
Double Your Memory!

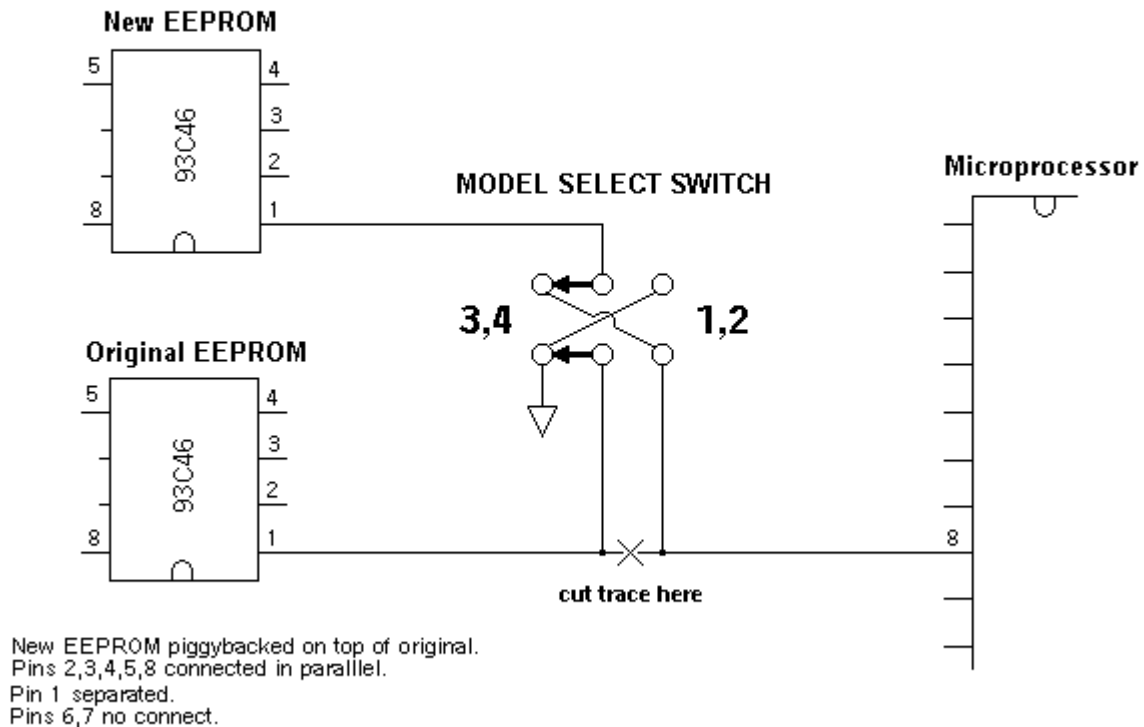
The Flash series radios are so-called because they store model settings in a 93C46 "Flash" EEPROM (Electrically Erasable Programmable Read Only Memory) which has 64 Bytes of storage capacity. I wired another EEPROM chip on top of the original one. This new chip provides storage for two extra model memories.

The microprocessor generates a 'Chip Select' signal, which needs to be routed to the CS input (pin 1) of the selected EEPROM. The other EEPROM must have its CS input tied to ground. A DPDT slide switch does the routing. Power and data in/out signals are commoned to both chips (note that pins 6 and 7 are not used).

Flash4 Extra Model Memory

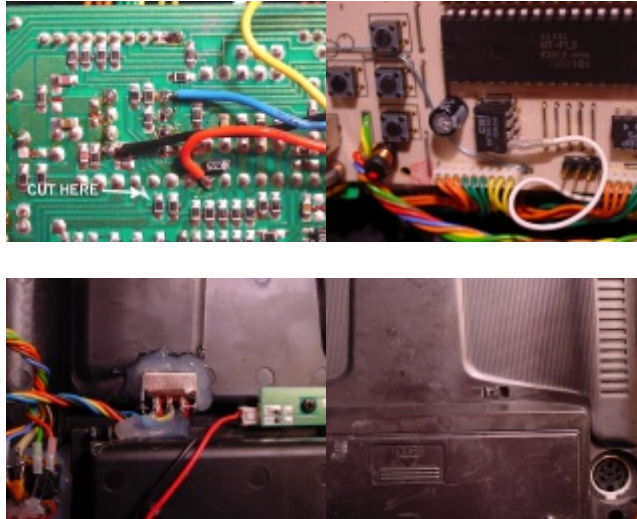
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Installing the Memory Doubler

Cut the PCB trace between the EEPROM and MPU at the point shown. Remove the LCD display from the front of the PCB. You should see the EEPROM chip next to the MPU (marked '93C46'). Now take your new EEPROM chip and bend out pin 1, so that it is horizontal. Solder pins 2,3,4,5 and 8 onto the same pins of the existing 93C46. Solder a wire onto pin 1 of your new chip, long enough to reach the slide switch. Now wire the switch according to the circuit diagram. Mount the switch in a convenient location, where it is accessible but cannot be accidentally operated. To prevent RF pickup from the antenna, twist the wires going to the switch. Try to minimise wire length, and keep the wiring away from the antenna.



Initializing the New Memory

Before using the new model memories you need to clear the EEPROM and calibrate the sticks. You invoke Factory Setup Mode by turning on the radio while operating a hidden pushbutton switch. To access this switch you can either drill a hole in the front panel (just to the right of the DOWN/TIMER button), or short out the switch from the back of the PCB.



In Factory Setup Mode, menus are selected using the UP and DOWN/TIMER buttons. Pressing UP repeatedly will cycle through the following options:-

- LCD test:- shows that all elements of the LCD are working.

- CAR F1 on/off:- something to do with CAR mode? (I haven't figured this one out yet...)
- Stick Position Readout:- shows raw stick values, move stick around to check its operation.
- Stick Calibration - Center (NOR):- leave stick at center, press CUT/SAVE.
- Stick Calibration - Maximum (CVM):- move stick all the way right/up, press CUT/SAVE.
- Stick Calibration - Minimum:- move stick all the way left/down, press CUT/SAVE.
- Reset EEPROM:- press CUT/SAVE to save calibration and reset all user settings.

To calibrate the sticks, you select each channel using the left-hand horizontal trims (just like in user mode). Remember that in Factory Setup Mode, the radio is always in Mode 1 (throttle on the right). After setting the center, minimum and maximum points for each stick, you then do a Reset EEPROM to save the settings permanently. This will also clear all the user settings to their default values.

Failure to calibrate the sticks properly can cause some really wierd effects. After fiddling for some time trying to get it right, I found an easier way:- just go into Factory Setup Mode with the Model Select switch set for 1-2, then change to 3-4, and do a Reset EEPROM. This copies the original factory settings into the new chip!

NOTE: In normal operation, you must **NOT** operate the Model Select switch while the radio is on! (unless you really *want* to overwrite one model with another...). To avoid accidental switch operation, I cut my switch lever down flush with the case.

If you fly Mode 2, you will need to change to Mode 2 for each of your two new models, since Factory Reset always puts the radio into Mode 1. In case you have forgotten how to change stick mode, the procedure is as follows:-

1. Turn on the radio while holding DOWN/TIMER and CUT/SAVE.
2. Select your model (1 or 2), using CUT/SAVE. Turn the radio off
3. Turn on the radio while holding UP and DOWN/TIMER.
4. Cycle to the STK menu, select mode (1 or 2) using CUT/SAVE.
5. Cycle to the SAVE menu, press CUT/SAVE, then turn the radio off.

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