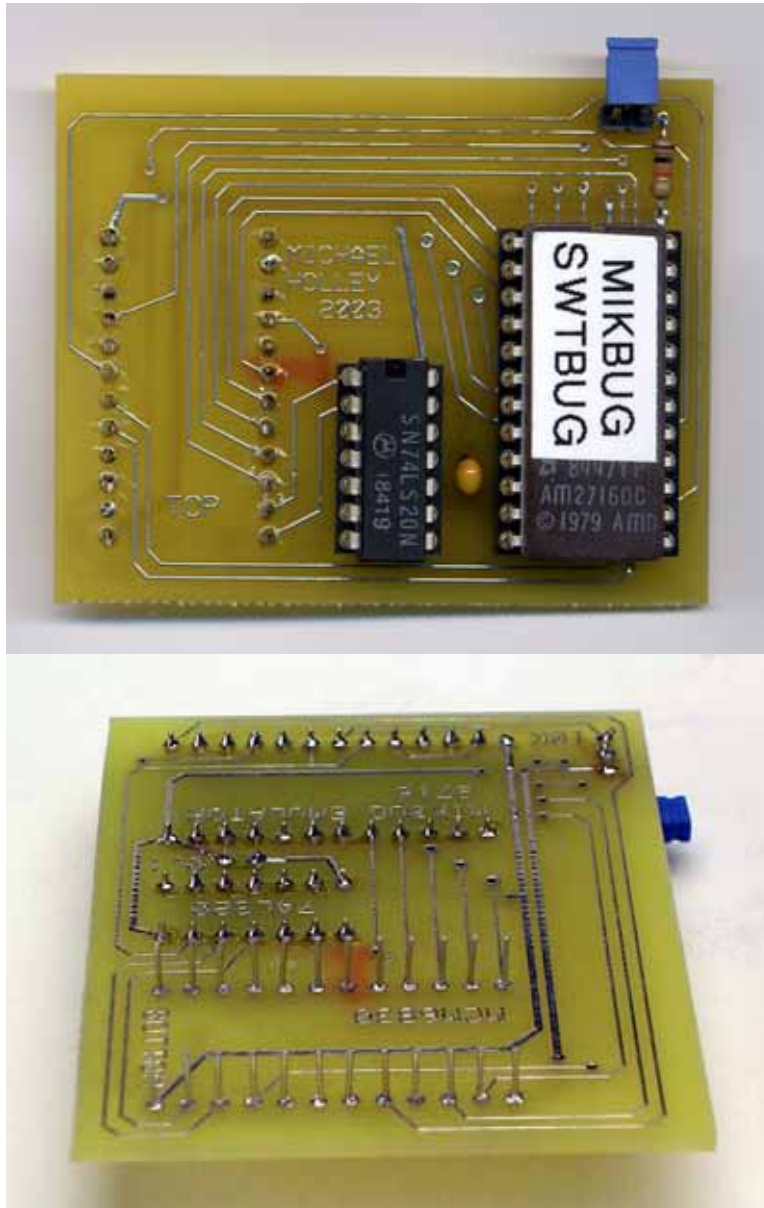


## MIKBUG ROM Emulator User's Guide

The MIKBUG ROM Emulator board replaces the MCM6830 ROM with a 2716 EPROM. This allows the MIKBUG ROM in a SWTPC 6800 Computer MP-A system board to be replaced with a different monitor such as SWTBUG. It is a 2.5" x 1.9" double sided plated thru hole circuit board containing the MCM6830 socket adapter, a 2716 EPROM and a 74LS20 AND gate.

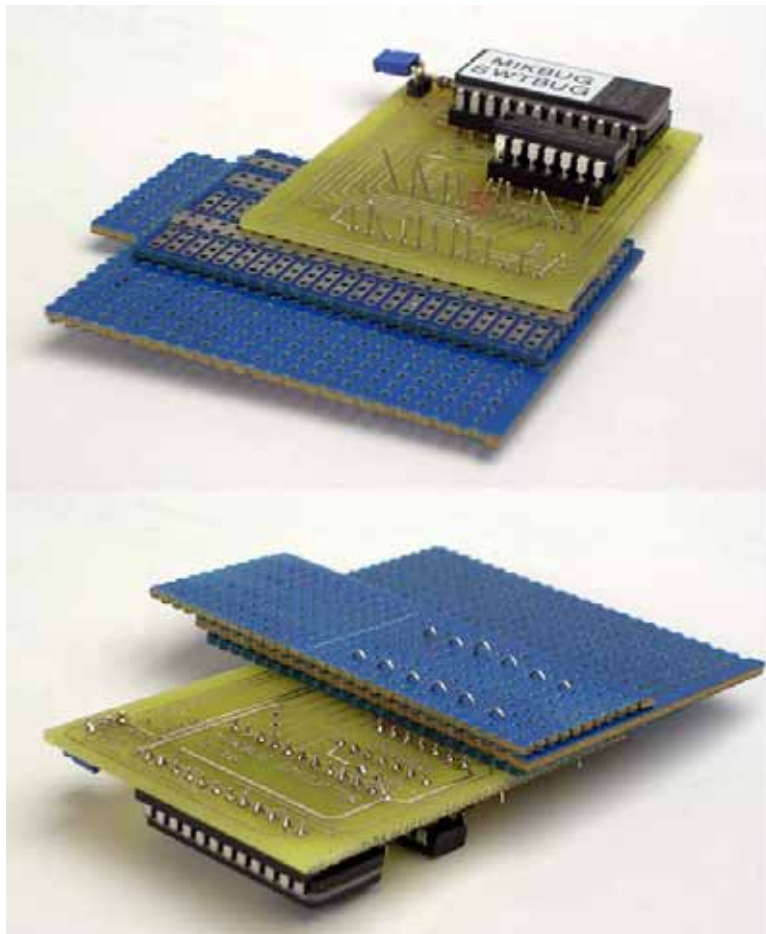
The 2716 EPROM holds 2048 bytes of data while the MP-A can only address 1024 bytes of data in the onboard ROM. Two different monitor programs can be stored in one EPROM and the desired monitor is selected with a jumper. (The jumper controls A10.) This allows both MIKBUG and SWTBUG to be stored in one 2716.



