



Corsham Technologies, LLC

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SS-50 RAM/EEPROM Board

Introduction

Thank you for buying our SS-50 RAM/EPR0M memory board!

Is this board vintage? Frankly, no. It was designed in 2014 using a RAM chip that most definitely available in the era when SWTPC was selling their systems. The 74LS04 and the Molex connectors are vintage, but not much else is.

Features

After many requests, I finally took the design of our SS-50 64K RAM board and added an EEPROM socket.

Features include:

- Provides anywhere from 0K to 64K.
- The RAM can be enabled/disabled in 4K segments via 16 switches from \$0000 to \$FFFF.
- The EEPROM (28C256) can be enabled/disabled in 4K segments via eight switches anywhere from \$8000 to \$FFFF.
- Fully compatible with the SS-50 bus. It does not support the extra four address lines of the SS-50C (6809) bus.
- Very low power.

Note that this memory board does not use any of the extended address bits on the SS-50C bus commonly used on 6809 based systems.

Setting the DIP Switches

There are three eight position DIP switches located on the left side of the board which are used to enable/disable any given 4K segment. They are labeled RAM LOWER which covers 0000-7FFF, RAM UPPER which covers 8000-FFFF and EEPROM which covers 8000-FFFF. Next to each switch is a label indicating which address range that switch enables.

To enable a segment, turn the switch to the ON position, usually sliding it to the right or pushing down the switch to the right, depending on the switch style. Some switches are labeled OPEN which is the opposite of ON.

Check the DIP switches to make sure they don't cause the memory to overlap with I/O, other RAM, ROM, etc., present in your system. If you experience problems, turn on the minimal amount of memory required to test.

It is possible to configure overlapping devices in the same region if both RAM and EEPROM are both enabled for the same memory block. Which device wins? It's up to those devices to "fight it out" over which data signals are strongest.

Putting Things into EEPROM

The board was designed to accept a 28C256 EEPROM which has 32K bytes. It mapped to memory addresses 8000-FFFF, so you will need to place your data at the appropriate offset in the EEPROM in order for it to appear at the proper address in the 6800's address space.

<u>Offset in EEPROM</u>	<u>Address in 6800's memory</u>
0000	8000
1000	9000
2000	A000
3000	B000
4000	C000
5000	D000
6000	E000
7000	F000

Installation

Once the DIP switches are set properly, simply plug the board into your system's motherboard. The Molex connectors are tight, to put it mildly, so sometimes it

works best to “rock” the board in. Note that there is a missing index pin on the motherboard and the corresponding pin on the RAM/EEPROM board has a pin that should match the motherboard.

Hey, Hey, 64K!

“Hey, Hey, 16K” is the name of a song written by MJ Hibbett about the good ol’ days of computers when 16K was enough memory to do many useful and fun things. I suggest you go to Wikipedia to see the entry for him and the link to the information about this particular song, or go to YouTube and search for “hey hey 16k.”

Great lyrics:

*Hey, Hey, 16K, what does that get you these days?
You need more than that for a letter,
Old School Ram Packs are much better!*

Since “64K” kind of sounds like “16K” I decided to pay homage to Mr. Hibbett’s great song and put that phrase on the board. I had seriously considered making a 16K board but that seemed kind of silly.

Why This?

Back when SWTPC was around, I was a teenager without much money to spare. I got their catalogs and was intrigued by their inexpensive kits and simple designs that could be assembled by average people. The entry point for a working system was a bit beyond my means, so I ended up with a KIM-1 instead.

Years later, I have my own company that has been making Apple/Franklin and KIM-1 expansion boards and one night I decided it was within my abilities to make a clone of the original SWTPC machine. By using some parts available now, the design can be simplified.

*Bob Applegate
April 7th, 2019*

Revision History

Version	Changes
1	Initial release 2018

Errata

C1 and C2 are now much smaller, either 10uf or 22uf.

R1 can vary from 2K to 6.8K. For a 1 MHz 6800, 6.8K is fine, but for a faster processor the value should be smaller in order to pull the /SELECT line high fast enough.

Parts List

Part	Number	Description
PCB	1	Printed Circuit Board (Corsham Tech)
J1	5	Molex 09-52-3101
C1	1	10 to 22uf, 25v electrolytic capacitor
C2	1	1 uf disc
C3-C7	5	.1 uf disc capacitor
IC1	1	628128-7 128K static RAM
IC2	1	74159
IC3	1	7805 +5 VDC regulator, TO-220 case
IC4	1	74LS00
IC5	1	28C256 EEPROM (user supplied)
IC6	1	74LS640
	1	32 pin socket for IC1
	1	24 pin socket for IC2
	1	28 pin socket for IC5
	1	14 pin socket for IC4
	1	20 pin socket for IC6
R2, R2	2	1K to 3.3K resistor
SW1-SW3	3	8 position DIP switch