Adding a Ham Gadgets ID-O-Matic II Controller to a Kenwood TKR-720 (VHF) or 820 (UHF)

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This is my experience in adding an ID-O-Matic II to a Kenwood TKR-720 VHF Repeater for 2-meter use. The same steps can be used to modify a TKR-820 UHF Repeater for 70-centimeter use.

I received a TKR-720 from a local communications company that is in the process of upgrading area repeater systems to narrow-band equipment. The TKR-x20's are not capable of narrow-band, so they are being phased out. The company was even nice enough to program it with the repeater frequencies and tone settings that I needed. A KPT-50 programmer is required if you want to do this yourself.

I purchased an ID-O-Matic II kit from Hamgadgets.com for $25, though you can find some that are already assembled on eBay for around $60. The finished product looks similar to the images below.
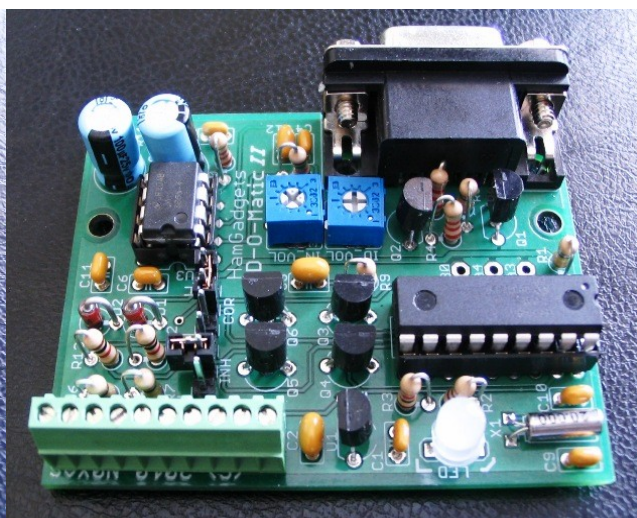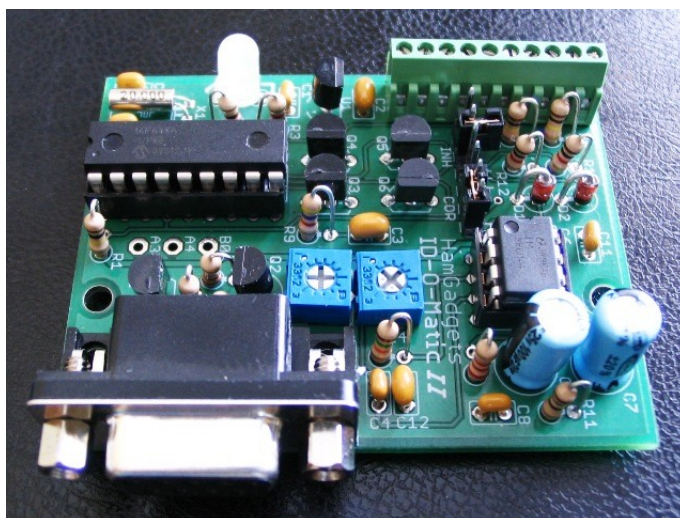
I mounted the controller on the power supply side of the radio. A couple of holes will need to be drilled in order to mount the controller. The Tx/Rx module will need to be removed so that you can do this; they'll have to be moved anyway. It's possible to remove it without disconnecting any cables, other than the power cable. You'll also need a couple of stand-off mounts. I used some from the local Radio Shack (yes, they actually had these!).
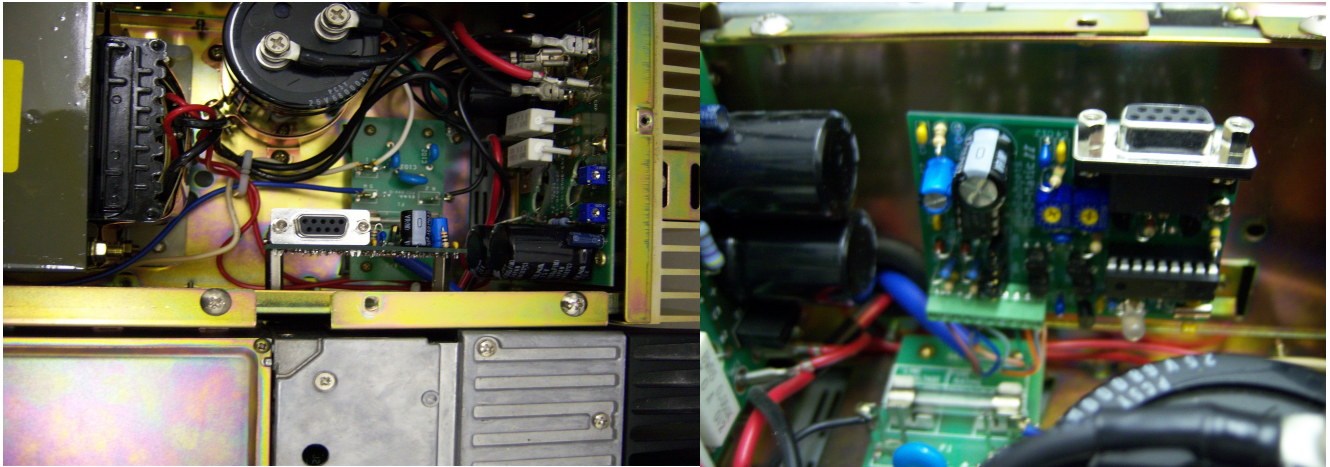
I hooked in all of the wiring to the repeater and used heat shrink on all the connections to the radio interface cable. I used shielded CAT-5E between the controller and the radio interface cable. I'll include what wires to connect where at the end of this document. I made the choice to cut the wires from the external interface because the likely-hood that I will ever use another type of controller is very, very low (this will be our club's backup repeater). However, there is a connector and pins available through various sources if you wish to wire it to the connector; the choice is yours. Regardless, make sure that all cables are tucked away so that they don't interfere with the placement of the Tx/Rx modules.
