APC-3XX2

7” and 8” Fanless Total IP66 Intel Atom™ E3845 Fleet Management Panel PC

User Manual

Release Date	Revision
Feb. 2020	V1.4

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Revision History

Reversion	Date	Description
1.0	2016/08/24	Official Version
1.1	2016/09/10	Modify PB-422B Specifications
1.2	2016/12/05	Add 7” Panel PC: APC-3072, and add projected capacitive touch
1.3	2017/7/18	Define I/O function
1.4	2020/02/24	MB:SBC-7810-BIOS

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.

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.

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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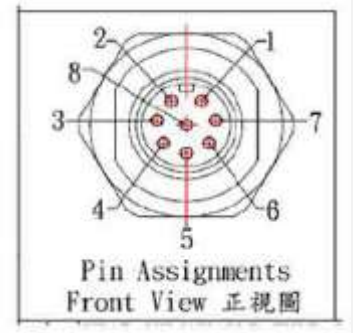
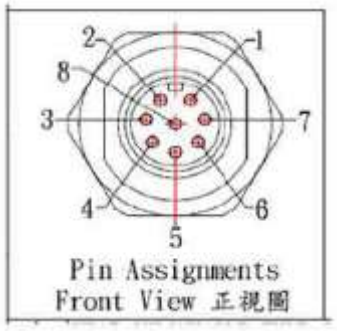
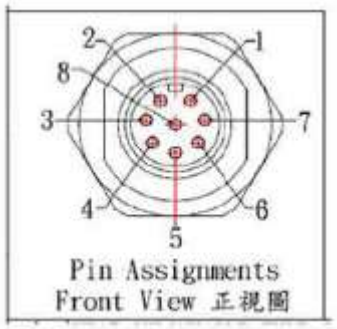
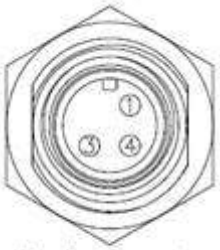
Chapter 1 Getting Started

1.1 Features

- High brightness LED backlight LCD
- Intel® Atom ™ Processor E3845
- 4GB DDR3L memory on board
- Wide range DC 6~36V power input
- Total 6 sides IP66
- Support function key: 6 key F1~F6 programmable for APC-3072
- Support OSD keypad for APC-3082

1.2 Specifications

<table>
<tr><th>System</th><th>APC-3072</th><th>APC-3082</th></tr>
<tr><td>Processor</td><td colspan="2">Intel® Atom™ Processor E3845(2M Cache, 1.91GHz)</td></tr>
<tr><td>System Memory</td><td colspan="2">Onboard 4GB DDR3L memory</td></tr>
<tr><td>OSD Keypad</td><td>7 keys
(F1~F6 with power button)
Default general keyboard
F1~F6 key, programmable
other define</td><td>5 keys
brightness up/brightness down
control 0~100%
volume up/volume down via audio
power on/off
LED indicator: power on/off</td></tr>
<tr><td>Speaker</td><td colspan="2">1 x 2W IP65 speaker</td></tr>
<tr><td colspan="3">I/O Ports: IP66 I/O Connector</td></tr>
<tr><td>USB</td><td>1 x M12 for 2 x USB 2.0
USB1/2:
<table>
<tr><th>CN1</th><th>Pin Define</th></tr>
<tr><td>1</td><td>USB1 5V</td></tr>
<tr><td>3</td><td>D1-</td></tr>
<tr><td>4</td><td>D1+</td></tr>
<tr><td>7</td><td>GND</td></tr>
<tr><td>2</td><td>USB2 5V</td></tr>
<tr><td>5</td><td>D2-</td></tr>
<tr><td>6</td><td>D2+</td></tr>
<tr><td>8</td><td>GND</td></tr>
</table></td><td> 
</td></tr>
</table>

<table>
<tr><td>Serial/Parallel</td><td>1 x M12 for RS-232/422/485, default RS-232
1 x M12 for RS-232
COM1/2:<table><tr><td></td><td>Pin Define</td></tr><tr><td>1</td><td>DCD</td></tr><tr><td>2</td><td>RXD</td></tr><tr><td>3</td><td>TXD</td></tr><tr><td>4</td><td>DTR</td></tr><tr><td>5</td><td>GND</td></tr><tr><td>6</td><td>DSR</td></tr><tr><td>7</td><td>RTS</td></tr><tr><td>8</td><td>CTS</td></tr></table></td><td> 
</td></tr>
<tr><td>LAN</td><td>1 x M12 for GbE LAN
LAN:<table><tr><td></td><td>Pin Define</td></tr><tr><td>2</td><td>LAN1_0+</td></tr><tr><td>1</td><td>LAN1_0-</td></tr><tr><td>4</td><td>LAN1_1+</td></tr><tr><td>3</td><td>LAN1_1-</td></tr><tr><td>6</td><td>LAN1_2+</td></tr><tr><td>5</td><td>LAN1_2-</td></tr><tr><td>8</td><td>LAN1_3+</td></tr><tr><td>7</td><td>LAN1_3-</td></tr></table></td><td> 
</td></tr>
<tr><td>Power</td><td>1 x DC power input (6~36V) by M12 connector<table><tr><td></td><td>Pin Define</td></tr><tr><td>1</td><td>NC</td></tr><tr><td>3</td><td>VCC</td></tr><tr><td>4</td><td>GND</td></tr></table></td><td> 
</td></tr>
<tr><td>Others</td><td colspan="2">1 x SMA connector for option GPS antenna
1 x Power LED(Green) front touch panel</td></tr>
<tr><td colspan="3">Expansion Slots</td></tr>
<tr><td>Expansion Slots</td><td colspan="2">1. 1 x Full-size mini-PCIe socket (PCIe+USB) for 3G/LTE/GPS (optional)
2. 1 x Half-size mini-PCIe socket (PCIe+USB) for WIFI/BT (optional)
3. 1 x SIM slot on board</td></tr>
<tr><td colspan="3">Storage</td></tr>
<tr><td>Storage</td><td colspan="2">1 x Micro SD on board
1 x mSATA MO-300 slot</td></tr>
<tr><td colspan="3">Power</td></tr>
</table>

Power Input	6~36V DC default	
Optional Power	6~36V DC + Ignition/VCC power	
Power Consumption	MAX: 15W	MAX: 19.8W
LCD		
Display Type	7” color TFT LCD	8” color TFT LCD
Max. Resolution	800 x 480	800 x 600
Max. Color	262K	16.2M
Contrast Ratio	400: 1	500: 1
Luminance (cd/m2)	600 (option 1000nits)	600 (option 1000nits)
Viewing Angle	135(H) / 125(V)	140(H) / 125(V)
Backlight Lifetime	50,000 hrs	50,000 hrs
Touch Screen – Resistive Touch Window Type (default for APC-3082) **(APC-3082 can option PCT touch screen but without OSD keypad function)**		
Interface	USB	
Light Transmission	Over 80%	
Touch Screen – Projected Capacitive Touch Screen (default for APC-3072 **(APC-3072 can option resistive touch screen)**		
Interface	USB	
Light Transmission	Over 90%	
Mechanical		
Construction	Rugged plastics housing with aluminum heatsink for APC-3082 (optional aluminum front bezel) Aluminum front bezel and plastic back cover with aluminum heatsink for APC-3072	
Mounting	Support Panel mount VESA mount 75 x 75 VESA mount 100 x 100 Yoke mount and stand mount **(option)**	
IP Rating	Total IP66	
Dimension (LxWxH)	240 x 180 x 59 mm	240 x 180 x 59 mm
Net Weight	2.1 Kg	1.6 Kg
Environmental		
Operating Temperature	0~50 °C WT1: -20°C~60°C for option	
Storage Temperature	-30~80 °C	
Storage Humidity	10%~90%@ 40℃, non-condensing	
Certificate	CE / FCC Class A	
OS Support	Windows 7 Professional for Embedded Systems Windows 7 Ultimate for Embedded Systems Windows Embedded 8.1 Pro Windows Embedded 8.1 Industry Pro Windows 10 IOT 2016	

1.3 Dimensions

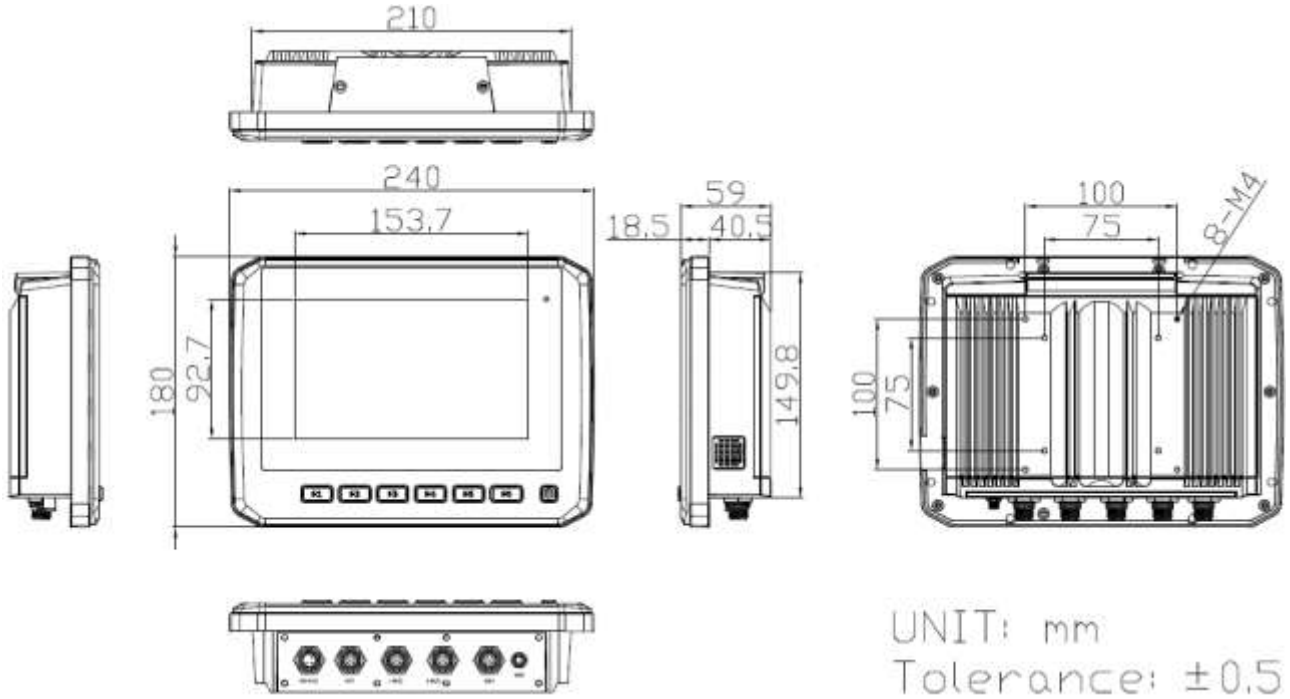


Figure 1.1: Dimensions of APC-3072

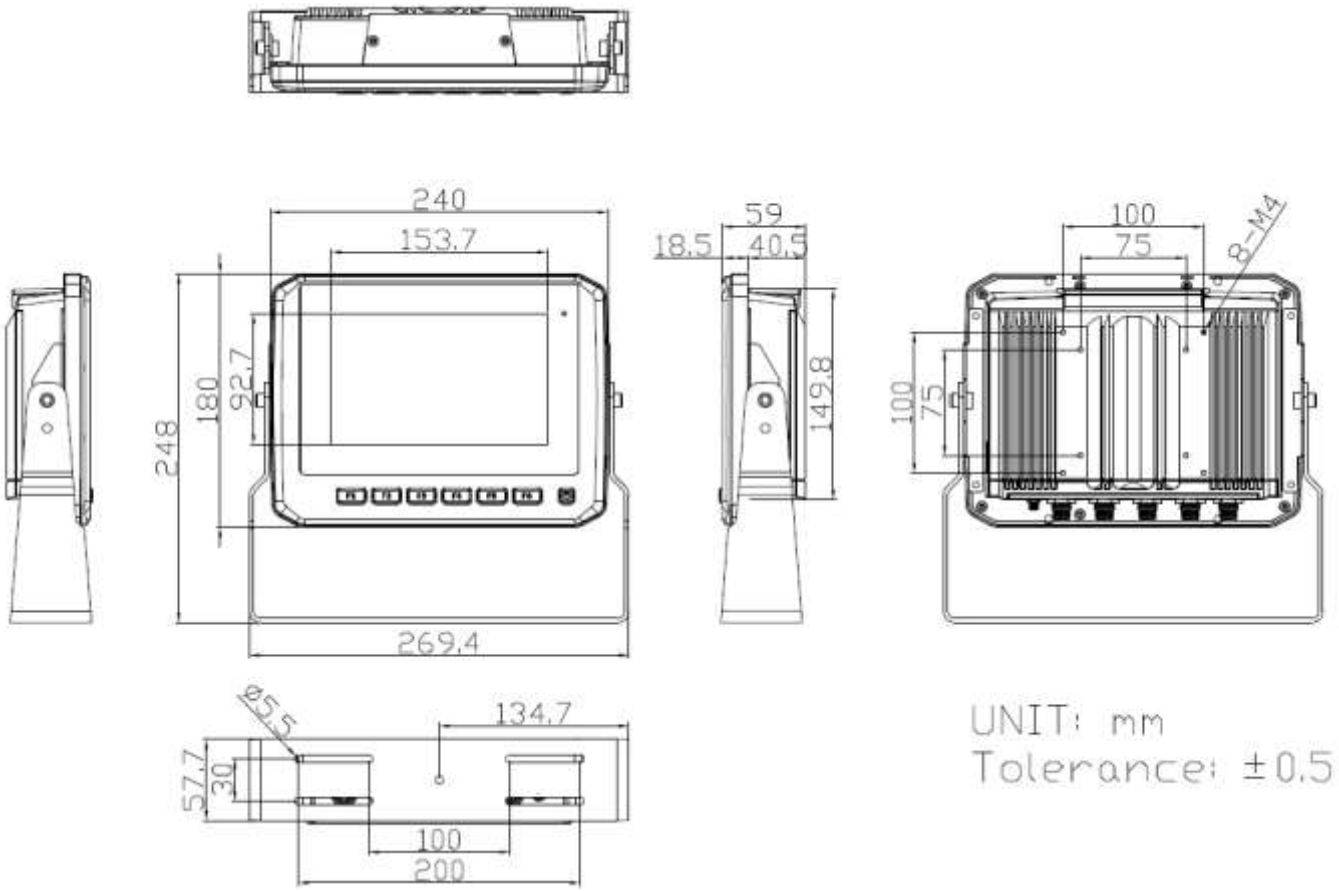


Figure 1.2: Dimensions of APC-3072 with Stand

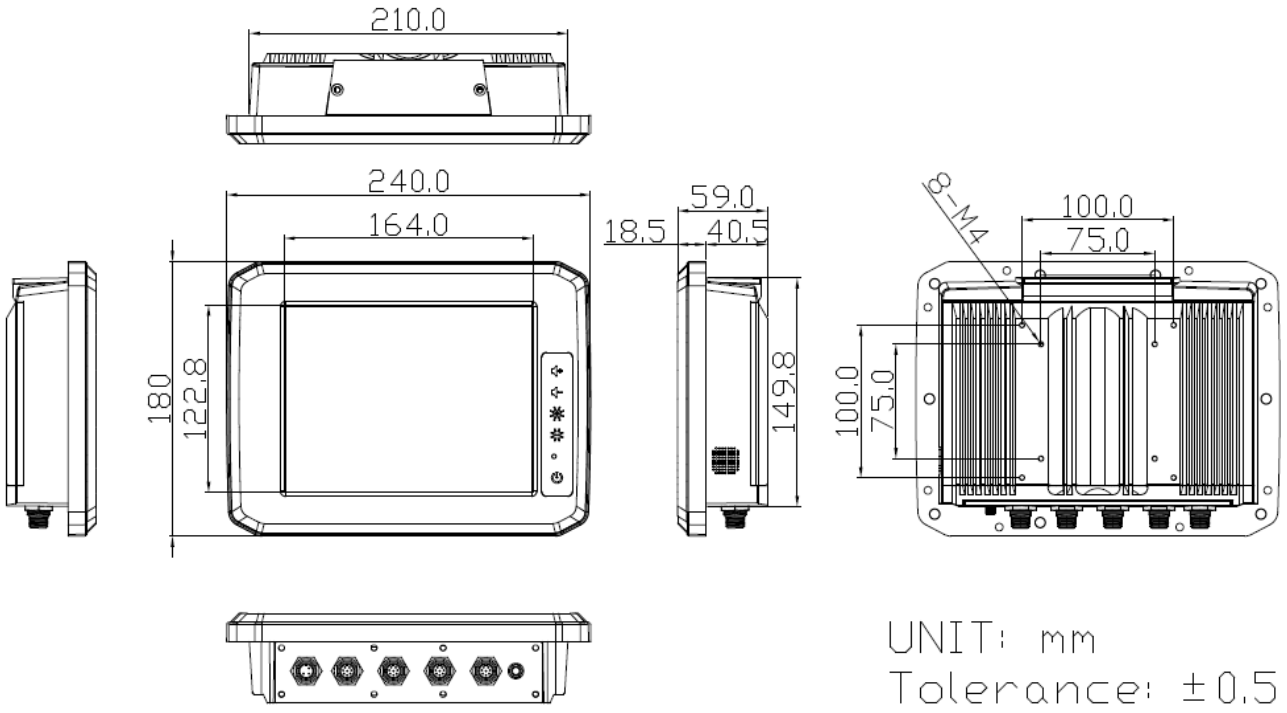


Figure 1.3: Dimensions of APC-3082

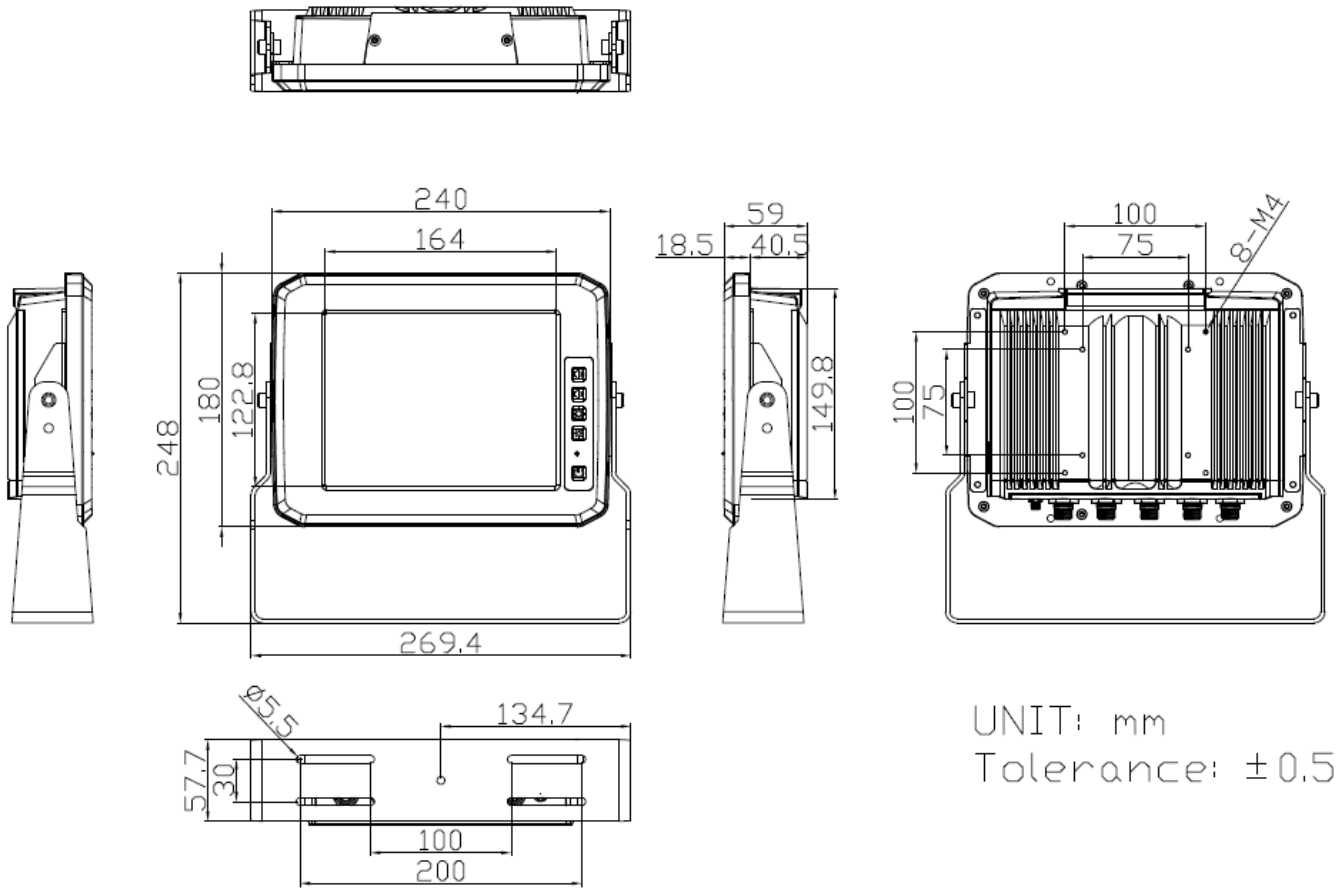


Figure 1.4: Dimensions of APC-3082 with Stand

1.4 Brief Description of APC-3XX2

APC-3XX2 is a fanless and fleet management low power consumption designed panel PC. It comes with total 6 sides IP66 waterproof grade, powered by Intel Atom E3845 processor, and supports 4GB DDR3L memory onboard. The LCD supports LED backlight for power saving, and can be optional high brightness LCD for sunlight readable. Furthermore, there is F1~F6 programmable function keypad with power button for APC-3072; and there is an OSD keypad control for power system on/off, brightness up and down, and volume up and down for APC-3082. APC-3072 and APC-3082 can support variety of communication interface. For instance, it has 1 x Mini-PCIe half size slot for optional WIFI and Bluetooth, 1 x Mini-PCIe full size slot for optional 3G, LTE, and GPS, and also 1 x mSATA MO-300 slot for storage. The model can be VESA 75 x 75 or 100 x 100 mounted, and adjustable stand is for option. In short, APC-3XX2 is ideal for fleet management application in any ways.

Figure 1.5 Front View of APC-3072

Figure 1.6 Rear View of APC-3072

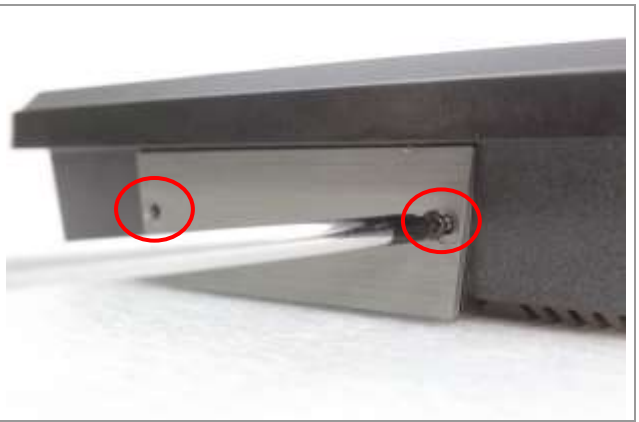
Figure 1.7 Front View of APC-3082

Figure 1.8 Rear View of APC-3082

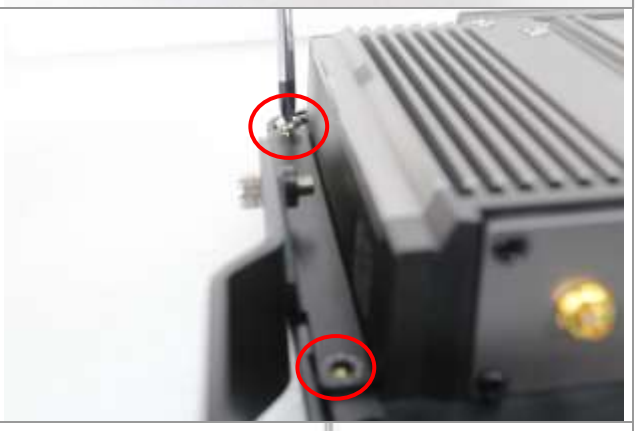
Figure 1.9 APC-3072 with Stand

Figure 1.10 APC-3082 with Stand

1.5 Installation of SD Card and SIM Card

Step 1 There are two screws to deal with when enclosing or removing the chassis. Gently remove two screws.	
Step 2 Take off the chassis cover. You can replace the SIM card as shown in the picture.	
Step 3 You can replace the micro SD card as shown in the picture.	

1.6 The Mounting of Stand I

Step 1 Put the stand on the panel PC.	
Step 2 Screw the two screws at one side.	
Step 3 Screw the two screws at the other side.	
Step 4 This is how it looks when the stand is mounted.	

1.7 The Mounting of Stand II

Step 1 Put the stand on the panel PC.	
Step 2 Screw the screw at one side	
Step 3 Screw the screw at another side.	
Step 4 Screw the screw at another side.	

Step 5 Screw the last screw as shown in the picture. After screwing the four screws, you manage to mount the stand.	

1.8 VESA Mounting

APC-3XX2 is designed to be VESA mounted as shown in the Figure 1.11. Just carefully place the unit through the hole and tighten the given screws from the rear to secure the mounting.

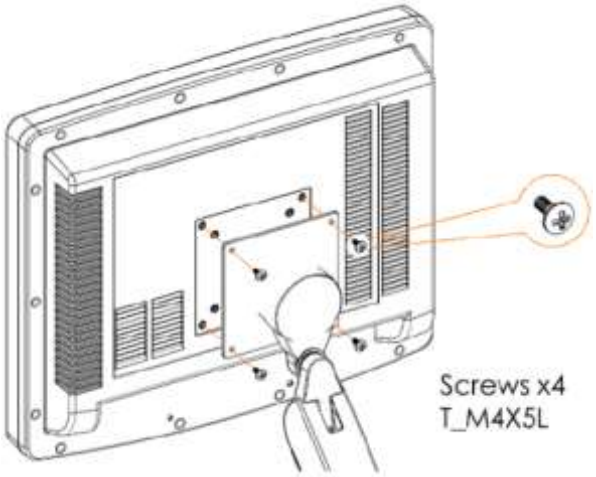


Figure 1.11: VESA Mounting of APC-3XX2

1.9 Panel Mounting

The APC-3XX2 is designed to be panel-mounted as shown in Figure 1.12. Just carefully place the unit through the hole and tighten the given screws from the rear to secure the mounting.

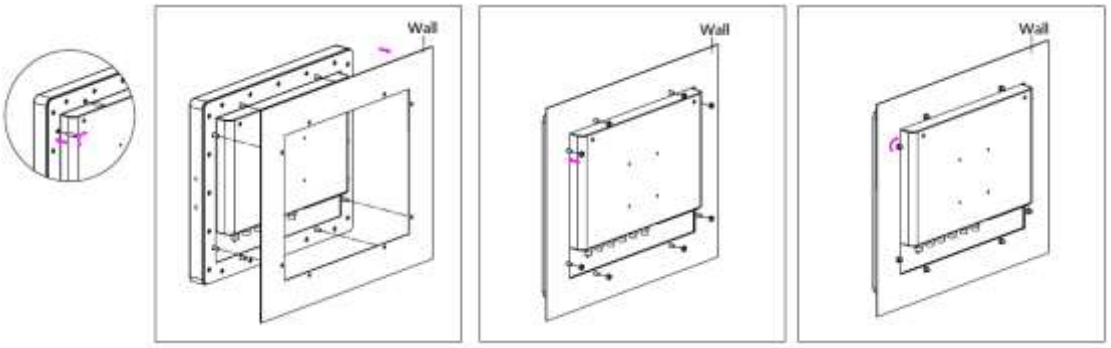


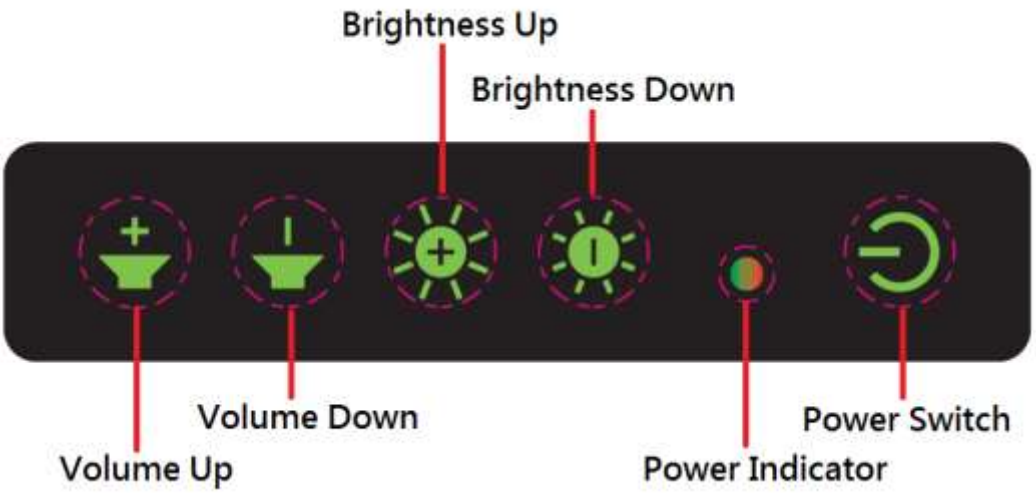
Figure 1.12: Panel Mounting of APC-3XX2

Chapter 2 OSD

2.1 APC-3072 Front Function Keyboard with Power Button

Default General Keyboard F1~F6 key, programmable other define.

2.2 APC-3082 OSD Functions and Control



Volume Up: To adjust the volume up.

Volume Down: To adjust the volume down.

