

BASIC Stamp[®] HomeWork Board[™] (Serial)

Single (#555-28158) or 10-pack (#28158)

This economical development platform with a surface-mount BASIC Stamp 2 microcontroller module was designed with beginners and student budgets in mind; the 10-pack perfect for outfitting a classroom. It is compatible with *What's a Microcontroller?*, *Robotics with the Boe-Bot*, and most other Stamps in Class tutorials. See the Program Overview link at www.parallax.com/education for complete details.

Features

- Built-in, surface-mount BASIC Stamp 2 microcontroller
- BASIC Stamp I/O pins plus power connections are brought adjacent to a 2" x 1 3/8" breadboard.
- Built-in 220-ohm series resistors between the I/O pins and breadboard for a bit of protection in case of wiring errors
- On-board regulator delivers up to 500 mA* of current for BS2 and breadboard circuits (see Rev B note, page 3)
- LED connected to the BS2's EEPROM clock line shows when a program is running
- Reset button
- 9 V snap-style battery clip with strain-relief holes to make it easy to strap the battery in place for mobile applications
- Grounded 0.125 in (3.18 mm) corner mounting holes, at 3.7 x 2.75 in (9.5 x 7 cm) on centers
- 4 peel-and-stick rubber PCB feet included

Application Ideas

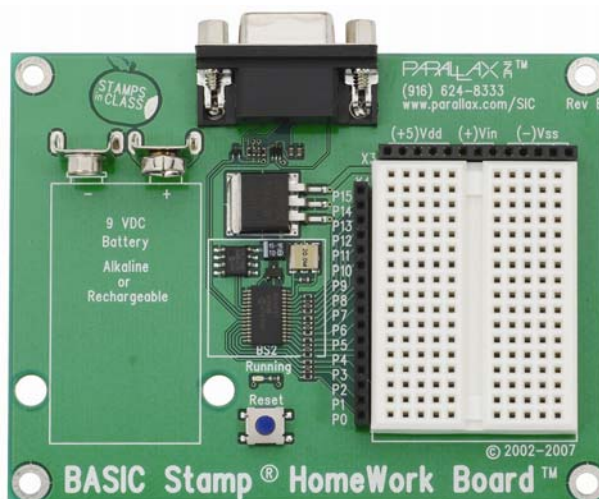
- BASIC Stamp-related homework assignments
- Dedicated science fair, contest, or hobby projects
- Affordable "nodes" in BASIC Stamp 2 network

Key Specifications

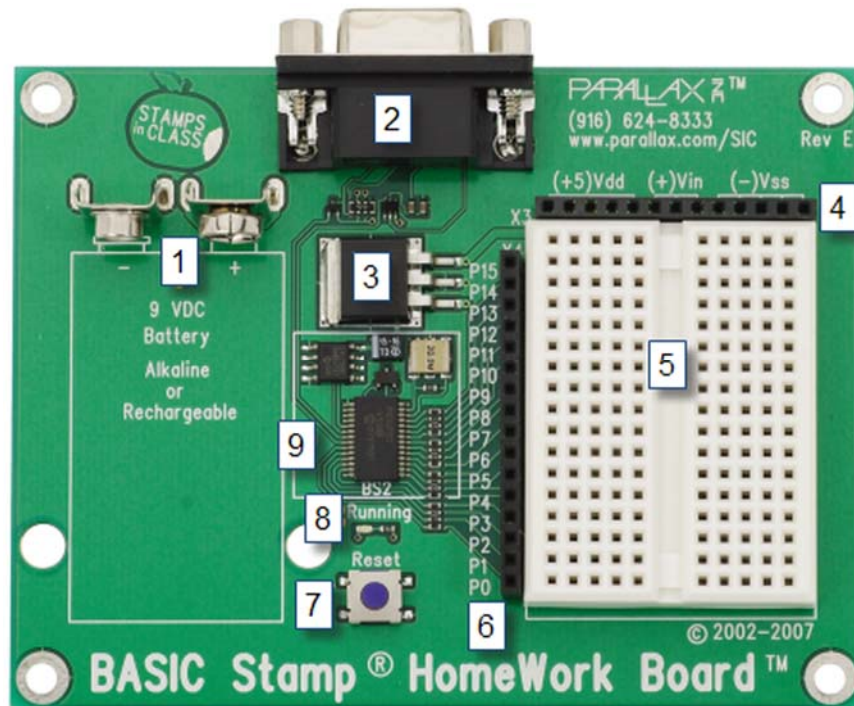
- Power requirements: 9 V battery; BS2 requires 7 mA running, 50 µA in sleep
- Communication: Serial (RS-232) via DB9
- Operating temperature: 32 to 158 °F (0 to 70 °C)
- Dimensions: 3.05 x 4 in (7.75 x 10.16 cm)

Additional Items Required

- Serial cable (#800-00003) — OR — USB to Serial Adapter with USB A to Mini-B cable (#28031)
- 9 V battery
- PC running Windows 2K/XP/Vista/7 for the BASIC Stamp Editor software. USB drivers for the optional USB Adapter are included with the software installer which is a free download from www.parallax.com/basicstampsoftware



