



Surface Acoustic Wave Touchscreen

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Chapter 1 Introduction

ATouch Technologies Co., Ltd. Surface Acoustic Wave Touchscreen is a pure glass surface Touch Screen in different types and dimensions.

CRT : Spherical CRT : 15"/17"/19"/21"

Flat CRT : 17"/19"/21"

LCD : 6.4"/10.4"/12.1"/14.1"/15"/17"/18.1"/19"/20.1"/23.1"

Surface Acoustic Wave Touchscreen features :

- Superior image clarity with high light transmission
- Sensitive and fast response
- Durability, deep scratch resistance and abrasion
- Highest resolution
- Active by finger, gloved hand, leather or soft stylus
- More than 50 million touches for a single point
- Dirt and splash sealed capability
- Custom size for OEM available

1.1 Touchscreen Sensor

ATouch SAW Touchscreen sensor with 3 different types for customers' option :

- Standard Sensor
- Anti-vandalism Sensor
- Protected SAW Sensor

1.1.1 Standard Sensor

It is 3mm-thickness standard glass.

1.1.2 Anti-Vandalism Sensor

It is 6mm-thickness heat strengthened glass, meets UL1950 specification.

1.1.3 Protected SAW Sensor

It is 6mm thickness heat strengthened glass, meets UL1950 specification with the ABS plastic frame covered around touch sensor.

It is dirt / dust / splash / water resistant.

1.2 Touchscreen Controller

The ATouch SAW controller offers the drive signal for the touchscreen, converts the received analog acoustic wave signals into digital coordinates of the touch point, and sends the coordinates to the computer.

The controller detects touch points by the comparison between received average amplitude of vibration of the acoustic wave signals and reference average waveform acquired when the touchscreen is in an untouched condition. The controller is capable of detecting the stay time of dirt, dust, water drops, scratches and other contaminants on the screen and then ignores them. If the contamination is removed, the controller relearns the original reference average waveform.

The re-calibration is not necessary unless the position of the video image changes.



Resolution of the ATouch SAW touch system based on the controller is 4096 x 4096.

1.3 Software Drivers

Drivers support operating system are as follow :

Windows : 95/98/Me/2000/XP/NT

Linux : Red Hat 9.0, Mandrake 9.1

1.4 Agency Approvals

FCC

CE

1.5 Warranty

ATouch SAW Touchscreen products are the following warranty.

Touch sensor : 10 years

Controller (RS-232 / USB) : 5 years

Chapter 2 Touchscreen Installation

2.1 CRT Monitor Installation

CRT monitor installation process as following steps :

1. Incoming inspection

- CRT monitor : please check if the monitor works well.
- Touchscreen : please unpack the touchscreen, connect your touchscreen with the controller on your PC and test if the touchscreen works well.
- After testing the monitor and touchscreen, you can start to install touchscreen into your monitor by the following steps.

2. Disassembling CRT monitor

- Remove the back side plastic housing of your CRT monitor.
- Discharge the CRT tube from the front bezel (usually there are 4 screws on the 4 corners need to be released).
- Check if the electronic board needs to be removed or not.
- Verify the fit position on the CRT tube for the touchscreen.
- After verifying the position, you can attach the touch sensor onto the CRT. You can use the double side high tack adhesive tape (as 3M) to attach the touch sensor onto the CRT display
- After this process, check the space between the touch sensor and the front bezel. If the space is not enough, you may need to add rubber spacers between the touch sensor and the front bezel (the 4 corners on which the CRT and the front bezel is

screwed).

- Installing Touchscreen Controller

Connect all cables / connectors in right places and fix the controller at the monitor chassis.

- Power Supply

If you use internal power supply +5VDC, connect the power cord (from touchscreen RS-232 controller) to the CRT monitor electronic board +5VDC.

If the external power supply is used, the +5VDC will be supplied from the keyboard through the RS-232 cable provided by ATouch.

- Fixing Cables

Cables should be fixed well and not movable.

- After above processes, test if the touch monitor works normally.

