USER MANUAL

USB Serial Adapter Software
for Windows 2000/XP/2003 Server/Vista
(Software V 3.7S)

Model: USA-19HS

Introduction

Overview

Keyspan's USB to Serial Adapter technology allows you to connect serial devices to computers that lack serial ports.

Keyspan's drivers and firmware provide software addresses (COM ports on Windows and Serial Ports on Mac) for your devices to access.

Our USA-19HS is broadly recommended by serial device manufacturers due to its dependability and "Best in Class" compatibility. The adapter is compatible with all RS-232 serial devices including modems, GPS devices, cell phones, hand held scanners, networking equipment (console port), graphics tablets, point of sale devices, touch screens, UPS devices, medical and scientific instruments, industrial process control devices, building automation instrumentation and other serial devices.

Features include:

- Certified: Microsoft WHQL approved
- High Speed: Supports 230 Kbps - twice the speed of a built in serial port
- Detachable Cable: Use adapter with any USB cable (up to 5 meters long)
- LED: Shows adapter status and data activity
- Plug & Play: Appears as standard COM port
- Mobile: Easy to carry - weighs just 2 oz.
- Bus Powered: No external power adapter required
- Analytic Tools: Includes Windows line monitor and data trace software
- Field Upgrade: Easy to update over time with free software downloads
- Easy Expansion: Supports use of multiple adapters on one PC

Specs

- Connects to USB port on PC or Mac
- Provides one male DB-9 RS-232 port for direct connection to serial device
- Supports data rates up to 230 Kbps

Package Contents

- USA-19HS USB to serial Adapter
- USB Cable
    ‣ A to B cable (3 foot)
- CDROM (includes software and electronic user manual)

Requirements

- an available USB port
- Mac OS: 8.6 - 9.2.2
- Mac OS X: 10.2.8, 10.3.x, 10.4.x, 10.5.x
- Windows: 98, 98SE, Me, 2000, XP (32bit and 64bit), Windows Server 2003 x86, Vista (32bit and 64bit)

Software and Hardware Installation

Installation Overview

Installation is 3 part process where you will 1) install the Keyspan software, 2) connect your adapter, and 3) determine your adapter's COM port assignment. This last step is important because this is COM port that you will tell your serial device to use. Please follow the instructions below to complete this process

Install Keyspan Software

Important Notes:
DISCONNECT your Keyspan adapter BEFORE install the Keyspan software.

1. Install the Keyspan Software:

   CDROM Installation:
   Windows will automatically open the Keyspan CD Browser window (Note: you can manually start the CD browser by locating and running the "Launch.exe" program on the CD-ROM). Using the on-screen menus, locate the Keyspan Installer selection and click it to start the installation process. Follow the instructions on-screen.

   Installation via download:
   Download the Keyspan driver from Keyspan's website (http://www.keyspan.com). Find and download the Keyspan USA-19HS installer. When you have downloaded the installer, run installer.

   WINDOWS Vista Tech Note:
   During and/or after the software installation, Windows may report "Windows can't verify the publisher of this software", click the "Install this driver software anyway" selection.

2. Follow the installer's onscreen instructions to finish the software installation. When the installer completes, proceed to the **Step 3 (Setup Hardware)**.

Setup and Connect the Keyspan Hardware

3. Connect one end of the USB cable to the USB port on the back of the Keyspan adapter. Connect the other end of the USB cable to the USB port on your computer. When you connect the adapter, Windows will detect your Keyspan adapter. During this time, you may see Windows messages appear and disappear showing the names of different components of the Keyspan adapter. This is normal during the the first installation of your adapter.

   WINDOWS Tech Note:
   During and/or after the hardware installation, the Windows New Hardware Wizard may ask you to install software several times. Select 'Install the software automatically'. You may also get an additional prompt regarding logo testing, click 'Continue Anyway' if it appears. Note that you may get this message several times. Continue through all the Hardware Wizards that appear until they stop appearing (you may see up to 3 Hardware Wizards).

4. When Windows has finished the installation of drivers for your adapter, proceed to the **Step 5 (Determine Keyspan's COM Port Assignment)**.

Determine Keyspan's COM Port Assignment

5. We now need to determine which COM port was assigned to the Keyspan adapter. The adapter's COM port is important because you will be telling your serial devices (ie modem, PDAs, GPS, etc) to use the Keyspan COM port. You can determine Keyspan's COM port assignment by using the **Keyspan Serial Assistant** utility.   Open **Keyspan Serial Assistant** utility (START menu > (All) Programs > Keyspan > Keyspan Serial Assistant). You will be presented with the following window:
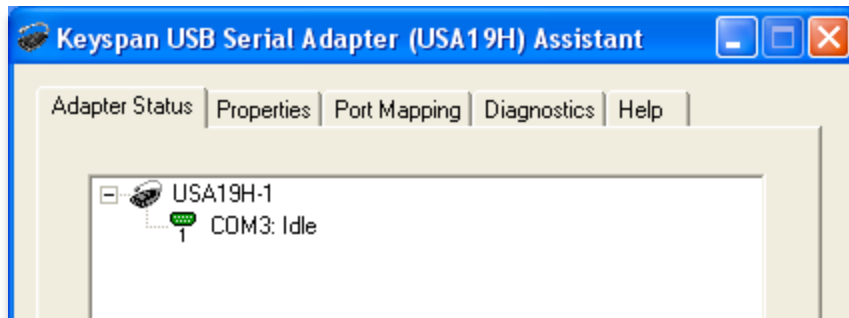
Keyspan Serial Assistant window

6. In the Keyspan Serial Assistant window, you will see your adapter's COM port assignment. You should see **COMxxx : IDLE** or **COMxxx: BUSY.**

Note the **COM port address** (ie COM1, COM2, etc) as you will need this information later.

IDLE message:
If you see the **IDLE** status message, **the Keyspan adapter is working** and waiting for some program to access the Keyspan COM port. This is the normal state of the adapter. If you look at your adapter's status light, it will be blinking slowly (1 blink per sec.) to indicate that it is idle. Proceed to the **Making Your Keyspan Adapter Work With Your Serial Device** section.

BUSY message:
If you see the **BUSY** status message, **the Keyspan adapter is working** and some program has already gained access the Keyspan COM port. If you look at your adapter's status light, it will be on (not blinking) or blinking every time data is sent or received (this can be a rapid blink or a blink every couple of seconds).   Assuming that your serial device's software gained accessed to the Keyspan adapter, you should be able to start using your serial device right away. In some cases, it may be another program that is accessing the COM port before your serial device has had a chance to get to the COM port. In these cases, please read the **Troubleshooting** section in this manual for further assistance.

No Keyspan Adapters Detected message:
If you see the **No Keyspan Adapters Detected** status message, there is a problem with the installation. Please read the **Troubleshooting** section in this manual for further assistance.

