

Arkham Technology[®]

USB/RS-232 Adapter Bridge

Users Manual

Document ID: OA094701

Revision: 1.1

Date: 20091207

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1 Introduction

This section provides an overview of the device, what is included with the boxed device, and what the requirements are for the interfacing system.

1.1 Overview

The Arkham Technology USB/RS-232 Adapter Bridge is a device which allows a computer with a standard USB port to communicate with DS-101 compatible equipment over a RS-232 physical layer interface.

A typical operational application is shown in Figure 1-1.

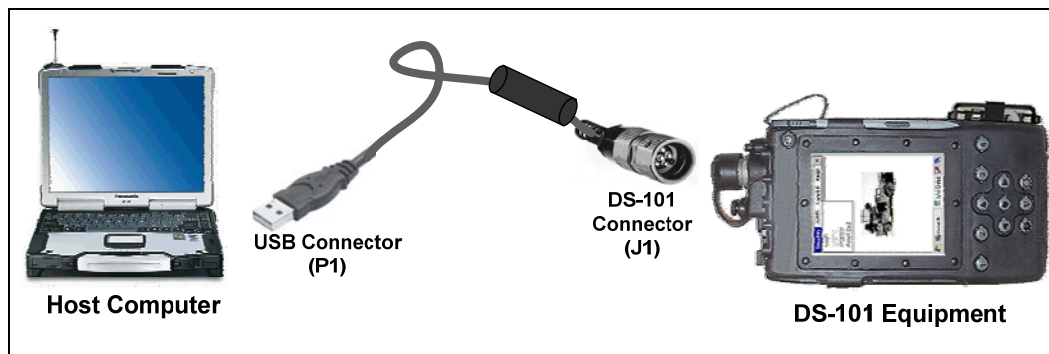


Figure 1-1: Operational Environment

The device hardware is shown in Figure 1-2.

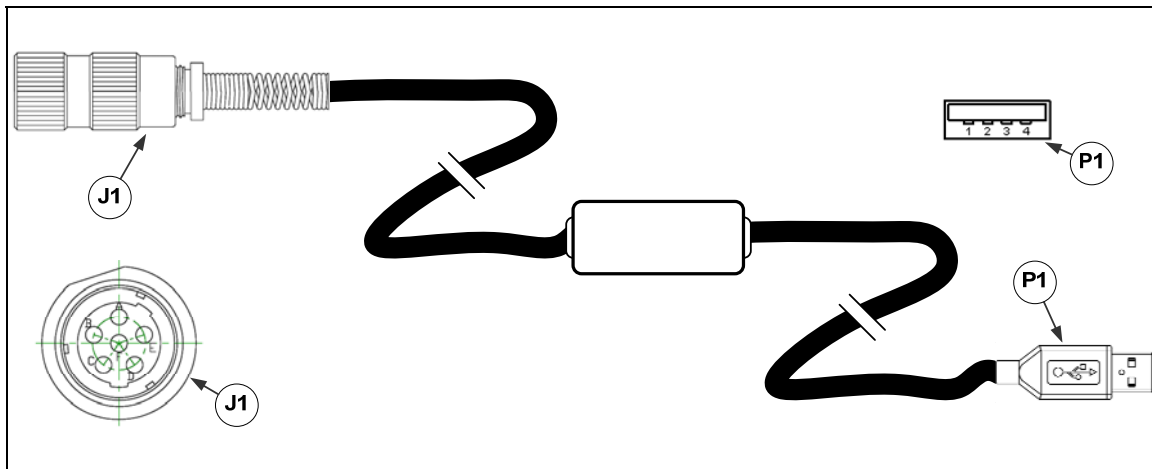


Figure 1-2: Device Hardware

As shown in Figure 1-2, each end of the device has a distinct connector. J1, the DS-101 connector, is a 6-Pin MIL-DTL-55116 circular audio-type connector. The J1 pin-out is given in Table 1.

Table 1: DS-101 Connector Pin-Out

Pin	Description (RS-232 Mode)
A	Ground
B	Unused
C	RX (I)
D	TX (O)
E	Unused
F	Unused

P1, the USB connector, is a USB Type-A male connector. The P1 pin-out is given in Table 2.

