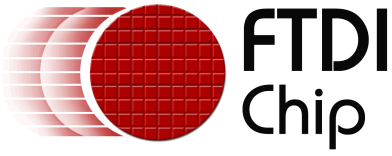

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Windows 98 Installation Guide

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1 Welcome to the Windows 98 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 98. The procedure is also applicable to Windows ME.

Please note that if Windows 98 Gold Edition is being used, you must have all the latest patches from the Microsoft website installed for the system to be USB compatible.

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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 98 and ME, 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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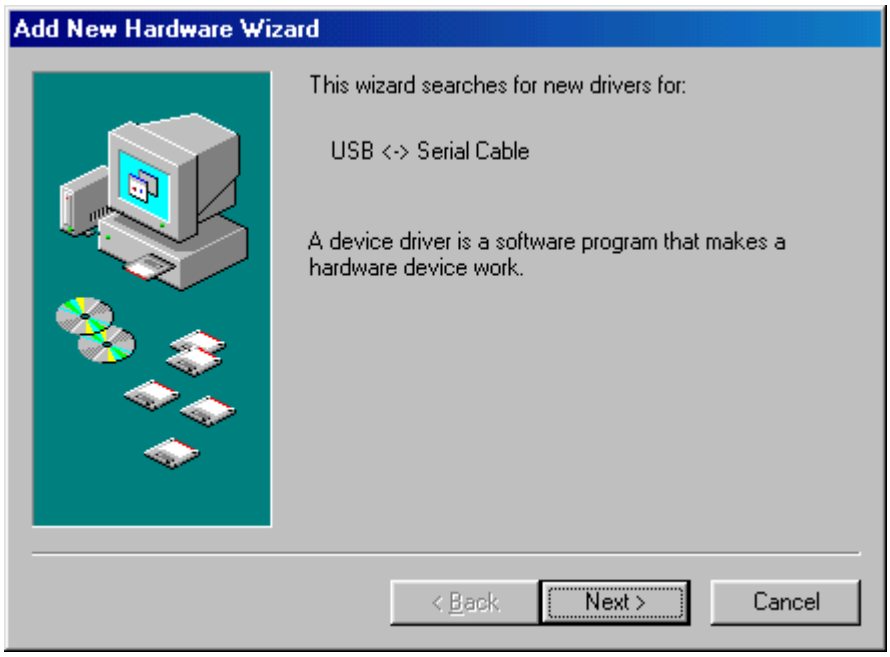
2.1 Installing D2XX Drivers

To install D2XX drivers for an FT232BM, FT245BM, FT8U232AM or FT8U245AM device under Windows 98, 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 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.

- Connect the device to a spare USB port on your PC. This will launch the Windows Add New Hardware Wizard. Windows may display a message reading "Building driver database" at this point which may take a few minutes to pass. Click "Next" to proceed with the installation.



- Select "Search for the best driver for your device. (Recommended)." as shown below and then click "Next".

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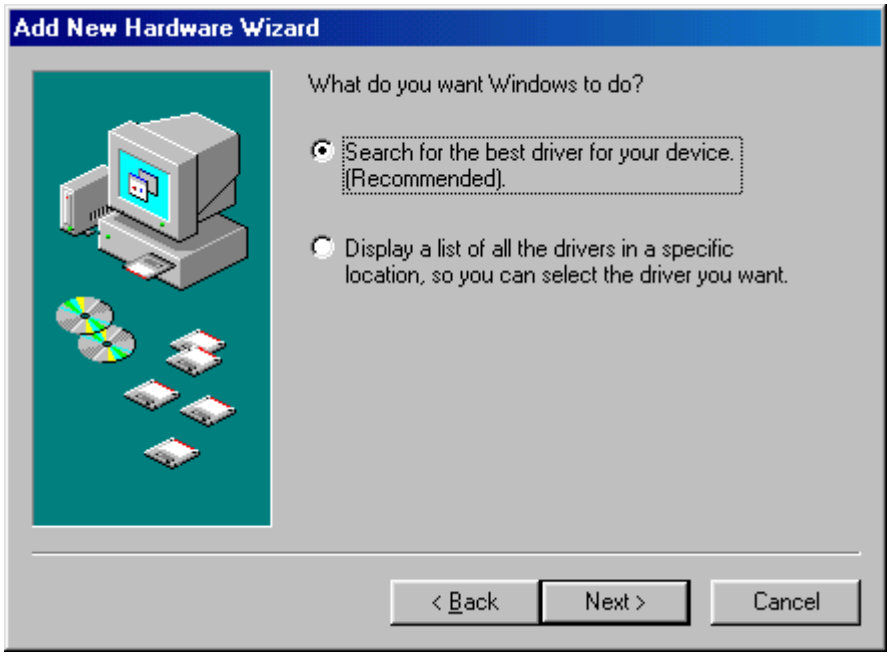
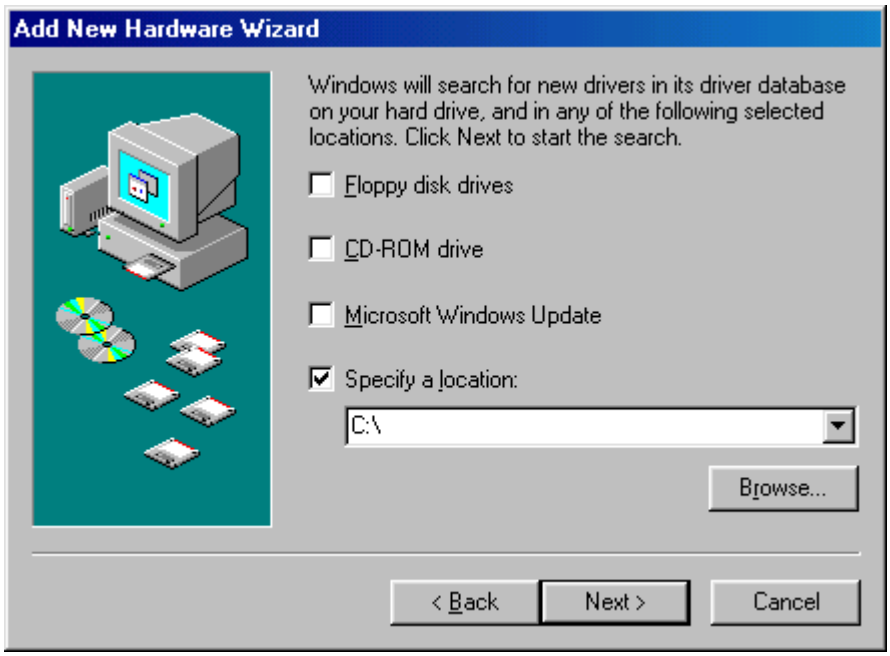


- Check the box next to "Specify a location" and uncheck all others as shown below. Click "Browse" and locate the driver files. Once the files have been located, click "Next" to proceed with the installation.



- Windows may display a message reading "Building driver database" at this point which may take a few minutes to pass. Once Windows has found the required files, click "Next" to install the device.

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- 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.

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

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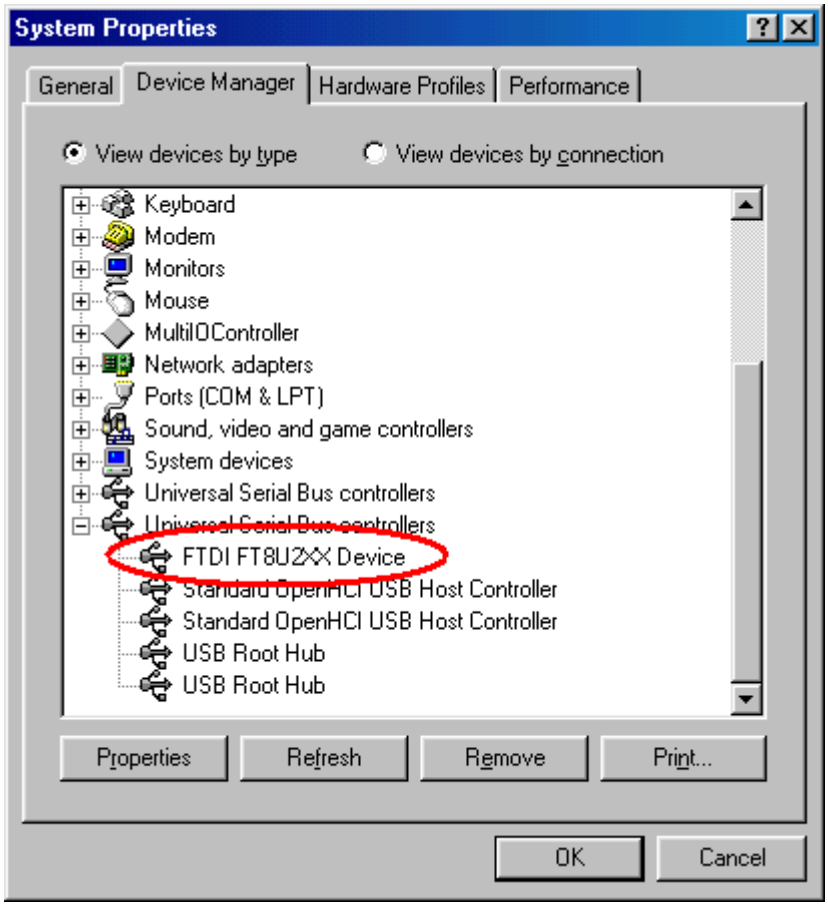

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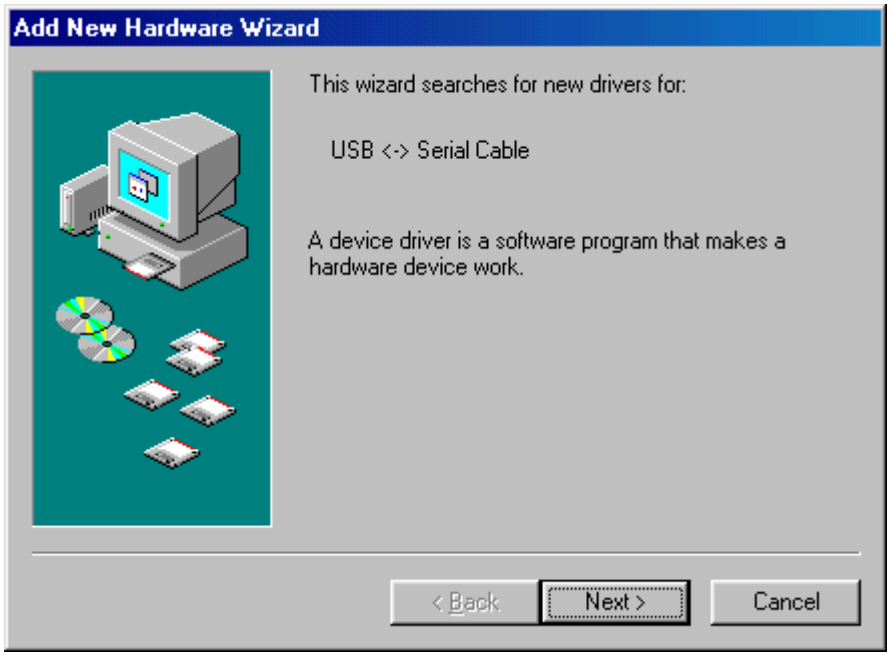
2.2 Installing VCP Drivers

To install VCP drivers for an FT232BM, FT245BM, FT8U232AM or FT8U245AM device under Windows 98, 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 VCP drivers from the FTDI website and unzip them to a location on your PC.

