PSK31 and an Elecraft K2 mod by Woody, WB4QXE.

I guess it was in the late 70's that I became active on RTTY (Radio TeleType). Commercial gear was expensive so many TUs (Terminal Unit=Modem) were homebrew. However, not the RTTY machine itself. It was a mechanical wonder. Some of us were able to get on RTTY when K4LQK (Bob Martin, SK) brought back a heavy trailer load of machines from a surplus location near D.C.

Have things changed! Digital is now simple, easy, and never more interesting.

Computers and sound cards have made getting on HF or VHF digital modes as easy as putting a simple interface box between the radio and computer and loading the right software. PSK31 is one of the newer digital modes. I was on Packet early, when it was reasonable to carry on QSOs with 2 & 3 land stations with almost no latency. That didn't last long as the frequencies became congested. Also, unlike RTTY, packet included "connections" and error checking - Not needed for casual HF QSOs . In fact, error free modes are not efficient for simple HF QSOs.

PSK31 got my attention when first introduced. A high performance, narrow band replacement for RTTY had arrived. It uses less bandwidth than RTTY, but is quite similar from the operator's perspective. The narrow bandwidth also means that low

power is very effective. Most stations run less than 30 watts. I have built several interface-isolation boxes and cable sets. Some were used with the old Drake TR-7.

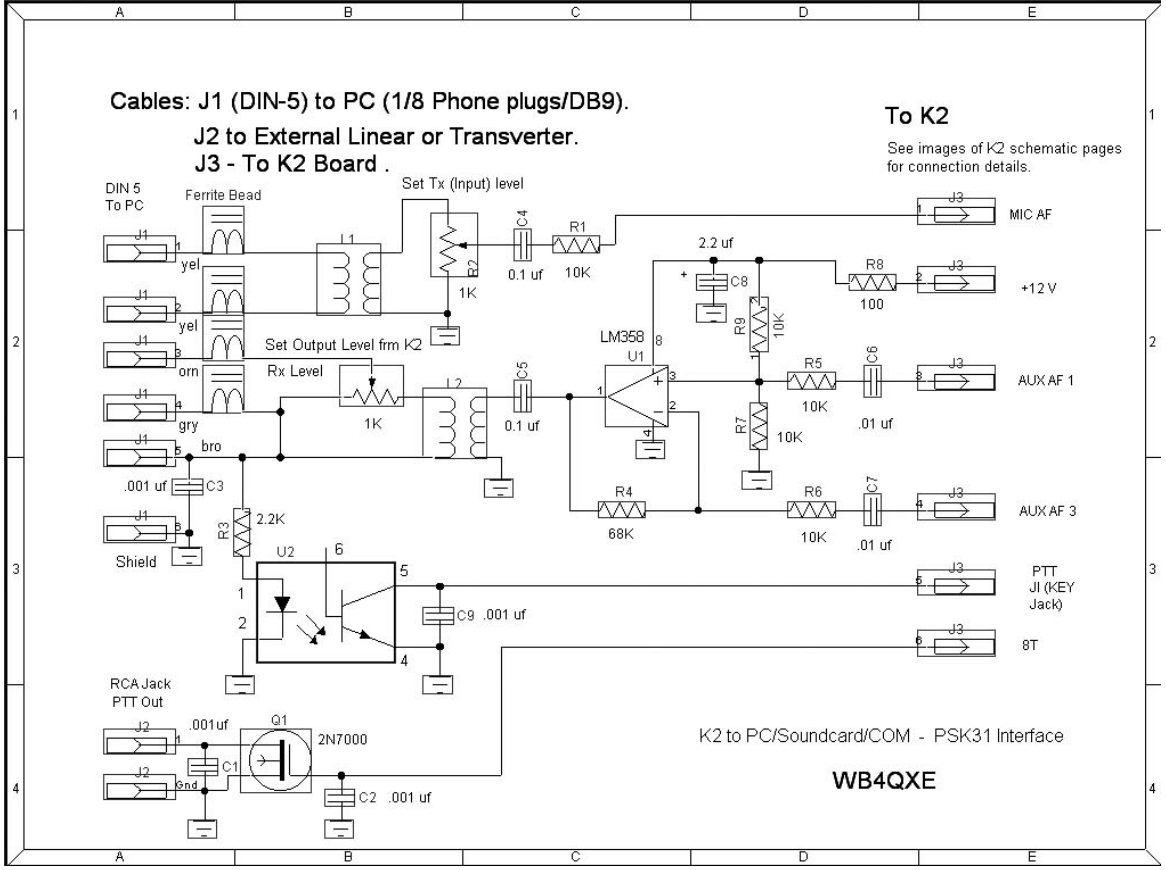
I recently completed an Elecraft K2 (nice radio!). The K2 is a well thought-out and engineered rig, but does not include provision for auxiliary audio I/O. My other interface would have worked using the Mic & speaker jacks, but I decided to build a new one inside the K2 case. The Rx & Tx audio, and PTT are brought to a rear panel DIN connector. With this configuration, only a set of cables is needed to hook the radio to the computer.

More sophisticated modifications are available for the K2. Some, for example, can bypass the microphone audio processor. I simply paralleled the Mic input internally. It may not be perfect, but seems to work reasonably well. Yesterday, I worked a VK3 when running 5 watts/PSK31 out of the K2! The balanced receive audio is tapped before the volume control at two board jumper locations. Since the audio is at a relatively low level, and to avoid interactions, the "tap" is buffered using an op-amp. The opamp feedback resistor may be changed to accommodate your audio level requirements. Both Tx & Rx audio are isolated using a pair of 600:600 ohm subminiature transformers. PTT input is buffered using an optoisolator. A COM port line (RTS) can be used for PTT/transmit. As configured: Low = Rx High = Tx . A PTT (Push To Talk –or Transmit) output was included (on separate connector) for use with external transverters or amplifiers. The PTT out was buffered using a mosfet, open drain configuration. The fet grounds a line on PTT. It will switch up to 200 ma. at up to 60 volts maximum.

