TouchKit Touch Panel
User manual
for Linux
Version: 3.1.4

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Chapter 1. Touch Panel Controller

This touch panel controller provides the optimistic performance of analog resistive touch panels for 4 wire, 5 wire and 8 wire models. It communicates with PC system directly through RS232, PS/2 or USB connector. User can see how superior the design is in sensitivity, accuracy and friendly operation. The touch panel driver emulates mouse left and right button function and supports operation systems including Microsoft Windows 95/98/ME/2000/NT/XP/XP Tablet PC Edition, Windows CE 2.12/3.0/. NET, Linux, iMac and DOS.

1.1 Controller

Interface	RS232	USB	PS/2
4-wire	Ready	Ready	Ready
5-wire	Ready	Ready	Ready
8-wire	Ready	Ready	Ready

1.2 Specifications and Features

Specifications for Touchkit controller.

Specifications	
Power requirements	+5VDC (Maximum 100mA, typical 70mA, 50mV peak to peak maximum ripple)
Operating temperature	0 to 50 ℃
Storage Temperature	-40 to 80 ℃
Relative Humidity	95% at 60 ℃
Protocol	RS232 Model: 9600 bauds, None parity, 8 data bits, 1 stop bit USB Model: USB 1.1 Low speed PS/2 Model: PS/2 mouse
Resolution	2048 X 2048
Report rate	RS232 Model: Max. 160 points/sec USB Model: Max. 160 points/sec PS/2 Model: Max. 140 points/sec
Response time	Resistive: Max. 35 ms Capacitive: Max. 20 ms
Pin out definition	4 wire model: X, Y, X, Y 5 wire model: UL, UR, COM, LR, LL 8 wire model: X+, X+ref, Y+, Y+ref, X- , X-ref, Y-, Y-ref
Panel resistance	4, 8 wire resistive model: 200 ~ 900 ohm (pin to pin on the same layer) 5 wire resistive model: 50 ~ 200 ohm (pin to pin on drive layer)
Regulatory Approvals	FCC-B, CE

Features for Touchkit software

Features	
Calibration	1. Fast full oriental 4 points position 2. Support monitor / display rotation 3. Support multiple monitor / display 4. Support QVGA and Half-VGA function
Compensation	Accuracy 25 points linearity compensation.
Draw Test	Position and linearity verification
Controller Setting	1. Support multiple controllers 2. Dynamical add / remove controllers 3. Change Controller interface without reboot.
Language	Support 9 languages for Windows
Mouse Emulator	1. Right / Left button emulation 2. Normal / Click on touch / Click on release mode 3. Cursor visibility
Sound Notification	1. No sound 2. Touch Down 3. Lift Up 4. Frequency adjustment 5. Duration adjustment
Double Click	1. Configurable double click speed 2. Configurable double click area
OS support	1. Windows 95/98/ME/NT4/2000/XP/ Windows XP Tablet PC Edition 2. Windows CE 2.12, 3.0, .NET 3. Linux (X Window Version: 3, 4 Red Hat 6.0 ~ 8.0 Mandrake 5.0 ~ 9.0) 4. iMac. OS9 5. MS-DOS: Support display resolution: 320x200, 640x200, 640x350, 640x480, 800x600, 1024x768 and 1280x1024
COM port support	1. Support COM 1 ~ COM 256 for Windows and Linux 2. Support COM 1 ~ COM 8 for DOS

Chapter 2. Installing and using TouchKit

Tested distributions:

- Red Hat 7.0 kernel version 2.2.16,
- Red Hat 7.1 kernel version 2.4.2,
- Red Hat 7.2 kernel version 2.4.7,
- Red Hat 7.3 kernel version 2.4.18-3,
- Red Hat 8.0 kernel version 2.4.18-14,

- Mandrake 8.0 kernel version 2.4.5
- Mandrake 8.1 kernel version 2.4.8
- Mandrake 8.2 kernel version 2.4.18
- Mandrake 9.0 kernel version 2.4.19

TouchKit is software, which contains drivers and two utilities of the touch panel controllers for RS232, PS/2 and USB on Linux operation system. The two utilities are as follows:

- **Configuration support**
  The calibration and draw test of touch panel are done by this utility.

- **Right button support**
  This is utility for emulating the right and left button of mouse through controlling touch panel. User can toggle between right or left mouse buttons by this utility.

