

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

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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 <u>http://www.tripplite.com/</u>.

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.	Save the packaging in case you ever need to store the unit or return it to Tripp Lite for service.	

Step		Procedure	Description
	 Step 3 Check the contents of the package to make sure you have received everything listed below: Tripp Lite U209-004 USB to Serial Adapter, USB cable, DB-9 loopback connector Installation CD-ROM containing the device drivers 		<i>The complete USB adapter package ships in a single box.</i>
	Step 4	and configuration software Check the USB to Serial Adapter and accessories for shipping damage.	Pay particular attention to the case and port connectors. If anything is missing or
			damaged, contact Tripp Lite Tech Support.

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</i> <i>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 illustrates the Win XP Found new bardware	Found New Hardware Wizard	
XP Found new hardware prompt. The Found New Hardware Wizard launches automatically when you first plug in the USB to Serial Adapter.		Welcome to the Found New Hardware Wizard This wizard helps you install software for: U209-004 If your hardware came with an installation CD or floppy disk, insert it now. What do you want the wizard to do? Install the software automatically (Recommended) Install from a list or specific location (Advanced) Click Next to continue. Next > Cancel
Step Procedure		Description
□ Step 5 Click the Next k	outton.	Windows searches for drivers for the serial USB adapter.

Figure 1 - Win XP Found new hardware prompt



Figure 2 - Win XP Searches drivers prompt

Rev 2.0 (5/30/2003)

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.	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.

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.		Hardware Installation Image: Second
Step	Procedure	Description
□ Step 7	Click the Contin	nue Anyway button.
□ Step 8	The Wizard prod installation.	ceeds with the The Wizard installs the software prom displays, followed by the Finished installing prompt.

Figure 4 - Win XP Wizard installs the software prompt



Figure 5 shows the Win XP		Found New Hardware Wizard	
Finished inst indicates tha adapter has installed.	alling prompt. It t the serial USB been successfully		Completing the Found New Hardware Wizard The wizard has finished installing the software for: U209-004
			Click Finish to close the wizard.
			< Back Finish Cancel
Step	Procedure		Description
□ Step 9	Press the Finish	button to continue.	The USB adapter installation is complete. Next, the Wizard installs the serial USB ports.
			<i>The Install software for USB serial port prompt displays.</i>

Figure 5 - Win XP Finished installing prompt

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



<u></u>		·	
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.</i>	
		<i>The complete path is E:\. Replace E:</i> <i>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 illust	trates the wizard	Found New Hardware Wizard
port driver.		Please wait while the wizard searches
		USB Serial Port
		< Back Next > Cancel
Step	Procedure	Description
□ Step 13	The Wizard proc installation.	eeds with the The Wizard installs the software prompt displays, followed by the Installation complete prompt.



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.

Ste	p	Procedure	Description
	Step 1	Turn on the power to your computer system.	<i>This is the system in which the USB to</i> <i>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.	Windows tells you that it has found new hardware and launches the Found New Hardware Wizard. The Found new hardware prompt displays.

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	Found New Hardware Wizard	Welcome to the Found New Hardware Wizard This wizard helps you install a device driver for a hardware device.	
ασαρτει.		To continue, click Next.	
		< Back Next >	Cancel

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		Found New Hardware Wizard	
Search for or display drivers prompt.		Install Hardware Device Drivers A device driver is a software program that enables a hardware device to work with an operating system.	
		This wizard will complete the installation for this device:	
		A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.	
		What do you want the wizard to do?	
		 Search for a suitable driver for my device (recommended) 	
		Display a list of the known drivers for this device so that I can choose a specific driver	
		< Back Next > Cancel	
Step	Procedure	Description	
□ Step 6	Select Search fo my device (recor	r a suitable driver for nmended).	
□ Step 7	Click the Next b	outton. The Locate driver files prompt displays.	

