

ELI Touch Screen Calibration in Linux

Linux Calibration Guide

Summary:

This guide explains how to perform OS-level calibration for an ELI touch device in a Linux environment. Please note that the OS-level touch screen calibration data will be saved on the host computer, meaning that the calibration will need to be performed again if the ELI unit is moved to another SBC, PC, or other host computer.

Target Device(s):

- ELI [Website](#)

Required Hardware:

- HDMI cable
- Type-A to Mini-B USB cable
- 12V 2A power supply

NOTE: We require a 12V 2A power supply as all ELI's will work at this voltage. But, you can use any power supply that meets your ELI's power requirement.

Required Software:

- Xinput-calibrator [Website](#)

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1. Connecting to the Board

1. Connect the HDMI video output from the host computer to the HDMI input on the ELI.

NOTE: While ELI requires an HDMI input, conversion from DVI to HDMI or DisplayPort to HDMI will work.

2. Connect a 12V power supply to the power input on the ELI.
3. Connect the host computer to the USB touch output on the ELI.

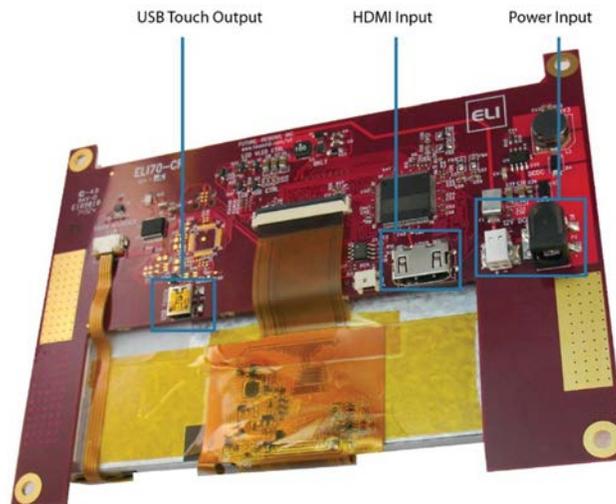


Figure 1. Connecting your ELI (example using ELI70-CR).

2. Using *xinput-calibrator*

We will be using the tool called “*xinput-calibrator*” to calibrate the touch screen. To install this utility, follow the steps below.

1. Open a terminal window by pressing Ctrl+Alt+T on the keyboard or by using the search tool in the top left corner of Ubuntu.

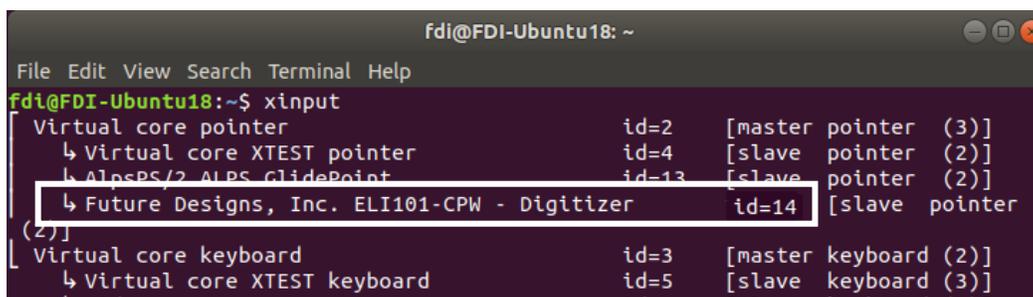
NOTE: If an ELI is currently set as the primary display, it is recommended to maximize the terminal for ease of use. This can be done by double-clicking the title bar of the terminal window.

2. Enter the following command to install the calibration software:

```
sudo apt-get install xinput-calibrator
```

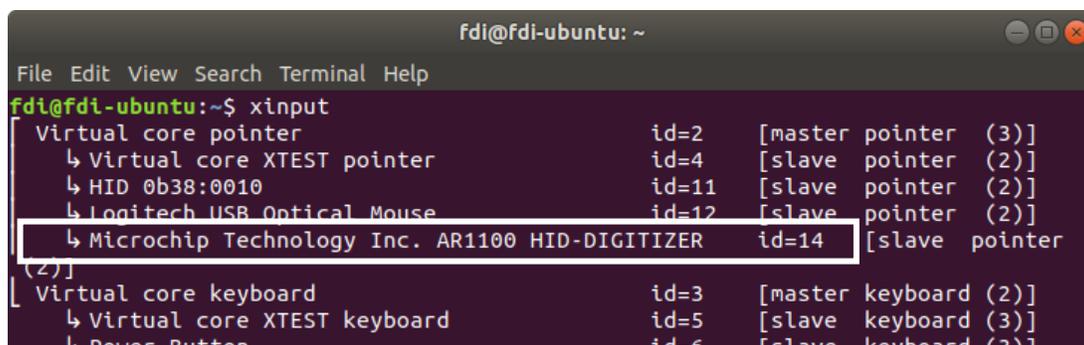
3. When using multiple monitors, touch input may register on a display other than the ELI display. If this happens, do the following:
 - a. Enter `xinput` and take note of the ELI's <device_id> (14 in both Figure 2 (Future Designs, Inc) and Figure 3 (Microchip Technology Inc.):

