

# **TouchScreen Controller**

## **Installation Guide**

**VERSION : 2.5**

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# Chapter 1. TOUCH SCREEN CONTROLLER

## ***About this Document***

The information in this document is subject to change without notice.

## ***Touch Screen Controller Components***

- Enhanced anti-noise SMD multi-layered controller board with 2 attached cables
- Serial controller with a keyboard power tap cable
- CD-ROM Drive Diskette

## ***Hardware System Requirements***

- Computer: IBM Pentium Compatible or above
- Hard Disk Drive: 5MB of free memory
- Drive: CD-ROM drive
- LCD or Monitor: SVGA color
- Video card: VESA Super VGA BIOS Ext. version 1.2 or newer SVGA
- Keyboard port: Output 4~6VDC (max. use<35ma)
- Connect port: RS-232 port or PS/2 port or USB port
- Mouse: Low power consumption model (2 buttons)

## Chapter 2. CONTROLLER FEATURES

### Serial Controller Features

#### (a) Hardware Specifications

Power Requirements	+5VDC ( Maximum 150mA, typical current depend on specified panel, 50mV peak to peak maximum ripple )
Operating Temperature	0 to 60 °C
Storage Tempeture	-40 to 80 °C
Relative Humidity	95% at 60 °C
Protocol	38400 BPS baudrate, 1 Start bit, 8 Data bits, None parity, 1 Stop Bit.
Resolution	Sample 4096X4096 (12Bits), Report 1024X1024(10Bits)
Report Rate	Minimum 65 PPS (Point per Second)
Response Time	Maximum 20 ms
Pin Out Definition	4 wire : YU, YD, XR, XL 5 wire : RT, RL, SG, LT, LL
Panel Resistance	4 wire : 150 to 1500 Ohm ( pin to pin on the same layer ) 5 wire : 30 to 500 Ohm ( pin to pin on drive layer )

#### (b) Software Specifications

Serial Port Support	COM1 to COM9 for DOS , Windows 95/98/ME/2000/XP/NT4/2003 COM1 to COM4 for Windows 3.1
Virtual Button	1. Stream Mode 2. Touch Down Mode 3. Lift Off Mode 4. Drag Drop Mode Support right button function
Feedback Sound	1. Silence ( No Sound ) 2. Touch Down Only 3. Lift Off Only 4. Both Touch Down and Lift Off
Mouse Speed	1. Bypass 2. Acceleration ( Slow, Medium, Fast, Off ) 3. Horizontal Speed ( 5% to 100% ) 4. Vertical Speed ( 5% to 100% )
Power Save	1. Disable 2. Enable ( 10 sec. to 300 sec. )
Calibration	Fast 4 point position
OS Support	1. MS-DOS 2. Windows 3.1/95/98/ME/NT4/2000/XP/2003 3. Redhat/Mandrake Linux (XOrg version 6.4.x / XFree86 version 4.1 or later ) 4. Windows CE 3.1/.NET

## **PS/2 Controller Features**

### **(a) Hardware Specifications**

Power Requirements	+5VDC ( Maximum 30mA, typical 15mA, 50mV peak to peak maximum ripple )
Operating Temperature	0 to 60 °C
Storage Tempeture	-40 to 80 °C
Relative Humidity	95% at 60 °C
Protocol	Standard 2 button PS/2 Mouse.
Resolution	Sample 4096X4096 (12Bits), Report 1024X1024(10Bits)
Report Rate	Minimum 60 PPS (Point per Second)
Response Time	Maximum 20 ms
Pin Out Definition	4 wire : YU, YD, XR, XL 5 wire : RT, RL, SG, LT, LL
Panel Resistance	4 wire : 150 to 1500 Ohm ( pin to pin on the same layer ) 5 wire : 30 to 500 Ohm ( pin to pin on drive layer )
Extend PS/2 Mouse Port	Support standard 2 button PS/2 Mouse

### **(b) Software Specifications**

PS/2 Port Support	Auto detect function
Virtual Button	1. Stream Mode 2. Touch Down Mode 3. Lift Off Mode 4. Drag Drop Mode Support right button function
Feedback Sound	1. Silence ( No Sound ) 2. Touch Down Only 3. Lift Off Only 4. Both Touch Down and Lift Off
Mouse Speed	1. Bypass 2. Acceleration ( Slow, Medium, Fast, Off ) 3. Horizontal Speed ( 5% to 100% ) 4. Vertical Speed ( 5% to 100% )
Calibration	Fast 4 point position
OS Support	1. MS-DOS 2. Windows 3.1/95/98/ME/NT4/2000/XP/2003 3. Redhat/Mandrake Linux (XOrg version 6.4.x / XFree86 version 4.1 or later ) 4. Windows CE 3.1/.NET

## USB Controller Features

### (a) Hardware Specifications

Power Requirements	+5VDC ( Maximum 100mA )
Operating Temperature	0 to 60 °C
Storage Tempeture	-40 to 80 °C
Relative Humidity	95% at 60 °C
Protocol	Standard USB Mouse.
Report Rate	Minimum 160 PPS (Point per Second)
Response Time	Maximum 35 ms
Pin Out Definition	5 wire : RT, RL, SG, LT, LL
Panel Resistance	5 wire : 30 to 500 Ohm ( pin to pin on drive layer )

### (b) Software Specifications

USB Port Support	Auto detect function
Virtual Button	<ol style="list-style-type: none"><li>1. Stream Mode</li><li>2. Touch Down Mode</li><li>3. Lift Off Mode</li><li>4. Drag Drop Mode</li></ol> Support right button function
Feedback Sound	<ol style="list-style-type: none"><li>1. Silence ( No Sound )</li><li>2. Touch Down Only</li><li>3. Lift Off Only</li><li>4. Both Touch Down and Lift Off</li></ol>
Mouse Speed	<ol style="list-style-type: none"><li>1. Bypass</li><li>2. Acceleration ( Slow, Medium, Fast, Off )</li><li>3. Horizontal Speed ( 5% to 100% )</li><li>4. Vertical Speed ( 5% to 100% )</li></ol>
Calibration	Fast 4 point position
OS Support	<ol style="list-style-type: none"><li>1. Windows 2000/XP</li></ol>

# Chapter 3. TOUCH SCREEN CONTROLLER HARDWARE INSTALLATION

## 5 Wires Resistive USB Touch Screen Controller Hardware Installation

This chapter discusses how to install your 5 wires resistive serial touch screen controller, follow the directions starting on the next section to install the controller to your computer.

---

**IMPORTANT:**  
Before connecting the touch screen controller to your computer system,  
Be sure that the computer system is turned off.

---

### 1. Turning Off Your Computer System

Before you install the 5 wires resistive USB touch screen controller, turn off your computer system.

### 2. Connecting the Controller

The 5 wires resistive USB touch screen controller included a USB cable, which has 5-pin D connector.. Plug the USB cable into a USB port on your computer directly .

### 3. Supplying Power to the Controller

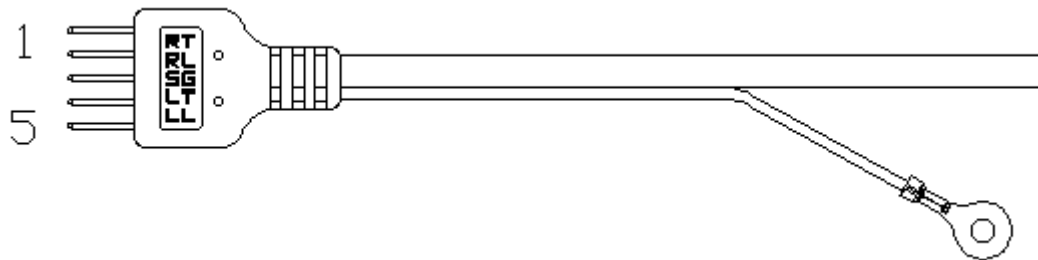
The 5 wires resistive USB touch screen controller included a 5-pin USB cable, which using to provide power to the controller.

