

Modifying an OBDLINK SX OBD-II USB Adapter for use with FORScan

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A hardware modification to the OBDLINK SX From Scantool.net allows FORScan to automatically select between HS and MS CAN.



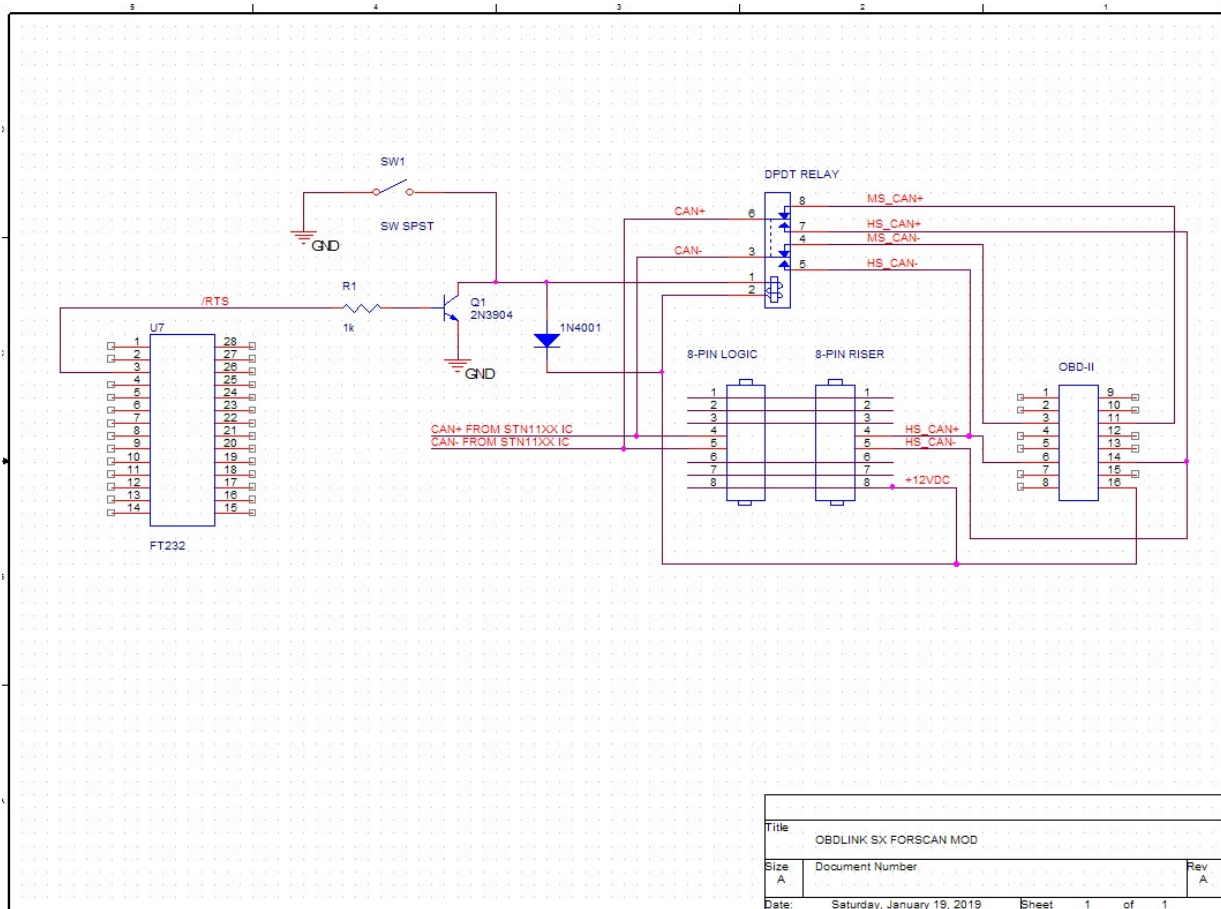
This procedure documents the steps on an already completed unit, therefore interior images will look different from a new adapter.

The summary is that we will add a DPDT relay to allow the OBDLINK-SX to select MS CAN or HS CAN operation using the RTS Handshaking line of the serial port. A schematic of the modifications is provided as someone will certainly have a cleaner way of performing this mod. (I'm not proud of the flux residue and melted plastic on my adapter from this mod)

