# NP-9XX-MA

12.1", 19", 24" Intel 4$^{th}$ Core i3/i5/i7 Marine PC

## User Manual

| Release Date | Revision |
|---|---|
| Oct. 2015 | V1.0 |

# Revision History

| Reversion | Date | Description |
|-----------|------|-------------|
| 1.0 | 2015/10/23 | Official Version |

# 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.

## 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

- 12.1"/19"/24" TFT LCD

- Aluminum (10mm) bezel and Aluminum housing, with Anti-Corrosion Coating)

- Intel Core 4th Gen i3/i5/i7 Processor

- 4G DDR3L onboard (8G for option)

- 1 x 2.5" Storage space (Recommended Industrial SSD)

- 1 x SD slot onboard and 1 x CF slot (option)

- 9~36V DC Power Input with isolated

- CE/FCC Class A/IEC 60945 Certificated

- Marine application

## 1.2 Specifications

| | NP-912-MA | NP-919-MA | NP-924-MA |
|---|---|---|---|
| **System** | | | |
| CPU | Intel Core i3-4010U Processor (3M Cache, 1.7 GHz) / TDP: 15W<br>Intel Core i5-4310U Processor (3M Cache, 2.0 GHz) / TDP: 15W | | |
| Chipset | SoC | | |
| Memory | Onboard 4GB DDR3L 1333/1600 MHz, 8GB for option | | |
| **IO Port** | | | |
| USB | 2 x USB 3.0 type A | | |
| Serial/Parallel | 1 x RS-232/422/485 DB-9 selectable, default RS-485, COM1<br>1 x RS-232 DB-9, COM2 | | |
| Audio | 1 x Line-out, phone jack | | |
| LAN | 2 x GbE LAN RJ-45 | | |
| Power | 1 x 2-pin terminal block connector (for remote power switch)<br>1 x 3-pin terminal block connector | | |
| Other | 1 x ESD Ground | | |
| Front Side IO | 1 x Backlight on/off with touch on/off<br>1 x Power System LED<br>1 x VR Knob Brightness Control | | |

| | |
|---|---|
| | 1 x Power on/off Button ( 19"/24" default, optional for 12.1") |
| | 2 x LED light for power and HDD indication (19"/24" default, optional for 12.1") |
| | 1 x USB Port with Waterproof Cover Design (19"/24" default, optional for 12.1") |
| Option<br>only for 19"and 24" | TB-528C1U2<br>2 x USB, 1 x RS-232 |

## Storage Space

| | |
|---|---|
| Storage | Default:<br>1 x 2.5" Storage Space (Recommended Industrial SSD)<br>1 x Internal SD slot onboard<br>Optional:<br>1 x Internal CF Slot |

## Expansion

| | |
|---|---|
| Expansion Slot | 1 x Mini PCIe full size slot onboard<br>Option wifi/BT or 3G with Antenna<br>1 x Mini PCIe full size slot onboard<br>Option isolation 2 x RS-422/485 isolation |

## Display

| Display Type | 12.1" color TFT LCD | 19" color TFT LCD | 24" color TFT LCD |
|---|---|---|---|
| Max. Resolution | 1024 x 768 | 1280 x 1024 | 1920 x 1080 |
| Max. Color | 16.7M | 16.7M | 16.7M |
| Luminance | 500 | 350 | 300 |
| Contrast Ratio | 700 : 1 | 1000 : 1 | 3000 : 1 |
| Viewing Angle | 160 (H) / 140 (V) | 170 (H) / 160 (V) | 178 (H) / 178 (V) |
| Backlight Lifetime | 50,000 hrs | 50,000 hrs | 50,000 hrs |

## Touch Screen – Resistive Touch Window Type

| | |
|---|---|
| TS Control IC | PenMount 6000 on Board |
| Interface | USB |
| Light Transmission | Over 80% |

## Power

| Power Input | Default:<br>9~36V DC with isolated<br>Option:<br>AC Power input | | |
|---|---|---|---|
| Power Consumption | MAX: 37.2W | MAX: 67W | MAX: 41.8W |

## Mechanical

| | |
|---|---|
| Chassis Color | Black / Aluminum (10mm) bezel and Aluminum housing |

| | Anti-Corrosion Coating | | |
|---|---|---|---|
| Mounting | Panel Mount and Front Access Mount<br>Mounting Bracket (option) | | |
| IP Rating | IP65 Front Panel | | |
| Dimensions | 337.2 x 293.2 x 65 mm | 484 x 400 x 60 mm | 647 x 414 x 65 mm |
| Net Weight | 4.4 Kg | 9.5 Kg | 11.7 Kg |
| Operating System Support | | | |
| OS Support | Windows 7 Professional for Embedded Systems,<br>Windows Embedded Standard 7 (WES7),<br>Windows 10 IoT 2016  LTSB/CBB | | |
| Environmental | | | |
| Operating temperature | 0~50℃<br><br>Optional WT1 -20℃ ~60℃ (with industrial SSD) | | |
| Storage temperature | -30~70℃ | | |
| Storage humidity | 10 to 90% @ 40°C, non- condensing | | |
| Certification | CE / FCC Class A/IEC 60945 Certificated<br>Meet IACS E10/DNV Standard | | |

# 1.3 Dimensions
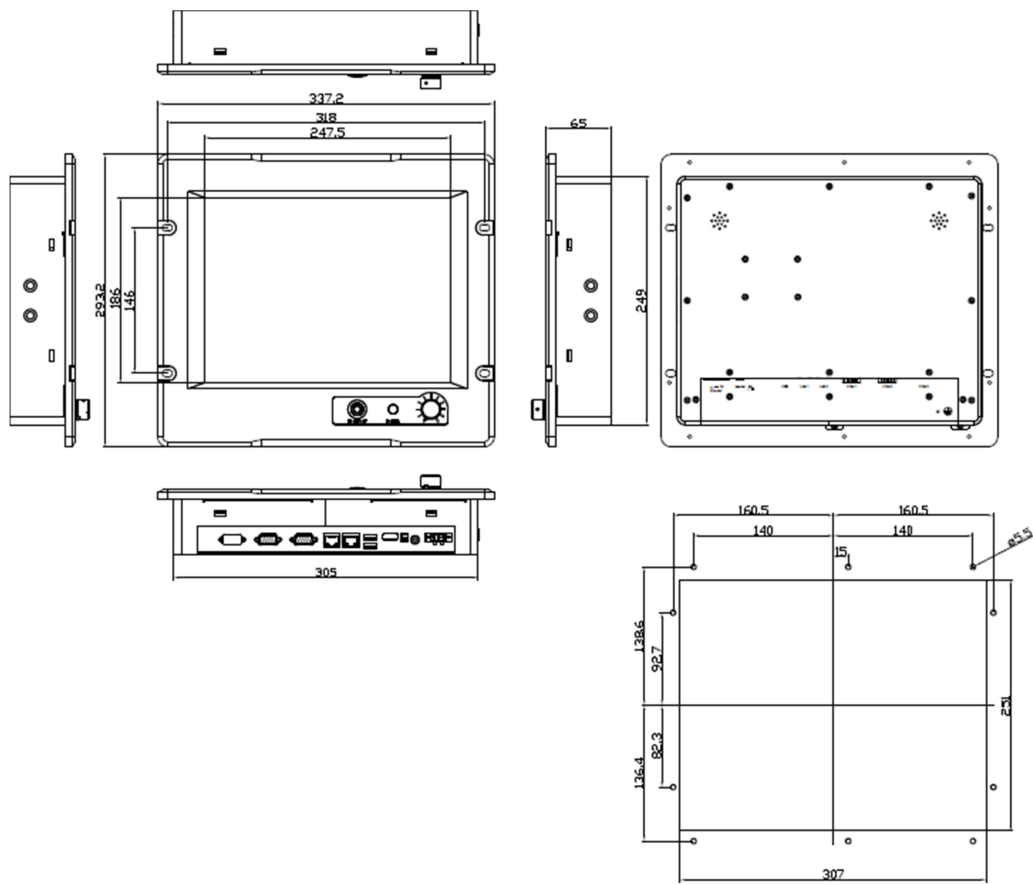


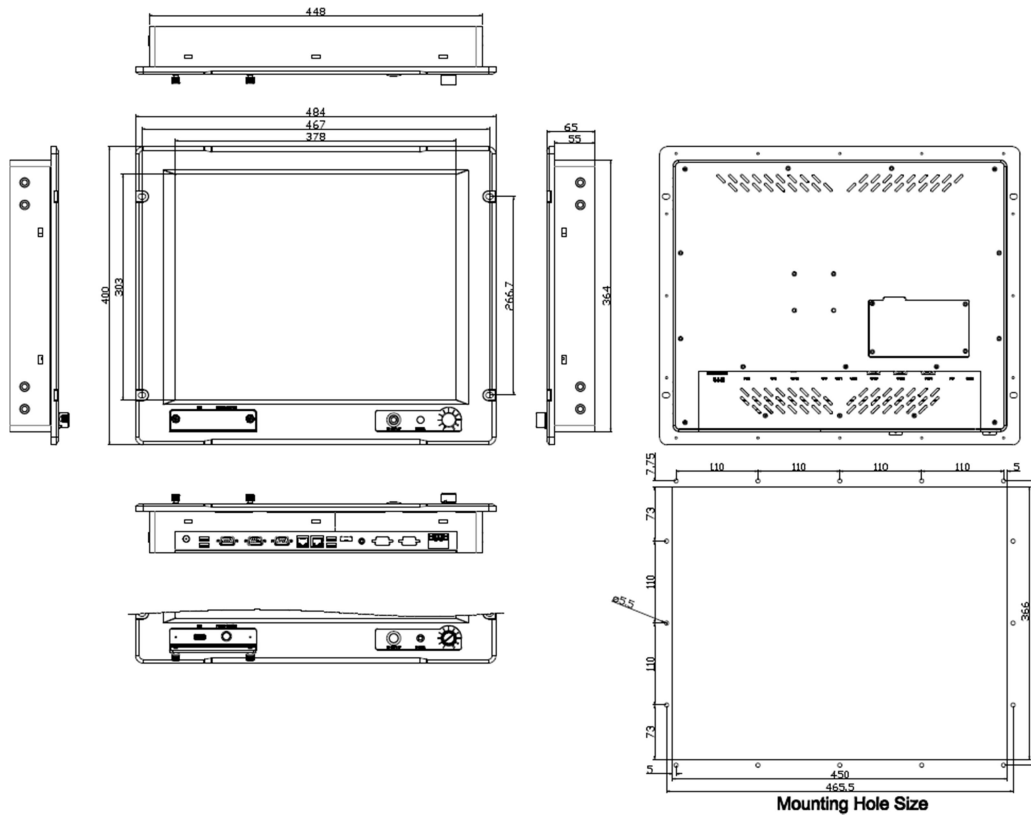Figure 1.1: Dimensions of NP-912-MA

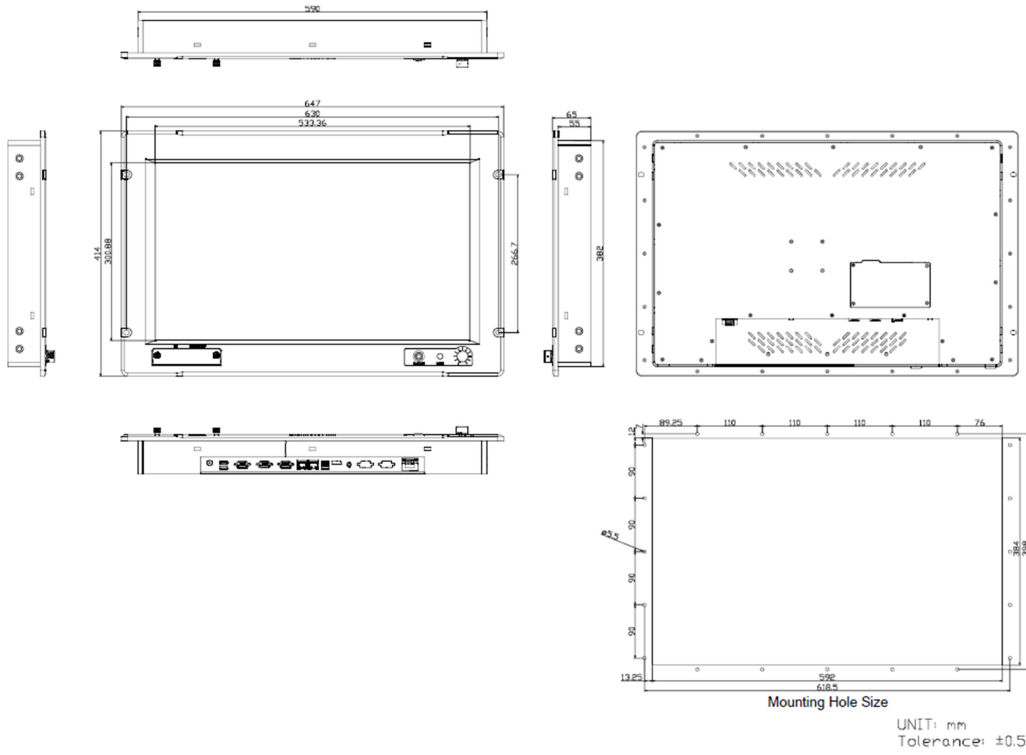Figure 1.2: Dimensions of NP-919-MA

Figure 1.3: Dimensions of NP-924-MA

## 1.4 Brief Description of NP-9XX-MA

NP-9XX-MA series are powered by Intel 4<sup>th</sup> Gen. i3/i5/i7 Processor. It is aluminum (10mm) bezel and aluminum housing with anti-corrosion coating and IP65 front panel designed. It comes with 12.1", 19", or 24" display with resistive touch screen. The model supports 4GB DDR3L onboard, 8GB is for option, 9~36V DC wide-ranging power input with isolated, 1 x 2.5" storage space(Recommended Industrial SSD), 1 x SD slot onboard, 1 x CF slot for option, and so on. It is CE, FCC Class A, IEC 60945 certificated, and meets IACS E10 and DNV Standard, and the model is designed for marine application.

