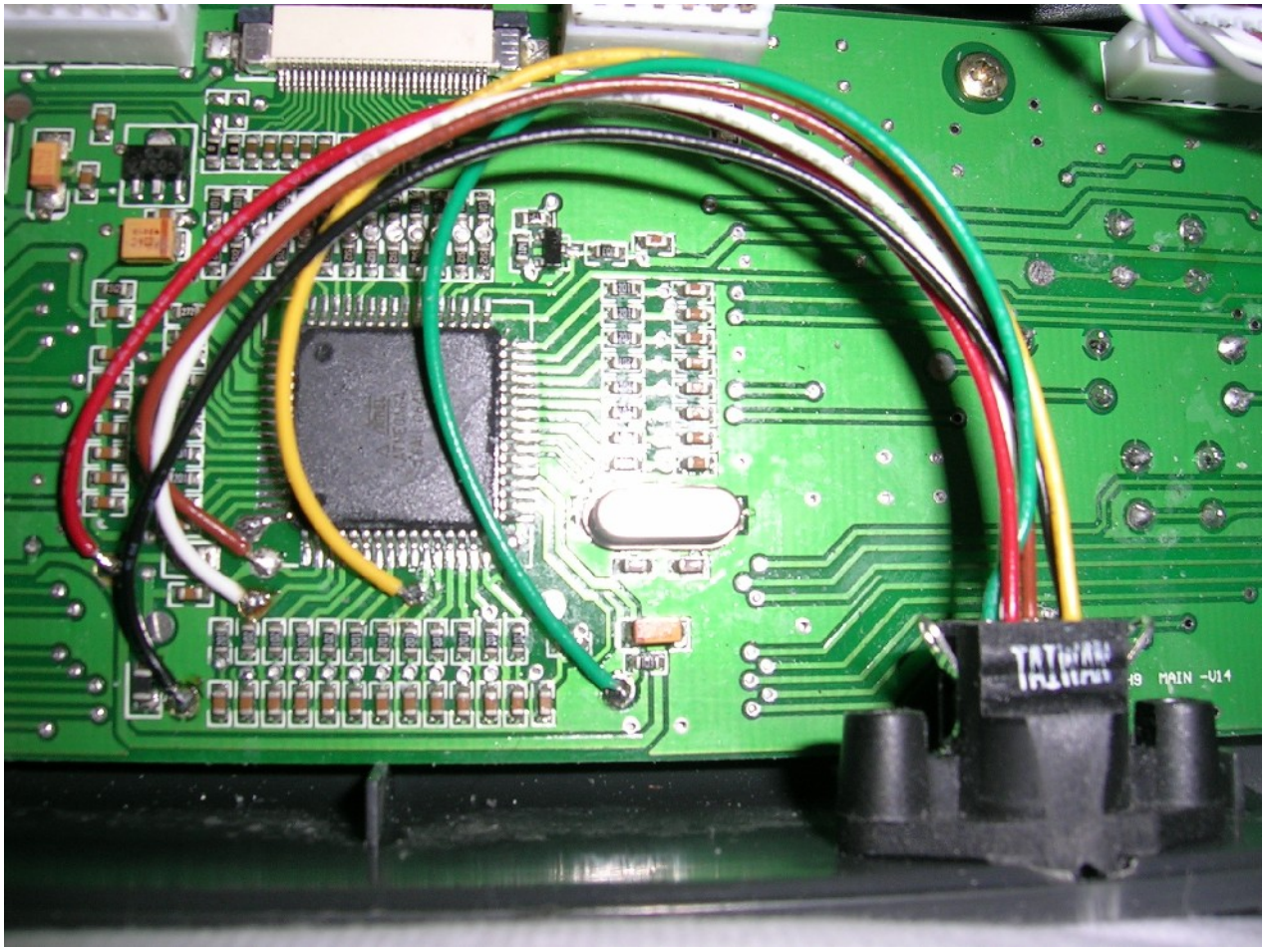
Alternate Hookup for Flashing the 9x Transmitter

