A DIY Serial Interface for programming Baofeng / Pofung HT's
By VA3DDN

Updated:!! -- pcb now available

Background
USB-Serial programming cables for the Baofeng radios can be found on eBay or other on-line sites. When they work, they work well enough, although many hams have had issues with installing the right driver and figuring out which com port is in use. Most of the low cost USB-Serial cables use a chip made by Prolific, which has unfortunately been counterfeited with the result that there are many out there that are bad copies, and just don't work properly.
*My advice is to make sure any USB-Serial programming cable you purchase uses only a chip made by **FTDI**. Used with CHIRP, a free open source programming software for many ham radios, makes the programming both easy and fun. (chirp.danplanet.com)*

At right is a photo of the simple serial interface I made, that works with the Baofeng models UV-3R+, UV-5R, UV-82, and many Kenwoods. (all use the same dual 3.5/2.5 mm ext. mic plugs).
The circuit I used is an adaptation of some of the many found on-line. I know it works. You do need to have either an older computer with the old, honest-to-goodness DB9 serial port, or a good USB to Serial converter cable, one which uses the FTDI chip. (An example is the Startech ICUSB2321F from Canada Computers)

Attached is the schematic of the circuit I used, along with the parts required. You can build it on a piece of perf board as I initially did, or use any of the other popular prototyping methods. There is nothing critical. To keep it simple, I have assumed the use of separate 3.5 mm and 2.5 mm stereo male-to-male audio cables to connect to the HT being programmed.

One caveat: You must make sure that the 3.5mm and 2.5mm plugs you use will seat properly and fully in the corresponding jacks on the HT. I have found that the body of some of these plugs is too "fat" and won't fit into the recess on the HT.

Also attached is an enlarged layout for a fabricated pcb
I have had a small quantity of these made, and which are **available now, for $6** ea.
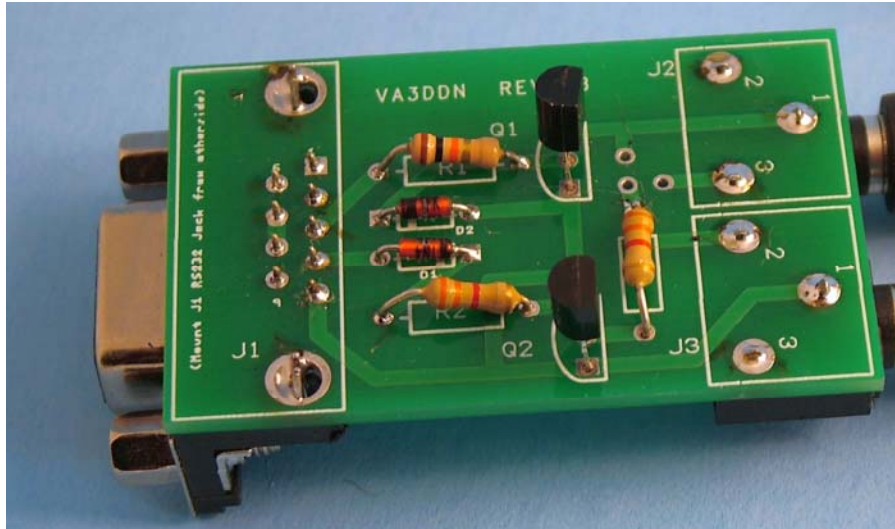A kit with all parts including cables will be available for $10 shortly.
For availability, mailing etc contact me: hamguy@hamguyparts.com

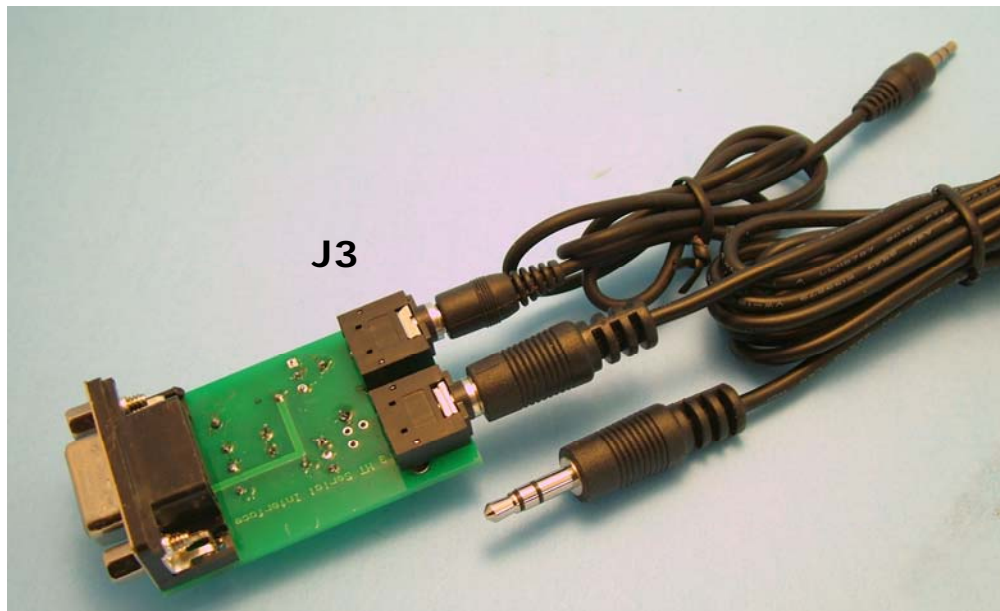# A DIY Serial Interface for programming Baofeng / Pofung HT's
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Here are some photos of the pcb version:

Note that the three connectors all mount on the bottom-side of the pcb.
I have found that not all stereo 3.5mm pcb-mount jacks have the same pin-out, nor do they have standardized pin numbering.
You can make sure, by checking continuity to the schematic.