Figure 12 il	lustrates the Win	Found New Hardware Wizard		
2000 Locate driver files prompt.		Locate Driver Files Where do you want Windows to search for driver files?		
		Search for driver files for the following hardware device:		
		209-004		
		The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.		
		To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.		
		Optional search locations:		
		Floppy disk drives CD-ROM drives Specify a location Microsoft Windows Lodate		
		< Back Next > Cancel		
Step	Procedure	Description		
□ Step 8	Select CD-ROM	drives. If necessary, you can also select Specify a location and browse to the desired location with the USB to Serial Adapter drivers.		
		<i>The complete path is E:\. Replace E:</i> <i>with your CD-ROM drive designation.</i>		
□ Step 9	Click the Next b	utton. Windows searches for drivers for the serial USB adapter. The Finished searching for driver files prompt displays.		

Figure 13 illustrates the Win 2000 Finished searching for driver files prompt.		Found New Hardware Wizard	
		Driver Files Search Results The wizard has finished searching for driver files for your hardware device.	
		The wizard found a driver for the following device:	
		U209-004	
		Windows found a driver for this device. To install the driver Windows found, click Next.	
		e:\oemusbbx.inf	
		< Back Next > Cancel	
Step	Procedure	Description	
□ Step 10	Click the Next b	atton.	
• Step 11	The Wizard loca the necessary so that Windows 20 software.	es and starts to installThe warning appears just as the installationtware, then notifies youstarts and indicates that Windows 200000 has not certified thehas not yet tested the software. Note that the software does work properly with	

Figure 14 - Win 2000 Software logo warning

Windows 2000.

	Digital Signature Not Found
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.	The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested. The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows. U209-004 If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at hit?://windowsupdate.microsoft.com to see if one is available. Do you want to continue the installation?
Step Procedure	Description

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

Figure 15 is the Win 2000	Found New Hardware Wizard	
Finished installing prompt. It indicates that the serial USB adapter has been successfully installed.		Completing the Found New Hardware Wizard U209-004 Windows has finished installing the software for this device.
		To close this wizard, click Finish.
		< Back Finish Cancel
Step Procedure		Description
□ Step 14 Press the Finish	a button to continue.	<i>The USB adapter installation is complete. Next, the Wizard installs the USB ports.</i>
		The Install software for USB serial port prompt displays.

Figure 15 - Win 2000 Finished installing prompt

Figure 16 indicates that the	Found New Hardware Wizard		
wizard has detected and is ready to install the USB ports.		Welcome to the Found New Hardware Wizard This wizard helps you install a device driver for a hardware device.	
		< Back Next >	Cancel

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

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.	The Search for or display device driver prompt displays.

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

Figure 17 illustrates the Win		Found New Hardware Wizard
2000 Search for or display device driver prompt.		Install Hardware Device Drivers A device driver is a software program that enables a hardware device to work with an operating system.
		This wizard will complete the installation for this device: Image: USB Serial Port A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next. What do you want the wizard to do? Image: Search for a suitable driver for my device (recommended) Image: Display a list of the known drivers for this device so that I can choose a specific driver
Stan	Drocoduro	<back next=""> Cancel</back>
Sieh	Procedure	Description
□ Step 17	Select Search fo device (recommo	r a suitable driver for my ended).
□ Step 18	Click the Next b	outton. The Locate driver files prompt displays.

Figure 18 illu	ustrates the Win	ound New Hardware Wizard	
2000 Locate dr	river files prompt.	Locate Driver Files Where do you want Windows to search for driver files?	
		Search for driver files for the following hardware device:	
		USB Serial Port	
		The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify. To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.	
		Optional search locations:	
		Floppy disk drives	
		CD-ROM drives	
		Specify a location	
		Microsoft Windows Update	
		< Back Next > Cancel	
Step	Procedure	Description	
□ Step 19	Select CD-ROM d	rives. If necessary, you can also select the Specify a location option and browse to the location with the USB to Serial Adapter drivers.	
		<i>The complete path is E:\. Replace E:\</i> <i>with your CD-ROM drive designation.</i>	
□ Step 20	Click the Next bu	tton. Windows searches for drivers for the serial USB adapter. The Finished searching for driver files prompt displays.	

