VIC-20
The friendly computer

This instruction sheet describes how to use the 3K, 8K, and 16 K Memory Expander Cartridges with your VIC 20. The cartridges plug directly into the VIC's Expansion Port and allow you to expand your computer's RAM (Random Access Memory) capacity.

VIC 3K Memory Expander (VIC-1210)

The VIC-1210 3 K Memory Expander adds an additional 3 K to the VIC-20 computer system, giving a total of 6655 bytes available for BASIC programs. The 3 K cartridge can be plugged into either the MEMORY EXPANSION SOCKET on the back of the VIC-20 or into one of the slots of the VIC-1010 Expansion Module.

When the 3 K cartridge is used to expand the VIC-20, the BASIC program area is changed so it starts at location 1024 ($0400).

Note that with the 3 K cartridge plugged in, only on-board memory (4096-8191 or $1000-1FFF) can be used as VIC screen and hi-resolution graphics areas.

Using the 3K RAM Cartridge

1) Turn off the power to the VIC.
2) Insert the cartridge into the expansion connector at the back of the VIC, with the nameplate facing UP.
3) Turn on the VIC.
4) You should see '6655 BYTES FREE' displayed as the opening message.

General Hints:

Always make sure that the power to the VIC is **off** when loading or unloading the RAM pack.

Avoid touching the metal contacts on the cartridge.

Do not drop the cartridge.

Only one 3 K RAM cartridge can be used at a time, even using the Expansion Module.

When an 8K or 16K RAM cartridge is used with the 3K RAM pack (using the Expansion Module) the 3K area will **not** be accessible as a BASIC program area.

VIC 8K and 16K Memory Expanders (VIC-1110 & VIC-1111)

The VIC-1110 8K Memory Expander adds 8192 bytes of memory to your VIC-20 system. The 16K Expander adds 16384 bytes of memory. Either can be plugged directly into the VIC or used with the VIC-1210 Expansion Module for additional expansion capability.

When the 8K or 16K cartridge is used to expand BASIC program area, the following areas are changed from the unexpanded VIC:

1) Screen memory moves to locations 4096-4607 ($1000-11FF)
2) Color memory moves to locations 37888-38399 ($9400-95FF)
3) The BASIC program area starts at 4608 ($1200)

Note that the VIC chip can only use on-board memory ($1000-1FFF) as screen memory and hi-resolution graphics areas.

Using the Cartridge

1) Turn off the power to the VIC.
2) Insert the RAM pack in the expansion connector at the back of the VIC, with the nameplate UP.
3) Turn on the VIC.
4) You should see '11775 BYTES FREE' displayed as the opening message for the 8K Expander and '19967 BYTES FREE' for the 16K Expander.
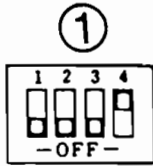
Changing 8K Memory Locations

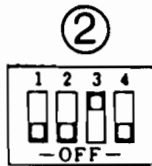The 8K cartridge can be adjusted to fit into any of the following areas in memory.

1) **$2000-$3FFF**   (**normal location for use with BASIC**)
2) $4000-5FFF
3) $6000-$7FFF
4) $A000-BFFF

There are four DIP switches inside the case of the 8K cartridge. By changing the switches it is possible (with the Expansion Module) to use more than one 8K cartridge at a time, allowing you to expand the VIC up to 29K for BASIC programs, and up to 40K for machine language programs.
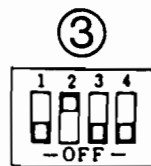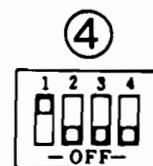
DIP Switch Settings

$2000-3FFF $4000-5FFF $6000-7FFF $A000-BFFF

Remember that the BASIC program area must be continuous. If you add another 8K RAM cartridge and you want BASIC to be able to 'see' it, the cartridge must be located at $4000.

How to Set the DIP Switches

1. Remove the screw on the back of the RAM pack using a Phillips head screwdriver.
2. Using a flat headed screwdriver open the plastic case by inserting the blade of the screwdriver into each of the slots, and levering upward. Remove the case.
3. The DIP switch bank is located at the center of the PC board. Set the switches to the desired setting.
4. Snap the cover closed and replace the screw.

REMEMBER:

Never have more than one switch on at the same time!

Never allow two cartridges to be in the same memory area.

General Hints:

Always make sure the power to the VIC is off when loading or unloading the cartridge.

Avoid touching the metal contacts on the pack

Do not drop the RAM cartridge.

VIC-1010 Expansion Module (Available Mid-1982)

Commodore's VIC-1010 Expansion Module will allow the use of more than one Memory Expander Cartridge simultaneously.

C= commodore
COMPUTER