Application Note AN0102: CAS and Windows USB-driver

1.0 Introduction

Concens Actuator Studio (CAS) is running under Microsoft Windows. All drivers will automatically update when using the Concens USB programming tool.

The tool is based on FTDI technology to interface with a PC. For detailed information and additional downloads, please refer to FTDI's website (www.ftdichip.com).

This application note covers how to install Concens USB programming tool on the following versions of Windows 10 in 32- and 64-bit versions:

- Windows 10
- Windows 10 Home
- Windows 10 Pro
- Windows 10 Enterprise
- Windows 10 Education

Windows 10 IoT, Embedded and Mobile are not covered.

2.0 Installing Concens USB Device Drivers

The Windows Combined Driver Model (CDM) may be installed on XP, VISTA, Windows 7, Windows 8 or Windows 10 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.

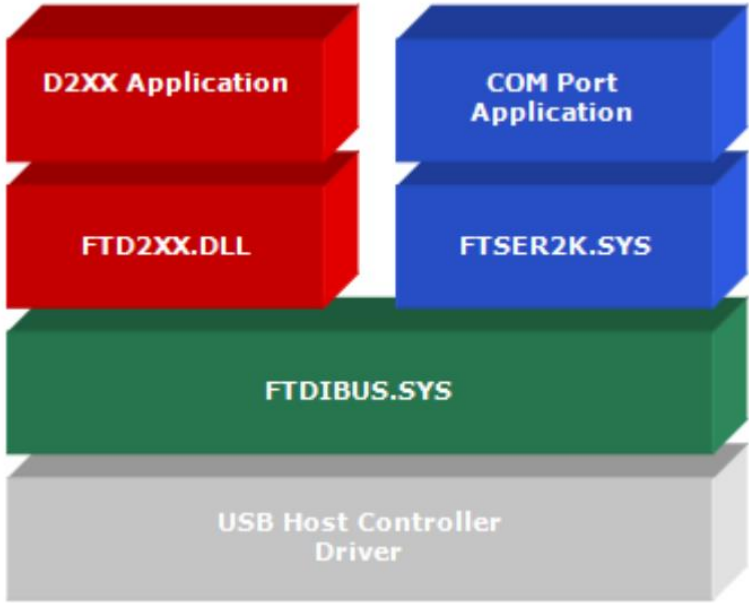The FTDI driver download page is available here https://ftdichip.com/drivers/

Figure 2.1 Windows CDM Driver Architecture

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3.0 Installing CDM Drivers

To install CDM drivers for an FTDI device under Windows 10, 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 will silently connect to the Windows Update website and install any suitable driver it finds for the device. Figure 3.1 shows the automatic driver installation taking place.
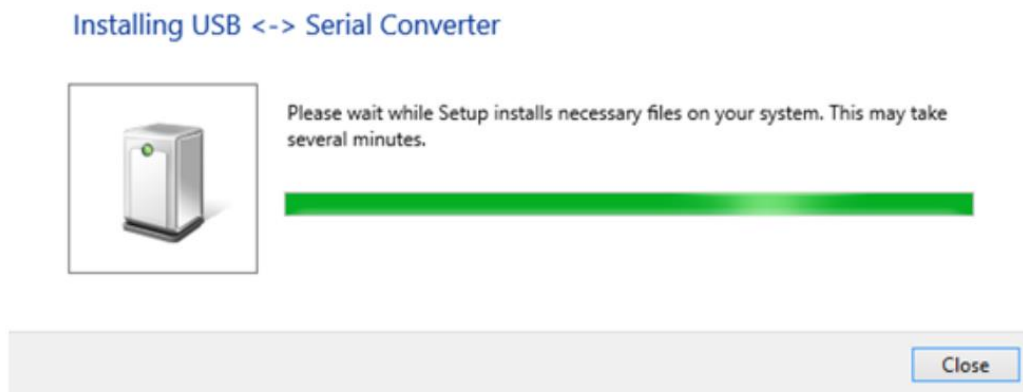

Figure 3.1 Windows Update Installation

3.2 Pre-Installation using the FTDI setup executable

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

The executable copies the default FTDI driver to the PC's driver store prior to the FTDI device being plugged into the PC.
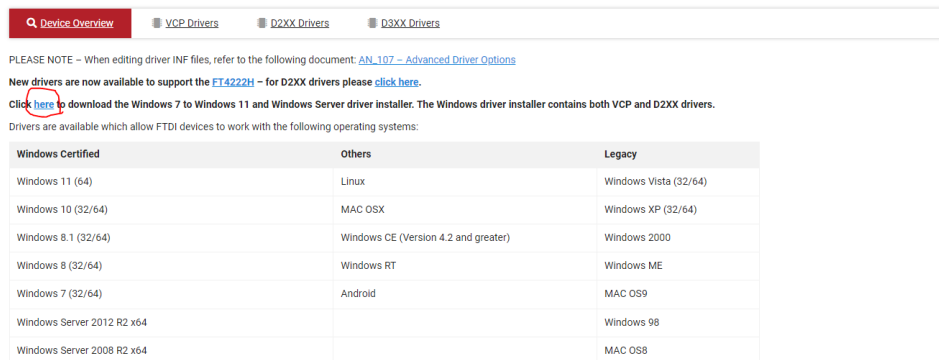