Figure 18 - Win 2000 Locate driver files prompt

Figure 19 illi	ustrates the Win	Found New Hardware Wizard		
2000 Finishe driver files pro	d searching for ompt.	Driver Files Search Results The wizard has finished searching for driver files for your hardware device.		
		The wizard found a driver for the following device:		
		USB Serial Port		
		Windows found a driver for this device. To install the driver Windows found, click Next.		
		e:\oemusbpt.inf		
		< Back Next > Cancel		
Step	Procedure	Description		
□ Step 21	Click the Next bu	atton. The wizard completes the installation and displays the Installation complete prompt.		

	Found New Hardware Wizard	
<i>Figure 20 displays when the file copying process is finished.</i>		Completing the Found New Hardware Wizard Image: Second S
		< Back Finish Cancel

Figure 20 - Win 2000 Installation complete prompt

Ste	р	Procedure	Description
	Step 22	Click the Finish button.	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!

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

<i>Note: Windows NT supports up to 256 serial ports.</i>		ws NT supports up 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.	
Ste	р	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</i> <i>Serial Adapter is to be installed and the</i> <i>CD that shipped with the USB adapter.</i>
Step 2 Select Start – Ru Navigate to the directory and sel		Select Start – Ru Navigate to the directory and se	un from the task bar. CD-ROM's WINNT4 lect Setup.exe.	<i>This complete path is E:\WINNT4\.</i> <i>Replace E:\ with your CD-ROM drive</i> <i>designation.</i>
		Click OK.		The Installation Wizard launches.
□ Step 3 Cl		Click Next or Yes as prompted		<i>Be sure to answer Yes to launch the USB device support setup.</i>
		Click Finish at t screen	he final installation	Your computer will reboot.
□ Step 4 Connect your US your computer a		Connect your US your computer a	SB to Serial Adapter to s follows:	
		Plug the wide fla into the downstr	at end of the USB cable ream connector.	<i>This is the connector located on the back of the computer or USB hub.</i>
		Plug the square the back of the U	end of the USB cable into JSB to Serial Adapter box.	Your USB to Serial Adapter installation is complete!

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</i> <i>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.

ollowing new hardware:
illy search for and install software are. If your hardware came with now and click Next.
o?
a better driver (Recommended)
f the driver (Advanced)

Step		Procedure	Description	
	Step 5	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.	
			If necessary, you can browse to the correct directory location. The correct path is E:\. Replace E:\ with your CD-ROM drive designation.	

Add New Hardware Wizard			
Figure 22 sho Driver file sear If Windows fin you automatica notifies you th installing the s If you specify a this screen location. It als chance to press different drive Next to begin process.	ws the Win Me ch prompt. Inds the files for ally, this screen that Windows is oftware. In driver location, displays that to offers you the Back to select a er or to press the installation		Windows driver file search for the device: U209-004 Windows is now installing the best software for this device. Location of driver: $\ensuremath{\underbrace{\ensuremath{\ensuremath{\underbrace{\ensuremath{\ensuremath{\underbrace{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\unemath{\ensuremath{\ensuremath{\ensuremath{\unemath{\unemath{\unemath{\nsuremath{\nsuremath{\unemath{\$
			< Back Next > Cancel
Step	Procedure		Description
□ Step 6	When the file cop completed, the w	pying process is vizard displays the	

Figure 23 - Win Me Finished installing prompt

finished installing prompt.

