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# BS1USB (#BS1USB)

## **General Description**

The BS1USB module is a BASIC Stamp<sup>®</sup> 1 microcontroller with an on-board USB interface and USB-A connector. Headers provide easy access to Vdd (+5 V), Vss (ground) and all eight BASIC Stamp 1 I/O pins.



# **Application Ideas**

This handy little device is perfect for adding a user-definable function to your PC. For example, with a few lines of code and a little hardware, you can create a project timer/data logger to keep track of how much time you spend on a particular project that uploads the tallied information to your PC. Ryan Clarke, our newest Tech, prefers to work by candlelight. Using the application note #1 found at: <u>www.parallaxefx.com</u>, Ryan created his own PC-side LED based candle to enjoy every time he boots up his computer. The possibilities are endless!

## Features

- BASIC Stamp 1 processor
- 8 I/O pins easily accessible
- 5 VDC sourced directly from the USB port
- Plug directly into USB port or USB-A male to USB-A female extension cable
- FTDI USB Drivers are free and easy to install

# **Device Information**

- A. BS1USB Top
- B. USB-A connector connects directly your PC USB port.
- C. Vdd = 5 Volt supply connection.
- D. P0 through P7 are the eight user I/O pins
- E. VSS = ground connection.
- F. BS1USB Bottom

#### Approximate Dimensions

 Overall Length:
 2.25 in (5.72 cm)

 Width:
 0.64 in (1.63 cm)

 Thickness:
 0.30 in (0.76 cm)



# Installation

### NOTE: Do not plug the BS1USB in to the USB port before installing the drivers.

- 1. Download the FTDI VCP Drivers from the bottom of the BS1USB product page: <u>http://www.parallax.com/detail.asp?product\_id=BS1USB</u>
- 2. Extract the driver files to a temporary folder that is easy to locate on your system. For the purposes of these instructions we will use the folder:

### C:\Temp\FTDI

3. Plug the BS1USB module into your system's USB port. A "Found New Hardware" message should appear, followed by the "Found New Hardware Wizard" dialog:

| Found New Hardware Wizard |  |  |  |  |
|---------------------------|--|--|--|--|
|                           | Welcome to the Found New<br>Hardware Wizard  |  |  |  |
|                           | This wizard helps you install software for:  |  |  |  |
|                           | USB <-> Serial   |  |  |  |
| 2 test                    | 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   |  |  |  |

- 4. Select "Install from a list or specific location (Advanced)," click on the "Next" button, and follow the steps below.
- 5. Select "Search for the best driver in these locations," mark the checkbox next to "Include this location in the search:" and enter the path (as shown below)...

| Please choose your search and installation options.  | und New Hardware Wizard  |  |  |  |
|--|--|--|--|--|
| <ul> <li>         Search for the best driver in these locations.         Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be nstalled.         <ul> <li>Search removable media. The best driver found will be nstalled.</li> <li>Search removable media (hoppy, CD-ROM)</li> <li>Include this location in the search:</li> <li>C\Temp\FTDI</li> <li>Browse</li> </ul> </li> <li>Opent search. I will choose the driver to install.         <ul> <li>Choes this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.</li> </ul> </li> </ul> | Please choose your search and installation options.  |  |  |  |
| Deal in Check Dates below to this of expand the deals teach (, mich includes occal paths and removable media. The best diver found will be nataled.     Search removable media (floppy, CD-ROM)     Deals are the logication in the search:         C:\Temp\FTDI         Browse     Dean't search. I will choose the driver to install.     Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.  | © Search for the best driver in these locations.   |  |  |  |
| Search removable media (floppy, CD-ROM) Include this Igcation in the search: C:\Temp\FTDI Browse Dont search. I will choose the driver to install. Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.   | Use the check boxes below to limit or expand the default search, which includes local<br>paths and removable media. The best driver found will be installed.   |  |  |  |
| Include this igcation in the search:     C:\Temp\FTDI     Browse     Don't search. I will choose the driver to install.     Choose this option to select the device driver from a list. Windows does not guarantee that     the driver you choose will be the best match for your hardware.  | Search removable media (floppy, CD-ROM)  |  |  |  |
| Downsearch. I will choose the driver to install.  Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.  | ✓ Include this location in the search:   |  |  |  |
| On search. I will choose the driver to install.<br>Choose this option to select the device driver from a list. Windows does not guarantee that<br>the driver you choose will be the best match for your hardware.  |  |  |  |  |
| Choose this option to select the device driver from a list. Windows does not guarantee that<br>the driver you choose will be the best match for your hardware.   | <u>D</u> on't search. I will choose the driver to install.   |  |  |  |
|  | Choose this option to select the device driver from a list. Windows does not guarantee that<br>the driver you choose will be the best match for your hardware. |  |  |  |
| Cancel   | Cancel   |  |  |  |