We provide two way to install the driver, one is automatic installation and the other is install manually.

<Automatic Installation>

Before install ***TouchKit*** for Linux, please make sure that (1) user have root privilege and that (2) X window system has been configured correctly.

Follow these steps to install ***TouchKit*** for Linux.

1. Put the ***TouchKit*** CD to CD-ROM and mount it on Linux operation system.
   e.g. with command: **mount /dev/cdrom /mnt/cdrom**
2. Change directory to **/mnt/cdrom/Linux/Other Version**

3. Execute script **touchkit.setup.sh** with command **sh touchkit.setup.sh**
4. The script will extract files to temporary directory and start installing:

```
(*) Extract files from [touchkit.setup.sh] to [/tmp/touchkit]
(*) Start installer [/tmp/touchkit/setup]

=== TouchKit for Linux Installer ===

(Step 1) Check Packages Installed
 [Common]
 make                    OK (make-3.79.1-5)
 tcl                   OK (tcl-8.3.1-46)
 tk                    OK (tk-8.3.1-46)
[Required for Full Mode]
 gcc                   OK (gcc-2.96-54)
 glibc-devel             OK (glibc-devel-2.1.92-14)
 XFree86-devel             OK (XFree86-devel-4.0.1-1)
 kernel-source             OK (kernel-source-2.2.16-22)
```

The first step is to check if software configuration is ready to install and to utilize ***TouchKit***. **Installation will abort if some Common packages are missing; please reinstall *TouchKit* after all those packages being installed.**

5. Press **[1]** or **[2]** followed by **enter** to select installation mode depending on the communication interface of ***TouchKit*** controller.

```
(Step 2) Select Installation Mode
(Q) Which installation mode do you prefer?
 (1) Compact Mode, (only RS232 and PS/2) or
 (2) Full Mode (RS232, PS/2 and [USB])
```

6. If **Full Mode** is selected, installer starts building process.

```
1
(I) [Full Mode] selected

(Step 3) Rebuild TouchKit
for n in include driver utility xf86drv diag usb; do              \
        make -C $n || exit 1;           \
done
        .
        .
        .
: '+------------------------------------+'
: '|  Build-All Complete Successfully  |'
: '+------------------------------------+'
```

7. After building process completes successfully (or if **Compact Mode** is selected), ***TouchKit*** will be installed into system; **user must restart X window system to see the change**.

```
(Step 4) Install TouchKit
(*) Install USB module [/lib/modules/2.2.16-22/usb/tkusb.o]
(*) Install touch panel daemon [/usr/bin/tpaneld]
(*) Install configuration utility [/usr/bin/touchcfg]
(*) Install XFree86 driver [/usr/X11R6/lib/modules/input/touchkit_drv
(*) Generate uninstall script [/usr/bin/uninstall_TouchKit]
(*) Update system starting up script [/etc/rc.d/rc.local]
(*) Update XFree86 configuration [/etc/X11/XF86Config-4]
+------------------------------------+
|  Installation Complete Successfully  |
+------------------------------------+
(I) Start TouchKit touch panel daemon
(I) Start USB module

(I) Please RESTART your X Window Server.
```

8. **To install driver for Redhat 8.0, Redhat 9.0**, please repeat the step 1~ 6 as the same as other version of Linux. The difference between Redhat 8.0/9.0 and other version is the install directory changed to **/mnt/cdrom/Linux/Redhat8**. Execute script **touchkit.setupr8.sh** with command **sh touchkit.setupr8.sh**. Two of software packages should be installed first, since they are not for default installation when installing OS.
   (1) sharutils-XXX.rpm
   (2) XF86Free-develXXX.rpm

   User can find these packages in disc3 and disc2 in RedhatLinux 8.0 distribution.

Also, user can find these packages in this touchkit driver Redhat8.0 subfolder.

< Manual Installation >

The following manual installation is only for X Window V 4

1. Please unzip **Touchkit.tgz** to **/usr/local/TouchKit**
2. copy **tpaneld** to **/usr/bin**
3. copy **touchkit_drv.o** to **/usr/X11R6/lib/modules/input**
4. copy **tpaneld.conf** to **/etc**

Please confirm the contain is as follow:

```
tpaneld.conf
MouseMode = DRAWING
DblClickSpeed = 18
DblClickArea = 30
RClickTool = 0
Sound = 0
Port = /dev/ttyS0
Port = /dev/ttyS1
Port = /dev/psaux
Port = /dev/usb/tkpanel0
Port = /dev/usb/tkpanel1
```

Note: the setting of ports depends on the outcome of system scanning, but users could amend the port by themselves.