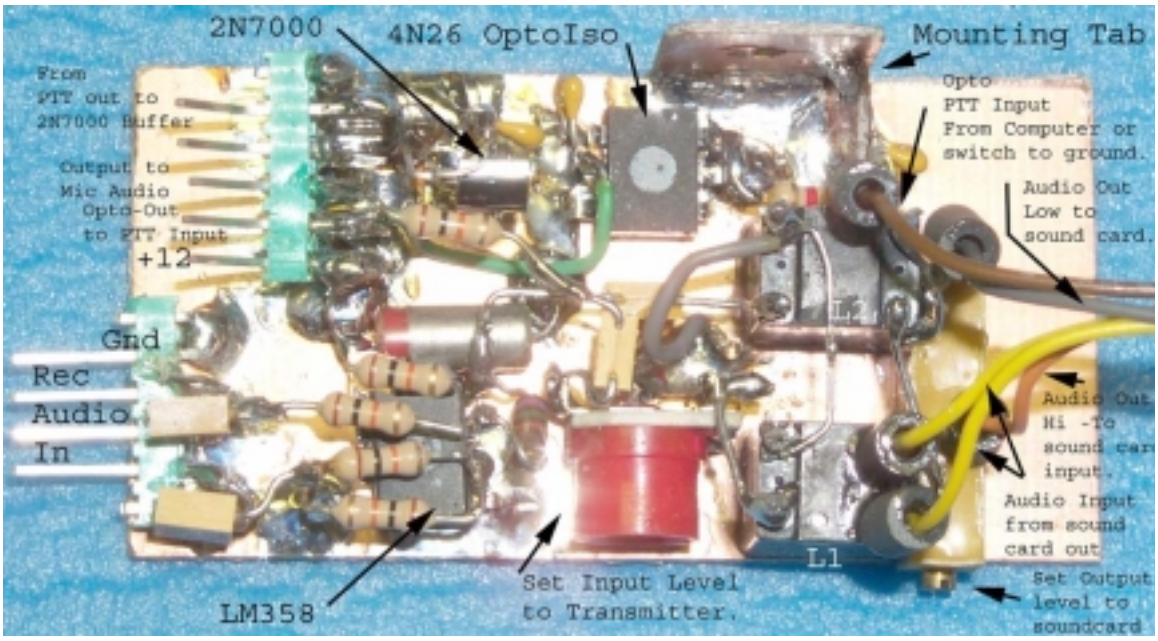
Circuit board layouts for the more sophisticated interfaces are also available, but I chose to use "dead bug" style for the sake of speed over beauty. I mounted the circuit in the top cover, near the rear panel connector. Small connectors were used between the interface and the radio tap points so the cover could be easily removed as needed. One tricky "tap" was the audio input to the SSB board. I used a male SIP (0.1 spacing) header connector by clipping off the two (board side) center pins. The inputs on the audio IC are 1 & 4, so I was able to solder (carefully!) the two remaining header pins to IC pins 1 & 4. A cautionary note. Either disconnect your microphone, or be sure its PTT switch breaks the audio as well as PTT. If this is not done, you will have an "open mic" in the shack when transmitting.

This article is not a detailed step by step construction guide, but meant to provide suggestions on interfacing a PC to a radio, specifically the Elecraft K2.

I am using MixW2 software and have a serial control connection between the K2 and the PC. This combination will allow software (command) control to operate the PTT and no hardware PTT is needed. I included the hardware PTT input circuit for more universal compatibility.



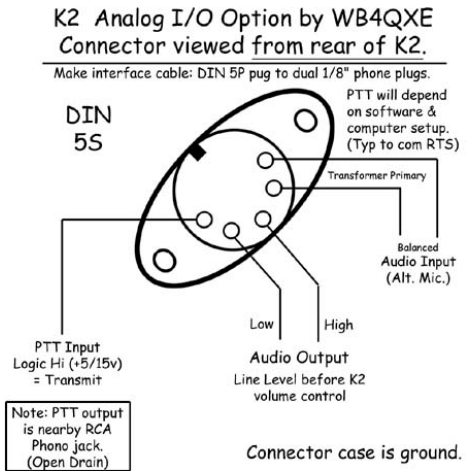
Above is the basic circuit. The left side (DIN5) is wired to a rear panel receptacle. On the right are the signals to and from the K2. Connectors (0.1" SIP) were used on the I/O board or on the K2 to ease removal and service. Female connectors, complete with shielded cable were scrounged from an antique VCR. Details of the "tap" points for the K2 are covered later.



Here is a picture of the finished interface, before it was installed in the K2.

Rear panel details and mounting in the K2.

Use whatever pin out / connector that suits you. Here is the way mine turned out… I enlarged the BNC transverter connector on the rear of the K2 to accept the DIN receptacle.



Here is the mounted interface wired to the DIN receptacle.

I made a cable that has a DIN-5P plug on one end and on the other end, two 1/8” phone plugs for Tx and Rx audio to the PC and a 1/8” inline phone jack for the (optional) PTT input. The lumps in the line are ferrite sleeves. They may not be necessary, but sure can’t hurt. The ferrite came from old, dead PC keyboards. . Now all that is needed for PSK31, RTTY, SSTV is the PC, the K2, this cable, an antenna, and power…

….AND YOU ARE ON THE AIR!