To connect USB cable:

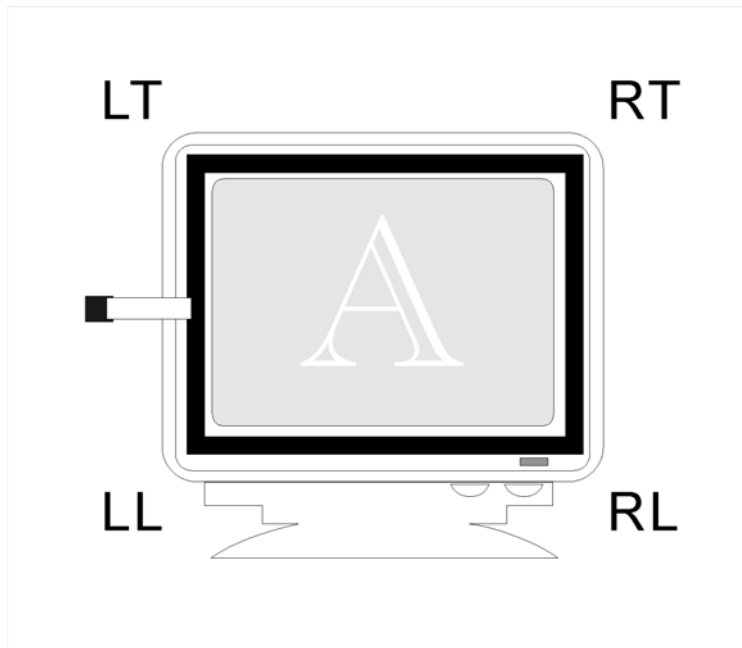
- Plug the USB cable into usb port.

### 4. Mounting the Touch Panel

There are several methods for mounting the touch panel (or sensor) depending on your application. The 5 wires resistive serial touch screen controller included a 5-pin ( pitch 2.54mm) touch panel cable. The Pin Assignment of Touch Panel Cable listed in below, if your touch panel's pin out does not match it, you may need jumping cable



Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
RT	RL	SG	LT	LL



### 5. Turning On Your Computer System

Before you turn on your computer system, ensure that all cables are connected properly and that the controller is properly mounted. Be sure to tighten all cable connector screws.

To start up your system:

- Turn on your computer system.
- Adjust the horizontal and vertical position controls on the monitor to center the image on the screen.

### 6. Check the Status LED

The 5 wires resistive USB touch screen controller has a LED (light emitting diode) on the box that indicates the status of the controller. When you power-up the unit, the LED is on after the controller start-up sequence is completed. Following start-up, the LED goes on and remains on as long as you do not touch the sensor. After the TouchScreen Driver is installed and startup, when you touch the sensor, the LED goes flashing (or blinking ) until you lift off from the sensor.

### 7. Installing and Using TouchScreen Software

You have successfully installed the 5 wires USB touch screen controller and connected the touchscreen to your computer. You are now ready to complete the following tasks:

- install the appropriate TouchScreen Driver software for the operating system you are using.
- Use the TouchScreen Control Panel software to calibrate the touchscreen.

Insert the TouchScreen Drivers CD-ROM in your computer's CD-ROM drive and follow the directions starting on the next page to install the driver software.



## 5 Wires Resistive Serial Touch Screen Controller Hardware Installation

This chapter discusses how to install your 5 wires resistive serial touch screen controller, follow the directions starting on the next section to install the controller to your computer.

---

### **IMPORTANT:**

**Before connecting the touch screen controller to your computer system, Be sure that the computer system is turned off.**

---

### 1. Turning Off Your Computer System

Before you install the 5 wires resistive serial touch screen controller, turn off your computer system.

### 2. Connecting the Controller

The 5 wires resistive serial touch screen controller included a RS-232 cable, which has 9-pin D connector. You may need 9-pin to 25-pin adapter if the only available COM port on your computer has 25 pins. Plug the RS-232 cable into a COM port on your computer, directly or through the adapter.

### 3. Supplying Power to the Controller

The 5 wires resistive serial touch screen controller included a 6-pin IBM PS/2 compatible keyboard power tap cable, which using to provide power to the controller. You may need 5-pin to 6-pin IBM PS/2 compatible keyboard adapter if the only available keyboard socket on your computer has 5-pin.

To connect the keyboard power tap cable:

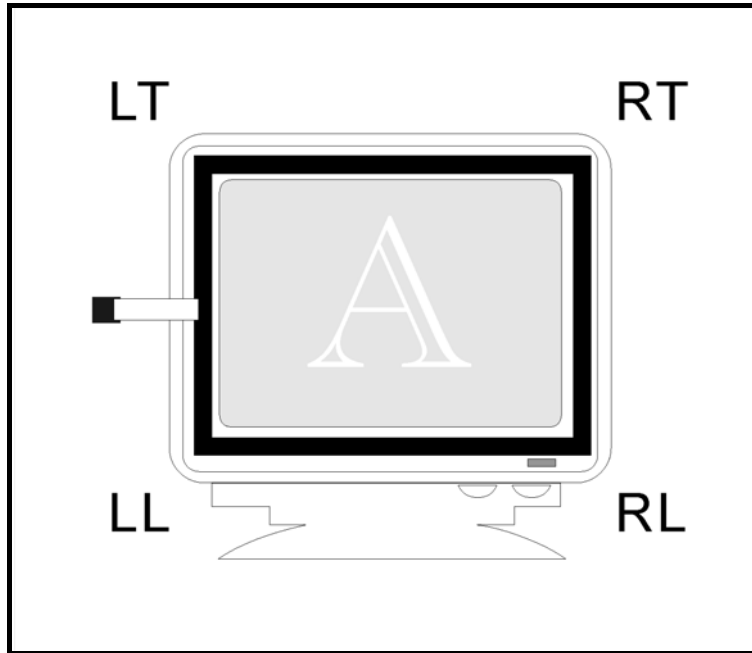
- Disconnect the keyboard cable from the back of your computer.
- Plug the keyboard cable into the power tap cable.
- Plug the power tap cable into the keyboard socket on the back of your computer.
- Connect the DC plug from the power tap cable to the jack built into the 9-pin D connector.

### 4. Mounting the Touch Panel

There are several methods for mounting the touch panel (or sensor) depending on your application. The 5 wires resistive serial touch screen controller included a 5-pin (pitch 2.54mm) touch panel cable. The Pin Assignment of Touch Panel Cable listed in below, if your touch panel's pin out does not match it, you may need jumping cable.



Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
RT	RL	SG	LT	LL



### 5. Turning On Your Computer System

Before you turn on your computer system, ensure that all cables are connected properly and that the controller is properly mounted. Be sure to tighten all cable connector screws.

To start up your system:

- Turn on your computer system.
- Adjust the horizontal and vertical position controls on the monitor to center the image on the screen.

### 6. Check the Status LED

The 5 wires resistive serial touch screen controller has a LED (light emitting diode) on the box that indicates the status of the controller. When you power-up the unit, the LED is on after the controller start-up sequence is completed. Following start-up, the LED goes on and remains on as long as you do not touch the sensor. After the TouchScreen Driver is installed and startup, when you touch the sensor, the LED goes flashing (or blinking ) until you lift off from the sensor.

### 7. Installing and Using TouchScreen Software

You have successfully installed the 5 wires resistive serial touch screen controller and connected the touchscreen to your computer. You are now ready to complete the following tasks:

- install the appropriate TouchScreen Driver software for the operating system you are using.
- Use the TouchScreen Control Panel software to calibrate the touchscreen.

Insert the TouchScreen Drivers CD-ROM in your computer's CD-ROM drive and follow the directions starting on the next page to install the driver software.

