



**AEx-P526** 

**15" ATEX Certified Intel Atom D2550 Stainless Steel Panel PC  
User Manual**

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**Revision**

V1.4

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# Revision History

Reversion	Date	Description
1.0	2013/08/22	Official Version
1.1	2015/10/23	Add "1.1 Features", ATEX LOGO at front page, Memory 4GB for option, Net Weight, Motherboard Introduction, Modify CPU Specifications to D2550, LCD Specifications, Power Input, EN60079,11 to EN60079-15, OS Support, Dimension Images, Product Images, Operating Temperature, storage space
1.2	2016/03/31	Add Data about ATEX from page 3 to page 6, and the exploded drawing of AEx-P526
1.3	2016/05/16	Modify "94/9/EC" to "2014/34/EU", and modify some contents at P.5 and P.6
1.4	2016/07/06	Modify OS Support

# Warning! \_\_\_\_\_

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

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

## Disclaimer

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

# AEx-P526

## ATEX Instruction Guide

### SAFETY INSTRUCTIONS

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

### PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Digital Electronics Corporation for any consequences arising out of the use of this material. A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

### SCOPE

This present document applies when AEx-P526 bears  marking. They are supplied only with DC 11~32 V. This documentation has to be kept and always refer to those instructions for installation, operation, maintenance or evolution of your system.

### Permitted zones of application

Refer to the section titled "Markings" to get information about the permitted zones of protection and the types of protection.

- AEx-P526 is installed in zones 2 hazardous areas must be certified and bear the  marking.
- Ensure with the marking that the terminals are compatible with the conditions permitted for the hazardous area at the site where it is being used.

### Installation, Operation and Maintenance

Make sure you follow all the recommendations in AEx-P526 User's Guide and additionally those listed below.

Installation of equipment shall be installed according to EN60079-14:2014 (Electrical installations in hazardous areas)

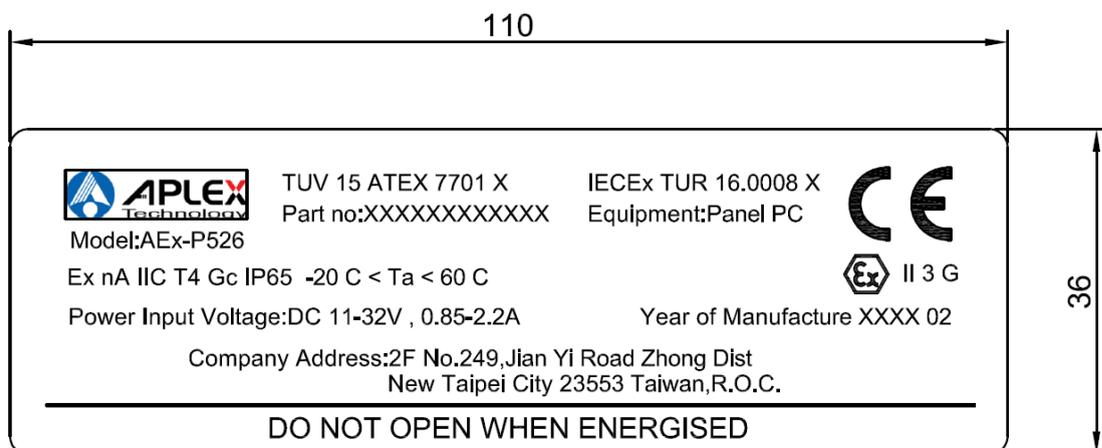
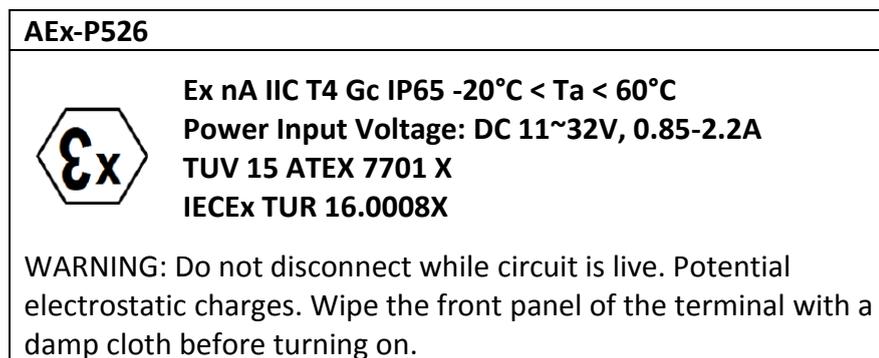
The procedures of routine maintenance and service should be followed by EN60079-17:2007 (Inspection and maintenance of electrical installations in hazardous areas). If major scale repair job is required, it is also strictly to follow the criterion of EN60079-19:2011 (Repair and overhaul for apparatus used in potentially explosive atmospheres).

## Notice

1. It is forbidden to use any of the I/O ports in the hazardous areas.
2. Do not rub on plastic parts or the display
3. The power supply meanings to the equipment are excluded from the certificate. It shall be installed in the safe area.
4. The equipment is used in an area of not more than pollution degree 2, as defined in IEC 60664-1.

## Markings

ATEX and markings, applied to the AEx-P526 Graphic Operator Interface, are as follows:



# DÉCLARATION UE DE CONFORMITÉ

Pour appareils destinés à être utilisés en atmosphères explosibles  
(Au titre de la directive Atmosphères Explosibles N° 2014/34/EU)

NOUS : Aplex Taiwan Siège  
15F-1, Non. 186, Jian Yi Route, Zhonghe District, New Taipei City, 235  
Taiwan

*Déclarons que les appareils*

MARQUE : Aplex  
NOM, TYPE : AEx-P526  
MODELES : AEx-P526, suivi de lettres et de chiffres décrits dans l'attestation  
TUV 15 ATEX 7701 X

*répondent de par leur conception et leur construction, aux exigences des  
Directives européennes et normes applicables :*

Directive(s) :		Norme(s) :
- Directive ATEX	2014/34/EU	- EN 60079-0:2012/A11:2013 - EN 60079-15:2010

*sous réserve d'installation, d'entretien et d'utilisation conformes à sa  
destination, à la réglementation, aux normes en vigueur, aux instructions du  
constructeur et aux règles de l'art.*

Marquage des appareils : II 3 G  
Marquage complémentaire : Ex nA IIC T4 Gc  
Tamb. -20°C to +60°C  
Attestation d'examen N de type : TUV 15 ATEX 7701 X

**Notified Body:**

TÜV Rheinland Industrie Service GmbH- TÜV Rheinland Group  
Am Grauen Stein, D-51105 Köln, Germany  
Identification No.: **0035**

# EU DECLARATION OF CONFORMITY

For units intended to be used in potentially explosive atmosphere  
(By way of the Explosive Atmospheres directive No. 2014/34/EU)

WE: Aplex Taiwan Headquarter  
15F-1, No. 186, Jian Yi Road, Zhonghe District, New Taipei City, 235 Taiwan

*hereby declare that the units*

TRADEMARK: Aplex  
PRODUCT, TYPE : AEx-P526  
MODELS : AEx-P526, followed by letters and numbers listed in  
certification TUV 15 ATEX 7701 X

*which, through their design and construction, meet the requirements of the European Directives and applicable standards:*

Directive(s) :		Standard(s) :
- ATEX directive	2014/34/EU	- EN 60079-0:2012/A11:2013 - EN 60079-15:2010

*It is important that the safety component is subject to correct installation, maintenance and use conforming to its intended purpose, to the applicable regulations and standards, to the supplier's instructions and to standard practices.*

Marking of units:	II 3 G
Additional marking:	Ex nA IIC T4 Gc Tamb. -20°C to +60°C
N type examination certification:	TUV 15 ATEX 7701 X

**Notified Body:**

TÜV Rheinland Industrie Service GmbH- TÜV Rheinland Group  
Am Grauen Stein, D-51105 Köln, Germany  
Identification No.: **0035**

## Packing List

Accessories (as ticked) included in this package are:
<input type="checkbox"/> Adaptor
<input type="checkbox"/> Driver & manual CD disc
<input type="checkbox"/> Other. _____ (please specify)

## Safety Precautions

Follow the messages below and read these safety instructions carefully to prevent your systems from damage:

- ◆ Keep this user's manual for later reference.
- ◆ 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.
- ◆ Disconnect this equipment from any outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
- ◆ For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
- ◆ Keep this equipment away from humidity.
- ◆ Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
- ◆ The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
- ◆ Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
- ◆ All cautions and warnings on the equipment should be noted.
- ◆ If the equipment is not used for a long time, disconnected it from the power source to avoid damage by transient over-voltage.
- ◆ Never pour any liquid into an opening. This could cause fire or electrical shock.
- ◆ Never open the equipment for safety reasons, only qualified service personnel should open the equipment.
- ◆ If any of the following situations arises, get the equipment checked by service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment does not work well, or you cannot get it to work according to the user's manual.
  - The equipment has been dropped and damaged.
  - The equipment has obvious signs of breakage.
- ◆ Do not leave this equipment in an environment where the storage temperature is below -30°C or above 70°C. It may damage the equipment.

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# Chapter 1

# Getting Started

## 1.1 Features

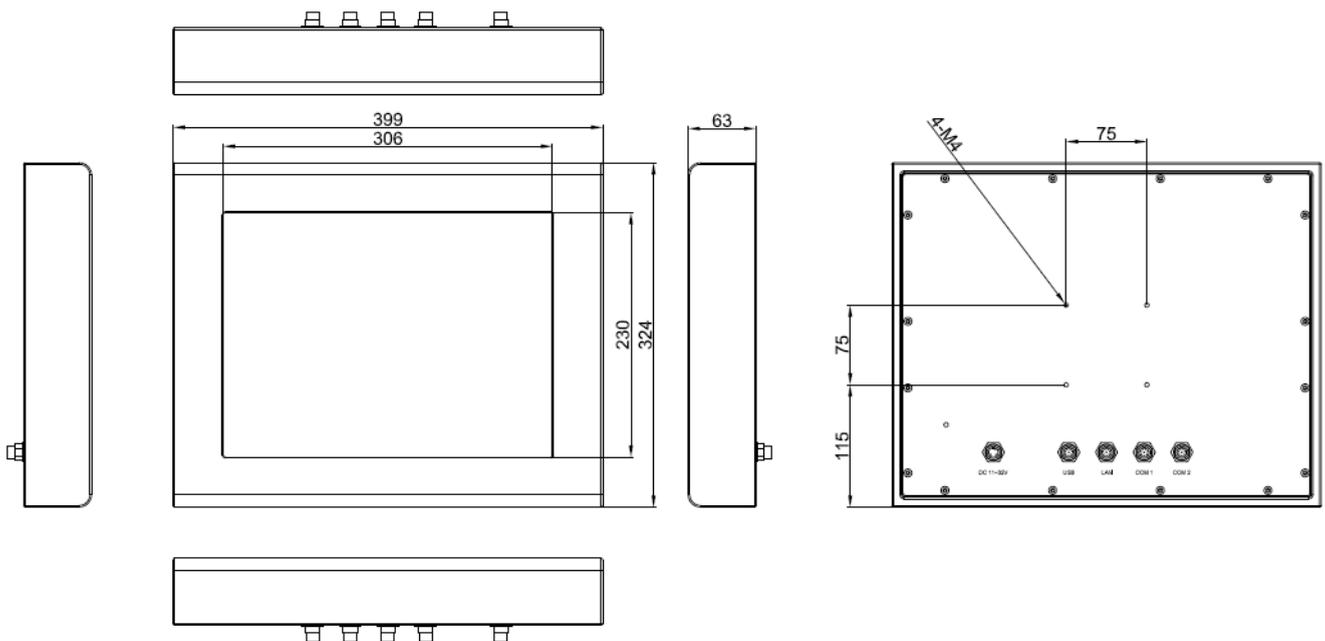
- 15" LED Backlight TFT LCD
- Intel Atom D2550 Low Power Consumption Processor
- Onboard 2G DDR3, 4G for option
- 316 Stainless Steel Enclosure
- 5 Wire Resistive Touch
- IP65 Dustproof and Waterproof
- Wide Range DC 11~32V Power Input
- ATEX95n / EN60079-15 Certified

## 1.2 Specifications

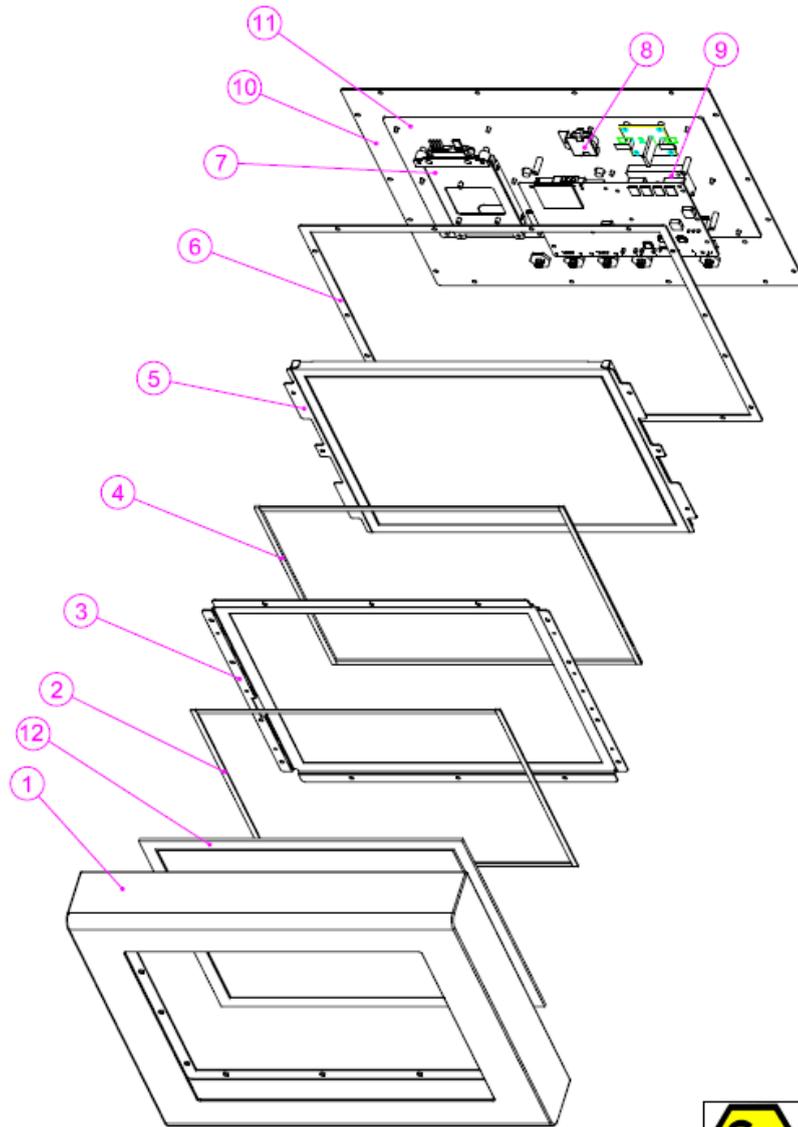
<b>System</b>	
Processor	Intel Atom Processor D2550 (1M Cache, 1.8GHz)
System Chipset	Intel NM10 Express
System Memory	Onboard 2GB DDR3 800 MHz, 4GB for option
Outside I/O Ports	2 x USB 2.0 by 8-pin M12 connector 1 x GbE LAN RJ-45 by 8-pin M12 connector 1 x RS-232 by 8-pin M12 connector, COM2 1 x RS-232/422/485 by 8-pin M12 connector, COM1, default RS-232 1 x DC Power Input by 3-pin M12 connector
Storage	1 x 2.5" SATA2 HDD or SSD 1 x Internal SD slot
Onboard Expansion bus	1 x Mini PCIe half size
OS Support	Windows 7 Professional for Embedded Systems Windows 7 Ultimate for Embedded Systems Windows Embedded 8 Standard Windows Embedded 8.1 Pro Windows Embedded 8.1 Industry Pro
<b>Power</b>	
Power Input	11~32V DC
Power Consumption	MAX: 24.3W
<b>LCD</b>	
Display Type	15" color TFT LCD

Resolution	1024 x 768
Color	16.7M
Contrast Ratio	700 : 1
Luminance (cd/m <sup>2</sup> )	400
Viewing Angle	160 (H) / 140 (V)
Backlight Lifetime	50,000 hrs
<b>Touch Screen</b>	
Type	Resistive Touch Screen
Interface	RS-232 Interface
Light Transmission	Over 80%
<b>Mechanical</b>	
Construction	316 Stainless Steel
Mounting	VESA Mount 75 x 75
IP Rating	Total IP65
Dimension	399 x 324 x 63 mm
Net Weight	6.9 Kg
<b>Environmental</b>	
Operating Temperature	-20~50 °C (optional -20~60°C)
Storage Temperature	-30~70 °C
Storage Humidity	10%~90%@ 40°C, non-condensing
Certificate	CE / FCC Class A / ATEX95-n / EN60079-15

### 1.3 Dimensions and Drawing



**Figure 1.1: Dimensions of AEx-P526**



NO.	PART NUMBER	TITLE	QUANTITY
1	011352600001	PANEL FRAME	1
2	050000000002	APC-3580 COVER RUBBER TP	4
3	013580001201	APC-3580/3581 TOUCH BKT/AUO	1
4	060304000037	AHM-6104 LCD DUST GUARD SPONGE	4
5	013580001401	APC-3580/3581 LCD BKT/AUO NEC	2
6	060304000292	BACK COVER SPONGE	1
7	013792100401	APC-3792P HDD BKT	1
8	013596000002	APC-3596 BATTERY BKT	1
9	411352600401	CPU SINK	1
10	411352600501	BACK COVER/DC11~32V	1
11	411352600601	HEATSINK PLATE/PB-418	1
12	301071500001	TOUCH SCREEN	1

**Figure 1.2: AEx-P526 Exploded Drawing**

## 1.4 Brief Description of AEx-P526

AEx-P526 implemented with ATEX95-n (EN-60079:15/Equipment for Explosive Atmosphere), which is offered to European directives for controlling explosive environment, can be protected from hazardous/explosive environment not only chemical facilities, but also in petroleum, mining industry...etc.

