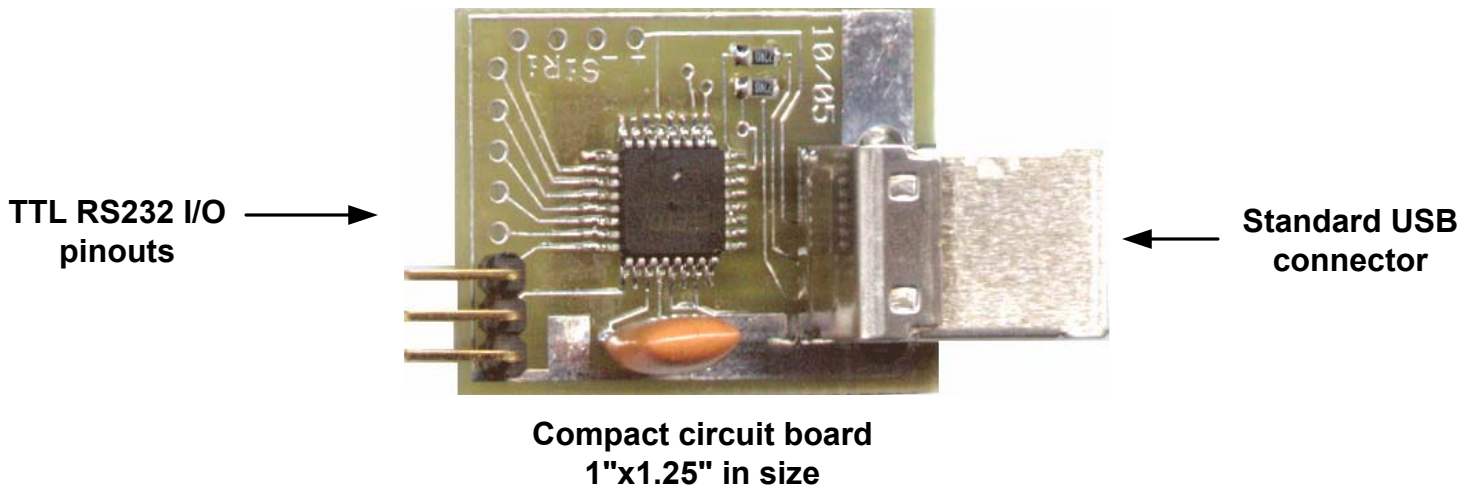


USB X1 Ver 1

FT232BM based TTL to RS232 via USB port

Virtual com port drivers available from <http://www.ftdichip.com/FTDriver.htm>



The USB X1 provides an easy method of connecting TTL to RS232 signals on PC via a USB port. Ideal for microcontroller circuits. The design uses Future Technology Devices Intl Ltd's (FTDI) FT232BM chip. The FTDI website provides the USB drivers for a virtual com port as well as Windows DLLs for interfacing with VisualBasic and Visual C, plus other applications.

FT232BM documentation, drivers and files are available from their website:
<http://www.ftdichip.com/FTDriver.htm>

Construction Hints

Assembly of this kit requires that the user has the necessary tools and skills to work with SMD (surface mount device) components. **If you are not comfortable with soldering miniature parts, then please seek assistance from someone who is capable to do so.** Small mistakes can cause many frustrating hours of grief in trouble shooting!

Minimum tools required:

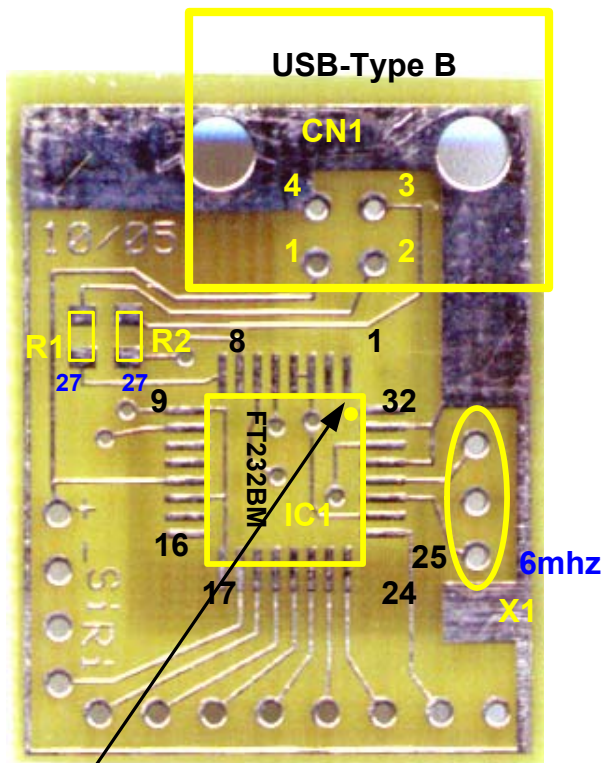
A fine point low power (25w max) soldering iron and thin solder. Ideally, 0.020" diameter (or less) silver-bearing non-corrosive rosin core should be used. In addition, narrow needle nose pliers, diagonal cutting pliers, good quality tweezers, large magnifying glass, volt-ohm meter, and a 7 to 12 vdc power supply.