- Connect the device to a spare USB port on your PC. This will launch the Windows Add New Hardware Wizard. Windows may display a message reading "Building driver database" at this point which may take a few minutes to pass. Click "Next" to proceed with the installation.



- Select "Search for the best driver for your device. (Recommended)." as shown below and then click "Next".

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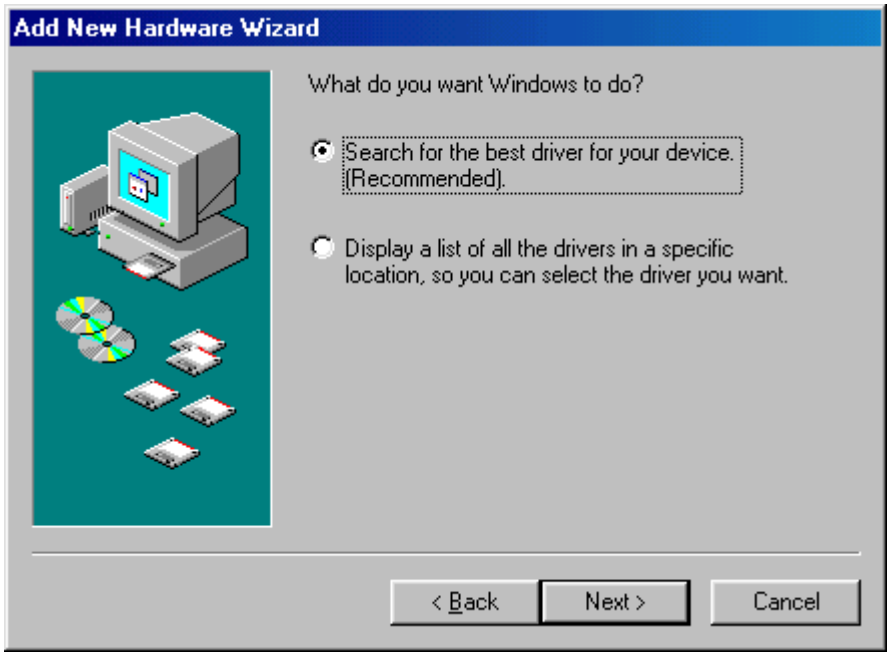
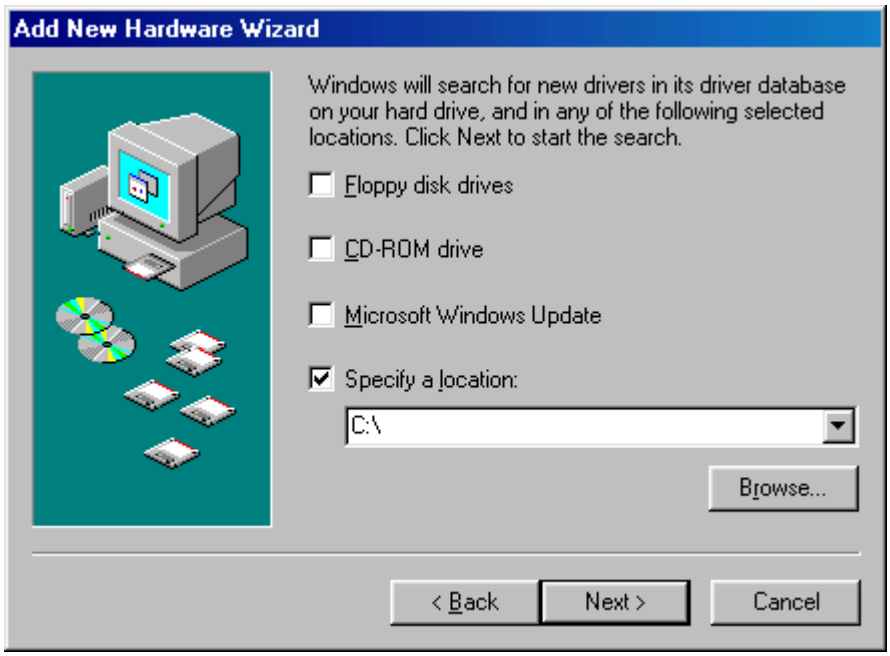


- Check the box next to "Specify a location" and uncheck all others as shown below. Click "Browse" and locate the driver files. Once the files have been located, click "Next" to proceed with the installation.



- Windows may display a message reading "Building driver database" at this point which may take a few minutes to pass. Once Windows has found the required files, click "Next" to install the device.

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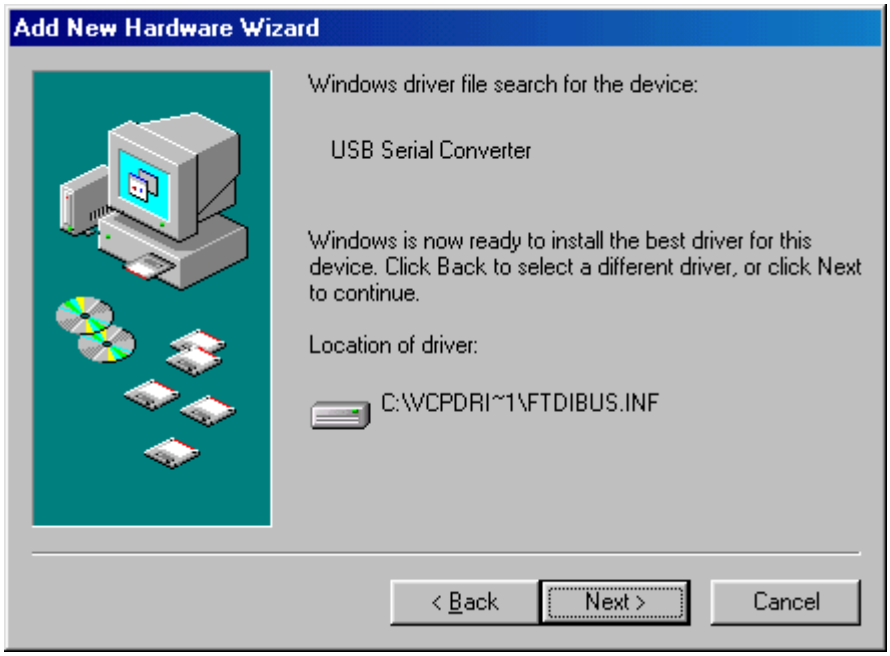
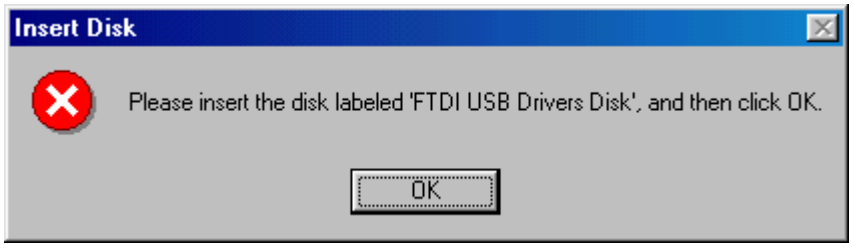
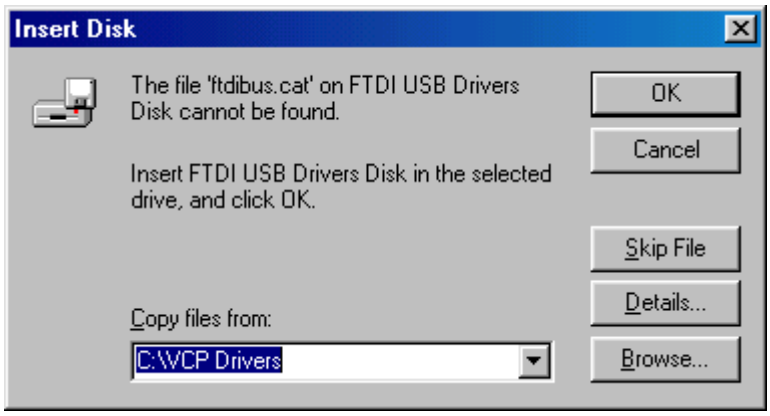


- If the driver being installed does not have Microsoft WHQL signature files (.CAT files), the wizard will request a driver disk to attempt to find them. Click "OK" on the "Insert Disk" message box.



The following window will appear to assist in locating the file. To proceed with the installation without the .CAT file, click "Skip File".



If the driver being installed is Microsoft WHQL certified, then the .CAT files will be located with the other driver files and should be installed automatically.

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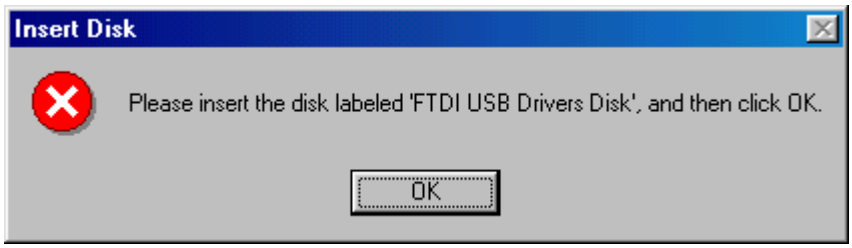
- Windows should then display a message indicating that the installation of the serial converter driver was successful. The COM port emulation driver must now be installed. Click "Finish" to complete the installation of the serial converter and proceed to the COM port emulation driver.

- Under Windows 98, the COM port emulation driver will be automatically installed from the same location as the serial converter driver. However, if the driver is not WHQL certified as explained above for the serial converter driver, the wizard will ask for the location of .CAT files. Click "OK" on the "Insert Disk" message box.



The following window will appear to assist in locating the file. To proceed with the installation without the .CAT file, click "Skip File".

