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1.1 - Introduction

Looking for a way to connect a serial printer, graphics tablet, camera or PDA to the USB ports to your USB equipped Macintosh computer (i.e. iMac, 'blue and white' G3, G4, PowerBook, iBook, etc.)? The **Keyspan USB Twin Serial Adapter** is a simple, inexpensive, and reliable way to make the connection.

The Adapter plugs into any USB port on your Mac. It provides **TWO** serial ports which can be used to connect to many Macintosh serial devices.

Up to **EIGHT** Keyspan USB Twin Serial Adapters may be installed on one CPU if desired.

Requirements

The **Keyspan USB Twin Serial Adapter Software for Mac OS** requires the following:

- Macintosh:
 - At least one available USB port
 - Mac OS 8.6 - 9.x

Contents

The **Keyspan USB Twin Serial Adapter** package includes:

- Keyspan USB Twin Serial Adapter (USA-28X)
- Mac compatible CD with software and user manual

Note: This documentation applies to Keyspan's USB Twin Serial Adapter Software for Mac OS 8.6 - 9.x and covers the features and use of this software on that platform. For Mac OS X information and instructions, please read the **Keyspan USB Serial Software for Mac OS X User Manual** or visit Keyspan's web page [<http://www.keyspan.com>](http://www.keyspan.com)



2.1 - Capabilities

Specifications - Hardware

The Keyspan USB Twin Serial Adapter provides **TWO female Din8 serial ports** which supports asynchronous or clocked asynchronous RS-422/RS-232 communications at data rates up to **1Mbit/sec**. The Keyspan USB Twin Serial Adapter's ports also support serial devices that require external clocking of the baud rate. Please read our [Compatibility List for Mac OS](#) for a list of serial devices that have been tested with the Keyspan USB Twin Serial Adapter.

The Keyspan USB Twin Serial Adapter also supports many MIDI devices. Please read our [MIDI Information](#) appendix for details about MIDI and the Keyspan USB Twin Serial Adapter.

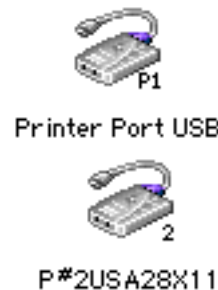
AppleTalk (LocalTalk) and **Geoport** are not supported on the Keyspan USB Twin Serial Adapter's ports. Please note that AppleTalk (LocalTalk) and Geoport are not disabled by the Keyspan USB Twin Serial Adapter if you have these features installed already.

Keyspan USB Twin Serial Adapter Port

Keyspan USB Twin Serial Adapter
Serial Ports



Keyspan USB Twin Serial Adapter
sample **Port Icons And Names**



Specifications - Software

The **TWO female Din8 serial ports** on the Keyspan Adapter are seen as serial ports by Mac OS. The Keyspan serial ports are interfaced via the "*CommToolBox*" API and are then available to any program that accesses serial ports via this API. For programs that don't use the *CommToolBox* to access serial ports, the Keyspan adapter can emulate the **PRINTER** and/or **MODEM** ports as found on older Macintosh computers.



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Note: You can only have one **PRINTER** port and one **MODEM** port on any given computer. In order for the Keyspan adapter to emulate either of these ports, the MODEM or PRINTER ports must not be 'in use' or registered by other software or hardware. For example, PRINTER/MODEM port emulation is not available on a Mac that already has a MODEM and PRINTER builtin (any pre-USB Mac). MODEM port emulation is not available on any Mac that has an internal modem as internal modem typically emulates the MODEM port (PRINTER port emulation is typically available on these Macs). Printer/Modem Port emulation can be turned ON by using the [Keyspan Serial Assistant's](#) Advanced Setting's screen.

On Mac OS, **Port 1** on the Keyspan USB Twin Serial Adapter is named "**P#1USA28Xyyxx**". This port is accessible by selecting the "**P#1USA28Xyyxx**" port name or the USA28X icon in your serial device's software. This port is published via the *CommToolBox* and can be accessed by *CommToolBox Savvy* software.

On Macs that do not have built-in serial ports (ie 'Blue and White' G3s, iMacs, iBooks, G4s, etc...), **Port 1** can emulate the **PRINTER** port (as found on older Macintosh computers) for serial devices that are *not CommToolBox Savvy* and can't access the "**P#1USA28Xyyxx**" port. Printer Port emulation can be turned ON by using the [Keyspan Serial Assistant's](#) Advanced Setting's screen. Once you've emulated the Printer port, Port 1 will be accessible by selecting the 'PRINTER' port icon or 'Printer Port USB' port name in your serial device's software. Printer port emulation is turned OFF by default.

On Mac OS, **Port 2** on the Keyspan USB Twin Serial Adapter is named "**P#2USA28Xyyxx**". This port is accessible by selecting the "**P#2USA28Xyyxx**" port name or the USA28X icon in your serial device's software. This port is published via the *CommToolBox* and can be accessed by *CommToolBox Savvy* software.

On Macs that do not have built-in serial ports (ie 'Blue and White' G3s, iMacs, iBooks, G4s, etc...), **Port 2** can emulate the **MODEM** port (as found on older Macintosh computers) for serial devices that are *not CommToolBox Savvy* and can't access the "**P#1USA28Xyyxx**" port. Printer Port emulation can be turned ON by using the [Keyspan Serial Assistant's](#) Advanced Setting's screen. Once you've emulated the Printer port, Port 1 will be accessible by selecting the 'PRINTER' port icon or 'Printer Port USB' port name in your serial device's software. Printer port emulation is turned OFF by default.

Note: If you install more than one Keyspan USB Twin Serial Adapter on your Mac, Port 1 and Port 2 on subsequent adapters will have different names (please contact Keyspan for details).



3.1 - Installation Instructions

Installing the USB Twin Serial Adapter Software for Mac OS

Note: These instructions apply to installing the Keyspan USB Twin Serial Adapter on Mac OS 8.6 through 9.x. If you are installing this software on Mac OS X via CLASSIC, please read the **Keyspan USB Serial Software for Mac OS X User Manual** or visit Keyspan's web page <<http://www.keyspan.com>> before proceeding.

Step 1 - Insert the Keyspan Serial Adapter CD-ROM

Turn your computer ON. When your computer starts up, place the **Keyspan USB Twin Serial Adapter** CD into the CD-ROM drive. When the CD icon appears on your desktop, double click on this icon to display its contents.