If you see either the IDLE or BUSY message, proceed to the **Using Your Keyspan Serial Port** section later in this manual.

Using The Keyspan Serial Port

Overview Of Using Serial Devices with Serial Ports

Using a serial device with any serial port requires:

- [hardware] serial device (ie a modem, glucose meter, GPS, etc).
- [software] software that sends/receives data from your serial device (ie your GPS software).
- [hardware] a serial port (provided by your Keyspan adapter).
- [software] a COM port provided by the Keyspan software.
- [setup]   your serial device's software needs to be told to use the Keyspan COM port.

This chapter will show you how to use the Keyspan adapter hardware and software. It will also provide an overview of how to setup your serial device.

> **Note:**
> Please note that this chapter assumes that you have completed the steps outlined in the **Software and Hardware Installation** section earlier in this manual.

Connecting and Configuring A Serial Device To Use A Keyspan Adapter

The basic outline to connecting and configuring your serial device to use the Keyspan are:

1. Connect your Keyspan adapter to your computer's USB port.

2. Connect your serial device to the Keyspan adapter.

3. Determine the Keyspan COM port via the Keyspan Serial Assistant

4. Open your serial device's software and tell that software to use the Keyspan COM port

5. Tell you serial device's software to 'communicate' with the serial device (ie start using the serial device like you would normally.

For example, if your Keyspan adapter is assigned to COM6, you need to tell your serial device's software to use COM6. The serial device's software is the program that you run to send/receive data from your serial device. This is where you need tell that program to use the Keyspan COM port. Please refer to your software's instruction manual for information on how to select a COM port.

> **Important Note:**
> If you find your program's COM port selection screen and find that it does not allow you to select the Keyspan COM port because its port selection screen is limited (ie your software only shows COM1 through COM4 but your adapter is on COM8), you will need to change the Keyspan COM port address. Please read the **Changing Your COM Port Address** section later in this manual.

Once you have installed the Keyspan software and connected the Keyspan adapter [hardware] to your computer, you are ready to connect your serial device hardware to the Keyspan adapter's DB9 port.

1. Connect your serial device's cable to the Keyspan adapter's DB9 port.

DB9 port on USA-19HS

Note:
If your serial device has a different connector, you may need a converter cable or adapter to connect your device to a DB9 port. Please contact the manufacturer of your serial device for details.

Now that you have physically connected your serial device to the Keyspan adapter, we need to connect your serial device's software to the Keyspan COM port (software). Before we can do this, we need to determine the Keyspan COM port. If you already know the Keyspan COM port, skip Step 2.

2. Open **Keyspan Serial Assistant** utility (START menu > (All) Programs > Keyspan > Keyspan Serial Assistant). You will be presented with the following window:
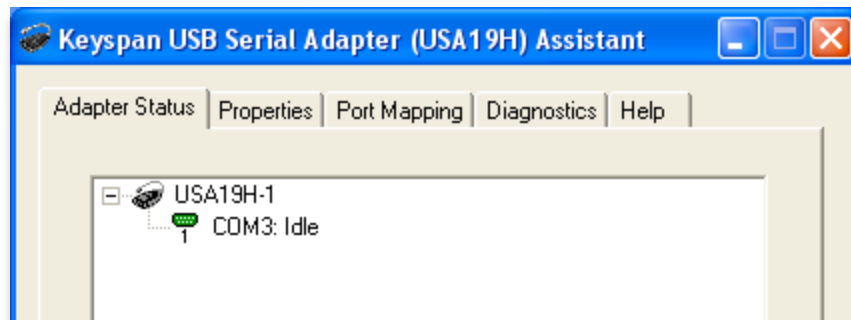
Keyspan Serial Assistant window

Alternate Method:
You can also use the **DEVICE MANAGER** in Windows to determine the Keyspan COM port. COM ports are shown in the Device Manager under the **PORTS (COM & LPT)** section.

Write down the COM port shown in the ADAPTER STATUS tab. We will need this in the next step.   You can close the Keyspan Serial Assistant when you have noted your COM port.

Note:
COM ports are assigned on the basis of what COM ports (software addresses) are available on your computer. Because of this, your adapter may be assigned to COM3 on one computer and the same adapter will be assigned to COM9 on another computer.

COM port addresses can be reserved by software. Microsoft typically reserves COM1 and COM2 on most Windows 2000, XP, and Vista computers. Devices such as internal modems, Bluetooth devices, and other USB to serial adapters will also reserve COM ports. This topic is discussed in more detail in the **Changing Your COM Port Address** section later in this manual.

3. Open your serial device's software. This is the software that you would normally use to communicate with your serial device. We need to tell this software to use the Keyspan COM port (from **Step 2**). Normally, this is found in a COM port selection screen, menu, etc. Please see your serial device's manual for instructions on how to select a serial port.   Once you find this screen, proceed to the next step.

Note:
Every serial device COM port selection screen is different. Some serial device's have COM port selections in a control panel, some have their COM port selection screens in menu's called Settings, Communication, Preferences, etc, and others may not have a place to select a serial port.

4. In your serial device's COM port selection screen, select the Keyspan COM port (the one that you noted in Step 2).

Note:
If your software shows a limited number of ports and your Keyspan COM port is not in that range, you will need to either get updated software that can see all COM ports or you will need to change the Keyspan COM port to one that your program can use.

If you need to change your Keyspan COM port, see the **Changing Your COM Port Address** section later in this manual. When you have completed that section, return to this section

5. Now that you have selected the Keyspan COM port, start using your serial device like you would normally.

   If your serial device is working, congratulations.

   If your serial device doesn't work, please read the **Troubleshooting** section in this manual for further assistance.

The Keyspan Adapter's Status Light

The Keyspan USA-19HS comes equipped with a green status light. This light reports the status of your Keyspan adapter. It is useful in troubleshooting various issues.

The following table shows all of the possible states of the status light and what they mean:

Color	State	Description
n/a	Off	The Keyspan adapter is not connected or not receiving power from your computer. The Keyspan hardware may not have been installed correct. See the troubleshooting section for details.

Color	State	Description
Green	On - Blinking Slowing (1 blink per second)	The Keyspan adapter is IDLE and waiting for your serial device's software to access the Keyspan COM port. This is normal state.
Green	On - Steady Light (Not Blinking)	The Keyspan adapter is BUSY / 'In Use'. The adapter is being accessed by some serial device's software.
Green	On - Blinking Fast or 'Randomly'	The Keyspan serial port is sending and/or receiving data

Changing Your COM Port Address

Overview

In some cases, you will find that your serial device's software does not look for all COM ports on your system. For example, some programs will only look for COM1 through COM4. If your Keyspan COM port is above your software's range, your software will not be able to see your serial device. In this case, you have two options:

- upgrade your software to a version that can see all COM ports (recommended)
- change the Keyspan COM port address.

