FPM-3170 Series

Industrial Flat Panel Monitor with 17" LCD in VGA/Video

User Manual

Copyright

This Manual Covers the Following Models
- FPM-3170G
- FPM-3170G-R
- FPM-3171GA
- FPM-3171GA-R

FCC Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with this user's manual, it may cause harmful interference to radio communications. Note that even when this equipment is installed and used in accordance with this user's manual, there is still no guarantee that interference will not occur. If this equipment is believed to be causing harmful interference to radio or television reception, this can be determined by turning the equipment on and off. If the interference is occurring, the user is encouraged to try to correct the interference by one or more of the following measures:

•Reorient or relocate the receiving antenna
•Increase the separation between the equipment and the receiver
•Connect the equipment to a power outlet on a circuit different from that to which the receiver is connected
•Consult the dealer or an experienced radio/TV technician for help

Additional Information and Assistance

1.Visit the Advantech web site at **www.advantech.com** where you can find the latest information about the product.

2.Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need

additional assistance. Please have the following information ready before you call:

•Product name and serial number

•Description of your peripheral attachments

•Description of your software (operating system, version, application software, etc.)

•A complete description of the problem

•The exact wording of any error messages

Safety Instructions

1. Read these safety instructions carefully.

2. Keep this User's Manual for later reference.

3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

5. Keep this equipment away from humidity.

6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.

7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.

8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.

10. All cautions and warnings on the equipment should be noted.

11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

12. Never pour any liquid into an opening. This may cause fire or electrical shock.

13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

14. If one of the following situations arises, get the equipment checked by service personnel:

a. The power cord or plug is damaged.

b. Liquid has penetrated into the equipment.

c. The equipment has been exposed to moisture.

d. The equipment does not work well, or you cannot get it to work according to the user's manual.

e. The equipment has been dropped and damaged.

f. The equipment has obvious signs of breakage.

15. DO NOT LEAVE THIS EQUIPMENT IN AN UNCONTROLLED ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS MAY DAMAGE THE EQUIPMENT.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70dB(A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Wichtige Sicherheishinweise

1. Bitte lesen sie Sich diese Hinweise sorgfältig durch.

2. Heben Sie diese Anleitung für den späteren Gebrauch auf.

3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie Keine Flüssig-oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.

4. Die NetzanschluBsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.

5. Das Gerät ist vor Feuchtigkeit zu schützen.

6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.

7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor überhitzung schützt. Sorgen Sie dafür, daB diese Öffnungen nicht abgedeckt werden.

8. Beachten Sie beim. AnschluB an das Stromnetz die AnschluBwerte.

9. Verlegen Sie die NetzanschluBleitung so, daB niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.

10. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.

11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.

12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.

13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.

14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:

a - Netzkabel oder Netzstecker sind beschädigt.

b - Flüssigkeit ist in das Gerät eingedrungen.

c - Das Gerät war Feuchtigkeit ausgesetzt.

d - Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.

e - Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.

f - Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weiger.

DISCLAIMER: This set of instructions is given according to IEC704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Contents

Introduction

This chapter includes:
•Introduction
•Specifications
•LCD Specification
•Connectors
•Dimensions

Chapter 1 Introduction

1.1 Introduction

Advantech's FPM-3170 Series consist of 17" color TFT LCD flat panel monitors built specifically for industrial applications. With the optional touchscreen, FPM-3170 monitors are excellent and user-friendly system control interfaces.

The FPM-3170 Series includes the FPM-3170G and FPM-3171GA. FPM-3170G comes standard with Direct-VGA, DVI-D, Video, S-Video ports, which not only can connect to popular PC VGA Cards, but also devices with video output, like cameras.

FPM-3171GA provides an alternative solution for users that do not require Video interface, and is equipped with a Direct-VGA port.

The whole chassis of FPM-3170G and FPM-3171GA is made of stainless steel, and the front panel is of aluminum with NEMA4/IP65 compliance.

The FPM-3170 monitors provide optional touch screen versions (FPM-3170G-R and FPM-3171GA-R). With an 8-wire resistive type touch-screen, the monitors can be immediately transformed into a remote control system.

1.2 Specifications

1.2.1 General
- **Control:** OSD (On Screen Display) control pad on front side
- **Mounting:** Rackmount, panelmount, wallmount and VESA arm mounting
- **I/O port:** VGA connector, DVI (FPM-3170G only), Video (FPM-3170G only), S-Video (FPM-3170G only), DC power input, power switch (FPM-3170G only), and RS-232 port (Touchscreen version only)
- **Power Adapter:** External 48W power adapter, with AC 100~230V input and DC +12V @ 4A output
- **Operating temperature:** 0 ~ 50 ° C
- **Storage Temperature:** -20 ~ 60 ° C
- **Storage Humidity:** 5 ~ 95% non-condensing

- **Vibration (operating):** 5 ~ 17 Hz, double-amplitude displacement 17 ~ 500 Hz, 1.0 G peak to peak
- **Dimensions:** (W x H x D):482 x 354 x 68 mm (19" x 13.9" x 2.7")
- **Net Weight:**12.7 kg (27.9 lb)
- **Compliance:** CE, FCC, BSMI, CCC compliant

1.2.2 Touchscreen (Optional)
- **Type:** 8 wire, analog resistive
- **Resolution:** 1024x1024
- **Light transmission:** 76%
- **Operating Pressure:**30~45 gram for stylus pen, contact bounce <10ms
- **Controller:** RS-232 interface (USB interface optional)
- **Power Consumption:** +5 V @ 200 mA
- **OS support:** Windows 2000/XP
- **Life span:** 1 million activations (typical) at a single point with a 5/8" diameter silicone finger at 350g load at 2 touches per sec.

1.3 LCD Specifications

- **Display Type:** SXGA TFT LCD
- **Display Size:** 17"
- **Max Colors:** full color (16 million)
- **Max Resolution:** 1280 x 1024
- **Dot Pitch:** 0.264 x 0.264 mm
- **Viewing Angle:** FPM-3170G: 170° (H), 170° (V)
  FPM-3171GA: 140° (H), 130° (V)
- **Luminance:** FPM-3170G: 250 cd/m²
  FPM-3171GA: 300 cd/m²
- **Storage Temperature:** -20 ~ 60° C
- **Operating Temperature**: 0 ~ 50° C
- **Backlight Lifetime:** FPM-3170G: 50,000 hrs
  FPM-3171GA: 40,000 hrs
- **Contrast Ratio:** 500:1

1.4 Connectors

The following connectors are situated on the left hand side of the FPM-3170 Series:

VGA Port (DB-15)

This DB-15 connector can be connected to the system via the external 15-pin DB-15 connector located on the left side of the system unit.

