Details of my modification to a Flysky 9x transmitter for FrSky telemetry.

By Mike Blandford (12 Jun 2011).

First the module.

I am using the FrSky DJT module.
I have used the two unused pins in the module so I do not have any external wiring or holes in the case.

The circuit diagram of my implementation is shown in Figure 1. As with all serial communications, care has to be taken with the names transmit (Txd) and receive (Rxd). Often the Rxd of one device needs to connect to the Txd of another device. This may be seen on the circuit where the Txd of the DJT module is connected to a receive input of the MAX232 device.

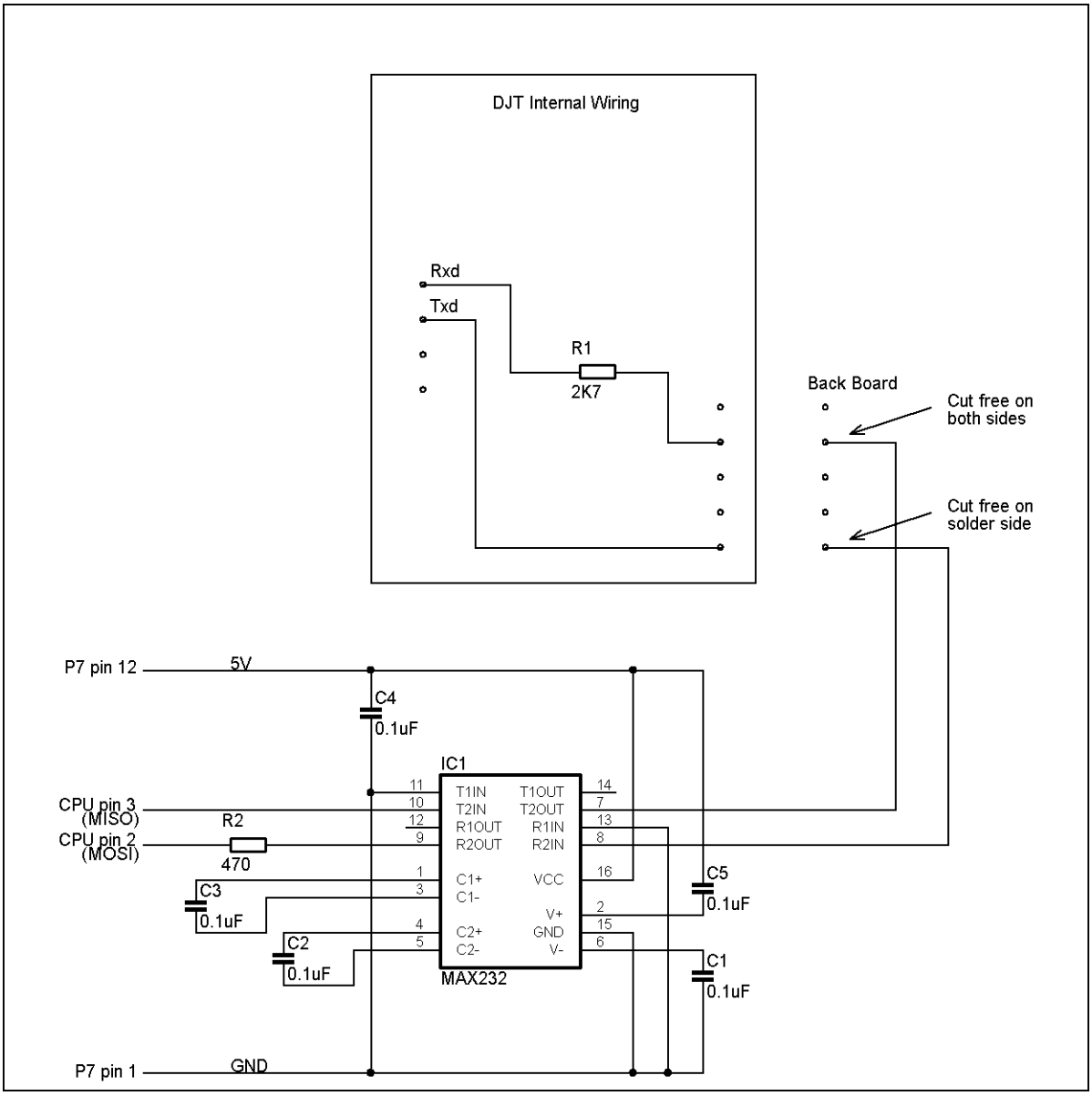

Figure 1

Internal to the DJT module, resistor R1 allows a PC to be connected to the external four pin connector. The PC serial output will override the 9X signal, but both the PC and the 9X will receive the data sent by the DJT module.
A picture of my wiring inside the DJT module is shown in Figure 2. The resistor from the Rxd pin

has sleeving over the bare wire to ensure it does not short to anything else. The wire from the Txd pin is kynar, a single strand insulated wire. Stranded wire is not advisable as it is very easy to allow a strand to short to an adjacent pin. At the four pin, external connector the wires are wrapped round the pin close to the circuit board and then soldered. These pins a sufficiently long that a mating connector will still fit when the wires have been soldered in place.

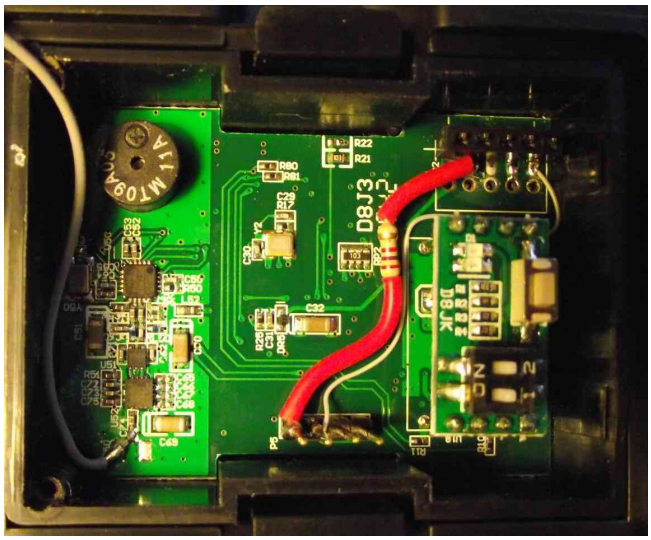

Figure 2