Brightness Up: To adjust the brightness up.

Brightness Down: To adjust the brightness down.

Power Switch: To turn on or turn off the power.

Chapter 3 Motherboard

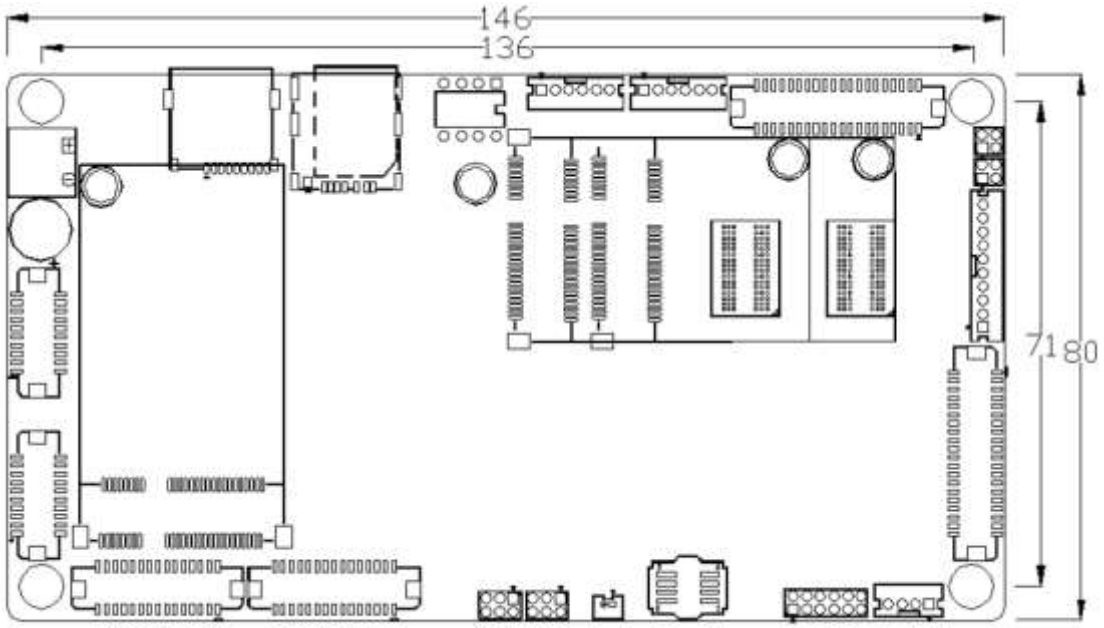
3.1 Motherboard Introduction

SBC-7810 is a 146 x 80mm Industrial motherboard developed on the basis of Intel Bay trail-I/M Processors, which provides abundant peripheral interfaces to meet the needs of different customers. Also, it features dual GbE ports, 4-COM ports and two Mini PCIE configuration, one CRT port, one LVDS interface. To satisfy the special needs of high-end customers, CN1 and CN2 and CN4 and FP1 and MIO1 richer extension functions. The product is widely used in various sectors of industrial control.

3.2 Motherboard Specifications

Specifications	
Board Size	146mm x 80mm
CPU Support	Intel Atom E3845 / 1.91GHz (4cores, 10W, onboard) Intel Celeron N2930 / 1.83 up to 2.16GHz (4cores, option)
Chipset	SoC
Memory Support	Onboard 4GB DDR3L SDRAM (E3845) Onboard 2GB DDR3L SDRAM (N2930, option)
Graphics	Intel® HD Graphics 542/792MHz (E3845) Intel® HD Graphics 313/854MHz (N2930)
Display Mode	1 x LVDS (18/24-bit dual LVDS) 1 x CRT Port
Support Resolution	Up to 1920 x 1200 for LVDS (PS8625) Up to 1920 x 1200 for CRT
Dual Display	LVDS + CRT
Super I/O	ITE IT8518E Fintek F81216AD
BIOS	AMI/UEFI
Storage	1 x MSATA Connector (MSATA1) 1 x SATAII Signal (MSATA1, option) 1 x Micro SD Slot
Ethernet	2 x PCIe Gbe LAN by Intel 82574L (CN2: LAN1/LAN2, option)
USB	1 x USB 2.0 Pin header for CN1 (USB1) 1 x USB 2.0 for internal Touch controller (USB4)

	USB 2.0 HUB (USB2514): 2 x USB 2.0 Pin header for MIO1 (E-USB5/E-USB6) 1 x USB 2.0 for MPCIE1 (E-USB7) 1 x USB 2.0 for MPCIE2 (E-USB8)
Serial	1 x RS232/RS422/RS485 header for CN1(COM1) Pin 16 w/5V/12V/RI select 1 x RS232/RS422/RS485 header for MIO1(COM2) Pin 16 w/5V/12V/RI select 2 x UART header for CN4 (F81216AD/COM3/COM4)
Digital I/O	8-bit digital I/O by Pin header (MIO1) 4-bit digital Input 4-bit digital Output 8-bit digital I/O by Pin header (EC_GPIO1)
Battery	Support CR2477 Li battery by 2-pin header (BAT1/CMOS)
Audio	Support Audio via Realtek ALC269 audio codec Support Line-out, MIC by 2x6-pin header (F_AUDIO1) Support Line-out by 1x4-pin header（1CH/2W,SPK1）
Keyboard /Mouse	1 x PS2 keyboard by pin header (MIO1) 1 x PS2 mouse by pin header (MIO1)
Expansion Bus	2 x Mini-PCI-express slots (MPCIE1/MPCIE2)
Touch Ctrl	1 x Touch ctrl header for TCH1 (PM6000 for USB4)
Power Management	DC 12V input only 1 x 2-pin power input connector (DC_IN1)
Switches and LED Indicators	1 x Power on/off switch (CN2/FP1) 1 x Power LED status (CN3) 1 x HDD LED status (MIO1) 1 x Buzzer
SIM	1 x Micro SIM Slot
Temperature	Operating: -20℃ to 60℃ Storage: -40℃ to 85℃
Humidity	10% - 90%, non-condensing, operating
Power Consumption	12V /0.80A (Intel Atom E3845 processor with 4GB DDR3L DRAM) 12V /0.70A (Intel Atom N2930 processor with 2GB DDR3L DRAM)
EMI/EMS	Meet CE/FCC class A



(units :mm)

Figure 3.1: Motherboard Dimensions

3.3 Jumpers and Connectors Location

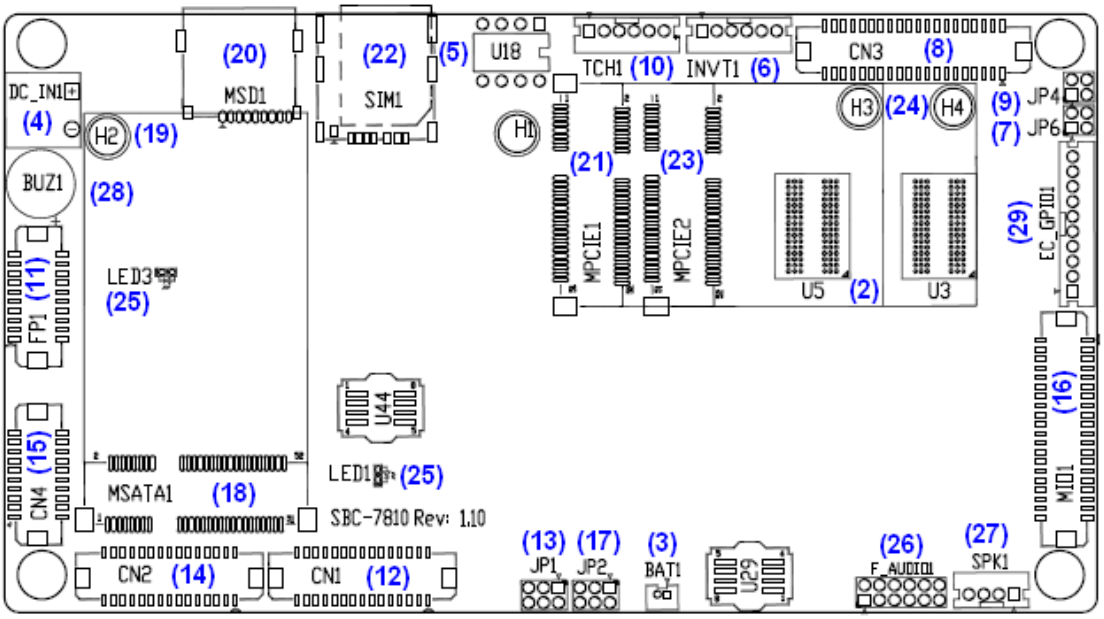


Figure 3.2: Jumpers and Connectors Location- Board Top

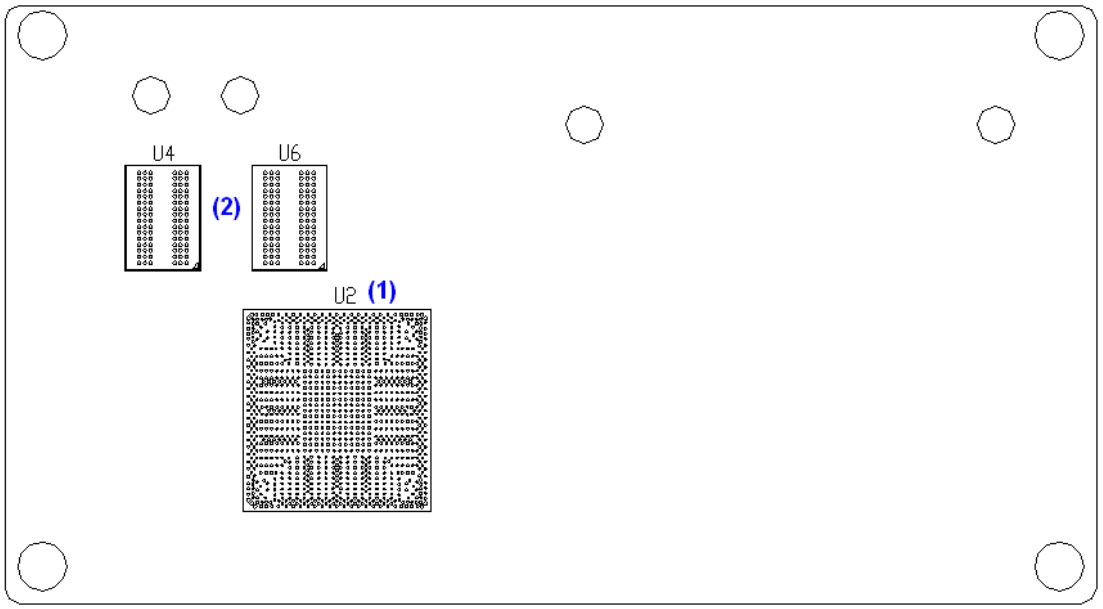


Figure 3.3: Jumpers and Connectors Location- Board Bottom

3.4 Jumpers Setting and Connectors

1. U2:

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

Model	Processor				
	Number	PBF	Cores/Threads	TDP	Remarks
SBC-7810-E3845-4G	E3845	1.91GHz	4 / 4	10W	
SBC-7810-N2930-2G	N2930	1.83 up to 2.16GHz	4 / 4	4.5/7.5W	option

2. U3/U4/U5/U6:

(FBGA96)Onboard DDR3L Memory.

Model	Memory
SBC-7810-E3845-4G	4GB
SBC-7810-N2930-2G	2GB (option)

3. 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

4. DC_IN1:

(5.08mm Pitch 1x2 Pin Connector),DC9V~36V System power input connector.

Pin#	Power Input
Pin1	DC+12V
Pin2	Ground

5. U18:

AT24C02-DIP8,The EEPROM IC（U18）is the set of LVDS resolution.

If you need other resolution settings, please upgrade U18 data.

Model	LVDS resolution
SBC-7111-E3845-4G	1280*1024 (Default)
SBC-7111-N2930-2G	800*480 (option)
	800*600 (option)
	1024*768 (option)
	1920*1080 (option)

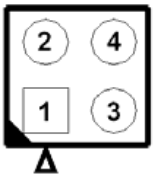
6. INVT1:

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

Pin#	Power Input
1	+DC12V
2	+DC12V
3	Ground
4	Ground
5	BKLT_EN_OUT
6	BKLT_CTRL

7. JP6:

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



JP6	Function (CN1)
Pin1-Pin2 (Close)	**Single channel LVDS (Default)**
Pn1-Pin2 (Open)	Dual channel LVDS
Pin3-Pin4 (Close)	8/24 bit
Pin3-Pin4 (Open)	**6/18 bit (Default)**

8. CN3：

(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.

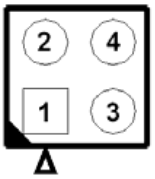
Function	Signal Name	Pin#		Signal Name	Function
	12V_S0	2	1	12V_S0	
	BKLT_EN_OUT	4	3	BKLT_CTRL	
	Ground	6	5	Ground	
	LVDS_VDD5	8	7	LVDS_VDD5	
	LVDS_VDD3	10	9	LVDS_VDD3	

LVDS	Ground	12	11	Ground	LVDS
	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	USB2
USB2	USB2_P	36	35	USB2_N	
	5V_S5_USB	38	37	5V_S5_USB	
Power LED	PWR_LED+	40	39	Ground	Power LED

9. JP4（*Reserve*）:

(2.0mm Pitch 2x2 Pin Header).

JP4	Function
Open 3-4(default)	-
Open 1-2(default)	-
Close 3-4(option)	Hardware Disable (TCH1)



10. 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

11. FP1:

(DF13-30P-1.25mm Connector),For expand output connector, via a dedicated cable connected to PB-422x FP1. Please see the PB-422x Manual.

Function	Signal Name	Pin#		Signal Name	Function
	NC	2	1	Ground	
	NC	4	3	NC	
	PWRBTN_ON-	6	5	Ground	
	NC	8	7	NC	
	EC_SMDATA1	10	9	EC_SMCLK1	
	Ground	12	11	Ground	
	NC	14	13	NC	
	NC	16	15	NC	
	FP_TXD1	18	17	FP_RXD1	
	12V_S0	20	19	12V_S0	

12. CN1:

(DF13-30P-1.25mm Connector), for expand output connector, It provides one CRT, one USB2.0, one RS232 or RS422 or RS485 connect to the TB-535 I/O board.

<table>
<tr><th>Function</th><th>Signal Name</th><th colspan="2">Pin#</th><th>Signal Name</th><th>Function</th></tr>
<tr><td rowspan="4">USB1
(NC)</td><td>5V_USB3</td><td>2</td><td>1</td><td>5V_USB3</td><td rowspan="4">USB1
(USB2.0)</td></tr>
<tr><td>USB3_TX1_N</td><td>4</td><td>3</td><td>USB1_N</td></tr>
<tr><td>USB3_TX1_P</td><td>6</td><td>5</td><td>USB1_P</td></tr>
<tr><td>Ground</td><td>8</td><td>7</td><td>Ground</td></tr>
<tr><td rowspan="2"></td><td>USB3_RX1_N</td><td>10</td><td>9</td><td>CRT_DDCDATA</td><td rowspan="11">CRT</td></tr>
<tr><td>USB3_RX1_P</td><td>12</td><td>11</td><td>CRT_DDCCLK</td></tr>
<tr><td></td><td>Ground</td><td>14</td><td>13</td><td>5V_VGA</td></tr>
<tr><td>COM1: RI/5V/12V</td><td>VCC_RI1-</td><td>16</td><td>15</td><td>CRT_H_SYNC</td></tr>
<tr><td>COM1: 232/422</td><td>DTR1-_422RX</td><td>18</td><td>17</td><td>CRT_V_SYNC</td></tr>
<tr><td>COM1: 232</td><td>CTS1-</td><td>20</td><td>19</td><td>3P3V_S0</td></tr>
<tr><td>COM1: 232/422</td><td>TXD1_422RX+</td><td>22</td><td>21</td><td>CRT_FB_RED</td></tr>
<tr><td>COM1:232</td><td>RTS1-</td><td>24</td><td>23</td><td>Ground</td></tr>
<tr><td>COM1:232/422/485</td><td>RXD1_422TX+_485+</td><td>26</td><td>25</td><td>CRT_FB_GREEN</td></tr>
<tr><td>COM1:232</td><td>DSR1</td><td>28</td><td>27</td><td>CRT_FB_BLUE</td></tr>
<tr><td>COM1:232/422/485</td><td>DCD1-_422TX-_485-</td><td>30</td><td>29</td><td>Ground</td></tr>
<tr><td colspan="6">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 Receptacle.</td></tr>
<tr><td colspan="6">Advanced/F81216SEC Super IO Configuration/Serial Port 1 Configuration
【RS-232】/【RS-422】/【RS-485】</td></tr>
</table>

13. JP1:

(2.0mm Pitch 2x3 Pin Header), COM1 jumper setting, pin 1~6 are used to select signal out of pin 16 of COM1 port.

JP1 Pin#	Function
Close 1-2	**COM1 RI (Ring Indicator) (default)**
Close 3-4	COM1 Pin16: DC+5V (option)
Close 5-6	COM1 Pin16: DC+12V (option)

14. CN2:

(DF13-30P-1.25mm Connector), For expand output connector, It provides two Ethernet ports. connected to the TB-535 I/O board. Two standard 10/100/1000M Ethernet ports are provided. Used intel 82574L chipset.

Function	Signal Name	Pin#		Signal Name	Function
LAN1	3P3V_S5	2	1	Ground	LAN2
	LAN1_MDI0+	4	3	LAN2_MDI0+	
	LAN1_MDI0-	6	5	LAN2_MDI0-	
	LAN1_MDI1+	8	7	LAN2_MDI1+	
	LAN1_MDI1-	10	9	LAN2_MDI1-	
	LAN1_MDI2+	12	11	LAN2_MDI2+	
	LAN1_MDI2-	14	13	LAN2_MDI2-	
	LAN1_MDI3+	16	15	LAN2_MDI3+	
	LAN1_MDI3-	18	17	LAN2_MDI3-	
	Ground	20	19	Ground	
	LAN1_1000M_LINK-	22	21	LAN2_1000M_LINK	
	LAN1_100M_LINK-	24	23	LAN2_100M_LINK	
	LAN1_ACT-	26	25	LAN2_ACT	
	Ground	28	27	Ground	
Power on/off	PWRBTN_ON-	30	29	Ground	

15. CN4:

(DF13-20P-1.25mm Connector), for expand output connector, it provides two UART Signal.

Function	Signal Name	Pin#		Signal Name	Function
DC5V	5V_S0	2	1	12V_S0	DC12V
COM3	COM3_CTS-	4	3	COM4_CTS-	COM4
	COM3_DSR-	6	5	COM4_DSR-	
	COM3_RTS-	8	7	COM4_RTS-	
	COM3_DTR-	10	9	COM4_DTR-	

(UART)	COM3_RXD	12	11	COM4_RXD	(UART)
	COM3_TXD	14	13	COM4_TXD	
	COM3_DCD-	16	15	COM4_DCD-	
	COM3_RI-	18	17	COM4_RI	
	Ground	20	19	Ground	

16. MIO1:

(DF13-40P-1.25mm Connector), for expand output connector, it provides eight GPIO, one RS232 or RS422 or RS485, two USB2.0,one PS/2 mouse, one PS/2 key board, one HDD LED.

Function	Signal Name	Pin#		Signal Name	Function
	Ground	2	1	5V_S0	
SOC_5V_GPIO04	GPIO_OUT1	4	3	GPIO_OUT2	SOC_5V_GPIO05
SOC_5V_GPIO06	GPIO_OUT3	6	5	GPIO_OUT4	SOC_5V_GPIO08
SOC_5V_GPIO09	GPIO_IN1	8	7	GPIO_IN2	SOC_5V_GPIO10
SOC_5V_GPIO17	GPIO_IN3	10	9	GPIO_IN4	SOC_5V_GPIO26
	Ground	12	11	Ground	
	Ground	14	13	MS_CLK	PS2 KB/MS
COM2:RI/5V/12V	VCC_RI2-	16	15	KB_CLK	
COM2:232/422	DTR2-_422RX-	18	17	5V_S0	
COM2:232	CTS2-	20	19	Ground	
COM2:232/422	TXD2_422RX+	22	21	MS_DATA	
COM2:232	RTS2-	24	23	KB_DATA	
COM2:232/422/485	RXD2_422TX+_485+	26	25	Ground	
COM2:232	DSR2-	28	27	HDD_LED+	HDD LED
COM2:232/422/485	DCD2-_422TX-_485-	30	29	Ground	
	Ground	32	31	AUTO_PWRON-	Power auto on
USB5 (HUB-USB2.0)	Ground	34	33	Ground	USB6 (HUB-USB2.0)
	E_USB5_N	36	35	E_USB6_N	
	E_USB5_P	38	37	E_USB6_P	
	5V_USB1	40	39	5V_USB1	
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 Receptacle.**					
COM2 BIOS Setup： Advanced/IT8518Super IO Configuration/Serial Port 2 Configuration【RS-232】/【RS-422】/【RS-485】					

17. JP2:

(2.0mm Pitch 2x3 Pin Header), COM2 jumper setting, pin 1~6 are used to select signal out of pin 16 of COM2 port.

JP1 Pin#	Function
Close 1-2	**COM2 RI (Ring Indicator) (default)**
Close 3-4	COM2 Pin16: DC+5V (option)
Close 5-6	COM2 Pin16: DC+12V (option)

18. MSATA1:

(50.95mmx30mm Socket 52Pin), mSATA socket, it is located at the top, it supports SATAII Signal and SMBUS and B2 mSATA bus for flash disk signal.

Function	Support
B2 mSATA	●
SMBUS	●
SATA II	○ (option)

19. H2:

MSATA1 SCREW HOLES, H2 for mini SATA card (30mmx50.95mm) assemble.

20. MSD1:

(Micro SD card slot), Micro Secure Digital Memory Card slot

21. MPCIE1:

(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. MPCIe card size is 30x50.95mm.

22. SIM1:

(Micro SIM Card slot), support micro SIM Card devices

23. MPCIE2:

(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 30x50.95mm.

24. H3/H4:

MPCIE1 SCREW HOLES, H3 for mini PCIe1 card (30mmx50.95mm) assemble. H4 for mini PCIe2 card (30mmx50.95mm) assemble.

25. LED1, LED3 (option)**:**

LED1: LED STATUS. Green LED for Motherboard Power Good status.
LED3: LED STATUS. Green LED for EC Power status.

26. F_AUDIO1:

(2.0mm Pitch 2x6 Pin Header), Front Audio, An onboard Realtek ALC269 codec is used to provide high-quality audio I/O ports. Line Out can be connected to a headphone or amplifier. MIC is the port for microphone input audio.

Signal Name	Pin#		Signal Name
+5V	1	2	GND_AUD
LINE-OUT-L	3	4	LINE-OUT-R
FRONT_JD	5	6	NC
NC	7	8	NC
MIC-IN-L	9	10	MIC-IN-R
GND_AUD	11	12	MIC1_JD

27. SPK1:

(2.0mm Pitch 1x4 Wafer Pin Header), support 2-W(per channel) efficient, audio power amplifier for driving bridged-tied stereo speakers.

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

28. BUZ1:

Onboard buzzer

29. EC_GPIO1 (option):

(2.0mm Pitch 1X10 Pin Header), for expand connector, it provides eight GPIO.

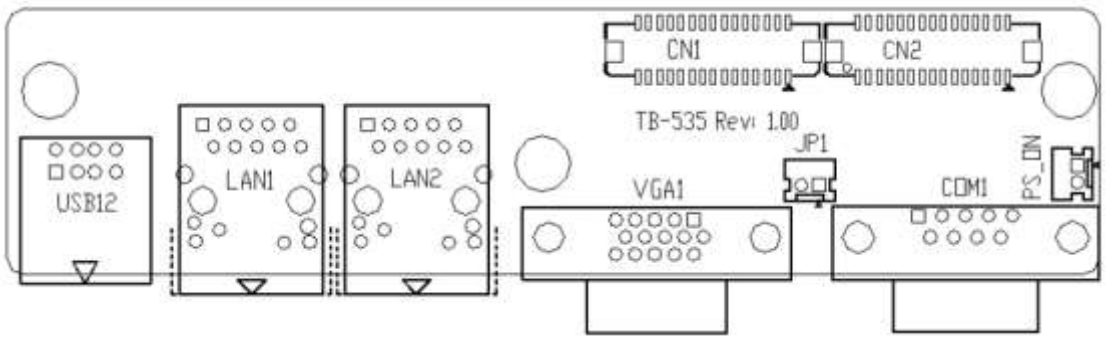
Pin#	Signal Name
1	Ground
2	GPA0_ONOFF (EC_GPA0)
3	GPA1_SPK- (EC_GPA1)
4	GPE6_BKLT- (EC_GPE6)
5	GPE0_BKLT+ (EC_GPE0)
6	GPC3_SPK+ (EC_GPC3)
7	BKLT_CTRL_PWR
8	ADC6_BKLT_CTRL (EC_ADC6)
9	ADC7_L_SENSE (EC_ADC7)
10	3.3V

EC_GPIO1	Function
OSD keypad	5Key: Power, Brightness up, Brightness down, Volume up, Volume down

30. TB-535:

SBC-7810 I/O Card, via a dedicated cable connected to SBC-7810 CN1 and MIO1 and CN2.

TB-535 Top：



CN1:

Function	Signal Name	Pin#		Signal Name	Function
(NC)	5V_USB3	2	1	5V_USB3	USB1 (USB2.0)
	NC	4	3	USB1_N	
	NC	6	5	USB1_P	
	Ground	8	7	Ground	
	NC	10	9	CRT_DDCDATA	CRT
	NC	12	11	CRT_DDCCLK	
	Ground	14	13	5V_VGA	
COM1:RI/5V/12V	VCC_RI1-	16	15	CRT_H_SYNC	
COM1:232/422	DTR1-_422RX	18	17	CRT_V_SYNC	
COM1:232	CTS1-	20	19	3P3V_S0	
COM1:232/422	TXD1_422RX+	22	21	CRT_FB_RED	
COM1:232	RTS1-	24	23	Ground	
COM1:232/422/485	RXD1_422TX+_485+	26	25	CRT_FB_GREEN	
COM1:232	DSR1-	28	27	CRT_FB_BLUE	
COM1:232/422/485	DCD1-_422TX-_485-	30	29	Ground	

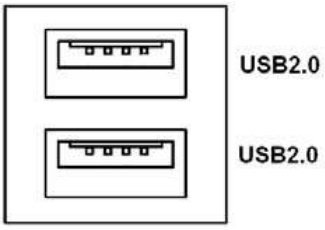
CN2:

Function	Signal Name	Pin#		Signal Name	Function
LAN1	3P3V_S5	2	1	Ground	LAN2
	LAN1_MDI0+	4	3	LAN2_MDI0+	
	LAN1_MDI0-	6	5	LAN2_MDI0-	
	LAN1_MDI1+	8	7	LAN2_MDI1+	
	LAN1_MDI1-	10	9	LAN2_MDI1-	
	LAN1_MDI2+	12	11	LAN2_MDI2+	
	LAN1_MDI2-	14	13	LAN2_MDI2-	
	LAN1_MDI3+	16	15	LAN2_MDI3+	
	LAN1_MDI3-	18	17	LAN2_MDI3-	
	Ground	20	19	Ground	
	LAN1_1000M_LINK-	22	21	LAN2_1000M_LINK	

	LAN1_100M_LINK-	24	23	LAN2_100M_LINK	
	LAN1_ACT-	26	25	LAN2_ACT	
MIO1/USB5	USB2_P	28	27	USB2_N	MIO1/USB5
Power on/off	WRBTN_ON-	30	29	Ground	

USB12:

(Double stack USB typeA), USB connector, it provides up to two USB2.0 ports, support USB full-speed and low-speed signaling.



Each USB Type A Receptacle (2 Ports) Current limited value is 1.5A.

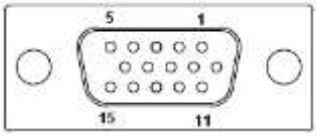
If the external USB device current exceeds 1.5A, please separate connectors into different Receptacle.

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.

VGA1：

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

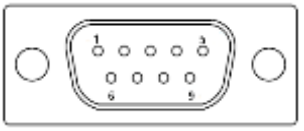


JP1:

VGA hot plug setting	
JP1	Function
Pin1-Pin2 (Close)	VGA Simulation Disabled
Pin1-Pin1 (Open)	VGA Simulation Enabled
Use the 2.0mm jumper cap to close pin 1 and pin 2	

COM1:

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



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/F81216SEC 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
BIOS Setup： Advanced/F81216SEC 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
BIOS Setup： Advanced/F81216SEC Super IO Configuration/Serial Port 1 Configuration【RS-485】	

PS_ON:

Power on/off button, used to connect power switch button

3.5 Power Board PB-422B Jumpers Setting and Connectors

PB422B is a power management board for SBC-7810. It contains DC_IN1、DC_OUT1、SW_C1、SW_T1、FP1 and BAT1 connectors. It inputs 6-36V voltage through DC_IN1 and 12V from the battery through the BAT1 connector. It outputs 14V or 0V voltage to SBC-7810 through DC_OUT1. When the power button is pressed for a period of time (2-5s) or the ACC signal is changed, the voltage of DC_OUT1 will be changed after a delay time. The delay time will be determined by the dial switch or data which is sent from SBC-7810 via FP1.

1. DC_IN1:

(3.81mm Pitch 1*3 Pin Connector), DC_IN1 inputs 6-36V voltage and ACC signal from vehicle.

Pin#	Signal Name
1	ACC
2	DC-
3	DC+

2. DC_OUT1:

(3.81mm Pitch 1*2 Pin Connector), DC_OUT1 outputs 14V or 0V voltage to SBC-7810.

Pin#	Signal Name
1	DC+
2	DC-

3. SW_C1:

5 bit dial switch. SW_C1 determines the delay time by the dial switch or the data from SBC-7810.

