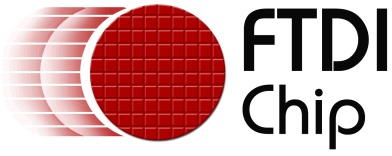

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Windows XP Installation Guide

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1 Welcome to the Windows XP Installation Guide

The purpose of this document is to provide users of FTDI chips with a simple procedure for installing drivers for their devices under Windows XP.

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2 Installing FT232BM, FT245BM, FT8U232AM and FT8U245AM Devices

FTDI's 1st and 2nd generation of USB UART and USB FIFO chips can be installed with one of two sets of drivers.

The first driver type is the D2XX direct driver. This provides direct access to the device via a dynamic link library (DLL) supplied with the driver. Applications can then be written which use the functions available in the DLL to directly control the device.

The second driver type is the virtual COM port (VCP) driver. The VCP drivers emulate a standard PC COM port. These can be communicated with in the same manner as any other COM port on the PC.

Under Windows XP, the Found New Hardware Wizard should be used to install devices when they are connected to the PC for the first time as this is the recommended procedure for reliable device operation.

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2.1 Installing D2XX Drivers

To install D2XX drivers for an FT232BM, FT245BM, FT8U232AM or FT8U245AM device under Windows XP and XP SP1, follow the instructions below:

- If a device of the same type has been installed on your machine before and the drivers that are about to be installed are different from those installed already, the original drivers need to be uninstalled. Please refer to the Uninstalling FT232BM, FT245BM, FT8U232AM and FT8U245AM 34 Devices section of this document for further details of this procedure.

- Download the latest available D2XX drivers from the FTDI website and unzip them to a location on your PC.

- If you are running Windows XP or Windows XP SP 1, temporarily disconnect your PC from the Internet. This can be done by either removing the network cable from your PC or by disabling your network card by going to the "Control Panel\Network and Dial-Up Connections", right-clicking on the appropriate connection and selecting "Disable" from the menu. The connection can be re-enabled after the installation is complete. This is not necessary under Windows XP SP 2 if configured to ask before connecting to Windows Update. Windows XP SP 2 can have the settings for Windows Update changed through "Control Panel\System" then select the "Hardware" tab and click "Windows Update".

- Connect the device to a spare USB port on your PC. This will launch the Windows Found New Hardware Wizard. If there is no available Internet connection or Windows XP SP 2 is configured to ask before connecting to Windows Update, the screen below is shown. Select "No, not this time" from the options available and then click "Next" to proceed with the installation. If there is an available Internet connection, Windows XP will silently connect to the Windows Update website and install any suitable driver it finds for the device in preference to the driver manually selected.

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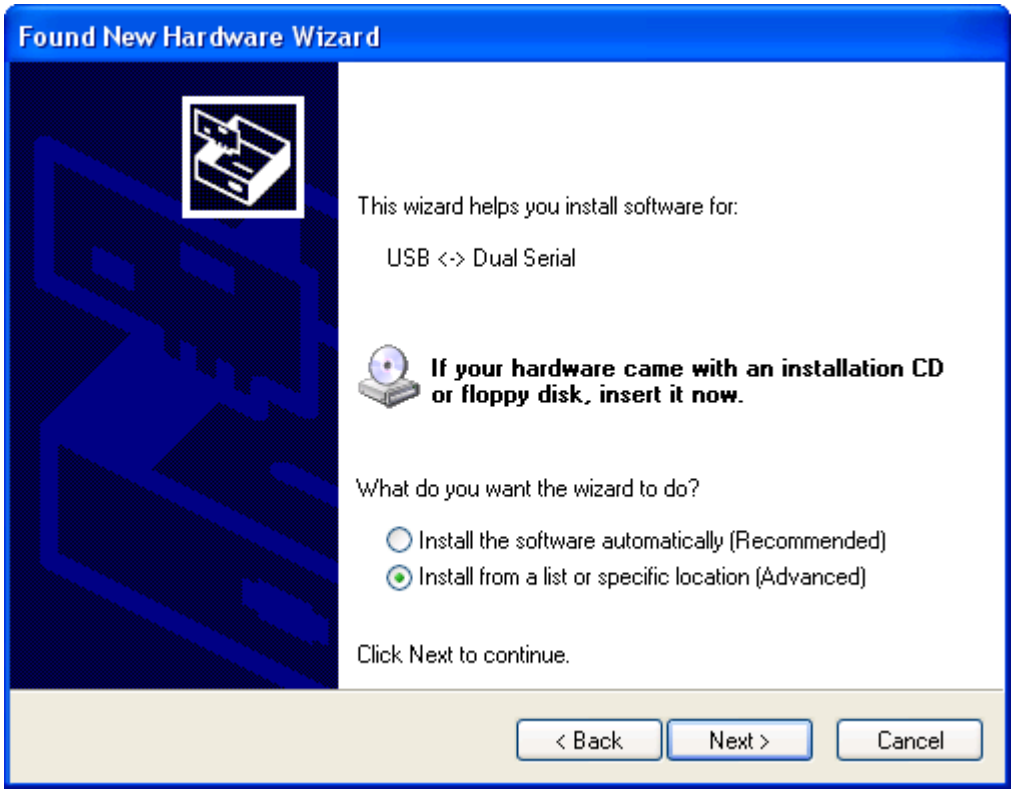
- Select "Install from a list or specific location (Advanced)" as shown below and then click "Next".



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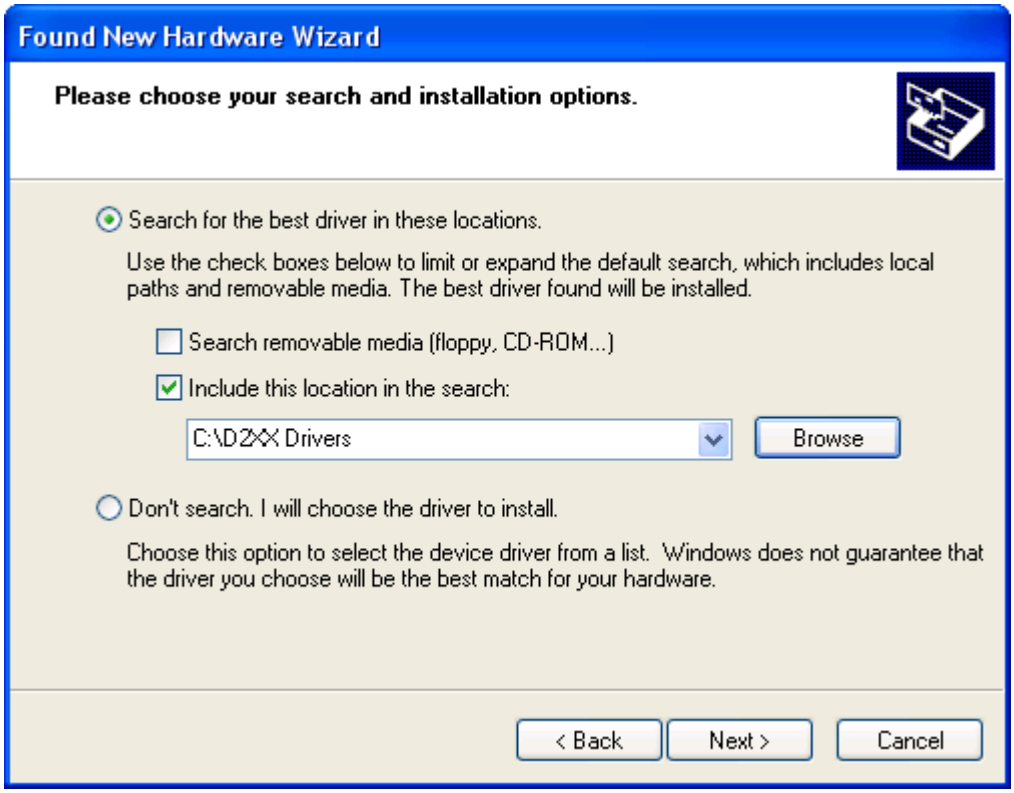
- Select "Search for the best driver in these locations" and enter the file path in the combo-box ("C:\D2XX Drivers" in the example below) or browse to it by clicking the browse button. Once the file path has been entered in the box, click next to proceed.



- If Windows XP is configured to warn when unsigned (non-WHQL certified) drivers are about to be installed, the following screen will be displayed. Click on "Continue Anyway" to continue with the installation. If Windows XP is configured to ignore file signature warnings, no message will appear.

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- The following screen will be displayed as Windows XP copies the required driver files.

- Windows should then display a message indicating that the installation was successful. Click "Finish" to complete the installation. The device is now ready for use.

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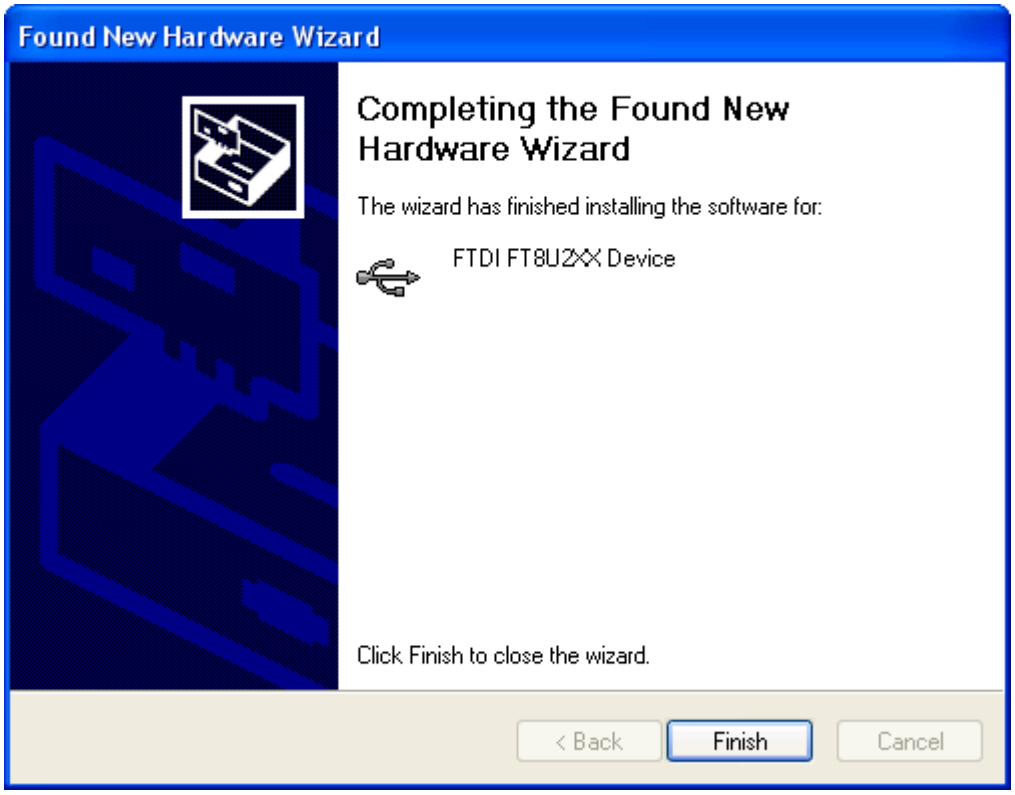

- Open the Device Manager (located in "Control Panel\System" then select the "Hardware" tab and click "Device Manger") and select "View > Devices by Type". The device appears as a FT8U2XX Device connected to a USB port.

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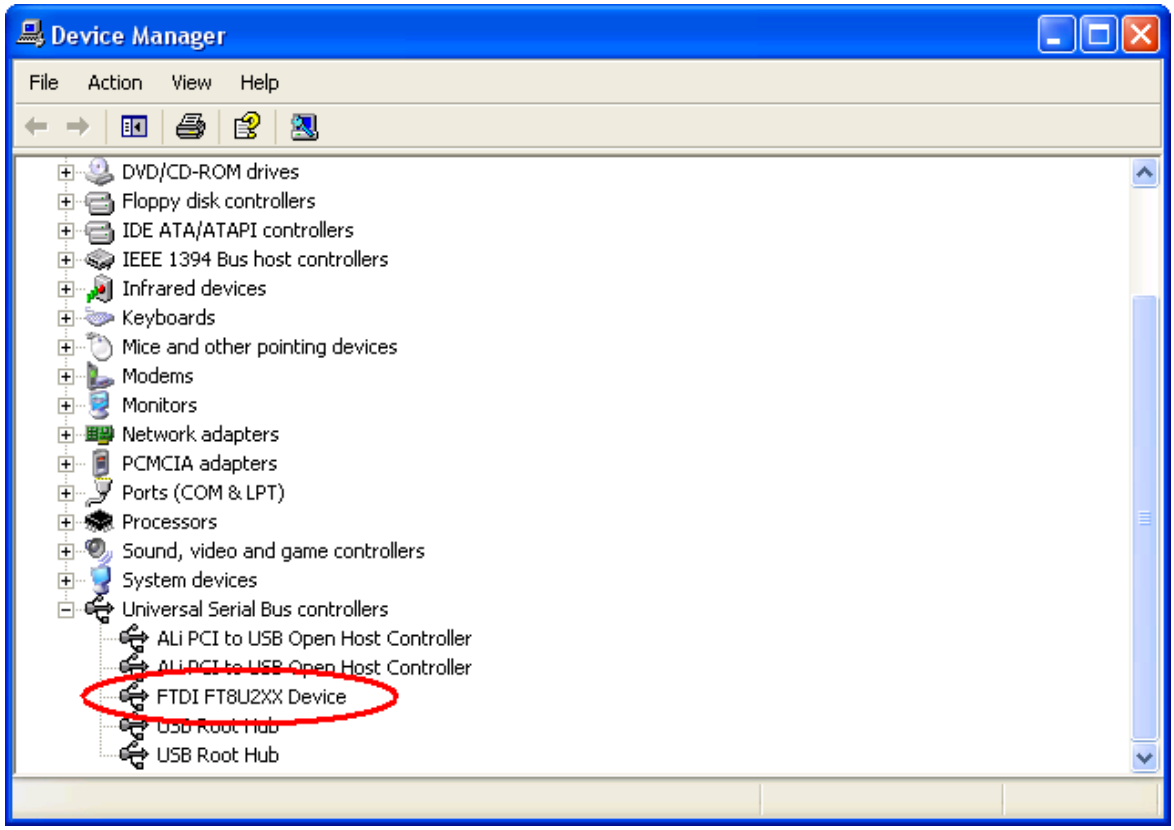

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2.2 Installing VCP Drivers

To install VCP drivers for an FT232BM, FT245BM, FT8U232AM or FT8U245AM device under Windows XP and XP SP1, follow the instructions below:

- If a device of the same type has been installed on your machine before and the drivers that are about to be installed are different from those installed already, the original drivers need to be uninstalled. Please refer to the Uninstalling FT232BM, FT245BM, FT8U232AM and FT8U245AM 10 Devices section of this document for further details of this procedure.

