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Elo Touchscreen Linux Driver - APR (USB)

Intel i686 (32 bit) or AMD64/Intel (64 bit)

Installation/Uninstallation Instructions

Version 2.2.0
October 07, 2010
Elo TouchSystems

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Elo Linux APR Driver package contains Linux drivers designed for Linux 2.6 kernel, graphic control panel and commandline control panel utilities for Elo APR touchmonitors. This driver requires the libusb-1.0 library to function properly. See section 3 for installing libusb-1.0 library.

This readme file is organized as follows:

1. Supported Touchmonitors and Elo Touchscreen Controllers

- Elo APR (USB) Controllers (APR 7000/7001/7002)

2. System Requirements

- 32 bit Intel i686 (x86) platform (or) 64 bit AMD/Intel x86_64 platform [Visit the Linux downloads section at www.elotouch.com to download driver package for your 32 or 64 bit Linux]

- Kernels supported:
  Kernel version 2.6

- Libusb versions supported:
  libusb 1.0 (libusb-1.0.so.0)

- Motif versions supported:
  Motif version 4.0 (libXm.so.4)
  Motif version 3.0 (libXm.so.3)

- libusb versions supported:
  libusb version 1.0

3. Installing the libusb-1.0 library

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Important:
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a.) Must have administrator access rights on the Linux system to install the
    libusb-1.0 library.

b.) To build the libusb-1.0 library from source code, a development environment
    is required with necessary packages like gcc, make, etc. Refer to libusb-1.0
    source code documentation for further details.

c.) Libusb-1.0 functions use "usbfs" file system to interact with the usb
    device. Ensure that "usbfs" is mounted and active if you receive errors with
    libusb-1.0 functions.

d.) This driver will NOT work with the older libusb-0.1 library.

The Elo APR touchscreen Linux driver components now require libusb-1.0 library
support (older libusb-0.1 library will not work). This libusb-1.0 library can be
installed from binary packages provided by various Linux distributions. The
library can also be installed by compiling the libusb-1.0 source package
available for download at the libusb-1.0 website.

Install libusb-1.0 library from binary packages

Most latest Linux distributions(example: OpenSuse 11.1, Ubuntu 9.04, Fedora 10,
etc) have started shipping this library (update to the popular libusb-0.1
library) as a part of their standard release. You may still need to select and
install the library from the CD/DVD image or from the online package repository.

Please see commands to install libusb-1.0 library binary package for some Linux
distributions, provided below.

yum install libusb1   [Fedora 10]

apt-get install libusb-1.0-0 [Ubuntu 9.04]

Install libusb-1.0 library from source code

If your distribution (example: OpenSuse 10.3, Ubuntu 8.04, Fedora 8, etc) does
not have a binary package for libusb-1.0 library, you can download the latest
source code for this library from the libusb-1.0 website, compile and install it
easily.

Website   - http://libusb.wiki.sourceforge.net/Libusb1.0
Download Source - http://sourceforge.net/projects/libusb/files/libusb-1.0/

Extract the library source code and then run the following commands to
configure, compile and install the library from the main library folder.

cd libusb-1.0.0
./configure
make
make install

Intel 32bit i686 platform:
- - - - - - - - - - - - -

ln -s /usr/local/lib/libusb-1.0.so.0 /usr/lib/libusb-1.0.so.0

(or)

AMD64/Intel 64bit x86_64 platform:

- - - - - - - - - - - - - - - - - - -

```
# ln  -s  /usr/local/lib64/libusb-1.0.so.0  /usr/lib64/libusb-1.0.so.0
```

Older Linux distributions may have some limitations to compile this library source code due to gcc compiler version. Refer to libusb-1.0 source code documentation for further details.

