

Relay interface for FT857 and FT897

By K0CQ

Last year W0ZQ (2008 CSVHF Proceedings page 25) showed how to dig into the 897 to bring out band and PTT data. There might be an easier way.

I have noticed while using my 857D on HF, that local 2m transmissions (like packet radio) cause HF noise. I separate HF from 6m already with a home made splitter, and I was working on a super 6m low pass filter, but I found that unhooking the HF and 6m antennas didn't affect the 2m transmitter induced noise. But unhooking the 2m coax from an antenna prevented the noise. So its coming in the 2m port and leaking through the internal switches. Makes me want a new logic scheme.

I want a relay to connect each VHF band to the rig only when I'm on that band, and I want a separate output PTT for each band so I can use that to hard key finals, preamps, or transverters.

These rigs have band, !PTT, and 13.8 volts on the 8 pin minidin connector out back when set for Linear mode. There are four band lines, A, B, C, and D. On 6m B and D are high. On 2m A, B, and D are high and on 70 cm C and D are high. In integer numbers, 6m = 10, 2m = 11, and 432 = 12. There are a number of ICs that will decode binary to one line at a time. Since I'm only interested in these lines for VHF and UHF, I can depend on D being high and use that for output enable. Then I can use !PTT (ground for transmit) to shift from receive outputs to transmit output. And I can gate the receive output pin and the transmit output pin with an OR gate or similar for the band output. The FT-817 is wildly different and not compatible with this scheme. It uses a stepped voltage to show the band. Something that would work well with a PIC chip having an A/D input.

I chose the CD4514B for the select line and XOR CD4030B for the OR gate. Since only one output of the CD4514 is active at a time the XOR gives me an equivalent OR function and I can use the left over XOR gate to invert the radio's D output for the output enable of the CD4514B. There are much faster equivalents, but slow in control circuits is a virtue. I chose BS-170 FETS to switch an amp at up to 40 volts, but any logic level FETS will work.

I found an 8 pin minidin chassis connector with wire leads at Mouser (catalog number

161-2108) and expect that an 8 pin to 8 pin Apple printer or modem cable will connect to the radio. I have to prove that. I probably won't wire up the 6m band relay, but it could replace the filter based HF/6m splitter. I will wire up all the other outputs. This will all fit on a small Radio Shack solder board.

The parts list:

Radio Shack 276-150 Grid style PC board.

78L05

CD4514B

CD4030B

Optionally, sockets for the ICs.

Mouser minidin connector 161-2108

Apple printer or modem cable (if its not jumpered too much inside)

In any case a straight 8 pin minidin to 8 pin minidin cable is appropriate.

0.1 mf supply bypasses, at least three, two for the regulator, one for the logic chips.

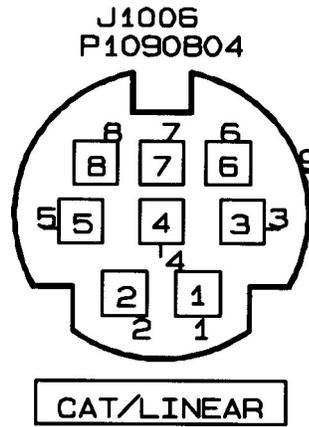
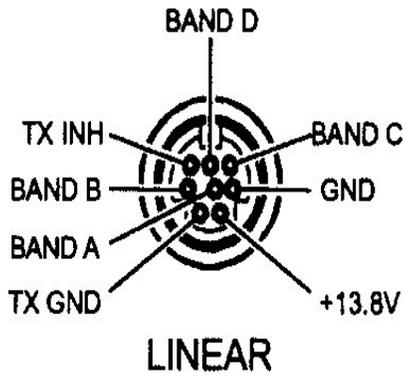
Qty 6 BS-170 or larger logic level MOSFETs.

A connector for the relay outputs (all supply grounds when active) and suitable relays.