Keyspan recommends that you at least try to get the latest version of your serial device's software before attempting to change the Keyspan COM port since most developers have upgraded their software to be compliant with latest Windows serial communication APIs.

If you cannot get newer software for your serial device, your only option is to change the Keyspan COM port. This guide will show you how to change the Keyspan COM port via the Keyspan Serial Assistant as well provide some details about COM ports in general.

How does the Keyspan adapter determine its COM port number?

Keyspan serial adapters create COM ports in the Windows registry just like the COM ports found on older computers.

When you first connect a Keyspan adapter, the Keyspan adapter software reads the Windows registry to find an 'available' COM port number.

If COM1 is not available it tries COM2, COM3, etc., until it finds a COM port number that is available. If your Keyspan adapter creates COM4, then COM1 though COM3 are 'busy' or have been 'reserved' for some piece of hardware or software (ie an internal modem, wireless connectivity, etc).

In modern computers (ie post Windows 2000), Microsoft reserves COM1 and COM2. Other things that reserve COM ports are things like internal modems, internal/external Bluetooth (which usually resever eight COM ports), and other USB to serial adapters.

Notes:
Since every computer is different, you may find that your Keyspan adapter is COM3 on one computer and COM10 on another computer. To determine your Keyspan adapter's COM port assignment, please use the Keyspan Serial Assistant.

Change COM Port via Keyspan Serial Assistant

Note: This is an advanced feature that requires you to have **Administrator privileges** on your system.

1. Open **Keyspan Serial Assistant** utility (START menu > (All) Programs > Keyspan > Keyspan Serial Assistant). You will be presented with the following window:
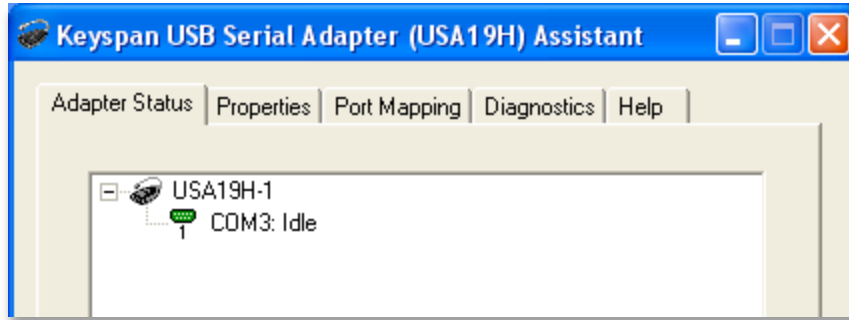
Keyspan Serial Assistant window

This will show your Keyspan adapter and the current COM port number (ie COM4, COM 5, etc.).

2. Click '**Port Mapping**' tab. Once you are in the 'Port Mapping' section select or highlight the Keyspan COM port that you wish to change.

Port Mapping tab with Keyspan Port highlighted

With your Keyspan COM port highlighted, select the new COM port number from the '**COM Port mapping for the selected adapter port**' pull down menu.
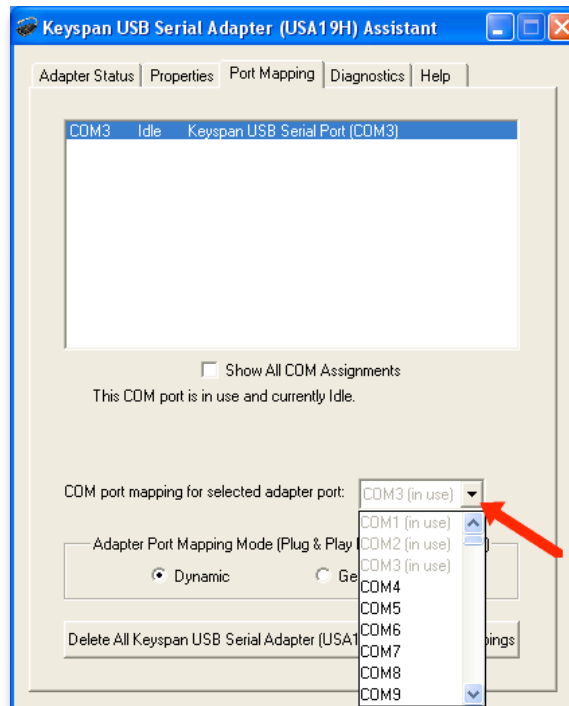
COM Port Mapping pull down menu

Once you have selected the new COM port number, the Keyspan software will ask you if you are sure you want to proceed.

IMPORTANT:
Please note that you can select any COM port you wish however, you may notice that certain ports are 'in use'. This may mean that there is hardware connected to these COM ports or they have been reserved for the operating system or other software. Changing the COM port mapping to a COM port that is '**in use**' may render any hardware and/or software using that port inoperable.

Keyspan Serial Adapter -- Comport Remap: Mapped COM Port Name Warning

You are about to change the COM Port name for the selected device from COM3 to COM1.

*** Warning: The port you're trying to assign to the selected Keyspan adapter is already in use by another device. If you continue, serious problems may result. ***

Do you want to continue?

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3. Your COM port has now been changed to the new COM port number. To confirm the change, click the Keyspan Serial Assistant's **Adapter Status** tab to see the new COM port.   The COM port change is complete.

Change COM Port via the Windows Device Manager

On Windows XP and Vista, you can change your Keyspan adapter's COM port number via the **Device Manager**. This requires the latest version of the Keyspan software (version 3.7 or later).

This process accomplishes the same task as changing the COM port via the Keyspan Serial Assistant however certain users may prefer to use the Device Manager to change ports.

Note: This is an advanced feature that requires you to have **Administrator privileges** on your system.

1. Open **Device Manager** by double-clicking the **System** control panel. Next, click the **Hardware** tab and then click the **Device Manager** button. This will open the **Device Manager**.
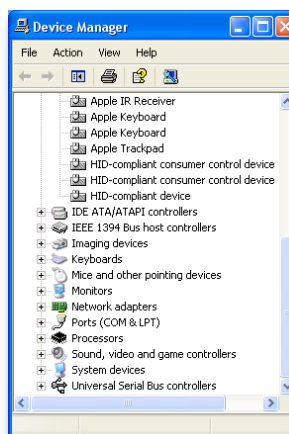
Device Manager window

Note: This is an advanced feature that requires you to have **Administrator privileges** on your system.