Figure 3.2 Setup Executable Location

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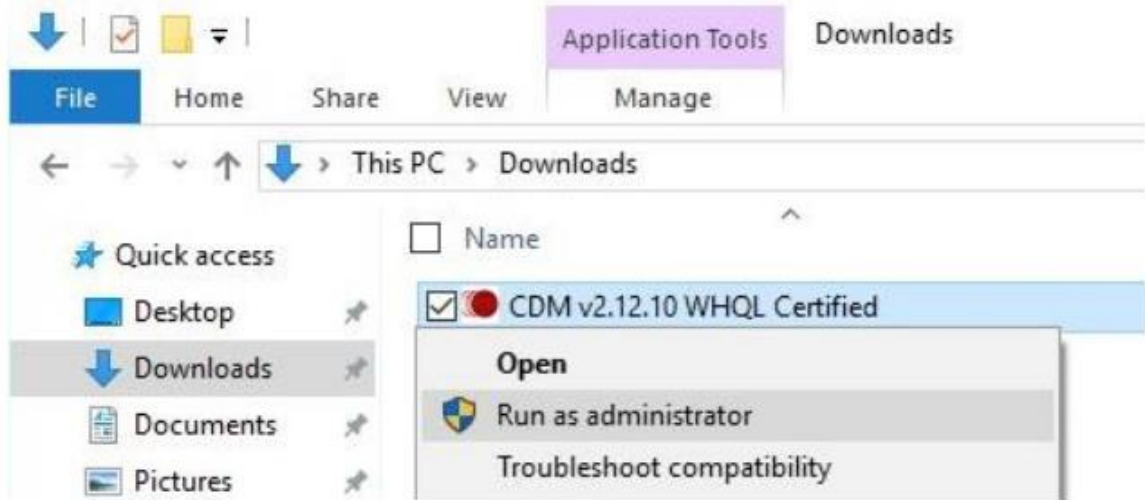

Figure 3.3 Setup Executable Run as administrator

A message from 'User Access Control' may pop up, 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.

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Figure 3.4 Extract CDM Drivers

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

Device Driver Installation Wizard

License Agreement

To continue, accept the following license agreement. To read the entire agreement, use the scroll bar or press the Page Down key.

> IMPORTANT NOTICE: PLEASE READ CAREFULLY BEFORE INSTALLING THE RELEVANT SOFTWARE:
> This licence agreement (Licence) is a legal agreement between you (Licensee or you) and Future Technology Devices International Limited of 2 Seaward Place, Centurion Business Park, Glasgow G41 1HH, Scotland (UK Company Number SC136640) (Licensor or we) for use of driver software provided by the Licensor(Software).
>
> BY INSTALLING OR USING THIS SOFTWARE YOU AGREE TO THE

◉ I accept this agreement   Save As   Print
○ I don't accept this agreement

< Back   Next >   Cancel

Figure 3.6 Driver Installation Wizard License Agreement

Device Driver Installation Wizard

Completing the Device Driver Installation Wizard

The drivers were successfully installed on this computer.

You can now connect your device to this computer. If your device came with instructions, please read them first.

Driver Name	Status
✔ FTDI CDM Driver Packa...	Ready to use
✔ FTDI CDM Driver Packa...	Ready to use

< Back   Finish   Cancel

Figure 3.7 Driver Installation Completion

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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.
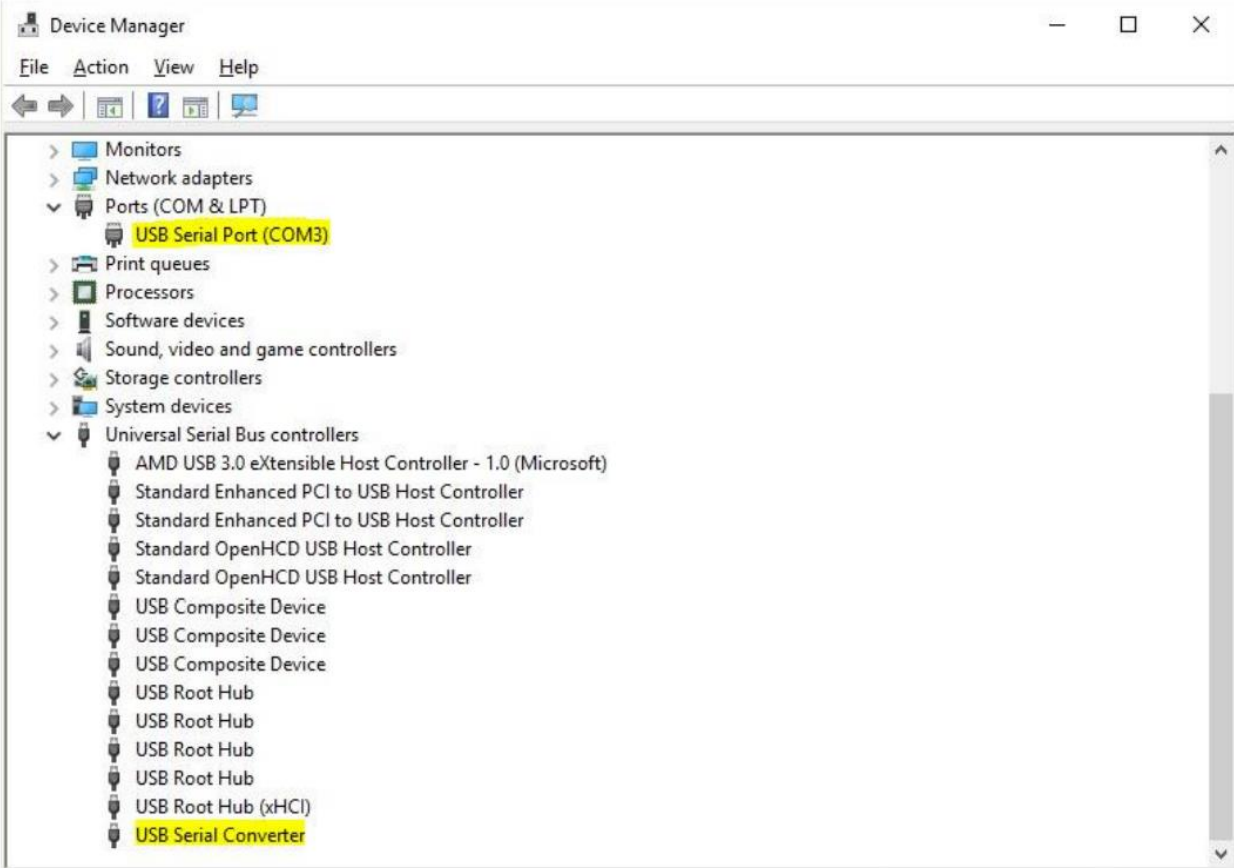