S-Video Port (Mini-DIN 4 pin) (Available for FPM-3170G only)

Supports NTSC and PAL.

DVI-D Port (Available for FPM-3170G only)

**Touchscreen Connector (DB-9) (Touchscreen version only)**

This connector will be present only if a touchscreen is installed. It must be connected to the RS-232 port of the PC. The touchscreen cable is included with all orders which include the touchscreen option.

Touchscreen Connector (USB B-type) (optional)

This connector will be an option for the touchscreen version. It must be connected to the USB port of the PC. The touchscreen cable is included with all orders which include the touchscreen option.

DC 12 V Power in

This connector will be connected to the DC 12V Switching Power Supply.

1.5 Dimensions

Cutout Dimensions: 451 x 340 mm (17.8" x 13.4")

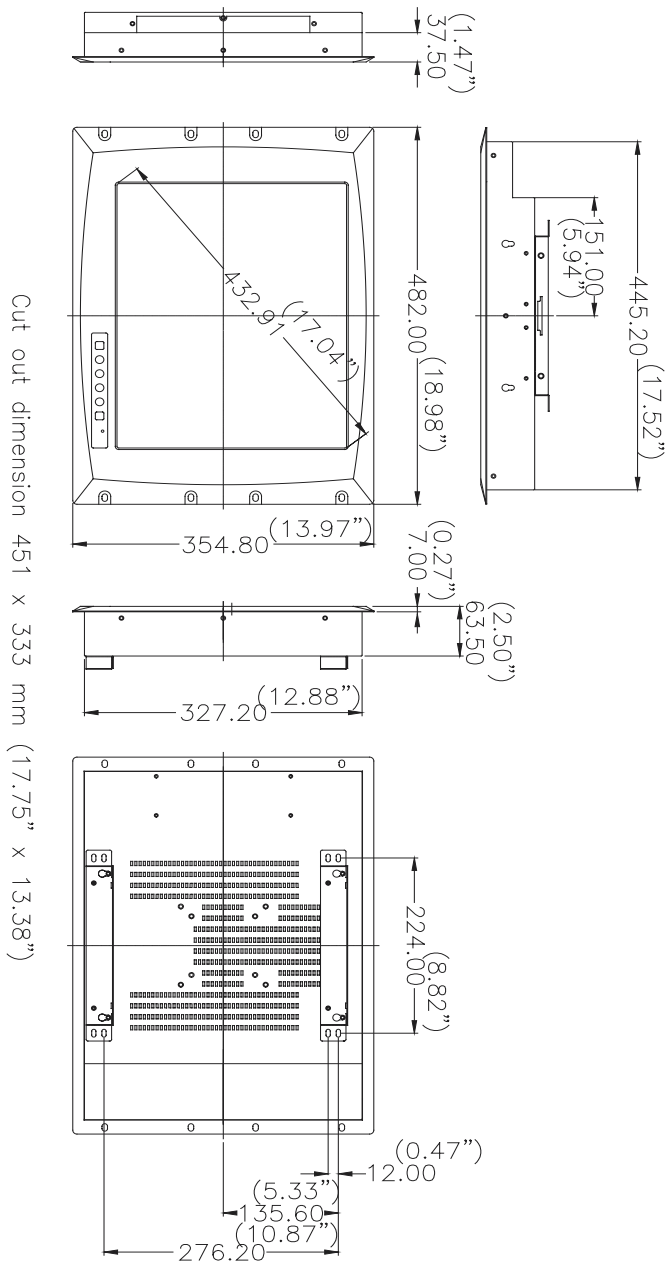*Figure 1.1: FPM-3170G Dimensions*
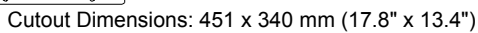
Figure 1.2: FPM-3171GA Dimensions

System Setup

This chapter includes:
•Mounting the Monitor
- Wall/Panel/Rack Mounting
- Desktop Stand/Swing-ARM Mounting

Chapter 2 System Setup

2.1 Mounting the Monitor

Monitors of the FPM-3170 series can be placed as you require. The versatility of the FPM-3170 mounts enable it to be mounted on your desk or anywhere else.

2.1.1 Wall Mounting

With wall mounting brackets, the FPM-3170 monitors can be mounted directly to a wall. The wall mounting brackets (named Fix brackets in the packing list) can be found in the accessory box.

1.   First mount the two brackets on the wall. Make sure the screw faces in a direction that is accessible.

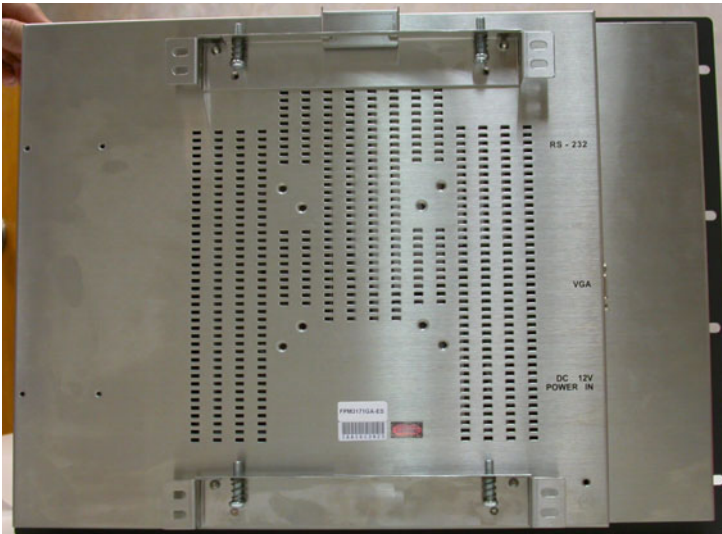2.   Hang the FPM-3170 by its keyholes onto the brackets.

