



U209-004
Four-Port USB to Serial Adapter
Users Manual

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U209-004
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Introduction

Note: These products comply fully with USB Specification version 1.1 and are fully supported under Windows 98/ME/XP/2000/NT4.

This Users Manual describes how to setup and install your Tripp Lite USB to Serial Adapter.

The Tripp Lite U209-004 provides four independent RS-232 serial interfaces to the host PC via the Universal Serial Bus (USB) port.

The following table details the port and connection configuration for the USB to Serial Adapter device.

Table 1 - Device port and connection

Device	Ports	Connection
U209-004	4	RS-232

Note: The 16550 is well suited for applications involving high data rates and for heavy multitasking environments. The larger FIFO allows each read/write access to the UART to move more data, resulting in fewer interrupts and less processor time spent servicing the UART.

Each adapter comes standard with 16550 Universal Asynchronous Receiver/Transmitters (UARTs) containing 16-byte First In First Out (FIFO) storage devices. These FIFOs, in conjunction with the USB micro controller FIFOs, help to relieve the CPU of excessive interrupts by buffering received and transmitted data. This configuration allows each channel to obtain data rates up to 460.8 kbps. The adapters are USB bus-powered; therefore no external power supply is required.

The USB to Serial Adapter product is a Plug-and-Play device and requires no hardware configuration. Your computer's BIOS or operating system automatically configures the ports when you install the device.

System requirements

Note: The Tripp Lite USB to Serial Adapter requires one USB port.

Tripp Lite's USB to Serial Adapter requires the Windows 98/Me/XP/2000/NT4 operating system and an IBM or IBM-compatible PC with a standard USB port or an add-in USB host adapter. Contact our sales department for details on current software offerings. Most device drivers are available for download from the Tripp Lite World Wide Web site at <http://www.tripplite.com/>.

Getting started

Follow these steps to unpack your USB to Serial Adapter.

Step	Procedure	Description
❑ Step 1	Remove the Tripp Lite USB to Serial Adapter from the box.	
❑ Step 2	Remove all packing material from the USB adapter.	<i>Save the packaging in case you ever need to store the unit or return it to Tripp Lite for service.</i>

Step	Procedure	Description
□ Step 3	<p>Check the contents of the package to make sure you have received everything listed below:</p> <ul style="list-style-type: none">➤ Tripp Lite U209-004 USB to Serial Adapter,➤ USB cable,➤ DB-9 loopback connector➤ Installation CD-ROM containing the device drivers and configuration software	<p><i>The complete USB adapter package ships in a single box.</i></p>
□ Step 4	<p>Check the USB to Serial Adapter and accessories for shipping damage.</p>	<p><i>Pay particular attention to the case and port connectors. If anything is missing or damaged, contact Tripp Lite Tech Support.</i></p>

Installing the USB to serial adapter

Note: The installation process takes place in two stages: the serial adapter board and then the serial ports.

Caution! Be sure to allow the installation process to finish without interruption. If you stop the process before the adapter board and all of the serial ports are installed, you will corrupt the installation.

This section explains how to install the USB to Serial Adapter under different operating systems. Please locate and follow the procedure for your computer's operating system.

Windows maintains a registry of all known hardware installed in your computer in which it keeps track of all of your system resources, such as I/O locations, IRQ levels, and DMA channels. The Add New Hardware Wizard utility helps you to add new hardware and updates this registry.

The USB to Serial Adapter includes an INF configuration file to allow easy configuration in the Windows environment. Windows uses the INF file to determine the system resources required by the adapter, searches for available resources to fill the board's requirements, and then updates the hardware registry with an entry that allocates these resources.

The USB to Serial Adapter also includes Windows device drivers that enable the adapter's serial ports to appear to Windows as standard COM ports.

Installing under Windows XP

Follow these steps to install the USB to Serial Adapter under Windows XP.

Step	Procedure	Description
❑ Step 1	Turn on the power to your computer system.	<i>This is the system in which the USB to Serial Adapter is to be installed.</i>
❑ Step 2	Plug the wide flat end of the USB cable into the downstream connector.	<i>This is the connector located on the back of the computer or USB hub.</i>
❑ Step 3	Plug the square end of the USB cable into the back of the USB to Serial Adapter box.	<i>Windows tells you that it has found new hardware and launches the Found New Hardware Wizard.</i>
❑ Step 4	Insert the Tripp Lite installation CD into your CD-ROM drive.	<i>This is the CD that shipped with your USB to Serial Adapter.</i>

Figure 1 - Win XP Found new hardware prompt

Figure 1 illustrates the Win XP Found new hardware prompt. The Found New Hardware Wizard launches automatically when you first plug in the USB to Serial Adapter.



Step	Procedure	Description
□ Step 5	Click the Next button.	Windows searches for drivers for the serial USB adapter.

Figure 2 - Win XP Searches drivers prompt

Figure 2 illustrates the Win XP Searches for drivers prompt. When the Wizard finds the USB to Serial Adapter drivers, this screen disappears.



Step	Procedure	Description
❑ Step 6	The Wizard locates and starts to install the necessary software, then notifies you that Windows XP has not certified the software.	<i>The warning appears just as the installation starts and indicates that Windows XP has not yet tested the software. Note that the software <u>does</u> work properly with XP.</i>

Figure 3 - Win XP software logo warning

Figure 3 shows the Windows XP Logo testing warning. This indicates only that Windows has not certified the USB to Serial Adapter. Rest assured that Tripp Lite's drivers work properly with Windows XP.



Step	Procedure	Description
❑ Step 7	Click the Continue Anyway button.	
❑ Step 8	The Wizard proceeds with the installation.	<i>The Wizard installs the software prompt displays, followed by the Finished installing prompt.</i>

Figure 4 - Win XP Wizard installs the software prompt

Figure 4 is the Win XP Wizard installs the software prompt. This prompt closes when the installation is complete.



Figure 5 - Win XP Finished installing prompt

Figure 5 shows the Win XP Finished installing prompt. It indicates that the serial USB adapter has been successfully installed.



Step	Procedure	Description
□ Step 9	Press the Finish button to continue.	<i>The USB adapter installation is complete. Next, the Wizard installs the serial USB ports. The Install software for USB serial port prompt displays.</i>

Figure 6 - Win XP Install software for USB serial port prompt

Figure 6 indicates that the wizard is ready to install the USB ports.



Step	Procedure	Description
❑ Step 10	Make sure that the Tripp Lite CD is still in your CD-ROM drive.	<i>This is the CD that shipped with your USB to serial Adapter.</i>
❑ Step 11	Select the Install the software automatically (Recommended) option.	<i>The Wizard should go automatically to the USB driver location. If necessary, you can browse to the correct location. The complete path is E:\. Replace E: with your CD-ROM drive designation.</i>
❑ Step 12	Click the Next button to continue.	<i>The wizard prompts you to wait while it searches for serial USB port drivers.</i>

Figure 7 - Win XP Searches for Tripp Lite serial port screen

Figure 7 illustrates the wizard searching for the serial USB port driver.