3. Reassembling CRT Monitor

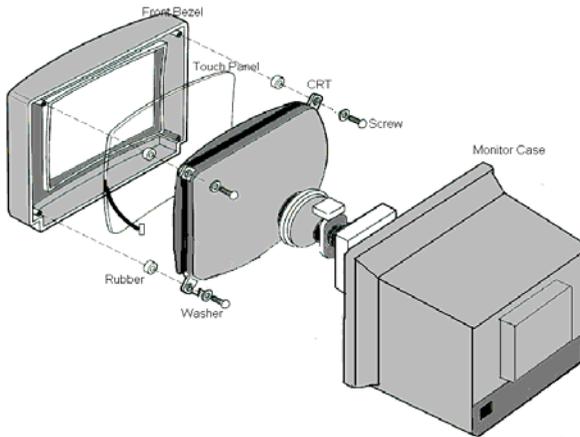
After the installation of the touchscreen, reassemble the CRT monitor back side plastic housing and test if the function of the touch monitor works well.

4. Sealing

Sealing should be even around the front bezel. The material is special sponges from ATouch. The adhesive side of the sponge is stuck on the front bezel, and the special plastic side on the touch sensor.

Or use the material manufactured by VOLTEK.

(Suggest from VOLTEK : 2A/2E//4A/4E black flame retardant material)



2.2 LCD Monitor Installation

1. Incoming inspection

- LCD monitor : check if the monitor works well.
- Touchscreen : Unpack the touchscreen, connect the touchscreen with the controller on your computer and test if the touchscreen works well.
- After testing the monitor and touchscreen, you can start to install touchscreen into your monitor by the following steps.

2. Disassembling LCD monitor

- Remove the rear side plastic housing of your LCD monitor.
- Remove the LCD display from the front bezel and kindly be attention to disassemble the LCD control board and the OSD

board.

- Verify the fit position on the LCD display for the touchscreen.
- After verifying the position, attach the touchscreen sensor on the LCD. Use the double side high tack adhesive tape (as 3M) to attach touchscreen sensor on the LCD display.
- After this process, check the space between the touchscreen sensor and the front bezel if there is any gape (You can use the special sponge provided by ATouch to fulfill it).
- Installing Touchscreen Controller

Connect all cables / connectors in the right places and fix the controller at the right position on the monitor rear side metal or plastic case.

- Power supply

If you use internal power supply +5VDC, connect the power cord (from touchscreen RS-232 controller) to the LCD control board +5VDC.

If the external power supply is used, the +5VDC will be supplied from the keyboard through the RS-232 cable provided by ATouch.

- Fixing Cables

Cables should be fixed well and not movable. Please note that cables do not get close to the inverter or the power supply.

- After above processes, test if the touch monitor works well.

3. Reassembling LCD Monitor

- After the processes mentioned above, reassemble the rear side

plastic housing of the LCD monitor.

- Seal the monitor if you need to seal it before you reassemble the front bezel of the LCD monitor.
- Test if the touch monitor function works well.

4. Sealing

Sealing should be even around the front bezel. The material is the special sponges from ATouch. The adhesive side of the sponge is stuck on the front bezel, and the special plastic side on the touch sensor.

Or use the material manufactured by VOLTEK
(Suggest from VOLTEK : 2A/2E//4A/4E black flame retardant material).

Chapter 3 Software Driver Installation

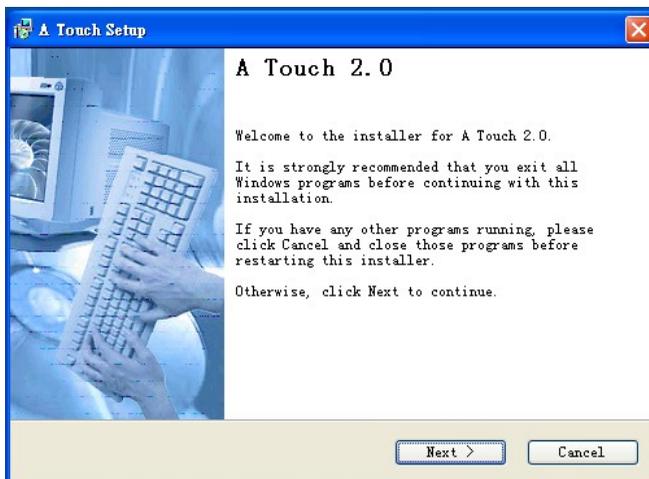
3.1 RS-232 Software Driver Installation for Windows