The guide that I wrote has the most straightforward connection between the programmer and the 9x that I could come up with. The color coding makes things easy to hook up, with little chance of getting the wiring wrong if you hook up to the right pads on the 9x. The only problem with it is getting access to the programming connector from the outside requires making a pretty large hole in the bottom of the case of the transmitter. It is difficult to make it neat and pretty. In addition, the 4x2 connector is not particularly cheap. The following method is pretty easy, and is neat and clean as the pictures show. It requires you to fabricate a custom cord between your programmer and the connector on the bottom of the 9x, which requires you to use a volt-ohm meter to figure out the hookup. This guide assumes you have read and understand the main guide on flashing the 9x. This guide only covers the mechanical differences in hookup.

Here's a couple of pictures to get your interest.

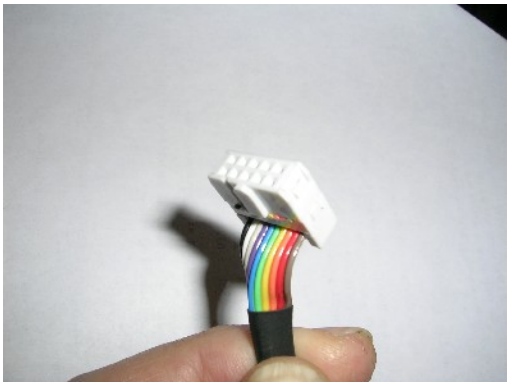


Hardware

You will need the following items from DigiKey:

Mini DIN Receptacle, 6 pin; CP-2960-ND:
http://search.digikey.com/scripts/DkSearch/dksus.dll?WT.z_header=search_go&lang=en&site=us&keywords=CP-2960-ND&x=0&y=0

5x2 Socket Assembly with polarizing key and strain relief; H1DXH-1036M-ND
http://search.digikey.com/scripts/DkSearch/dksus.dll?vendor=0&keywords=H1DXH-1036M-ND
It will look something like this when you get it, only it will have a 36” long piece of multicolor ribbon cable on it.



Keyboard Extension Cable, PS/2
http://search.digikey.com/scripts/DkSearch/dksus.dll?
WT.z_header=search_go&lang=en&site=us&keywords=ae9876-nd&x=0&y=0

Heat shrink tubing of various sizes.

15-30 watt GROUNDED soldering pencil iron.

Rosin core solder.

Various drill bits, small sheet metal screws, small side cutters, wire strippers, etc.

Optional:
Spare Connector with strain relief for ribbon cable in case you screw something up!; HKR10H-ND:
http://search.digikey.com/scripts/DkSearch/dksus.dll?
WT.z_header=search_go&lang=en&site=us&keywords=hkr10h-nd&x=0&y=0

Installation

As you can see, this uses a nice 6 pin mini-DIN connector to use on the 9x. You use the 5x2 cable assembly, along with a section of the PS/2 keyboard extension cable to make an adapter cable from your programmer to the mini-DIN connector on the 9x. The good news is that the min-DIN connector already has the wires you need to solder to the mainboard on the 9x. The bad news is that the PS/2 extension cables, do NOT use the same color code, hence the need for a volt-ohm meter to figure out the right connections.

Plug in your soldering iron, and let it get hot.

The first step in this case is to make the adapter cable between the programmer and the mini-DIN connector. Do NOT solder the mini-DIN connector in the 9x yet! Using your side cutters, cut off one end of the PS/2 cable, about 6-8" from the end. Carefully strip the outer insulation off the cable about 1 " from the end of the cable. Note that there will be an uninsulated ground wire along with the colored wires inside the cable. You don't need it, so cut it off close to where the wires come out of the cable. Strip each wire about 1/8" from the end.