NOTE: The ELI display will be listed with a name beginning with either “Future Designs, Inc” or “Microchip Technology Inc.”.



```
fdi@FDI-Ubuntu18: ~  
File Edit View Search Terminal Help  
fdi@FDI-Ubuntu18:~$ xinput  
Virtual core pointer          id=2  [master pointer (3)]  
↳ Virtual core XTEST pointer  id=4  [slave  pointer (2)]  
↳ AlpsPS/2 ALPS GlidePoint    id=13 [slave  pointer (2)]  
↳ Future Designs, Inc. ELI101-CPW - Digitizer id=14 [slave pointer (2)]  
Virtual core keyboard        id=3  [master keyboard (2)]  
↳ Virtual core XTEST keyboard  id=5  [slave  keyboard (3)]
```

Figure 2. Determining the ELI Touch Input ID, ELI101-CPW, Future Designs, Inc.



```
fdi@fdi-ubuntu: ~  
File Edit View Search Terminal Help  
fdi@fdi-ubuntu:~$ xinput  
Virtual core pointer          id=2  [master pointer (3)]  
↳ Virtual core XTEST pointer  id=4  [slave  pointer (2)]  
↳ HID 0b38:0010              id=11 [slave  pointer (2)]  
↳ Logitech USB Optical Mouse  id=12 [slave  pointer (2)]  
↳ Microchip Technology Inc. AR1100 HID-DIGITIZER id=14 [slave pointer (2)]  
Virtual core keyboard        id=3  [master keyboard (2)]  
↳ Virtual core XTEST keyboard  id=5  [slave  keyboard (3)]  
↳ Power Button              id=6  [slave  keyboard (3)]
```

Figure 3. Determining the ELI Touch Input ID, ELI70-CR, Microchip AR1100.

- b. Next, enter `xrandr` and locate the ELI display output. Note the `<output_device>` (DVI-I-1-2 in the example below):

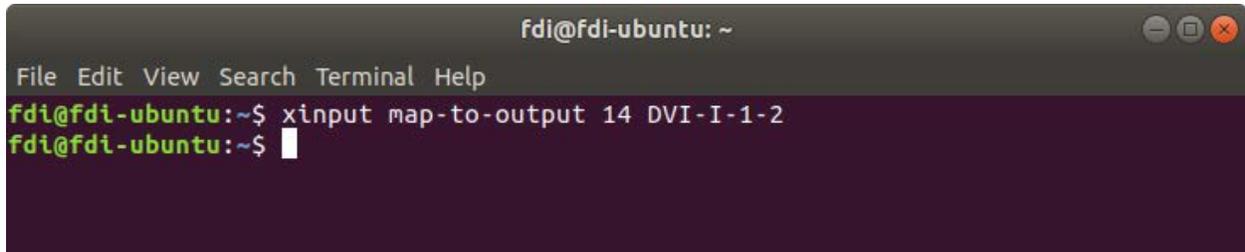
NOTE: Find the ELI by looking for the word “connected” next to the possible display outputs. The resolution of the display should be used to identify the ELI. In the example below, we are connected to an ELI70-CR, which has a screen resolution of 800x480. To learn what resolution your ELI display uses, check its specifications online at our website: <https://www.teamfdi.com/>

```
fdi@fdi-ubuntu: ~
File Edit View Search Terminal Help
Screen 0: minimum 320 x 200, current 2480 x 1050, maximum 16384 x 16384
HDMI-2 disconnected (normal left inverted right x axis y axis)
DVI-0 connected primary 1680x1050+0+0 (normal left inverted right x axis y axis)
 434mm x 270mm
 1680x1050    59.88*+
 1280x1024    75.02   60.02
 1152x864     75.00
 1024x768     75.03   60.00
 800x600      75.00   60.32
 640x480      75.00   59.94
 720x400      70.08
VGA-0 disconnected (normal left inverted right x axis y axis)
HDMI-2-1 disconnected (normal left inverted right x axis y axis)
HDMI-2-2 disconnected (normal left inverted right x axis y axis)
DP-2-1 disconnected (normal left inverted right x axis y axis)
DVI-I-1-1 disconnected (normal left inverted right x axis y axis)
DVI-I-1-2 connected 800x480+1680+0 (normal left inverted right x axis y axis) 15
 4mm x 86mm
 800x480      60.00*+
 640x480      59.94
 640x480 (0xaa) 25.175MHz -HSync -VSync
   h: width 640 start 656 end 752 total 800 skew 0 clock 31.47KHz
   v: height 480 start 490 end 492 total 525 clock 59.94Hz
fdi@fdi-ubuntu:~$
```

Figure 4. Determining the ELI Output Device.

