

Edgeport[®]

USB EXPANSION MODULES

Installation Guide

Models:

Edgeport/1

Edgeport/2

Edgeport/4

Edgeport/4r

Edgeport/8

Edgeport/8r

Edgeport/416

Edgeport/2c

Edgeport/22c



www.digi.com

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Edgeport Products

Edgeport USB-to-Serial Converters offer an out-of-the-box alternative to serial cards for easy plug-and-play COM port expansion. Multiple serial and USB ports can be added to a PC, thin client or server in minutes — without opening the chassis or reconfiguring and rebooting the system. Its feature-rich design, reliable performance and unmatched operating system support (Windows XP, Server 2003 (R2), Server 2008 (R2), Windows 7, Windows 8, and Server 2012 (R2)) make the Edgeport ideal for mission-critical enterprise applications.



Edgeport/1, Edgeport/2, Edgeport/4, Edgeport/4r, Edgeport/8, Edgeport/8r

The Edgeport/2, Edgeport/4, Edgeport/4r, Edgeport/8, and Edgeport/8r from Digi International are intelligent, stackable expansion modules that connect to a PC or server running Windows XP, Server 2003 (R2), Server 2008 (R2), Windows 7, Windows 8, and Server 2012 (R2) via the Universal Serial Bus (USB), providing high-speed serial connectivity. For more detailed information as well as the latest manual and technical updates, visit www.digi.com/support.

Cabling Edgeport



Type A



Type B

Plug the Type A end of the USB cable into the USB port located in the back of your PC or into an available USB port on a standard hub or into a Digi Hubport. Plug the Type B end of the USB cable into the back of the Edgeport.

If the drivers are not already installed, go to “Edgeport Driver Installation” on page 7.

Edgeport/4r and Edgeport/8r RJ-45 Pin Assignments

Use the table below to find the RJ-45 pin assignments for your Edgeport4r and Edgeport/8r.

Signal	Description	DTE Use	Pin #
RTS	Request to Send	Output	1
DSR	Data Set Ready	Input	2
DCD	Data Carrier Detect	Input	3
RXD	Received Data	Input	4
TXD	Transmitted Data	Output	5
SG	Signal Ground	Reference	6
DTR	Data Terminal Ready	Output	7
CTS	Clear to Send	Input	8

Edgeport/416

The Edgeport/416 utilizes a standards-based USB bus for connectivity, unlike many serial card products which require additional external proprietary hardware to support the same number of devices. This Edgeport also supplies four USB ports, providing users with a built-in migration path as peripherals become USB-ready. The converters can be rack mounted and easily daisy-chained together. This Edgeport converter is available in two models: one with DB25 connectors and one with DB9 connectors. The two models are functionally equal, but differ in the type and placement of the connectors.

Cabling Edgeport



Type A



Type B

Connect one end of the power supply into the back of your Edgeport and the other end into an AC outlet.*

To connect your Edgeport to a PC or Hub, plug the Type A end of the USB cable into the USB port located in the back of your PC *or* into an available USB port on a standard hub *or* into a Digi Hubport. Plug the Type B end of the USB cable into the back of the Edgeport/416.

To connect a USB device to your Edgeport, plug the Type A end of the USB cable into one of the Edgeport's USB Type A slots and the Type B end of the USB cable into the device (e.g. a Rapidport, Hubport, Edgeport/421, etc.).

** Power to the Edgeport-DB25 and Edgeport-DB9 may be supplied by a UL Listed Direct Plug-In Power Unit or Information Technology Equipment Rated Power Unit rated 5 V dc, at least 2.9 A if used in the U.S. and Canada or a power supply with similar rating and approved by your local safety code if it is used elsewhere. For polarity, see diagram to the right.*



If the drivers are not already installed, go to “Edgeport Driver Installation” on page 7.

Edgeport/2c

The Edgeport/2c is an intelligent expansion module that connects to a PC or server running a Windows OS via the Universal Serial Bus (USB), providing high-speed serial connectivity. For more detailed information as well as the latest manual and technical updates, visit our website at www.digi.com.

Cabling Edgeport



Type A

Plug the USB cable (with the Type A plug) into a USB port located on your PC or into an available USB port on a standard hub or into a Digi Hubport.

If the drivers are not already installed, go to “Edgeport Driver Installation” on page 7.

Edgeport/22c

The Edgeport/22c is a compact, multi-connector converter for mobile and high-end workstation users who need to attach multiple serial (RS-232) ports and USB peripherals to a single USB upstream connector.