The AEx-P526 comes with a 15-inch high-brightness TFT LCD and base on Intel Atom D2550 platform, space for one 2.5-inch HDD, resistive touch screen and 11~32V DC wide-ranging power input. Furthermore, the chassis is made of stainless steel 316 with an ultra slim profile with M12 connectors and total IP65 protection.



**Figure 1.3: Front View of AEx-P526**



**Figure 1.4: Rear View of AEx-P526**

## 2.1 Motherboard Introduction

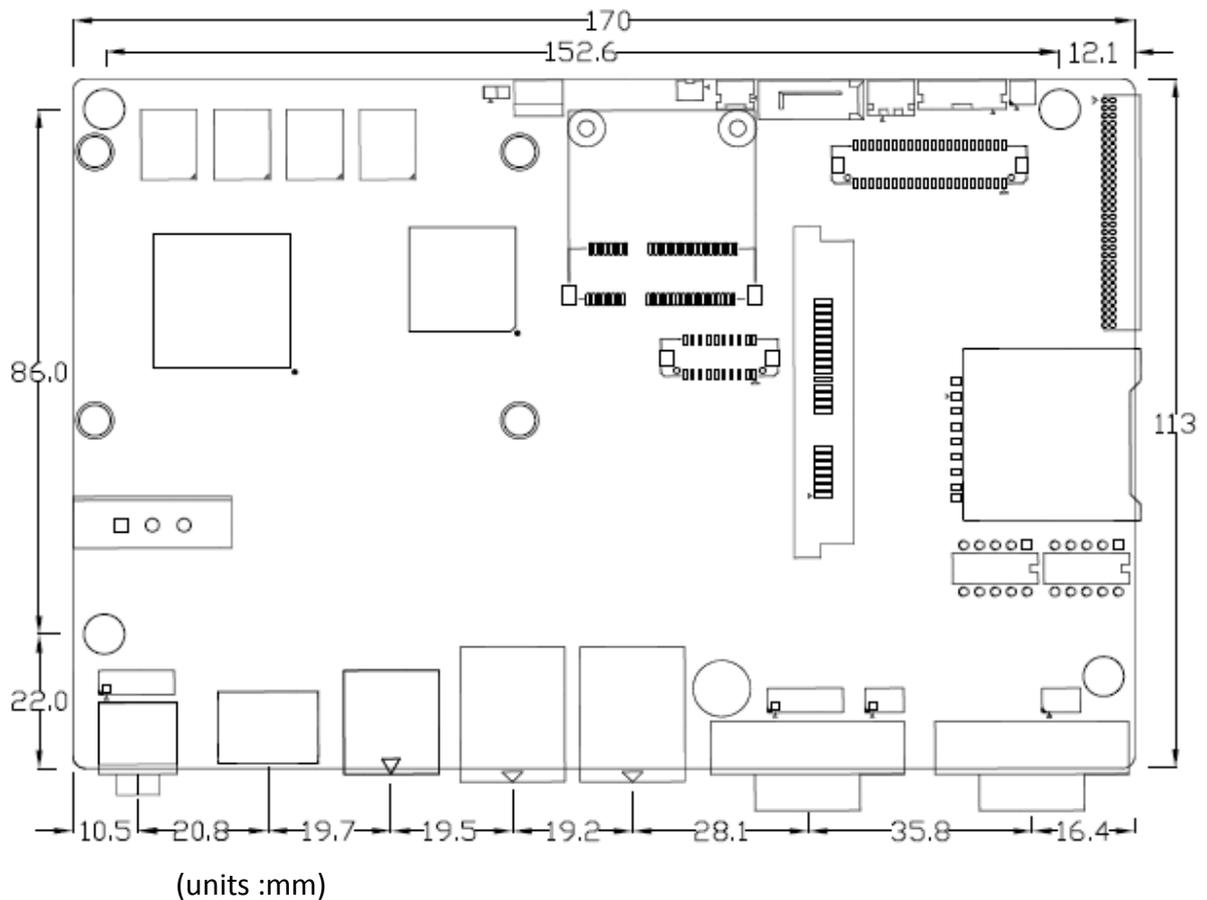
SBC-7106 is a 4" industrial motherboard developed on the basis of Intel Cedarview-M Processors and NM10, which provides abundant peripheral interfaces to meet the needs of different customers. Also, it features dual GbE ports, 3-COM ports and one Mini PCIE configuration, one VGA port, one HDMI port, 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	
<b>Board Size</b>	170mm x 113mm
<b>CPU Support</b>	Intel Atom N2600 /1.60GHz (2cores,3.5W, onboard ) Intel Atom D2550 /1.86GHz(2cores,10W, option)
<b>Chipset</b>	Intel NM10 Express
<b>Memory Support</b>	Onboard 2GB DDRIII SDRAM (N2600) <a href="#">Onboard 4GB DDRIII SDRAM (D2550)</a>
<b>Graphics</b>	Integrated Intel GMA 3600 (N2600) Integrated Intel GMA 3650 (D2550)
<b>Display Mode</b>	1 x CRT Port 1 x HDMI Port 1 x LVDS1 (18/24-bit single LVDS)
<b>Support Resolution</b>	Up to 1920 x1200 for CRT Up to 1920 x1200 for HDMI Up to 1366 x768 for LVDS1 (N2600) Up to 1440 x 900 for LVDS1 (D2550)
<b>Dual Display</b>	CRT+LVDS1 CRT+HDMI LVDS1+HDMI
<b>Super I/O</b>	Winbond W83627UHG-E
<b>BIOS</b>	AMIBIOS

<b>Storage</b>	<ul style="list-style-type: none"> <li>1 x SATA Connector (7P)</li> <li>1 x SATA Connector (7P+15P)</li> <li>1 x SD Socket (USB to SD)</li> </ul>
<b>Ethernet</b>	2 x PCIe Gbe LAN by Realtek RTL8111E
<b>USB</b>	<ul style="list-style-type: none"> <li>2 x USB 2.0 (type A)stack ports (USB4/USB5)</li> <li>2 x USB 2.0 Pin header for CN3 (USB2/USB3)</li> <li>2 x USB 2.0 Pin header for CN1 (USB0/USB1)</li> <li>1 x USB 2.0 for MPCIE1 (USB7)</li> </ul>
<b>Serial</b>	<ul style="list-style-type: none"> <li>1 x RS232/RS422/RS485 port, DB9 connector for external (COM1) pin 9 w/5V/12V/Ring select</li> <li>1 x RS232 port, DB9 connector for external (COM2) pin 9 w/5V/12V/Ring select</li> <li>1 x RS422/485 header for CN2 (COM3)</li> <li>2 x UART for CN3 (COM5,COM6)</li> </ul>
<b>Digital I/O</b>	<ul style="list-style-type: none"> <li>8-bit digital I/O by Pin header (CN2) <ul style="list-style-type: none"> <li>4-bit digital Input</li> <li>4-bit digital Output</li> </ul> </li> <li>4-bit digital I/O by Pin header (CN3) <ul style="list-style-type: none"> <li>2-bit digital Input</li> <li>2-bit digital Output</li> </ul> </li> </ul>
<b>Battery</b>	Support CR2477 Li battery by 2-pin header
<b>Audio</b>	<ul style="list-style-type: none"> <li>Support Audio via Realtek ALC662 HD audio codec</li> <li>Support Line-in, Line-out, MIC by 2x6-pin header</li> </ul>
<b>Keyboard /Mouse</b>	1 x PS2 keyboard/mouse by 1x6 box pin header (CN3)
<b>Expansion Bus</b>	<ul style="list-style-type: none"> <li>1 x mini-PCI-express slot</li> <li>1 x PCI-express (CN3)</li> </ul>
<b>Touch Ctrl</b>	1 x Touch ctrl header for TCH1 (COM4)
<b>Power Management</b>	<ul style="list-style-type: none"> <li>Wide Range DC10V~30v input</li> <li>1 x 3-pin power input connector</li> </ul>
<b>Switches and LED Indicators</b>	<ul style="list-style-type: none"> <li>1 x Power on/off switch (CN1)</li> <li>1 x Reset switch (CN1)</li> <li>1 x Power LED status (CN1)</li> <li>1 x HDD LED status (CN1)</li> <li>1 x Buzzer</li> </ul>

<b>External I/O port</b>	2 x COM Ports (COM1/COM2) 2 x USB 2.0 Ports (stack) 2 x RJ45 GbE LAN Ports 1 x HDMI Port 1 x Stack audio Jack (Line out)
<b>Watchdog Timer</b>	Software programmable 1 – 255 second by Super I/O
<b>Temperature</b>	Operating: -20°C to 70°C Storage: -40°C to 85°C
<b>Humidity</b>	5% - 95%, non-condensing, operating
<b>Power Consumption</b>	12V /0.95A (Intel Atom N2600 processor with 2GB DDR3 DRAM)
<b>EMI/EMS</b>	Meet CE/FCC class A
<b>TB-528CAN2</b>	2 x CAN bus
	1 x SIM Card Socket
	1 x mini-PCI-express slot



**Figure 2.1: Motherboard Dimensions**

## 2.2.1 Jumpers Setting and Connectors

Board Top

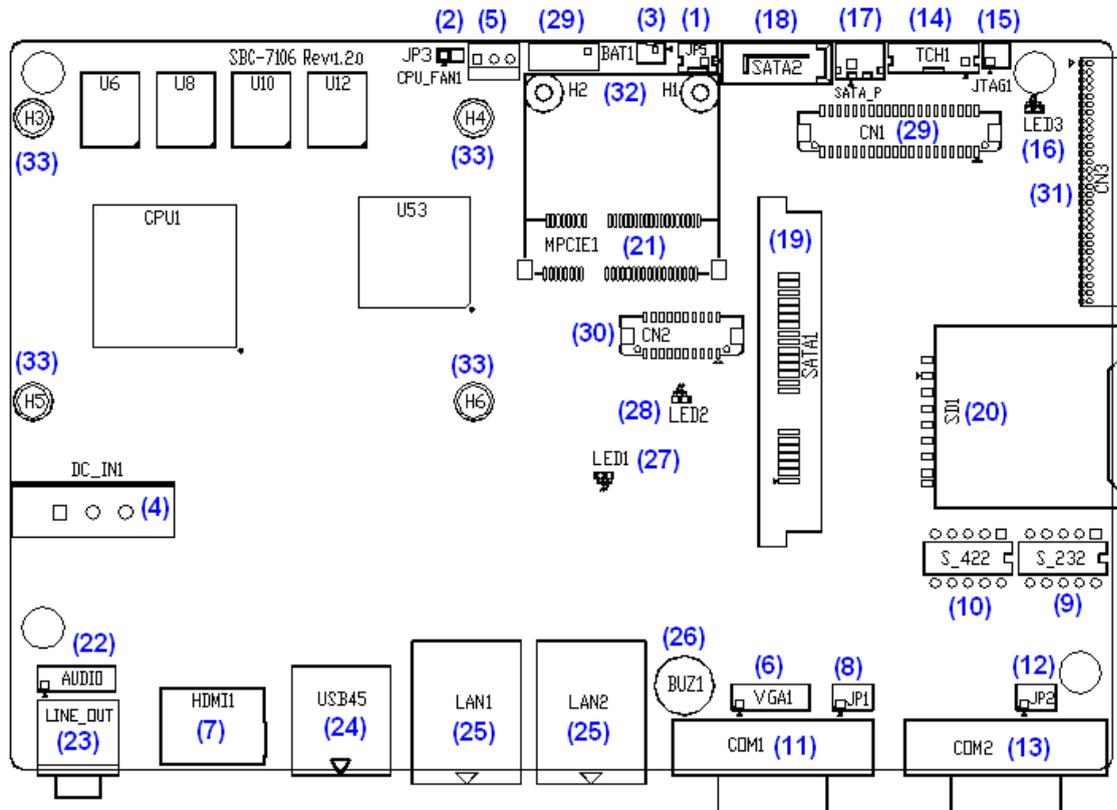


Figure 2.2: Jumpers and Connectors Location\_ Board Top

Board Bottom

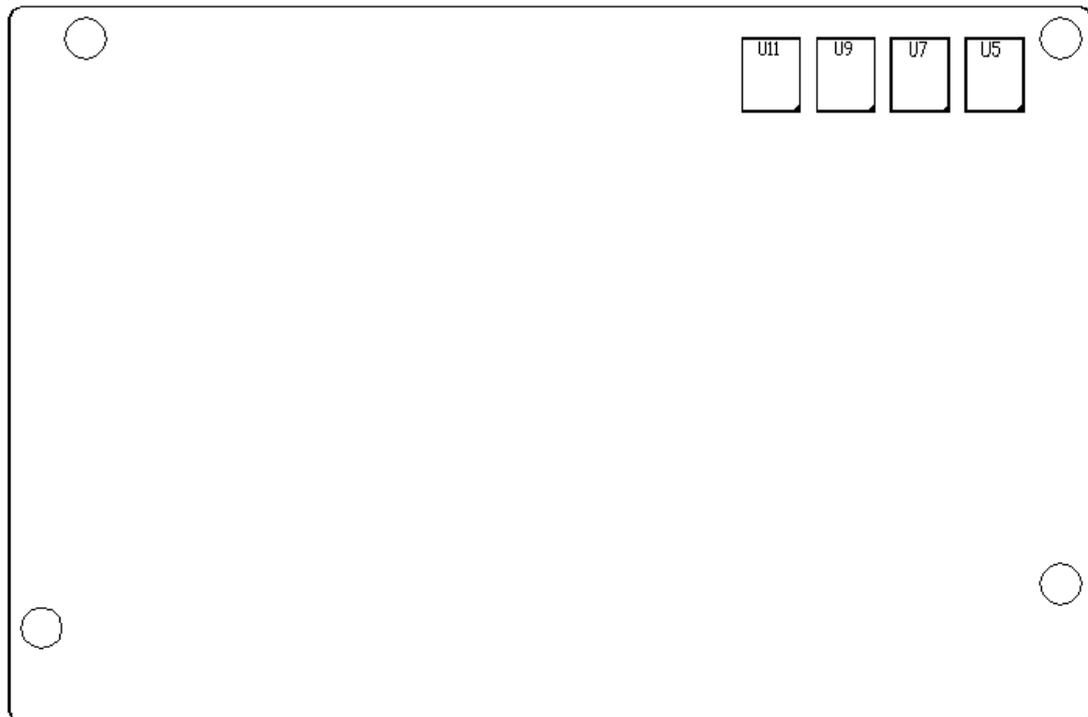


Figure 2.3: Jumpers and Connectors Location\_ Board Bottom

## 2.3 Jumpers Setting and Connectors

### 1. JP5:

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

JP5	Mode
Open	ATX Power
Close	<b>Auto Power on (Default)</b>

### 2. 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:

- Turn off the system and unplug the power cord from the power outlet.
- 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.
- Power on the system again.
- When entering the POST screen, press the <F1> or <DEL> key to enter CMOS Setup Utility to load optimal defaults.
- After the above operations, save changes and exit BIOS Setup.

