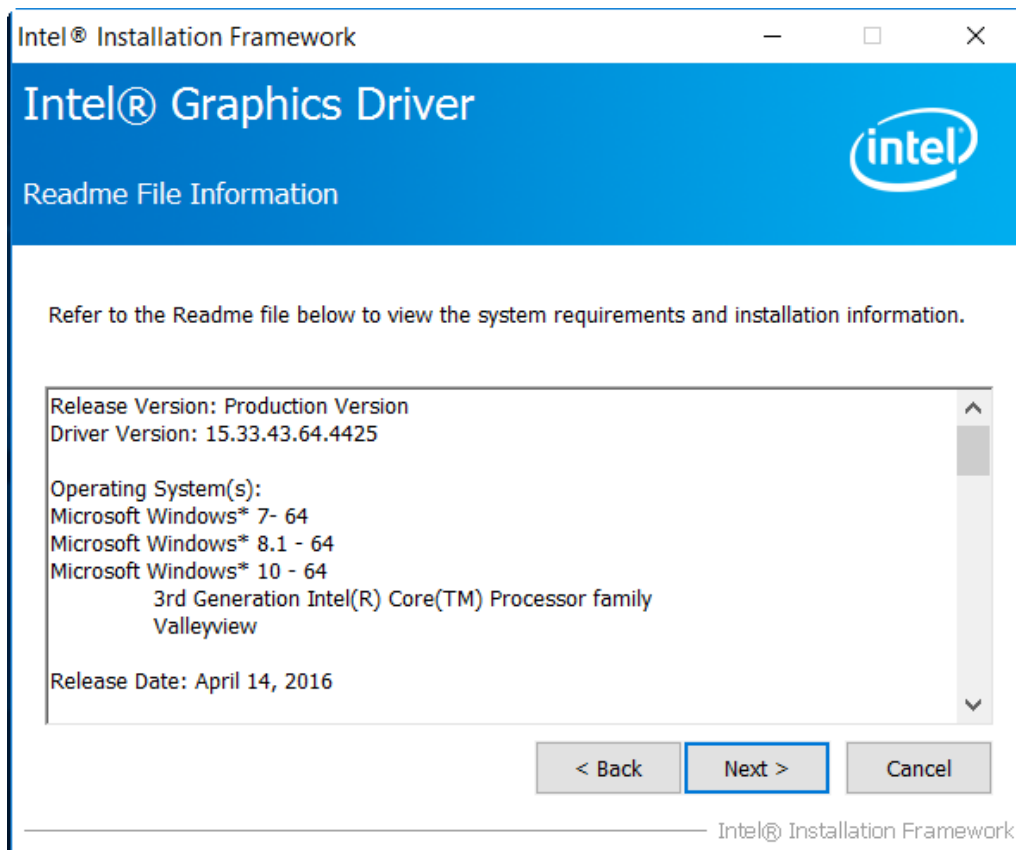
Step 3. Choose **automatically run** function and Click **Next** to setup program.



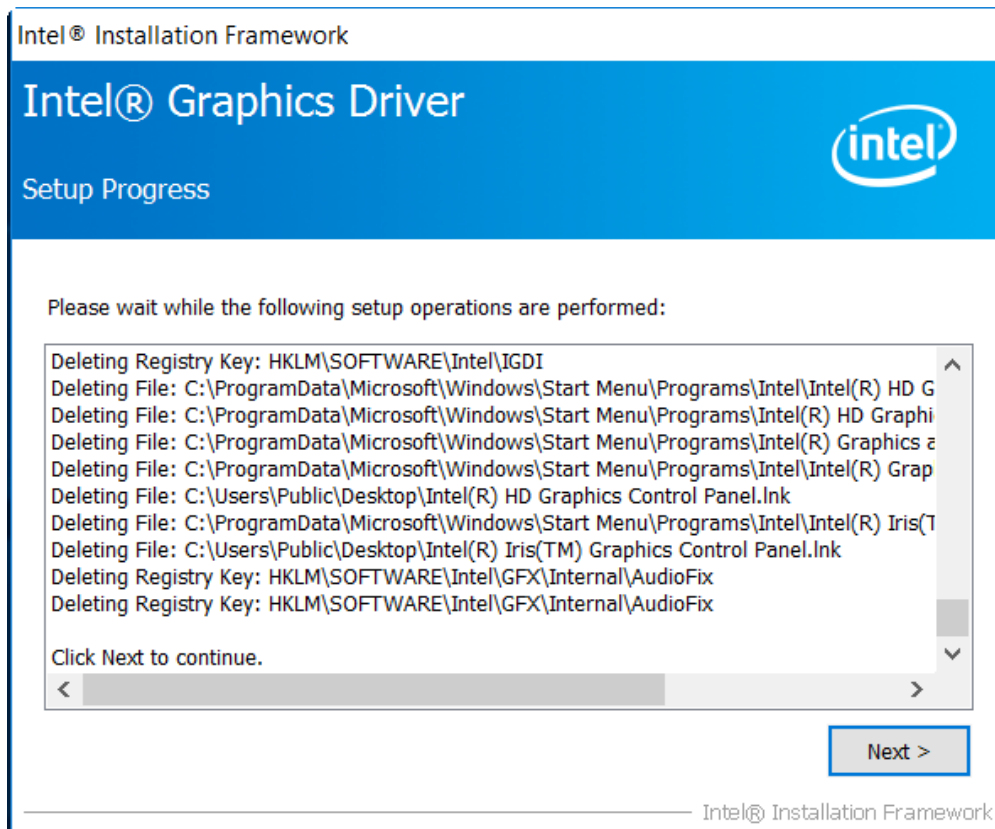
Step 4. Read the license agreement. Click **Yes** to accept all of the terms of the license agreement.