Locate the Keyspan Mac OS 8.6 - 9.x folder and then locate the **Keyspan USA28X Installer** for Mac OS.

Step 2 - Run the Keyspan USB Serial Software for Mac OS Installer

If the Keyspan Adapter is connected to your computer, **disconnect** it now.

Run the **Keyspan USA28X Installer** for Mac OS by double clicking the installer icon. This will start the installer. Once the installer is running, follow the instructions on screen.

The installer will install the following items:

- " KeyspanUSBLoader" (in the *Extensions* folder)
- "KeyspanUSA28XDrv" (in the *Extensions* folder)
- "[Keyspan Serial Assistant](#)" (in the *Control Panels* folder)
- "Keyspan Manager" (in the *System Folder* folder)

Step 3 - Software Installation Complete!

Now that you have installed the Keyspan USB Twin Serial Adapter software, you are ready to install the Keyspan USB Twin Serial Adapter hardware. Please proceed to the **installing the Keyspan USB Twin Serial Adapter Hardware** instructions.

(continued on next page...)



Installing the Keyspan USB Twin Serial Adapter Hardware

The following hardware installation instructions provide a basic overview on installing the **Keyspan USB Twin Serial Adapter** in a USB port. For detailed instructions on how to connect USB devices your specific computer, please refer to the USB Device Install section in your computer's user's manual.

Step 4 - Connect the Adapter to your USB port

Attach the Adapter to your computer by connecting the Adapter's **USB cable** into any built-in USB port on your computer or USB Hub. It is not necessary to turn off your computer when attaching the Adapter.

Keyspan USB Twin Serial Adapter's
USB Cable



Step 5 - Hardware Installation Complete!

Your Keyspan USB Twin Serial Adapter is ready for use now that you have installed hardware and software.

Please proceed to the [Configuring Your Serial Device](#) section in this manual for instructions on what to do next.



4.1 - Configuring Your Serial Device

Prior to using your serial device (modem,UPS, etc.) with the Keyspan USB Twin Serial Adapter, you must:

1. connect your serial device (*hardware*) to the Keyspan port
2. configure your serial device's *software* to use the Keyspan port

The following instructions provide a general overview of this process however we do provide specific configuration instructions for certain serial devices. For a list of these examples, please read the [Configuration Examples for Mac OS](#) Appendix in this manual.

Connecting Your Serial Device (Hardware)

If your Keyspan adapter is not connected, please do so NOW.

Step 1 - Connect Your Serial Device To The Keyspan Adapter

Attach your serial device's (ie Palm cradle, GPS, cell phone) serial cable to the serial port on your Keyspan USB Twin Serial Adapter.

Step 2 - Determine Which Keyspan Port Your Serial Device Is Connected To

If your have a Keyspan product that has more than one serial port, please note which Keyspan serial port your serial device is connected to (the serial port on the Keyspan product, not your USB ports on your computer or USB hub). This information will become useful as we start Configuring Your Serial Device's Software.

Configuring Your Serial Device's Software

The following configuration instructions provide a basic overview of how to configure your software to use your Keyspan serial port(s). For specific instructions on how to operate your serial device, please refer to your serial device's user's manual for detailed instructions...

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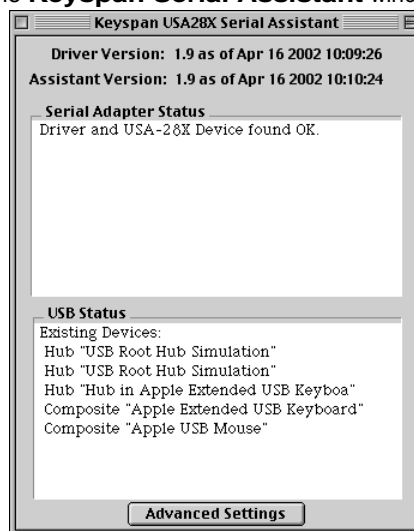


Step 3 - Check the Keyspan Serial Assistant

Now that your serial device is connected to the Keyspan adapter, you should check to see if the Keyspan serial port is installed correctly.

To do this, open the [Keyspan Serial Assistant](#) (located in Control Panels). When you open the [Keyspan Serial Assistant](#), you will see the following window:

the **Keyspan Serial Assistant** window



If your Keyspan hardware and software are installed correctly, the '**Serial Adapter Status**' text box will report 'Driver and USA-28X Device found OK' or '...Renumerating...Done'.

If you see either of these messages, proceed to **Step 4**. If you do not receive either of these messages, proceed [Problem Solving](#) section in this manual

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Step 4 - Determine Where To Select/Configure The Keyspan Serial Port(s)

Prior to using your serial device with a Keyspan serial port, you must first tell that serial device's **software** which serial port your serial device **hardware** is connected to.

For example, if you have a Palm, you will have to tell the Palm Desktop **software** to look for your Palm handheld (**hardware**) on a Keyspan serial port. By doing this, you establish communication between your serial device's **software** (ie the Palm Desktop software) and your serial device hardware (the Palm handheld unit).

Most serial devices will have software that will allow you to select which serial port the device is connected to. Depending on your serial device and its software, you may have to configure: a Control Panel (ie modems accessing ISPs), an application (ie UPSes), or some combination of these (ie modems accessing terminals using Zterm).

Please refer to your serial devices documentation on which method your serial device uses and how to access that software's serial port "configuration" screen.

Once you've determined where to select or configure your serial device's software's serial port settings, please proceed to **Step 5**.

Step 5 - Determine Which Serial Port To Select In Your Serial Device's Software

When you've found the port selection screen in your serial device's software, you may be presented with a list of serial port names, a list of icons, or some combination of both.

At this point, you have to select the name or icon of the Keyspan serial adapter you are connecting to. Please note that you can see the port name and icon port name of your Keyspan Serial Adapter in the [Capabilities](#) section in this manual.

Step 6 - Use Your Serial Device

Once you've configured your serial software to use the Keyspan serial port, you're ready to start using your serial device under Mac OS.