Step	Procedure	Description
❑ Step 13	The Wizard proceeds with the installation.	<i>The Wizard installs the software prompt displays, followed by the Installation complete prompt.</i>

Figure 8 - Win XP Wizard installs the software prompt

Figure 8 is the Win XP Wizard installs the software prompt. This screen shows you the progress of the installation.



Figure 9 - Win XP Installation complete prompt

Figure 9 displays when the file copying process is finished.



Step	Procedure	Description
❑ Step 14	Click the Finish button.	<i>The Wizard briefly displays the Unknown hardware found and Installing messages as it installs the serial USB port.</i>
❑ Step 15	Repeat Steps 11-14 for each port.	<i>Your USB to Serial Adapter installation is complete!</i>

Uninstalling from Windows XP

Follow these steps in the event that you need to uninstall or reinstall the USB to Serial Adapter software.

1. From the Control Panel, select System.
2. Press the Hardware tab.
3. Click on Device Manager.
4. Scroll down to Multi-port serial adapters and expand.
5. Highlight your Tripp Lite U209-004 USB to Serial Adapter.
6. Select the Action menu option.
7. Select Uninstall from the drop down menu.
8. Click OK at the Confirmation screen. Note that this also removes all the serial ports associated with your USB to Serial Adapter.

Installing under Windows 2000

Follow these steps to install the USB to Serial Adapter under Windows 2000.

Step	Procedure	Description
❑ Step 1	Turn on the power to your computer system.	<i>This is the system in which the USB to Serial Adapter is to be installed.</i>
❑ Step 2	Plug the wide flat end of the USB cable into the downstream connector.	<i>This is the connector located on the back of the computer or USB hub.</i>
❑ Step 3	Plug the square end of the USB cable into the back of the USB to Serial Adapter box.	<i>Windows tells you that it has found new hardware and launches the Found New Hardware Wizard. The Found new hardware prompt displays.</i>

Figure 10 - Win 2000 Found new hardware prompt

Figure 10 illustrates the Win 2000 Found new hardware prompt. The Found New Hardware Wizard launches automatically when you first plug in the USB to Serial adapter.



Step	Procedure	Description
❑ Step 4	Click the Next button.	<i>The Search for or display drivers prompt displays.</i>
❑ Step 5	Insert the Tripp Lite installation CD into your CD-ROM drive.	<i>This is the CD that shipped with the USB to Serial Adapter.</i>

Figure 11 - Win 2000 Search for or display drivers prompt

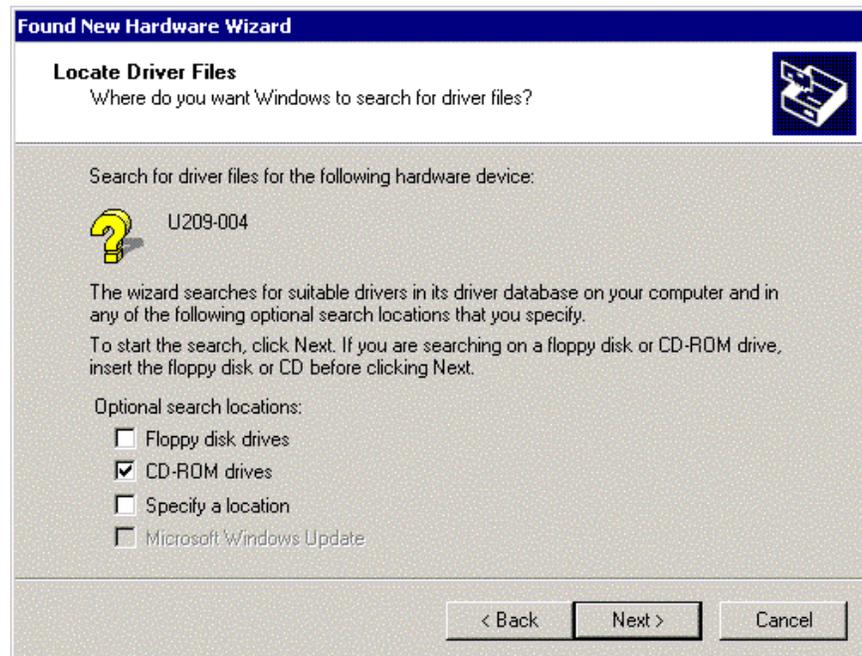
Figure 11 shows the Win 2000 Search for or display drivers prompt.



Step	Procedure	Description
❑ Step 6	Select Search for a suitable driver for my device (recommended).	
❑ Step 7	Click the Next button.	<i>The Locate driver files prompt displays.</i>

Figure 12 - Win 2000 Locate driver files prompt

Figure 12 illustrates the Win 2000 Locate driver files prompt.



Step	Procedure	Description
□ Step 8	Select CD-ROM drives.	<i>If necessary, you can also select Specify a location and browse to the desired location with the USB to Serial Adapter drivers. The complete path is E:\. Replace E: with your CD-ROM drive designation.</i>
□ Step 9	Click the Next button.	<i>Windows searches for drivers for the serial USB adapter. The Finished searching for driver files prompt displays.</i>

Figure 13 - Win 2000 Finished searching for driver files prompt

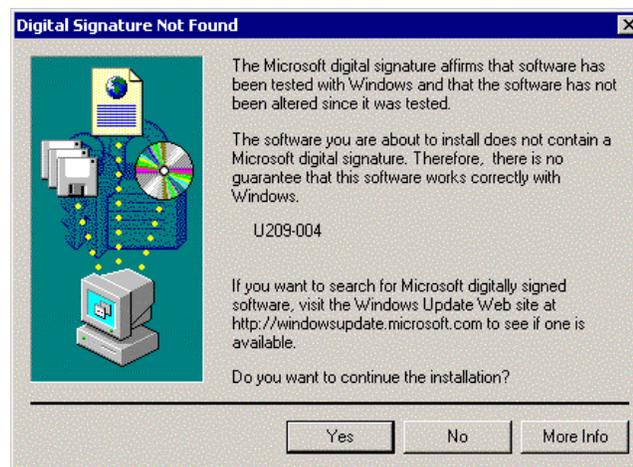
Figure 13 illustrates the Win 2000 Finished searching for driver files prompt.



Step	Procedure	Description
❑ Step 10	Click the Next button.	
❑ Step 11	The Wizard locates and starts to install the necessary software, then notifies you that Windows 2000 has not certified the software.	<i>The warning appears just as the installation starts and indicates that Windows 2000 has not yet tested the software. Note that the software <u>does</u> work properly with Windows 2000.</i>

Figure 14 - Win 2000 Software logo warning

Figure 14 shows the Windows 2000 Logo test warning. This indicates only that Windows has not certified the USB to Serial Adapter. Rest assured that Tripp Lite's drivers work properly with Windows 2000.



Step	Procedure	Description
❑ Step 12	Click the Yes button.	
❑ Step 13	The Wizard proceeds with the installation.	<i>The Please wait while the Wizard installs the software screen displays, followed by the Finished installing prompt.</i>

Figure 15 - Win 2000 Finished installing prompt

Figure 15 is the Win 2000 Finished installing prompt. It indicates that the serial USB adapter has been successfully installed.



