

Future Technology Devices International Ltd. Application Note AN_234 FTDI Drivers Installation guide for Windows 8

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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 8.

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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 8.

This installation guide is only intended for installing FTDI devices on the following versions of Windows 8.

- Windows 8
- Windows 8 Pro
- Windows 8 Enterprise

FTDI are not able to support Windows 8 RT as it is effectively a closed system. It will support standard USB device classes, but the option for vendors to add their own drivers and support different device classes is not available.



2 Installing FTDI Device Drivers

The Windows combined driver model (CDM) may be installed on XP, VISTA, Windows 7 or Windows 8 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 and the FT-X series 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, <u>Advanced Driver Options</u>. 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 http://www.ftdichip.com/FTDrivers.htm



Windows CDM Driver Architecture



3 Installing CDM Drivers

To install CDM drivers for an FTDI device under Windows 8, 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 8 will silently connect to the Windows Update website and install any suitable driver it finds for the device.

This screenshot shows the automatic driver installation taking place.

	×
Device Setup	
Installing USB <-> Serial Converter Please wait while Setup installs necessary files on your system. This may take several minutes.	
Close	2



3.2 Manual Installation

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

Firstly download the latest FTDI windows drivers from <u>http://www.ftdichip.com/FTDrivers.htm</u> and save them to a known folder on the PC. The desktop can be used so that the driver folder can be easily located.

To locate the device manager on windows 8 - move the mouse to the bottom right hand corner of the screen. When the following window pops up, select the Settings button.





Setting Desktop	S	
Control Pane	el	
Personalizati	on	
PC info		
Help		
Î	I	÷Ģ:
ftdi.local	No speakers or headphones	Unavailable
		ENG
Notifications	Power	Keyboard
	Chang	ge PC settings

Select "Control Panel".



From the Control Panel window select Hardware and Sound



At the next screen select Device Manager:





In the Device Manager window there will be a device under Other Devices with a yellow warning symbol to indicate a problem i.e. no driver installed. The text next to this device will depend on the device attached. In this example the device was a USB <-> Serial Converter device.

<u></u>	Device Manager	- 🗆 ×
<u>F</u> ile <u>A</u> ction <u>V</u> iew <u>H</u> elp		
(+ -) 🖬 📓 🛛 🖬 💐 🖹 😽		
 FTDI_APPS FTDI_APPS Disk drives Disk drives Display adapters DVD/CD-ROM drives DVD/CD-ROM drives IDE ATA/ATAPI controllers Keyboards Mice and other pointing devices Monitors Network adapters Other devices USB <-> Serial Converter 		
 Out Construction Out Construction Out Construction Portable Devices Print queues Processors Software devices Sound, video and game controllers Storage controllers Storage controllers System devices Universal Serial Bus controllers 		



Right click on the other device (USB <-> Serial Converter in this example) to bring up a menu as shown below.

From the displayed menu select "Update Driver Software..."

This then displays the option for an automatic search or a manual search.

Hov	v do you want to search for driver software?	
•	Search automatically for updated driver software Windows will search your computer and the Internet for the latest driver software for your device, unless you've disabled this feature in your device installation settings.	
•	Browse my computer for driver software Locate and install driver software manually.	



Select the second option to browse manually.

	×
Browse for driver software on your computer	
Search for driver software in this location:	
F:\CDM20827.14	
✓ Include subfolders	
Let me pick from a list of device drivers on my computer This list will show installed driver software compatible with the device, and all driver software in the same category as the device.	
<u>N</u> ext Cance	el

In the address box put the exact location where the drivers have been saved to. This may be on a CD or in a folder on the PC. It is not necessarily the exact same location as shown in the screenshot. The drivers could have been saved anywhere of the users choosing.

After entering the address select "NEXT" to start the installation.

	×
Installing driver software	
<u> </u>	



When the installation has finished a completion screen is displayed.



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



A Device Manager	-	×
<u>File Action View Help</u>		
✓ D Other devices		^
USB Serial Port		
Portable Devices		
Points (COM & LPT)		
Discorrection		
Sound video and game controllers		
System devices		
Universal Serial Bus controllers		
Renesas USB 3.0 eXtensible Host Controller - 0096 (Microsoft)		
Standard Enhanced PCI to USB Host Controller		
🖕 Standard OpenHCD USB Host Controller		
Standard OpenHCD USB Host Controller		
🖡 Standard OpenHCD USB Host Controller		
🚽 Standard OpenHCD USB Host Controller		
🏺 Standard OpenHCD USB Host Controller		
💗 USB Mass Storage Device		
USB Root Hub		
USB Root Hub (xHCl)		
USB Serial Converter		*

If the Virtual Com Port option has been selected then the Device Manager will show a device under Other Devices but in addition to this there is a new entry under Universal Serial Bus Controllers indicated in the screenshot above 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 almost a repeat of the last few steps.

Right click on the other device (USB Serial Convertor in this example) to bring up a menu as shown below.