Figure 1.4: Front View of NP-9XX-MA

Figure 1.5: Rear View of NP-912-MA

Figure 1.6: Front View of NP-919-MA



Figure 1.7: Rear View of NP-919-MA

Figure 1.8: Front View of NP-924-MA



Figure 1.9: Rear View of NP-924-MA

## 1.5 Mounting of NP-9XX-MA
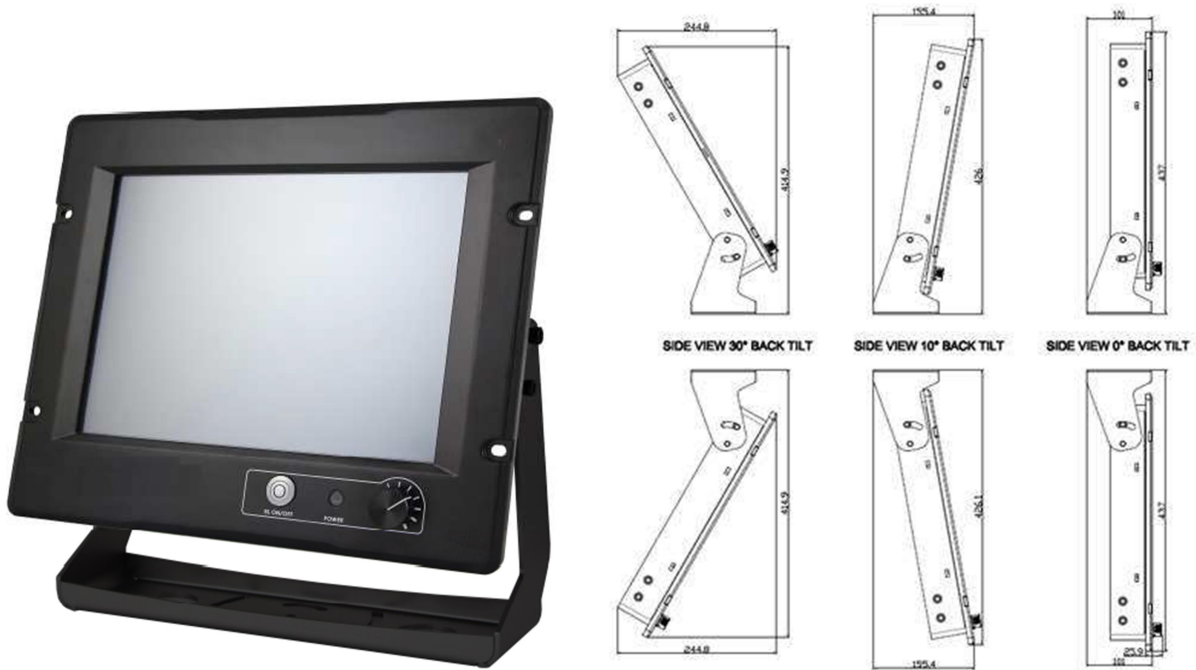


Figure 1.10: Panel Mounting of NP-9XX-MA



SIDE VIEW 30° BACK TILT    SIDE VIEW 10° BACK TILT    SIDE VIEW 0° BACK TILT

Figure 1.11: Adjustable Mounting Bracket of NP-9XX-MA

# Chapter 2                              Hardware

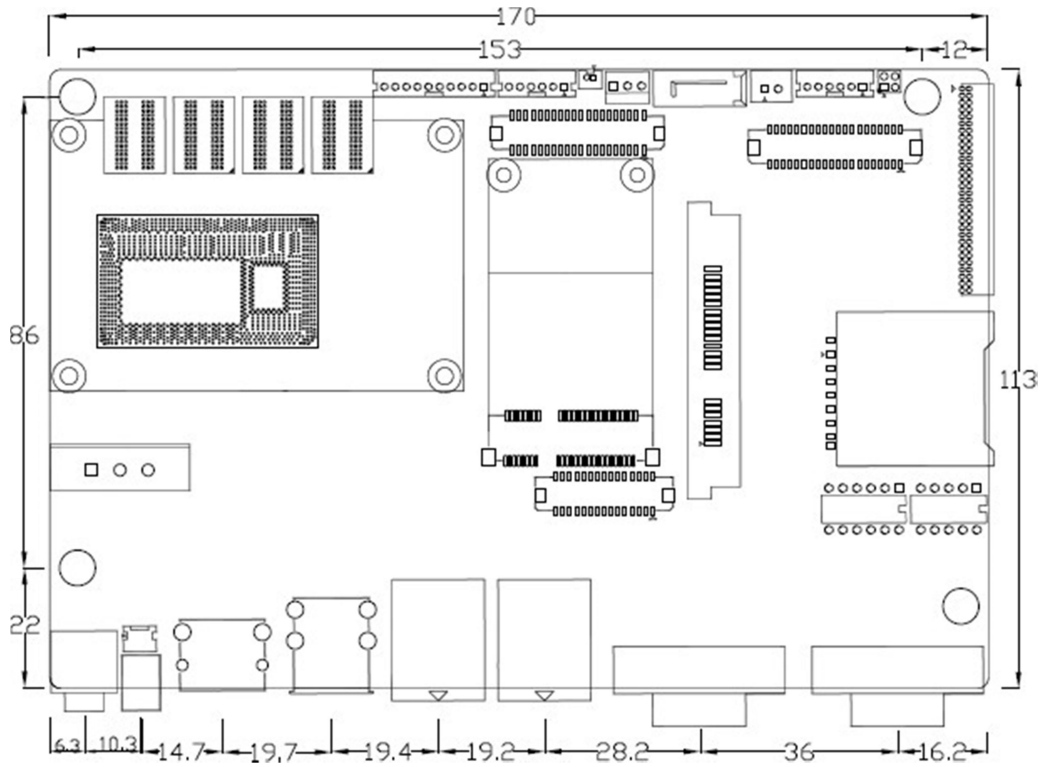## 2.1 Mainboard Introduction

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

## 2.2 Specifications

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

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

| | |
|---|---|
| Switches and LED Indicators | 1 x Power on/off switch (BT1/BT2/CN2/CN3)<br>1 x Reset (CN2)<br>1 x HDD LED status (CN2)<br>1 x Power LED status (CN1)<br>1 x Buzzer |
| External I/O port | 2 x COM Ports (COM1/COM2)<br>2 x USB 3.0 Ports (stack)<br>2 x RJ45 GbE LAN Ports<br>1 x HDMI Port<br>1 x Stack audio Jack (Line out) |
| Watchdog Timer | *Software programmable 1–255 level by Super I/O (Reserve)* |
| Temperature | Operating: -20℃ to 70℃<br><br>Storage: -40℃ to 85℃ |
| Humidity | 10% - 90%, non-condensing, operating |
| Power Consumption | 12V /1.33A (Intel I3-4010U processor with 4GB DDR3L DRAM)<br>12V /1.33A (Intel I5-4310U processor with 4GB DDR3L DRAM) |
| EMI/EMS | Meet CE/FCC class A |
| | |
| TB-528CAN2 | 2 x CAN bus |
| | 1 x SIM Card Socket |
| | 1 x mini-PCI-express slot |

(units :mm)

Figure 2.1: Mainboard Dimensions

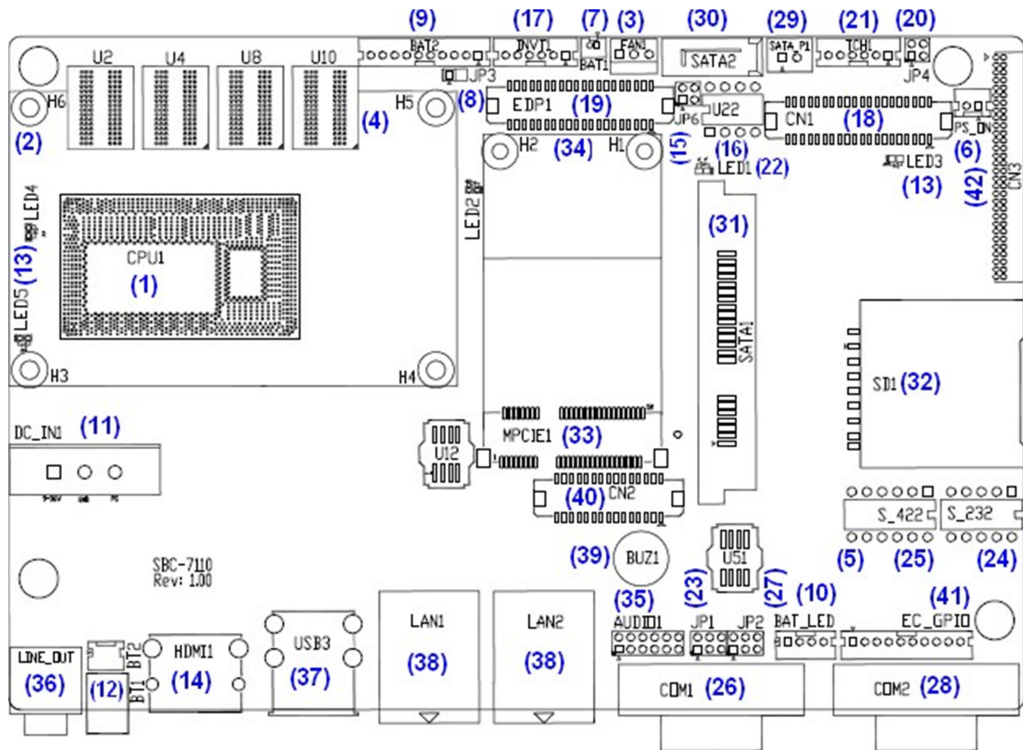## 2.3 Jumpers and Connectors Location



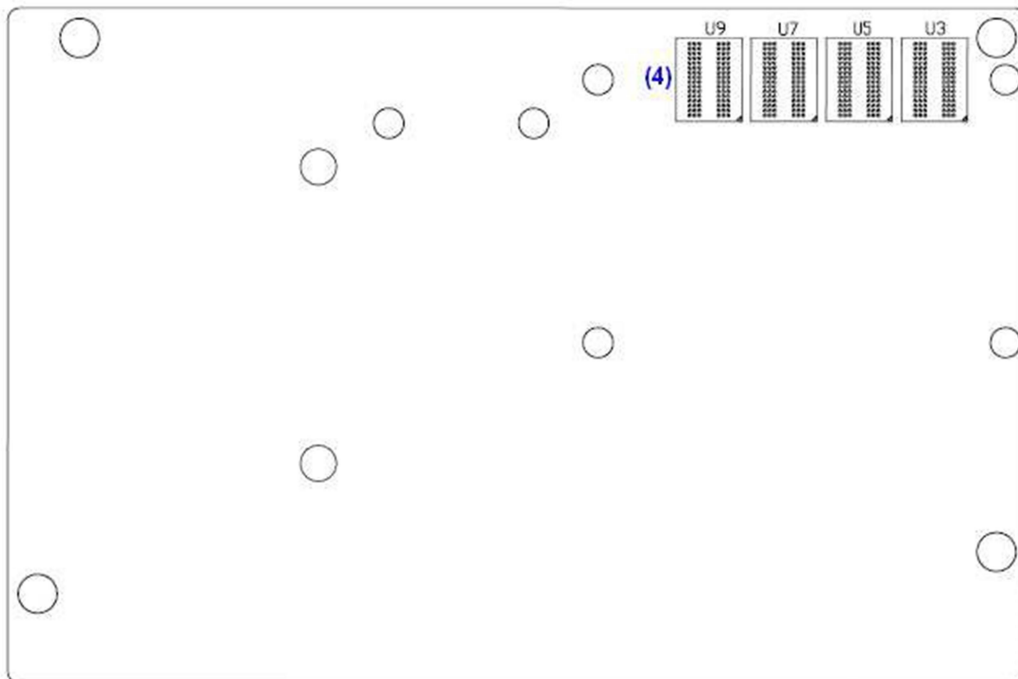Figure 2.2: Jumpers and Connectors Location- Board Top



Figure 2.3: Jumpers and Connectors Location- Board Bottom

## 2.4 Jumpers Setting and Connectors

1. CPU1:

   (FCBGA1168), onboard Intel Haswell-U Processors.

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

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

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

3. FAN1(option):

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



| Pin# | Signal Name |
|---|---|
| 1 | Ground |
| 2 | VCC |
| 3 | Rotation detection |

 Note:

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

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

   (FBGA96)Onboard DDR3L Memory.

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

5. S-422 (PIN6):

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

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

6. PS_ON (option):

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

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

7. BAT1:

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

| Pin# | Signal Name |
|---|---|
| Pin1 | VBAT |
| Pin2 | Ground |

8. JP3:

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

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

Procedures of CMOS clear:

a) Turn off the system and unplug the power cord from the power outlet.

b) To clear the CMOS settings, use the jumper cap to close pins 1 and 2 for about 3 seconds then reinstall the jumper clip back to pins open.

c) Power on the system again.

d) When entering the POST screen, press the <ESC> or <DEL> key to enter CMOS Setup Utility to load optimal defaults.

e) After the above operations, save changes and exit BIOS Setup.

9. BAT2:

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

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

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

10. BAT_LED:

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

Pin1-Pin3: Charge LED status.

Pin2-Pin3: Discharge LED status.

Pin4-Pin3: EC LED status.

| Pin# | Signal Name |
|------|-------------|

| Pin1 | BAT2_LED+ |
|------|-----------|
| Pin2 | BAT2_LED- |
| Pin3 | Ground |
| Pin4 | RST_EC |

11. DC_IN1:

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

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

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

12. BT1/BT2:

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

13. LED2/LED3/LED4/LED5:

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

14. HDMI1:

(HDMI 19P Connector), High Definition Multimedia Interface connector.
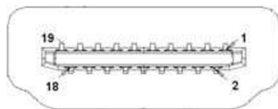
15. JP6:

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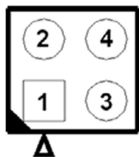


| JP6 | Function (CN1) |
|---|---|
| Pin1-Pin2 (Close) | Signal channel LVDS |
| Pin1-Pin2 (Open) | Dual channel LVDS (Default) |
| Pin3-Pin4 (Close) | 8/24 bit (Default) |
| Pin3-Pin4 (Open) | 6/18 bit |

16. U22:

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

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

17. INVT1:

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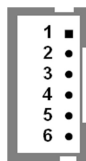


| Pin# | Signal Name |
|---|---|
| 1 | +DC12V_S0 |
| 2 | +DC12V_S0 |
| 3 | Ground |
| 4 | Ground |
| 5 | BKLT_EN_OUT |

| | | | | | |
|---|---|---|---|---|---|
| 6 | | | | BKLT_CTRL | |

18. CN1:

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

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

19. EDP1 (option)

| Function | Signal Name | Pin# | Pin# | Signal Name | Function |
|---|---|---|---|---|---|
| | 12V_S0_EDP | 2 | 1 | 12V_S0_EDP | |
| | 12V_S0_EDP | 4 | 3 | 12V_S0_EDP | |
| | Ground | 6 | 5 | Ground | |

| EDP | EDP_VDD5 | 8 | 7 | EDP_VDD5 | EDP |
|---|---|---|---|---|---|
| | EDP_VDD3 | 10 | 9 | EDP_VDD3 | |
| | Ground | 12 | 11 | Ground | |
| | EDP_BKLT_EN | 14 | 13 | EDP_TXN_1 | |
| | EDP_BKLT_CTRL | 16 | 15 | EDP_TXP_1 | |
| | EDP_VDD_EN | 18 | 17 | Ground | |
| | EDP_TXN_2 | 20 | 19 | EDP_TXN_0 | |
| | EDP_TXP_2 | 22 | 21 | EDP_TXP_0 | |
| | Ground | 24 | 23 | Ground | |
| | EDP_TXN_3 | 26 | 25 | EDP_AUX_N | |
| | EDP_TXP_3 | 28 | 27 | EDP_AUX_P | |
| | EDP_DISP_UTIL | 30 | 29 | 12C1_SCL | 12C |
| | EDP_HP_CN | 32 | 31 | 12C1_SDA | |
| | Ground | 34 | 33 | Ground | USB7 |
| USB7 | USB7_P | 36 | 35 | USB7_N | (option) |
| (option) | 5V_S5_USB | 38 | 37 | 5V_S5_USB | |
| Power LED | PWR_LED+ | 40 | 39 | Ground | Power LED |

20. JP4:

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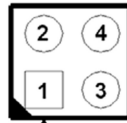


| JP4 | Function | |
|---|---|---|
| | USB7 (CN1) | Touch (TCH1) |
| Close 3-4 (default) | - | Yes |
| Open 3-4 (option) | Yes | - |
| Open 1-2 (default) | - | |

21. TCH1:

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

| Pin# | Signal Name |
|---|---|
| 1 | SENSE |
| 2 | X+ |
| 3 | X- |
| 4 | Y+ |

| 5 | Y- |
|---|---|
| 6 | GND_EARCH |

22. LED1:

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

23. JP1:

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

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

24. S_232

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

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

25. S_422:

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

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

26. COM1

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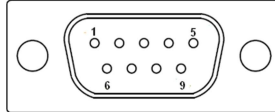


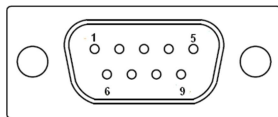| RS232 (Default) | |
|---|---|
| Pin# | Signal Name |
| 1 | DCD# (Data Carrier Detect) |
| 2 | RXD (Received Data) |
| 3 | TXD (Transmit Data) |
| 4 | DTR (Data Terminal Ready) |
| 5 | Ground |
| 6 | DSR (Data Set Ready) |
| 7 | RTS (Request To Send) |
| 8 | CTS (Clear To Send) |
| 9 | JP1 select Setting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

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

| BIOS Setup: Advanced/F81216 Super IO Configuration/Serial Port 0 Configuration 【RS-422】 | |
|---|---|
| RS485 (option) | |
| Pin# | Signal Name |
| 1 | NC |
| 2 | NC |
| 3 | 485- |
| 4 | 485+ |
| 5 | Ground |
| 6 | NC |
| 7 | NC |
| 8 | NC |
| 9 | NC |
| BIOS Setup: Advanced/F81216 Super IO Configuration/Serial Port 0 Configuration 【RS-485】 | |

27. JP2:

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

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

28. COM2:

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



| Pin# | Signal Name |
|---|---|
| 1 | DCD# (Data Carrier Detect) |
| 2 | RXD (Received Data) |
| 3 | TXD (Transmit Data) |

| 4 | DTR (Data Terminal Ready) |
|---|---|
| 5 | Ground |
| 6 | DSR (Data Set Ready) |
| 7 | RTS (Request To Send) |
| 8 | CTS (Clear To Send) |
| 9 | JP2 select Setting (RI/5V/12V) |

29. SATA_P:

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

| Pin# | Signal Name |
|---|---|
| 1 | +DC5V |
| 2 | Ground |

Note:

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

30. SATA2:

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

31. SATA1:

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

32. SD1:

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

33. MPCIE1:

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

34. H1/H2:

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

35. AUDIO1:

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

| Signal Name | Pin# | Pin# | Signal Name |
|---|---|---|---|
| +5V | 1 | 2 | GND_AUD |
| LINE-OUT-L | 3 | 4 | LINE-OUT-R |
| FRONT_JD | 5 | 6 | LINE1_JD |
| LINE-IN-L | 7 | 8 | LINE-IN-R |
| MIC-IN-L | 9 | 10 | MIC-IN-R |
| GND_AUD | 11 | 12 | MIC1_JD |

36. LINE_OUT:

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



37. USB3:

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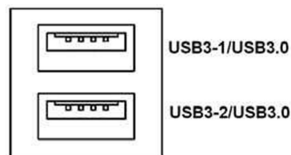


Each USB Type A Receptacle (2 Ports) Current limited value is 1.5A.
If the external USB device current exceeds 1.5A, please separate connectors into different Receptable.