Step	Procedure	Description
□ Step 14	Press the Finish button to continue.	<i>The USB adapter installation is complete. Next, the Wizard installs the USB ports. The Install software for USB serial port prompt displays.</i>

Figure 16 - Win 2000 Install software for USB serial port prompt

Figure 16 indicates that the wizard has detected and is ready to install the USB ports.



Step	Procedure	Description
❑ Step 15	Make sure that the Tripp Lite CD is still in your CD-ROM drive.	<i>This is the CD that shipped with your USB to Serial Adapter.</i>
❑ Step 16	Click the Next button to continue.	<i>The Search for or display device driver prompt displays.</i>

Figure 17 - Win 2000 Search for or display device driver prompt

Figure 17 illustrates the Win 2000 Search for or display device driver prompt.



Step	Procedure	Description
❑ Step 17	Select Search for a suitable driver for my device (recommended).	
❑ Step 18	Click the Next button.	<i>The Locate driver files prompt displays.</i>

Figure 18 - Win 2000 Locate driver files prompt

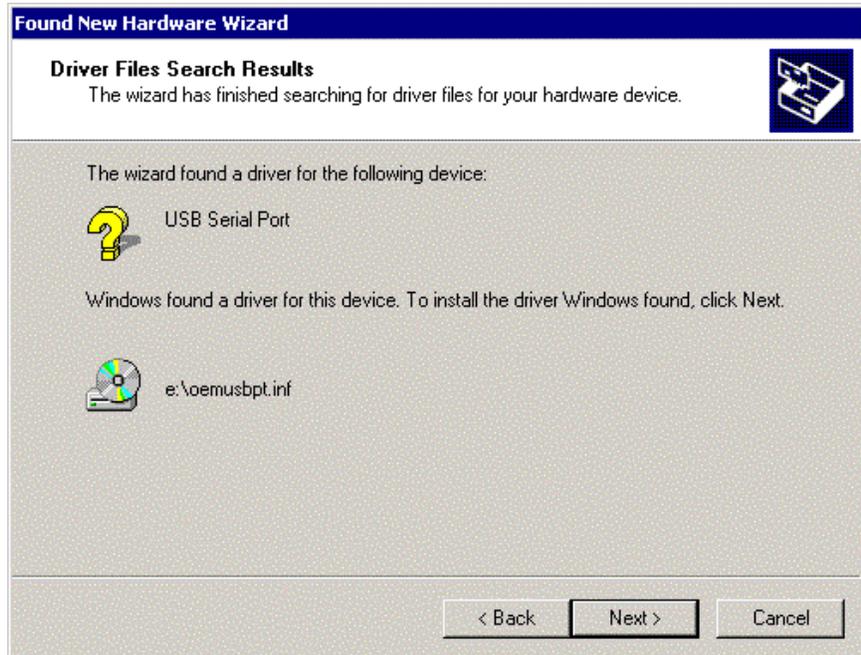
Figure 18 illustrates the Win 2000 Locate driver files prompt.



Step	Procedure	Description
□ Step 19	Select CD-ROM drives.	<i>If necessary, you can also select the Specify a location option and browse to the location with the USB to Serial Adapter drivers. The complete path is E:\. Replace E:\ with your CD-ROM drive designation.</i>
□ Step 20	Click the Next button.	<i>Windows searches for drivers for the serial USB adapter. The Finished searching for driver files prompt displays.</i>

Figure 19 - Win 2000 Finished searching for driver files prompt

Figure 19 illustrates the Win 2000 Finished searching for driver files prompt.



Step	Procedure	Description
□ Step 21	Click the Next button.	<i>The wizard completes the installation and displays the Installation complete prompt.</i>

Figure 20 - Win 2000 Installation complete prompt

Figure 20 displays when the file copying process is finished.



Step	Procedure	Description
❑ Step 22	Click the Finish button.	<i>The Wizard briefly displays a series of Unknown hardware found and Installing messages as it installs each serial USB port. Your USB to Serial Adapter installation is complete!</i>

Uninstalling from Windows 2000

Follow these steps in the event that you need to uninstall or reinstall the USB to serial Adapter software.

1. From the Control Panel, select System.
2. Press the Hardware tab.
3. Click on Device Manager.
4. Scroll down to Multi-port serial adapters and expand.
5. Highlight your Tripp Lite U209-004 USB to Serial Adapter.
6. Select the Action menu option.
7. Select Uninstall from the drop down menu.
8. Click OK at the Confirmation screen. Note that this also removes all the serial ports associated with your USB to Serial Adapter.

Installing under Windows NT

Note: Windows NT supports up to 256 serial ports.

You must install the Windows NT device driver by running the SETUP program, a command line-based configuration utility for adding USB bus and ISA bus serial ports.

Step	Procedure	Description
❑ Step 1	Turn on the power to your computer system and insert the Tripp Lite installation CD into your CD-ROM drive.	<i>This is the system in which the USB to Serial Adapter is to be installed and the CD that shipped with the USB adapter.</i>
❑ Step 2	Select Start – Run from the task bar. Navigate to the CD-ROM's WINNT4 directory and select Setup.exe. Click OK.	<i>This complete path is E:\WINNT4\.</i> <i>Replace E:\ with your CD-ROM drive designation.</i> <i>The Installation Wizard launches.</i>
❑ Step 3	Click Next or Yes as prompted Click Finish at the final installation screen	<i>Be sure to answer Yes to launch the USB device support setup.</i> <i>Your computer will reboot.</i>
❑ Step 4	Connect your USB to Serial Adapter to your computer as follows: Plug the wide flat end of the USB cable into the downstream connector. Plug the square end of the USB cable into the back of the USB to Serial Adapter box.	<i>This is the connector located on the back of the computer or USB hub.</i> <i>Your USB to Serial Adapter installation is complete!</i>

Contact Tripp Lite support for further information.

Installing under Windows Me

Follow these steps to install the USB to Serial Adapter under Windows Me.

Step	Procedure	Description
❑ Step 1	Turn on the power to your computer system.	<i>This is the system in which the USB to Serial Adapter is to be installed.</i>
❑ Step 2	Plug the wide flat end of the USB cable into the downstream connector.	<i>This is the connector located on the back of the computer or USB hub.</i>
❑ Step 3	Plug the square end of the USB cable into the back of the USB to Serial Adapter box.	<i>Windows tells you that it has found new hardware and launches the Add New Hardware Wizard.</i>
❑ Step 4	Insert the Tripp Lite installation disk in your CD-ROM drive.	<i>This is the CD that shipped with the USB to Serial Adapter.</i>

Figure 21 - Win Me Found new hardware prompt

Figure 21 illustrates the Win Me Add New Hardware Wizard's Found new hardware prompt. The Add New Hardware Wizard launches automatically when you first connect the USB adapter. The Found new hardware prompt lets you specify the directory in the Tripp Lite installation disc from which to install the USB to Serial Adapter under Win Me.



