

File Name: Repeater Mod for ICOM IC12-221 SERIES.rtf by Sean Smith VE6SAR
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Instructions on how to modify Icom F121, F121S, F221, and F221s commercial radios for use as repeater radios.

Repeater Mod for ICOM IC-F121, IC-F121S, IC-F221, and IC-F221S radios.

Modifying this series of radios for repeater use is a fairly simple process. All that is required is basic soldering skills and the Icom programming software.

These radios can be connected back to back to make a simple repeater with a hang time of up to 25 seconds. Or they can be connected to an external controller.

Hardware Modifications:

1. Open the case.
2. Located the split pad on the right hand side of the board labelled "F". If it isn't labelled it the split solder pad closest to the RX marking at the front of the radio near the metal box where the external cable plugs in.
3. Plug in an OPC-617 cable, and replace the cover.
4. The radios are programmed as follows:
In the Common – Expert menu set RX EXO to ON; this makes the horn output line into an active low COS line.
EPPT/FTSW: set to EPPT.
Set the EPPT timer to the desired hang timer 0 – 25 seconds.
If Tone Mute EPTT is ON no CTCSS tones will be sent regardless of the channel programming.

The pin out for the OPC-617 cable is as follows:

1. Dimmer cont. IN or IGSW cont. IN
2. AF OUT
3. Detector AF OUT
4. Mod. IN
5. PTT control IN or
6. Horn drive cont. OUT → Active Low COS
7. AF GND
8. Detector AF GND
9. Mod. GND