Figure 3.8 Device Manager View

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

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

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, 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.
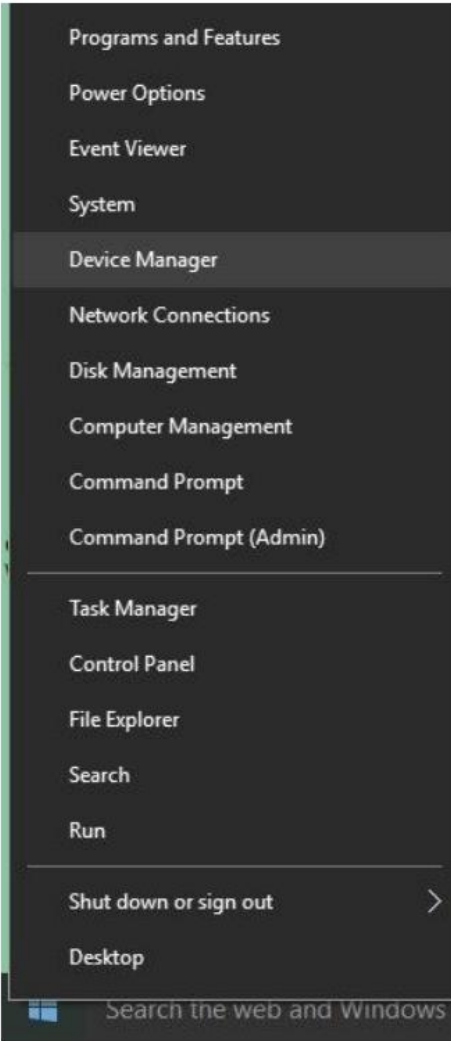
Figure 3.9 Device Manager Access

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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.
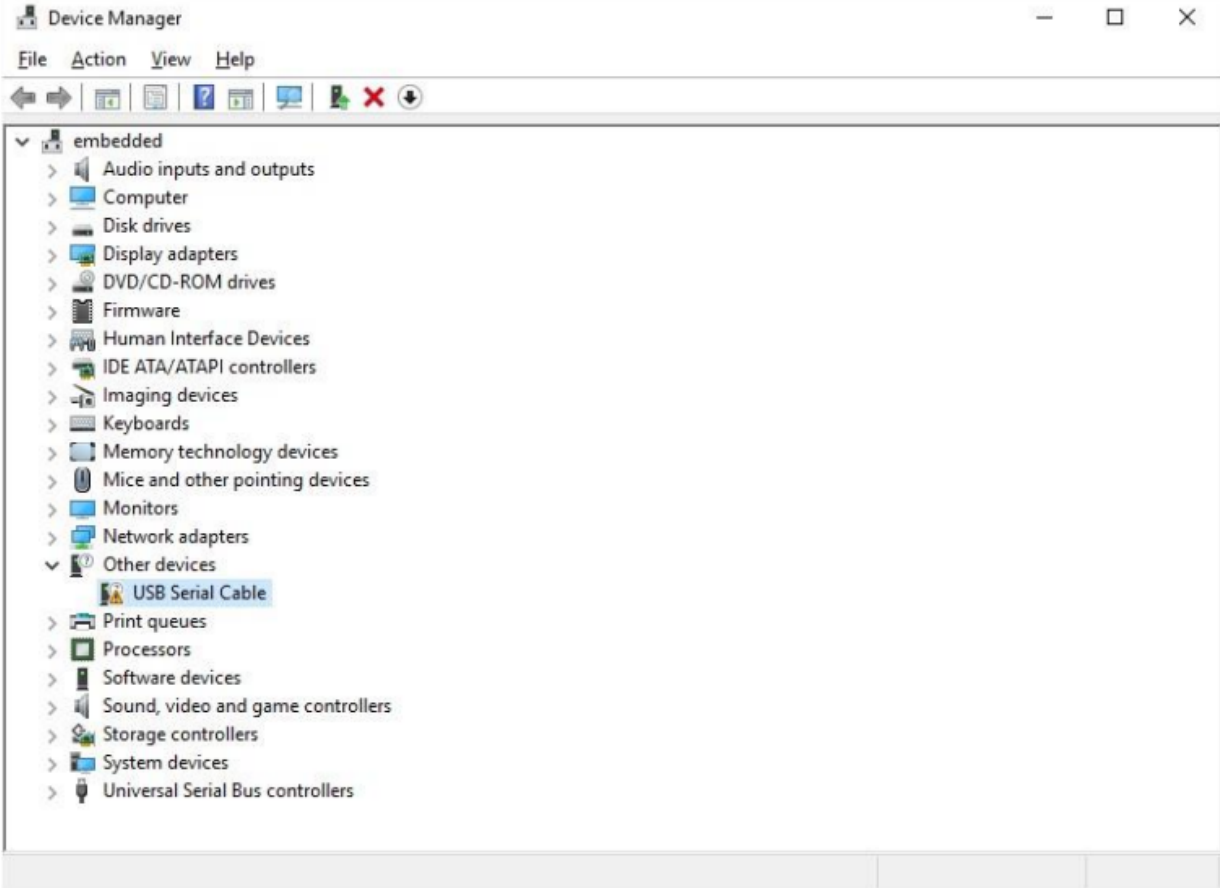
Figure 3.10 Device Manager View