Table 2: USB Connector Pin-Out

Pin	Description
1	+5V _{DC}
2	Data – (I/O)
3	Data + (I/O)
4	Ground

In RS-232 protocol mode, the device communicates at the Baud rate set by the user in Microsoft Windows (see Section 2.3). The device supports up to 128kBaud.

Note: Many DS-101 equipment only support up to 9600 Baud RS-232.

Note: Hardware flow control is not supported on the DS-101 connector (J1), user selection of hardware flow control will have no effect.

1.2 What is Included

The boxed adapter device includes the following components:

- Arkham Technology USB/RS-232 Adapter Bridge hardware
- Arkham Technology RS-232 Adapter Installation CD

1.3 System Requirements

The host computer is required to have the following:

- An unused standard USB port (USB host port with a Type-A female connector).
- If a USB hub is used, an externally powered type (i.e., with AC adapter) is recommended.
- At least equivalent of a 500 MHz Intel Pentium III.
- At least 10MB free hard disk space
- At least 128MB RAM
- Microsoft Windows XP/Vista/7

The external DS-101 equipment is required to be compliant with EKMS 308 with respect to the physical and HDLC layers.

2 Installation

In order for the USB to RS-232 Bridge Adapter to function as intended, both its hardware and software components must be correctly installed.

2.1 Software Installation

This process installs the Windows drivers on the host computer for the adapter hardware.

Note: Installation of other software applications on either the host computer or DS-101 equipment is outside the scope of this document.

The preferred process for installing the software is given in Section 2.1. This assumes the device hardware is not yet installed.

Note: It is recommended that Windows be rebooted after software installation.

The following procedure installs the driver.

- a) Download the new file from www.arkhamtechnology.com or insert the new *Arkham Technology RS-232 Adapter Installation* CD into drive.

Note: If CD AutoPlay disabled, execute *setup.exe* from the CD's root directory.

The window shown in Figure 2-1 will then appear.

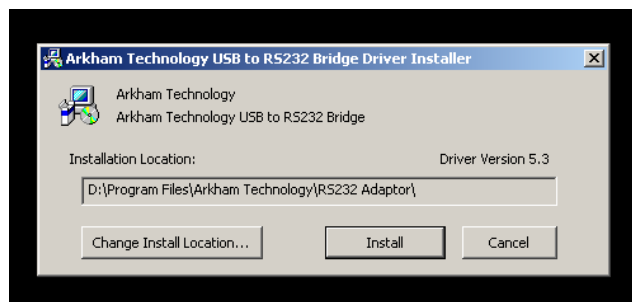


Figure 2-1: Welcome Window

- b) Click the *Install* button to continue.

After a few seconds, the installation will complete and the *Installation Complete* window will then appear as shown in Figure 2-2.

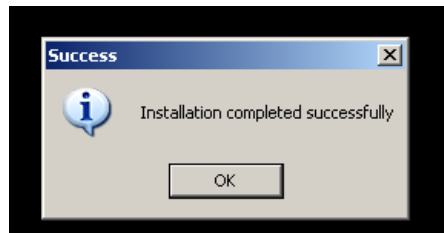


Figure 2-2: Installation Complete Window

- c) Click the OK button to continue.

The *Installation Complete* window will then disappear.

The software installation is now complete. Verify installation by installing device hardware into host

2.2 Un-install Software

The following process un-installs the Windows drivers for the adapter hardware as well as the *DS101 Configuration Utility* application used to configure the adapter once installed.

The following process removes the drivers.

- a) Open the Windows Control Panel (*Start > Control Panel*).
b) Select and launch *Add or Remove Programs* as shown in Figure 2-3.

