

"Checkmate King Two, this is White Rook!"

Retrofitting the BC-1000

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Well, I've been asked to do a write-up on how to wire a CB radio or FRS (e.g. talk-about type radios) in a BC-1000 radio. There will be some things that you'll have to experiment with in order to accomplish this task.

For doing ONLY a CB or only an FRS, the wiring will be somewhat straightforward. It is when you try to have both available that it becomes rather involved.

One note of caution - do not use Motorola FRS radios as their connections are proprietary. You are just going to chase your tail trying to find the proper connectors for the 3/32nd inch jack only to find there aren't any. Trust me.

Things you will need include:

- BC-1000 empty case with lid. Hopefully your lid will still have the connections available.
- Handset TS-9-F (or microphone and external speaker)
- Spool of 24g wire. I got a spool of intercom wire from Radio Shack that has four wires. You can add one more spool of wire or just trim what you need off the other spool.
- Wire connectors - assorted.
- Soldering iron & solder.
- Wire cutter/crimping tool.
- 1/8th inch male mono jack.(This is if you are making a CB connection.)
- 3/32nd inch male stereo jack.(Used in both circumstances CB/FRS)
- Test wires with alligator clips
- 2 radios (be it CB or FRS type radios)
- If CB setup, you will need a length of COAX with the appropriate connector for your radio (BNC or RF)
- Wire ties or electrical tape.



Additional items if you are making a CB and/or FRS setup.

- 4PDT Switch (4 post, double-throw. "On - On" is fine. You don't need an OFF position.
- 2 of each type of radio. This is so that you can test the transmit and receive functions of both types.

Ready? Let's get started!

The hardest part of this project, other than just getting started, is figuring out which wire goes where. So, have your test wires handy. You'll need 5 of them for the 5 wires coming from the underside of the connectors. Have your handset plugged in and ready to use.

Handheld CB Radio Setup

For a handheld CB, it typically has 2 ports for hands-free operation. A 1/8th inch SPEAKER connection that is mono (Tip and Sleeve only) and a 3/32nd inch MIC input which is stereo (TRS - tip, ring and sleeve).

This actually makes things simple as 4 of the 5 wires attach rather straightforward. The two wires from the speaker obviously connect to the 1/8th inch mono male jack and so forth.

Making sure you have two radios on and on the same channel, strip the end of the wires from the back of the speaker jack and attach a test wire to each. On the radio, insert the 1/8th jack with the cover off the jack. There should be a long post (Ground) and a shorter one (Positive). Connect them with the test wires. Using the other radio, transmit a test (Test 1-2-3 or something). If you have the handheld that will be in the box at full volume you won't have to try and hold the handset to your ear while you test the wires.

If nothing comes out switch the wires on the 1/8th jack. You should hear something. Whichever wire is connected to the long jack mark as the BLACK wire and be sure to mark the wires on the underside of the jack to match. The other will be white of course.

Go ahead and connect your wires using the black/white scheme to the underside of the jack and solder the other end to the 1/8th. You can close up the 1/8th and this part is done.

Same concept for the MIC jack. Expose wires and clip the test wires and open the 3/32nd jack and connect the test wires. This time you will use the handset and attempt to transmit to the other radio. Most likely you will not get it on the first attempt (unless you are real lucky!) so just keep moving wires around until you find the magic combination. Once you hear something from the other radio, use that one to transmit back. You should hear something on the handset. You might get an open mic so just keep going until things transmit/receive appropriately. Mark your wires and solder/connect and you are done with the CB. There will be one wire that is not used.

If you want to use the external antenna connection, underneath the antenna base there is a ceramic disk with a screw at the apex. With your coax cable, expose the center wire and attach to this mounting post. The remaining wire needs to be attached to the box for grounding the antenna. I secured the antenna wire using plastic wire clips so as not to put too much strain on the frail wire. The tuning of the antenna won't be great but you'll still be better off than just using the short handheld antenna inside the box. I'm still working on a better solution for tuning the antenna. A two-foot CB antenna seems to work best in my setup and it allows you to tune for best results.

FRS Radio Setup

The FRS setup is a bit more of a challenge due to the fact that you are going from 5 wires down to three. Not to fret, however, as only four wires get used.

I found it easiest to start from receiving. You will definitely use the two wires from the SPEAKER jack (narrowing it down) and only two from the MIC jack. The black ground wire will go to the long post on the 3/32nd stereo male jack that you should have opened by now. It's the black ground wire that will be paired up with a wire from the MIC side. Using the second radio, keep trying to transmit and see if you hear anything from the handset.

There's not much more I can tell you other than you will have to keep experimenting with the connections. Keep going back and forth between transmit and receive on the different radios until you find the magic combination. Unfortunately, at least on the BC-1000 radio top that I have, the wires all looked the same so I don't have the magic decoder ring to tell you which goes where.

right terminals and the rest for the FRS.

The switch basically changes the wiring configuration from A to B and allows the operator to choose which radio is being used.

I also wired the Ext. Speaker jack to work so that one can monitor the radio with an external speaker as well as the handset. The easy part about this setup is that the wiring is identical to the speaker jack for the handset so you can simply Y the wires together.

There is still some work to be done such as finding the right foam to lay inside the box to protect the radios from bouncing around inside. I will write something further as this project nears completion.

At least, this is my project so far. Have fun. I'm sure there is a more elegant way of doing this but for my first time wiring this and not being very verse in electronics. So, good luck with your project!



You can see why foam is needed!



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