Now plug the cable you just prepared into the min-DIN socket assembly. You are now going to check continuity on each wire end to end to figure out what color wire on the mini-DIN connector matches what color wire on the cable. Write this down as you will need it in a couple of minutes. You notes should look something like this:

Mini-DIN	**Cable**
Black	Red
Yellow	Yellow
Red	Green
White	Brown
Brown	Black
Green	Orange

Please note that the above is ONLY an example. Yours may, and probably will be different, especially if you got your cable from a source other than DigiKey. Check and recheck your setup carefully.

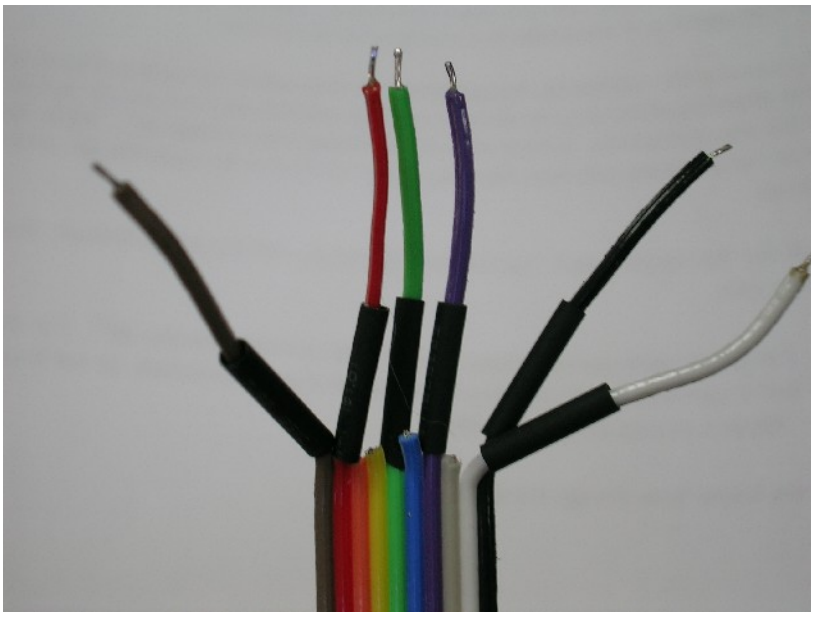
Now take your 5x2 connector assembly with the colored ribbon cable. We are going to match the colors between the mini-DIN cable and the ribbon cable as best we can. Given that, add another column to your color code notes as above:

Mini-DIN	**PS/2Cable**	**5x2 Ribbon Cable assembly**
Black	Red	Black
Yellow	Yellow	Purple
Red	Green	Red
White	Brown	White
Brown	Black	Brown
Green	Orange	Green

Note that all of the colors in the first column align with the last column, except for purple. So now you

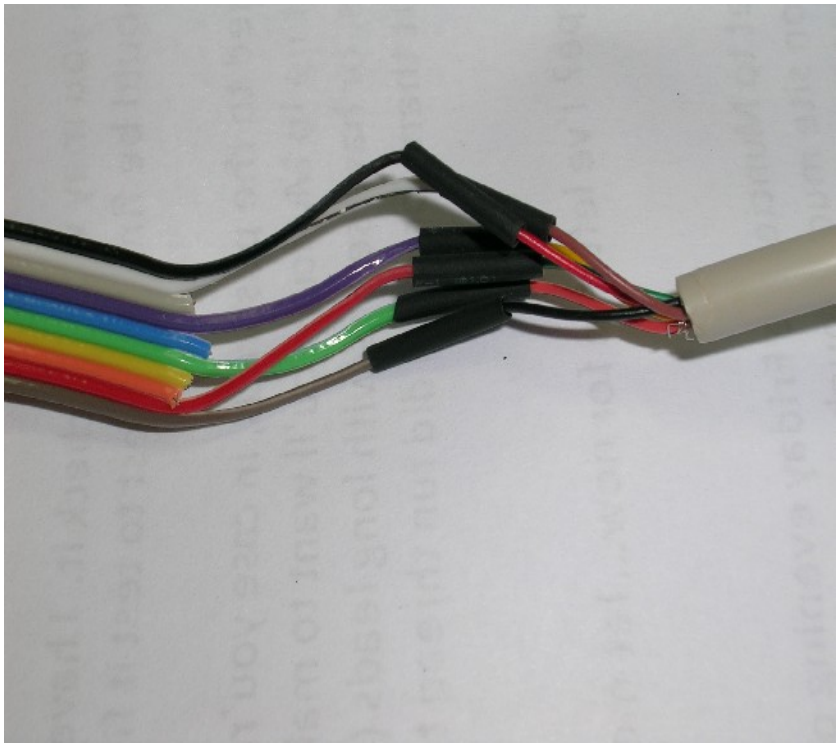
will solder Red on the PS/2 cable to Black on the Ribbon cable, Yellow to Purple, Green to Red, etc. Again, check your own cables!