Model	JP3
SBC-7106-N2600	No
SBC-7106-N2600-P	No
SBC-7106-D2550	Yes

### 3. BAT1 :

(1.25mm Pitch 1X2 box Pin Header) 3.0V Li battery is embedded to provide power for CMOS.

Pin#	Signal Name
Pin1	VBAT
PIN2	Ground

### 4. DC\_IN1:

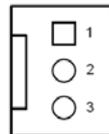
(5.08mm Pitch 1x3 Pin Connector), DC9V~32V System power input connector.

Pin#	Power Input
Pin1	DC+9V~32V
Pin2	Ground
Pin3	FG

Model	DC_IN1
SBC-7106-N2600	180°Connector
SBC-7106-N2600-P	45°Connector
SBC-7106-D2550	45°Connector

### 5. CPU\_FAN1:

(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.

Model	CPU_FAN1
SBC-7106-N2600	No
SBC-7106-N2600-P	No
SBC-7106-D2550	Yes

### 6. VGA1:

(CRT 2.0mm Pitch 2X6 Pin Header), Video Graphic Array Port, Provide 2x6Pin cable to VGA Port.

Signal Name	Pin#	Pin#	Signal Name
CRT_RED	1	2	Ground
CRT_GREEN	3	4	Ground
CRT_BLUE	5	6	VGA_EN
CRT_H_SYNC	7	8	CRT_DDCDATA
CRT_V_SYNC	9	10	CRT_DDCCLK
Ground	11	12	Ground

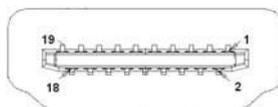
#### VGA hot plug setting for Windows XP:

VGA1 ( Pin Header )	Function
---------------------	----------

Pin4-Pin6 (Close)	VGA Simulation Disabled
Pin4-Pin6 (Open)	VGA Simulation Enabled
use the 2.0mm jumper cap to close pin 4 and pin6	

**7. HDMI1:**

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



**8. 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
<b>Close 1-2</b>	<b>COM1 RI (Ring Indicator) (default)</b>
Close 3-4	COM1 Pin9=+5V (option)
Close 5-6	COM1 Pin9=+12V (option)

**9. S\_232:**

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

Function	S_232 Pin#
<b>RS232 (Default)</b>	<b>ON: Pin1, Pin2, Pin3, Pin4</b>
RS422 (option)	OFF: Pin1, Pin2, Pin3, Pin4
RS485 (option)	OFF: Pin1, Pin2, Pin3, Pin4

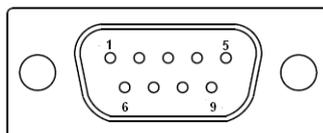
**10. S\_422:**

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

Function	S_422 Pin#
<b>RS232 (Default)</b>	<b>OFF: Pin1, Pin2, Pin3, Pin4</b>
RS422 (option)	ON: Pin1, Pin2, Pin3, Pin4
RS485 (option)	ON: Pin1, Pin2, Pin3, Pin4

**11. COM1:**

**(Type DB9)**,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.



<b>RS232 (Default):</b>	
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	<b>JP1 select Setting (RI/5V/12V)</b>
BIOS Setup: Advanced/W83627UHG Super IO Configuration/Serial Port 1 Configuration <b>【RS-232】</b>	

<b>RS422 (option):</b>	
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/W83627UHG Super IO Configuration/Serial Port 1 Configuration <b>【RS-422】</b>	

<b>RS485 (option):</b>	
Pin#	Signal Name
1	NC
2	NC
3	485-
4	485+
5	Ground
6	NC
7	NC

8	NC
9	NC
BIOS Setup: Advanced/W83627UHG Super IO Configuration/Serial Port 1 Configuration 【RS-485】	

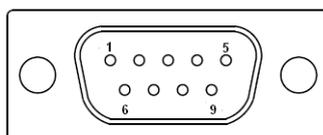
**12. JP2:**

(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
<b>Close 1-2</b>	<b>COM2 RI (Ring Indicator) (default)</b>
Close 3-4	COM2 Pin9=+5V (option)
Close 5-6	COM2 Pin9=+12V (option)

**13. COM2:**

**(Type DB9)**,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	RI (Ring Indicator)

**14. TCH1:**

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

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

**15. JTAG1(option):**

(2.0mm Pitch 2x2 Pin Header), Touch eeprom program to write interface

Signal Name	Pin#		Signal Name
3.3V	1	2	C2D_BR
YC2CK_RST	3	4	Ground

**16. LED3:**

LED STATUS. Green LED for Touch Power status.

**17. SATA\_P:**

(2.5mm Pitch 1x2 box Pin Header), Two onboard 5V output connectors 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.**

**18. SATA2:**

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

**19. SATA1:**

(SATA 7Pin+15Pin), SATA Connectors, one SATA connectors are provided, with transfer speed up to 3.0Gb/s.

**20. SD1:**

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

**21. 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 30x30mm.

**22. AUDIO:**

(2.0mm Pitch 2X6 Pin Header), Front Audio, An onboard Realtek ALC662 codec is used to provide high-quality audio I/O ports. Line Out can be connected to a headphone or amplifier. Line In is used for the connection of external audio source via a Line in cable. MIC is the port for microphone input audio.

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

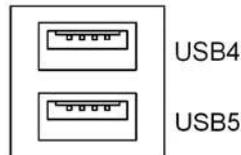
**23. LINE\_OUT:**

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



**24. USB45:**

**USB4/USB5:** (Double stack USB type A), Rear USB connector, it provides up to 4 USB2.0 ports, High-speed USB 2.0 allows data transfers up to 480 Mb/s, support USB full-speed and low-speed signaling.

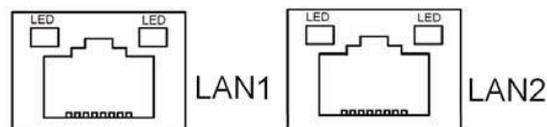


**Each USB Type A Receptacle (2 Ports) Current limited value is 1.5A.**

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

**25. LAN1/LAN2:**

**LAN1/LAN2:** (RJ45 Connector), Rear LAN port, Two standard 10/100/1000M RJ-45 Ethernet ports are provided. Used Realtek RTL8111E 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.



**26. BUZ1:**

Onboard buzzer.

**27. LED1:**

LED STATUS. Green LED for Motherboard Power status.

**28. LED2:**

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

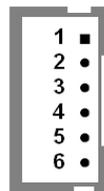
**29. CN1:**

(DF13-40P Connector), For expand output connector, It provides one 18/24bit single channel LVDS, one Backlight control, two USB ports, one power led, one HDD LED, on power on/off button, one RESET.

Function	Signal Name	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_DATAP0	14	13	LA_DATAN0	
	LA_DATAP1	16	15	LA_DATAN1	
	LA_DATAP2	18	17	LA_DATAN2	
	LA_DATAP3	20	19	LA_DATAN3	
	LA_CLKP	22	21	LA_CLKN	
	Ground	24	23	Ground	
		Ground	26	25	
USB1	USB1_P	28	27	USB1_N	USB1
USB0	USB0_P	30	29	USB0_N	USB0
	5V_USB01	32	31	5V_USB01	USB1
	5V_USB01	34	33	5V_USB01	
PWR LED	PWR_LED+	36	35	HDD_LED+	HDD LED
	Ground	38	37	Ground	
PWR ON/OFF	PWRBTN_ON-	40	39	FP_RST-	RESET

**INVT1:**

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



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



Note:

Pin6 is backlight control signal, support DC or PWM mode, mode select at BIOS CMOS menu.

### 30. CN2:

(DF13-20P Connector), for expand output connector, it provides eight GPIO, one RS422 or RS485.

Function	Signal Name	Pin#		Signal Name	Function
5V	5V_S5	2	1	5V_S5	5V
SIO_GPIO61	GPIO_IN2	4	3	GPIO_IN1	SIO_GPIO60
SIO_GPIO63	GPIO_IN4	6	5	GPIO_IN3	SIO_GPIO62
	Ground	8	7	Ground	
SIO_GPIO21	GPIO_OUT2	10	9	GPIO_OUT1	SIO_GPIO20
SIO_GPIO23	GPIO_OUT4	12	11	GPIO_OUT3	SIO_GPIO22
	Ground	14	13	Ground	
485 or 422	485+_422TX+	16	15	485-_422TX-	485 or 422
RS422	422_RX+	18	17	422_RX-	RS422
5V	5V_S0	20	19	5V_S0	5V
COM3 BIOS Setup: Advanced/W83627UHG Super IO Configuration/Serial Port 3 Configuration 【RS-422】 Advanced/W83627UHG Super IO Configuration/Serial Port 3 Configuration 【RS-485】					

### 31. CN3:

(1.27mm Pitch 2X30 Pin Header), For expand output connector, It provides four GPIO, Two USB 2.0, one PS/2 mouse, one PS/2 keyboard, two uart, one PCIe x1, one SMBus. connected to the TB-528 riser Card.

Function	Signal Name	Pin#		Signal Name	Function
	5V_S5_USB	1	2	5V_S5_USB	
	5V_S5_USB	3	4	5V_S5_USB	
	USB23_OC	5	6	CLKREQPSON AT	
USB2	USB2_N	7	8	USB2_P	USB2
USB3	USB3_N	9	10	USB3_P	USB3
	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
	COM6_RI	17	18	COM6_DCD-	

COM6 (UART)	COM6_TXD	19	20	COM6_RXD	COM6 (UART)
	COM6_DTR	21	22	RICOM6_RTS-	
	COM6_DSR	23	24	COM6_CTS-	
	Ground	25	26	Ground	
COM5 (UART)	COM5_RI	27	28	COM5_DCD-	COM5 (UART)
	COM5_TXD	29	30	COM5_RXD	
	COM5_DTR	31	32	DSRCOM5_RTS-	
	COM5_DSR	33	34	DTRCOM5_CTS-	
GPIO24	ICH_GPIO24	35	36	ICH_GPIO13	GPIO13
GPIO26	ICH_GPIO26	37	38	ICH_GPIO27	GPIO27
	Ground	39	40	Ground	
PCIE	PE1_TX_N0	41	42	PE1_TX_P0	PCIE
	PE1_RX_N0	43	44	PE1_RX_P0	
	Ground	45	46	Ground	
	CLK_100M_PE	47	48	CLK_100M_PE1	
	PM_PCIE_WAK	49	50	PLTRST_BUF-	
SMBUS	SMB_CLK_S5	51	52	SMB_DATA_S5	SMBUS
PCIE	PE1_CLKREQ	53	54	Ground	
	3P3V_S5	55	56	PWRBTN_ON-	
	3P3V_S5	57	58	3P3V_S5	
12V	12V_S0	59	60	12V_S0	12V

**32. H3/H4/H5/H6:**

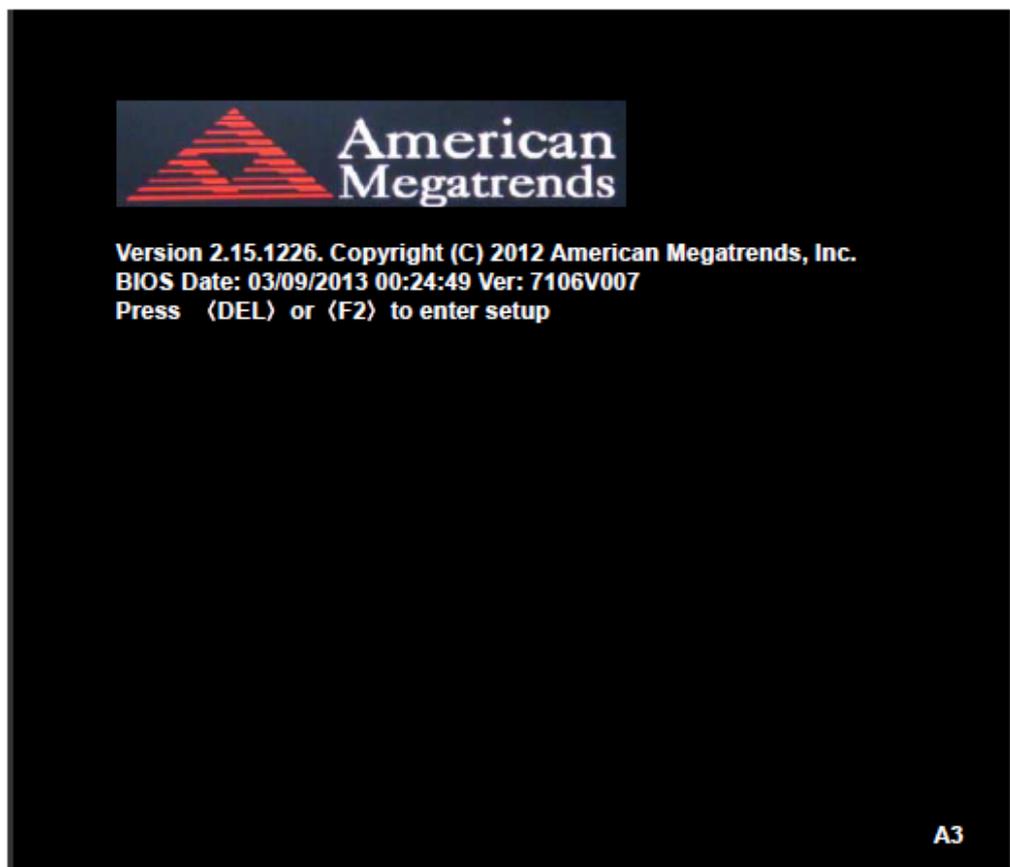
CPU1 and U53 Heat Sink SCREW HOLES, Four screw holes for intel N2600 and NM10 Heat Sink assemble.

**33. H1/H2:**

MPCIE1 SCREW HOLES, H1and H2 for mini PCIE card (30mmx30mm) assemble.

## 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.

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
BIOS Information BIOS Vendor            American Megatrends Core Version            4.6.5.3 Compliancy            UEFI 2.3; PI 1.2 Project Version        7106V007 Build Date and Time    03/09/2013 00:24:49 ▶ Intel RC Version					Intel Reference Code Version
System Language        [English]  System Date            [Sun 01/01/2012] System Time            [00:00:08]  Access Level            Administrator					→←: Select Screen ↑↓ : Select Item Enter: Select +/- : Change Opt. F1 : General Help F2: Previous Values F3:Optimized Defaults F4:Save and Exit ESC Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends , Inc.					