38. LAN1/LAN2:

LAN1/LAN2: (RJ45 Connector), Rear LAN port, Two standard 10/100/1000M

RJ-45 Ethernet ports are provided. Used intel 82574L chipset, LINK LED (green) and ACTIVE LED (yellow) respectively located at the left-hand and right-hand side of the Ethernet port indicate the activity and transmission state of LAN.
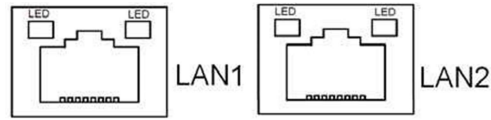


39. BUZ1:
Onboard buzzer.

40. CN2:
(DF13-30P Connector), For expand output connector, It provides eight GPIO, one RS422 or RS485, one USB2.0, one Power on/off, one Reset.

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

41. EC_GPIO:

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

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

42. CN3:

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

| Function | Signal Name | Pin# | Pin# | Signal Name | Function |
|----------|-------------|------|------|-------------|----------|
|  | 5V_S5_USB | 1 | 2 | 5V_S5_USB |  |
|  | 5V_S5_USB | 3 | 4 | 5V_S5_SB |  |
|  | USB34_OC | 5 | 6 | PSON_ATX- |  |
| USB3 | USB3_N | 7 | 8 | USB3_P | USB3 |
| USB4 | USB4_N | 9 | 10 | USB4_P | USB4 |
|  | Ground | 11 | 12 | Ground |  |
| PS/2 MS | PS2_MSCLK | 13 | 14 | PS2_MSDATA | PS/2 MS |
| PS/2 KB | PS2_KBCLK | 15 | 16 | PS2_KBDATA | PS/2 KB |
| COM4 (UART) | COM4_RI | 17 | 18 | COM4_DCD- | COM4 (UART) |
| | COM4_TXD | 19 | 20 | COM4_RXD | |
| | COM4_DTR | 21 | 22 | COM4_RTS- | |
| | COM4_DSR | 23 | 24 | COM4_CTS- | |
|  | Ground | 25 | 26 | Ground |  |
| COM3 | COM3_RI | 27 | 28 | COM3_DCD- | COM3 |
| | COM3_TXD | 29 | 30 | COM3_RXD | |

| (UART) | COM3_DTR | 31 | 32 | COM3_RTS- | (UART) |
|---|---|---|---|---|---|
| | COM3_DSR | 33 | 34 | COM3_CTS- | |
| GPIO56 | PCH_GPIO56 | 35 | 36 | PCH_GPIO58 | GPIO58 |
| GPIO57 | PCH_GPIO57 | 37 | 38 | PCH_GPIO59 | GPIO59 |
| | Ground | 39 | 40 | Ground | |
| PCIE | PCIE1_TX_N0 | 41 | 42 | PE1_TX_P0 | PCIE |
| | PCIE1_RX_N0 | 43 | 44 | PE1_RX_P0 | |
| | Ground | 45 | 46 | Ground | |
| | CLK_100M_PE1_N | 47 | 48 | CLK_100M_PE1_P | |
| | PCIE1_WAKE_N | 49 | 50 | PLT_RST_BUF2- | |
| SMBUS | SMB_CLK_S5 | 51 | 52 | SMB_DATA_S5 | SMBUS |
| PCIE | CLKREQ_PE1- | 53 | 54 | Ground | |
| | 3P3V_S5 | 55 | 56 | PWRBTN_ON- | Power Auto on |
| | 3P3V_S5 | 57 | 58 | 3P3V_S5 | |
| 12V | 12V_S0 | 59 | 60 | 12V_S0 | 12V |

43. TB-528C2ME1 (option):

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

TB-528C2ME1 Top:
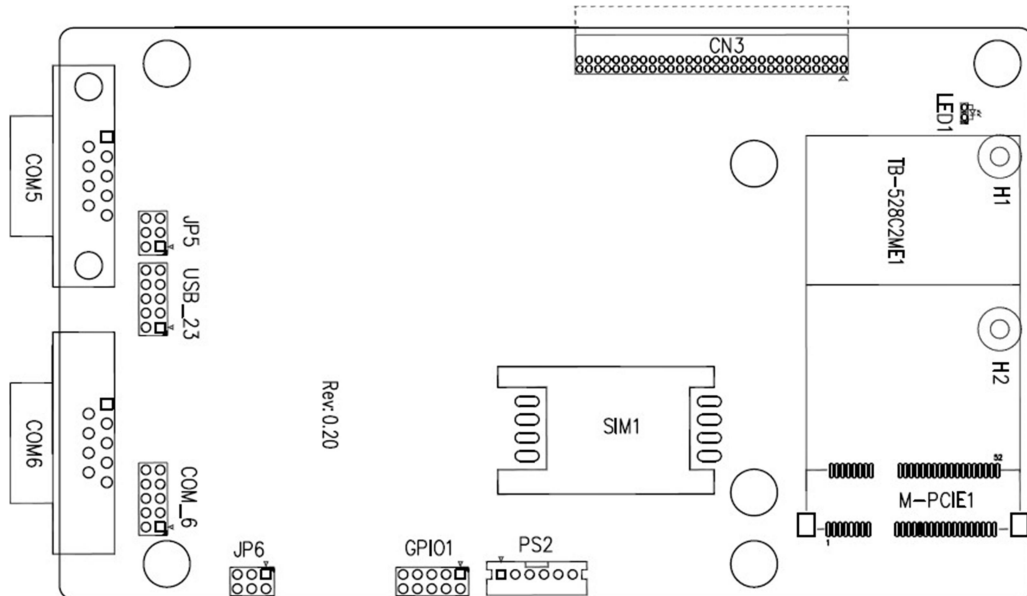


CN3:

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

M-PCIE1:

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

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

H1/H2:

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

LED1:

Mini PCIe devices LED Status.

SIM1:

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

PS2:

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

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

GPIO1:

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

| Signal Name | Pin# | Pin# | Signal Name |
|---|---|---|---|

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

USB_23:

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

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

Note:

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

JP5:

(2.0mm Pitch 2x3 Pin Header), COM5 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM5 port.

| JP5 Pin# | Function |
|---|---|
| Close 1-2 | RI (Ring Indicator)    (default) |
| Close 3-4 | COM5 Pin9=+5V    (option) |
| Close 5-6 | COM5 Pin9=+12V    (option) |

COM5(SBC-7110/COM3):

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM5 port is controlled by pins No. 1~6 of JP5, select output Signal RI or 5V or 12V, For details, please refer to description of JP3.

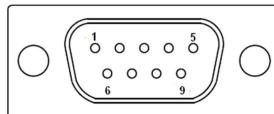| Pin# | Signal Name |
|------|-------------|
| 1 | DCD# (Data Carrier Detect) |
| 2 | RXD (Received Data) |
| 3 | TXD (Transmit Data) |
| 4 | DTR (Data Terminal Ready) |
| 5 | Ground |
| 6 | DSR (Data Set Ready) |
| 7 | RTS (Request To Send) |
| 8 | CTS (Clear To Send) |
| 9 | JP5 Setting: <br> Pin1-2: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

JP6:

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

| JP6 Pin# | Function |
|----------|----------|
| Close 1-2 | RI (Ring Indicator)    (default) |
| Close 3-4 | COM6 Pin9=+5V    (option) |
| Close 5-6 | COM6 Pin9=+12V    (option) |

COM6(SBC-7110/COM4):

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM6 port is controlled by pins No.1~6 of JP6, select output Signal RI or 5V or 12V, For details, please refer to description of JP6.



| Pin# | Signal Name |
|------|-------------|
| 1 | DCD# (Data Carrier Detect) |
| 2 | RXD (Received Data) |

| | |
|---|---|
| 3 | TXD (Transmit Data) |
| 4 | DTR (Data Terminal Ready) |
| 5 | Ground |
| 6 | DSR (Data Set Ready) |
| 7 | RTS (Request To Send) |
| 8 | CTS (Clear To Send) |
| 9 | JP6 Setting:<br><br>Pin1-2: RI (Ring Indicator)    (default)<br>Pin3-4: 5V Standby power    (option)<br>Pin5-6: 12V Standby power    (option) |

COM_6 (option, SBC-7110/COM4):

(2.0mm Pitch 2x5 Pin Header), COM6 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

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

44.   TB-528C2 (option):

SBC-7110 Riser Card, TB-528C2ME1 CN3 connect to SBC-7110 CN3 pin Header.
TB-528C21 Top:

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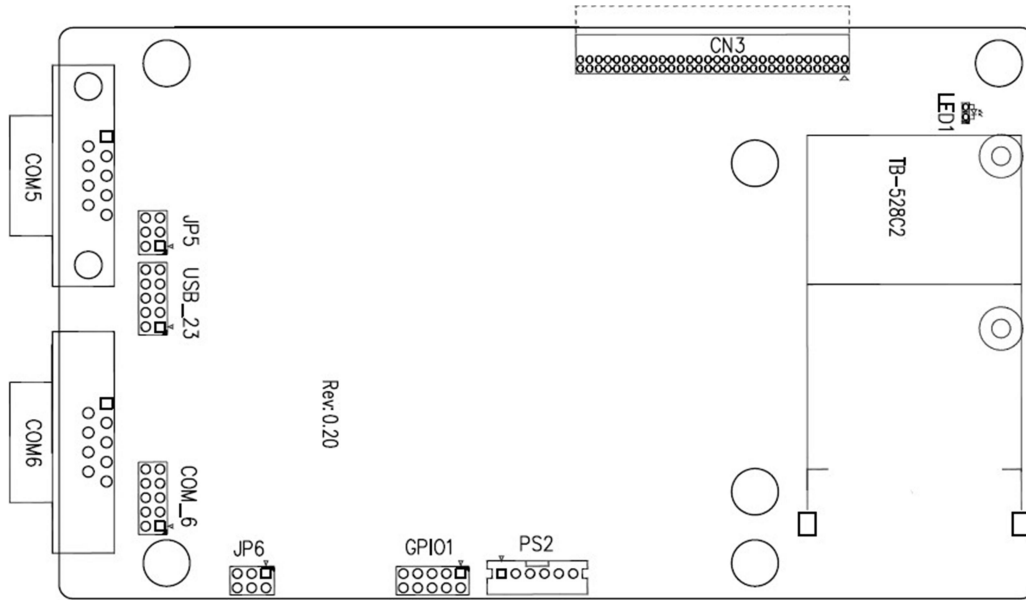
(1.27mm Pitch 2 x 30 Pin Header), connect to SBC-7110 CN3 pin Header.

LED1:

Mini PCIe devices LED Status.

PS2:

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

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

GPIO1:

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

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

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

USB_23:

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

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

Note:

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

JP5:

(2.0mm Pitch 2x3 Pin Header), COM5 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM5 port.

| JP6 Pin# | Function |
|---|---|
| Close 1-2 | RI (Ring Indicator)      (default) |
| Close 3-4 | COM5 Pin9=+5V      (option) |
| Close 5-6 | COM5 Pin9=+12V     (option) |

COM5(SBC-7110/COM3):

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM5 port is controlled by pins No.1~6 of JP5, select output Signal RI or 5V or 12v, For details, please refer to description of JP3.

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

COM6(SBC-7110/COM3)：

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM6 port is controlled by pins No.1~6 of JP6, select output Signal RI or 5V or 12v, For details, please refer to description of JP6.



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

| | | Pin5-6: 12V Standby power    (option) |
|---|---|---|

COM_6 (option, SBC-7110/COM3):

(2.0mm Pitch 2X5 Pin Header), COM6 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

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

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

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

TB-528C1U2P1 Top：
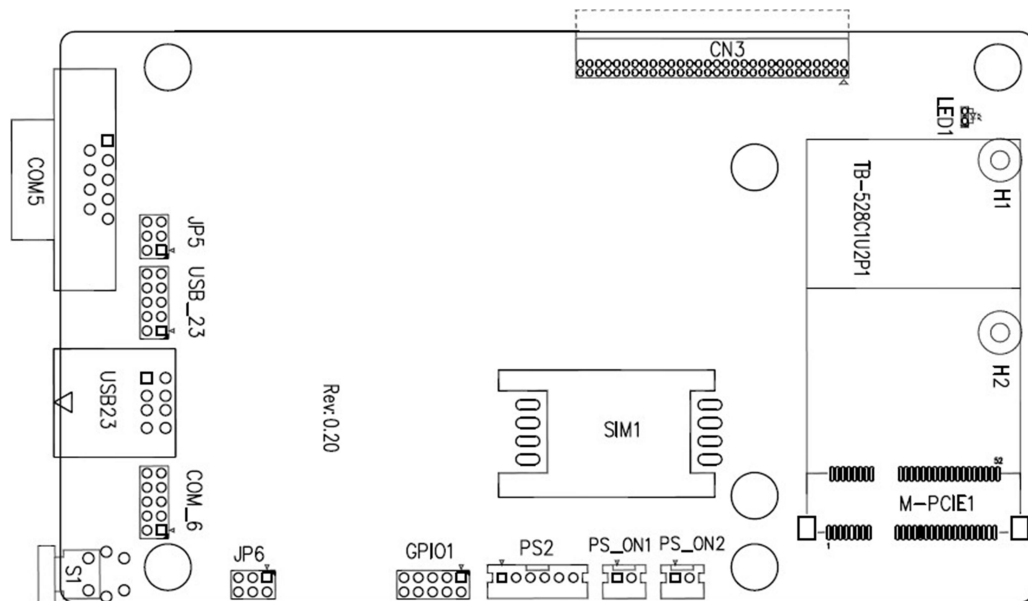


CN3:

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

M-PCIE1：

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

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

H1/H2:

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

LED1：

Mini PCIe devices LED Status.

SIM1（option）：

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

PS_ON1：

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

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

PS_ON2（option）：

(2.0mm Pitch 1X2 Pin Wafer).

PS2：

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

| Pin# | Signal Name |
|---|---|
| 1 | KBDATA |
| 2 | MSDATA |
| 3 | Ground |
| 4 | +5V |
| 5 | KBCLK |

| 6 | MSCLK |
|---|---|

GPIO1：

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

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

USB23(SBC-7110 USB3/USB4)：
(Double stack USB type A), Rear USB connector, it provides up to 2 USB2.0 ports, speed up to 480Mb/s.



USB_23（option）：
(2.0mm Pitch 2x5 Pin Header), Front USB connector, it provides one USB port via a dedicated USB cable, speed up to 480Mb/s.

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

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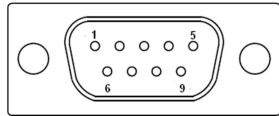
even hardware damages.

JP5：
(2.0mm Pitch 2x3 Pin Header), COM5 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM5 port.

| JP3 Pin# | Function |
|---|---|
| Close 1-2 | RI (Ring Indicator)     (default) |
| Close 3-4 | COM5 Pin9: +5V       (option) |
| Close 5-6 | COM5 Pin9: +12V     (option) |

COM5(SBC-7110/COM3)：
(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM5 port is controlled by pins No.1~6 of JP5, select output Signal RI or 5V or 12v, For details, please refer to description of JP3.

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

JP6：
(2.0mm Pitch 2x3 Pin Header), COM6 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM6 port.

| JP3 Pin# | Function |
|---|---|
| Close 1-2 | RI (Ring Indicator) (default) |
| Close 3-4 | COM6 Pin9: +5V (option) |
| Close 5-6 | COM6 Pin9: +12V (option) |

COM6(SBC-7110/COM4)：

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM6 port is controlled by pins No.1~6 of JP6, select output Signal RI or 5V or 12v, For details, please refer to description of JP6.



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

S1：

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

PWR LED: POWER LED status.

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

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

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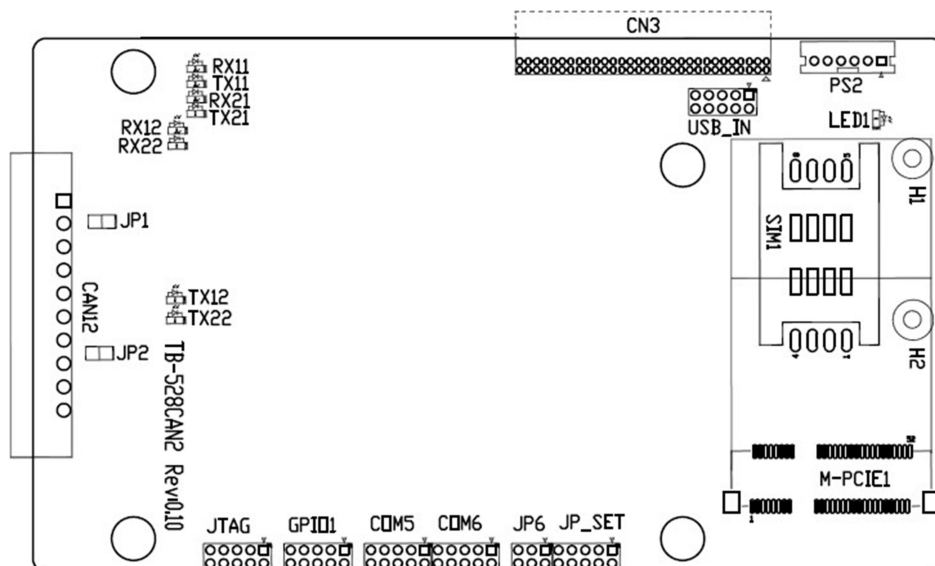


CN3：
(1.27mm Pitch 2X30 Pin Header), connect to SBC-7110 CN3 pin Header.