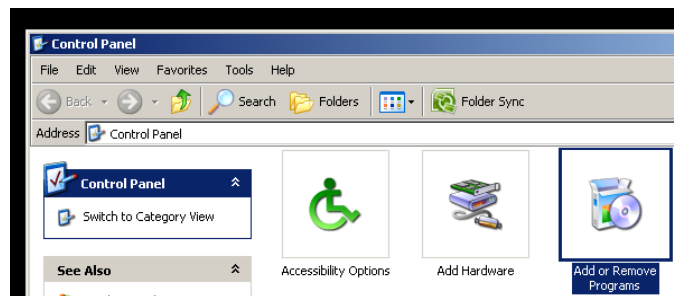


Figure 2-3: Windows Control Panel

The *Add or Remove Programs* window will then appear as shown in Figure 2-4.

- c) Select the *Arkham Technology USB to RS232 Bridge (Driver Removal)* entry as shown in Figure 2-4.

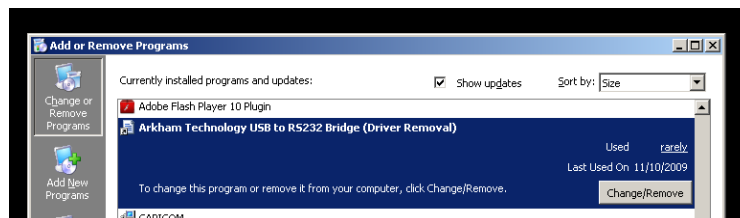


Figure 2-4: Add or Remove Programs

- d) Click the *Remove* button.

The pop-up window will then appear as shown in Figure 2-5.

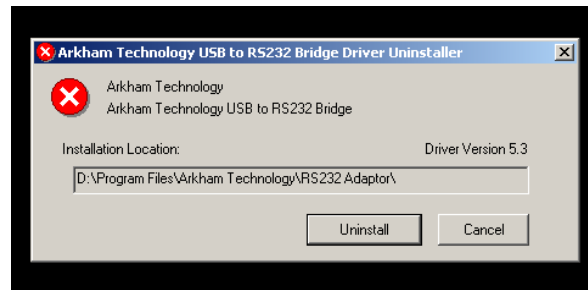


Figure 2-5: Add or Remove Programs OK

- e) Click the *Uninstall* button.

After a delay the list in the *Add or Remove Programs* window will refresh and the *Arkham Technology USB to RS232 Bridge (Driver Removal)* entry will have been deleted. The driver is now un-installed.

Note: No confirmation will be given.

- f) Close *Add or Remove Programs* window.

The status window will then appear as shown in Figure 2-6.

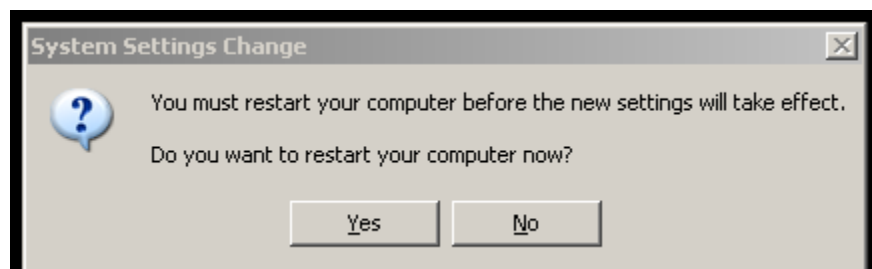


Figure 2-6: Restart

- g) Click the *Yes* button.

The *driver* is now un-installed and Windows will restart.

2.3 Hardware Installation

Assuming the driver has been loaded, see Section 2.1, the device will now enumerate in Windows as a standard serial COM port (COM1, COM2, etc.). If the driver has not yet been installed, Windows will initiate the *Found New Hardware* wizard.

Note: If multiple devices are installed concurrently, Windows may enumerate them as the same COM port number. It is recommended that the enumeration be checked using the procedure given in Section 3.1.1 and, if necessary, modified as required per Section 3.1.2.

2.3.1 Install Hardware in Host Computer

This process installs the device hardware into the host computer's USB port (reference Figure 1-1).

Note: When each hardware device is installed for the first time in a specific host computer the device enumeration and driver matching process must occur.

- a) Plug the device's USB connector (P1) into the computer's USB port.