1. Please review **/etc/rc.d/rc.local**, and make sure that the following sentences are added.

```
## TouchKit section begin ( Please do NOT edit this section!! ) ##
      /usr/bin/usbpnpd
      /usr/bin/tpaneld
## TouchKit section end #
```

2. Please review the **XF86Config** file for X Window

a.) For Red hat Linux :

Please review **/etc/X11/XF86Config** and make sure that the following sentences are added.

```
## TouchKit section begin ( Please do NOT edit this section!! ) ##
    Section  "InputDevice"
        Identifier "TKPANEL"
        Driver "touchkit"
        Option "Device"          "/dev/tkdat0"
        Option "DebugLevel"   "0"
    EndSection
## TouchKit section end ##
```

b.) For Other Linux distribution:

b-1) XFree86 V4.x

Edit the file **/etc/X11/XF86Config-4** and make sure that the following sentences are added.

```
## TouchKit section begin ( Please do NOT edit this section!! ) ##
    Section  "InputDevice"
        Identifier "TKPANEL"
        Driver "touchkit"
        Option "Device"          "/dev/tkdat0"
        Option "DebugLevel"   "0"
    EndSection
## TouchKit section end ##
```

b-2) XFree86 V3.x

Edit the file **/etc/X11/XF86Config** and make sure that the following sentences are added.

```
## TouchKit section begin (Please do NOT edit this section!!) ##
  Section "Module"
        Load "xf86TouchKit.so"
  EndSection
```

```
Section "Xinput"
    SubSection "touchkitpanel"
        Port "/dev/tkdat0"
        DeviceName "tpanel"
        AlwaysCore
        DebugLevel 0
    EndSubSection
EndSection
## TouchKit section end ##
```

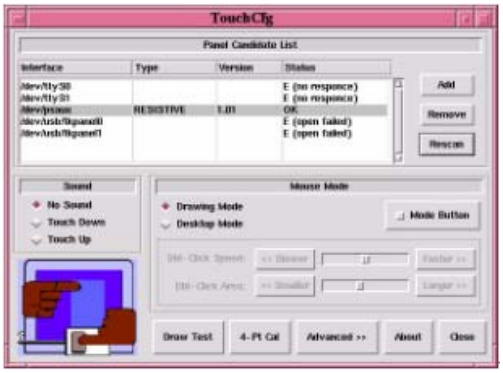
7. Restart X Window.

8. **/usr/local/TouchKit/diag** contains the following files:

4pcal	4points calibration	ex. 4pcal /dev/ttys0
25pcal	25 points calibration	ex. 25pcal /dev/ttys0
drawtest	drawing test	ex. drawtest /dev/ttys0

Chapter 3. Configuration Utility and Right Button Emulator

The touch-sensitive area of the panel and touch-sensitivity both can be modulated through the configuration utility. Besides, the controller identification and device activated shall be done first.
After installation ***TouchKit***, execute **touchcfg** to start the configuration utility.



The **Panel Candidate List**, which contains by default two RS232, one PS/2 and two USB devices, commands ***TouchKit*** driver which port to probe for controller. If a port is occupied by other device, e.g. **/dev/ttyS1(COM2)** is used by a mouse, it is recommended to **Remove** /dev/ttyS1 from the list, since the probe process would interfere the operation of mouse.

If the user need another com port, for example com3, please go to **/etc/tpaneld.conf** and add the sentence **Port = /dev/ttyS2**.

< tpaneld.conf >
MouseMode = DRAWING
DblClickSpeed = 18
DblClickArea = 30
RClickTool = 0
Sound = 0

Port = /dev/ttyS0
Port = /dev/ttyS1
Port = /dev/psaux
Port = /dev/usb/tkpanel0

Port = /dev/ttyS2 is added to use com3
Port = /dev/ttyS3 is added to use com4

Port = /dev/usb/tkpanel1

After checking that touch panel devices (included its controller) are equipped well, user may click **[Rescan]** button to scan all devices listed. If there are any additional connections excluding default connections, please press **[Add]** button to set specific settings.