2. In the Device Manager, go to the **Ports (COM & LPT)** heading and click the on the **plus (+) sign** to expand the heading. Find the Keyspan COM port in the list and right-click on the **Keyspan USB Serial Port** item. Next select **Properties**.
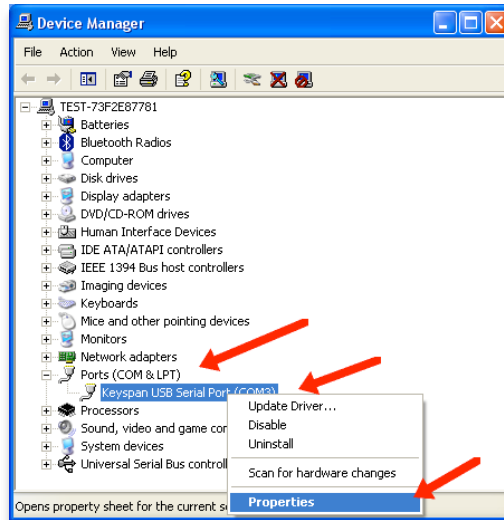
Opening the Keyspan USB Serial Port Properties

This will open the **Properties** window:
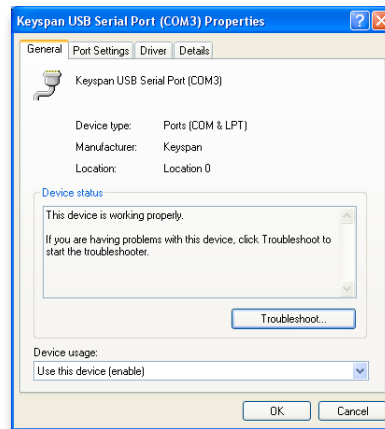
the **Properties** window

3. In the Properties window, click the **Port Settings** tab and then click the **Advanced...** button as shown below:

the **Port Settings** tab and **Advanced...** button

This will open the **Advanced Settings** window:

the **Advanced Settings** window

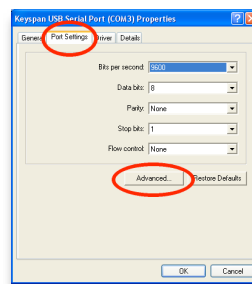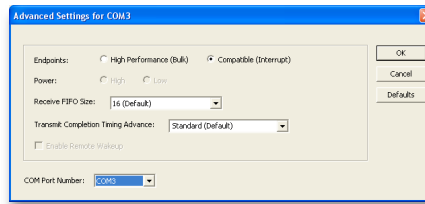4. In the **Advanced Settings** window, select the new COM port from your the **COM Port Number** pull down menu.
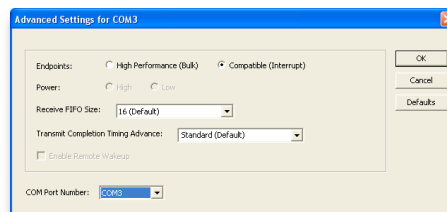
the **Advanced Settings** window

Once you have selected the new COM port number, the Keyspan software will ask you if you are sure you want to proceed.

IMPORTANT:
Please note that you can select any COM port you wish however, you may notice that certain ports are 'in use'. This may mean that there is hardware connected to these COM ports or they have been reserved for the operating system or other software. Changing the COM port mapping to a COM port that is 'in use' may render any hardware and/or software using that port inoperable.
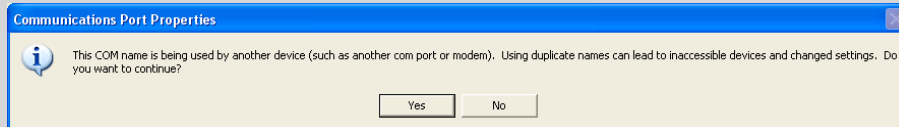
5. Your COM port has now been changed to the new COM port number. To confirm the change, return to the Device Manager and locate the new COM port under the **Ports (COM & LPT)** heading.

Troubleshooting

This troubleshooting guide will guide you in solving problems with the Keyspan USA-19HS hardware and software installation.

Before you begin, make sure that you have:

- installed the latest USA-19HS software (available from our website)
- your USA-19HS adapter is connected to your USB port

Note:
If you are downloading software from Keyspan's website, make sure you download the USA-19HS drivers. Keyspan has drivers for other adapters such as the USA-19, USA-19Qi, USA-19QW, etc. These drivers are not compatible with the USA-19HS.

1. Open **Keyspan Serial Assistant** utility (START menu > (All) Programs > Keyspan > Keyspan Serial Assistant). You will be presented with a window that looks like the following:
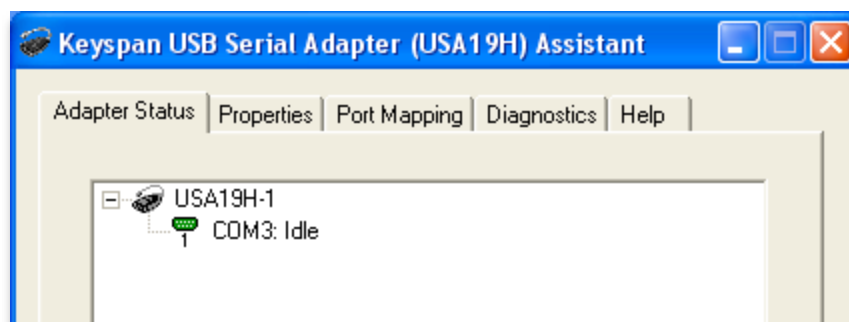
Keyspan Serial Assistant window

<Option 1>
The Keyspan Serial Assistant will show your adapter's COM port and status (ie COMxx:Idle or COMxx busy).

The *IDLE* message means that your serial device's software is not currently accessing the Keyspan port).

The *BUSY* message means that a program (software) has accessed the Keyspan COM port. In most cases, this means that you are ready to start using your serial device via the Keyspan adapter.

If your COM port appears, the Keyspan software and hardware is installed correctly. You do not need to read the rest of this troubleshooting guide.
'
<Option 2>
If the message '**NO KEYSPAN USB SERIAL ADAPTERS FOUND**' appears, proceed to Step 2.

2. Look at your Keyspan adapter hardware. On the front of the adapter, it will have the work **Keyspan** printed on it. On the back of the adapter, find the printed p/n number (located under

the FCC and CE symbols).

<Option 1>
If your printed p/n number DOES NOT show USA-19HS, you do not have a USA-19HS. Refer to the correct documentation for your adapter.

<Option 2>
If your printed p/n number shows USA-19HS, proceed to Step 3.

3. Open the Device Manager:

   On Windows 2000, XP, or Vista:
   Open **Device Manager** by double-clicking the **System** control panel. Next, click the **Hardware** tab and then click the **Device Manager** button. This will open the **Device Manager**.

   On Windows 98, 98SE, or Me:
   Open **Device Manager** by double-clicking the **System** control panel. Next, click the **Device Manager** tab.

4. In the Device Manager, we are looking for any Keyspan related item that has a question mark (?), exclamation mark (!), or red 'X'. You do not need to open every heading. Items with ?, !, and X will appear on their own.