## 5 Wires Resistive PS/2 Touch Screen Controller Hardware Installation

This chapter discusses how to install your 5 wires resistive PS/2 touch screen controller, follow the directions starting on the next section to install the controller to your computer.

---

**IMPORTANT:**

**Before connecting the touch screen controller to your computer system, Be sure that the computer system is turned off.**

---

### 1. Turning Off Your Computer System

Before you install the 5 wires resistive PS/2 touch screen controller, turn off your computer system.

### 2. Connecting the Controller

The 5 wire resistive PS/2 touch screen controller included a Y-type cable, which has a 6-pin Male Mini Din connector and a 6-pin Female Mini Din connector. You may use the Y-type cable to connect the controller to your computer and connect the PS/2 mouse to the controller.

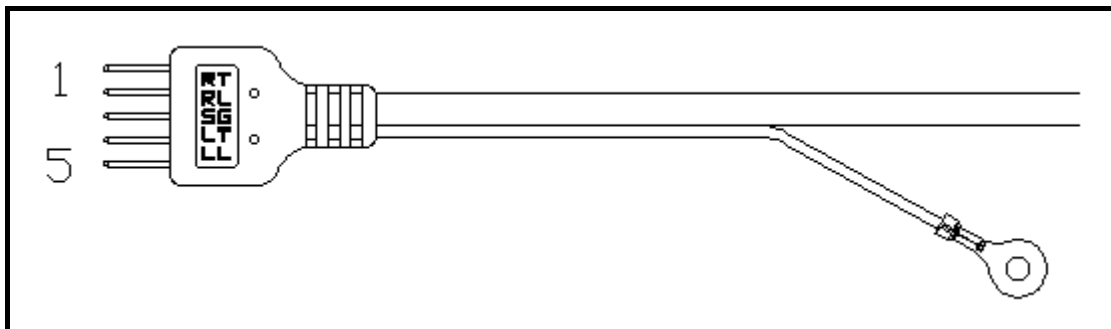
### 3. Supplying Power to the Controller

To connect the controller:

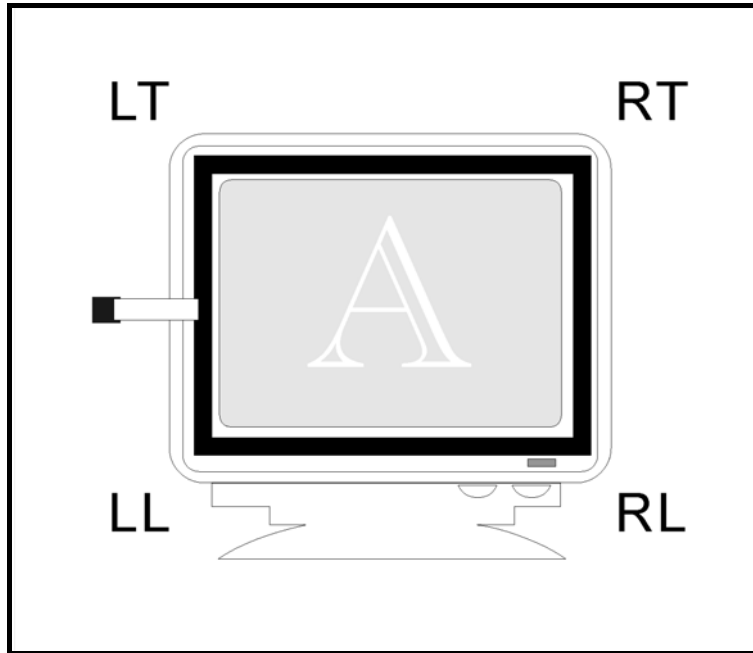
- Disconnect the PS/2 mouse cable from the back of your computer.
- Plug the PS/2 mouse cable into the Y-type cable.
- Plug the Y-type cable into the mouse socket on the back of your computer.

### 4. Mounting the Touch Panel

There are several methods for mounting the touch panel (or sensor) depending on your application. The 5 wires resistive PS/2 touch screen controller includes a 5-pin (pitch 2.54mm) touch panel cable. The Pin Assignment of Touch Panel Cable listed as below, if your touch panel's pin out cannot match it, you may need a jump cable.



Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
RT	RL	SG	LT	LL



### 5. Turning On Your Computer System

Before you turn on your computer system, ensure that all cables are connected properly and the controller is mounted properly. Be sure to tighten all cable connector screws.

To start up your system:

- Turn on your computer system.
- Adjust the horizontal and vertical position controls on the monitor to center the image on the screen.

### 6. Check the Status LED

The 5 wire resistive PS/2 touch screen controller has a LED (light emitting diode) on the box that indicates the status of the controller. When you power-up the unit, the LED is on after the controller start-up sequence is completed. Following start-up, the LED goes on and remains on as long as you do not touch the sensor. After the touch screen driver is installed and startup, when you touch the sensor, the LED goes flashing (or blinking) until you lift off from the sensor.

### 7. Installing and Using Touch Screen Software

You have successfully installed the 5 wires resistive PS/2 touch screen controller and connected the touch screen to your computer. You are now ready to complete the following tasks:

- install the appropriate touch screen driver software for the operating system you are using.
- Use the Touch Screen Control Panel software to calibrate the touch screen.

Insert the Touch Screen Drivers CD-ROM in your computer's CD-ROM drive and follow the directions starting on the next page to install the driver software.

## 4 Wires Resistive Serial Touch Screen Controller Hardware Installation

This chapter discusses how to install your 4 wires resistive serial touch screen controller, follow the directions starting on the next section to install the controller to your computer.

---

**IMPORTANT:**

**Before connecting the touch screen controller to your computer system, Be sure that the computer system is turned off.**

---

### 1. Turning Off Your Computer System

Before you install the 4 wires resistive serial touch screen controller, turn off your computer system.

### 2. Connecting the Controller

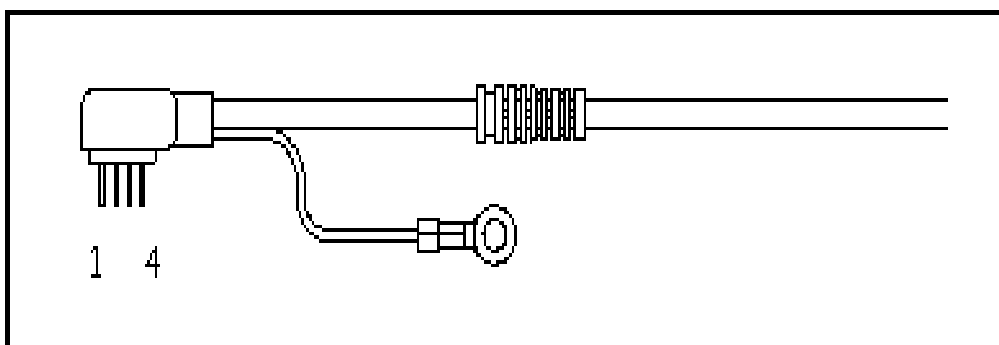
The 4 wires resistive serial touch screen controller includes a 6-pin IBM PS/2 compatible keyboard power tap cable, which using to provide power to the controller. You may need 5-pin to 6-pin IBM PS/2 compatible keyboard adapter if the only available keyboard socket on your computer has 5-pin.