The following installation is applied to

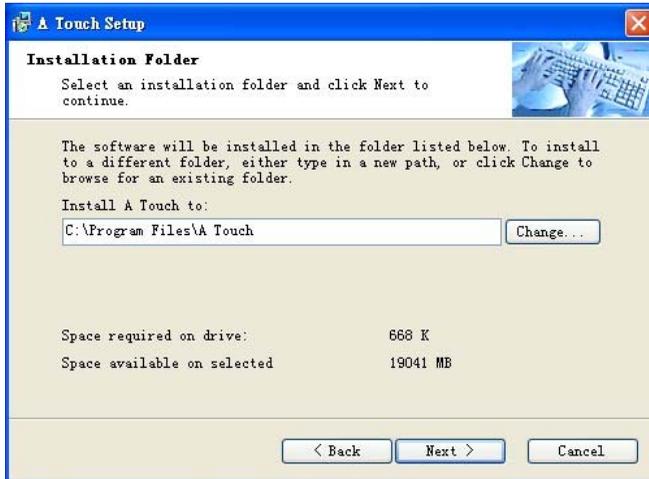
Windows 95/98/Me/2000/XP/NT

3.1.1 Installing the Touch Driver

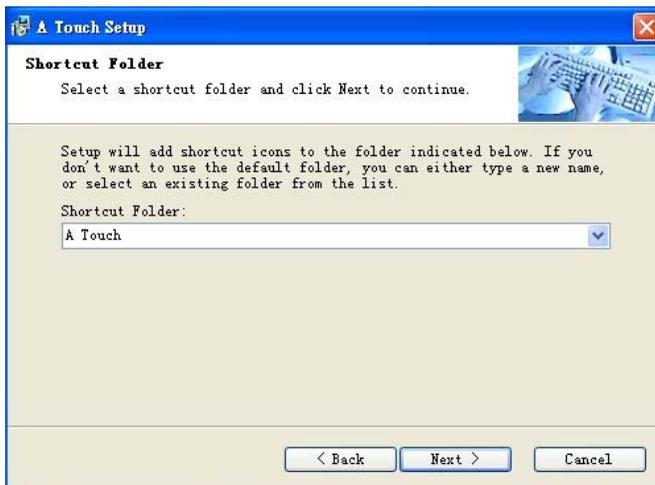
1. Launch Windows operating system, and exit all Windows programs before continuing with the installation.
2. Insert the ATouch utility diskette into the floppy disk drive.
3. Run “A Touch-2.0.exe”. The following dialog box will appear.
Click [Next].



4. Select Installation Folder and click [Next] to continue the next step.



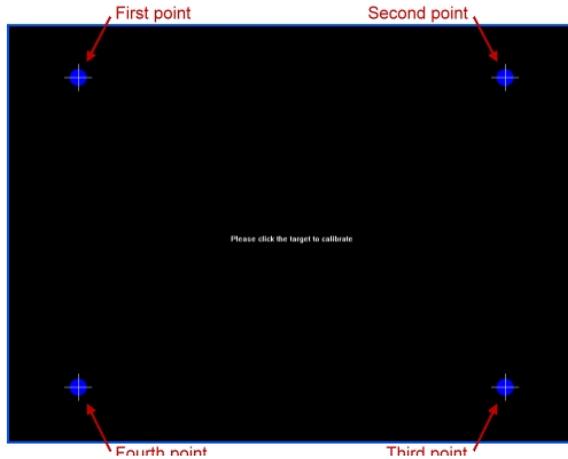
5. Select Shortcut Folder and click [Next] to continue the next step.



6. Now the ATouch touchscreen setting is completed. Please check the installation setting. If you accept the setting, please click [Next] to install the driver.
7. After the driver installation, a dialog box will launch for you to choose the serial port which your touch monitor is currently connected to.



8. Select the serial port and click [Finish] to start the four-point calibration.
9. Touch each center of the point sequentially. Four calibration points in total.



10. The installation completes.

3.1.2 Uninstalling the Touch Driver

There are two ways to remove the touch driver.

1. Use the Add/Remove Programs feature in the Control Panel.
 - Open the Control Panel
 - Click Start, hover over Settings, click Control Panel
 - Double-click the Add/Remove Programs icon
 - Choose the A Touch 2.0 item.
 - Click the Change/Remove button.
 - Click the Yes button
 - The ATouch driver will be removed. No computer restart is required.
2. Use Shortcut Folder icon in the Start Menu.
 - Click Start, hover over Programs, choose A Touch folder and click Uninstall.

3.1.3 Calibration

Calibration ensures that the cursor appears at the position of touch.

ATouch uses a four-point calibration sequence that will accept touchscreens with any orientation of the X or Y axis.

Once calibrated, the touchscreen will be ready to use automatically each time the system is restarted.



• Options to Launch

The Calibration Program may be launched by three different ways.