Signal Name	Pin#		Signal Name
HW_SET	1	2	GND
NC	3	4	GND
MB_PWR_OFF-	5	6	GND

RSV_SW_P3_3	7	8	GND
PWRON_TST-	9	10	GND

4. SW_T1:

6 bit dial switch. SW_T1 provides the delay signal.

Signal Name	Pin#		Signal Name
SET_ON_1	1	2	GND
SET_ON_2	3	4	GND
SET_ON_3	5	6	GND
SET_OFF_1	7	8	GND
SET_OFF_2	9	10	GND
SET_OFF_3	11	12	GND

5. FP1:

(1.25mm Pitch 2*10 Pin Connector) FP1 communicates with SBC-7810 through IIC and UART and receive the power button signal.

Signal Name	Pin#		Signal Name
GND	1	2	PWR_BTN_MCU-
DC13V_ON_LED-	3	4	5V_ALLS
GND	5	6	PWR_BTN_MB-
SBW_TCK	7	8	SBW_TDIO_RST-
UCB0_SCL	9	10	UCB0_SDA
GND	11	12	GND
NC	13	14	NC
MB_PWR_OFF-	15	16	NC
P_RXD1	17	18	P_TXD1
14V_PC	19	20	14V_PC

6. BAT1:

BAT1 communicates with the battery through the SMBUS and input 12V battery voltage.

Pin#	Signal Name
1	VCC_BAT1
2	VCC_BAT1
3	VCC_BAT1
4	SMB_DAT_BAT1
5	SMB_CLK_BAT1
6	BAT1_TEMP
7	GND
8	GND
9	GND
10	SET_BAT1_ON

Chapter 4 UEFI SETUP UTILITY

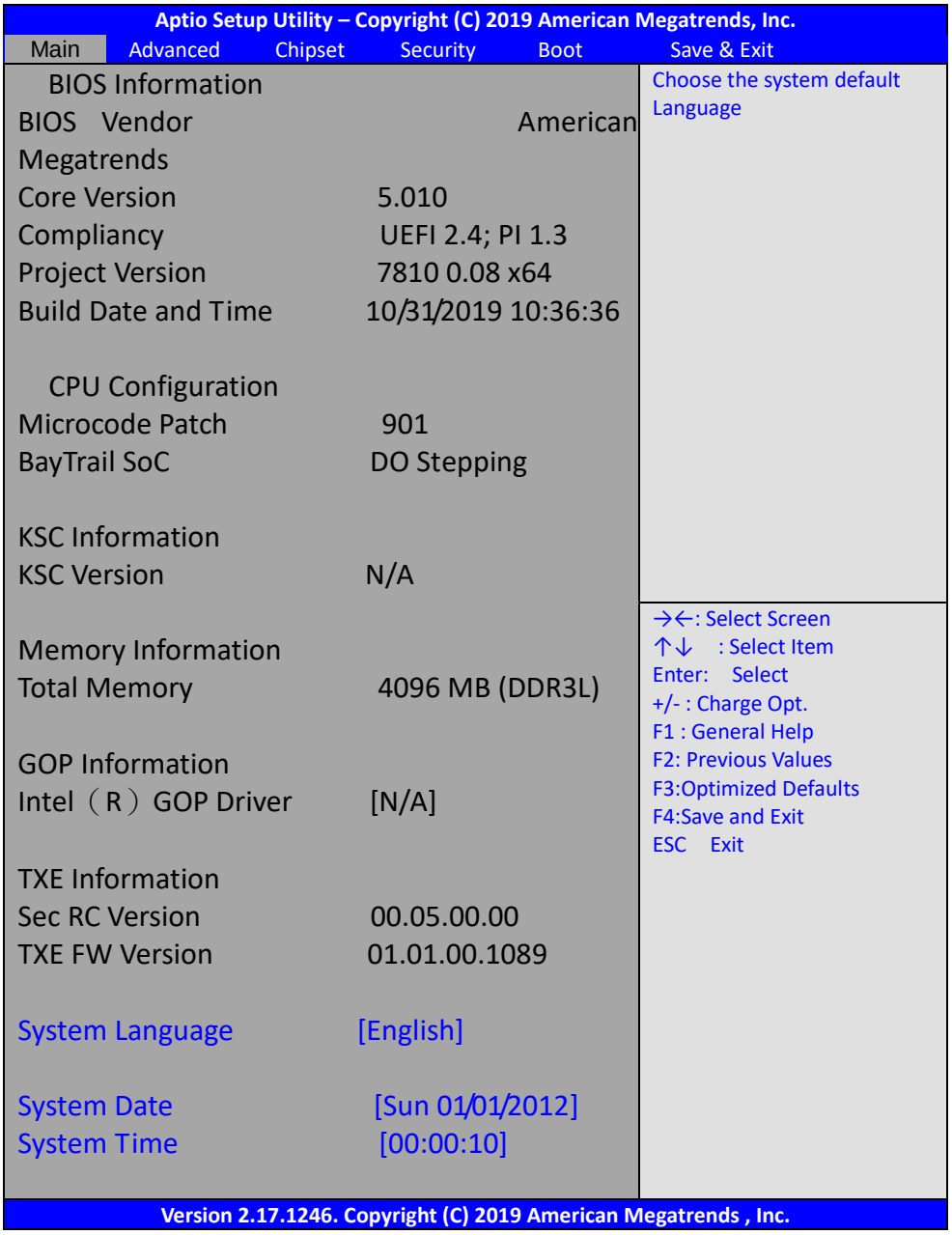
4.1 Operations after POST Screen

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

4.2 BIOS Setup Utility

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

4.3 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:

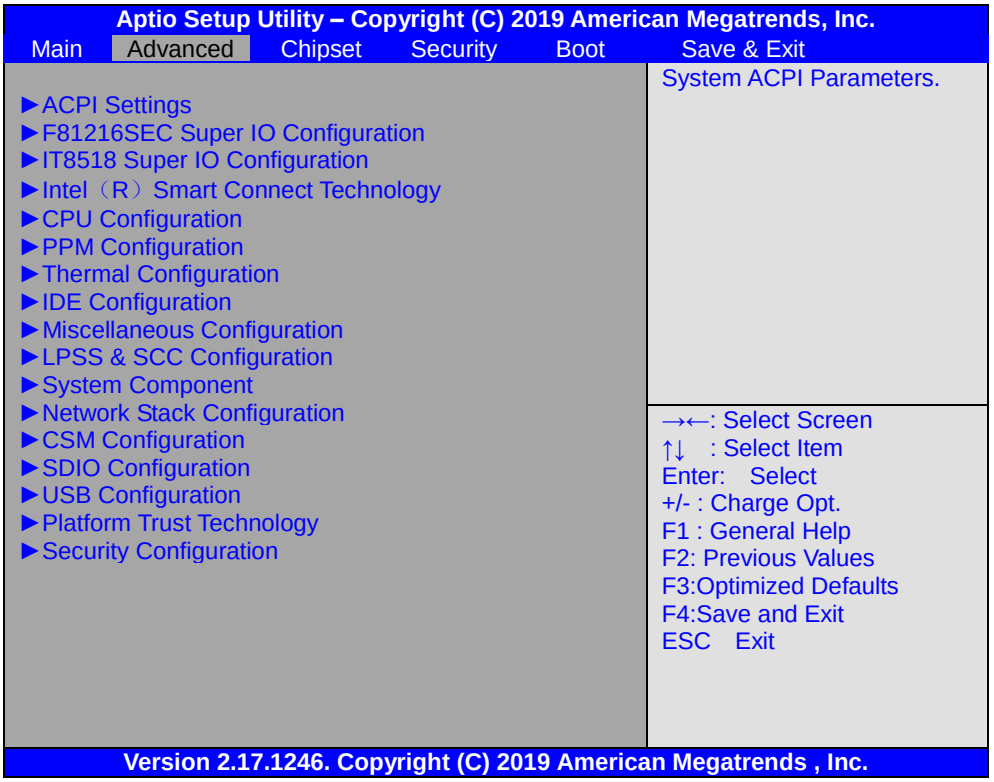
Day: Note that the ‘Day’ automatically changes when you set the date

Month: 01 to 12

Date: 01 to 31

Year: 1999 to 2099

4.4 Advanced Settings



4.4.1 ACPI Settings

Enable ACPI Auto Conf:

[Disabled]

[Enabled]

Enable Hibernation:

[Enabled]

[Disabled]

ACPI Sleep State:

[S3 (Suspend to RAM)]

[Suspend Disabled]

Lock Legacy Resources:

[Disabled]

[Enabled]

4.4.2 F81216SEC Super IO Configuration

Super IO chip F81216SEC

Serial Port 1 Configuration

UART1 Mode Selection：

[RS-232]

[RS-485]

[RS-422]

Serial Port 2 Configuration

Backlight PWM Controller：

[RS-232]

[RS-485]

[RS-422]

Serial Port 3 Configuration

Change Settings [Auto]

Serial Port 4 Configuration

Change Settings [Auto]

4.4.3 IT8518 Super IO Configuration

Super IO chip IT8518/IT8519

Serial Port 1 Configuration

Change Settings [Auto]

Serial Port 2 Configuration (COM6)

Change Settings [Auto]

4.4.4 Intel® Smart Connect Technology

ISCT Support

[Disabled]

[Enabled]

4.4.5 CPU Configuration

Socket 0 CPU Information

Intel® ATOM™ CPU E3845 @ 1.91GHz

CPU Signature	30679
Microcoede Patch	901
Max CPU Speed	1910 MHz
Mix CPU Speed	500MHz
Processor Cores	4
Intel HT Technology	Not Supported
Intel HT-X Technology	Supported
L1 Date Cache	24KB x 4
L1 Code Cache	32KB x 4
L2 Cache	1024 KB x 2
L2 Cache	Not Present
CPU Thermal configuration	
CPU Speed	1918 MHz
64-bit	Supported

Limit CPUID Maximum:

[Disabled]

[Enabled]

Execute Disable Bit:

[Enabled]

[Disabled]

Intel Virtualization Technology:

[Enabled]

[Disabled]

Power Technology

[Energy Efficient]

[Disabled]

[Custom]

4.4.6 PPM Configuration

CPU C State Report

[Enabled]

[Disabled]

Max CPU C-state

[C7]

[C6]

[C1]

SOix

[Disabled]

[Enabled]

4.4.7 Thermal Configuration Parameters

4.4.8 IDE Configuration

Serial-ATA (SATA)

[Enabled]

[Disabled]

SATA Test Mode

[Disabled]

[Enabled]

SATA Speed Support

[Gen2]

[Gen1]

SATA ODD Port

[No ODD]

[Porto ODD]

[Port1 ODD]

[Disabled]

SATA Mode

[AHCI Mode]
[IDE Mode]

Serial-ATA Port 0

[Enabled]
[Disabled]

SATA Port0 Hotplug

[Disabled]
[Enabled]

Serial-ATA Port 1

[Enabled]
[Disabled]

SATA Port1 Hotplug

[Disabled]
[Enabled]

SATA Port0
Not Present
SATA Port1
Not Present

4.4.9 Miscellaneous Configuration

4.4.10 LPSS & SCC Configuration

OS Selection	【Windows 7】
	[Windows 8.x]
LPSS & SCC Configuration	
SCC Configuration	
SCC eMMC Support	[eMMC AUTO MODE]
SCC eMMC 4.5 DDR50 Support	[Enabled]
SCC eMMC 4.5 HS200 Support	[Disabled]
eMMC Secure Erase	[Disabled]
SCC SDIO Support	[Enabled]
SCC SD Card Support	[Enabled]
SDR25 Support for SDCard	[Enabled]
SDR50 Support for SDCard	[Enabled]
MIPI HSI Support	[Disabled]
LPSS Configuration	[Enabled]
LPSS DMA #1 Support	[Enabled]
LPSS DMA #2 Support	[Enabled]
LPSS I2C #1 Support	[Enabled]

LPSS I2C #2 Support	[Enabled]
LPSS I2C #3 Support	[Enabled]
LPSS I2C #4 Support	[Enabled]
LPSS I2C #5 Support	[Enabled]
LPSS I2C #6 Support	[Enabled]
LPSS I2C #7 Support	[Enabled]
NFC	[Disabled]
Touch Pad	[Disabled]
I2C touch Device Address	[AUTO]
LPSS HSUART #1 Support	[Disabled]
LPSS HSUART #2 Support	[Disabled]
LPSS PWM #1 Support	[Enabled]
LPSS PWM #2 Support	[Enabled]

4.4.11 System Component

4.4.12 Network Stack Configuration

Network Stack	[Disabled]

4.4.13 CSM Configuration

CSM Support	[Enabled]
CSM16 Module Version	07.76
GateA20 Active	[Upon Request]
	[Always]
Option ROM Messages	[Force BIOS]
	[Keep Current]
Boot option filter	[UEFI and Legacy]
	[Legacy only]
	[UEFI only]
Network	
	[UEFI]
	[Do not launch]
	[Legacy]
Storage	
	[UEFI]
	[Do not launch]
	[Legacy]
Video	
	[Legacy]
	[UEFI]

[Do not launch]

Other PCI devices

[UEFI]
[Do not launch]
[Legacy]

4.4.14 SDIO Configuration

4.4.15 USB Configuration

USB Configuration
USB Module Version 8.11.02
USB Devices:
1 keyboard, 2 Mice，2 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]

4.4.16 Platform Trust Technology

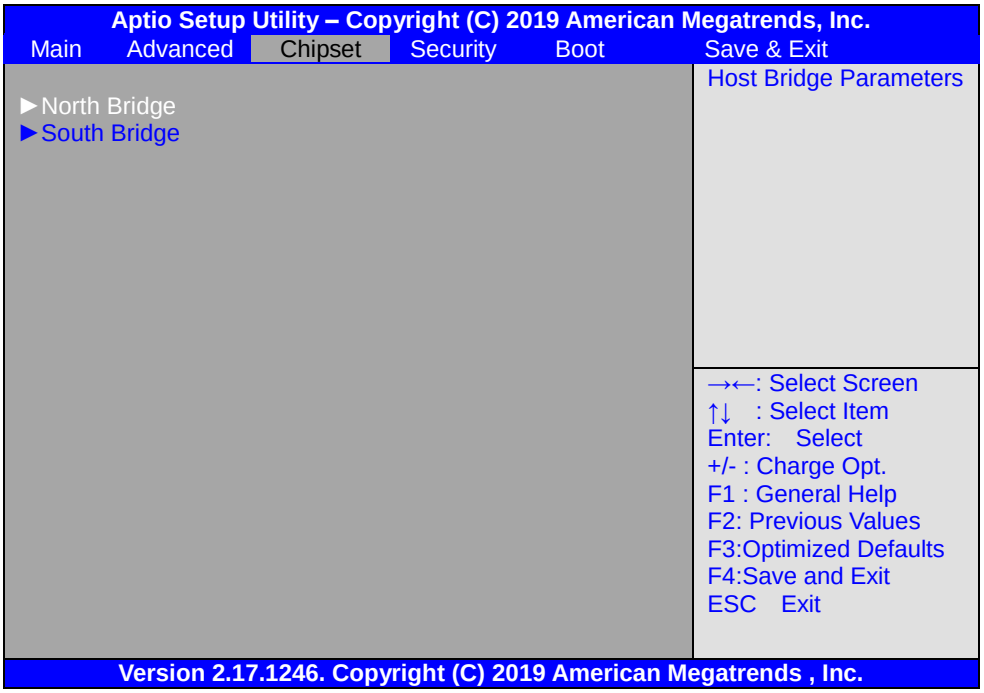
Ftpm

[Disabled]

[Enabled]

4.4.17 Security Configuration

4.5 Chipset Settings



4.5.1 North Bridge

►Intel IGD Configuration

►IGD – LCD Control

Force Lid Status [On]

[off]

BIA [Auto]

ALS Support [Disabled]

IGD Flat Panel [Auto]

Pannel Scaling [Auto]

►Memory Frequency and Timing

►Graphics Power Management Control

Memory Information

Total Memory 4096 MB(DDR3L)

Memory Slot0 4096 MB(DDR3L)

DIMM#2 Not Present

Max TOLUD

[Dynamic]
[2GB]
[2.25GB]
[2.5GB]
[2.75GB]
[3GB]

Backlight PWM or DC Control

[PWM]
[DC]

Backlight PWM Control

[Button Control PWM by EC]
[PWM Inverted by BIOS]
[PWM Normal by BIOS]
[Button Control PWM by EC]

BIOS Control Backlight Level

[Level 7]
[Level 0]
[Level 1]
[Level 2]
[Level 3]
[Level 4]
[Level 5]
[Level 6]
[Level 8]
[Level 9]
[Level 10]
[Level 11]
[Level 12]
[Level 13]
[Level 14]
[Level 15]

Power on Delay Time [10 Second]

[30 Second]
[1min]
[5min]
[10min]
[15min]
[30min]
[1Hour]
[1.5Hour]

[2Hour]
[2.5Hour]
[3Hour]

4.5.2 South Bridge

►Azalia HD Audio

►USB Configuration

USB OTG Support	[Disabled]
USB VBUS	[on]
XHCI Mode	[smart Auto]
USB2 Link Power Management	[Enabled]
USB 2.0(EHCI) Support	[Enabled]
USB EHCI debug	[Disabled]
USB Per Port Control	[Enabled]
USB Port 0	[Enabled]
USB Port 1	[Enabled]
USB Port 2	[Enabled]
USB Port 3	[Enabled]

4.6 Security Settings

4.6.1 Administrator Password

4.6.2 User Password

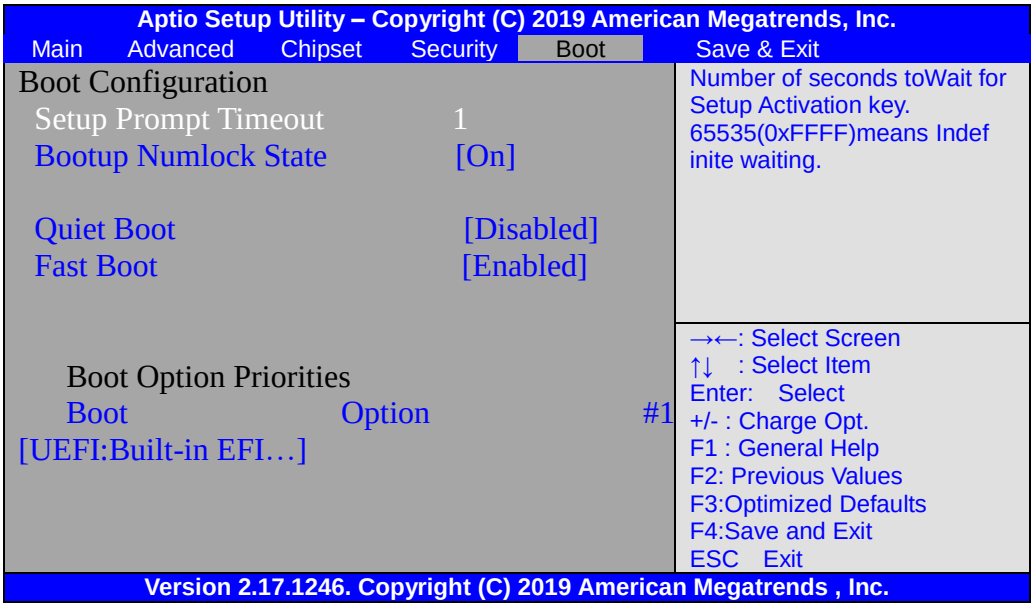
Type the password with up to 20 characters and then press <Enter> key. This will clear all previously typed CMOS passwords. You will be requested to confirm the password. Type the password again and press <Enter> key. You may press <Esc> key to abandon password entry operation.

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.

4.7 Boot 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:*** …]

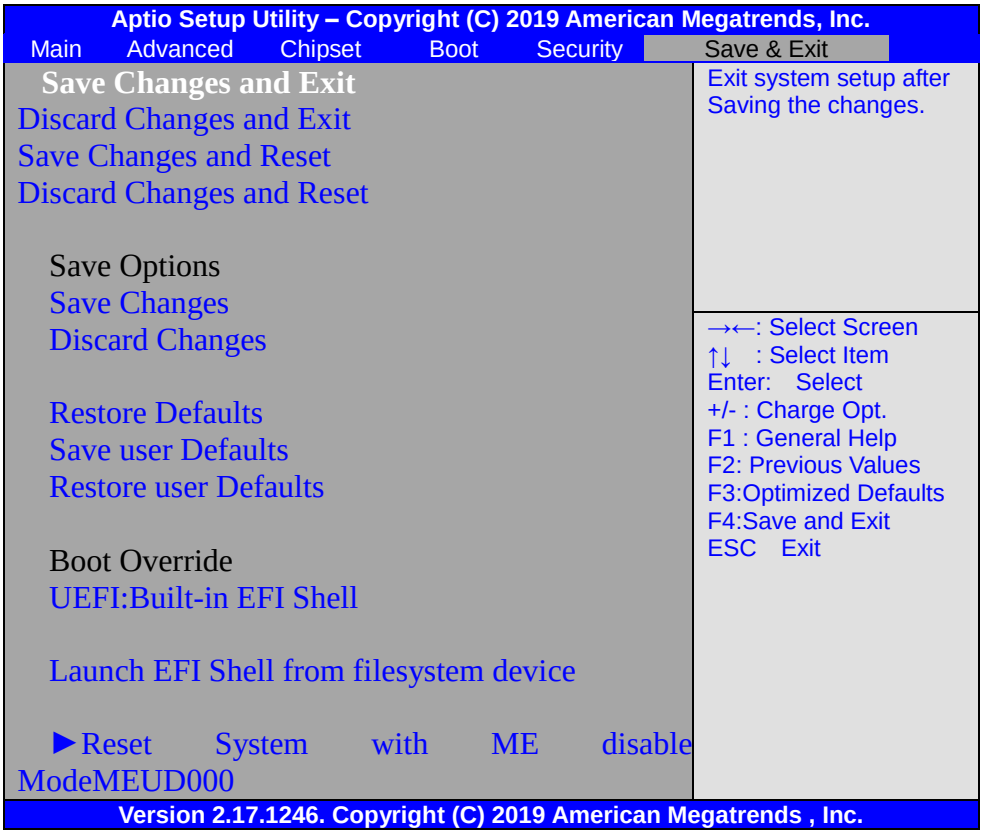
Boot Option #1

SATA PM:***…

******

Disabled

4.8 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]

Launch EFI Shell from filesystem device

WARNING Not Found

[ok]

Reset System with ME disable ModeMEUD000

ME will runs into the temporary disable mode, Ignore if ME Ignition FWMEUD001.

Chapter 5 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 chipset driver, VGA driver, LAN driver, Audio driver, USB 3.0 driver, and Com 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.

5.1 Intel® AtomTM SoC Chipset Driver

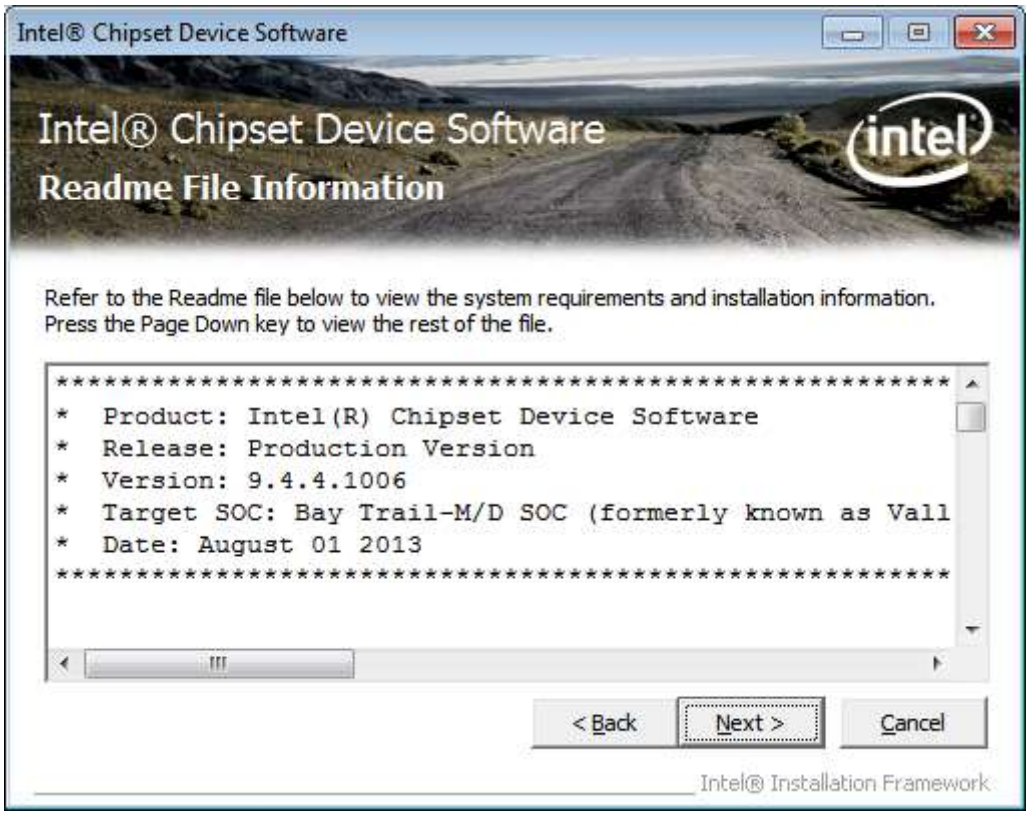
To install the Intel chipset driver, please follow the steps below.

Step 1. Select **Intel AtomTM SoC Chipset** from the list

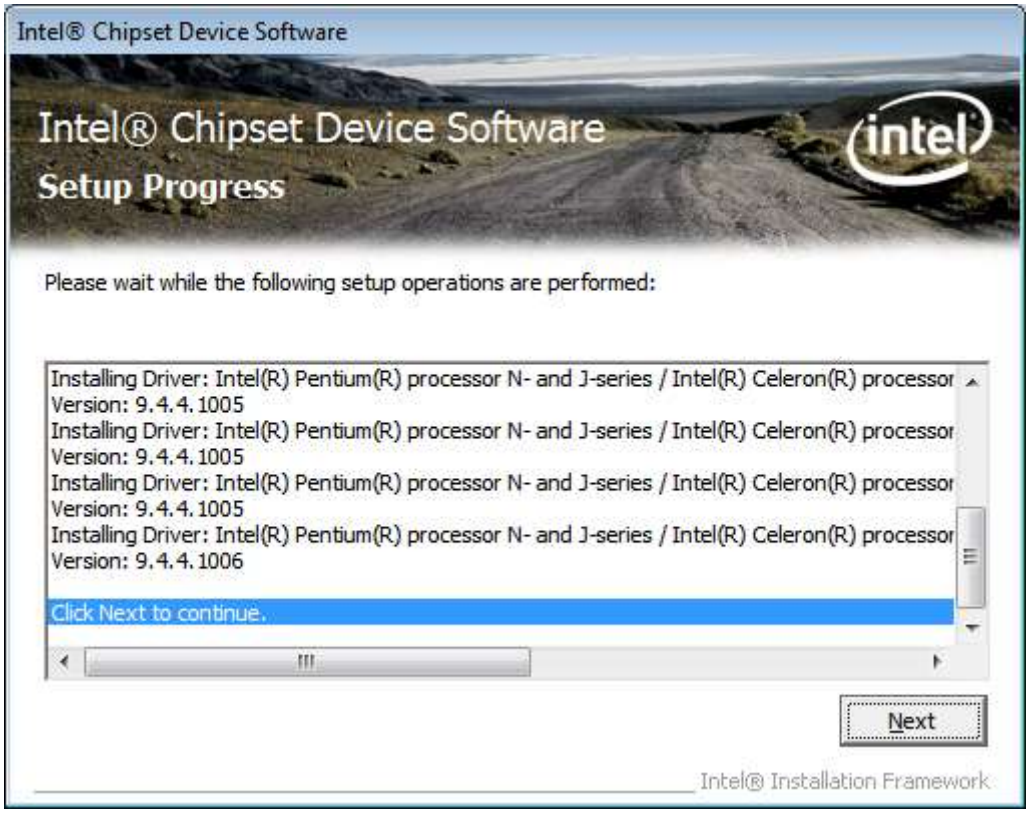
Step 2. Click **Next** to setup program.

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

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



Step 5. Click **Next**.



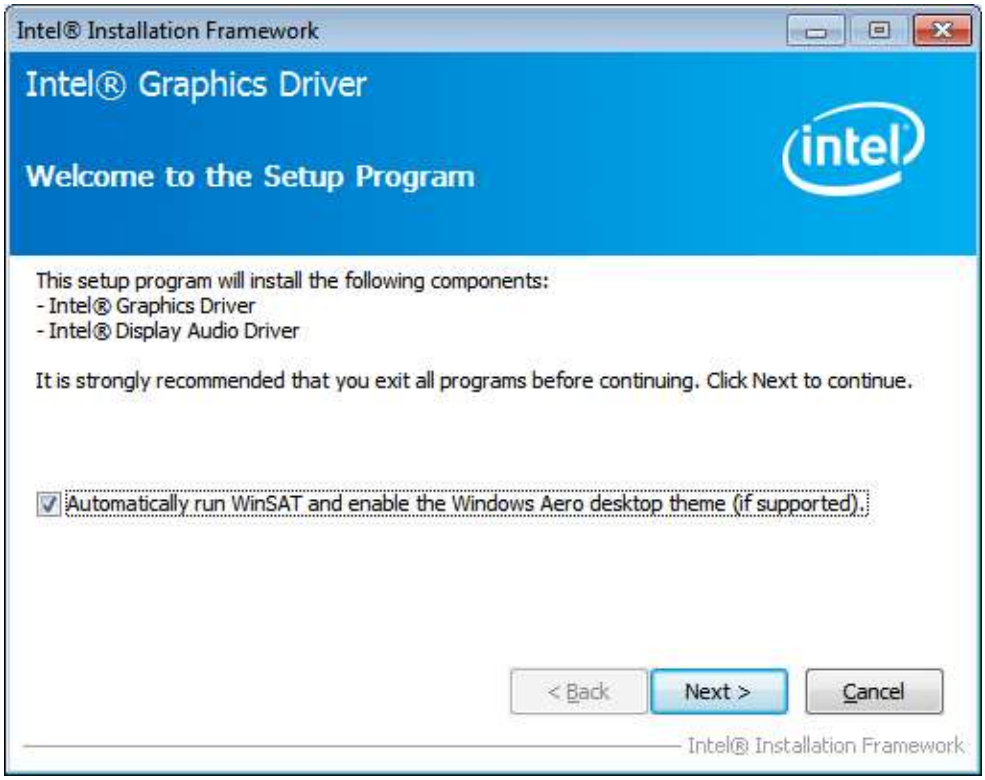
Step 6. Select **Yes, I want to restart this computer now**. Click **Finish**, then remove any installation media from the drives.