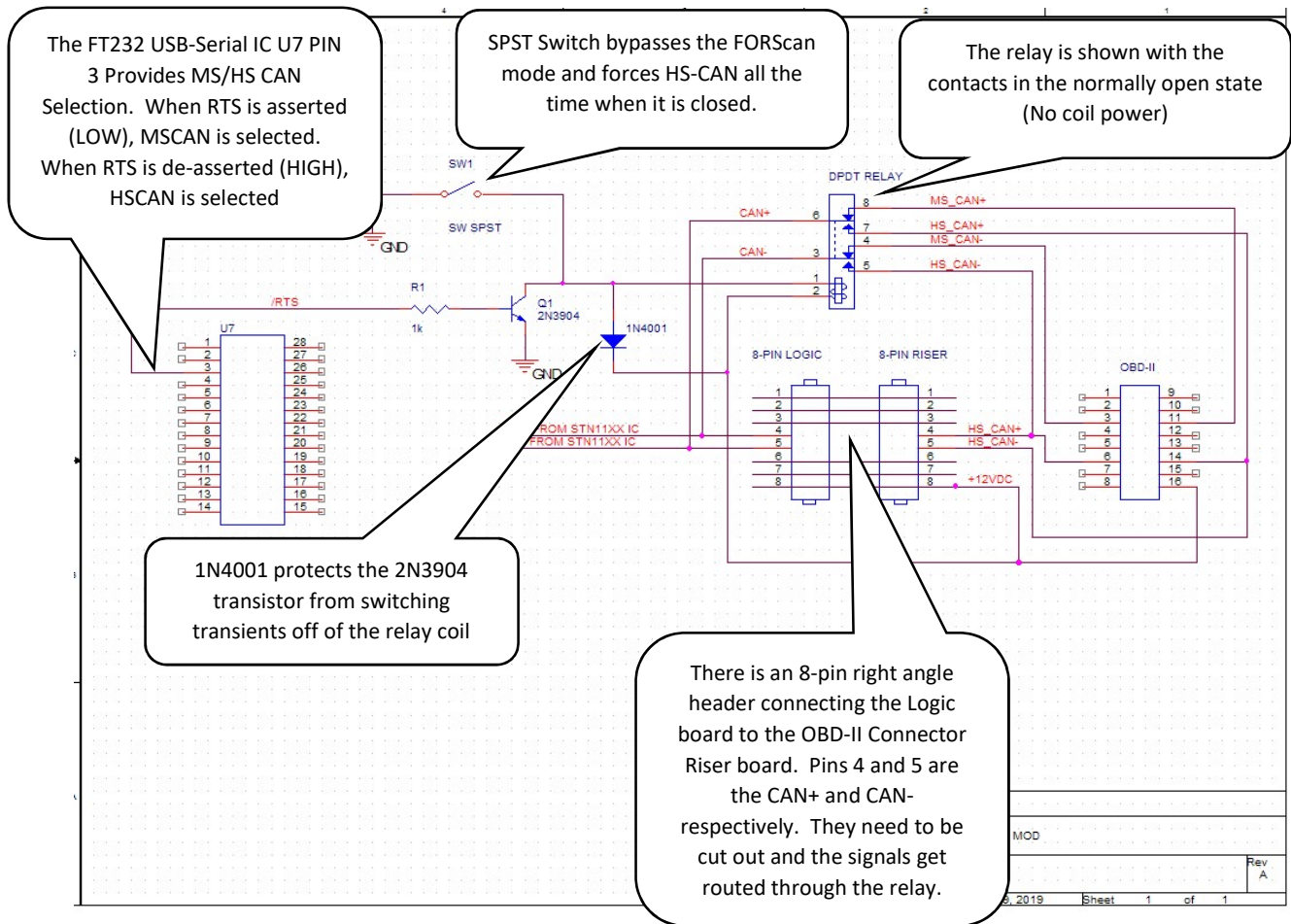
This procedure requires the following:

1. Soldering iron, solder, solder wick
2. Fine gauge wire strippers
3. Electrical tape or heat shrink
4. Small side angle wire cutters to cut pins on a 2.54mm header
5. Insulated fine gauge wire (Wire wrapping ~30Ga is ideal, multiple colors is helpful)
6. 2N3904 Transistor
7. 1k-ohm Resistor
8. 1N4001 Diode
9. DPDT Relay with 12V Coil, small enough to fit inside of adapter housing. I used an Omron G6S-2G because I had several left over from other projects.
10. Optional SPST Switch of your preference: After the modification the adapter will default to MS-CAN when using generic OBD Scan tools. The switch forces HSCAN operation for use with GM, etc.

