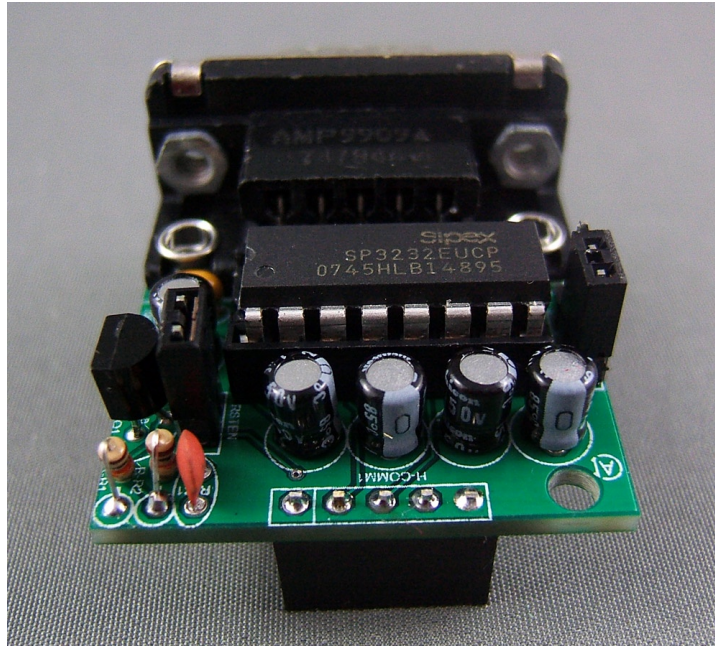


# SerPlug Build Manual v0.7

Copyright 2010 William Henning  
<http://Mikronauts.com>

**Thank you for purchasing SerPlug!**



You will find SerPlug a very easy kit to build if you follow these instructions.

Here is the list of parts included with SerPlug

1. 1 – PCB
2. 1 – SP3232 (or MAX3232) integrated circuit
3. 1 – 16 pin dip socket
4. 1 – DB9 female pcb mount connector
5. 5 – mini electrolytic capacitors
6. 1 – 2N3904 transistor
7. 1 – 10nF ceramic capacitor (labeled as 103)
8. 1 – 100nF decoupling capacitor (labeled as 104)
9. 2 – 10k resistor header
10. 1 – 1x5 female header
11. 1 – 1x3 male header
12. 1 – 1x2 male header
13. 2 – shorting caps for the male headers

**Step 1:**

Insert the 16 pin IC socket into the PC board. Note that the round notch in one end should go as indicated on the PC board. Solder all 16 pins.

**Step 2:**

Insert the 103 capacitor the board at the “R-C1” position, which is near the two resistors and the RSTEN jumper. Solder the two pins, trim off the extra wire left over.

**Step 3:**

Insert the 104 capacitor the board at the “100nF-6” position, which between “SC1” and one of the mounting holes for the DB9 connector. Solder the two pins, trim off the extra wire left over.

**Step 4:**

Bend one of the leads over on the two 10k resistors so that they will fit into the two resistor positions near the 103 capacitor.

The white printing on the board will show you how to insert the resistors. Solder all four leads, and trim off the excess wire.

You can also refer to the photo on the first page for how SerPlug will look when fully assembled.

**Step 5:**

Bend the middle leg of the 2N3904 transistor back so that it will fit into the holes arranged in a triangle pattern in the board.

Make sure you insert the transistor with the “flat” face as indicated on the board. Push it down, and solder all three leads. Trim away the excess wire.

**Step 6:**

Now you have to mound the five electrolytic capacitors.

The board shows where the “+” leg of each capacitor goes. The side of the capacitor WITHOUT the light colored stripe is the “+” side, as the light stripe indicates the “-” leg of the capacitor.

Make sure you have them all in the proper orientation, as not only will SerPlug NOT work if you get them wrong, but you are likely to damage the incorrectly inserted capacitors.

After double-checking, solder all capacitors, trimming any excess wire.

**Step 7:**

Insert the two pin male connector's shorter side into the board where it is shown as "RSTEN".

Solder the two pins. Put one of the two shorting caps on the two pin male header.

**Step 8:**

Insert the three pin male connector's shorter side into the board where it is shown as "RTS-DTR".

Solder the three pins. Put the remaining shorting cap on the "DTR" side of the "RTS-DTR" header, connecting the center and "DTR" pins.

**Step 9:**

There are many ways of mounting the five pin female header, I will only document the most common method.

Insert the five pin female header FROM THE BOTTOM of the board into the HCOMM header position.

Unlike the other parts, here you will solder the pins on the TOP of the board. Trim the excess leads.

**Step 10:**

Insert the SP3232 chip, making sure that the "half moon" indicator on the front of the chip lines up with the "half moon" on the board.

## **Congratulations! You have built your SerPlug!**

Make sure that the orientation you plug it in is correct, so that GND (sometimes labeled Vss) lines up on the board you are plugging it into and on SerPlug.

You should now be able to use SerPlug to program a Propeller chip. If you are using SerPlug with a Mikronauts board, you can simply plug it in, and it should work.

If you are using SerPlug with a board that only uses a four pin male connector, you will have to run a wire from 3.3V on the board you are trying to program to the fifth position on SerPlug – if you look at the bottom of the board, you will see that all SerPlug HCOMM header pins are labeled.

In sequence, they are: GND, /RST, TX, RX, +3.3V