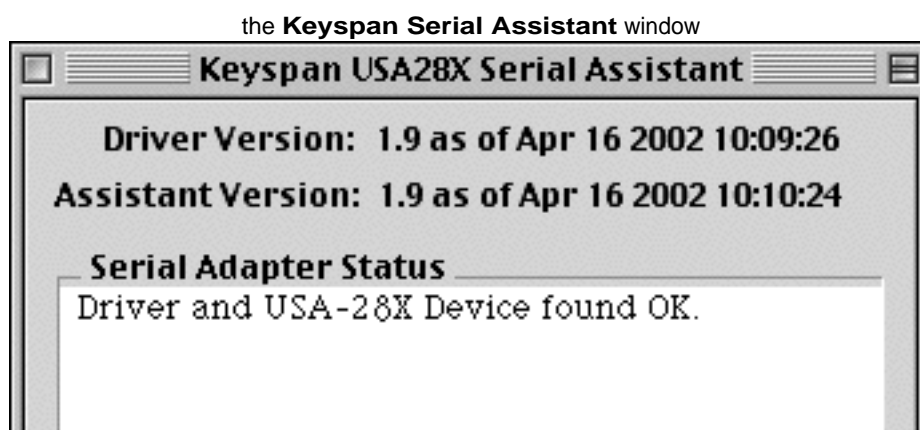
5.1 - Keyspan Serial Assistant

Besides the required drivers, the Keyspan USB Twin 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

To launch the Assistant, double click the "Keyspan Serial Assistant" icon in your **Control Panels** folder. This will open the [Keyspan Serial Assistant](#) window.



The Keyspan Serial Assistant will display any Keyspan USB Twin Serial Adapters connected to your computer. If your Keyspan adapter hardware and software are installed correctly you will see 'Driver and USA-28x Device found OK' or '...Renumerating...Done' in the **Serial Adapter Status** text box. If you do not receive either of these messages, proceed [Problem Solving](#) 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 selecting '**Show Balloons**' in the Help menu and moving the cursor over any item in the Assistant.

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Keyspan Serial Assistant Window

the **Driver and Assistant Version** items

Driver Version: 1.9 as of Apr 16 2002 10:09:26
Assistant Version: 1.9 as of Apr 16 2002 10:10:24

The **Driver Version** and **Assistant Version** items show the version numbers of the *installed* Keyspan USA-28X driver and Assistant respectively. The two version numbers should always match. If these numbers do not match, you should reinstall the Keyspan software.

the **Serial Adapter Status** text box

Serial Adapter Status
Driver and USA-28X Device found OK.

The **Serial Adapter Status** text box displays the status of your Keyspan adapter hardware and software. It detects if the Keyspan driver (*software*) is installed (or found) and whether or not a Keyspan adapter (*hardware*) is connected.

If your Keyspan adapter hardware and software are installed correctly you will see 'Driver and USA-28X Device found OK' or '...Renumerating...Done' in the **Serial Adapter Status** text box. If you do not receive either of these messages, proceed [Problem Solving](#) section in this manual.

the **USB Status** text box

USB Status
Existing Devices:

The **USB Status** text box shows what USB devices (ie hubs, keyboards, mice, etc.) are connected to your USB bus. This text box will not display serial devices connected to your Keyspan adapter.

the **Advanced Settings** button

Advanced Settings

The **Advanced Settings** button will access the Keyspan adapter's advance configuration options. Once you click this button, you will open the [Keyspan Manager](#) window.

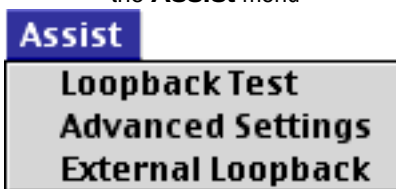


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You should only access this option if your serial device requires that you turn on an advanced option on or if you are sure of what you are doing. In most cases, you will not need to change any of the adapter's advanced options.

The Assist Menu

the **Assist** menu



The Keyspan Serial Assistant's **Assist** menu is located in the Menu bar and provides access to the following command(s):

- The **Loopback Test** command performs an 'internal loopback test.' This tests the ability of the Adapter to **send** data. Since this test **does not test the ability to receive data**. Results of this test listed in the **Serial Adapter Status** text box. Please note that this test cannot take place when the Keyspan serial port is in use by another application.
- The **Advanced Settings** button will access the Keyspan adapter's advance configuration options. Once you click this button, you will open the [Keyspan Manager](#) window.
- The **External Loopback** command tests the Adapter's ability to **send and receive** data. This test requires an external 'loopback connector'. For details about external loop back connectors, please read the **External Loopback Connector** information in [Serial Port Pin Outs](#) appendix in this manual.

5.1.a - Keyspan Manager

The **Keyspan Manager** window allows you to modify characteristics of your Keyspan serial port(s). You should only change settings in this window if you are sure that you specifically need to change them.

To open the **Keyspan Manager**, click the "Advanced Settings" button in the [Keyspan Serial Assistant](#) control panel (located in your **Control Panels** folder (located in your hard drive's **System Folder**)). This will open the **Keyspan Manager** window.

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Explanation of Manager Features

The following is a description of all the relevant text boxes and menus found in the Keyspan Manager. You can also obtain this information by selecting '**Show Balloons**' in the Help menu and moving the cursor over any item in the Manager.

Keyspan Manager Window

Unit **usb1::1:**

The **Unit** popup menu is used to select which **Keyspan Adapter** you would like to configure. The available items in this menu will correspond to the physical location of any USB Twin Serial Adapter (or adapters) that has been installed in your computer.

☐ Use Naming '.Cin .Din etc.'

The **Use Naming '.Cin .Din** check box allows use of an alternative port naming conventions. This option is provided for compatibility with certain applications which adopted this naming convention. Please contact the manufacturer of your serial to see if you require this setting to be enabled. The default state is unchecked. A change in this setting will take effect upon restart of your computer or until you disconnect and reconnect the adapter.

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☐ Use INTERRUPT endpoints

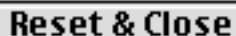
The **Use INTERRUPT endpoints** check box is used to change how the Keyspan adapter communicates with your computer's USB bus. When this option is turned on, the Keyspan adapter will use the INTERRUPT endpoints to communicate with your computer's USB bus. When this option is turned off, the Keyspan adapter will use the BULK method of communicating with your computer's USB bus.

Port 

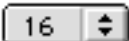
The **Port** popup menu allows you to select the Keyspan serial port that you want to configure. Please note that each port maintains its own separate settings. As a result you must configure each port individually.