- c. Finally, enter the command below using the <device_id> found in step 3a and the <output_device> found in step 3b to map the touch input to the ELI display.

```
xinput map-to-output <device_id> <output_device>
```



```
fdi@fdi-ubuntu: ~  
File Edit View Search Terminal Help  
fdi@fdi-ubuntu:~$ xinput map-to-output 14 DVI-I-1-2  
fdi@fdi-ubuntu:~$
```

Figure 5. Mapping the Touch Input to the ELI Display Output.

NOTE: For xinput_calibrator to work properly, it may be necessary to temporarily make ELI the only display before continuing.

4. Enter the following command to run the calibration software:

```
xinput_calibrator
```

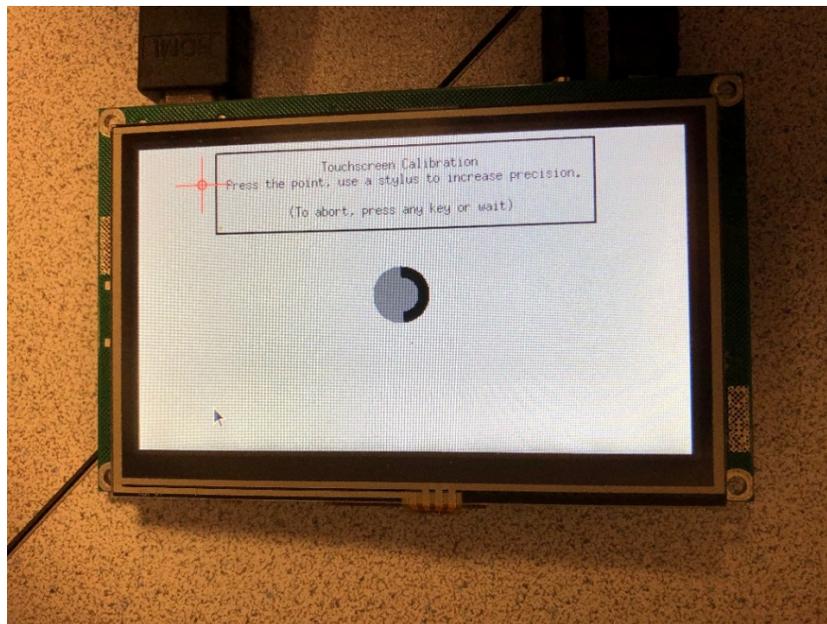


Figure 6. Calibration in progress (example using ELI43-CR).

5. After the calibration finishes, the terminal will output text like the following:

```
--> Making the calibration permanent <--
copy the snippet below into '/etc/X11/xorg.conf.d/99-calibration.conf'
Section "InputClass"
    Identifier      "calibration"
    MatchProduct   "Future Designs, Inc. ELI43-CR resistive touchscreen rev
ision 2.0"
    Option  "MinX"    "31562"
    Option  "MaxX"    "31562"
    Option  "MinY"    "64852"
    Option  "MaxY"    "955"
    Option  "SwapXY"  "1" # unless it was already set to 1
EndSection
```

Figure 7. Code to be copied

6. To make the calibration permanent, we need to place the calibration section into a specific file. Start by copying the calibration section, which will look like the following:

```
Section "InputClass"
    Identifier      "calibration"
    MatchProduct   "Future Designs, Inc. ELI43-CR resistive touchscreen rev
ision 2.0"
    Option  "MinX"    "31562"
    Option  "MaxX"    "31562"
    Option  "MinY"    "64852"
    Option  "MaxY"    "955"
    Option  "SwapXY"  "1" # unless it was already set to 1
EndSection
```

Figure 8. Using Nano to save changes

7. Enter the following command to open (or create) the calibration file:

```
sudo nano /etc/X11/xorg.conf.d/99-calibration.conf
```

8. If the document already contains data, hold the Delete key to clear the file before pasting.
9. Right-click and Paste the data copied in step 6 into the file. Text like that shown in Figure 87 should be the only text in the file.
10. Finally, press Ctrl+X to close the file type 'y' to save changes, and press Enter to confirm the file name. The calibration has been made permanent.

3. Website and Support

Support:

- FDI Support home page:..... <https://www.teamfdi.com/support>
- FDI Forums: <https://www.teamfdi.com/forums>