

MODERN DEVICE

USB BUB - USB to TTL serial board

Instructions revised 6/10/09

The USB BUB board was engineered to be a simple low-cost link from USB ports on laptops or desktop computers to the TTL serial that is required by most microcontrollers.

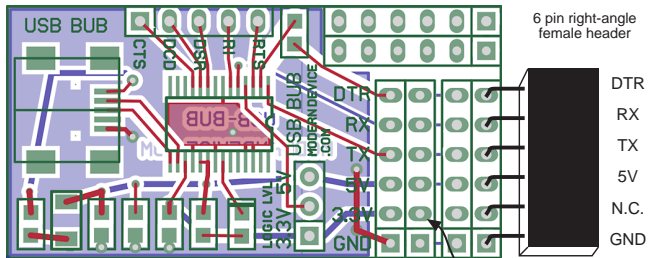


figure 1: USB BUB pcb traces, front view

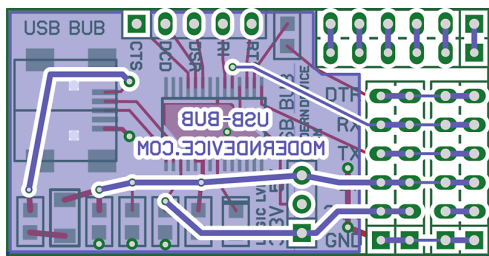
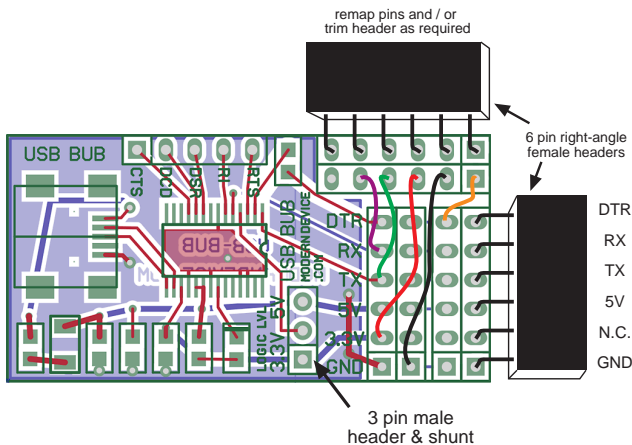
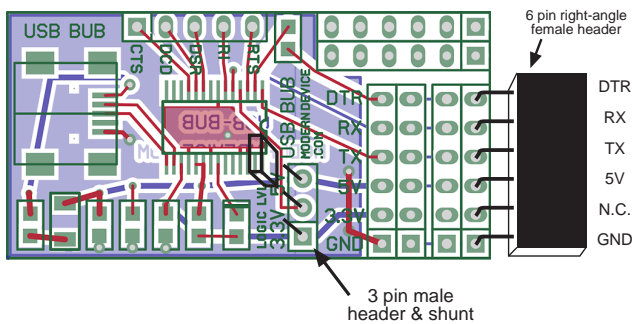


figure 2: USB BUB pcb traces, transparent back view, (as if viewing the back through the front layer)



USB BUB Kit Parts List

Printed Circuit Board Assembly

- 1 USB BUB assembled printed circuit board

Hardware

- 1 3-pin male header, .100" pitch
- 2 right-angle 6-position female headers, .100" pitch
- 1 .100" header 2 position shorting clip (shunt)

Accessory

- 1 USB male to mini male connector cable, same as digital camera cable

Configuration 1:

The most simple BUB board configuration is just to solder on the female header. This configuration will power 5-volt BBB, RBBB, Boarduino, Sangunio boards. The 3 pin header and shunt is not required as the board defaults to 5 volts.

3.3 volt pin

The FTDI FT232RL chip, upon which the BUB is based, contains a 3.3V regulator, capable of providing 50 mA of current. This is brought out to pin 2 of the header block pads. Note that this 3.3V trace does not go through to the two right-most columns, where the primary header is attached. To use the this 3.3 volt supply voltage it will be necessary to use a jumper to the desired supply pin on the auxiliary header, or to cut a trace, as in Configuration 4.

Configuration 2:

In addition to the six-pin female header, solder on the three-pin male header. This allows selecting either 3.3V or 5V logic level signals. With 3.3 V logic level signals selected, the board is suitable for programming Arduino Pro and other boards operating at 3.3 volts, but that have on-board regulators.

