APA9XXX

8” / 17” / 18.5“ / 21.5” LCD Monitor
Aluminum Die-casting Chassis
IP 65 Rated Flat Front Bezel

Industrial Monitors

User Manual

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Revision History

Reversion	Date	Description
1.0	2014/10/03	Official Version
1.1	2015/06/10	Add 17”, and 18.5”
1.2	2015/07/24	Delete description of die-casting, Modify Power Consumption

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.

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Chapter 1 Getting Started

1.1 Features

- Solid Aluminum chassis
- Variety of LCD panel size selections
- Front bezel IP65
- VGA and DVI input, RCA is for option
- 9~36V DC wide range power input

1.2 Specifications

	APA9080		APA9170	APA9185	APA9215
Hardware					
Display Type	8” color TFT LCD		17”color TFT LCD	18.5”color TFT LCD	21.5”color TFT LCD
External I/O Port	**Default I/O:** 1 x 3 pins terminal block power input 9~36V DC 1 x DVI 1 x VGA 1 x USB for Touch control **Option I/O:** 1 x RCA 1 x RS-232 DB-9 for Resistive Touch control				
OSD Control	On board controller, extendable key pad from connector Transfer Board OSD Membrane Keypad				
Speaker	1 x 3W AMP internal pin header for option				
LCD					
Max. Resolution	800 x 600		1280 x 1024	1366 x 768	1920 x 1080
Max. Color	16.2M		16.7M	16.7M	16.7M
Luminance(cd/m²)	350		350	300	250
Contrast Ratio	500 : 1		800 : 1	1000 : 1	3000 : 1
Viewing Angle (H/V)	140°/125°		160°/140°	170°/160°	178°/178°
Backlight Lifetime	40,000 hrs		50,000 hrs	50,000	30,000 hrs

Power Input	9~36V DC on board				
Power Consumption	MAX: 4.7W(108) MAX: 3.6W(108P)		MAX: 14.3W(117) MAX: 18.4W(117P)	MAX: 21.5W(118) MAX: 20.4W(118P)	MAX: 21.7W(121) MAX: 24.9W(121P)
Touch Screen (APA9XXX)					
Type	Resistive Touch Window				
Interface	USB / RS-232				
Light Transmission	Over 80%				
Touch Screen (APA9XXXP)					
Type	Projected Capacitive				
Interface	USB				
Light Transmission	Over 90%				
Mechanical					
Construction	Aluminum chassis Aluminum Die-casting chassis only for 8”				
Dimensions	231 x 176 x 51 mm		439 x 348 x 64.8 mm	499.6 x 314.6 x 59.9 mm	557 x 362 x 64.8 mm
Net Weight	1.8 kg		9.56 kg	5.9 kg	7.3 kg
Mounting	Panel / VESA 75x75	Panel / VESA 100x100			
Environment Specifications					
Operating Temperature	0 ~ 50 ℃ (32 ~ 122 ℉)				
Storage Temperature	-20 ~ 60 ℃ (-4 ~ 140 ℉)				
Storage Humidity	10 ~ 90% @40℃ Non-condensing				
IP Rating	Front Panel IP65				
Certificate	CE/FCC Class A				

