Application Note

AN_396

FTDI Drivers Installation Guide for Windows 10/11

Version 1.1

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The purpose of this application note is to provide users of FTDI chips with a simple procedure for installing FTDI drivers for FTDI devices used under Windows 10 and Windows 11.

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 for installing FTDI drivers for their devices under Windows 10 and Windows 11 as both OS versions are similar.

This installation guide is only intended for installing FTDI devices on the following versions of Windows 10/11.

- Windows 10/11
- Windows 10/11 Home
- Windows 10/11 Pro
- Windows 10/11 Enterprise
- Windows 10/11 Education

Windows 10 32 bit and 64 bit are supported.

Windows 11 64 bit is only supported as Microsoft do not support 32 bit for this OS.

There are different versions of the FTDI Driver for Windows 10/11 as shown in Figure 1.1.

		Processor Architecture							
Operating System	Release Date	X86 (32-Bit)	X64 (64-Bit)	PPC	ARM	MIPSII	MIPSIV	SH4	Comments
Windows (Desktop)*	2021-07-15	2.12.36.4	2.12.36.4	–	2.12.36.4A****	–	–	–	WHQL Certified. Includes VCP and D2XX. Available as a setup executable Please read the Release Notes and Installation Guides.
Windows (Universal)***	2021-11-12	2.12.36.4U	2.12.36.4U	–	–	–	–	–	WHQL Certified. Includes VCP and D2XX.

Figure 1.1 Windows 10/11 Driver Versions

*Includes the following version of the Windows operating system: Windows 7, Windows 8/8.1, Windows 10, Windows 11, Windows Server 2008 R2 and Windows server 2012 R2.

****Windows 10 and Windows 11 only. Universal Windows Drivers enable developers to create a single driver package that runs across multiple different device types, from embedded systems to tablets and desktop PCs.

*****Windows 10 and Windows 11 only for ARM64 based Windows PCs. Also works on Mac M1 running Parallels VM with Windows.

Windows (Universal) and ARM64 drivers are not on Windows Update and do not have 'setup executables' so must be installed manually. See 3.3 Manual Installation for details on how to install these drivers.

This document does not cover Windows 10/11 IoT, embedded or mobile. A separate driver is required for these versions of operating systems.

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2 Installing FTDI Device Drivers

The Windows Combined Driver Model (CDM) may be installed on Windows 10/11 allowing applications to access FTDI devices through either the D2XX DLL or a COM port without having to change driver type. However, it should be noted that an application can only communicate through one of these interfaces at a time and cannot send commands to the D2XX DLL and the associated COM port at the same time.

The CDM driver comes in two parts as shown in the block diagram below. The first part is the bus layer (FTDIBUS.sys) that provides D2XX style functionality and is always installed. The second part is the serial COM port layer (FTSER2k.sys) and the CDM driver will determine whether a COM port should be exposed by reading the EEPROM of FT232R, FT245R, FT2232D, FT2232H, FT4232H, FT232H, FT-X series and other FTDI devices. In the case of FT232BM, FT245BM, devices, the CDM driver will default to always installing both the bus and COM port parts.

This COM port installation can be disabled and EEPROM settings ignored by changing the driver INF files as detailed in FTDI Application Note AN_107 Advanced Driver Options. Please note that modifying the INF files of a Microsoft HCK certified driver will invalidate the Windows certification.

The FTDI driver download page is available here https://ftdichip.com/drivers/

Figure 2.1 Windows CDM Driver Architecture

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3 Installing CDM Drivers

To install CDM drivers for an FTDI device under Windows 10/11, follow the instructions below:

Connect the device to a spare USB port on your PC.

3.1 Windows Update

If there is an available internet connection, Windows 10/11 will silently connect to the Windows Update service and install any suitable driver it finds for the device.

Note: This only applies to the Desktop version of the driver (x86 (32-Bit) and x64 (64-Bit)) and does not include ARM64 or universal versions of the driver.

Figure 3.1 shows the automatic driver installation taking place.

Figure 3.1 Windows Update Installation

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3.2 Pre-Installation using the FTDI setup executable

The Windows 10/11 CDM driver is also available as a setup.exe from the FTDI website, as shown in Figure 3.2.

Note: This only applies to the Desktop version of the driver (x86 (32-Bit) and x64 (64-Bit)) and does not include ARM64 or universal versions of the driver.
The executable copies the default FTDI driver to the PC's temporary driver store prior to the FTDI device being plugged into the PC.

		Processor Architecture							
Operating System	Release Date	X86 (32-Bit)	X64 (64-Bit)	PPC	ARM	MIPSII	MIPSIV	SH4	Comments
Windows (Desktop)*	2021-07-15	2.12.36.4	2.12.36.4	–	2.12.36.4A****	–	–	–	WHQL Certified. Includes VCP and D2XX. Available as a setup executable Please read the Release Notes and Installation Guides.

Figure 3.2 Setup Executable Location

Download the setup.exe, unzip and right-click and select 'Run as administrator' as shown in Figure 3.3.

Figure 3.3 Setup Executable Run as administrator

You may see a message from 'User Access Control' asking 'Do you want to allow this app to make changes to your PC?.' If so, click Yes to continue.