- Download the latest available VCP drivers from the FTDI website and unzip them to a location on your PC.

- If you are running Windows XP or Windows XP SP 1, temporarily disconnect your PC from the Internet. This can be done by either removing the network cable from your PC or by disabling your network card by going to the "Control Panel\Network and Dial-Up Connections", right-clicking on the appropriate connection and selecting "Disable" from the menu. The connection can be re-enabled after the installation is complete. This is not necessary under Windows XP SP 2 if configured to ask before connecting to Windows Update. Windows XP SP 2 can have the settings for Windows Update changed through "Control Panel\System" then select the "Hardware" tab and click "Windows Update".

- Connect the device to a spare USB port on your PC. This will launch the Windows Found New Hardware Wizard. If there is no available Internet connection or Windows XP SP 2 is configured to ask before connecting to Windows Update, the screen below is shown. Select "No, not this time" from the options available and then click "Next" to proceed with the installation. If there is an available Internet connection, Windows XP will silently connect to the Windows Update website and install any suitable driver it finds for the device in preference to the driver manually selected.

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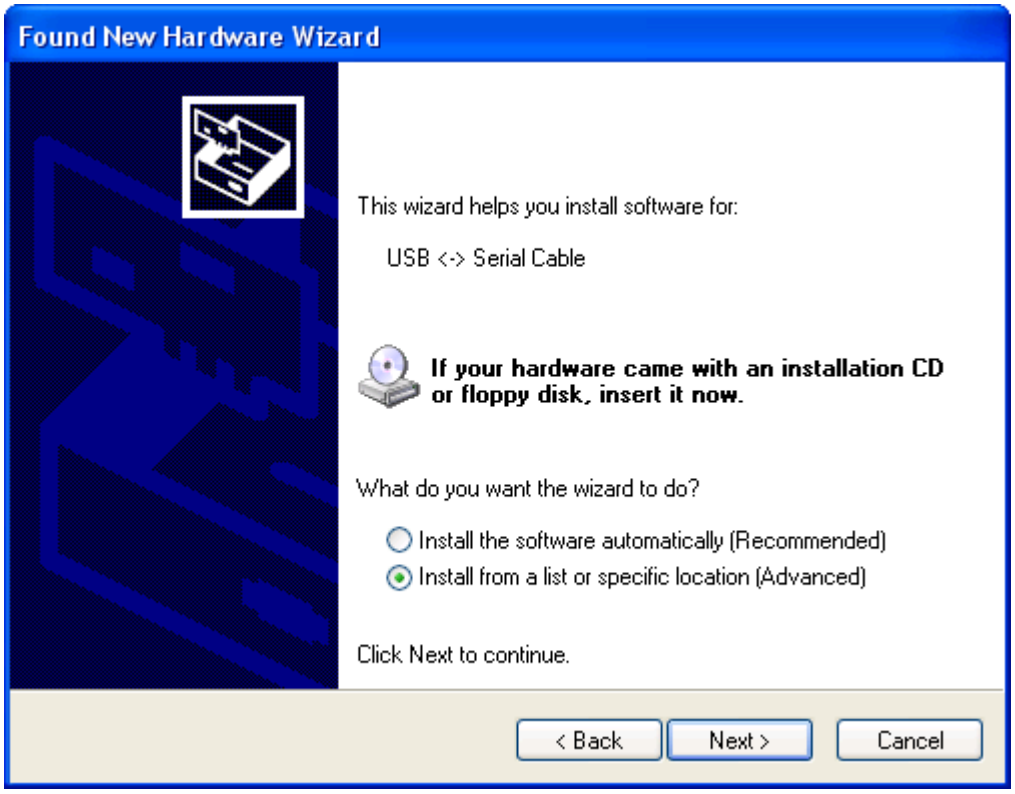
- Select "Install from a list or specific location (Advanced)" as shown below and then click "Next".



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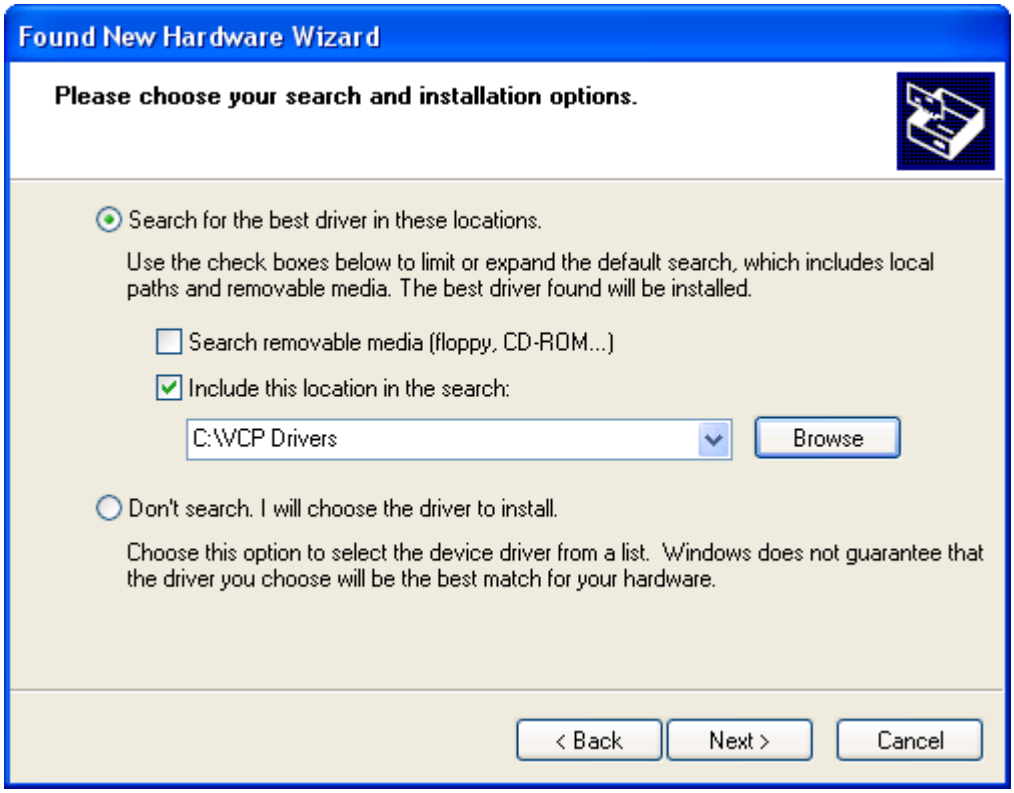
- Select "Search for the best driver in these locations" and enter the file path in the combo-box ("C:\VCP Drivers" in the example below) or browse to it by clicking the browse button. Once the file path has been entered in the box, click next to proceed.



- If Windows XP is configured to warn when unsigned (non-WHQL certified) drivers are about to be installed, the following screen will be displayed. Click on "Continue Anyway" to continue with the installation. If Windows XP is configured to ignore file signature warnings, no message will appear.

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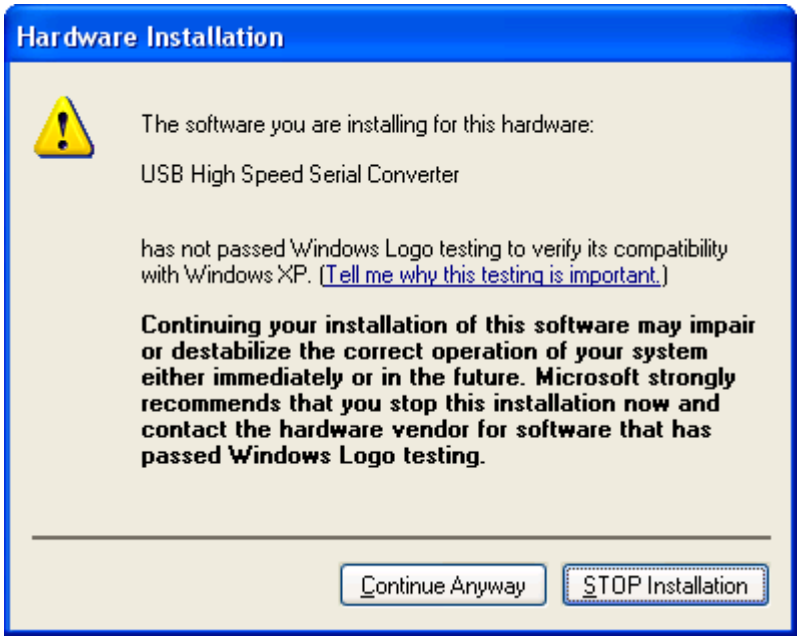
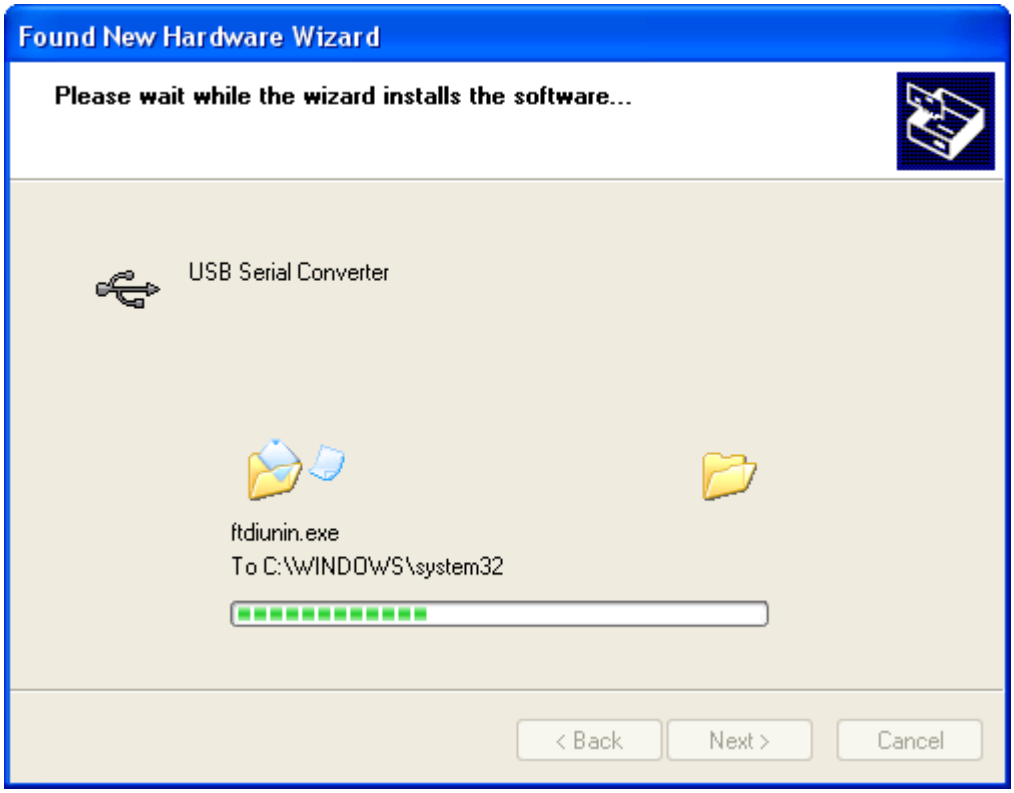


- The following screen will be displayed as Windows XP copies the required driver files.



- Windows should then display a message indicating that the installation was successful. Click "Finish" to complete the installation. This has installed the serial converter. The COM port emulation driver must be installed after this has completed.

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- After clicking "Finish", the Found New Hardware Wizard will continue by installing the COM port emulation driver. The procedure is the same as that above for installing the serial converter driver.

- Open the Device Manager (located in "Control Panel\System" then select the "Hardware" tab and click "Device Manger") and select "View > Devices by Type". The device appears as an additional COM port with the label "USB Serial Port".