Step	Procedure	Description
❑ Step 5	Check the Automatic search for a better driver (Recommended) checkbox and click the Next button.	<i>Windows searches for drivers for your USB to Serial Adapter and then begins copying them from the CD-ROM. If necessary, you can browse to the correct directory location. The correct path is E:\. Replace E:\ with your CD-ROM drive designation.</i>

Figure 22 - Win Me Driver file search prompt

Figure 22 shows the Win Me Driver file search prompt. If Windows finds the files for you automatically, this screen notifies you that Windows is installing the software. If you specify a driver location, this screen displays that location. It also offers you the chance to press Back to select a different driver or to press Next to begin the installation process.



Step	Procedure	Description
❑ Step 6	When the file copying process is completed, the wizard displays the finished installing prompt.	

Figure 23 - Win Me Finished installing prompt

Figure 23 indicates that Windows has finished installing the software for your USB.



Step	Procedure	Description
❑ Step 7	Click the Finish button.	Windows tells you that it has found new hardware and launches the Add New Hardware Wizard to install the serial ports.

Figure 24 - Win Me Ready to install prompt

Figure 24 shows the Win Me Found new hardware prompt. You can choose either to have Windows automatically search for a driver or to specify the location of the driver you want to use.



Step	Procedure	Description
❑ Step 8	Check the Automatic search for a better driver (Recommended) checkbox and click the Next button.	Windows searches for drivers for your USB to Serial Adapter and then begins copying them from the CD-ROM.

Figure 25 - Win Me Driver file search prompt

Figure 25 shows the Win Me Driver file search prompt. If Windows finds the files for you automatically, this screen notifies you that Windows is installing the software. If you specify a driver location, this screen displays that location. It also offers you the chance to press Back to select a different driver or to press Next to begin the installation process.



Step	Procedure	Description
❑ Step 9	When the file copying process is completed, the wizard displays the finished installing prompt.	

Figure 26 - Win Me Finished installing prompt

Figure 26 shows the Win Me Finished installing prompt. This prompt displays at the end of the installation process.



Step	Procedure	Description
□ Step 10	Click the Finish button.	<i>The wizard briefly displays Unknown hardware found and Installing messages as it installs the serial ports. When the desktop displays, your USB to Serial Adapter installation is complete!</i>

Uninstalling from Windows Me

Follow these steps in the event that you need to uninstall or reinstall the USB to serial Adapter software.

1. From the Control Panel, select System.
2. Select the Device Manager tab.
3. Expand Multifunction adapters.
4. Highlight the Tripp Lite U209-004 USB to Serial Adapter. Click Remove.
5. Click OK at the Confirmation screen. Note that this also removes all the serial ports associated with your USB to Serial Adapter.

Installing under Windows 98/98SE

Follow these steps to install your USB to serial Adapter in Windows 98/98SE.

Step	Procedure	Description
❑ Step 1	Turn on the power to your computer system.	<i>This is the system in which the USB to Serial Adapter is to be installed.</i>
❑ Step 2	Plug the wide flat end of the USB cable into the downstream connector.	<i>This is the connector located on the back of the computer of USB hub.</i>
❑ Step 3	Plug the square end of the USB cable into the back of the USB to Serial Adapter box.	<i>Windows tells you that it has found new hardware and launches the Add New Hardware Wizard.</i>

Figure 27 - Win 98/98SE Searches for new drivers prompt

Figure 27 shows the Win 98/98SE Add New Hardware Wizard searching for new drivers prompt. The Wizard launches automatically when you first connect the USB to Serial Adapter.



Step	Procedure	Description
❑ Step 4	Click the Next button.	<i>The Search or select prompt displays.</i>
❑ Step 5	Insert the Tripp Lite installation disk in your CD-ROM drive.	<i>This is the CD that shipped with the USB to Serial Adapter.</i>

Figure 28 - Win 98/98SE Search or select prompt

Figure 28 shows the 98/98SE Search or select prompt with the Search for the best driver option selected.



Step	Procedure	Description
❑ Step 6	Select Search for the best driver for your device (Recommended); then click the Next button.	<i>The Search for new drivers prompt displays.</i>

Figure 29 - Win 98/98SE Search for new drivers prompt

Figure 29 shows the Search for new drivers prompt. If Windows finds the files for you automatically, this screen notifies you that Windows is installing the software. If you specify a driver location, this screen displays that location. It also offers you the chance to press Back to select a different driver or to press Next to begin the installation process.



Step	Procedure	Description
□ Step 7	Select the CD-ROM drive check box.	<i>You may be able to install the software by checking the CD-ROM drive check box. If not, you need to specify a location. The complete path is E:\. Replace E:\ with your CD-ROM drive designation.</i>
□ Step 8	Click the Next button.	<i>The Ready to install the best driver prompt displays.</i>

Figure 30 - Win 98/98SE Ready to install the best driver prompt

Figure 30 shows the 98/98SE Ready to install the best driver prompt, which lets you double-check the device that you are installing and the location of the driver.



Step	Procedure	Description
□ Step 9	Confirm that the device and driver location are correct. Click the Next button.	<i>If necessary, use the Back button to return to the previous screen. Windows builds a driver information base, copies the appropriate files from the CD, and then displays the Finished installing software prompt.</i>

Figure 31 - Win 98/98SE Finished installing software prompt

Figure 31 indicates that Windows has finished installing the software for your U209-004's adapter. Next it will install each serial port.



Step	Procedure	Description
❑ Step 10	Click the Finish button.	Windows tells you that it has found new hardware and launches the Add New Hardware Wizard to install the serial ports.

Figure 32 - Win 98/98SE Searches for new drivers prompt

Figure 32 shows the start of the serial port installation process.



Step	Procedure	Description
❑ Step 11	Click the Next button.	The Search or display prompt displays.

Figure 33 - Win 98/98SE Search or display prompt

Figure 33 shows the 98/98SE Search or display prompt.



Step	Procedure	Description
❑ Step 12	Select Search for the best driver for your device; then click the Next button.	<i>The Search for new drivers prompt displays.</i>

Figure 34 - Win 98/98SE Search for new drivers prompt

Figure 34 shows the 98/98SE Search for new drivers prompt. If Windows finds the files for you automatically, this screen notifies you that Windows is installing the software. If you specify a driver location, this screen displays that location. It also offers you the chance to press Back to select a different driver or to press Next to begin the installation process.



Step	Procedure	Description
❑ Step 13	Select the CD-ROM drive check box.	<i>You may be able to install the software by checking the CD-ROM drive check box. If not, you need to specify a location. The complete path is E:\. Replace E:\ with your CD-ROM drive designation.</i>

Step	Procedure	Description
□ Step 14	Make sure that the Tripp Lite installation CD is still in your CD-ROM drive.	<i>This is the CD that shipped with the USB to Serial Adapter.</i>
□ Step 15	Click the Next button.	<i>The Ready to install prompt displays.</i>

Figure 35 - Win 98/98SE Ready to install prompt

Figure 35 shows the 98/98SE Ready to install the prompt, which lets you double-check the device that you are installing and the location of the driver.



