How to Add a Drive Select Switch

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Rick Shear

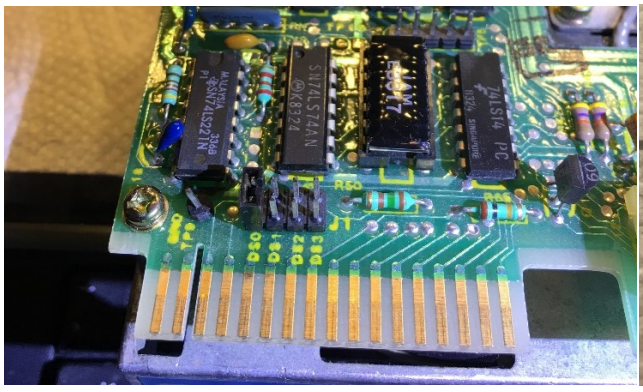
Before I get started, let me preface this by stating that while the methods outlined below worked for me with my skill set, I am in no way responsible for any problems, or damage you do to your equipment should it become damaged attempting these modifications. Perform these at your own risk.

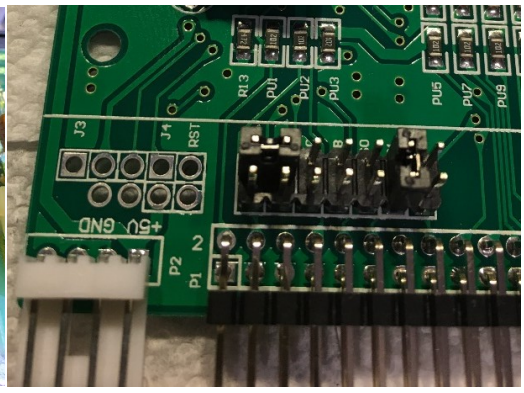
I've been asked several times to describe the process in which I have added drive select switches to my TRS-80 Model III and IV. Drive select switches can be useful to allow you to select which drive you want to boot from by mechanically changing the drive zero select from one drive to another.

The original floppy drives and floppy ribbon cable will not work without modifications. The reason for this is that the original drives had all the drive selects tied together and the cables had the drive select pins removed for all but the drive that was to be operated in each cable connector location.

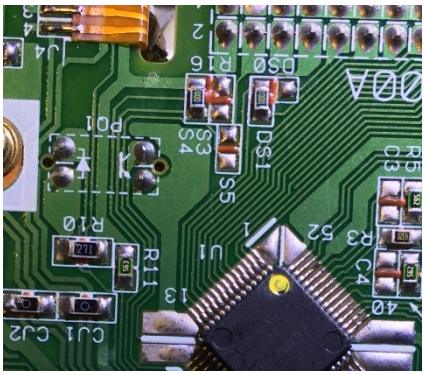
In order to do this modification, you must perform a few steps to update your machine. First, you must either modify or replace the original floppy drive ribbon cable that was in the machine with the proper connectors for the drives you wish to use. These connectors must have all the pins in each connector. Second, if you want to use an original disk drive, you will have to cut traces on its PCB to separate the drive select signals. I personally wanted to utilize two half height devices, so I didn't use the original drives and the process for modifying those is not included in this document.

This process is easiest when done using 5 ¼" floppy drives or a floppy drive emulator such as a Gotek device. These devices will have drive select jumpers in the standard .1" spacing as shown below.





3 ½" devices may have drive select jumpers, but if they do often they are not .1" spaced and can be more complicated to use. On my Model IV, I modified the drive I had by removing a hard wired surface mount jumper and adding pin headers for connection. If you are handy with a soldering iron, and want to attempt this, make sure your 3 ½" drive has provision for changing the drive select and wire it up your best way.



Notice the silkscreened "DS0" and "DS1". This is and example of a 3 ½" floppy drive select. In this example, there is a jumper (000 Ohm resistor) connecting the common pad with the DS1 pad. To change this drive to DS0, the zero ohm resistor would have to be located horizontally connecting the corner common pad with the upper right DS0 pad. In my modifications, this is done with a DPDT switch.

With my machines, I had two methods of thought. On my model 3, I had a floppy emulator (Gotek), and a 5 ¼" Double sided drive I wanted to toggle between drive :0 and drive :1. Sometimes I would want to boot from floppy, sometimes from the Gotek. In this instance, I wanted the switch to set the Gotek to drive :0 and the 5 ¼" to drive :1 in one position and reverse them in the other. On my model 4, I wanted my drive :1 to be 3 ½" all the time, however, I wanted to be able to toggle my boot drive between another 3 ½" or a 5 ¼". When setup like this, one of the drives is not used when the other is.