M-PCIE1：
(Socket 52Pin), mini PCIe socket, it is located at the top, it supports mini PCIe
devices with Smbus, USB2.0,SIM and PCIe signal. MPCIe card size is 30x30mm
or 30x50.95mm.

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

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

LED1：

Mini PCIe devices LED Status.

SIM1 (option)：

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


PS2：

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

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


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

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

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

JP_SET（option）：

(2.0mm Pitch 2x5 Pin Header).

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

JP6：

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

| JP3 Pin# | Function |
|---|---|
| Close 1-2 | RI (Ring Indicator)      (default) |
| Close 3-4 | COM6 Pin9: +5V      (option) |
| Close 5-6 | COM6 Pin9: +12V      (option) |

COM6(SBC-7110/COM4)：

(2.0mm Pitch 2X5 Pin Header), COM6 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

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

COM5(SBC-7110/COM3)：

(2.0mm Pitch 2X5 Pin Header), COM5 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

| Signal Name | Pin# | Pin# | Signal Name |
|---|---|---|---|
| DCD | 1 | 2 | RXD |
| TXD | 3 | 4 | DTR |
| Ground | 5 | 6 | DSR |
| RTS | 7 | 8 | CTS |

| | RI | 9 | 10 | NC |
|---|---|---|---|---|

**GPIO1：**

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

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

**JTAG：**

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

**JP1：**

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

**JP2：**

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

**CAN1/CAN2：**

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

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

【See TB-528AN2 Manual】

47. TB-528U2 (option)

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

TB-528U2 Top：



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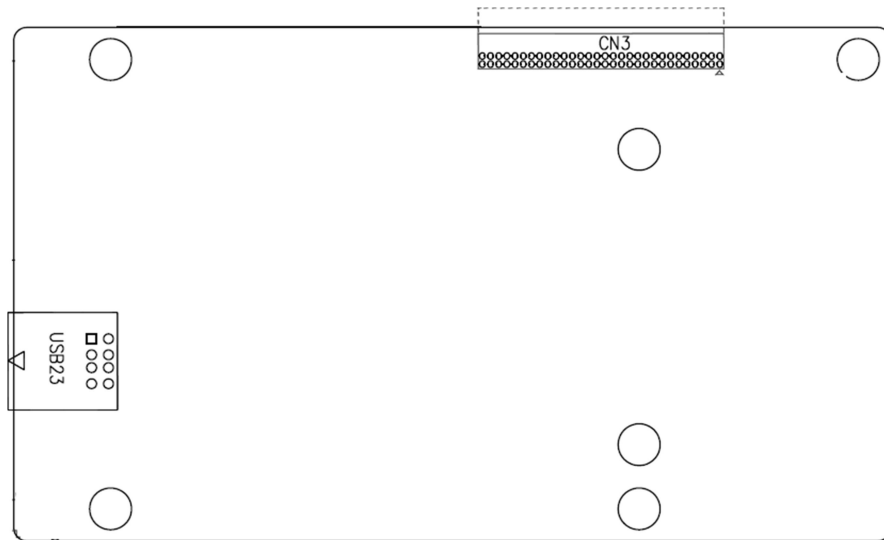
(1.27mm Pitch 2X30 Pin Header), connect to SBC-7110 CN3 pin Header.

USB23(SBC-7110 USB3/USB4)：

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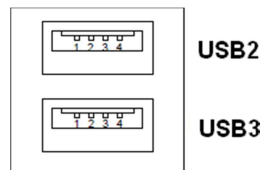


# Chapter 3                 BIOS Setup

## 3.1 Operations after POST Screen

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

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

## 3.2 BIOS Setup Utility

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

## 3.3 Main Settings



Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.

| Main | Advanced | Chipset | Security | Boot | Save & Exit |

BIOS Information

| BIOS Vendor | American Megatrends |
| Core Version | 4.6.5.4 |
| Compliancy | UEFI 2.3.1; PI 1.2 |
| Project Version | 7110V 0.08 x64 |
| Build Date and Time | 01/05/2015 10:27:48 |

| System Language | [English] |
| System Date | [Thu 01/01/2009] |
| System Time | [00:00:18] |
| Access Level | Administrator |

Choose the system default Language

→←: Select Screen
↑↓ : Select Item
Enter: Select
+/- : Charge Opt.
F1 : General Help
F2: Previous Values
F3:Optimized Defaults
F4:Save and Exit
ESC : Exit

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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

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

                                                   System ACPI Parameters.
 ACPI Settings
 CPU Configuration
 SATA Configuration
 USB Configuration
 Super IO Configuration
 F81216 Second Super IO Configuration
 Intel（R）82574L Gigabit Network Configuration-70:B3:D5:E7...
 Intel（R）82574L Gigabit Network Configuration-70:B3:D5:E7...

                                                   →←: Select Screen
                                                   ↑↓  : Select Item
                                                   Enter:   Select
                                                   +/- : Charge Opt.
                                                   F1 : General Help
                                                   F2: Previous Values
                                                   F3:Optimized Defaults
                                                   F4:Save and Exit
                                                   ESC  Exit

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```

3.4.1  ACPI Settings

Enable ACPI Auto Conf:

[Disabled]

[Enabled]

Enable Hibernation:

[Enabled]

[Disabled]

ACPI Sleep State:

[S1 only (CPU Stop Clock) ]

[S3 (Suspend to RAM)]

[Suspend Disabled]

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

Lock Legacy Resources:

[Disabled]

[Enabled]

S3 Video Repost:

[Disabled]

[Enabled]

ACPI Low Power SO Idle:

[Disabled]

[Enabled]

3.4.2 CPU Configuration

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

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

EIST                      [Enabled]

Turbo Mode         [Enabled]

……

### 3.4.3 SATA Configuration

SATA Configuration(S)

[Enabled]

[Disabled]

SATA Mode Selection

[AHCI]

[RAID]

SATA Test Mode

[Disabled]

[Enabled]

Aggressive LPM Support

[Enabled]

[Disabled]

SATA Controller Speed

[Default]

[Gen1]

[Gen2]

[Gen3]

Software Feature Mask Configuration

Serial ATA Port 0     Empty

   Software Preserve   Unknown

Serial ATA Port 1     Empty

   Software Preserve   Unknown

…….

### 3.4.4 USB Configuration

USB Configuration

USB Module Version   8.10.31

USB Devices:

   1 Keyboard, 1 Mouse, 1 Hubs

Legacy USB Support:

[Enabled]

[Disabled]

XHCI Hand-off:

[Enabled]

[Disabled]

EHCI Hand-off:

[Disabled]

[Enabled]

USB Mass Storage Driver Support

[Enabled]

[Disabled]

USB hardware delays and time-outs:

USB transfer time-out:

[20 sec]

[10 sec]

[5 sec]

[1 sec]

Device reset time-out:

[20 sec]

[10 sec]

[30 sec]

[40 sec]

Device power-up delay

[Auto]

[Manual]

3.4.5 Super IO Configuration

Super IO chip          IT8518/IT8519

Serial Port 0 Configuration        (COM5)

Device Mode Selection:

[RS-485]

[RS-422]

Serial Port 1 Configuration        (COM6)

Device Mode Selection:

[RS-485]

[RS-422]

3.4.6 F81216 Second Super IO Configuration

        Super IO chip          F81216 Second IO

        Serial Port 0 Configuration

           UART1 Mode Selection:

                [RS-232]

                [RS-485]

                [RS-422]

        Serial Port 1 Configuration

           Change Settings    [Auto]

        Serial Port 2 Configuration

           Change Settings    [Auto]

        Serial Port 3 Configuration

           Change Settings    [Auto]

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

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

# 3.5 Chipset Settings
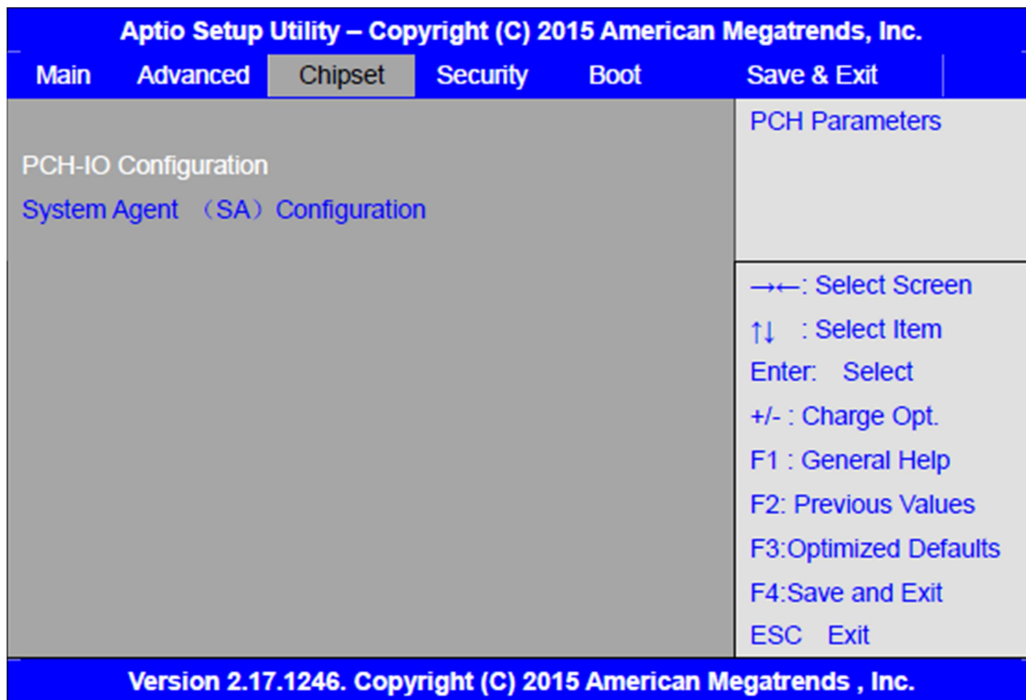
3.5.1 PCH-IO Configuration

    Intel PCH RC Version            1.8.0.0

    Intel PCH SKU Name        Premium SKU

    Intel PCH Rev ID           04/B2

PCH Express Configuration

    PCI Express Clock Gating     [Enabled]

    DMI Link ASPM Control      [Enabled]

    DMI Link Extended Synch Control  [Disabled]

    PCIe-USB Glitch W/A        [Disabled]

    PCIE Root Port Function Swapping [Disabled]

    Subtractive Decode         [Disabled]

    PCI Express Root Port 1

    PCI Express Root Port 2

    PCI Express Root Port 3

    PCI Express Root Port 4

    PCI Express Root Port 5

    PCI Express Root Port 6

USB Configuration

    USB Precondition          [Disabled]

    XHCI Mode

    XHCI Idle L1

    BTCG

    USB Ports Per-Port Disabled Control  [Disabled]

Restore AC Power Loss           [Power off]

## 3.6 Boot Settings



**Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.**

| Main | Advanced | Chipset | Boot | Security | Save & Exit |
|------|----------|---------|------|----------|-------------|

Boot Configuration

| Setup Prompt Timeout | 1 |
| Bootup Numlock State | [On] |
| Quiet Boot | [Disabled] |
| Fast Boot | [Enabled] |

Boot Option Priorities

| Boot Option #1 | [UEFI:Built-in EFI...] |

Number of seconds toWait for Setup Activation key. 65535(0xFFFF)means Indefinite waiting.

→←: Select Screen
↑↓ : Select Item
Enter:  Select
+/- : Charge Opt.
F1 : General Help
F2: Previous Values
F3:Optimized Defaults
F4:Save and Exit
ESC  Exit

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### 3.6.1 Administrator Password

Create New Password
*******************

### 3.6.2 User Password

Create New Password
*******************

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

To clear the password, just press ◄Enter► key when password input window pops

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

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

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

## 3.7 Security Settings



|  |  |  |  |  | |
| --- | --- | --- | --- | --- | --- |
| Setup Prompt Timeout | | | [1] | | |
| Bootup Numlock State | | | | | |

[On]

[off]

Quiet Boot

[Disabled]

[Enabled]

Fast Boot

[Disabled]

[Enabled]

Boot Option Priorities

Boot Option #1

Sets the system boot order

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

Boot Option #1

SATA PM:***…

******

Disabled

# 3.8 Save & Exit Settings

| Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc. | |
|---|---|
| Main  Advanced  Chipset  Boot  Security  Save & Exit | |
| Save Changes and Exit | Exit system setup after |
| Discard Changes and Exit | Saving the changes. |
| Save Changes and Reset | |
| Discard Changes and Reset | |
| | |
| Save Options | |
| Save Changes | |
| Discard Changes | |
| | |
| Restore Defaults | →←: Select Screen |
| Save user Defaults | ↑↓ : Select Item |
| Restore user Defaults | Enter:  Select |
| | +/- : Charge Opt. |
| Boot Override | F1 : General Help |
| UEFI:Built-in EFI Shell | F2: Previous Values |
| | F3:Optimized Defaults |
| | F4:Save and Exit |
| | ESC   Exit |
| Version 2.17.1246. Copyright (C) 2015 American Megatrends , Inc. | |

Save Changes and Exit

 Save & Exit Setup save Configuration and exit ?

      [Yes]

      [No]

Discard Changes and Ext

 Exit Without Saving Quit without saving?

      [Yes]

      [No]

Save Changes and Reset

 Save & reset Save Configuration and reset?

      [Yes]

      [No]

Discard Changes and Reset

 Reset Without Saving Reset without saving?

      [Yes]

      [No]

Save Changes

 Save Setup Values Save configuration?

      [Yes]

      [No]

Discard Changes

 Load Previous Values Load Previous Values?

      [Yes]

      [No]

Restore Defaults

 Load Optimized Defaults Load optimized Defaults?

      [Yes]

      [No]

Save user Defaults

 Save Values as User Defaults Save configuration?

      [Yes]

      [No]

Restore user Defaults

 Restore User Defaults Restore User Defaults?

      [Yes]

      [No]

# Chapter 4          Installation of Drivers

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

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

## 4.1  Intel(R) CORE TM SoC Chipset

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

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



Step 2. Click Next to setup program.
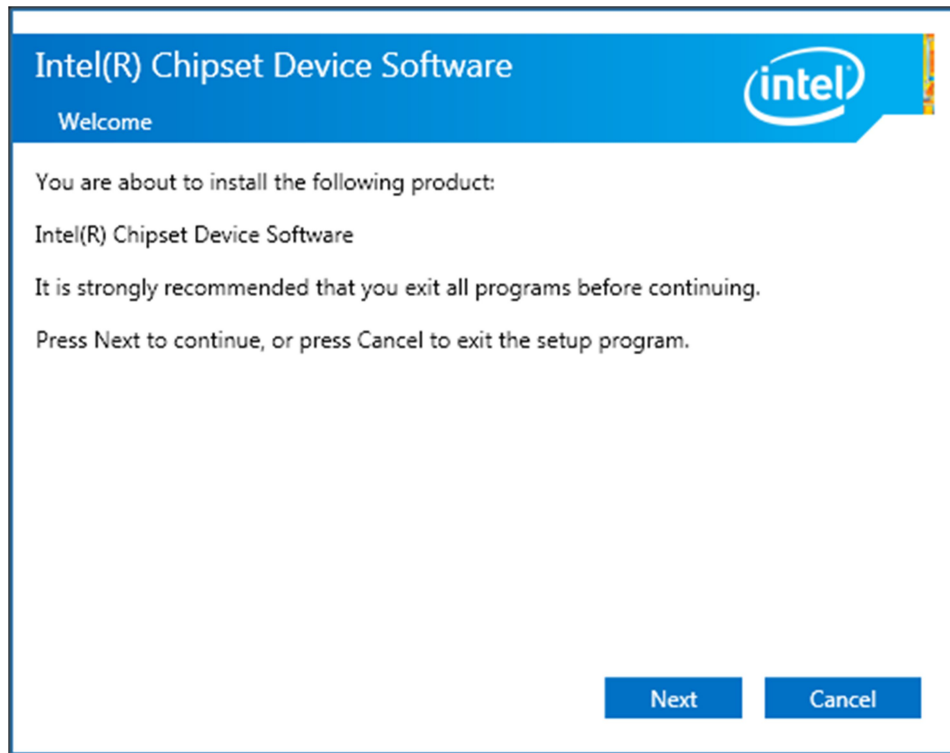
Step 3. Read the license agreement.     Click Accept to accept all of the terms of the
license agreement.