The convention I have used for numbering the 3.5mm jack connections is as follows:
Pin 1 is shield, Pin 3 is middle connection of plug, pin 3 is plug tip.
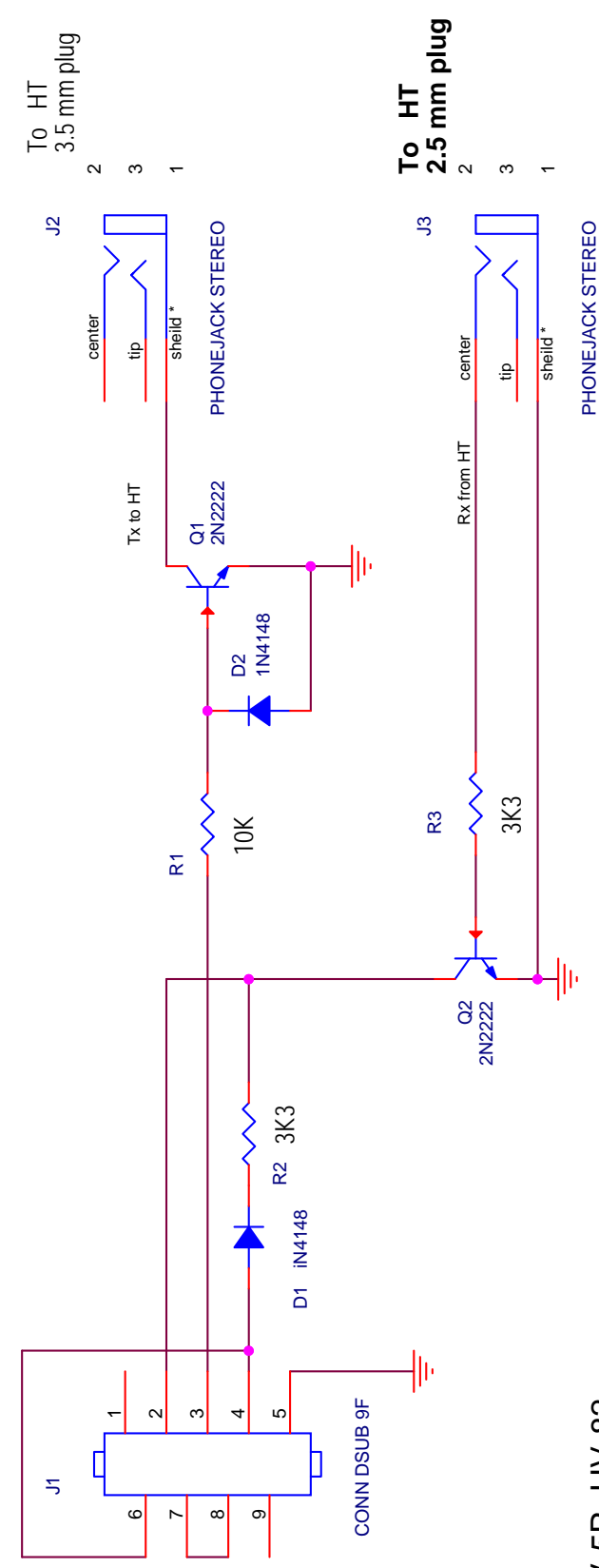
The photo below shows the flip side with the cables connected.
Note that the 3.5mm to 2.5mm stereo plug cable is in J3, which is shown on top below.

To serial port
on computer
DB-9 Connections

2 Rxd
3 Txd
4 Dtr
5 Ground
6 Dsr
7 Rts
8 Cts
9

J1
CONN DSUB 9F

To HT
3.5 mm plug

J2
PHONEJACK STEREO
center
tip
sheild *

To HT
2.5 mm plug

J3
PHONEJACK STEREO
center
tip
sheild *

Tx to HT
Q1 2N2222
D2 1N4148
R1 10K
R2 3K3
D1 iN4148

Rx from HT
R3 3K3
Q2 2N2222

2N3904
NPN General Purpose
Amplifier

C
B
E

E = EMITTER
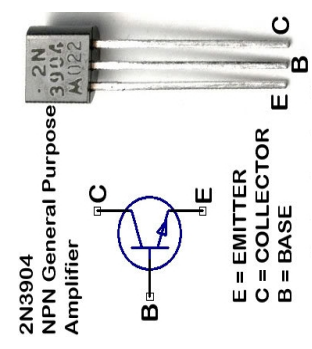C = COLLECTOR
B = BASE

Note 1:
Can be used with
models: UV-3R+, UV-5R, UV-82
and some Kenwoods.

Note 2:
Both J2 and J3 are pcb mount 3.5 mm stereo jacks,
CUI #SJ1-3523N or equiv., Jameco # 2168131
To connect to HT, use a 3.5mm to 3.5mm male-to-male
plug cable in J2:
and a 3.5mm male to 2.5mm male plug cable in J3.

*IMPORTANT: The sheild connections of J2 and J3
must not be electrically connected.

Note 3:
Q1 and Q2 are any general purpose NPN transistors,
like 2N2222, 2N3904, BC147 etc.
D1, D2 are 1N4148, small signal diodes
J1 - 9-pin female dsub connector, r/a pcb mount. 0.318"
set-back (Amp/tyco 747844-5 or eq, Jameco #104943)

VA3DDN
Baofeng HT Serial Interface

Title
Size A
Document Number
<Doc>
Rev B

Date: January 23 2015
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