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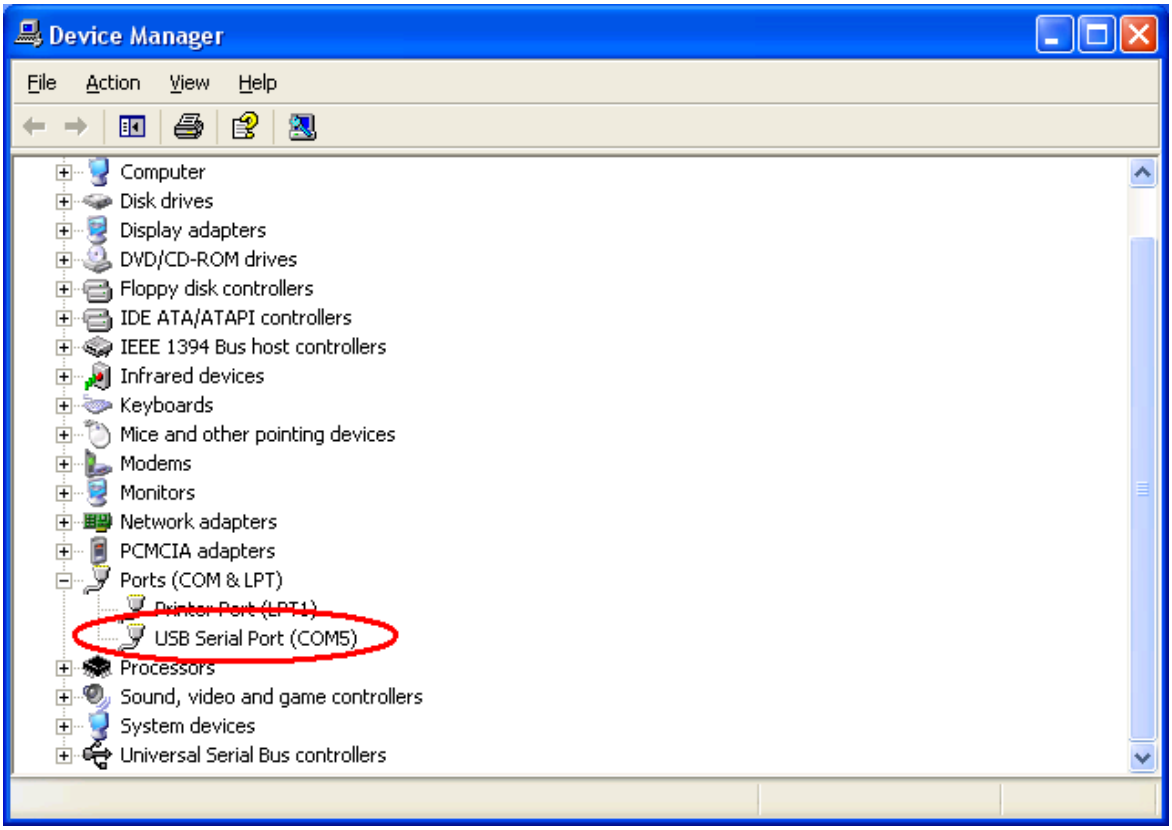

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3 Installing FT2232C Devices

FTDI's 3rd generation chip, the FT2232C, is a composite device with two ports that can be configured to behave as a USB UART or a USB FIFO interface by configuring an external EEPROM. In addition, the FT2232C EEPROM determines which drivers the device will use.

The EEPROM is read on power-up and will configure the chip accordingly before the device is enumerated. If no EEPROM is fitted, the device will default to both channels configured as USB to UART interfaces using VCP drivers.

For Windows 2000 and Windows XP, a combined driver is available. This installs the D2XX driver and then installs the VCP driver layer in addition if required. Under Windows XP, the Found New Hardware Wizard should be used to install devices when they are connected to the PC for the first time as this is the recommended procedure for reliable device operation.

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3.1 Installing D2XX Drivers

To install D2XX drivers for an FT2232C device under Windows XP and XP SP1, follow the instructions below:

- If a device of the same type has been installed on your machine before and the drivers that are about to be installed are different from those installed already, the original drivers need to be uninstalled. Please refer to the Uninstalling FT2232C Devices 38 section of this document for further details of this procedure.

- Download the latest available FTC combined D2XX and VCP drivers from the FTDI website and unzip them to a location on your PC.

- If you are running Windows XP or Windows XP SP 1, temporarily disconnect your PC from the Internet. This can be done by either removing the network cable from your PC or by disabling your network card by going to the "Control Panel\Network and Dial-Up Connections", right-clicking on the appropriate connection and selecting "Disable" from the menu. The connection can be re-enabled after the installation is complete. This is not necessary under Windows XP SP 2 if configured to ask before connecting to Windows Update. Windows XP SP 2 can have the settings for Windows Update changed through "Control Panel\System" then select the "Hardware" tab and click "Windows Update".

- Connect the device to a spare USB port on your PC. This will launch the Windows Found New Hardware Wizard. The Microsoft composite USB device driver is installed silently in the background. This will launch the Windows Found New Hardware Wizard. If there is no available Internet connection or Windows XP SP 2 is configured to ask before connecting to Windows Update, the screen below is shown. Select "No, not this time" from the options available and then click "Next" to proceed with the installation. If there is an available Internet connection, Windows XP will silently connect to the Windows Update website and install any suitable driver it finds for the device in preference to the driver manually selected.

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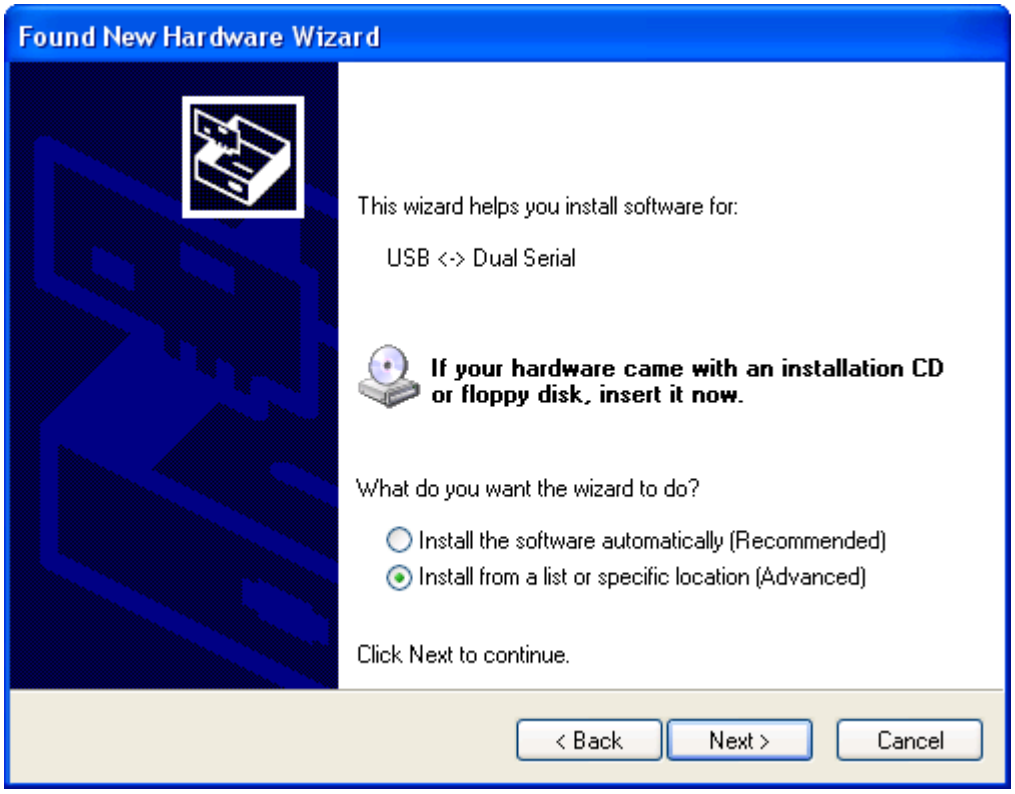
- Select "Install from a list or specific location (Advanced)" as shown below and then click "Next".



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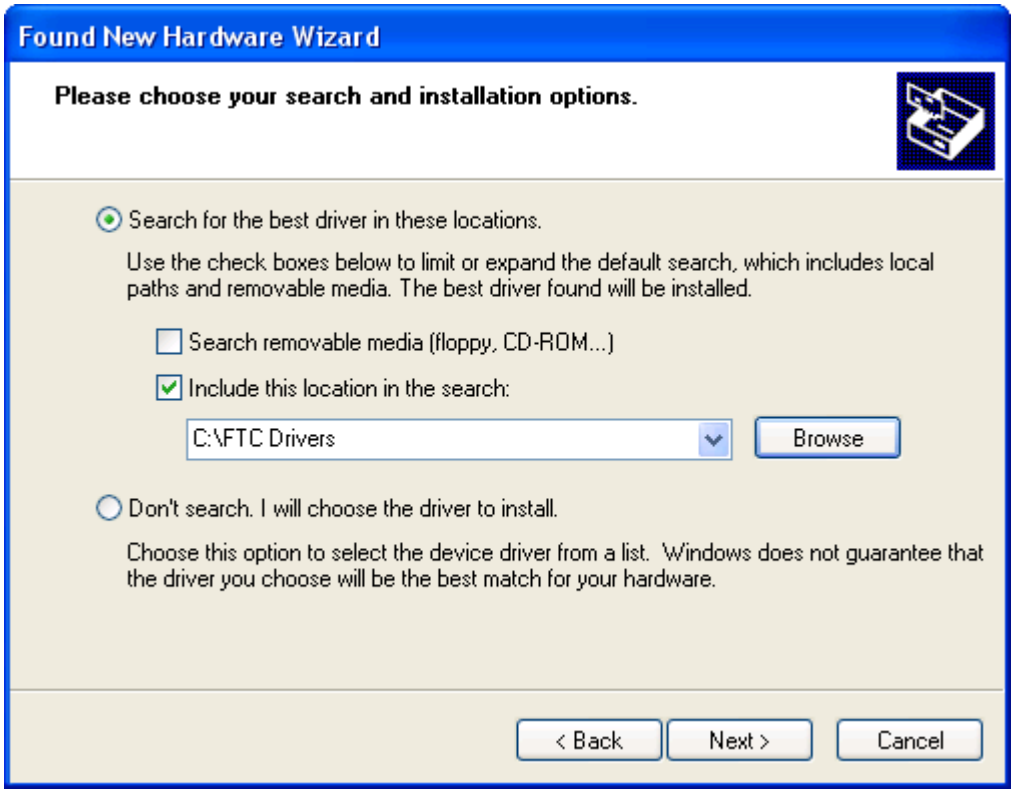
- Select "Search for the best driver in these locations" and enter the file path in the combo-box ("C:\FTC Drivers" in the example below) or browse to it by clicking the browse button. Once the file path has been entered in the box, click next to proceed.



- If Windows XP is configured to warn when unsigned (non-WHQL certified) drivers are about to be installed, the following screen will be displayed. Click on "Continue Anyway" to continue with the installation. If Windows XP is configured to ignore file signature warnings, no message will appear.

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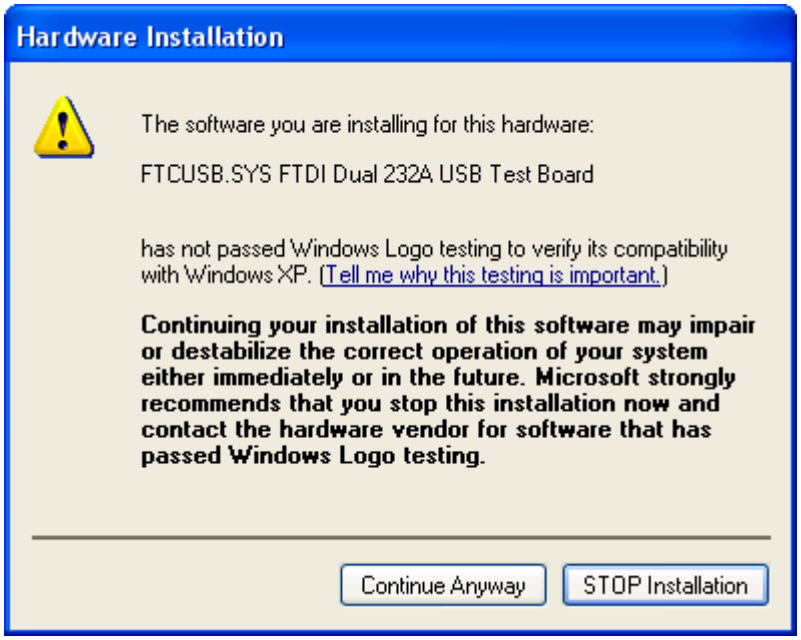
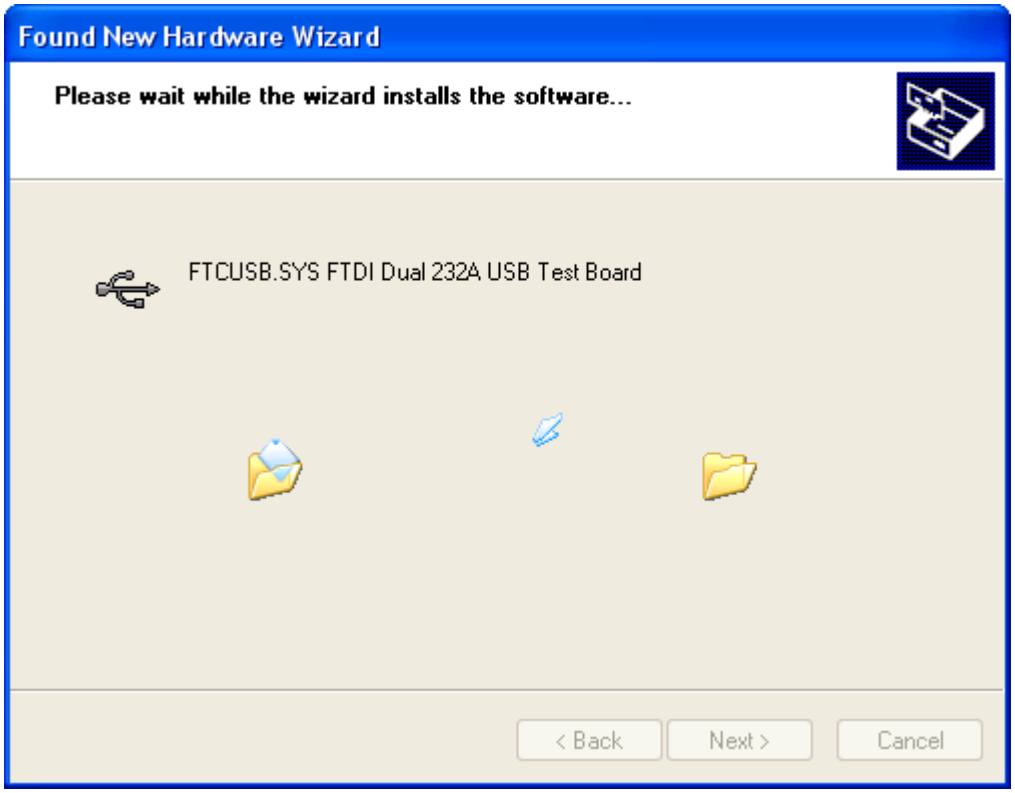


- The following screen will be displayed as Windows XP copies the required driver files.