Note: The device supports hot-plugging such that the device's USB connector (P1) may be inserted while computer power is continuously applied.

After insertion, Windows will output a *Found New Hardware* message in the tool bar as shown in Figure 2-7.

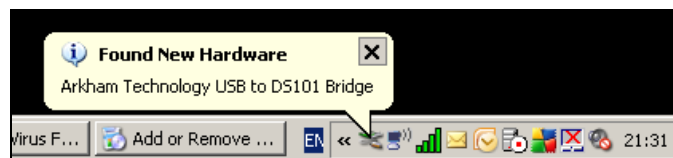


Figure 2-7: Device Detected Toolbar Message

Windows will then automatically launch the *Found New Hardware Wizard*.

- a) Select *No, not this time* from the *Found New Hardware Wizard* as shown in Figure 2-8.

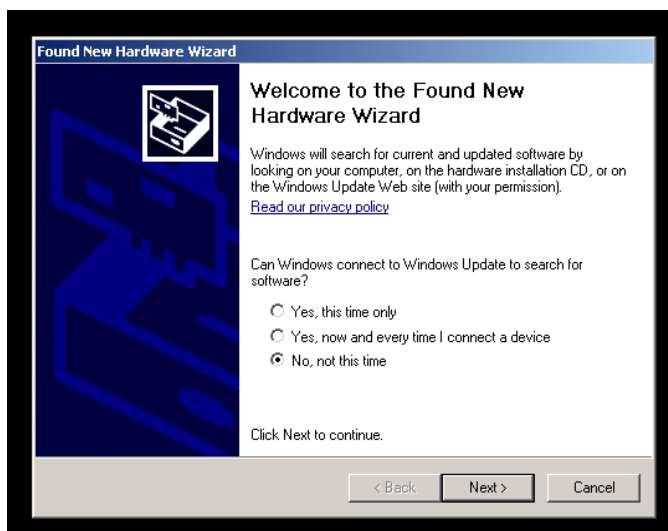


Figure 2-8: Found New Hardware Wizard (Page 1)

- b) Click the *Next>* button.

The next page of the *Found New Hardware Wizard* will then be displayed.

- c) Select *Install the software automatically (Recommended)* from the *Found New Hardware Wizard* shown in Figure 2-8.

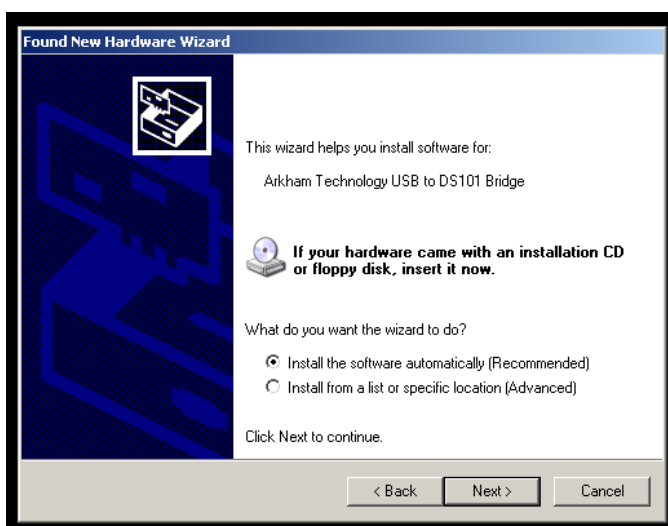


Figure 2-9: Found New Hardware Wizard (Page 2)

- d) Click the *Next>* button.

The next page of the *Found New Hardware Wizard* as shown in Figure 2-8 will then be displayed while searching and copying the files.