   <Option 1>
   Nothing shows up for Keyspan adapter in Device Manager (i.e. no "Other Device" or "TUSB 3410 Boot Device"). In this case, please change another USB cable and connect your Keyspan adapter to another USB port in your computer.

   <Option 2>
   Keyspan adapter appears in Device Manager as **"TUSB 3410 Boot Device"**. This indicates that you have a defective Keyspan USB Serial Adapter. Stop here and contact Tripp Lite tech support for further assistance.

   <Option 3>
   Check the 'Other Devices' heading (you can expand this by clicking on the plus (+) sign next to the heading) and see if there any items with a question mark (?) or an exclamation point (!). If you have any items like this, right-click on each one and select the 'remove' or 'uninstall' command from the right click menu.

   Once you have removed all items with a question mark or an exclamation point in Device Manager, disconnect your Keyspan adapter and restart your computer.

   Login as Administrator and disable any anti-virus software when you get back to the desktop. Reconnect the adapter to a built-in USB port and open Keyspan Serial Assistant. Your Keyspan com port should now show up under the 'Adapter Status' tab. Your Keyspan USB Serial adapter now is ready to use.

Uninstalling USA-19HS Software

How To Remove the USA-19HS Software

Uninstalling the Keyspan USA-19HS software is an easy process in Windows. This process completely uninstalls all Keyspan software files and entries in your Windows registry. The following process walks you through the process of uninstalling the Keyspan software.

1. Disconnect the Keyspan USA-19HS Adapter from your USB port.

2. Close any Keyspan program windows (ie the Keyspan Serial Assistant)

IMPORTANT:
Make sure you complete steps 1 and 2. Uninstall will fail if you skip these steps.

3. For 98, Me, 2000, and XP, open the **Add/Remove Programs** control panel.

   For Vista, open the **Programs And Features** control panel.

4. In the control panel, locate the Keyspan USA-19HS software.   Then click the Uninstall/Change button to begin the uninstall program. Follow the instructions on-screen to complete the uninstall process.

Note:
You may get an additional dialog asking you if you want to Repair, Modify, or Remove the software. Select Remove and then click the Next button if you see this dialog appear.

Keyspan Serial Assistant

Besides the required drivers, the Keyspan USB Serial Adapter software installer installs an application called Keyspan Serial Assistant. This application is used to:

- Determine the status of the adapter software and hardware
- Assist in problem solving

Launching the Keyspan Serial Assistant

Open Keyspan Serial Assistant utility (START menu > (All) Programs > Keyspan > Keyspan Serial Assistant). You will be presented with a window that looks like the following:

Keyspan Serial Assistant window
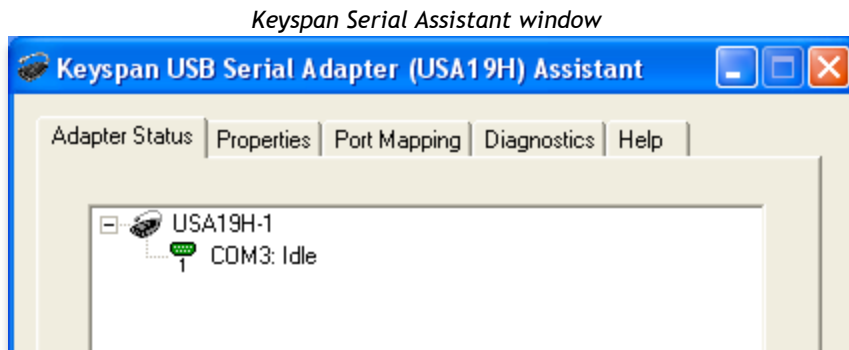
If your Keyspan hardware and software are installed correctly, you will see your adapter in the 'Adapter Status' tab box. You should also see the COM port number (ie COM1, COM2, etc.) and the COM Port Status (IDLE or BUSY).

Note:
If you see your COM port number and its COM port Status. If you do not see either of these items, proceed Troubleshooting section in this manual.

Explanation of Assistant Features
The following is a description of all the relevant text boxes and menus found in the Keyspan Serial Assistant. You can also obtain this information by turning on the '**Enable Tool Tips**' check box in the Assistant's **Help** tab.

Adapter Status tab
The Adapter Status tab in the Keyspan Serial Assistant displays the status of your Keyspan adapter. Specifically, it shows the COM port number (ie COM1, COM2, etc.) and the COM Port Status.(IDLE or BUSY). If you have several Keyspan adapters of the same type, they will all show up in this tab.
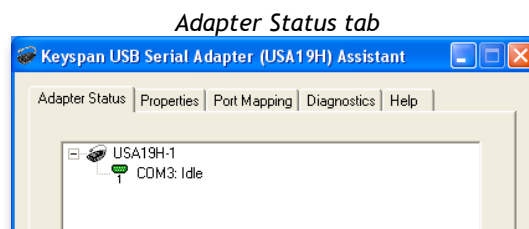
Adapter Status tab

This is also the first place to check to see if your Keyspan adapter is working properly. If your Keyspan adapter does not show up in the Adapter Status tab, please proceed **Troubleshooting** section in this manual for further instructions.

Properties tab

The Properties tab in the Keyspan Serial Assistant allows has two functions:

- test your Keyspan adapter (via Serial Test Options)
- make changes to the behavior of the Keyspan adapter (Endpoints and Serial Port Options)

Properties tab
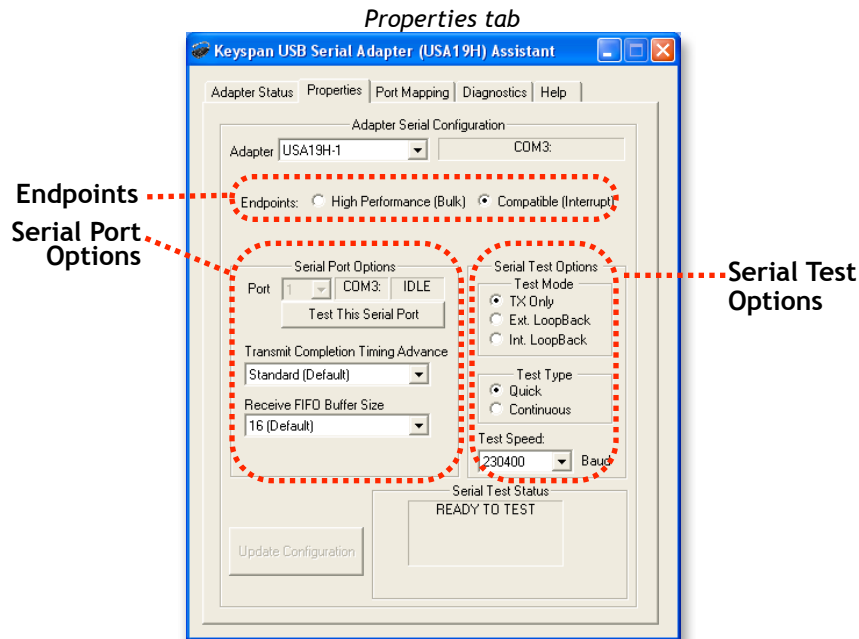
Adapter pull down menu
The **Adapter** pull down menu is used to select which USB Serial Adapter you would like to configure. If you only have one Keyspan USB Serial Adapter, you will not need to change the selection.