- Windows should then display a message indicating that the installation was successful. Click "Finish" to complete the installation for the first port of the device.

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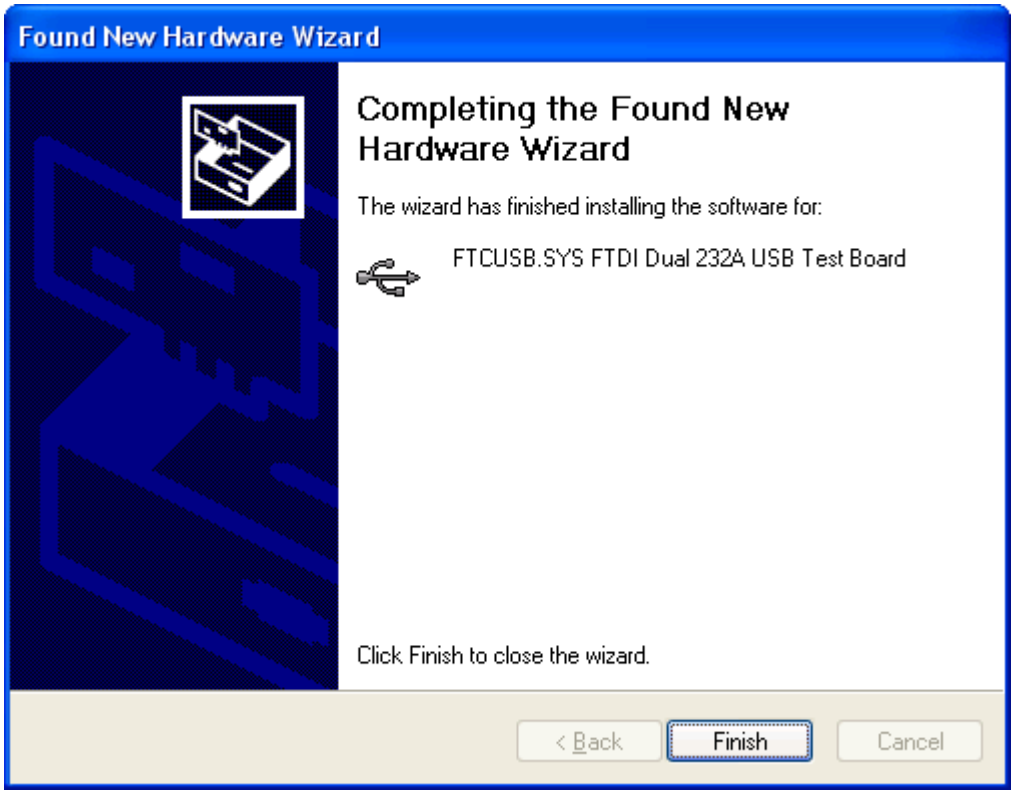

- As the FT2232C has 2 ports available, the second port must also be installed. The procedure for installing the second port is identical to that for installing the first port from the first screen of the Found New Hardware Wizard.

- Open the Device Manager (located in "Control Panel\System" then select the "Hardware" tab and click "Device Manger") and select "View > Devices by Type". The device appears as a "USB Composite Device" connected to a USB port with ports A and B respectively denoted as "FTCUSB.SYS FTDI Dual 232A USB Test Board" and "FTCUSB.SYS FTDI Dual 232B USB Test Board".

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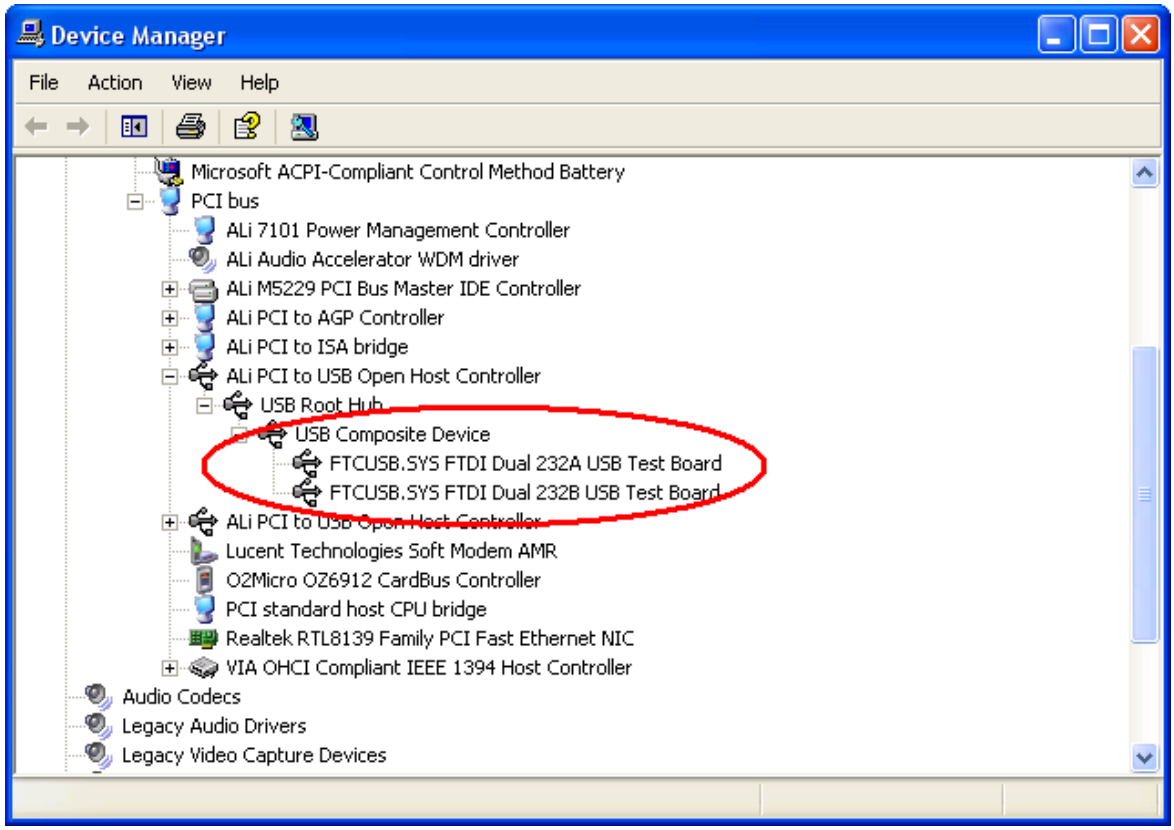

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3.2 Installing VCP Drivers

To install VCP drivers for an FT2232C device under Windows XP and XP SP1, follow the instructions below:

- If a device of the same type has been installed on your machine before and the drivers that are about to be installed are different from those installed already, the original drivers need to be uninstalled. Please refer to the Uninstalling FT2232C Devices 38 section of this document for further details of this procedure.

- Download the latest available FTC combined D2XX and VCP drivers from the FTDI website and unzip them to a location on your PC.

- If you are running Windows XP or Windows XP SP 1, temporarily disconnect your PC from the Internet. This can be done by either removing the network cable from your PC or by disabling your network card by going to the "Control Panel\Network and Dial-Up Connections", right-clicking on the appropriate connection and selecting "Disable" from the menu. The connection can be re-enabled after the installation is complete. This is not necessary under Windows XP SP 2 if configured to ask before connecting to Windows Update. Windows XP SP 2 can have the settings for Windows Update changed through "Control Panel\System" then select the "Hardware" tab and click "Windows Update".

- Connect the device to a spare USB port on your PC. This will launch the Windows Found New Hardware Wizard. The Microsoft composite USB device driver is installed silently in the background. This will launch the Windows Found New Hardware Wizard. If there is no available Internet connection or Windows XP SP 2 is configured to ask before connecting to Windows Update, the screen below is shown. Select "No, not this time" from the options available and then click "Next" to proceed with the installation. If there is an available Internet connection, Windows XP will silently connect to the Windows Update website and install any suitable driver it finds for the device in preference to the driver manually selected.

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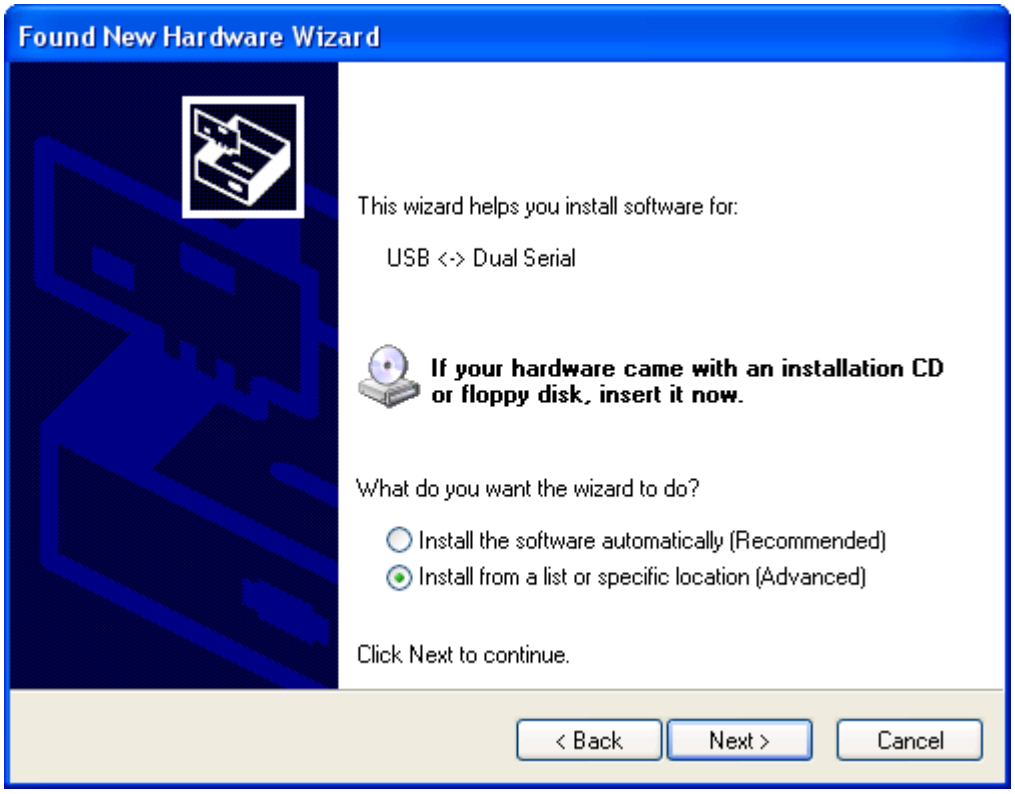
- Select "Install from a list or specific location (Advanced)" as shown below and then click "Next".



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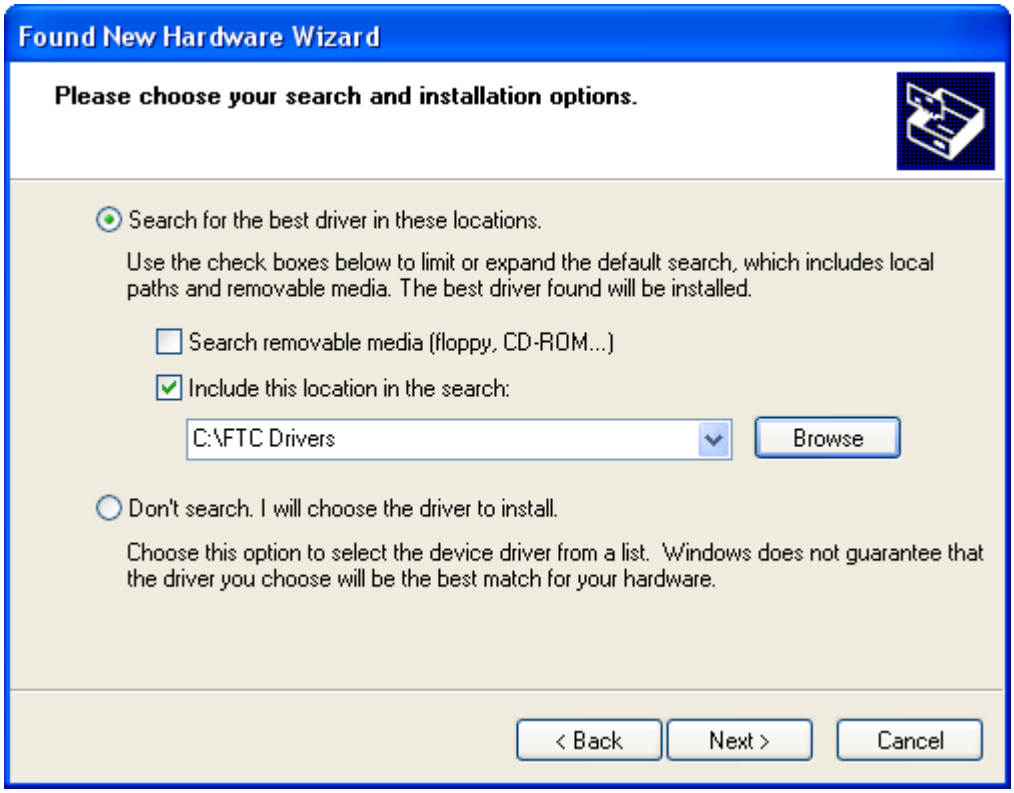
- Select "Search for the best driver in these locations" and enter the file path in the combo-box ("C:\FTC Drivers" in the example below) or browse to it by clicking the browse button. Once the file path has been entered in the box, click next to proceed.