Cabling Edgeport



Type A

This Edgeport operates as bus-powered hub. For more information about hubs, see the section-“Understanding Hubs” on page 16. To connect your Edgeport, plug the USB cable (with the Type A plug) into a USB port located on your PC or into an available USB port on a standard hub or into a Digi Hubport.

Edgeport Driver Installation

For Windows XP, Server 2003 (R2), Server 2008 (R2), Windows 7, Windows 8, and Server 2012 (R2)

Note: You must be logged into an account with administrator privileges before proceeding.

Note: Please go to www.digi.com to download software for older Operating Systems.

- A. Download the most current Edgeport driver from the Digi website:
 1. Navigate to **www.digi.com** using a web browser.
 2. Mouse over the Support menu and select **Drivers**.
 3. Scroll through the products and select **Edgeport USB** from the list.
 4. Select any of the "Active" Edgeport products.
 5. Select the appropriate Windows Operating System from the dropbox at the bottom.
 6. The driver download link will appear underneath the OS dropbox. Save this .exe file somewhere convenient such as your desktop.

- B. Install the Edgeport driver:
 1. Log into Windows with the administrator user account, or another account with administrative privileges.
 2. Run the **downloaded .exe** file and wait until the installation is complete.
 3. Connect the Edgeport to the computer with a USB cable. Or, if the Edgeport is already connected to the computer via USB, unplug and replug it.
 4. The Edgeport drivers will automatically install.

Your new COM port(s), numbered sequentially following the existing ports in your system, is/are ready.

The System Status Light

For All Edgeports except the Edgeport/1

Legacy "930-based" Edgeports:

Red - Blinking red indicates that the Edgeport driver is not properly installed.

Orange - Blinking orange indicates Edgeport serial port activity. This light may also flash briefly during installation.

Green - Blinking green indicates that the Edgeport driver is properly installed is operating normally, and the unit is idle, ready for use.

Current "TI-based" Edgeports:

Off - No light indicates that the Edgeport driver is not properly installed.

Red - This light may flash briefly during installation.

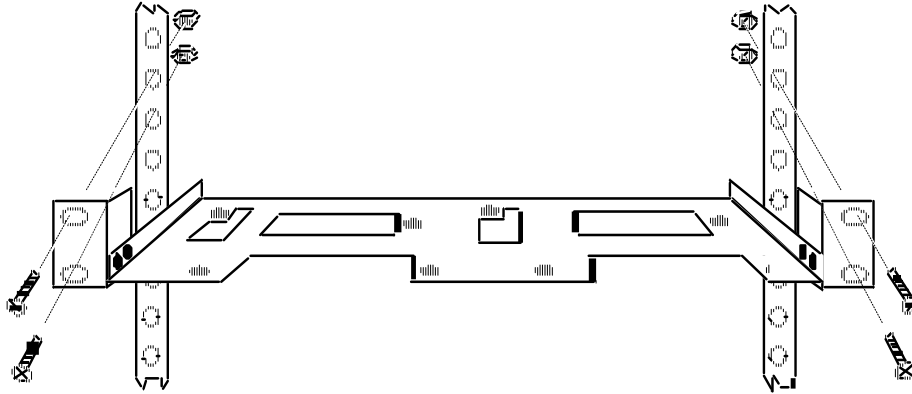
Orange - Blinking orange indicates Edgeport serial port activity. This light may also flash briefly during installation.

Green - Blinking green indicates that the Edgeport driver is properly installed, is operating normally, and the unit is idle, ready for use.