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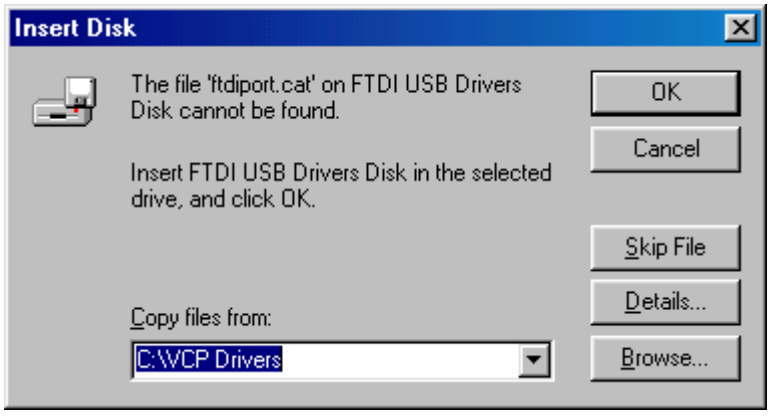
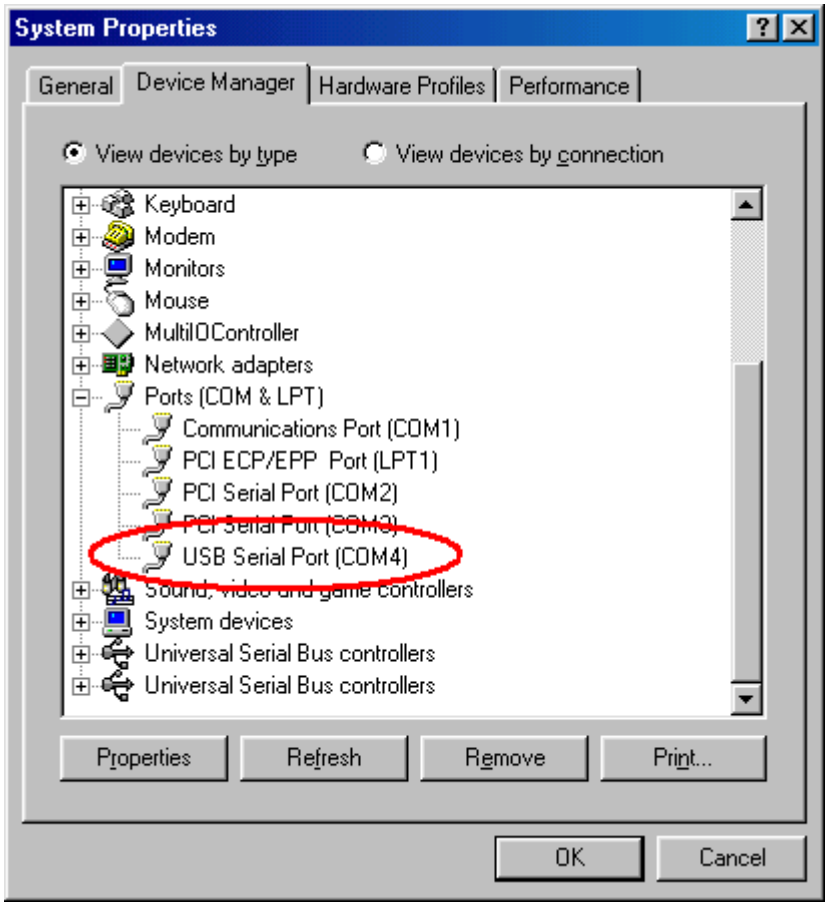


If the driver being installed is Microsoft WHQL certified, then the .CAT files will be located with the other driver files and should be installed automatically.

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



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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.

Under Windows 98 and ME, 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 98, 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 37 section of this document for further details of this procedure.

- Download the latest available FTCD2XX drivers from the FTDI website and unzip them to a location on your PC. Please note that attempting to install the FTC combined D2XX and VCP driver will result in an unsuccessful installation if the device EEPROM is configured for D2XX drivers.

- Connect the device to a spare USB port on your PC. As the FT2232C is a composite device, the Microsoft composite device driver must be loaded first. This is not done automatically under Windows 98. The Windows Add New Hardware Wizard will detect the new USB device as a composite device and will guide the user through the installation. Click "Next" on the screen below to continue with the installation.

- Select "Search for the best driver for your device. (Recommended)." as shown below and then click "Next".

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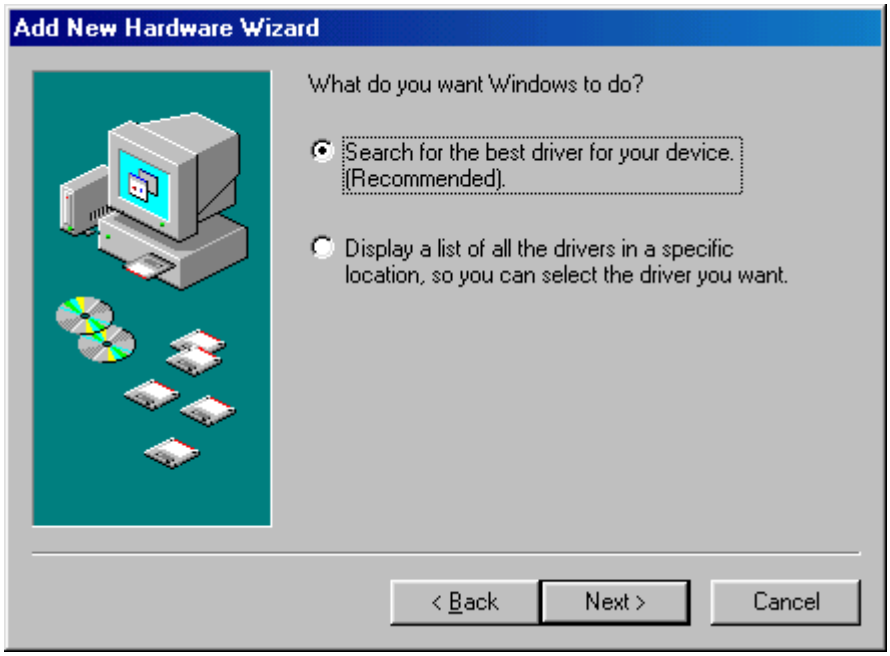
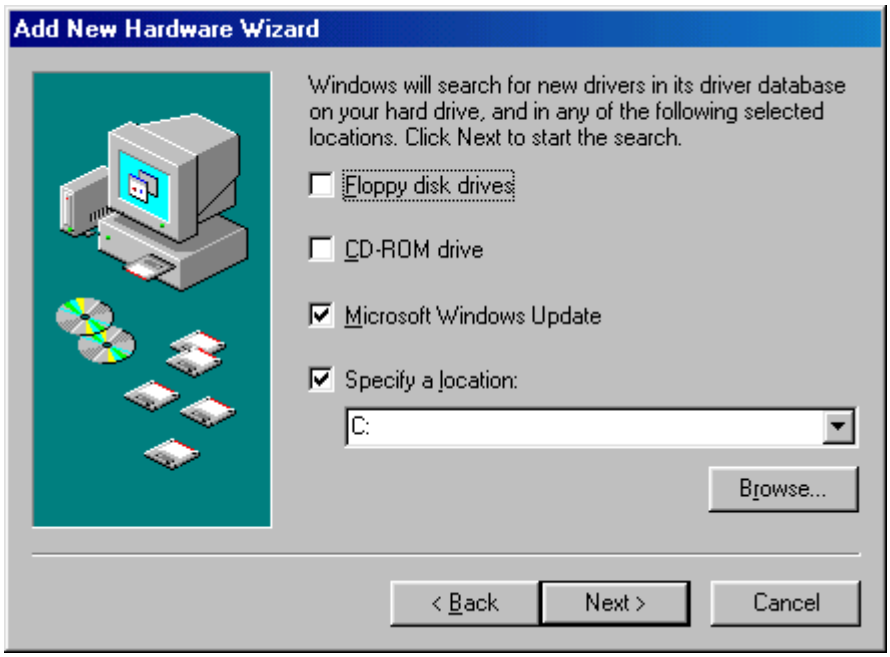


- Check the box next to "Specify a location" and uncheck all others as shown below. Normally, Windows will find the composite driver already available in the system. If the composite driver is not available on the PC, the "Microsoft Windows Update" option may be selected and a composite driver will be downloaded from the Microsoft Windows update website.



- Windows will display a message indicating that a composite driver file has been found. In the case below, Windows has found a newer version of the composite driver already installed. It is safe to install this. Continue by clicking "Next".

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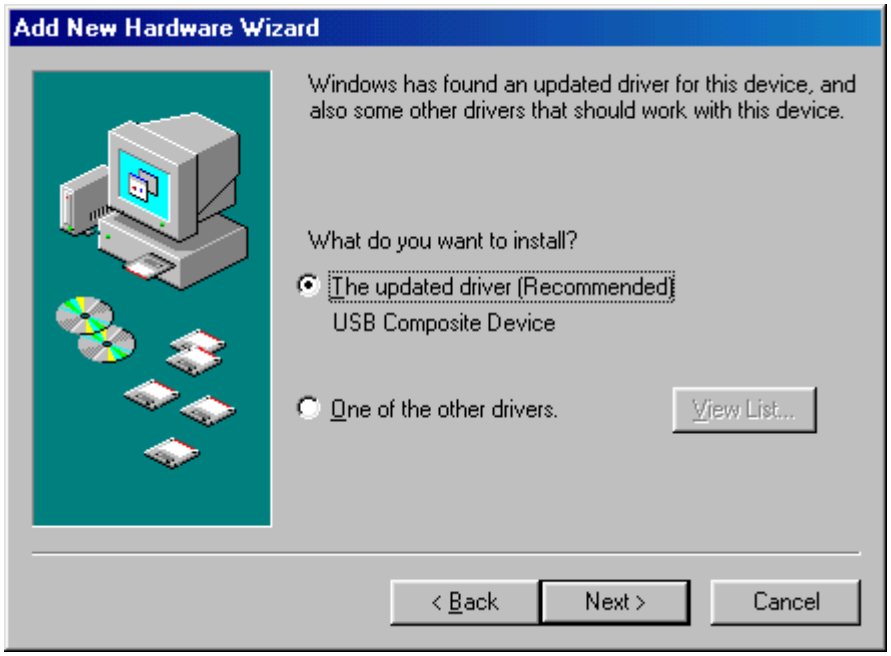

- To install the composite driver click "Next".

- Windows should then display a message indicating that the composite driver installation was successful. Click "Finish" to complete the composite driver installation.