Figure 2.1: FPM-3170 with Brackets

3.   Attach a hook bracket on top to ensure that FPM-3170 does not jump out of the keyholes during vibration.
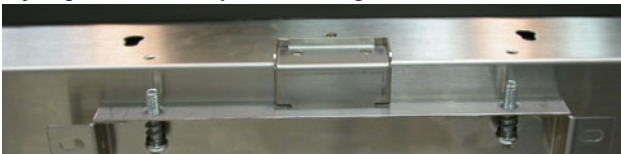

Figure 2.2: Hook Bracket

2.1.2 Panel Mounting

If you need to install the FPM-3170 series on a panel mount, please release the wall mounting brackets by detaching four screws on rear side and fix them on top and bottom sides by screws.
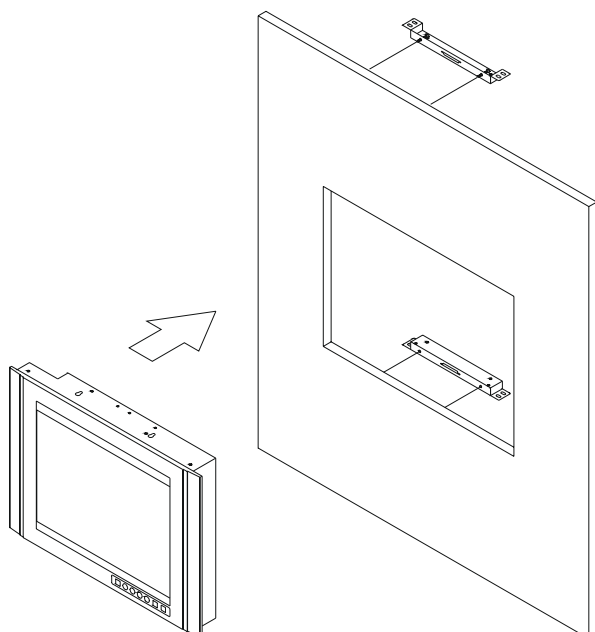
Figure 2.3: Panel Mounting (cut out dimension: 451 x 340 mm)

Figure 2.4: Bracket Arranged for Panel Mounting

Chapter 2 System Setup

2.1.3 Rack Mounting

The FPM-3170G series of monitors can be directly mounted to an industry standard 19" rack. There are four screw holes on each side of the panel.
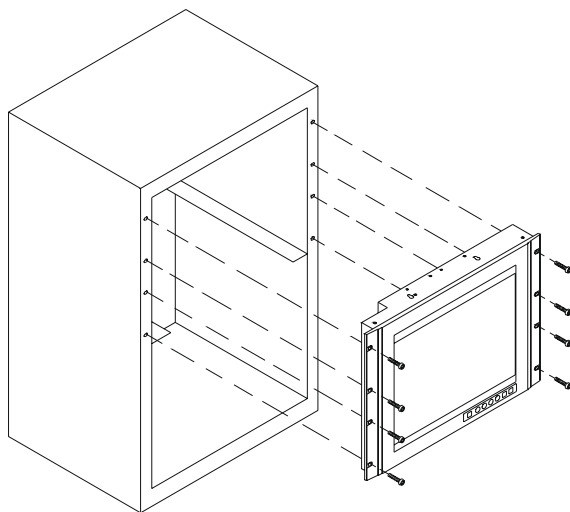
Figure 2.5: Rack Mounting

2.2 Desktop Mounting

You can place the desktop stand for desktop use or attach it on a swing-arm bracket.

2.2.1 Desktop Stand

The desktop stand brackets (named mounting bracket in the packing list) can be found in the accessory box.

Figure 2.6: FPM-3170 Mounted on Desktop Stand

Attach the fix bracket on the bottom part of the FPM-3170. Then use two screws on each of the desktop mounting brackets. Place one on each side of the fix bracket.

Figure 2.7: A Complete Desktop Stand

2.3 Swing Arm Mounting

Detach the mounting brackets on the rear side, then attach the FPM-3170 series onto the Swing-ARM mount (75 or 100 mm square bracket).

Figure 2.8: Swing Arm for the FPM-3170 series

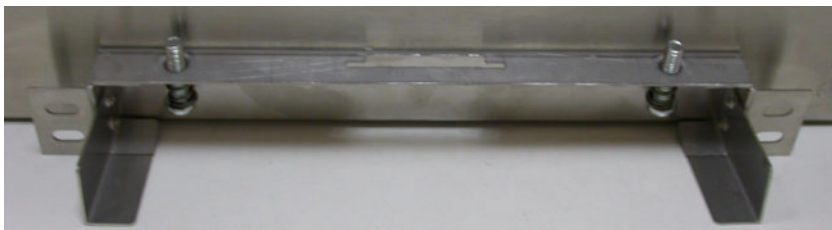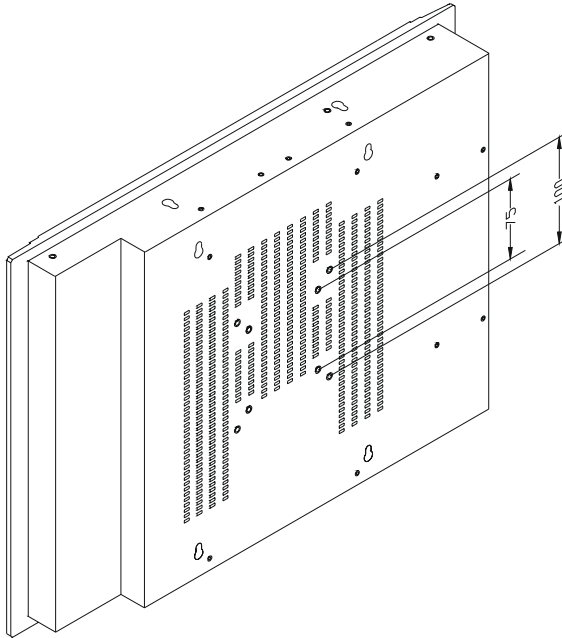# Touchscreen Driver Installation

•Introduction
•Specification
•Installation

Appendix A Touchscreen Driver Installation

A.1 Introduction

The FPM-3170 Series' optional touchscreen uses an advanced 8-wire resistive technology. It provides more accurate sensing capacity than other technologies. The touchscreen is specially designed for tough industrial environments, and has been approved to FCC Class B standards.

A.2 Touchscreen Specifications

A.2.1 Electrical
• **Operating Voltage:** 2.5 to 5 V DC

• **Linearity:** c1.5% error

A.2.2 Optical
• Transmittance: 78%

A.2.3 Mechanical
• **Activation Force:** Data is for .004" diameter separator dots on a 0.14" pitch.

• **Stylus:** <25g average wth plastic stylus with 1mm radius.

• **Finger:** <50g average with 5/8" diameter silicone finger

A.2.4 Durability
• **Point Activation:** Data is for .004" diameter separator dots on a 0.14" pitch. 1 Million activations (typical) at a single point with a 5/8" diameter silicone finger with a 350g load at 2 touches per second.