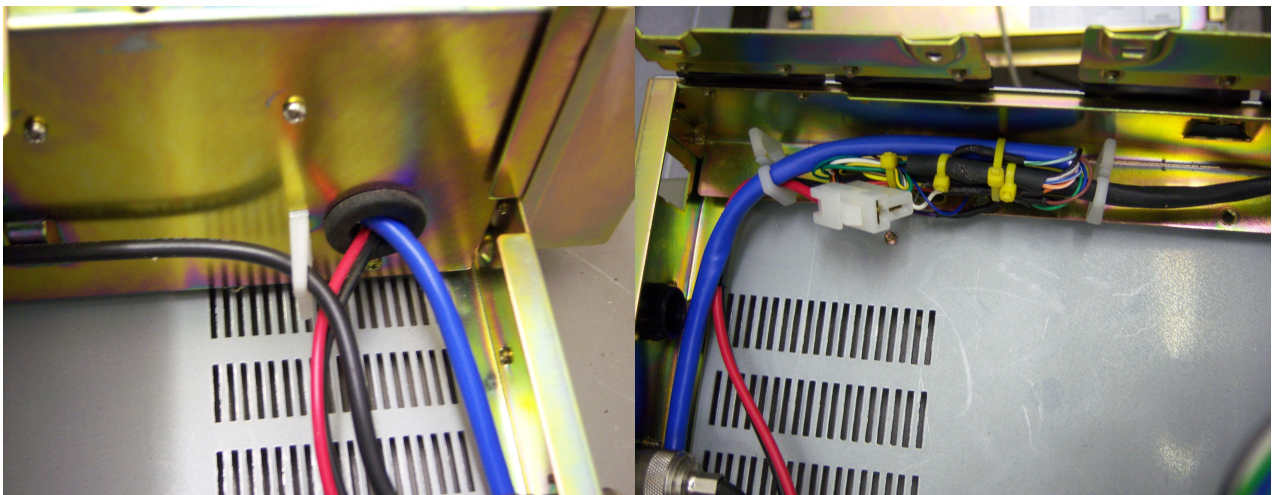
Place the Tx/Rx module back in place (don't forget to hook up the power cable!) and bolt it into place. Now, connect the Tx port to an antenna or a dummy load, connect the AC power cable to an outlet, and power-up your repeater. Now you can program your controller, using a serial cable and a laptop or PC with a serial connection. Refer to the ID-O-Matic II documentation on how to connect and make changes to the settings. After you're finished making the changes, power down the repeater and disconnect the serial cable. Then put the cover back in place and fasten it down. Now you're all set!

Connector Information: Please refer to the following web page. http://www.repeater-builder.com/kenwood/tkr-n20-notes.html

Connect the following from the ID-O-MATIC II controller to the following pins/wires on the Kenwood TKR-x20 repeater.

ID-O-MATIC	TKR-x20 EXT CONN PINS
J1-1	1, 2, 11
J1-2	7
J1-3	8
J1-7	13
J1-8	10
J1-10	5

Jumper pin 9 to pin 12 to enable the internal speaker on the TKR-x20. I recommend that you use shielded cable, such as shielded CAT5E, to connect from the controller to the external interface port. Make sure that you tie the shield ground wire into the ground on the controller and the ground on theTKR-x20 (pins 1,2, and 11). Also, make sure that the COR jumper on the controller is on "HI".

Many thanks to:
Mike Morris WA6ILQ – His page on the repeater-builder.com website provided me with very invaluable information, which I used to connect the ID-O-MATIC II Controller to our TKR-720 repeater.

Dale Botkin N0XAS – Producer of the ID-O-MATIC II Controller. Visit http://www.hamgadgets.com/ to see his other items for sale.