1.3 Dimensions

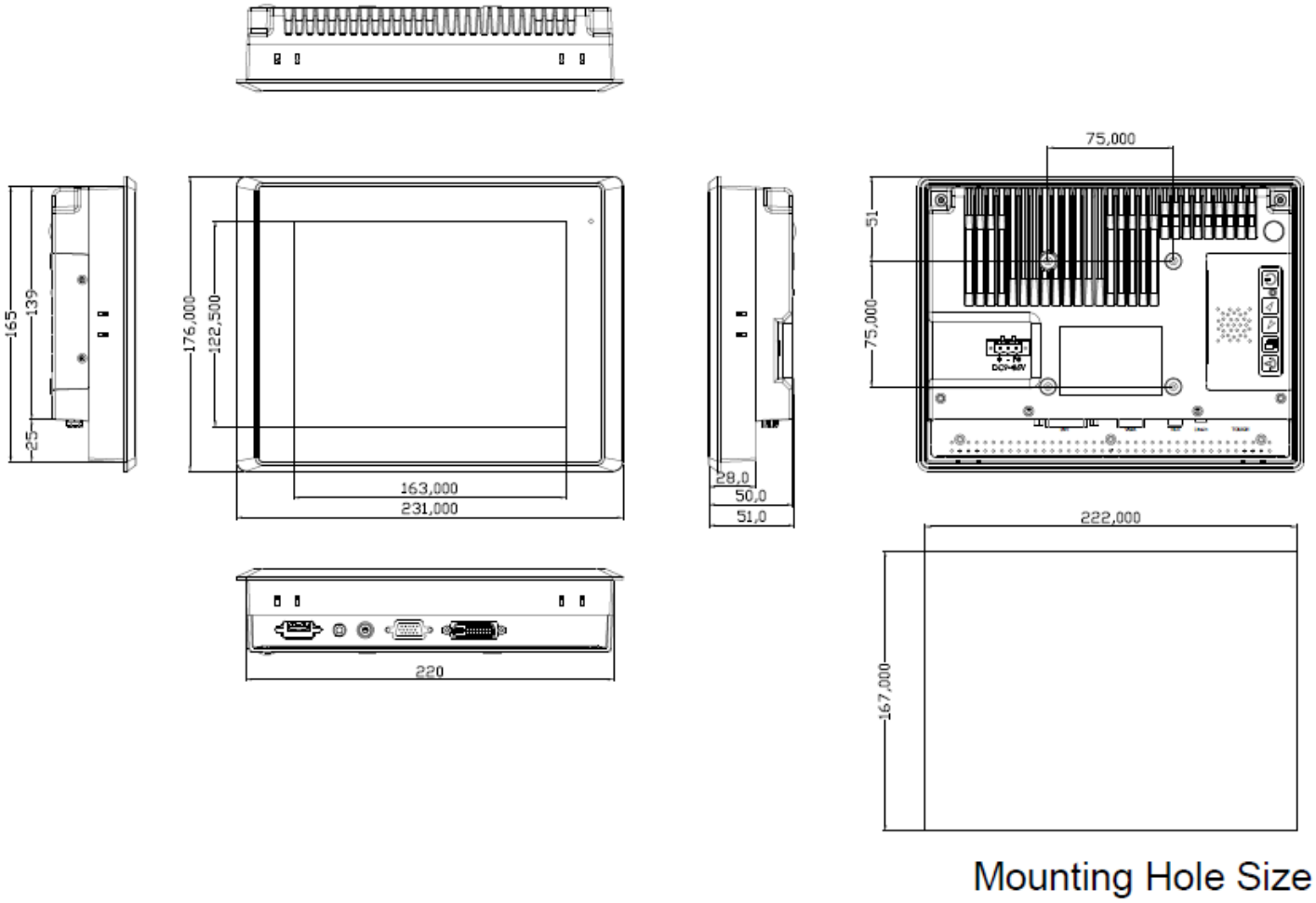


Figure 1.1: Dimensions of APA9080

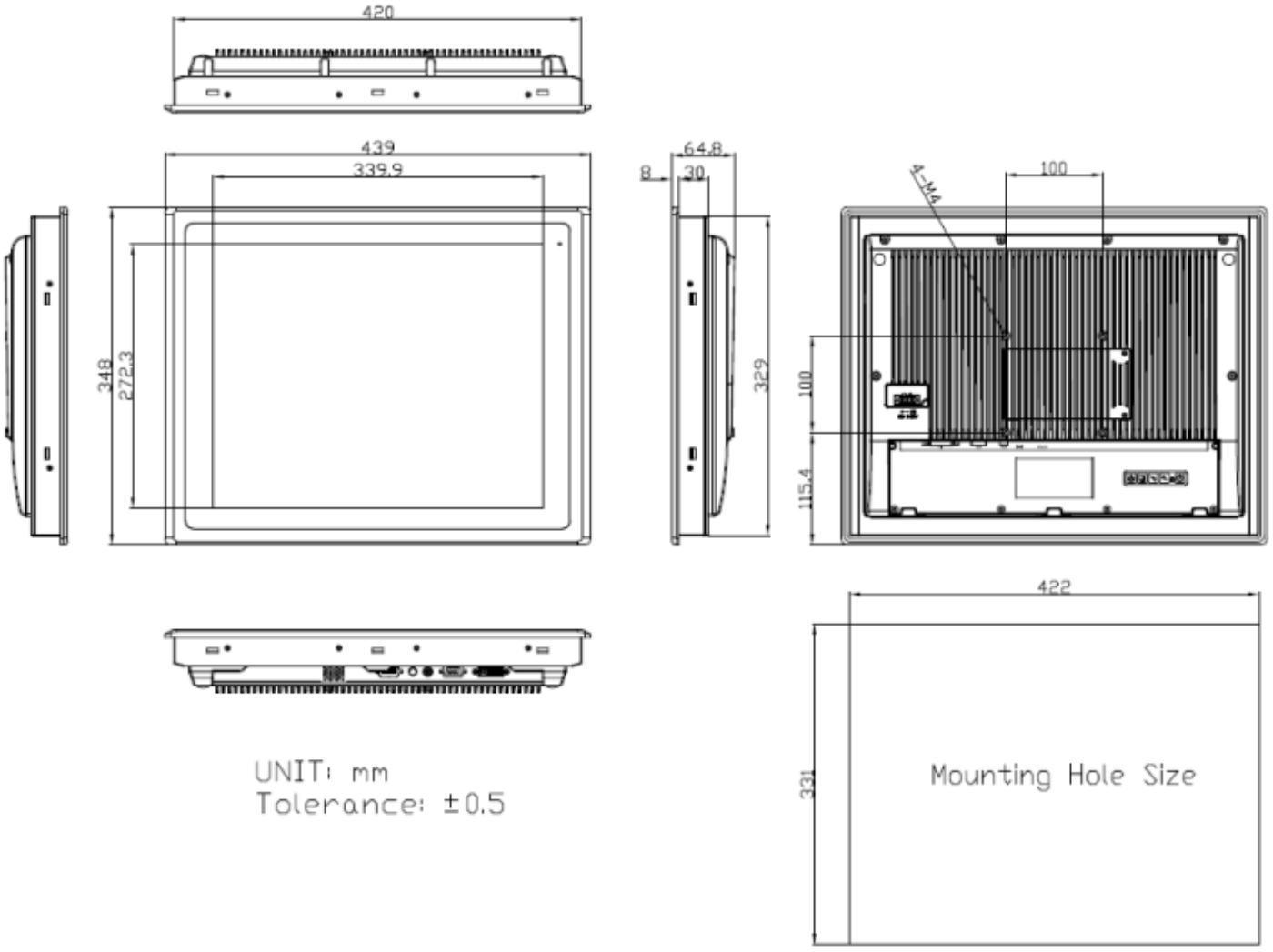


Figure 1.2: Dimensions of APA9170

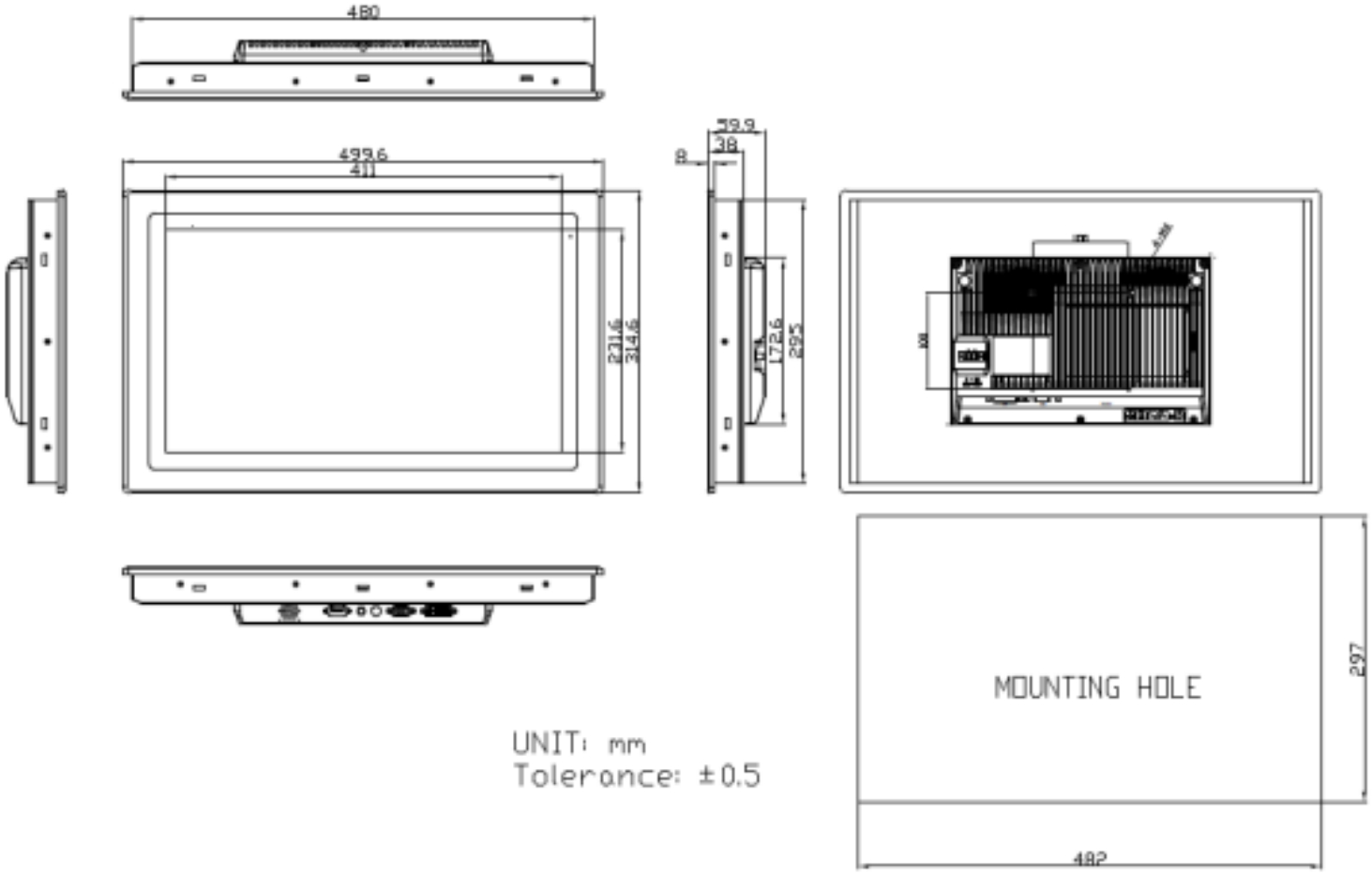


Figure 1.3: Dimensions of APA9185

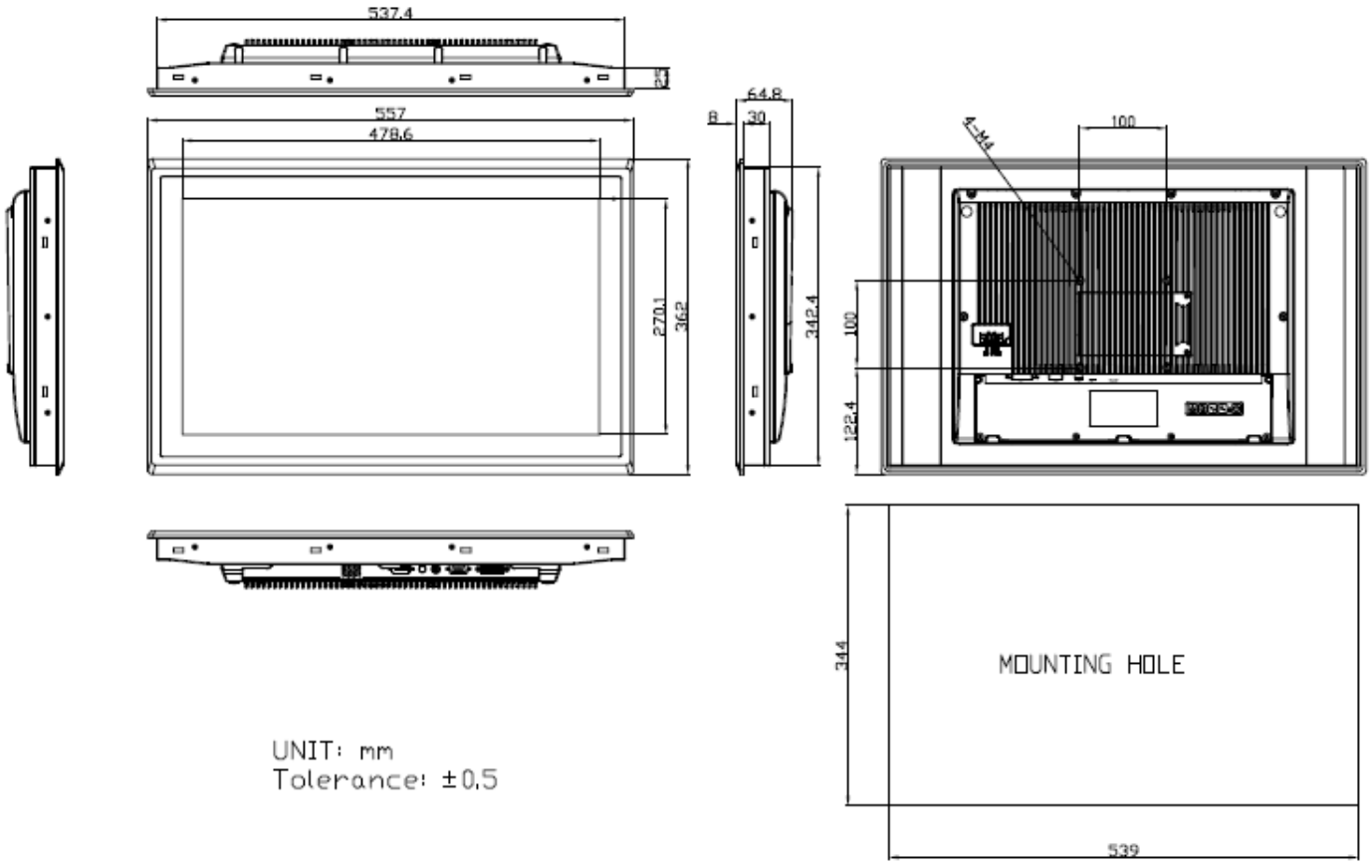


Figure 1.4: Dimensions of APA9215

1.4 System Diagram (Full Function)

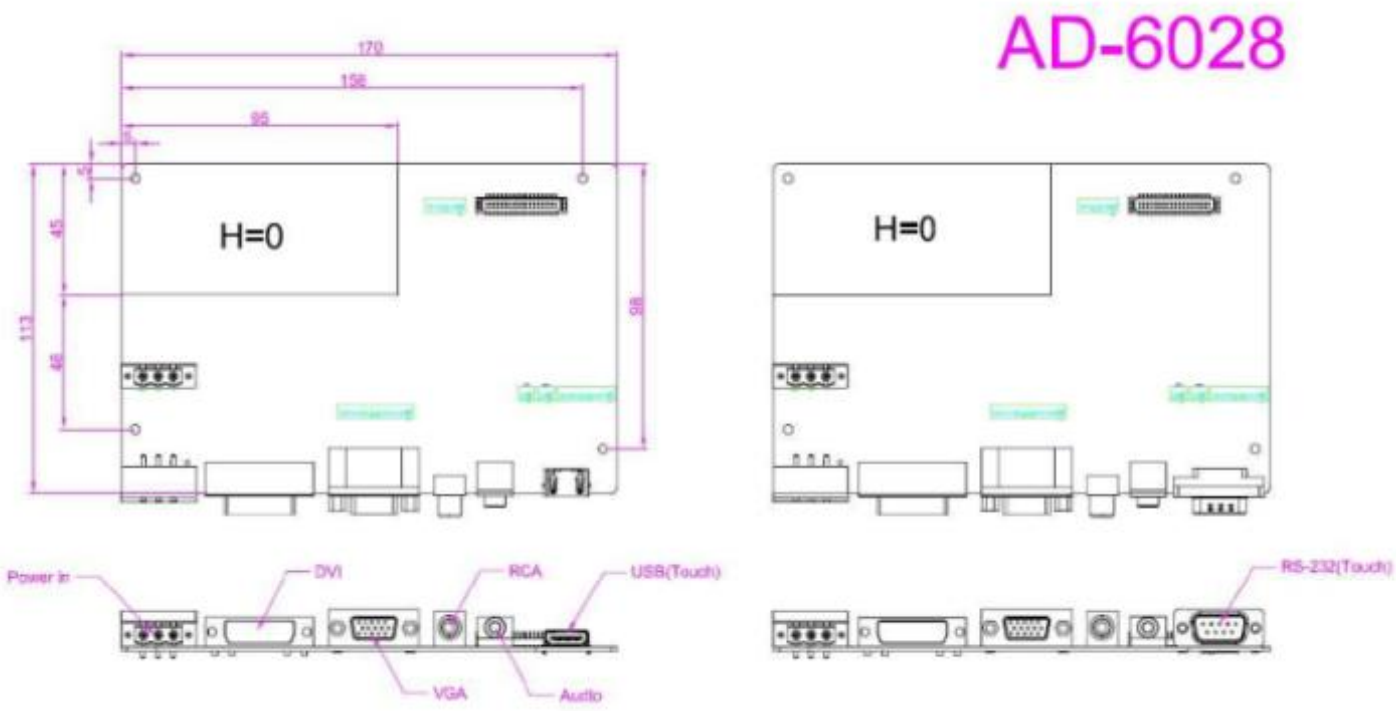


Figure 1.5: System diagram of APA9XXX

1.5 Brief Description of APA9XXX

APA9XXX with TB-6028 AD Board is a total IP65 aluminum front bezel and chassis LCD Display, which comes with 8 inch (luminance of 350 cd/m²), 17 inch (luminance of 350 cd/m²), 18.5 inch (luminance of 300 cd/m²) and 21.5 inch (luminance of 250 cd/m²) TFT LCD. APA9080 comes with a viewing angle of 140 (H) degrees and 125 (V) degrees. APA9170 comes with a viewing angle of 160 (H) degrees and 140 (V) degrees. APA9185 comes with a viewing angle of 170(H) degrees and 160 (V) degrees. APA9215 comes with a viewing angle of 178 (H) degrees and 178 (V) degrees. APA9XXX has more outstanding features, thus giving the best in monitoring and control applications. APA9080 can be VESA-75 mounted. APA9170, APA9185 and APA9215 can be VESA-100 mounted.

Figure 1.6: Front View of APA9080

Figure 1.7: Rear View of APA9080

Figure 1.8: Front View of APA9170

Figure 1.9: Rear View of APA9170

Figure 1.10: Front View of APA9185

Figure 1.11: Rear View of APA9185

Figure 1.12: Front View of APA9215

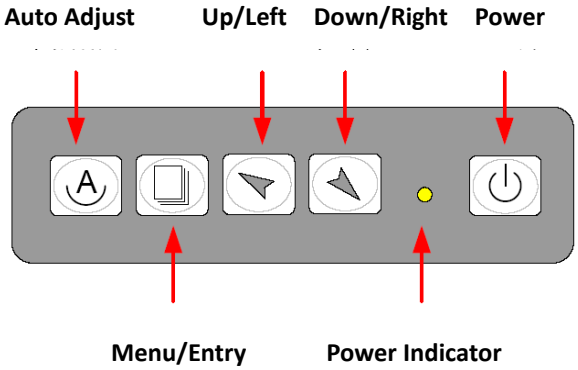
Figure 1.13: Rear View of APA9215

1.6 Display Mode

Item	Resolution	H Freq.(kHz)	V Freq.(Hz)	Remark
1	640x350@70	31.469	70.087	VGA
2	640x400@70	31.469	70.087	VGA
3*	640x480@60	31.469	59.940	VESA
4	640x480@66	35.000	66.667	MAC
5	640x480@72	37.861	72.809	VESA
6*	640x480@75	37.500	75.000	VESA
7	720x400@70	31.469	75.000	TEXT
8	800x600@56	35.156	56.250	VESA
9*	800x600@60	37.879	60.317	VESA
10	800x600@72	48.077	72.188	VESA
11*	800x600@75	46.875	75.000	VESA
12	832x624@75	49.107	75.087	MAC
13	848x480@60	31.020	60.000	VESA
14*	1024x768@60	48.363	60.004	VESA
15*	1024x768@75	60.023	75.029	VESA
17	1152x864@70	63.850	70.000	VESA
18	1152x864@75	67.500	75.000	VESA
19	1152x900@76	71.809	76.149	SUN
20*	1280x768@60	47.730	60.000	VESA
21*	1280x768@75	60.290	74.890	VESA
22	1280x960@60	60.000	60.000	VESA
23*	1280x1024@60	63.980	60.000	VESA
24*	1280x1024@75	79.976	75.025	VESA
25*	1366x768@60	47.710	60.020	VESA
26	1440x900@60	56.040	60.000	VESA
27	1440x1050@60	65.320	59.980	VESA
28	1440x1050@75	82.280	74.870	VESA
29*	1920x1080@60	67.500	60.000	VESA

Chapter 2 OSD

2.1 AD Board OSD Functions



Power switch: To turn ON or OFF the power

Shift the icon to the right side or shift it up

Shift the icon to the left side or shift it down

Menu: To enter OSD menu for related icon and item.

Auto Button: One-touch auto adjustment

1.) Getting into Burn-in Mode

Before setting into a burn-in mode, first disconnect the AC power cord. Then press (don't let them go) the buttons until the AC power cord is connected and the "RGB" appears on the top left corner of your screen. Now it can be put into the burn-in mode for changing colors.

2.) Getting Out of Burn-in Mode

Before getting out of the burn-in mode, please first disconnect the AC power cord. Then press the button (If not workable, press the button and don't let them go) until the AC power cord is connected. Please don't let your fingers go until the AC power cord is connected again and the wording of "RGB" appears on the top left corner of your screen, and wait for 3 second. Under the non-signal entry situation, if **Cable Not Connected** is seen, exit is thus successfully made.

When the Burn-in Mode is Unable to Eradicate…

1.) If the “RGB” is still on the top left corner of the screen, press to enter “Miscellaneous” and choose “Reset”, and then **Yes,** and press . When the screen goes black, disconnect power and repeat the above steps.

2.) If the “RGB” is not found, disconnect the AC power cord first. Then press the buttons (don’t let them go) until the AC power cord is connected, and wait for 2 to 3 seconds. When “RGB” appears, repeat the above steps.

2.2 OSD Controls

To make any adjustment, select the following:

1. Press (Menu) to show the OSD menu or disable the OSD menu.
2. Select the icon that you wish to adjust with the (/ or +/-) key in the menu.
3. Press (Menu) and then choose the item with the (/ or +/-) key.
4. Press (Menu) and then adjust the quality with the (/ or +/-) key.

2.3 OSD Function

1. Power button: Power on/off

2. Down button: Brightness

3. Up button: Volume

4. Menu button: Menu

5. Auto button: Auto adjustment

2.4 OSD Default Parameter

	APA9080	APA9170	APA9185	APA9215
Luminance				
Brightness	**50**	**50**	**50**	**50**
Contrast	**50**	**50**	**50**	**50**
Management				
H. Position	**auto**	**auto**	**auto**	**auto**
V. Position	**auto**	**auto**	**auto**	**auto**
Pixel Clock	**auto**	**auto**	**auto**	**auto**
Phase	**auto**	**auto**	**auto**	**auto**
Color	**sRGB**	**sRGB**	**sRGB**	**sRGB**
Red	**50**	**50**	**50**	**50**
Green	**50**	**50**	**50**	**50**
Blue	**50**	**50**	**50**	**50**
OSD				
H. Position	**50**	**50**	**50**	**50**
V. Position	**50**	**50**	**50**	**50**
OSD time	**7**	**7**	**7**	**7**
Language				
English				

2.5 Main Menu

In the **Main menu**, there are the following items:

- Color
- Image Setting
- Position
- OSD Menu
- Language
- Misc.
- Exit

For **Color**, check out the following:

- Contrast
- Brightness
- Color Adjust
- Color Temp
- Back

For **Image setting**, check out the following:

- Clock
- Phase
- Gamma
- Sharpness
- Back

In the **Position**, there are the following:

- H. Position
- V. Position
- Back

In the **OSD** menu, there are:

- OSD H. Pos.
- OSD V. Pos.
- OSD Timer
- Back

In the **Language** menu, there are:

- English
- Frances
- Germany
- Spanish
- Traditional Chinese
- Simplified Chinese
- Japanese

In the **Misc** menu, there are:

- Signal Source

Select VGA: Analogue VGA Input

Select DVI: Digital DVI-D Input

Select AV: Composite Video Input

Select SV: S-Video Video Input

- Reset
- Back

Chapter 3 Installation

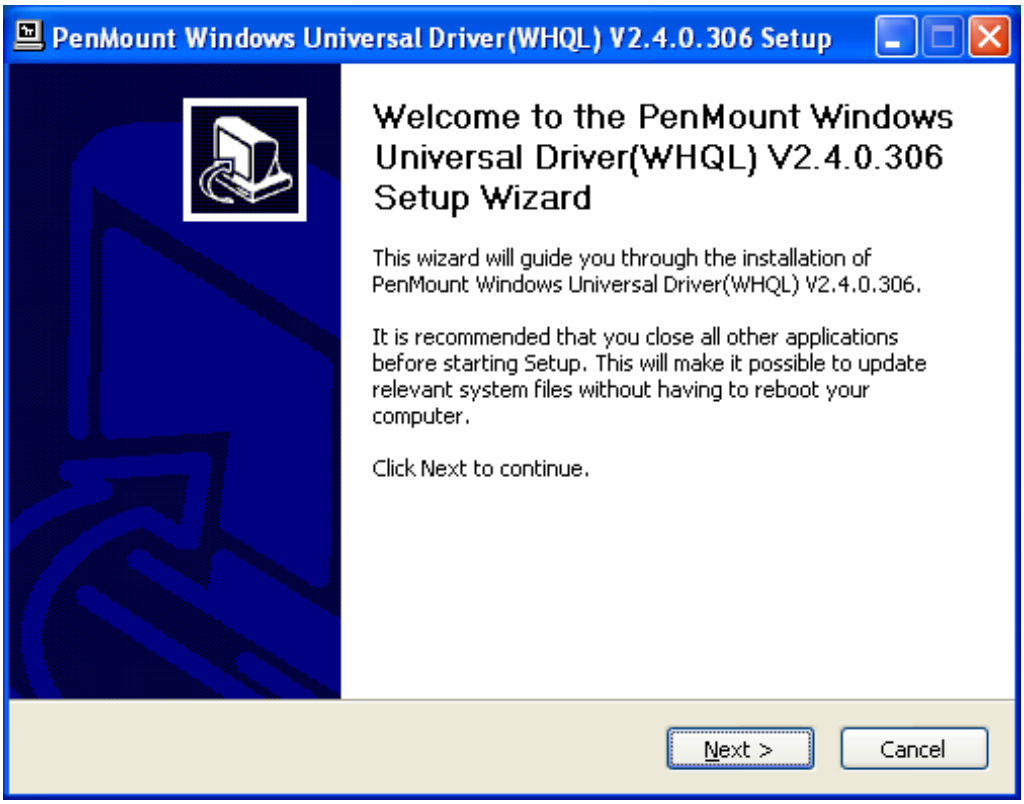
3.1 Windows XP/2003/Vista/7 Universal Driver Installation for PenMount 6000 Series

Before installing the Windows XP/2003/Vista/7 driver software, you must have the Windows XP/2003/Vista/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.

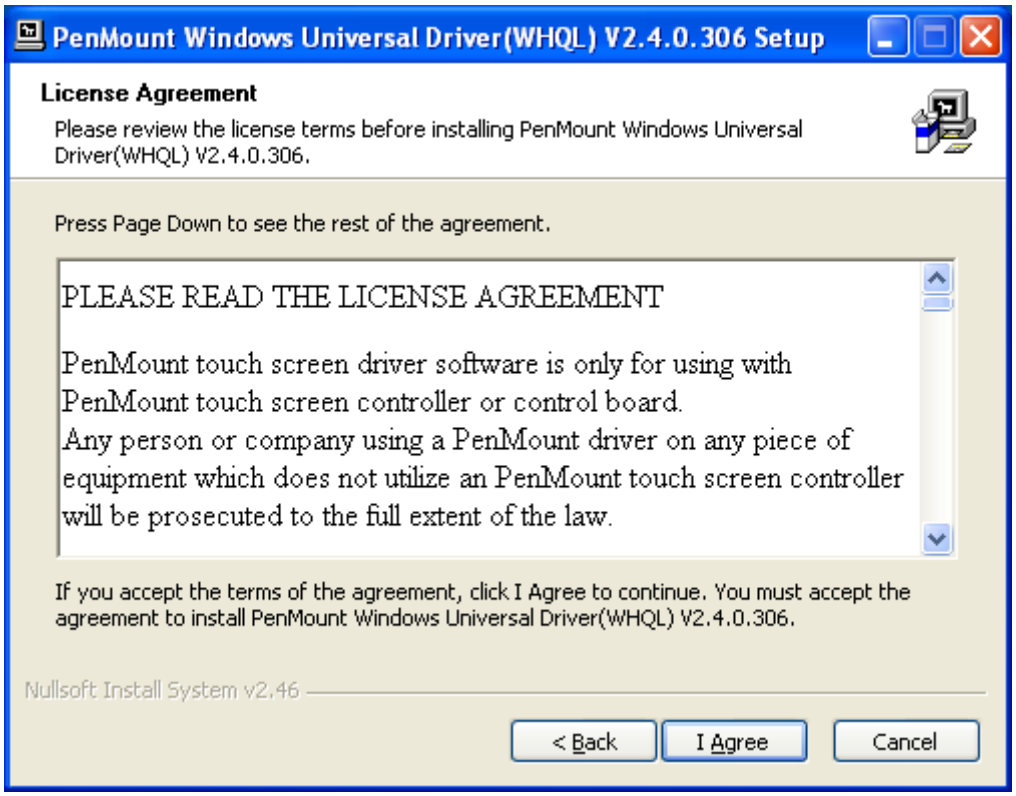
3.2 Installing Software (Resistive Touch Screen Type)

If you have an older version of the PenMount Windows XP/2003/Vista/7 driver installed in your system, please remove it first. Follow the steps below to install the PenMount DMC6000 Windows XP/2003/Vista/7 driver.

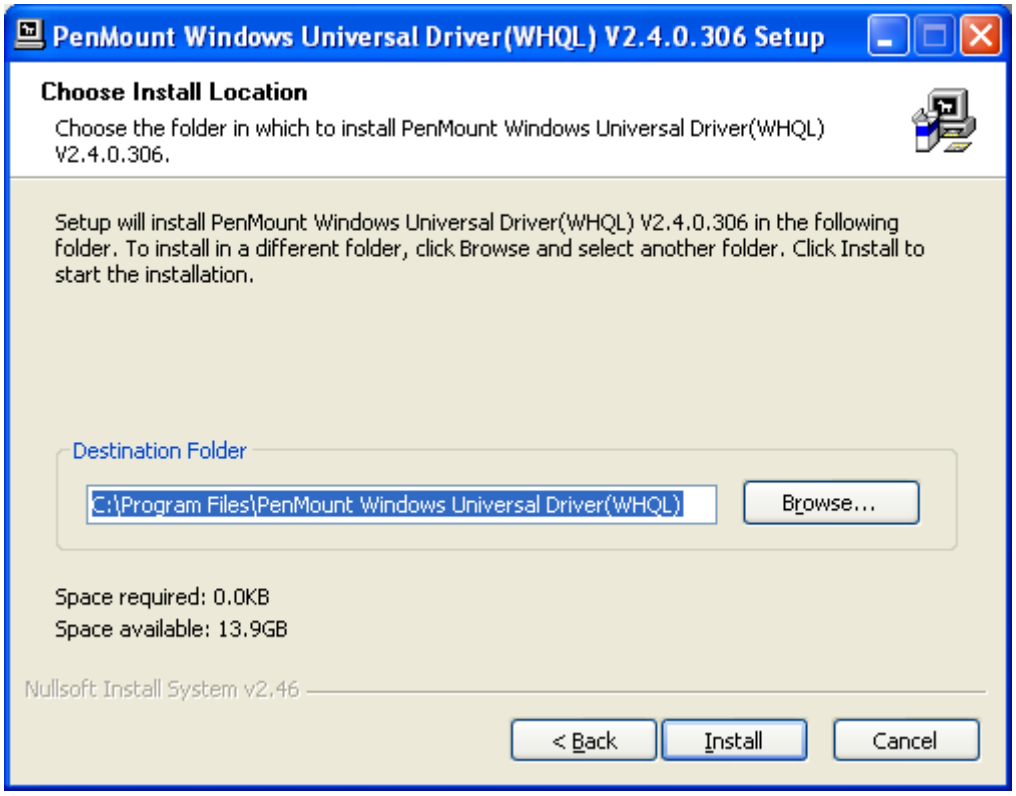
Step 1. Click **Next** to continue.



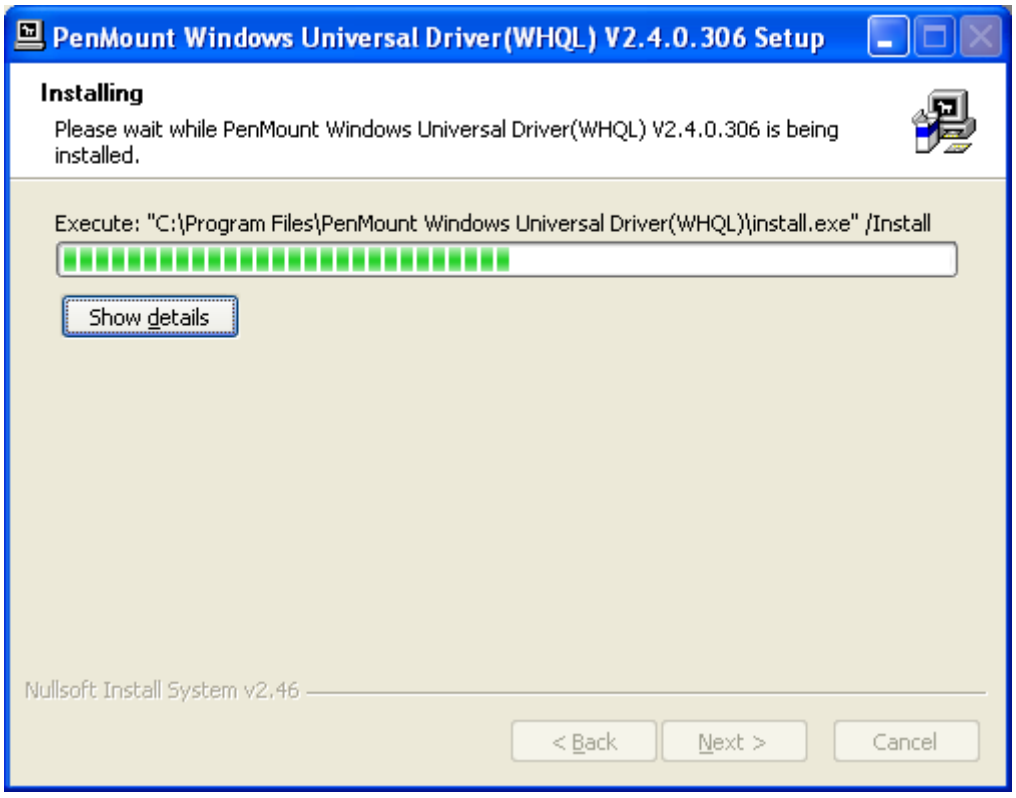
Step 2. Read the license agreement. Click **I Agree** to agree the license agreement.



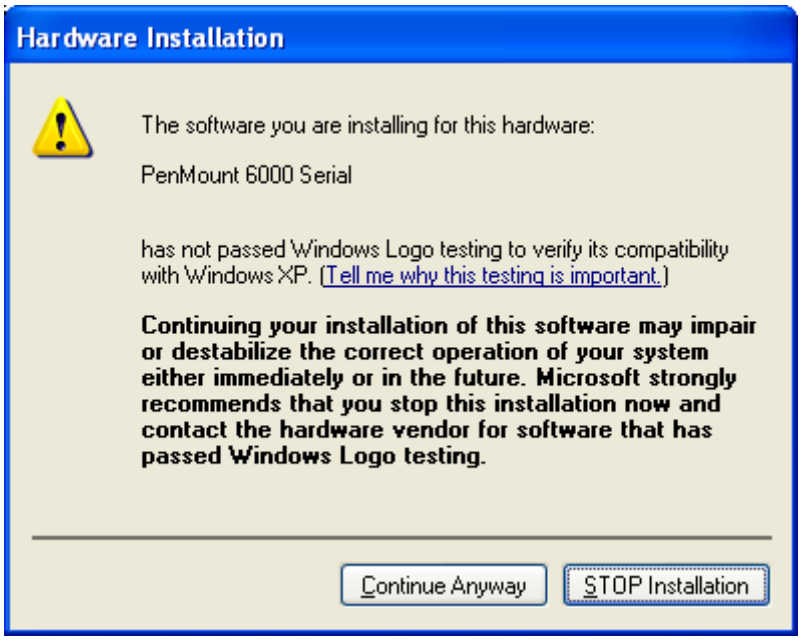
Step 3. Choose the folder in which to install PenMount Windows Universal Driver. Click **Install** to start the installation.



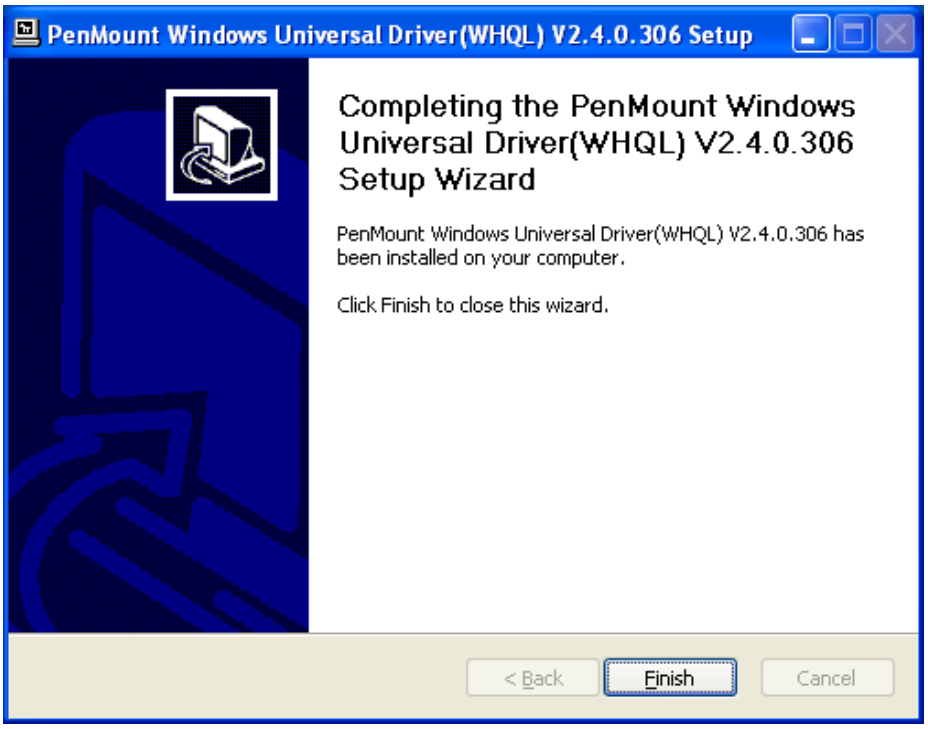
Step 4. Wait for installation. Then click **Next** to continue.



Step 5. Click **Continue Anyway**.



