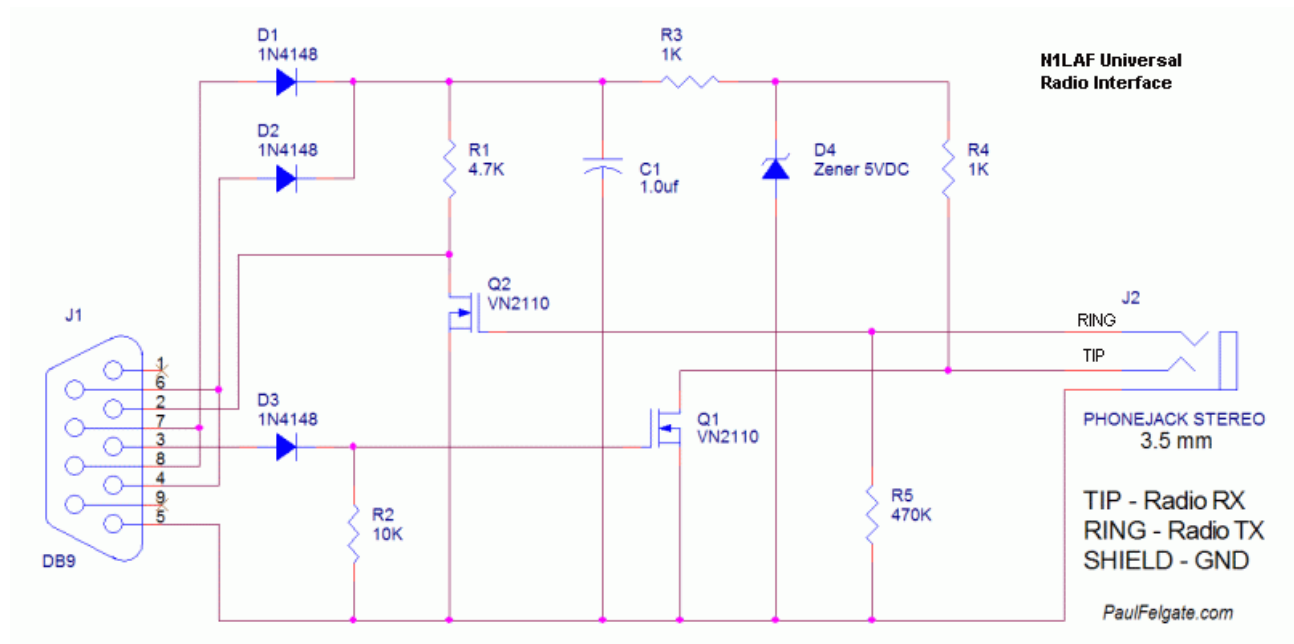


Ham Radio Universal Serial Interface

By Paul A. Felgate, N1LAF

This little serial interface is turning into a universal radio to computer interface, where the connector selects full duplex or simplex mode. This circuit has been worked using both desktop and laptop computers, full RS232 and TTL level serial without problems. On the radio side, I have used this interface successfully on the ICOM IC706 MKIIG and the Kenwood TH-F6A. The Kenwood program works well with this interface, and my program for the 706 works well. The problem with simplex serial is the possibilities of collision as experienced on the '706.

Circuit Diagram



Voltage is picked off by pins 7,8 and 4,6 and rectified by D1 and D2. Capacitor C1 will filter transition noise. I use MOSFETS because they do not load down both serial and radio interfaces.

Radio to Serial Port Q2 is used to transmit data from the radio to serial port. R1 pulls the line high. R5 is a bleeder resistor, so when not connected, it will not cause spurious signalling due to the high impedance of the MOSFET gate, acting like an antenna.

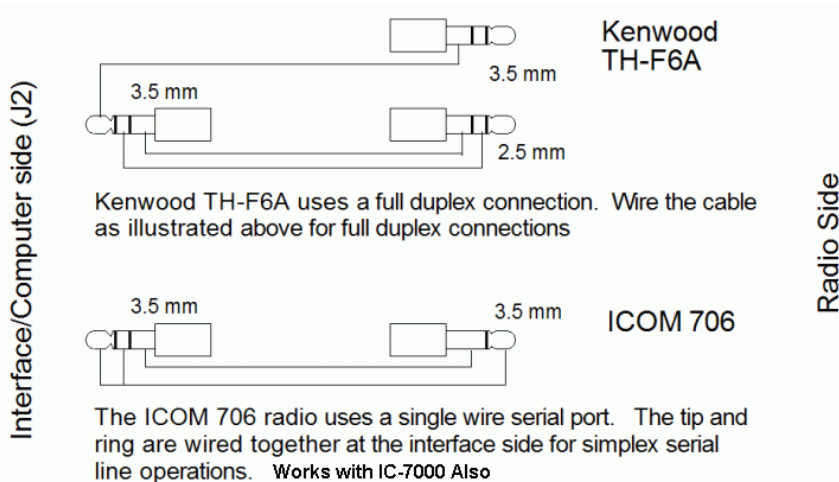
Radio to Serial Port Q1 transmit the data from the serial port to the radio. R2 is a bleed off as well as developing voltage across it. D3 was used to cut out negative voltage that was causing problems with the MOSFET from some computer systems. The combination of D3 and R2 allows for rapid rise and fall of incoming signaling.

R3, D4 and R4 was added to pull up voltage on Q1. This was necessary to get the serial interface to work with the TH-F6A. I am guessing that the radio 'looks' for this voltage. This does not cause adverse effect with the '706. Since the power supply voltage can be anywhere between 5 VDC and 12 VDC, it was necessary to include a 5 VDC zener. The '706 will flake out if the voltage on the serial line exceeds 5 VDC.

To test the interface, connect tip and ring together, and use a terminal program like hyperterminal, and enter text. It will echo back to the terminal program. I have tested this interface excess of 56K baud without problems.

It is important to keep the connections short between the radio and the interface unless you use twisted pair wiring. Serial cables rated for 56K baud minimum should be used. Poor cables, improperly matched can lead to cross talk and slow rise and fall times that will interfere with high speed serial transmissions. Just be aware of this. Most cases this will not be a problem.

Serial to Radio Connections



The above diagram is pretty much self explainable. The TH-F6A is an example of full duplex, and the '706 is simplex. This circuit should work with other radios and I would be interested in feedback on what other radios this works with.

Add PTT Functionality