Figure 23	indicates that	Add New Hardware Wizard	
<i>Figure 23</i> <i>Windows has a</i> <i>the software f</i>	indicates that finished installing for your USB.		U209-004 Windows has finished installing the new hardware device.
Step	Procedure		Key matching Cancel Description
□ Step 7	Click the Finish	button.	<i>Windows tells you that it has found new hardware and launches the Add New Hardware Wizard to install the serial</i>

ports.

Figure 24 - Win Me Ready to install prompt

Figuro 91 ch	ows the Win Me	Add New Hardware Wizard		
Figure 24 sh Found new h You can choo Windows auto for a driver location of the to use.	ows the Win Me ardware prompt. se either to have omatically search or to specify the e driver you want	Image: state stat	ISB Serial Port ISB Serial Port Indows can automatically search for and install software t supports your hardware. If your hardware came with allation media, insert it now and click Next. Next would you like to do? <u>Automatic search for a better driver (Recommended)</u> <u>Specify the location of the driver (Advanced)</u> <u>Specify the location of the driver (Advanced)</u> <u>Cancel</u>	
Step	Procedure		Description	
□ Step 8	Check the Autor driver (Recommended the Next button	natic search for a better ended) checkbox and click	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



finished installing prompt.

Step

Figure 26 sho Finished ins This prompt end of the inst	ows the Win Me stalling prompt. displays at the allation process.	Add New Hardware Wizard Image: Second Seco
		< <u>B</u> ack Finish Cancel
Step	Procedure	Description
□ Step 10	Click the Finish	button. 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!

Figure 26 - Win Me Finished installing prompt

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</i> <i>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		Add New Hardware Wizard	
98/98SE Add New Hardware Wizard searching for new drivers prompt. The Wizard launches automatically when you first connect the USB to Serial Adapter.			This wizard searches for new drivers for: U209-004 A device driver is a software program that makes a hardware device work.
Step	Procedure		< Back
□ Step 4	Click the Next b	utton.	The Search or select prompt displays.
□ Step 5	Insert the Tripp your CD-ROM d	Lite installation disk in rive.	<i>This is the CD that shipped with the USB to Serial Adapter.</i>

Figure 28 shows the 98/98SE		Add New Hardware Wizard	
Search or sel the Search fo option selected	lect prompt with r the best driver d.		 What do you want Windows to do? Search for the best driver for your device. (Recommended). Display a list of all the drivers in a specific location, so you can select the driver you want.
			< <u>B</u> ack Next > Cancel
Step	Procedure		Description
□ Step 6	Select Search for device (Recomm Next button.	r the best driver for yo ended); then click the	our The Search for new drivers prompt displays.

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

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

	Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
	□ Eloppy disk drives □ CD-ROM drive
8	 Microsoft Windows Update Specify a location:
	Bīowse
	< <u>B</u> ack Next > Cancel

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.	You may be able to install the software by checking the CD-ROM drive check box. If not, you need to specify a location.
			with your CD-ROM drive designation.
	Step 8	Click the Next button.	The Ready to install the best driver prompt displays.

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

Add New Hardware Wizard Figure 30 shows the 98/98SE Ready to install the best driver Windows driver file search for the device: prompt, which lets you doublecheck the device that you are U209-004 installing and the location of the driver. Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue. Location of driver: OEMUSBBX.INF < <u>B</u>ack Next > Cancel Step Procedure Description □ Step 9 Confirm that the device and driver If necessary, use the Back button to location are correct. return to the previous screen. Click the Next button. Windows builds a driver information base, copies the appropriate files from the CD, and then displays the Finished installing software prompt.

Figure 31 Windows has f the software 004's adapted install each se	indicates that inished installing for your U209- r. Next it will rial port.	Add New Hardware Wiza	rd U209-004 Windows has finished installing the software that your new hardware device requires.
			Kack Finish Cancel
Step	Procedure	<u>.</u>	Description
□ Step 10	Click the Finish	button.	<i>Windows tells you that it has found new hardware and launches the Add New Hardware Wizard to install the serial ports.</i>

Figure 32 she	ows the start of	Add New Hardware Wiz	zard
Figure 32 sho the serial p process.	ows the start of oort installation	Add New Hardware Wiz	This wizard searches for new drivers for: USB Serial Port A device driver is a software program that makes a hardware device work.
			Cancel
Step	Procedure		Description
□ Step 11	Click the Next b	outton.	The Search or display prompt displays.