Schematic Modifications:



Schematic Modifications with explanations:



Some of the terms used here:

NO= Normally Open

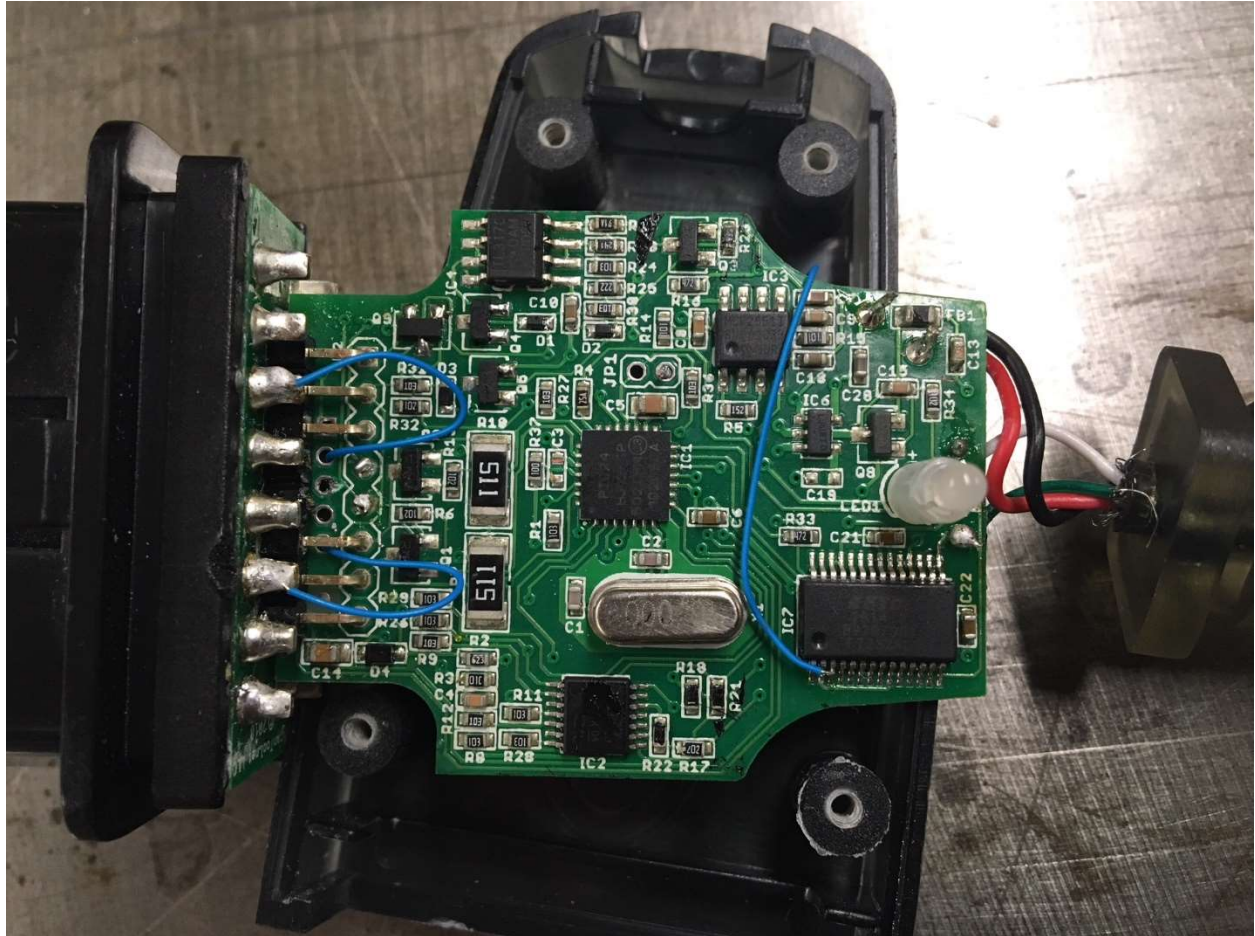
C=Common

NC=Normally Closed

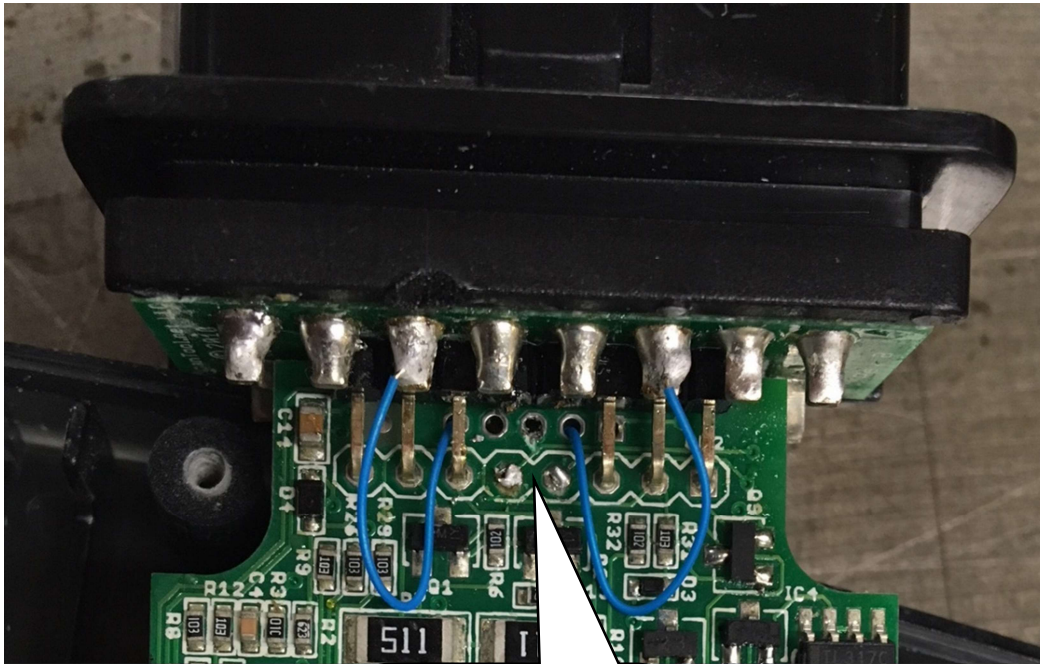
CAN+ = CAN-H or CAN HIGH

CAN- = CAN-L or CAN LOW

Step 1. Remove four Philips-head screws from enclosure and expose PCB with OBDII connector.



