▲▲▲MODERN DEVICE

USB BUB - USB to TTL serial board
Instructions revised 2/20/09

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.

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,
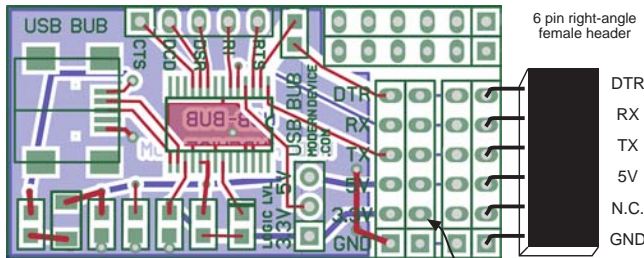same as digital camera cable
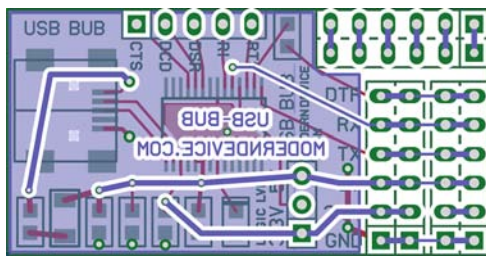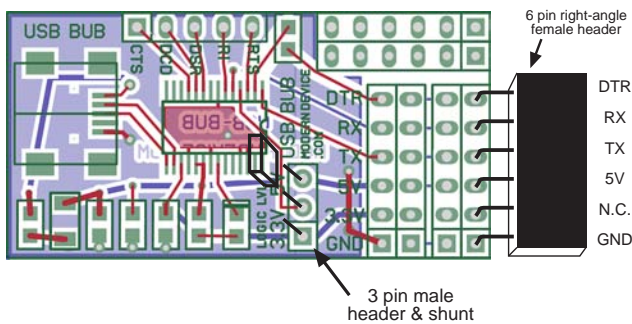

figure 1: USB BUB pcb traces, front view

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

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 neccessary to use a jumper to the desired supply pin on the auxiliary header.

3 pin male
header & shunt

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.
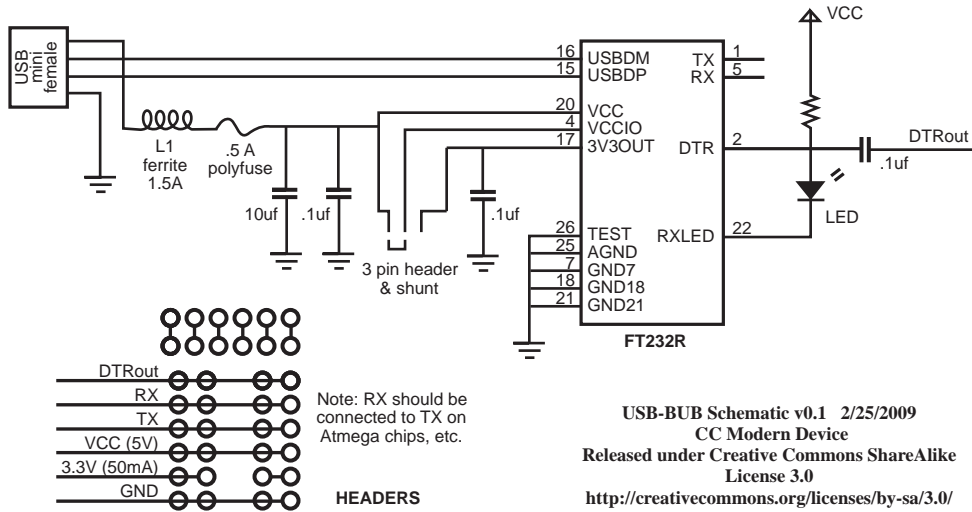
NOTE:

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.

3 pin male
header & shunt
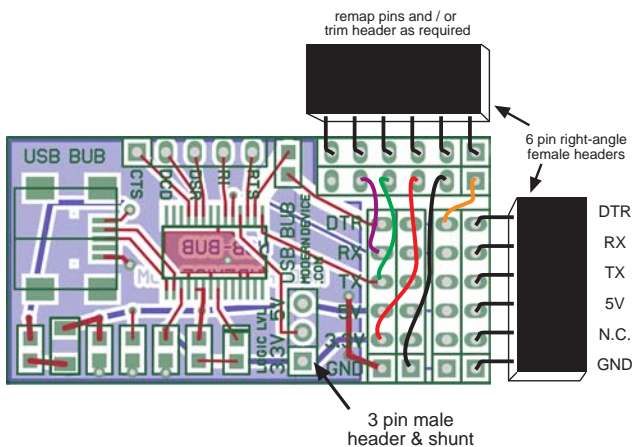
Configuration 3:

Solder on the auxiliary six-pin male 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.

USB - BUB schematic

Schematic labels:
- USB mini female
- 16 USBDM
- 15 USBDP
- 20 VCC
- 4 VCCIO
- 17 3V3OUT
- 26 TEST
- 25 AGND
- 7 GND7
- 18 GND18
- 21 GND21
- FT232R
- 1 TX
- 5 RX
- 2 DTR
- 22 RXLED
- VCC
- DTRout
- .1uf
- LED
- L1 ferrite 1.5A
- .5 A polyfuse
- 10uf
- .1uf
- .1uf
- 3 pin header & shunt

HEADERS
- DTRout
- RX
- TX
- VCC (5V)
- 3.3V (50mA)
- GND

Note: RX should be connected to TX on Atmega chips, etc.

USB-BUB Schematic v0.1   2/25/2009
CC Modern Device
Released under Creative Commons ShareAlike
License 3.0
http://creativecommons.org/licenses/by-sa/3.0/

USB - BUB photo without auxiliary header

BUB dimenisions (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