...or click the "Browse" button to find the folder where the driver files have been saved:

| Browse For Folder                                  | ? 🛛       |
|--|-----------|
| Select the folder that contains drivers for your h | ardware.  |
|  |           |
| E CEMDRVRS   | <u>~</u>  |
| 🗉 🚞 Program Files                                  |           |
| PSFONTS  |           |
| 🗉 🚞 Python23                                       |           |
| 🗉 🧰 qdesigns                                       |           |
| 🗉 🧰 quartus2we                                     |           |
| 🗉 🧰 ScanSoft Documents                             |           |
| E C Temp   |           |
| 🗉 🛅 tmp  |           |
| 🗉 🧰 VBCERedistKit                                  |           |
| E C WINDOWS  |           |
| 🗉 🧰 Windows CE Tools                               | ~         |
|  |           |
| To view any subfolders, dick a plus sign above.    |           |
|  | OK Cancel |

Select the target folder and then click "OK," then "Next" on the Wizard dialog. (Note: Some systems may report that it cannot locate the drivers. If this happens, click on the Finish button. The "Add New Hardware Wizard" will restart, this time finding the "USB <-> Serial" device. Repeat steps 4 and 5.)

6. Windows will search for the appropriate driver file(s) in the specified location. You may see the following dialog:



Click on the "Continue Anyway" button to proceed.

This dialog will be displayed as the appropriate files are installed:

| Found New Hardware Wizard |  |  |  |
|---------------------------|--|--|--|
| Please wai                | t while the wizard installs the software |  |  |
| ŝ                         | USB High Speed Serial Converter          |  |  |
|                           | Fidun 2k. Ini<br>To C. WINNT System 32   |  |  |
|                           | < <u>B</u> ack <u>N</u> ext > Cancel     |  |  |

When the installation is complete the following dialog will appear:

| Found New Hardware Wiz | ard  |
|------------------------|--|
|                        | Completing the Found New<br>Hardware Wizard          |
|                        | The wizard has finished installing the software for: |
|                        | See USB High Speed Senal Converter                   |
|                        | Click Finish to close the wizard.                    |

Click on the "Finish" button. If the "Found New Hardware Wizard" restarts, repeat steps 4 through 6. If you experience difficulty, call Parallax Tech Support for assistance at (888) 512-1024 in the US, weekdays from 7:00 am to 5:00 pm PT, or email us at: <a href="mailto:support@parallax.com">support@parallax.com</a>.

# **Power Considerations**

If your BS1USB will be sharing a non-powered hub with other USB devices, be sure that the hub can supply adequate current for all devices.

| Maximum current for:           | Source | Sink  |
|--------------------------------|--------|-------|
| Each individual I/O pin        | 20 mA  | 25 mA |
| Total of all I/O pins combined | 40 mA  | 50 mA |

# Sample Program

This program requires the BASIC Stamp Editor for Windows v2.0 or higher. Download this free software from www.parallax.com, from the Downloads > Software menu. When you enter and run this program, a Debug Terminal should open, displaying the message "Hello World!"

See the BASIC Stamp Syntax and Reference Manual for more PBASIC 1 programming information, available for purchase or download from <a href="http://www.parallax.com/detail.asp?product\_id=27218">http://www.parallax.com/detail.asp?product\_id=27218</a>.