Step	Procedure	Description
□ Step 16	Confirm that the device and driver location are correct. Click the Next button.	<i>If necessary, use the Back button to return to the previous screen. Windows copies the appropriate files from the CD, then displays the Finished installing software prompt.</i>

Figure 36 - Win 98/98SE Finished installing prompt

Figure 36 indicates that Windows has finished installing the software for the USB serial port.



Step	Procedure	Description
□ Step 17	Click Finish.	<i>The wizard briefly displays a series of Unknown hardware found and Installing messages as it installs the rest of the serial ports. When the desktop displays, your USB to Serial Adapter installation is complete!</i>

Uninstalling from Windows 98/98SE

Follow these steps in the event that you need to uninstall or reinstall the USB to serial Adapter software.

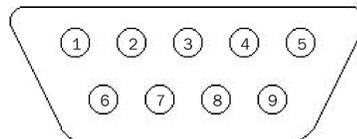
1. From the Control Panel, select System.
2. Select the Device Manager tab.
3. Scroll down to Multi-port serial devices and expand.
4. Highlight the Tripp Lite U209-004 USB to Serial Converter. Click Remove.
5. Click OK at the Confirmation screen. Note that this also removes all the serial ports associated with your USB to Serial Adapter.

Making external connections

RS-232 serial connections

The Tripp Lite USB to Serial Adapter comes with standard male DB-9 connectors. The figure below shows the pin designations.

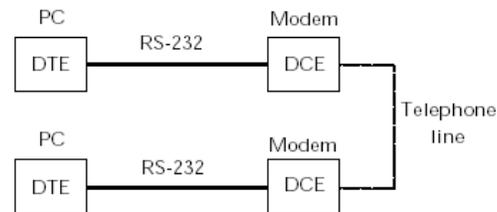
Figure 37 - RS-232 DB-9 pin designations



RS-232-C devices are classified by their function as either Data Terminal Equipment (DTE) or Data Communication Equipment (DCE).

Figure 38 - Use of DTEs and DCEs in a communication link

Figure 38 illustrates role of DTE and DCE devices in a communications link.



Note: A DTE device is the communication source. A DCE device provides a communication channel between two DTE-type devices.

Tripp Lite's USB to Serial Adapters are DTE devices that connect to peripheral equipment through a male DB-9 connector. The following table lists the serial port connector definitions.

Table 2 - RS-232 DB-9 signal definitions

RS-232 signal description	DTE connection DB-9
Data Carrier Detect (DCD)	1
Receive Data (RxD)	2
Transmit Data (TxD)	3
Data Terminal Ready (DTR)	4
Signal Ground	5
Data Set Ready (DSR)	6
Request To Send (RTS)	7
Clear To Send (CTS)	8
Ring Indicate (RI)	9

Note: In many applications, DCEs are unnecessary. This allows you to use a null modem cable (modem eliminator cable) to directly connect two DTE-type devices.

DTE- and DCE-type devices have complementary pinouts that allow terminals and modems to connect directly using a one-to-one cable as shown in Figure 39.

See Figure 39 on the following page for a typical null modem cable.

Using Device Manager

This section explains how to use Device Manager to view the properties of the serial ports enumerated by the Tripp Lite USB to Serial Adapter.

Accessing Device Manager

Win XP and 2000

Step	Procedure	Description
❑ Step 1	Select Start – Control Panel.	
❑ Step 2	Double click the System icon.	<i>The System Properties dialog box opens.</i>
❑ Step 3	Click the Hardware tab, and then press the Device Manager button.	<i>Device Manager lists all the hardware devices that are registered inside the Windows registry.</i>

Win 98, 98SE, and Me

Step	Procedure	Description
❑ Step 1	Select Start – Settings – Control Panel.	
❑ Step 2	Double click the System icon.	<i>The System Properties dialog box opens.</i>
❑ Step 3	Click the Device Manager tab.	<i>Device Manager lists all the hardware devices that are registered inside the Windows registry.</i>

Exploring Device Manager screens

Win XP and 2000

Device Manager provides two USB to Serial Adapter property dialog boxes:

- Ports (COM & LPT) device group property box
- Multi-port serial adapters device group property box

Use the Ports (COM & LPT) device group property box to view and set the port settings and to view device usage and driver information for the USB serial ports. Use the Multi-port serial adapters device group property box to view and set the advanced options and to view device usage and driver information for the U209-004 USB to Serial Adapter.

Step	Procedure	Description
❑ Step 1	With Device Manager open, expand the Multi-port serial adapters device group.	<i>Your USB to Serial Adapter should appear in the list – for example, U209-004 (Group ID1).</i>

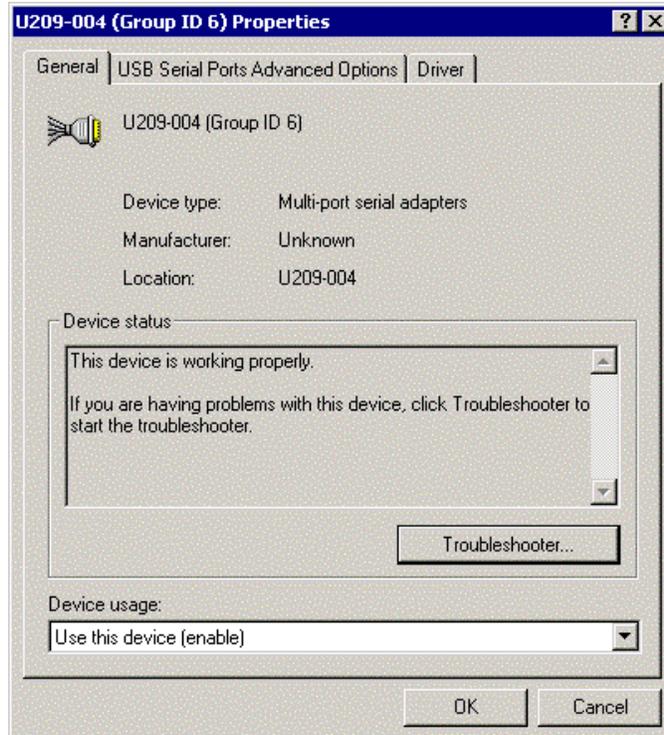
Step	Procedure	Description
❑ Step 2	Double click the U209-004 adapter.	<i>The USB Serial Port Properties dialog box opens and displays the General tab.</i>

Figure 40 - Win XP/2000 Device Manager USB serial port properties, General tab

Figure 40 illustrates the Win XP/2000 General Tab, which tells you whether the USB to Serial Adapter is working properly and allows you to determine the device usage:

- Use this device (enable)
- Do not use this device (disable)