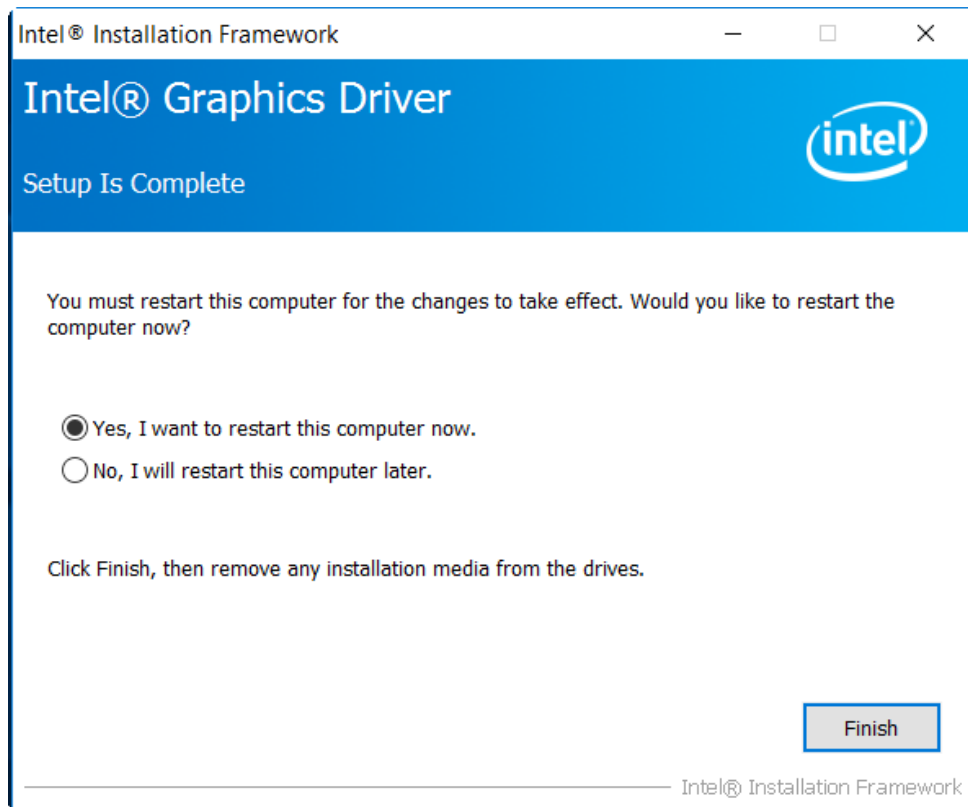
Step 5. Click **Next** to continue.



Step 6. Click **Next** to continue.



Step 7. Select **Yes, I want to restart this computer now.** Click **Finish**, then remove any installation media from the drives.