Cut the ribbon cable about 6” from the end of the cable. Carefully separate each of the wires in the ribbon to about 1” from the end. You won't need any colors except the ones above in the last column, so cut off the rest of them back to the separation point. Strip each wire about 1/8”. Tin each of the wires on the ribbon cable and the PS/2 cable. Cut 6, 1/2” pieces of small heatshrink tubing and push one piece over each of the wires you separated on the ribbon cable back to the separation point.

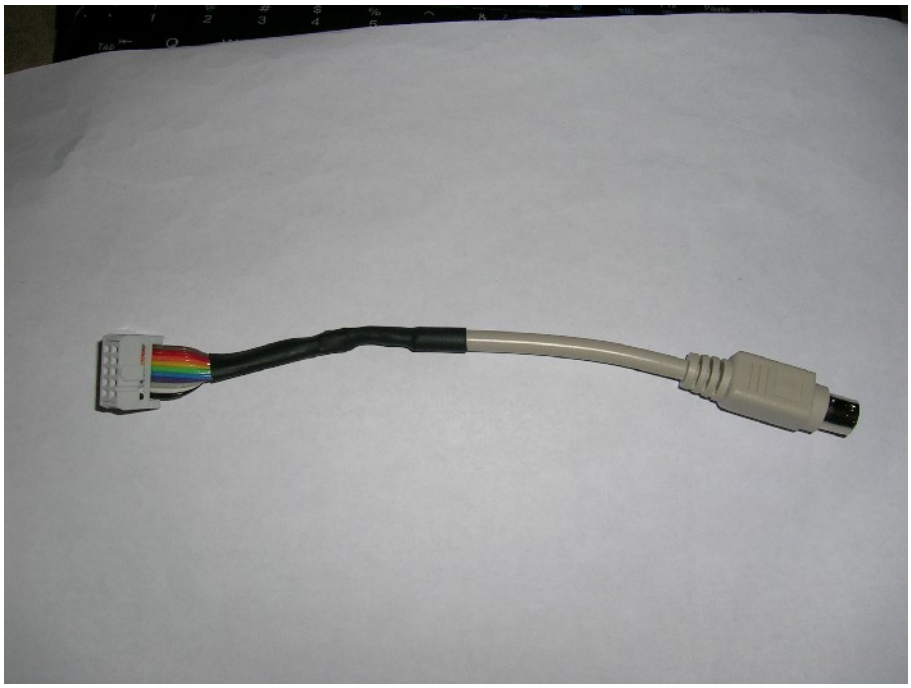


You can also tin the ends on the mini-DIN cable while you are at it, but you won't be soldering anything to it at the moment. Cut a 3” piece of 3/8” heat shrink tubing, and push it over the PS/2 cable end.

Now solder each of the wires in column two to those in column three. Check each wire to wire connection against the color codes above carefully. After you are SURE you connected the correct wires, push the small heat shrink over each solder joint.



