

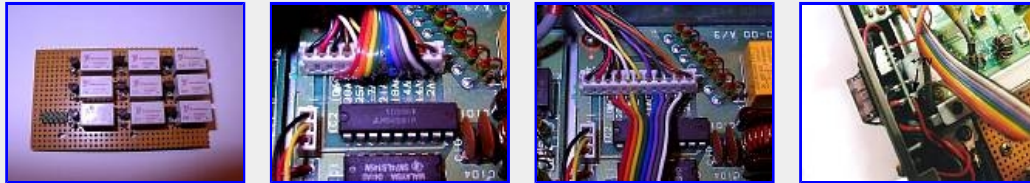
A Band Decoder for the Kenwood TS-850 HF-Transceiver

by Winfried Kriegl DK9IP/KH7CD (April 2001)

The Kenwood TS-850 transceiver is still quite popular amongst DXers and contesters but this rig does not have a build-in band decoder as most of the ICOM transceivers do. Especially in a contest setup this feature would be very helpful for a quick band change. By studying the circuit diagram I discovered a way how to easily add a band decoder to the TS-850. This can be done by using the band signals that control the filter unit and the build-in automatic antenna tuner. The circuit can be added without permanently modifying the unit (i.e. drilling holes) if you follow my recommendations. The supplement requires no special knowledge or the removal of circuit boards but you'll have to solder on a board and some care should be taken not to damage anything.

From here you proceed on your own risk. Don't make me responsible if you fry your radio.

My circuit uses 9 miniature relays (12V DC, spst type) to drive any remote antenna switch, band filters etc. The relay contacts are switched to ground when active but it is also possible to switch to +12V if needed.



I didn't make a PC board for this "prototype" yet. Components were soldered on a perforated construction board (size abt. 8.5 cm x 5 cm). The board was mounted under the removable top cover with 3 screws. This space is reserved for the optional VS-2 Voice Synthesizer which I don't use.

To connect the band decoder board to the transceiver proceed as follows:

- Remove the transceiver top case
- Remove the shield cover of the filter unit X51-3100-00 (7 screws)
- On the filter board locate the 9 pads marked 10A, 28A, 25A, 7A, 21A, 18A, 4A, 14A and 2A between IC2 and connector CN4. These pins are on +12V level when the related band is selected
- Solder 9 wires of a 10-wire flat ribbon cable to the pads and connect to the corresponding inputs (33kOhm resistors) on the band decoder board. The remaining wire is connected to +12V as supply voltage for the relays. Use a separate wire for ground connection



I used a DB9 female connector for the relay output signals. The connector can be mounted by replacing the ACC4 connector which is provided for connecting the external antenna tuner AT-300. You won't need this connector with the build-in automatic tuner. Just remove the ACC4 connector and push it back into the cabinet.

The DB9 connector is fixed without additional screws by clamping it between the rear panel and the metal supports. Proceed as follows:

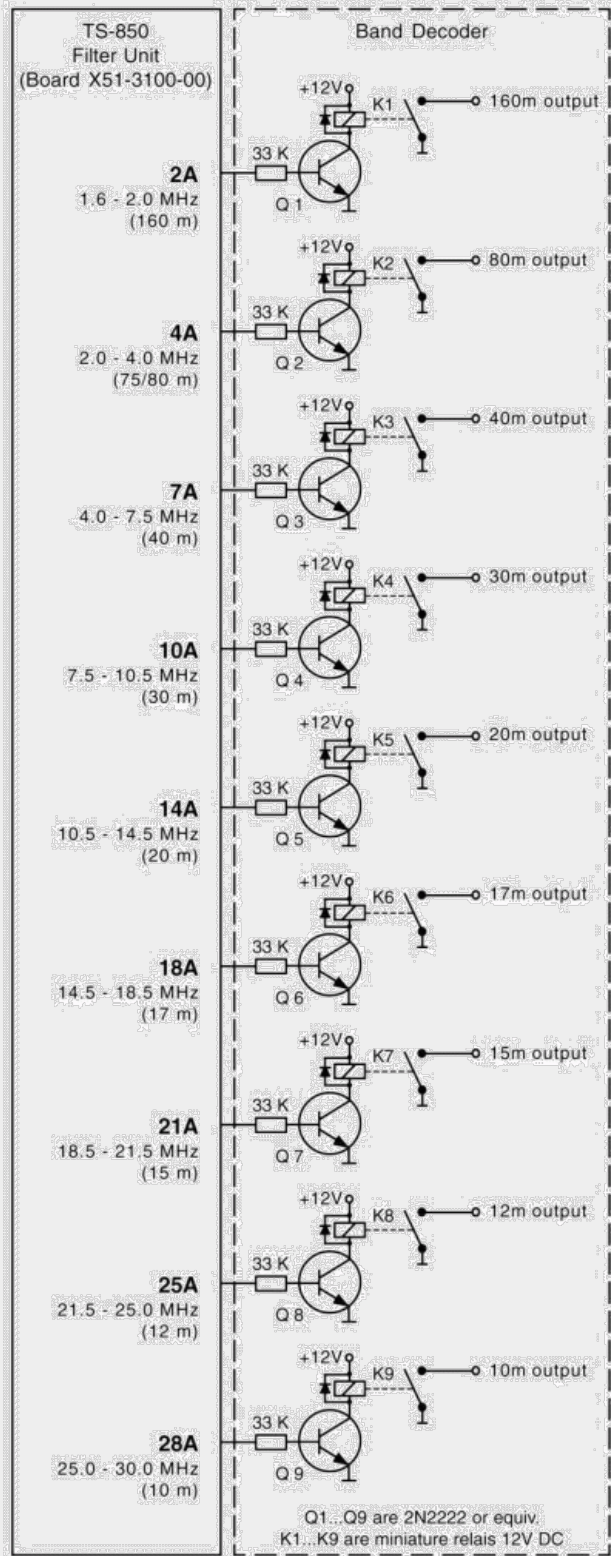
- Loosen all screws of the rear panel. Remove the screws that hold the RTTY/DSP1/DSP2 connector board
- Place the DB9 connector in the center of the ACC4 mounting hole. Fix the screws while clamping the DB9 connector as described above (see picture)
- Connect the DB9-pins to the relay outputs of the band decoder using flat ribbon cable. Ground connection is made via the metal case of the DB9 connector. Remember to connect the case of the DB9 plug to ground



That's all. Replace the shielding cover and top case.

Now you can drive any remote antenna switch or band filters with the relay output from this band decoder.

Band Decoder Circuit Diagram



Related links

[TS-850 Service Manual download](#)

[TS-850 Instruction Manual download](#)

[TK5EP's page with PC-interface](#)

[The TS-850 repair page by N6TR](#)

[Lots of info on K0BX's homepage](#)

[TS-850 mods on KB1GW's page](#)

[The BCC TS-850 interface \(german\)](#)

News

John, AA3M designed an interface to connect the FL-7000 linear to the TS-850. [Look here](#)

He also made a PCB layout for my band decoder circuit. TNX John.

You can download the [PCB layout](#) and [circuit diagram](#). You need [ExpressPCB](#) software (freeware) to open the files.