### 3.3 Main Settings

BIOS Information BIOS Vendor            American Megatrends Core Version            4.6.5.3 Compliancy            UEFI 2.3; PI 1.2 Project Version        7106V007 Build Date and Time    03/09/2013 00:24:49 ▶ Intel RC Version					Intel Reference Code Version
System Language        [English]  System Date            [Sun 01/01/2012] System Time            [00:00:08]  Access Level            Administrator					→←: Select Screen ↑↓ : Select Item Enter: Select +/- : Change Opt. F1 : General Help F2: Previous Values F3:Optimized Defaults F4:Save and Exit ESC Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends , Inc.					

**System Time:**

Set the system time, the time format is:

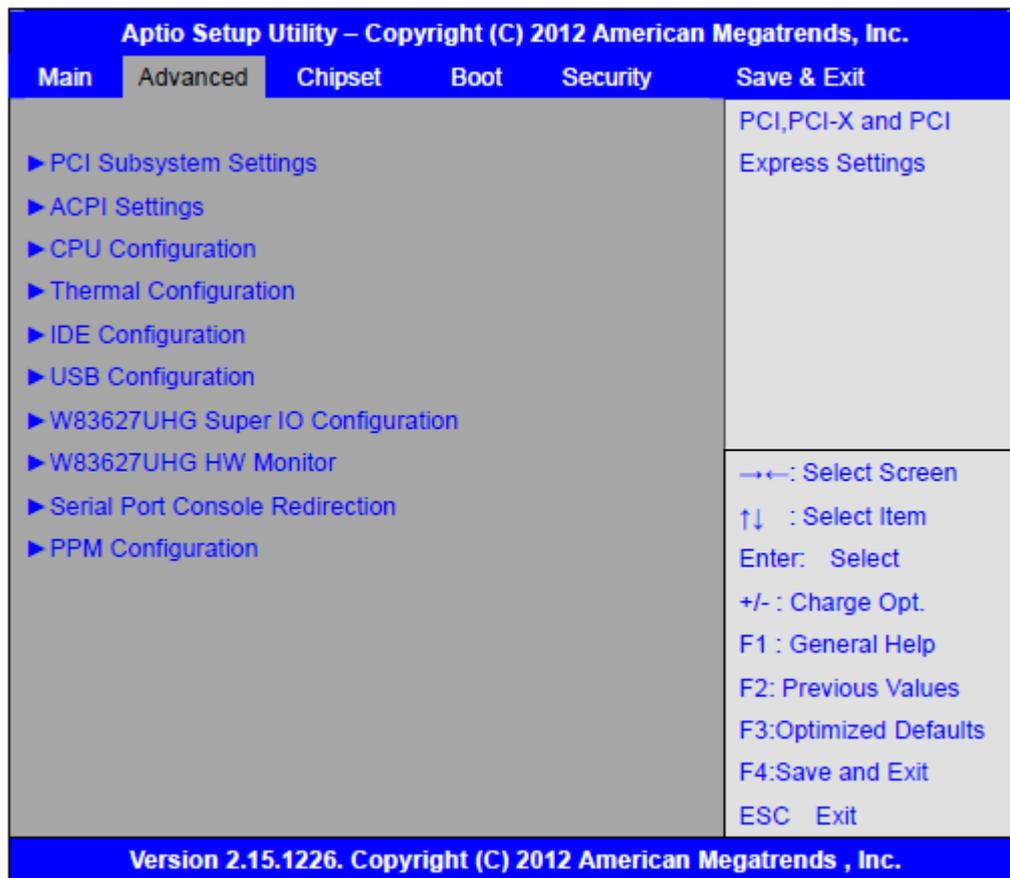
- Hour: 0 to 23
- Minute: 0 to 59
- Second: 0 to 59

**System Date**

Set the system date, the date format is:

- Day:** Note that the 'Day' automatically changes when you set the date.
- Month:** 01 to 12
- Date:** 01 to 31
- Year:** 1998 to 2099

### 3.4 Advanced Settings



**3.4.1 PCI Subsystem Settings**

PCI Bus Driver Versio V2.05.02

**PCI Common Settings:**

**PCI Latency Timer:**

[32 PCI Bus Clocks]

[64 PCI Bus Clocks]

[96 PCI Bus Clocks]  
[128 PCI Bus Clocks]  
[160 PCI Bus Clocks]  
[192 PCI Bus Clocks]  
[224 PCI Bus Clocks]  
[248 PCI Bus Clocks]

**VGA Palette Snoop:**

**[Disabled]**  
[Enabled]

**PERR# Generation:**

**[Disabled]**  
[Enabled]

**SERR# Generation:**

**[Disabled]**  
[Enabled]

**3.4.2 ACPI Settings**

**Enable ACPI Auto Conf:**

**[Disabled]**  
[Enabled]

**Enable Hibernation:**

**[Enabled]**  
[Disabled]

**ACPI Sleep State:**

**[Both S1 and S3 available for OS to choose from ]**  
[Suspend Disabled]  
[S1 only (CPU Stop Clock)]  
[S3 only (Suspend to RAM)]

**Lock Legacy Resources:**

**[Disabled]**  
[Enabled]

**S3 Video Repost:**

**[Disabled]**  
[Enabled]

### 3.4.3 CPU Configuration

Processor Type	Intel(R) Atom(TM) CPU N2600
EMT64	Not Supported
Processor Speed	1600MHz
System Bus Speed	400MHz
Ratio Status	16
Actual Ratio	16
System Bus Speed	400MHz
Processor Stepping	30661
Microcode Revision	269
L1 Cache RAM	2x56 k
L2 Cache RAM	2x512 k
Processor Core	Dual
Hyper-Threading	Supported

Hyper-Threading:

**[Enabled]**  
[Disabled]

Execute Disable Bit:

**[Enabled]**  
[Disabled]

**Limit CPUID Maximum:**

**[Disabled]**  
[Enabled]

### 3.4.4 Thermal Configuration

CPU Thermal Configuration

DTS SMM

**[Disabled]**  
[Enabled]

Platform Thermal Configuration

Critical Trip Point [POR]

Active Trip Point Lo [55 C]

Active Trip Point Hi [71C]

Passive Trip Point [95]

Passive TC1 Value 1

Passive TC2 Value 5

Passive TSP Value 10

### 3.4.5 IDE Configuration

SATA Port0 Not Present  
SATA Port1 Not Present

#### SATA Controller(S):

[Enabled]  
[Disabled]

#### Configure SATA as:

[IDE]  
[AHCI]

#### Misc Configuration for hard disk

### 3.4.6 USB Configuration

USB Configuration  
USB Devices:  
1 Drive , 1 keyboard  
Legacy USB Support:

[Enabled]  
[Disabled]

#### EHCI Hand-off:

[Disabled]  
[Enabled]

USB hardware delays a  
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]

### 3.4.7 W83627UHG Super IO Configuration

W83627UHG Super IO ch W83627UHG

Serial Port 1 Configuration

UART Mode Selection:

[RS-232]

[RS-485]

[RS-422]

Serial Port 2 Configuration

Serial Port 3 Configuration

UART Mode Selection:

[RS-485]

[RS-422]

Serial Port 4 Configuration

Serial Port 5 Configuration

Serial Port 6 Configuration

### 3.4.8 W83627UHG HW Monitor

PC Health Status

System Temperature1 : +38

System Speed : N/A

VCORE : +0.968V

+12V : +12.302V

+3.3V : +3.320V

+1.5V : +1.528V

AVCC : +5.203V

VCC5V : +5.216V

VSBS : +5.203V

VBAT : +3.334V

### 3.4.9 Serial Port Console Redirection

COM0

Console Redirection

[Enabled]

[Disabled]

Console Redirection Settings

Serial Port for Out-of-Band Management/

Windows Emergency Management Services (EMS)

Console Redirection

[Disabled]

[Enabled]

Console Redirection Settings

**3.4.10 PPM Configuration**

PPM Configuration

EIST:

[Enabled]

[Disabled]

CPU C State Report

[Enabled]

[Disabled]

Enhanced C State

[Enabled]

[Disabled]

CPU Hard C4E

[Enabled]

[Disabled]

CPU C6 State

[Enabled]

[Disabled]

C4 Exit Timing

[Fast]

[Default]

[Slow]

C-state POPDOWN

[Enabled]

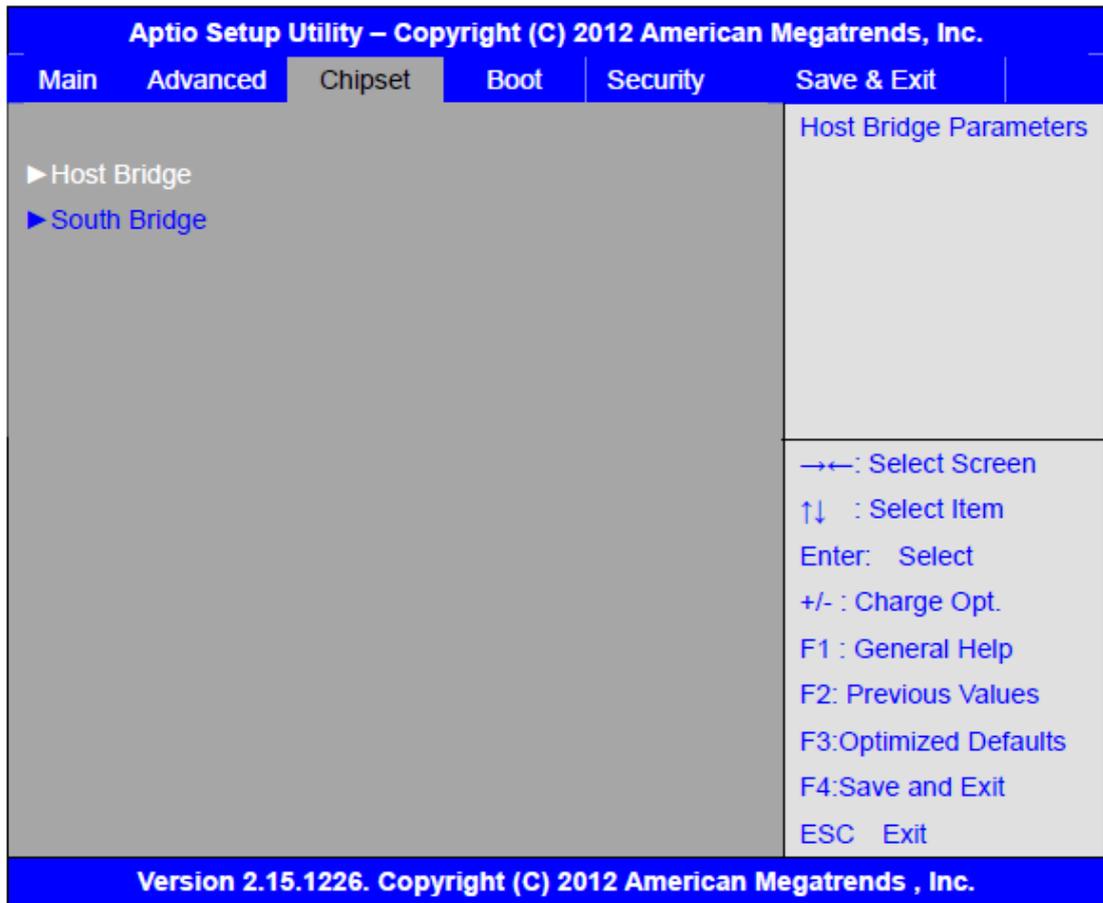
[Disabled]

C-state POPUP

[Enabled]

[Disabled]

## 3.5 Chipset Settings



### 3.5.1 Host Bridge

#### ▶ Memory Frequency and Timing

#### ▶ Intel IGD Configuration

\*\*\*\*\* Memory Information \*\*\*\*\*

Memory Frequency	800 MHz(DDR3)
Total Memory	2048 MB
DIMM#0	Not Present
DIMM#1	2048 MB

#### Memory Frequency and Timing

MRC Fast Boot

[Enabled]

	[Disabled]
Max TOLUD	<b>[Dynamic]</b> [1GB] [1.25GB] [1.5GB] [1.75GB] [2GB] [2.25GB] [2.5GB] [2.75GB] [3GB] [3.25GB]
<b>Intel IGD Configuration</b>	
IGFX – Boot Type	<b>[VBIOS Default]</b> [VGA] [LVDS] [HDMI] [VGA + LVDS] [VGA + HDMI] [LVDS + HDMI]
LCD Panel Type	<b>[VBIOS Default]</b> [640x480, 18bit] [800x480, 18bit] [800x600, 18bit] [1024x600, 18bit ] [1024x768, 18bit ] [1280x768, 18bit ] [1280x800, 18bit ] [1280x1024, 18bit] [1366x768, 18bit] [1024x768, 24bit] [1280x768, 24bit] [1280x800, 24bit] [1280x1024, 24bit] [1366x768, 24bit]
Panel Scaling	<b>[Auto]</b> [Force Scaling] [off]

Active LFP	[Maintain Aspect Ratio]
	<b>[LVDS]</b>
IGD Clock Source	[No LVDS] [EDP]
	<b>[External Clock]</b>
Fixed Graphics Memory	[Internal Clock]
ALS Support	[128MB] [256MB]
Back light Control	<b>[Disabled]</b> [Enabled]
Back light Logic	<b>[DC]</b> [PWM]
Back light Control Lev	<b>[Positive]</b> [Negative]
	[Auto]
	[Disabled]
	[Level 8]
	[Level 1]
	[Level 2]
	[Level 3]
	[Level 4]
	[Level 5]
	[Level 6]
	[Level 7]
	[Level 8]
	[Level 9]
	[Level 10]
	[Level 11]
	[Level 12]
	[Level 13]
	[Level 14]
	[Level 15]

### 3.5.1 South Bridge

TPT Devices	[Enable]
PCI Express Root Port 0	[Disabled]
PCI Express Root Port 1	
PCI Express Root Port 2	
PCI Express Root Port 3	
DMI Link ASPM Control	
PCI-Exp. High Priorit	[Disabled]
	[Enabled]
High Precision Event Timer Configuration	
High Precision Timer	[Enabled]
	[Disabled]
SLP_S4 Assertion Widt	[1-2 Seconds]
	[2-3 Seconds]
	[3-4 Seconds]
	[4-5 Seconds]

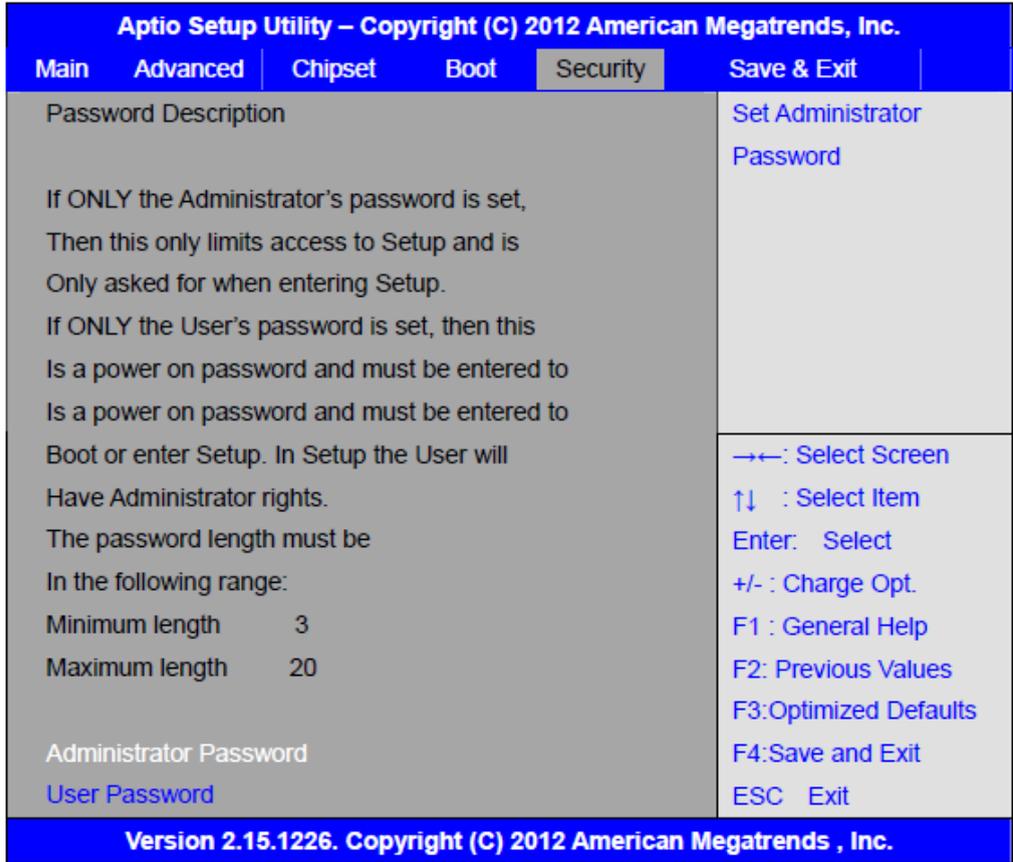
## 3.6 Boot Settings

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
Boot Configuration					Number of seconds to Wait for setup
	Setup Prompt Timeout	1			Activation key.
	Bootup Numlock State	[On]			65535(0xFFFF)means Indefinite waiting.
	Quiet Boot	[Disabled]			
	Fast Boot	[Enabled]			
	Skip USB	[Disabled]			
	Skip PS2	[Disabled]			
	CSM16 Module Version	07.69			
	Gatea20 Active	[Upon Request]			
	Option ROM Messages	[Force BIOS]			
	Interrupt 19 Capture	[Immediate]			
	Driver Option Priorities				→←: Select Screen
	Boot Option Priorities				↑↓ : Select Item
	Boot Option Priorities				Enter: Select
	Boot Option #1	[SATA PM: Hitachi...]			+/- : Change Opt.
	Boot Option #2	[...]			F1 : General Help
	Hard Drive BBS Priorities				F2: Previous Values
	► CSM Parameters				F3:Optimized Defaults
					F4:Save and Exit
					ESC Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends , Inc.					