- Double-click the ATouch icon on the desktop. Choose Calibrate tab and click the Calibration button.
- Click Start, hover over Programs, choose ATouch folder and click Calibration.
- Click right mouse button on the ATouch icon in the Windows task bar at the bottom right of the display and click the Calibration.

• **Running the Calibration Program**

1. When you run the calibration program using one of the options above, touch the center of the four targets as they appear sequentially.



2. When you release your finger on each point, you will hear a beep.
3. After the calibration completes, you can
 - press ENTER or touch the touchscreen to save and exit.
 - press SPACE to calibrate again.
 - press ESC to discard the result and exit.

3.1.4 Control Center

The control Center application allows configuration of the driver to suit the application programs, and present system and diagnostic information to the user.

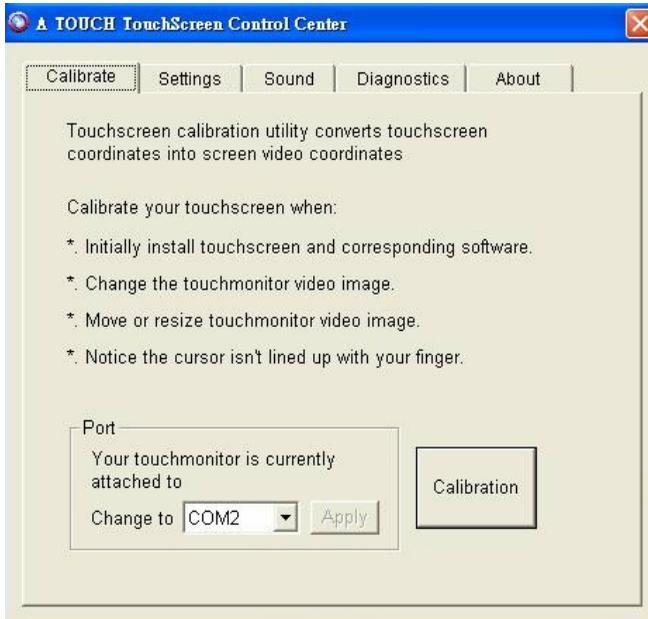
Each of the five tabs in the Control Center is described below.

1. Running the Control Center

The Control Center may be launched by four different ways to adjust the properties.

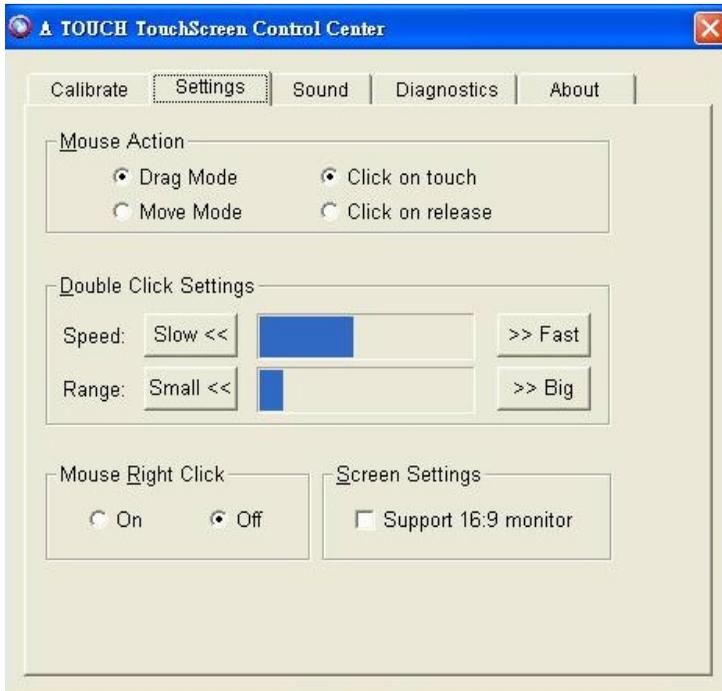
- Double-click the ATouch icon on the desktop.
- Click Start, hover over Programs, choose ATouch folder and click Control Center.
- Click the ATouch icon in the Windows task bar at the bottom right of the display.
- Click right mouse button on the ATouch icon in the Windows task bar at the bottom right of the display and click Show Control Center.

2. Calibrate



- The Calibrate tab is displayed when the Control Center is launched.
- Serial port is changeable. Choose the right serial port with which the touchscreen connects, and click Apply button.
- Click the Calibration button to calibrate.