• **Gouge Hardness:** >=4H per ASTM D3363-92 and ASTM D3363-92

A.2.5 Chemical Resistance

The touch screen surface finish is unaffected by exposure to the following chemicals for a period of one hour at 22..C, 45% relative humidity.

• ASTM-F-1598-95.

• Tea, Coffee, Ketchup, Mustard, Vinegar, Beer, Coca-Cola, Red Wine, Cooking Oil, Wisk Laundry Detergent, Fantastik All Purpose Cleaner, Joy Dishwashing Liquid, Windex, Formula 409 Cleaner, Clorox Bleach (5.25%), Hydrogen Peroxide (3%), Lysol, Ethyl Alcohol, Isopropyl Alcohol Accetone, Methyl Ethyl Ketone (MEK), Toluene, Concentrated Hydrochloric Acid, Naptha, Mineral Spirits, Gasoline, 10W30 Motor Oil, Diesel Fuel, Transmission Fluid, Brake Fluid, Antifreeze, Hydraulic Oil.

A.3 Installation of Touchscreen Driver

The touchscreen in the FPM-3170 Series provides drivers for use with Windows 2000 and XP. For a detailed touchscreen drivers installation procedure, please refer to the folder:
\Touch-Screen-DRV\Penmount 9000(resistive)

Note 1:   The following windows illustrations are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

Before installing the Windows 2000/XP driver software, you must have the Windows 2000/XP system installed and running on your computer. You must also have one of the following PenMount Serial Interface controller boards installed: 90A4, 9026B, 9036 or 9084. Contents of the PenMount Windows 2000/XP driver folder are listed below.