- If Windows XP is configured to warn when unsigned (non-WHQL certified) drivers are about to be installed, the following screen will be displayed. Click on "Continue Anyway" to continue with the installation. If Windows XP is configured to ignore file signature warnings, no message will appear.

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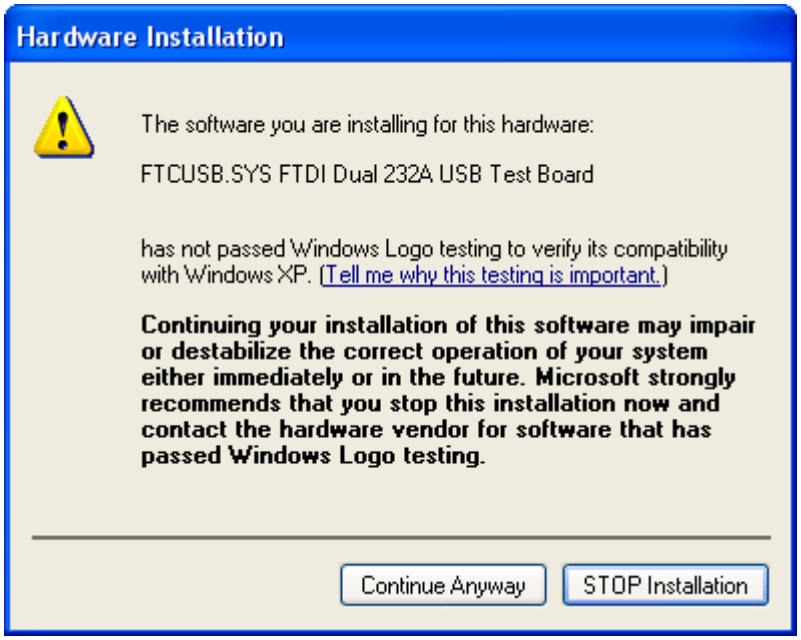
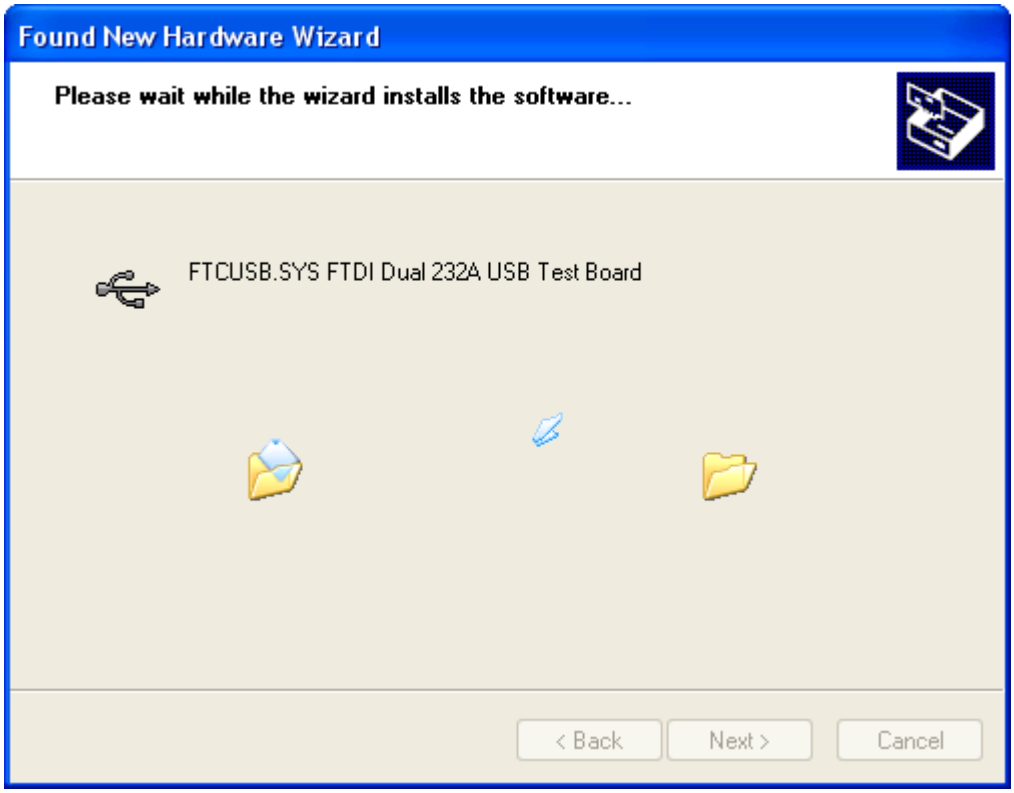


- The following screen will be displayed as Windows XP copies the required driver files.



- Windows should then display a message indicating that the installation was successful. Click "Finish" to complete the installation for the first port of the device.

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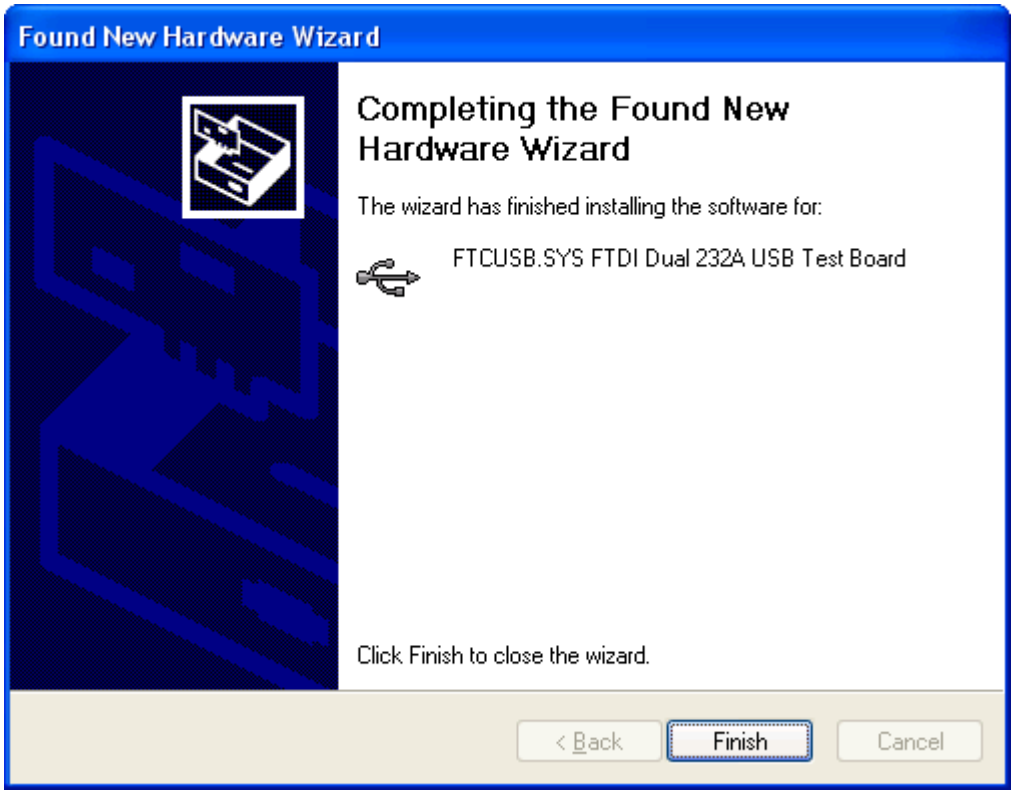

- After clicking "Finish", the Found New Hardware Wizard will continue by installing the second port of the FT2232C. The procedure for installing the second port is identical to that for installing the first port from the first screen of the Found New Hardware Wizard.

- Once the serial converter drivers have been installed for both ports, the COM port emulation drivers must also be installed for each port that is configured to use VCP drivers. The Found New Hardware Wizard will launch automatically to install the COM port emulation drivers. As above, select "No, not this time" From the options and click "Next" to proceed with the installation.

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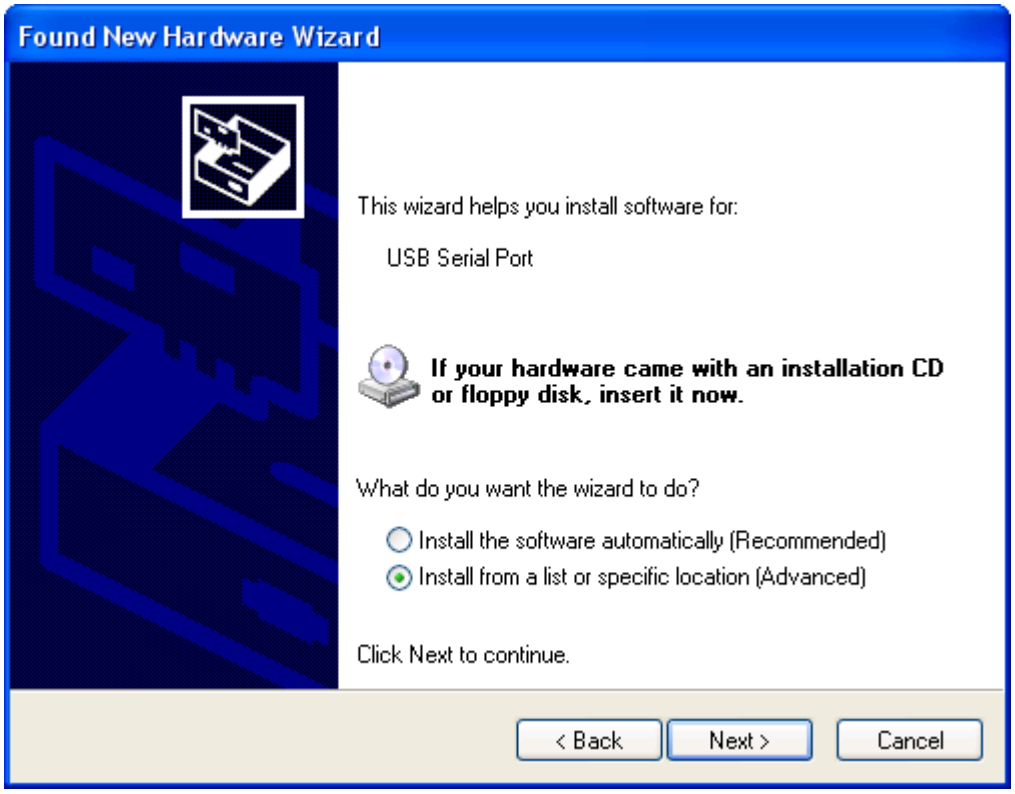
- Select "Install from a list or specific location (Advanced)" as shown below and then click "Next".



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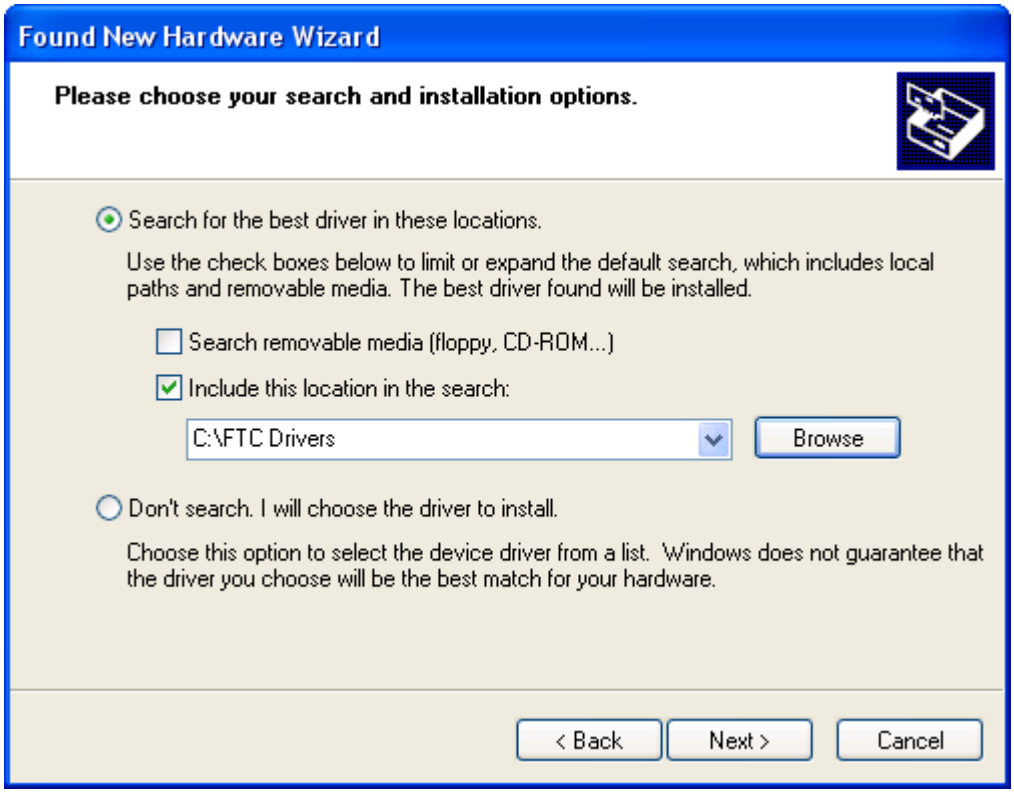
- Select "Search for the best driver in these locations" and enter the file path in the combo-box ("C:\FTC Drivers" in the example below) or browse to it by clicking the browse button. Once the file path has been entered in the box, click next to proceed.