To connect the keyboard power tap cable:

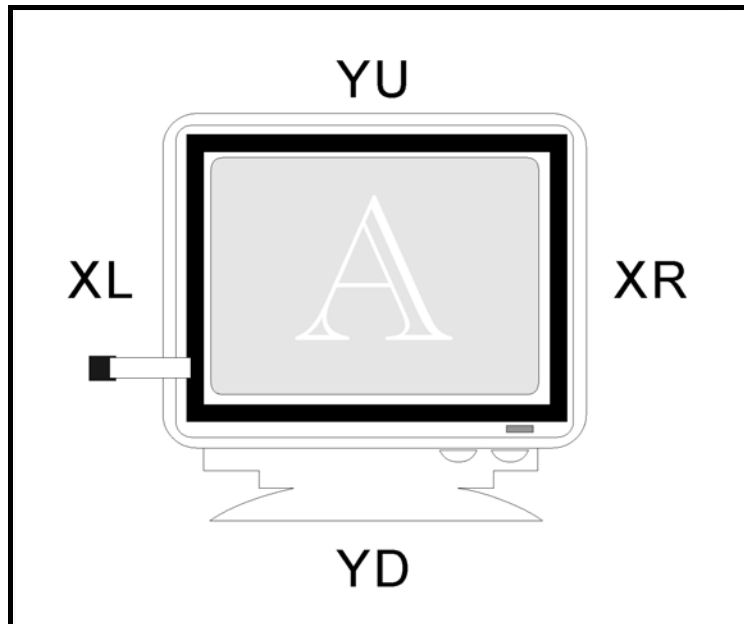
- Disconnect the keyboard cable from the back of your computer.
- Plug the keyboard cable into the power tap cable.
- Plug the power tap cable into the keyboard socket on the back of your computer.
- Connect the DC plug from the power tap cable to the jack built into the 9-pin D connector.

### 3. Mounting the Touch Panel

There are several methods for mounting the touch panel (or sensor) depending on your application. The 4 wires resistive serial touch screen controller included a 4-pin (pitch 2.54mm) touch panel cable. The Pin Assignment of Touch Panel Cable listed in below, if your touch panel's pin out does not match it, you may need jumping cable.



Pin 1	Pin 2	Pin 3	Pin 4
YU	YD	XR	XL



#### 4. Turning On Your Computer System

Before you turn on your computer system, ensure that all cables are connected properly and that the controller is properly mounted. Be sure to tighten all cable connector screws.

To start up your system:

- Turn on your computer system.
- Adjust the horizontal and vertical position controls on the monitor to center the image on the screen.

#### 5. Check the Status LED

The 4 wires resistive serial touch screen controller has a LED ( light emitting diode) on the box that indicates the status of the controller. When you power-up the unit, the LED is on after the controller start-up sequence is completed. Following start-up, the LED goes on and remains on as long as you do not touch the sensor. After the touch screen Driver is installed and startup, when you touch the sensor, the LED goes flashing ( or blinking ) until you lift off from the sensor.

#### 6. Installing and Using Touch Screen Software

You have successfully installed the 4 wires resistive serial touch screen controller and connected the touch screen to your computer. You are now ready to complete the following tasks:

- install the appropriate touch screen Driver software for the operation system you are using.
- Use the touch screen Control Panel software to calibrate the touch screen.

Insert the touch screen Drivers CD-ROM in your computer's CD-ROM drive and follow the directions starting on the next page to install the driver software.

## 4 Wires Resistive PS/2 Touch Screen Controller Hardware Installation

This chapter discusses how to install your 4 wires resistive ps/2 touch screen controller, follow the directions starting on the next section to install the controller to your computer.

---

**IMPORTANT:**

**Before connecting the TouchScreen Controller to your computer system, Be sure that the computer system is turned off.**

---

### 1. Turning Off Your Computer System

Before you install the 4 wire resistive PS/2 touch screen controller, turn off your computer system.

### 2. Connecting the Controller

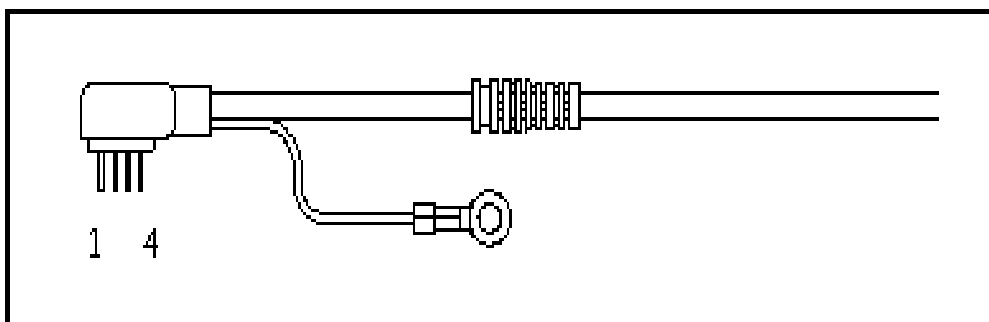
The 4 wire resistive PS/2 touch screen controller included a Y-type cable, which has a 6-pin Male Mini Din connector and a 6-pin Female Mini Din connector. You may use the Y-type cable to connect the controller to your computer and connect the PS/2 mouse to the controller.

To connect the controller:

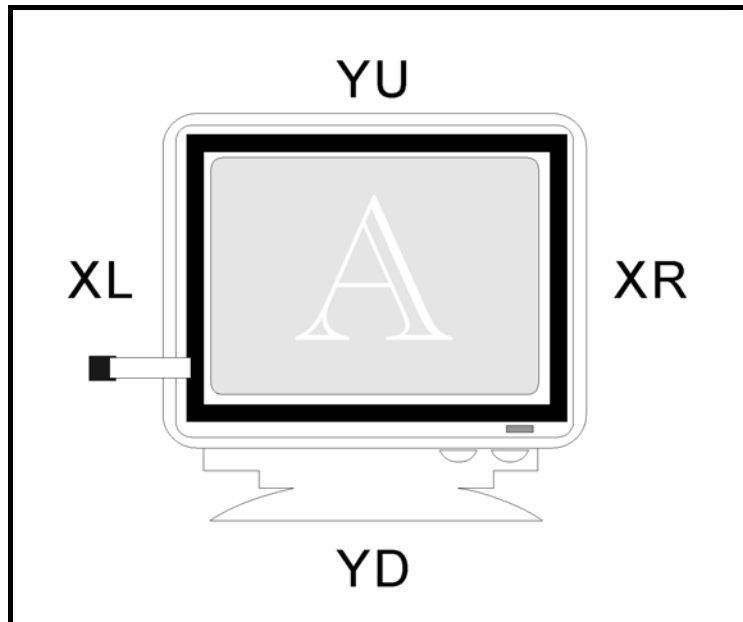
- Disconnect the PS/2 mouse cable from the back of your computer.
- Plug the PS/2 mouse cable into the Y-type cable.
- Plug the Y-type cable into the mouse socket on the back of your computer.

### 3. Mounting the Touch Panel

There are several methods for mounting the touch panel (or sensor) depending on your application. The 4 wire resistive PS/2 touch screen controller included a 4-pin (pitch 2mm) touch panel cable. The Pin Assignment of Touch Panel Cable listed in below, if your touch panel's pin out does not match it, you may need jumping cable.



Pin 1	Pin 2	Pin 3	Pin 4
YU	YD	XR	XL



#### 4. Turning On Your Computer System

Before you turn on your computer system, ensure that all cables are connected properly and the controller is properly mounted. Be sure to tighten all cable connector screws.

To start up your system:

- Turn on your computer system.
- Adjust the horizontal and vertical position controls on the monitor to center the image on the screen.

#### 5. Checking the Status of LED

The 4 wire resistive PS/2 touch screen controller has a LED (light emitting diode) on the box that indicates the status of the controller. When you power-up the unit, the LED is out while the controller start-up sequence is completed. Following start-up, the LED goes out and remains out as long as you do not touch the sensor. After the touch screen Driver is installed and startup, when you touch the sensor, the LED goes flashing (or blinking) until you lift off from the sensor.

#### 6. Installing and Using Touch Screen Software

You have successfully installed the 4 wires resistive PS/2 touch screen controller and connected the touch screen to your computer. You are now ready to complete the following tasks:

- install the appropriate touch screen Driver software for the operating system you are using.
- Use the touch screen Control Panel software to calibrate the touch screen.