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…"
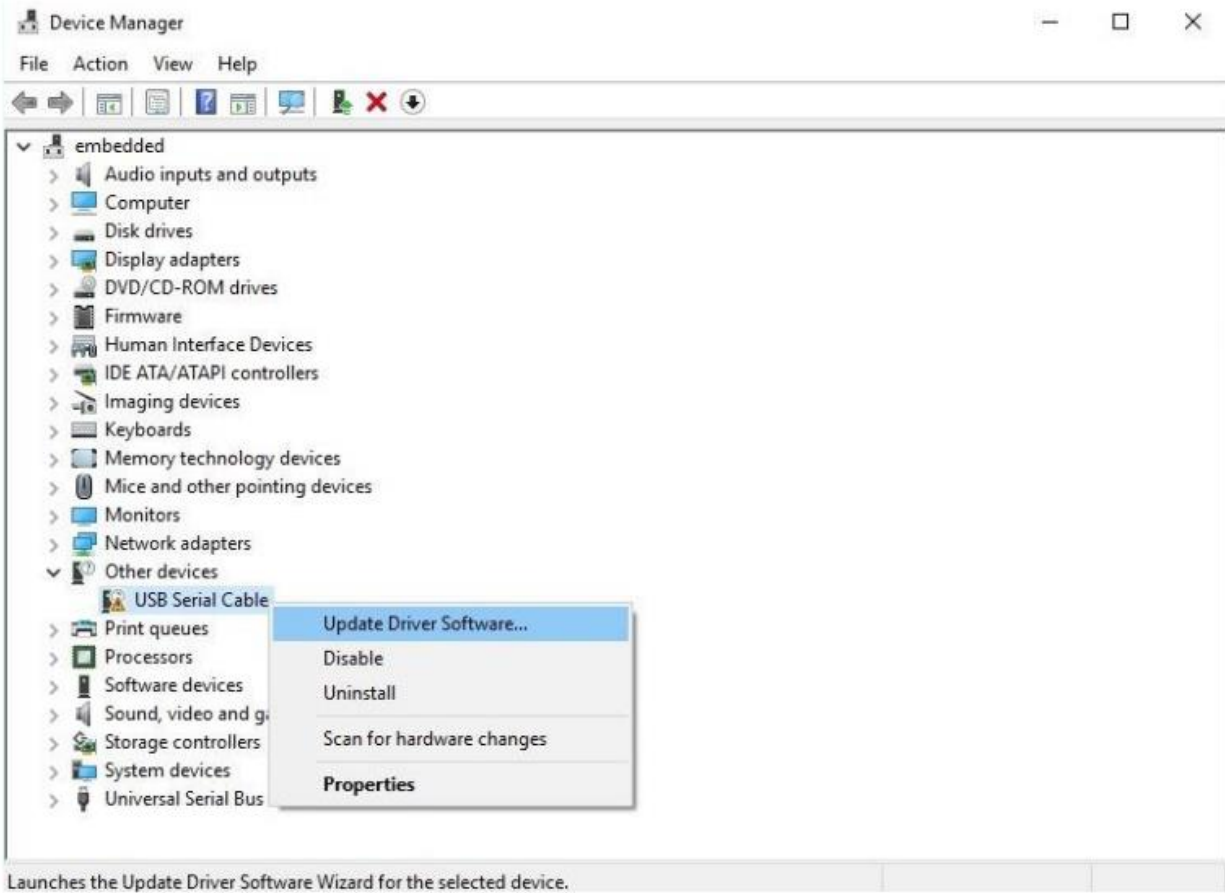
Figure 3.11 Update Driver Software

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.
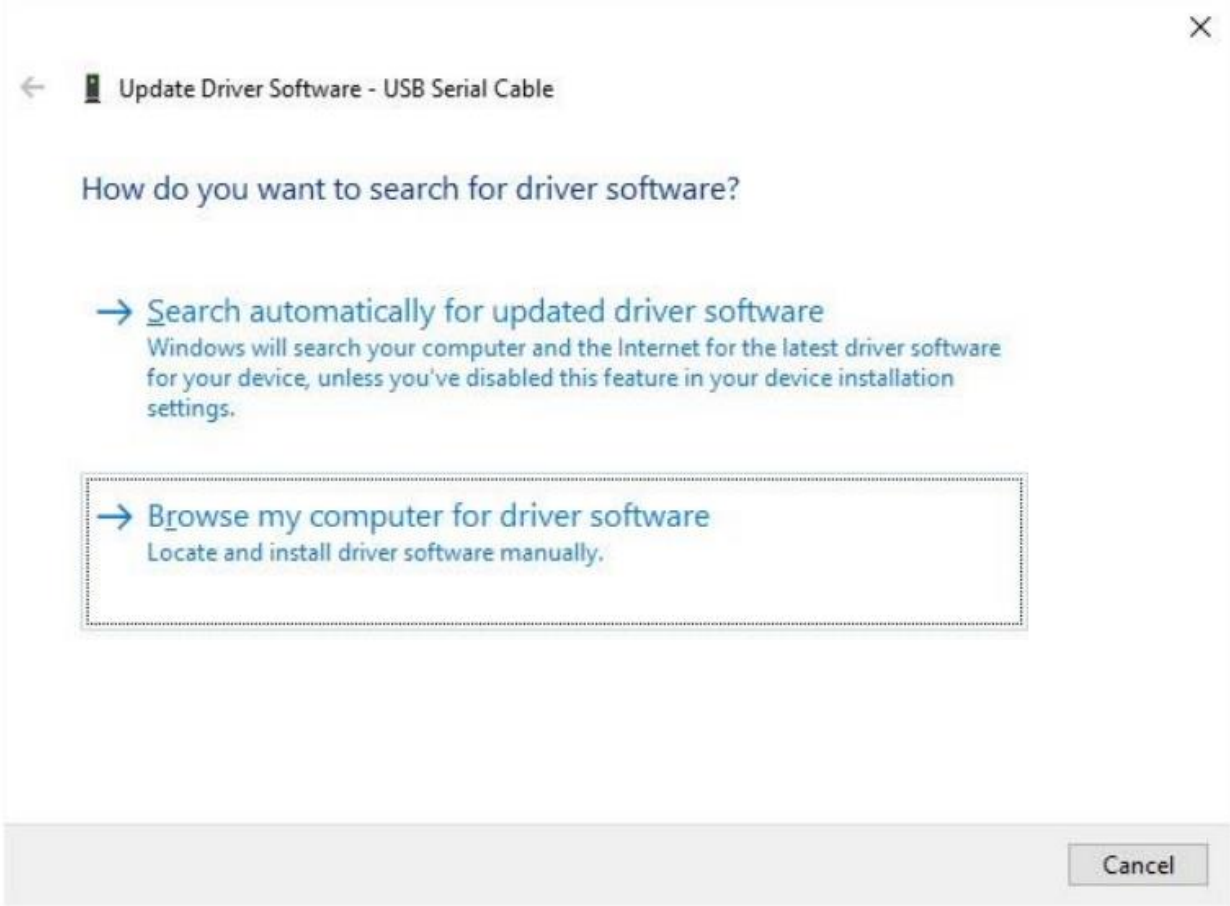
Figure 3.12 Browse my computer for Driver Software