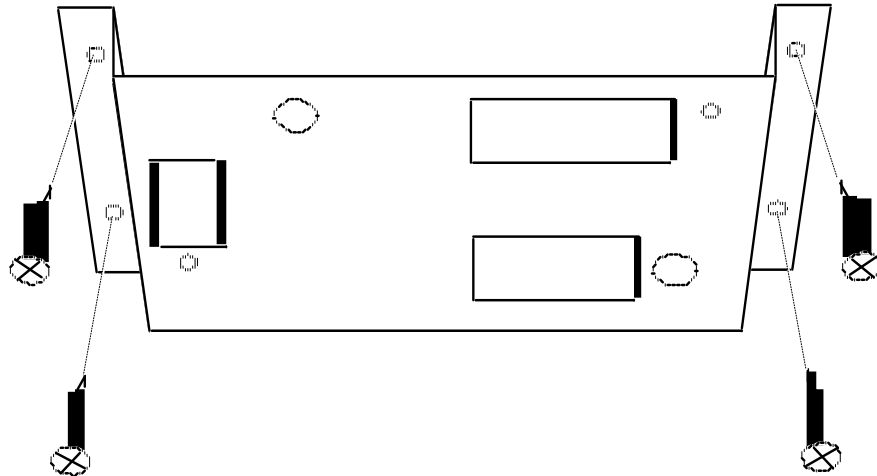
Mounting Diagrams

For all Edgeport Products except Edgeport/416

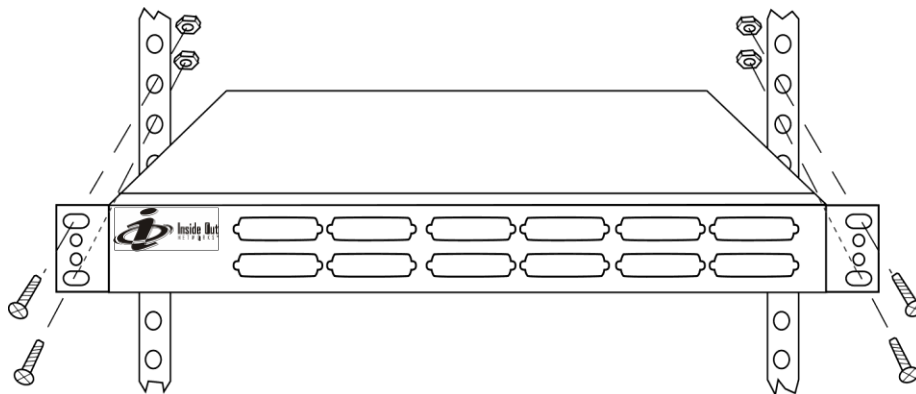
Rack Mount Kit*



Under-Shelf Mounting Bracket*



For Edgeport/416*



*Nuts, bolts, and screws are not included.

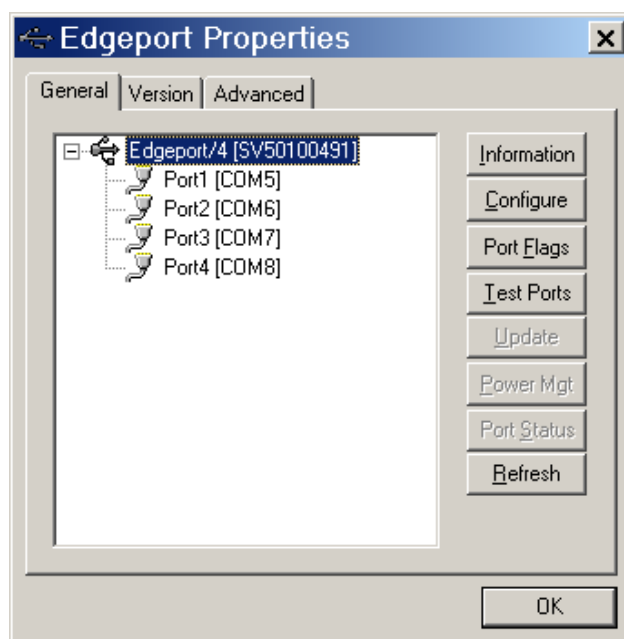
The Edgeport Utility Program

For All Windows Operating Systems

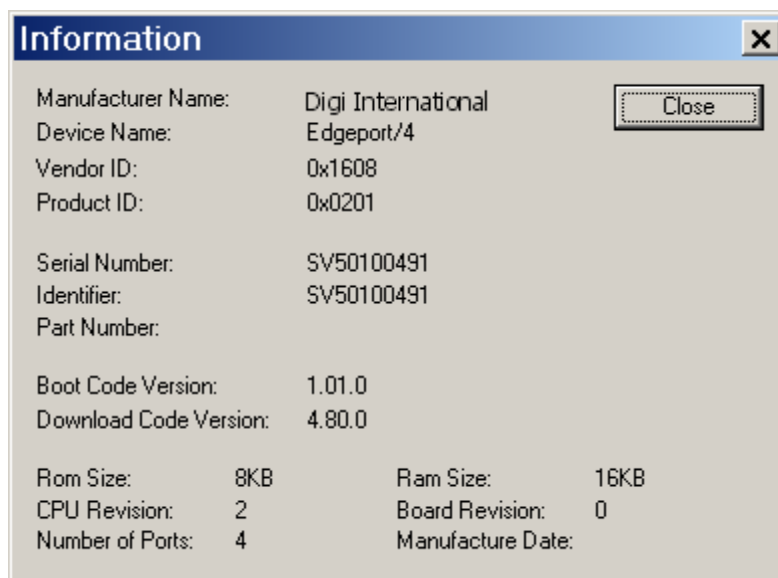
The Edgeport configuration utility program (**edgeport.exe**) allows you to manage the serial ports of your Edgeport product. For more information, see the Support section at www.digi.com.