- Endpoints and Serial Port Options

The **Endpoints** radio buttons are used to configure how the Keyspan adapter will communicate with the USB subsystem (software)on your computer. Most users will not need to modify the default setting (Compatible (Interrupt)). You should only change this setting if you are sure that your serial device needs a specific setting. The default setting is Compatible (Interrupt).

Port pull down menu
If you have more than one serial port on your Keyspan adapter, the Port pull down menu allows you select which serial port you want to modify or test. You can also see the serial port's COM port number and its COM port status next to the Port pull down menu.   If you only have one serial port on your Keyspan USB Serial Adapter, you will not need to change the selection.

Transmit Completion Timing Advance pull down menu
The **Transmit Completion Timing Advance** pull down menu allows you to adjust a device's transmit behavior to achieve the optimum compromise between compatibility (exact emulation of built-in ports) and improved throughput. The default setting is 'Standard'. Before changing this setting, read the **TX Ack Advance Details** section in this manual. This section gives you detailed information as to what this feature does and how it affects serial communication. This setting is set per port (ie if you have a multi port Keyspan adapter, you can set one port to have one setting and another port to use a different setting). Once you make this change, click the **Update Configuration** button to upload the new settings to your adapter.

Receive FIFO Buffer Size pull down menu
The Receive FIFO Buffer Size pull down menu allows you to configure the number of characters which are stored in the card's "First In First Out" input buffer ("FIFO") before they are made available to the computer. The default value of this parameter is "16". The Receive FIFO improves the reliability of data transfer at high speeds. You can turn this option OFF for performance reasons however this is not necessary in most cases. If you are receiving data from your serial device at speeds of 9600 baud or lower, you may want to set the **Receive FIFO Buffer Size** to *None*. This setting is set per port (ie if you have a multi port Keyspan adapter, you can set one port to have one setting and another port to use a different setting). Once you make this change, click the **Update Configuration** button to upload the new settings to your adapter.

Update Configuration button
The Update Configuration button updates the Keyspan adapter with the changes you have made in the Properties tab. Please note that these changes will take effect when you click the Update Configuration button.

- Serial Test Options

The Test This Port button tests the COM port selected in the **Port** pull down menu (in the Serial Port Option section in the Properties tab). The test that is performed is the selected test in the Test Option box.

> **Note:**
> The baud rate shown here is only used to configure the Serial Test. If your serial device's software does not provide the necessary port settings to our adapter and you need to specify the default port settings (ie baud [bits per second], data bits, parity, stop bits, and flow control), you set these settings in the Device Manager (right-click your Keyspan COM port in the **Ports (COM & LPT)** heading and then select Properties and then click the **Port Settings** tab).

Test This Port button
The Test This Port button tests the COM port selected in the Port pull down menu (in the Serial Port Option section in the Properties tab). The test that is performed is the selected test in the Test Option box.

Test Mode box
The Test Mode box allows to specify the type of test that will be performed when you press the Test This Port button. There are 3 types of tests:

TX Only:
Use this test to test only the transmit (Tx) signals of the Keyspan adapter.

Ext. LoopBack:
Use this test sending and receiving data. This test sends data out the selected serial port and waits to receive it via a special Loopback connector. You can find more information about this special Loopback connector in the **Serial Port Pin Outs** section in this manual. **IMPORTANT!** This test will fail if you did not make and connect a custom Loopback connector.

Int. Loop Back:
Use this test sending and receiving data. This test is performed within the Keyspan adapter hardware. This test DOES NOT require a special Loopback cable.

Test Type box
The Test Type box allows to specify how many times the selected test will be repeated when you press the Test button. Use the Quick option to perform the test once. To perform a subsequent test, press the Test This Port button. Use the Continuous option to repeat the test continuously. To

stop the test, press the Stop Test button (the Test This Port button becomes the Stop Test button during a test).

Test Speed pull down menu
The Test Speed pull down menu allows to specify the speed (baud rate) at which the port will be tested at when you press the Test This Port button button.

Test Status box
The Test Status box reports the test status or results of the selected COM port.

Port Mapping tab

The Port Mapping tab in the Keyspan Serial Assistant allows you to change how COM port numbers are assigned to your Keyspan adapter. The following is an explanation of the items in this tab.

Important!!! Changing COM port assignments may render other hardware unusable. For step by step instructions on how to change a COM port address, read the **Changing Your COM Port Address** section earlier in this manual. Please make sure you read the sections about changing COM ports carefully.

Port Mapping tab
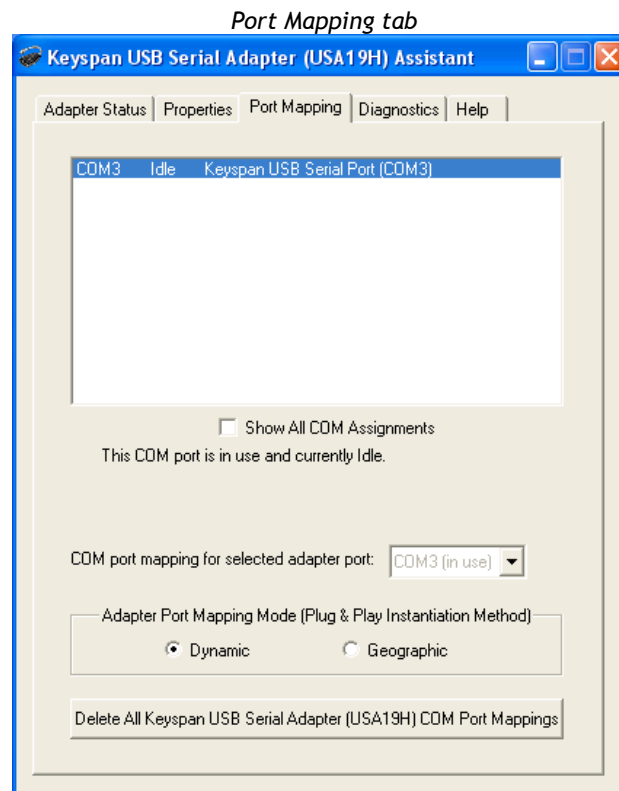
COM Port list box
The **COM Port** list box shows any connected Keyspan USB Serial Adapter, its COM port number and COM port status. You can also see any other COM port that have been assigned or reserved on your computer if you enable or check the Show All COM Assignment check box.