Step 2: An 8-pin right angle connector is used to interface the OBD-II adapter logic to the connector riser. The center two pins are the HS-CAN connections and need to be cut and removed as shown below.

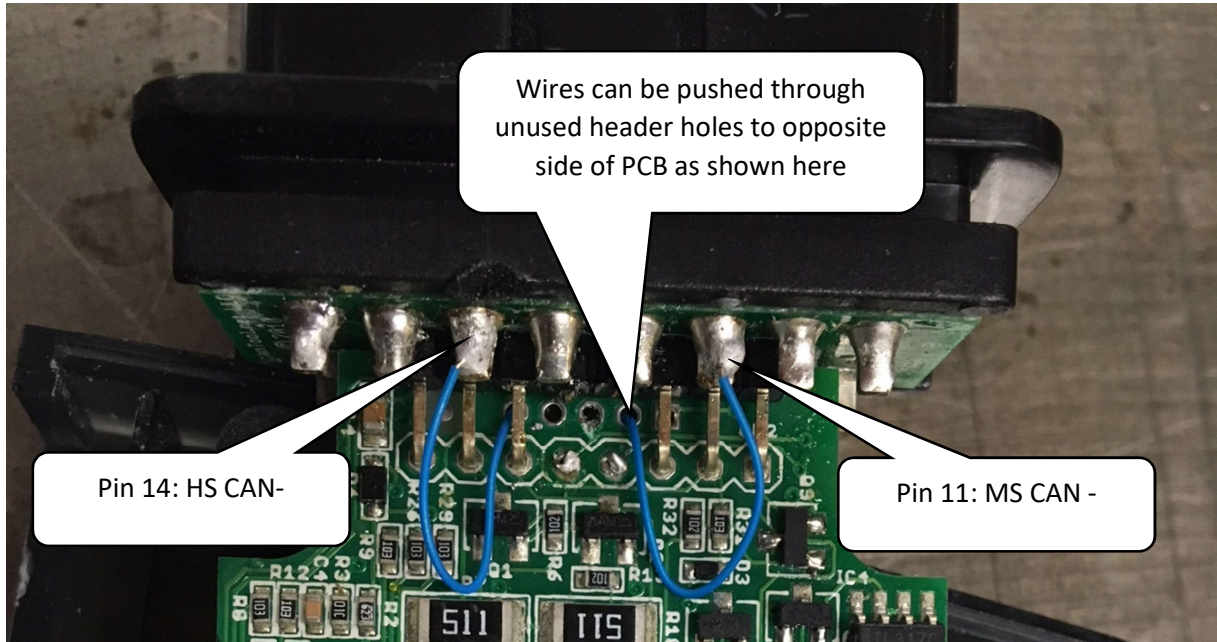


These two center pins are cut away to sever the HS-CAN connection pair

Step 3a:

Solder wires to the MS CAN and HS CAN terminals of the OBD-II connector

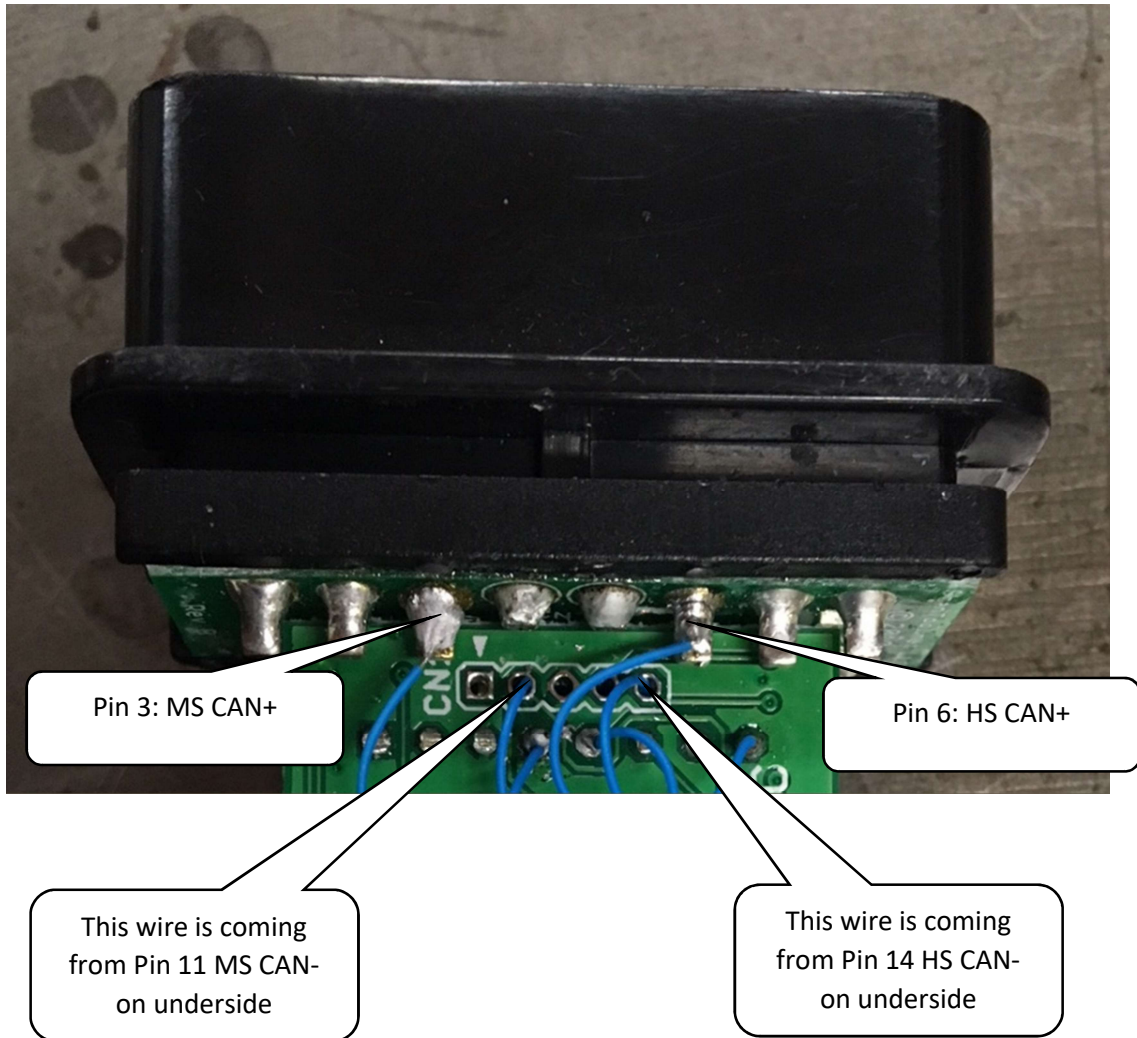
First, Pins 11 and 14



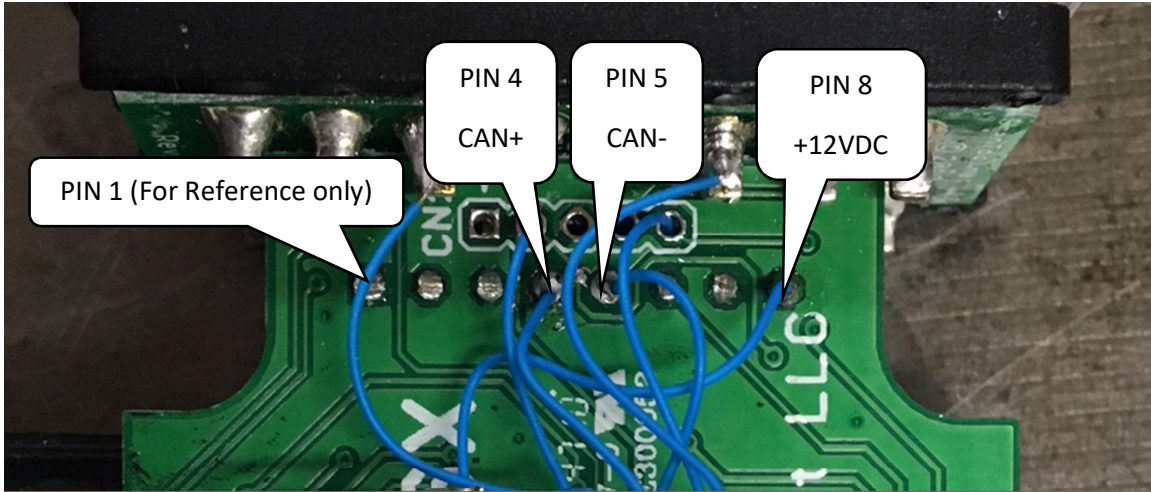
Conveniently, these wires can be routed to the opposite side of the PCB through the holes of an unused header as shown.

