

BASIC Stamp 2 Windows Interface

FEATURES:

GENERAL:

- **Win95/98/NT 4.0** compatible. This software runs under Windows 95 and 98 (both new and upgrade versions), as well as Windows NT 4.0 with Service Pack 1 or 3 (WinNT 4.0 with Service Pack 2 has not been tested).

EDITOR:

- **Multiple Document Interface** in tabbed-page format allows up to 16 BASIC Stamp source code files to be open at once. Code may be cut and pasted between files easily and efficiently with this interface.
- **File History** list appears under file menu allowing quick access to the last 0 to 10 (configurable) files accessed.
- **Color and Font Size** used in the editor windows are configurable.
- **Default COM port** may be set to AUTO, allowing automatic detection of BASIC Stamp 2, or may be set directly to a specific port.
- **Default directory** where BS2 source code files are stored can be configured.
- **Syntax Check** feature allows proper code format verification without actually downloading the code or engaging the Memory Map window.

DEBUG WINDOW:

- **Terminal-like** features allow receiving and sending data. This single interface can provide easy use of the most commonly implemented features of the BASIC Stamp, DEBUG and SERIN/SEROUT. Transmitted and received data appear in two separate panes that are user sizable.
- **Open any time** feature allows Debug Terminal to be opened at any time, not just after a program download, and may remain open while user switches back to Editor window.
- **Color and Font Size** used in the Transmit and Receive panes are configurable.
- **COM port settings** such as Port, Baud Rate, Parity, Data Bits and Flow Control may be changed in real-time (even while data is being received), allowing easier debugging and configuration at times when the proper settings may not be obvious.
- **Port status indicators** show state of many serial port pins (TX, RX, DSR and CTS) and allow setting the state of DTR and RTS with the click of the mouse button. This is a great way to simulate what will happen to the BASIC Stamp 2 when the DTR line goes high while using the standard programming interface.
- **Buffer Size** for the Receive pane is configurable to allow scrolling back of up to 8192 lines. Pause button may be used along with scrolling feature if data is arriving continually; data will still be stored in buffer, but screen will not update until Resume is selected.
- **Macro Keys** may be defined which contain text/data which are needed to be output from the Debug Terminal. Up to 26 macro keys may be defined in one Macro Key file. Macro Key files may be saved or loaded allowing definition of different macro key sets for different projects.
- **Special Control Character** set has been enhanced to allow more control over Debug Terminal formatting to ease development. Standard (downward compatible) control characters include: Clear Screen, Home, Bell, Tab and Carriage Return. Enhanced control characters include: MoveTo (x,y), Cursor Left, Right, Up and Down, Backspace, Line Feed, Clear Right and Clear Down. Each of the control characters may be disabled through preference settings.

PRODUCT INTRODUCTION

This is the first official release of the BASIC Stamp 2 Windows Interface. In the next few months, there will be at least two additional releases, each with additional features that could not be added at this time. Among those added features will be the ability to program the BASIC Stamp IISX and the BASIC Stamp I as well as on-line help. A few menu items, preference settings, buttons, etc. may be grayed-out and unavailable at this time. We encourage you to visit our web site around mid-December 1998 and mid-January 1999 for updates of this software. Updates will be downloadable from:
<http://www.parallaxinc.com/stamps/stampsoftware.htm>

INTERFACE INTRODUCTION

The BASIC Stamp 2 Windows Interface was designed to be easy to use and the use of most features should be intuitive. Those that are familiar with the DOS-only version of the interface as well as standard Windows software should feel comfortable using the BASIC Stamp 2 Windows Interface.

EDITOR WINDOW

The Interface consists of one main editor window that can be used to view and modify up to 16 different source code files at once. Each source code file that is loaded into the editor will have its own tab at the top of the page labeled with the name of the file. Source code that has never been saved to disk will default to "Untitled#"; where # is an automatically generated number. A user can switch between source code files by simply pointing and clicking on a file's tab.

The status of the active source code page is indicated in a status bar below it and the full path to the source code (if it has been loaded from or saved to disk) will appear in the title bar of the BASIC Stamp 2 Win Interface. The status bar contains information such as cursor position, file save status, and syntax error/download messages.

DEBUG TERMINAL

The Debug Terminal window (simply called the Debug window in the DOS-only software) is available via the Run menu. It has been greatly improved compared to the DOS-only version and may be opened at any time. It will also automatically appear after a program containing a DEBUG command is downloaded to the BS2-IC. The Debug Terminal may be left open while editing and downloading new code.

The main portion of the Debug Terminal is split into two panes consisting of the Transmitter pane (above) and the Receiver pane (below). A movable splitter bar separates the two panes and can be used to resize them in relation to each other. The Receiver pane is similar to the entire Debug window in the DOS-only software. It displays any data received from the Stamp 2's DEBUG or SEROUT command. Data that recently scrolled off the pane can be viewed again through the use of the Receiver pane's vertical scroll bar. The Transmitter pane displays data entered at the keyboard and can be used to send data to the BASIC Stamp through the same serial port.