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

Figure 33 sho	ws the 98/98SE	Add New Hardware Wizard	
Search or disp	viay prompt.		 What do you want Windows to do? Search for the best driver for your device. Recommended). Display a list of all the drivers in a specific location, so you can select the driver you want.
			< <u>B</u> ack Next > Cancel
Step	Procedure		Description
□ Step 12	Select Search fo device; then clic	r the best driver for you k the Next button.	r The Search for new drivers prompt displays.

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

Eiter 24 shows the 00 /00CE	Add New Hardware Wiz	ard
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.		Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search. Eloppy disk drives CD-ROM drive Microsoft Windows Update Specify a location: Elowse
Stop Drocoduro		< <u>B</u> ack Next> Cancel
Step Procedure		Description
□ Step 13 Select the CD-R	OM 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.</i>

The complete path is $E: \$. Replace $E: \$ with your CD-ROM drive designation.

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.	The Ready to install prompt displays.	

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

Figure 35 sho	ws the 98/98SE	Add New Hardware Wizard		
Ready to inst which lets y the device installing and the driver.	tall the prompt, ou double-check that you are I the location of		Windows driver file search for the device: USB Serial Port Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue. Location of driver:	
2	-		< <u>B</u> ack Next> Cancel	
Step	Procedure		Description	
□ Step 16	Confirm that the location are corr Click the North	e device and driver ect.	If necessary, use the Back button to return to the previous screen. Windows copies the appropriate files	
	Unck the Next D	uu011.	from the CD, then displays the Finished installing software prompt.	

Figure 36	indicates that	Add New Hardware Wizard		
Windows has f the software fo port.	<i>initiales that</i> <i>inished installing</i> <i>or the USB serial</i>	USB Serial Port		
		< Back Finish Cancel		
Step	Procedure	Description		
□ Step 17	Click Finish.	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!		

Figure 36 - Win 98/98SE Finished installing prompt

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

DCE

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

PC RS-232 Modem

DTE

Note: A DTE devices 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.

Telephone line

Table 2 - RS-232 DB-9 signal definitions

RS-232 signal	DTE connection
description	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 DTEtype 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.

Figure 39 illustrates the RS-232C pinouts for typical DTEto-DCE and DTE-to-DTE (null modem) cables with 25-pin connectors.

(3)	RxD ———	TxD	(3)
(2)	TxD	RxD	(2)
(4)	RTS	CTS	(4)
(5)	CTS	RTS	(5)
(20)	DTR	DSR	(20)
(6)	DSR	DTR	(6)
(8)	DCD	DCD	(8)
(22)	RI	RI	(22)
(7)	GND	GND	(7)
	Typical DTF-to-DCF ca	able	

Figure 39 - Cabling requirements for RS-232C devices

(3)	RxD -		RxD	(3)
(2)	TxD -	·	TxD	(2)
(4)	RTS		RTS	(4)
(5)	CTS -		CTS	(5)
(20)	DTR		DTR	(20)
(6)	DSR ⁻		DSR	(6)
(8)	DCD		DCD	(8)
(22)	RI ⁻		RI	(22)
(7)	GND [·]		GND	(7)
Typical DTE-to-DCE cable				

Testing DB-9 serial ports in HyperTerminal

This section explains how to test the functionality of your USB serial adapter using Hyperterminal. Follow the directions under Running Hyperterminal below.