4. Installing the Elo Touchscreen APR Driver

Important:

a.) Must have administrator access rights on the Linux system to install the Elo Touchscreen APR Driver.

b.) Ensure all earlier Elo drivers are uninstalled from the system.

c.) Do not extract the downloaded binary package on a Windows system.

d.) This driver will work only on Linux kernel version 2.6.

e.) Ensure that the libusb-1.0 library (libusb-1_0-0-0.9.3-4.22 or libusb-1.0-0 package) is installed before you proceed with the touchscreen driver installation.

f.) Motif 4.0 (libXm.so.4) or Motif 3.0 (libXm.so.3) library is required to use the Graphic User Interface (GUI) based control panel (/etc/opt/elo-apr/cpl). Openmotif, libmotif, libopenmotif or lesstif installation packages provide the required libXm.so.4 or libXm.so.3 library.

g.) Ensure that the APR touchscreen is connected to the system while installing the driver and while rebooting after the driver installation.

Step I:

Copy the Elo APR driver files from the extracted "bin-apr" binary folder to the default elo folder (/etc/opt/elo-apr).

```
  # cp -r ./bin-apr/  /etc/opt/elo-apr
  # cd /etc/opt/elo-apr
```

Step II:

APR touchscreens with external characterization data file (on USB stick):
- -

If the APR touchscreen (example: 3200L Interactive Digital Signage Display) came with a USB stick, plug in the USB stick and mount it on your Linux distribution. Now copy the external characterization data file from the USB stick to the APR characterization data folder (/etc/opt/elo-apr/ConfigData/APRCalData/) and rename the file exactly as "AprCF.bin"(aprcf.bin will not work). Create the characterization data folder if it does not exist. Overwrite the AprCF.bin file if it already exists.

```
  # mkdir -p /etc/opt/elo-apr/ConfigData/APRCalData/
  # cp -r  <usb stick path>/<data file name> /etc/opt/elo-apr/ConfigData/APRCalData/AprCF.bin
```

If the USB stick is mounted on "/media/usbdisk" and if the characterization file name is "F102000120PD_U03", use the command below. Modify the USB mount point and file name as necessary.

```
  # cp -r /media/usbdisk/F102000120PD_U03 /etc/opt/elo-apr/ConfigData/APRCalData/AprCF.bin

Now run the driver from the terminal to detect the new APR touchscreen and
start working with the new AprCF.bin characterization data file.

  # cd /etc/opt/elo-apr
  # ./eloapr

The driver will start responding to user's touch input for any user (root or
normal user). After the next system restart, touch should be available at the
login screen too.

Now proceed to Installation Step III.


APR touchscreens with inbuilt characterization data file:
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Ensure that the APR touchscreen is connected to the system and proceed with the
characterization data file download.

Now run the driver from the terminal to detect the new APR touchscreen and
download the characterization data file. This data download will take a few
minutes to complete and is done only once per touchscreen. This data, stored on
the hard disk, is unique for every touchscreen and is used by the driver to
work with a specific touchscreen.

  # cd /etc/opt/elo-apr
  # ./eloapr

Once the data download is complete the driver will start responding to user's
touch input for any user (root or normal user). After the next system restart,
touch should be available at the login screen too.



Step III:
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OpenSuse and Suse Enterprise Linux systems:
- - - - - - - - - - - - - - - - - - - - - - -
Copy the Elo APR driver udev rules file (99-elotouch-suse.rules) to the udev
rules folder "/etc/udev/rules.d/". If your Xserver does not use X
authentication, add the "--noxauthentication" commandline parameter to the
eloapr startup line, in the "/etc/udev/rules.d/99-elotouch-suse.rules" file.

  # ls -l /etc/udev/rules.d/
  # cp /etc/opt/elo-apr/setup/99-elotouch-suse.rules /etc/udev/rules.d/


Unplug and replug the APR touchscreen and check if touch is active. If touch is
not restored, modify the APR UDEV rules file to suit the Linux distribution. Check
the available udev rules files in the /etc/opt/elo-apr/setup folder and
/etc/udev/rules.d folder for possible modifications.


Debian, Ubuntu and Gentoo systems:
- - - - - - - - - - - - - - - - - - -
Copy the Elo APR driver udev rules file (99-elotouch-ubuntu.rules) to the udev
rules folder "/etc/udev/rules.d/". If your Xserver does not use X
authentication, add the "--noxauthentication" commandline parameter to the
eloapr startup line, in the "/etc/udev/rules.d/99-elotouch-ubuntu.rules" file.

  # ls -l /etc/udev/rules.d/
  # cp /etc/opt/elo-apr/setup/99-elotouch-ubuntu.rules /etc/udev/rules.d/


Unplug and replug the APR touchscreen and check if touch is active. If touch is
not restored, modify the APR UDEV rules file to suit the Linux distribution. Check
the available udev rules files in the /etc/opt/elo-apr/setup folder and
/etc/udev/rules.d folder for possible modifications.
```