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



3.3 Software Functions (Resistive Touch Screen Type)

Upon rebooting, the computer automatically finds the new 9036CH5 control board. The touch screen is connected but not calibrated. Follow the procedures below to carry out calibration.

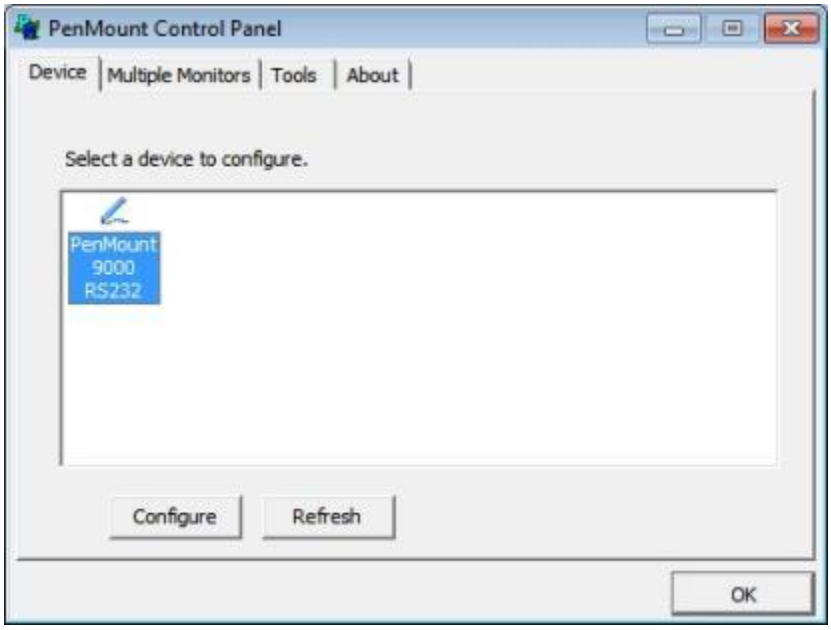
1. After installation, click the PenMount Monitor icon “PM” in the menu bar.
2. When the PenMount Control Panel appears, click “Calibrate”.

PenMount Control Panel

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

Device

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



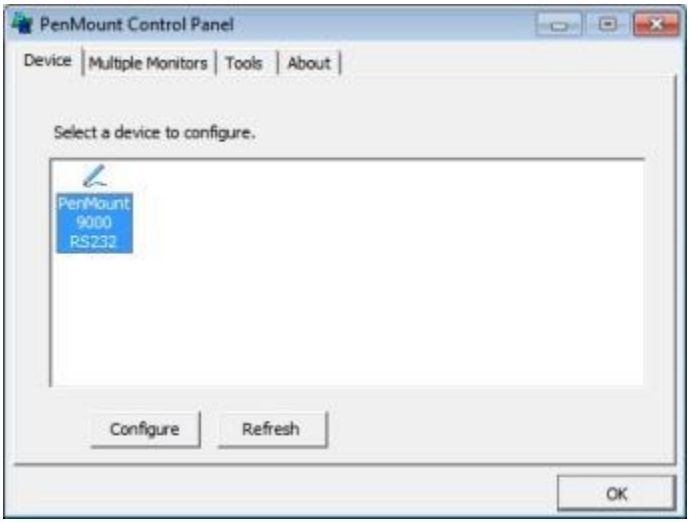
Calibrate

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

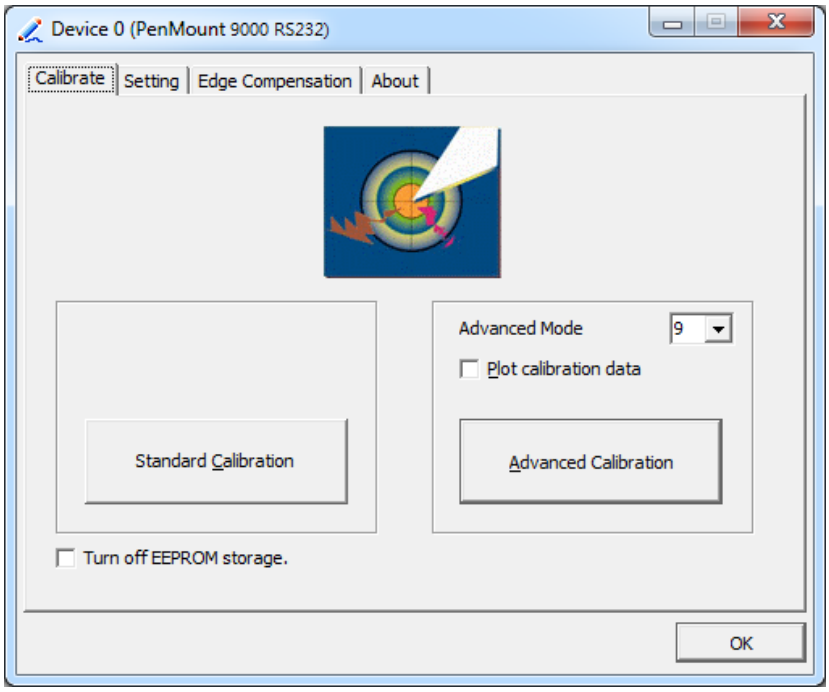
Standard Calibration	**Click this button and arrows appear pointing to red squares. Use your finger or stylus to touch the red squares in sequence. After the fifth red point calibration is complete. To skip, press “ESC”.**
Advanced Calibration	**Advanced Calibration uses 4, 9, 16 or 25 points to effectively 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”.**

Standard Calibration

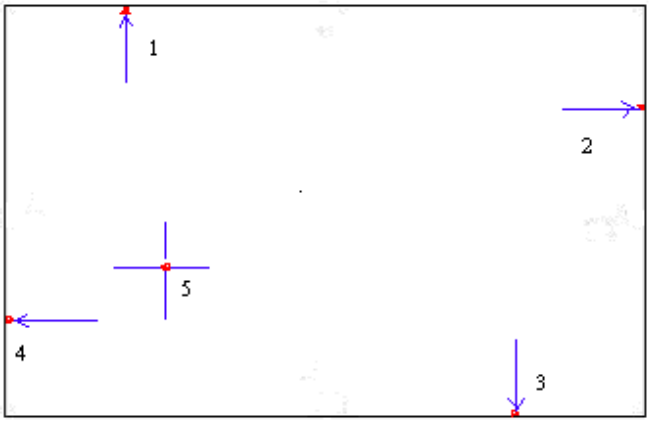
Step 1. Please select a device then click “Configure”. You can also double click the device too.



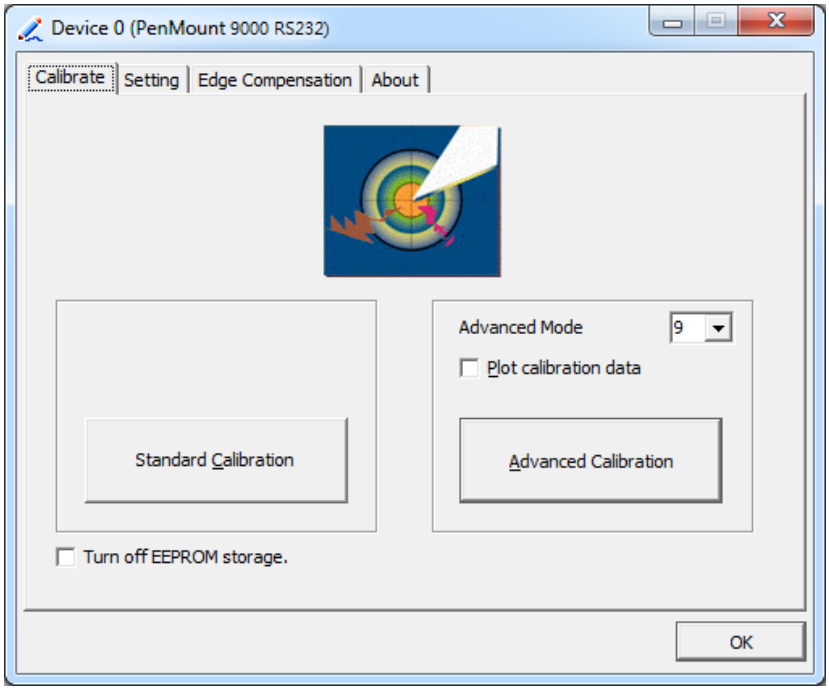
Step 2. Click **Standard Calibration**



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



Advanced Calibration – click **Advanced Calibration**



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.**

Multiple Monitors

Multiple Monitors support from two to six touch screen displays for one system.

The PenMount drivers for Windows XP/2003/Vista/7 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

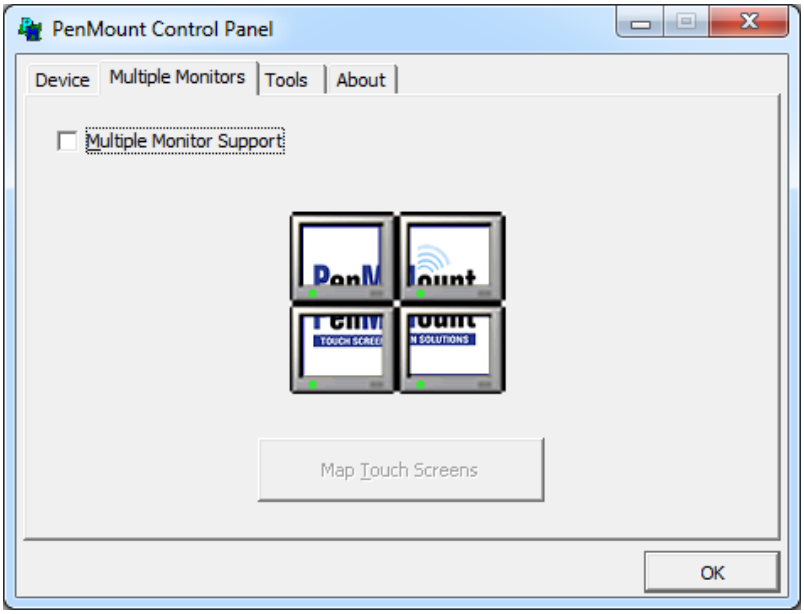
Matrox DualHead Multi-Screen Function

nVidia nView Function

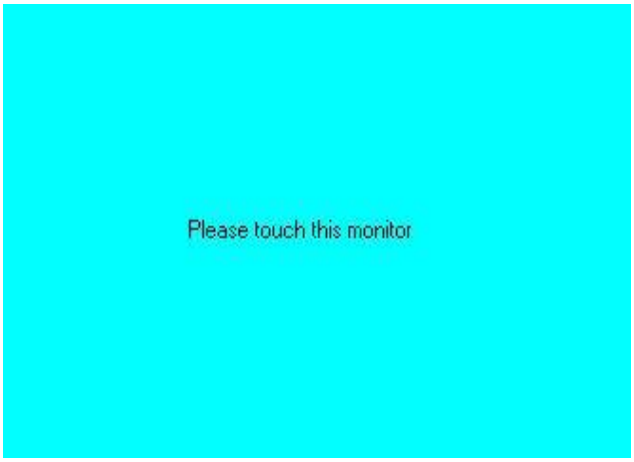
NOTE: The Multiple Monitor function is for use with multiple displays only. Do not use this function if you have only one touch screen display. Please note once you turn on this function the rotating function is disabled.

Enable the multiple display function as follows:

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

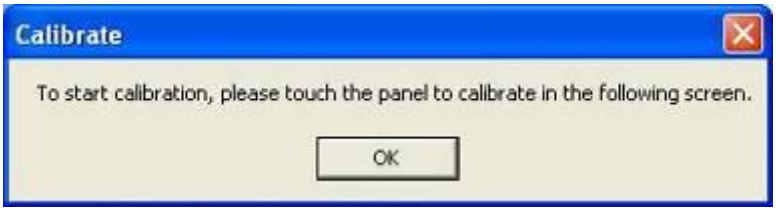


2. When the mapping screen message appears, click **OK**.
3. Touch each screen as it displays “Please touch this monitor”. Following this sequence and touching each screen is called **mapping the touch screens**.



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.**



NOTES:

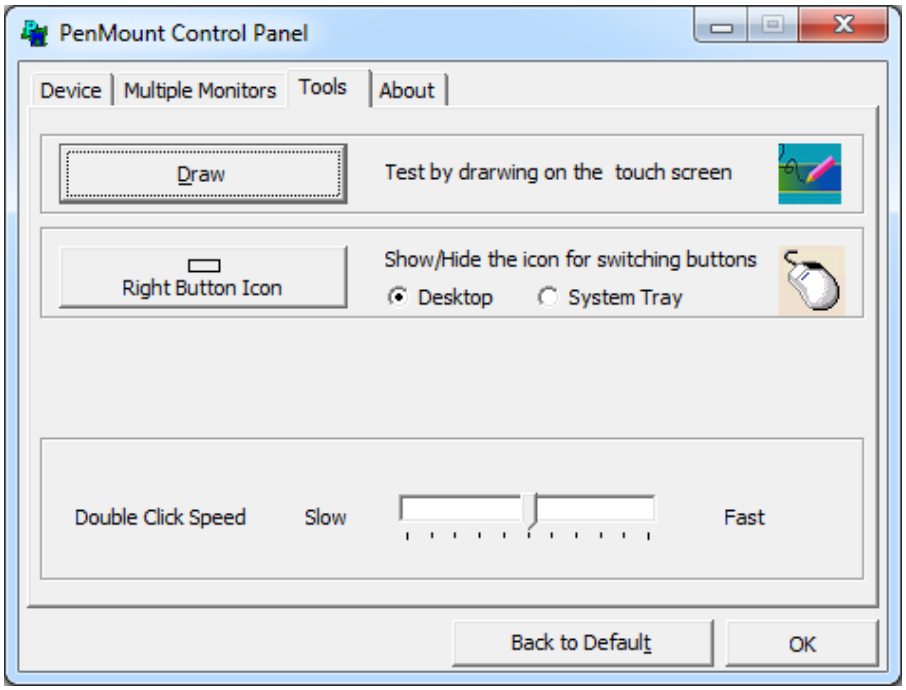
1. If you use a single VGA output for multiple monitors, please do not use the **Multiple Monitor** function. Just follow the regular procedure for calibration on each of your desktop monitors.

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.