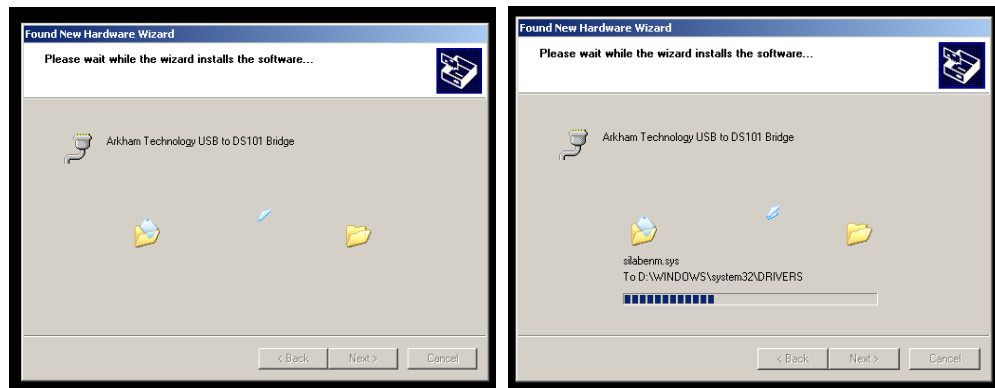


Figure 2-10: Found New Hardware Wizard (Pages 3 & 4)

When the installation is complete, the next page of the *Found New Hardware Wizard* as shown in Figure 2-8 will then be displayed.

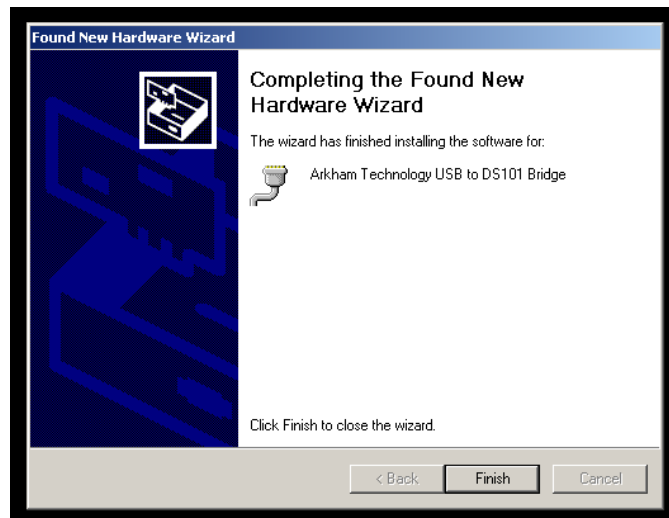


Figure 2-11: Found New Hardware Wizard (Page 5)

e) Click the *Finish* button.

The *Found New Hardware Wizard* window will then close. The first device installed on a specific computer may require Windows to reboot. If this is the case a message will be displayed in the taskbar as shown in Figure 2-12. After a few seconds the message will disappear and a reboot pop-up message will appear as shown in Figure 2-13. If a reboot is not requested proceed past step f).

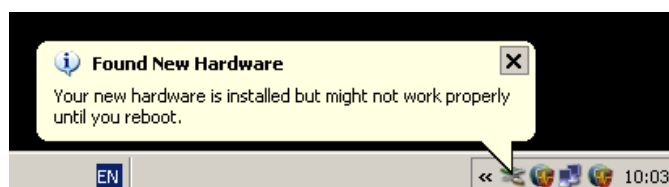


Figure 2-12: Taskbar Reboot Message

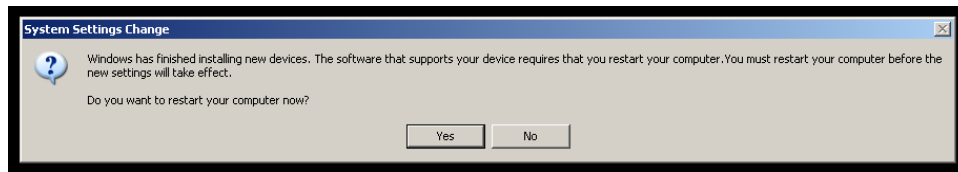


Figure 2-13: Taskbar Reboot Pop-up

- f) Click the *Finish* button.

If the installation did not require a reboot, a message will be displayed in the taskbar as shown in Figure 2-14. After a few seconds the message will disappear.