Port Name: 

The **Port Name** text box allows you to change the name of the selected port. Changes will take effect upon reboot. Please note that you cannot change the port name on ports that use the **Emulate Modem/Printer Port** check box.



The **Reset & Close** button can be used to recover use of a serial port that is open and cannot be closed by the application that opened it. When you click on this button, Keyspan Manager will send calls to the port which should reset the port and close it. This will not prove effective in every circumstance.

Receive FIFO: 

The **Receive FIFO** popup 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.

Default buffer size: 

The **Default buffer size** text box allows to set a different buffer size to be established for the specified Adapter port. This change takes effect upon restart of your computer. Since most applications which use serial ports supply their own buffer, this setting often has no benefit.




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☐ Double Baud Rate

The **Double Baud Rate** check box will allow certain older applications to use higher data rates than were foreseen when the application was written. Some applications, for example, may not provide the opportunity to select a baud rate above 57.6 Kbps. When this check box is checked, the port will use a baud rate which is exactly double the rate specified in the application software. Changes will take effect upon restart of your computer.

WARNING: DO NOT enable this check box if you do not need to. Enabling this check box in software that supports the baud rates higher than 57.6 will cause that software to operate incorrectly.

Tx Ack Advance: 

The **Tx Ack Advance** popup menu allows you to set the Keyspan adapter's transmit behavior to achieve the optimum compromise between compatibility (exact emulation of built-in ports) and maximum throughput. Please read the [TX Ack Advance](#) appendix in this manual for more detailed information.

☐ Emulate Modem Port

The **Emulate Modem/Printer Port** check box allows your Keyspan adapter to emulate the "Printer Port" or "Modem Port" as found on older Macintosh computers. This allows software that is not CommToolBox Savvy to use a port on the Keyspan adapter.

Note: This option is only available on Macs that do not have a built-in Modem or Printer (ie "Blue and White" G3s, iMacs, iBooks, etc.). On Keyspan Adapters that only have ONE serial port, you can only emulate the **Printer** port.

☐ Epson Support

The **Epson Support** check box allows one you to use certain Epson printers with your Keyspan USB Twin Serial Adapter. Only use this option if you our [Compatibility List for Mac OS](#) instructs you to do so or if you are having problems with your Epson printer. **IMPORTANT!!! Turning on this feature will disable any device connected to an internal modem slot.**

Note: This option is only available on an emulated Printer port. Please check our [Compatibility List for Mac OS](#) page for information on which Epson printers require this setting. This option is **DISABLED** on the Keyspan High Speed USB Serial Adapter and Keyspan USB PDA Adapter.

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Stats

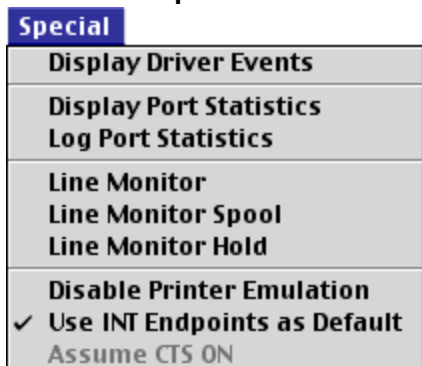
The **Stats** button will cause a Port Statistics window to appear. The Stats window can be used to confirm that a baud rate for the selected port is set at your intended value. It may also be used to document the existence of communications errors.

Status:

The **Status** text box displays current status of the selected port. Information in this text box is dynamically updated.

The Special Menu

the **Special** menu



The Keyspan Manager's **Special** menu is located in the Menu bar and provides access to the following command(s):

Display Driver Events

The **Display Driver Events** command copies the Keyspan Adapter's serial driver's internal event buffer into the Keyspan Manager's event log and displays it in a window. This capability may be useful when troubleshooting a communications problem with the help of Keyspan staff.

Display Port Statistics

The **Display Port Statistics** command functions the same as the **Stats** button in the Keyspan Manager's window.

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Log Port Statistics

The **Log Port Statistics** command copies port statistics to the Keyspan Manager's event log, but does not display the "Stats" window. Adding statistical data to the event log enriches the information provided to Keyspan staff during troubleshooting.

✓ Line Monitor

The **Line Monitor** option will display a Line Monitor window for port selected in the **Port** popup menu. The Line Monitor will display all data and all modem control state changes sent to and from the Keyspan Adapter.

✓ Line Monitor Spool

The **Line Monitor Spool** creates a file where information from the Keyspan Manager's Line Monitor will be stored. You can turn this option on or off.

✓ Line Monitor Hold

The **Line Monitor Hold** command will stop the Keyspan Manager from spooling the Line Monitor data. Deselecting this option will resume the collection of Line Monitor data.

✓ Disable Printer Emulation

The **Disable Printer Emulation** command will disable Printer port emulation on ALL Keyspan USB Twin Serial Adapters connected to your computer. Deselecting this option will allow Printer port emulation on any Keyspan USB Twin Serial Adapter connected to your computer.

✓ Use INT Endpoints as Default

The **USE INT Endpoints as Default** command will make ALL Keyspan USB Twin Serial Adapters connected to your computer default to use **INTERRUPT endpoints** (for better performance at high baud rates).

✓ Assume CTS ON

The **Assume CTS ON** command will force ALL Keyspan USB Twin Serial Adapters connected to your computer to assume that the CTS signal is ON (or HIGH) when CTS is not specified by your serial device's software or serial cable.

Note: This option is **DISABLED** on the Keyspan High Speed USB Serial Adapter and Keyspan USB PDA Adapter.



6.1 - Problem Solving

If you are having problems with your **Keyspan USB to Serial Adapter in Mac OS**, please read the following instructions to assist you in troubleshooting your Keyspan adapter.

Hardware Troubleshooting

Step 1 - Use the Keyspan Serial Assistant

Launch the [Keyspan Serial Assistant](#) application. When you open the [Keyspan Serial Assistant](#) application, the '**Serial Adapter Status**' text box will report 'Driver and USA-28X Device found OK' or '...Renumerating...Done'. These messages indicate the Keyspan adapter software and hardware are installed properly.

If you do not receive either of these messages, please contact [Keyspan Tech Support](#) for further assistance.

Otherwise, skip ahead to **Step 2**.