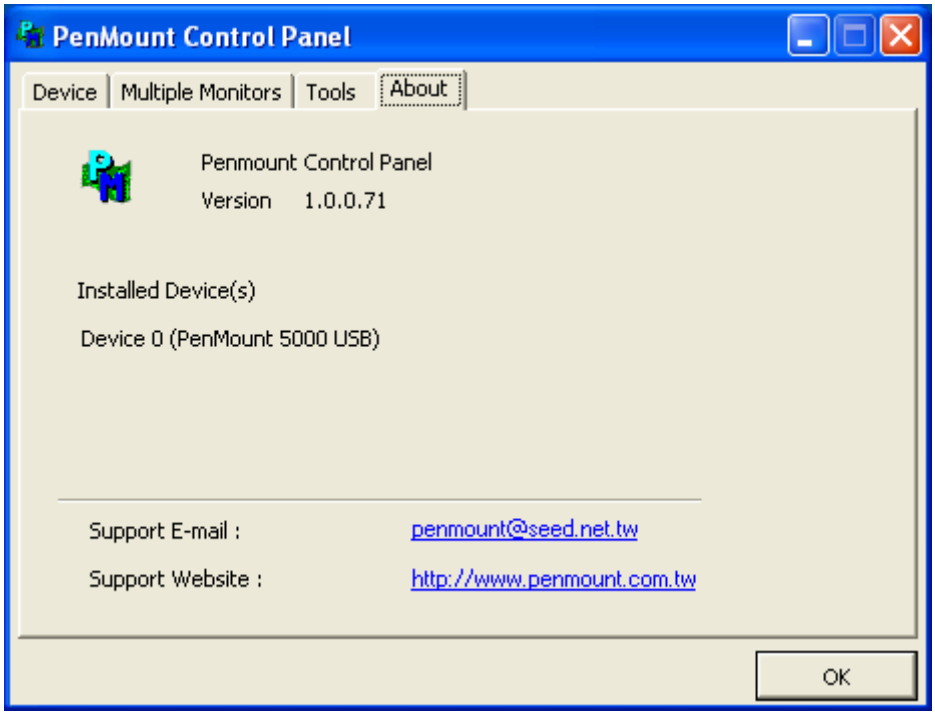
Tools

Draw	**Tests or demonstrates the PenMount touch screen operation.**
Right Button Icon	**Enable right button function. The icon can show on Desktop or System Tray (menu bar).**



About

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



PenMount Monitor Menu Icon

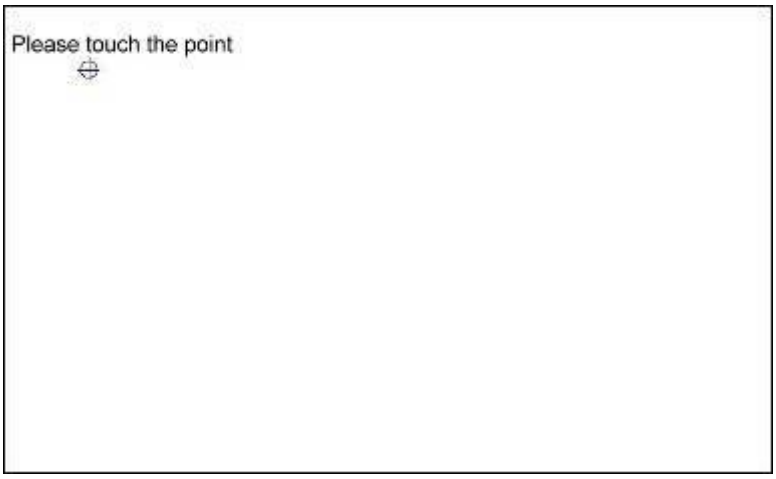
The PenMount monitor icon (PM) appears in the menu bar of Windows XP/2003/Vista/7 system when you turn on the PenMount Monitor in the PenMount Utilities.

The PenMount Monitor has the following functions:

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 Rotation Function

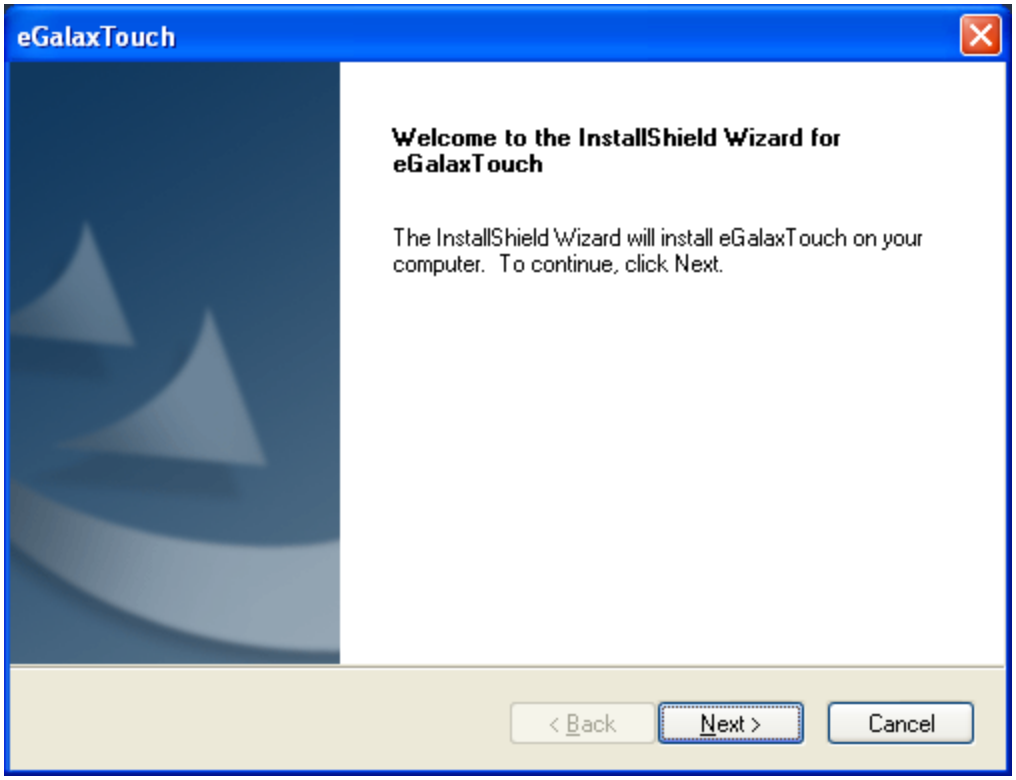
1. Install the rotation software package.
2. Choose the rotating function (0°, 90°, 180°, 270°) in the 3rd party software. The calibration screen appears automatically. Touch this point and rotation is mapped.



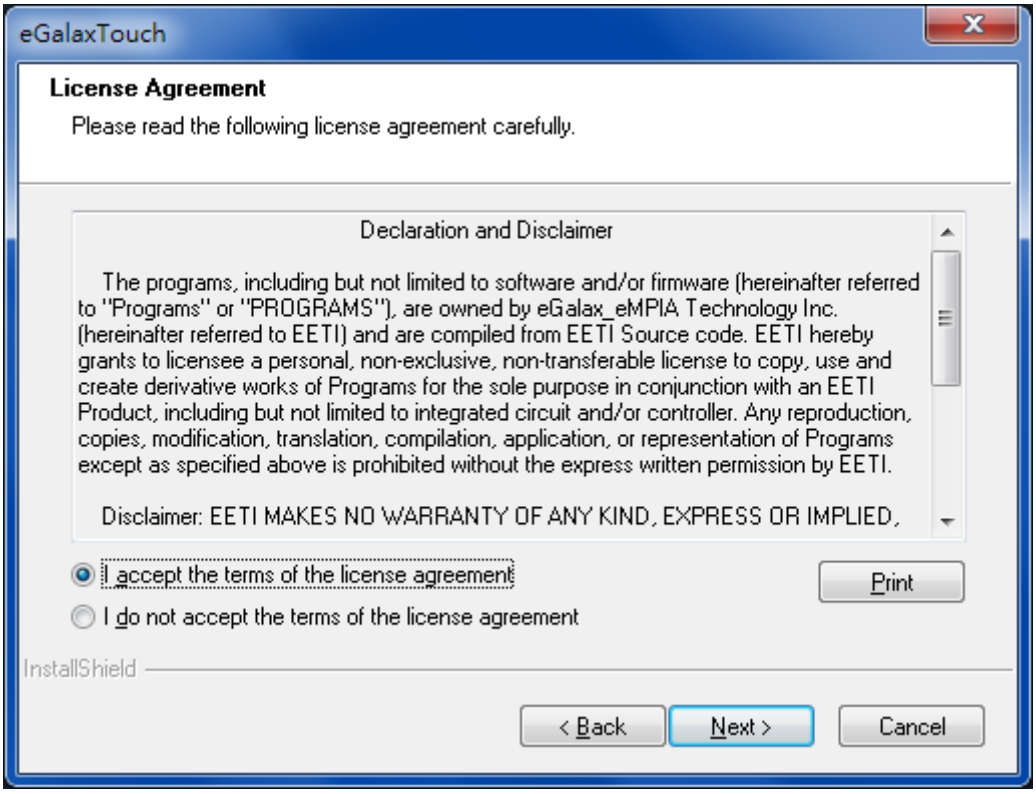
NOTE: The rotating function is disabled if you use Monitor Mapping

3.4 Installing Software (Projected Capacitive Touch)

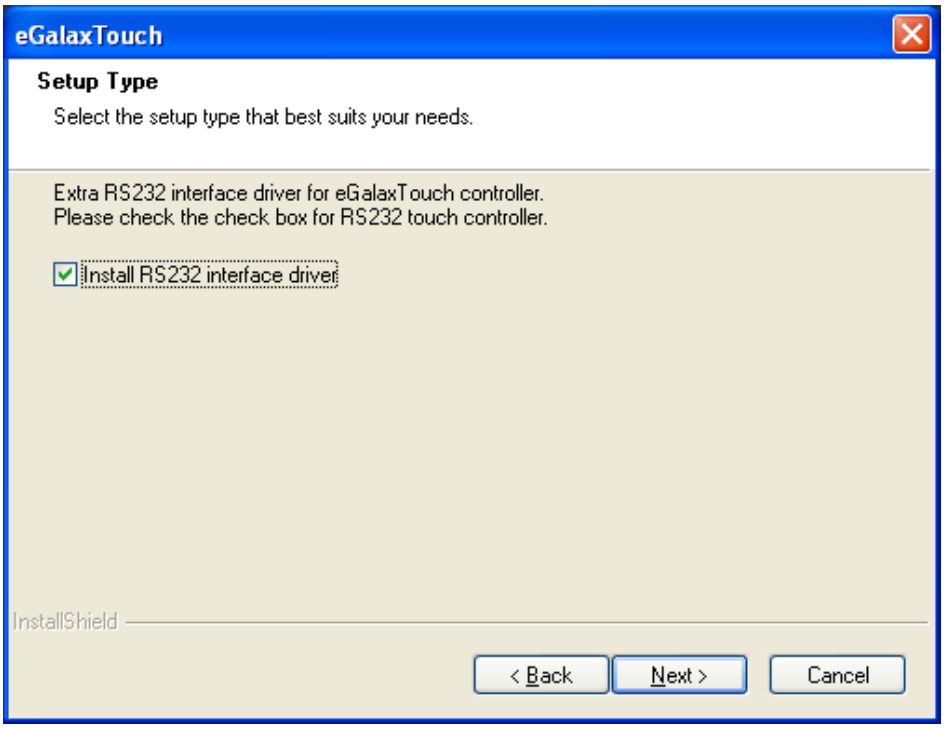
Step 1. Insert Driver CD, the screen below would appear. Click **Next** to continue.



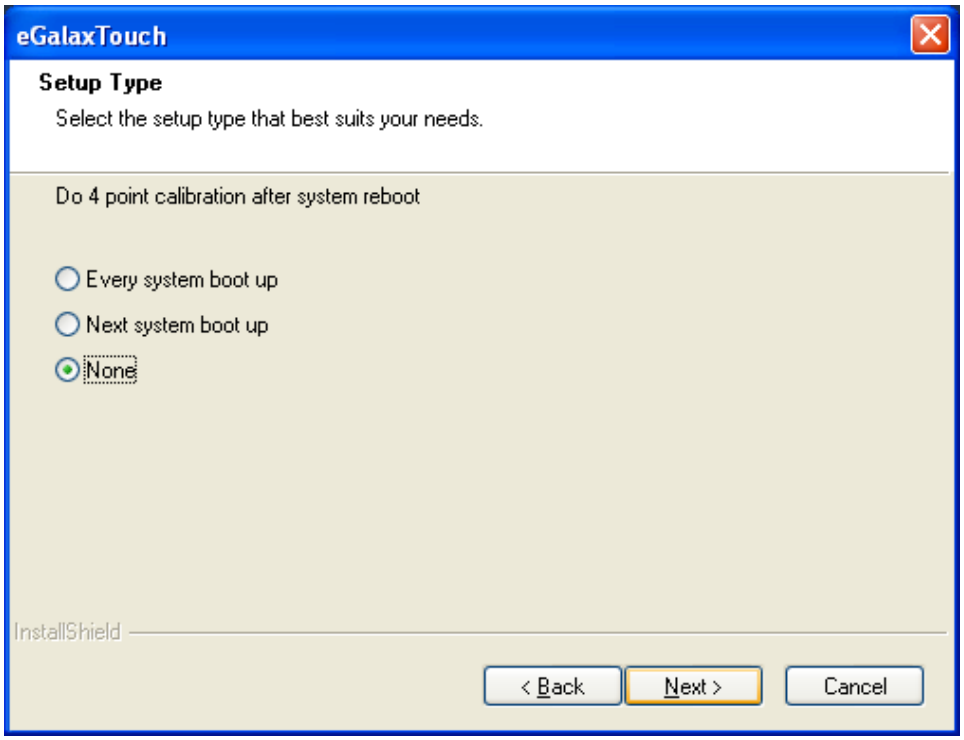
Step 2. Select **I accept the terms of the license agreement**. Click **Next.**



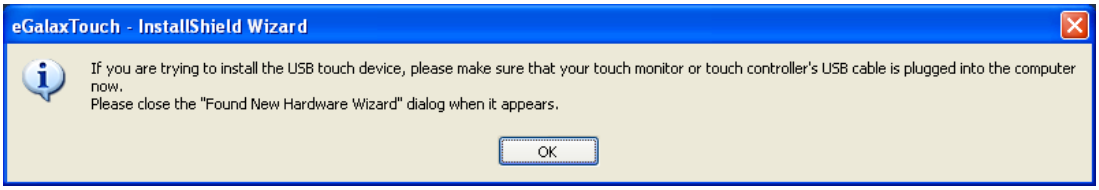
Step 3. Click **Install RS232 interface driver,** then click **Next** to continue.