The top of the Debug Terminal contains many serial port configuration items that can be modified unless the Debug Terminal was opened automatically after a download. For example, (if the Debug Terminal was opened manually) the Baud Rate of the port can be changed even while data is being received. To change to another available serial port, simply select one from the COM Port combo box. An error message will be displayed if a port cannot be accessed for any reason.

To the right of the serial port configuration items is a set of status lights and check boxes that indicate the current status of their associated data or control line on the serial port. A bright green light indicates that line is active (high), while a dark green light indicates the line is inactive (low). This can be used to monitor received and transmitted data on the serial port. The DTR and RTS checkboxes also indicate line status but may be directly controlled by clicking on them. A checkmark indicates the line is active, while an empty box indicates the line is inactive.

At the bottom of the Debug Terminal window, is a set of buttons. The Capture button (not implemented in this version) will store the received data (from the Receiver pane) to a file on disk. The Macro Key button will open the Macro Key definition window (see below). The Pause button will halt the updating of the Receiver pane allowing a user to scroll the display backward in cases where data is being received constantly. The Close button will close the Debug Terminal.

The Debug Terminal Receiver pane supports a number of special control characters. Like the DOS-only version, Clear Screen, Home, Bell, Tab and Carriage Return are supported and perform the indicated function. In addition to these standard control characters, MoveTo(x,y), Cursor Left, Right, Up and Down, Backspace, Line Feed, Clear Right and Clear Down are also supported. The Cursor Left, Right, Up and Down control characters are ASCII 3,4,5 and 6, respectively. Sending an ASCII 3 value from the BS2-IC (with the command: SEROUT 16,84+\$4000,[3]) would result in the Receiver pane's cursor moving left one position. These special characters give great flexibility in formatting and refreshing data on the Receiver pane. Most should operate in an intuitive manner. Those that may not be listed below:

- MoveTo(x,y) – ASCII 2 – This is a unique control character that allows moving the screen cursor to a specific character location on the screen. It must be followed by two additional characters whose value indicates the X and Y position desired. For example: SEROUT 16,84+\$4000,[2,10,15,"hello"] would first move the cursor into column 10 (the x position) and row 15 (the y position) and then display *hello* on the screen starting from that position. NOTE: If the pane is not big enough for the position indicated in a MoveTo command, the cursor will wrap to the other side of the screen.
- Clear Right – ASCII 11 – This control character will cause all characters starting at the cursor position and to the right being cleared from the screen.
- Clear Down – ASCII 12 – This control character will cause all lines starting at the cursor and below being cleared from the screen. NOTE: Only visible lines will be affected.

Any of the special control characters can be disabled from the Debug Function tab of the Preferences window.

MACRO KEY WINDOW

The Macro Key definition window (available by clicking on the Macro Keys button from the Debug Terminal) allows the creation of special hot-keys for predefined text. This can be used to store common data to be transmitted to the BASIC Stamp 2 during run-time. For example, during the development of a project, it might be necessary to manually send data to the Stamp that would normally be sent by some other device, or by another computer program. If this data were long or complicated, it would be tedious to type it in at the keyboard, over and over again, throughout the development. The Macro Key definition window allows this data to be assigned to one of 26 hot-key combinations. A user can define, for example, Ctrl+Shift+A to be the standard output data of a

GPS receiver. Simply pressing Ctrl+Shift+A in the Debug Terminal will thereafter result in the data stream being entered into the Transmitter pane and transmitted through the serial port just as if it was typed in from the keyboard.

The Macro Key definition window requires the defined macro keys be stored in a macro key file. Macro Key files can be loaded and saved at any time. To add a new macro key, click on the Add button and enter the Name, Key and Data into the edit controls on the right. The Current Macros list on the left displays all the currently defined macros in the list, sorted by Key.

SHORTCUT KEYS

The following table lists the available keyboard shortcuts within the BASIC Stamp 2 Windows Interface.

File Functions	
Shortcut Key	Function
Ctrl+O	Open a source code file into the Editor window.
Ctrl+S	Save current source code file to disk.
Ctrl+P	Print current source code.
Editing Functions	
Shortcut Key	Function
Ctrl+U	Undo last action.
Ctrl+X	Cut selected text to the clipboard.
Ctrl+C	Copy selected text to the clipboard.
Ctrl+V	Paste text from clipboard to selected area.
Ctrl+A	Select all text in current source code.
Ctrl+F	Find or Replace text.
F3	Find text again.
F5	Open Preferences window.
Coding Functions	
Shortcut Key(s)	Function
F6 or Ctrl+I	Identify BASIC Stamp firmware.
F7 or Ctrl+T	Perform a syntax check on the code and display any error messages.
F8 or Ctrl+M	Open Memory Map window. (not implemented in this version).
F9 or Ctrl+R	Tokenize code, download to the BASIC Stamp and open Debug window if necessary.
F12 or Ctrl+D	Open Debug window.
ESC	Close current window.