DMC9000.inf

DMC9000.sys

DMC9000.cat

SETUP.EXE

If you have an older version of the PenMount Windows 2000/XP driver installed in your system, please remove it first. Follow the steps below to install the PenMount Windows 2000/XP driver.

1.   When the system first detects the controller board, a screen appears that shows "Unknown Device." Do not use this hardware wizard. Press Cancel.

Found New Hardware Wizard

Welcome to the Found New Hardware Wizard

This wizard helps you install software for:

Unknown

If your hardware came with an installation CD or floppy disk, insert it now.

What do you want the wizard to do?

○ Install the software automatically (Recommended)
⦿ Install from a list or specific location (Advanced)

Click Next to continue.

[< Back]   [Next >]   [Cancel]

2. Insert the PenMount Driver CD-ROM. Go to the Windows 2000-XP Driver folder. Click **setup.exe**.
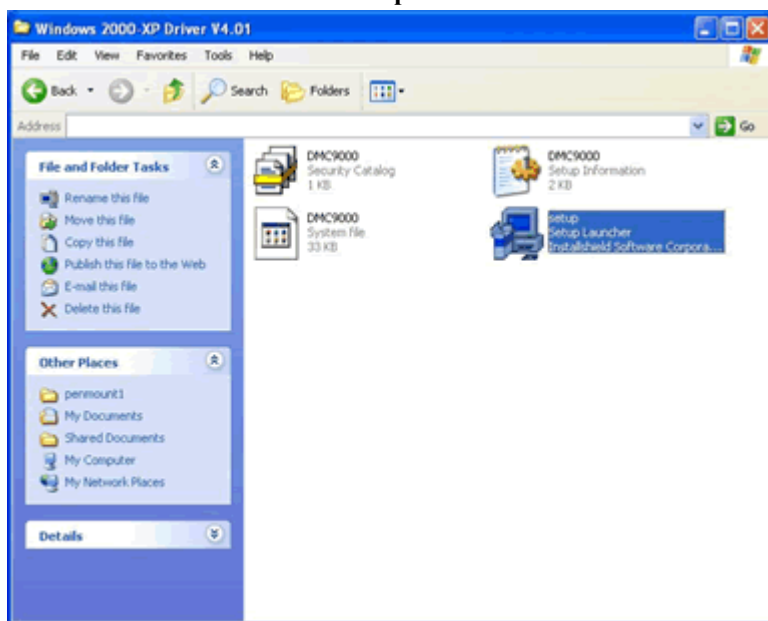
3. The screen displays the installation wizard for the PenMount software. Click "Next".
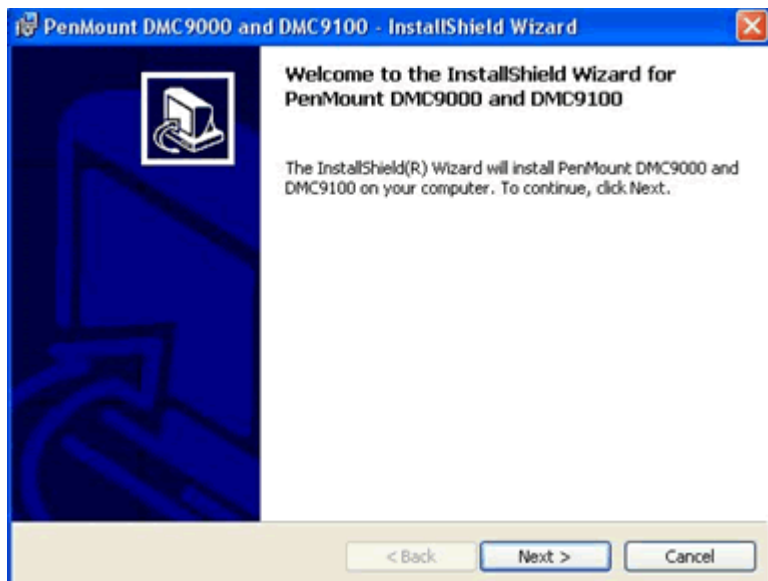
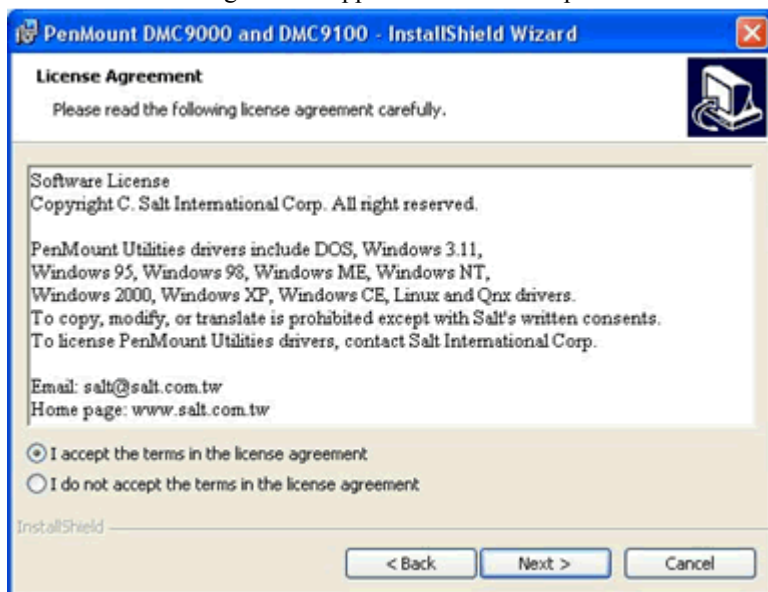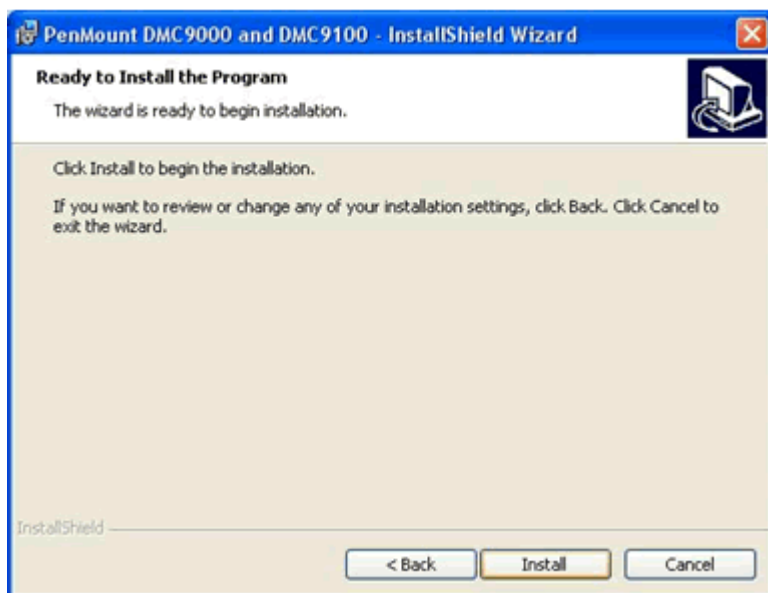4.   A License Agreement appears. Click "I accept…" and "Next"
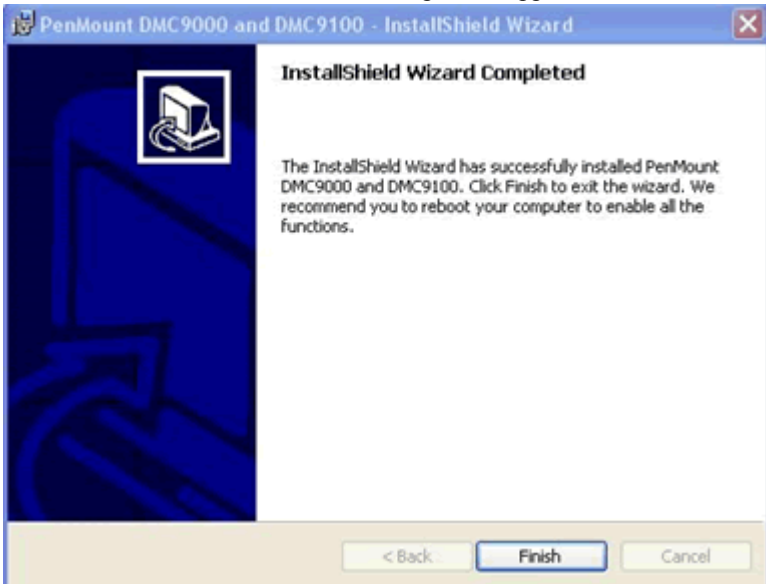