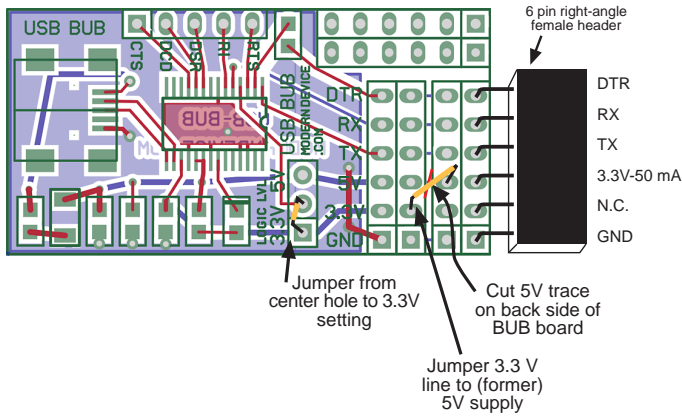
NOTE:

Setting the logic shunt to 3.3 volts does not change the 5 volt supply voltage, available at pin 3 of the header. If you wish to provide 3.3 volts (at 50 mA) for a supply voltage, you will need to jump the 3.3 line to the auxiliary header.

Configuration 3:

Solder on the auxiliary six-pin female header. This allows remapping the pins as necessary.

Arrange the wires and solder in one end only. Then check that they work for the needed application, and finish soldering them in. The custom arrangement shown would be required for the Seattle Dorkbot's Dorkboard, for example. Other board boards that require a 3.3V supply such as the Mini Pro, would also require a custom header.



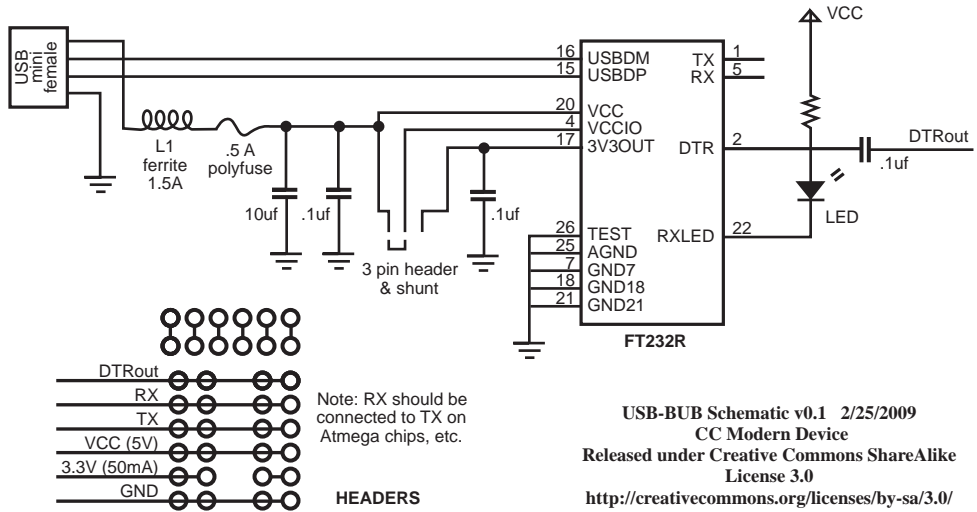
**Configuration 4 :
Dedicated 3.3V supply and logic**

In addition to the six-pin female header, solder in a jumper on the three-pin logic level option. This permanently sets logic level to 3.3V.

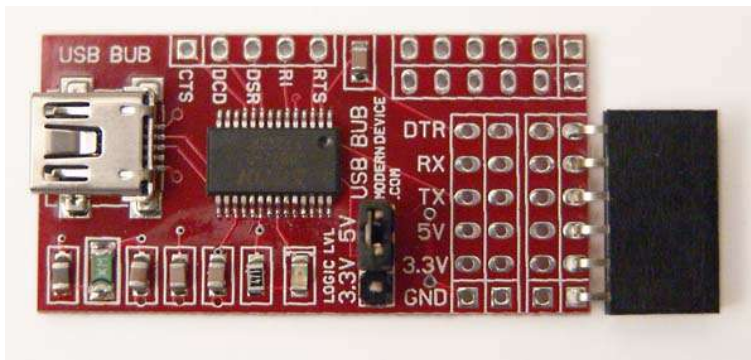
Flip the board and cut the 5V supply trace, between columns 2 & 3 of the header configuration holes. If you stick a resistor lead in one of the 5V line holes it will make it harder to cut the wrong trace. (smiley)

Jumper the 3.3 V supply to the former 5V supply line.

Remember that the 3.3V line is running through a small regulator on the FTDI chip, and it's only engineered for 50 milliamps!



USB - BUB schematic



USB - BUB photo without auxiliary header

BUB dimensions (L x W x H)		
Board	Board with Female Header	Board with 2 Female Headers
1.675 x .860 x .410"	2.050 x .860 x .410"	2.050 x 1.200 x .410"
42.4 X 21.8 X 10.4 mm	52 X 21.8 X 10.4 mm	52 X 30.5 X 10.4 mm