3. Settings



- **Mouse Action**

There are three combinations for this function.

- Drag Mode and Click on touch

Click on touch sends, immediately upon touch, a mouse down/up message at the point of touch on the touchscreen. The user's finger must be removed from the touchscreen before a new touch at any location is recognized. The cursor or selected

objects can be dragged on the screen in this mode.

- **Move Mode and Click on touch**

Click on touch sends, immediately upon touch, a mouse down/up message at the point of touch on the touchscreen. The user's finger must be removed from the touchscreen before a new touch at any location will be recognized. The cursor or selected objects cannot be dragged on the screen in this mode.

- **Move Mode and Click on release**

Click on release sends, at the time of release, a mouse down/up message at the point that the screen was last touched. Dragging across objects on the screen will not highlight or select them unless untouch occurs when the touch is over the object.

- **Double Click Settings**

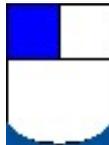
- **Speed** : To set the appropriate speed to achieve double-click that is identical to the speed of a successful double-click with the mouse.

- **Range** : To set the dimensions of the location around each clickable icon or object on the screen which will be recognized by Windows.

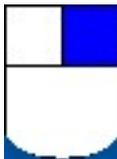
- **Mouse Right Click**

- Allow a Windows right mouse button simulation on the touchscreen.

- When this function is set On, a representation of a typical two-button mouse is displayed in a small window on the desktop, named Right Mouse Button Window (RMBW). The initial presentation of the RMBW shows the left button blue, indicating that the left button is active. Any touch on the desktop or an application will make a left button click constantly.

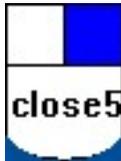


- A touch in the RMBW changes to show the right mouse button blue and make it active. At that time any touch on this monitor will make a right button click constantly.



- When the RMBW is right button active, click it again to change to left button active.

- When the mouse cursor is moved to the RMBW and stays on it for five seconds, the RMBW is shutdown automatically.

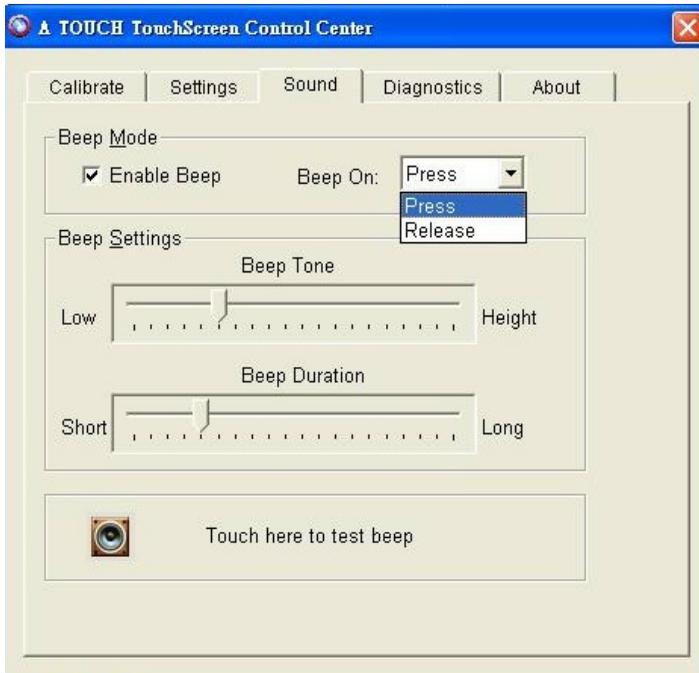


- The position of the RMBW is fixed in the bottom right of the display.
- The RMBW cannot be resized.

- **Screen Settings**

Putting a check in the box supports 16:9 monitor, otherwise supports standard 4:3 monitor.