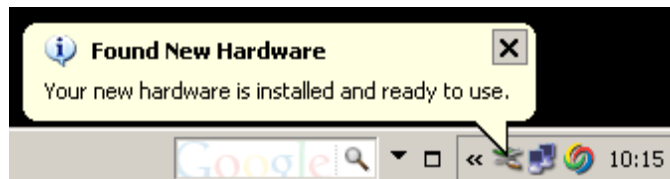


Figure 2-14: Hardware Ready Message

The hardware installation is now complete. Verify installation by following the process in Section 3.1.1.

2.3.2 Un-install Hardware from Host Computer

The following process disconnects the hardware from the computer.

- a) Un-plug the device's USB connector (P1) from the computer's USB port.

Note: The device supports hot-unplugging such that the device's USB connector (P1) may be detached while computer power is continuously applied.

2.3.3 Connect Hardware to DS-101 Equipment

The following process connects the hardware to the DS-101 equipment.

- a) Press in and then twist clockwise the DS-101 connector (P1) onto the equipment's mating DS-101 port.

2.3.4 Disconnect Hardware from DS-101 Equipment

The following process disconnects the hardware from the DS-101 equipment.

- a) Press in, twist counter-clockwise, and then detach DS-101 connector (P1) from the equipment's mating DS-101 port.

3 Operation

3.1 COM Port Enumeration

3.1.1 Check COM Port Enumeration Status

The following process checks the status of the COM port enumeration value (COM1, COM2, etc.) for each installed device.

- a) Right click on the *My Computer* icon on the desktop or in the Start menu.
- b) Click on the *Manage* menu item as shown in Figure 3-1.

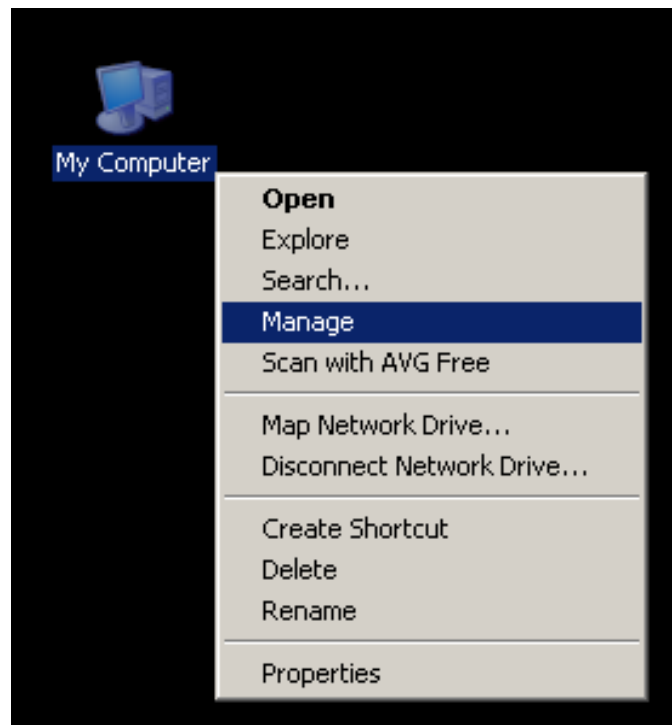


Figure 3-1: Manage My Computer

The *Computer Management* window will then open.

- c) Click on the *Computer Management (Local) > System Tools > Device Manager* tree-entry in the left frame.

The right frame will then refresh to show all the hardware devices installed in the computer.

- d) Expand the *Ports (COM & LPT)* tree-entry in the right frame.

The installed device should appear as a branch-entry of the *Ports (COM & LPT)* tree in the *Computer Management* window's right frame as shown in Figure 3-2.