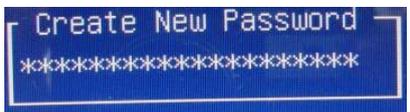
Setup Prompt Timeout	[1]
Bootup Numlock State	[On] [off]
Quiet Boot	[Disabled] [Enabled]
Fast Boot	[Enabled] [Disabled]
Skip VGA	[Enabled] [Disabled]
Skip USB	[Disabled] [Enabled]
Skip PS2	[Disabled] [Enabled]
CSM16 Module Version	07.69
Gatea20 Active	[Upon Request] [Always]
Option ROM Messages	[Force BIOS] [Keep Current]
Interrupt 19 Capture	[Immediate] [Postponed]
Boot Option #1	
Boot Option #2	
.....	
Hard Drive BBS Priorities	Sets the system boot order [SATA PM:***...] Boot Option #1 SATA PM:***... ***** Disabled
CSM Parameters	
Launch CSM	[Always] [Never]
Boot option filter	[UEFI and Legacy] [Legacy only] [UEFI only]
Launch PXE OpROM poli	[Do not Launch] [UEFI only] [Legacy only]
Launch Storage OpROM	[Legacy only] [Do not Launch] [UEFI only]

Launch Video OpROM po	[Do not Launch] [UEFI only] [Legacy only]
Other PCI device ROM	[UEFI OpROM] [Legacy OpROM]

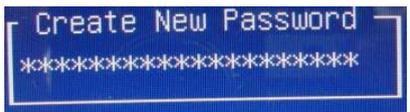
### 3.7 Security Settings



#### 3.7.1 Administrator Password



#### 3.7.2 User Password



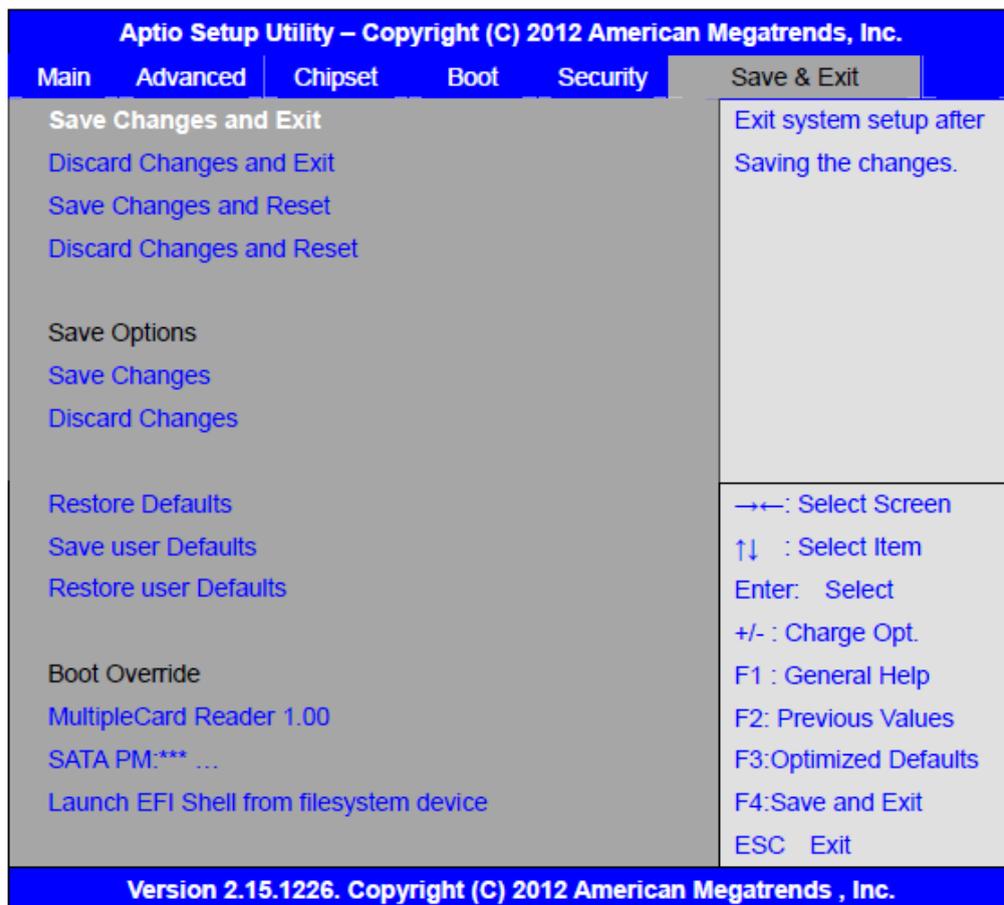
Type the password with up to 20 characters and then press <Enter> key. This will clear all previously typed CMOS passwords. You will be requested to confirm the password. Type the password again and press <Enter> key. You may press <Esc> key to abandon password entry operation.

To clear the password, just press <Enter> key when password input window pops up. A confirmation message will be shown on the screen as to whether the password will be disabled. You will have direct access to BIOS setup without typing any password after system reboot once the password is disabled.

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

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

### 3.8 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]

# 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 chipset driver, VGA driver, LAN drivers, Audio 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 Chipset Driver

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

**Step 1.** Select **Intel (R) Chipset NM10 Express** 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.



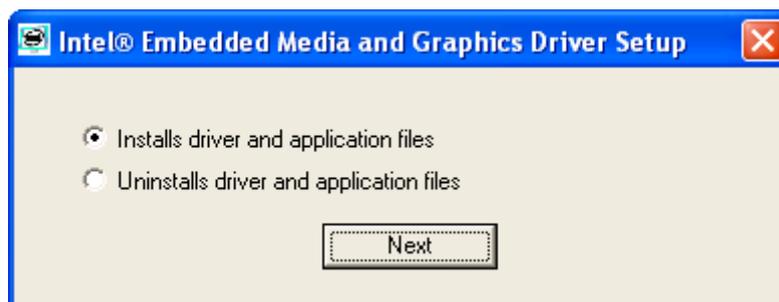
## 4.2 Intel Graphics Media Accelerator driver

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

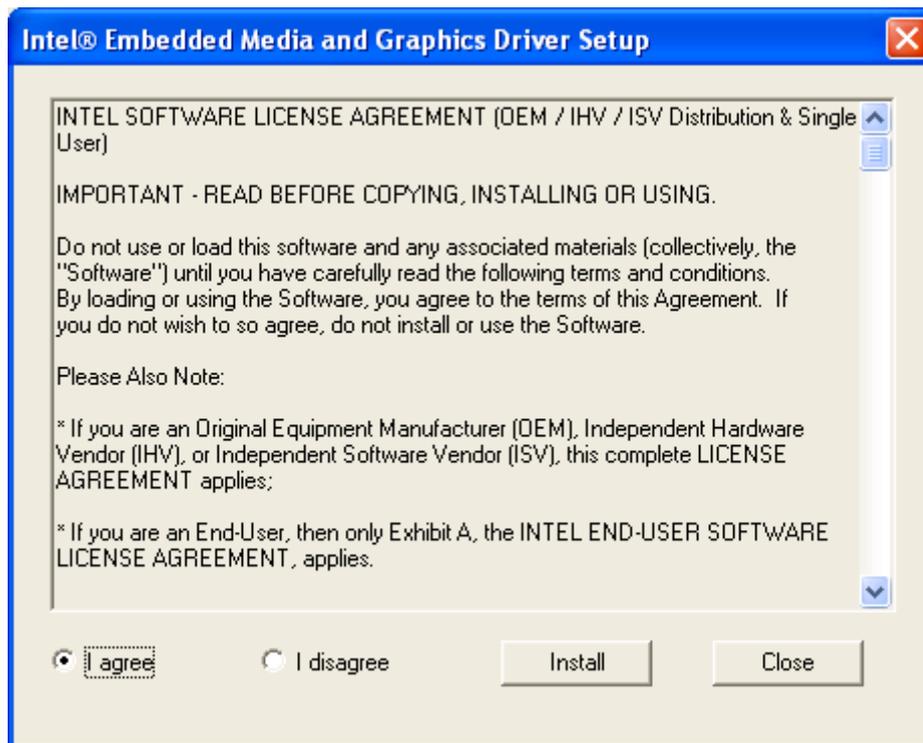
**Step 1.** Select **Intel(R) VGA Chipset Driver**.



**Step 2.** Select **Installs driver and application files**. Click **Next**.



**Step 3. Select I agree. Click Install.**



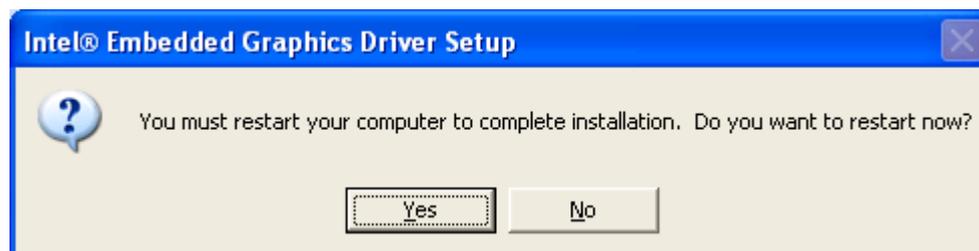
**Step 4. Click Continue Anyway.**



**Step 5. Click Continue Anyway.**



**Step 6. Click Yes to restart your computer.**



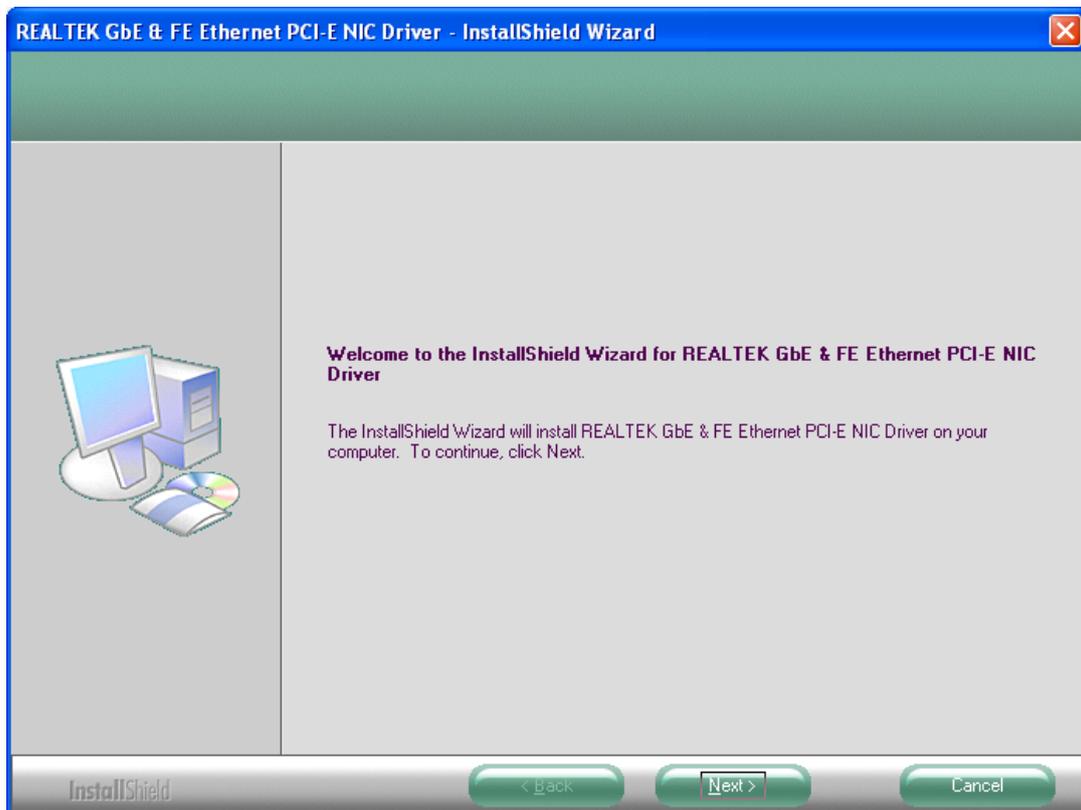
## 4.3 Intel (R) Network Adapter

To install the Intel (R) Network Adapter device driver, please follow the steps below.