Slackware and Redhat Enterprise Linux systems:
- -
Copy the Elo APR driver udev rules file (99-elotouch-rhel.rules) to the udev
rules folder "/etc/udev/rules.d/". If your Xserver does not use X
authentication, add the "--noxauthentication" commandline parameter to the
eloapr startup line, in the "/etc/udev/rules.d/99-elotouch-rhel.rules" file.

```
# ls -l /etc/udev/rules.d/
# cp /etc/opt/elo-apr/setup/99-elotouch-rhel.rules /etc/udev/rules.d/
```

Unplug and replug the APR touchscreen and check if touch is active. If touch is
not restored, modify the APR UDEV rules file to suit the Linux distribution. Check
the available udev rules files in the /etc/opt/elo-apr/setup folder and
/etc/udev/rules.d folder for possible modifications.

Fedora systems:
- - - - - - - - -
Copy the Elo APR driver udev rules file (99-elotouch-fedora.rules) to the udev
rules folder "/etc/udev/rules.d/". If your Xserver does not use X
authentication, add the "--noxauthentication" commandline parameter to the
eloapr startup line, in the "/etc/udev/rules.d/99-elotouch-fedora.rules" file.

```
# ls -l /etc/udev/rules.d/
# cp /etc/opt/elo-apr/setup/99-elotouch-fedora.rules /etc/udev/rules.d/
```

Unplug and replug the APR touchscreen and check if touch is active. If touch is
not restored, modify the APR UDEV rules file to suit the Linux distribution. Check
the available udev rules files in the /etc/opt/elo-apr/setup folder and
/etc/udev/rules.d folder for possible modifications.

Mandriva systems:
- - - - - - - - - -
Copy the Elo APR driver udev rules file (99-elotouch-mandriva.rules) to the udev
rules folder "/etc/udev/rules.d/". If your Xserver does not use X
authentication, add the "--noxauthentication" commandline parameter to the
eloapr startup line, in the "/etc/udev/rules.d/99-elotouch-mandriva.rules" file.

```
# ls -l /etc/udev/rules.d/
# cp /etc/opt/elo-apr/setup/99-elotouch-mandriva.rules /etc/udev/rules.d/
```

Unplug and replug the APR touchscreen and check if touch is active. If touch is
not restored, modify the APR UDEV rules file to suit the Linux distribution. Check
the available udev rules files in the /etc/opt/elo-apr/setup folder and
/etc/udev/rules.d folder for possible modifications.

Step IV:

Ensure that the Elo APR (USB) touchscreen is connected to the computer and
restart your system.

```
# shutdown -r now
```