5.   The "Ready to Install the Program" screen appears. Select "Install."

6. The next screen is "Hardware Installation." Select "Continue Anyway."

7. The "InstallShield Wizard Completed" appears. Click "Finish."

A.4 Configuring PenMount Windows 2000/XP Driver

Upon rebooting, the computer automatically finds the new 9000 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, click "Calibrate."

A.4.1 PenMount Control Panel
The functions of the PenMount Control Panel are Calibrate, Draw, Multiple Monitors, Option, and About, which are explained in the following sections.

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'.
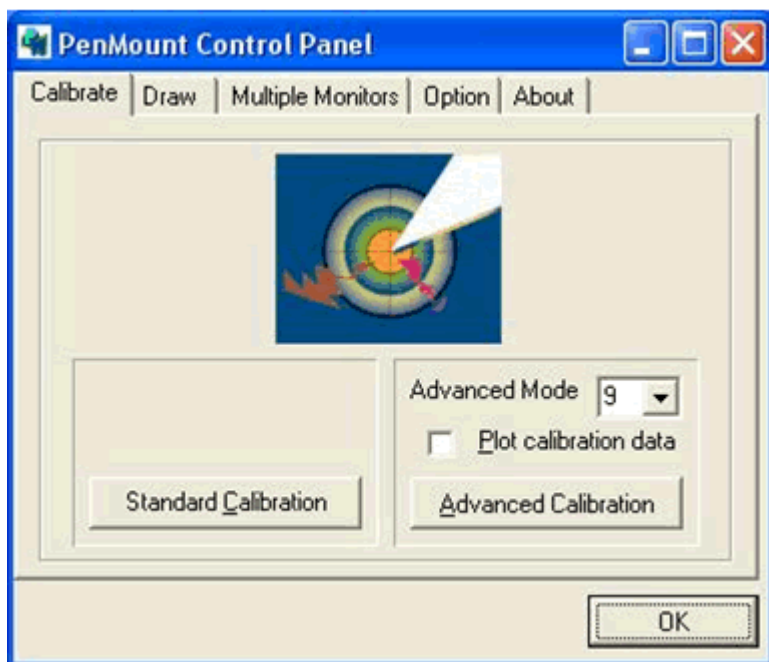
NOTE: The older the touch screen, the more
             Advanced Mode calibration points you need for
             an accurate calibration. Use a stylus during
             Advanced Calibration for greater accuracy.
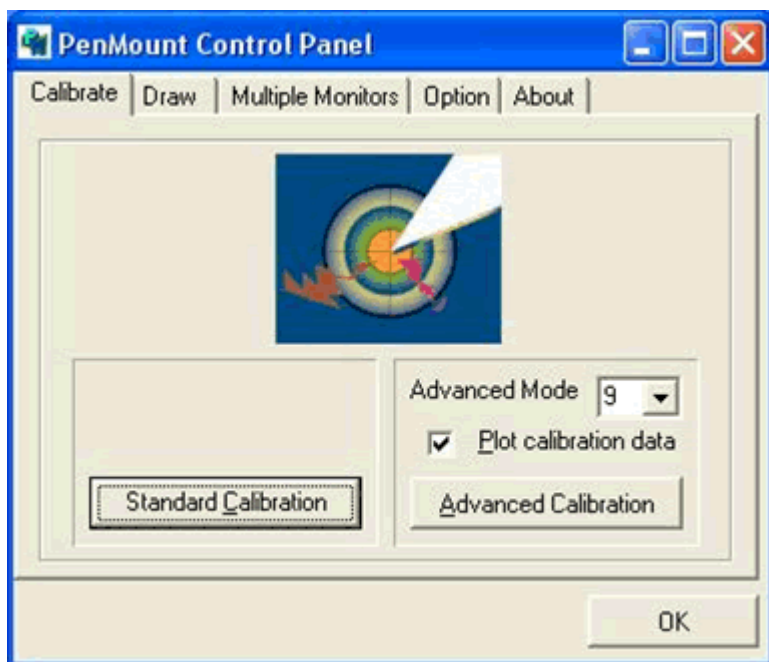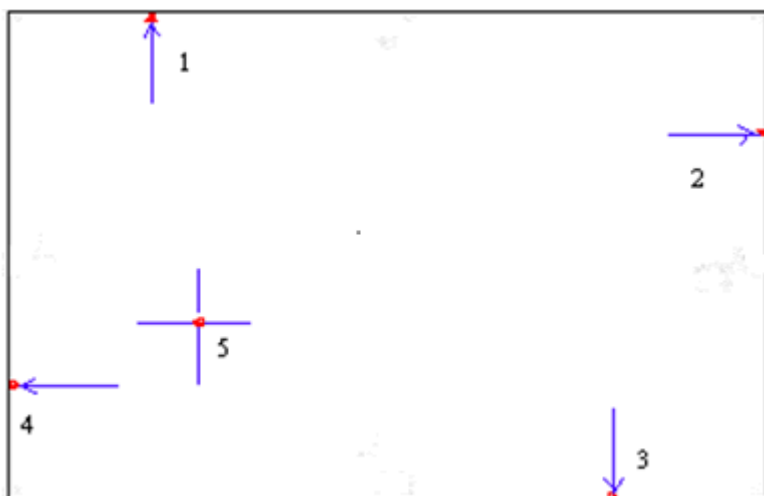
Plot Calibration Data	Check this function and a touch panel linearity comparison graph appears when you have finished Advanced Calibration. The blue lines show linearity before calibration and black lines show linearity after calibration.
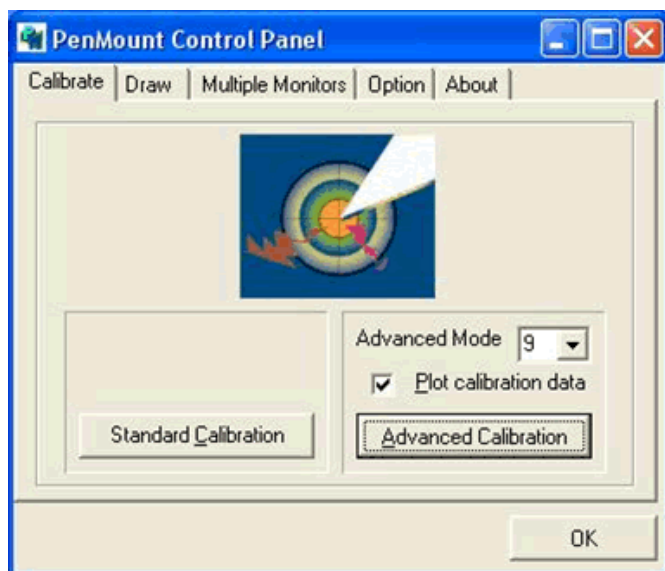
Draw

Tests or demonstrates the PenMount touch screen operation. The display shows touch location. Click Draw to start. Touch the screen with your finger or a stylus and the drawing screen registers touch activity such left, right, up, down, pen up, and pen down.
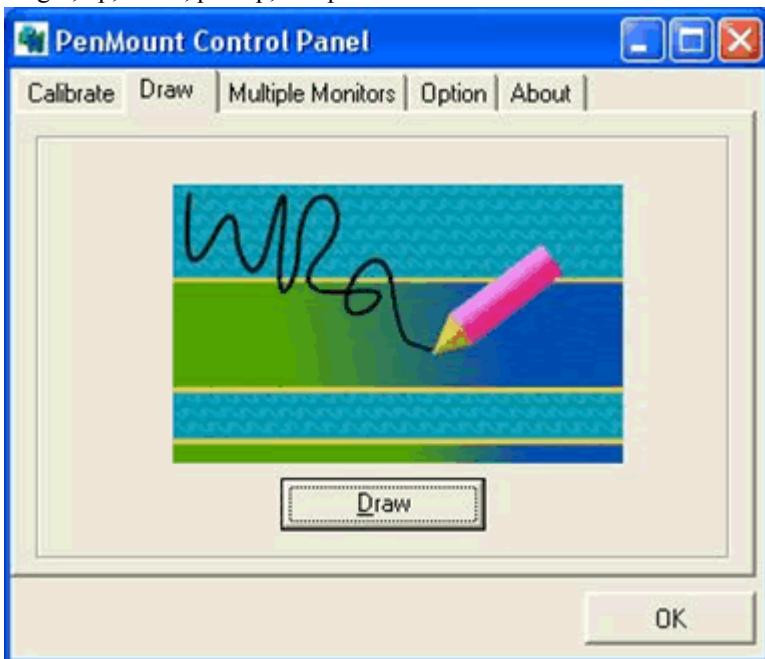
Touch the screen with your finger or a stylus and the drawing screen registers touch activity such left, right, up, down, pen up, and pen down.

Click Clear Screen to clear the drawing.

