

# PRO-2004 400 Channel Memory Expansion

## *Adding 100 More Channels to Your Realistic PRO-2004 Turns It Into A 400-Channel Superscanner*

BY ALAN SMITHEE, KCA6WX

**I**n August of 1987, I read in POP'COMM how to restore the "missing" 800 MHz frequency coverage to my realistic PRO-2004 scanner. It was a simple modification that has increased my enjoyment of this excellent scanner by a factor of ten. Now it's my turn to help others to even further add to the versatility of the PRO-2004.

I had heard rumors of there being a way of adding 100 more channels to the memory of the PRO-2004, turning the 300-channel scanner into a 400-channel unit. Writing to POP'COMM in the hopes of finding out if this could be done, I was sent some information that was submitted to the magazine by reader Al Traylor, KT4F, of Tennessee. With it was a note suggesting that I might like to try Traylor's suggestions and then write them up in the form of a feature for POP'COMM. Traylor's modification worked, so I'm happy to pass it along.

Note that any modifications to the scanner will probably void the warranty of the unit. Persons having no experience in working on electronic equipment would be best advised to seek the services of a technician for the modification. Three safety precautions should be observed. First, the PRO-2004 must be unplugged from its 117 VAC or 12 VDC power source, also disconnect the antenna system. Second, discharge any static electricity from your body before touching any part(s) inside the case of the PRO-2004. Lastly, use a low wattage soldering tool with a grounded tip.

### **The Nitty Gritty**

Take out the four screws from the rear of the PRO-2004, then slide the chassis forward and out of the case. Then, turn the PRO-2004 upside down and find the metal box type of sub-chassis. It's the one with the Restart switch (SW-101) on the PRO-2004's back panel (don't get this confused with the Reset key on the scanner's front panel). The sub-chassis should be marked PC-3 in the rear of the board.

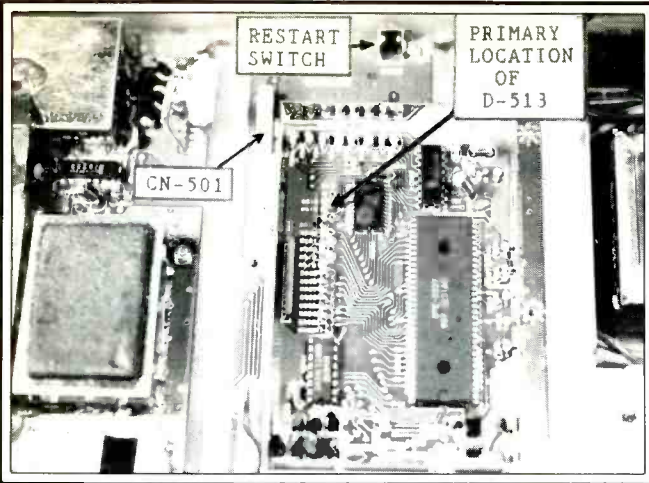
Carefully pry the cover off the sub-chassis. Inside, there's the CPU chip, the only IC of that size in the scanner. To the left of this chip is a row of resistors and diodes. At one



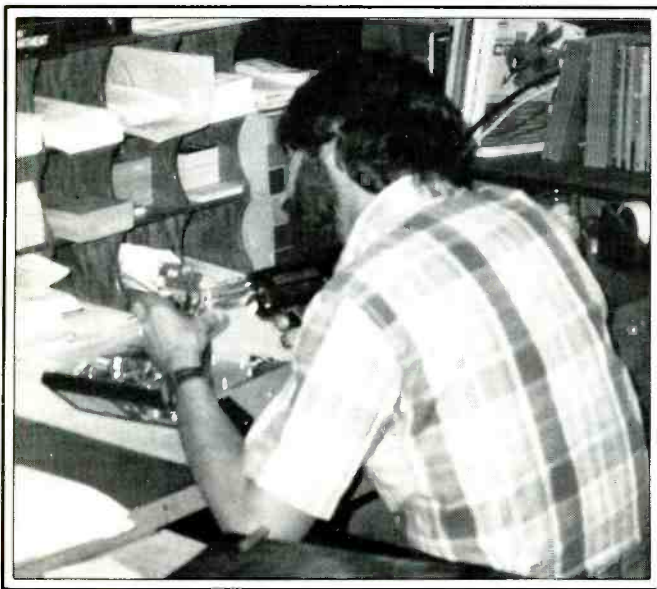
*The Realistic PRO-2004 poised for action.*



*Note that this modified PRO-2004 shows it receiving on Channel #400. Not bad for a scanner that was only supposed to receive 300 channels! You may not even be able to fill up all 400 channels with active frequencies.*



Here's a photo showing the sub-assembly in question, plus the location of major landmarks you can use as a guide. (Photo by Dr. Rigormortis.)



end of the row is part number *R-502*, followed, in line, by *R-503*, *R-504*, etc.