Step 4. Click Install to begin the installation.
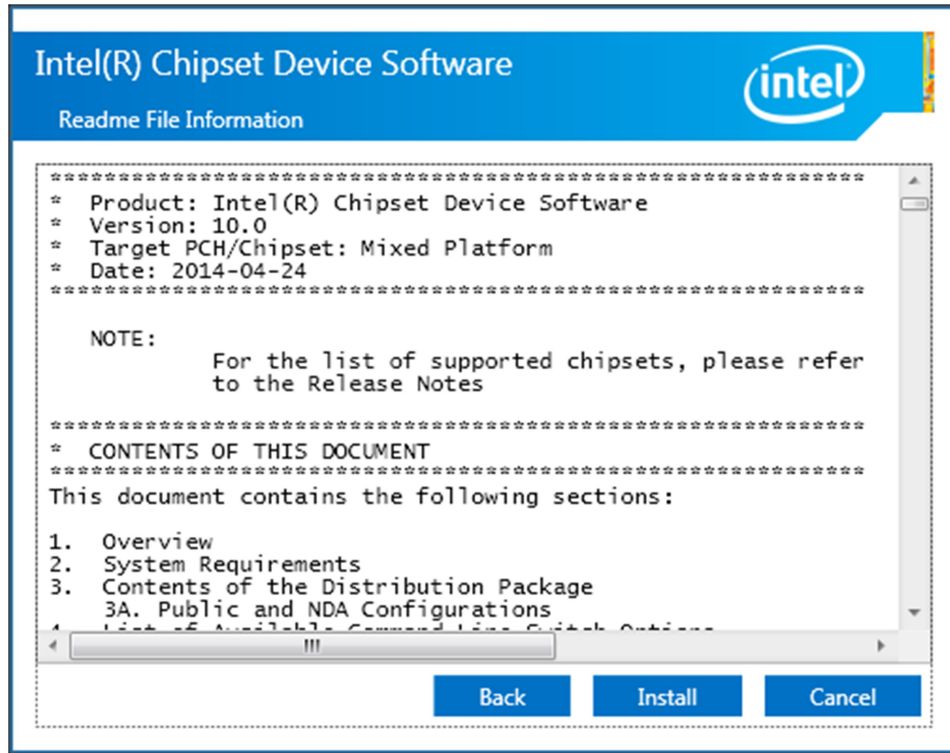
Step 5. Click Finish to complete the setup process.
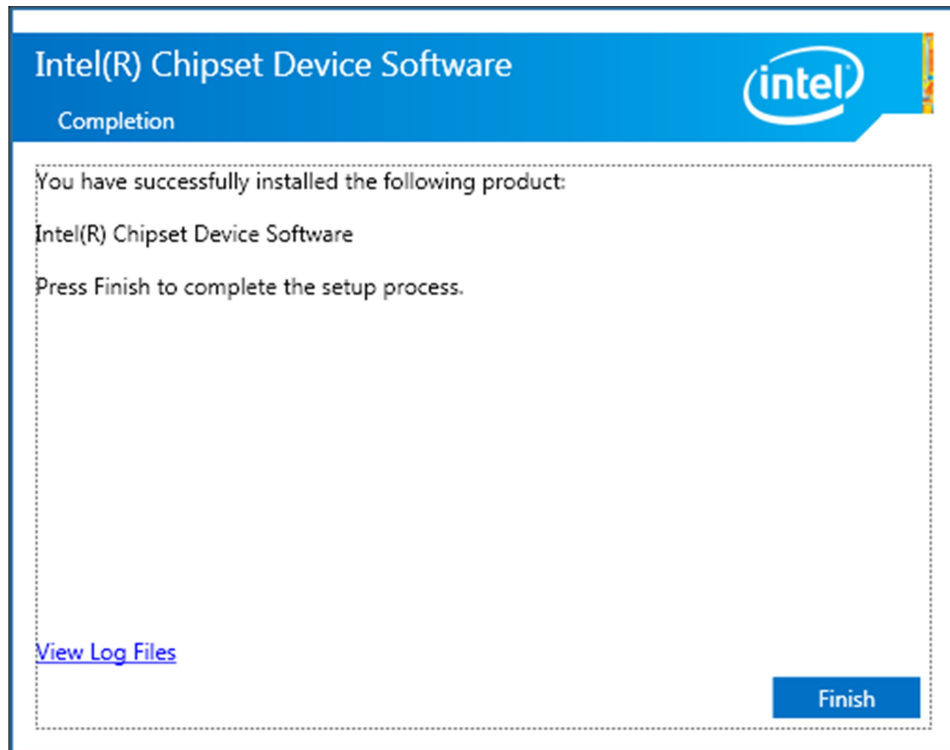


## 4.2  Intel(R) VGA Chipset

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

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



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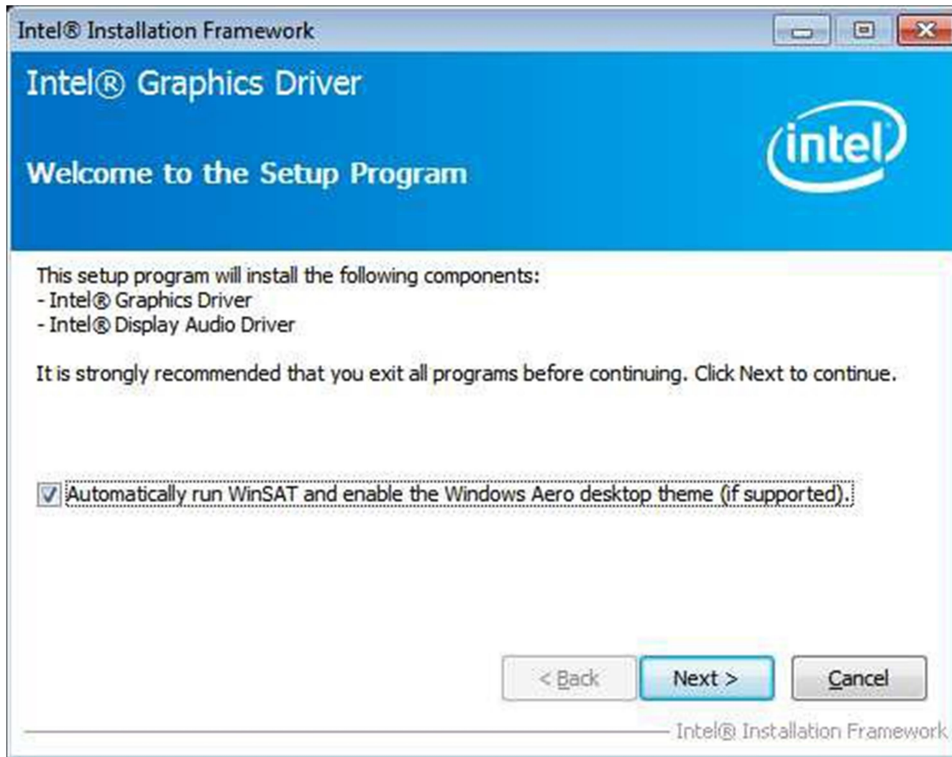


Step 3. Read license agreement.    Click Yes.

Step 4. Click Next to continue.
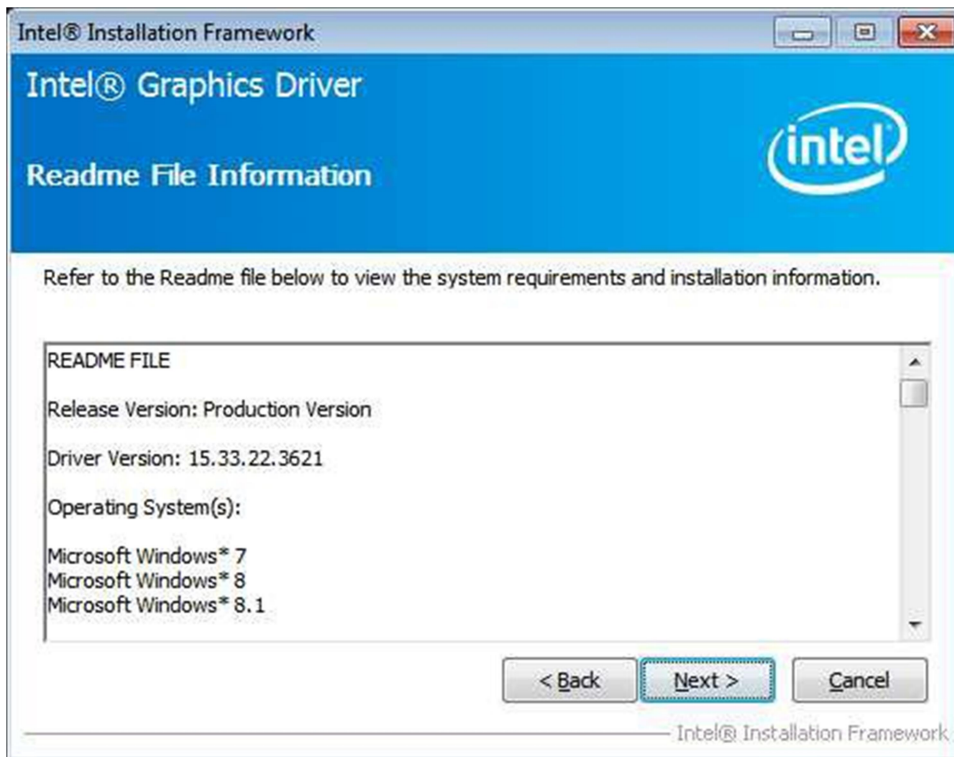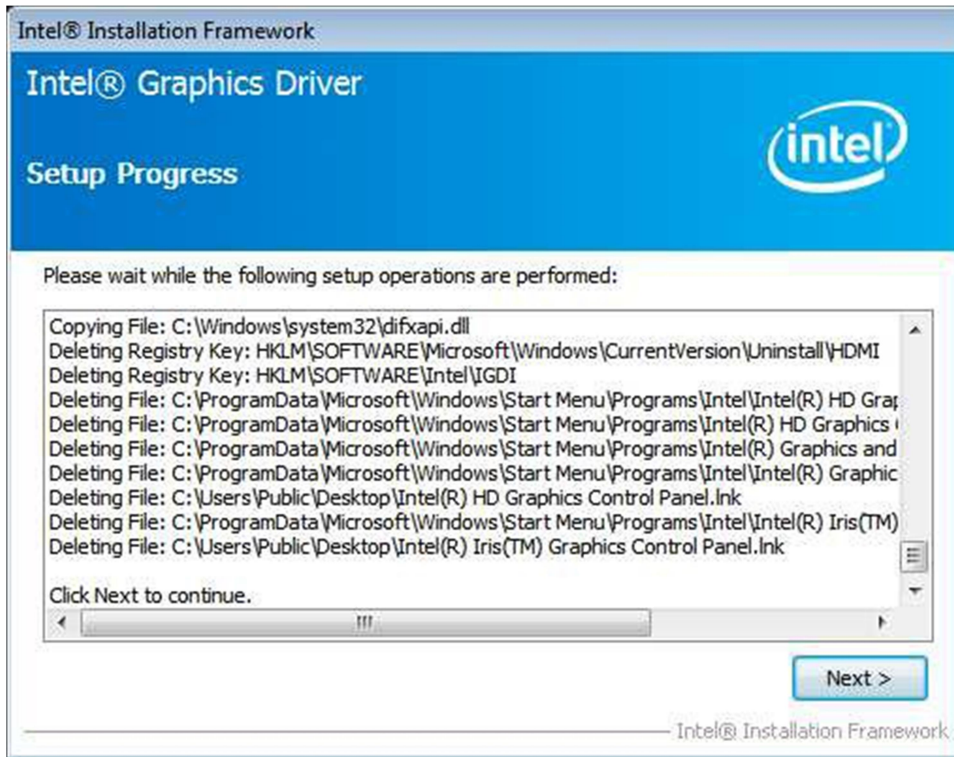


Step 5. Click Next to continue.

Step 6. Select Yes, I want to restart this computer now. Then click Finish to complete the installation.
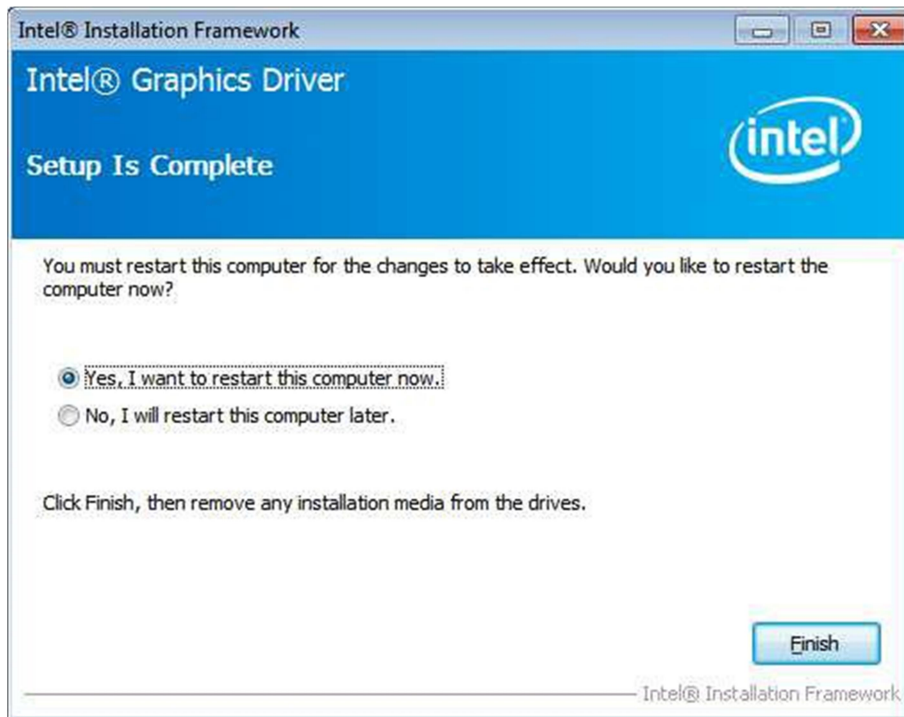
## 4.3 Intel(R) LAN Driver

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

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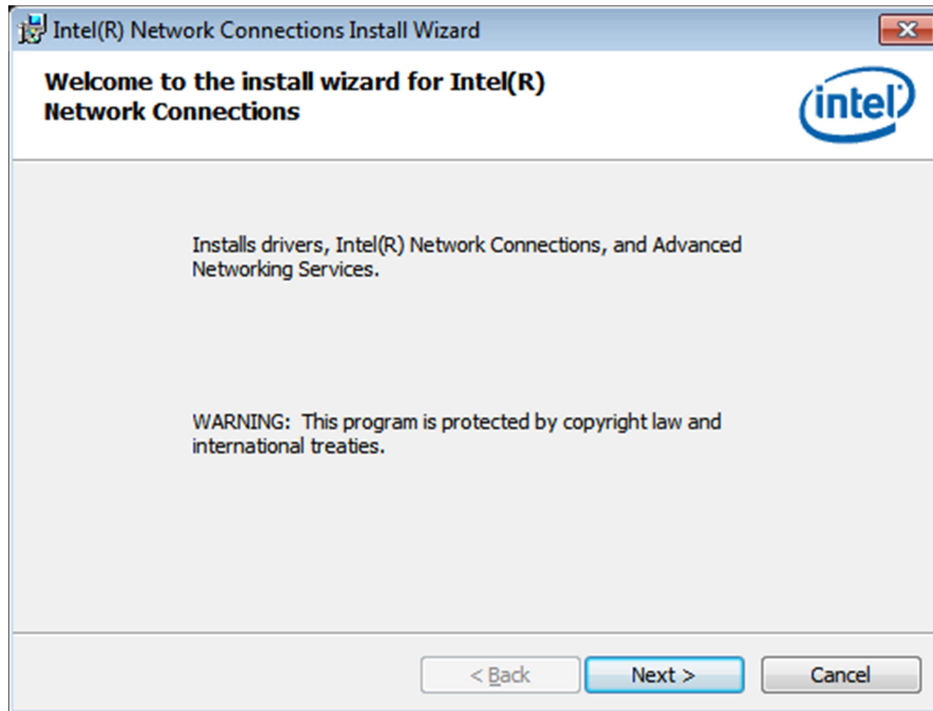


Step 2. . Click Next.

