

CB to 10

— part XXV: using those surplus 40-channel boards

The Poly Paks flyer aroused my curiosity with the ad for "A 40-channel CB board complete with channel selector for only \$14.88,"¹ and in a reasonable time UPS delivered what proved to be a rather sophisticated 40-channel PLL CB set minus the case, speaker, microphone, and volume and squelch controls.

A little examination and research revealed that this is a very versatile printed board, used in several Hy-Gain units and several Kraco models. What appear to be missing parts are deliberate omissions. These parts are ones that function in some other unit than that for which this board was intended.

With a little work and ingenuity, this board can be turned into a fully-functioning and illegal CB transceiver, and, with a little more work, it can become a neat 10-meter rig. All part numbers are silk-screened on the board, and all wiring is attached to numbered wire-wrap posts or to numbered holes in the board. My wiring instructions will denote wire-wrap posts with a "P" and a number and board holes with an "H" and a number.

Only the board mount-

ing screws, the heat sinks, the antenna connector shield, and the two disc capacitors on the bottom of the board go to chassis ground. All other grounding points are attached to one of the board grounds, G1, G2, G3, or G4. Board grounds will be "BG" and chassis grounds "CG." Got it? Heat up the iron and go!

Wiring

Solder a red lead for +12 V to H1. Solder a black lead for -12 V to H2. Wire the center pin of an antenna connector to P58 and the shield to CG. Attach the leads of the two disc caps on the bottom of the board to CG. Install a jumper from P9 to P20. Wire a power on-off switch between P20 and P25. Wire an outer lug of a 15k squelch pot to P7 and the other two lugs to BG. Wire an outer lug of a 50k volume control to P19. Wire the center lug to P21 and the remaining lug to BG.

Wire the + terminal of a 0-1-mA S/rf meter to H34 and the - terminal to BG. Wire one speaker lead to P23 and attach the other speaker lead to BG temporarily. In actual operation, the speaker lead is routed to BG through the PTT switch on the microphone. A 500-Ohm dynamic mike

is used. This mike has a DPDT PTT switch that opens the speaker lead as it grounds the PTT line. This is necessary since the modulation transformer is also used as the audio output transformer, and an unearthly howl results if the speaker is not disabled. This mike audio line goes to P22, the PTT line to P13, and the neutral to BG.

Tune-Up

Tuning up the receive requires a signal generator, a VTVM, and a little patience. The first step is to set the voltage on the PLL. Check your wiring a last time, apply power, and check for smoke. If everything is OK, turning the volume and squelch controls should produce noise in the speaker. Squelch range can be set with the on-board pot, RV101. Attach a VTVM probe to the end of R113 nearest T101 and the ground to BG.

What we're looking for here is 1.5 V on channel 1. Since the switch is not marked, we have no idea where channel 1 is, so tune T101 for 1.5 V on the VTVM and then rotate the channel selector clockwise. The voltage should rise and abruptly drop. The voltage drop indicates that you have just gone from

channel 40 to channel 1. Reset T101 for 1.5 V and remove the VTVM.

Feed a 455-kHz signal through a .01 capacitor to the emitter of Q116, and tune T109, T108, and T107 for highest reading on the S/rf meter. The S-meter range may be adjusted with the on-board pot, TV103. Feed a 10.7-MHz signal through a .01 cap to the base of Q115 and tune T106 and L112 for the highest S-meter reading. Set the channel selector to channel 13 and feed a 27.115-MHz signal into the antenna connector. Tune T105 and T104 for highest S-meter reading. You now can attach an antenna and check for "Big 10-4s" and other esoterica amongst the local Good Buddies.

Set the channel selector to channel 13, attach a 10-Watt dummy load, key the mike or ground the PTT line, and adjust L103, L104, T102, T103, L106, L109, and L110 for the highest S/rf meter reading. Rf-meter range may be adjusted with the on-board pot, RV104.

10-Meter Conversion

Getting the rig on 10 involves replacing crystal X101 and retuning the PLL, the transmitter, and the

receiver front end. The crystal formula for the new X101 is: $N/3 + 11.806 \text{ MHz}$, when N equals the new channel 1 frequency minus 26.965 MHz.

For example: If we wished the new channel 1 to be 28.965 MHz, then: $N = 28.965 - 26.965 = 2.000$; $2.000/3 = .667$; $.667 + 11.806 = 12.473 \text{ MHz}$ for the new X101. The crystal may be ordered from any of several suppliers. Specify a parallel resonant mode, with a 30-pF load capacitance, an HC-18 holder, and .005% or better tolerance.

When the new X101 is installed, return to the section on tune-up and reset T101 for 1.5 V on channel 1. Retune the transmitter. It may be necessary to use the S-meter on a 10-meter receiver during initial transmitter tune-up until enough signal is obtained to register on the S/rf

meter. Using a signal generator or on-the-air signal, retune T105 and T104 for the highest S-meter readings. The center frequency may be adjusted by tuning CT101. The automatic modulation-limiting level is set with the on-board pot, RV102.

Additional information on rigs using this board and their conversion to 10 may be found in previous issues of 73^{2,3} and in *Sams Photofact*® CB-116.⁴ ■

References

1. Part #92CU5554. Poly Paks, PO Box 942-A3, South Lynnfield MA 01940.
2. Cliff Wiginton, Sr. WB5BSG, "CB to 10—Hy-Gain's PLL Rigs," 73, September, 1978, p. 172.
3. Clay Webb W1PI, "CB to 10—Convert a Kraco PLL Rig," 73, October, 1978, p. 254.
4. "Kraco Model KCB-2330B," *Sams Photofact CB Radio Series (CB-116)*, Howard W. Sams and Co. Indianapolis IN, 1977, p. 5.

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