Show All COM Assignments check box
Enable or check the Show All COM Assignments check box to display ALL of the COM port name and numbers that have been registered on your computer. This will include COM ports for other devices.

Note: You may have COM ports assigned or 'set aside' for hardware that may not be installed on your computer depending on how your computer was setup by its manufacturer.

COM port mapping pull down menu

The COM port mapping pull down menu allows you to reassign the selected Keyspan COM port in the COM port list window.   This window also reports whether a COM port is 'in use'. In this menu, 'in use' means that the selected COM port has assigned or reserved. It is highly recommended that you only change the COM port mapping to COM ports that are not 'in use'.

Note: The COM port mapping pull down menu allows you to change the COM port mapping to any COM port including those that have already been assigned (aka in use). Changing the COM port mapping to a COM port that is in use may render any hardware and/or software using that port inoperable.

Adapter Port Mapping Mode box

The Adapter Port Mapping Mode box allows you to change the behavior of how Keyspan COM port numbers are assigned when you connect the Keyspan adapter to a different USB port than the one it was originally connected to.

Dynamic:
Dynamic assigns a COM port number (or numbers if your Keyspan adapter has multiple serial ports) to a particular Keyspan adapter. If you disconnect the Keyspan adapter and connect it to a different USB port, the COM port number of that Keyspan adapter will not change. This is the default setting and is recommended setting if you only have one Keyspan adapter.

Geographic:
Geographic assigns a COM port number (or numbers if your Keyspan adapter has multiple serial ports) to a particular USB port on your computer.   If you disconnect the Keyspan adapter and connect it to a different USB port, the COM port number of that Keyspan adapter will change. This setting is recommended if you are using multiple Keyspan adapters and want the COM port numbers to remain the same.

Delete All Keyspan USB Serial Adapter Port Mappings button

Note: this is an option for advanced users only. If you are unsure about how this command will affect your computer, do not use it.

The Delete All Keyspan USB Serial Adapter Port Mappings button clears the Windows registry of all Keyspan USB Serial Adapter COM port numbers and Keyspan USB information. This allows Windows to create new COM port assignments.

Diagnostics tab

The Diagnostic tab in the Keyspan Serial Assistant reports diagnostic information about your Keyspan adapter's software and hardware. The following is an explanation of the items in this tab.

Diagnostics tab
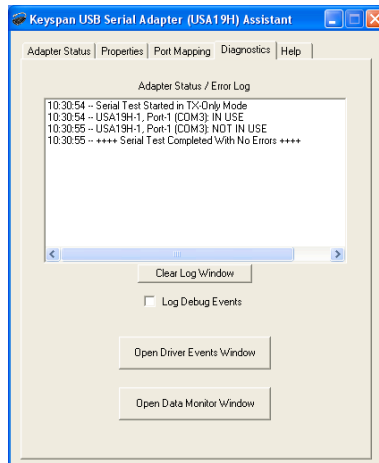
Adapter Status/Error Log window
The Adapter Status / Error Log box displays the status of your Keyspan adapter hardware and software. It detects if the Keyspan driver is installed and whether or not a Keyspan adapter is connected.

Clear Log Window button
The Clear Log Window button will clear the Adapter Status / Error Events box.

Log Debug Events check box
Enable or check the Log Debug Events check box to display all of the Keyspan adapter's debug events as well as the driver events. This option can be turned on and off.

Open Driver Events Window button
The Open Driver Events Window button will open the Keyspan adapter's Event log window. This window reports all of the events or actions that the adapter is performing. This is useful in troubleshooting data communication problems. This is an advanced feature of the Keyspan Serial Assistant. For more details on how to use this feature, read the **Driver Events / Data Monitor Features** section in this manual. Data from this window can be saved to text file.

Open Data Monitor Window button
The Open Data Monitor Window button will open the Keyspan adapter's Line Monitor (aka Data Monitor) window. The Line Monitor will display all data and all modem control state changes sent to and from the USB Serial Adapter. This is an advanced feature of the Keyspan Serial Assistant. For more details on how to use this feature, read the **Using Driver Events / Data Monitor Features** section in this manual. Data from this window can be saved as a graphic to your clipboard (and pasted into most programs [WordPad is a compatible program]).

Help Tab

The Help tab in the Keyspan Serial Assistant displays the version numbers if the different components in your Keyspan USB Serial Adapter installation. You can also enable Tool Tips (on screen help), read your Keyspan adapter's User's Manual, or go to Keyspan's home page.

Help tab
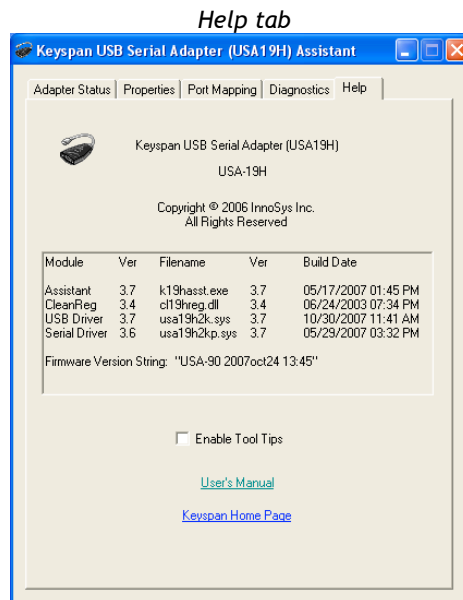
TX Ack Advance Details

USA-19H Tx Ack Advance Overview

Many Keyspan USB serial adapters support configurable "Transmit Acknowledgment Advance" (aka TX-ACK threshold, aka TX-ACK(nowledgement) advance, etc.) in the Keyspan Manager. This feature allows the user to adjust a device's transmit behavior to achieve the optimum compromise between compatibility (exact emulation of built-in ports) and improved throughput. This document describes the factors which a user should be aware of to guide their configuration of this feature.

The Problem

In the case of a standard, "built-in" serial port, the host CPU (the "brain" of the computer) can communicate directly with the serial hardware because the (serial) hardware is in the address space directly accessible to the CPU. When the serial port has transmitted all the data in its transmit FIFO (the buffer that holds characters waiting to be sent), it interrupts the CPU, which then adds more characters to the transmit FIFO with a minimal time delay.

By contrast, in a USB to serial adapter, information about the state of the serial port FIFO reaches the CPU by means of USB messages. The USB subsystem in most computers delays the delivery of inbound (USB peripheral to USB host computer) USB messages by about 1 millisecond. The impact of this delay on serial throughput depends on the baud rate. At 9600 baud, it takes about 1 millisecond to transmit a character. If the serial adapter signals the host when it begins transmitting the last character in its FIFO, the host learns about it at about the same time the character is actually finished being transmitted. Since outbound (USB host computer to USB peripheral) USB messages are not subject to such a long delay, the host can supply new data before the serial port has been idle for too long.