General Tab

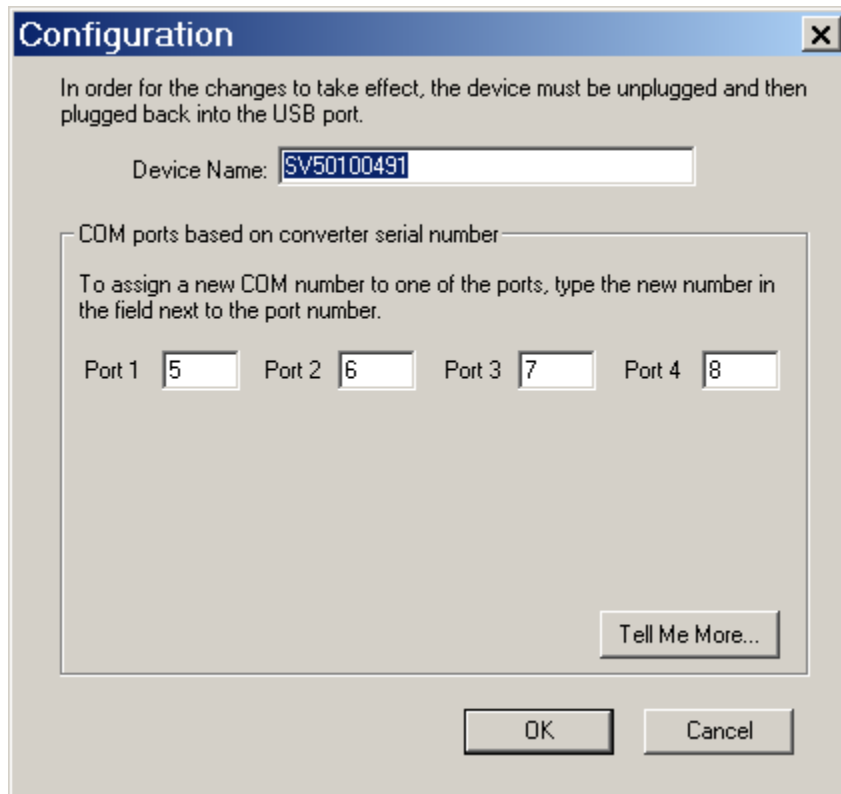
The General tab in this utility allows you to do the following:



Information - Check the manufacturing information pertaining to your device.