At the other end the wires are soldered to the pads by the pins. I did not use the hole, and made sure there were no shorts to the holes. Using a fine tipped soldering iron these wires were soldered without removing the board from the plastic case. Care needs to be taken not to melt the case with the iron. It is a very small space due to the daughter board with the switches and LED sticking up.

Now for the board in the back of the transmitter.

This board is shown in Figure 3. To use the two pins from the DJT module, they need to be isolated from the board. Pin 5, labelled DJT Tx in the picture, only needed a single cut on the visible side of the board, it may be seen just by the end of the orange wire. Pin 2, labelled DJT Rx in the picture, needed one cut on the visible side, and two on the side towards the module. The board will, of course, need to be unscrewed to get at the other side

I had a MAX232 board available so I used that, if you do not have a suitable board you could make the circuit on a small piece of stripboard.

Power and ground for the board was obtained from the 12 way connector, the white wire is +5volts and the grey wire is ground. It is always wise to check this with a meter before wiring up.

The pins from the module were wired to the board (purple and orange wires). The other side of the MAX232 board were wired using a servo extension lead to provide a means of disconnecting the front and back halves of the case (red and white wires).

The board was then glued to the back board with a small square of depron between them to provide isolation so the pins of the MAX232 board could not rub on the back board. The servo connector was also glued to the back board, and all the wires tack glued to prevent movement and strain on the soldered joints.