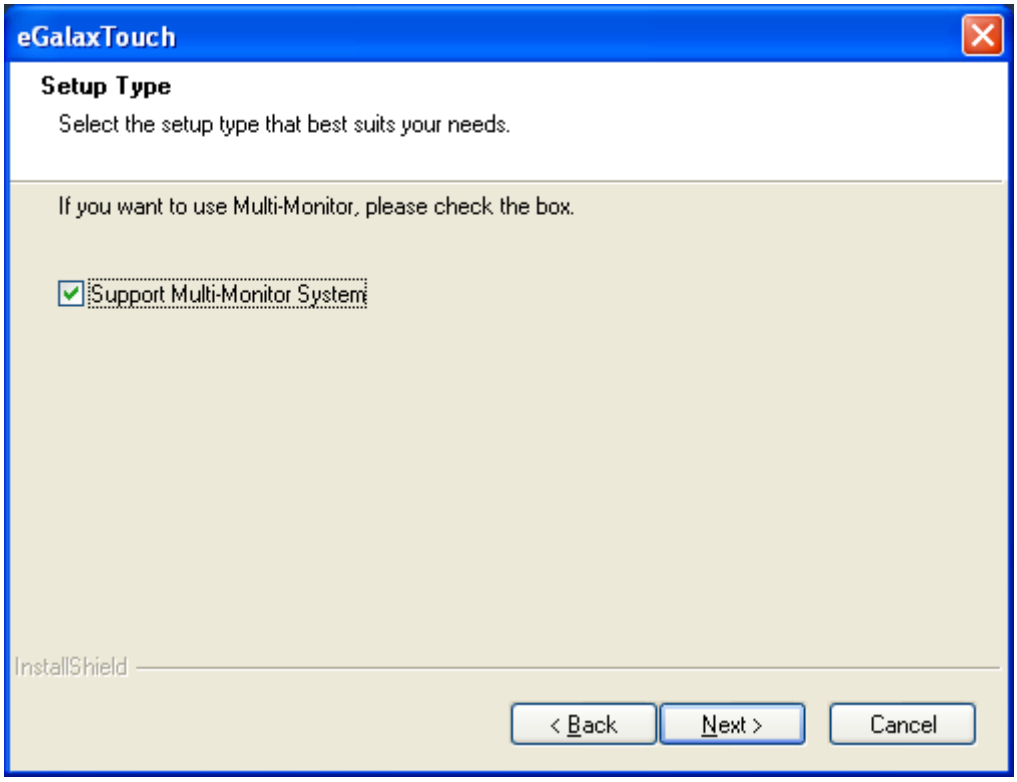
Step 4. Select **None**. Click **Next**.



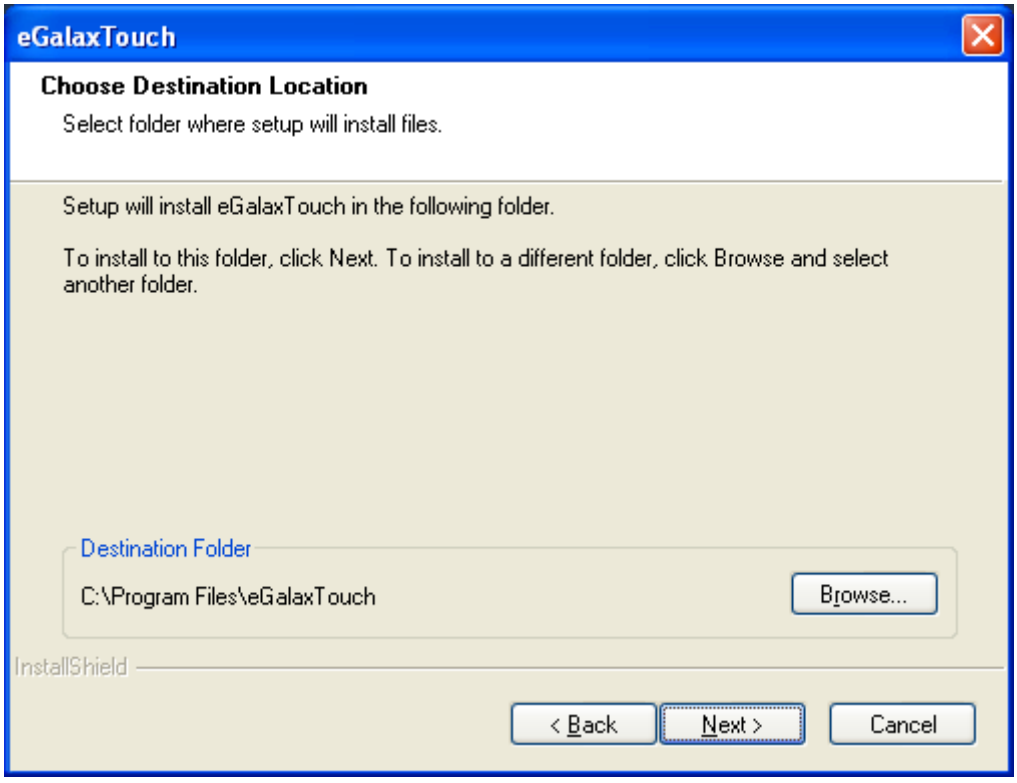
Step 5. Click **OK.**



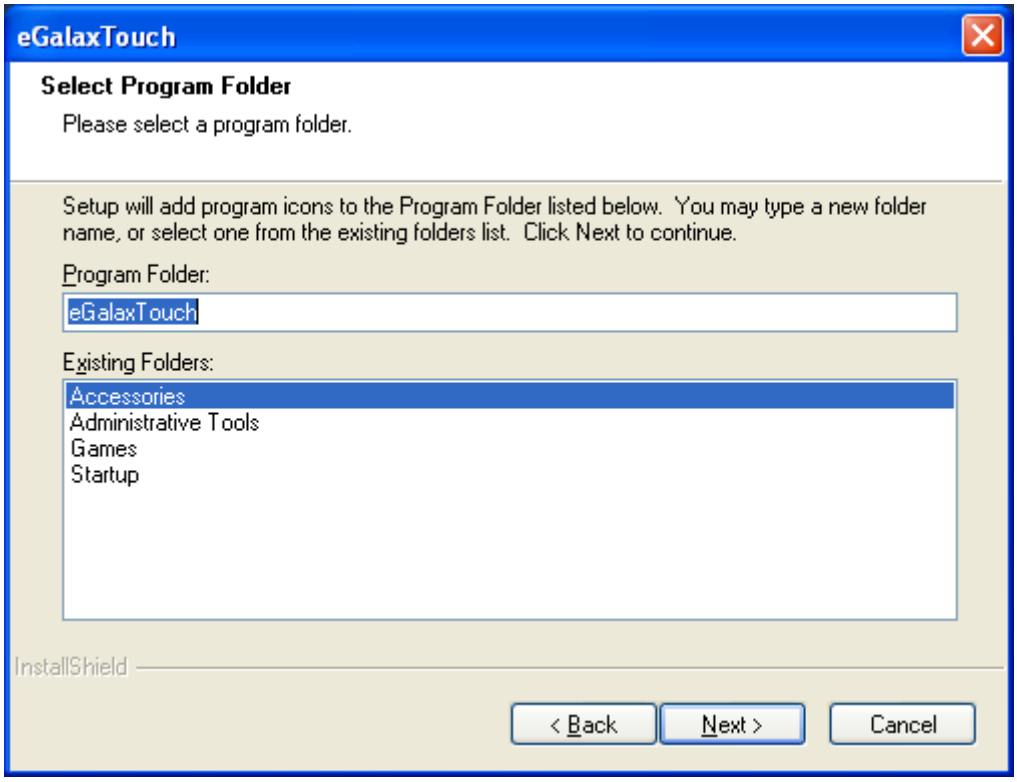
Step 6. Click **Support Muti-Monitor System**. Click **Next.**



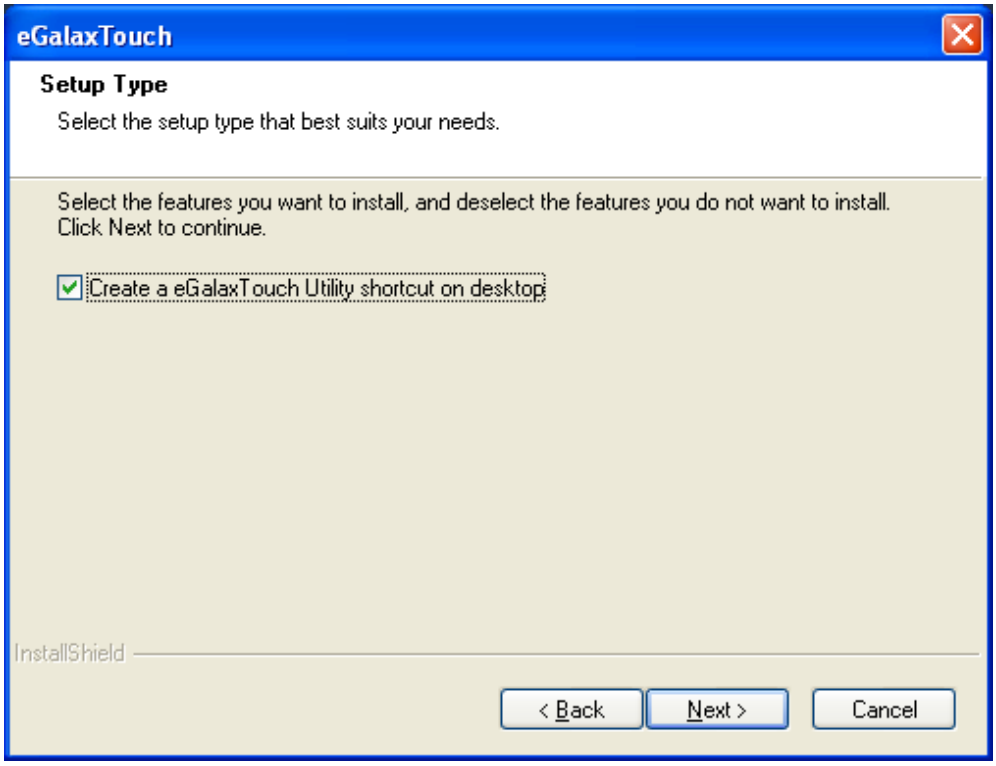
Step 7. Go to **C:\Program Files\eGalaxTouch**. Click **Next**.



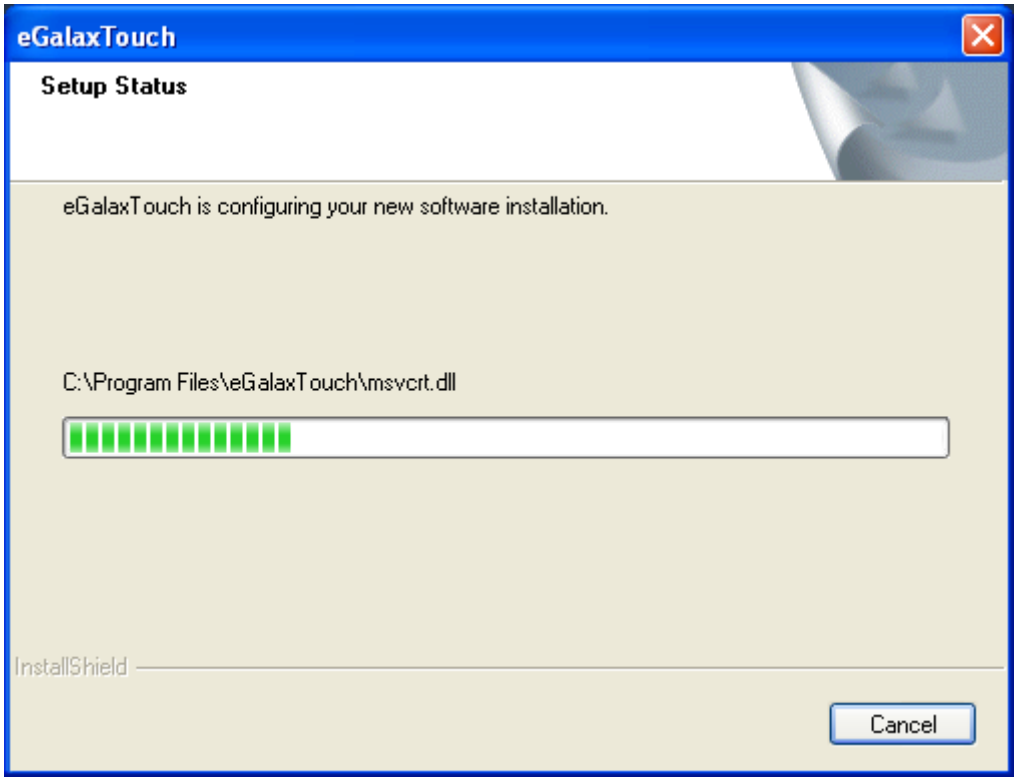
Step 8. Click **Next.**



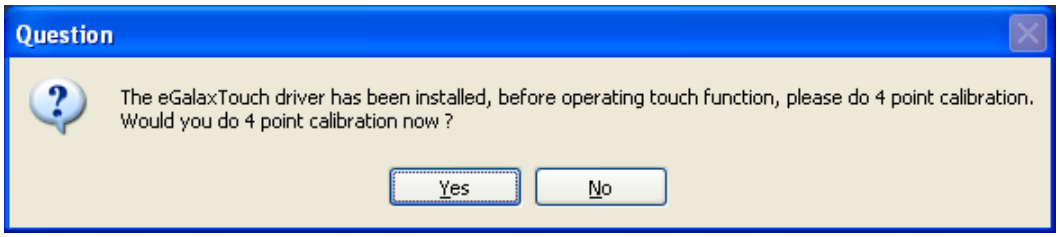
Step 9. Tick **Create a eGalaxTouch Utility shortcut on desktop**. Click **Next**.



Step 10. Wait for installation.



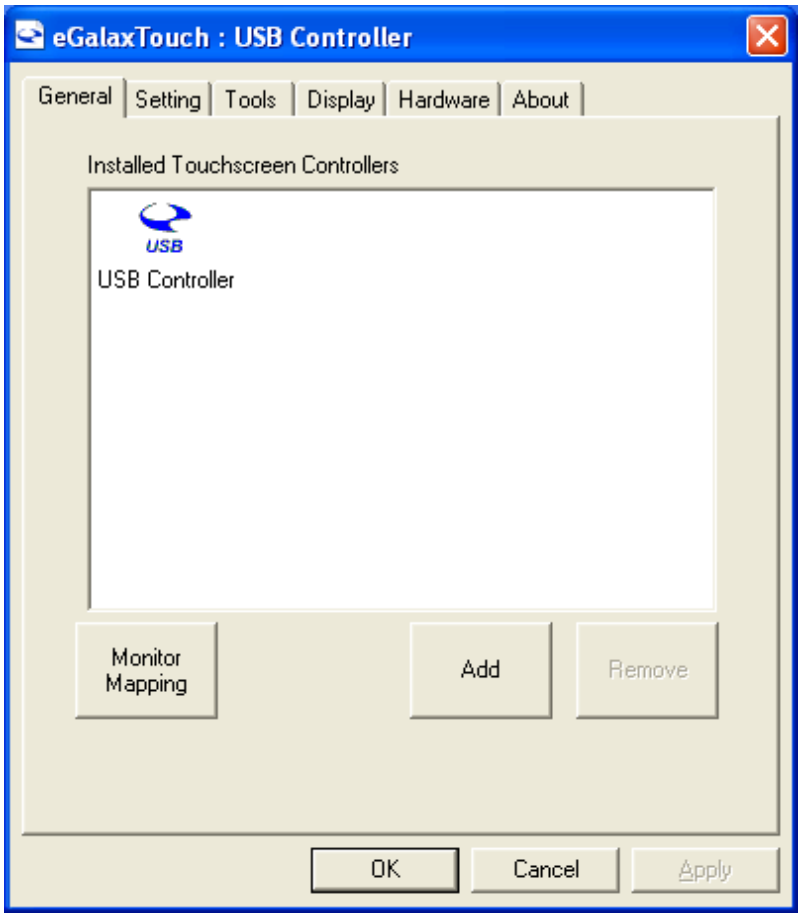
Step 11. Click **Yes** to do 4 point calibration.