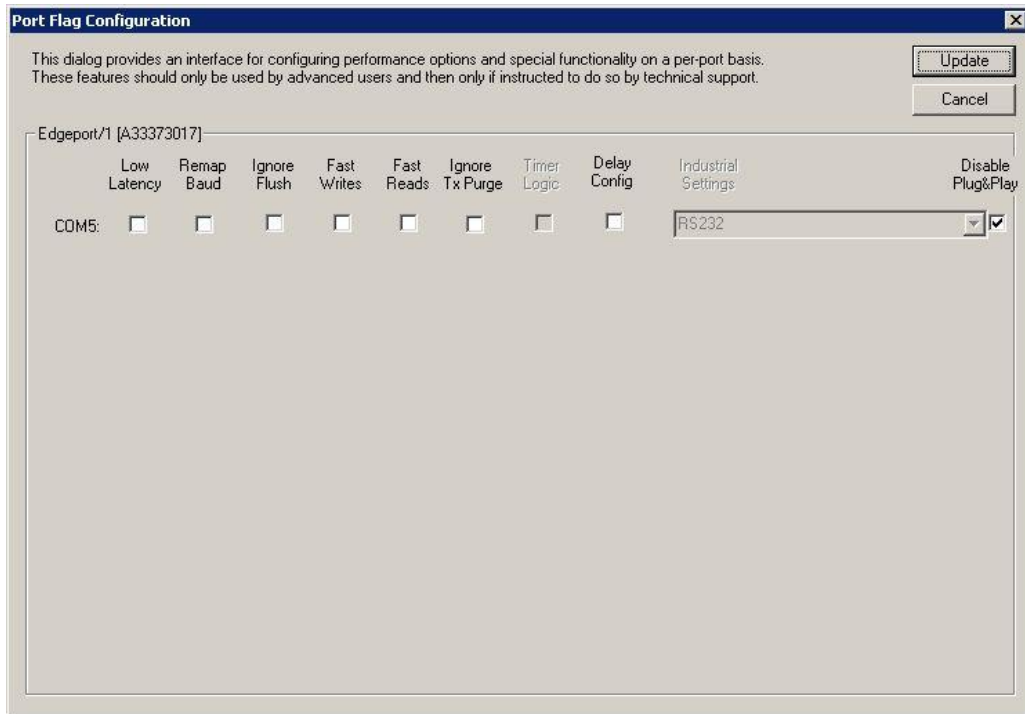


Configure - Reassign the physical port on your device to any available Windows COM port number from 1 to 255 and give your device a user friendly Device Name. This capability is particularly helpful if you have more than one device.



Important: Although not required, it is recommended to unplug/replug the Edgeport's USB cable after clicking OK, after changing Edgeport COM port assignments.

Port Flags - Configure performance options and special functionality on a per-port basis.



Low Latency: (930 based Edgeport only)

Normally the UART will interrupt when the receiver has been idle for 4 character times. (For example 4ms at 9600) As long as data is being received the UART will continue to buffer them until its internal FIFO is full (~56 bytes). This flag causes the Edgeport to poll the RX FIFO for received bytes. If any bytes are available they will be sent to the driver without any delay.

Remap Baud: (All operating systems - 930 and TI based Edgeport)

Setting the baud rate to 1200 baud will result in 230400 baud

Ignore Flush: (Windows NT/2K/XP 930 and TI)

If an application sends IRP_MJ_FLUSH_BUFFERS it will be ignored.

Excerpt from Microsoft documentation:

Drivers of devices with internal caches for data and drivers that maintain internal buffers for data must handle this request.

When Sent

Receipt of a flush request indicates that the driver should flush the device's cache or its internal buffer, or, possibly, should discard the data in its internal buffer.

Operation

The driver transfers any data currently cached in the device or held in the driver's internal buffer(s) before completing the flush request. The driver of an input-only device that buffers data internally might simply discard the currently buffered device data before completing the flush IRP, depending on the nature of its device.

Fast Writes: (All operating systems - 930 and TI based Edgeport)

When an application sends a write to the driver, by default the Edgeport driver will wait until all data has been transmitted out of the Edgeport device before completing the write. When the Fast Writes flag is set, we complete the write even if data is still buffered in the driver and the Edgeport device.

Fast Reads:

This flag is used when an application requires that a read complete immediately. In the read immediate case, the Edgeport driver will send a request to the Edgeport device asking for any buffered data to be sent up. This buffered data will be included when the read completes. If this flag is set, the driver will not query the Edgeport device for additional data.

Disable Plug & Play:

Uncheck this to allow Windows to detect Plug & Play serial devices, such as most modems.

Timer Logic: (Windows 9x only)

If application uses PortSetReadCallBack(), the notification routine will only be called when the number of bytes in the receive buffer is greater than the RX trigger. The Microsoft serial VxD also implements a timer that will trigger and call the notification routine if some amount of data is available in the RX buffer but no new data has been received for ~200ms (receiver is no longer active).

We do not enable this behavior by default because of the nature of Edgeport buffering. But if you set the flag we will complete the read when we detect ~200 ms no activity.

Here is a comment from the code:

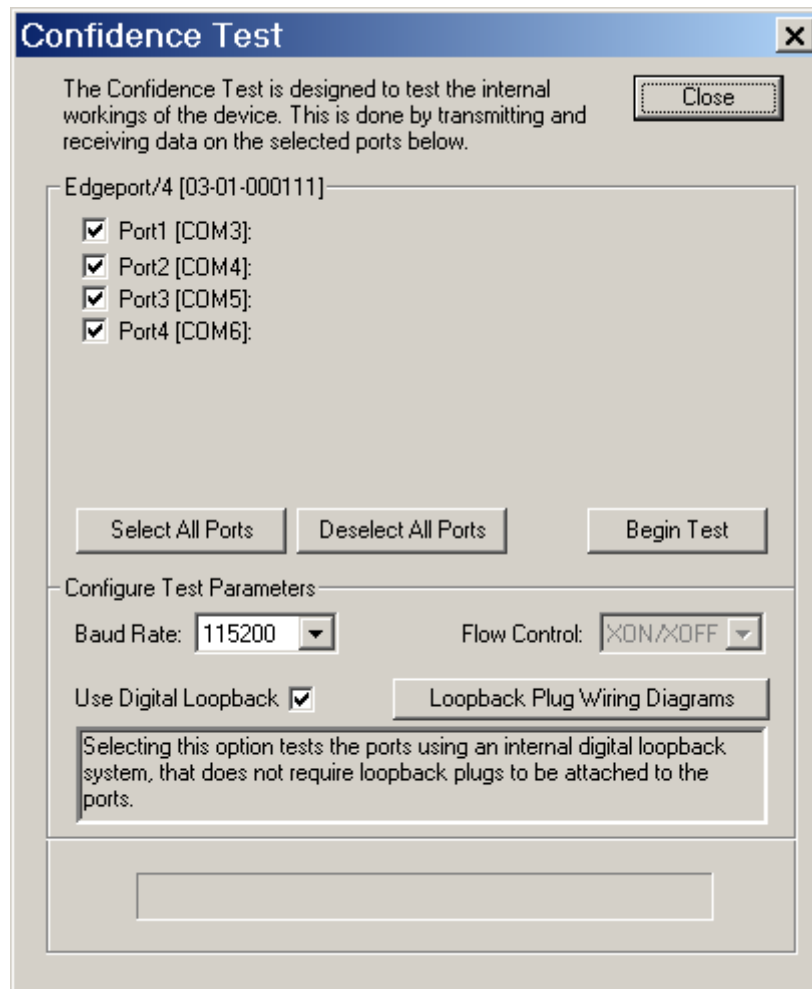
If the receiver is active then do not complete this read. The problem is that the Edgeport buffers the RX bytes and we poll the driver. If we do not receive any bytes in 200ms we may report an erroneous event even if there are available bytes in the Edgeport device or driver.

Test Ports - Perform a confidence test on the internal workings of the serial ports.

Note: The Digital Loopback test is unreliable if a serial device is attached to the serial port in question.

To reliably run the Digital Loopback test:

1. Close any software applications and/or services that may have the COM port(s) in question open.
2. Disconnect the serial cable(s) from the serial port(s) being tested.
3. Unplug the Edgeport via USB then plug it back in.
4. Launch the Edgeport Configuration Utility and run the Digital Loopback test with the default options.



Update –Updates firmware for Digi Rapidport/4 modems. This feature is not used for Edgeports.

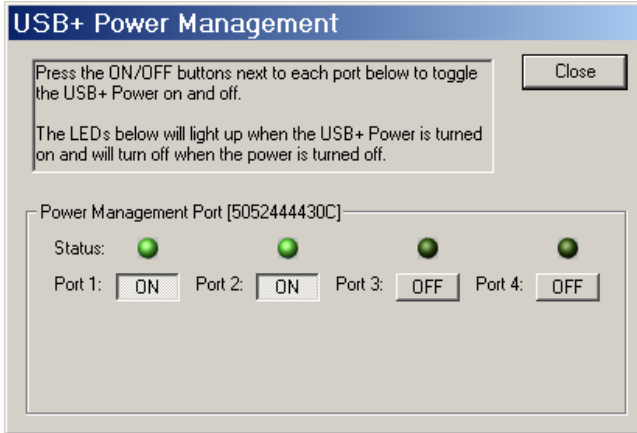
Power Management – Turn on and off the power for HubPorts with USB PlusPower ports.

Note: This feature toggles 12V/24V power on/off for specific PlusPower Hubport models.

