

YAESU.TXT

Subject: Yaesu Mods

The uP's in the FT-23R and the FT-211R/H can be set for several frequency and memory mode combinations. These modes are controlled by the jumpers (solder pads) marked 7,8 and 9 on the processor board of either radio. Here's a list of what can be done:

JUMPER			CONFIG	DISPLAY MODE
7	8	9	NUMBER	
open	open	in	1	140 to 164 MHz, amateur mode
open	in	in	2	140 to 160 MHz, amateur mode
in	open	in	3	144 to 148 MHz, amateur mode
in	in	in	4	144 to 146 MHz, amateur mode
open	open	open	5	220 to 550 MHz, commercial mode
open	in	open	6	440 to 450 MHz, amateur mode
in	open	in	7	50 to 300 MHz, commercial mode
in	in	open	8	430 to 440 MHz, amateur mode

Both of my radios (USA) were shipped from the factory in config #3. They can be converted to config #1 without re-tuning just by changing the jumpers. Tuning range can be further expanded by changing to jumper config #7. The FT-211 has separate VCO's for transmit and receive and will lock over about 38 MHz from approx. 130 to 180 MHz. The FT-23 has only one VCO and the overlapping lock range (Xmt & Rcv) is about 25 MHz from approx. 135 to 175 MHz. Don't forget, if you adjust the VCO you must re-align every electronically tuned stage in the front end of the radio. The transmitters can be tuned for somewhat higher power output above 164 MHz but at a great power loss at 2m.

The commercial memory mode will cause these functional changes:

1. When in the MR mode, the channel number will be displayed instead of frequency. You can toggle back to the original "amateur" mode display by pressing F<up-arrow>. Pressing F<down arrow> takes you back to commercial mode. However, when switching from D to MR, the display will always revert to the commercial mode.
2. The function of the Dot<Pri> button will be exactly reversed. That means now you can press just one button (Dot) to get into or out of the Primary function. The Pri function (in memory mode) will be indicated by a large "P" on the left side of the display.
3. The only indication of low power operation is in the memory mode. A "C" will appear in the upper left corner of the display (where the primary "P" used to be). The bargraph will always read 100%.
4. The band scan is now even more useless. The uP will painfully

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count from 50 to 300 MHz.

I have been able to modify my FT-211RH to scan at about 10 chan/sec by speeding up the uP clock. This also speeds up every other uP function by x5, so you have to be fast on the "F" key. No squelch sensitivity or synthesizer lock-up problems have been encountered with this modification while scanning.

Basically, I replaced the 800 KHz ceramic resonator (pn CSB800K) with a Radio Shack 3.58 MHz color burst crystal. The resonator is located on a small (2.5 sq cm) sub-board that is stuck with double sided tape to the radio's processor board. This sub-board is actually an outboard clock for the uP. The schematic I got with the radio showed the uP's internal osc. being used - so I don't know if my version differs from newer radios. This mod works fine until you turn the radio off and then back on again. A startup glitch then wipes out all of the memories. To delay the oscillator start up, I added a 220uF 10V electrolytic cap between the red wire on the sub-board and ground. Positive goes to the red wire. A convenient ground is the bare wire located diagonally across from the red wire (on the sub-bd).

So far I have been unsuccessful with this mod on the FT-23R H-T. Since it uses the uP's on board osc, there seems to be no way to delay it's startup. Every time you turn on the power the uP resets. If anyone can solve this problem I would be very interested in hearing from you!

These are not intended to be step by step instructions. Also, you will want to have a service manual before you begin. If you're not familiar around surface mount components you may want to "learn" on something with cheaper consequences. Finally, don't adjust the VCO's unless you are familiar with how a synthesized radio works. Use your own judgement!