Multiple Monitors

Multiple Monitors supports 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 supports the following modes:

Windows Extend Monitor Function

Matrox DualHead Multi-Screen Function

nVidia nView Function

NOTE: *The Multiple Monitors 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.
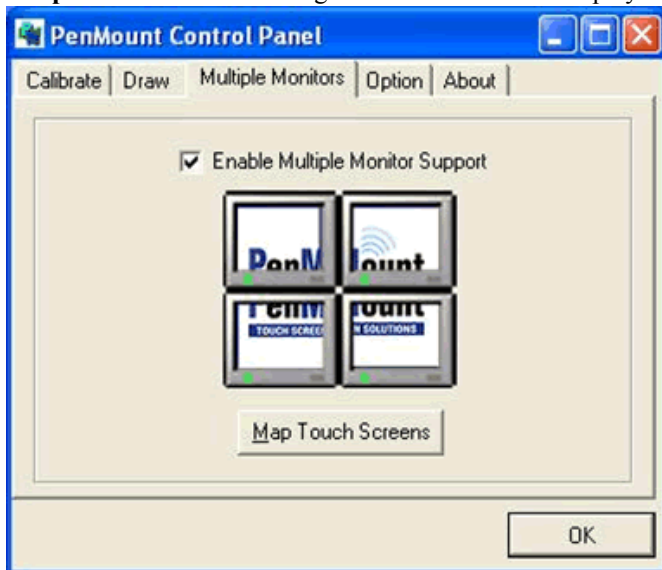
2.   When the mapping screen message appears, click OK.
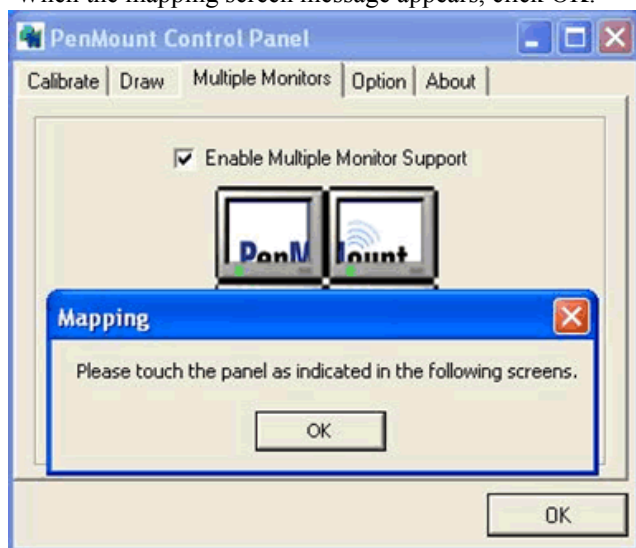
3.   Touch each screen as it displays "Please touch this monitor." Following this sequence and touching each screen is called **mapping the touch screens**.

4.   Touching all screens completes the mapping and the desktop reappears on the monitors.

Calibrate

To start calibration, please touch the panel to calibrate in the following screen.

OK
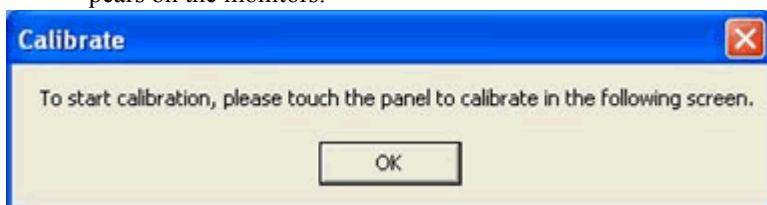
5.   Select a display and execute the 'Calibration' function. A message to start calibration appears. Click OK.

PenMount Control Panel

Calibrate | Draw | Multiple Monitors | Option | About

Operation Mode
- Stream Mode
- Point Mode

☑ Enable Beep Sound

Beep Frequency   600 Hz

- Beep on pen down
- Beep on pen up
- Beep on both

Beep Duration   100 ms

Back to Driver Default

OK
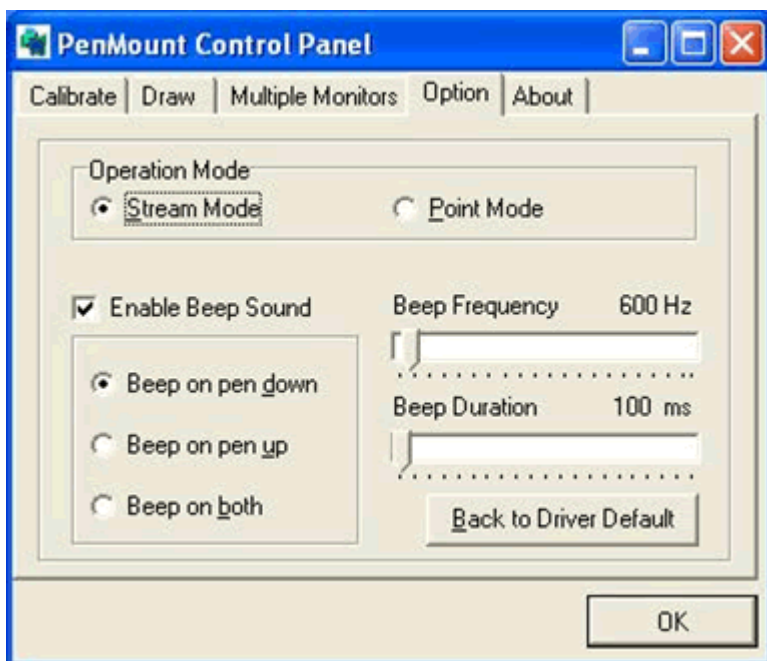
6.   "Touch this screen to start its calibration" appears on one of the screens. Touch the screen.

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.

NOTE: *1. If you used a single VGA output for multiple monitors, please do not use the Multiple Monitors 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 Monitors 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.

Option

This panel function supports two modes—Operation Mode and Beep Sound Mode—which allow configuration for specific touch screen applications, such as point-of-sales (POS) terminals.

Operation Mode	This mode enables and disables the mouse's ability to drag on-screen icons—useful for configuring POS terminals. *Stream Mode* – Select this mode and the mouse functions as normal and allows dragging of icons. *Point Mode* – Select this mode and the mouse only provides a click function, and dragging is disabled.
Beep Sound Mode	*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 of Pen Down/Up* – beep occurs on both *Beep Frequency* – modifies sound frequency *Beep Duration* – modifies sound duration