5.2 Intel® VGA Chipset Driver

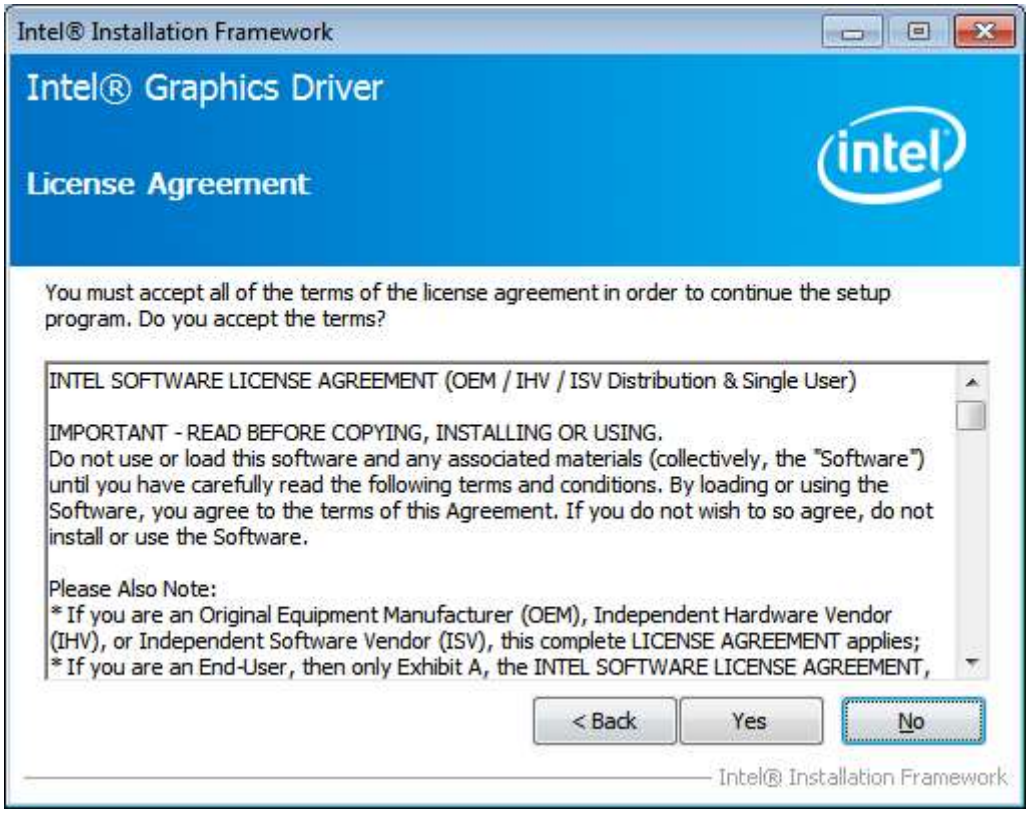
To install the VGA drivers, follow the steps below to proceed with the installation.

Step 1.Select **Intel® VGA Chipset Driver.**

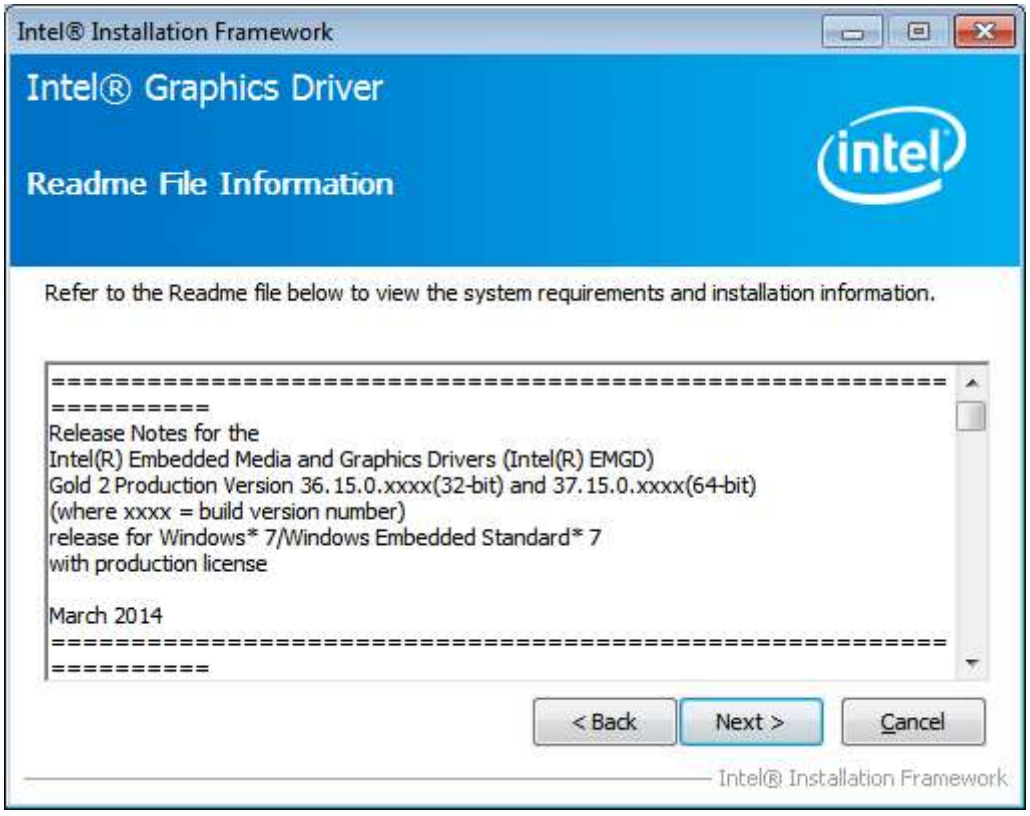
Step 2. Click **Automatically run WinSAT and enable the Windows Aero desktop theme(if supported).** Click **Next.**



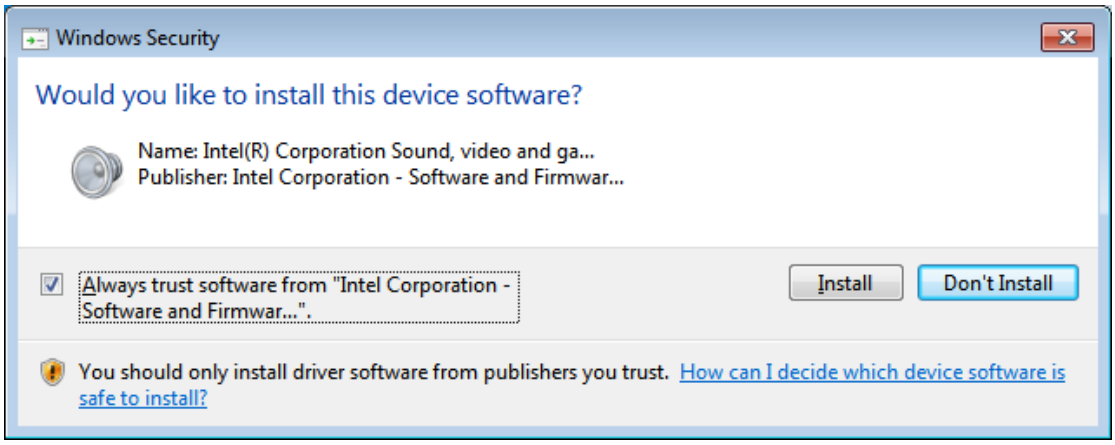
Step 3. Read license agreement. Click **Yes.**



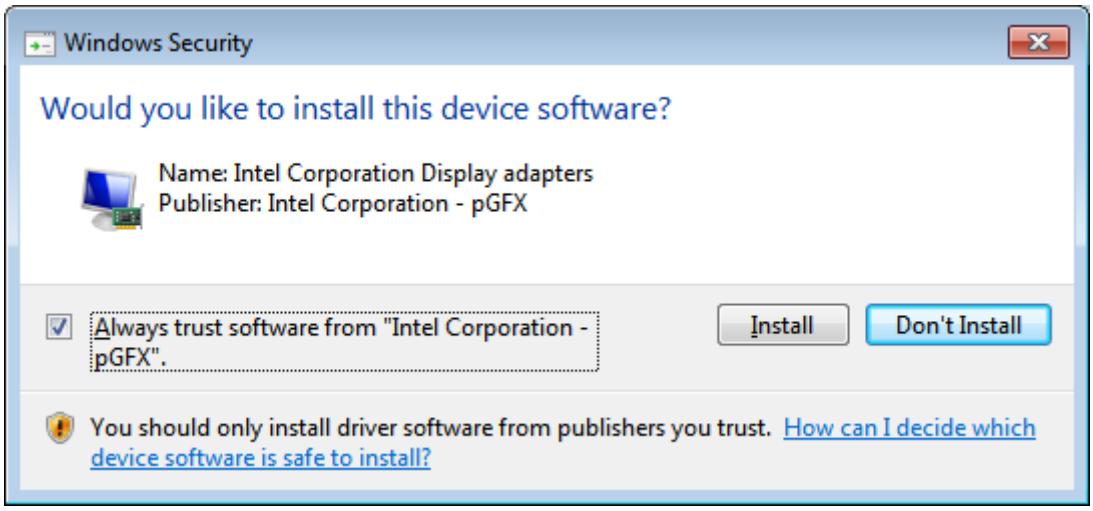
Step 4. Click **Next** to continue.



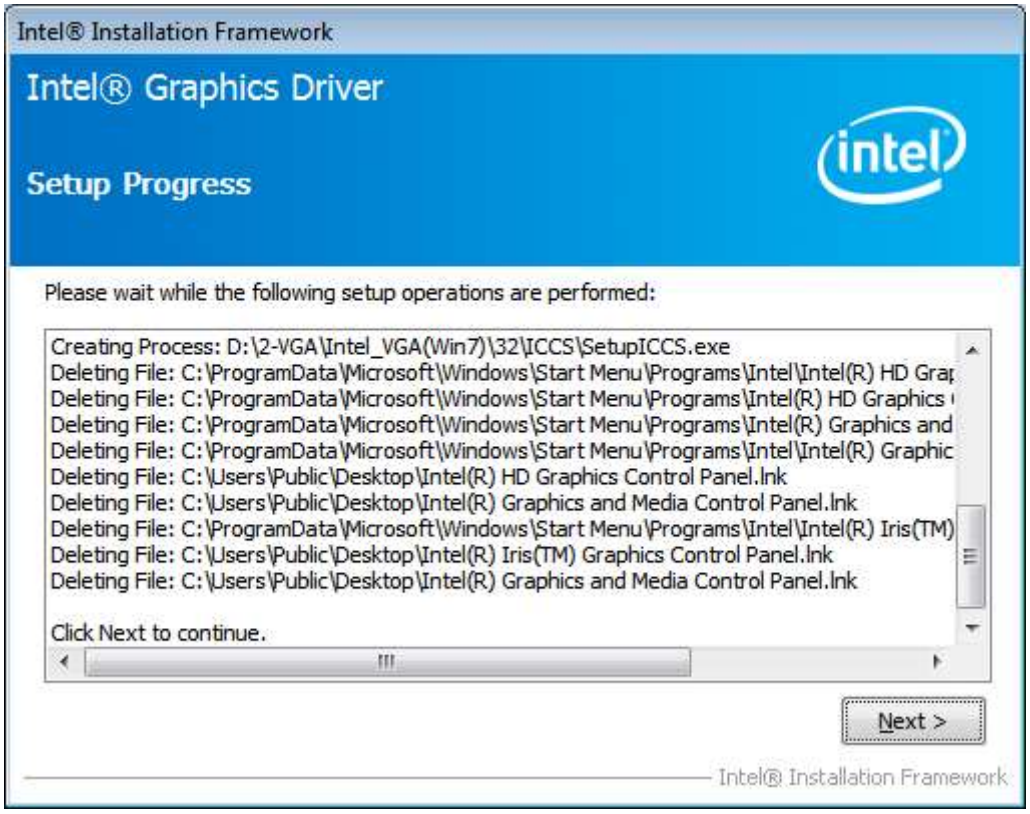
Step 5. Click **Install.**



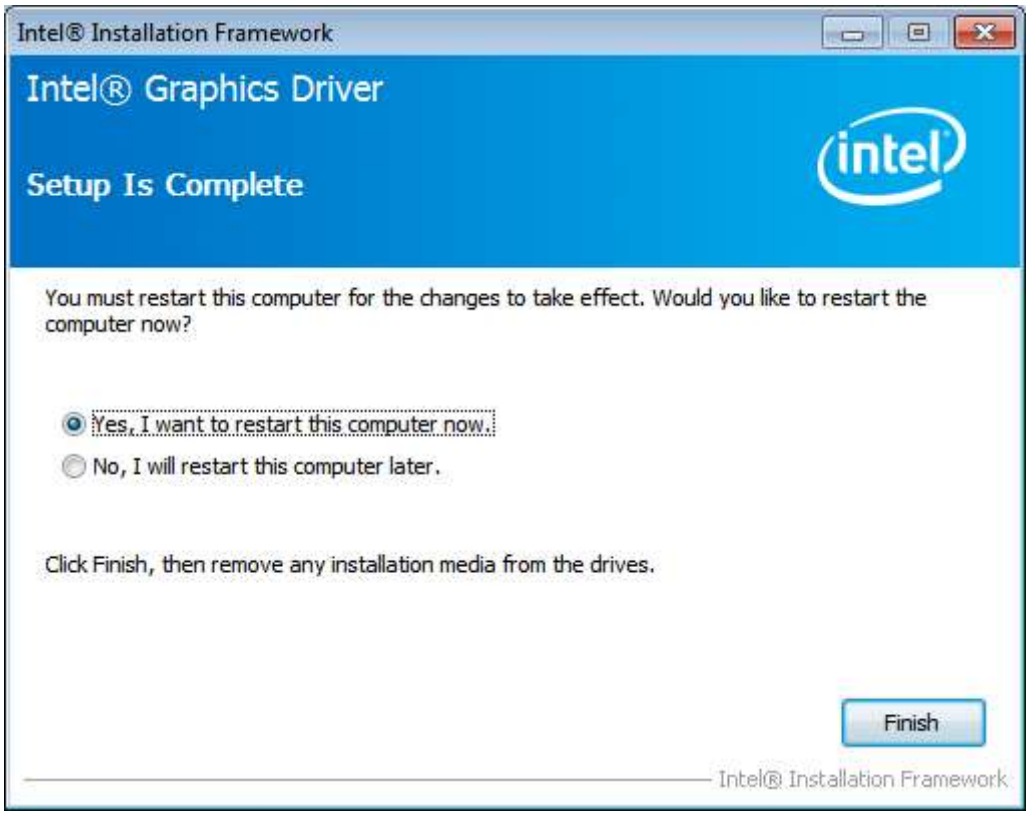
Step 6. Click **Install**.



Step 7. Click **Next.**



Step 8. Select **Yes, I want to restart this computer now.** Then click **Finish** to complete the installation.

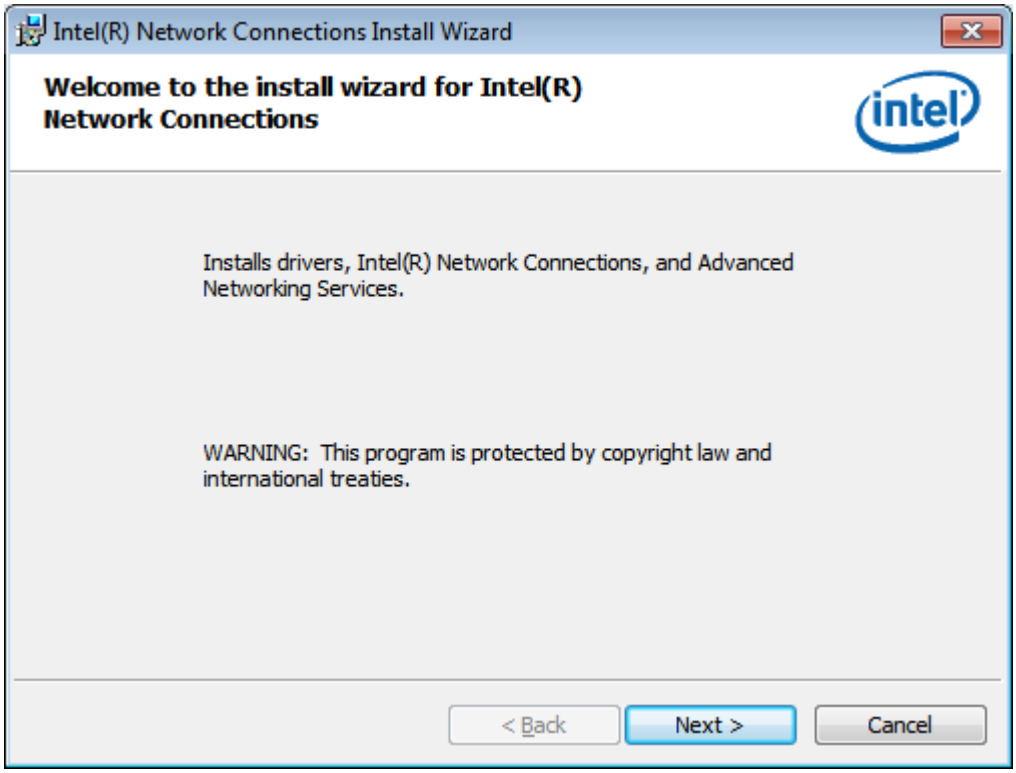


5.3 Intel® 82574L LAN Driver

To install the Intel® 82574L LAN Driver, please follow the steps below.

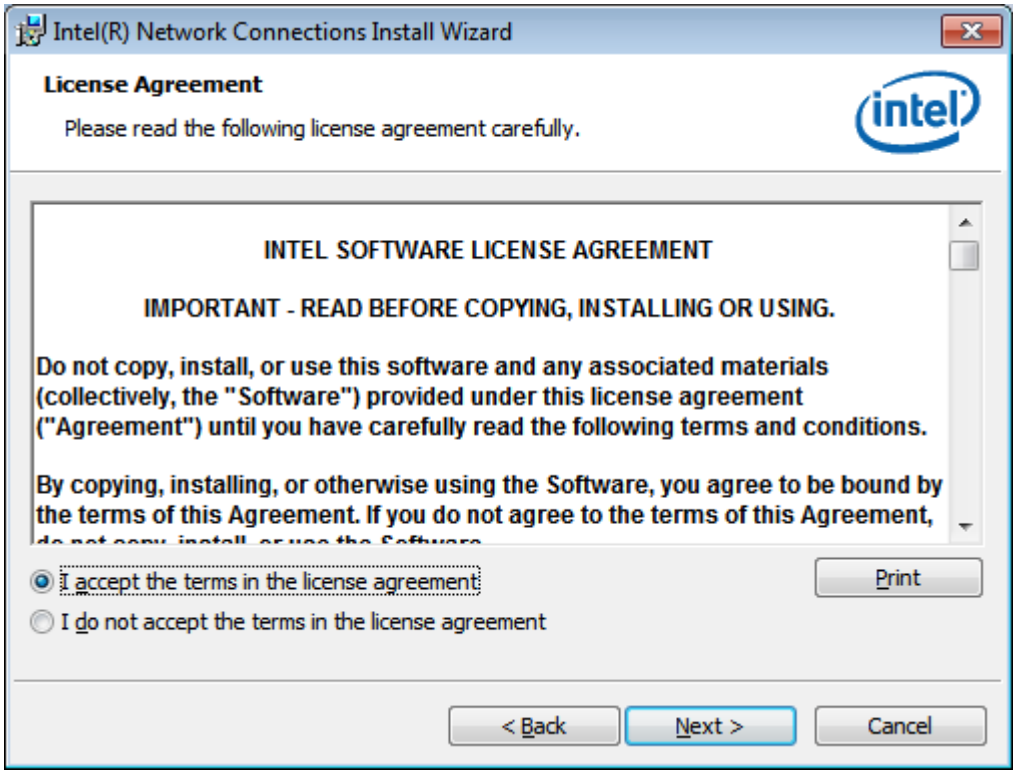
Step 1. Select **Intel® 82574L LAN Driver** from the list**.**

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

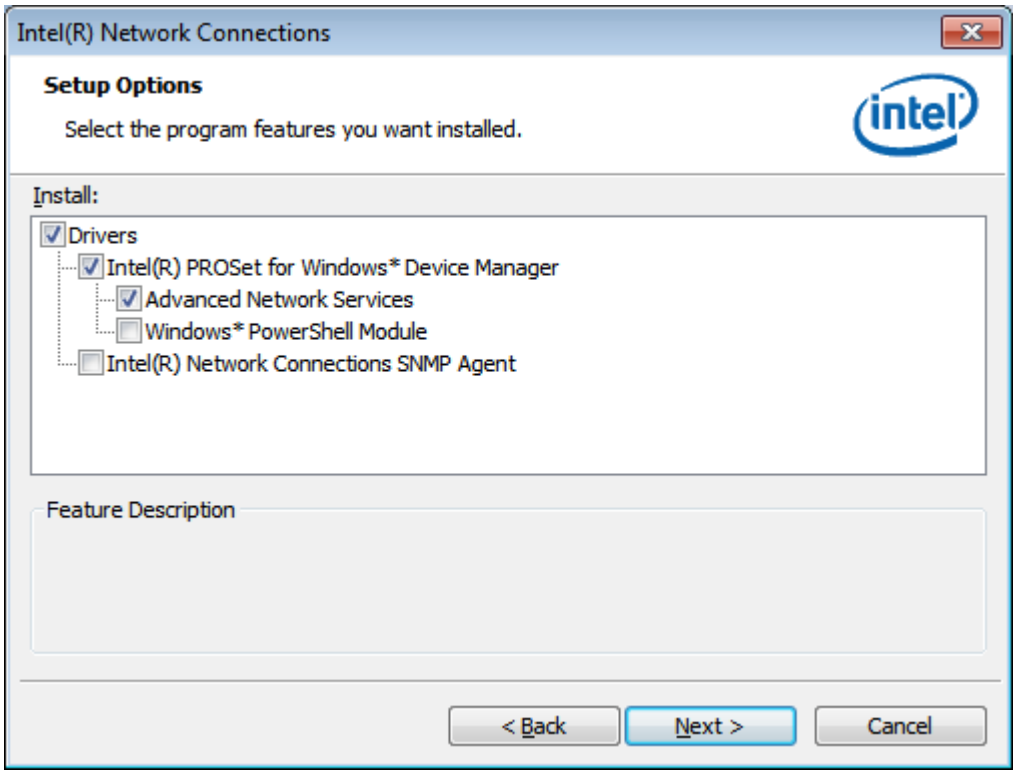


Step 3. Read license agreement. Click **I accept the terms in the license agreement.**

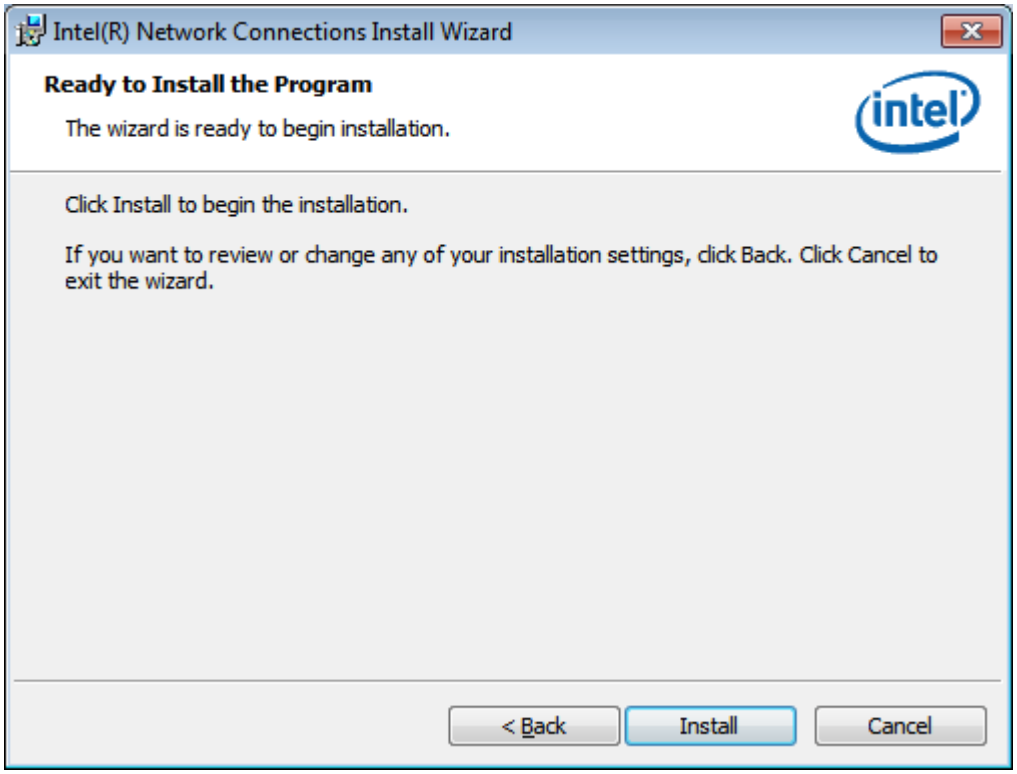
Click **Next.**



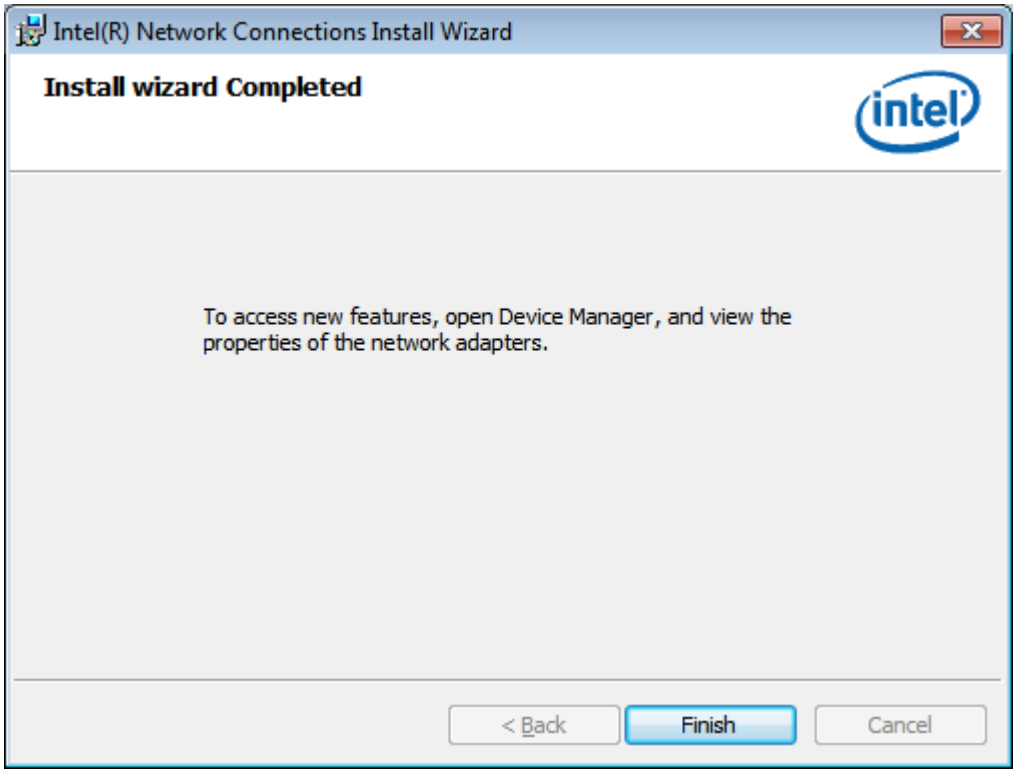
Step 4. Click **Next** to continue.