BASIC Stamp HomeWork Board Features



1. **9V Battery Clip:** You can use alkaline or rechargeable 9-volt batteries. Disconnect the battery to turn off power to your board
2. **Serial Programming Connector:** This is a female DB9 socket for programming and for two-way serial communication between the BASIC Stamp and your computer. You can connect directly to a serial port on your computer, or use a USB to Serial Adapter to connect to a USB port.
3. **Voltage regulator:** Supplies regulated 5 V (up to 500 milliamps*) to the BASIC Stamp and sockets labeled Vdd for circuits you will build on the breadboard area. (*See Rev B note, page 3.)
4. **Power header (X3):** The sockets labeled (+5)Vdd connect to +5 VDC, (+)Vin connects directly to the power supplied to the board by the battery clip (+9 VDC typical), and (-)Vss connects to 0 V (ground).
5. **Breadboard:** The breadboard has metal clips that run underneath the white plastic board in a horizontal fashion. Each strip connects a 5-socket group, with two groups to each row, separated by a center trench. Wires or legs of components plugged into the same 5-socket group will be electrically connected. Components with many legs (such as pushbuttons or ICs), are placed in the middle of the board so that half of the legs are on the left side and half are on the right side of the trench. Note: Always disconnect power before building or modifying circuits!
6. **I/O Pin Access Header (X4):** The BASIC Stamp module's 16 I/O pins, labeled 0 to 15, are connected to this header, so you can conveniently connect to your breadboard circuits. On this board, there are 220-ohm resistors placed between the header and the BASIC Stamp I/O pins to help prevent damage in case of a wiring mistake.
7. **Reset Button:** The reset button can be used to restart your BASIC Stamp without having to cycle the power. This saves wear-and-tear on the battery clip for simple program restarts. Some advanced programming techniques use the reset button and the BASIC Stamp EEPROM as a way to toggle between different program functions.

8. **Running Indicator LED:** This LED will light up when a BASIC Stamp program is running. It is not a power indicator LED.
9. **BASIC Stamp 2:** The components of a BASIC Stamp 2 module are built directly onto the board. It connects the BASIC Stamp to the programming connector, power, the running indicator LED, reset button, and I/O pin header.

Rev B Note

The BASIC Stamp HomeWork Board Rev B's voltage regulator supplies current to the embedded BASIC Stamp, certain circuits built on the breadboard and connected to I/O pins, and any devices drawing current from the Vdd sockets. The current budget for the HomeWork Board Rev B's voltage regulator is 50 mA. Most devices featured in Stamps in Class texts only draw a few extra milliamps of current and will work fine when powered by HomeWork Board Rev B's Vdd Pins. However, there are a few exceptions, including servos, pumps, and heating elements. These devices should not be connected to Vdd, or it could damage the board's voltage regulator. Instead, these higher current devices should be connected to Vin. The voltage supplied to Vin should in turn be limited to a level that is compatible with the device (servo, pump, heating element).

Resources and Downloads

- BASIC Stamp Editor programming software (free), which contains the Getting Started tutorial, *BASIC Stamp Syntax and Reference Manual*, and *What's a Microcontroller?* text: www.parallax.com/basicstampsoftware
- Information about the BASIC Stamp family of microcontroller modules, including a comparison chart: www.parallax.com/basicstamp
- Free, moderated discussion forums: <http://forums.parallax.com>
- Free educational tutorials and mini-projects for BASIC Stamp 2 programming, and other resources for students and Educators: www.parallax.com/education; education@parallax.com.
- "How To-The Basics of Breadboarding" and other YouTube videos: www.parallax.com/go/videos
- Free Technical Support: support@parallax.com, or call toll-free in the Continental US: 888-99-STAMP, all others call 916-624-8333.

Quick-Start Guide

Step 1

Download and install the latest version of the free BASIC Stamp Editor software from:

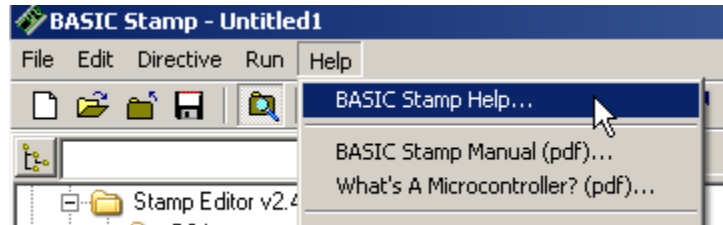
www.parallax.com/basicstampsoftware

...accepting all defaults. Note: Do not connect your hardware until you have followed the directions in Step 2 below.



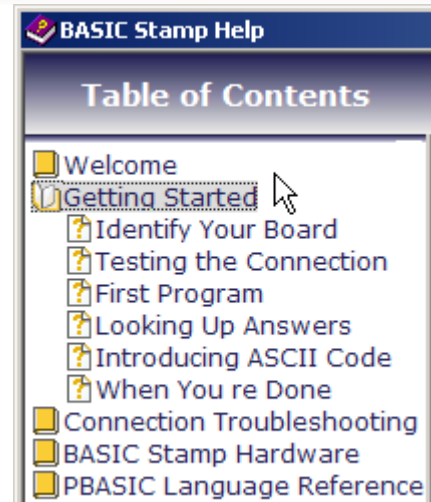
Step 2

Open the BASIC Stamp Editor Software, and select BASIC Stamp Help from the Help menu.



Step 3

Click on the Getting Started link in the Help file, then follow the directions in the tutorial for connecting your board testing your programming connection.



Note: USB Resets BASIC Stamp

Connecting a USB-based board to your PC may reset your BASIC Stamp. If you are using the USB to Serial Adapter, resets are easy to avoid. After connecting your board to your PC the first time, always disconnect and reconnect at the serial (9-pin) end of the USB to Serial Adapter. Leaving the Adapter connected to your PC keeps the virtual communications port open, preventing an unwanted reset.

Revision History: v2.1 added the USB Resets Basic Stamp section, above.