

Pin Diagram of the BASIC Stamp

Notes:

Ground is also called Vss.

Vcc is +5V, even though we use a 9v battery.

Vcc is also called Vdd.

Reset is active low, and is the same as pushing the reset button on the BOE.

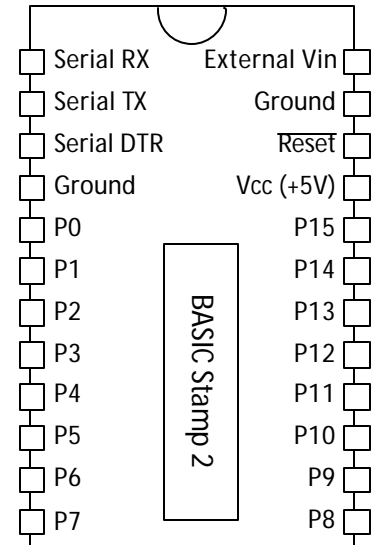
External Vin allows the chip to be powered from a separate source than the board of education. The Stamp will convert this (6v to 12v) power supply into a +5v Vcc. It CANNOT be used when a battery is connected. Don't touch it.

Sout: When the Stamp is connected to a PC, this pin talks to the RX pin of the serial port running the STAMP.

Sin: When the Stamp is connected to a PC, this pin talks to the TX pin of the serial port running the STAMP.

Atn: When the Stamp is connected to a PC, this pin talks to the DTR pin of the serial port running the STAMP.

P0 through P15: Programmable I/O pins.



Board of Education

Notes:

Allows communication with PC through serial cable or USB cable.

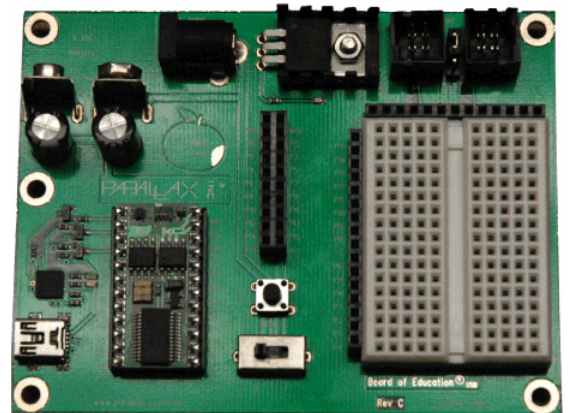
Requires a power supply (i.e., a 9V battery).

The terminal strips allow easy wiring access to the sixteen pins of the stamp.

The Stamp can be used with the BOE after it has been programmed.

Has a physical reset button to restart the stamp's current program.

The power switch should be off (left) when not in use, otherwise, the LED will drain the battery. The on position is in the middle. The right most position allows use of other features we will not use.



Getting Started:

Attach the battery

Put the switch in the middle (1) position

Run the BASIC Stamp Editor

Connect ground (Vss) of the BOE to ground for your PAD-234.

Common PBASIC Commands

‘**{STAMP BS2}** Specifies that we are using the version 2 Basic Stamp. REQUIRED for all programs!

‘**{PBASIC 2.5}** Specifies that we are using PBASIC version 2.5. REQUIRED for all programs!

‘ Allows the user to write programming comments. Also used for global directives, as above.

DEBUG: Instructs the stamp to send a message to the PC.

DEBUG 65	→ send ASCII character 65 (“A”) to the display
DEBUG DEC 65	→ send the integer 65 to the display
DEBUG “hi there”	→ send the message “hi there” to the display.
DEBUG CR	→ send a carriage return to the display. Same as ASCII 13.
DEBUG 65, 66, 67	→ send multiple characters to the display (in this case, “ABC”).
DEBUG ? Q	→ display the value of the declared variable “Q”.
DEBUG HOME	→ moves the display cursor to the upper left corner.
DEBUG CLS	→ clear the display screen
DEBUG IN DEC q	→ waits for use to type in a value for the variable q.

END: Put the Stamp into low-power mode. Use in all programs!

PAUSE 200: Program will wait for specified time in milliseconds.

DIR5 = 1: Declares that pin 5 is an output. Use 0 if it is an input.

HIGH 5: Declares that pin 5 is an output, and then asserts pin 5 as high.

OUTL = % 00000001: Sets P0 to high, and P1 through P7 low if they are already declared as outputs!

OUTH = % 00000001: Sets P8 to high, and P9 through P15 low if they are already declared as outputs!

DIRL = % 00001111: Declares P0 through P3 to be outputs, and P4 through P7 as inputs.

DIRL = 65: Is the same as DIRL = %01000001.

LOW 4: Declares that pin 4 is an output, and then asserts pin 4 as low.

INPUT 4: Specify that P4 will be used for input.

OUTPUT 12: Specify that P12 will be used for output.

OUT8 = 1: Asserts pin 8 as high, if it has been declared as an output pin.

IN3: Contains the value of pin 3 at the time it is referenced.

Bob PIN 9: Assign the alias “Bob” to P9.

Q VAR Byte: Create an integer variable name (in this case, Q)

PBASIC is NOT case sensitive! Q is the same as q.

Allowed types are Bit (0 to 1), Nib (0 to 15), byte (0 to 2255), and Word (0 to 65545)

A VAR Byte(20): create a twenty element array called A.

DO: Establish the starting point for a repeating loop. Use for all designs used without the BOE.

LOOP: Return to DO.

LOOP UNTIL → specify a condition for loop termination.

FOR q = 4 TO 13 STEP 3: Begin a loop, assigning 4 to q initially, and incrementing q by 3 each cycle.

NEXT: Begin a new cycle of the associated FOR loop, or exit the loop if the end is reached.

EXIT: Force an exit from the innermost loop (either a DO or a FOR).

IF (Q = 1) THEN ... ELSE ...: Conditional branch.

Note that “=” is used for both assignment and comparison!

ELSIF: Can follow a THEN to create a second condition.

RANDOM q: Assign a random value to q, using the range allowed for that type.

PULSEOUT 3, 150: Asset a high pulse of 150 milliseconds to pin 3.

***/:** Used for floating point arithmetic. All operations are really integers. So, to compute A*B, where B is a floating point number, then use A*/C, where C is the integer nearest to 256B.

Example: To compute 3.69A, use **A*/ 945**