4	Device Manager	-	□ ×
File Action View He	elp		
🗢 🄿 📰 📴 👔	司 🔍 🗎 🐺 65		
Other devices USB Serial P	art		^
Portable De	Update Driver Software		
Ports (CON)	Disable		
Print queue Print queue	Uninstall		
Sound, vide	Scan for hardware changes		
 Storage cor System dev 	Properties		- 1
Wiversal Serial Renesas USE Standard Op Standard Op Standard Op Standard Op Standard Op Standard Op USB Mass St USB Root Hi USB R	Bus controllers i 3.0 eXtensible Host Controller - 0096 (Microsoft) hanced PCI to USB Host Controller venHCD USB Host Controller venHCD USB Host Controller venHCD USB Host Controller venHCD USB Host Controller orage Device ub ub ub ub ub ub ub (XHCI) onverter		
Launches the Undate Driver	Software Wizard for the selected device		~
counciles the opdate briver			_

From the displayed menu select "Update Driver Software..."

This then displays the option for an automatic search or a manual search.

	×
🕒 🔟 Update Driver Software - USB Serial Port	
How do you want to search for driver software?	
Search automatically for updated driver software Windows will search your computer and the Internet for the latest driver software for your device, unless you've disabled this feature in your device installation settings.	
Browse my computer for driver software Locate and install driver software manually.	
	Cancel



Select the second option to browse manually.

	×
📀 🧕 Update Driver Software - USB Serial Port	
Browse for driver software on your computer	
Search for driver software in this location:	
F:\CDM20827.14	
✓ Include subfolders	
Let me pick from a list of device drivers on my computer This list will show installed driver software compatible with the device, and all driver software in the same category as the device.	
<u>N</u> ext C	ancel

In the address box put the exact location where the drivers have been saved to. This may be on a CD or in a folder on the PC. It is not necessarily the exact same location as shown in the screenshot. The drivers could have been saved anywhere of the users choosing.

After entering the address select "NEXT" to start the installation.



Update Driver Software - USB Serial Port
Installing driver software

When the installation is finished a completion screen is displayed.

		×
G	Update Driver Software - USB Serial Port (COM3)	
	Windows has successfully updated your driver software	
	Windows has finished installing the driver software for this device:	
	USB Serial Port	
		Close

Note this screen also displays the COM port assigned to the device. Press Close to close this window and go back to the Device Manager Window.



4	Device Manager	- 🗆	×
<u>F</u> ile	<u>A</u> ction <u>V</u> iew <u>H</u> elp		
-	ا الله الله الله الله الله الله الله ال		
3 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	 Ports (COM & LPT) Communications Port (COM1) ECP Printer Port (LPT1) USB Serial Port (COM3) Print queues Processors Sound, video and game controllers Storage controllers System devices Universal Serial Bus controllers Standard DpenHCD USB Host Controller Standard OpenHCD USB Host Controller USB Root Hub USB Root Hub USB Root Hub USB Root Hub USB Root Hub (vHCl) USB Serial Converter 		~

This time the Device Manager does not have a USB <-> SERIAL CONVERTER entry under Other Devices but does show entries under Universal Serial Bus Controllers and Ports (COM & LPT). The above screen shot 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 on the basis of the next free com port as designated in the PC registry. The COM port can be reassigned to another free port in advance properties.

D	evice Manager	×		Advanced Setting	gs for COM3	? ×
File Action View Help						
(+ +) 🗊 🔛 🔢 🖬 😣 🗎 😽			COM Port Number:	СОМЗ	•	ОК
▲ Apps ▷ Apps □ Computer □ □ Disk drives □	USB Serial Port (COM3) Propertie General Port Settings Driver Details Events Bits per second: 9600 Data bits: 8	es ×	USB Transfer Sizes Select lower settings to corre Select higher settings for fas Receive (Bytes): Transmit (Bytes):	COM3 / COM4 (nue) COM4 (nue) COM5 / COM6 COM7 COM6 COM9 COM10 COM10 COM11 COM12 COM13	d rates.	Cancel Defaults
	Parity: None Stop bits: 1	~	BM Options Select lower settings to corre	COM15 COM15 COM16 COM17 COM18	Miscellaneous Options Serial Enumerator	V
	Flow control: None	~	Latency Timer (msec):	COM19 COM20 COM21 COM22	Serial Printer Cancel If Power Off	
 Processors Image: Sound, video and game controllers 	Advanced F	Restore Defaults	Timeouts	COM23 COM24 COM25	Event On Surprise Removal	
 Storage controllers Image System devices 			Minimum Read Timeout (mse	COM26 COM27	Set RTS On Close	
Universal Serial Bus controllers			Minimum Write Timeout (mse	COM28 COM29 COM30	Disable Modem Ctrl At Startup	



3.3 Pre-Installation using the FTDI setup executable

The Windows 8 CDM driver is also available as a setup.exe from the **FTDI Web Site**.

