Final Expansion 3
User Guide

Version 1.0

Copyright Information

Version Information

Version	Date	Changes
1.0	2017-02-08	Initial draft

Authors

Simon Rowe <srowe@mose.org.uk>

Contents

Introduction

This guide describes the features of the Final Expansion 3 cartridge for the VIC-20 and how to use them. It also includes reference material for programmers to write software that uses the advanced capabilities of the cartridge.

The information given in this guide is believed to be accurate, however because there are many hardware and software variations the authors cannot guarantee that a specific system will function exactly as described.

The authors would be grateful to hear from you if you find a mistake or omission in this guide.

Where to Get Help

As there are several versions of the cartridge produced by different manufacturers the best source of information specific to yours is wherever you purchased it from.

The on-line forum Denial, http://sleepingelephant.com/ipw-web/bulletin/bb/index.php, is a community of VIC-20 users. They may be able to provide information and suggestions but cannot be expected to resolve your problems.

Cartridge Overview

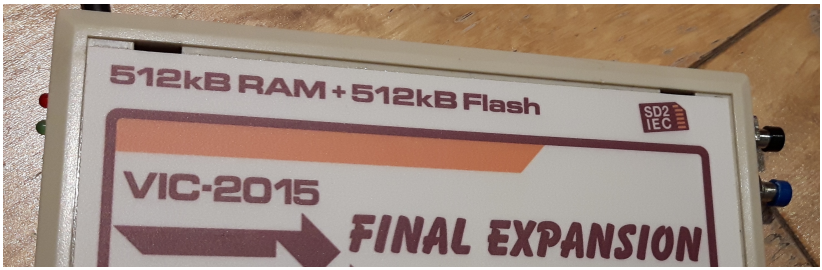
The Final Expansion 3 (FE3) cartridge expands the VIC-20 with:

- 512KB of Random Access Memory (RAM)
- 512KB of Electrically Erasable Read Only Memory (EEPROM)
- storage to Secure Digital cards emulating a disk drive (SD2IEC)

The memory expansion is highly configurable, both from an interactive menu and by commands contained in user-created files. Virtually any type of memory map can be set up to allow all manner of programs to be run.

Additional commands are available to make disk devices easier to use, these are provided using a software wedge (which can be disabled) similar to those supplied with physical disk drives such as the 1541.

Loading and saving to IEC bus devices is accelerated if they contain support for JiffyDOS, this includes the integrated SD2IEC device.



The two indicators which are located on the left of the cartridge relate to the SD2IEC device

- error (top, red) – flashes when an error message is present on the command channel
- activity (bottom, green) – lit when a file is open on the device

The two push buttons on the right of the cartridge provide different forms of system reset

- VIC-20 system reset (top)
- VIC-20 and Final Expansion 3 reset (bottom)

Start Up Menus

When the VIC-20 is powered on the following menu is presented. Options are selected by pressing the function keys (along with the Shift key if necessary).

RAM Manager

This submenu allows different memory configurations to be set up

The configurations are summarized in the following table:

Key	Memory	Blocks	Wedge?
F1	3K	RAM1,2,3	Yes
F2	8K	BLK1	Yes
F3	16K	BLK1,2	Yes
F4	24K	BLK1,2,3	Yes
F5	24K+3K	RAM1,2,3 & BLK1,2,3	Yes
F6	-	-	No

Key	Memory	Blocks	Wedge?
F7	24K+3K+8K	RAM1,2,3 & BLK1,2,3,5	Yes

At the bottom of the menu two checkboxes are shown:

- I/O registers (R) - Allow access to the registers which control the memory configuration of the cartridge
- Command wedge (W) – Enable commands listed on page 10

Pressing the given key toggles each checkbox.

“F8” returns to the main menu.

Wedge Commands

The following commands are available in immediate mode, they cannot be included in BASIC programs.

File names may be given in quotes or follow the command immediately (unless otherwise stated).

Storage Device Commands

Load BASIC Program

The '/' command can be used to load a program from the current device

The start and end addresses are displayed in hex.

Load Machine Code Program

The '%' command can be used to load a machine code program into the correct location in memory

The start and end addresses are displayed in hex, the start address is often used to execute the program.

Save BASIC or Machine Code Program

The '←' command can be used to save the program in memory to the current device

The start and end addresses are displayed in hex.

To save a machine code program the file name must be given in quotes followed by the start and end addresses

If the file already exists on the device the following prompt is displayed

Pressing 'R' deletes the existing file and saves the current program with the file name given.

Pressing 'U' renames the existing file with "'" (single quote) character at the beginning then saves the current program with the file name given.

Pressing 'A' cancels the operation.

Verify BASIC Program

The '>' command can be used to verify that the program in memory matches the copy saved to the current device

Show & Change Drive

The '#' command can be used to display the current device number

To change to another device a number between 8 and 15 may be appended