The MCM6830 socket adapter is made of 22-gauge wire instead of wire wrap pins. This prevents damage to the socket on the MP-A board and you can restore the system with the MIKBUG ROM later. Some capacitors have steel leads, these make excellent pins. (The leads can be picked up with a magnet.) You can still use the capacitor after you trim the leads.



Use three layers of perf board as a gauge for wire pin length. Take a one inch length of capacitor lead, bend it double, and insert it through the perf board.



After all the leads are inserted, solder them from the top. From the bottom cut the loop off and file the leads to length with the perf board still in place.

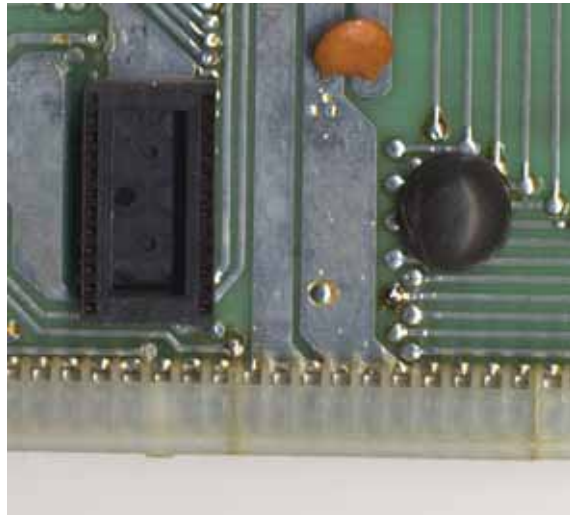


## Installation

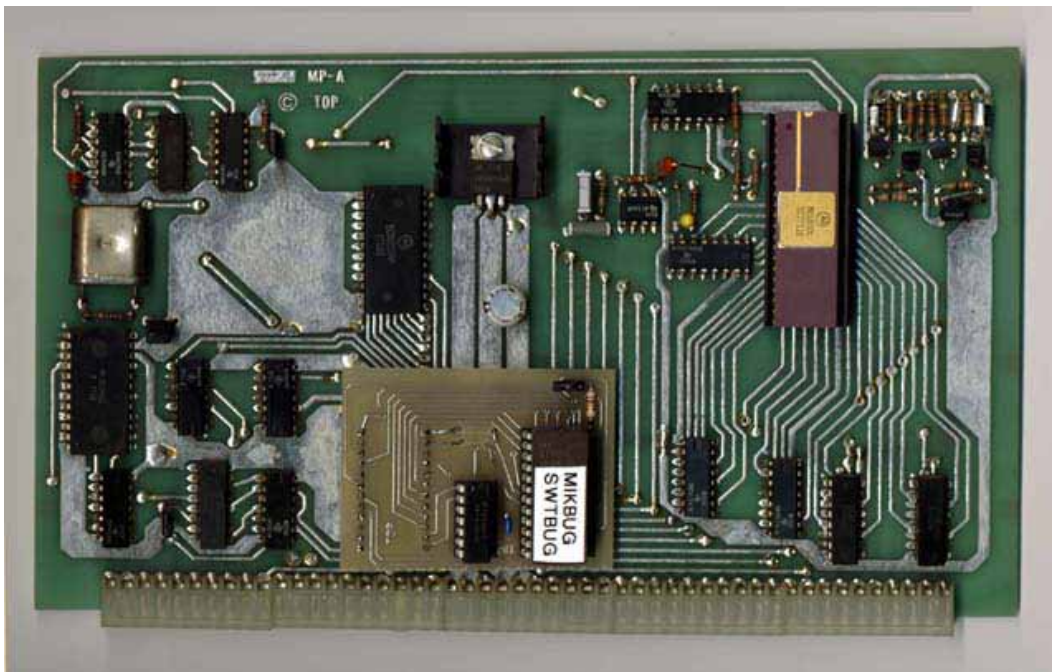
To use the SWTBUG portion of the EPROM you will need to modify your MP-A system board using the instructions in the SWTBUG Users Guide. This can be done now or you can test the ROM Emulator in MIKBUG mode first.

