Application Note

AN_220

FTDI Drivers Installation Guide for Linux

Version 1.1

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The purpose of this application note is to provide users of FTDI chips with a simple procedure to install FTDI drivers for FTDI devices used with Linux.

Use of FTDI devices in life support and/or safety applications is entirely at the user's risk, and the user agrees to defend, indemnify and hold FTDI harmless from any and all damages, claims, suits or expense resulting from such use.

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1 Introduction

The purpose of this application note is to provide users of FTDI chips with a simple procedure to install FTDI drivers for FTDI devices using Linux.

1.1 Overview

FTDI has two types of drivers for all supported operating systems. These are the virtual COM port driver (VCP) and the D2XX API driver. Since the FTDI VCP driver is built into the Linux kernel, this document will focus on the installation of the D2XX driver.

To ensure all FTDI devices have VCP driver support, FTDI recommends installing the latest kernel release on the Linux system. In Linux, the VCP drivers will appear as /dev/ttyUSBx.

How to verify the built-in COM port:

Plug in a FTDI based design/module/cable

Open a terminal window, and enter

dmesg | grep FTDI <ret>

[10170.987708] USB Serial support registered for FTDI USB Serial Device

[10170.987915] ftdi_sio 9-1:1.0: FTDI USB Serial Device converter detected

[10170.991172] usb 9-1: FTDI USB Serial Device converter now attached to ttyUSB0

[10170.991219] ftdi_sio: v1.6.0:USB FTDI Serial Converters Driver

In Linux, the VCP driver and D2XX driver are incompatible with each other. When a FTDI device is plugged in, the VCP driver must be unloaded before a D2XX application can be run. Use the remove module (rmmod) command to do this:

sudo rmmod ftdi_sio <ret>

sudo rmmod usbserial <ret>

When the FTDI device is power cycled or reset the VCP driver will be reloaded. The rmmod process must be repeated each time this occurs. It is possible to write a simple script that unloads the VCP driver before running the D2XX application.

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2 Installing D2XX driver

Download the Linux D2XX driver from the FTDI D2XX driver web page. The driver files are contained in a tar gzip file. This archive contains the D2XX driver and directory of sample code. Most Linux distributions have utilities for extracting tar gzip archive files, such as the Archive Manager in Ubuntu. Figure 2.1 shows a screen capture showing the contents of the tar gzip archive. Click on Extract and save all the files to your desired target directory.

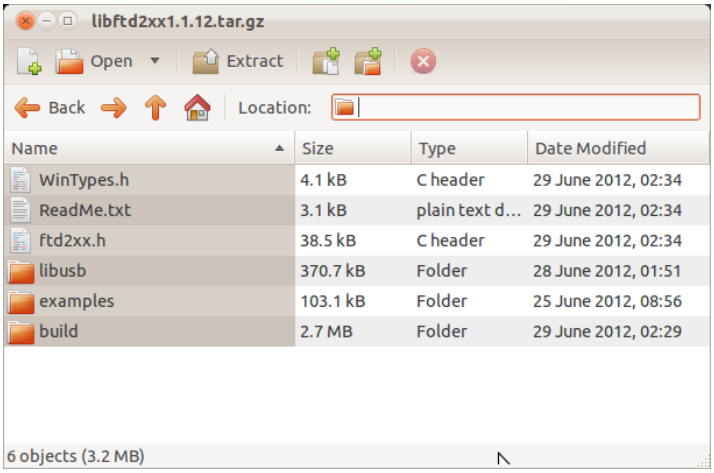


Figure 2.1 Contents of D2XX driver archive

As an alternative, you can use the Linux gunzip and tar –xvf commands to extract the driver files. Open a Linux terminal window and enter

gunzip libftd2xx1.1.12.tar.gz <ret>

tar –xvf libftd2xx1.1.12.tar <ret>

Once the files have been extracted, change to the required architecture subdirectory (i386 for 32 bit systems, x86_64 for 64 bit systems, & arm926 for ARM v5 systems such as Raspberry Pi).

2.1 Linux Shared Object and Static Library Install

All driver files are copied and linked using the Linux sudo command for root permissions.

sudo cp /releases/build/arch/lib* /usr/local/lib <ret>

arch refers to CPU architecture: i386,x86_64,arm926

Make the following symbolic links and permission modifications in /usr/local/lib:

cd /usr/local/lib <ret>

sudo ln –s libftd2xx.so.1.1.12 libftd2xx.so <ret>

sudo chmod 0755 libftd2xx.so.1.1.12 <ret>

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3 Compiling and Running Sample D2XX Applications

FTDI provides both Shared Object (.so) and Static linked (.a) D2XX libraries. Here are the installation procedures for these libraries.

3.1 Building and Running the Shared Object Examples

To verify the D2XX driver install, compile and run the EEPROM read sample program. Make sure the Linux system has the gcc compiler installed.

```
cd /examples  <ret>
make –B  <ret>
cd /examples/eeprom/read  <ret>
```

The name of the executable file is *read*.

Plug in the FTDI based device. Remove the VCP driver as described in section 1.1:

```
sudo rmmod ftdi_sio  <ret>
sudo rmmod usbserial <ret>
```

Run the sample application:

```
sudo ./read  <ret>
```

The read application will list the configuration descriptors of the attached FTDI device as follows:

```
opening port 0
ftHandle0 = 0x8e89220
Signature1 = 0
Signature2 = -1
Version = 2
VendorId = 0x0403
ProductId = 0x6001
Manufacturer = FTDI
ManufacturerId = FT
Description = USB-Serial Converter
SerialNumber = FTG5FL9U
```


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3.2 Building and Running the Static Library Example

The static library example is simple to run and execute:

cd /release/examples/static <ret>

rm lib* <ret> (removes any previous library built for another target)

cp /usr/local/lib/libftd2xx.a . <ret>

make –B <ret>

sudo ./static_link

This application will write and read 16 bytes to port 0 of any FTDI USB ->UART device with a loopback connector attached:

Device 0 Serial Number - FTVESNIO

Opened device FTVESNIO

FT_Read read 16 bytes

Closed device FTVESNIO

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4 Contact Information

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Appendix A – References

Document References

Refer to the FTDI D2XX Programmers Guide for more information on the D2XX API.

D2XX Programmers Guide

Acronyms and Abbreviations

Terms	Description
Make command	Make is a script for compiling code examples.
Shared Object File (.so)	Linux version of a Windows Dynamically Linked Library (dll)
Static File (.a)	Linux version of a Windows static linked library

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Appendix C – Revision History

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