XFree86–Touch–Screen–HOWTO

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Linux Touch Screen HOWTO

(c) 2002–2006 by Christoph Baumann, cgb(at)debian.org

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This document describes how to set up a touch screen input device under XFree86. As the author had only the opportunity to work with devices from EloTouch(R) and MicroTouch(R) this HOWTO is rather specific for these devices. The examples given in this HOWTO concentrate on devices connected via the serial port i.e. /dev/ttyS0 or /dev/ttyS1. (Information about USB devices would be appreciated!)

1. How to configure the device

2. Activating the device

3. Using touch screen and mouse in parallel

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- 4.1 Another configuration example
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1. How to configure the device

Touch screen devices are configured in the Xinput section in the XF86Config file (mostly /etc/X11/XF86Config or /etc/XF86Config). At first verify that the device driver modules exist. They are located in /usr/X11R6/lib/modules/ (the modules for the above mentioned devices are xf86Elo.so and xf86MuTouch.so). Now have a look into XF86Config. There should be a section looking like this:

```
Section "Files"
...
ModulePath "/usr/X11R6/lib/modules"
...
EndSection
```

To get the module loaded by the X server there has to be a section like this:

```
Section "Module"
Load "xf86Elo.so"
```

```
EndSection
```

Now the more tricky part. X needs to know some parameters about the device. The section for this looks like this (see "man XF86Config" for more details):

```
Section "Xinput"
 SubSection "Elographics"
#the entry for a MicroTouch device would be SubSection "MicrotouchFinger"
  Port "/dev/ttyS1" # for a device at serial port 2
  DeviceName "TouchScreen" #could be any unambiguous name
  MinimumXPosition 300
  MaximumXPosition 3700
  MinimumYPosition 300
  MaximumYPosition 3700
  UntouchDelay 10 #not supported with MuTouch
  ReportDelay 10  #not supported with MuTouch
  AlwaysCore #activates the device on startup
 EndSubSection
EndSection
```

The values for the entries MinimumXPosition etc. are of course specific for the setup of the hardware (i.e. depend on the position of the touch screen relative to the monitor). The values determine where the points (0,0) and (xmax,ymax) on your monitor (xmax and ymax depend on the resolution chosen for the Xserver, such as 1024x768) are mapped on the touch screen. The device driver reads these values and interpolishes the other coordinates. For illustration:

```
 ---------------touch screen area-----------------
 I                                                I
 I  ########visible monitor area##############  I
 I  #x                                        #  I
 I  # (0,0)                                   #  I
 I  # (MinimumXPosition,MinimumYPosition)     #  I
 I  #                                         #  I
 I  #                                         #  I
 I  #                                         #  I
 I  #                                         #  I
 I  #                                         #  I
 I  #                                         #  I
 I  #                                         #  I
 I  #      (MaximumXPosition,MaximumYPosition)#  I
 I  #                                (xmax,ymax)#  I
 I  #                                        x#  I
 I  ##########################################  I
 I                                                I
 ------------------------------------------------
```

This mapping can be done by trial and error or by reading the raw output of the device (needs some serial port programming, see "The Linux Serial Programming HOWTO"). For the types EloTouch and MicroTouch exists a rudimentary calibration tool (written by the author of this document, it can be found at http://touchcal.sourceforge.net).

2. Activating the device

After starting X, type in an Xterminal the command

```
xsetpointer <devicename>
```

where<devicename> is the name defined in XF86Config with the line DeviceName "....." , in this example it would be TouchScreen.

To get the device working on startup use the AlwaysCore option in the touch screen section (see above)

3. Using touch screen and mouse in parallel

To use the touch screen and a mouse in parallel you need to enter the mouse specs in the Xinput−section. This definitions should be the same as in the Pointer−section. The following example is for a PS/2−mouse:

```
Section "Xinput"
   SubSection "Mouse"
      Protocol "PS/2"
      Port "/dev/mouse" #could also be /dev/psaux
      DeviceName "Mouse"
      AlwaysCore
   EndSubSection
...
EndSection
```

Several people pointed this out, especially the usage of the AlwaysCore option. Thanks to them all.