Running Hyperterminal

Note: Use the DB-9 loopback connector that shipped with your USB to Serial Adapter. This procedure explains how to troubleshoot RS-232 DB-9 serial ports using Hyperterminal. Before testing your serial ports, you must first hook up a loopback. A loopback connects the output signal (TxD) to the input signal (RxD) in a single serial port connector to make it seem like there are two ports connected together.

A loopback connector shipped with your USB adapter. Use it to test each individual serial port in Hyperterminal.

Step		Procedure	Description
	Step 1	Launch HyperTerminal.	In Windows, select Programs/ Accessories/ Communications/ HyperTerminal.
	Step 2	Connect the loopback connector to the port you wish to test.	<i>You will need to test each port individually.</i>
	Step 3	Create a new session.	When prompted, give the session any name you wish.
	Step 4	Select the COM # associated with the port you are testing from the drop down list.	<i>You are now set up to test that serial port.</i>
			Note: Leave all settings at default.
	Step 5	With the session open, type any text.	If the text you type is echoed on the screen, the port is functioning properly.
	Step 6	Close the session.	
	Step 7	Repeat steps 2 through 6 for each serial port in turn.	

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.	The System Properties dialog box opens.
□ 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.	The System Properties dialog box opens.
□ 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 t boxes:	Device Manager provides two USB to Serial Adapter property dialog boxes:		
	Ports (COM & LPT)Multi-port serial ad	 Ports (COM & LPT) device group property box Multi-port serial adapters device group property box 		
	Use the Ports (COM & LP' set the port settings and to for the USB serial ports. U group property box to view device usage and driver in Adapter.	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.	Your USB to Serial Adapter should appear in the list – for example, U209- 004 (Group ID1).		

Step	Procedure	Description	
□ Step 2	Double click the U209-004 adapter.	The USB Serial Port Properties dialog	

The USB Serial Port Properties dialog box opens and displays the General tab.

		U209-004 (Group ID 6) Properties
Figure 40 illu Win XP/2000 which tells yo USB to Serial	strates the General Tab, ou whether the Adapter is	General USB Serial Ports Advanced Options Driver
 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. 		Device type: Multi-port serial adapters Manufacturer: Unknown Location: U209-004 Device status This device is working properly. If you are having problems with this device, click Troubleshooter to start the troubleshooter.
		Device usage: Use this device (enable)
Stop	Procoduro	Description
⊔ Step 3	Options tab to v properties.	view the port setting displays.

Figure 41 illu	istrates the	U209-004 (Group ID 6) Properties	? 🗙
Win XP/2000 Ports Advand box, which le data rate mu	USB Serial ced Options ts you set the ltiplier:	General USB Serial Ports Advanced Data Rate Multiplier Maximum data rate (bps): 460,8 • Auto (recommended) • Force X1 mode • Force X2 mode • Force X4 mode The settings on this page apply to al All programs using these serial ports before any changes made in this dia	Options Driver O Restore Defaults I four serial ports. must be closed log will take effect. OK Cancel
Step	Procedure		Description
□ Step 4	The USB Serial dialog box lets y multiplier and r settings.	Port Advanced Options ou set the data rate estore the default	See the Data rate multiplier section on page 40 for details.
□ Step 5	Click Cancel to a Adapter propert	close the USB to Serial y box.	
□ Step 6	With Device Ma Ports (COM & L	nager open, expand the .PT) 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.	The USB Serial Port Properties dialog box opens and displays the General tab.
□ Step 8	Click the Port se	ettings tab.	The Port Settings dialog box displays.

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

		USB Serial Port (COM9) Properties		2 X	
Figure 42 illus Win XP/2000 I	strates the USB Ports which late you	General Port Settings Driver			
set the default	t port settings,	Bits per second:	9600		
and restore th	e default	Data bits:	8	-	
settings.		Parity:	None	•	
		Stop bits:	1	_	
		Flow control:	None		
		Ad	vanced Resto	Cancel	
Step	Procedure	C	Description		
□ Step 9	This Port Setting default values fo	ss tab allows you to set r the following:	The Port Settin values for the s	ngs window sets defai relected port.	ult
	 > Bits per seco > Data bits > Parity > Stop bits > Flow control 	nd S	See the Setting on page 40 sect	advanced options se ion for details.	ction
□ Step 10	Press the Advance	ced button.	The Advanced	Options dialog box o	pens.

