# 20-Port USB Switch



# User's Guide

**DIGITAL LOGGERS, INC.**

## Product Features

- 20 ports of relay isolated USB interfaces arranged in a 20PST switching configuration.
- Large 20 port power supply to provide .5A continuous power to all ports simultaneously, even when unselected. Auto-resetting circuit breakers are provided on all target ports.
- On-board control µP with EEPROM storage for port names, etc.
- USB / serial link to uP via separate control port.
- Manual or batch file operation via simple text menu.

## Device Requirements

- One available USB control port. An FTDI serial driver will automatically install to control switching. Baud rate is 9600, N, 8,1.
- One available USB data port. This data port will be switched to one of the 20 selected target ports. The control and data ports may be on the same or different systems.
- Software, such as hyperterminal for manual control, a batch file or script for program control.

## Crosspoint Switch Operation

The switch provides a cost-effective alternative to daisy chained hubs when you only need to communicate with only one USB device at a time.

The switch provides a link from one USB host device (such as a PC or modem) to several attached target devices (such as routers, radios, or sensors). The switch is not a hub, so only one target device may be accessed at a time. However, power is provided to all ports simultaneously, so autonomous target devices may continue to operate even when they are not selected.

An internal power supply provides 75W of power to all ports. 5V wall adapter provides regulated DC power to the switch. The maximum current drain of .6A at 120VAC occurs when all ports are fully loaded and all devices are switched on. Nominal power consumption is under 5W when devices are unselected.

## Hardware Setup

To communicate with the switch, first attach a USB cable between the host PC and the control port. Power is not required at this point. With luck, the system will detect the USB serial converter and this balloon will appear:

If the system you are using doesn't have a USB serial port driver, select and download it from:

http://www.ftdichip.com/FTDrivers.htm

In Windows, point to the file using the "found new hardware" wizard.

**Found New Hardware Wizard**

Welcome to the Found New Hardware Wizard

This wizard helps you install software for:

MicroTouch

If your hardware came with an installation CD or floppy disk, insert it now.

What do you want the wizard to do?

○ Install the software automatically (Recommended)
● Install from a list or specific location (Advanced)

Click Next to continue.

[< Back] [Next >] [Cancel]

Drivers are currently available for:

- Windows XP x64
- Windows Server 2003 x64
- Windows XP
- Windows Server 2003
- Windows 2000
- Windows ME
- Windows 98
- Linux
- Mac OS X
- Mac OS 9
- Mac OS 8
- Windows CE.NET (Version 4.2 and greater)

## Menu Operation

Once the control port is connected, you may access the menu using Windows hyperterminal or a similar terminal program. Start Hyperterminal to communicate directly with the serial port. It's located in Start > All Programs > Accessories > Communications > Hyperterminal.

Enter any name on the new connection screen. Next, select the right communication port. Don't use "Standard Modem" or "Bluetooth Link". Instead, select the virtual COM port that the USB device is mapped to. The USB device is usually the highest numbered COM port. Set the data format to 9600, N, 8, 1. Turn handshaking off by setting flow control to "none".

Connect and apply power to the USB switch. The following screen will appear:

```
usb - HyperTerminal
File  Edit  View  Call  Transfer  Help

USB Data Switch    V 2.0.1
www.digital-loggers.com/uds

Switch ID: DLI USB Switch
All ports are off.

Valid commands:

A-T or 01-20    Enable the specified port
W               Turn off all ports
V               View port ID's/status
Y               Change Port or Switch ID
Z               Change delay between port switching

Enter command (? for help):


Connected 0:00:43    VT52    9600 8-N-1    SCROLL   CAPS   NUM   Capture   Print echo
```

Entering A-T or 01-20 will connect the data port to the corresponding USB target port.

Connect a second cable to another port on the control PC or to another computer. Connect one or more target devices. These devices may now be accessed when they are switched on. Devices such as sensors, radios, etc will continue to operate using power from the switch when they are enabled and switched off.

To name a port, use the "Y" command. Initially, all ports will have the switch name, so enter names for all port in sequence, and press "enter" to clear the names of the unused ports.

A switching delay is provided with the "Z" command. This can be useful to limit the switching speed to permit drivers to load.

Note that power is continuously applied to all ports regardless of the switch settings.

# Communication via Command Line Batch Control

Under Windows, a serial port is configured using:

```
mode com8: baud=9600 parity=n data=8 stop=1
```

You may copy commands to the port using:

```
copy commands.txt com8:
copy con com8:
```

or similar scripts.

In some situations, it may be useful to redirect the serial port control port to a remote system, ie. virtual serial port.

# Communication from Within Programs

The simplest method of setting up a port is to spawn the mode commands above in a system() function call:

```
system( "mode com8: baud=9600 parity=n data=8 stop=1" )
```

Type mode /? in a command line console for full details.  Once a port is set up, a com port can be opened as a stream I/O device using stdio:

```
FILE* portfp = fopen( "com8:", "w+" ) ;
fprintf( portfp, "A" ) ;                /*select target port*/
Delay (1500);                           /* wait for connection */
```

You can also use C++ fstream I/O.  The Win32 API has comprehensive low level functions for serial I/O, but the simpler stdio function works for many applications.  For information on W32 serial communications, see:

http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnfiles/html/msdn_serial.asp

For information on Linux serial communications, see:

http://www.atnf.csiro.au/people/rgooch/linux/docs/devfs.html

# Support

Please visit www.digital-loggers.com for manuals and accessories. If we haven't answered your questions here, please call (408) 330-5599 or send an email to support@digital-loggers.com.  We'll be glad to help.