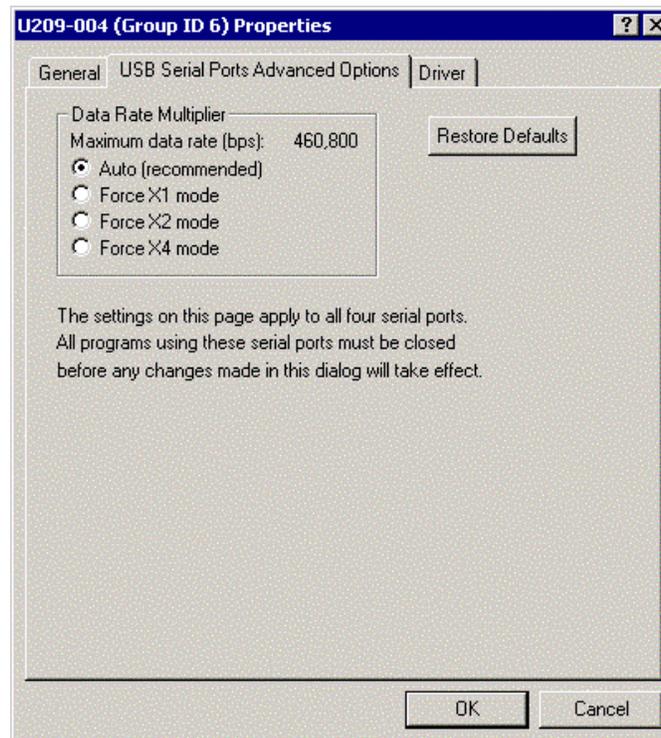
This dialog box also contains a link to Window's generic hardware troubleshooter.



Step	Procedure	Description
❑ Step 3	Click the USB Serial Port Advanced Options tab to view the port setting properties.	<i>The Advanced Options dialog box displays.</i>

Figure 41 - Win XP/2000 RS-232 Advanced Options dialog window

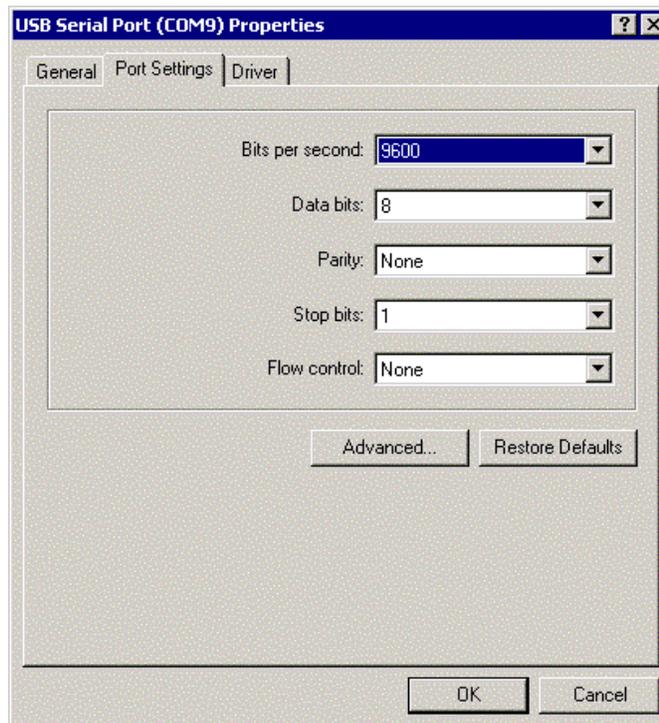
Figure 41 illustrates the Win XP/2000 USB Serial Ports Advanced Options box, which lets you set the data rate multiplier:



Step	Procedure	Description
❑ Step 4	The USB Serial Port Advanced Options dialog box lets you set the data rate multiplier and restore the default settings.	<i>See the Data rate multiplier section on page 40 for details.</i>
❑ Step 5	Click Cancel to close the USB to Serial Adapter property box.	
❑ Step 6	With Device Manager open, expand the Ports (COM & LPT) device group.	<i>The ports associated with the USB to Serial Adapter should appear in the list of ports.</i>
❑ Step 7	Double click the desired port.	<i>The USB Serial Port Properties dialog box opens and displays the General tab.</i>
❑ Step 8	Click the Port settings tab.	<i>The Port Settings dialog box displays.</i>

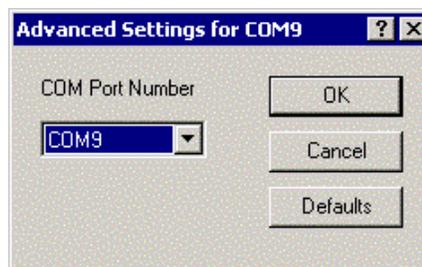
Figure 42 - Win XP/2000 USB serial port, Port settings box

Figure 42 illustrates the Win XP/2000 USB Ports Settings box, which lets you set the default port settings, view the advanced options, and restore the default settings.



Step	Procedure	Description
<ul style="list-style-type: none"> ❑ Step 9 	<p>This Port Settings tab allows you to set default values for the following:</p> <ul style="list-style-type: none"> ➤ Bits per second ➤ Data bits ➤ Parity ➤ Stop bits ➤ Flow control 	<p><i>The Port Settings window sets default values for the selected port.</i></p> <p><i>See the Setting advanced options section on page 40 section for details.</i></p>
<ul style="list-style-type: none"> ❑ Step 10 	<p>Press the Advanced button.</p>	<p><i>The Advanced Options dialog box opens.</i></p>

Figure 43 - Win XP/2000 USB serial port, Advanced settings box

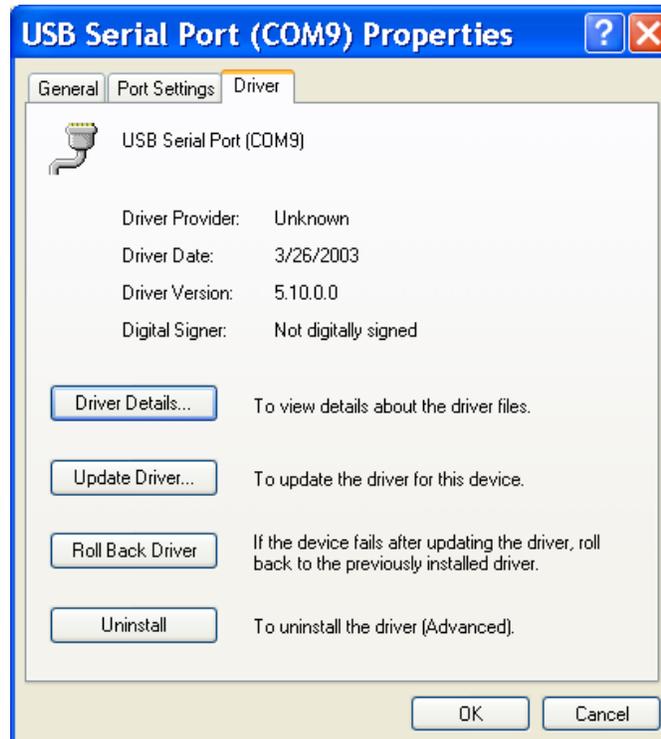


Step	Procedure	Description
<ul style="list-style-type: none"> ❑ Step 11 	<p>Use the drop down box to select the port whose settings you wish to change.</p> <p>Click Cancel to return to the Port Settings tab.</p>	