About

This panel displays information about the PenMount controller and driver version.
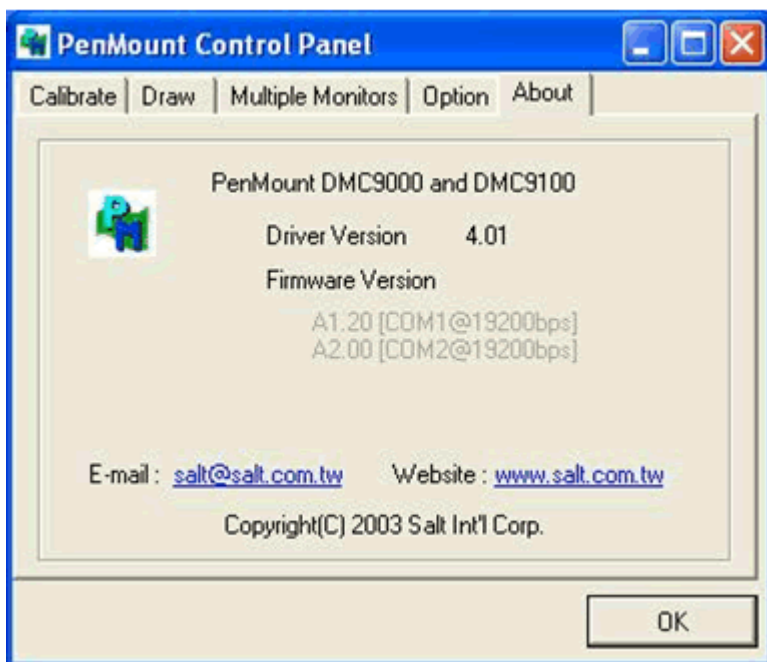
A.4.2 PenMount Monitor Menu Icon

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 functions.

Beep	Turns beep on or off.
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.

|	
Pen Stabilizer	Check this function to reduce cursor vibration for relatively unstable touch screens, or where there may be excess vibration. Normally this function is not checked.
Exit	Exits the PenMount Monitor function.

A.4.3 PenMount Rotating Functions

The PenMount driver for Windows 2000/XP supports several display rotating software packages. Please see Chapter 5 for more information. The PenMount drivers for Windows 95, Windows 98/Me, Windows 2000/XP, as well as Windows 98 USB and Windows Me/2000/XP support display rotating software packages such as:

• Portrait's Pivot Screen Rotation Software

• ATI Display Driver Rotate Function

• nVidia Display Driver Rotate Function

• SMI Display Driver Rotate Function

• Intel 845G/GE Display Driver Rotate Function

Configuring the Rotate Function

1. Install the rotation software package.

2. Choose the rotate function (0°, 90°, 180°, 270°) in the 3rd party software. The calibration screen appears automatically. Touch this point and rotation is mapped.
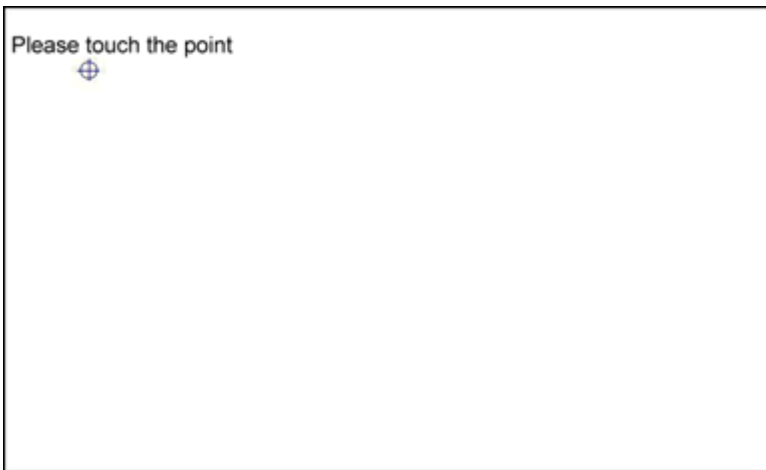
NOTE: The Rotate function is disabled if you use Monitor Mapping

Supported Input Timing Modes

Appendix B Supported Input Timing Modes

B.1 Supported Input Timing Modes

The nineteen kinds of timings below are already programmed into this module. The input synchronous signals are automatically recognized.

Resolution	Vertical Frequencies					
	56Hz	60Hz	70Hz	72Hz	75Hz	85Hz
640x480		Yes		Yes	Yes	X
800x600	Yes	Yes	Yes	Yes	Yes	X
1024x768		Yes	Yes		Yes	X
1280x1024		Yes	Yes		Yes	X
1600x1200		Yes				

Table B-1: Supported Input formats

Note 1:   *Even if the preset timing is entered, a little adjustment of the functions such as Horizontal period, CLK-delay and display position, are required. The adjusted values are memorized in every preset number.*

Note 2:   *This module recognizes the synchronous signals with near preset timing of the frequency of the HS and Vsync, even in the case that the signals other than the preset timing that were entered.*

Note 3:   *Because adjustments may not fit, such as differing magnifying ratios or, in the case that you use it except for the display timing that was preset.*

OSD Operation Keypad

Appendix C OSD Operation

C.1 OSD Operation Keypad

The OSD keypad, including six keys and a two color indicator, is designed as the OSD operation interface.

The six keypad functions are in Table C-1.

Auto	Press this button to execute auto adjustment process
Sel	Press to show the OSD screen or select an item to change its setting
◄ ►	To move between items or increase or decrease setting
Exit	This key has two functions: 1.) To exit from the current setting in OSD function 2.) To switch the input source between RGB, Video and S-Video
On/OFF	Turns display backlight ON and OFF

Table C-1: Keypad functions

Note 1: When the display ON/OFF button is ON, the constant green light means that the COMMON board detects the input signal and ends output signal to LCD panel. The orange light means that the COMMON board does not detect the input signal.
Note 2: When the display ON/OFF button is OFF, the flashing green light means that the display backlight is OFF. When the light shows no color, the display is powered off.
Note 3: If auto setup would like to be selected, please follow the procedure below:
1. Press the auto button
2. Press the sel button, then select the save icon to save the current status.
3. The auto setup procedure finishes.
Note 4: If the OSD needs to be locked, press the < and > at the same time until the .Lock. indicator appears on the display. To unlock, repeat the same procedures once more.

C.2 OSD Function

Each selected value is stored into LCD memory after SEL signal input or time out. The stored values are not affected if the power is turned off. But the selected value is not available in case a selected mode is changed before time out or power is turned off before time out.

The default definition of input keys is shown as following:

Main Menu	Sub Menu	Functionality
Brightness		Adjust brightness of the display
Contrast	Contrast	Adjust contrast of RGB channel simultanously
	Sub Contrast RGB	Adjust color of selected RGB channel
Position	H.Size	Adjust phase of ADC sample clock
	Clock Phase	Adjust number of clocks per line
	H.Position	Move input image capture window left or right
	V.Position	Move the input image capture window up or down
Information	Information	System input mode information and maximum range supported by screen
All Reset	All Reset	Reset menu parameters to factory default setting