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

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

		Advanced Settings for COM	9 ? ×	
		COM Port Number	OK Cancel Defaults	
Step	Procedure		Description	
□ Step 11	Use the drop whose setting	down box to select the por gs you wish to change.	t	
	Click Cancel tab.	to return to the Port Settin	ıgs	

Step	Procedure	Description	
□ Step 12	Click the Driver tab to view the driver information and update the driver.	The USB Serial Driver properties dialog box displays.	

Elaura 11			o oriol mort	mramartian	Driverhey
	- W/IN XP/		Senai non	nnnemec	
	VVIII/(I/	2000 000	Julia pula		

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:

Procedure

	USB Serial Port (COM9) Properties 🛛 💽 🔀
ets	General Port Settings Driver
ls	USB Serial Port (COM9)
	Driver Provider: Unknown
	Driver Date: 3/26/2003
	Driver Version: 5.10.0.0
	Digital Signer: Not digitally signed
	Driver Details To view details about the driver files.
	Update Driver To update the driver for this device.
	Roll Back Driver If the device fails after updating the driver, roll back to the previously installed driver.
	Uninstall To uninstall the driver (Advanced).
	OK Cancel
	Description

Step 13	You have several options: ➤ View detailed driver information.			
	\succ Update the device drivers.	Clicking Update Driver opens the Installation Wizard		
	> Roll Back Driver (XP only)	Revert to the previously installed driver.		
	> Uninstall your USB to Serial Adapter.	This also removes all the associated serial USB ports.		
	\succ Save your changes and exit.	<i>Clicking OK also saves any changes from the other tabs.</i>		
	Abandon your changes and return to the Device Manager.			
Step 14	Click Cancel to close the USB to Serial Adapter port property box.			

Step

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 Multiport 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.	The USB Serial Port Properties dialog box opens and displays the General tab.	

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

Figure 45 illus	strates the	USB Serial Port Properties	
Win 98/98SE/	Me General	General USB Serial Port Settings Driver	
 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 		Communications Port (COM4) Device type: Ports (COM & LPT) Manufacturer: None specified. Hardware version: Not available Device status This device is working properly.	
		Device usage ☐ Disable in this hardware profile ☑ Exists in all hardware profiles	
		OK Cancel	
Step	Procedure	Description	
□ Step 3	Click the USB S view the port se	Serial Port Settings tab to The USB Serial Port Settings proper ting properties. The USB Serial Port Settings proper dialog box displays.	ties

Figure 46 illu	istrates the	USB Serial Port Proper	ties		? ×
Win 98/98SE	/Me USB Serial tab, which lets	General USB Serial Po	t Settings Driver	1	
values for the serial port set	e following ttings:	<u>B</u> its per second:	9500		
 Bits per s Data bits 	second	<u>D</u> ata bits:	8	T	
 Parity Stop bits Flow cont 	trol	Parity:	None	•	
		<u>S</u> top bits:	[1	_	
		Elow control:	Xon / Xoff	<u> </u>	
		Advanced	<u> </u>	estore Defaults	
				OK Cano]
Step	Procedure		De	scription	
□ Step 4	The USB Serial you to set defaul	Port Settings tab a t values for the fol	llows <i>Th</i> lowing: <i>de</i>	he Port Setting faults for the	gs window can set selected port.
	 > Bits per seco > Data bits > Parity > Stop bits > Flow control 	ond	Se or	ee the Setting a 1 page 40 for a	advanced options section letails.
□ Step 5	Click the Advan Advanced Option	ced button to open ns dialog box.	the The boots the	he USB Serial ox displays. Th e data rate mu efault settings.	Ports Advanced Options his dialog box lets you set ultiplier and restore the
			Se pa	ee the Data rai age 40 for deta	te multiplier section on ils.