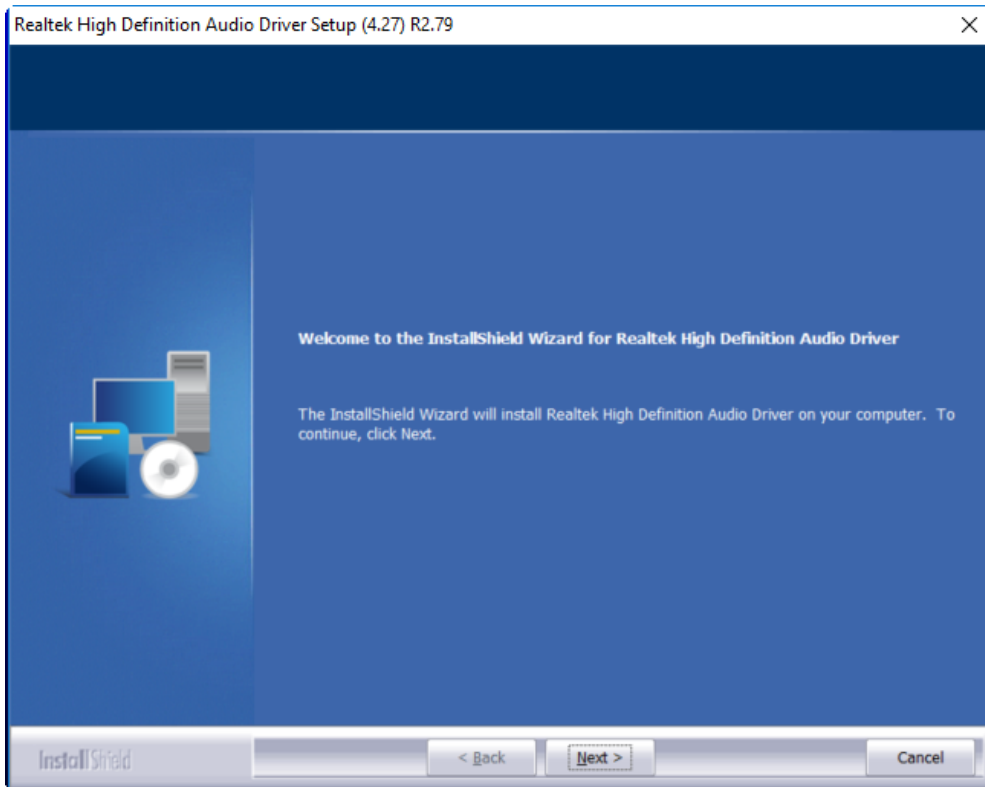
4.3 Realtek ALC662 HD Audio Driver Installation

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

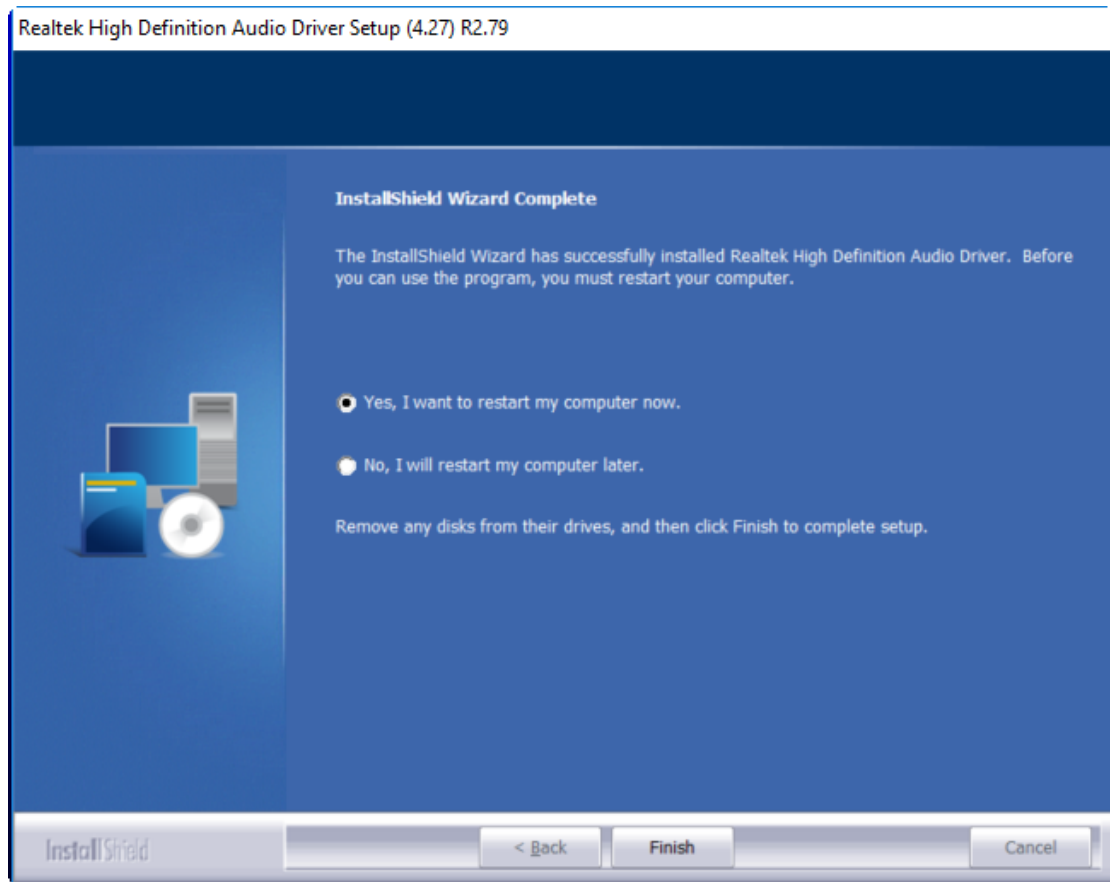
Step 1. Select **Realtek AL662 HD Audio Driver** from the list