The executable installs the default FTDI driver prior to the FTDI device being plugged into the PC. Right click and select Run as administrator



Press the Extract button





The driver will now be automatically installed.

FTDI CDM drivers	×
Extracting Files FreeExtractor is extracting the compressed files in this archive.	۲
Please wait while the files in this archive are extracted.	
Extracting ftdibus.cat	_
FreeExtractor Back Extract	Cancel

Whenever a FTDI device is plugged into the PC, both VCP and D2XX drivers will be installed and listed in device manager.





4 Uninstalling FTDI Devices

The FTDI utility CDM Uninstaller can be used to remove FTDI drivers from the windows 8 PC. The utility is available on the <u>FTDI website</u>.

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 8 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.

Confirm Device Uninstall	×
USB Serial Port (COM3)	
Warning: You are about to uninstall this device from your system	n.
Delete the driver software for this device.	
OK Cancel	
	~
Confirm Device Uninstall	×
Confirm Device Uninstall USB Serial Converter	×
Confirm Device Uninstall USB Serial Converter Warning: You are about to uninstall this device from your system	n.
Confirm Device Uninstall USB Serial Converter Image: You are about to uninstall this device from your system Image: You are about to uninstall this device from your system Image: Delete the driver software for this device.	×

This stage is done twice. Once for the device under Ports (COM & LPT) and once for the device under Universal Serial Bus Controllers.



5 Troubleshooting

5.1 Windows 8 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 USBView utility from the <u>FTDI web site</u>. 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 FTDI PID issued 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.



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 "Control Panel > System" then select the "Advanced" tab and click "Environment Variables".







Variable	Value
TEMP	%USERPROFILE%\AppData\Local\Temp
TMP	%USERPROFILE%\AppData\Local\Temp
	New Edit Delete
ystem variables	New Edit Delete
ystem variables Variable	New Edit Delete
ystem variables Variable ComSpec	New Edit Delete Value C:\WINDOWS\system32\cmd.exe A
ystem variables Variable ComSpec FP_NO_HOST_C	New Edit Delete Value - - C:\WINDOWS\system32\cmd.exe NO
vstem variables Variable ComSpec FP_NO_HOST_C NUMBER_OF_P	New Edit Delete Value C:\WINDOWS\system32\cmd.exe NO 2
vstem variables Variable ComSpec FP_NO_HOST_C NUMBER_OF_P OS	New Edit Delete Value C:\WINDOWS\system32\cmd.exe ////////////////////////////////////

, click "New..." to display the following window:

Ν	lew System Variable
Variable <u>n</u> ame:	DevMgr_Show_NonPresent_Devices
Variable <u>v</u> alue:	1
	OK Cancel

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

Open the Device Manager ("Control Panel > System" then select the "Hardware" tab and click "Device Manager...", or "Control Panel > Device Manger" in Windows 8) and select "View > Show Hidden Devices". Device Manager will then show all hidden and phantom devices available on that PC as shaded.



🚔 Device Manager	- 6	x
File Action View Help		
Image: Action View Freip Image: Action Devices by type Image: Disk Devices by connection Image: Disk Resources by type Image: Disk Resources by connection Image: Disk Customize Image: Disk Portalo Devices Image: Disk Point queues Image: Disk Sund, video and game controllers Image: Disk System devices Image: Disk System devices Image: Disk Universal Serial Bus controllers Image: Disk Universal Serial Bus controllers <th></th> <th></th>		
Displays legacy devices and devices that are no longer installed.		



5.3 Windows 8 shows a warning that the driver is not certified

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

8		Windows Security	×
8	Win	dows can't verify the publisher of this driver software	
	٢	Do <u>n</u> 't install this driver software You should check your manufacturer's website for updated driver software for your device.	
	e	Install this driver software anyway Only install driver software obtained from your manufacturer's website or disc. Unsigned software from other sources may harm your computer or st information.	eal
⊘ Se	e <u>d</u> et	tails	

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 8 x64

Windows 8 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 FT232 and FT245
PID 6010 for FT2232
PID 6011 for FT4232
PID 6014 for FT232H
PID 6015 for all FT-X series

If you have a product where the manufacture has customised 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 8 x64.

This is the error that is reported when the driver installation fails due to the driver not being certified.

	×
Windows encountered a problem installing the driver software for your de	vice
Windows found driver software for your device but encountered an error while attempting to install it.	
USB Serial Converter	
The hash for the file is not present in the specified catalogue file. The file is probably corrupt or has been tampered with.	;
If you know the manufacturer of your device, you can visit its website and check the support section for driver software.	
	<u>C</u> lose



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Appendix A – Abbreviations

Terms	Description
PID	Product ID, a unique product identification issued by the holder of the
VID	Vendor ID, a unique vendor identification number issued by the USB
USB	USB Universal Serial Bus
WHCK	Windows Hardware Certification Kit
OS	Operating System



Appendix B – Revision History

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