4. Sound



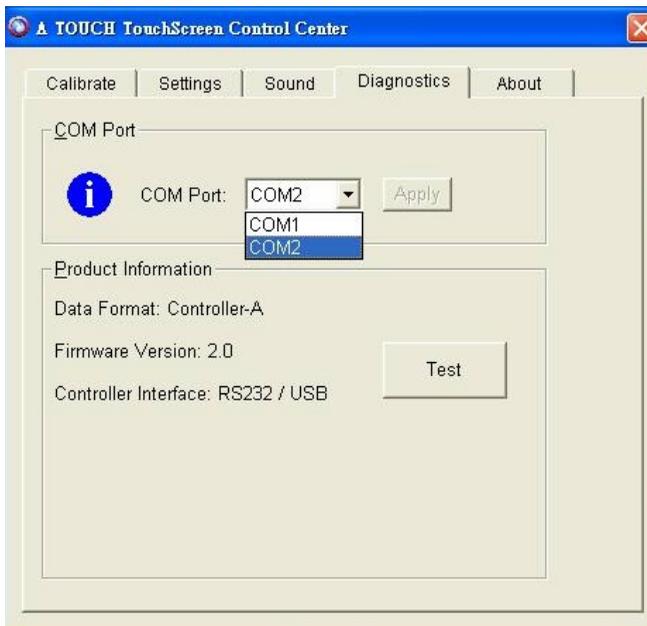
- **Beep Mode**

- The Sound tab sends a single-frequency tone, or “Beep” to the system speaker each time that a valid touch occurs.
- The beep is enabled by default when the driver is installed. It is able to be turned off by unchecking the Beep on the check box in this tab.
- Choose the Beep by clicking on touch or release.

- **Beep Settings**

- The frequency (Tone) and the Duration of the beep can be adjusted by moving the appropriate slider in this tab with the touchscreen or mouse, or by using the keyboard arrow keys.

5. Diagnostics



- Choose the right serial port with which the touchscreen connects, and click Apply button.
- Showing the product information.

6. About

The About tab show the version of the driver and provides the link to ATouch's web site.

3.2 USB Software Driver Installation for Windows

The following installation is applied to

Windows 95/98/Me/2000/XP/NT

The complete procedure is divided into two parts: pl2303 and ATouch-2.0.exe.

Step1. Run self-extract file “ATouch USB Drivers.exe” in the driver diskette.

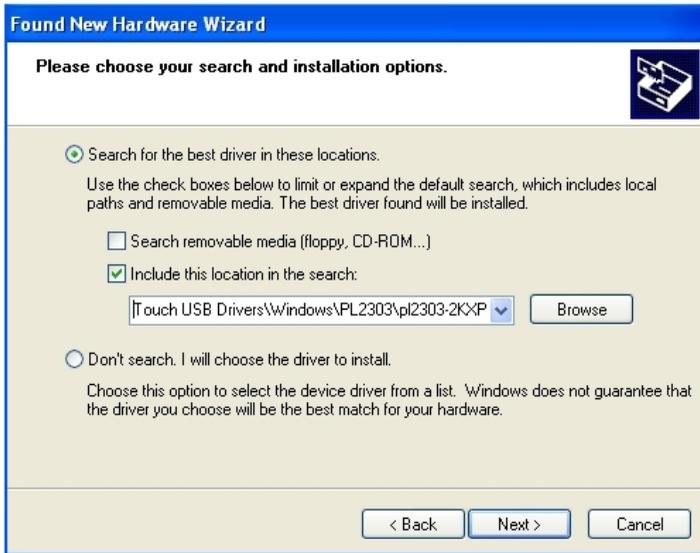
Step2: Installing the pl2303 USB-to-Serial converter driver.

(Use Windows XP for example)

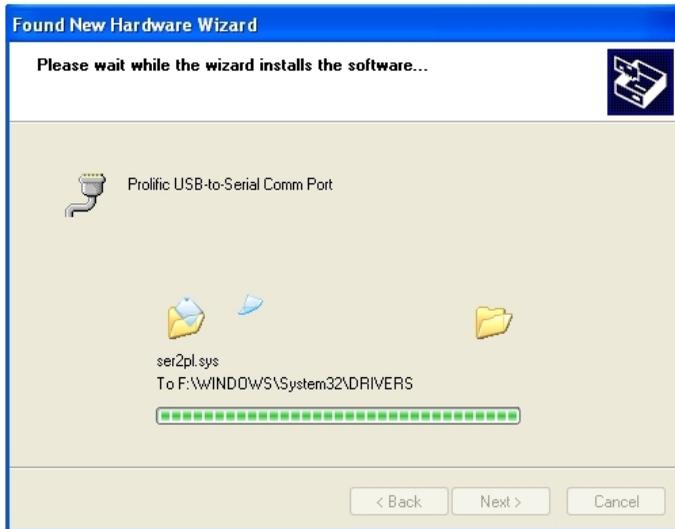
1. When your operating system is detected a new USB device, please choose the “Install form a list or specific location [Advanced]” item to install the pl2303 driver.



2. Please tick the “include this location in the search” item and click the Browse button to specify the correct path of its directory.



