VC-EXPAND/80 Users Manual

INTRODUCTION

VC-Expand/80 is a program which enhances VisiCorp's VisiCalc on the Apple II or Apple II Plus. VC-Expand/80 allows you to get more memory and 80 column display for VisiCalc, when you use a Videx Videoterm board and at least one Saturn RAM board (32K, 64K, or 128K).

With VC-Expand/80 and one or more memory boards, you can increase your workspace memory to as much as 177K. You may now save the entire file, even if it requires more than one diskette. Also, you can use the entire displayed matrix, from A1 to BK254.

VC-Expand/80 also modifies VisiCalc in memory so that it can find and use the Videx Videoterm board. If you have a lower case adapter, the VC-Expand/80 software will provide for lower case letters in your VisiCalc model. VC-Expand/80 will automatically use the Videx soft switch, if present. If you have an inverse video ROM, VC-Expand/80 will operate with or without it, as you choose.

An inverse character is a dark letter or number on a bright background. VisiCalc uses inverse characters for the row and column headings, on the entry and prompt lines, and under the cursor. If you do not have the inverse video ROM on your Videoterm board, your VisiCalc screen will use only standard characters (bright on dark background). If you do have the inverse video ROM, you have a choice of using or not using inverse characters. You may prefer standard characters when using 80 column display. Try it both ways.

Note that the "current" cell in the matrix (i.e., the one where the cursor is) is always displayed in inverse. It looks like a bright rectangle whether or not you use the inverse ROM. This is so you can tell easily where the cursor is. If you don't have the inverse ROM, you will not see anything written where the cursor is. However, the contents of the current cell will be displayed at the top of the screen.

WHAT YOU NEED

1. VC-Expand/80 diskette
2. At least one Saturn RAM board (32K, 64K, or 128K)
3. A Videx Videoterm board
4. VisiCorp's 16 sector VisiCalc

You may also use another Saturn board of any size, or a standard 16K RAM board, to get even more memory.

The Videoterm board may be used with or without the inverse video ROM and/or soft switch.

A lower case adapter is necessary to enter lower case characters.

VC-Expand/80 will work without the Videoterm board, but of course you will only get 40 column display without the 80 column board. You may use VC-Expand/80 to get more workspace memory with 40 column or 80 column display.

WHAT YOU GET

The total amount of memory in your workspace depends on what memory boards you have, as follows:

BOARDS PRESENT	APPROX. WORKSPACE MEMORY*
none	18K
Apple Language or other 16K	34K
Saturn 32K	49K
Saturn 32K + 16K	65K
Saturn 64K (or 2 Saturn 32K)	81K
Saturn 64K + 16K	97K
Saturn 64K + Saturn 32K	113K
Saturn 128K	145K
Saturn 128K + 16K	161K
Saturn 128K + Saturn 32K	177K

*This is the number displayed in the upper right corner of the VisiCalc screen.

Your display can be 40 or 80 columns, as you choose. If you have the inverse video ROM, you may choose inverse or standard display.

If you do not have the inverse video ROM, you will not see any inverse characters in the 80 column display. That's OK; it just looks a little different.

Use of 32K, 64K, or 128K boards from manufacturers other than Saturn is not recommended while running VC-Expand/80. Their performance cannot be guaranteed for all the features of VC-Expand/80. All 16K boards which are compatible with the Apple Language card are acceptable.

HOW TO GET STARTED

First, install memory board(s) and Videoterm board according to the respective manuals.

Then boot the VC-Expand/80 diskette. You will see a message on the screen. Press H to receive instructions on the screen. You will see a brief description of VC-Expand/80 and the "configuration dialog". The configuration dialog has been added

so that you can run VC-Expand/80 regardless of what you may have inside your Apple.

When the message is finished, you will see on the screen

PRESS (ESC) FOR CONFIGURATION DIALOG
(H) FOR FURTHER INSTRUCTIONS

If you press H, you will see the same instructions again. When you are finished reading the instructions, press the ESC key. Then enter E (RETURN).

VC-Expand/80 will print a table which looks like this:

SLOT 0	SLOT 4
SLOT 1	SLOT 5
SLOT 2	SLOT 6
SLOT 3	SLOT 7

VC-Expand/80 will ask you for a slot number. Enter the number of the slot with the first memory board (or Apple Language Card). Then VC-Expand/80 will ask you what is in that slot. If you forgot the abbreviations, type /H. Enter the letter for the board in that slot. VC-Expand/80 will add this information to the table.

If you have a second memory board, repeat the steps in the last paragraph.

Then enter the slot number for your Videoterm board. If you do not have an inverse video ROM, enter VX for the device. If you have an inverse video ROM, you may enter VV to use inverse characters or VX to use only standard characters.

If you have 2 disk drives, enter D2 for slot 6 (or whichever slot your disk controller card is in: most people use 6).

If you have only one disk drive, don't bother to enter anything for disk drives.

Check the configuration diagram on the screen. When you have all the boards entered (and D2 for a second disk drive), press RETURN.

If there is a mistake in the table, press E (RETURN) to try again. You can erase an entry by typing the slot number, and then entering (RETURN) for the device.

When the table looks OK, type W (RETURN). Be sure that the VC-Expand/80 diskette is in drive 1, and press (RETURN) again. The information you have entered will be written on your VC-Expand/80 diskette, so that you will not have to go through this again until you want to change something. You should edit the configuration dialog if you add a memory board, if you move the boards around, or if you want to change between inverse and

standard character display. If you want to go back to 40 column
display, erase the VV or VX from the table.