Press the Extract button as shown in Figure 3.4.

Figure 3.4 Extract CDM Drivers

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Follow the installation instructions shown in Figure 3.5 including license terms agreement acceptance shown in Figure 3.6 and the driver will be automatically installed. From a legal point of view, the user must accept the license terms of the driver. Successful installation is shown in Figure 3.7.

Figure 3.5 Driver Installation Wizard

Figure 3.6 Driver Installation Wizard License Agreement

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Figure 3.7 Driver Installation Completion

Whenever an FTDI device is plugged into the PC, VCP and D2XX drivers will be installed, depending on EEPROM settings, and listed in device manager as shown in Figure 3.8. Device Manager can be found as shown in Figure 3.9.

Figure 3.8 Device Manager View

Note: The device must be physically plugged in after running the setup exe to complete the installation.

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3.3 Manual Installation

If no suitable driver is automatically found, then the following procedure should be followed.

Note: This is the only method to install the ARM64 or universal versions of the driver.

Firstly, download the latest FTDI windows driver files from https://ftdichip.com/drivers/ and save the driver .zip file to a known folder on the PC. The desktop can be used so that the driver folder can be easily located then extract the .zip file.

To locate the device manager on windows 10/11, right click on the Microsoft logo at the bottom left-hand corner of the screen and select Device Manager as shown in Figure 3.9.

Figure 3.9 Device Manager Access

In the Device Manager window there should be a device under Other Devices with a yellow warning symbol to indicate a problem i.e. no driver installed, as shown in Figure 3.10. The text next to this device will depend on the device attached. In this example the device was a USB Serial Cable.

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Figure 3.10 Device Manager View

Right click on the other device (USB Serial Cable in this example) to bring up a menu as shown in Figure 3.11. From the displayed menu select "Update Driver Software…"

Figure 3.11 Update Driver Software

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This then displays the option for an automatic search or a manual search. Select the second option to browse manually as shown in Figure 3.12.

Figure 3.12 Browse my computer for Driver Software

In the address box put the exact location where the drivers have been saved to. The location should be the top-level folder of the extracted files and contain two *.INF files. It is not necessarily the exact same location as shown in Figure 3.13. The drivers could have been saved anywhere on the PC by the user.

Figure 3.13 Search Location

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After entering or browsing for the address, select "Next" to start the installation as shown in Figure 3.14.

Figure 3.14 Installing driver software

When the installation has finished a completion screen is displayed as shown in Figure 3.15.

Figure 3.15 Successful Driver Software Update

Press Close to close this window and go back to the Device Manager Window.

If the Virtual Com Port option has been enabled to load then Device Manager will show a device under Other Devices but in addition to this there is a new entry under Universal Serial Bus

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Controllers indicated in Figure 3.16 as the USB Serial Converter. This indicates the bus layer of the driver is installed. Installing the Virtual Com Port layer of the driver is a repeat of the last few steps.

Figure 3.16 Device Manager View

Right click on the other device (USB Serial Cable in this example) to bring up a menu as shown in Figure 3.17. From the displayed menu select "Update Driver Software…"

Figure 3.17 Update Driver Software

This then displays the option for an automatic search, or a manual search as shown in Figure 3.18. Select the second option to browse manually

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Figure 3.18 Browse my computer for Driver Software

In the address box put the exact location where the drivers have been saved to. The location should be the top-level folder of the extracted files and contain two *.INF files. It is not necessarily the exact same location as shown in Figure 3.19. The drivers could have been saved anywhere on the PC by the user.

Figure 3.19 Search Location

After entering the address select "Next" to start the installation as shown in Figure 3.20.

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Figure 3.20 Installing driver software

When the installation is finished a completion screen is displayed as shown in Figure 3.21.

Figure 3.21 Successful Driver Software Update

Note this screen also displays the COM port number assigned to the device.

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Press Close to close this window and go back to the Device Manager Window as shown in Figure 3.22.

Figure 3.22 Device Manager View

This time Device Manager does not have an entry under Other Devices but does show entries under Universal Serial Bus Controllers and Ports (COM & LPT). Figure 3.22 displays a correct installation. The device is now ready to use on COM3.

Note: Not all devices will install to COM3. The COM port allocation is determined by the installation wizard based on the next free com port as designated in the PC registry. The COM port can be reassigned to another free port in advance properties as shown in Figure 3.23. FTDI have also produced a utility called COM PORT Assignment which can help assign the port to a different COM port number.

Figure 3.23 Advanced Settings

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4 Uninstalling FTDI Devices

The FTDI utility CDM Uninstaller can be used to remove FTDI drivers from the Windows 10/11 PC. The utility is available on the FTDI website.

The readme for the command line version is available here and the readme for the GUI version can be viewed here.

You may want to enter the Vendor ID as 0403 and leave the Product ID blank. This would mean that all FTDI drivers are removed. See Figure 4.1.

Figure 4.1 CDMUninstaller

Alternately devices can be removed using the Device Manager by simply right-clicking on the mouse and selecting "Uninstall". This will delete the associated registry entries for that device only. Windows 10/11 provides an automatic method to delete driver files via a check box to "Delete the driver software for this device" on the uninstall dialog box.