Insert the touch screen Drivers CD-ROM in your computer's CD-ROM drive and follow the directions starting on the next page to install the driver software.



# Chapter 4. SOFTWARE INSTALLATION

This chapter discusses how to install the TouchScreen Driver software. The TouchScreen Drivers CD-ROM provides driver software that allows your TouchScreen to work with your computer. Drivers are located on the enclosed CD-ROM for the following operating systems:

Volume: TSCD06

├── \ USB	<b>USB Model Drivers</b>
├── \ WIN2000	..... Windows 2000
└── \ WINXP	..... Windows XP
├── \ COM	<b>Serial Model Drivers</b>
├── \ DOS	..... MS-DOS
├── \ WIN31	..... Windows 3.1
├── \ WIN95	..... Windows 95
├── \ WIN98	..... Windows 98
├── \ WINME	..... Windows ME
├── \ WINNT	..... Windows NT 4.0
├── \ WIN2000	..... Windows 2000
├── \ WIN2003	..... Windows Server 2003
├── \ WINXP	..... Windows XP
├── \ WINXPEMB	..... Windows XP Embedded
├── \ WINCE	..... Windows CE
└── \ LINUX	..... LINUX
└── \ PS2	<b>PS/2 Model Drivers</b>
├── \ DOS	..... MS-DOS
├── \ WIN31	..... Windows 3.1
├── \ WIN95	..... Windows 95
├── \ WIN98	..... Windows 98
├── \ WINME	..... Windows ME
├── \ WINNT	..... Windows NT 4.0
├── \ WIN2000	..... Windows 2000
├── \ WIN2003	..... Windows Server 2003
├── \ WINXP	..... Windows XP
├── \ WINXPEMB	..... Windows XP Embedded
├── \ WINCE	..... Windows CE
└── \ LINUX	..... LINUX

## Touch Screen Controller List

<ul style="list-style-type: none"> <li>— USB</li> </ul>	<ul style="list-style-type: none"> <li>— USB-R5W- HT580</li> </ul>	<ul style="list-style-type: none"> <li>... Internal 5 wires resistive serial controller (w/o case)</li> </ul>
<ul style="list-style-type: none"> <li>— COM</li> </ul>	<ul style="list-style-type: none"> <li>— COM-R4W-MT066</li> <li>— COM-R4W-6002</li> <li>— COM-R5W-MT566/HT271</li> <li>— COM-R5W- HT580</li> <li>— COM-R5W-6502</li> </ul>	<ul style="list-style-type: none"> <li>... Internal 4 wires resistive serial controller (w/o case)</li> <li>... External 4 wires resistive serial controller (w/ case)</li> <li>... Internal 5 wires resistive serial controller (w/o case)</li> <li>... Internal 5 wires resistive serial controller (w/o case)</li> <li>... External 5 wires resistive serial controller (w/ case)</li> </ul>
<ul style="list-style-type: none"> <li>— PS/2</li> </ul>	<ul style="list-style-type: none"> <li>— PS2-R4W-MT018</li> <li>— PS2-R4W-2002</li> <li>— PS2-R5W-MT518</li> <li>— PS2-R5W-2502</li> </ul>	<ul style="list-style-type: none"> <li>... Internal 4 wires resistive PS/2 controller (w/o case)</li> <li>... External 4 wires resistive PS/2 controller (w/ case)</li> <li>... Internal 5 wires resistive PS/2 controller (w/o case)</li> <li>... External 5 wires resistive PS/2 controller (w/ case)</li> </ul>

Exp1: If you use internal 4 wires resistive serial controller, model COM-R4W-MT066 under Win98 OS, and the CD-ROM is in "C" drive, please change to following subdirectory and execute it.  
 c:\com\win98\setup.exe ", the installation will be proceeded.

Exp2: If you use external 5 wires resistive PS/2 controller, model PS2-R5W-2502 under Winxp, and the CD-ROM is in "D" drive, please change to following subdirectory and execute it.  
 d:\ps2\winxp\setup.exe ", the installation will be proceeded.

Exp3: If you use external 5 wires resistive serial controller, model COM-R5W-6502 under DOS, and the CD-ROM is "E" in drive, please change to following subdirectory and execute it.  
 e:\com\dos\install c: ", the touch screen driver will be copied to drive C.

Be sure to install the correct TouchScreen Driver for the operating system you are using. The driver installation also includes a control panel for setting user touchscreen operating model and calibrate the touchscreen. Calibration aligns the touchscreen with the underlying video by defining of screen's image, and locating the center of touchscreen. You must calibrate the touchscreen and test the calibration to ensure its successful operation.

Refer to the appropriate section as follows for driver installation instructions.

## Chapter 5. DRIVER INSTALLATION

### **Windows XP**

This section discusses how to install the driver and calibrate the TouchScreen for Windows XP.

---

**Note:** You must have administrator access rights to install the driver.

---

To install the TouchScreen Driver:

- Insert the TouchScreen Drivers CD-ROM in your computer's CD-ROM drive
- Click **Start > Run**
- Click the **Browse** button to locate the Setup.exe program on the path "\COM\WINXP" of the CD-ROM.
- Click **Open**, then **OK** to run Setup.exe.
- Follow the directions on the screen to complete the driver setup.

To calibrate the TouchScreen:

- Click **Start > All Programs > TouchScreen V.x.x.COM > TouchScreen Control Panel V.x.x.COM** ( *where x.x is the Version of TouchScreen Driver* )
- Click **Calibration** button to start calibrate.
- Follow the directions on the screen to complete the calibration and test.

### **Windows XP Embedded**

This section discusses how to install the driver and calibrate the TouchScreen for Windows XP Embedded.

There are two method to install the TSCOM driver for Windows XP Embedded:

- (1) To install the TSCOM driver after the Windows XP Embedded system startup, read "TSCOM\_XPE\_Setup.txt" file for detail information.

Note: The TSCOM Driver for Windows XP also can be use for Windows XP Embedded in this mothod.

- (2) To build in the TSCOM driver to the Windows XP Embedded run-time image, read "TSCOM\_XPE\_BuildIn.txt" file for detail information.

## **Windows 2000**

This section discusses how to install the driver and calibrate the touchscreen for Windows 2000.

---

**Note:** You must have administrator access rights to install the driver.

---

To install the TouchScreen Driver:

- Insert the TouchScreen Drivers CD-ROM in your computer's CD-ROM drive
- Click **Start > Run**
- Click the **Browse** button to locate the Setup.exe program on the path "**\\COM\\WIN2000**" of the CD-ROM.
- Click **Open**, then **OK** to run Setup.exe.
- Follow the directions on the screen to complete the driver setup.

To calibrate the TouchScreen:

- Click **Start > Programs > TouchScreen V.x.x.COM > TouchScreen Control Panel V.x.x.COM** ( *where x.x is the Version of TouchScreen Driver* )
- Click **Calibration** button to start calibrate.
- Follow the directions on the screen to complete the calibration and test.

## **Windows Server 2003**

This section discusses how to install the driver and calibrate the touchscreen for Windows Server 2003.

---

**Note:** You must have administrator access rights to install the driver.

---

To install the TouchScreen Driver:

- Insert the TouchScreen Drivers CD-ROM in your computer's CD-ROM drive
- Click **Start > Run**
- Click the **Browse** button to locate the Setup.exe program on the path "**\\COM\\WIN2003**" of the CD-ROM.
- Click **Open**, then **OK** to run Setup.exe.
- Follow the directions on the screen to complete the driver setup.

To calibrate the TouchScreen:

- Click **Start > Programs > TouchScreen V.x.x.COM > TouchScreen Control Panel V.x.x.COM** ( *where x.x is the Version of TouchScreen Driver* )
- Click **Calibration** button to start calibrate.
- Follow the directions on the screen to complete the calibration and test.

## **Windows NT 4.0**

This section discusses how to install the driver and calibrate the TouchScreen for Windows NT 4.0.