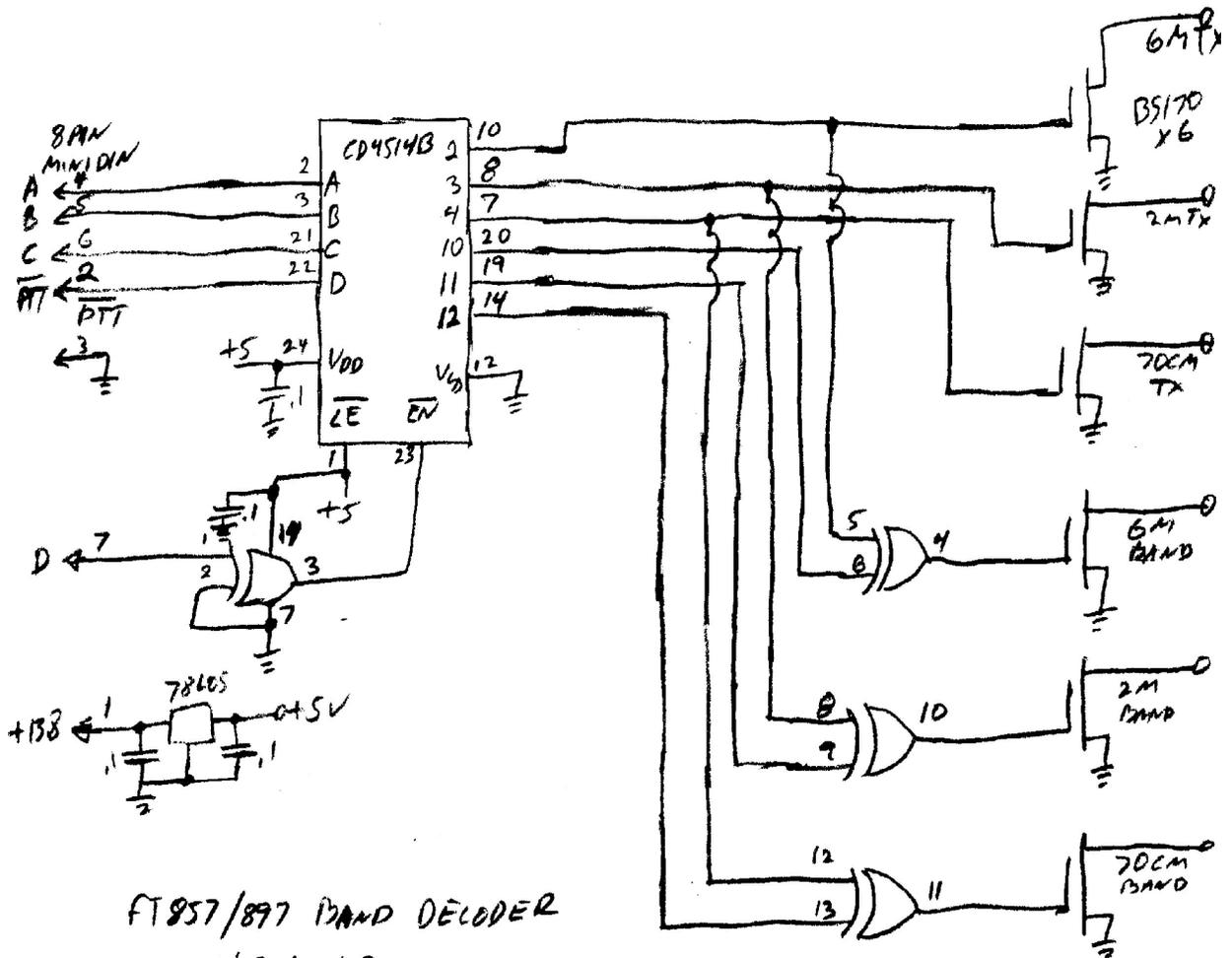
The parts:



The connectors:



The schematic:



FT857/897 BAND DECODER
VHF/UHF

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