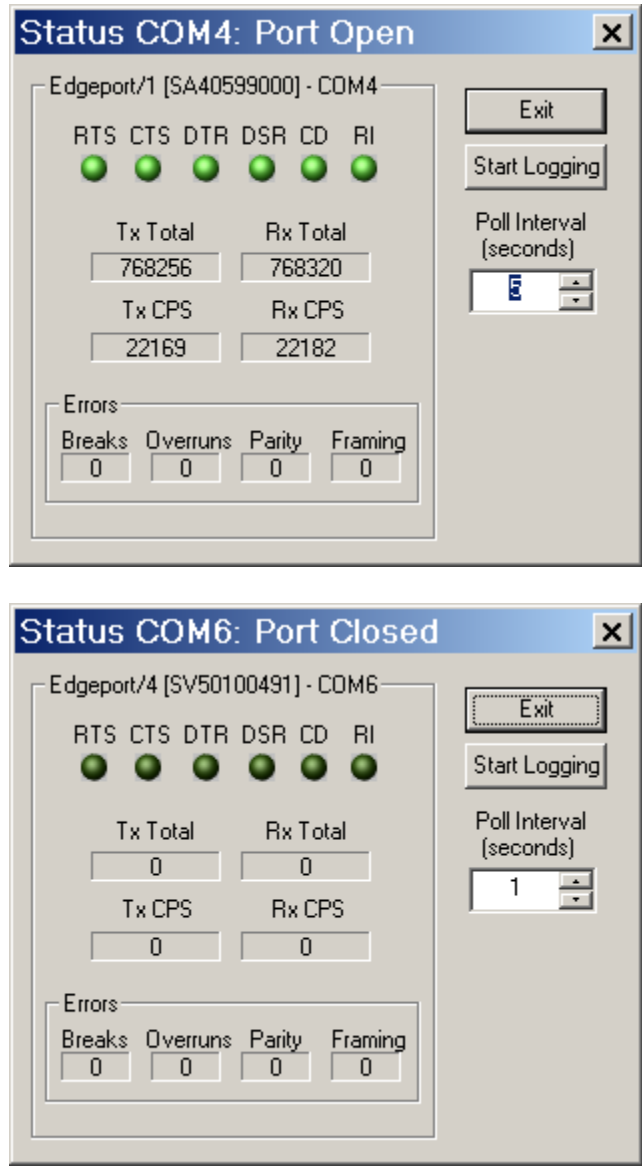
This feature does not toggle the 5V standard USB port.

This is a safety feature to prevent sparks when disconnecting or connecting 12V/24V PlusPower USB cables.

This feature applies only to Compact (/c) or PCI card PlusPower Hubport models.



Port Status – Provide the status of a selected (highlighted) serial port.



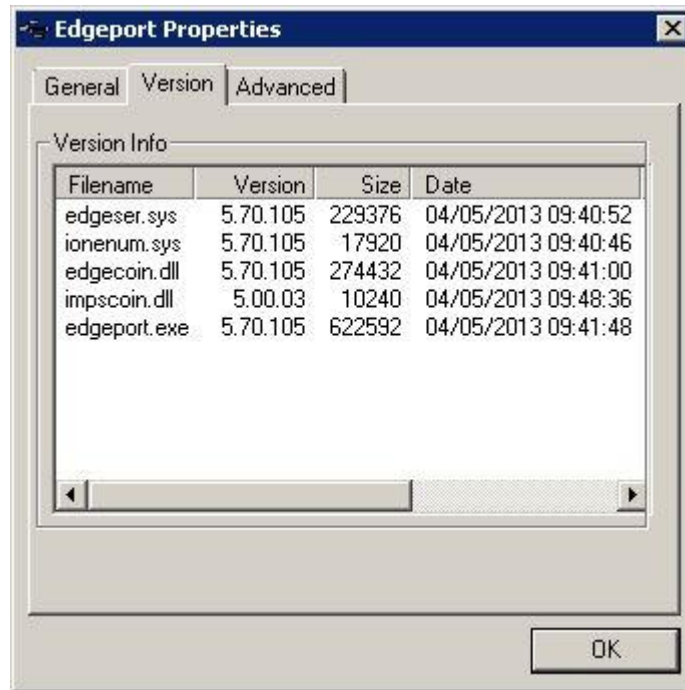
The Poll Interval is the number of seconds between updates of this window. This is also the number of seconds between each entry in the log file.

To create a log file, click the Start Logging button and enter a filename for the log file. This file will contain all of the information displayed in the Port Status window until the Stop Logging button is clicked.

Refresh – Scan for ports.

Version Tab

The Version tab allows you to check the file information pertaining to the software.