3.5 Software Functions (Projected Capacitive Touch)

General

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



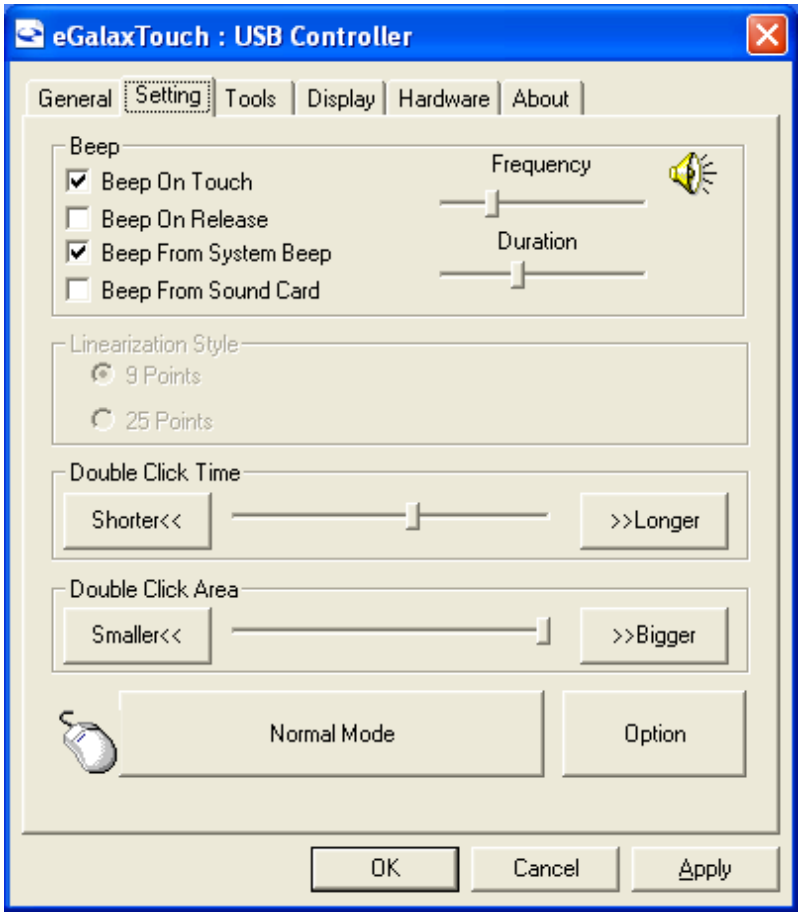
Monitor Mapping

to adjust touch panel

Add

to search for device

Setting



Beep

Beep On Touch

Beep On Release

Beep From System Beep

Beep From Sound Card

Linearization Style

9 points

25 points

Double Click Time

Shorter

Longer

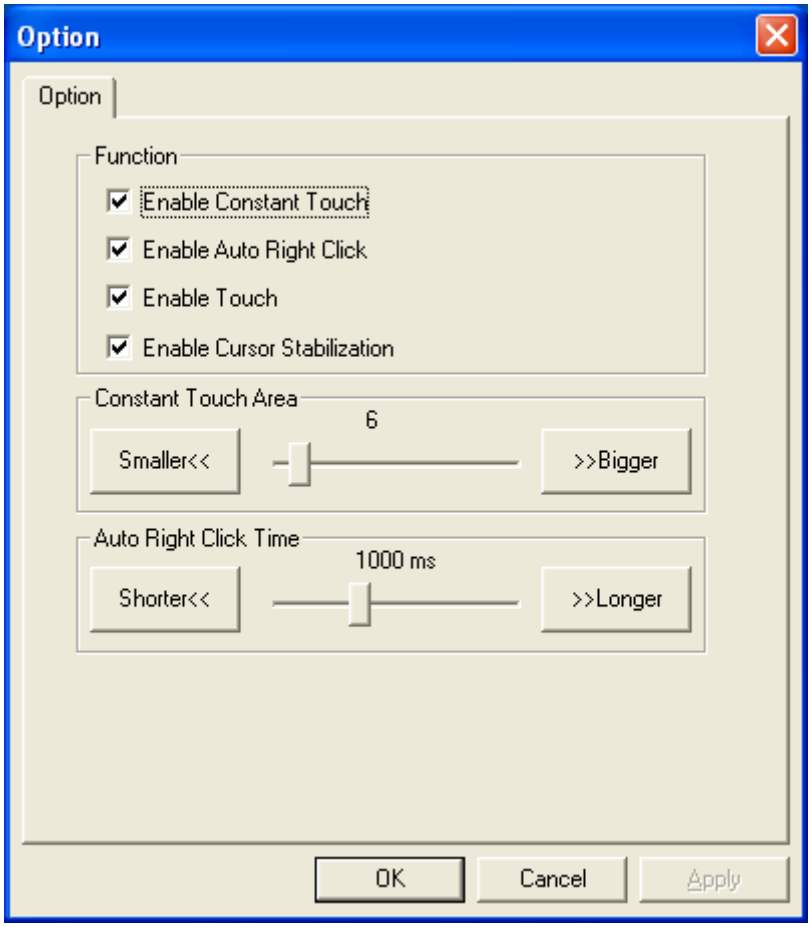
Double Click Area

Smaller

Bigger

Normal mode

Simulate the mouse mode



Option

Function

Enable Constant Touch

Enable Auto Right Click

Enable Touch

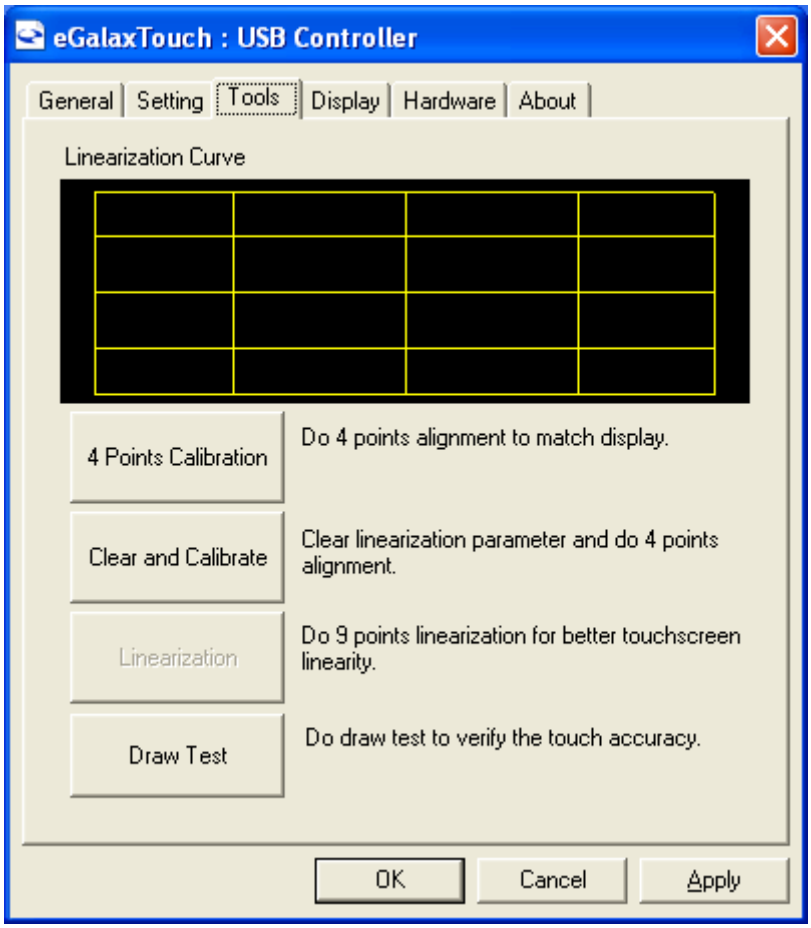
Enable Cursor Stabilization

Constant Touch Area

Auto Right Click Time

Tools

Click **OK** to continue the settings.



4 Points Calibration

Do 4 points alignment to match display.

Clear and Calibrate

Clear linearization parameter and do 4 points alignment.

Linearization

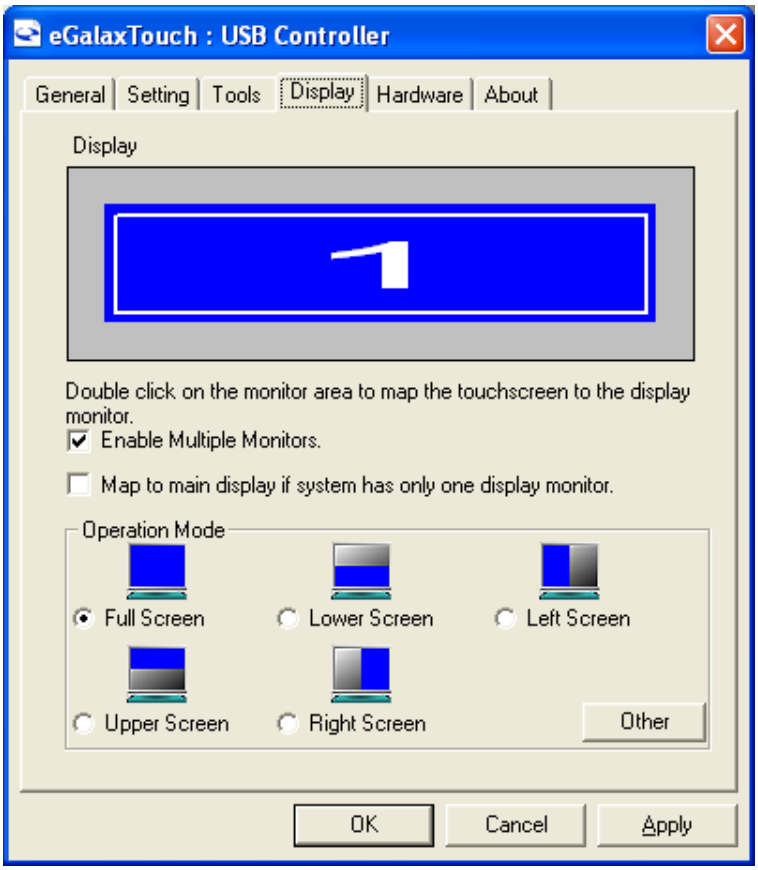
Do 9 points linearization for better touchscreen linearity.

Draw Test

Do draw test to verify the touch accuracy.

Display

In this window, it shows the mode of display.



Enable Multiple Monitors.