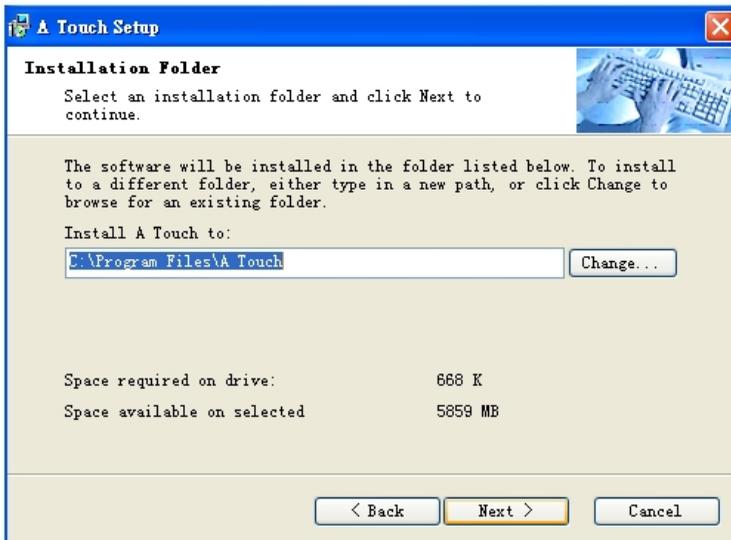
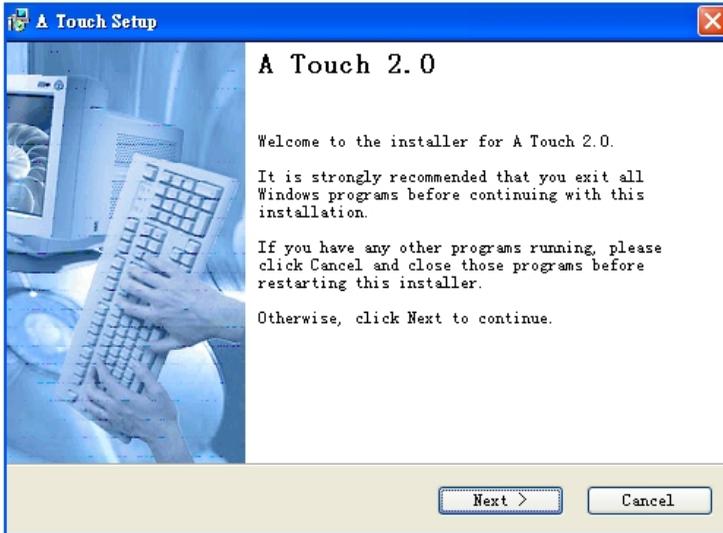
3. The Hardware Wizard has found the driver and installing it.

