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Assembly Instructions

BBC Jr™



Completed Design

Checking the Completed Board: Now it is time to test your soldering skills.

1. Plug a DC transformer into your Companion (You can probably find one around the house that plugs into some other electronic device. Just make sure the transformer has an output voltage of 9-20VDC).
2. The LED labeled "Pwr" should be on.
3. Using a voltmeter, put the ground probe on the Gnd loop. Check the 5V, and 0V pins with the other probe on the voltmeter.
4. Using a voltmeter, put the ground probe on the Gnd loop. Make sure switch "1" of the dip switch is switched so that it is away from the printed number 1. Check the voltage on S1 with the other end of the probe. It should read 0V. Change the switch so that it is towards the printed number "1" and check with the voltmeter again. It should read 5V. Repeat with the other switches.
5. Plug your companion into a breadboard. Run wires so that S1 connects to L1, S2 to L2, S3 to L3, and S4 to L4. Turn on and off S1 through S4 and see if the LEDs light up accordingly. The LEDs are "active high" and will turn on when 5V are applied to them.

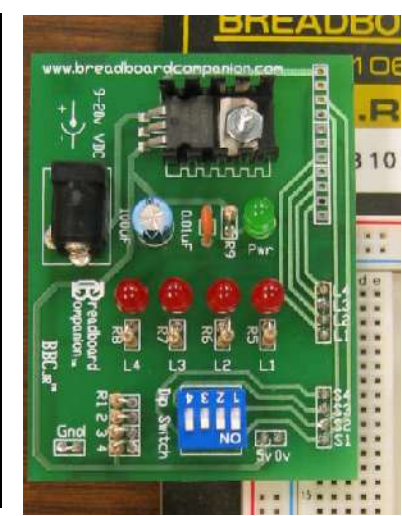
Troubleshooting: Upon completion of the soldering, if any part of the board is not working, use an Ohmmeter to check for cold solder joints and bridges.

1. Cold Solder Joints: These are soldered connections that are not making electrical contact. Use an Ohmmeter to check every joint. Make sure the pin sticking through the board reads "0" resistance with a pin it is connected to on another place of the board. If you find a cold solder joint, reapply heat (and more solder if necessary) and check with the meter again.
2. Bridges: These are electrical connections between two separate joints that are not meant to be connected. Use an Ohmmeter to check every pair of neighboring joints (make sure the resistance is infinite between these joints). Use soldering braid or a desoldering tool to remove any unwanted solder.

For technical assistance and support, contact us at support@breadboardcompanion.com

BBCJR™ -Power Supply Kit-

- Provides your breadboard with:*
- 5 Volt, and 0V connection to breadboard
 - 4 digital switches (switches between 5V and 0V) for inputs
 - 4 LED logic indicators for outputs
 - Ground clip for easy probe testing
 - Compatibility with PLD Companion prototyping board
 - Adapter that will allow for a DC transformer to serve as power source (not included)



Parts



Tools Needed:

Necessary Equipment:

1. Soldering Iron
2. Solder
3. Multimeter
4. Wire Cutters
5. Pliers

Useful Equipment:

1. Needle Nose
2. Diagonal Cutters
3. Soldering Flux
4. Solder Braid or Desoldering Tool

Before Soldering: *If you are inexperienced at soldering, refer to the hand-out "Tips on Soldering."*

*Note: With the exception of some of the header pins, all components go through the top of the board (side with print) and are soldered on the bottom. **ALWAYS USE SAFETY GOGGLES WHEN CLIPPING THE SOLDERED PINS.***

Assembling the Board: *Listed below is a suggested order in which to assemble the kit. There are several details to watch out for.*

1. Voltage Regulator: This is intended to be bolted down to the heat sink with the hardware (see Completed Design on front cover). Stick the regulator through the holes, then bend it backwards (so that the writing on the regulator is showing), and bolt it down to the heat sink BEFORE you solder it in place. To keep the bolt from getting in the way later on, insert it so that the nut is on top.

2. 100uF Capacitor and LED's: These items are polarized; this means that the way in which you put them in matters. The "+" side of the component has the longer leg. All polarized items have asymmetrical pads on the board—round (+) and square (-). The 100uF capacitor and the LEDs are polarized. If you want the LEDs to lie flush with the board, clip the legs before you insert them. Now that the legs are clipped, you will have to look at the lip of the LED to find its polarization. The flat edge represents the negative side. The red LEDs go in the spots labeled L1-L4 and the green LED goes in the spot labeled "Pwr". Save one of your clipped legs for the ground loop in step #6.
3. Resistors and the 0.01uF capacitor: None of these components are polarized, so it does not matter which way you put them in. All the resistors are the same and they go in the spots labeled R1-R9. All of the resistors stand up. (See Completed Design). You are given one extra resistor in case you lose one.
4. Dip Switch: Put the dip switch in so that the numbers are closest to the LED's (see Completed Design).
5. Header Pins: These can break into pieces of any desired amount. Break them into two groups of four and one group of two. Take one group of four and plug the long end into a breadboard and place the part of the board marked L1, L2, L3, and L4 over the shorter end of the pins. **SOLDER THE PINS TO THE TOP OF THE BOARD.** This will leave the long pins straight and protruding from the bottom. Repeat this process for the switches. For the group of two left over, plug the long end into two parallel bus strips on the breadboard. Now place the part of the board marked 5V, 0V over the shorter end of the pins. All header pins should plug squarely into the breadboard at the same time. Solder all header pins into place.
6. Ground Loop: For the holes that say "Gnd", bend one of your clipped legs so that it makes a loop and stick the loop into these holes so that the loop is on the top of the board. Solder it into place.
7. DC jack: See Completed Design for placement. These will require enough solder to fill the holes completely.

See reverse for testing and troubleshooting.