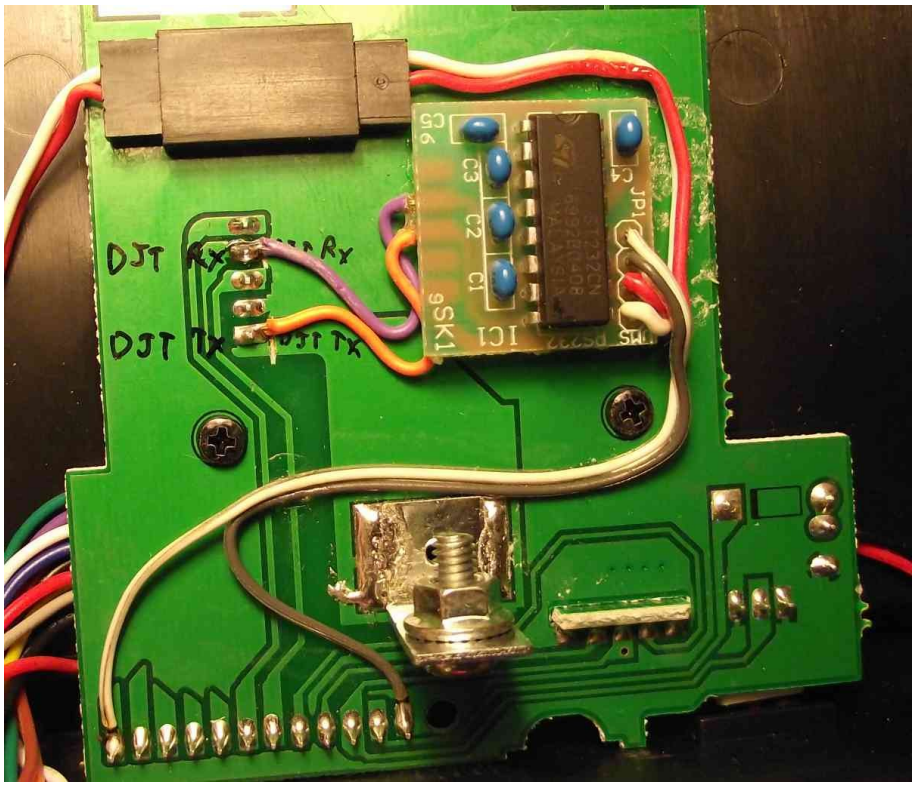

Figure 3

Finally the processor board.

This was modified as described in http://code.google.com/p/gruvin9x/wiki/FrskyInterfacing with two, surface mount resistors being removed to allow the serial connections to be made to the ATMEGA64A, and two currently unused pins wired via 220 ohm resistors to to replace the signals disconnected by removing the resistors, see Figure 4. Not shown is resistor R2 on the circuit. This is wired in-line on the white wire from the servo connector the the processor board. This resistor allows programming operations to take place with the serial interface still connected.

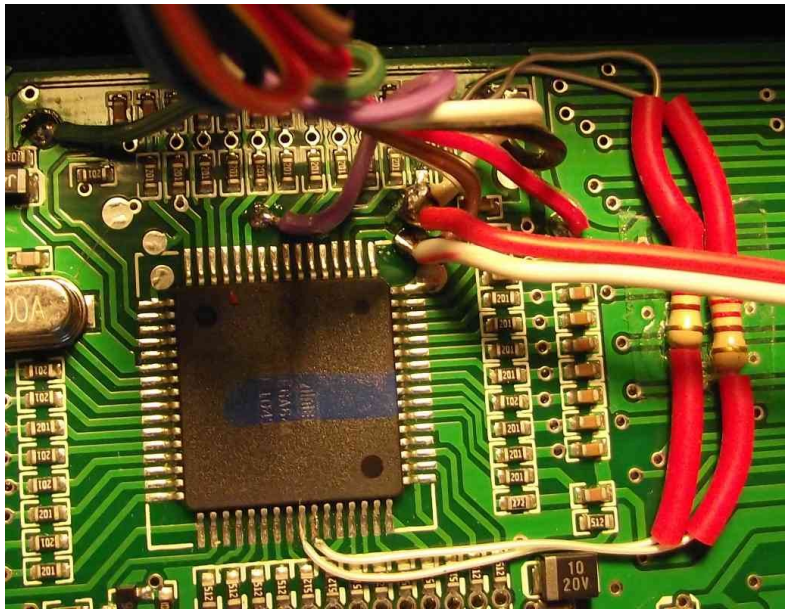
Figure 4