Step	Procedure	Description
❑ Step 12	Click the Driver tab to view the driver information and update the driver.	<i>The USB Serial Driver properties dialog box displays.</i>

Figure 44 - Win XP/2000 USB serial port properties, Driver box

Figure 44 illustrates the Win XP/2000 USB Serial Ports Driver box, which lets you view the driver details and update, roll back (XP only), and uninstall the driver:



Step	Procedure	Description
❑ Step 13	You have several options: <ul style="list-style-type: none"> ➤ View detailed driver information. ➤ Update the device drivers. ➤ Roll Back Driver (XP only) ➤ Uninstall your USB to Serial Adapter. ➤ Save your changes and exit. ➤ Abandon your changes and return to the Device Manager. 	<p><i>Clicking Update Driver opens the Installation Wizard.</i></p> <p><i>Revert to the previously installed driver.</i></p> <p><i>This also removes all the associated serial USB ports.</i></p> <p><i>Clicking OK also saves any changes from the other tabs.</i></p>
❑ Step 14	Click Cancel to close the USB to Serial Adapter port property box.	

Win 98, 98SE, and Me

The Device Manager provides two USB to Serial Adapter property dialog boxes.

- Ports (COM & LPT) device group property box
- Multi-port serial adapters device group property box

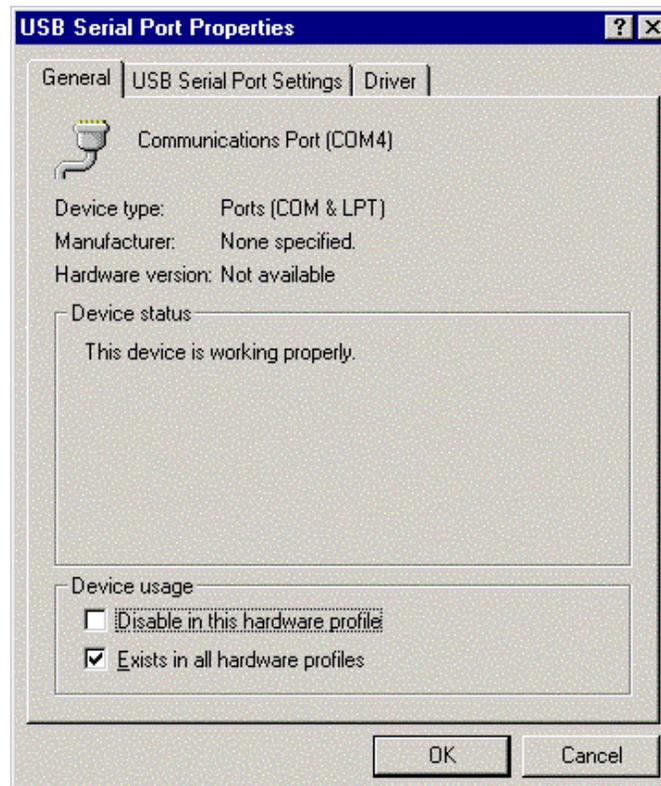
Use the Ports (COM & LPT) device group property box to view and set the port settings and the advanced options and to view device usage and driver information for the USB serial ports. Use the Multi-port serial adapters device group property box to view device usage and driver information for the U209-004 USB to Serial Adapter.

Step	Procedure	Description
❑ Step 1	With Device Manager open, expand the Ports (COM & LPT) device group.	<i>The ports associated with the USB to Serial Adapter should appear in the list of ports.</i>
❑ Step 2	Double click the desired port.	<i>The USB Serial Port Properties dialog box opens and displays the General tab.</i>

Figure 45 - Win 98/98SE/Me USB serial port properties, General tab

Figure 45 illustrates the Win 98/98SE/Me General tab, which tells you whether the USB to Serial Adapter is working properly and allows you to determine the device usage:

- Disable in this hardware profile
- Exists in all hardware profiles

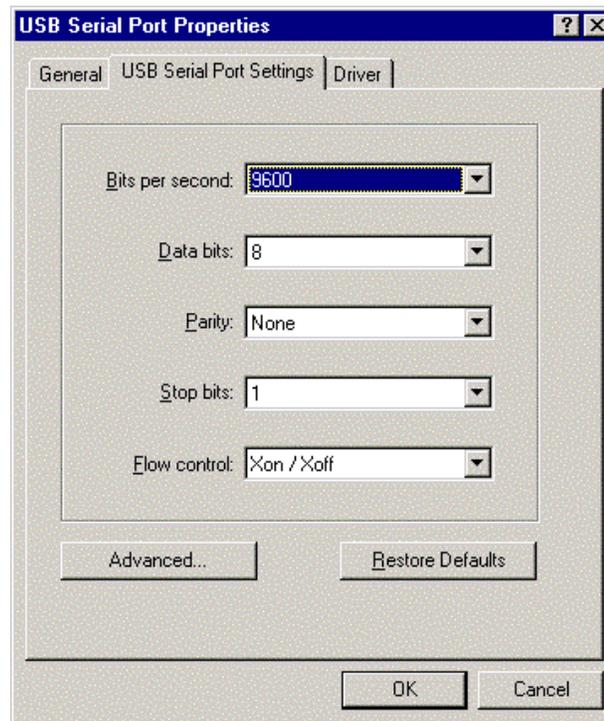


Step	Procedure	Description
❑ Step 3	Click the USB Serial Port Settings tab to view the port setting properties.	<i>The USB Serial Port Settings properties dialog box displays.</i>

Figure 46 - Win 98/98SE/Me USB serial port properties, USB Serial Port Settings tab

Figure 46 illustrates the Win 98/98SE/Me USB Serial Port Settings tab, which lets you view and set default values for the following serial port settings:

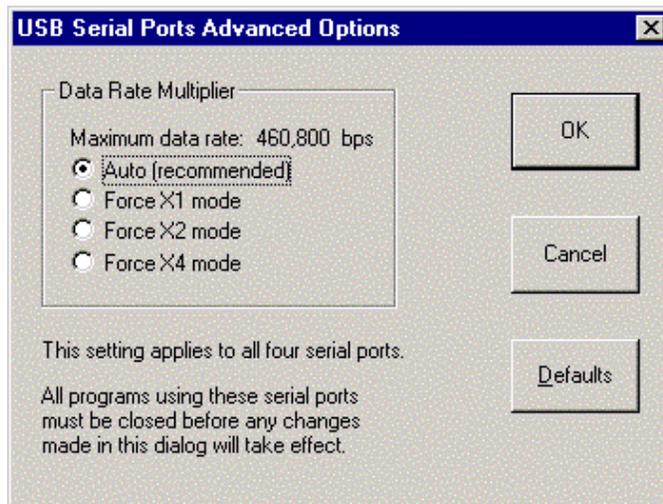
- Bits per second
- Data bits
- Parity
- Stop bits
- Flow control



