



## BASIC Stamp™

\$39

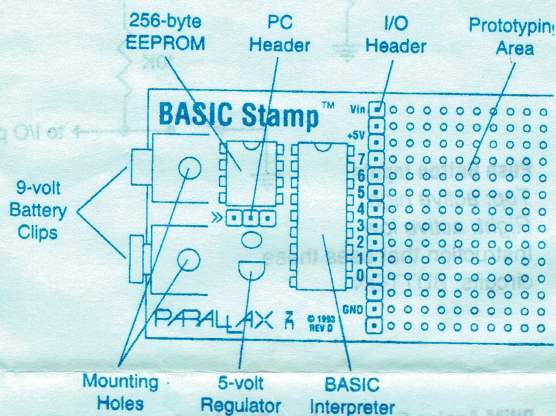
1.5x2.5-inch computer runs BASIC

The BASIC Stamp is a small single-board computer that runs BASIC programs. At first glance, the Stamp may seem fairly minimal – and in fact, it is. But, with software that fully utilizes all available hardware, the Stamp gives you powerful features – without the cost of hardware. Its low cost and simplicity make the Stamp perfect for many prototyping and control applications.

**Hardware:** the Stamp is comprised of two main components. The brain of the Stamp is an 18-pin BASIC interpreter chip. A 256-byte EEPROM holds a tokenized version of your program, which is read and executed by the interpreter. The remainder of the Stamp's 1.5x2.5-inch circuit board is taken up by a 4-MHz resonator, 5-volt regulator, and 9-volt battery clip. Also included are a small prototyping area and I/O header, which provide connection points for the Stamp's 8 I/O lines, 5-volt supply, unregulated supply, and ground.

**BASIC Language:** the Stamp is programmed in our simple BASIC language. The language includes familiar instructions, such as GOTO, FOR...NEXT, and IF...THEN, as well as SBC instructions, such as SERIN (serial input), PWM, and BUTTON. Each instruction takes 2-3 bytes of EEPROM space, resulting in a maximum program size of 80-100 instructions. Programs are executed at the rate of about 2,000 instructions per second.

**Programming:** to write software for the Stamp, you'll need the Programming Package. The package contains our editor software, programming cable, manual, application notes, and access to free technical support. Please see the following pages for more information about the Programming Package.



- BASIC Interpreter:** executes BASIC program from EEPROM.
- EEPROM:** holds BASIC program in tokenized form.
- Battery Clips:** allows the Stamp to run on a 9-volt battery.
- 5-volt Regulator:** regulates incoming voltage to 5 volts.
- PC Header:** connection point for programming cable.
- I/O Header:** provides connections for I/O, power, and ground.
- Prototyping Area:** provides space for signals and extra parts.
- Mounting Holes:** allow you to firmly mount the Stamp.

- BASIC language includes instructions for serial I/O, PWM, potentiometer input, pulse measurement, button debounce, tone generation, etc.
- Programs are stored in EEPROM, so they are retained without power and can be changed often.
- Cable connects Stamp to PC parallel port for programming and debugging.
- The Stamp has 8 digital I/O lines, each programmable as an input or output. Each can sink 25 mA and source 20 mA.
- Small prototyping area provides space for connecting signals and extra components.
- Powered by 5-9 VDC or 9-volt battery.
- Consumes just 2 mA (typical) or 20 µA (sleep mode).
- Mounting holes accept 4-40 screws for mounting to other objects.
- Simple 1- and 2-part circuits allow the Stamp to receive RS-232, read potentiometers, output analog voltages, drive speakers, etc.

To Order or Request Information, Please Call (916) 624-8333 or Send a Fax to 624-8003

BASIC STAMP

## BASIC Stamp I/O Circuits

Simple circuits allow the Stamp to receive RS-232, read potentiometers, drive speakers, etc.

The following circuits must be added to the Stamp for certain instructions to work. All circuits are very simple, consisting of only resistors and capacitors. With each circuit, you'll find a short description and a list of any instructions that use it.

+5  to I/O pin

10K

+5

10K

to I/O pin

### Push Button Inputs

Top: active high

Right: active low

Instruction that uses these circuits: **BUTTON**

### RS-232 Serial Input. Uses a resistor to limit input current.

Input voltage is limited by PIC's internal diodes.

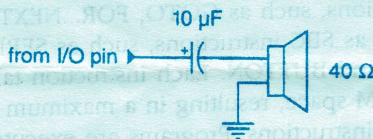
Instruction that uses this circuit: **SERIN**

±10 volt serial input  to I/O pin

22K

### Audio Output. Uses a capacitor and speaker (or piezo) to generate tones.

Instruction that uses this circuit: **SOUND**

from I/O pin  40 Ω

10 μF

Remove capacitor if using piezo electric speaker

### PWM Analog Output. Uses PWM to form a slow D/A converter.

Instruction that uses this circuit: **PWM**

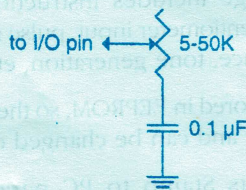
from I/O pin  analog output

10K

1 μF

### Potentiometer Input. Reads potentiometer by timing how long it takes to fill the capacitor.

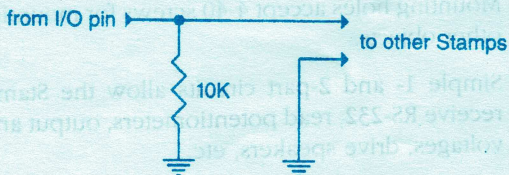
Instruction that uses this circuit: **POT**

to I/O pin  5-50K

0.1 μF

### Network Node. This circuit shows how to connect a Stamp to a network of multiple Stamps.

Instructions that might use this circuit: **SERIN, SEROUT**

from I/O pin  to other Stamps

10K