

The DOX, Data Operated Transmit for the FT-847

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The DOX data interface works well with PSK31, but should also work well with any AFSK produced by or decoded by a PC Sound Card. The advantage of using DOX (Data Operated Transmit) is that it frees up PC serial ports. The FT-847 Data Port can be used to key the transmitter by pulling the transmit line low with a 22K ohm (or lower value) resistor. Keying the Data Port also disables the mike.

Here's how DOX works:

Audio from one PC Speaker Output is stepped up by a reverse connected speaker output transformer (T2) (RS #273-1380), to approximately 30 volts P-P and peak rectified by D1, D2, C2, and C3. This rectified voltage is applied to a 2N7000 MOSFET (Q1), which has a low resistance D-S when the gate is positive. The peak detection is very effective because the FET gate appears essentially as an open circuit. Peak detection with a long discharge time constant is required because PSK31 data goes through a "null" with each phase reversal. The discharge time constant (C3-R5) of approximately 0.1 second is long enough to provide low ripple in the rectified voltage. The zener diode (D4) provides protection for the 2N7000 gate in the event the input voltage is too high; as a bonus, the LED (D4) in series with the zener indicates that data is detected and the transmitter is keyed.

The combination of R1 and R2 reduce the stepped-up audio card output to the approximate 30mv P-P required by the Data Input. The method used to adjust transmit level is to connect the transmitter to a dummy load, set the PC software to the TRANSMIT MODE, and adjust the PC Sound Card sliders so that the LED just lights. Then, adjust R2 so that the ALC meter barely indicates.

All components are relatively non-critical. Diodes D1 and D3 may be any small-signal silicon diodes. Zener D2 may be any 18 to 24 volt, 500mw device. The LED may be omitted if desired. Time constant C3-R5 may be varied; the values used did not produce any relay chattering in the FT-847.

On the receive side, the center-tap of a 1:1 transformer (RS #273-1374) provides a 2:1 voltage step-up to the Sound Card Line Input. This interface is constructed in a small metal enclosure and only the transceiver side of the circuit is grounded to the case. The leads on the PC side are shielded and connect to ground only at the PC; this is important to prevent any possibility of line frequency hum being introduced onto the low level signals. I didn't use any connectors, but instead, cut a shielded stereo patch cord (RS #42-2387) in half to make two cables with stereo phone plugs on the ends.