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

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.
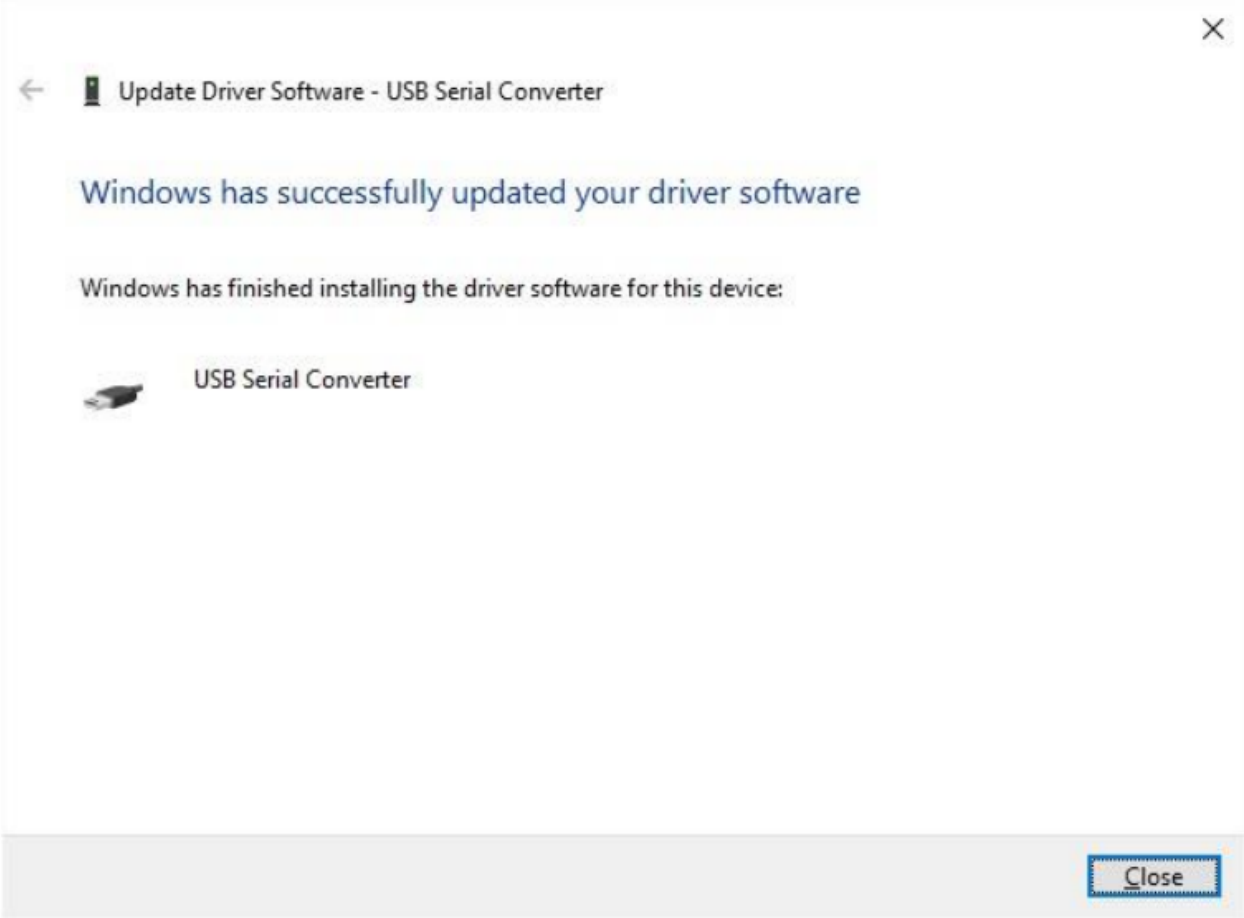
Figure 3.15 Successful Driver Software Update