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



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



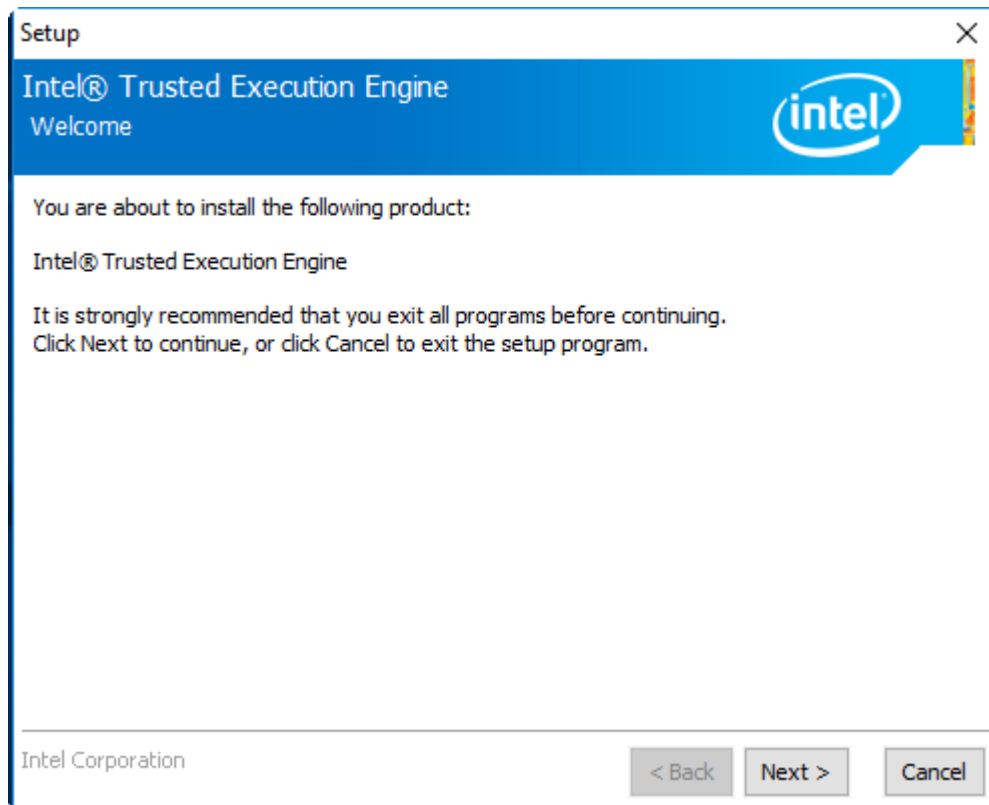
4.4 Intel_TXE(Win) Driver

To install the Intel_TXE(Win) Driver, please follow the steps below.