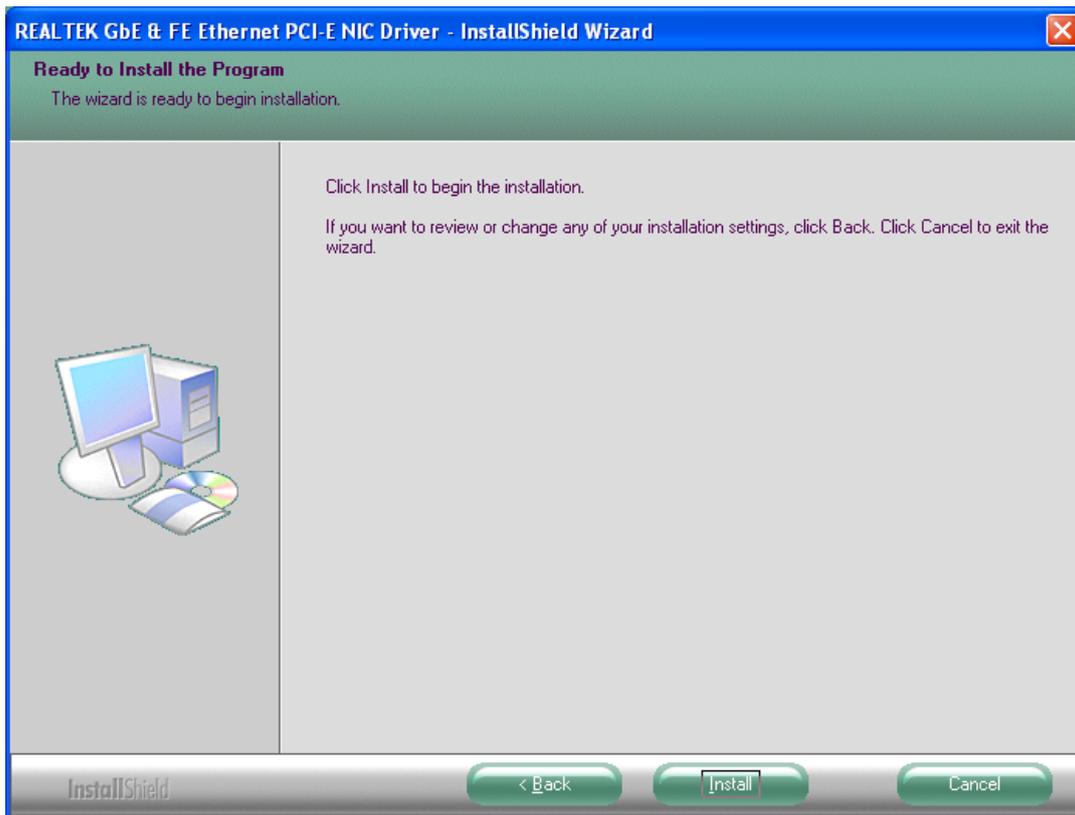
**Step 1. Select Realtek RTL8111D Driver.**



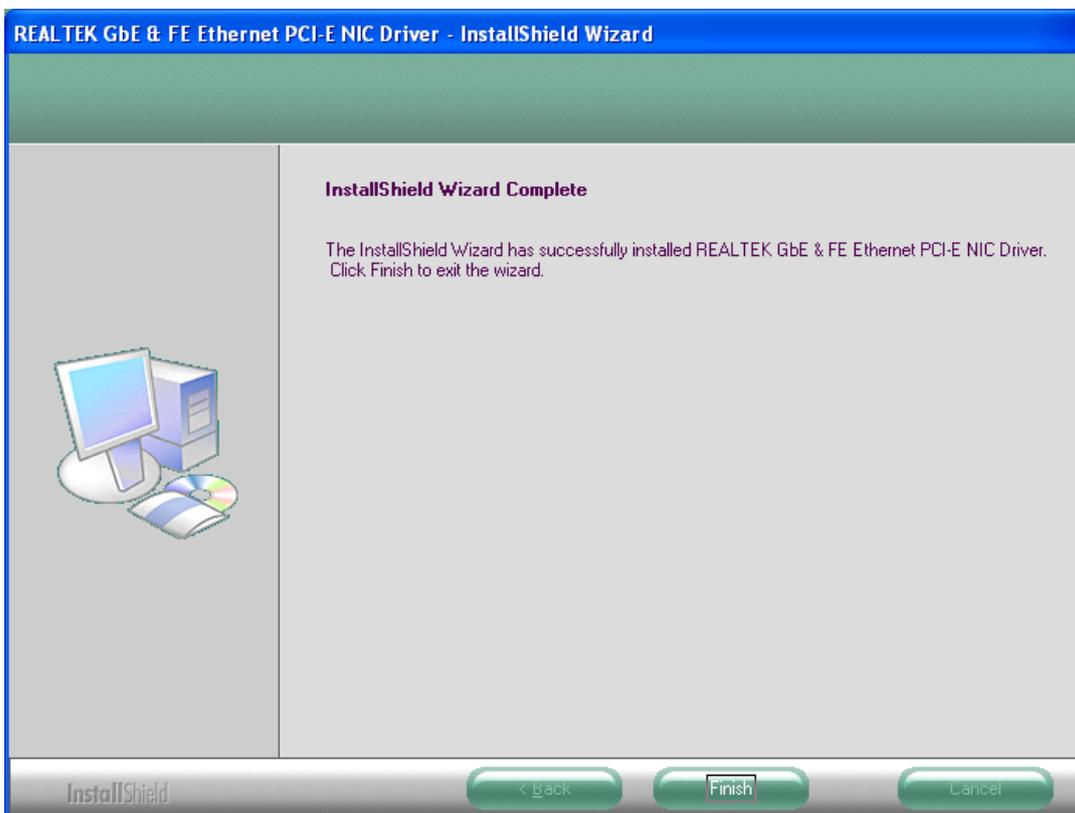
**Step 2. Click Next to continue.**



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



**Step 4.** Click **Finish** to exist the wizard.



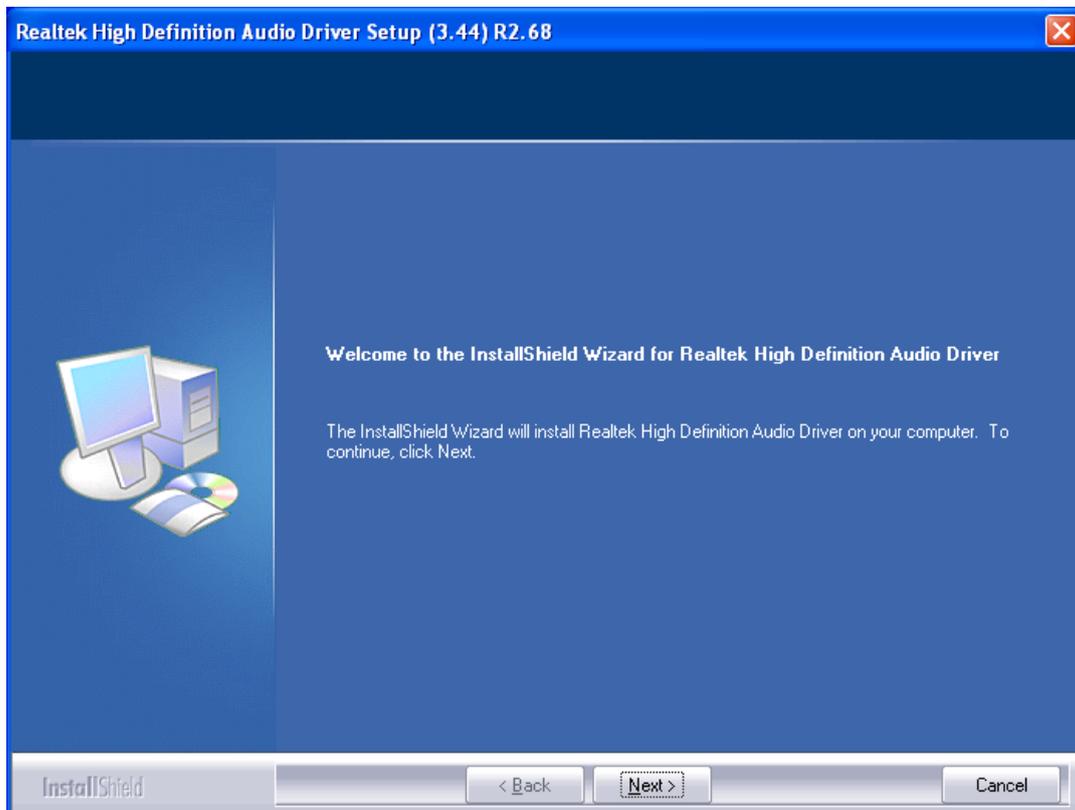
## 4.4 Realtek ALC662 HD Audio Codec Driver Installation

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

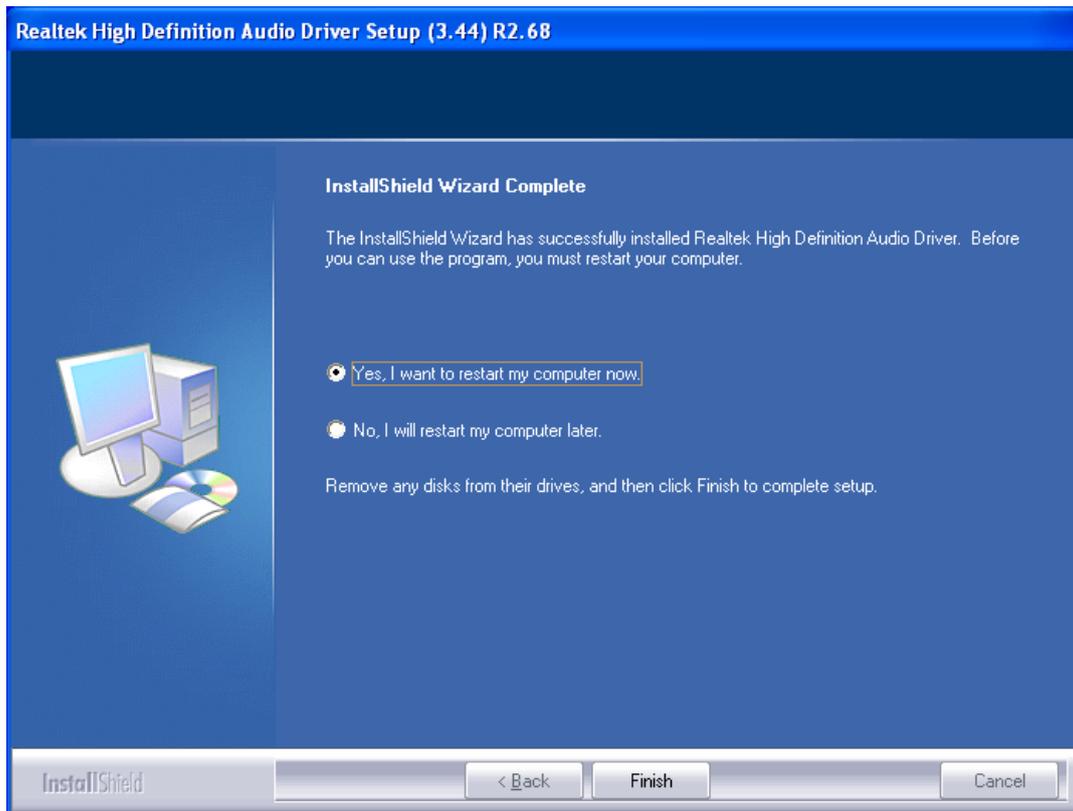
**Step 1.** Select **Realtek AL662 Audio Codec Driver** from the list



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



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



# 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 Universal Driver Installation for PenMount 6000 Series

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

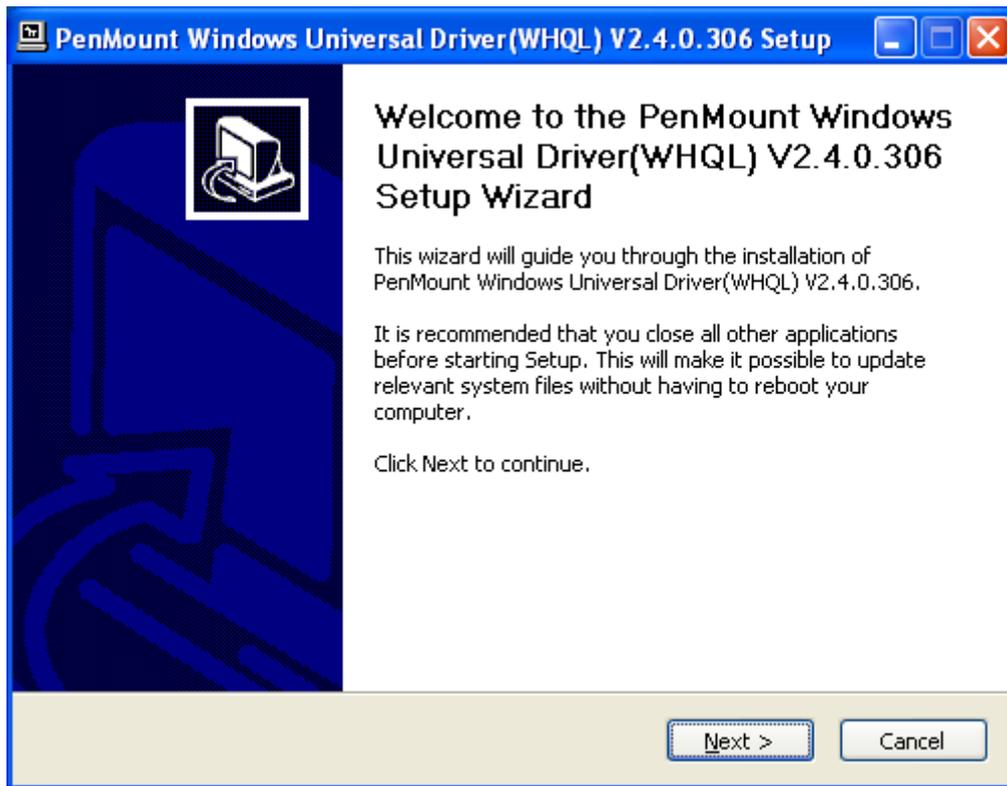
### 5.1.1 Installing Software

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.

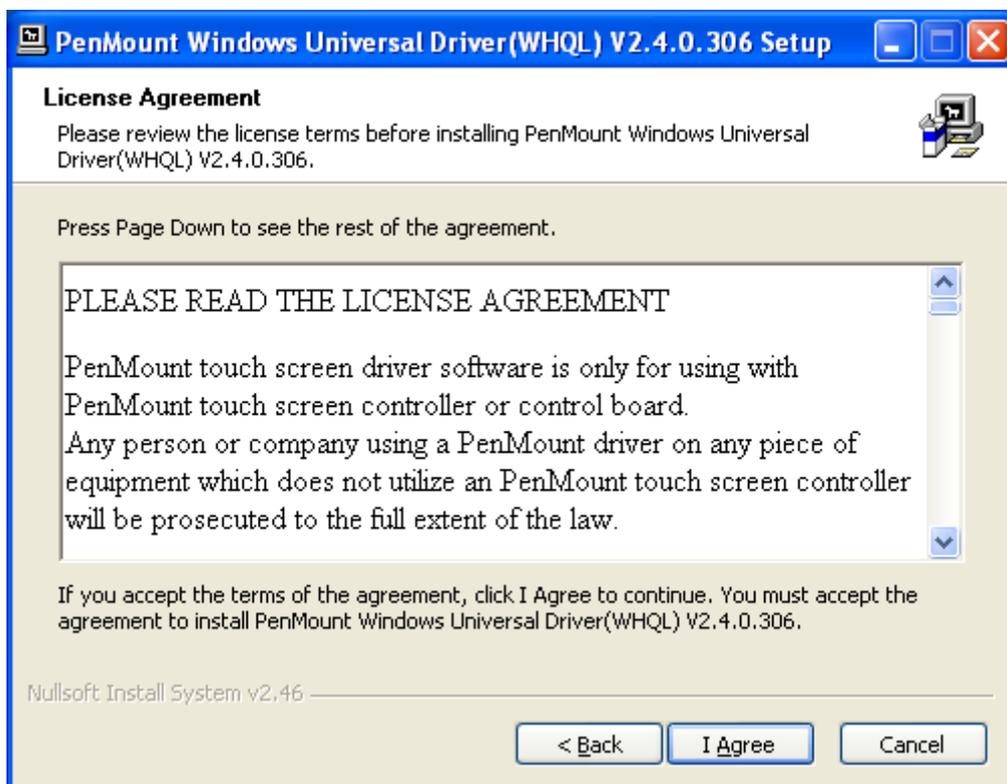
**Step 1.** Insert the product CD, the screen below would appear. Click touch panel driver from the list.