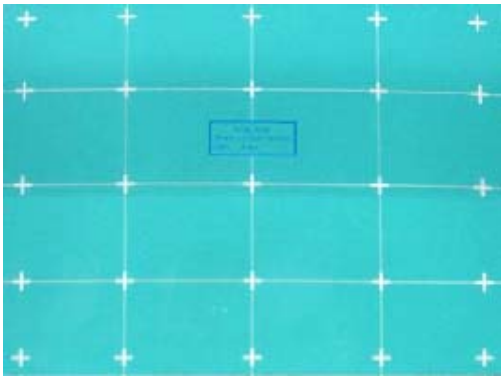
Select one device after import more than one device at the panel list window.
The one selected will activate the panel.

The Sound option provides user the click feedback while the click actions are done.

There are five buttons, **[Draw Test]**, **[4-PT Cal]**, **[Advanced]**, **[About]** and **[Close]**, at the lower section of the TouchCfg window.

<DRAW TEST>

Test the drawing position related to the display screen on panel.
Click on the **[Draw Test]** button. There will be a squared blue display showing.



Try to write or draw on it to verify the touch position.

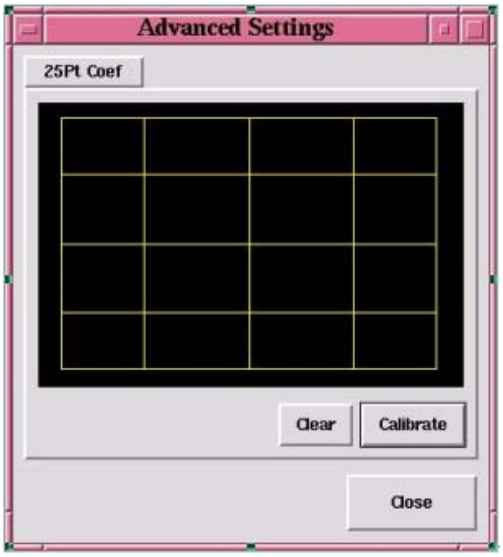
Press **<ESC>** to exit.

<4-PT Cal>

Correct 4 point locations on screen with the panel. Press **[4-PT Cal]**, screen displays as follows.

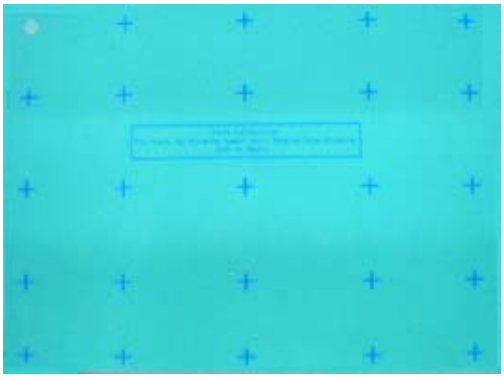
Touch the blinking symbol on panel until beep or stop blinking.

<Advanced>



Press **[Clear]** to clear the previous calibration records.
The record will become default record.

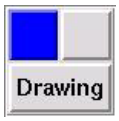
Press **[Calibrate]** to execute 25 points calibration.
Correct 25 point locations on screen with the panel.



Touch the blinking symbol on panel until beep or stop blinking.
There will be a message window after this correction. After the calibration, the new record will overwrite the old one.

<Mode Button>

Check it or not to turn mouse button, which provides mode selection and right button emulation, on or off.



Change **right / left** button by click the button shown on the right-bottom corner of screen. Blue area expresses what button has been selected.
After select the button, user can touch the panel to control mouse activities. Select / De-select files or Drag icons on screen, whatever the mouse behaves.

<Double Click Speed>

Double Click Speed is the time of the touch panel response when someone double click it. Drag the cursor from left to right is slow to fast.

<Double Click Area>

Each one touch has its own touch tolerance once someone may not fix in one point. So if user sets the Double Click Area to **<Smaller>**, the panel will be very sensitive about micro-move while user wants to fix on a point. If user sets it to

<Larger>, it tolerates the larger touch point movement while user wants to point at a fixed position.

<About>

Information about ***TouchKit***.

<Close>

Close ***TouchKit*** touch panel utility.

Chapter 4. Uninstalling TouchKit

To uninstall ***TouchKit*** all user has to do is execute **uninstall_TouchKit** in **text mode**.