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



Step 4. Click Next to continue.
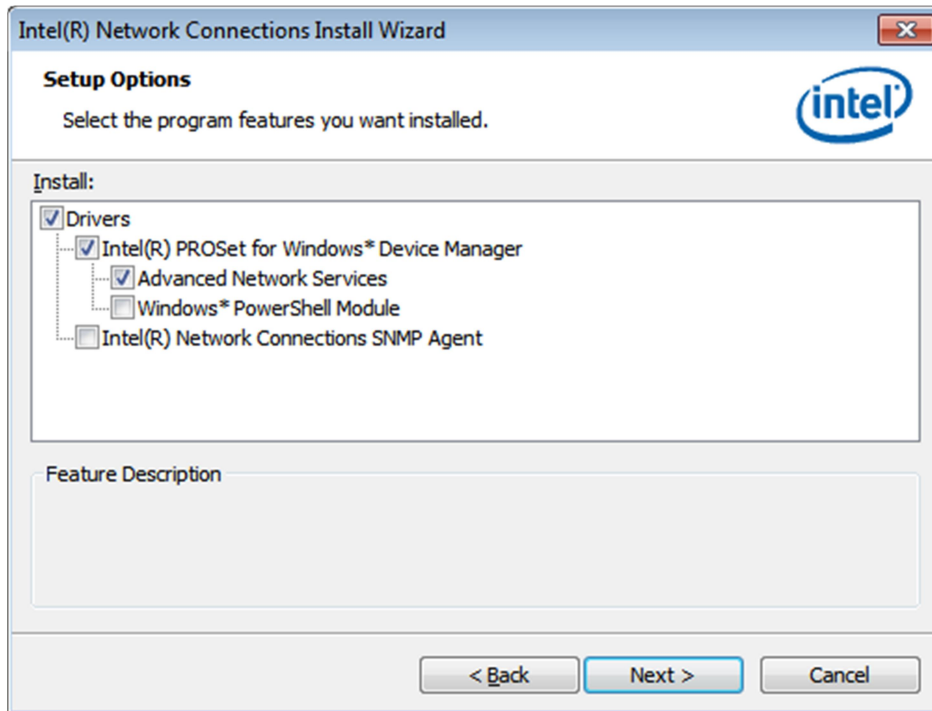
Step 5. Click Install to begin the installation.
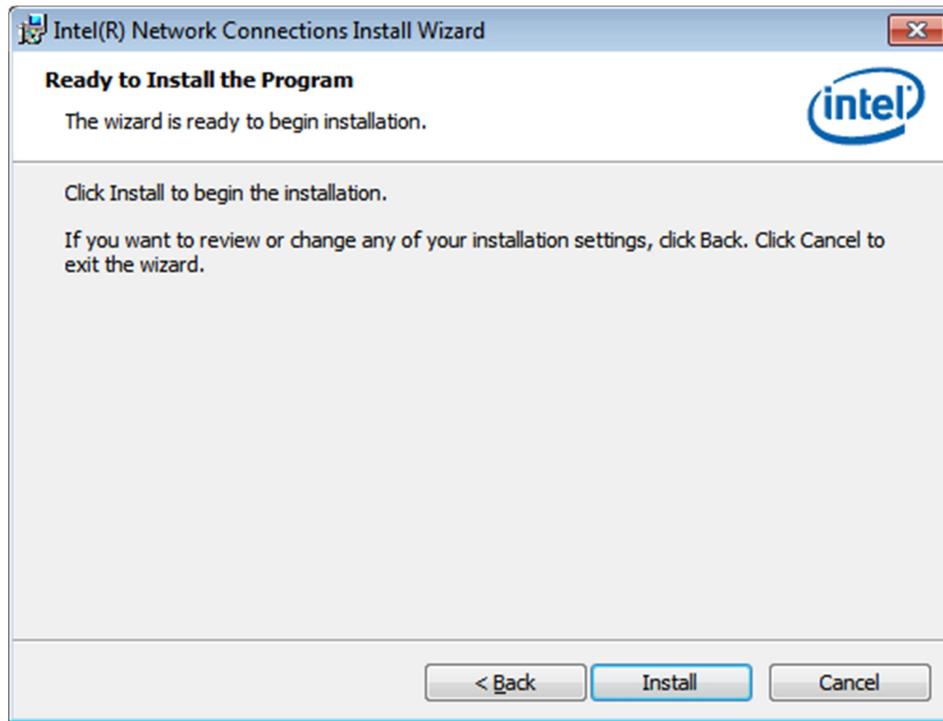


Step 6. Click Finish to exit the wizard.
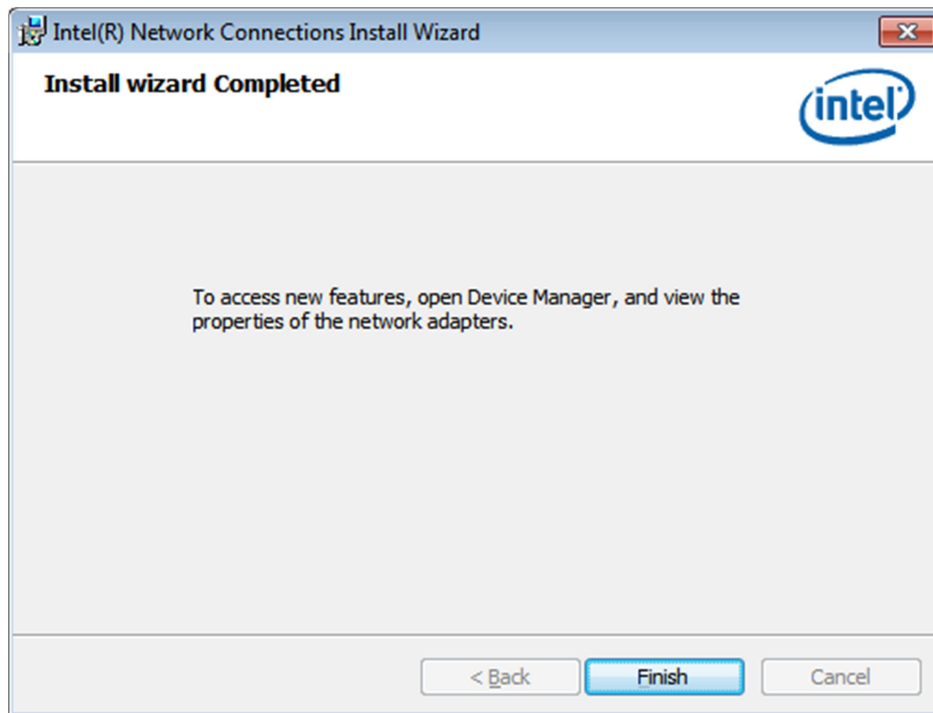
## 4.4 Realtek ALC662 HD Audio Driver

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

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



Step 2. Click Next to continue.
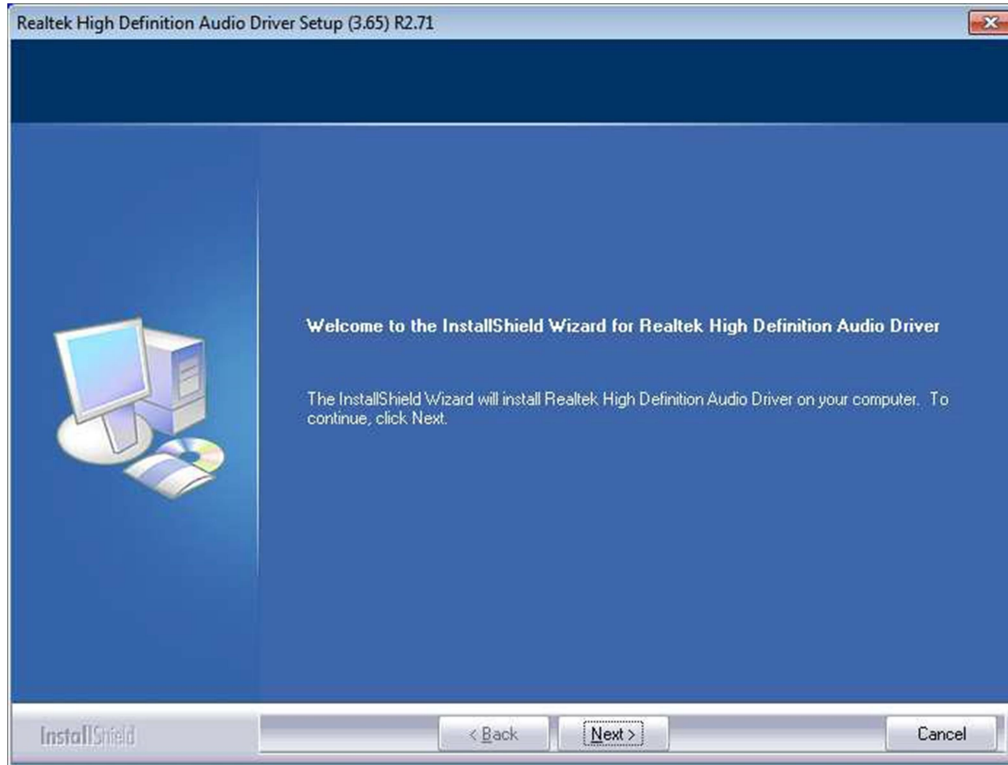
Step 3. Click Yes, I want to restart my computer now.    Click Finish to complete the installation.
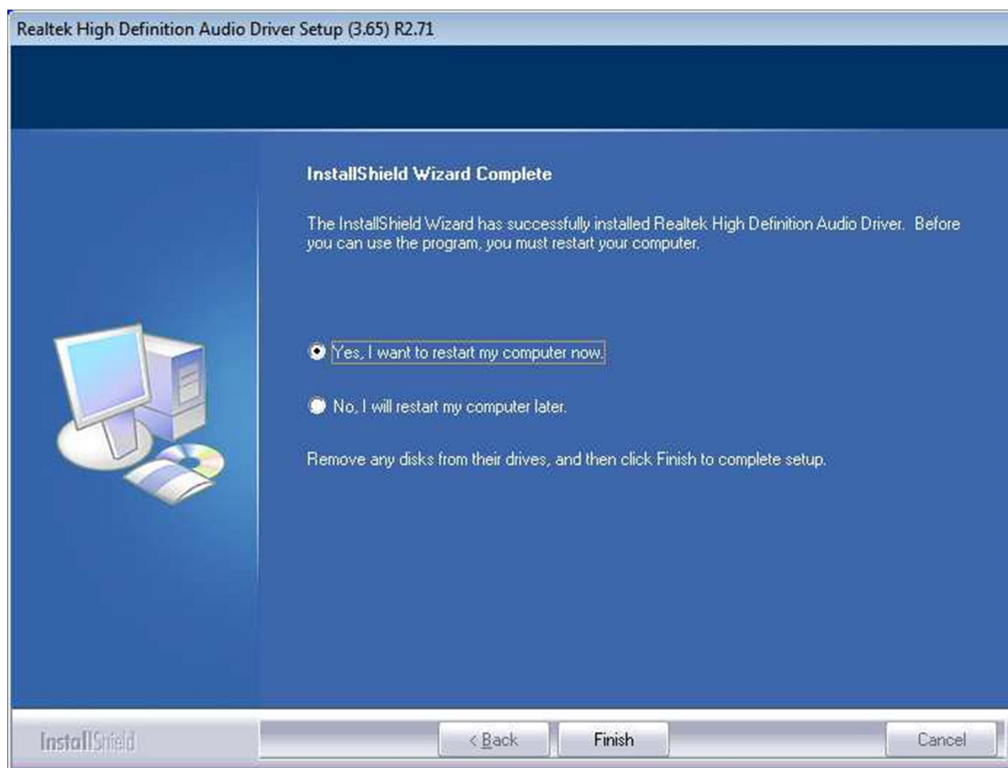
## 4.5 USB 3.0 Driver

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

Step 1. Select USB 3.0 Driver from the list



Step 2. Click Next to continue.

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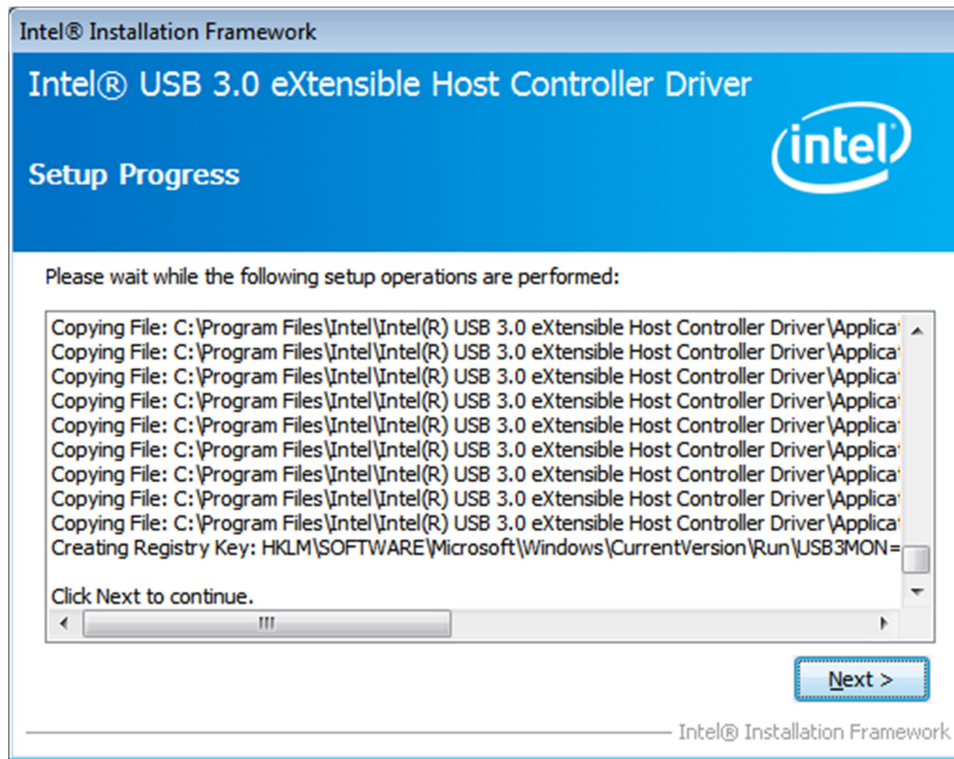


Step 4. Click Next to continue.

Step 5. Click Next to continue.



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

## 4.6 Intel(R) MEI Driver

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

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



Step 2. Click Next to continue.
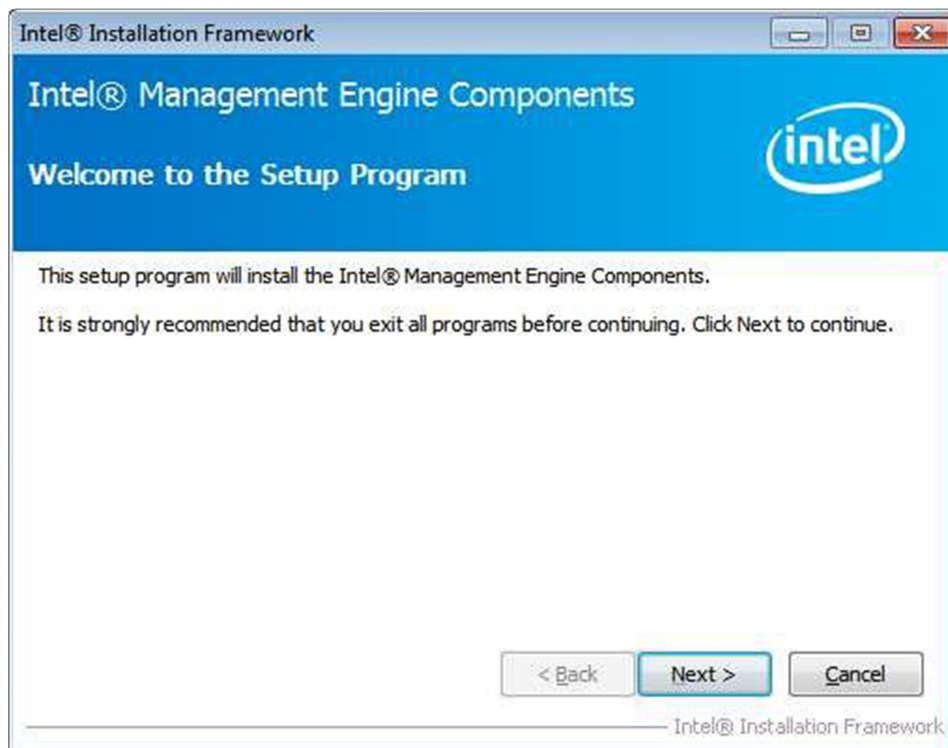
Step 3. Read the License Agreement and then click Yes to continue.
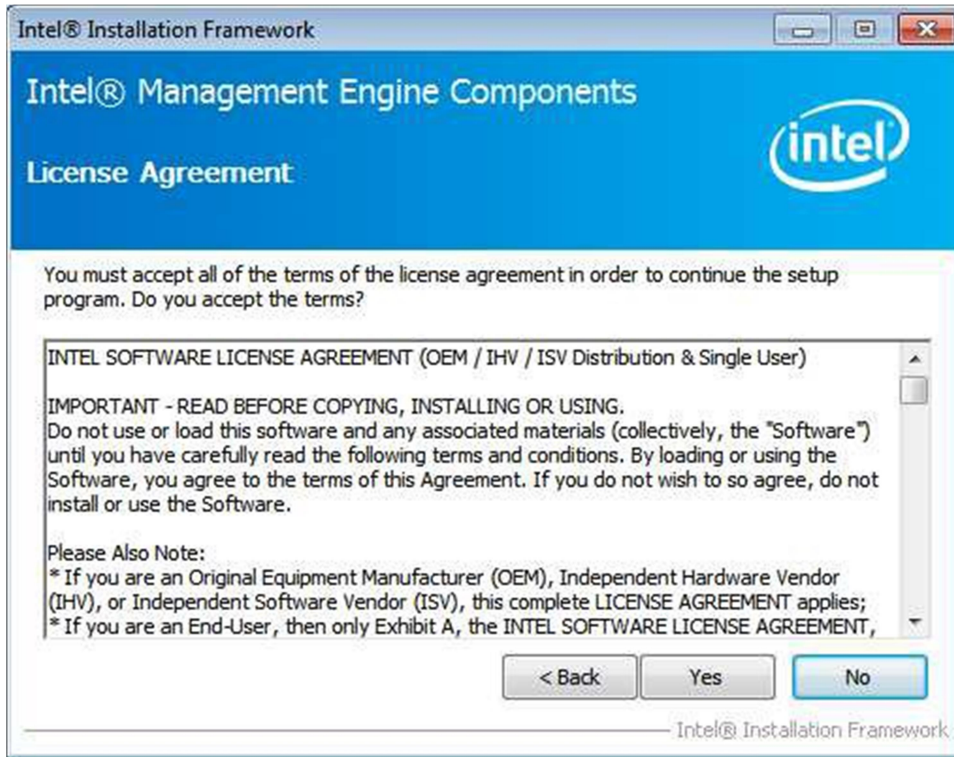