---

**Note:** You must have administrator access rights to install the driver.

---

To install the TouchScreen Driver:

- Insert the TouchScreen Drivers CD-ROM in your computer's CD-ROM drive
- Click **Start > Run**
- Click the **Browse** button to locate the Setup.exe program on the path "**\\COM\\WINNT**" of the CD-ROM.
- Click **Open**, then **OK** to run Setup.exe.
- Follow the directions on the screen to complete the driver setup.

To calibrate the TouchScreen:

- Click **Start > Programs > TouchScreen V.x.x.COM > TouchScreen Control Panel V.x.x.COM** ( *where x.x is the Version of TouchScreen Driver* )
- Click **Calibration** button to start calibrate.
- Follow the directions on the screen to complete the calibration and test.

## **Windows ME**

This section discusses how to install the driver and calibrate the TouchScreen for Windows ME.

To install the TouchScreen Driver:

- Insert the TouchScreen Drivers CD-ROM in your computer's CD-ROM drive
- Click **Start > Run**
- Click the **Browse** button to locate the Setup.exe program on the path "**\\COM\\WINME**" of the CD-ROM.
- Click **Open**, then **OK** to run Setup.exe.
- Follow the directions on the screen to complete the driver setup.

To calibrate the TouchScreen:

- Click **Start > Programs > TouchScreen V.x.x.COM > TouchScreen Control Panel V.x.x.COM** ( *where x.x is the Version of TouchScreen Driver* )
- Click **Calibration** button to start calibrate.
- Follow the directions on the screen to complete the calibration and test.

## **Windows 98**

This section discusses how to install the driver and calibrate the TouchScreen for Windows 98.

To install the TouchScreen Driver:

- Insert the TouchScreen Drivers CD-ROM in your computer's CD-ROM drive
- Click **Start > Run**
- Click the **Browse** button to locate the Setup.exe program on the path "**\COM\WIN98**" of the CD-ROM.
- Click **Open**, then **OK** to run Setup.exe.
- Follow the directions on the screen to complete the driver setup.

To calibrate the TouchScreen:

- Click **Start > Programs > TouchScreen V.x.x.COM > TouchScreen Control Panel V.x.x.COM** ( *where x.x is the Version of TouchScreen Driver* )
- Click **Calibration** button to start calibrate.
- Follow the directions on the screen to complete the calibration and test.

## **Windows 95**

This section discusses how to install the driver and calibrate the TouchScreen for Windows 95.

To install the TouchScreen Driver:

- Insert the TouchScreen Drivers CD-ROM in your computer's CD-ROM drive
- Click **Start > Run**
- Click the **Browse** button to locate the Setup.exe program on the path "**\COM\WIN95**" of the CD-ROM.
- Click **Open**, then **OK** to run Setup.exe.
- Follow the directions on the screen to complete the driver setup.

To calibrate the TouchScreen:

- Click **Start > Programs > TouchScreen V.x.x.COM > TouchScreen Control Panel V.x.x.COM** ( *where x.x is the Version of TouchScreen Driver* )
- Click **Calibration** button to start calibrate.
- Follow the directions on the screen to complete the calibration and test.

## **Windows CE**

This section discusses how to install the driver and calibrate the TouchScreen for Windows CE.

To install the TSCOM driver into the Windows CE system , read the " readme " file in different version for detail information.

## **Windows 3.1**

This section discusses how to install the driver and calibrate the TouchScreen for Windows 3.1.

To install the TouchScreen Driver:

- Insert the TouchScreen Drivers CD-ROM in your computer's CD-ROM drive
- Click **File > Run** on the Desktop Menu.
- Click the **Browse** button to locate the Setup.exe program on the path "**\COM\WIN31**" of the CD-ROM.
- Click **Open**, then **OK** to run Setup.exe.
- Follow the directions on the screen to complete the driver setup.

To calibrate the TouchScreen:

- Open **TouchScreen V.x.x.COM** Group Window, then double Click on **TouchScreen Control Panel V.x.x.COM** Icon to startup TouchScreen Control Panel Program.  
( *where x.x is the Version of TouchScreen Driver* )
- Click **Calibration** button to start calibrate.
- Follow the directions on the screen to complete the calibration and test.

## **MS-DOS**

This section discusses how to install the driver and calibrate the TouchScreen for MS-DOS.

To install the TouchScreen Driver:

- Insert the TouchScreen Drivers CD-ROM in your computer's CD-ROM drive
- Type **D:** and press **Enter** key to change current drive to your CD-ROM drive.  
( *your CD-ROM drive may be mapped to different drive letter* )
- Type **CD \COM\DOS** and press **Enter** key to change current directory to the MS-DOS Driver directory.
- Type **INSTALL C:** and press **Enter** key to start installation.  
( *your can change C: to different drive letter that you want to install the driver* )
- The INSTALL program setup the driver to **\TSDOSCOM.Vxx** directory on the target drive letter.  
( *where xx is the Version of TouchScreen Driver* )

To calibrate the TouchScreen:

- Change working directory to the TouchScreen Driver installed directory.  
Example: type **C:** and press **Enter** key, then type **CD \TSDOSCOM.V61** and press **Enter** Key.
- Type **M** and press **Enter** key to startup the TouchScreen Driver.
- Type **S** and press **Enter** key to startup the TouchScreen Control Panel program.
- Click **Calibration** button to start calibrate.
- Follow the directions on the screen to complete the calibration and test.

To configure the serial port:

- Type **C** and press **Enter** key to configure the serial ports.

To uninstall the TouchScreen Driver:

- Type **M** and press **Enter** key , it will unload the TouchScreen Driver.

## **Linux**

This section discusses how to install the driver and calibrate the TouchScreen for Linux .

### **1. Serial Touch Screen Controller Driver Version 2.0.0**

The TSCOM for Linux SetupPack Version 2.0.0 required the X Window System using XOrg version 6.4.x / XFree86 version 4.1 or later. If you using a earlyly version, we recommand that you update the X Window System before install The TSCOM for Linux SetupPack.

#### **File List of SetupPack**

The following files are included in the TSCOM for Linux SetupPack:

*tscom\_setup Setup Wizard program file for quick Installation*

*tscom-2.0.0-common.tar.gz Program and/or data files for all of the X Window Version*

*tscom-2.0.0-driver-410.tar.gz Driver files for XOrg version 6.4.x / XFree86 version 4.1*

*tscom-2.0.0-driver-420.tar.gz Driver files for XOrg version 6.5.x / XFree86 version 4.2*

*tscom-2.0.0-driver-421.tar.gz Driver files for XOrg version 6.5.x / XFree86 version 4.2.1*

*tscom-2.0.0-driver-430.tar.gz Driver files for XOrg version 6.6.x / XFree86 version 4.3.x*

*tscom-2.0.0-driver-440.tar.gz Driver files for XOrg version 6.7.x / XFree86 version 4.4.x*

*tscom-2.0.0-driver-450.tar.gz Driver files for XOrg version 6.8.x / XFree86 version 4.5.x*

*tscom-2.0.0-readme.pdf Installation document (same as this file)*

#### **Installation - using Setup Wizard**

The Setup Wizard program assist you to complete the install in a few Click, the followings describe how it to do that:

1. Removing previous installed version.
2. Installing the Common Package (tscom-2.0.0-common.tar.gz).
3. Installing the Driver Package (tscom-2.0.0-driver-xxx.tar.gz) correspond with the X Window System Version that you using.
4. Detecting the X Config File location in your system, and modify it to configurate the X Window System to use the TSCOM Touchscreen.

The followings describe how to quick install using the the Setup Wizard program:

1. Login as root.
2. Run the “tscom\_setup” program.
3. Following the instructions on the Setup window to complete the install.
4. Reboot your computer after the Setup is done.