Software/Serial Device Troubleshooting

Step 2 - Check The Physical Connections

Make certain that your serial device is powered on and is properly connected to the Keyspan Serial Adapter.

Proceed to **Step 3** ...

Step 3 - Check Your Serial Device's Software Configuration

Check to see if your serial device's software is configured to use the Keyspan port . Please refer to your serial device's documentation for instructions on how to select/switch/configure a serial port in that software.

Once you've found your software port configuration screen, does it display the Keyspan USB Twin Serial Adapter port name(s)?



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If you **do not** see the Keyspan port name(s), please contact [Keyspan Tech Support](#) for further assistance.

If you see the Keyspan port name(s) and have properly selected the Keyspan port that your serial device is connected to and are still having problems, please continue to **Step 4**.

Step 4 - Use Your Serial Device

If you have followed all of the above steps and are still having problems with your Keyspan USB Twin Serial Adapter, contact [Keyspan Tech Support](#) for further assistance.

When You Need More Help...

The Keyspan web site <http://www.keyspan.com> is your best source for technical support information. The web site includes technical notes, reference manual updates, and answers to frequently asked questions.

You may also contact our technical support department directly via email, phone, or fax. Please see the [Support Information](#) section in this manual for more details.



7.1 - Appendices -

- [Frequently Asked Questions \(FAQs\)](#)
Frequently Asked Questions
- [Compatibility List for Mac OS](#)
List of serial devices that have been tested with Keyspan serial adapters...
- [Configuration Examples for Mac OS](#)
Instructions on configuring select serial devices to use Keyspan serial ports
- [Serial Port Pin Outs](#)
Serial Port Pin Out and Loopback Test Information
- [TX Ack Advance](#)
White Paper on the TX Ack Advance feature
- [MIDI Information](#)
Information about Keyspan serial ports and MIDI
- [Notices](#)
FCC, CE, VCCI, Copyright and Trademark Information
- [Keyspan Warranty Information](#)
Keyspan Warranty Information
- [Support Information](#)
Information about obtaining technical support



7.1.a - Frequently Asked Questions (FAQs)

The following is a list of Frequently Asked Questions (FAQs) about the Keyspan USB Twin Serial Adapter for Mac OS. Keyspan frequently updates and adds the questions and answers list below. For the latest list, please visit the our web site at: <http://www.keyspan.com>

Frequently Asked Question List

Question:

How do I configure my serial device to recognize the Keyspan USB Twin Serial Adapter?

Answer:

To configure any serial device to use a serial port on any Keyspan USB Serial Adapter, you must:

1. Locate the software that controls your serial device.
2. Access that software's port or connection configuration screen/dialog/menu/etc.
3. Select the Keyspan port that your device is connected to in port or connection configuration screen/dialog/menu/etc. for that device

Depending on what type of serial device you have, you may have to configure a control panel, an application, a plug-in, or an icon in the Chooser. Keyspan provides documentation on how to configure many popular serial devices in the [Configuration Examples for Mac OS](#) appendix in this manual.

Question:

Can I connect my Keyspan USB device to a USB hub?

Answer:

Yes, any Keyspan USB device can be connected to a USB hub. However, there are some USB hubs that cannot fully support some USB devices. If you are having problems with a Keyspan USB device that is connected to a USB hub, please connect the Keyspan USB device to a built-in USB



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port on your computer. If this solves the problem, then this may be an issue with your USB hub. If you are encountering this problem or something similar to it, please contact [Keyspan Tech Support](#) for further instructions.



7.1.b - Compatibility List for Mac OS

The following is a list of serial devices that have been tested with various Keyspan Serial Products on Mac OS (8.6 - 9.x). This list is intended to be used as reference guide and not as complete compatibility list. We are constantly testing products and adding them to this list.

Although compatibility testing of the **Keyspan USB Twin Serial Adapter** software has been focused on printers, modems, Palm PDAs, many Mac OS compatible serial devices are compatible with the Keyspan USB Twin Serial Adapter.

For the latest version of this list, please visit our web site at: <http://www.keyspan.com>

For the compatibility list for other operating system (ie Mac OS X, Windows, etc.), please refer to the user manual for that platform or visit our web site at: <http://www.keyspan.com>

Legend

- = See **Notes** section at end of list
- √ = Configuration Guide Available
- Δ = Not Tested
- * = Requires emulated **MODEM** or **PRINTER** port
- Y = Compatible
- N = Not Compatible
- ! = See Guide for Information
- ∅ = not compatible with Operating System

Compatibility List for Mac OS (8.6 - 9.x)

<u>Product</u>	<u>Guide</u>	SX-2 SX-4 USA28	USA18X USA28X	SXPro4
<i>Graphic Tablets</i>				
Wacom Tablets (serial)		Y	Y	Y
<i>PDAs and PDA Software</i>				
Palm	√	Y	Y	Y

(continued on next page...)



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Digital Cameras and Digital Camera Software

CamerAid	Y	Y	Y
Olympus Digital Cameras (serial)	Y	Y	Y

Modems and Modem Software

Remote Access software (Apple)	Y	Y	Y
AOL software	Y	Y	Y
Modems (serial - any model)	Y	Y	Y

Printers & Printer Software/Protocols

LocalTalk (aka AppleTalk via Serial)	N•	N•	N•
LaserWriter8 printer driver (AppleTalk)	N•	N•	N•
AdobePS printer driver (AppleTalk)	N•	N•	N•
PowerRIP RIP software	Δ	Δ	Δ
ImageWriter *	N	N	N
ImageWriter *	Y	Y	Y
ImageWriter II *	Y	Y	Y
LaserWriter 300 *	N	Y	Y
LaserWriter LS *	N	Y	Y
LaserWriter 310 *	∅	∅	∅
StyleWriter I *	Y	Y	Y
StyleWriter II *	Y	Y	Y
StyleWriter Pro *	Y	Y	Y
StyleWriter Portable *	Y	Y	Y
StyleWriter 1200 *	Y	Y	Y
StyleWriter 1500 *	N	Y	Y
StyleWriter 2200 *	N	Y	Y
StyleWriter 2400 *	N	Y	Y
StyleWriter 4100 *	Y•	Y	Y

(continued on next page...)