As you look up this row in the direction of the *Restart* switch, you'll notice that at the end of the row closest to the *Restart* switch there are unused and (often) unmarked holes where components weren't installed. The final factory-installed component in this row is *D-513*, and after that there are three unused mounting positions which may or may not be marked *D-512*, *D-511*, and *D-510*. The final unused pair of holes at the end of the row is *D-510*. That's the one we are seeking for our purposes.

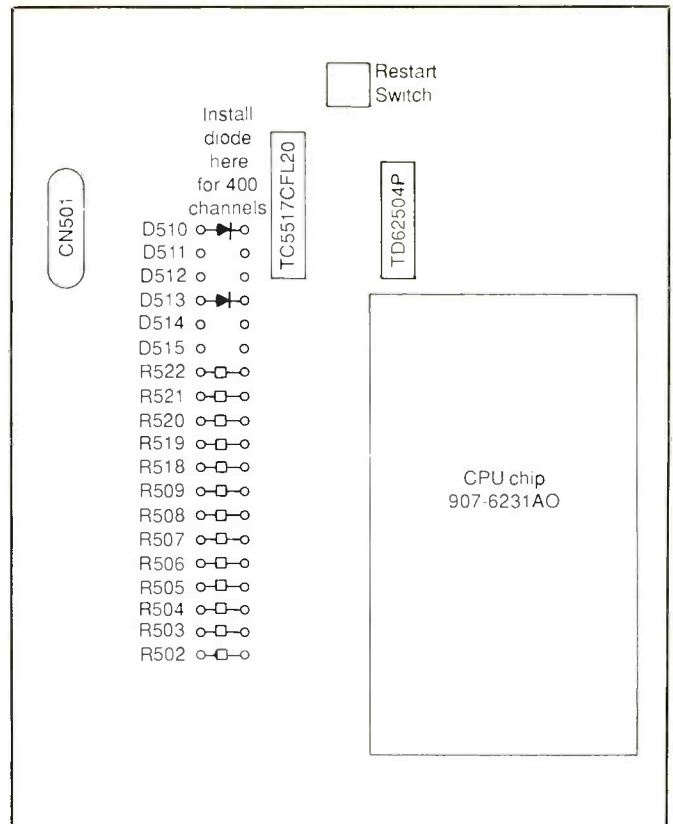
Apparently, on some (but not most) *PRO-2004*'s, there's a short wire or solder jumper across the two *D-510* mounting holes. It's possible that this is on the other (bottom) surface of the sub-assembly board. In any event, that jumper (should it exist) will have to be carefully removed with a desoldering tool. Be sure to handle the sub-assembly board and cable connector *CN-501* with tender loving care since even the

slightest damage or minor crack in the board will result in a scanner that is good only for use as a boat anchor.

## Onward and Upward

If you still have the old *D-513* diode that you had snipped out in order to restore the missing 800 MHz frequencies, you're in luck. Otherwise, you'll have to find one in the junk box or else buy one. Should you have to buy one, an inexpensive route to go is to Radio Shack for a bargain pack of fifty 1N914 silicon diodes for about \$2. These are #276-1620 on page 120 of the 1989 Radio Shack catalog.

Observing correct polarity, the diode should be gently soldered into place in the *D-510* mounting holes. The 400-channel modification is completed. The *PRO-2004* can now be carefully reassembled, connected to power and antenna, and put into service. The main difference is that now, in-



A close-up diagram of the sub-assembly showing where the diode is to be installed at the *D-510* position. If there is a factory-installed jumper across *D-510* (on either side of the *PC* board), it should be removed prior to installing the diode. Observe diode polarity.

It takes only a few minutes to make this modification. But use a low-heat soldering gun (the one being used in the photo on the *PRO-2004* is a bit bigger than necessary or advisable).

stead of 30 channels in each of the 10 memory banks, you'll have 40 channels!

Should you decide to have a technician perform this work for you, we'd guesstimate that for the time and work involved, you should expect to pay about \$20 to \$35.

In Al Traylor's notes on the modification, he observed that he had not yet figured out the purpose of the *D-511* position, but that the *D-512* was installed on European and Australian models. We already know that when the *D-513* is installed, it locks out the cellular bands. Traylor comments that *D-514* seems to increase the scan rate above 16 channels per second. He hasn't yet figured out the function of factory-installed *D-515*.

Several of my friends have modified their *PRO-2004*'s for 400-channel memories. This has brought up the question as to why this beautiful piece of equipment was simply put on the market with this diode installed at the factory and a 400-channel capability. We have no answer at this time.

**PC**