Step 4. Click Next to continue.
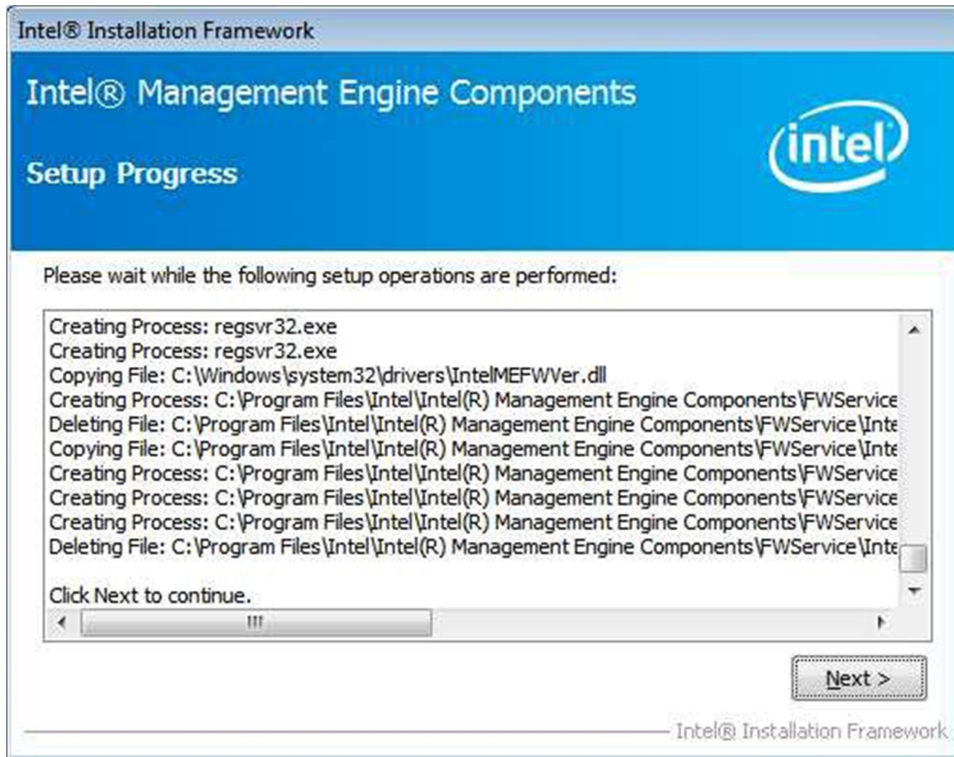
Step 5. Select Yes, I want to restart this computer now. Then click Finish to complete
the installation.
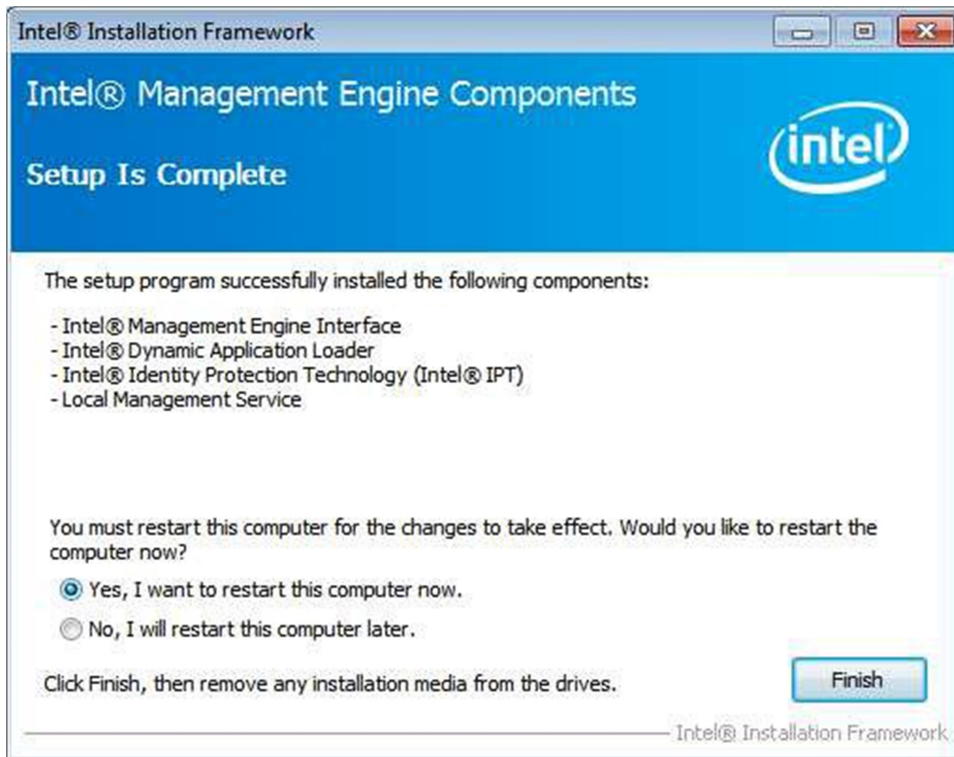
# Chapter 5    Touch Screen Installation

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

## 5.1  Windows 7/8/8.1 Universal Driver Installation for PenMount 6000 Series

Before installing the Windows 7/8/8.1 driver software, you must have the Windows 7/8/8.1 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.

### 5.1.1 Installing Software

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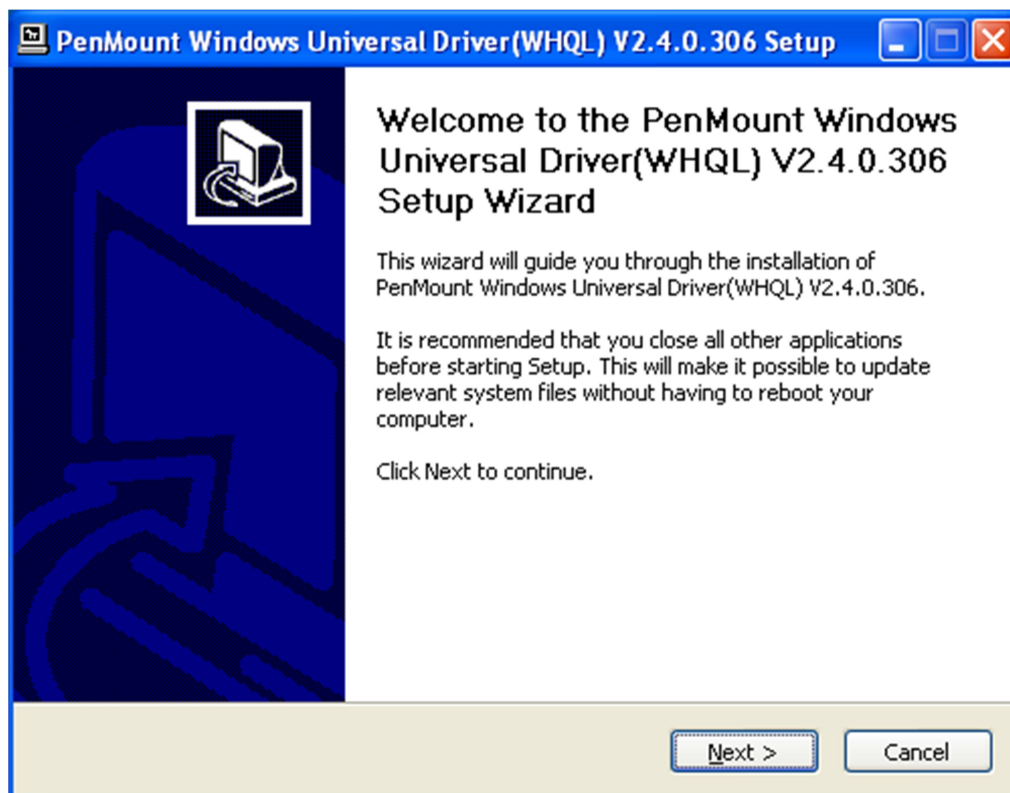
Step 3. Read the license agreement.    Click I Agree to agree the license agreement.
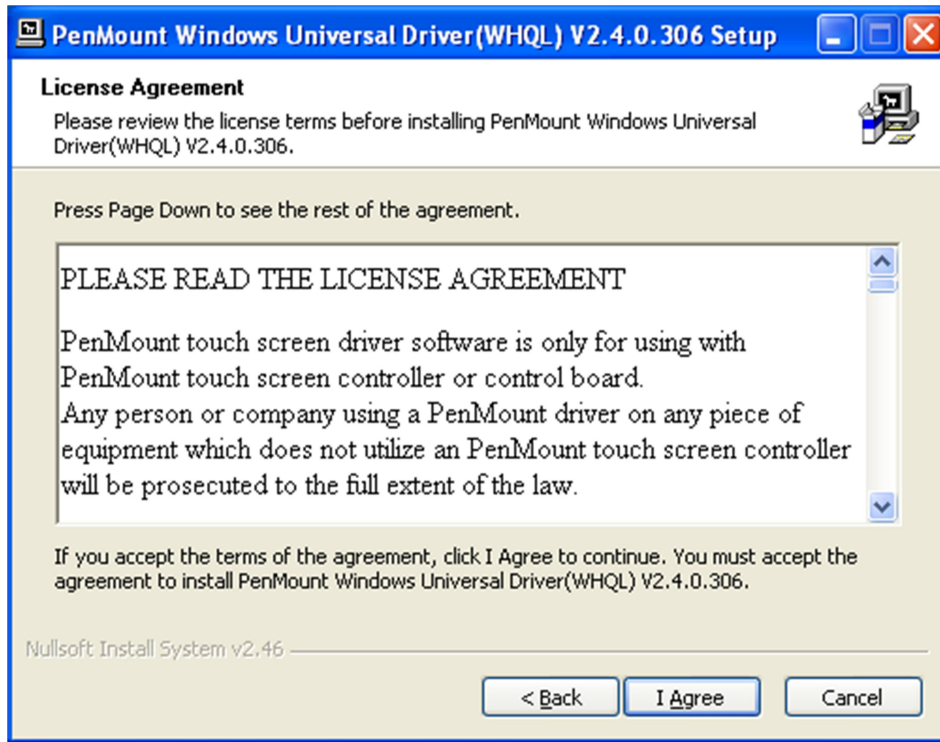


Step 4. Choose the folder in which to install PenMount Windows Universal Driver.
Click Install to start the installation.
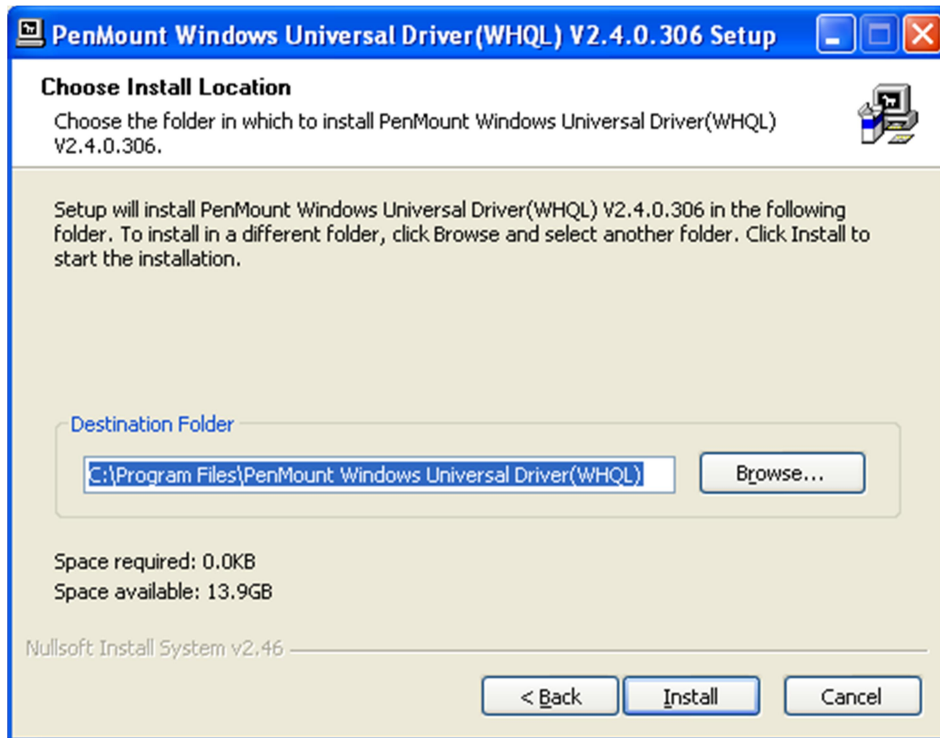
Step 5. Wait for installation.    Then click Next to continue.
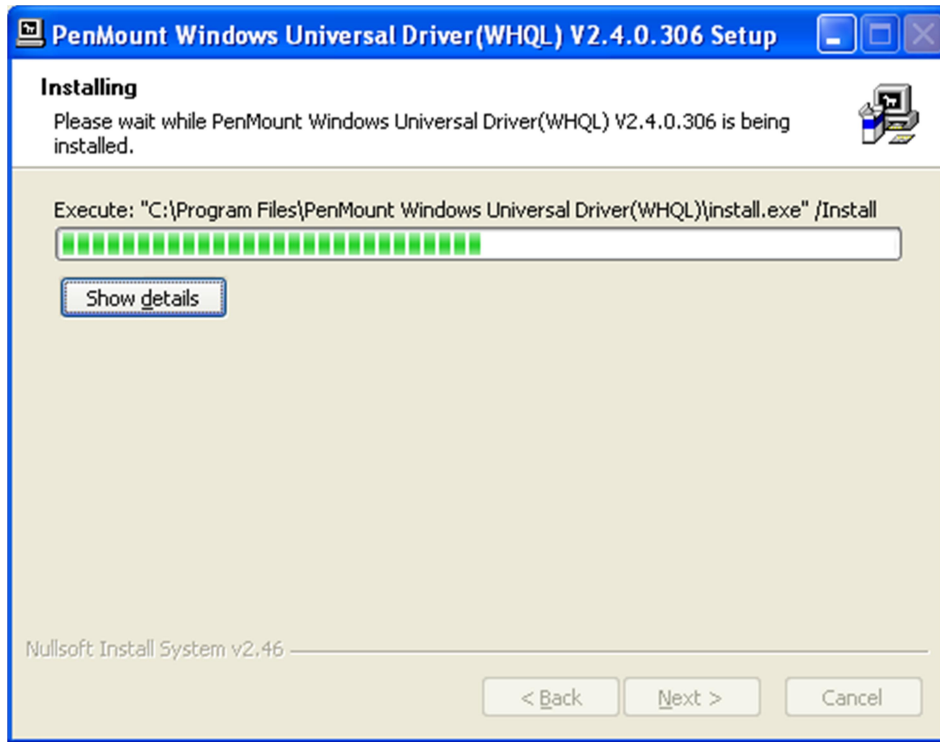


Step 6. Click Continue Anyway.