## Installation - manually (for expert)

We recommend that you use the Setup Wizard to complete the install, refer to “Installation - using Setup Wizard” section for detail.

The followings describe how to complete the install manually:

### 1. Login as root.

### 2. Checking the X Window System Version.

To get the X Window System Version by running the following:

```
X -version
```

Write down the X Window System Version that you are using, it's required when installing the Driver Package later.

### 3. Removing the Previous Installed Version.

Remove the previous installed directory and files by running the followings:

```
rm -vfr /etc/TSCOM
```

```
rm -vf /usr/X11R6/lib/modules/input/tscom_drv.o
```

```
rm -vf /usr/X11R6/lib/modules/input/tscomxp_drv.o
```

### 4. Creating the Install Directory.

Make a new directory named “TSCOM” in the “/etc” directory and set corresponding access permissions to it, we recommend that you set permissions mode 0755 to the Install Directory.

Create Install Directory by running the following:

```
mkdir -m 0755 /etc/TSCOM
```

### 5. Installing Common Package.

The Common Package is a file named “tscom-2.0.0-common.tar.gz”, it's required to install for all X Window System version.

Extract the Common Package file by running the followings (replace the **sourcePath** to the path of the Common Package file):

```
cd /etc/TSCOM
```

```
gzip -d < sourcePath/tscom-2.0.0-common.tar.gz | tar vxf -
```

### 6. Installing Driver Package.

The Driver Package is all of file named “tscom-2.0.0-driver-**xxx**.tar.gz”, where **xxx** indicates that it supported what X Window System Version. Refer to the following table to choose a Driver Package Filename correspond with the X Window System Version that you are using:

---

*Using X Window System Driver Package Filename*

---

XOrg Version 6.4.x / XFree86 Version 4.1 tscom-2.0.0-driver-410.tar.gz

XOrg Version 6.5.x / XFree86 Version 4.2 tscom-2.0.0-driver-420.tar.gz

XOrg Version 6.5.x / XFree86 Version 4.2.1 tscom-2.0.0-driver-421.tar.gz

XOrg Version 6.6.x / XFree86 Version 4.3.x tscom-2.0.0-driver-430.tar.gz

XOrg Version 6.7.x / XFree86 Version 4.4.x tscom-2.0.0-driver-440.tar.gz

XOrg Version 6.8.x / XFree86 Version 4.5.x tscom-2.0.0-driver-450.tar.gz

---

Extra the the Driver Package file by running the followings (replace the **sourcePath** to the path of the Driver Package file, and replace the **xxx** to set the filename to the Driver Package Filename that you want to install):

```
cd /etc/TSCOM
```

```
gzip -d < sourcePath/tscom-2.0.0-driver-xxx.tar.gz | tar vxf -
```

### 7. Setting Correspond Access Permissions to Installed Files.

We recommend that you set correspond access permissions to each file in the Install Directory, Set permissions to each file in the Install Directory by running followings:

```
cd /etc/TSCOM
```

```
chmod 0444 tscom_drv.o
```

```
chmod 0444 tscomxp_drv.o
```

```
chmod 0666 tscom-config
```

```
chmod 0755 tscom_calibrate
```

```
chmod 0666 tscom_calibrate.log
```

```
chmod 0755 tscom_rightbutton
```

```
chmod 0666 tscom_rightbutton.log
```

### 8. Installing the TSCOM XInput Device Drivers.

For loading the TSCOM XInput Device Drivers when the X Window System booting, All of TSCOM drivers must present in the XInput Drivers Directory ( `"/usr/X11R6/lib/modules/input"` ), you can use "Copy File" or "Create Symbolic File" command to install TSCOM drivers, from the Install Directory to the XInput Drivers Directory.

We recommend that you Install TSCOM drivers by running the followings:

```
cd /usr/X11R6/lib/modules/input
```

```
ln -s /etc/TSCOM/tscom_drv.o tscom_drv.o
```

```
ln -s /etc/TSCOM/tscomxp_drv.o tscomxp_drv.o
```

### 9. Configuring the X Window System.

In order to use TSCOM Touchscreen with the X Window System, you need to configurate the X Window System by editing the X Config File, the followings describe how to do that.

· Opening the X Config File.

Use any text editor to open the X Config File in edit mode. The path and filename of the X Config File is depended on the Linux Distribution that you using, locate to the `"/var/log"` directory, open the file named `"XF86Config"` or `"Xorg.conf"` , search in the file with `"Using config file:"` string, the path and filename of the X Config File shows following the string.

· Add two InputDevice Section.

```
Section "InputDevice"
```

```
Identifier "TSCOM_Touchscreen"
```

```
Driver "tscom"
```

```
Option "Device" "/dev/ttyS0"
```

```
Option "DeviceModel" "TS"
```

```
Option "ScreenNo" "0"
Option "SendCoreEvents" "yes"
EndSection
```

```
Section "InputDevice"
Identifier "TSCOM_Calibration"
Driver "tscomxp"
EndSection
```

*Note:*

*(1) The instructions above are case-sensitive.*

*(2) The instructions above are for a touchscreen connected to COM1, the Option "Device" specifies the COM port the touchscreen is connected to. The following describe how to use:*

*Use Option "Device" "/dev/ttyS0" for COM1.*

*Use Option "Device" "/dev/ttyS1" for COM2.*

*Use Option "Device" "/dev/ttyS2" for COM3.*

*Use Option "Device" "/dev/ttyS3" for COM4.*

· Add two InputDevice lines to the ServerLayout Section.

```
Section "ServerLayout"
InputDevice "TSCOM_Touchscreen" "SendCoreEvents"
InputDevice "TSCOM_Calibration"
EndSection
```

*Note:*

*(1) The instructions above are case-sensitive.*

*(2) If no pointer device configed to "CorePointer", you can change the "SendCoreEvents" to "CorePointer" in the InputDevice "TSCOM\_Touchscreen" line.*

· Save changes to the X Config File.

## **10.Restarting the X Window System.**

After you complete the install, you must reboot your computer or restart the X Server for the new settings to take effect, and make the TSCOM Touchscreen start to working.

## **Calibration**

To calibrate the touchscreen, run the "tscom\_calibrate" program in the "/etc/TSCOM" directory, following the instructions show on the screen to complete the calibrate.

*Note:*

*The user who runs the Calibration program must have permissions to access (read/write) the "tscom-config" file and the "tscom\_calibrate.log" file in the "/etc/TSCOM" directory.*

The Calibration program read the "CalibrationMode" setting from the "/etc/TSCOM/tscom-config" file at start, if the setting is set to 1, it running in 4 Points Calibration Mode 2 (center of each edge of screen), if the setting is set to 0, it running in 4 Points Calibration Mode 1 (each conner of screen).

## Right Button Function

The TSCOM Touchscreen supported two Right Button Function Mode, one is “Manual Mode” , the other is “Automatic Mode” , see the followings for detail information.

### · Manual Right Button Mode

To enable the Manual Right Button Function, run the “tscom\_rightbutton” program in in the “/etc/TSCOM” directory.

*Note:*

*The user who runs the Right Button Function program must have permissions to access (read/write) the the “tscom\_rightbutton.log” file in the “/etc/TSCOM” directory.*

To disable the Manual Right Button Function, click right-button on the Title of Right Button Window, than click “Yes” button on the dialog to close the Manual Right Button Function program.

The followings describe how to using the Manual Right Button Function:

Every time you click (touch then lift-off) on the Hand-Mouse icon in the Right Button Window, the next touch will be Right Button until you Lift-off.

### · Automatic Right Button Mode

To enable/disable the Automatic Right Button Function, edit the “tscom-config” file in the “/etc/TSCOM” directory by changing the following settings:

RightButtonAutoMode Function control.

0=Disable,

1=Enable.

RightButtonAutoSTime Automatic Toggle-on time.

0=0.5 second,

1=1 second,

2=1.5 second ...

RightButtonAutoETime Automatic Toggle-off time.