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



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

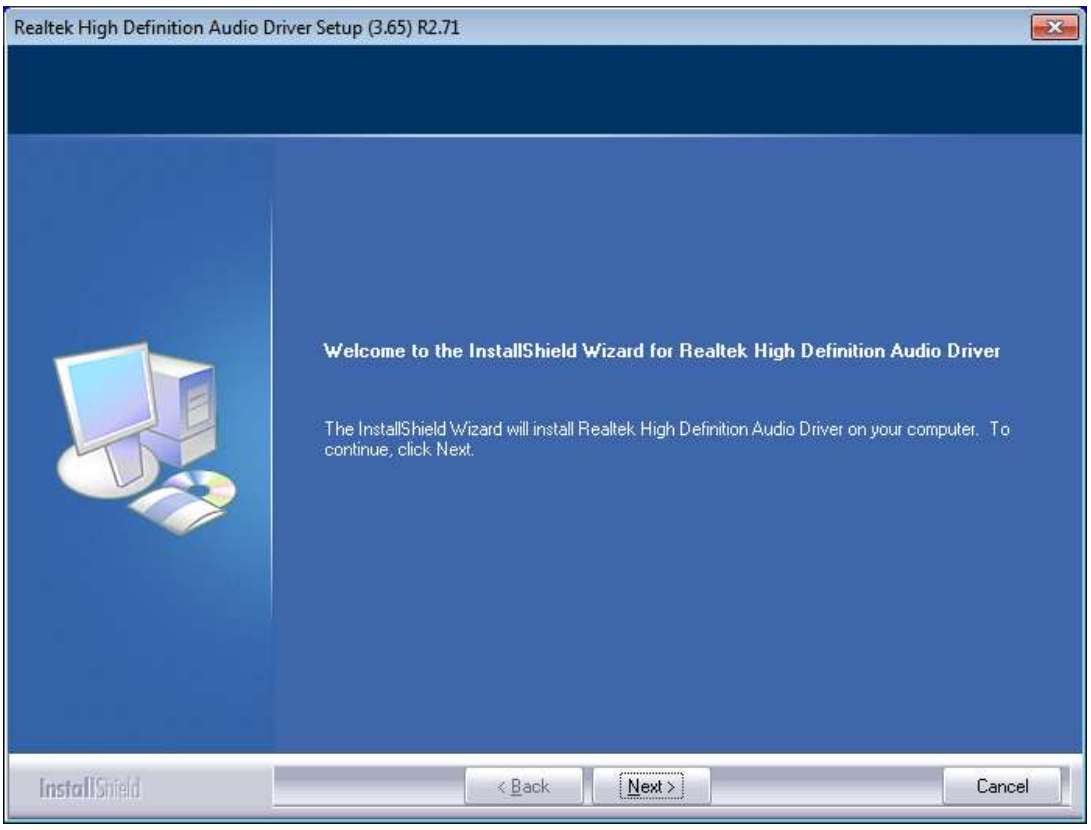


5.4 Realtek ALC662 HD Audio Driver

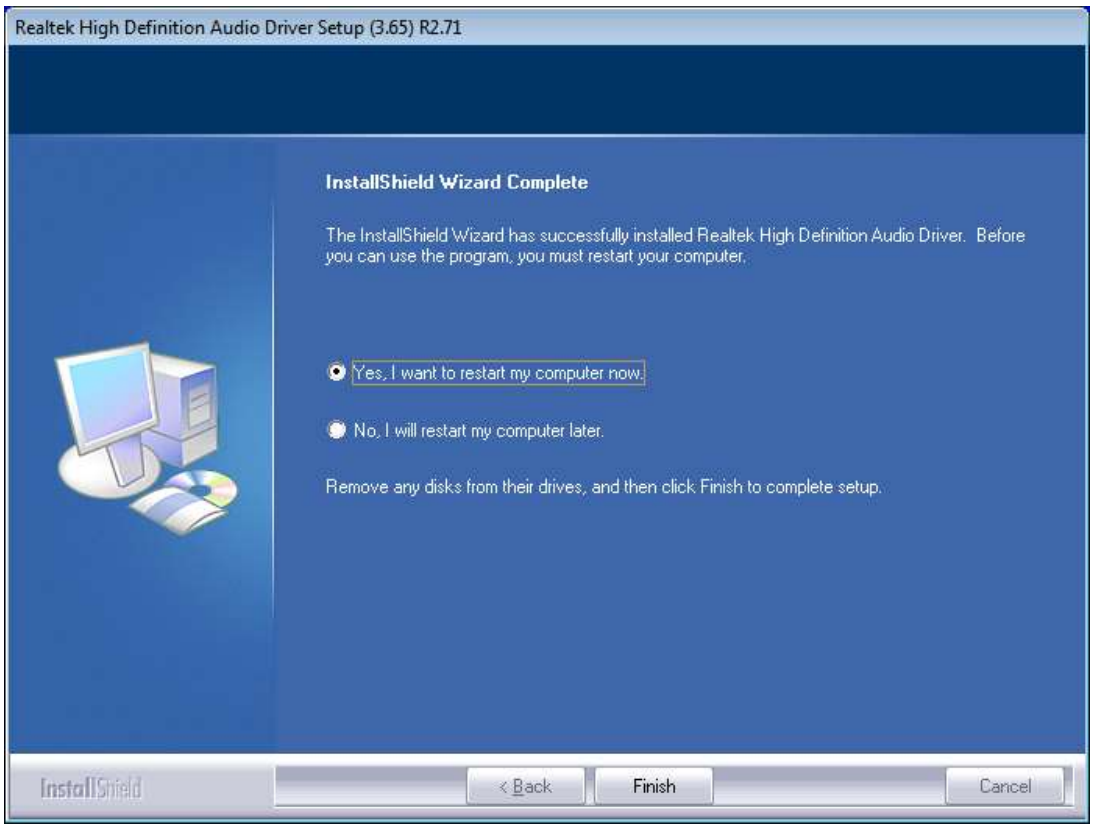
To install the Realtek ALC662 HD Audio Driver, please follow the steps below.

Step 1. Select **Realtek ALC662 GD Audio Driver** from the list

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



Step 3. Select **Yes, I want to restart my computer now.,** and then click **Finish** to complete installation.

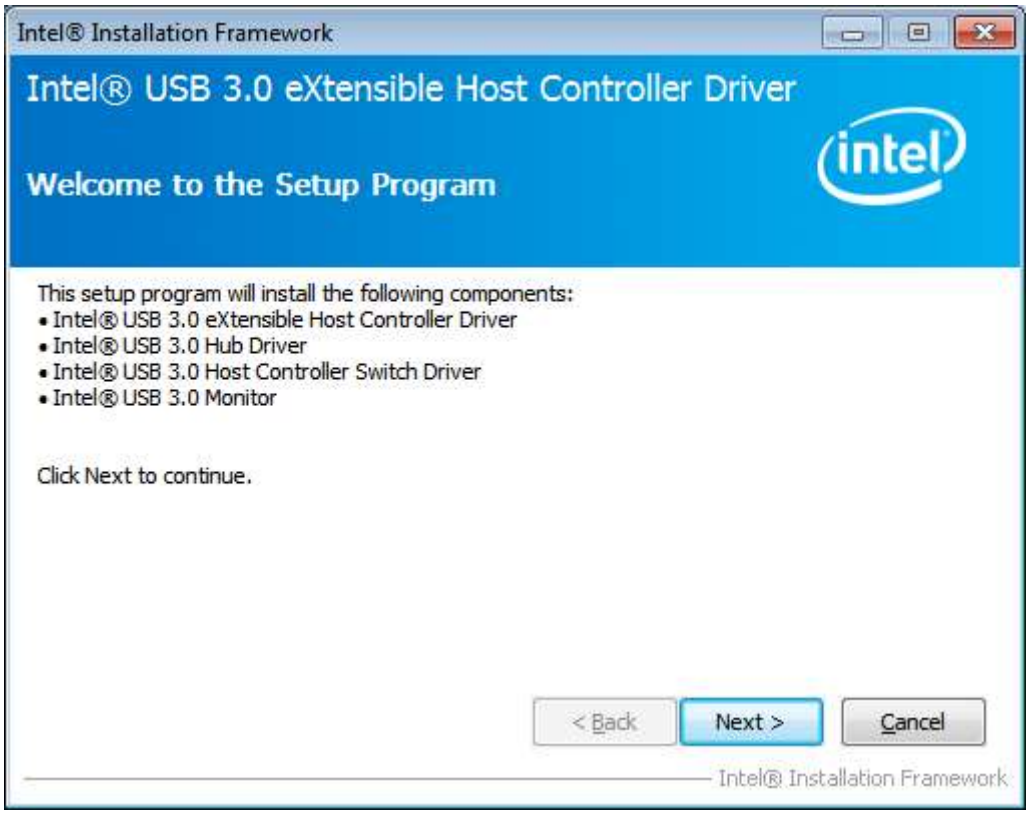


5.5 USB 3.0 Driver

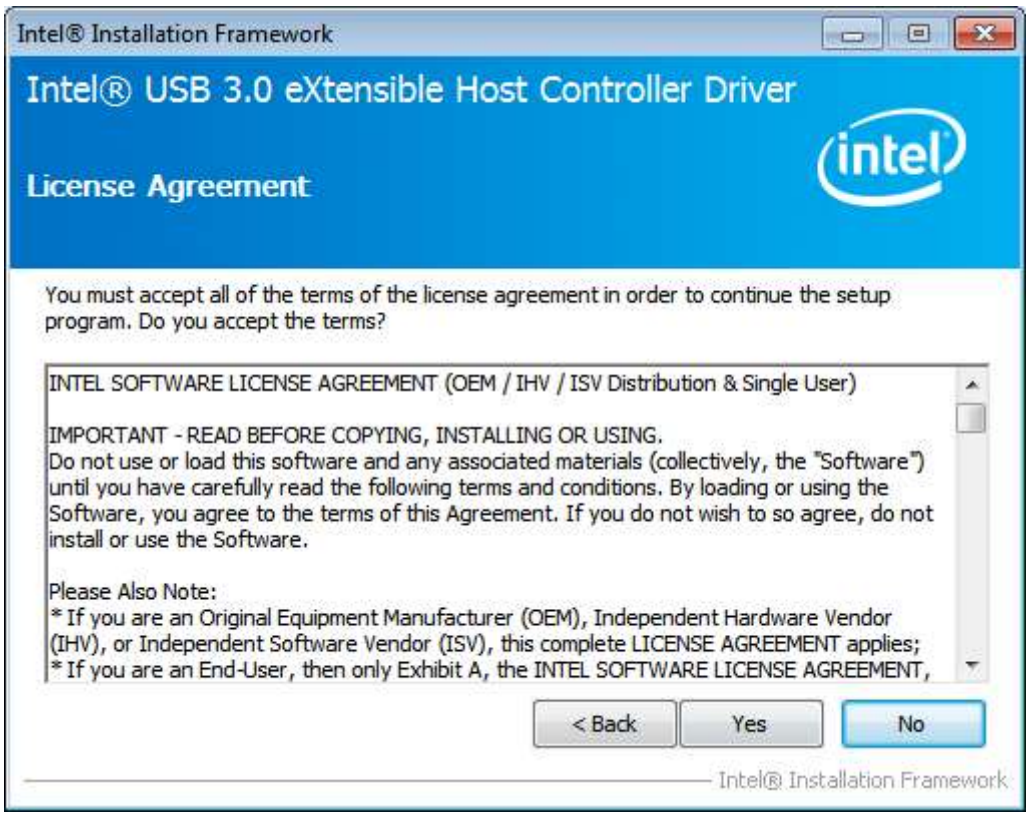
To install the USB 3.0 Driver, please follow the steps below.

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

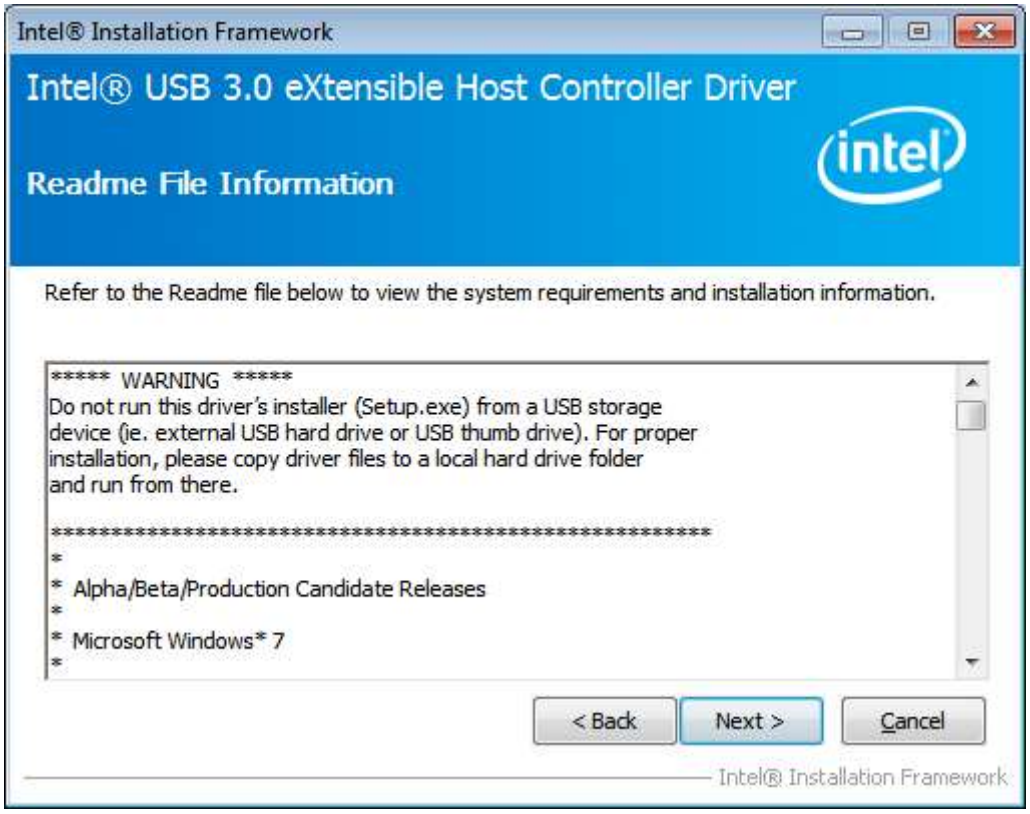
Step 2. Click **Next** to continue.



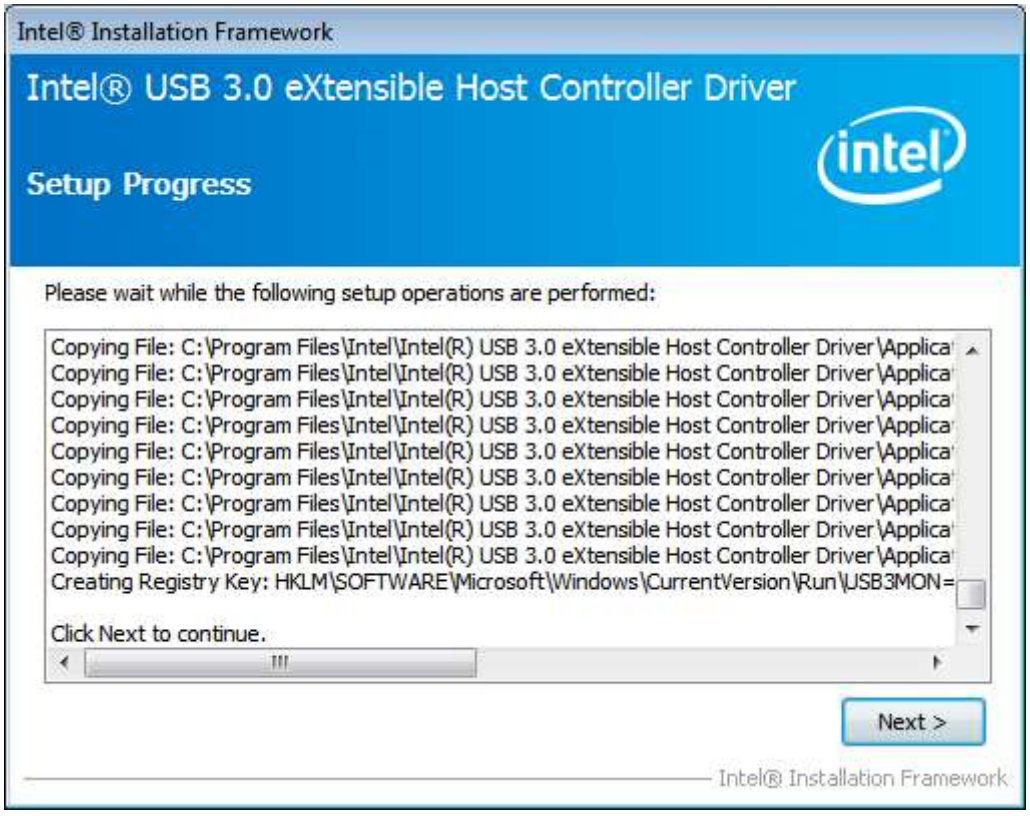
Step 3. Read the license agreement and click **Yes** to continue.



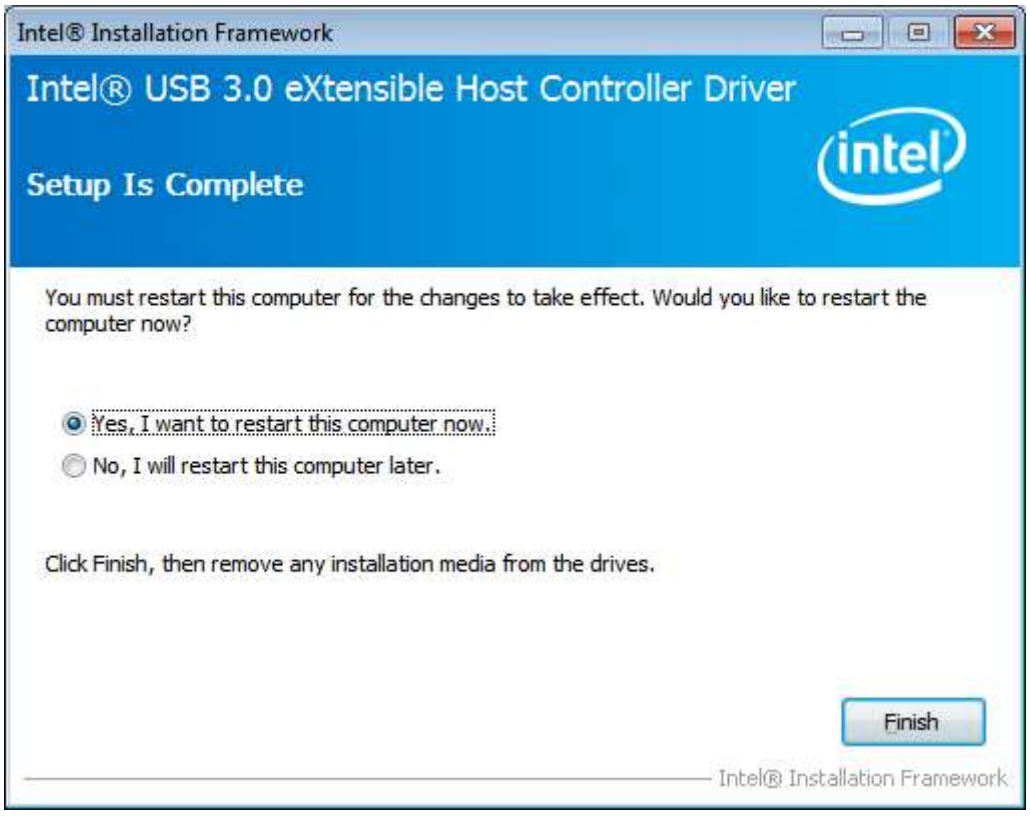
Step 4. Click **Next** to continue.



Step 5. Click **Next** to continue



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

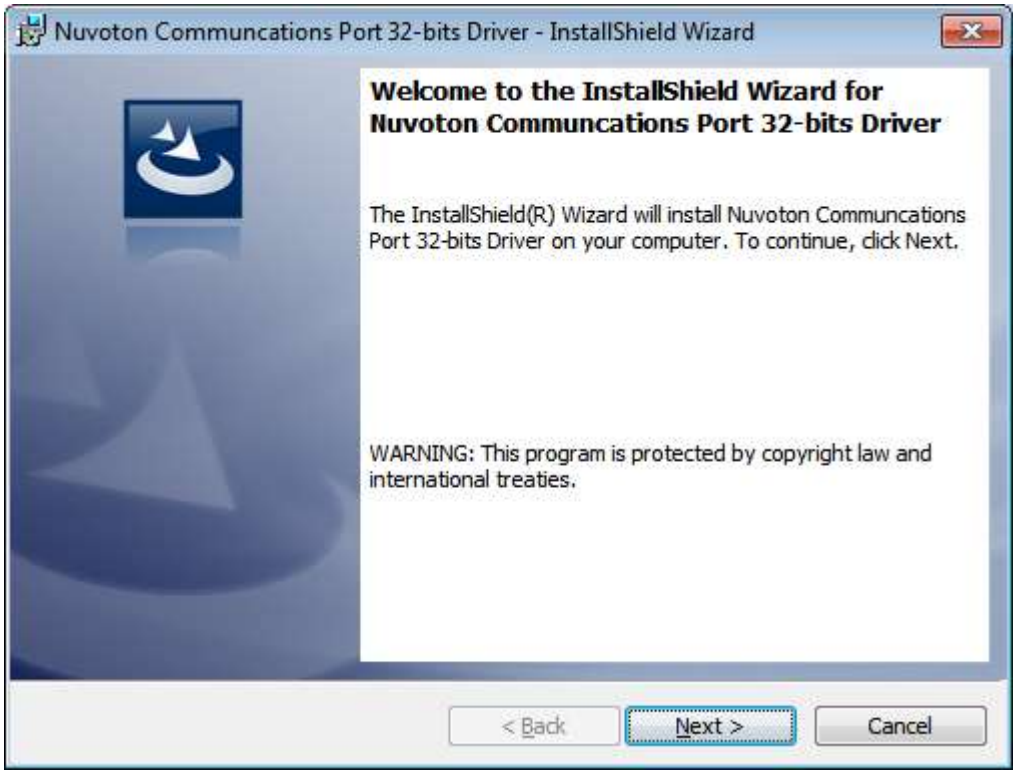


5.6 Com Driver

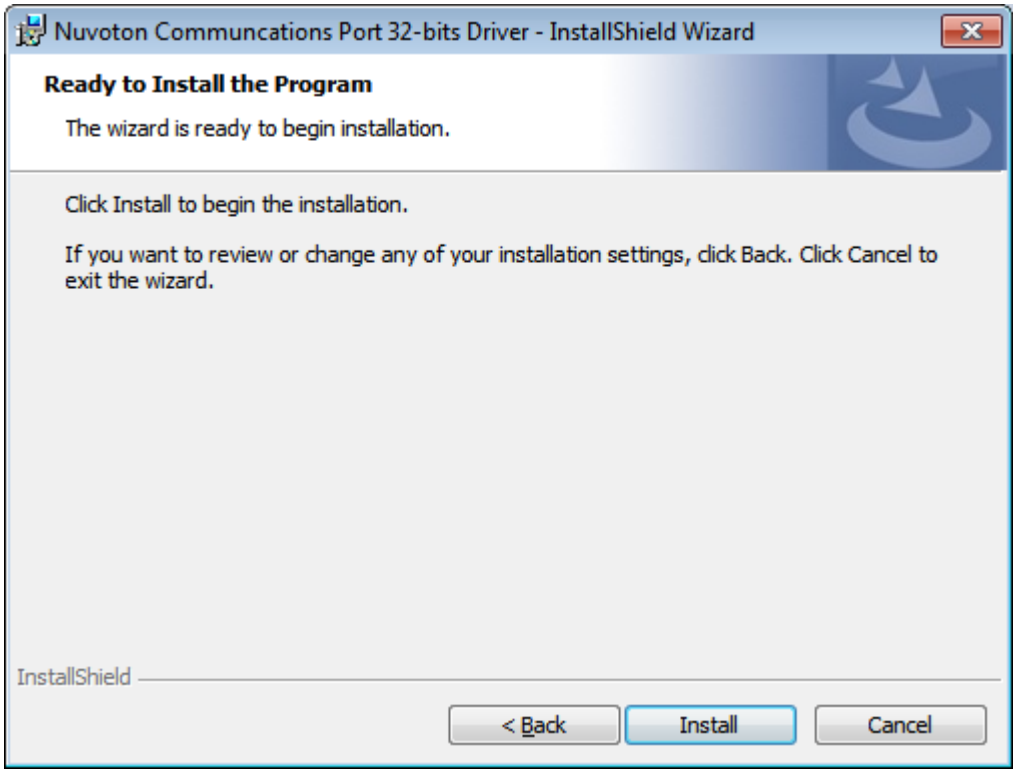
To install the Com Driver, please follow the steps below.

Step 1. Select **Com Driver** from the list.

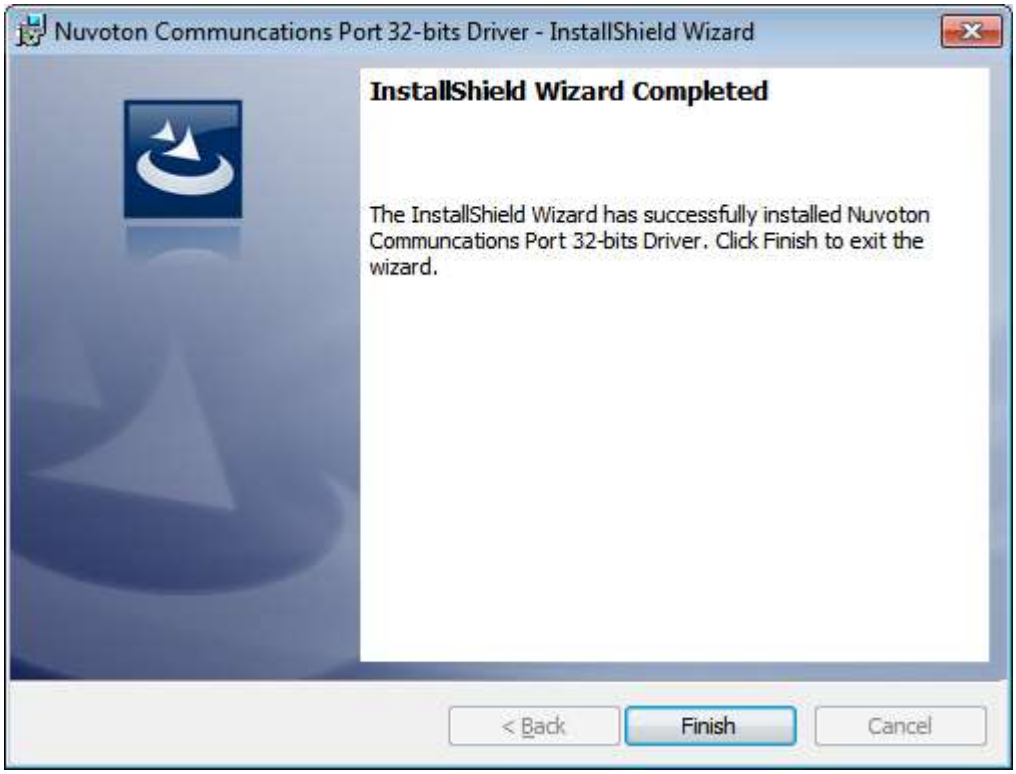
Step 2. Click **Next** to continue.



Step 3. Click **install** to begin the installation.



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



Chapter 6 Touch Screen Installation

This chapter describes how to install drivers and other software that will allow your touch screen work with different operating systems.

6.1 Windows 7/8.1 Universal Driver Installation for PenMount 6000 Series

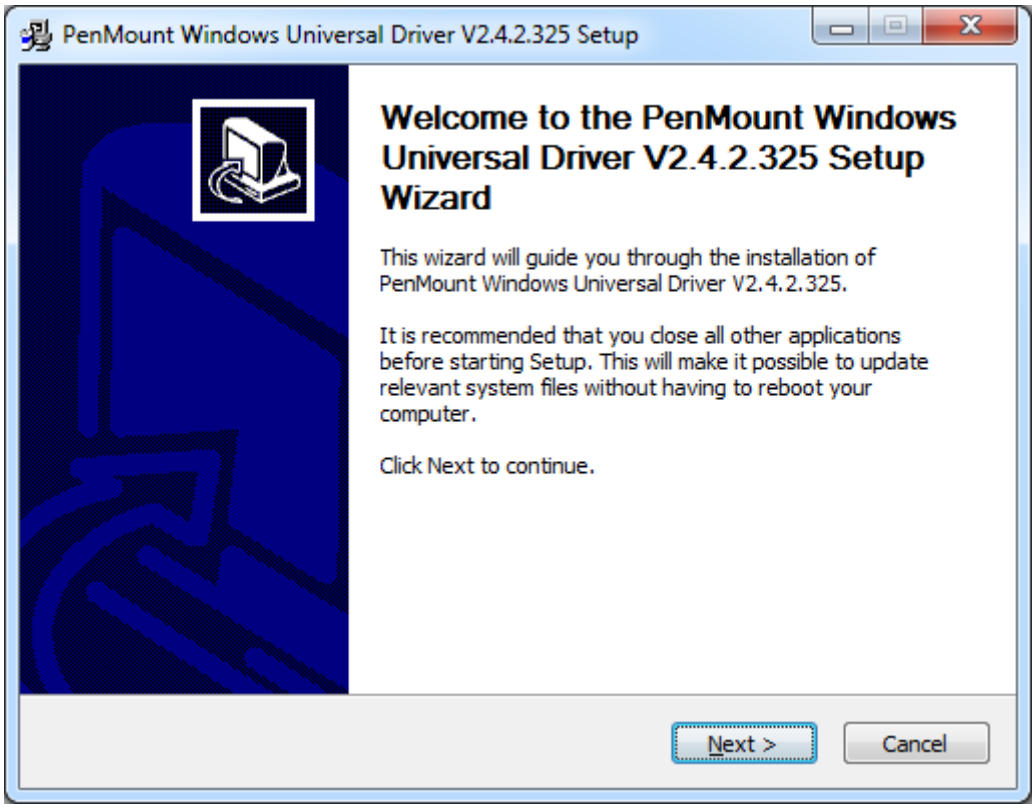
Before installing the Windows 7/8.1 driver software, you must have the Windows 7/8.1 system installed and running on your computer. You must also have one of the following PenMount 6000 series controller or control boards installed: PM6500, PM6300.