Press Close to close this window and go back to the Device Manager Window. If the Virtual Com Port option has been 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 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 almost a repeat of the last few steps.
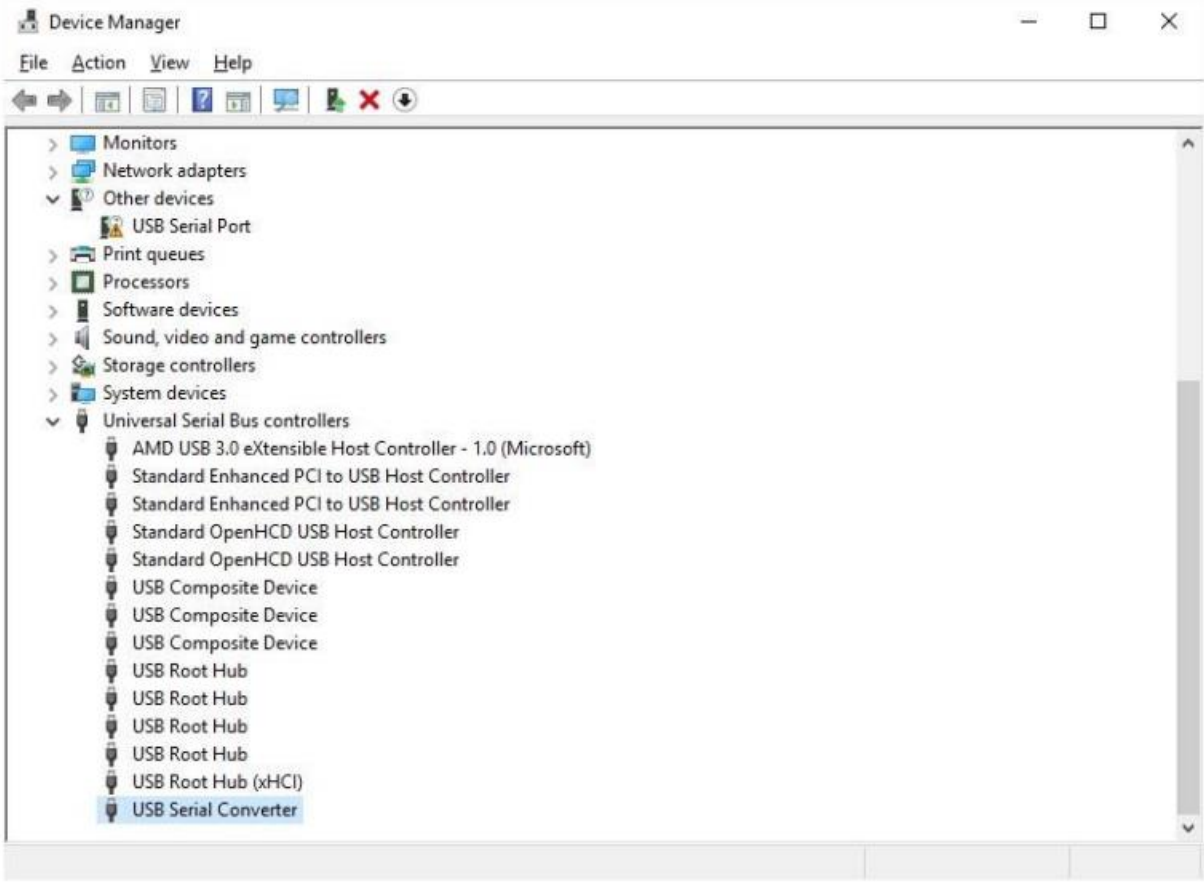
Figure 3.16 Device Manager View

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…"
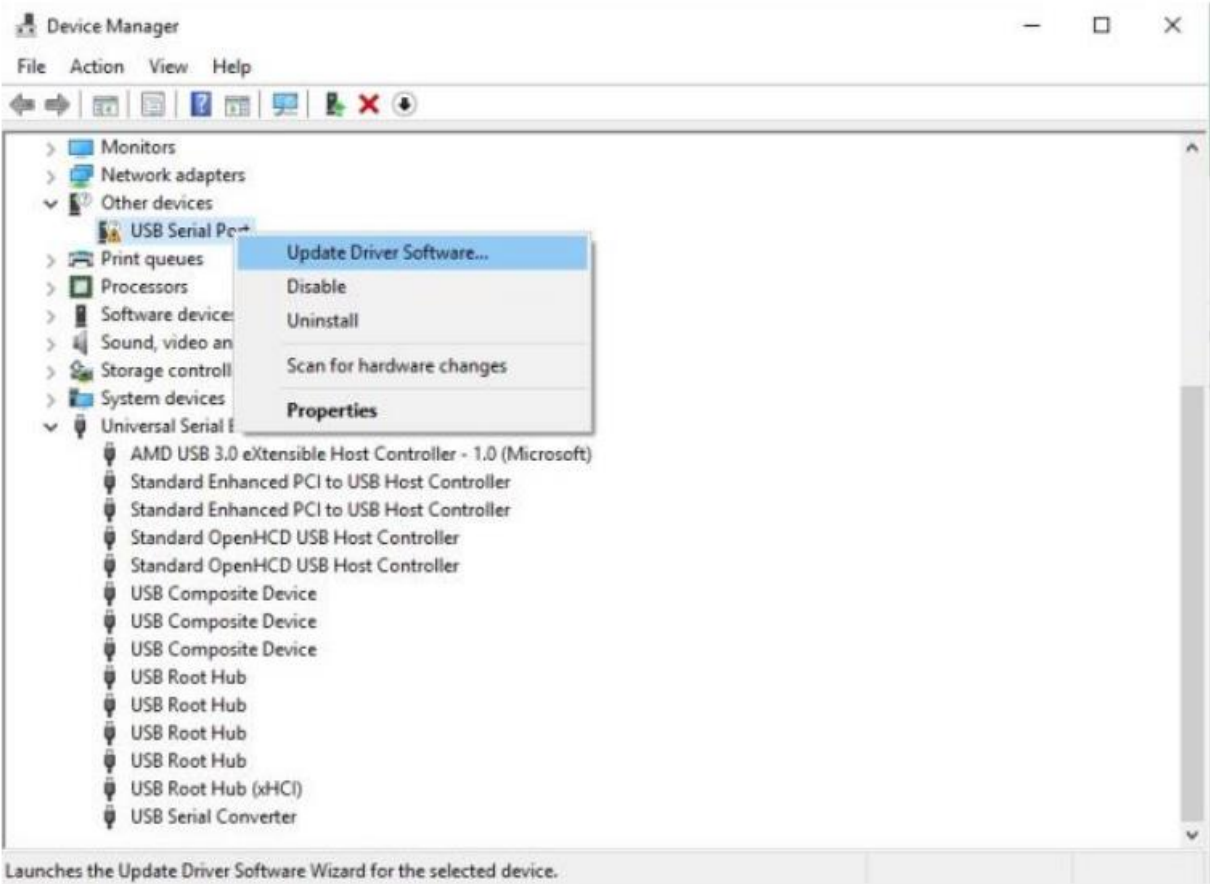
Figure 3.17 Update Driver Software