- If Windows XP is configured to warn when unsigned (non-WHQL certified) drivers are about to be installed, the following screen will be displayed. Click on "Continue Anyway" to continue with the installation. If Windows XP is configured to ignore file signature warnings, no message will appear.

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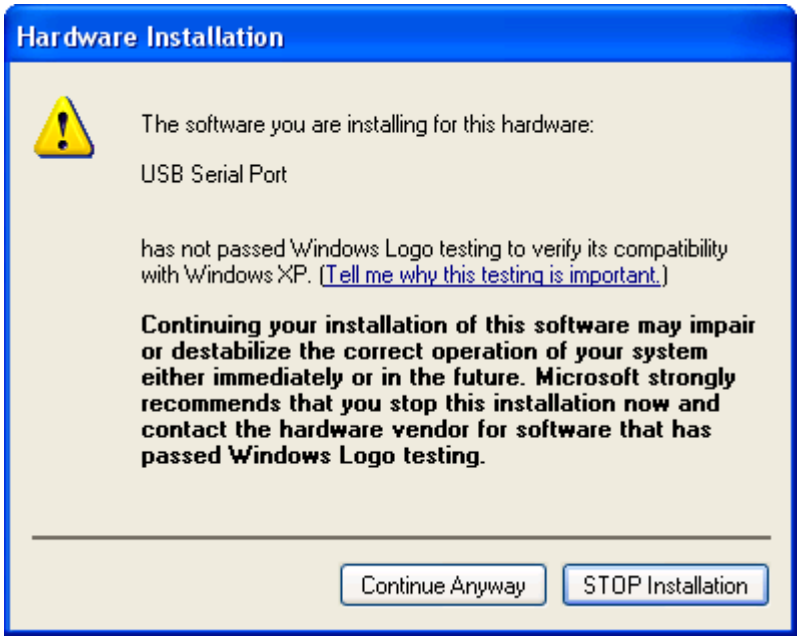
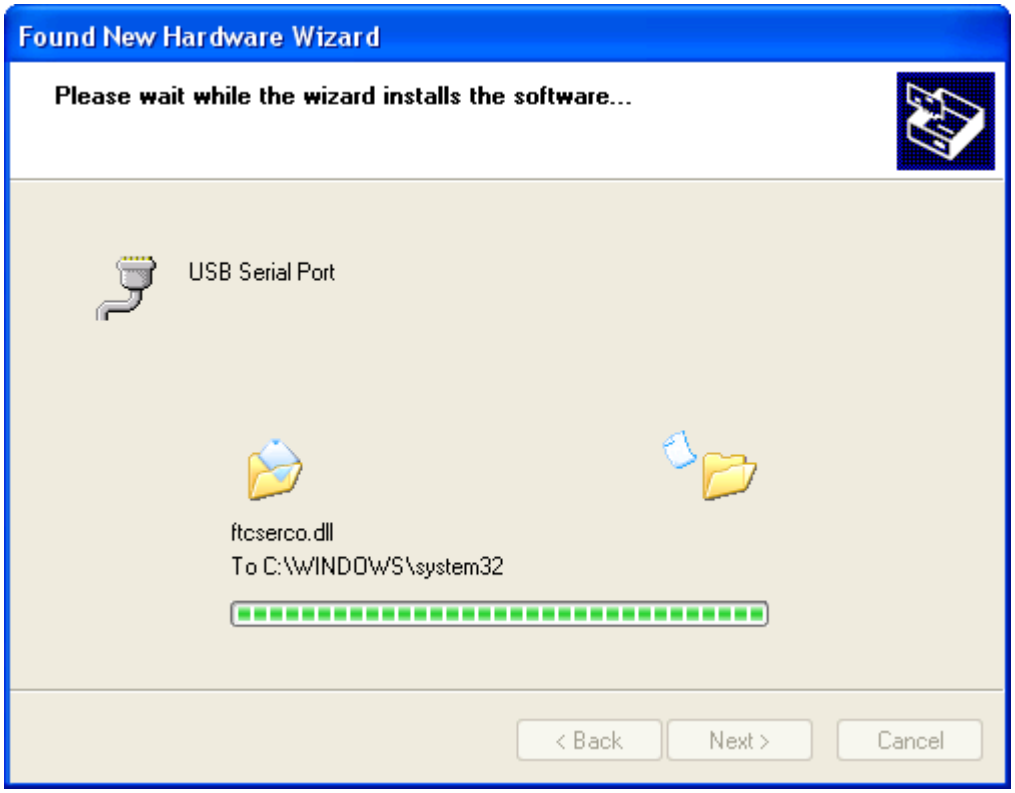


- The following screen will be displayed as Windows XP copies the required driver files.



- Windows should then display a message indicating that the installation was successful. Click "Finish" to complete the installation for the first port of the device.

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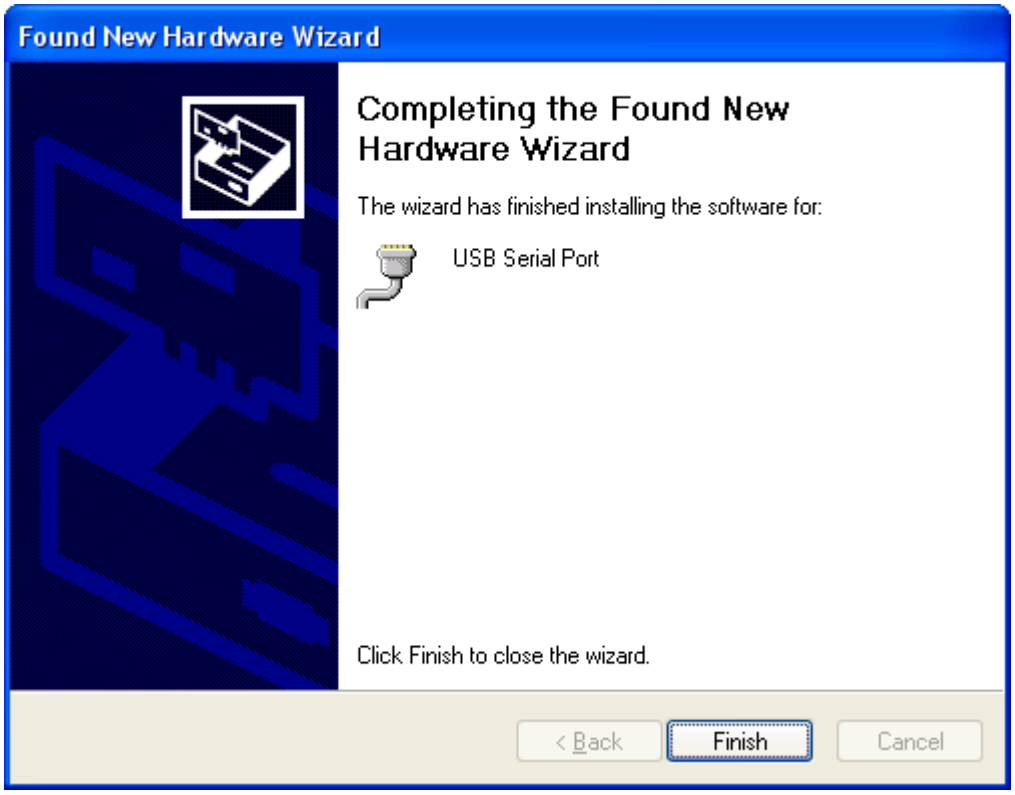

- As with the serial converter driver, if both ports are configured to use VCP drivers the VCP driver for the second port must be installed. The procedure for installing the second port is identical to that for installing the first port from the first screen of the Found New Hardware Wizard for the USB Serial Port device.

- Open the Device Manager (located in "Control Panel\System" then select the "Hardware" tab and click "Device Manger") and select "View > Devices by Connection". The device appears as a "USB Composite Device" connected to a USB port with ports A and B respectively denoted as "FTCUSB.SYS FTDI Dual 232A USB Test Board" and "FTCUSB.SYS FTDI Dual 232B USB Test Board". Port A and port B each have a "USB Serial Port" available through them.

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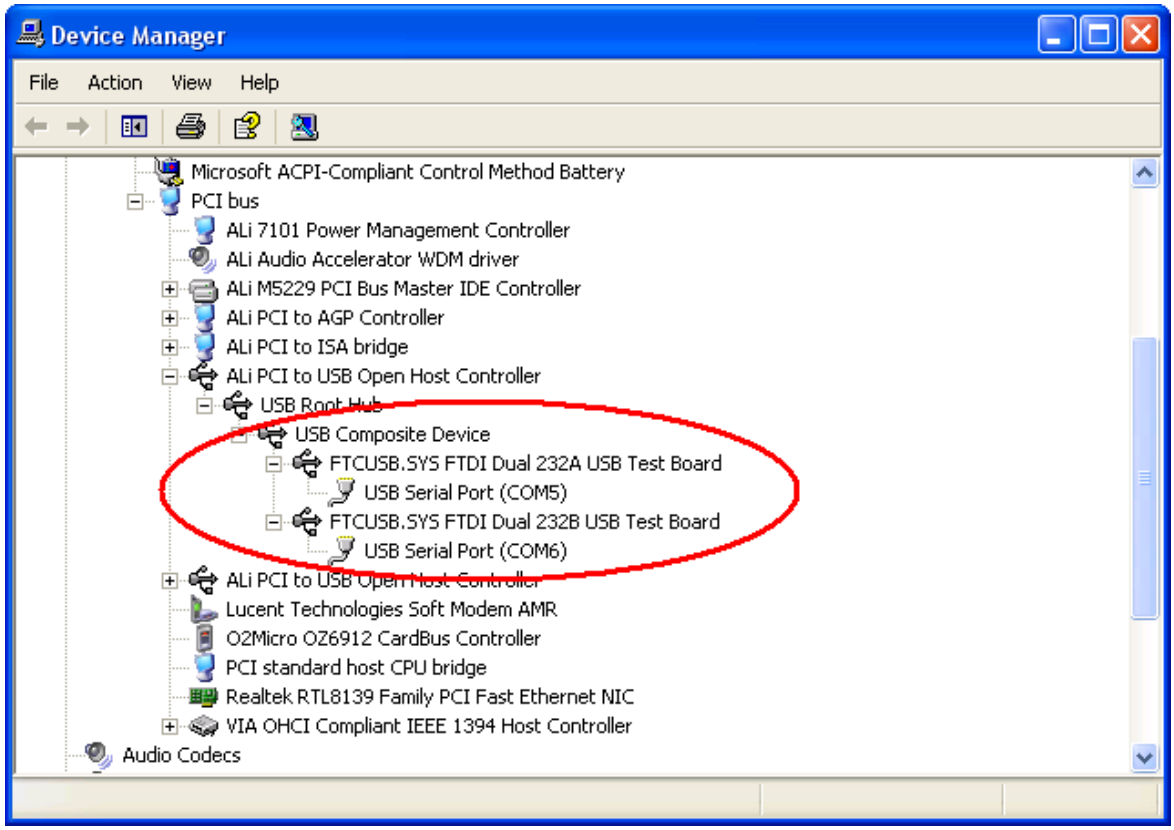

- Port A of the FT2232C will be installed as COMX and port B will be installed as COMX+1 where COMX is the first available COM port number.

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4 Uninstalling FT232BM, FT245BM, FT8U232AM and FT8U245AM Devices

When uninstalling devices from Windows XP, it should always be done through the Add/Remove Programs utility as this uses the FTDI driver uninstaller program to remove files and registry entries to leave a clean system. Other methods may leave fragments of the driver that may interfere with future installations.

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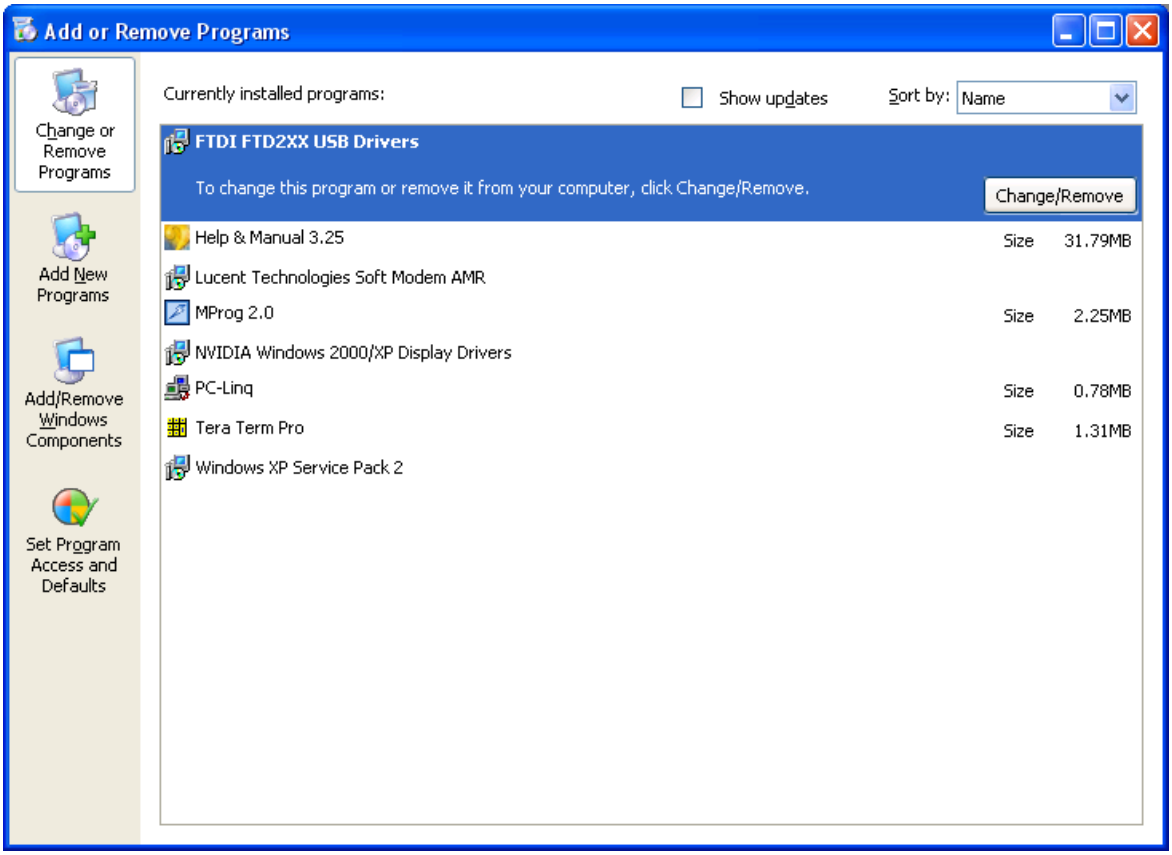
4.1 Uninstalling D2XX Drivers

To uninstall D2XX drivers for FT232BM, FT245BM, FT8U232AM and FT8U245AM devices, follow the instructions below:

- Disconnect any FTDI devices that are attached to the PC.
- Open the Add/Remove Programs utility located in "Control Panel\Add/Remove Programs". Select "FTDI FTD2XX USB Drivers" from the list of installed programs.