6.1.1 Installing Software(Resistive Touch)

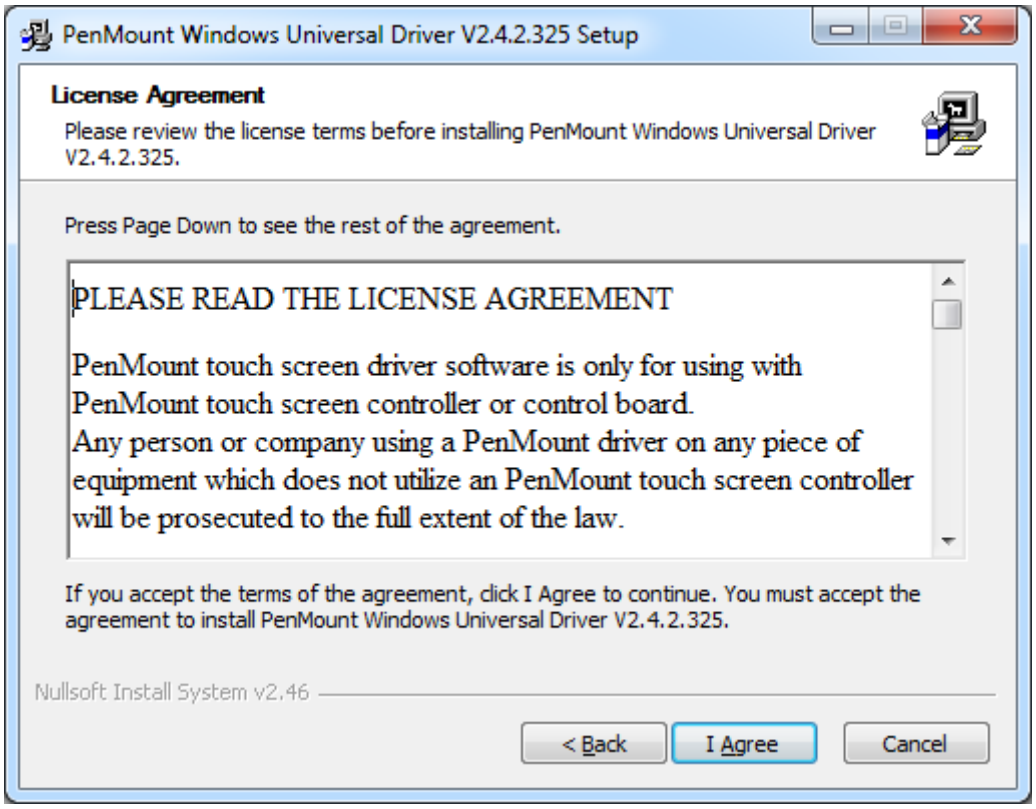
If you have an older version of the PenMount Windows 7 driver installed in your system, please remove it first. Follow the steps below to install the PenMount DMC6000 Windows 7 driver.

Step 1. Insert the product CD, the screen below would appear. Click **Touch Panel Driver** from the list.

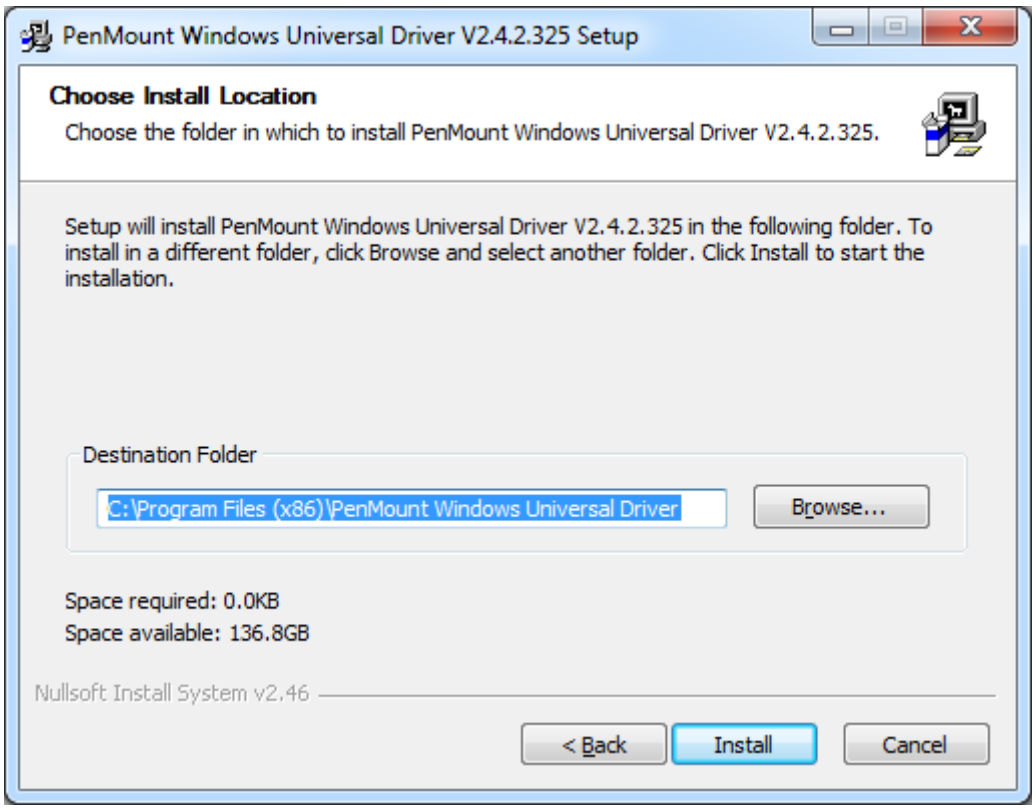
Step 2. Click **Next** to continue.



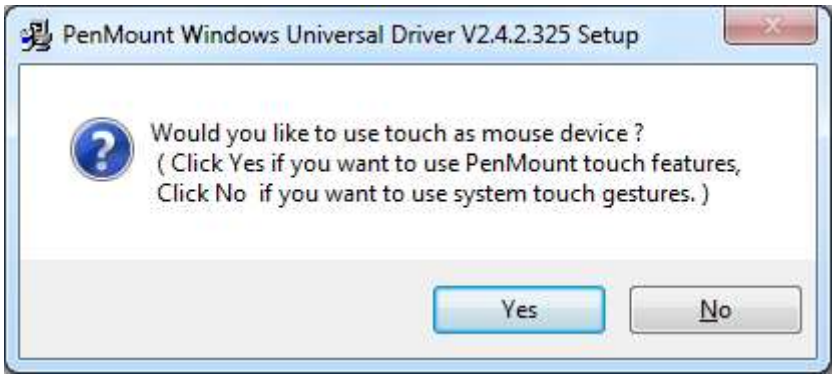
Step 3. Read the license agreement. Click **I Agree** to agree the license agreement.



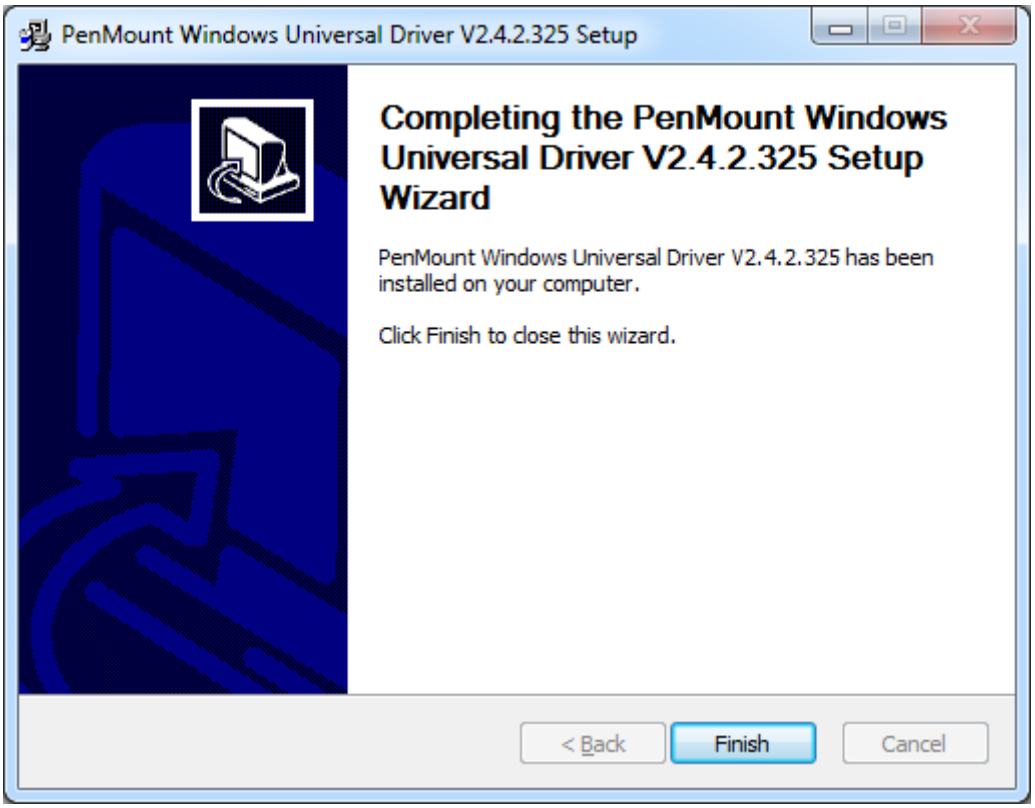
Step 4. Choose the folder in which to install PenMount Windows Universal Driver. Click **Install** to start the installation.



Step 5. Click **Yes** to continue.



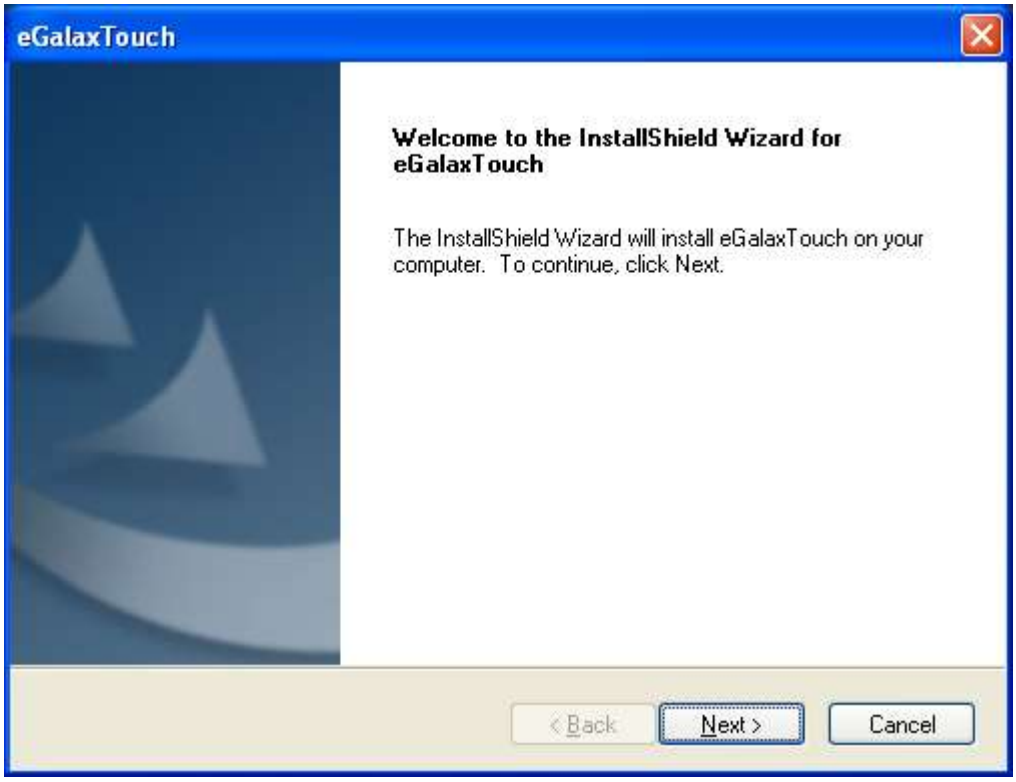
Step 6. Click **Finish** to complete installation.



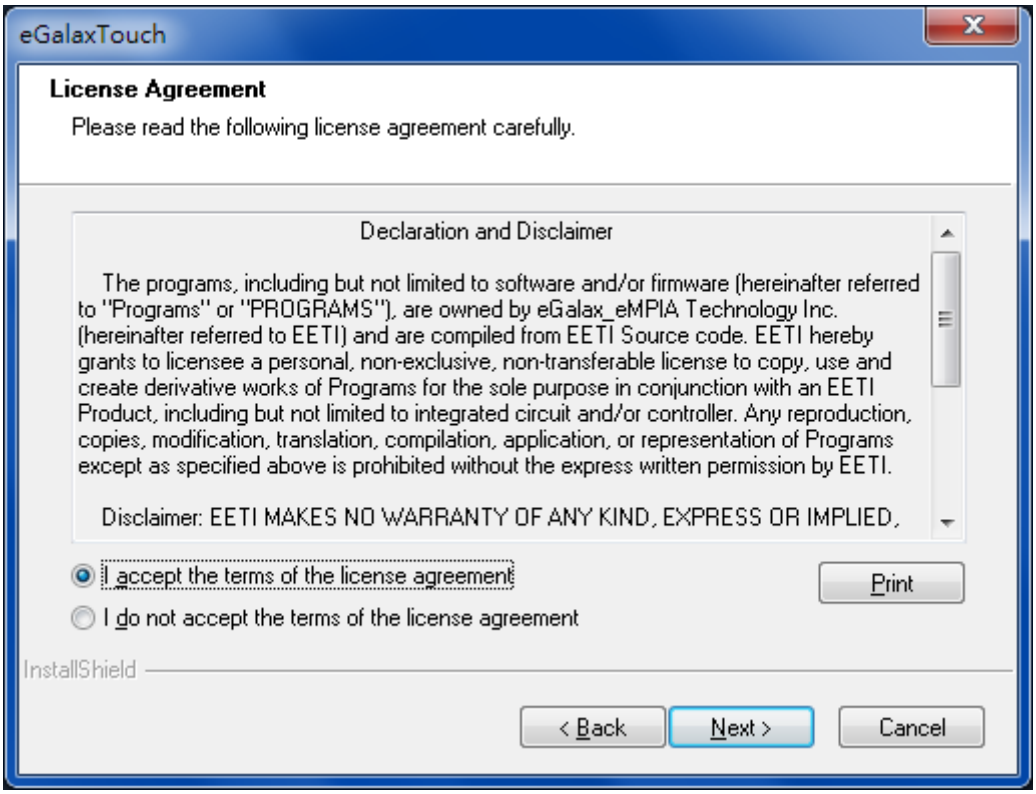
6.1.2 Installing Software (Projected Capacitive)

Step 1. Insert the product CD, the screen below would appear. Click **touch panel driver** from the list.

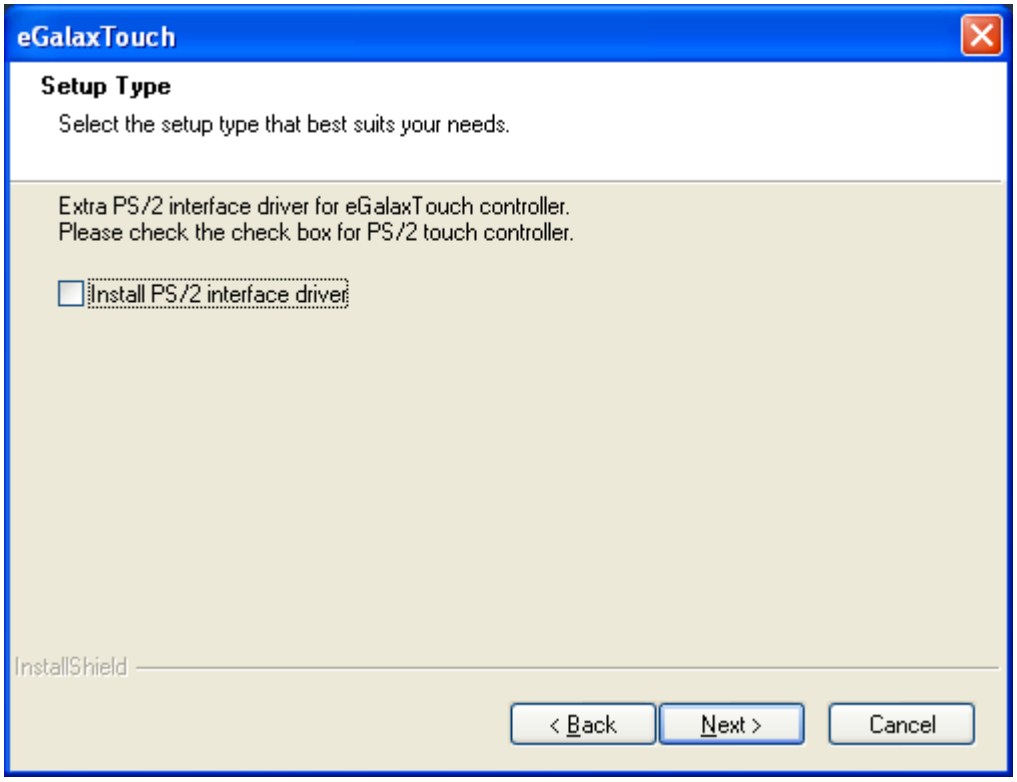
Step 2. Click **Next** to continue.



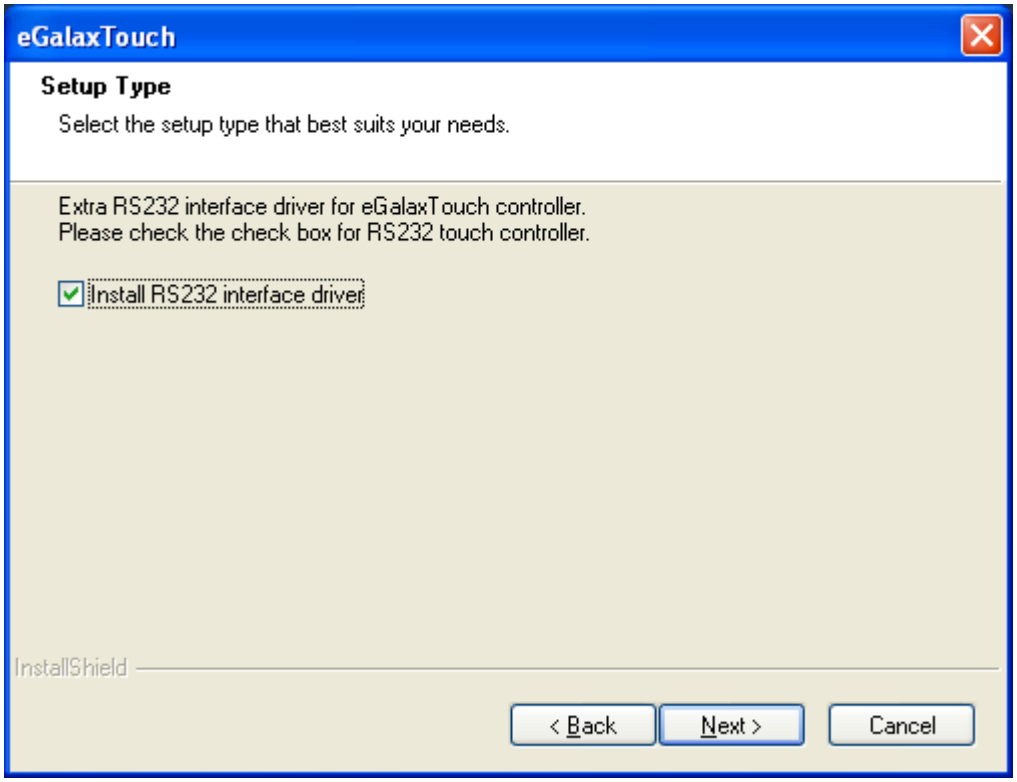
Step 3. Select **I accept the terms of the license agreement**. Click **Next.**



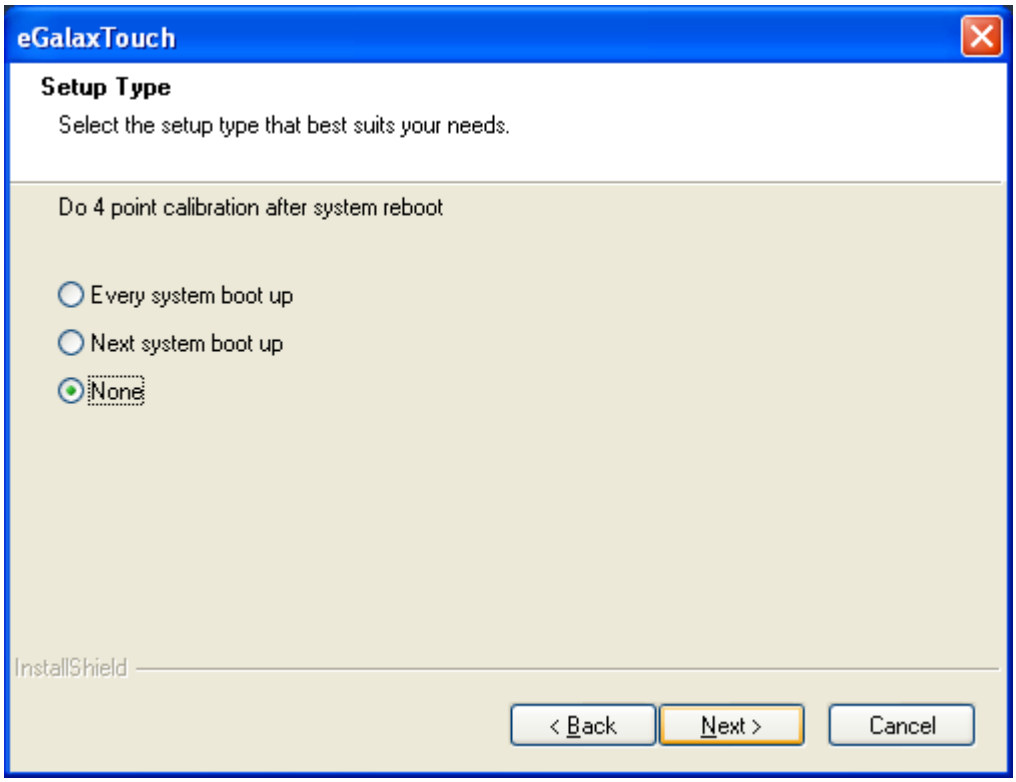
Step.4. Click **Next** to continue.



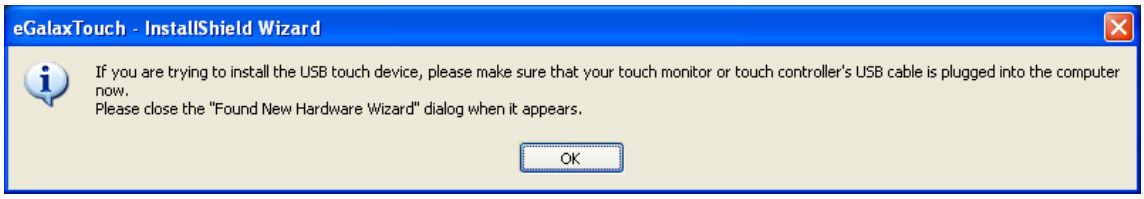
Step 5. Click **Install RS232 interface driver**. Then click **Next** to continue.



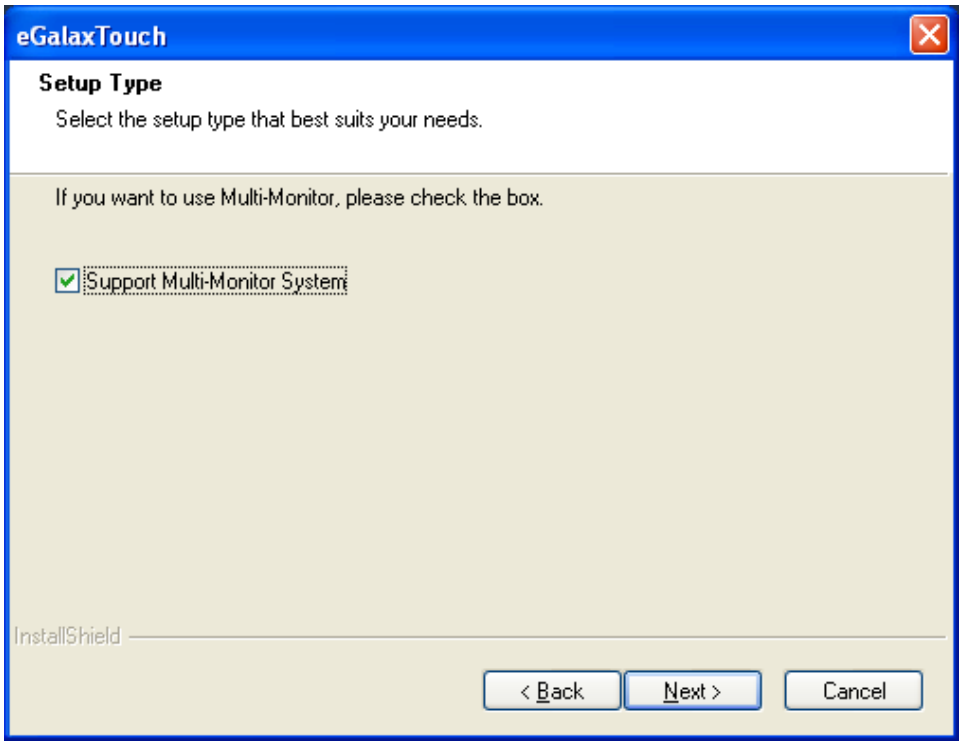
Step 6. Select **None**. Click **Next**.



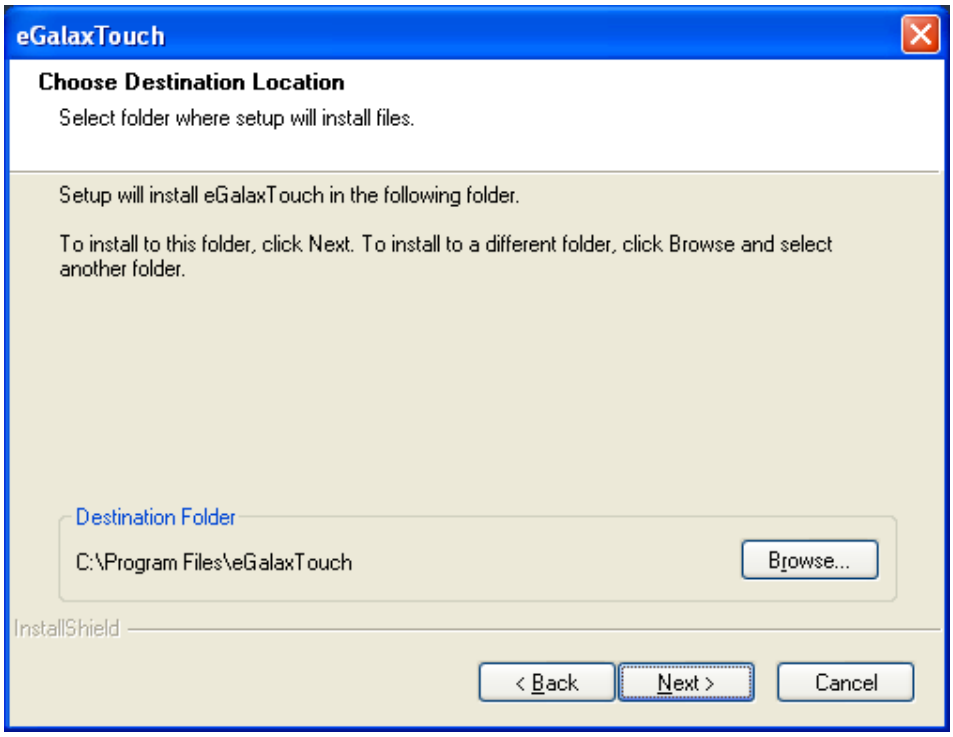
Step 7. Click **OK** to continue.