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
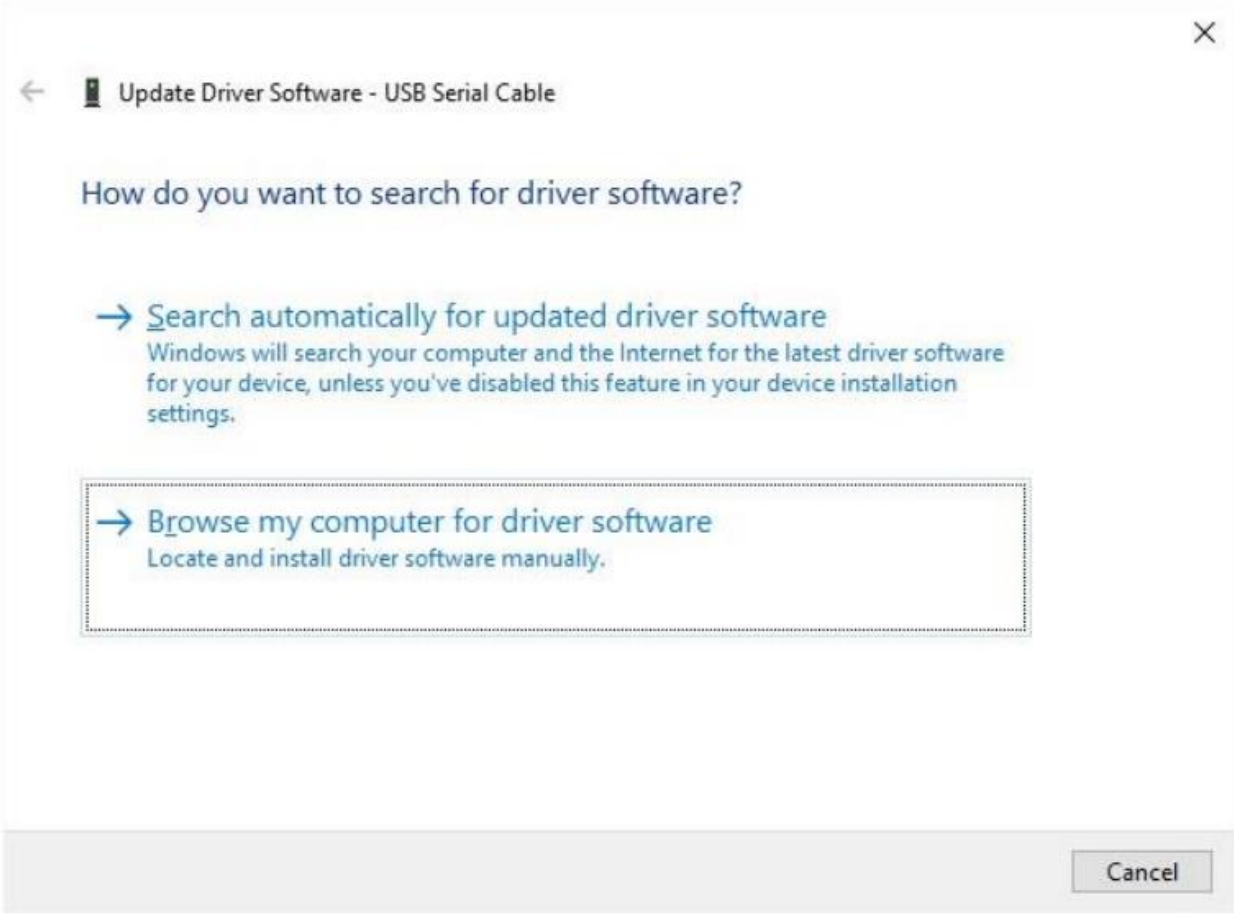
Figure 3.18 Browse my computer for Driver Software

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.

Figure 3.20 Installing driver software

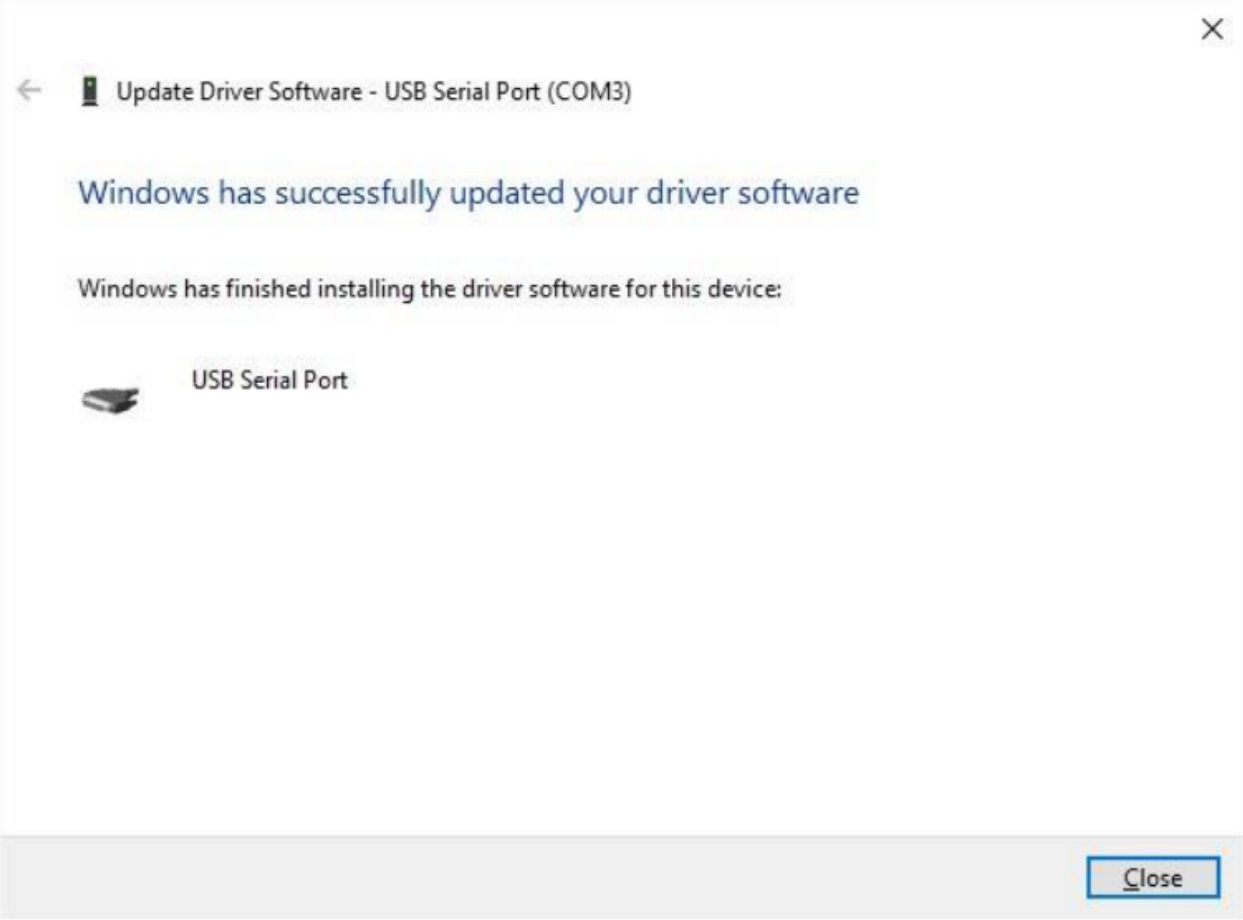When the installation is finished a completion screen is displayed as shown in Figure 3.21.