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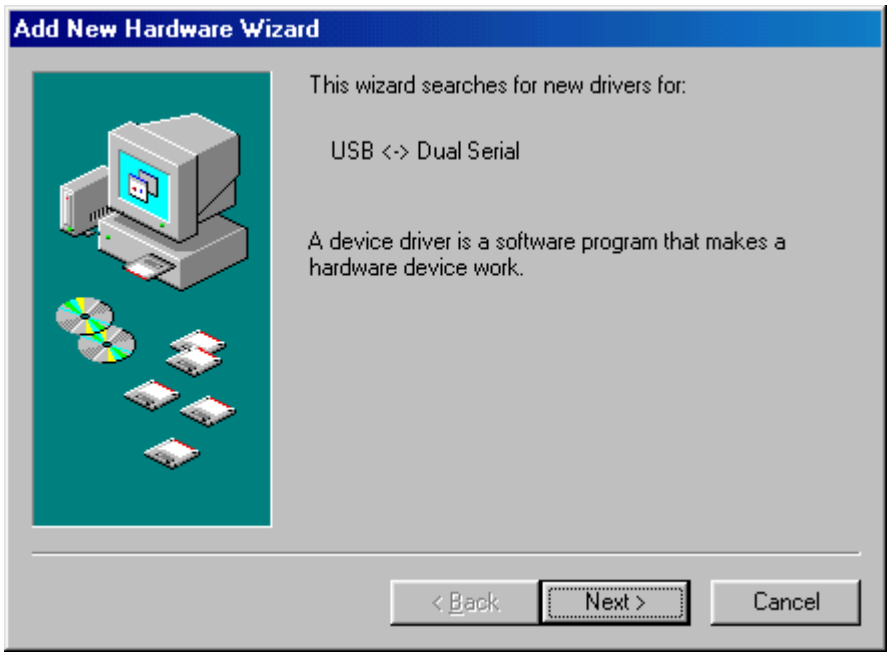
- Once the composite driver is installed, the Add New Hardware Wizard will then detect a port of the FT2232C device. Windows may display a message reading "Building driver database" at this point which may take a few minutes to pass. Click "Next" when the screen below is shown.



- Select "Search for the best driver for your device. (Recommended)." as shown below and then click "Next".

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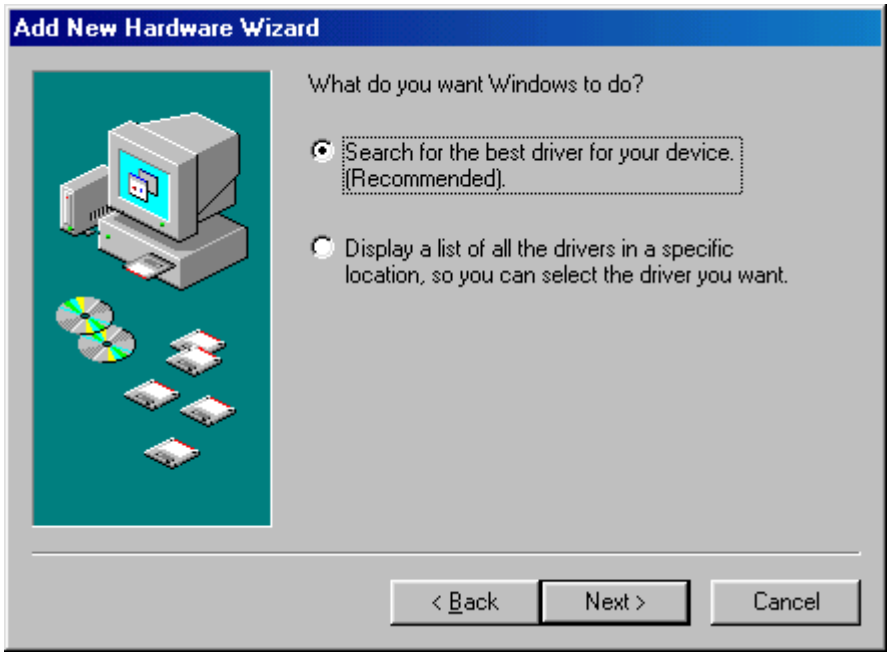
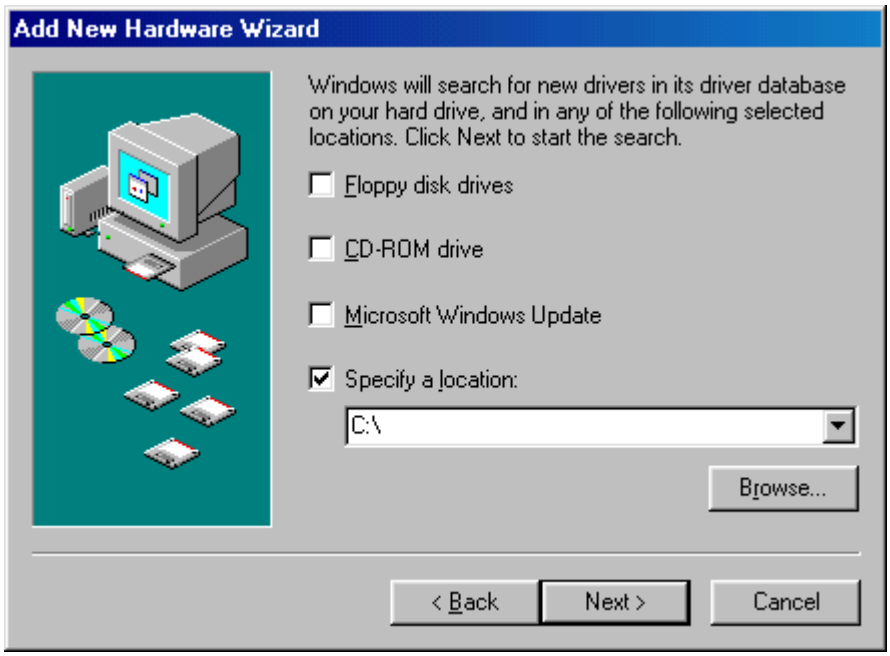


- Check the box next to "Specify a location" and uncheck all others as shown below. Click "Browse" and locate the driver files. Once the files have been located, click "Next" to proceed with the installation.



- Windows may display a message reading "Building driver database" at this point which may take a few minutes to pass. Once Windows has found the required files, click "Next" to install the device.

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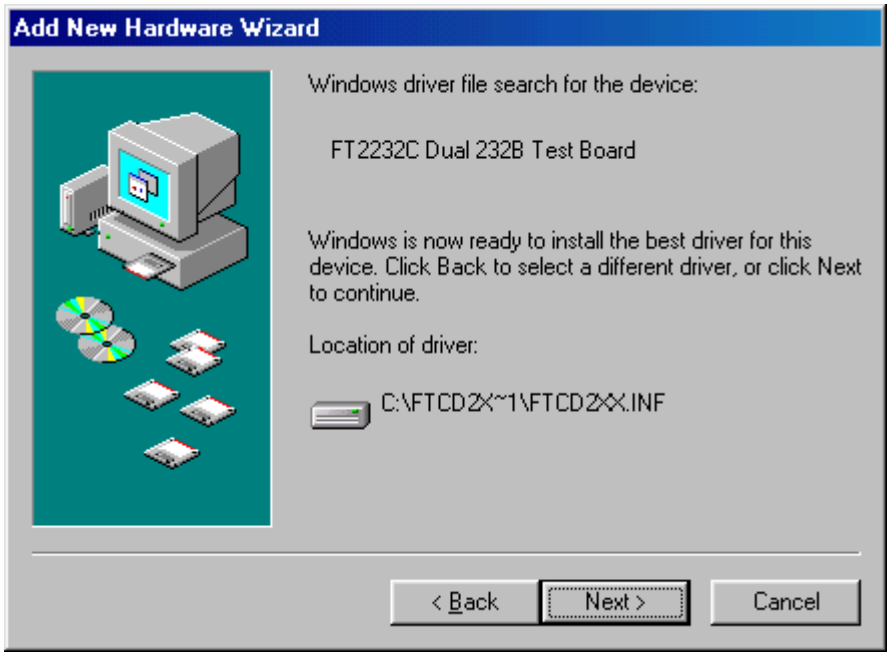

- Windows should then display a message indicating that the installation was successful. Click "Finish" to complete the installation.

- As the FT2232C has 2 ports available, the second port must also be installed. Under Windows 98, this will occur automatically.

- Open the Device Manager (located in "Control Panel\System" then select the ""Device Manger" tab) 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

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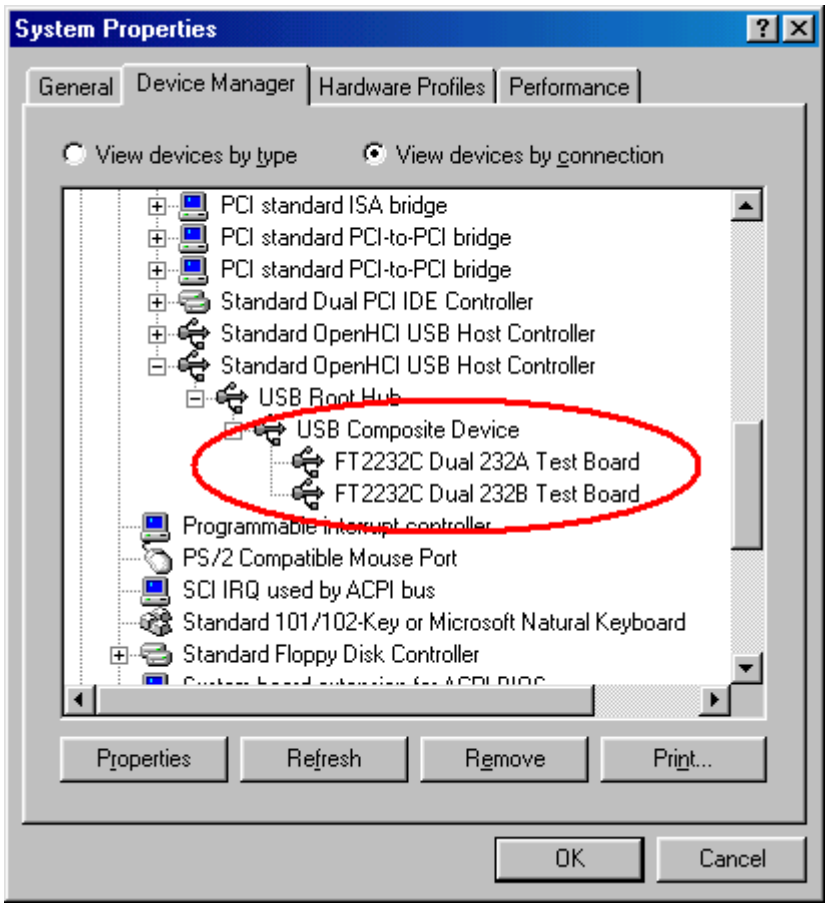
FTDI Dual 232A USB Test Board" and "FTCUSB.SYS FTDI Dual 232B USB Test Board".



