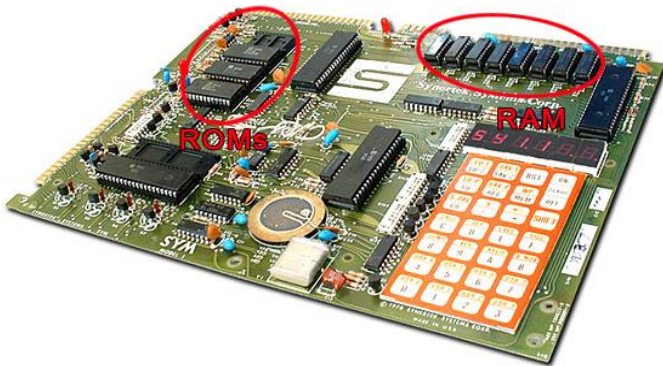# Getting Started with the SYM-1 Expansion Board

The Expansion Board has 32K of RAM and 32K of EEPROM (only 24K is accessible). Your SYM-1 also has some RAM and ROM on it. You need to make sure that that the SYM-1's memory and the Expansion Board's memory do not conflict with each other.

Your SYM-1 was originally sold with one ROM chip and two RAM chips. Some people added additional ROMs and RAM, as shown in the picture to the left.

You must remove all the ROM chips so that they do not interfere with the EEPROM on the Expansion Board.

With the RAM, you have a choice. You can have a total of 4K RAM on your SYM-1 (8 RAM chips) or you can have 0K RAM on your SYM-1 (remove all the RAM chips). You cannot have 1K of RAM on your SYM-1 (two chips). If your SYM-1 has two RAM chips, remove them.

(When you remove ROM and RAM chips, be careful to safely discharge any static electricity in your body, and save the chips in anti-static foam.)

You also need to configure the Expansion Board so that it knows whether there is 0K or 4K on the SYM-1. If there is 4K of

RAM on the SYM-1, a jumper should be installed at J11. If there is 0K RAM in the SYM-1, the jumper should be removed from J11 (leaving only the bare pins).
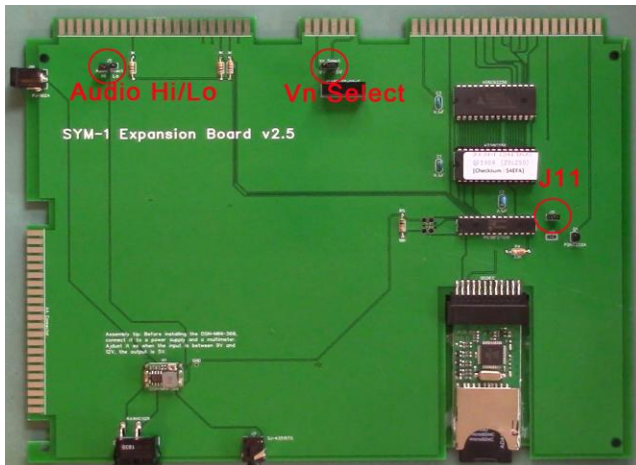
There is another jumper, Vn Select. Vn is the voltage supplied to the SYM-1 for its serial port. You can select -5V, which makes the serial port compatible with the RS-232 voltage requirements, or 0V, which makes the serial port safe to use with TTL levels.

Finally, there's an Audio Hi/Lo jumper, which affects the audio levels at the audio jack, for use with a cassette tape.

To see how to connect the SYM-1 to the Expansion Board, watch the video at https://www.galacticstudios.org/sym-1/. There's also a lot of other helpful information there about using the SYM-1 and the DOS.

When you connect the side backplane, notice that there are two test points on it for an oscilloscope probe. Orient the connector so that those test points are towards the back of the Expansion Board (i.e. closer to the power jack and farther from the power switch).