Figure 3.21 Successful Driver Software Update

Note this screen also displays the COM port number assigned to the device. Press Close to close this window and go back to the Device Manager Window as shown in Figure 3.22.

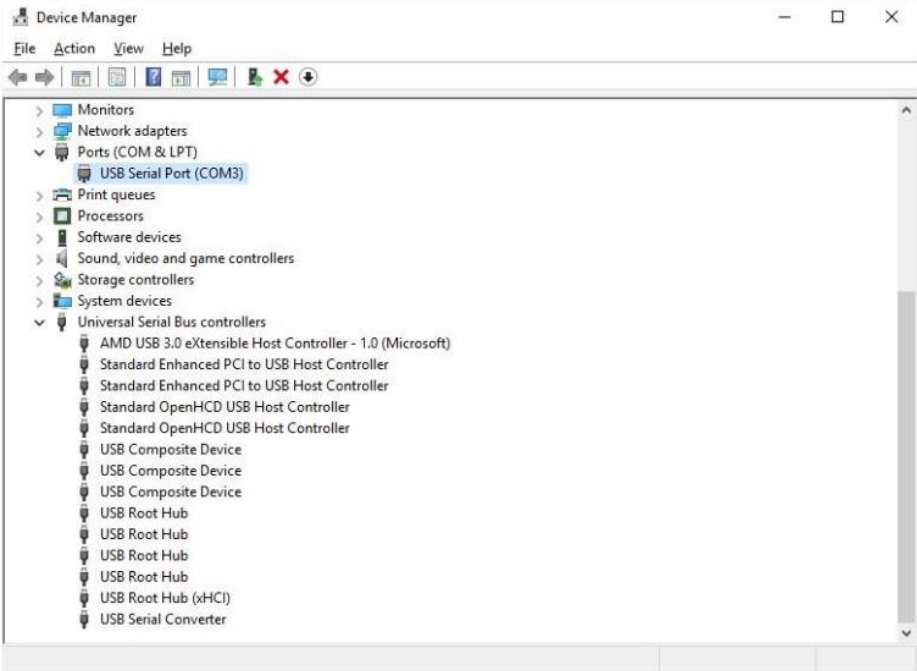# Application Note AN0102: CAS and Windows USB-driver

Figure 3.22 Device Manager View

This time the 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 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 as shown in Figure 3.23. FTDI have also produced a utility called COM PORT Assignment.
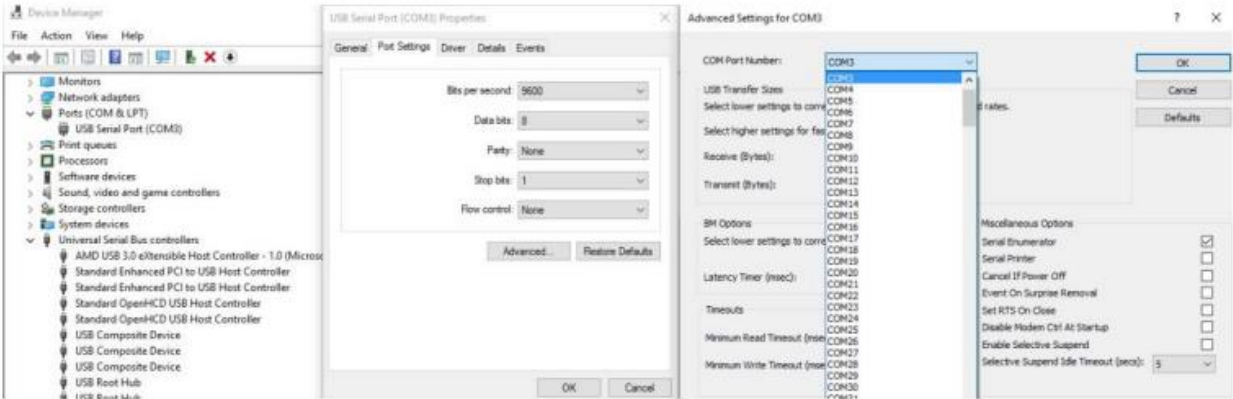

Figure 3.23 Advanced Settings

4.0 Troubleshooting

4.1 Windows 10 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 USB View utility from the FTDI web site. 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 specific VID and PID or FTDI's VID (0x0403) and associated PID issued by FTDI should be used in the EEPROM and INF files. If the FTDI driver files are edited in any way, the certification is invalidated, and the default drivers may not install.

For further details, please contact support@concens.com

Concens A/S
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