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3.2 Installing VCP Drivers

To install D2XX drivers for an FT2232C device under Windows 98, 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 37 section of this document for further details of this procedure.

- Download the latest available FTCD2XX drivers from the FTDI website and unzip them to a location on your PC. Please note that attempting to install the FTC combined D2XX and VCP driver will result in an unsuccessful installation if the device EEPROM is configured for D2XX drivers.

- Connect the device to a spare USB port on your PC. As the FT2232C is a composite device, the Microsoft composite device driver must be loaded first. This is not done automatically under Windows 98. The Windows Add New Hardware Wizard will detect the new USB device as a composite device and will guide the user through the installation. Click "Next" on the screen below to continue with the installation.

- Select "Search for the best driver for your device. (Recommended)." as shown below and then click "Next".

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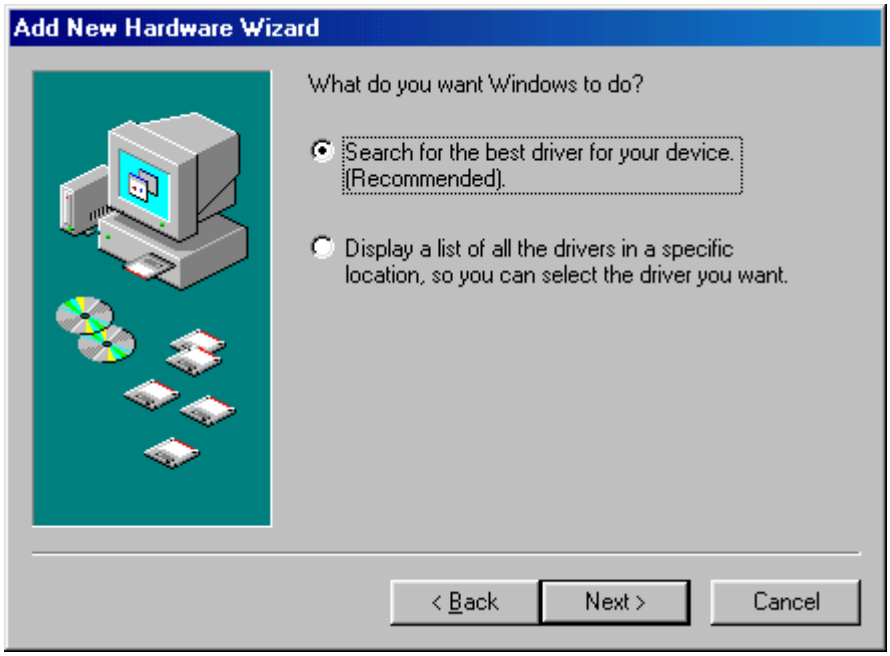
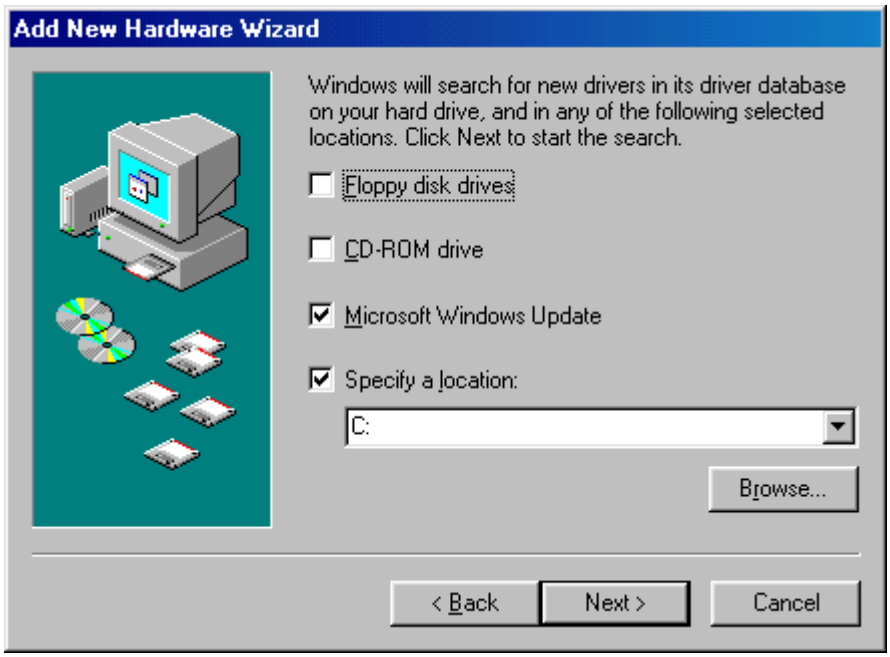


- Check the box next to "Specify a location" and uncheck all others as shown below. Normally, Windows will find the composite driver already available in the system. If the composite driver is not available on the PC, the "Microsoft Windows Update" option may be selected and a composite driver will be downloaded from the Microsoft Windows update website.



- Windows will display a message indicating that a composite driver file has been found. In the case below, Windows has found a newer version of the composite driver already installed. It is safe to install this. Continue by clicking "Next".

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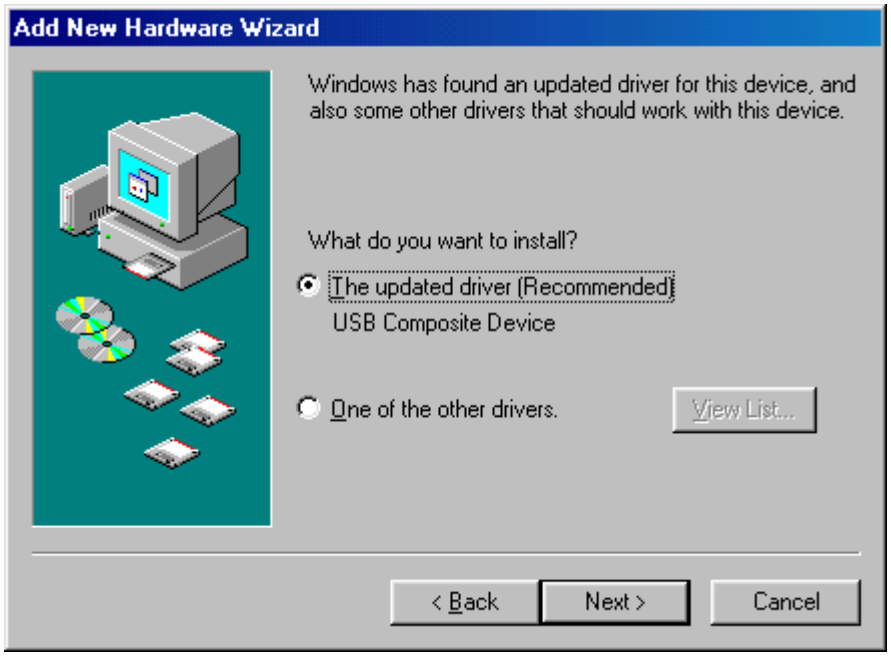

- To install the composite driver click "Next".

- Windows should then display a message indicating that the composite driver installation was successful. Click "Finish" to complete the composite driver installation.

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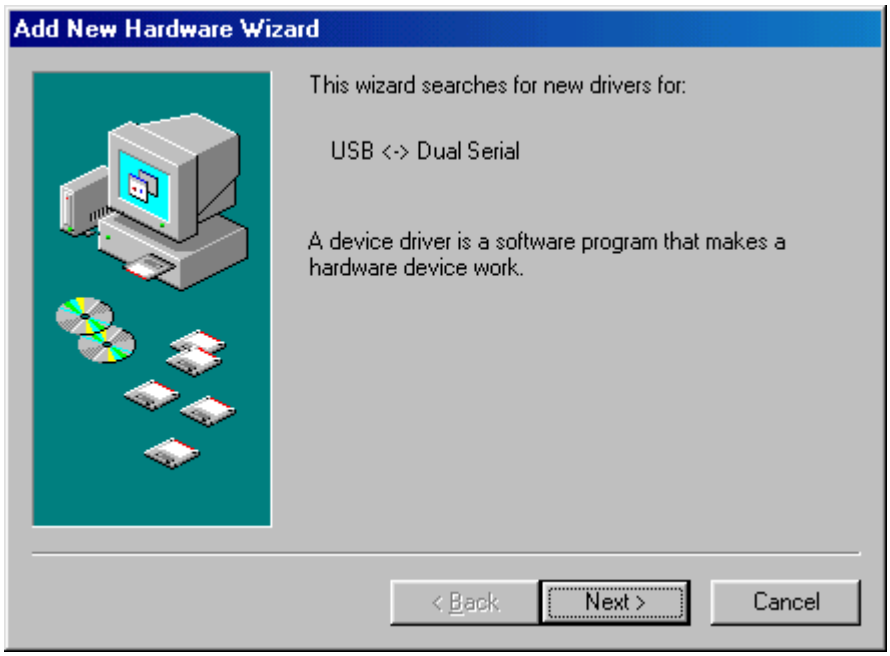
- Once the composite driver is installed, the Add New Hardware Wizard will then detect a port of the FT2232C device. Windows may display a message reading "Building driver database" at this point which may take a few minutes to pass. Click "Next" when the screen below is shown.



- Select "Search for the best driver for your device. (Recommended)." as shown below and then click "Next".