0=0.5 second,

1=1 second,

2=1.5 second ...

RightButtonAutoBeep Beep when toggle-on and toggle-off.

0=No,

1=Yes.

*Note:*

*You must reboot your computer or restart the X Server for the new settings to take effect.*

The followings describe how to using the Automatic Right Button Function:

If you touch on and hold (no move) until out of the Toggle-On time ( RightButtonAutoSTime), the Touchscreen automatic change to Right Button Mode, if you touch on and moving before out of the Toggle-On time, the Touchscreen stay in Left Button Mode until you lift-off from the Touchscreen.

After the Touchscreen automatic change to Right Button Mode, when you lift-off from the Touchscreen, if no touch found until out of the Toggle-Off time ( RightButtonAutoETime), the Touchscreen automatic change back to Left Button Mode, if you touch on again before out of the

Toggle-Off time ( RightButtonAutoETime), the Touchscreen stay in Right Button Mode until you lift-off from the Touchscreen.

If the Toggle-Beep Mode (RightButtonAutoBeep) is set to 1 (Yes), the Touchscreen will beep when it automatic toggle-on/off the Right Button Mode.

### Touch Beep Function

To enable/disable the Touch Beep Function, edit the "tscom-config" file in the "/etc/TSCOM" directory by changing the following settings:

TouchBeepMode Function control.

0=Silence ( no sound ).

1=Beep when lift-off.

2=Beep when touch-down.

3=Beep when touch-down or lift-off.

TouchBeepTone Beep sound frequency.

The PC mainboard timer 8254 is clocked at 1.19 MHz and so the tone is 1190000/frequency,

TouchBeepVolume Beep volume control.

TouchBeepDuration Beep duration control.

*Note:*

*You must reboot your computer or restart the X Server for the new settings to take effect.*

## 2. PS/2 Touch Screen Controller Driver Version 1.1.0

### Installation

- (1) Create a directory name called "TSPS2" in "/etc" directory.
- (2) Extract "tsps2-1.1.0.tar.gz" to "/etc/TSPS2" directory.
- (3) Copy the driver files "tsps2\_drv.o" and "tsps2xp\_drv.o" to XFree86 Input device driver modules directory ( "/usr/X11R6/lib/modules/input" ).
- (4) Set access permissions of the following files:

"/usr/X11R6/lib/modules/input/tsps2_drv.o" .....	mode 0755
"/usr/X11R6/lib/modules/input/tsps2xp_drv.o" ...	mode 0755
"/etc/TSPS2/tsps2_calibrate" .....	mode 0755
"/etc/TSPS2/tsps2-config" .....	mode 0666

### Configuration

In order to use a TSPS2 Touchscreen device with XWindow you need to add Input Device to "XF86Config-4" file ( usually in the "/etc/X11" directory ). The following shows how to modify it:

- (1) Add two InputDevice Section:

```
Section "InputDevice"
    Identifier "TSPS2_Touchscreen"
    Driver      "tsps2"
    Option     "Device"          "/dev/psaux"
    Option     "DeviceModel"     "TS"
    Option     "ScreenNo"       "0"
```

```

Option "Emulate3Buttons"
Option "Emulate3Timeout" "50"
Option "SendCoreEvents" "yes"
Option "TouchBeepMode" "0"
Option "TouchBeepVolume" "100"
Option "TouchBeepPitch" "2468"
Option "TouchBeepDuration" "20"

```

```

EndSection
Section "InputDevice"
    Identifier "TSPS2_Calibration"
    Driver "tsps2xp"
EndSection

```

Note:

- The instructions above are case-sensitive.
- Check out that you don't have two drivers configured which use the same PS2-device ("/dev/psaux").
- The Option "TouchBeepMode" specifies the touch feedback sound mode:  
 Use Option "TouchBeepMode" "0" for silence ( no sound ).  
 Use Option "TouchBeepMode" "1" for beep when lift-off.  
 Use Option "TouchBeepMode" "2" for beep when touch-down.  
 Use Option "TouchBeepMode" "3" for beep when touch-down or lift-off.
- The PC mainboard timer 8254 is clocked at 1.19 MHz, hence the tone is 1190000/frequency, and the Option "TouchBeepPitch" indicates the frequency.

- (2) Add two InputDevice lines to the ServerLayout Section:

```

Section "ServerLayout"
    InputDevice "TSPS2_Touchscreen" "SendCoreEvents"
    InputDevice "TSPS2_Calibration"
EndSection

```

Note:

- The instructions above are case-sensitive.
- If no pointer device is configured to "CorePointer", you can change the "SendCoreEvents" to "CorePointer" in the InputDevice "TSPS2\_Touchscreen" line.

- (3) Save changes to the config file and restart X Server.

## Calibration

To calibrate the touchscreen, run the "tsps2\_calibrate", under XWindow. It has been tested with XFree86 version 4.2.0, 4.2.1 and 4.3.0. The user who runs the calibration program must have permissions to access (read/write) "tsps2-config" file.

## Chapter 6. UNINSTALL TOUCH SCREEN DRIVER

This section discusses how to uninstall the TouchScreen Driver for Windows.

To uninstall the TouchScreen:

- Click **Start > Programs > TouchScreen V.x.x.COM > TouchScreen Uninstall V.x.x.COM** ( *where x.x is the Version of TouchScreen Driver* )
- Click **Yes** button to remove TouchScreen Driver.
- After pressing **Yes** button , it will restart Windows and remove TouchScreen Driver completely.

## Chapter 7. TOUCH SCREEN DRIVER FUNCTION

**Virtual Button:** Virtual Button is to set the function that allows the touch screen to simulate the activation as if the mouse's left button or right button was pushed.

**Feedback Sound:** Feedback Sound is to set the sound's open/close when push the touch screen.

**Mouse Speed:** Mouse Speed adjusts the mouse speed.

**Power Save:** Power Save is to adjust power down time.

**Calibration:** Calibration sets touch panel corresponding location .

### **Virtual Button**

Function: Virtual Button is to set the function that allows the touch screen to simulate the activation as if the mouse's left button or right button was pushed.

Virtual Button Options:

- . Stream mode (No activation – the touch screen does not simulate the button reaction)
- . Lift off mode (Activates the moment your finger lift off the touch screen)
- . Touch down mode (Activates the moment your finger presses the touch screen)
- . Drag drop mode (Activates whenever your finger presses the touch screen)

Right button function:

- . Disable (Off) – (Close touch screen right button function)
- . Enable (On) – (Open touch screen right button function)
  - Manual mode: touch screen right button function is an ICON
  - Automatic mode: touch screen right button function is to press touch panel no longer than a toggle time.

Default setting: Virtual Button Option -- Drag drop mode  
Right button function – Enable (On), Manual mode

### **Feedback Sound**

Function: Feedback Sound is to set the sound's open/close when push the touch screen.

Feedback Sound Options:

- . Silence (No sound)
- . Touch down only (Sound appears the moment your finger presses the touch screen)
- . Lift off only (Sound appears the moment your finger lift off the touch screen)
- . Both touch down & lift off (Sound appears the moment your finger presses and lift off the touch screen)

Tone: Adjust the tone of feedback sound

Duration: Adjust the time of feedback sound

Default setting: Silence



### **Mouse Speed**

Function: Mouse Speed sets the speed of mouse

Detail: It can adjust horizontal speed and vertical speed of mouse

Default setting: Bypass Mode -- Enable

### **Power Save**

Function: Power Save is to set the time of power down

Default setting: Disable Power Down Function

### **Calibration**

Function: Calibration is to set the corresponding location with different VGA mode resolution

**Warning: The touch point and the cursor may not be consistent if the touch screen is not calibrated.**

Options:

- . 4 points, mode 1 – rectangular four points calibration
- . 4 points, mode 2 – rhombic four points calibration

Default setting: 4 points, mode 2