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5. APR Driver Commandline Options and Usage
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The APR (eloapr) driver commandline options are listed below. If required, modify the
Elo UDEV rules file to add commandline options to eloapr driver startup.

```
--nobeepontouch       [ Disable the beep on touch feature ]
```

```
  --noxauthentication   [ Disable the X authentication process for Xorg
                          Xservers that do not require authentication procedure
                          to interact with the Xserver (embedded systems) ]

  --displaycoordinates  [ Display the touch data, corresponding to each touch,
                          on a terminal. Touch data consists of touch state
                          (Touch/ Stream/ Untouch) along with X and Y
                          coordinates. This option is used for testing the APR
                          touchscreen, hence touch data is only displayed and
                          not sent to Xserver to move the mouse pointer. ]

  --rotation <angle>    [ Launch the APR driver to support respective video
                          rotation mode. Supported video rotation angles are 0,
                          90, 180 and 270. ]

  --linearinputgain <index>   [ Change the linear input gain index. Valid range
                                for the gain index is 0 to 45. ]

  --aprmode_pos         [ Start the Elo APR driver tailored for Point of Sale
                          (POS) applications(default mode). ]

  --aprmode_general     [ Start the Elo APR driver tailored for General
                          applications. ]

  --aprmode_signature   [ Start the Elo APR driver tailored for Signature
                          applications. ]

  --aprmode_gaming      [ Start the Elo APR driver tailored for Gaming
                          applications. ]

  --custom_parameters   [ Start the Elo APR driver with custom parameters for a
                          specific APR mode. Custom parameters are read from the
                          /etc/opt/elo-apr/setup/customAprParameters.txt file.
                          Contact Elo tech support for help with custom
                          parameters, if the 4 standard APR modes are not
                          suitable. The custom parameter format is listed in the
                          customAprParameters.txt file and the valid range is
                          from Parameter_0 to Parameter_37.  ]



Usage Examples:
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  eloapr --nobeepontouch

  eloapr --nobeepontouch --noxauthentication --aprmode_gaming

  eloapr --rotate 90

  eloapr --rotate 180 --displaycoordinates

  eloapr --aprmode_signature

  eloapr --aprmode_signature --custom_parameters  [ Load Standard APR Signature
                                                    mode and then replace some
                                                    parameters provided in the
                                                    custom parameters file. ]

  eloapr --custom_parameters                      [ Load Standard APR POS mode
                                                    (default) and then replace
                                                    some parameters provided in
                                                    the custom parameters file. ]




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6. Accessing the Control Panel
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The control panel application allows the user to easily set the available driver
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The control panel application allows the user to easily set the available driver configuration options. After the driver is installed and loaded, change to the /etc/opt/elo-apr folder and run the control panel application.

Important:
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Users must have administrator or root access to run the control panel applications.

Step I:

Run the control panel utility from a command window in X Windows from the /etc/opt/elo-apr folder. Motif version 4.0 (libXm.so.4) or Motif version 3.0 (libXm.so.3) is required to use the GUI based control panel (/etc/opt/elo-apr/cpl).

```
  # cd /etc/opt/elo-apr
  # ./cpl
```

Step II:

Navigate through the various tabs by clicking on them. Here is an overview of information related to each tab.

```
  General    - General touchscreen information
  Mode       - Change the touchscreen mode
  Properties - Display data related to the APR touch monitor
  About      - Information about the package. Click on the Readme
               button to open this readme.txt file.
```

Step III:

If Motif is not installed, use the command line version of the application to access the control panel. Run the command line application from a command window in X Windows from the /etc/opt/elo-apr folder.

```
  # cd /etc/opt/elo-apr
  # ./cplcmd
```

7. Uninstalling the Elo Touchscreen APR Driver

Important:
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a.) Must have administrator access rights on the Linux system to uninstall the Elo Touchscreen APR Driver.

b.) All the touchscreen characterization data that have been downloaded to the hard disk will be erased.

Step I:

Remove the Elo APR driver udev rules file(99-elotouch-*.rules) that was copied to the udev rules folder "/etc/udev/ruled.d" in Installation Step III.

```
  # cd /etc/udev/rules.d
```

```
  # rm -i /etc/udev/rules.d/99-elotouch-*.rules


Step II:
--------

Delete the Elo APR driver files and folders within the main Elo APR driver
folder "/etc/opt/elo-apr", created in Installation Step I.

  # cd /etc/opt
  # rm -rf /etc/opt/elo-apr


Restart the system to complete the uninstallation process.

  # shutdown -r now




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8. Contacting Elo TouchSystems
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Website: http://www.elotouch.com


E-mail: customerservice@elotouch.com


Mailing Address:
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