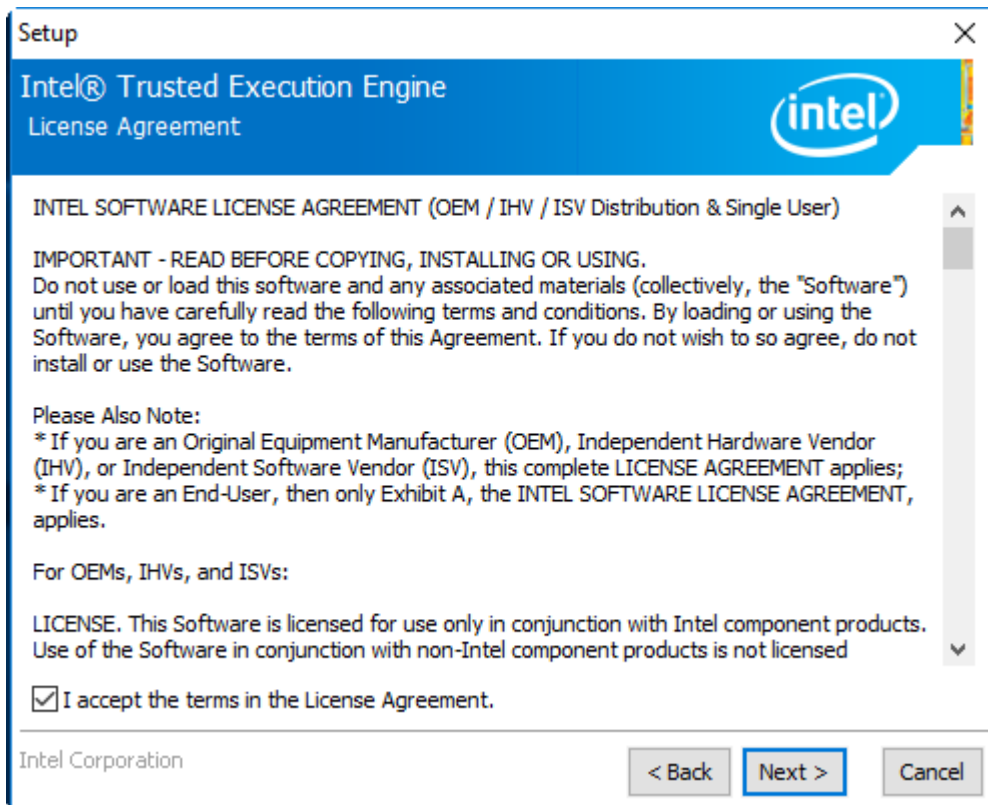
Step 1. Select **Intel_TXE(Win) Driver** from the list



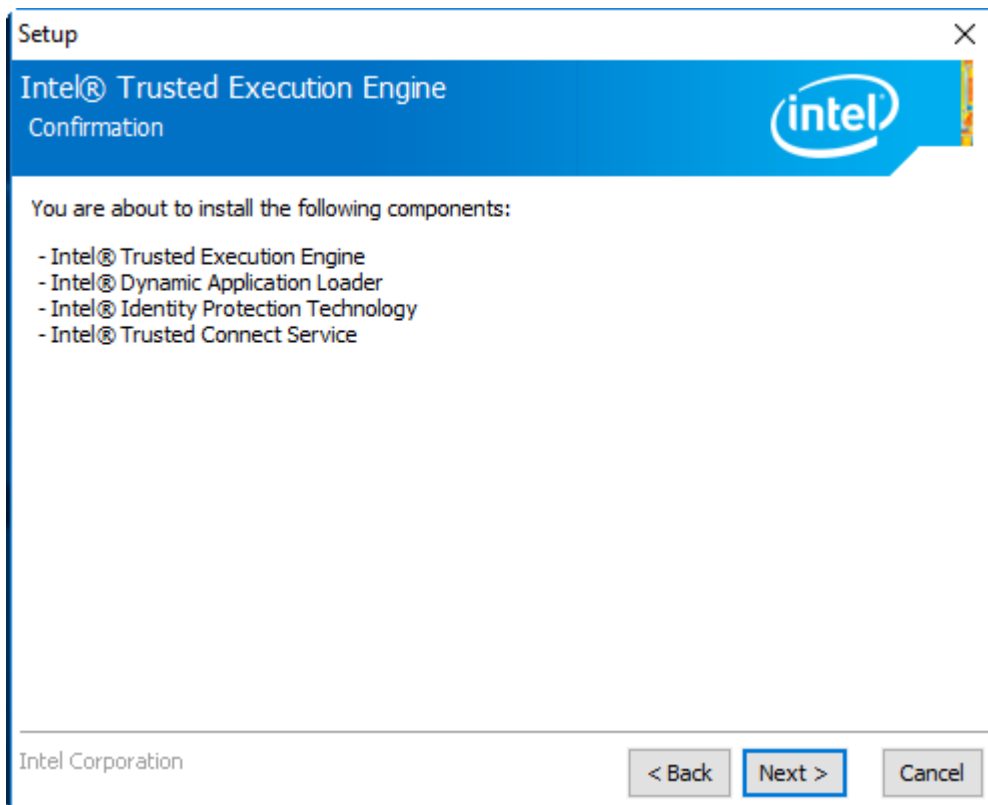
Step 2. Click **Next** to continue.



Step 3. Read the license agreement. Choose **Accept** and click **Next** to accept all of the terms of the license agreement.



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



Step 5. Click **Finish** to complete the installation.