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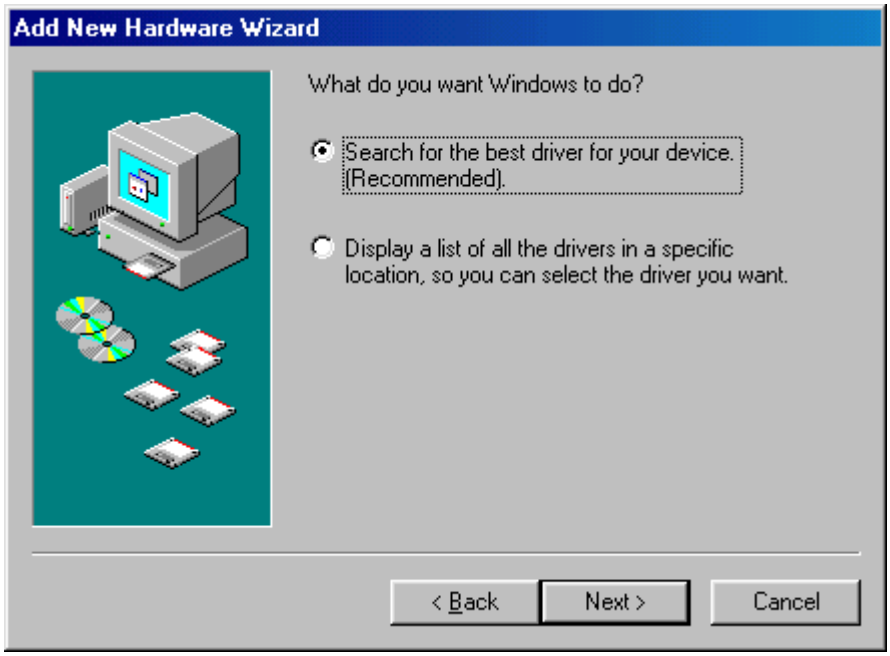
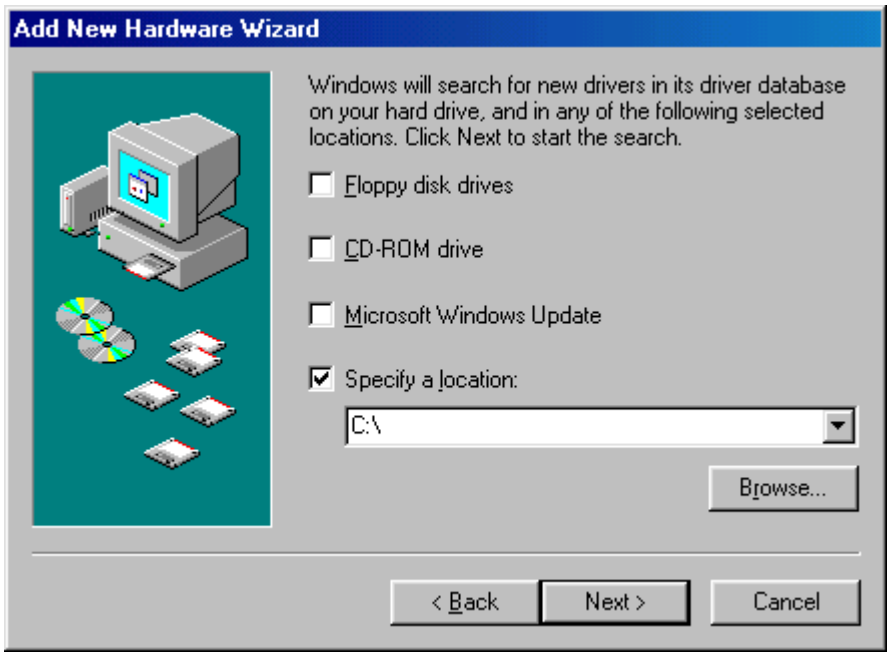


- Check the box next to "Specify a location" and uncheck all others as shown below. Click "Browse" and locate the driver files. Once the files have been located, click "Next" to proceed with the installation.



- Windows may display a message reading "Building driver database" at this point which may take a few minutes to pass. Once Windows has found the required files, click "Next" to install the device.

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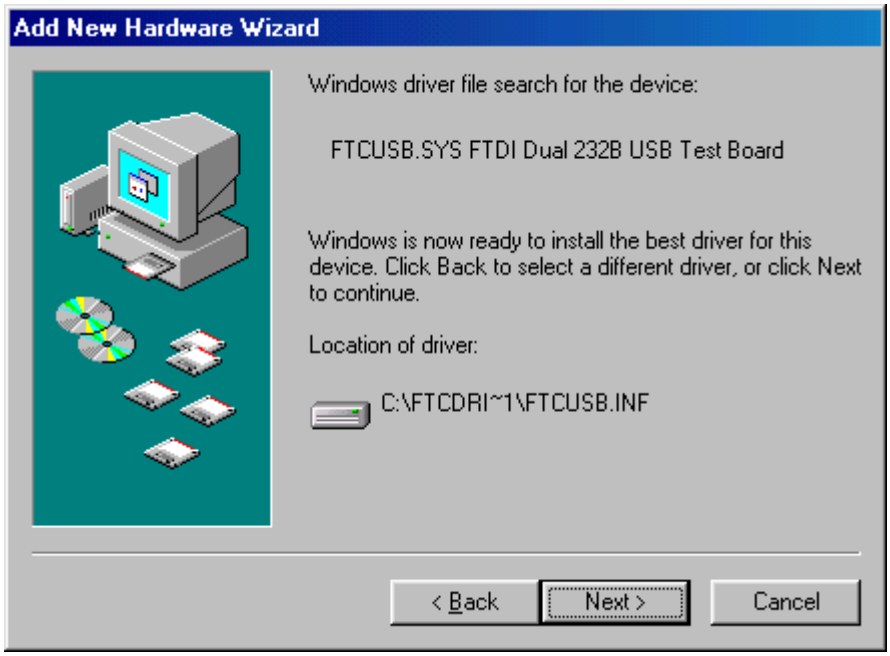
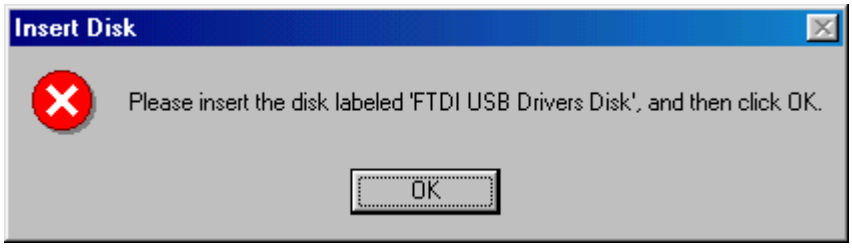
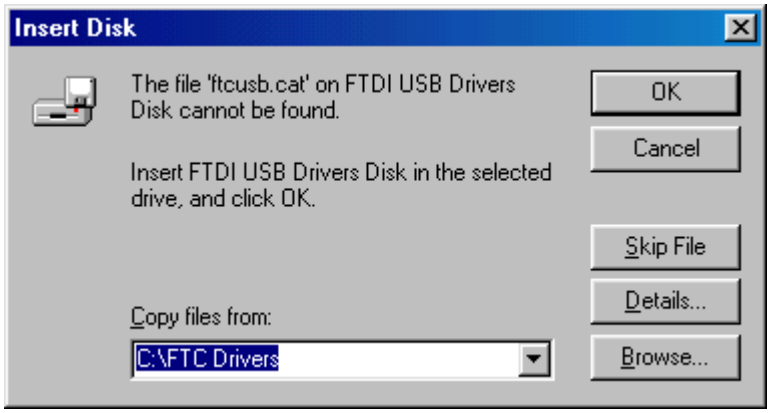


- If the driver being installed does not have Microsoft WHQL signature files (.CAT files), the wizard will request a driver disk to attempt to find them. Click "OK" on the "Insert Disk" message box.



The following window will appear to assist in locating the file. To proceed with the installation without the .CAT file, click "Skip File".



If the driver being installed is Microsoft WHQL certified, then the .CAT files will be located with the other driver files and should be installed automatically.

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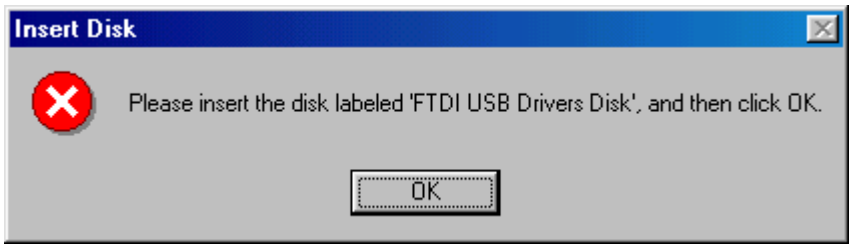
- Windows should then display a message indicating that the installation of the serial converter driver was successful. The COM port emulation driver must now be installed. Click "Finish" to complete the installation of the serial converter driver for the first port of the FT2232C device.

- As the FT2232C device has two ports available, the serial converter driver must also be installed for the second port. This occurs automatically in Windows 98 with the exception of the .cat file warnings. As above, click "OK" on the "Insert Disk" message box.



To continue with the installation, click "Skip File".

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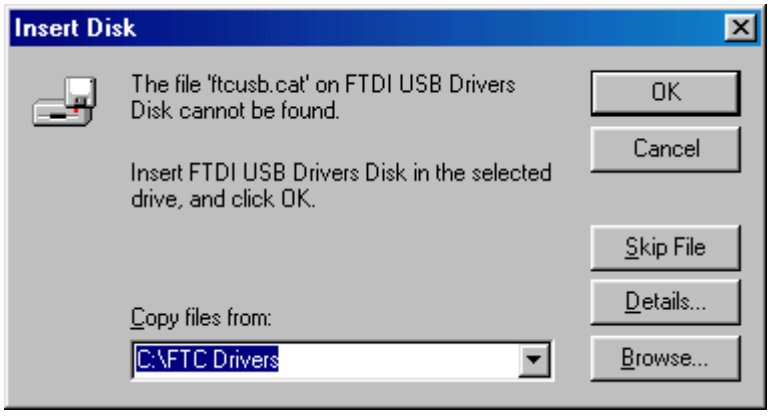
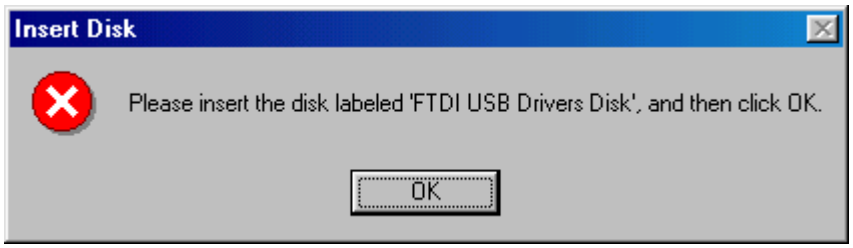
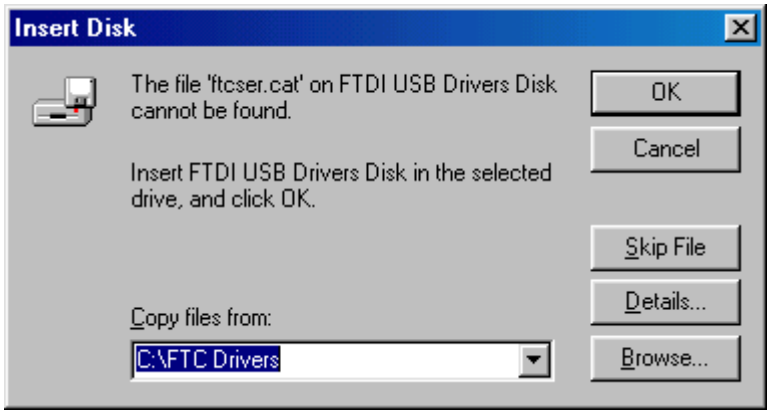


This will complete the installation of the serial converter driver for the second port of the FT2232C device.