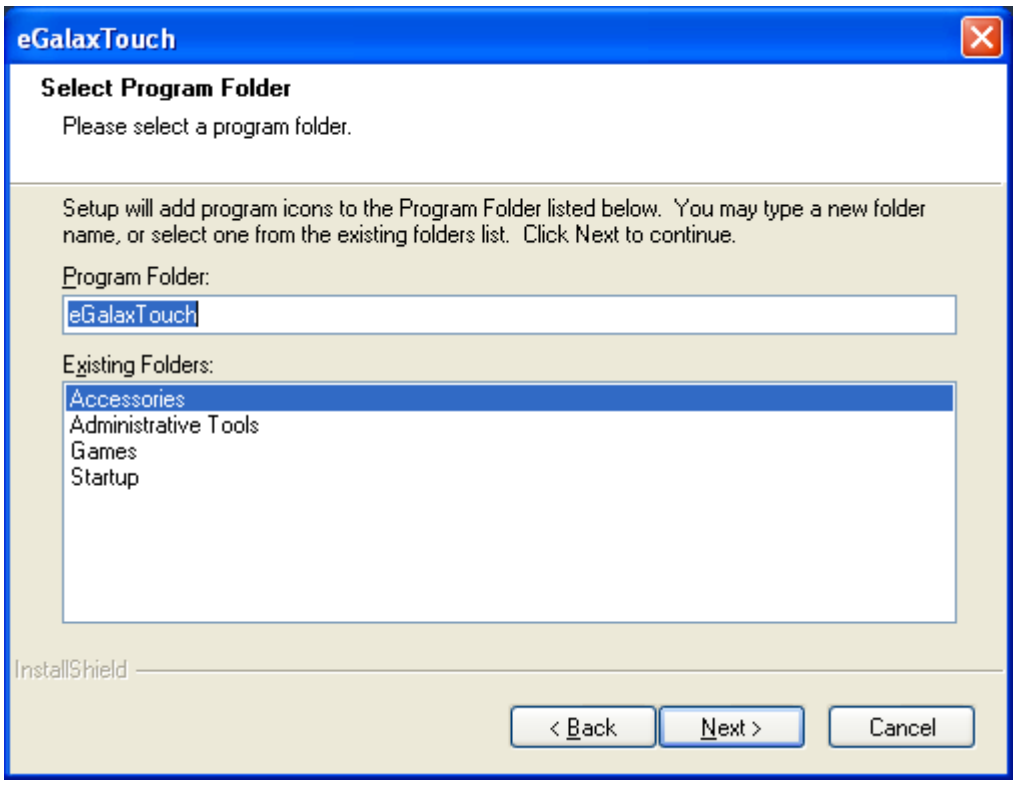
Step 8. Click **Support Muti-Monitor System**. Click **Next.**



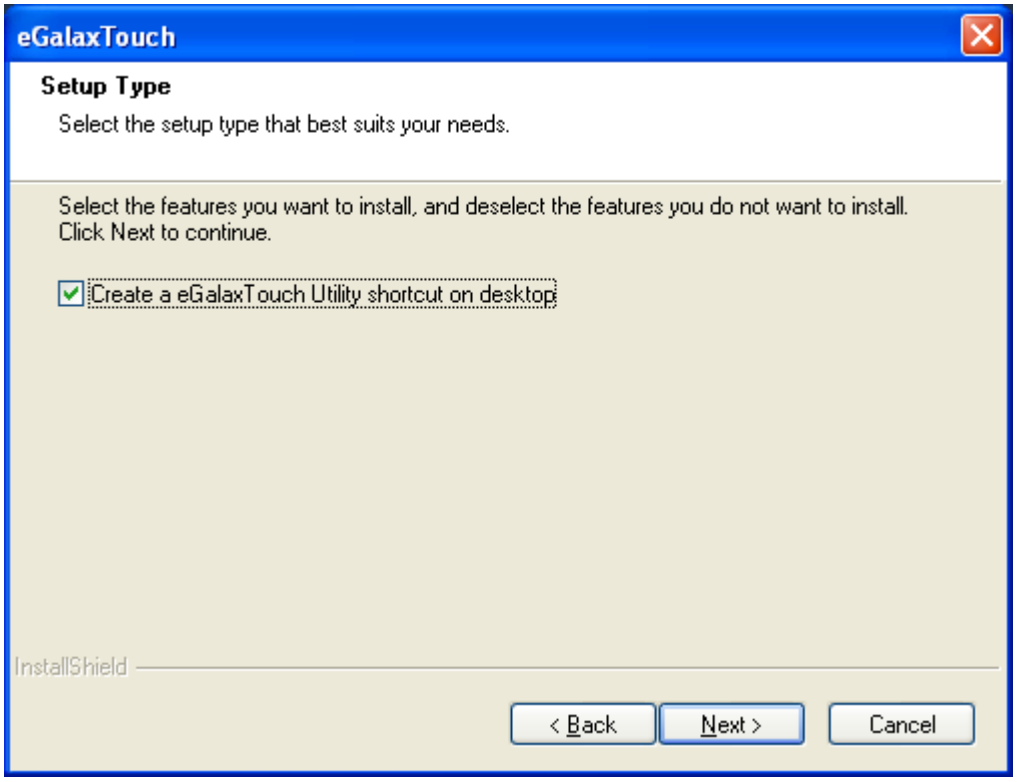
Step 9. Go to **C:\Program Files\eGalaxTouch**. Click **Next**.



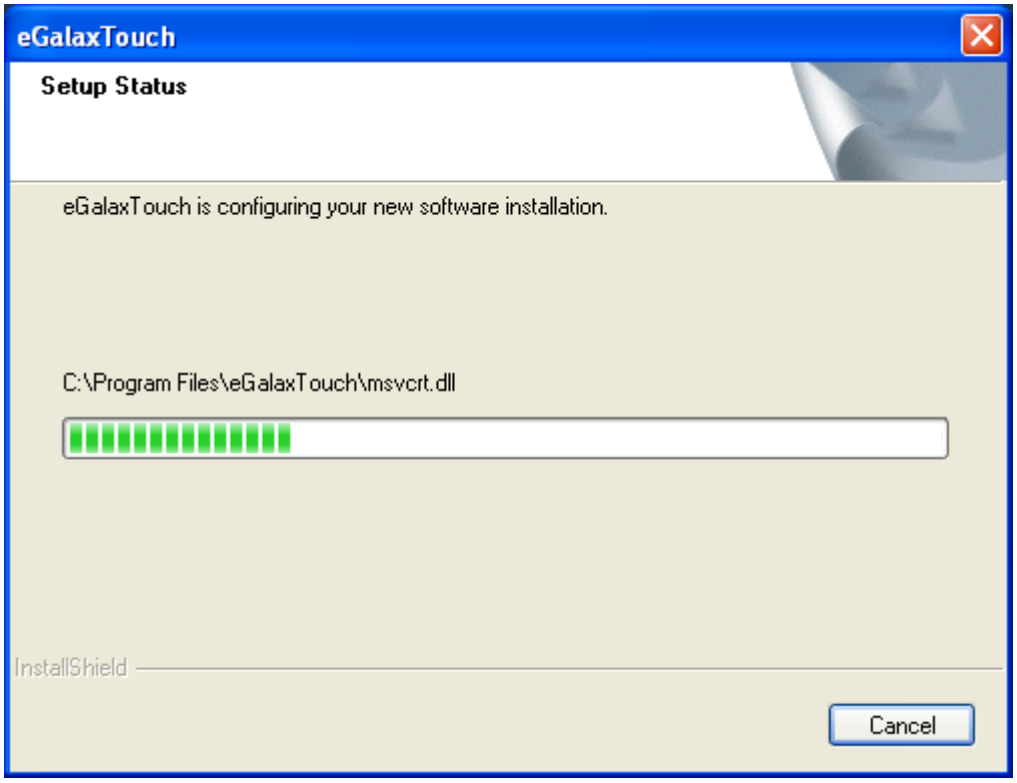
Step 10. Click **Next.**



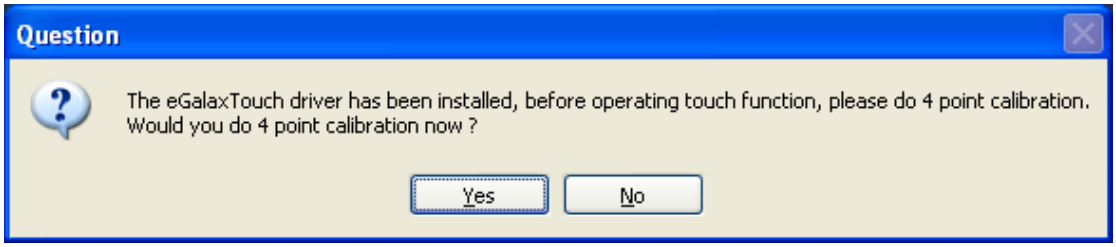
Step 11. Click **Create a eGalaxTouch Utility shortcut on desktop**. Click **Next**.



Step 12. Wait for installation.



Step 13. Click **Yes** to do 4 point calibration.



6.2 Software Functions

6.2.1 Software Functions(Resistive Touch)

Upon rebooting, the computer automatically finds the new 6000 controller board. The touch screen is connected but not calibrated. Follow the procedures below to carry out calibration.

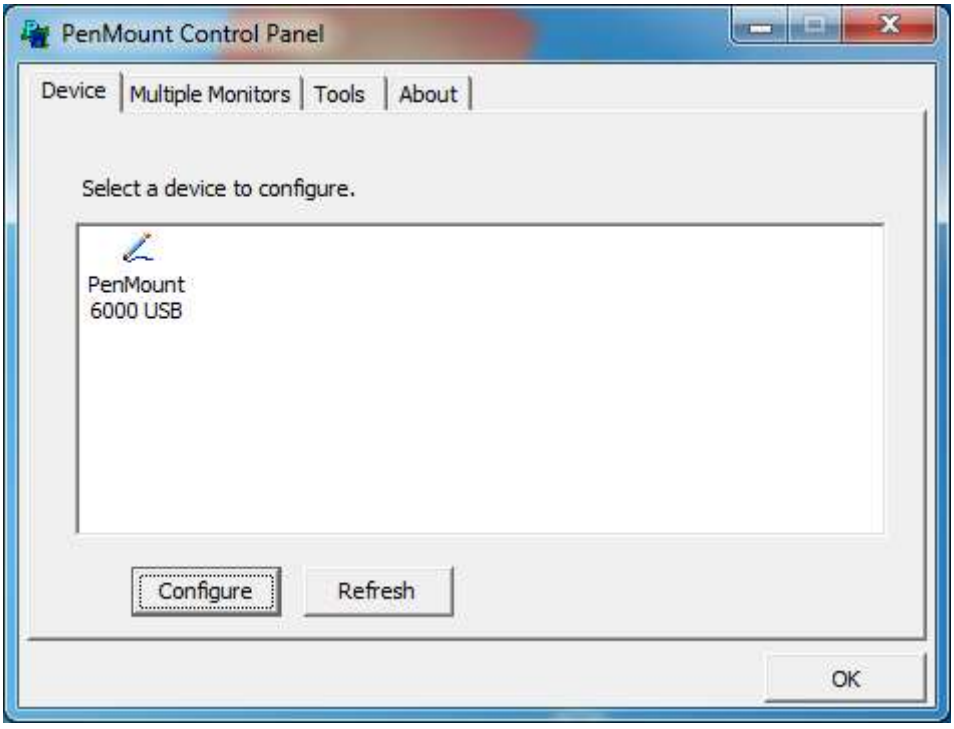
1. After installation, click the PenMount Monitor icon “PM” in the menu bar.
2. When the PenMount Control Panel appears, select a device to “Calibrate.”

PenMount Control Panel(Resistive Touch)

The functions of the PenMount Control Panel are **Device, Multiple Monitors** ,**Tools** and **About**, which are explained in the following sections.

Device

In this window, you can find out that how many devices be detected on your system.

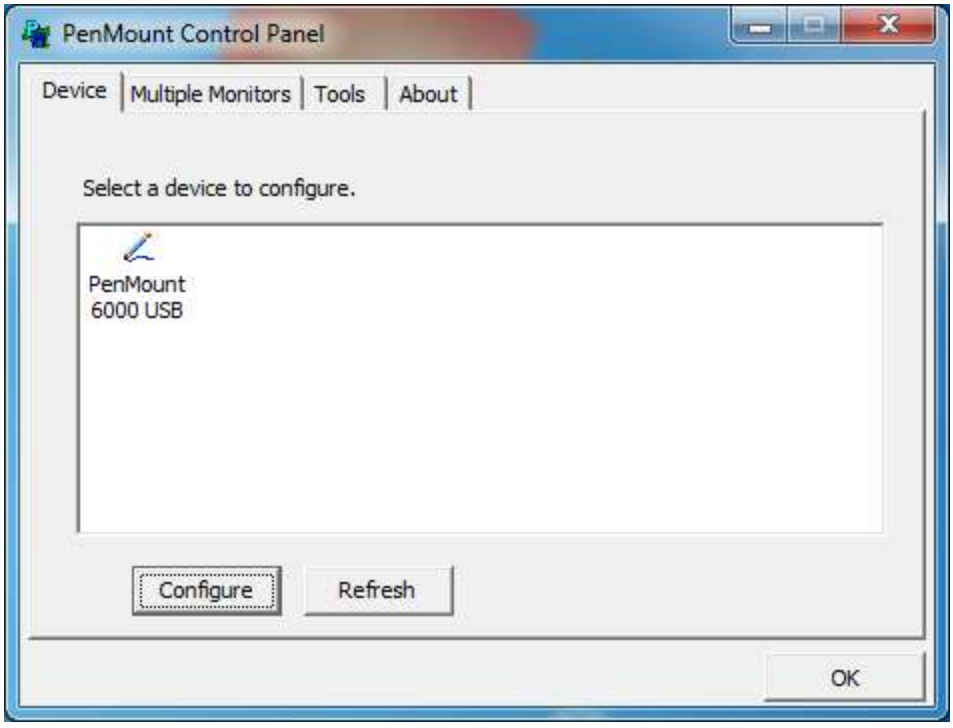


Calibrate

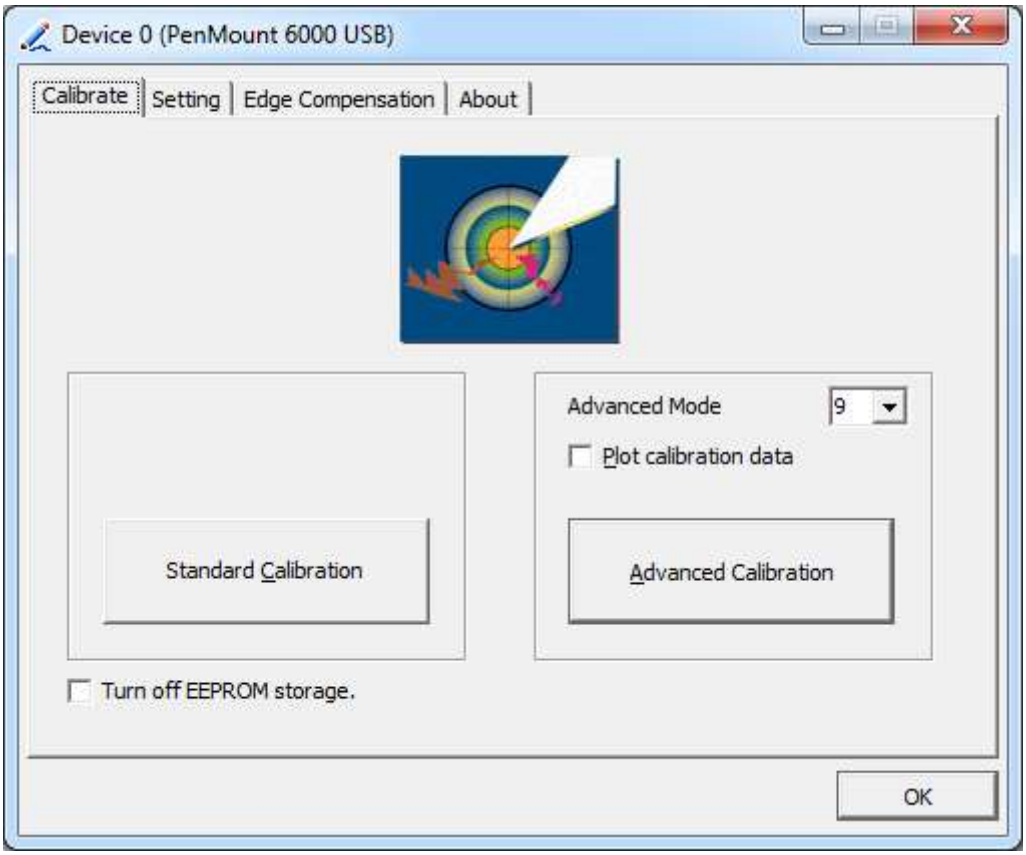
This function offers two ways to calibrate your touch screen. 'Standard Calibration' adjusts most touch screens. 'Advanced Calibration' adjusts aging touch screens.

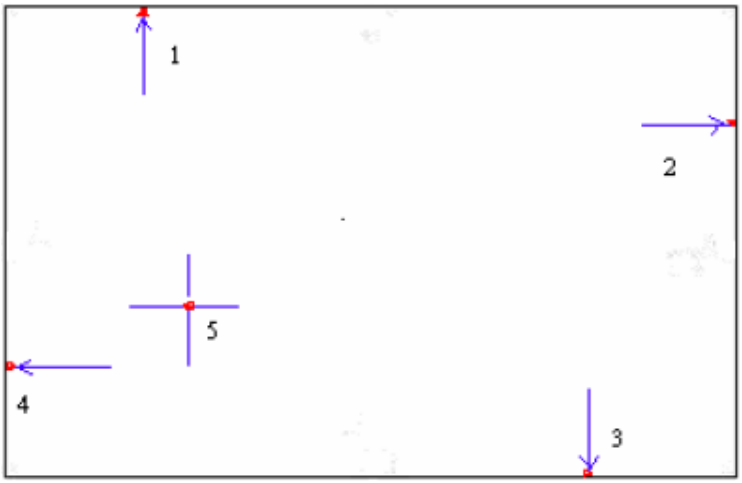
Standard Calibration	**Click this button and arrows appear pointing to red squares. Use your finger or stylus to touch the red squares in sequence. After the fifth red point calibration is complete. To skip, press 'ESC'.**
Advanced Calibration	**Advanced Calibration uses 4, 9, 16 or 25 points to effectively calibrate touch panel linearity of aged touch screens. Click this button and touch the red squares in sequence with a stylus. To skip, press ESC'.**

Step 1. Please select a device then click "Configure". You can also double click the device too.



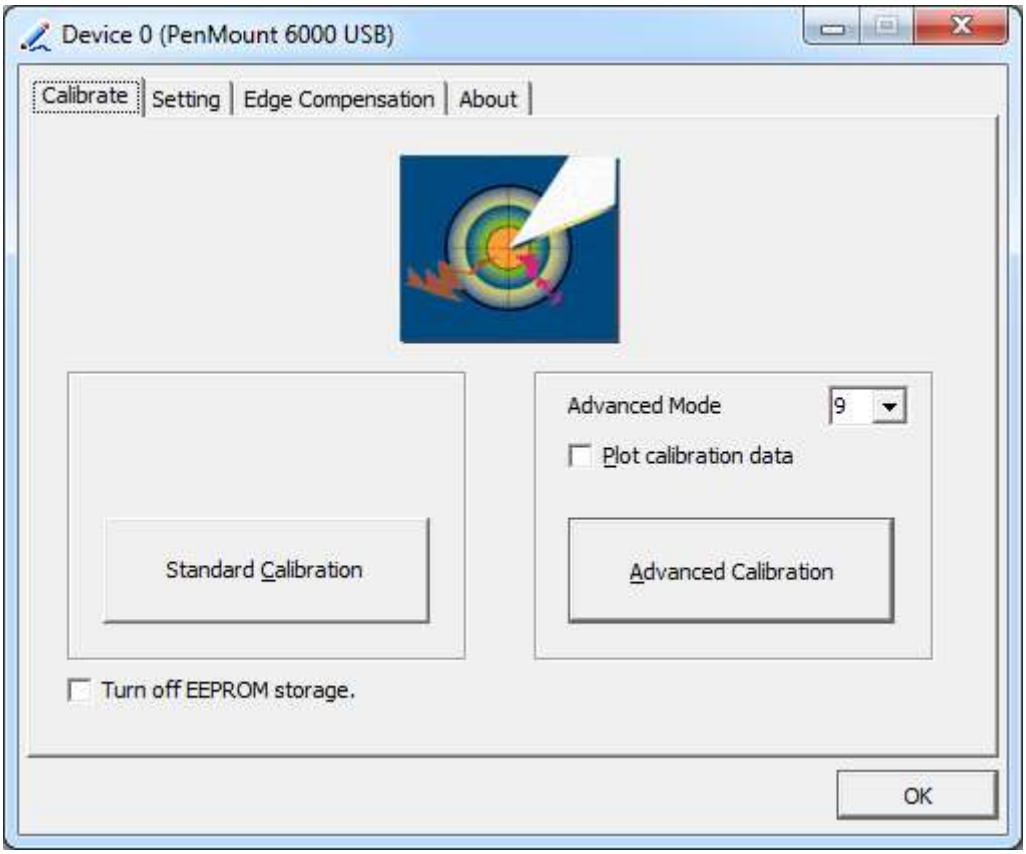
Step 2. Click "**Standard Calibration**" to start calibration procedure



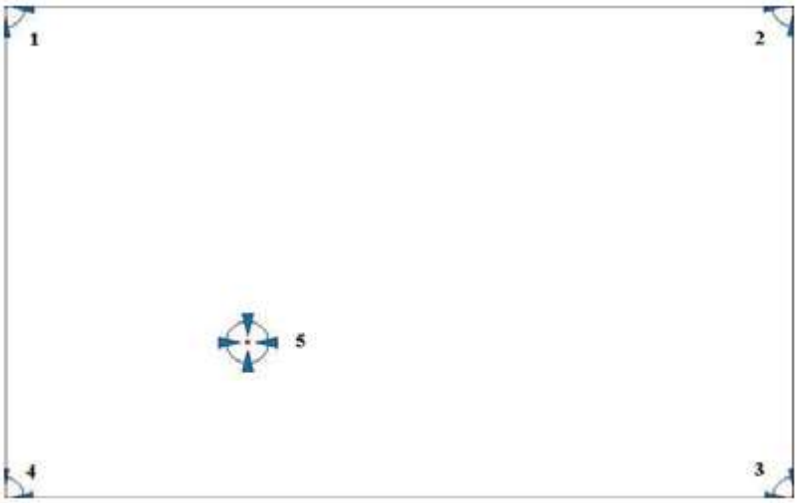


NOTE: The older the touch screen, the more Advanced Mode calibration points you need for an accurate calibration. Use a stylus during Advanced Calibration for greater accuracy. Please follow the step as below:

Step 3. Select **Device** to calibrate, then you can start to do **Advanced Calibration**.

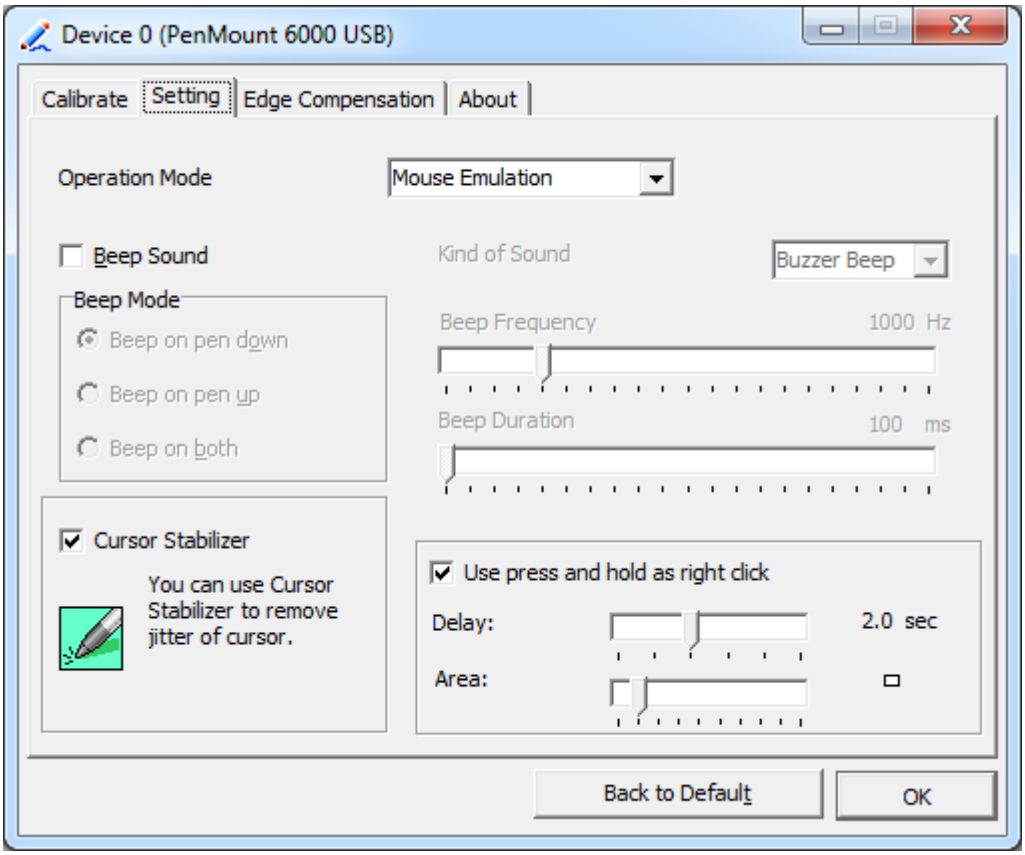


NOTE: Recommend to use a stylus during Advanced Calibration for greater accuracy.



Plot Calibration Data	**Check this function and a touch panel linearity comparison graph appears when you have finished Advanced Calibration. The blue lines show linearity before calibration and black lines show linearity after calibration.**
Turn off EEPROM storage	**The function disable for calibration data to write in Controller. The default setting is Enable.**

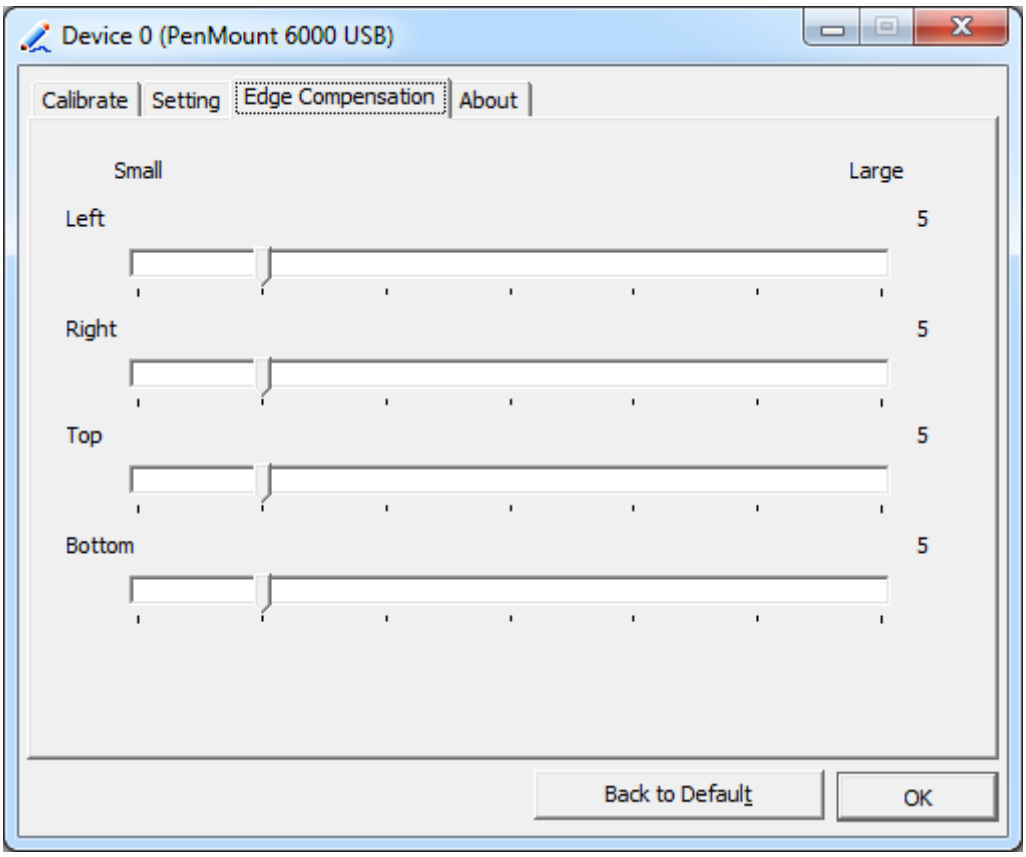
Setting



Touch Mode	**This mode enables and disables the mouse's ability to drag on-screen icons – useful for configuring POS terminals.** **Mouse Emulation – Select this mode and the mouse functions as normal and allows dragging of icons.** **Click on Touch – Select this mode and mouse only provides a click function, and dragging is disables.**
Beep Sound	**Enable Beep Sound – turns beep function on and off** **Beep on Pen Down – beep occurs when pen comes down** **Beep on Pen Up – beep occurs when pen is lifted up** **Beep on both – beep occurs when comes down and lifted up** **Beep Frequency – modifies sound frequency** **Beep Duration – modifies sound duration**
Cursor Stabilizer	**Enable the function support to prevent cursor shake.**
Use press and hold as right click	**You can set the time out and area for you need.**

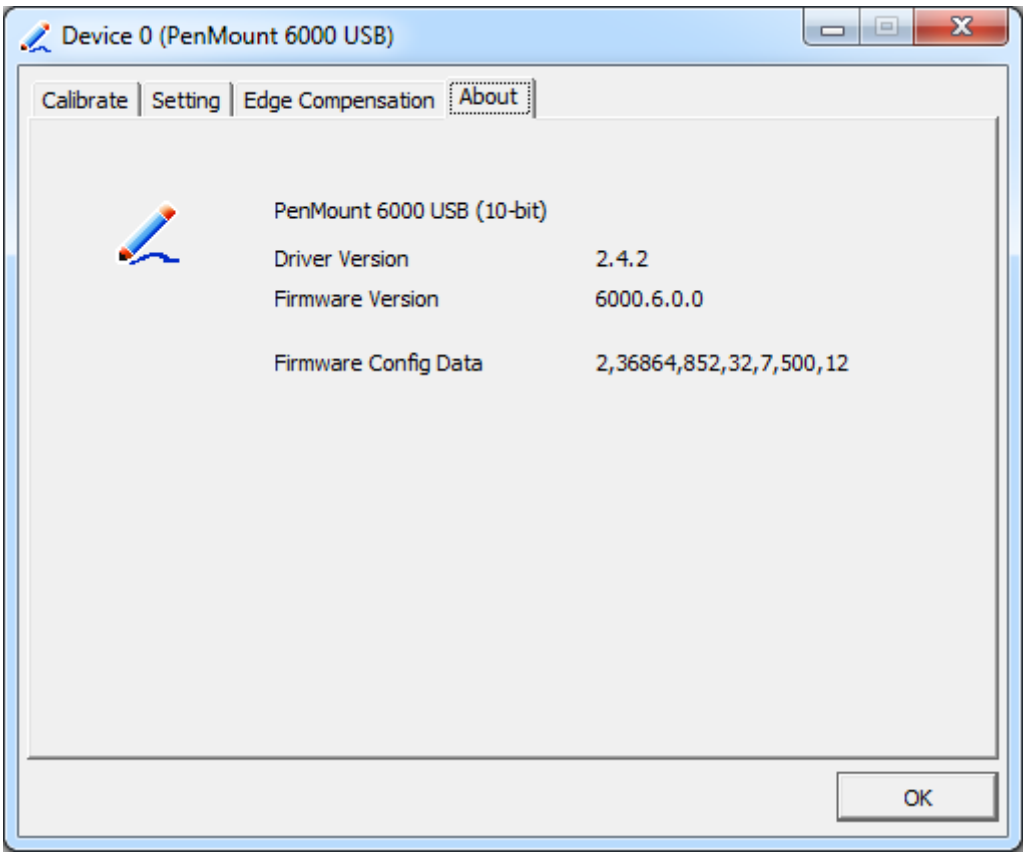
Edge Compensation

You can use Edge Compensation to calibrate more subtly.



