



## Application Note 3

### Subject: Using ICOM Peripherals with Yaesu Radios

#### Background:

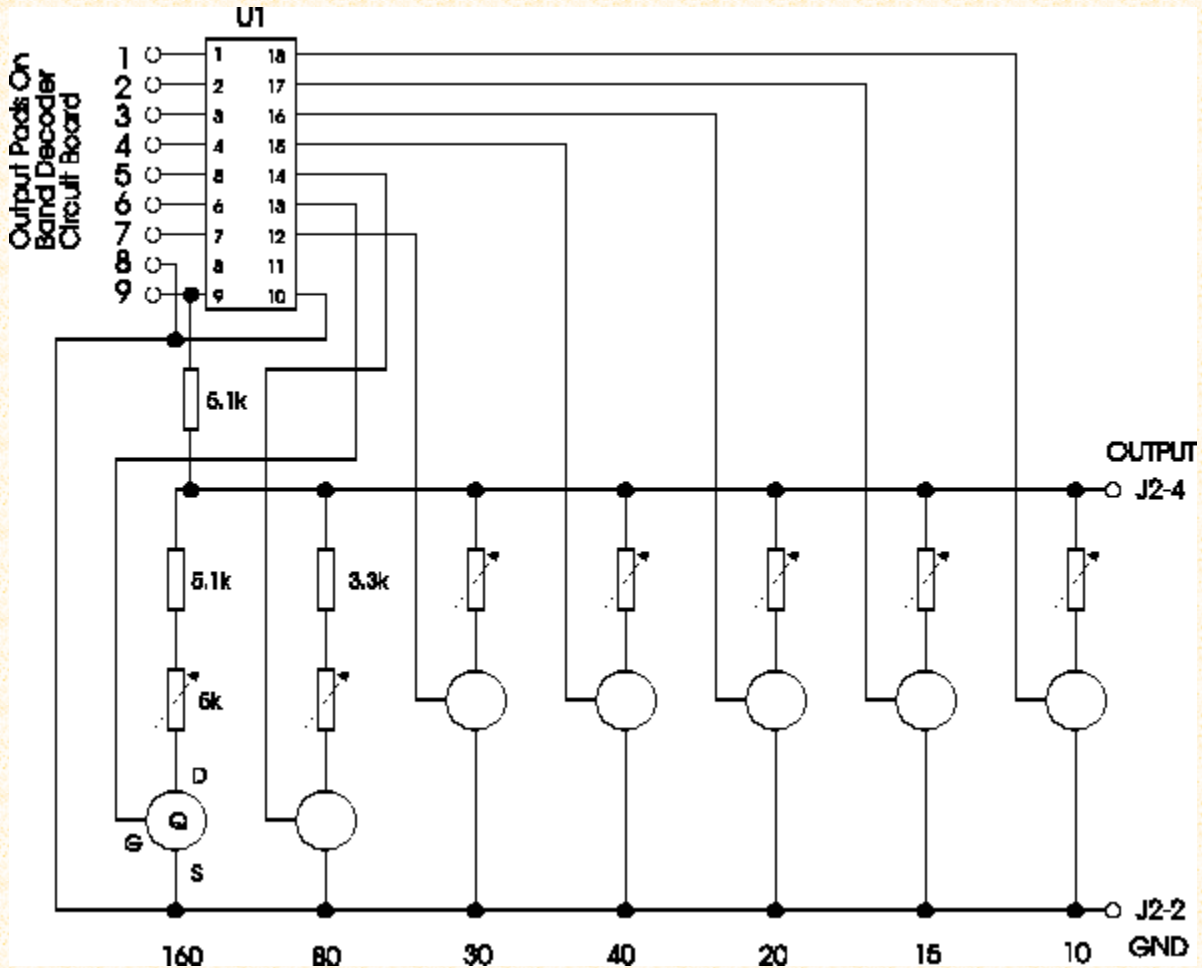
ICOM manufactures a solid state amplifier, the IC-4KL. The 4KL expects to be connected to an ICOM transceiver which provides the analog voltage band data signal to allow automatic tracking of the amplifier and transceiver. In the event that the station comprises a 4KL and either a Yaesu or Kenwood transceiver, to accomplish automatic 4KL band changing, a method must be devised to create the necessary analog band voltage, emulating an ICOM transceiver, and have that voltage track the Yaesu or Kenwood transceiver's band.

#### Circuit Description

By using a Band Decoder-Y, either directly attached to the Yaesu transceiver, or in the case of a Kenwood transceiver, attached to the computer's LPT1 port, we can easily track the rig's frequency. The band decoder's circuitry provides an individual switching signal corresponding to each of the bands. The additional "ICOM emulation" circuitry converts each of those binary (ie. ON or OFF) lines to an analog voltage of the same value that an ICOM transceiver would present. Trimmer pots are provided to allow fine tuning of the output voltages to precisely match the ICOM specification.

Circuit components are mounted on a small piece of perf board or experimenter's board and located inside the Band Decoder behind the rotary switch. Please note that none of the existing Band Decoder-Y circuitry or wiring needs to be modified; this circuitry is *additional*.

## Circuit Diagram



U1 is a UDN2585A or UDN2580A Source Driver. All Q are 2N7000 MOSFETs. Not shown for clarity are 1.5 k ohm pull-down resistors from ground to U1-12 through U1-18, and a .01 $\mu$ F bypass capacitor between U1-9 and U1-10.

## Adjustment Procedure

Attach the Band Decoder-Y to either a Yaesu radio or to the LPT1 port of a computer running CT (remember the -AC command line switch). Attach a digital voltmeter to the output of the circuit at J2-4.

With the rig on 160 meters, adjust the trimpot for the appropriate voltage from the table below. Repeat for the remaining bands.

Band (MHz)	Voltage at J2-4
10	0.5
28	2.5
21	3.5
14	4.5
7	5.5
3.5	6.5
1.8	7.5

### Notes

1. The normal outputs from the Band Decoder can be used simultaneously with the ICOM emulation outputs. This way, a Top Ten Devices Six Way Relay Box can be used on the output of the 4KL to automatically select the proper antenna.
2. The manual bandswitch on the Band Decoder is a convenient way to test the functionality of the circuit, as well as to change bands on the 4KL manually in the event that neither the computer nor transceiver is not available to provide a Band Decoder input.
3. This circuit can also be used to drive other ICOM peripherals, such as their remote antenna switch.