This User Manual applies to the Keyspan USB Twin Serial Adapter Software for **Mac OS**.
(rev 02may12JA)



KeySpan:USB Twin Serial Adapter for Mac OS-v1.9 User Manual

StyleWriter 4500 *	Y•	Y	Y
StyleWriter 6500 *	N	Y	Y
Canon Bubble Jet (BJC-4550)	Y•	Y	Y
CoStar LabelWriters	Y	Y	Y
Epson 300 series *	Y	Y	Y
Epson 500 series *	Y	Y	Y
Epson 600 series *	N	Y•	Y•
Epson 800 series *	N	Y•	Y•
Epson 1520 series *	N	Y•	Y•
Epson 3000 series *	N	Y•	Y•
Epson Stylus Photo 700 series *	N	Y•	Y•
Epson Stylus Photo EX *	N	Y•	Y•
Epson 600 series *	N	Y•	Y•
HP Deskwriter (no model# - serial) *	Y	Y	Y
HP Deskwriter 300, 310 & 320 (serial) *	Y	Y	Y
HP Deskwriter 340 (serial) *	N	•	•
HP Deskwriter 500 series (serial) *	Y	Y	Y
HP Deskwriter 600 series (serial)	Y•	Y	Y
HP Deskjet 800 series (serial)	Y•	Y	Y
HP LaserJets (AppleTalk)	N•	N•	N•
Seiko Label Printer *	Y	Y	Y
Infowave PowerPrint (serial)	N	N	N
NEC Silentwriter (AppleTalk)	N•	N•	N•
Olympus P-150E dye-sub printer	N	N	N
Olympus P-330E dye-sub printer	N	N	N

Other Devices and Software

X-Rite Model DTP 32 Densitometer	Δ	Y	Y
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This User Manual applies to the KeySpan USB Twin Serial Adapter Software for **Mac OS**.
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Keyspan:USB Twin Serial Adapter for Mac OS-v1.9 User Manual

Compatibility List for Mac OS - Notes

StyleWrite 4000 Printers	USA28 - These printers require their drivers to be patched for use the Keyspan USB Serial Adapter. You can do this with the Keyspan Serial Assistant. Please see that product's documentation for details.
Epson Printers	USA28x, USA18x, SXPro4 - These printers require 'Epson Support' to be turned on in the Keyspan Serial Assistant's Advanced Settings. Please see that product's documentation for details.
HP DeskWriter 340	USA28x, USA18x, SXPro4 - This printer may work using an older version of the DeskWriter 310 printer drivers (lower than v6.0.3).
AppleTalk	any - any software or printer that uses AppleTalk or LocalTalk is not compatible with any USB to Serial Adapter. There are other solutions to hooking up AppleTalk printers via Ethernet. Unfortunately, Keyspan does not make these products.



7.1.c - Configuration Examples for Mac OS -

The following is a list of available configuration examples for Mac OS. These example provide step-by-step instructions on configuring select serial devices. The current example available are:

- [Palm Desktop](#)

For the latest version of this list, please visit our web site at: <http://www.keyspan.com>

For the configuration examples for other operating system (ie Mac OS X, Windows, etc.), please refer to the user manual for that platform or visit our web site at: <http://www.keyspan.com>



7.1.c.01 - Palm Desktop

Before you begin...

This Configuration Example assumes that you have already done the following:

1. installed the Keyspan serial port *hardware* and *software*
2. installed the Palm Desktop *software*
3. connected the Palm Serial Cradle *hardware* to a Keyspan serial port

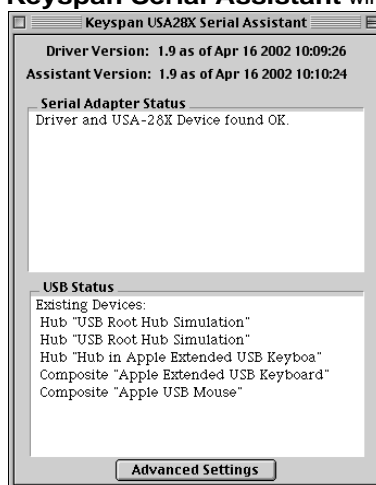
If you have not performed any of the steps mentioned above, please do so before proceeding.

Step 1 - Check the Keyspan Serial Assistant

Before proceeding, you should check to see if the Keyspan serial port is installed correctly.

To do this, open the [Keyspan Serial Assistant](#) (located in Control Panels). When you open the [Keyspan Serial Assistant](#), you will see a window similar to the one shown below:

the **Keyspan Serial Assistant** window



If your Keyspan hardware and software are installed correctly, the '**Serial Adapter Status**' text box will report 'Driver and USA-28x Device found OK' or '...Renumerating...Done'.

If you see either of these messages, proceed to **Step 2**. If you do not receive either of these messages, proceed [Problem Solving](#) section in this manual.

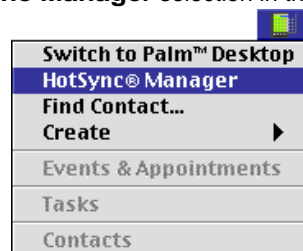


Step 2 - Open the HotSync® Manager application

Before you can begin to HotSync your Palm, you must access and configure the HotSync® Manager application. The HotSync Manager is the program that manages the serial communication between your Palm and your computer.

Open the HotSync® Manager application by double clicking the HotSync® Manager application icon in your Palm folder or by selecting the HotSync® Manager selection in the Palm menu (as shown below).

the **HotSync Manager** selection in the Palm menu

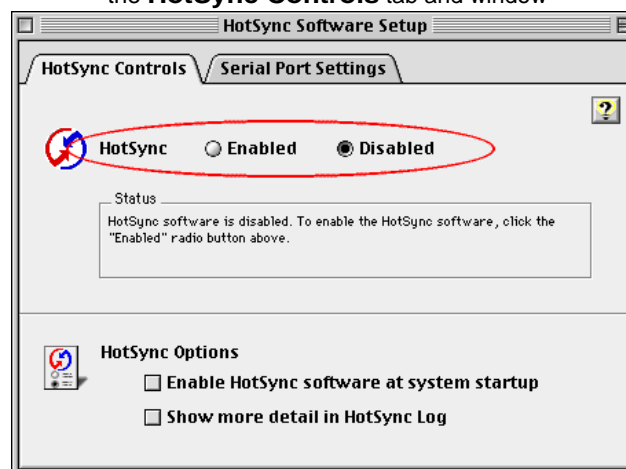


Once the HotSync® Manager application is opened, you will be presented with the HotSync Software Setup window.