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

Figure 47 illustr Win 98/98SE/Me USB Serial Port Options box, wh set the data rate	USB Serial Ports Advanced Op RS-232 s Advanced ich lets you multiplier: Data Rate Multiplier Maximum data rate: 460,800 ft Auto (recommended) Force X1 mode Force X2 mode Force X4 mode This setting applies to all four serial All programs using these serial port must be closed before any change made in this dialog will take effect.	Deps DK Cancel
Step Pr	ocedure	Description
□ Step 6 C	lick Cancel.	The USB Serial Port Settings properties dialog box returns.
□ Step 7 Ye	 ou have three additional options: 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. 	Clicking OK saves any changes you made in any of the dialog boxes.
□ Step 8 C	lick the Driver tab.	<i>The USB Serial Driver properties dialog box displays. See the figure on the following page.</i>

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

Figure 48 illu	istrates the	USB Serial Port Properties
Win 98/98SE	/Me USB Serial	General USB Serial Port Settings Driver
Ports Driver you view the and update th	box, which lets driver details he driver.	Communications Port (COM4) Provider: Not available Date: 3-26-2003 To view details about the driver files loaded for this device, click Driver File Details. To update the driver files for this device, click
		Driver File Details
Chara	Descentions	
Step	Procedure	Description
□ Step 9	This tab provide	es two options:
	 Click the Dr detailed dri Click the U install the l 	river Details button to view ver information.This option opens the Driver File Details dialog box.pdate Driver button to atest drivers.This option launches the Installation Wizard.
□ Step 10	Click Cancel to Adapter port pr	close the USB to Serial operty box.

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

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)	
<i>Note: This setting is suitable for most applications.</i>	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	
<i>Note: This setting will not enhance most applications.</i>	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	The cables are not connected correctly.	1. Check the USB to Serial Adapter cables to make sure that they are connected correctly.
other equipment.		2. Make sure that each cable is securely attached.
	The device driver is not installed.	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.	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	Number of Data rate simultaneously operating ports		
	1, 2 230k bps*		
	3, 4 115k bps		
	* 460.8k bps is possible for any one port under certain conditions		
	Actual baud rates depend on the following:		
	Hardware flow control		
	Horsepower of the host computer		
	Quality of and length of cables		
	Continuous or "bursty" data		
Ports	4		
UARTs	One 16650 UART with 16-byte FIFO per port		
Transceivers:	<u>RS-232 Output</u>		
(SP211HB)	Voltage Swing: +/-5V min, +/-7V typical		
	RS-232 Input		
	Voltage Range: –15V min, +15V max		
	Input Threshold Low: 0.8V min, 1.2V typical		
	Input Threshold High: 2.4V max, 1.7V typical		
Connectors	DB-9 Male Connectors		
Dimensions	6.08" L x 4.26" W x 1.50" H (U209-004)		
Power Requirements	USB bus powered,		
	(no external connection required)		
	Suspend Power: < 500 uA		
	Unconfigured Power: < 100 mA		
	Configured Power: < 500 mA		
Temperature:	Operating: 0 to 70 C		
	Storage: -50 to 80 C		
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.

EXCEPT AS PROVIDED HEREIN, TRIPP LITE MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some states do not permit limitation or exclusion of implied warranties; therefore, the aforesaid limitation(s) or exclusion(s) may not apply to the purchaser.

EXCEPT AS PROVIDED ABOVE, IN NO EVENT WILL TRIPP LITE BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF THIS PRODUCT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. Specifically, TRIPP LITE is not liable for any costs, such as lost profits or revenue, loss of equipment, loss of use of equipment, loss of software, loss of data, costs of substitutes, claims by third parties, or otherwise.

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