About

This panel displays information about the PenMount controller and driver version.



Multiple Monitors

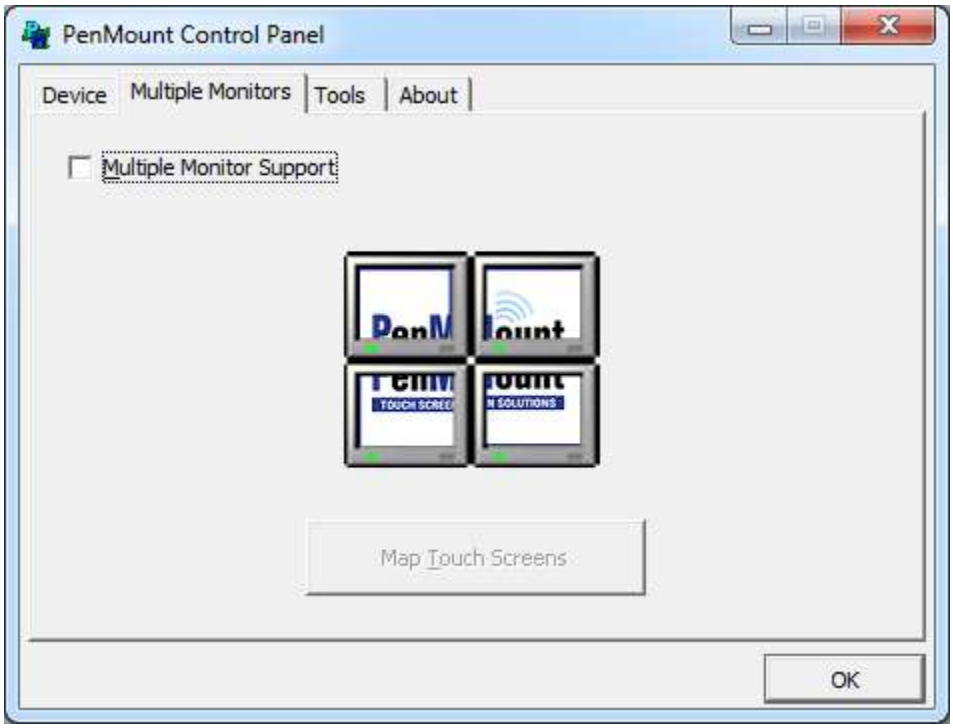
Multiple Monitors support from two to six touch screen displays for one system. The PenMount drivers for Windows 7/8.1 support Multiple Monitors. This function supports from two to six touch screen displays for one system. Each monitor requires its own PenMount touch screen control board, either installed inside the display or in a central unit. The PenMount control boards must be connected to the computer COM ports via the USB interface. Driver installation procedures are the same as for a single monitor. Multiple Monitors support the following modes:

Windows Extends Monitor Function
Matrox DualHead Multi-Screen Function
nVidia nView Function

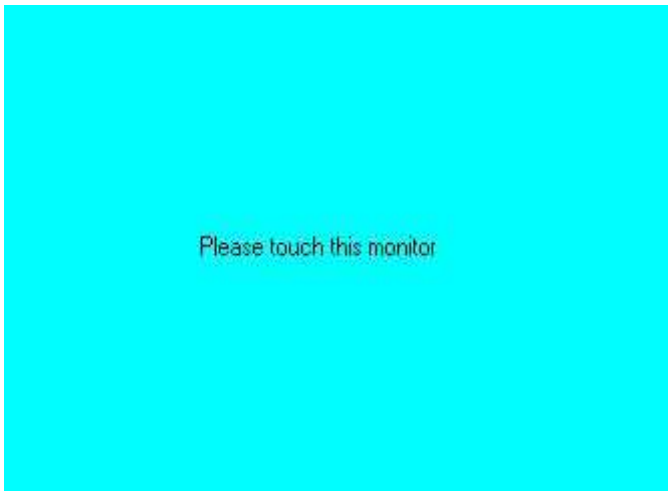
NOTE: The Multiple Monitor function is for use with multiple displays only. Do not use this function if you have only one touch screen display. Please note once you turn on this function the rotating function is disabled.

Enable the multiple display function as follows:

1. Check the **Enable Multiple Monitor Support** box; then click **Map Touch Screens** to assign touch controllers to displays.



2. When the mapping screen message appears, click **OK.**
3. Touch each screen as it displays “Please touch this monitor”. Following this sequence and touching each screen is called **mapping the touch screens.**



4. Touching all screens completes the mapping and the desktop reappears on the monitors.
5. Select a display and execute the “Calibration” function. A message to start calibration appears. Click **OK.**

6. "Touch this screen to start its calibration" appears on one of the screens. Touch the screen.
7. "Touch the red square" messages appear. Touch the red squares in sequence.
8. Continue calibration for each monitor by clicking **Standard Calibration** and touching the red squares.

NOTES:

1. If you use a single VGA output for multiple monitors, please do not use the **Multiple Monitor** function. Just follow the regular procedure for calibration on each of your desktop monitors.
2. The Rotating function is disabled if you use the Multiple Monitor function.
3. If you change the resolution of display or screen address, you have to redo **Map Touch Screens,** so the system understands where the displays are.

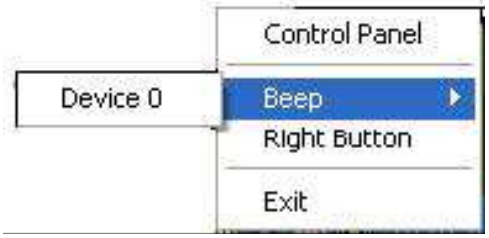
About

This panel displays information about the PenMount controller and this driver version.

PenMount Monitor Menu Icon

The PenMount monitor icon (PM) appears in the menu bar of Windows 7/8.1 system when you turn on PenMount Monitor in PenMount Utilities.

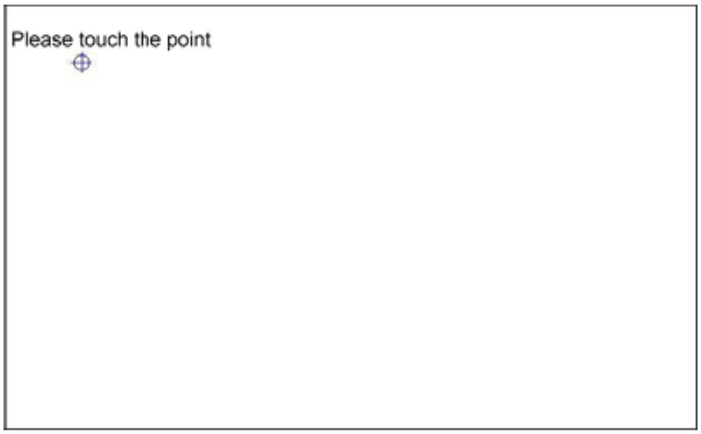
PenMount Monitor has the following function



Control Panel	**Open Control Panel Windows**
Beep	**Setting Beep function for each device**
Right Button	**When you select this function, a mouse icon appears in the right-bottom of the screen.**  **Click this icon to switch between Right and Left Button functions.**
Exit	**Exits the PenMount Monitor function.**

Configuring the Rotate Function

1. Install the rotation software package.
2. Choose the rotate function (0°, 90°, 180°, 270°) in the 3rd party software. The calibration screen appears automatically. Touch this point and rotation is mapped.

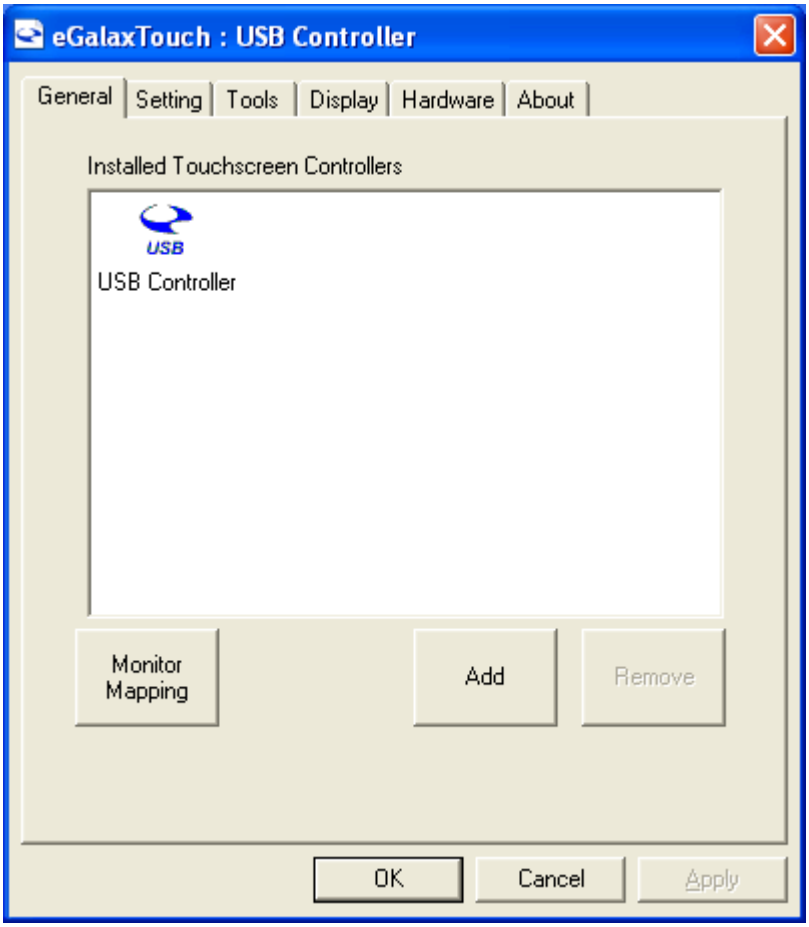


NOTE: The Rotate function is disabled if you use Monitor Mapping

6.2.2 Software Functions(Projected Capacitive)

General

In this window, you can see there is USB Controller. Click **OK** to continue.



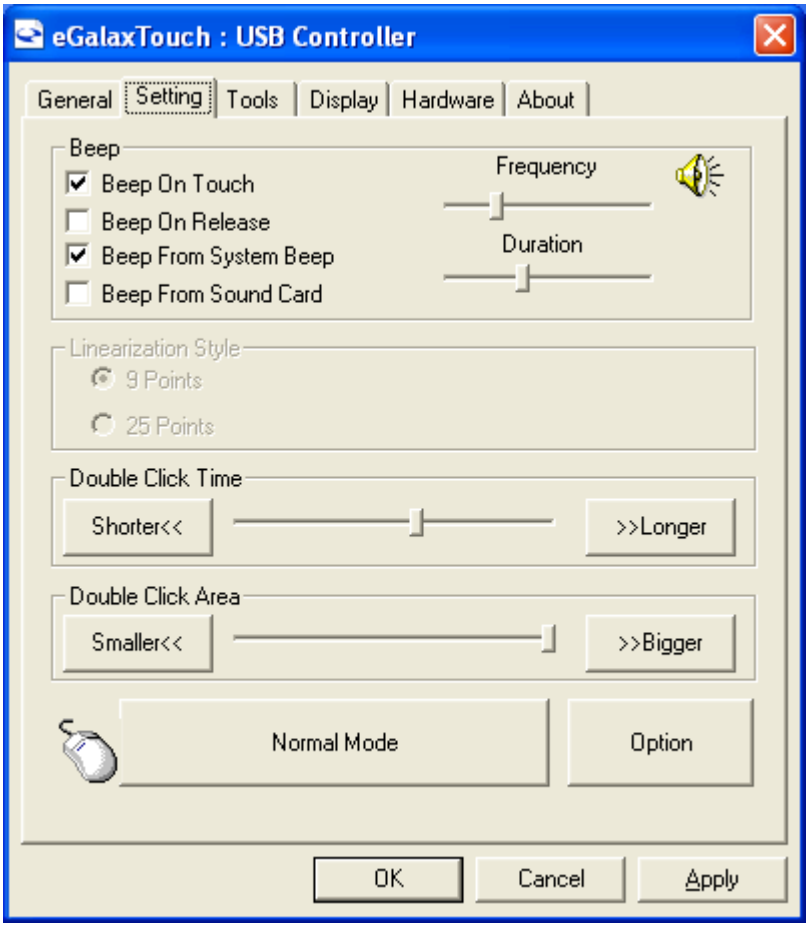
Monitor Mapping

to adjust touch panel

Add

to search for device

Setting



Beep

Beep On Touch

Beep On Release

Beep From System Beep

Beep From Sound Card

Linearization Style

9 points

25 points

Double Click Time

Shorter

Longer

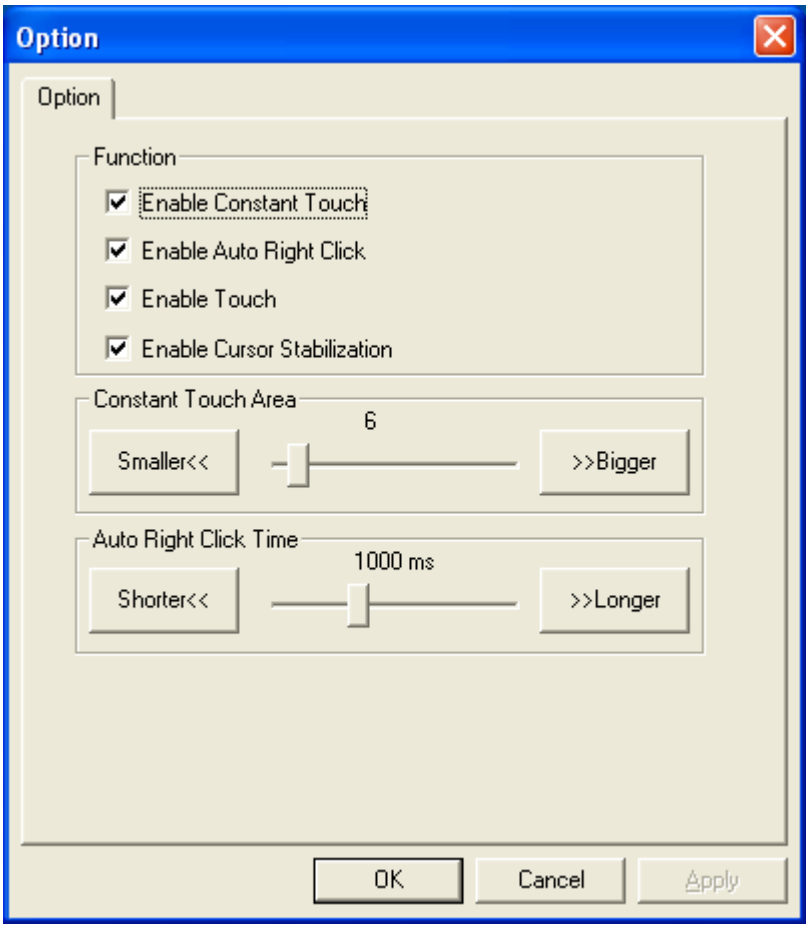
Double Click Area

Smaller

Bigger

Normal mode

Simulate the mouse mode



Option

Function

Enable Constant Touch

Enable Auto Right Click

Enable Touch

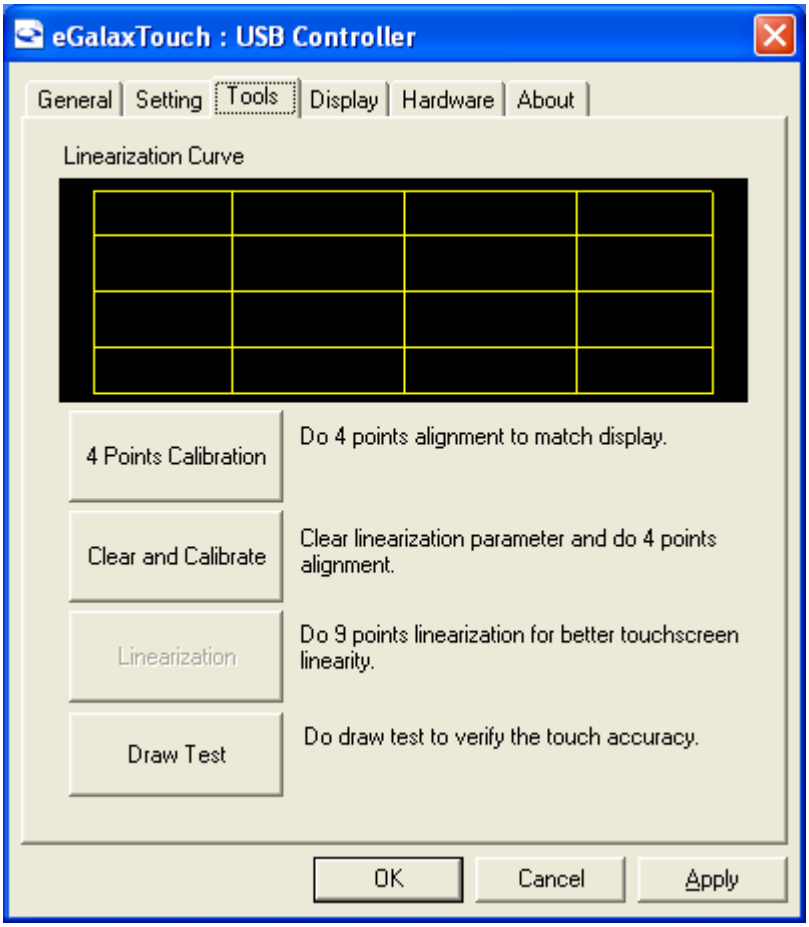
Enable Cursor Stabilization

Constant Touch Area

Auto Right Click Time

Tools

Click **OK** to continue the settings.



4 Points Calibration

Do 4 points alignment to match display.

Clear and Calibrate

Clear linearization parameter and do 4 points alignment.

Linearization

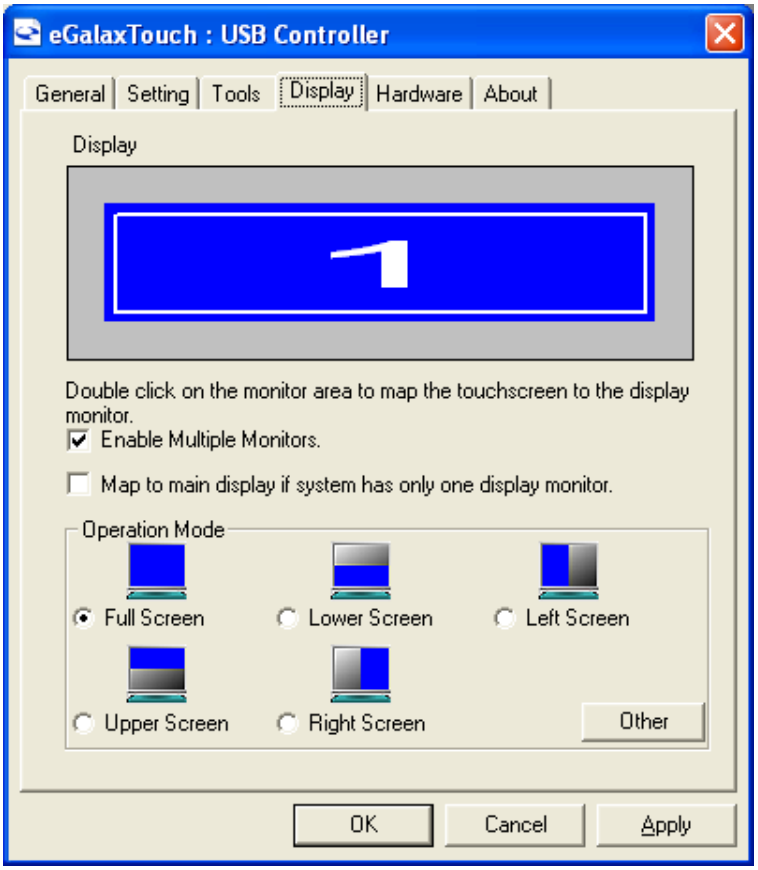
Do 9 points linearization for better touchscreen linearity.

Draw Test

Do draw test to verify the touch accuracy.

Display

In this window, it shows the mode of display.



Enable Multiple Monitors.

Map to main display if system has only one display monitor

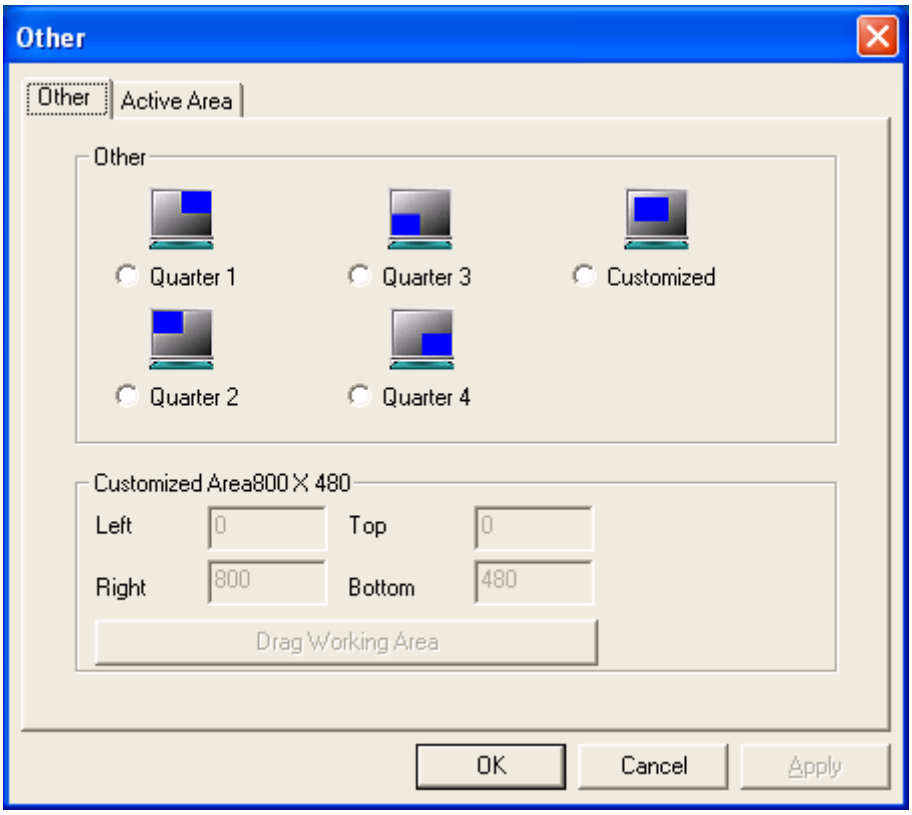
Full Screen

Lower Screen

Left Screen

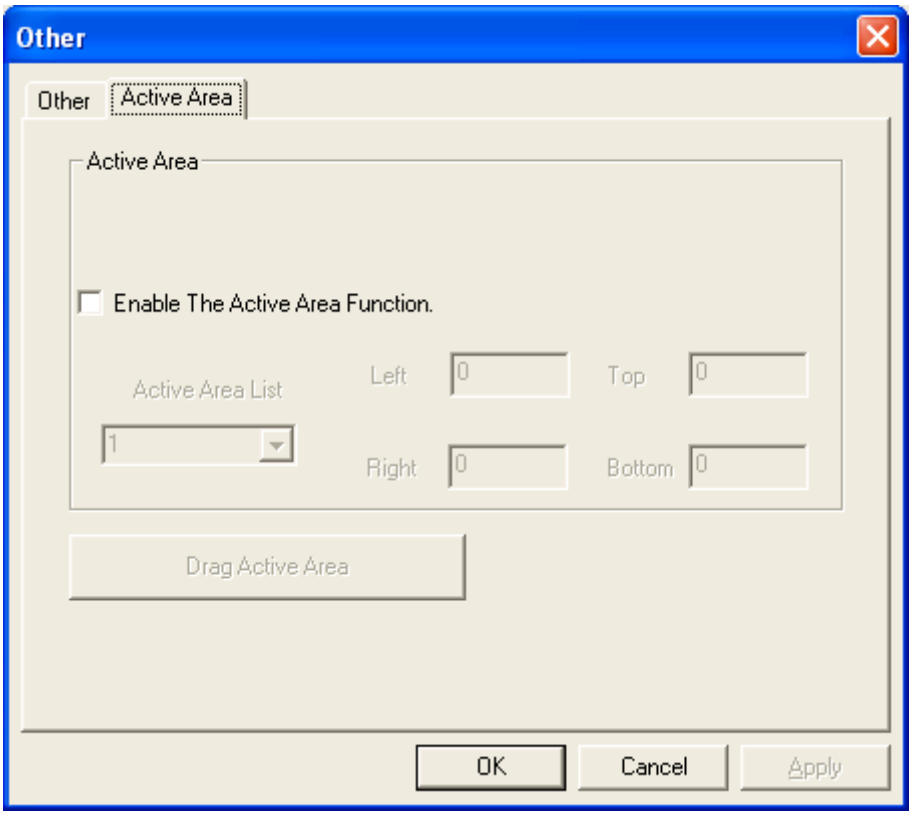
Upper Screen

Right Screen



Other

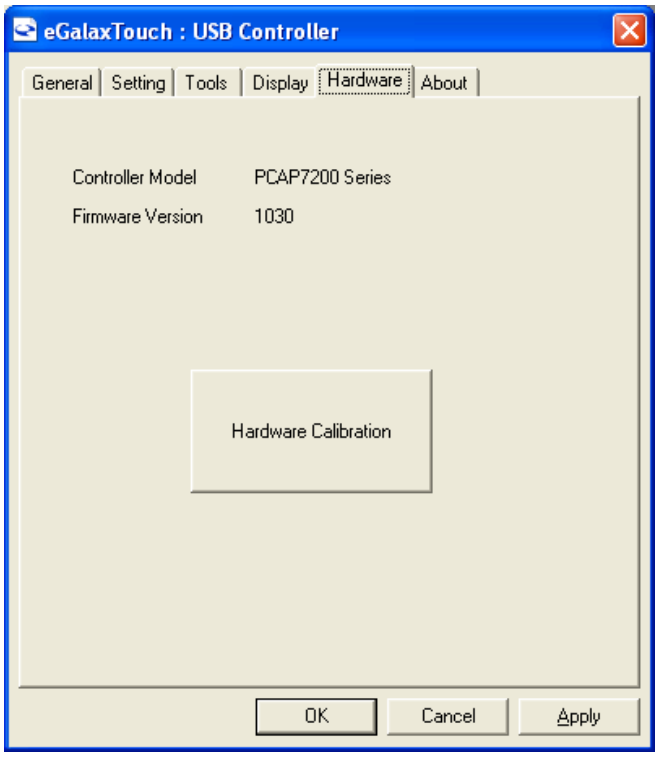
Other mode of display. Quarter1~4 and Customized area.



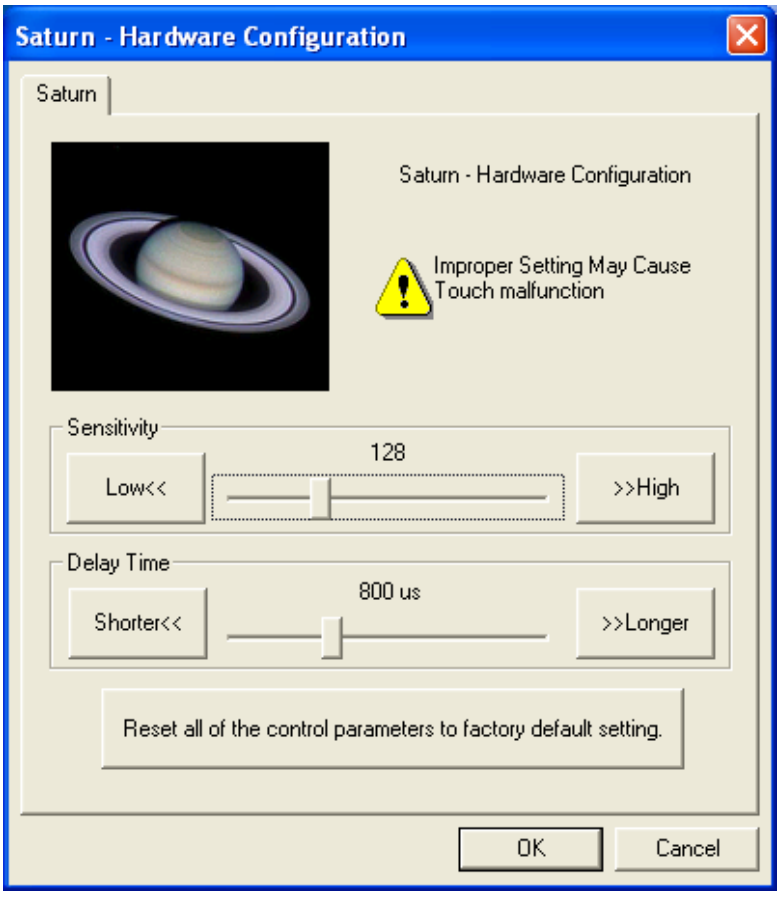
Active Area

Drag active area to enable Active Area Function.

Hardware



Saturn Hardware Configuration



About

To display information about eGalaxTouch and its version.