Make sure that you work in a clean well lighted area and have adequate desk area. If you have carpeting then please be aware of static discharge as well as accidentally losing tiny components in the carpets fiber. SMD capacitors and resistors are very tiny and can quickly become lost in the carpeting.

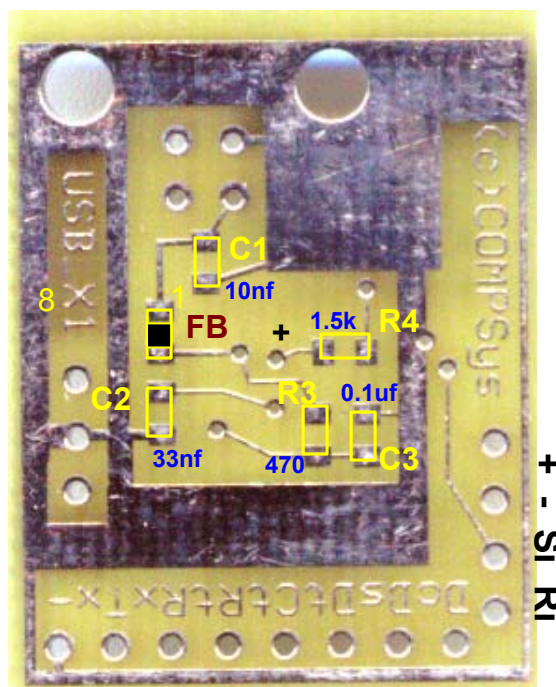
Disclaimer and Terms of Agreement

As with any kit, only the individual parts supplied are guaranteed against defects and not the user assembled unit. All kit parts are purchased from reputable sources such as Digikey Inc, Allied Electronics and Mouser Inc, however, should a kit part be ascertained to be defective it will be replaced at no charge within 30 (thirty) days of the purchase date. Beyond that, COMPSys Workbench and / or the COMPSys developer(s) assume no liability and WILL NOT be held liable nor be held responsible wholly or in part for any damages caused by the construction of and / or use of their products sold .

USB3 Parts Layout



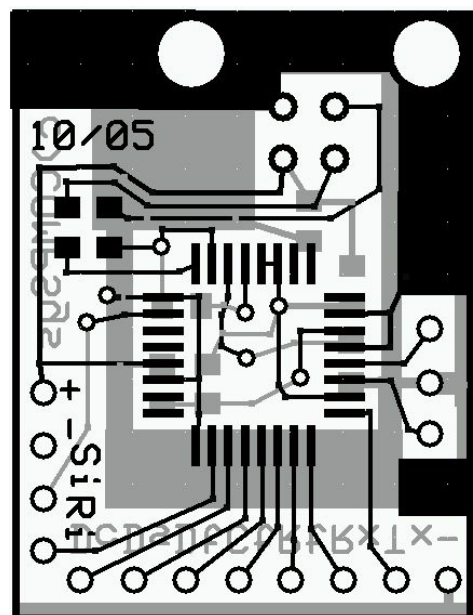
Note: Pin 1 (dot on FT232BM chip)



Gnd Tx Rx Rts Cts Dt Ds Dc

Parts List

R1,R2	27 ohm
R3	470 ohm
R4	1.5k
C1	10nf
C2	33nf
C3	0.1uf
FB	Ferrite bead
IC1	FT232BM
X1	6Mhz resonator
CN1	USB-B pcb connector