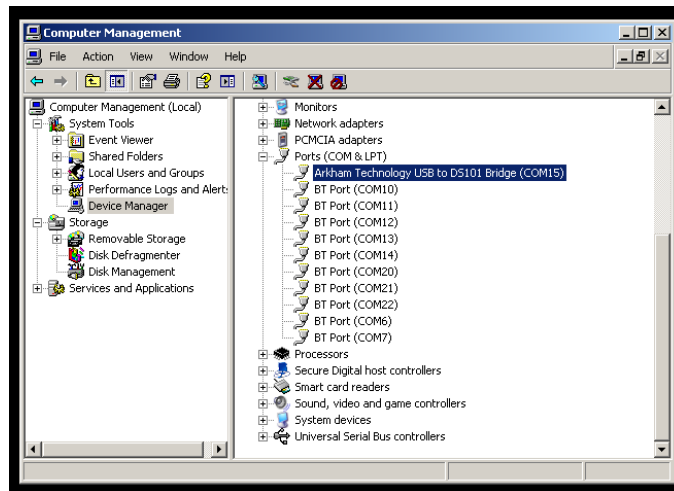


Figure 3-2: Device Manager

The enumerated COM port value will be displayed to the right in parenthesis.

Note: Sometimes Windows fails to automatically refresh COM port enumeration settings in the *Device Manager*. If this is suspected, close the *Computer Management* window and repeat steps 3a) through 3d).

e) Close *Computer Management* window.

Note: If the installation has become corrupt for some reason the COM port enumeration will be flagged with a yellow exclamation point icon. If this occurs, right click the entry in the list and select Uninstall as shown in Figure 3-3.

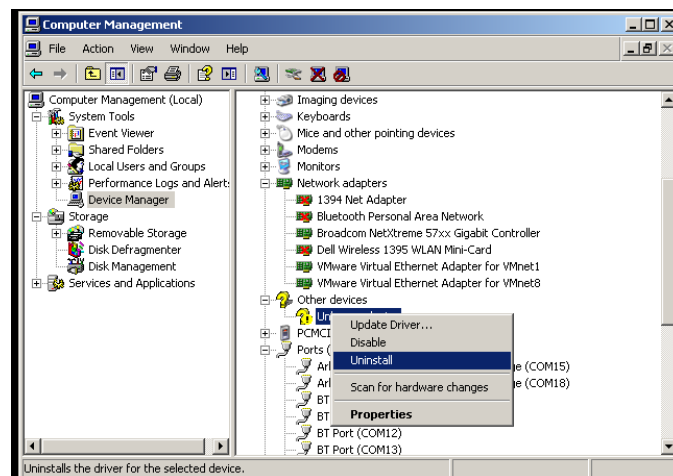


Figure 3-3: Manual Device Uninstall

f) Unplug the device and reinstall the device following the procedure in Section 2.3.1.

3.1.2 Modify COM Port Enumeration

To modify the COM port enumeration, follow the following procedure. Note: Some host computer software applications may require the device to be installed on COM1 for proper operation.

- a) Follow steps 3a) through 3d), as required, in order to locate the device's entry in the *Device Manager's* right frame.
- b) As shown in Figure 3-2, right click on the entry and select *Properties*.