Step 7. Click Finish to complete installation.
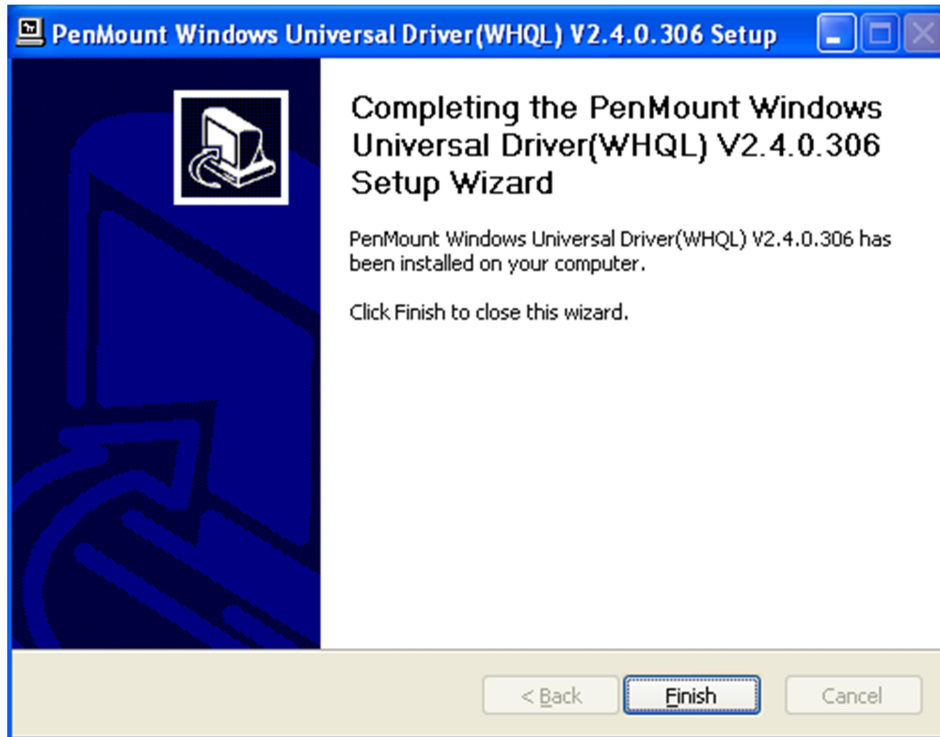
## 5.2 Software Functions

### 5.2.1 Software Functions

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

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.
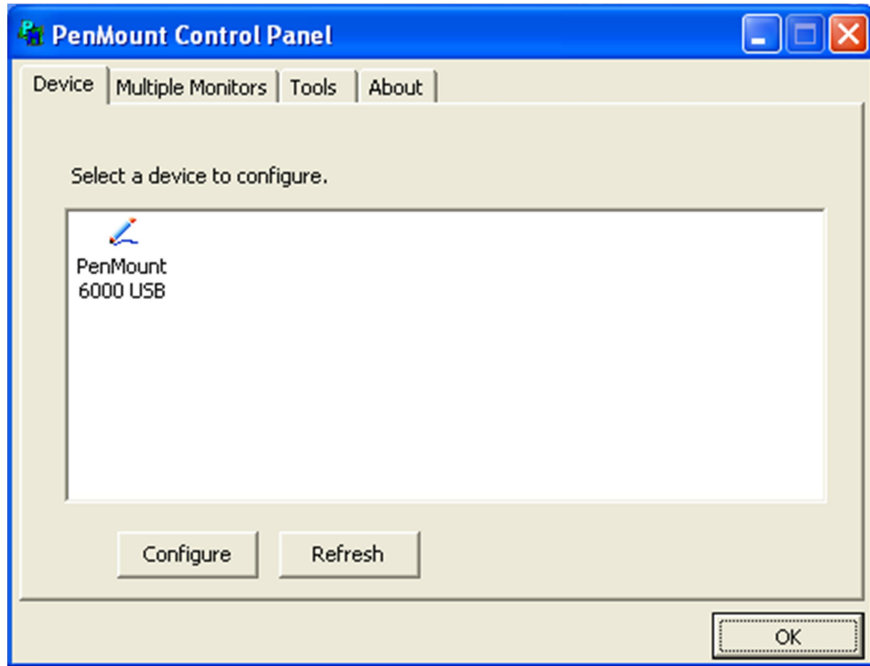
## Calibrate

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.
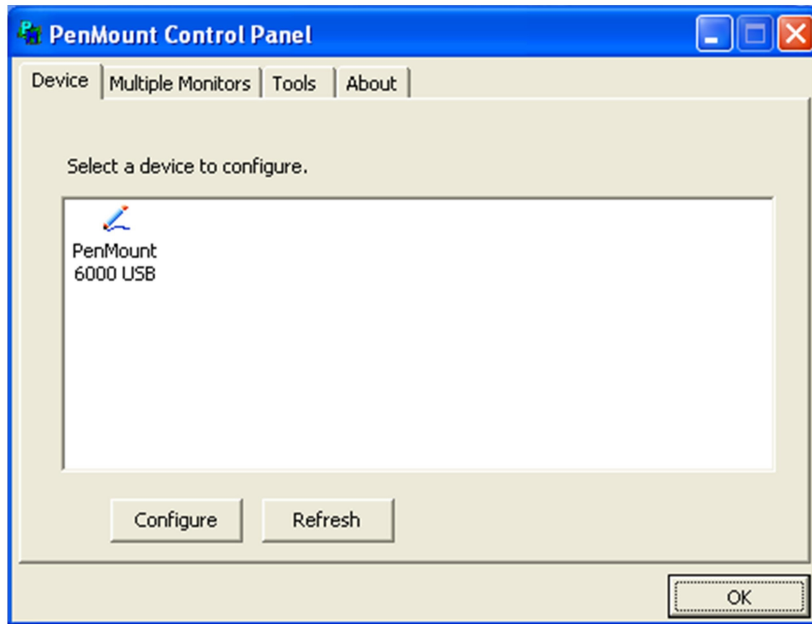
Step 2.Click "Standard Calibration" to start calibration procedure
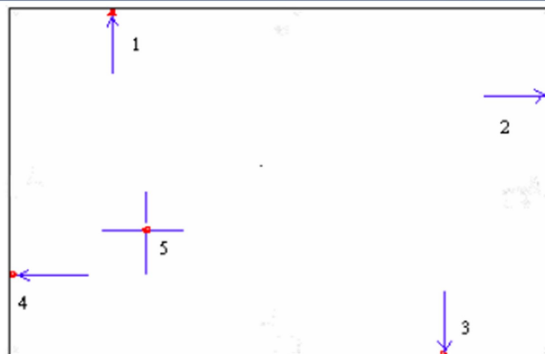
NOTE: The older the touch screen, the more Advanced Mode calibration points you need for an accurate calibration. Use a stylus during Advanced Calibration for greater accuracy. Please follow the step as below:

Step 3.Come back to "PenMount Control Panel" and select Tools then click Advanced Calibration.
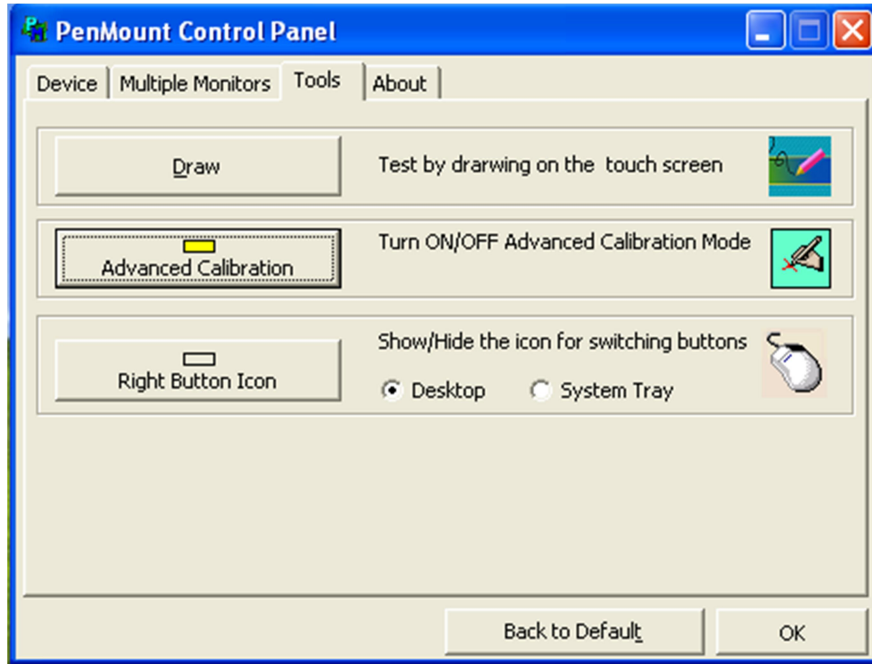


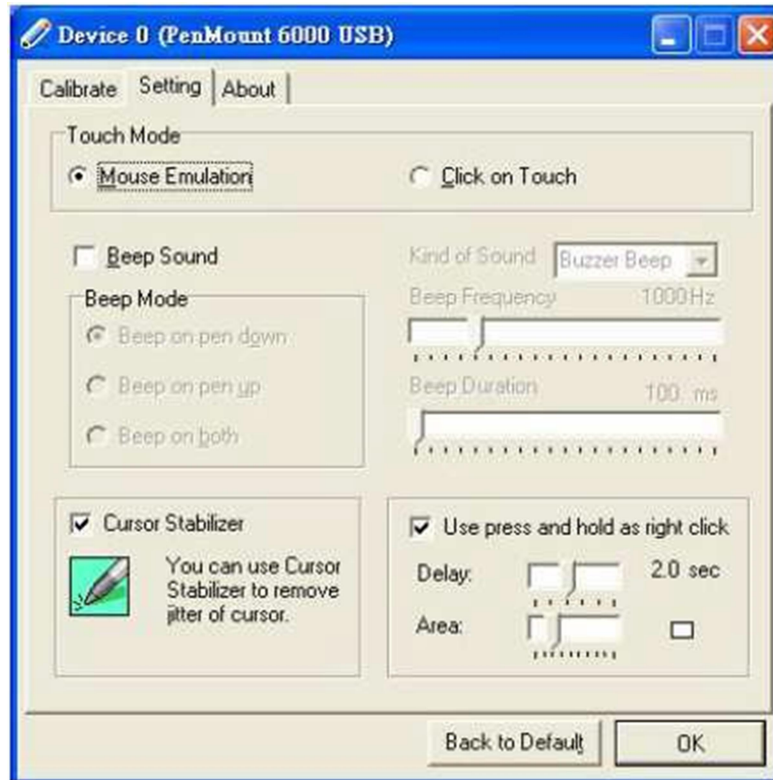Step 4. Select Device to calibrate, then you can start to do Advanced Calibration.

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. |

## About

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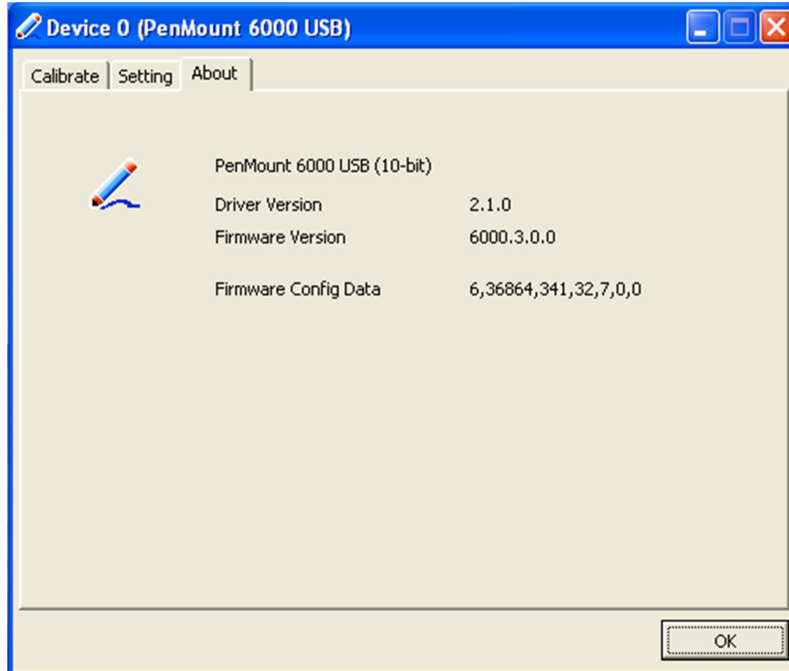


## Multiple Monitors

Multiple Monitors support from two to six touch screen displays for one system. The PenMount drivers for Windows 7/8/8.1 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.
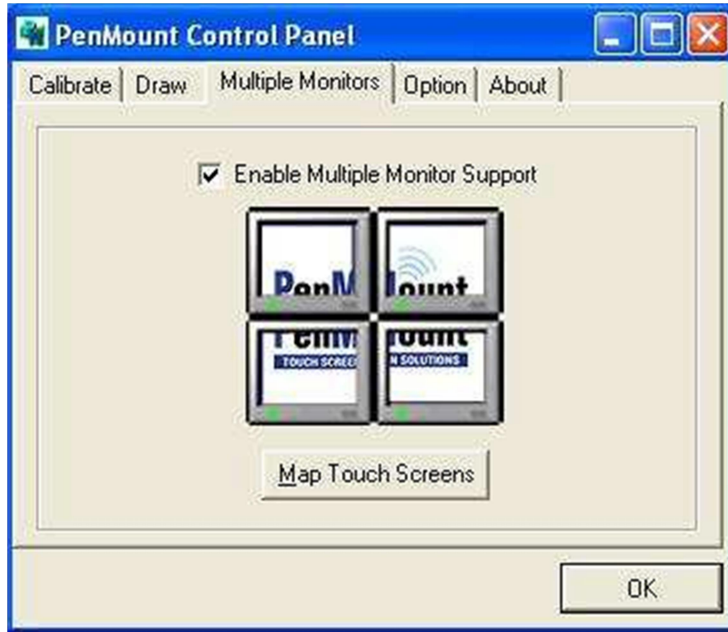
2. When the mapping screen message appears, click OK.
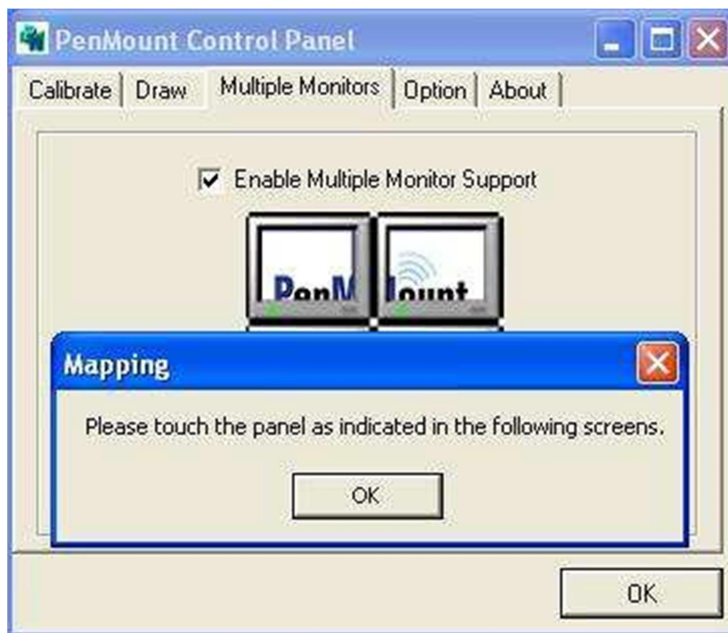


3. Touch each screen as it displays "Please touch this monitor". Following this sequence and touching each screen is called mapping the touch screens.

Please touch this monitor

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.
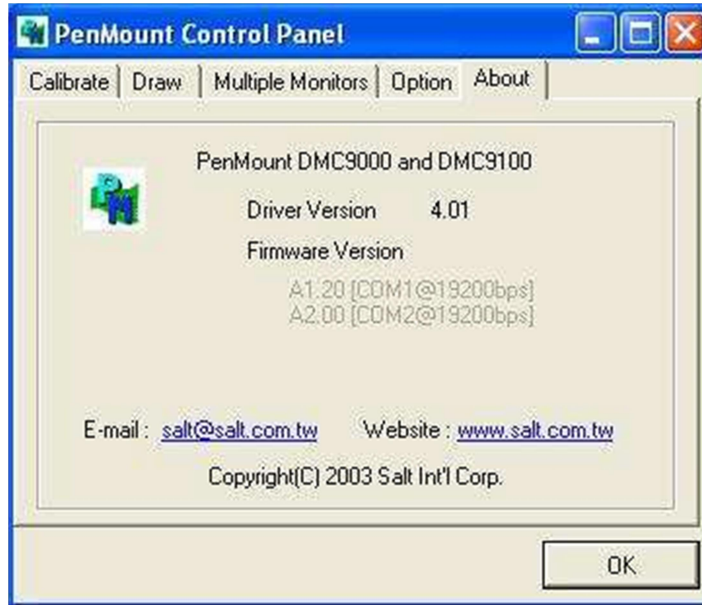


PenMount Monitor Menu Icon

The PenMount monitor icon (PM) appears in the menu bar of Windows 7/8/8.1 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.

Please touch the point
⊕
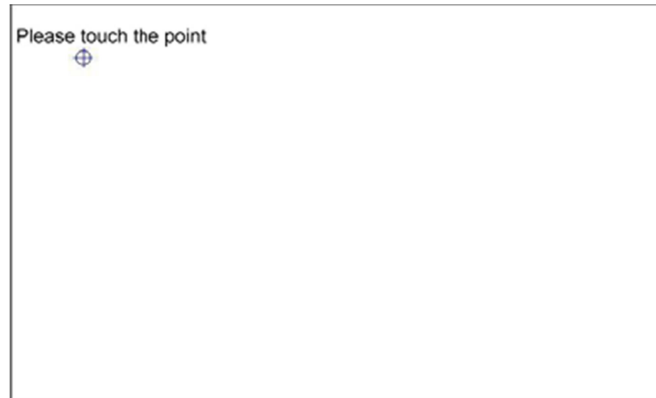
NOTE: The Rotate function is disabled if you use Monitor Mapping