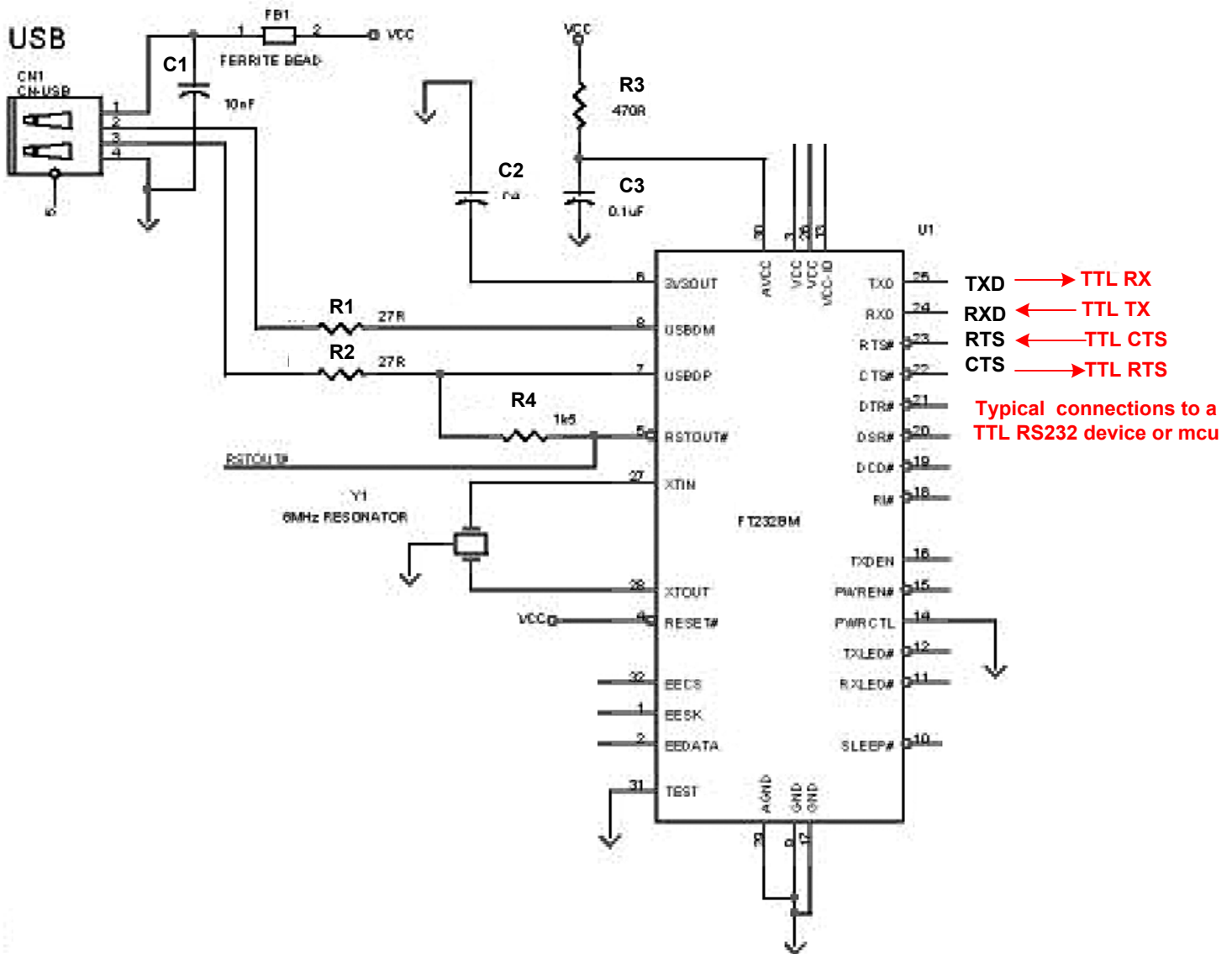
Recommended Assembly Steps

- Top side first, **carefully orient and mount** the FT232 chip
- Mount resistors R1,R2 next (top side)
- Bottom side, mount C1,C2 and C3 *
- Next mount the ferrite bead* and resistors R3,R4
- Install the 6mhz resonator (top side)
- Carefully mount and solder the USB-Type B connector
- Mount headers as needed
- **DOUBLE CHECK ALL COMPONENTS!**

Use solder sparingly! Apply only tiny amounts when required on the pcb pads. Double check orientation of all parts **BEFORE** soldering.

*The capacitors and ferrite bead do not have any markings, make sure to identify each before installing.

USB FT232BM schematic



Note: Schematic may not reflect recent changes. Part numbers may not match those printed on the circuit board