4. Configuration under XFree86 4

(from Lee Monamy)

Example XF86Config−4 for an ELO touch screen:

```
Section "InputDevice"
        Identifier "ELO touchscreen"
        Driver "elographics"
        Option  "Device"        "/dev/ttyS0"
        Option  "MinimumXPosition"      "300"
        Option  "MaximumXPosition"      "3700"
        Option  "MinimumYPosition"      "300"
        Option  "MaximumYPosition"      "3700"
        Option  "UntouchDelay"  "10"
        Option  "ReportDelay"   "10"
        Option  "SendCoreEvents"        "yes"
EndSection
```

Noteable differences between this and the version 3 config are that you specify a Device, *not* a Port, otherwise you get an error. Also, AlwaysCore from v3 has been replaced with SendCoreEvents.

You must also add to the ServerLayout section, despite that X might say: "(II) XINPUT: Adding extended input device "TOUCHSCREEN" (type: Elographics Touch Screen)"

```
Section "ServerLayout"
        Identifier      "Default Layout"
        Screen  "Default Screen"
        InputDevice "Generic Keyboard"
...
        InputDevice "ELO touchscreen"
EndSection
```

4.1 Another configuration example

from Dirk Mueller (for Microtouch SMT3 Series):

```
Section "InputDevice"
        Identifier  "MicroTouchFinger"
        Driver      "mutouch"
        Option      "Type" "finger"
        Option      "Device" "/dev/ttyS0"
        Option      "ScreenNo" "0"
        Option      "MinimumXPosition" "0"
        Option      "MaximumXPosition" "16383"
        Option      "MinimumYPosition" "0"
        Option      "MaximumYPosition" "16383"
EndSection
```

Option "Type" can be "finger" or "stylus" Since Microtouch was bought by 3M−Touch, the resources are on http://www.3M.com/3MTouchSystems/downloads/legacy.jhtml#Linux

4.2 Addendum

According to Wong Yeow Sen the configuration option names have changed in XFree86 4.2 (at least with Red Hat 7.3). If it seems your calibration values aren't parsed try the following:

```
...
        Option  "MinX"      "100"
        Option  "MaxX"      "4000"
        Option  "MinY"      "100"
        Option  "MaxY"      "4000"
...
```

---

5. Touch Screens on Fujitsu LifeBooks

(from Joerg Hau)

Information about these devices can be found here:

"...

Harald Hoyer's Linux Touch Panel Drivers for the Fujitsu Lifebooks B112/B142/B2130, http://parzelle.de/Linux/Lifebook/. Unfortunately, this is XFree 3.x only and it seems that this information is now "static" (dead?).

Kenan Esau's Lifebook Series B Touchscreen driver, which is the adaptation of Harald's driver to XFree 4.x. http://www.conan.de/lifebook/lifebook.html.

I [Joerg Hau] have used Kenan's driver on my Fujitsu LifeBook B142 (described at http://www.mysunrise.ch/users/joerg.hau/linux/b142.htm), and it works like a charm.

..."

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6. Configuration under X.Org

(from Kenan Bektas)

Example xorg.conf for an Elo TouchSystems 2216 AccuTouch® USB Touch−Monitor:

```
Section "InputDevice"
    Identifier "elo"
    Driver "elo"
    Option "AlwaysCore"
    Option "MinX"          "300"
    Option "MaxX"          "3700"
    Option "MinY"          "300"
    Option "MaxY"          "3700"
    Option "ScreenNumber"  "0"
    Option "ButtonNumber"  "1"
EndSection
```

7. Suggested reading

- Manpage for XF86Config
- http://www.elotouch.com/Support/linux.asp
- http://www.3M.com/3MTouchSystems/downloads/legacy.jhtml#Linux
- http://www.hof−berlin.de/tablet/tablet.html (Thanks to Christer Olofsson for sending me this URL)
- http://freshmeat.net/projects/xf86elousb (Driver for iTouch USB)
- The manual shipped with your touch screen :−)