Step 3b:

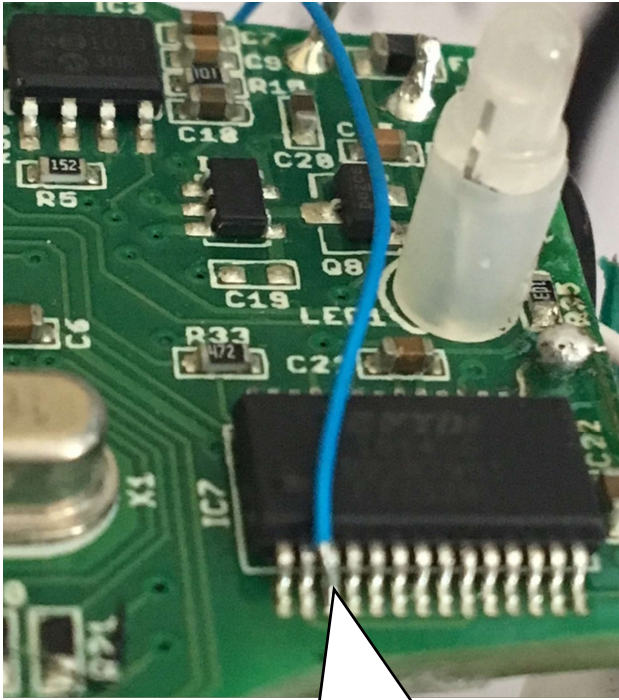
Flip PCB over and solder two more wires to the MS CAN+ and HS CAN+ terminals of the OBD-II connector



Step 4: Solder three additional wires to pins 4,5,and 8 of the OBD Riser board header. These are Logic board CAN+ and CAN- lines, and +12VDC



Step 5: Attach a wire to the RTS line of the FT232 IC. The signal is on PIN3 of IC7. The wire needs to be long enough to wrap around the other side of the PCB.