- Once the serial converter drivers are installed, the Add New Hardware Wizard will detect the USB serial ports and will automatically find the drivers for these in the same location as the serial converter drivers. As before, the wizard will prompt for the .cat files if they cannot be found. Click "OK" on the "Insert Disk" dialog box to proceed.



Click "Skip File" to continue with the installation.



This will complete the installation of the COM port emulation driver for the first port of the FT2232C device.

- As with the serial converter driver above, the wizard will detect the second port and install the COM port emulation driver automatically. Click "OK" on the "Insert Disk" dialog box to proceed.

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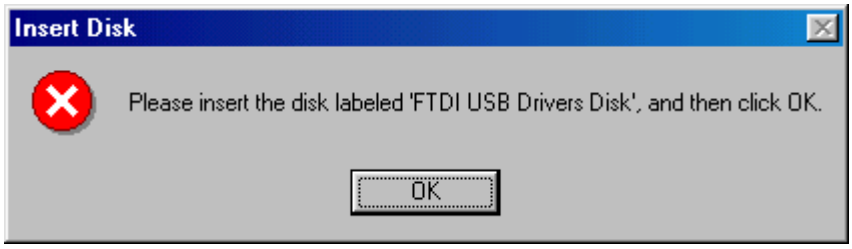
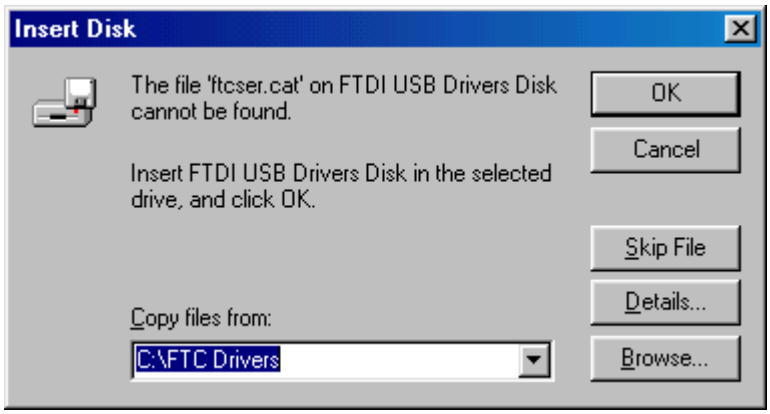


Click "Skip File" to continue with the installation.



- This will complete the installation of the FT2232C device. The device is now ready to use.
- Open the Device Manager (located in "Control Panel\System" then select the ""Device Manger" tab) and select "View devices by connection". The device appears as 2 additional COM ports with the labels "USB Serial Port". Please note that there is no co-installer available for Windows 98 so port B of the FT2232C may have a lower COM port number assigned than that assigned to port A as in the screen shot below.

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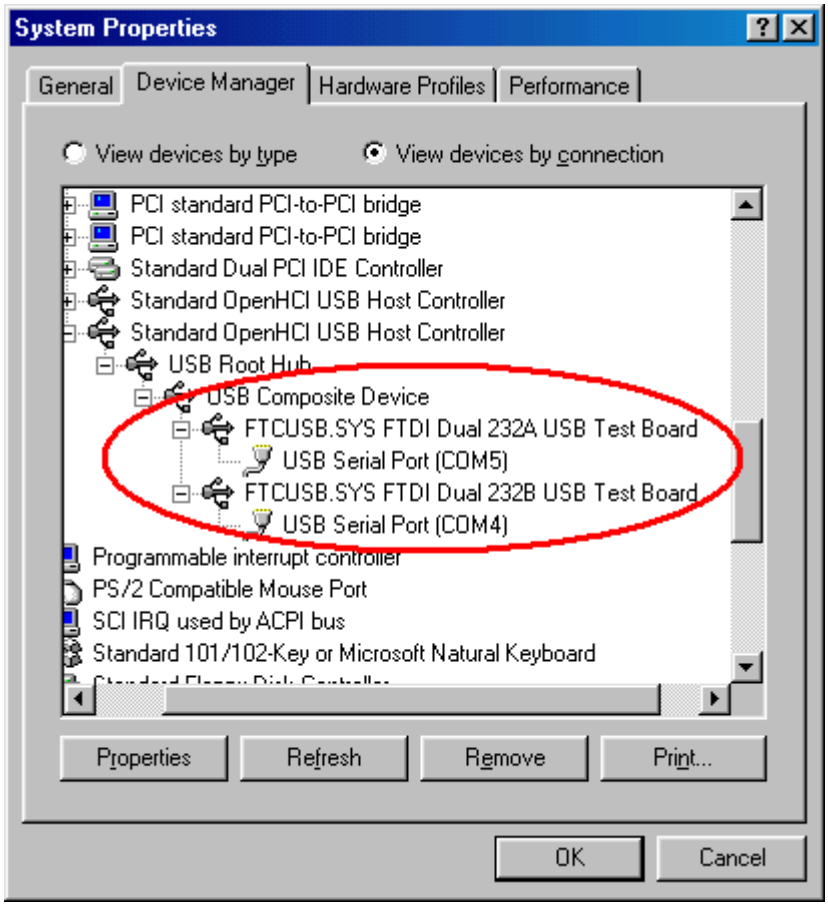

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4 Uninstalling FT232BM, FT245BM, FT8U232AM and FT8U245AM Devices

When uninstalling devices from Windows 98, 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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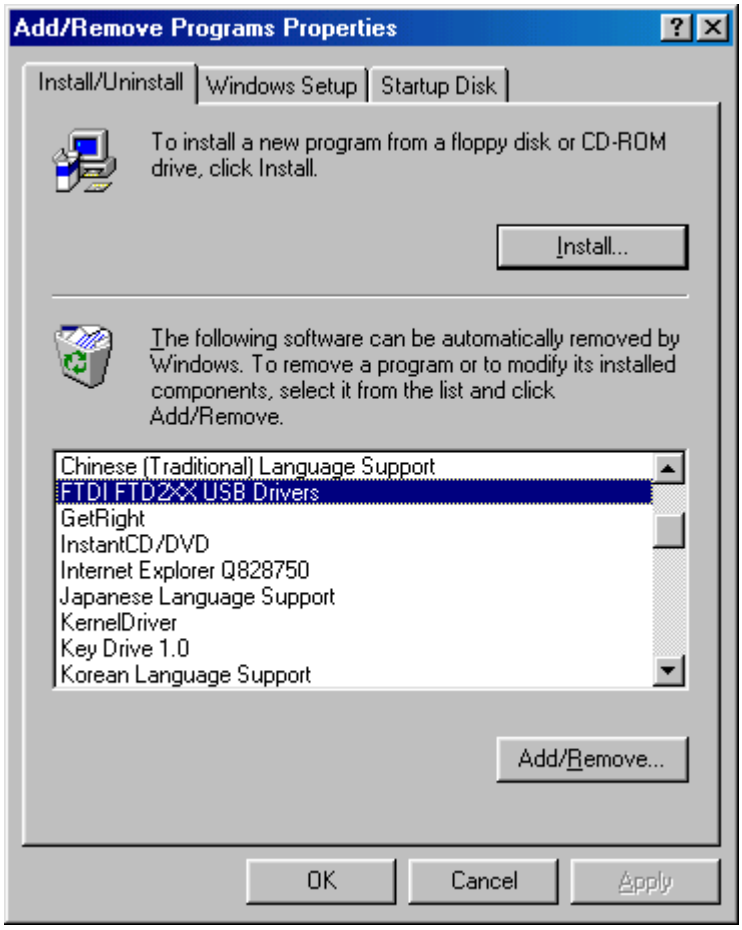
4.1 Uninstalling D2XX Drivers

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

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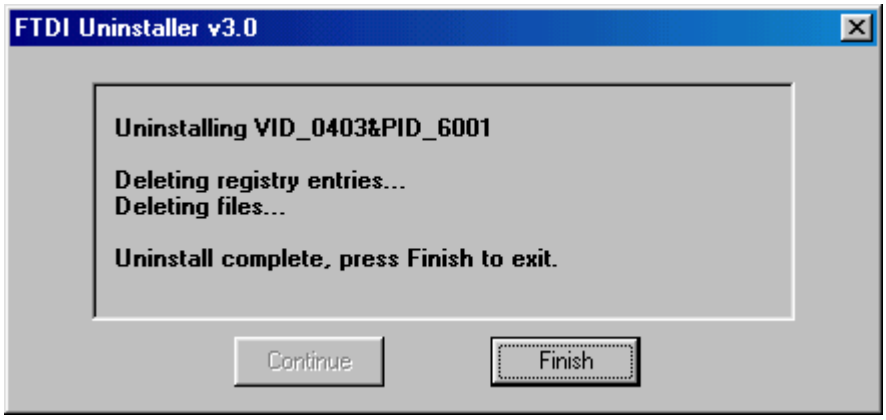
- When the uninstaller has finished removing the device from the system, the caption on the "Cancel" button will change to "Finish". Click "Finish" to complete the process.



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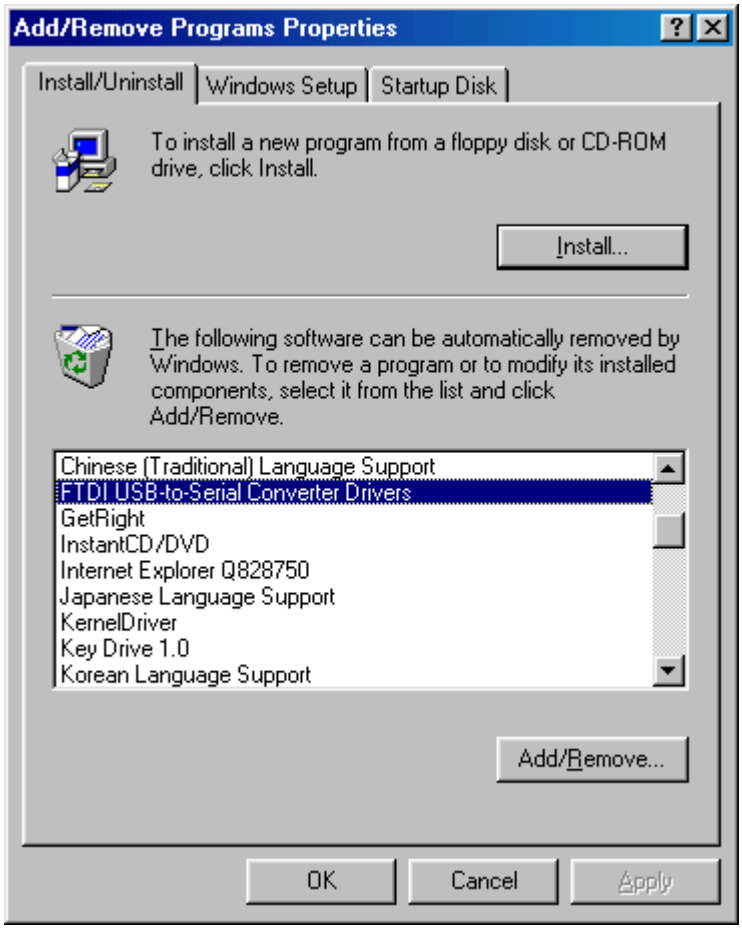
4.2 Uninstalling VCP Drivers