Test your existing system and make sure every thing is working correctly with your existing MIKBUG ROM.

Turn the power off and remove the MP-A system board. Carefully remove the MIKBUG ROM from the MP-A and place it in piece of anti-static foam. Carefully bend the disk capacitor next to the ROM socket so it will not interfere with the Emulator board. Place a rubber bumper about one inch to the right of the ROM socket. This bumper should be the same height as the ROM socket.



Remove the protective cover from the wire pins on the ROM Emulator board. Insert the board into the ROM socket. Make sure all of the wire pins go into the socket. For operation in MIKBUG mode place the jumper on both pins. Replace the MP-A board into you system and apply power. You should get a \* prompt.



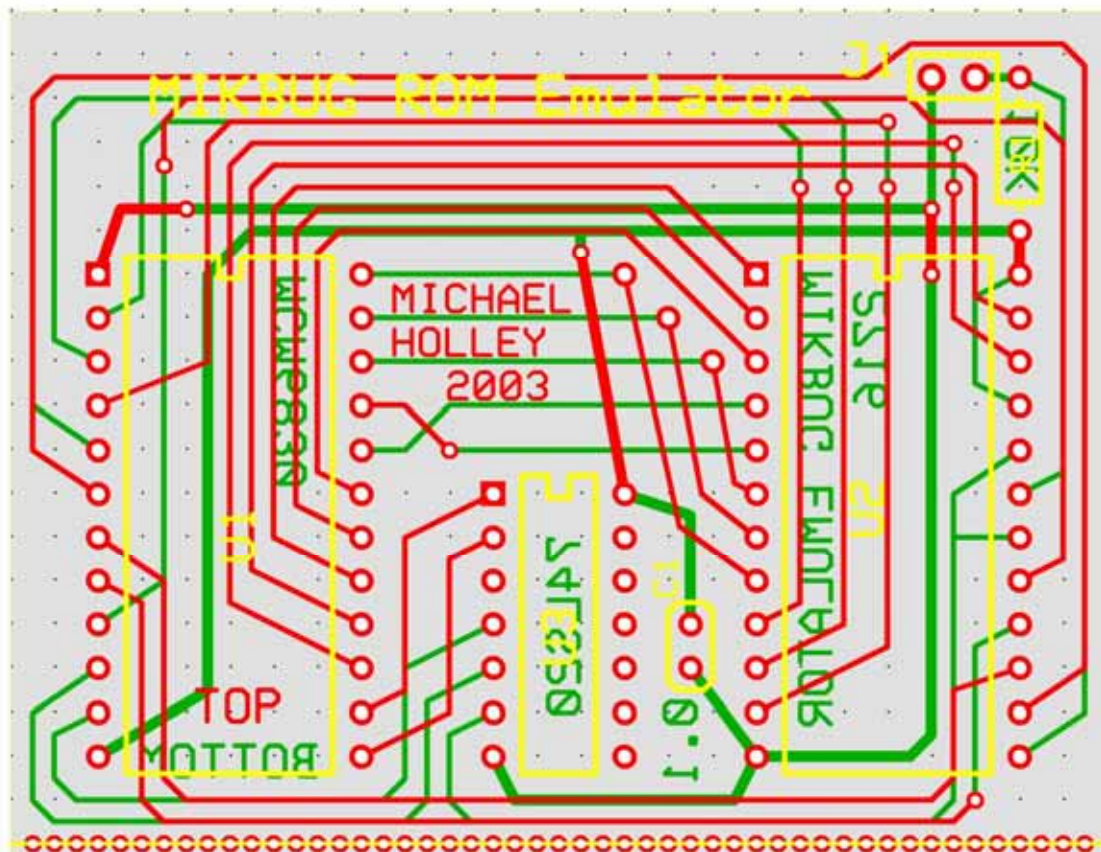


## How It Works

The Motorola MCM6830ROM has 4 chip select lines that can be masked active high or active low. The MIKBUG and SWTBUG ROMs have all 4 configured active high. The 2716 EPROM has a single active low chip enable line. The 74LS20 (a 4-input NAND gate) maps the 4 active high chip selects to a single active low chip enable.

The jumper on address line A10 determines which half of the ERPOM is used. When the jumper is on, A10 is low and the lower 1024 bytes are used. When it is off, the upper 1024 bytes are used. The MIKBUG code only takes 512 bytes so two copies are used to fill the 1024 bytes. (This is required because the MIKBUG code is at E000 to E1FF but the upper bytes of the ROM are the RESET vectors.)

Address	EPROM Contents
0000-01FF	MIKBUG
0200-03FF	MIKBUG
0400-07FF	SWTBUG



## ROM Emulator Parts List

- |    |               |
|----|---------------|
| C1 | 0.1 uf        |
| R1 | 10K 1/4w      |
| U2 | 2716          |
| U3 | 74LS20        |
|    | 14 pin Socket |
|    | 24 pin Socket |
|    | 2 pin jumper  |
|    | Shorting clip |