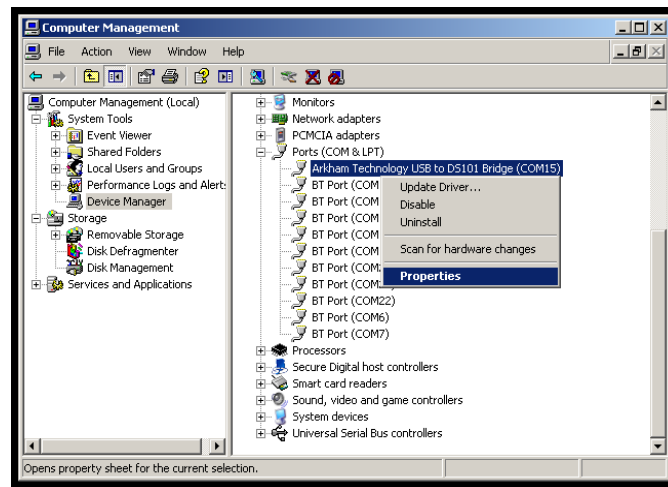


Figure 3-4: View Device Properties

- c) Select on the *Port Settings* tab as shown in Figure 3-5

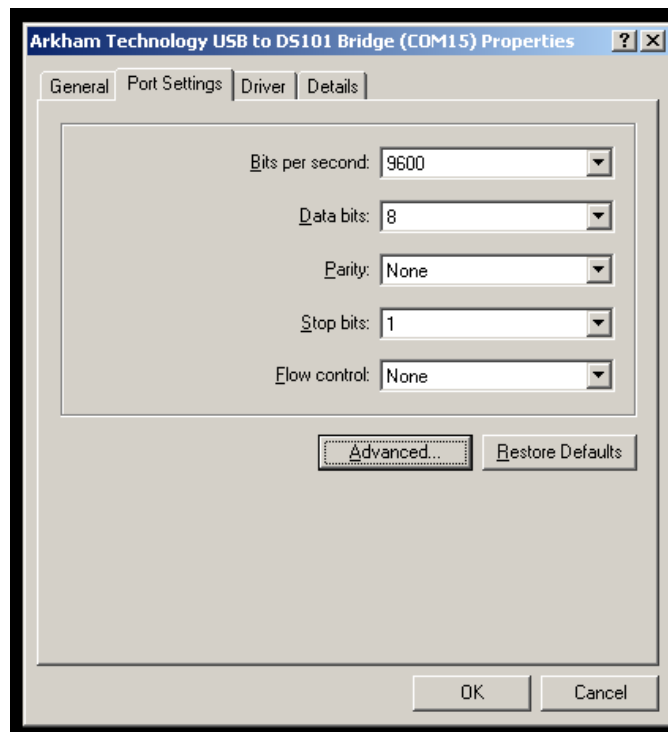


Figure 3-5: View Device Port Settings

- d) Click on the *Advanced* button
- e) Pull down the COM port list and select desired COM port number as shown in Figure 3-6.

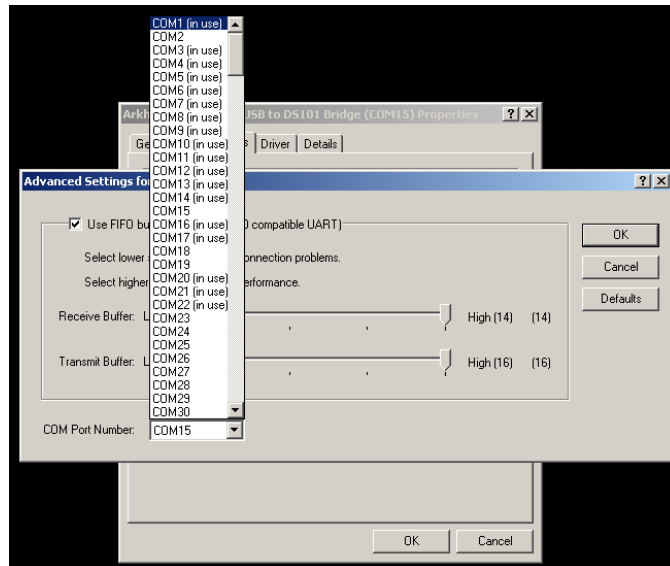


Figure 3-6: Select New COM Port Number

- f) Close *Computer Management* window.

To verify setting modification, follow the procedure in 3.1.1.

Note: Sometimes Windows fails to automatically refresh COM port enumeration settings in the *Device Manager*. If this is suspected, close the *Computer Management* window and repeat steps 3a) through 3d).

3.2 Application Notes

3.2.1 Usage with the DMD PowerStation

Some versions of Data Management Device (DMD) PowerStation only recognize COM1 through COM4, even though other COM port numbers may be selected. In these cases, the COM port enumeration of the device must be modified to COM1 through COM4 using the process described in Section 3.1.2.

3.2.2 Usage with ACES/JACS

Some versions of ACES/JACS only recognize COM1. In these cases, the COM port enumeration of the device must be modified to COM1 using the process described in Section 3.1.2.

Note: The device can be used even if the host computer has an existing integrated DB-9 serial port parked at COM1. Follow the steps described in Section 3.1.2 and assign the installed USB Bridge device to COM1. Ignore the warnings and click *OK*. The USB Bridge device now “owns” COM1.