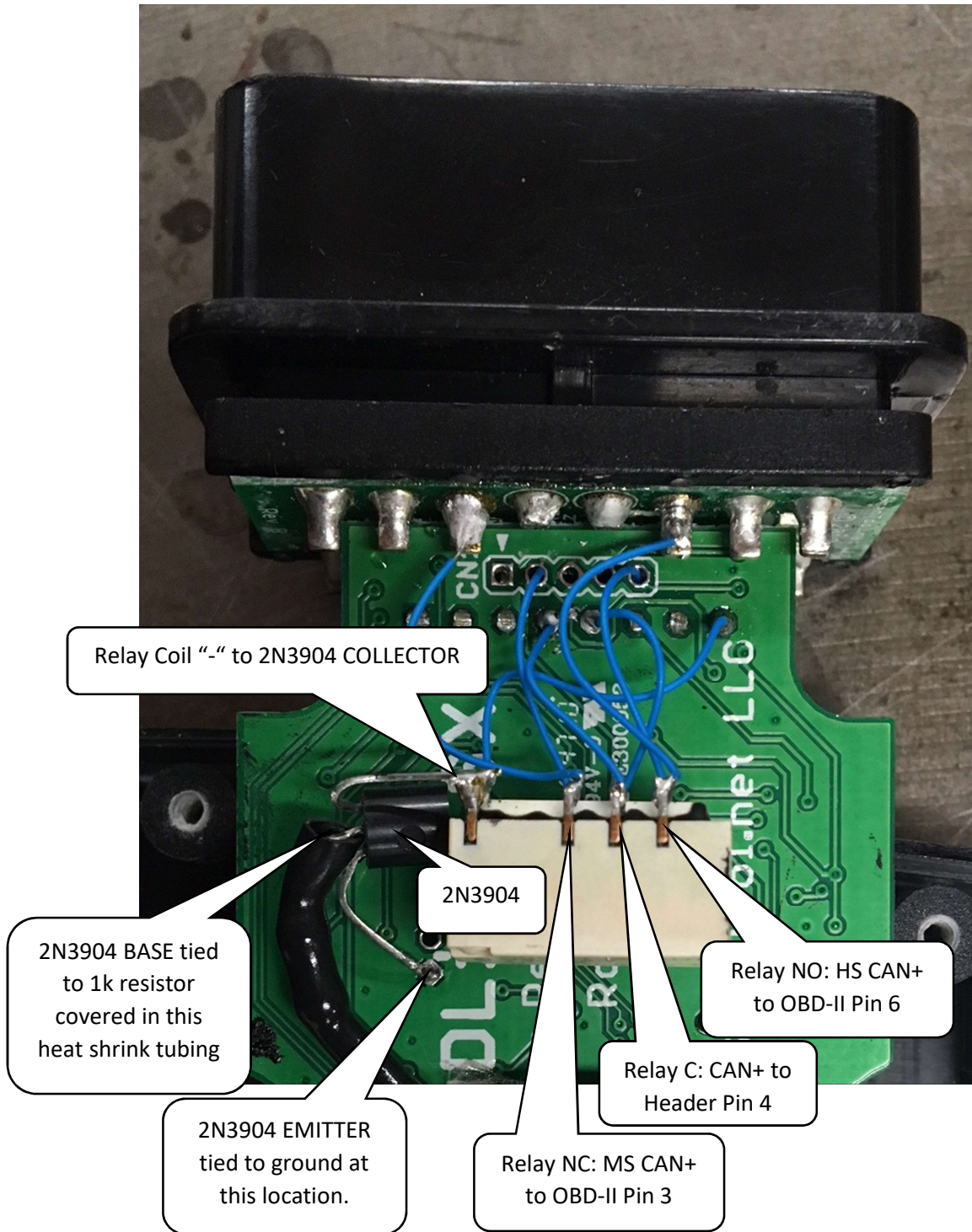


Pin 3: RTS Handshake line

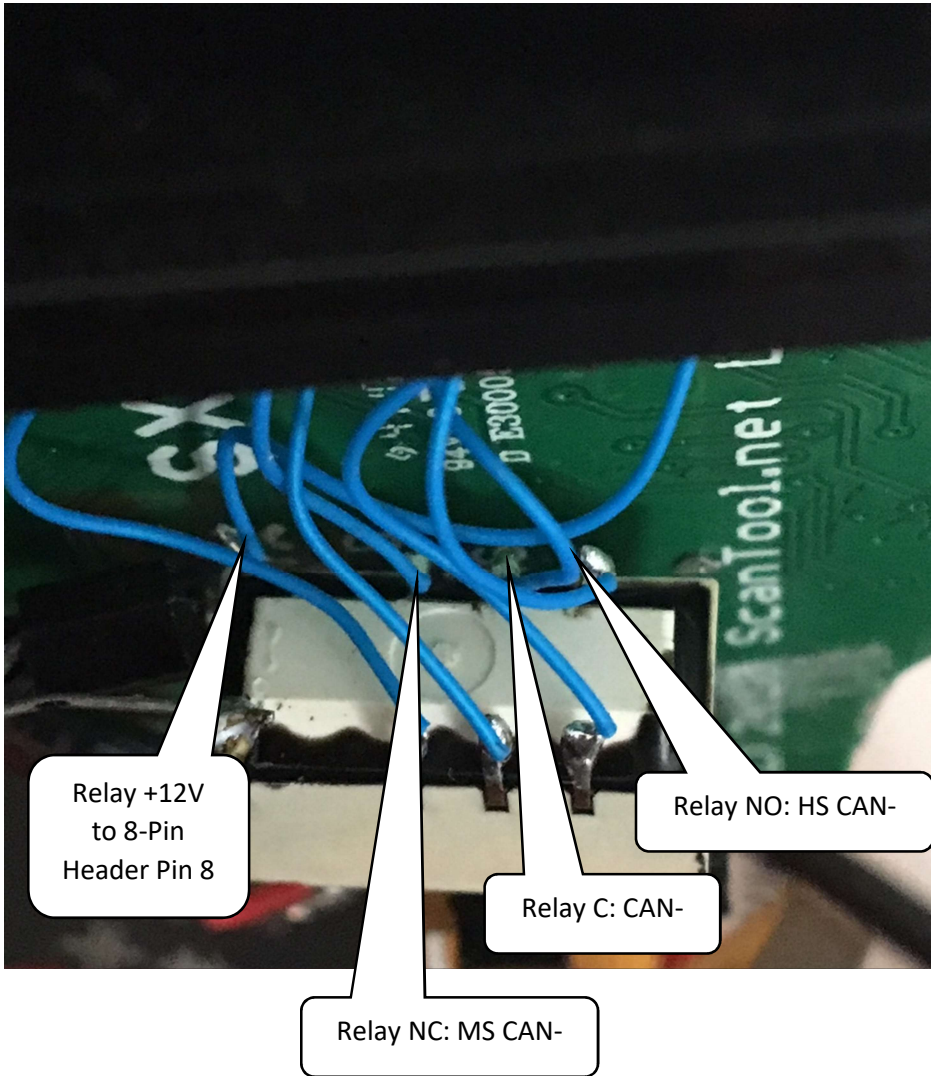
Step 6: Wire up relay contacts to CAN+/-, HS CAN+/-, MS CAN+/-

