

## VIC 3K Memory Expander (VIC-1210)

### VIC 3K Memory Expander (VIC-1210)

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

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

#### NOTE

NOTE that the VIC chip can only use on-board memory (4096-8191 or \$1000-1FFF) as screen memory on powering up.

#### Using the 3K RAM 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 "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 cartridge.

Avoid touching the metal contacts on the cartridge.

Do not drop the cartridge.

Only one 3K 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 cartridge (using the Expansion Module) the 3K area will not be accessible as a BASIC program area.

## VIC 8K Memory Expander (VIC-1110)

### VIC 8K Memory Expander (VIC-1110)

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

When the 8K 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) Colour memory moves to locations 37888-38399 (\$9400-95FF)
- 3) The BASIC program area starts at 4608 (\$1200)

#### NOTE

NOTE that the VIC chip can only use on-board memory (4096-8191 or \$1000-1FFF) as screen memory on powering up.

#### Using the 8K RAM 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.

#### CHANGING 8K MEMORY LOCATIONS

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

- 1) \$2000-3FFF
- 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 27.5K for BASIC programs and up to 38.5K for machine language programs.

#### DIP Switch Settings

Remember that the BASIC program area must be continuous. If you add a second 8K cartridge and you want BASIC to be able to "see" it, the second 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 that the power to the VIC is off when loading or unloading the RAM cartridge.

Avoid touching the metal contacts on the cartridge.

Do not drop the cartridge.

## VIC 16K Memory Expander (VIC-1111)

### 16K Memory Expander (VIC-1111)

The VIC-1111 16K Memory Expander adds 16384 bytes of memory to your VIC system. It can either be plugged directly into the VIC or used with the VIC-1010 Expansion Module for additional expansion capability.

When the 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) Colour memory moves to locations 37888-38394 (\$9400-95FA)
- 3) The BASIC program area starts at 4608 (\$1200)

### NOTE

NOTE that the VIC chip can only use on-board memory (4096-8191 or \$1000-1FFF) as screen memory on powering up.

### Using the 16K RAM 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 "19967 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 cartridge.

Avoid touching the metal contacts on the cartridge.

Do not drop the cartridge.

Only one 16K RAM cartridge can be used at a time, even using the Expansion Module.

When an 8K RAM cartridge is used with the 16K RAM pack (using the Expansion Module) the 8K area will need to be selected for memory address \$6000-7FFF to provide 24576 bytes of continuous memory.

## VIC 1010 EXPANSION MODULE

### VIC 1010 Expansion Module

Commodore's VIC 1010 Expansion Module will allow the use of more than one Memory Expander Cartridge simultaneously. The 3K cartridge will work in the Expansion Module with machine language programs (not BASIC). The 8K and 16K cartridges will work in the Expansion Module in both machine language and BASIC.



**VIC 1111**

— 16K memory expansion



**VIC 1110**

— 8K memory expansion



**VIC 1210**

— 3K memory expansion.

Enclosed