At higher baud rates, however, this 1-millisecond delay becomes more of a problem. For example, at 920 Kbps, 1 millisecond is enough time to send 92 characters. So, if you're sending 92 characters at a time, you will only achieve 50% throughput, since half the time is spent with the adapter waiting for the host to send more data.

The Work Around

Since there's no way to eliminate the USB delays, there's only one work around: the serial adapter has to lie about when it's done transmitting. This way, the adapter still has some data to transmit while it's waiting for more to arrive from the host. If the next data from the host arrives before the previous data is completely sent, the new data can be sent with no delay, and the device will achieve improved transmit throughput.

Notes about the Work Around

In most situations, the serial adapter's lie is harmless or beneficial, even. However, in some circumstances, this lie gets us into trouble. There are several ways this can happen:

Flow control:
If the adapter is programmed to use flow control, the remote (receiving) end of the serial connection can ask the adapter to suspend its data transmission (e.g. if it's not ready to receive more data). Since this state can persist indefinitely, the "I'm done" indication, if it were sent early, could arrive at the host a significant amount ahead of time. As a result, the application might use the "I'm done" signal as an indication that the remote end is ready, leading to various kinds of trouble.

Data flushing:
Sometimes, an application will issue a "transmit flush" command to the adapter get rid of extra data. For example, let's say that an application sends "AAAA" to the adapter, and then, once it's received the "I'm done" indication, sends "BBBB." Now, let's say that some time after sending "BBBB," the appli-

cation decides to cancel whatever part of the "BBBB" has yet to leave the serial port, and sends a "transmit flush" command to the adapter. If the adapter had been lying about being done sending "AAAA," it might still not be done, and the flush could purge the transmit FIFO of some of the A's (which is not what the application was expecting) in addition to the B's.

Timing:
In some applications, the receipt of the "I'm done" indication is used as a timing reference point. For example, an application could send a data stream like this:

```
COMMAND...........................................................
```

The extra periods following COMMAND would be just used to establish a timing interval: the application would know that once the serial port said "I'm done," the receiver would have had at least 64 character times to process COMMAND. If the "I'm done" indication was sent early, the application might then do its subsequent action too early.

There are many other communication protocols in which time periods are counted from the point that a message has been delivered. Any time you change the timing of the "I'm done" indication, you run the risk of interfering with such protocols.

What Should I Use?
There are two ways you can configure Tx Ack Advance:

Standard:
If you're using a baud rate of 57600 or less, you probably don't have a problem. The 1 millisecond delay will not significantly affect your throughput, and you can select this option. This option is also a good choice if you are running an application in which throughput is not an issue, or one in which guaranteeing 100% correct operation is important enough that you'd prefer not to risk having problems.

Faster:
If you're using a baud rate above 57600, you can simply try increasing this setting, and see whether it improves performance (in which case, great!), causes problems (in which case, don't use it), or doesn't make any difference (in which case it doesn't matter what you do).

Serial Port Pin Outs [DB9]

USA-19HS Pin Outs

The pin assignments for the Keyspan USB Serial Adapter's male DB9 port are illustrated below:
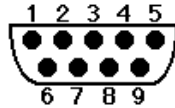
Pin	Name	Signal Designation
1	DCD	DCD Data Carrier Detect (Input)
2	RX	RX Received Data (Input)
3	TX	TX Transmitted Data (Output)
4	DTR	DTR Data Terminal Ready (Output)
5	GND	GND Ground
6	DSR	DSR Data Set Ready (Input)
7	RTS	RTS Request To Send (Output)
8	CTS	CTS Clear To Send (Input)
9	RI	RI Ring Indicator (Input)

In order to ensure compliance with emission specifications, cables should be shielded using braided shields and metal hoods with complete 100% contact between the shields and hoods.

External Loopback Connector Information

The Keyspan Serial Assistant allows you to perform two types of loopback tests - internal and external. The external test requires the use of a special loopback connector. This connector requires a "DB9 Female Loopback plug" with the following wiring:

Pin (s)	Wired to	Pin(s)
1	< - >	4, 8
2	< - >	3
5	< - >	7, 9

Specs - High Speed USB Serial Adapter

Specs
- Connects to USB port on PC or Mac
- Provides one male DB-9 RS-232 port for direct connection to serial device
- Supports data rates up to 230 Kbps

Package Contents
- USA-19HS USB to serial Adapter
- USB Cable
  - ‣ A to B cable (3 foot)
- CDROM (includes software and electronic user manual)

Requirements
- an available USB port
- Mac OS: 8.6 - 9.2.2
- Mac OS X: 10.2.8, 10.3.x, 10.4.x, 10.5.x
- Windows: 98, 98SE, Me, 2000, XP, Windows Server 2003 x86, Vista (32bit and 64bit)

Warranty Information [Two (2) year(s)]

2-Year Limited Warranty

TRIPP LITE warrants its products to be free from defects in materials and workmanship for a period of two (2) years from the date of initial purchase. TRIPP LITEs 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 which has been damaged by accident, negligence or misapplication or has been altered or modifi ed 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.

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Notices FCC, CE, etc

United States FCC

InnoSys Incorporated (dba Keyspan)
4118 Lakeside Dr
Richmond, CA 94806 USA
(510) 222-0131

KEYSPAN High Speed USB Serial Adapter (part of USA-19HS package)
Model: USA-19H (aka USA-19HS)

Complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications to the USB Serial Adapter not expressly approved by InnoSys Incorporated could void the user's authority to operate this equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult InnoSys Incorporated or an experienced radio/TV technician for help.

Complies with 15.247

Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications to the KYRF-TVUSB-A and/or TVREM-200C (both part of USA-19HS package) not expressly approved by InnoSys Incorporated could void the EMC compliance and negate the user's authority to operate this equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.
Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
Consult InnoSys Incorporated (aka Keyspan) or an experienced radio/TV technician for help.

CE MARK DECLARATION OF CONFORMITY

Manufacturer's Name and Address

InnoSys Incorporated (dba Keyspan)
4118 Lakeside Dr
Richmond, CA 94806

Declares that the product:

KEYSPAN High Speed USB Serial Adapter Transceiver (part of USA-19HS package)
Model: USA-19H (aka USA-19HS)

Conforms to the following Product Specifications:

EN 55022: 1998 Class B
EN 55024: 1998

following the provisions of the R & TTE Directive.

Mike Ridenhour, Richmond, CA, USA,
President, March, 2008

Canada Digital Apparatus EMI Standard

This Class B digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numerique de la classe B respecte toutes les exigences du Reglement sur le material brouilleur du Canada.

VCCI (Japan)

Voluntary Control Council for Interference from Information Technology Equipment

Class B ITE

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

Translation:
This is a Class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

Australia/New Zealand

This device complies with AS/NZS 3548 Class B limits for the operation of Information Technology Equipment.

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