Advanced Tab

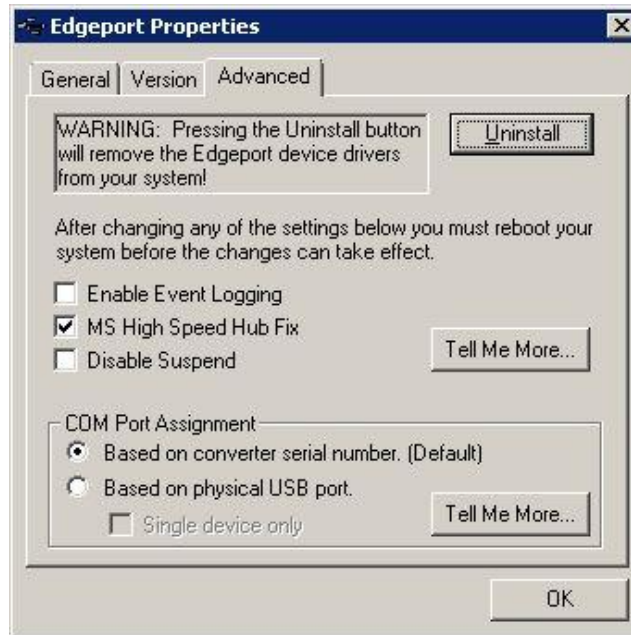
The Advanced tab allows you to do the following:

Uninstall – Uninstall the Edgeport drivers.

Note: that the computer will need to be rebooted afterwards.

Enable Event Logging – Place event messages in system event log.

COM Port Assignment – Configure how COM ports will be assigned.



Important: Changing the COM Port Assignment requires rebooting the computer after clicking the OK button.

Understanding Hubs

Hubs, critical components in the USB architecture, are wiring concentrators that enable the attachment of multiple devices, thus converting a single attachment point into multiple attachment points. USB architecture allows a cascaded multiple hub configuration with certain power limitations (explained later in this section). See figure 1.

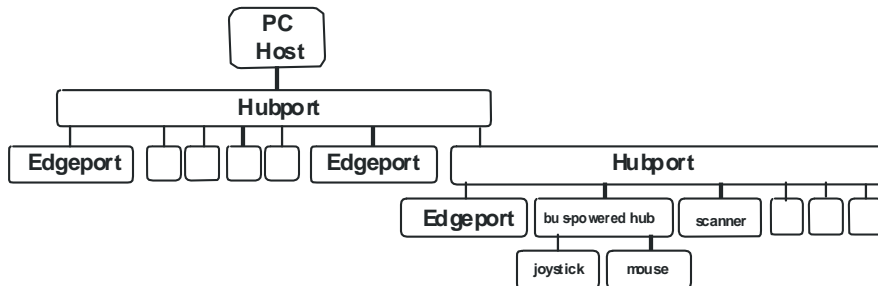


Figure 1: Example of a Typical Hub Configuration

Each hub has an upstream port, connecting to the host, and multiple downstream ports, connecting to downstream devices, possibly including other hubs. A hub can detect attachment and detachment of downstream devices and enable and monitor the distribution of the power to downstream devices via their integral hardware and the operating system.

Each USB device reports its power requirements to the operating system, which then enables and disables the device as a function of its power requirements and the amount of available power. High powered devices typically need to be connected to a self-powered hub, such as the Hubport, which obtains power from its external power supply and provides up to 500 mA for each downstream port. Only low powered devices, such as a mouse, can be connected to a bus-powered hub, which obtains power from its upstream host and provides up to 100 mA for each downstream port.

Due to the limited available power for bus-powered hubs, cascading two bus-powered hubs is an illegal topology, and devices connected to the second hub will not function. *USB specifications limit the connection of a bus-powered hub to a self-powered hub or host only.* Since Edgeport/421, Edgeport/42, Edgeport/42+, and Edgeport/416 operate as self-powered hubs, they are not affected by this limitation.

According to the USB Specification, the maximum limit of hubs cascaded in series cannot exceed five. In other words, you may have a maximum of five hubs between any device and the host. This does NOT mean that the maximum number of hubs in a system is five. Indeed, up to seven hubs can be connected parallel *at any given level.* You must tally both external and embedded hubs when counting downstream hubs.

Regulatory & Other Information

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Federal Communications Commission (FCC) Regulatory Information (USA only)

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 correct the interference by one or more of the following measures:

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

Warning: The connection of a non-shielded interface cable to this equipment will invalidate the FCC Certification for this device.

FCC Regulation - Part 15

Declaration of Conformity (DoC)

This device complies with the requirements of the Code of Federal Regulations listed below:

FCC Title 47 CFR, Part 15 Class B for a digital device.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Department of Communication (DOC) Notice (Canada only)

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

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