- Click the "Change/Remove" button. This will run the FTDI uninstaller program. Click "Continue" to run the uninstaller or "Cancel" to exit.

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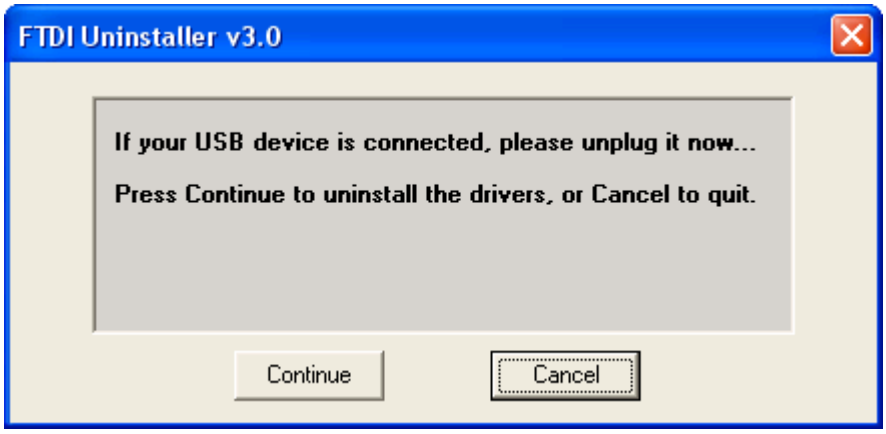
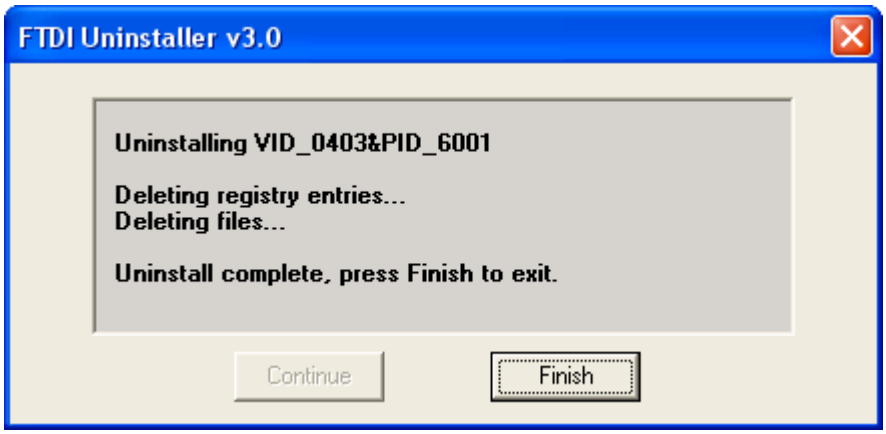


- When the uninstaller has finished removing the device from the system, the caption on the "Cancel" button will change to "Finish". Click "Finish" to complete the process.



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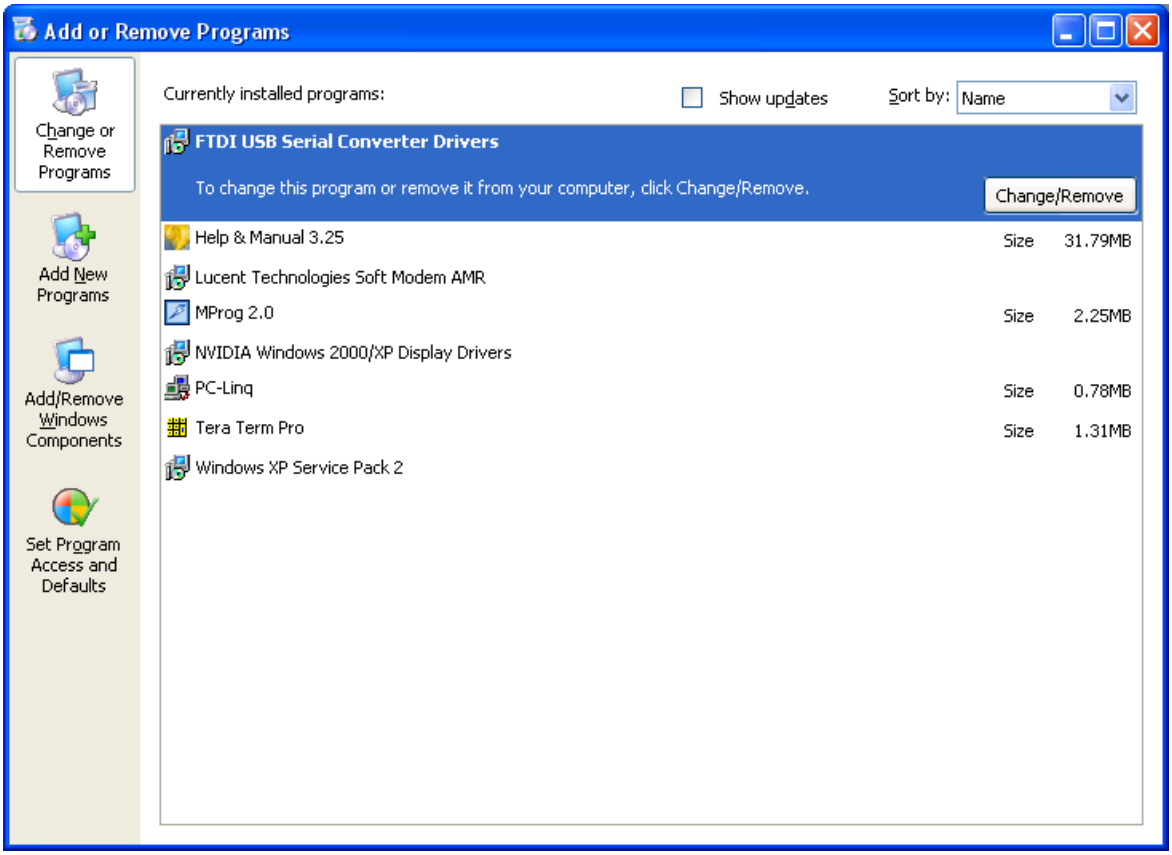
4.2 Uninstalling VCP Drivers

To uninstall VCP drivers for FT232BM, FT245BM, FT8U232AM and FT8U245AM devices, follow the instructions below:

- Disconnect any FTDI devices that are attached to the PC.
- Open the Add/Remove Programs utility located in "Control Panel\Add/Remove Programs". Select "FTDI USB Serial Converter Drivers" from the list of installed programs.



- Click the "Change/Remove" button. This will run the FTDI uninstaller program. Click "Continue" to run the uninstaller or "Cancel" to exit.

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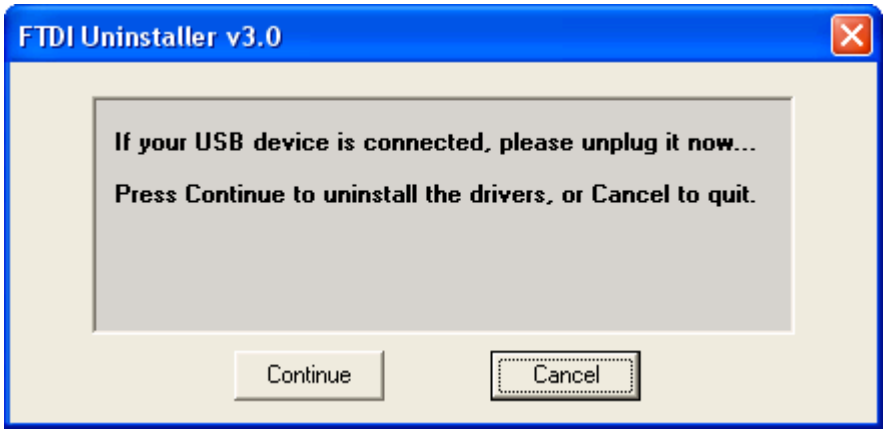
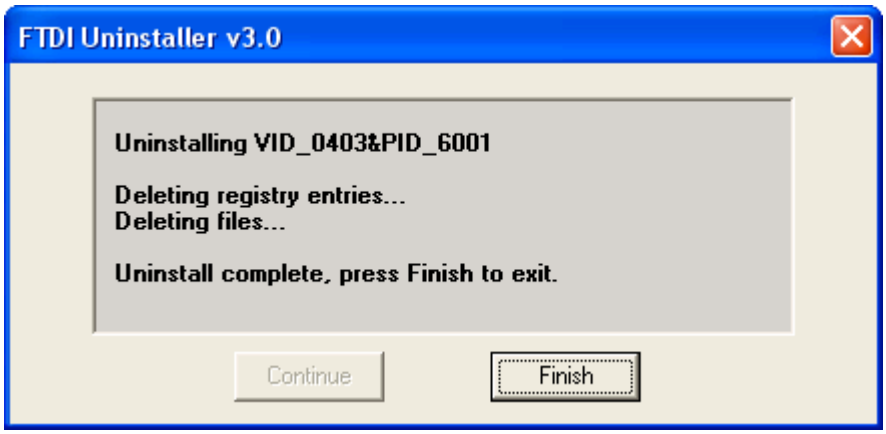


- When the uninstaller has finished removing the device from the system, the caption on the "Cancel" button will change to "Finish". Click "Finish" to complete the process.



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5 Uninstalling FT2232C Devices

When uninstalling devices from Windows XP, it should always be done through the Add/Remove Programs utility as this uses the FTDI driver uninstaller program to remove files and registry entries to leave a clean system. Other methods may leave fragments of the driver that may interfere with future installations.

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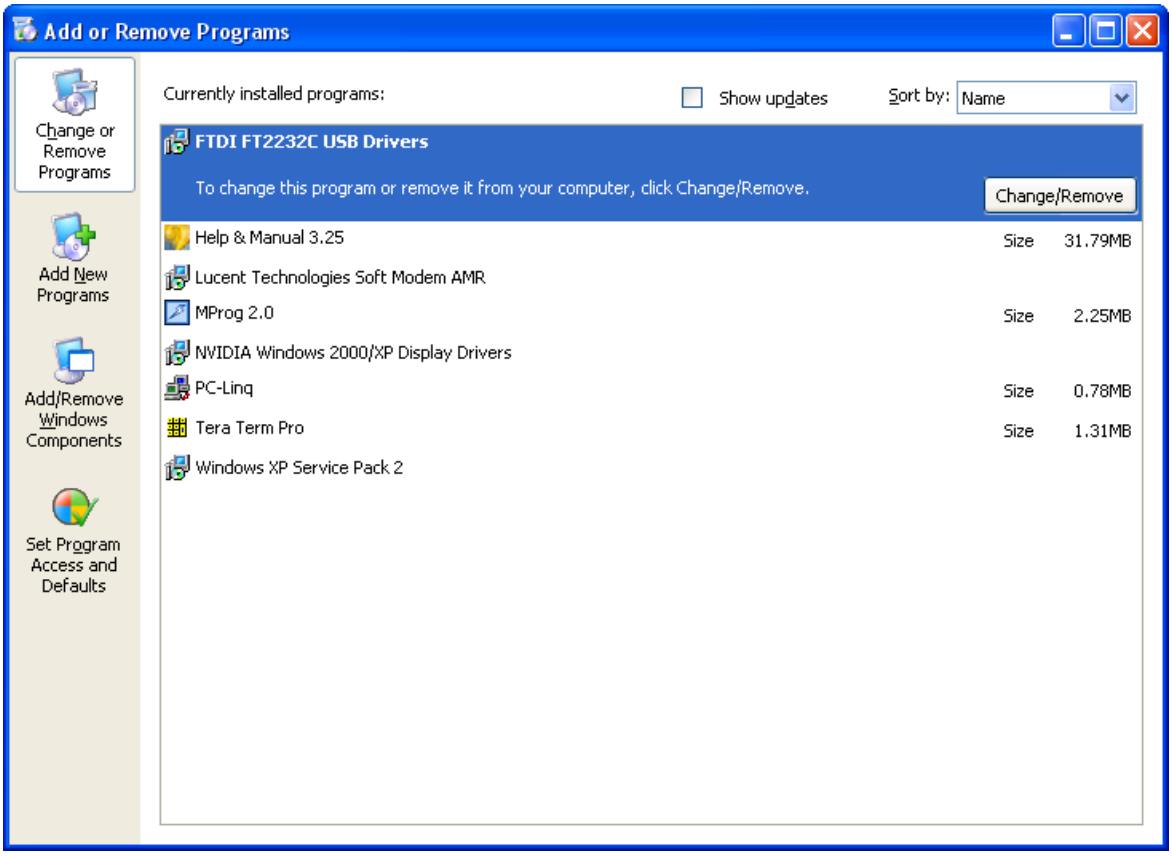
5.1 Uninstalling D2XX Drivers

To uninstall D2XX drivers for FT2232C devices, follow the instructions below:

- Disconnect any FTDI devices that are attached to the PC.
- Open the Add/Remove Programs utility located in "Control Panel\Add/Remove Programs". Select "FTDI FT2232C USB Drivers" from the list of installed programs.