Figure 4.2 VCP COM Port Uninstall

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Figure 4.3 D2XX USB Controller Uninstall

This stage is done twice. Once for the device under Ports (COM & LPT) and the next time for the device under Universal Serial Bus Controllers as shown in Figure 4.2 and Figure 4.3.

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5 Troubleshooting

5.1 Windows 10/11 cannot find drivers for my device

This error can occur if the VID and PID programmed into the device EEPROM do not match those listed in the INF files for the driver. The VID and PID programmed into the device EEPROM may be found by using the Microsoft USBView utility from the FTDI website. These can then be checked against the VID and PID entries in the driver INF files. If they do not match, that driver cannot be installed for that device without either re-programming the device EEPROM or modifying the list of VID and PID numbers in the INF files.

Please note that only your own company VID and PID or FTDI's VID (0x0403) and associated PID issued by FTDI for use by the customer should be used in the EEPROM and INF files.

End customers should obtain modified drivers from the OEM of the device, and not necessarily edit the files themselves. If the FTDI driver files are edited in any way, the certification is invalidated, and the default drivers may not install.

5.2 Devices not shown in Device Manager for uninstalling

Devices that have been installed on a system but are not currently available are referred to as "phantom devices". These devices are not usually displayed in the device manager but can be made to be displayed as though they are attached. This allows device properties to be changed or devices to be uninstalled via Device Manger even though the device is not physically connected to the PC.

To display phantom devices in Device Manager, a new system variable is required. Open Windows 10/11 Settings and select “About” then “Advanced System Settings” as shown in Figure 5.1.

Figure 5.1 Advanced System Settings

Select the "Advanced" tab and click "Environment Variables" in Figure 5.2.

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Figure 5.2 Environment Variables

In the System Variables section (**NOT THE USER VARIABLES SECTION**) shown in Figure 5.3.

Figure 5.3 System Variables

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Click "New..." to display the following window in Figure 5.4.

Figure 5.4 New System Variable

Create a new System Variable called "DevMgr_Show_NonPresent_Devices" and set the value to 1, then click OK.

Open the Device Manager and select "View → Show Hidden Devices" as shown in Figure 5.5. Device Manager will then show all hidden and phantom devices available on that PC as shaded.

Figure 5.5 Shown Hidden Devices

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5.3 Windows 10/11 warning message

If the driver is not certified, then a pop-up window such as shown below may be displayed.

Figure 5.6 Windows cannot verify the Publisher

If you are certain of the source of the driver the warning can be ignored and you can continue installation by selecting "Install this driver software anyway."

If you are unsure about the driver source, contact your vendor.

5.4 Driver will not install on Windows 10 x64

Windows 10/11 x64 OS will only allow certified drivers to be installed. The certified driver supplied by FTDI will work with VID 0403 and the following PID's for their respective devices:

PID 6001 for FT232B/R and FT245B/R
PID 6010 for FT2232D/H
PID 6011 for FT4232H
PID 6014 for FT232H
PID 6015 for all FT-X series
PID 601B/601C for FT4222H
PID 6040 for FT2233HP
PID 6041 for FT4233HP
PID 6042 for FT2232HP
PID 6043 for FT4232HP
PID 6044 for FT233HP
PID 6045 for FT232HP
PID 6048 for FT4232HA
PID 6049 for FT232RN

If you have a product where the manufacture has customized the driver but has not signed / re-certified it, then the driver will not load. You should contact your vendor to determine if they will support Windows 10/11 x64.

Figure 5.7 shows the error that is reported when the driver installation fails due to the driver not being certified.

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Figure 5.7 Problem Installing the Driver

5.5 Unable to view device installation status

If the installation progress is not shown automatically by the PC, it can be accessed by entering the PC Settings. Click on the Windows icon on the bottom left-hand corner of the PC and select Settings. A window should appear as shown in Figure 5.8.

Figure 5.8 Windows Settings

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Select 'Update and Security' to view any update status. You may see a similar screen shown in Figure 5.9.

Figure 5.9 Windows Update Settings

Click on Install updates if available as shown in Figure 5.10.

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Figure 5.10 Windows Update Install Now

Please ensure that your PC is kept up to date by always installing the latest Windows updates. This can have an adverse effect on driver installation if the PC is not kept up to date.

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Distributor and Sales Representatives

Please visit the Sales Network page of the FTDI website for the contact details of our distributor(s) and sales representative(s) in your country.

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Appendix A – References

Document References

AN_107 Advanced Driver Options

https://ftdichip.com/drivers/

https://ftdichip.com/utilities/

Acronyms and Abbreviations

Terms	Description
CDM	Windows Combined Driver Model
OS	Operating System
PID	Product ID
USB	Universal Serial Bus
VID	Vendor ID
WHCK	Windows Hardware Certification Kit

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Appendix C – Revision History

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Revision	Changes	Date
1.0	Initial Release	02-02-2016
1.1	Update to include Windows 11 and all versions of the FTDI driver (Desktop, Universal and ARM64)	29-04-2022

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