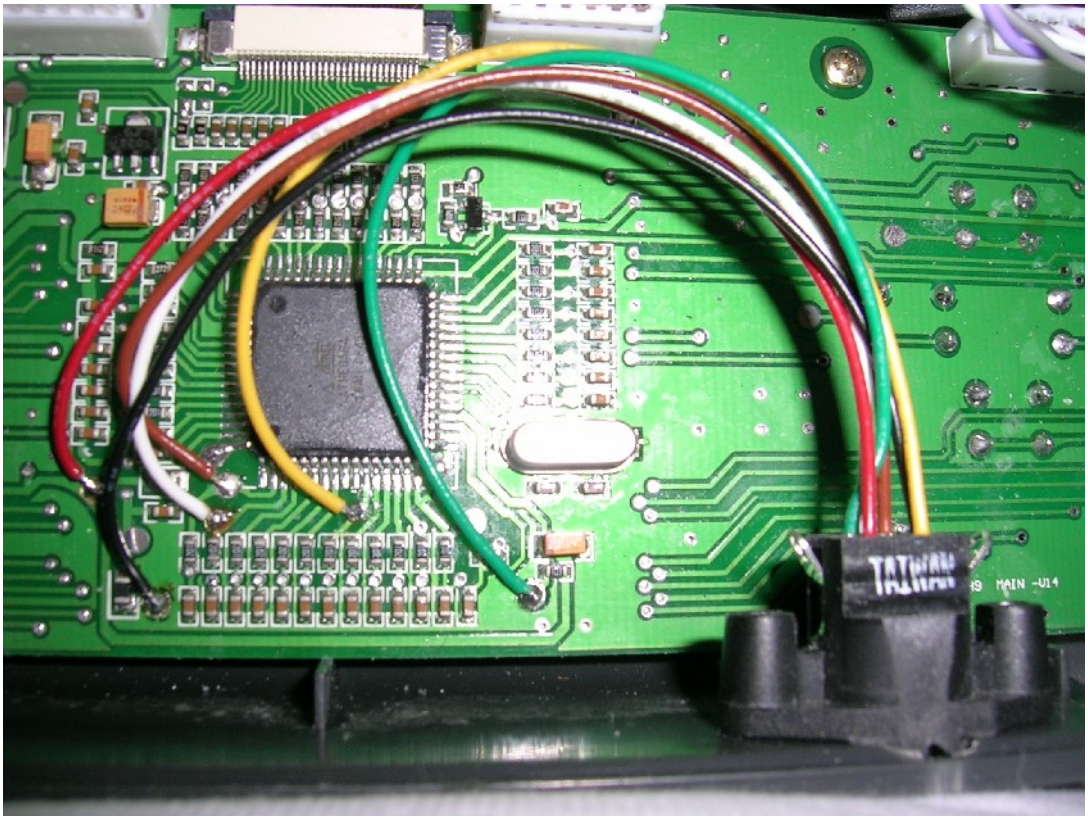
Use a heat gun and shrink the tubing, making sure each solder joint is completely insulated. Now push the 3/8” heat shrink over the whole joint, and shrink it down. You should end up with a cable looking like this:



Now, you are ready to mount the PS/2 cable assembly in your 9x. This is a case of measure twice and cut once. I made a small mistake on mine, and mounted the connector assembly too close to the opening on the back. I should have mounted it as close to the circuit board as I could to keep it from interfering with the battery compartment. As it is, I had to slightly shave both the connector and the compartment to clear.

After measuring twice to ensure everything will clear, drill a hole in the bottom of the case, starting with about a 1/8" bit, and enlarging until the barrel of the connector on the cable will clear it and go into the connector held in place in the case. Once you have done that, drill two smaller holes and use small sheet metal screws to hold it in place.

Refer to the soldering guide in my main flashing document on where to solder the various wires. The ONLY difference in colors is replacing the purple wire in the original guide, with the yellow wire from the mini-DIN connector.



Hook everything up, and test it out, as I explain in my main guide.