Method 1: - Both drives are in use, toggle drive zero position.

1. Remove all drive select jumpers from the drives, because the switch will be performing the drive selection
2. Gather 1Pc DPDT toggle or rocker switch (DO NOT GET A CENTER OFF SWITCH), 6 Pieces Dupont wires approximately 12" long with female connectors on at least 1 end.
3. Snip the connectors off one end of the Dupont wires making sure to keep the end with the female connectors.
4. Strip & Tin the end of the wires. (Figure 1)
5. Solder wires to the switch. The common wire will go to the center, DS0 for one drive will be at the bottom and DS1 at the top positions for one of the drives and this is reversed on the other. This will connect the common of one drive to DS0 while the other drives common is connected to DS1 and reverse that when the switch is in the other position. (Figure 2) If you get a DPDT switch, you will not have the third row of contacts, I had a triple pole double throw switch handy at the time so that was what I used.
6. I then connected the other end of the wires to my 5 ¼" and Gotek drives. The wiring as done on that switch, shows the green wire as the common for the 5 ¼" drive and the black as the common for the Gotek. The orange is DS0 and the Yellow DS1 for my 5 ¼" (Figure 4), the Brown was DS0 for my Gotek and the Red was DS1 (Figure 5).

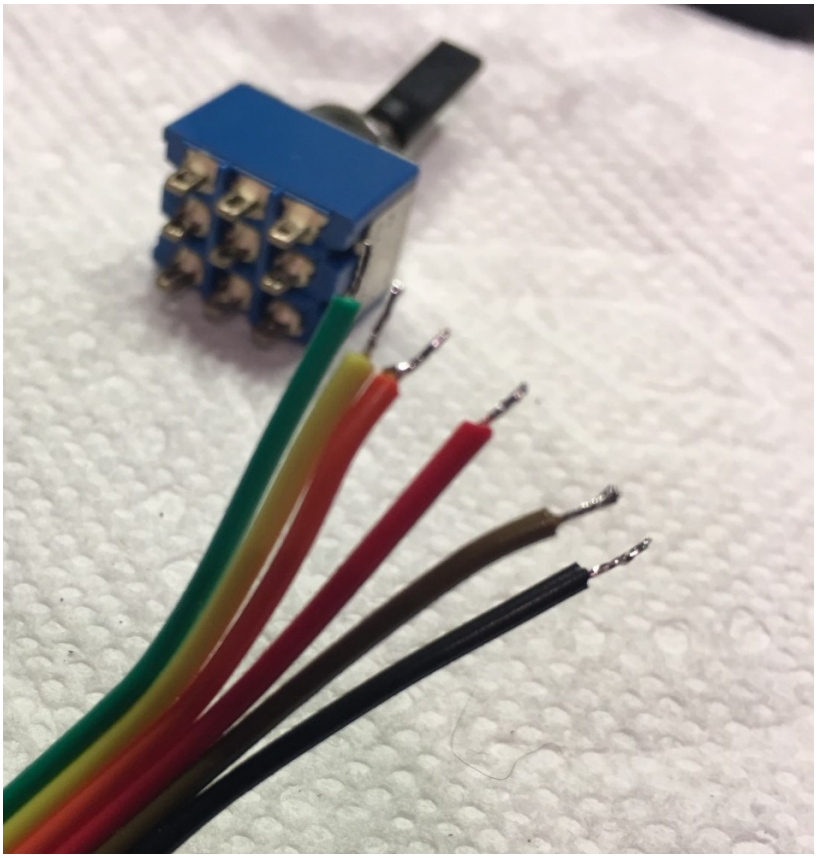


Figure 1 - Wires stripped and tinned

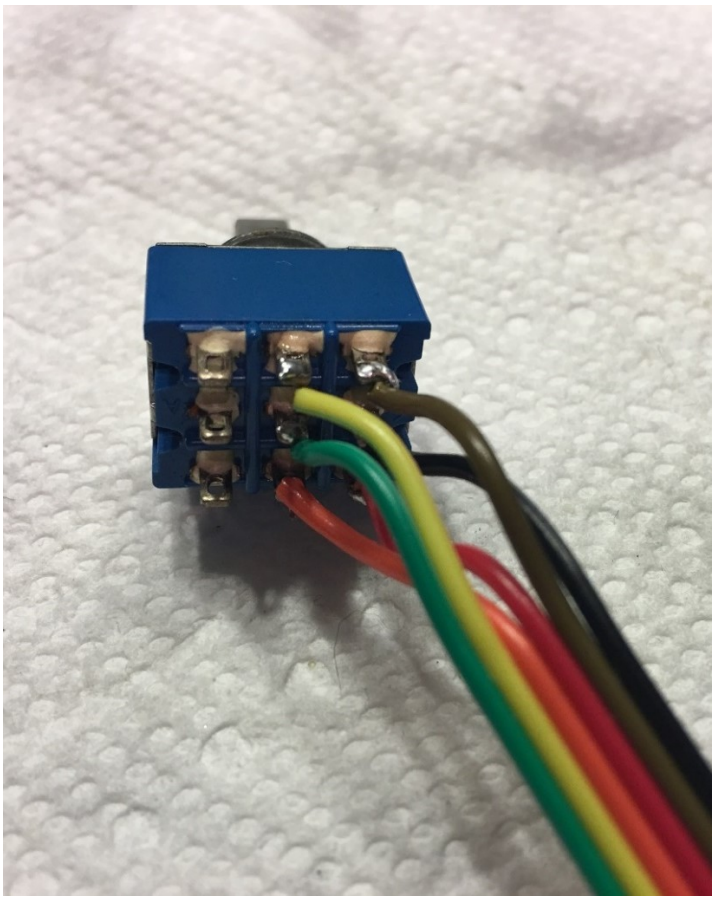


Figure 2 - Connections to Switch

Figure 3 - 5 1/4" connections

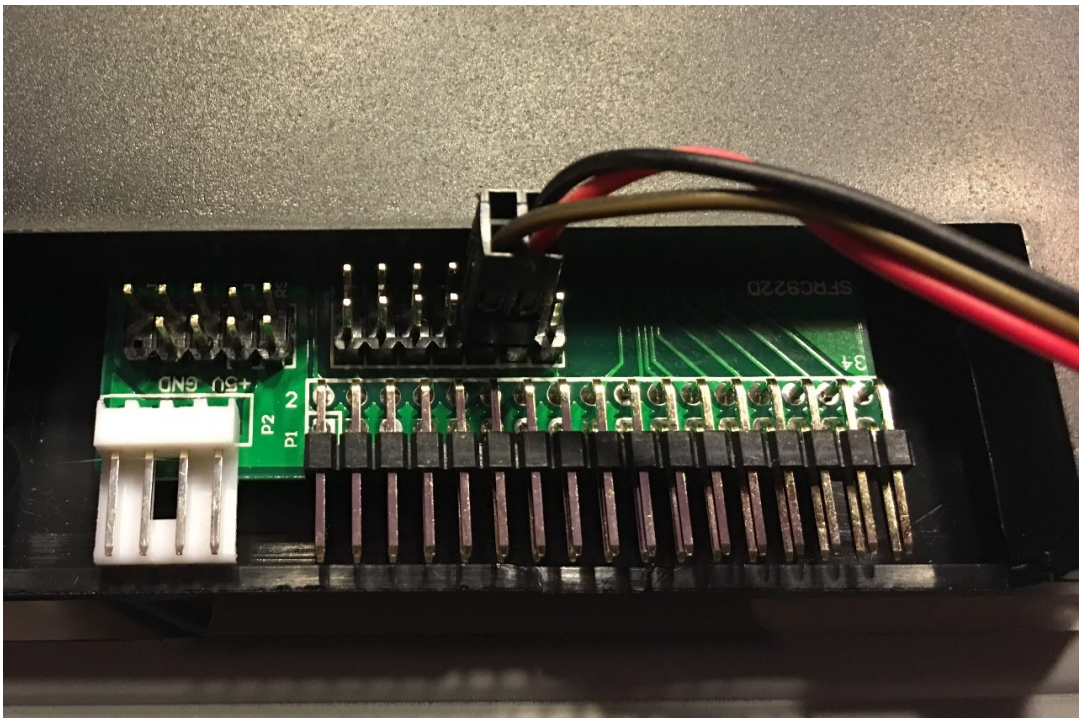


Figure 4 - Gotek Connections

Once all those connections are made, it's just a matter of connecting your new/modified ribbon cable to the drives and power. You may need to purchase a power "Y" cable to get the power to both drives. Once complete, if the switch is in one position, you should be able to boot from one drive and in the other position, you should be able to boot from the other.

Method 2 is the same as with method 1 with one exception: The DS1 line is not connected to either drive. Just the common and the DS0 line. This effectively disconnects one drive from the cable while the other is connected as DS0. This allows for DS1 to be set to another drive that isn't switched.