Step 3 - Configure the HotSync Software Setup window

In the HotSync Software Setup window, click on the **HotSync Controls** tab at the top of the window. This will display the HotSync Controls options.

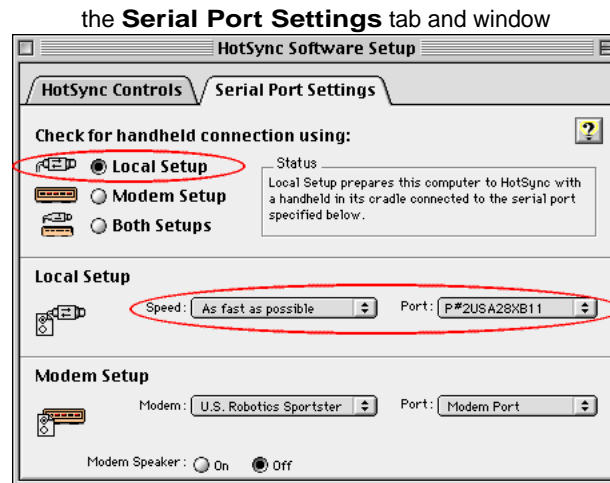
the **HotSync Controls** tab and window





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Click on the **Disabled** radio button to temporarily turn off HotSync monitoring. Then click on the Serial Port Settings tab at the top of the HotSync Software Setup window. This will display the serial port options.



In the Serial Port Settings tab, select either the **Local Setup** or **Both Setups** radio button. This tells the HotSync® Manager application to monitor any HotSync activity on a serial port.

Also, in the Local Setup section in the Serial Port Settings tab, select the **Keyspan port** that your Palm Organizer is connected to in the port popup menu. This tells the HotSync® Manager application to monitor the port on your Keyspan serial adapter.

Please note: The name(s) of your Keyspan serial port(s) vary from Keyspan product to product. Please check the **Capabilities** section in your Keyspan product's user manual for the specific port names.

Once you've made the selections mentioned above, click on the HotSync Controls tab at the top of the HotSync Software Setup window then select the Enabled button.

Step 3 - HotSync your Palm Organizer

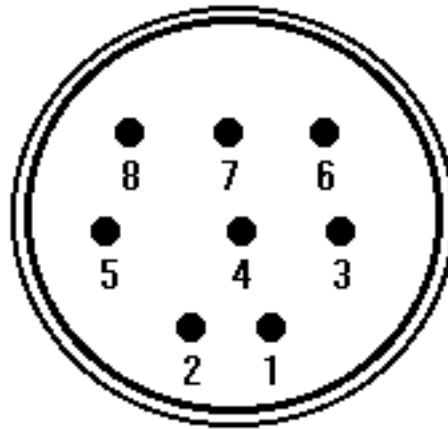
Palm Software configuration is now complete. To initiate a 'HotSync' session, place your Palm Organizer in its cradle and then press the HotSync button on the cradle. Your Palm Organizer will now "HotSync."



7.1.d - Serial Port Pin Outs

The pin assignments for the Keyspan USB Twin Serial Adapter's female Din8 port are illustrated below:

Keyspan USB Twin Serial Adapter's
female Din8 port



<u>Pin</u>	<u>Name</u>	<u>Signal Designation</u>
1	HSKo	Handshake Output (DTR)
2	HSKi	Handshake Input (CTS)
3	TxD-	Transmit Data (-)
4	GND	Ground
5	RxD-	Receive Data (-)
6	TxD+	Transmit Data (+)
7	GPi	General Purpose Input (DCD)
8	RxD+	Receive Data (+)

In order to ensure compliance with emission specifications, cables should be shielded using braided shields and metal hoods with 360° 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 loopback cable. This cable is typically identical to any standard Mac male Din8 to male Din8 'printer cable' (aka ImageWriter II cable).



7.1.f - TX Ack Advance

Overview

Many Keyspan USB serial adapters support configurable "Transmit Acknowledgment Advance" (aka TX-ACK threshold, aka TX-ACK(nowledge)ment 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 maximum 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. The size of the lie is what's being configured with the "TX Ack Advance" parameter: it specifies how many characters ahead of time the adapter tells the host "I'm done." 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 100% 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 application 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.

Another possibility is that the application is using the timing of the "I'm done" message to determine the baud rate. For example, if the serial port was using external clocking, the application might not know what baud rate was being used, so it would send a message and see how long it took. The early delivery of "I'm done" could screw up its calculation.

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 various ways you can configure Tx Ack Advance. Following is a discussion of some possibilities:



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None: If you're using a baud rate of 9600 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.

Auto: The "Auto" setting uses the calculation described above when internal clocking is used and sets the Tx Ack Advance to "None" when external clocking is used (this is because the host doesn't know the baud rate when the clocking is supplied externally).

Experiment: If you're using a baud rate above 9600, you can simply try increasing the Tx Ack Advance 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).

Calculate: If you know that your application will not run into troubles with flow control or data flushing, you know what baud rate it uses, and you'd like to adjust the Tx Ack Advance to most closely approximate the timing of a built-in port, you can calculate the value yourself using this formula:

$$\text{integer}(\text{baud} / (\text{totalBitsPerCharacter} * 1000)) + 0.5)$$

This will result in the host receiving the "transmit complete" message at approximately the same time the last character has actually been transmitted. Note: the total bits per character includes the start bit, the stop bit(s), the parity bit (if any) and the data bits. So, an 8-bit character with one stop bit and no parity has a total of 10 bits.



7.1.w - MIDI Information

The Keyspan USB Twin Serial Adapter supports the following MIDI clocking modes: x1, x16, x32, and x64. This means that if you have a MIDI device that uses any of these clocking modes, your MIDI device should work with the Keyspan USB Twin Serial Adapter.

However, due to the different implementations of the MIDI standard, some devices may not be compatible with the USB Twin Serial Adapter. Please contact your MIDI device and/or software manufacturer for compatibility of their products with the USB Twin Serial Adapter or contact Keyspan for more information.

Currently, Keyspan only supports Mark of the Unicorn's FreeMIDI software.