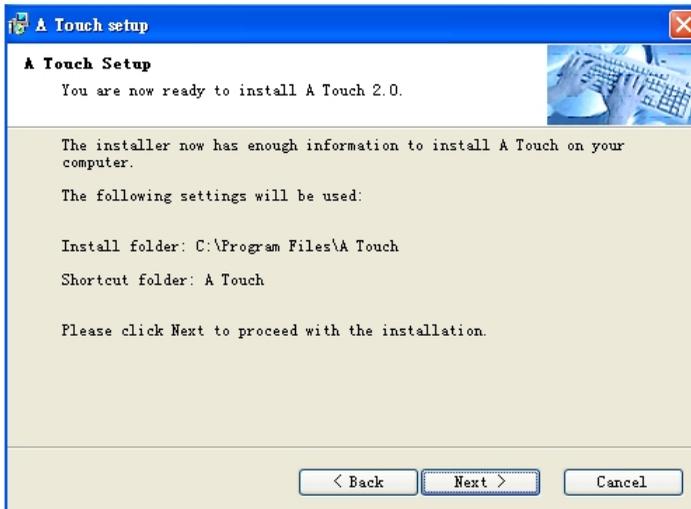


4. After these three steps, the USB touch screen has been activated.

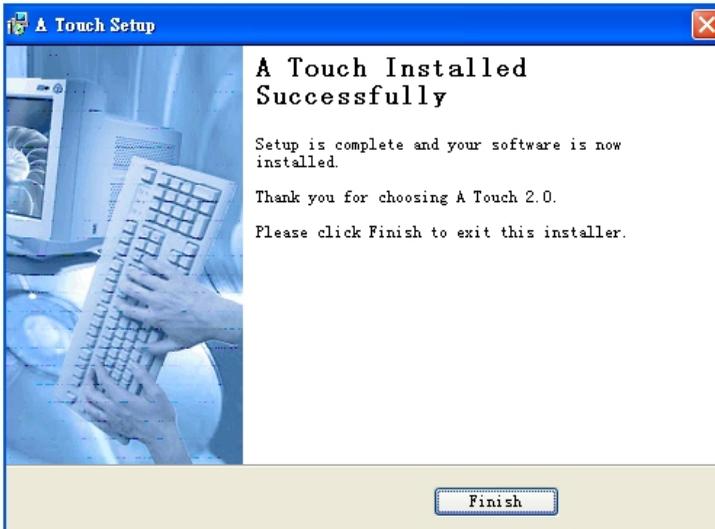
Step3 : Installing the ATouch-2.0 touch screen driver.

1. Execute "ATouch-2.0.exe" in your diskette or other folder, and follow its instructions to complete the installation.

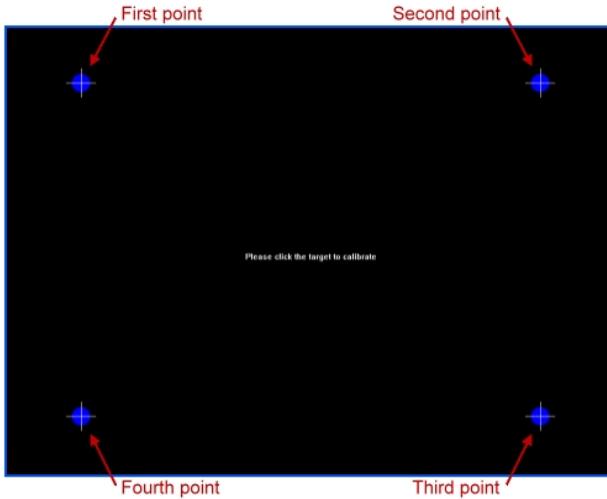




2. Please select the COM3 or COM4 port.



3. Touch each center of the point sequentially. Four calibration points in total.



4. The installation completes.

3.3 Linux Drivers

Please contact with your distributor or contact with ATouch
Technical Support Dept. (info@a-touch.com.tw)

Chapter 4 Troubleshooting

Before you start troubleshooting, check the following.

- Make sure your computer and monitor are working normally.
- Check that the touchscreen connectors are all inserted correctly.

Make sure if the touchscreen hardware is normal in function.

- Connect the touch sensor and the controller with the computer. After the computer power is opened, check the controller. The red LED on the controller will light and then switch off after three seconds automatically. When the touch sensor is touched, the LED lights. That condition means the touchscreen system is normal.

The LED lights constantly, not switch off

- Check whether the protected film on the touch sensor is removed.
- Check whether the touch sensor is very dirty and needs to be cleaned.
- The transducers on the touch sensor are out of order during transportation and movement.

The LED does not light

- The power-supply key board cable of the touchscreen does not be connected or not connected tightly enough. Or the key board connectors have some defects. Remove the touchscreen system from the computer, and re-connect the key board with the computer to check if the key board works normally.

The touchscreen hardware is normal but no touch response .

- If the RS-232 controller is used, check whether its COM port is identical with the serial port setting in the ATouch Control Center program . If they are not the same, correct it and retry.
- Check whether the device resource of the computer is in conflict condition. For example, the default IRQ of some network adapters is 3 ,and that conflicts with the IRQ of COM2. Change the IRQ of the device to the idle one.

The touch position is not accurate.

- Use the Calibration function of the ATouch Control Center program to re-align.
- If the touch position is not accurate after the calibration, please check whether the touchscreen driver you use is the newest version.
- Maybe there is too much water, dust or other contaminants on the surface of the touch sensor. Please clean it.

No touch response to the partial area of the touch sensor.

- Maybe the partial reflectors on the touch sensor surface are covered with dust that influences the transmission of the acoustic wave. Please check and clean it.
- Maybe the partial reflectors on the touch sensor surface are scratched by certain hard object. In this case, the touch sensor is not able to be repaired.

The cursor trembles on the screen automatically in untouched condition.

- Check whether the setting position of the controller and the touchscreen cables are set too close to the display's inverter and the power supply. Let the controller and the cables far away from them.
- Check whether the insulation treatment is done.

Chapter 5 Contact

For any question, please contact with your distributor or contact with A Touch Technical Support Dept.:

info@a-touch.com.tw