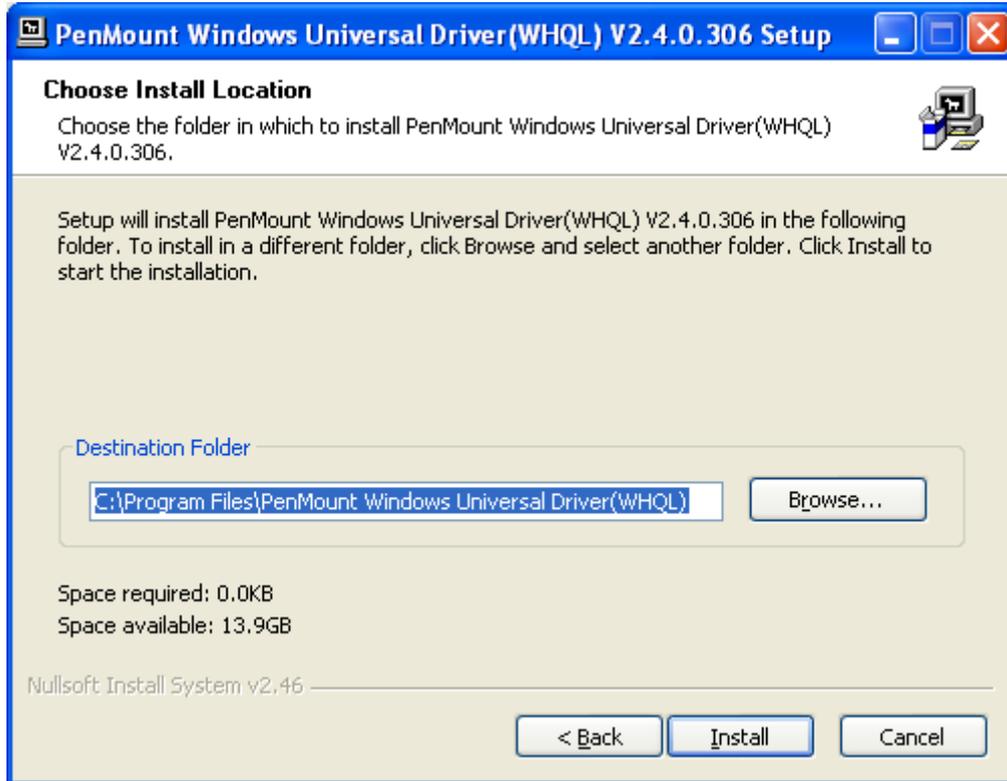
**Step 2.** Click **Next** to continue.



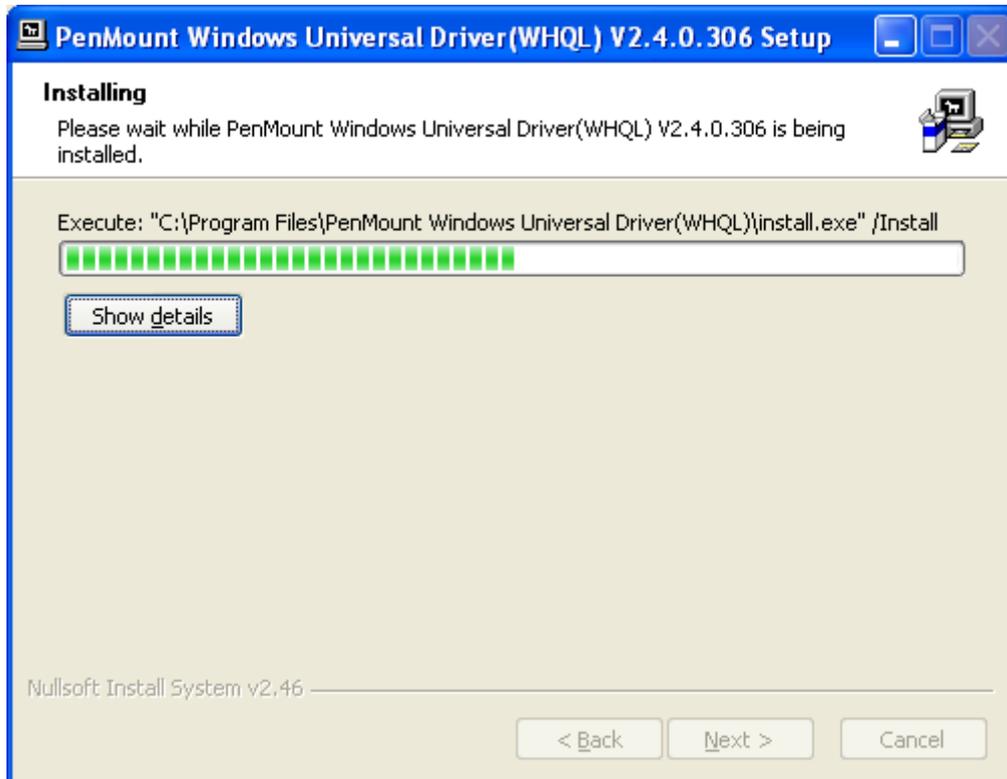
**Step 3.** Read the license agreement. Click **I Agree** to agree the license agreement.



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



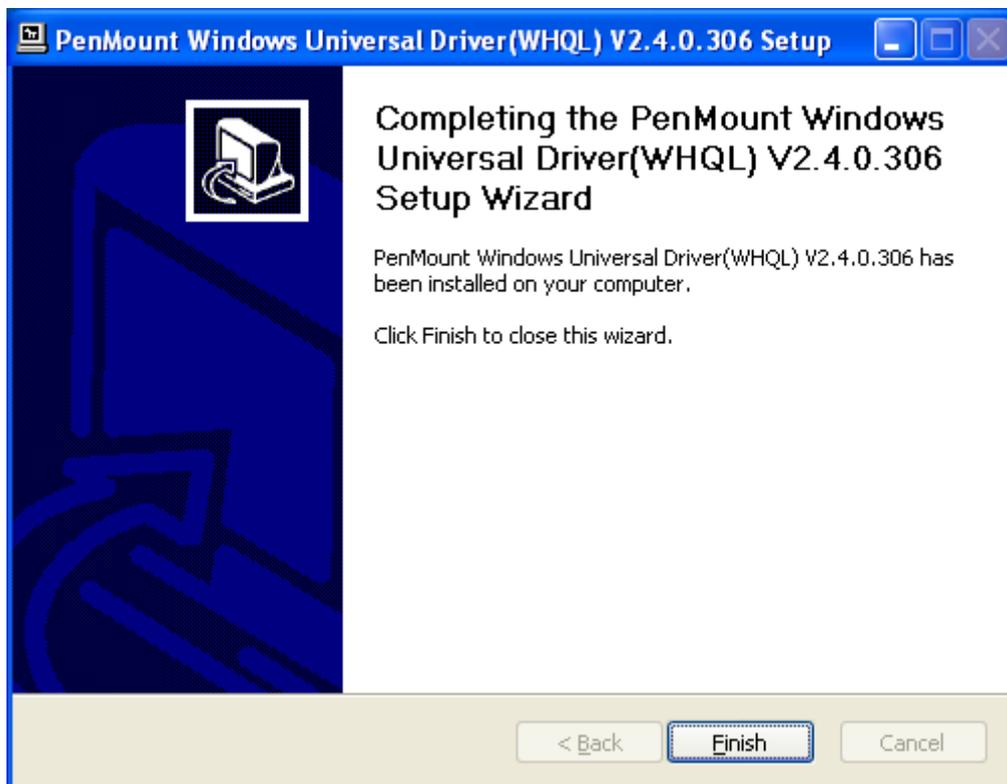
**Step 5.** Wait for installation. Then click **Next** to continue.



**Step 6. Click Continue Anyway.**



**Step 7. Click Finish to complete installation.**



## 5.2 Software Functions

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.

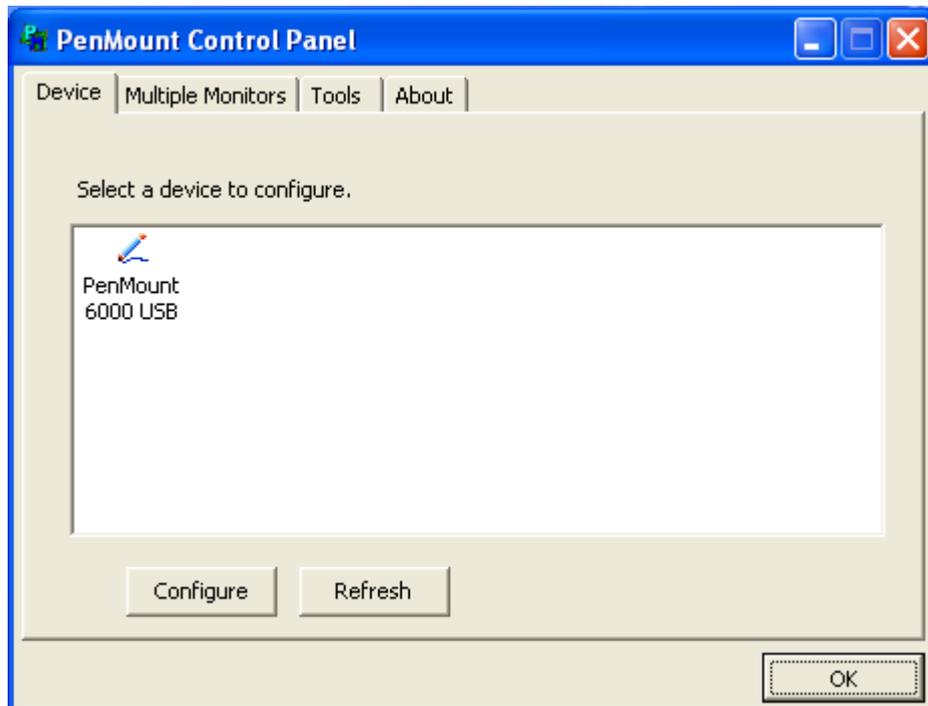
1. After installation, click the PenMount Monitor icon “PM” in the menu bar.
2. When the PenMount Control Panel appears, select a device to “Calibrate.”

### 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.



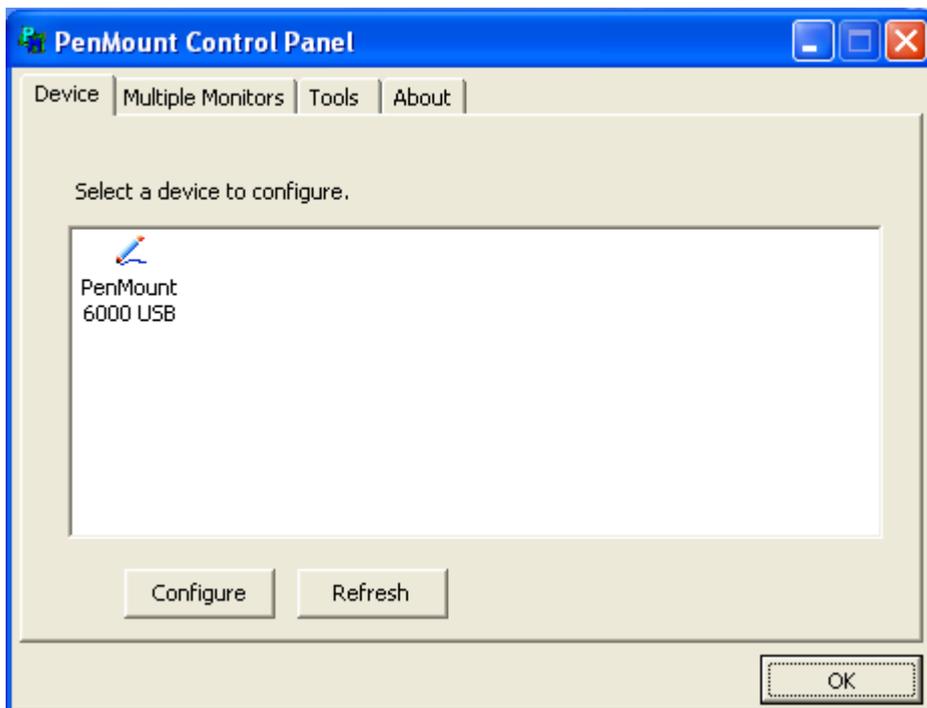
#### Calibrate

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

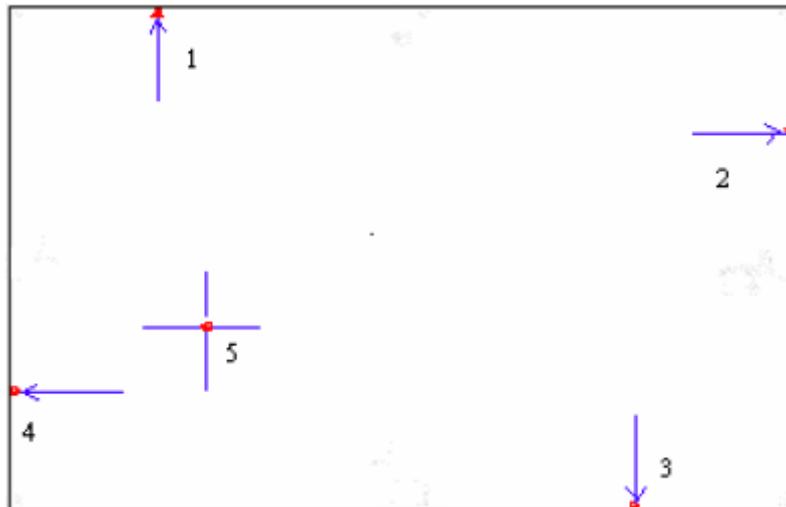
Standard Calibration	<b>Click this button and arrows appear pointing to red squares. Use your finger or stylus to touch the red squares in sequence. After the fifth red point calibration is complete. To skip, press ‘ESC’.</b>
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Advanced Calibration	<b>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’.</b>
Command Calibration	<b>Command call calibration function. Use command mode call calibration function, this can uses Standard, 4, 9, 16 or 25 points to calibrate</b> E.g. Please run ms-dos prompt or command prompt c:\Program Files\PenMount Universa Driver\Dmctrl.exe -calibration 0 ( Standard Calibration) Dmctrl.exe - calibration (\$) 0= Standard Calibration 4=Advanced Calibration 4 9=Advanced Calibration 9 16=Advanced Calibration 16 25=Advanced Calibration 25

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

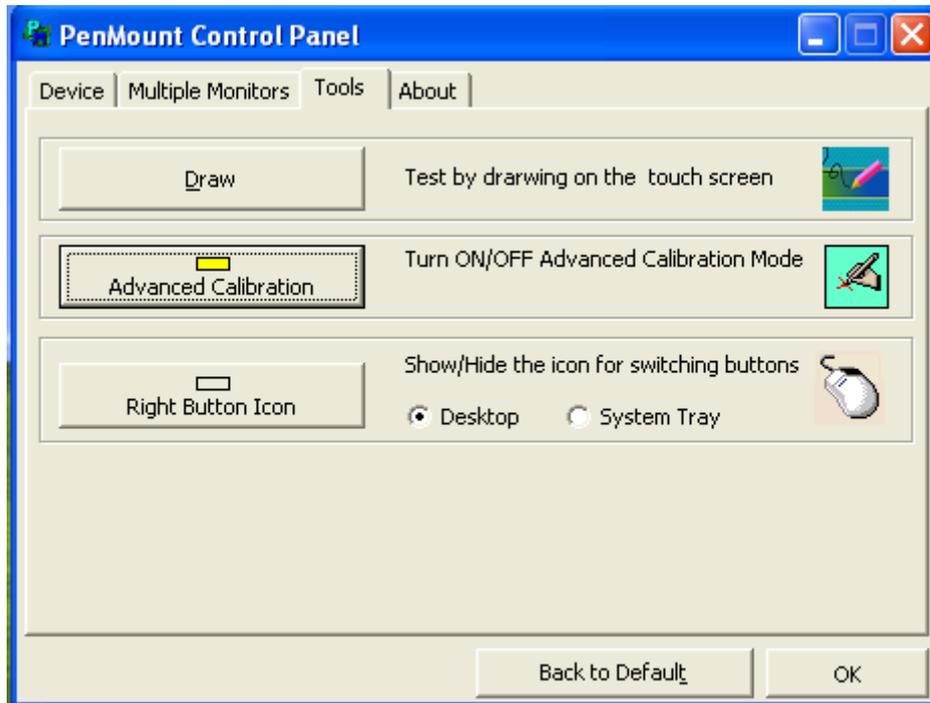


**Step 2.** Click “Standard Calibration” to start calibration procedure



**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:

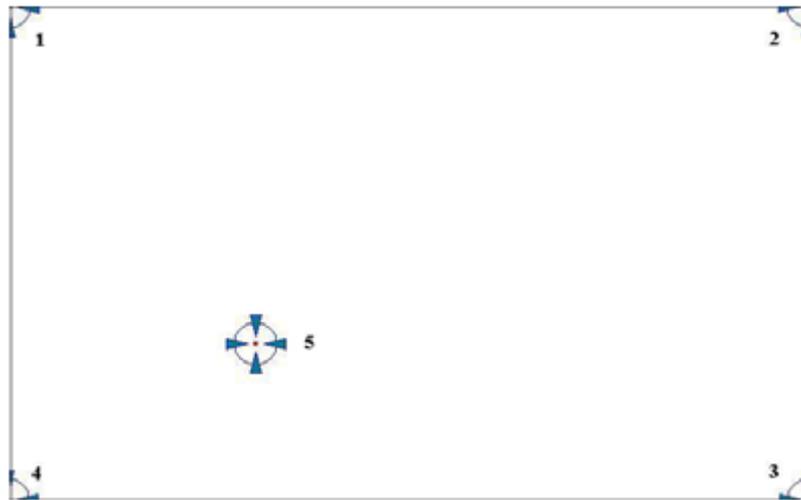
**Step 3.** Come back to “PenMount Control Panel” and select **Tools** then click **Advanced Calibration**.