7.1.x - Notices

Notices

United States FCC

DECLARATION OF CONFORMITY

We, InnoSys Incorporated at
3095 Richmond Parkway, Suite 207
Richmond, CA 94806 USA
(510) 222-7717

declare under our sole responsibility that the

KEYSPAN USB Twin Serial Adapter, Model **USA28X**

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 Twin 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.

(continued on next page...)



CE MARK DECLARATION OF CONFORMITY

(According to EN 45014)

Manufacturer's Name and Address

InnoSys Incorporated
3095 Richmond Parkway, Suite 207
Richmond, CA 94806

Declares that the product:

Product Name: KEYSPAN USB Twin Serial Adapter
Model Number: USA-28X
Conforms to the following Product Specifications:

EN 55022: 1994 Class B, including Amendments A1:1995, A2:1997
EN 50082-1:1997
EN61000-4-2
EN61000-4-3/ENV 50204
EN61000-4-4:1995
EN61000-4-6

following the provisions of the Electromagnetic Compatibility Directive.

Mike Ridenhour, Richmond, CA, USA,
President, April, 2002

Canada Digital Apparatus EMI Standard

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

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

(continued on next page...)



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VCCI

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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This User Manual applies to the Keyspan USB Twin Serial Adapter Software for **Mac OS**.
(rev 02may12JA)



7.1.y - Keyspan Warranty Information

KEYSPAN Software License Agreement and Limited Warranty

Definitions

The following definitions apply to the terms as they appear in this agreement.

- **KEYSPAN** means KEYSPAN, a division of InnoSys Incorporated.
- **Software** means the computer program contained in this package, and all updates to the computer program. The term also includes all copies of any part of the computer program.
- **Documentation** means the on-disk user's manual(s) as well as printed materials accompanying the Software.
- **Product** means the Software and Documentation

Copyright Protection

The Product is owned by KEYSPAN and is protected by United States and international copyright laws and international trade provisions. You must treat the Product like any other copyrighted material. This license and your right to use the Product terminate automatically if you violate any part of this agreement. In the event of termination, you must immediately destroy all copies of the Product or return them to KEYSPAN.

License Grant

Upon receipt of full payment for this product, KEYSPAN grants you a non exclusive license to:

- Use one copy of the Software on a single computer ("Dedicated Computer")
- Make one copy of the Software for archival purposes, or copy the Software onto the hard disk of your computer and retain the original for archival purposes. If one individual uses the Software on the Dedicated Computer more than 80% of the time it is in use, then the individual may also use a second copy of the Software for use on a single home computer, provided such use on a single home computer is limited to no more than 20% of the time.
- After written notification to KEYSPAN, transfer the entire product on a permanent basis to another person or entity, provided you retain no copies of the Product and the transferee agrees to the terms of this agreement.

For the purposes of this section, "use" means loading the Software into RAM, as well as installation on a hard disk or other storage device (other than a network server). You may access the Software from a hard disk, over a network, or any other means you choose, so long as you otherwise comply with this agreement.

You may NOT:



Keyspan:USB Twin Serial Adapter for Mac OS-v1.9 User Manual

- Copy the documentation, except for purposes of creating a back-up copy for your own use.
- Modify, translate, or merge the Software with another program, except for your personal use on a single computer. Any modifications to the Software are subject to this agreement.
- Reverse engineer, disassemble, decompile, or make any attempt to discover the source code of the Software.
- Sublicense, rent, or lease any portion of the Product.
- Use the previous version of the Software that has been upgraded or updated under this agreement. Upon upgrading, or updating the Software, the old copy must be deleted from the computer and the original disks destroyed.

Limited Warranty on Software and Media

KEYSPAN warrants the disks on which the Software is distributed to be free from defects in materials and workmanship and that the Software will perform substantially in accordance with the Documentation for a period of 90 days from your receipt of the Product. Any written or oral information or advice given by KEYSPAN resellers, agents or employees will in no way increase the scope of this warranty.

If the Product fails to comply with the warranty set forth above, KEYSPAN's entire liability and your exclusive remedy will be replacement of the disk or, at KEYSPAN's option, KEYSPAN's reasonable effort to make the Product meet the warranty set forth above. This limited warranty applies only if you return all copies of the Product, along with a copy of your paid invoice, to KEYSPAN within 90 days of the date you received the Product. If KEYSPAN is unable to make the Product conform to the above warranty, KEYSPAN, at its option, will refund all or a fair portion of the price you paid for this package. Any replacement software will be warranted for the remainder of the original 90 day warranty period or for 30 days from the date you received the replacement, whichever is longer.

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No Liability for Consequential Damages

In no event shall KEYSPAN or its resellers be liable for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or other pecuniary loss) arising out of the use of or inability to use this KEYSPAN product, even if KEYSPAN has been advised of the possibility of such damages. Because some jurisdictions do not allow the exclusion or limitation of liability for consequential damages, the above limitation may not apply to you. The foregoing limitations of warranty and liability inure to the benefit of KEYSPAN licensors having an interest in this package.



Keyspan:USB Twin Serial Adapter for Mac OS-v1.9 User Manual

General

This agreement constitutes the entire software license agreement between you and KEYSPAN and supersedes any prior agreement concerning the contents of this package. It shall not be modified except by written agreement dated subsequent to the date of this agreement and signed by an authorized KEYSPAN representative. KEYSPAN is not bound by any provision of any purchase order, acceptance, confirmation, correspondence, or otherwise, unless KEYSPAN specifically agrees to the provision in writing. This agreement is governed by the laws of the State of California.

Keyspan,
a division of InnoSys, Inc.
3095 Richmond Pkwy, Ste. 207
Richmond CA 94806



7.1.z - Support Information

Contacting Support

If you require assistance with any Keyspan product, you may contact us by one of the following ways:

- **web/email:** <http://www.keyspan.com/support/>
(Monday through Friday: 9 am to 5 pm Pacific)
- **fax:** +1.510.222.0323
(Monday through Friday: 9 am to 5 pm Pacific)
- **telephone :** +1.510.222.8802
(**tech support**) (Monday through Friday: 9 am to 5 pm Pacific)

International Support Options

If you live outside of the United States and require assistance with your Keyspan product, please contact the Keyspan's distributor in your country for technical support in your language. For a list of Keyspan's international distributors, please visit our international web page at:

<http://www.keyspan.com/international/>