Using the FT-857 Microphone Jack for Serial Control (CAT)

The FT-857 manual hints that the microphone jack is capable of communicating with a personal computer (see the section on Menu 059, "MIC SEL"; this is on page 107 of the FT-857D manual). This allows using the "CAT/ Linear" jack on the rear panel for either the external antenna tuner or (what I need it for) to access the 4-bit band data in "Linear" mode. Unfortunately, no other data is given—not even the pinout of the microphone jack(!!). For any of you interested, the "mystery" is solved here.

Divining Mic Pinouts

First off, we need the microphone jack pinout. From the schematic (and a couple of guesses), we derive Table I (see sidebar). Make sure you don't confuse Pin 1 and Pin 8. Extra functions RXD and TXD are only available when the microphone mode is set to "CAT" via Menu 059.

Cable Making

We know this rig is very similar to the FT-817 and it uses the same Yaesu serial cable, so we assume the circuit proven with the '817 will play with the '857*. That means we require two transistors and three resistors, plus connectors. For microphone audio, I like using a one-eighth inch phone jack. Push-to-talk uses a phono jack. The serial data to the PC connects through a standard DB-9 jack (female preferred). The rig end of the cable was taken from a commercial Ethernet RJ-45 cable with the plastic "boot" installed to protect the locking key tab (you know, the little piece of the connector that really likes to break off). I use short lengths of shielded cable (RG-174 coax works great) for the mic and PTT jacks. Wire the whole thing up like this (Figure 1) with the transistors inside the DB-9 hood. The shielded wire for mic and PTT exit from the hood as shown in the photograph (above).

Software Problems

Now that the cable is finished doesn't mean you merely "plug and play". But we're close. You must enable the extended functionality of the mic jack with Menu 059, "MIC SEL". Change it from NOR (normal) to CAT. Menu 019, "CAT RATE" should match your PC application's serial bit rate.

***Refer to http://www.k6xx.com/ft817/817bbox.html**

RJ-45 Pin	Mic Mode	"Extra" Functions
1	DN	TXD
2	UP	RXD
3	+5V	+5V
4	GND	Mic GND
5	Mic Audio	Mic Audio
6	PTT	PTT
7	GND	PTT Ground
8	FAST	Power Switch (hold 1 sec.)

Table I. FT-857 Microphone Jack Pinout

FT-857 Serial Data From the Microphone Jack

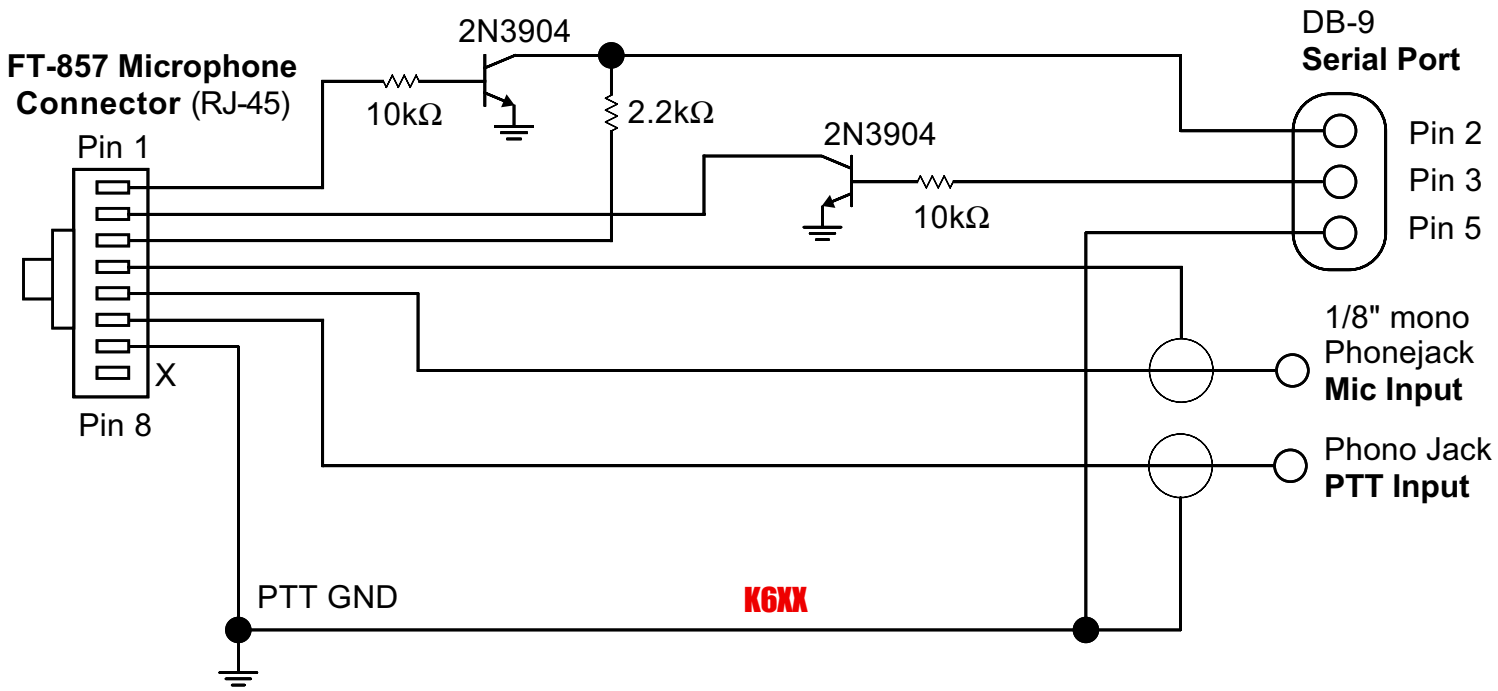

Figure 1. FT-857 Serial Data from the Microphone Jack circuit.

Now you are free to change the rear panel CAT/Linear jack control, Menu 020, "CAT/LIN/TUN", to your choice of Tuner or Linear, and still have serial communications. Incidentally, my mic jack cable worked fine even though I left Menu 020 in CAT. The rig saw no conflict even though its serial data sprayed out two different ports.

Operation and an Alternative

With this cable, I now have my FT-857 talking to a logging program through the mic jack and communicating its active band to my automatic antenna/bandpass filter/amplifier selection interfaces through its CAT/Linear jack in "Linear" mode. When the need arises, I can connect a headset or boom microphone to the mic connector and a foot switch to the PTT input and use this little mobile rig as if it was a much larger fixed station transceiver.

There was another option considered: use the interface circuit I designed for the FT-817 and decode the BAND voltage (available on the CAT/Linear jack in CAT mode) into its 4-bit values. However, this solution requires at least two ICs and four transistors and then only decodes 160m through 10m. Reading the VHF/UHF bands would require a doubling of circuit complexity. Since a boom-mic headset input was desired anyway, this microphone/serial interface cable was the simplest and best solution.

Rev 1.02. 13 June 2005