Step	Procedure	Description
❑ Step 4	The USB Serial Port Settings tab allows you to set default values for the following: <ul style="list-style-type: none"> ➤ Bits per second ➤ Data bits ➤ Parity ➤ Stop bits ➤ Flow control 	<i>The Port Settings window can set defaults for the selected port. See the Setting advanced options section on page 40 for details.</i>
❑ Step 5	Click the Advanced button to open the Advanced Options dialog box.	<i>The USB Serial Ports Advanced Options box displays. This dialog box lets you set the data rate multiplier and restore the default settings. See the Data rate multiplier section on page 40 for details.</i>

Figure 47 - Win 98/98SE/Me USB serial port properties, USB Serial Port Advanced Options box

Figure 47 illustrates the Win 98/98SE/Me RS-232 USB Serial Ports Advanced Options box, which lets you set the data rate multiplier:



Step	Procedure	Description
❑ Step 6	Click Cancel.	<i>The USB Serial Port Settings properties dialog box returns.</i>
❑ Step 7	You have three additional options: <ul style="list-style-type: none"> ➤ Click the Restore Defaults button to restore the selected port to the default settings. ➤ Click the Driver tab to view the driver information and update the driver. ➤ Click the OK button to save your changes. 	<i>Clicking OK saves any changes you made in any of the dialog boxes.</i>
❑ Step 8	Click the Driver tab.	<i>The USB Serial Driver properties dialog box displays. See the figure on the following page.</i>

Figure 48 - Win 98/98SE/Me USB serial port properties Driver box

Figure 48 illustrates the Win 98/98SE/Me USB Serial Ports Driver box, which lets you view the driver details and update the driver.



Step	Procedure	Description
<ul style="list-style-type: none"> ❑ Step 9 	<p>This tab provides two options:</p> <ul style="list-style-type: none"> ➤ Click the Driver Details button to view detailed driver information. ➤ Click the Update Driver button to install the latest drivers. 	<p><i>This option opens the Driver File Details dialog box.</i></p> <p><i>This option launches the Installation Wizard.</i></p>
<ul style="list-style-type: none"> ❑ Step 10 	<p>Click Cancel to close the USB to Serial Adapter port property box.</p>	

Setting advanced options

Notes: Changing any setting in the advanced options window affects all ports on the USB to Serial Adapter.

The USB to Serial Adapter port properties can only be altered from the Device Manager window. Attempting to access these properties from another software program generates an error message box that refers you to the Device Manager.

See Exploring Device Manager screens on page 31 for help in navigating through the Device Manager screens.

Data rate multiplier

Notes: We recommend leaving the Data Rate Multiplier in Auto mode unless the application specifically requires otherwise.

The USB to Serial Adapter uses an accelerated UART clock frequency to boost data rates to as high as 460,800 bits per second. This setting determines the amount of data rate acceleration applied.

Auto (default)

Note: This setting is suitable for most applications.

Select this radio button to allow the USB serial port device drivers to automatically adjust the clock as necessary. The software application can request any desired baud rate up to 460,800 bits per second.

Force X1 mode

Note: This setting will not enhance most applications.

Select this radio button to limit each serial port to a maximum of 115,200 bits per second. The software application can request any desired baud rate up to 115,200 bits per second.

Force X2 mode

Note: This setting allows applications not capable of asking for higher baud rates to achieve them.

Select this radio button to allow each serial port to run at a maximum of 230,400 bits per second. The software application can request any desired baud rate up to 115,200 bits per second. The actual baud rate will be two (2) times higher than requested.

Force X4 mode

Note: This setting allows applications not capable of asking for higher baud rates to achieve them.

Select this radio button to allow each serial port to run at a maximum of 460,800 bits per second. The software application can request any desired baud rate up to 115,200 bits per second. The actual baud rate will be four (4) times higher than requested.

Troubleshooting

Note: Any unauthorized repairs or modifications will void the U209-004's warranty.

This section lists some common problems and their causes. If the information below does not provide a solution, contact Tripp Lite technical support.

Problem	Cause	Solution
The USB to Serial Adapter cannot communicate with other equipment.	➤ The cables are not connected correctly.	<ol style="list-style-type: none"> 1. Check the USB to Serial Adapter cables to make sure that they are connected correctly. 2. Make sure that each cable is securely attached.
	➤ The device driver is not installed.	<ol style="list-style-type: none"> 1. Double check the Device Manager per the instructions in the Using Device Manager section starting on page 31. Make sure that drivers are installed correctly and that all devices are working properly. 2. Try removing the USB adapter from the Device Manager window and then repeat the hardware installation instructions.
	➤ The USB port is faulty.	<ol style="list-style-type: none"> 1. If possible, connect a known good USB device to the PC or hub connector and see if it operates properly.

Appendix A

Specifications

Bus interface	USB Specification 1.1				
Data rates	<p>Number of simultaneously operating ports</p> <table> <tr> <td>1, 2</td> <td>230k bps*</td> </tr> <tr> <td>3, 4</td> <td>115k bps</td> </tr> </table> <p>* 460.8k bps is possible for any one port under certain conditions</p> <p>Actual baud rates depend on the following:</p> <ul style="list-style-type: none"> ➤ Hardware flow control ➤ Horsepower of the host computer ➤ Quality of and length of cables ➤ Continuous or “bursty” data 	1, 2	230k bps*	3, 4	115k bps
1, 2	230k bps*				
3, 4	115k bps				
Ports	4				
UARTs	One 16650 UART with 16-byte FIFO per port				
Transceivers: (SP211HB)	<p><u>RS-232 Output</u> Voltage Swing: +/-5V min, +/-7V typical</p> <p><u>RS-232 Input</u> Voltage Range: -15V min, +15V max Input Threshold Low: 0.8V min, 1.2V typical Input Threshold High: 2.4V max, 1.7V typical</p>				
Connectors	DB-9 Male Connectors				
Dimensions	6.08” L x 4.26” W x 1.50” H (U209-004)				
Power Requirements	<p>USB bus powered, (no external connection required)</p> <p>Suspend Power: < 500 uA Unconfigured Power: < 100 mA Configured Power: < 500 mA</p>				
Temperature:	<p>Operating: 0 to 70 C Storage: -50 to 80 C</p>				
Humidity	10 to 90%				
OS Support	Windows 98, Windows ME , Windows 2000, Windows XP, Windows NT 4.0				

Appendix B

Warranty information

5-YEAR LIMITED WARRANTY

TRIPP LITE warrants its products to be free from defects in materials and workmanship for a period of five (5) years from the date of initial purchase. TRIPP LITE's obligation under this warranty is limited to repairing or replacing (at its sole option) any such defective products. To obtain service under this warranty, you must obtain a Returned Material Authorization (RMA) number from TRIPP LITE or an authorized TRIPP LITE service center. Products must be returned to TRIPP LITE or an authorized TRIPP LITE service center with transportation charges prepaid and must be accompanied by a brief description of the problem encountered and proof of date and place of purchase. This warranty does not apply to equipment that has been damaged by accident, negligence or misapplication or has been altered or modified in any way.

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TRIPP LITE has a policy of continuous improvement. Specifications are subject to change without notice.