There is more room to fit the relay on the side without the SMT components.

IMPORTANT: For proper operation with Forscan, the MS CAN bus must be tied to the NORMALLY CLOSED contacts of the relay.



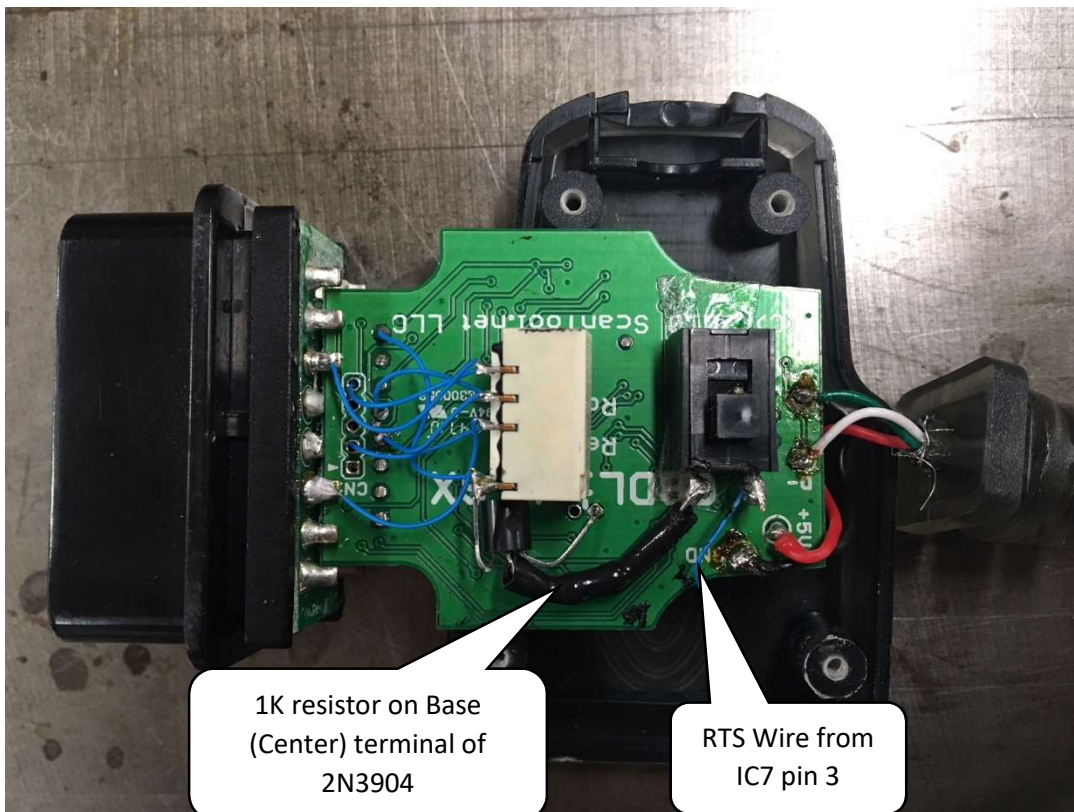
Step 6: (Continued) The CAN- connections to the relay are shown below



Step 7: Install switch (Optional), Or connect 1K resistor directly to the RTS Wire of Step 5

There are a few options:

1. In the photo below, when the switch is open it forces MS-CAN operation as it keeps the relay from operating. When it is closed it is in AUTO operation for FORScan. This is useful if you are using the adapter for other MS-CAN work that requires manual control, like FoCCcus.
2. The SPST switch can be wired across the Collector and Emitter of the 2N3904 transistor. When the switch is closed it forces HS-CAN operation. When it is open it is in AUTO operation for FORScan. This is useful if you use the adapter with other diagnostic tools on your PC.
3. Wire the RTS handshake line directly to the 1k resistor. The adapter is now only compatible with FORScan.



Step 8: Change the FORScan configuration