- Click the "Change/Remove" button. This will run the FTDI uninstaller program. Click "Continue" to run the uninstaller or "Cancel" to exit.

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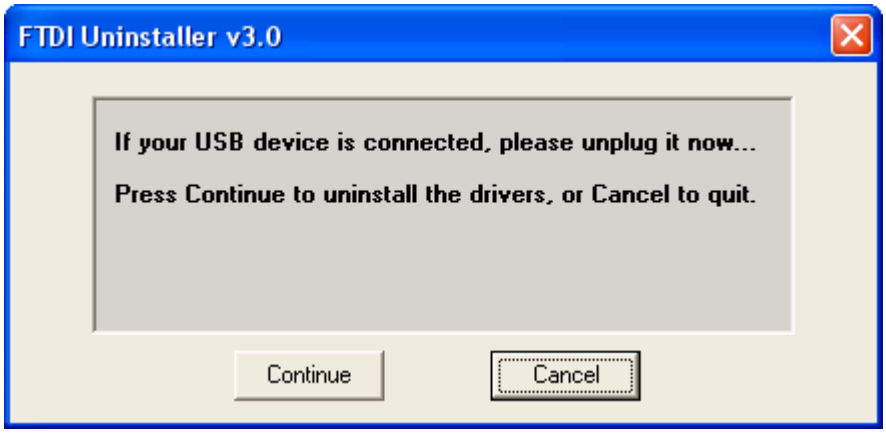
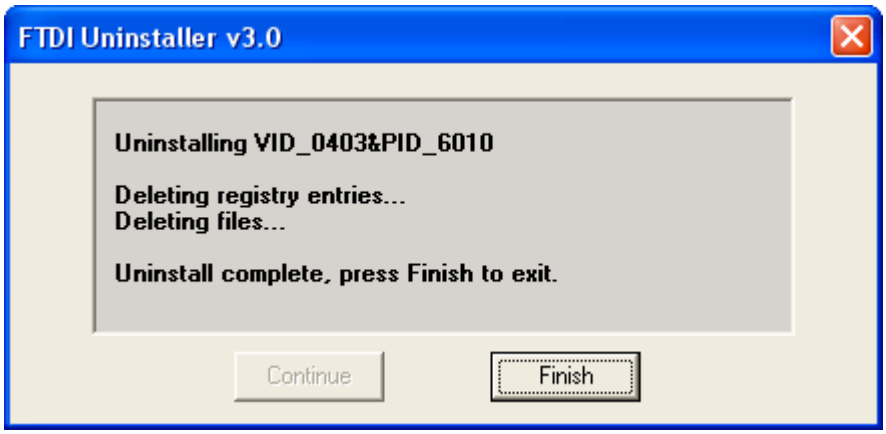


- When the uninstaller has finished removing the device from the system, the caption on the "Cancel" button will change to "Finish". Click "Finish" to complete the process.



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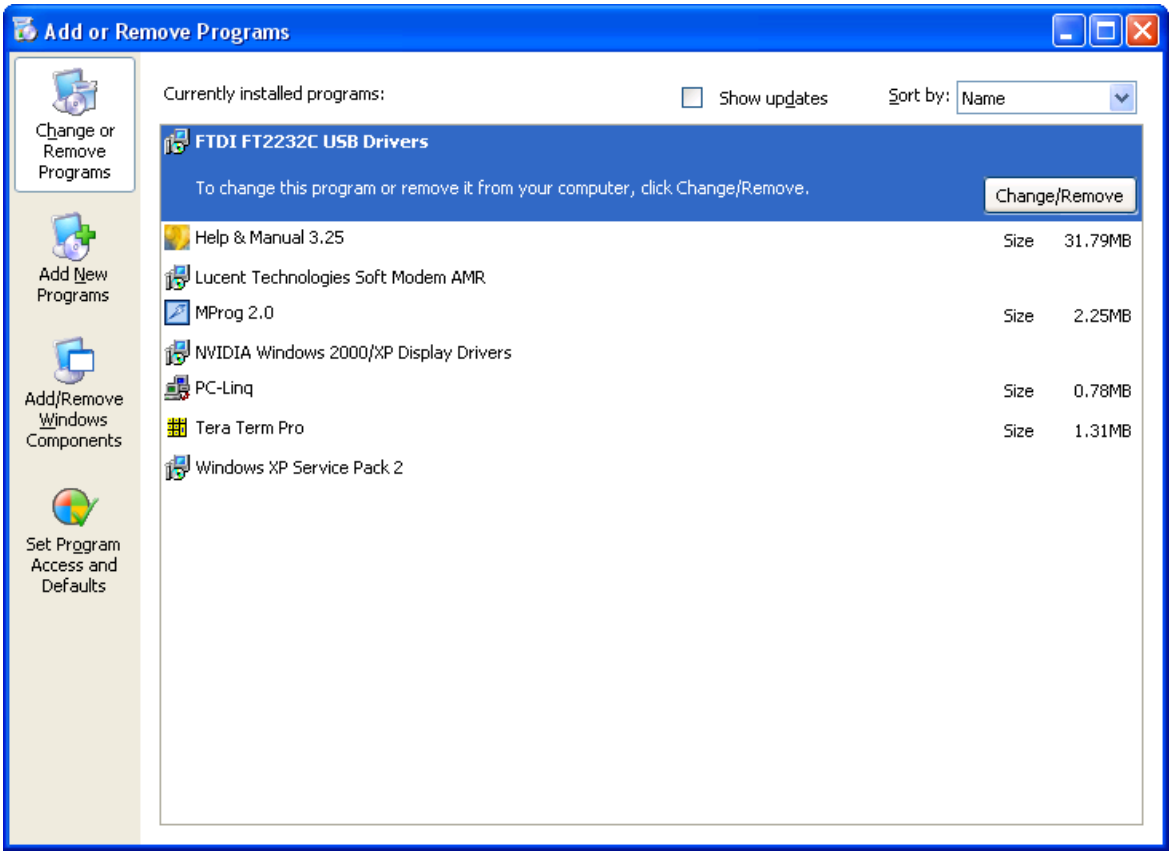
5.2 Uninstalling VCP Drivers

To uninstall VCP drivers for FT2232C devices, follow the instructions below:

- Disconnect any FTDI devices that are attached to the PC.
- Open the Add/Remove Programs utility located in "Control Panel\Add/Remove Programs". Select "FTDI FT2232C USB Drivers" from the list of installed programs.



- Click the "Change/Remove" button. This will run the FTDI uninstaller program. Click "Continue" to run the uninstaller or "Cancel" to exit.

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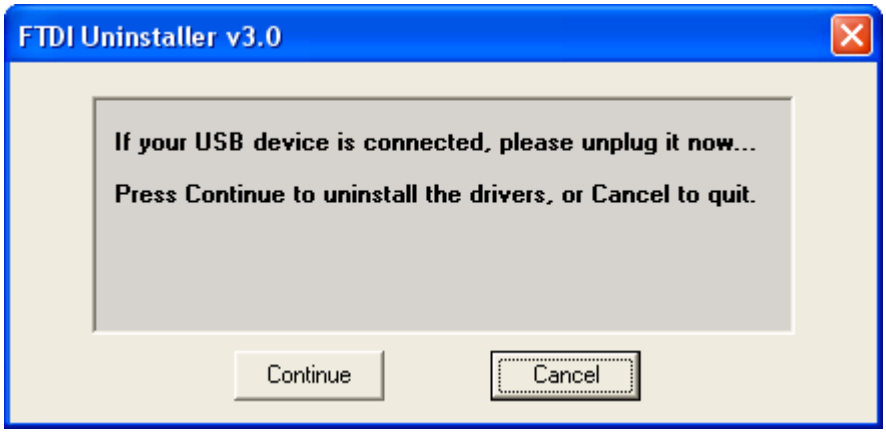
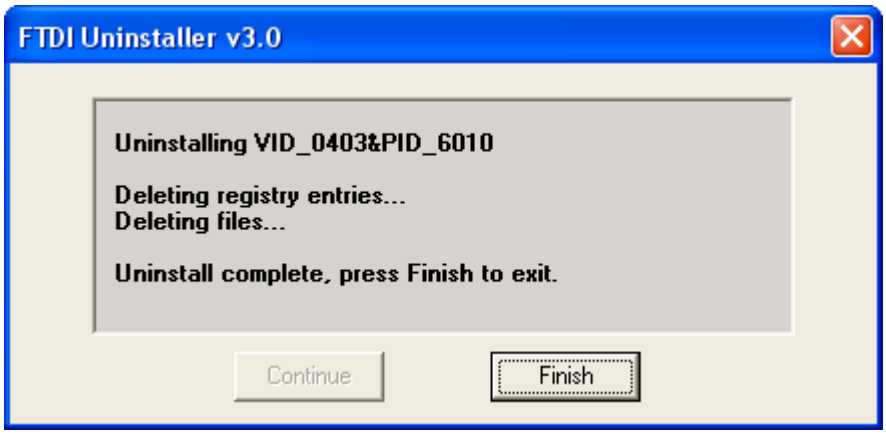


- When the uninstaller has finished removing the device from the system, the caption on the "Cancel" button will change to "Finish". Click "Finish" to complete the process.



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6 Troubleshooting

6.1 Windows XP 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 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 FTDI PID issued for use by your company should be used in the EEPROM and INF/INI files.

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6.2 Windows XP forces a reboot after installing a device

This problem can occur if an application is accessing a file while the New Hardware Wizard is trying to copy it. This usually occurs with the FTD2XX.DLL file. If installing a D2XX device, selecting not to restart the computer then unplugging and re-plugging the device may allow the device to function properly without restarting. Restarting the machine will allow the device to work correctly.

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6.3 Driver installation fails and Windows XP gives error code 10

Windows error code 10 indicates a hardware error or failed driver installation. This error may appear if a device has insufficient power to operate correctly (e.g. plugged into a bus powered hub with other devices), or may indicate a more serious hardware problem. Also, it may be indicative of USB root hub drivers being incorrectly installed.

Please refer to the example schematics on the FTDI website for standard device configurations. If the error persists, please contact the FTDI support department.

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6.4 FT232BM or FT245BM device hangs randomly during operation under Windows XP

This is not caused by the driver, but is a hardware compatibility problem. Some newer USB 2.0 hubs and host controllers can be susceptible to noise and can cause random device failures. This can be overcome by fitting 47pF capacitors to ground on the USBDP and USBDM lines on the USB connector side of the 27Ω series resistors.

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6.5 Windows XP installs VCP driver despite D2XX driver being manually selected

This can occur when there is an active Internet connection under Windows XP SP 1 when installing an FTDI device. When the device is being installed, Windows XP silently connects to the Windows Update website and attempts to retrieve a Microsoft certified driver for the device. If the operating system finds a certified driver, it will install this driver regardless of the driver manually selected.

This can also occur under Windows XP SP 2 when configured to connect to Windows Update automatically when new hardware is detected. This setting can be changed through "Control Panel\System" then select the "Hardware" tab and click "Windows Update".

At present, FTDI have a certified version of the VCP drivers available on the Windows Update website. This can cause VCP drivers to be installed even when D2XX drivers have been selected. To prevent this problem from occurring, disable any available Internet connections before installing any devices.

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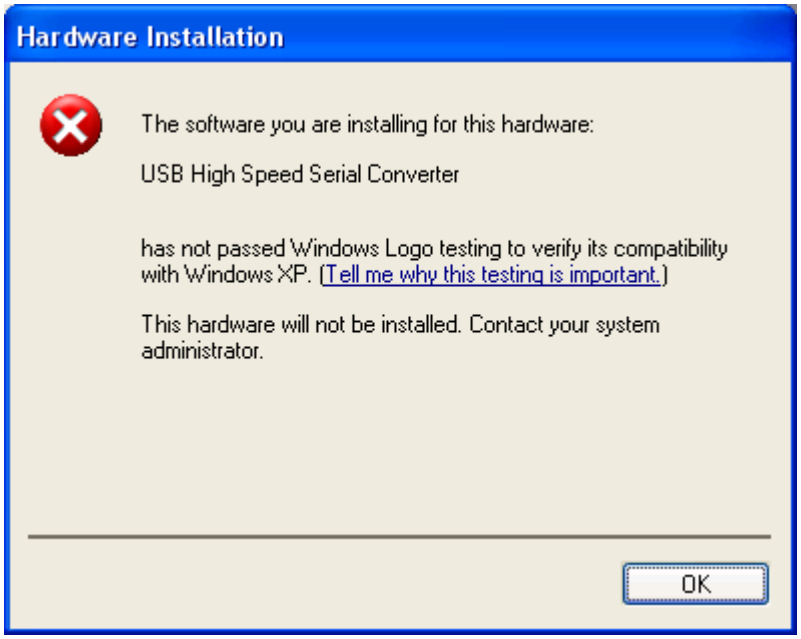
6.6 Windows XP displays an error and then terminates installation

If the following screen is displayed with this message, Windows XP has been configured to block the installation of any drivers that are not WHQL certified.



Two options are available to successfully install the device. Either a certified version of the driver can be installed (if available) or the driver signing options can be changed to either warn or ignore to allow the installation to complete.

To change the current driver signing setting, go to "Control Panel\System", click on the "Hardware" tab and then click "Driver Signing". The desired signing option may then be selected.

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7 Revision History

Version	Release Date	Comments
1.0	January 2005	Initial release

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