Map to main display if system has only one display monitor

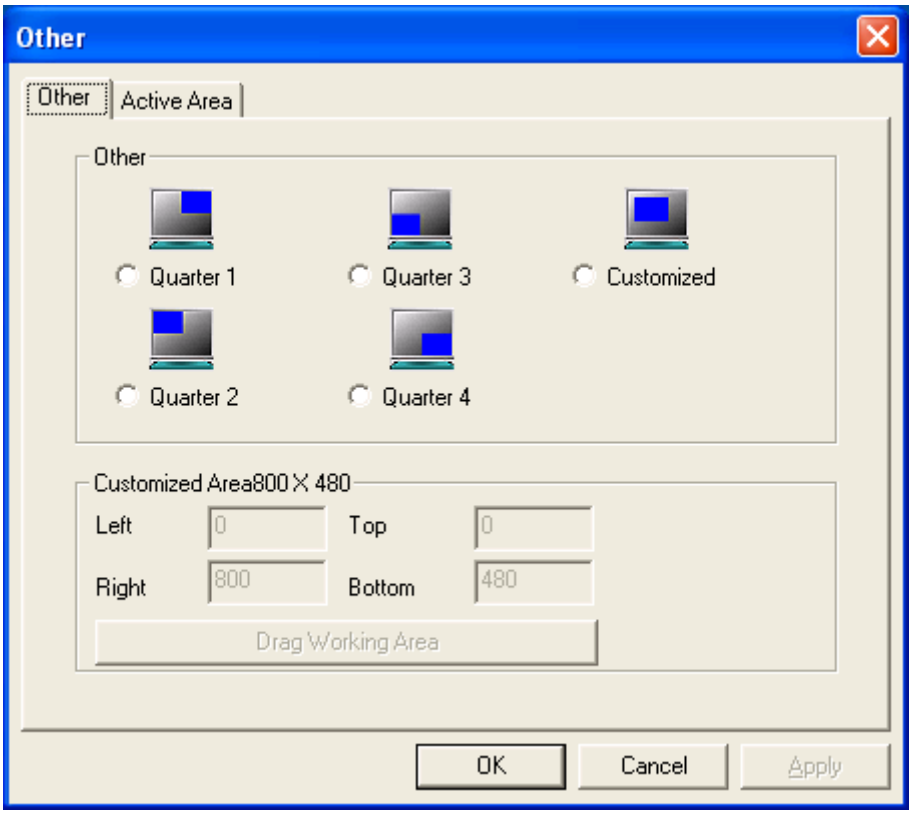
Full Screen

Lower Screen

Left Screen

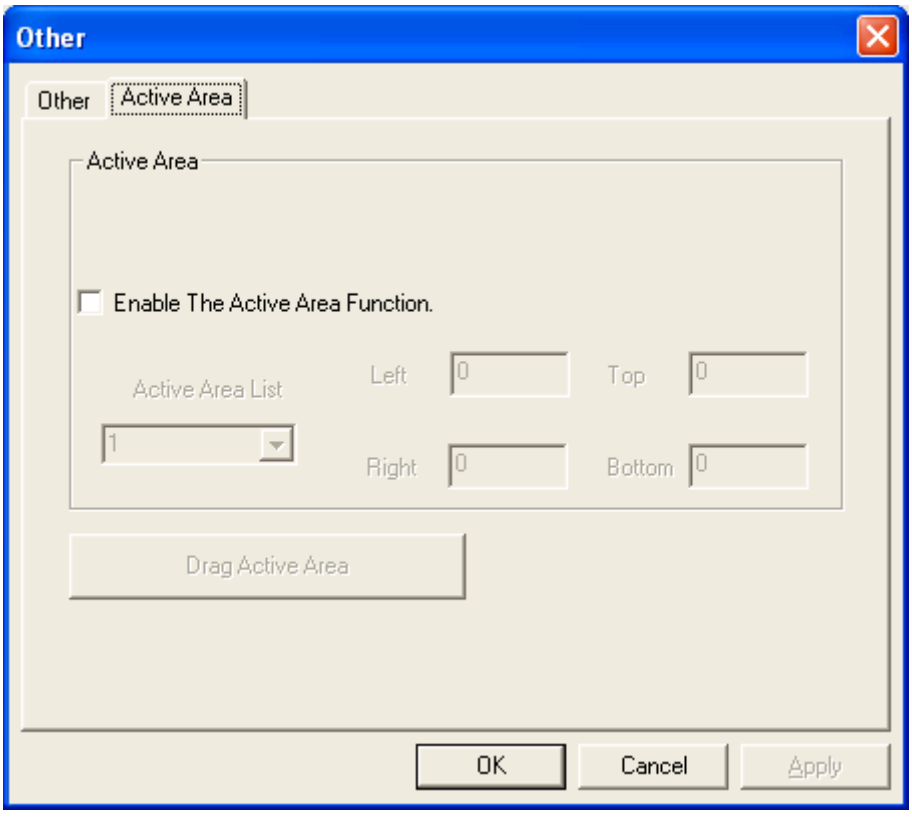
Upper Screen

Right Screen



Other

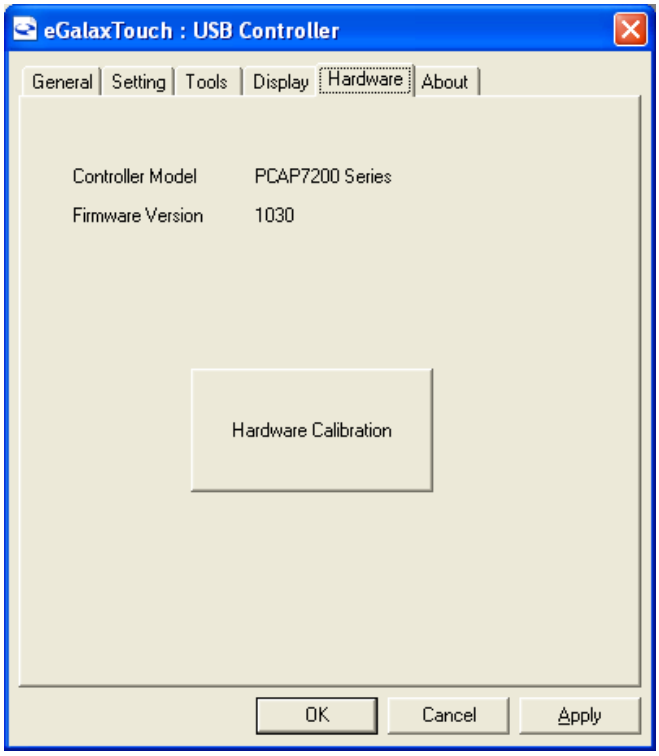
Other mode of display. Quarter1~4 and Customized area.



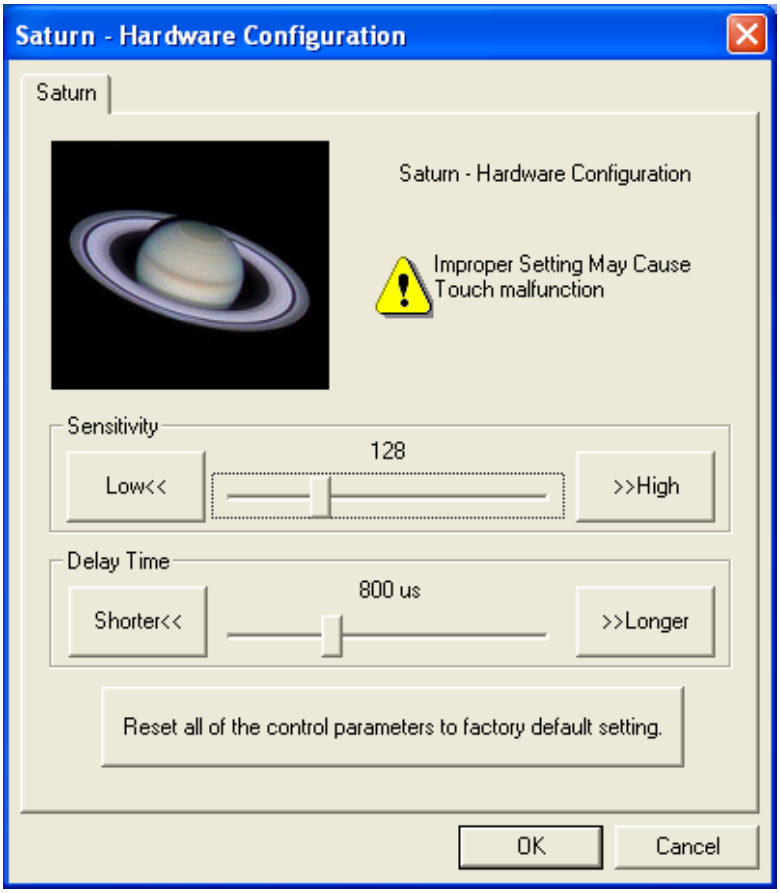
Active Area

Drag active area to enable Active Area Function.

Hardware

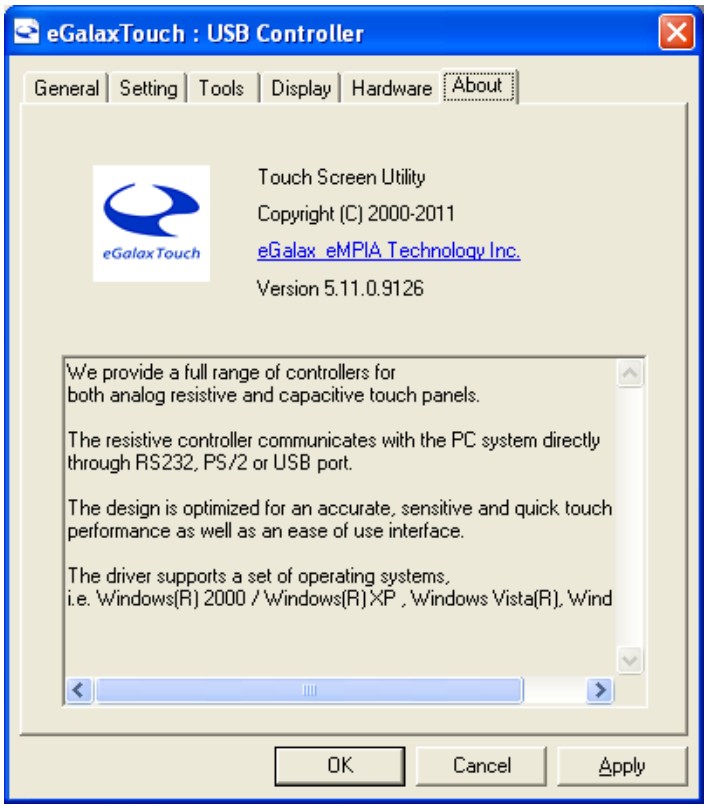


Saturn Hardware Configuration



About

To display information about eGalaxTouch and its version.



Appendix A: Board Descriptions & Specifications

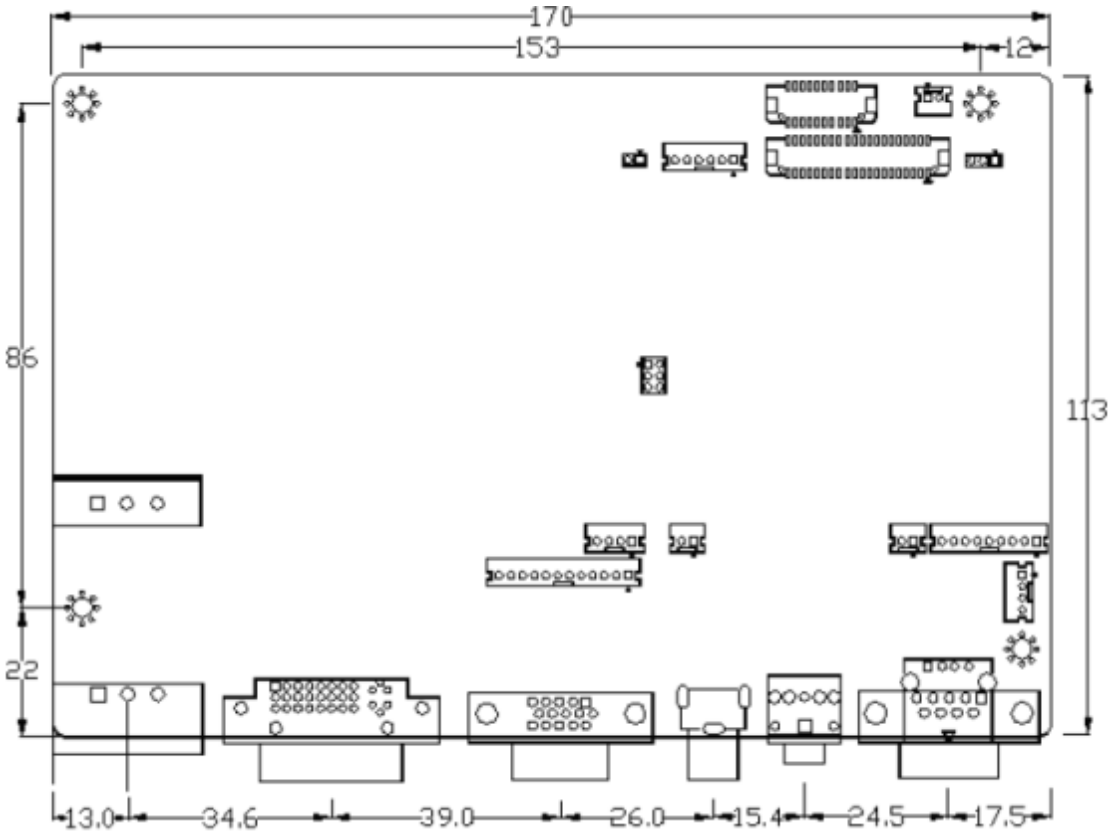
Descriptions

Model	Function Descriptions
TB-6028	AD board,VGA /DVI-D/RCA input,LVDS output
TB-6028TU	AD board,VGA /DVI-D/RCA input,LVDS output,USB/Touch controller
TB-6028TR	AD board,VGA /DVI-D/RCA input,LVDS output,RS232/Touch controller
TB-6028TRS	AD board, VGA/DVI-D input, LVDS output, RE232/Touch controller

Specifications

Specifications	
Board Size	170 x 113 x 1.6 mm
Chipset	Realtek RTD2533VH PenMount 6000
Input	1 x VGA input Port 1 x DB15 connector（Default） 1 x 1*12Pin Wafer （option） 1 x DVI-D input 1 x RCA input（option） 1 x RS232 input port, DB9 connector (option) 1 x USB 2.0 input port, Single USB connector (option) 1 x Line in port, Phone Jack (option) 1 x 3-pin power input connector (Wide range DC+9V~36V) 1 x OSD function support 1 x Touch controller(option)
Output	1 x 24bit Dual Channel LVDS output interface 1 x Audio Power Amplifier (Line out, option) 1 x USB 2.0 Port（option）
Resolution	Up to 1920 x1200 for LVDS
Power input	DC9V-36V
Temperature	Operating: -20℃ to 70℃ Storage: -40℃ to 85℃
Humidity	0% - 80%, non-condensing, operating
EMI/EMS	Meet CE/FCC class A

Board Dimensions



(units :mm)

Figure A: Dimensions of TB-6028

Appendix B: Panel Mounting and VESA Mounting

The APA9XXX is designed to be panel-mounted and VESA mounted as shown in Picture. Just carefully place the unit through the hole and tighten the given screws from the rear to secure the mounting.

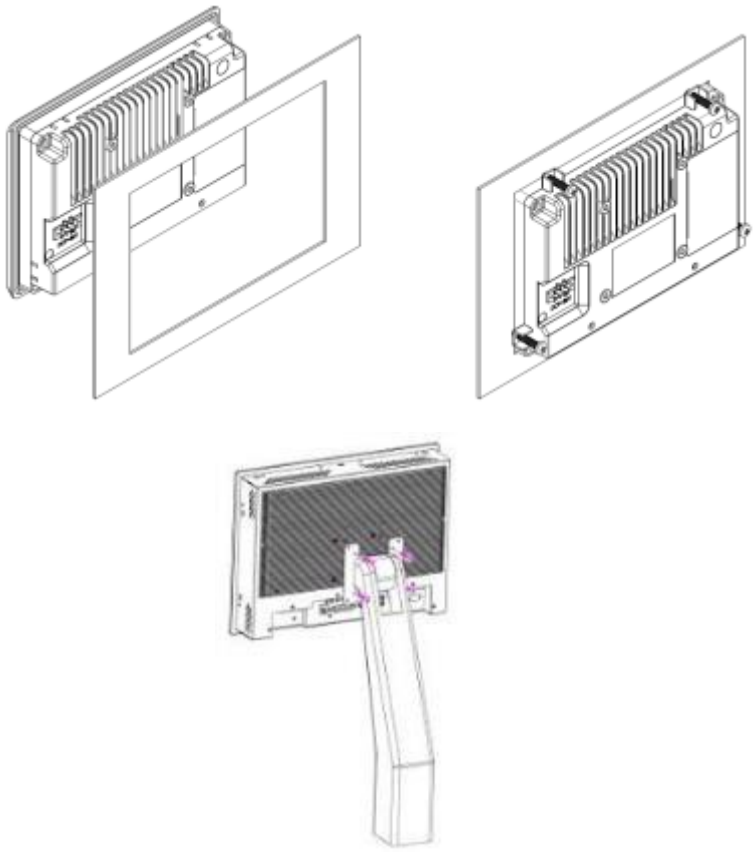


Figure B: Panel mounting and VESA mounting

***Notice：**

Tighten the mounting clip screws by hand until the gasket seal contacts the mounting surface uniformly.

Tighten the mounting clips screws to a torque of 8 ~ 10 kgf-cm by using the specified sequence, making sure not to overtighten.

*Tighten the mounting clips to the specified torque to provide a proper seal and to prevent damage to the product. Acnodes assumes no responsibility for water or chemical damage to the product or other equipment within the enclosure due to improper installation.