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



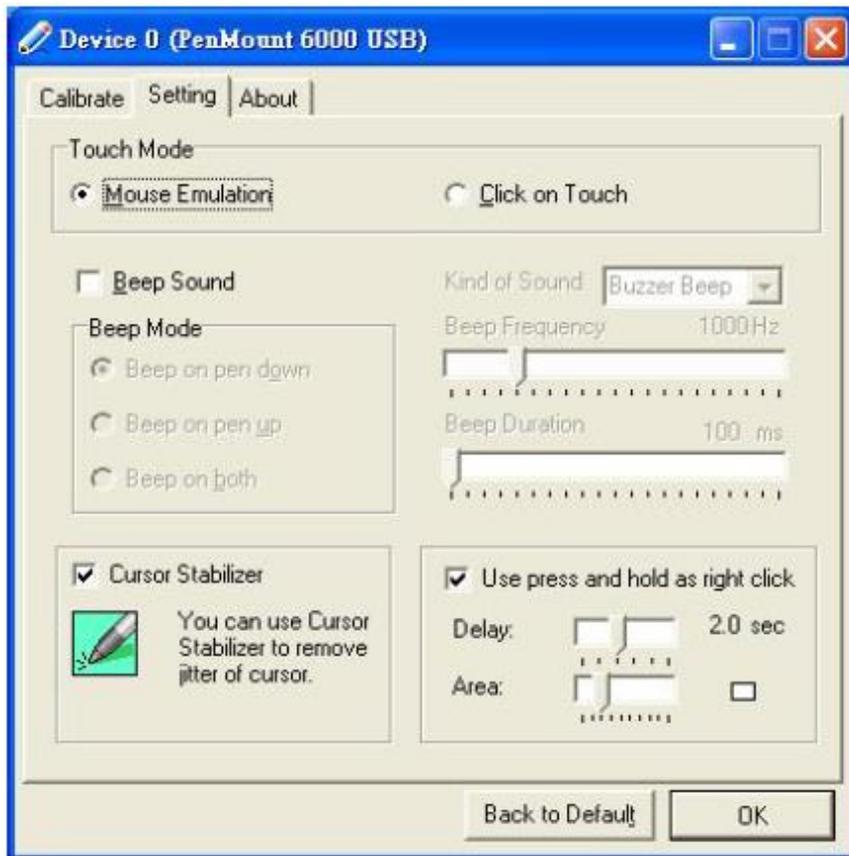
**NOTE:** Recommend to use a stylus during Advanced Calibration for greater accuracy.



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

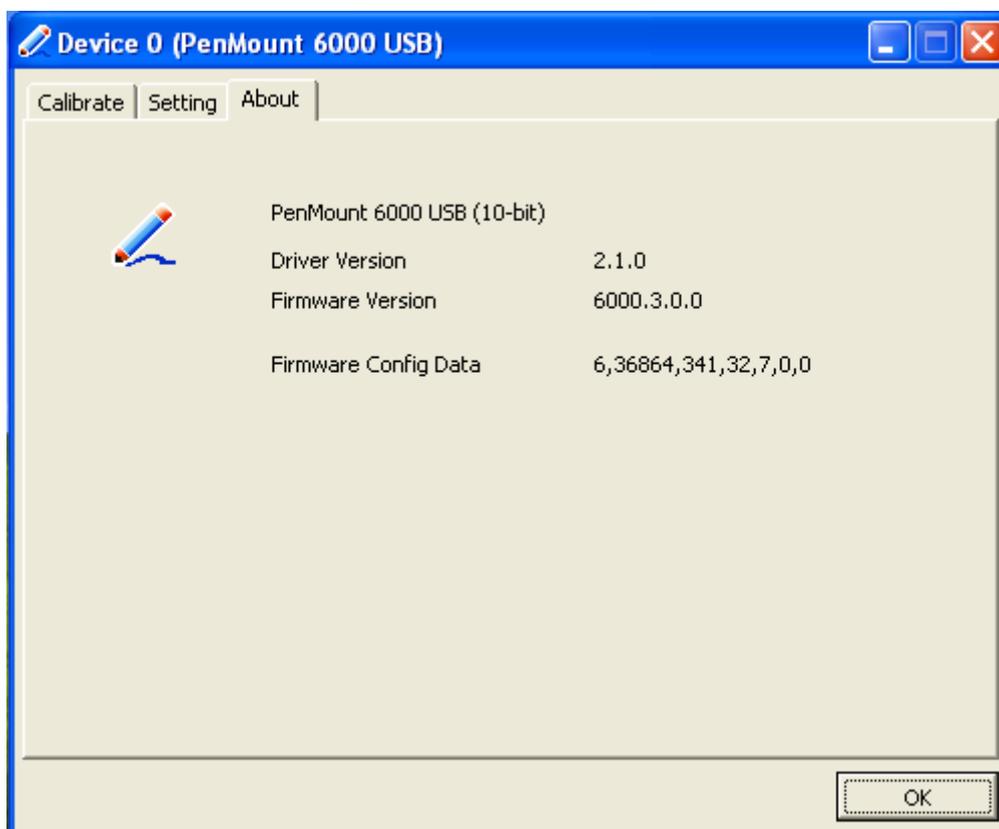
## Setting

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



## 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 2000/XP 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 RS-232 interface. Driver installation procedures are the same as for a single monitor. Multiple Monitors support the following modes:

Windows Extends Monitor Function

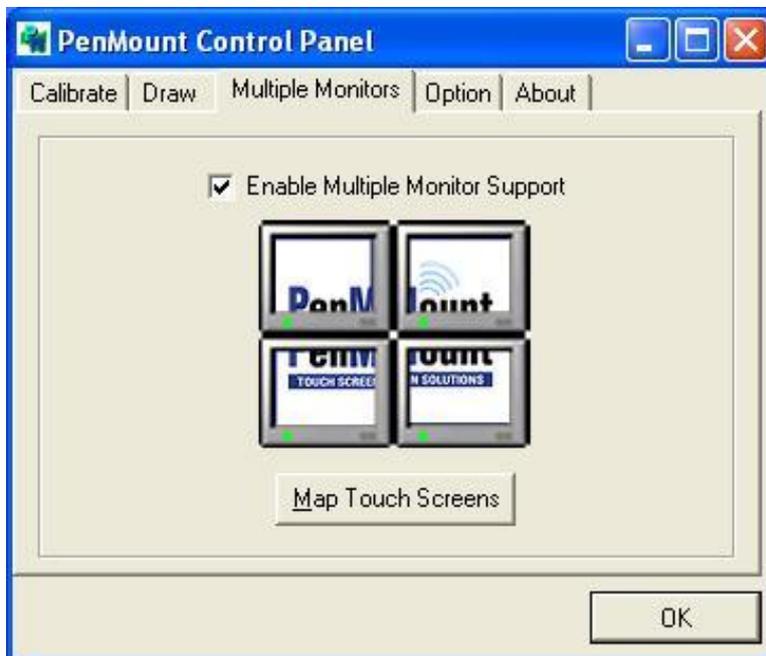
Matrox DualHead Multi-Screen Function

nVidia nView Function

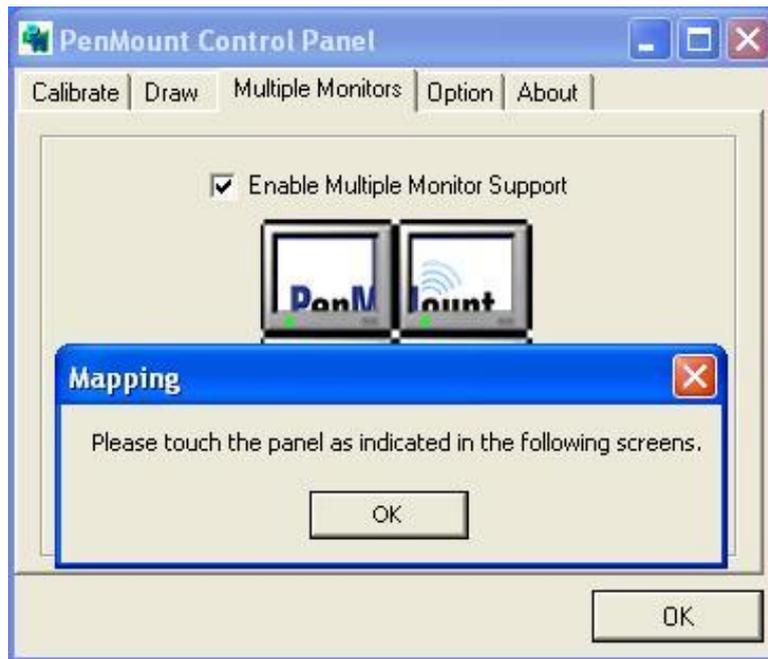
**NOTE:** The Multiple Monitor function is for use with multiple displays only. Do not use this function if you have only one touch screen display. Please note once you turn on this function the rotating function is disabled.

Enable the multiple display function as follows:

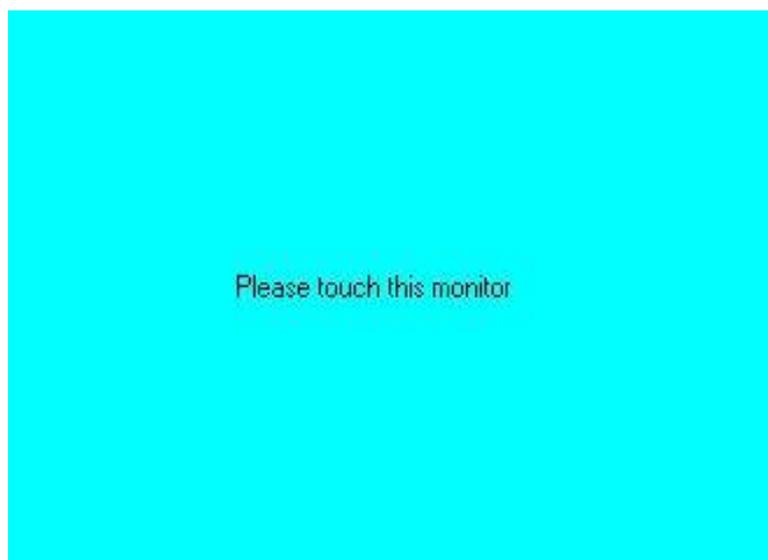
1. Check the **Enable Multiple Monitor Support** box; then click **Map Touch Screens** to assign touch controllers to displays.



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.



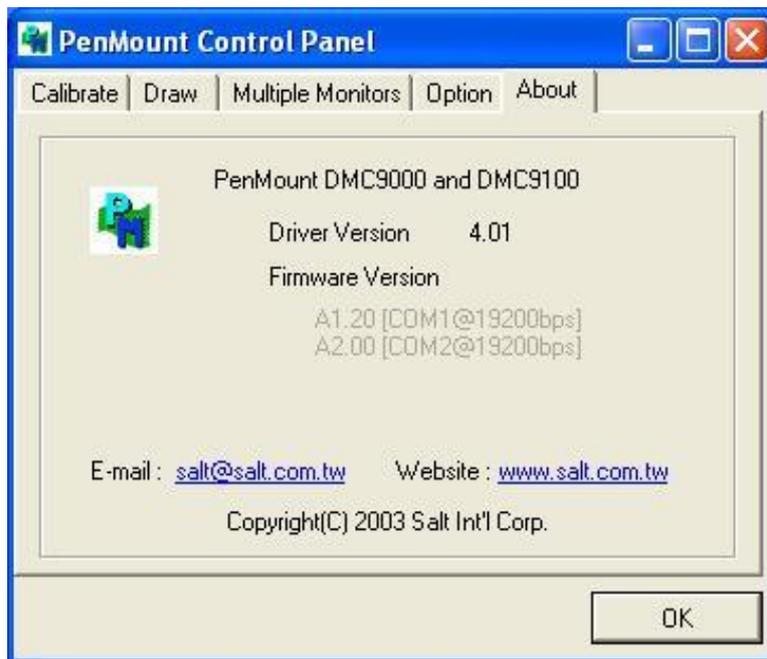
6. "Touch this screen to start its calibration" appears on one of the screens. Touch the screen.
7. "Touch the red square" messages appear. Touch the red squares in sequence.
8. Continue calibration for each monitor by clicking **Standard Calibration** and touching the red squares.

**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.

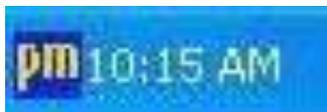
**About**

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 2000/XP system when you turn on PenMount Monitor in PenMount Utilities.



PenMount Monitor has the following function

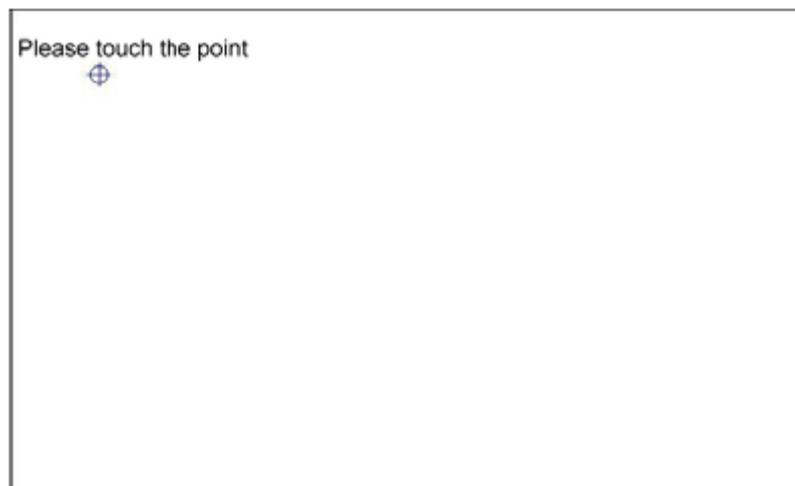


Control Panel	<b>Open Control Panel Windows</b>
Beep	<b>Setting Beep function for each device</b>
Right Button	<b>When you select this function, a mouse icon appears in the right-bottom of the screen. Click this icon to switch between Right and Left Button function.</b>
Exit	<b>Exits the PenMount Monitor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



### 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