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

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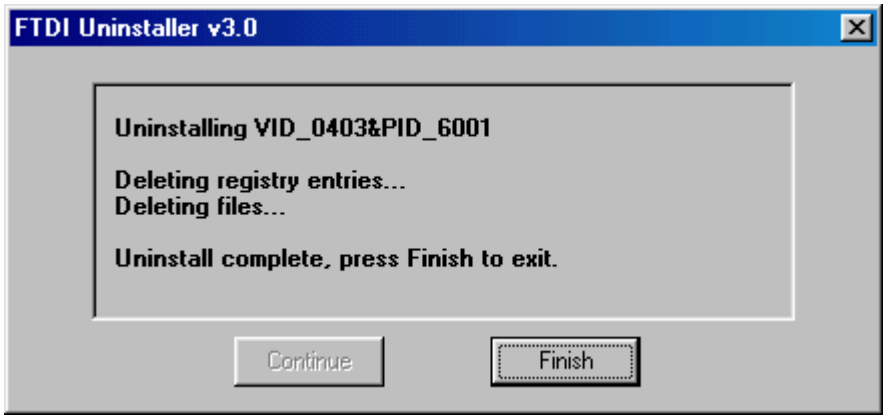
- When the uninstaller has finished removing the device from the system, the caption on the "Cancel" button will change to "Finish". Click "Finish" to complete the process.



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5 Uninstalling FT2232C Devices

When uninstalling devices from Windows 98, 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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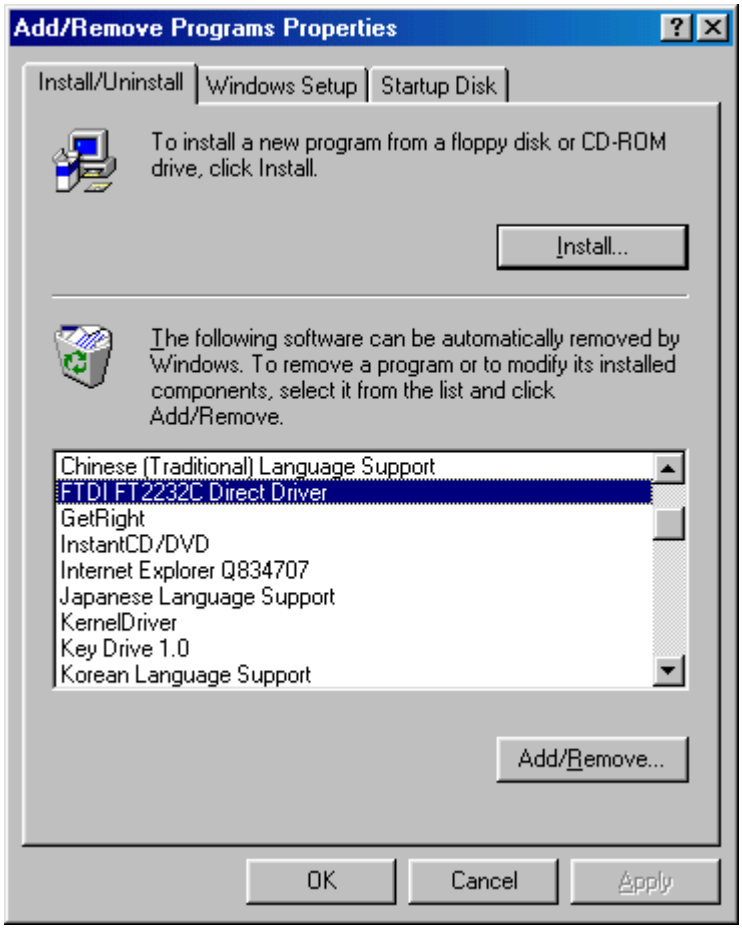
5.1 Uninstalling D2XX Drivers

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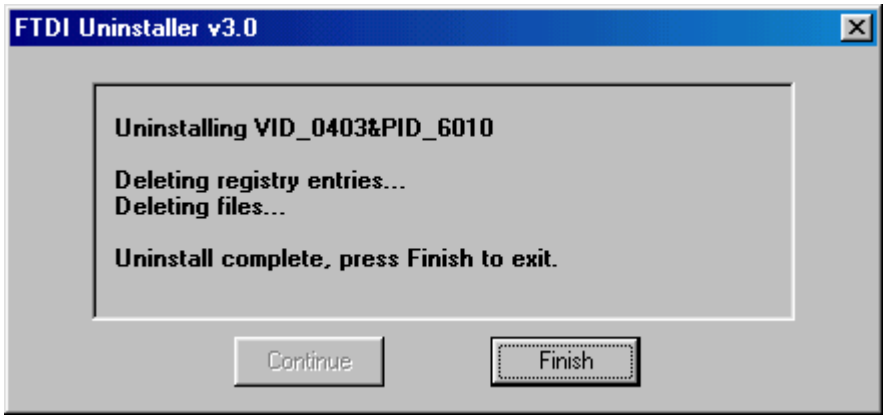
- When the uninstaller has finished removing the device from the system, the caption on the "Cancel" button will change to "Finish". Click "Finish" to complete the process.



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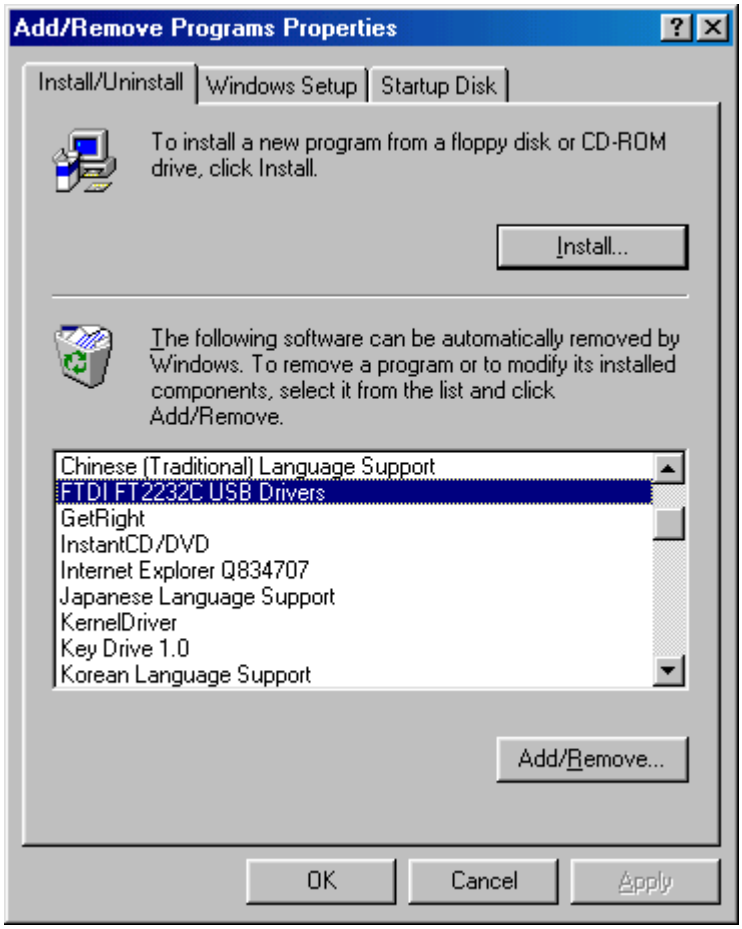
5.2 Uninstalling VCP Drivers

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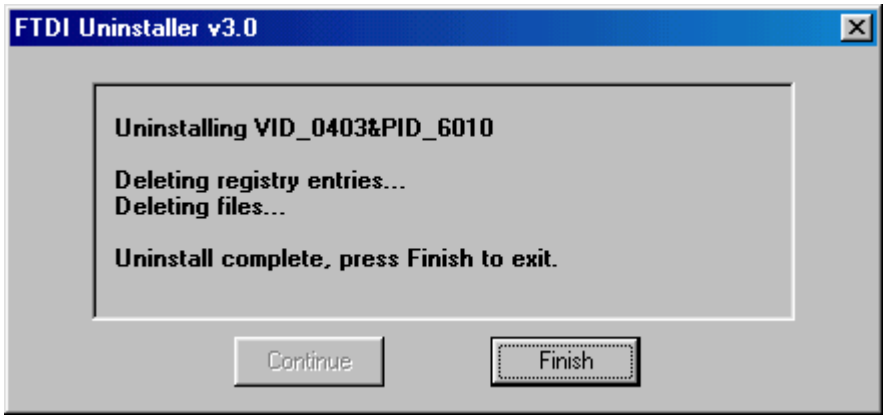
- When the uninstaller has finished removing the device from the system, the caption on the "Cancel" button will change to "Finish". Click "Finish" to complete the process.



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6 Troubleshooting

6.1 Windows 98 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 98 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 98 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 98

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 98 complains about missing .CAT files

Files with the .cat extension are signature files issued by Microsoft that indicate a device driver is WHQL certified. If a driver is not certified, there will be no .cat files available.

When installing drivers in Windows 98 or Windows ME, the user is prompted to locate the .cat files if the operating system cannot find them. If the driver is not certified but you wish to install it anyway, the files may be skipped by clicking the "Skip" button.

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6.6 Windows 98 complains about missing ftccomms.vxd file

This can occur when the USB Composite driver has been installed if the user has not browsed to the location of the driver files. If this message appears, do not skip it but browse to the driver file location. The wizard will then be able to correctly install the device.

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6.7 Windows 98 installs FT2232C device as VCP even though D2XX drivers are selected in the EEPROM

This problem can occur when the device EEPROM is set to use D2XX drivers and the user is attempting to install using the combined FTC drivers for D2XX and VCP for Windows 2000 and Windows XP. The combined drivers will only provide VCP functionality under Windows 98 and will always install an FT2232C device with VCP drivers.

To install a FT2232C device configured to use D2XX drivers under Windows 98, the FTCD2XX drivers must be used. This driver release will provide D2XX drivers for Windows 98 and will also install D2XX devices under Windows 2000 and Windows XP.

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7 Revision History

Version	Release Date	Comments
1.0	January 2005	Initial release

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