     Now you are ready to make a back-up copy.

MAKING A BACK-UP COPY

     You should make at least one back-up copy as soon as
possible. The back-ups are called "dormant" because they cannot
be used until they have been activated. In order to activate a
back-up copy, you must allow the program to destroy a master
copy. Thus you may have as many back-ups as you wish, but only
one can be active (usable) at a time.

     To make a back-up, reboot the VC-Expand/80 diskette. (You
can press reset twice, or else turn the power off and back on.)
You will see a message that says:

                         TO MAKE A BACK-UP COPY,
                         PRESS 'P' DURING BOOT

When you see that message, press 'P' immediately.

     The screen will display a list of things you can do now.
Type 4 to see instructions on the screen. At the end of the
instructions, you may press RESET to reboot. Then you should
press 'P' again when you see the message telling you to press
'P'.

     Type 1 or 2 to make a back-up copy from a one-drive or a
two-drive system. Use a blank diskette to make the dormant copy.
Follow the directions on the screen.

     When you finish making the back-up copy, boot the dormant
back-up. (You can put the dormant copy in drive 1 and turn the
power off and on.) The screen should say:

                         GOOD DORMANT COPY

If you don't see "GOOD DORMANT COPY" on the screen, reboot VC-
Expand/80 and try again.

     Once you have at least one good dormant copy, you are ready
to start using your new expanded VisiCalc.

HAPPY VISICALCULATING!

     Now you're all set! Just boot your VC-Expand/80 diskette.
Since you have the configuration written on the diskette, you
will see on the screen:

Now put VisiCalc in the disk drive (drive 2 if you have two drives), and press (RETURN). Your VisiCalc matrix is now ready to use.

SAVING LARGE FILES

With VC-Expand/80 and sufficient memory boards, you can create models too large to save on a single diskette. So a special feature has been added to allow saving files on more than one diskette.

Be sure to have at least two disks initialized before you save a large file. Then use the normal /SS to save a VisiCalc file. If the file is too big for one diskette, VC-Expand/80 will fill the first diskette and then print on the prompt line:

RETURN TO CONTINUE ON NEXT DISKETTE

Then insert a new initialized diskette and press return. VC-Expand/80 will continue the file on this diskette. If you name your file "FILENAME", then the part on the second diskette will be called "FILENAME.VC2".

When you reload the large file, VC-Expand/80 will print "RETURN TO CONTINUE ON NEXT DISKETTE" when the first one has been read. Then you should insert the diskette with the rest of the file and press return.

With VC-Expand/80, you will never see the "TOO BIG" message from VisiCalc when saving files. If you save several small files on the same diskette, you may see the "RETURN TO CONTINUE ON NEXT DISKETTE" message on a small file. When this happens, you may either continue on another diskette, or cancel this attempt (with control C) and put the entire file on a new diskette. If you try to save a file on a diskette which is completely full, you will see "RETURN TO CONTINUE ON NEXT DISKETTE". The file name will be displayed without the ".VC2" ending. This means that none of the file was saved on the diskette which was already full.

ANY QUESTIONS?

This section provides answers to some commonly asked technical and operational questions.

1. How does VC-Expand/80 work?

It makes additions and modifications to VisiCalc in memory. VC-Expand/80 will not alter your VisiCalc diskette.

2. Why is the workspace memory always an odd number with VC-Expand/80 and Saturn board(s)?

    Because the modifications to VisiCalc take up approximately 1K. VisiCalc itself uses about 30K. So your memory is 48K - 31K + memory on boards.

3. Will VisiCalc run slower with VC-Expand/80?

    Not noticeably. At most, the expanded VisiCalc will take about 5% longer for its calculations. Of course, your Apple will require more time to calculate the larger, more extensive models you are now able to create.

4. How do I use VC-Expand/80 with one disk drive?

    In the configuration dialog, don't enter anything about the disk drive. Then each time you use VisiCalc, boot the VC-Expand/80 diskette first, then remove it and put the VisiCalc diskette in the drive. Press (RETURN) and VisiCalc will start.

5. How do I use VC-Expand/80 with two disk drives?

    In the configuration dialog, enter D2 for slot 6 (or which-ever slot has your disk controller card; most people use 6). Then always put VC-Expand/80 in drive 1 and VisiCalc in drive 2. Turn on the power, wait for the message to end, and then press (RETURN).

6. What if I enter D1 for the slot with the disk controller card?

    Then the computer will read VisiCalc from the same drive as VC-Expand/80. In this case you have to switch diskettes.

7. Can I use other 32K, 64K, or 128K boards with VC-Expand/80?

    Not reliably. All memory boards with more than 16K must be divided into 16K (or smaller) memory banks. That's why they are all multiples of 16K. Since the Apple can only address 64K of memory at a time, each 16K bank of added memory must share the address space of the motherboard ROM. Any RAM board with more than 16K must include a bank selection scheme in order for the software to find and control the upper banks of memory. VC-Expand/80 is written specifically for Saturn's bank selection scheme. Boards which were designed primarily for disk emulation may have a totally different scheme. Other boards may follow the basic circuitry used by Saturn, but use different control state addresses for some or all of the functions. VC-Expand/80 will operate reliably with the first 16K of any board which is compatible with the Apple Language Card. Higher banks may not be found at all, or may scramble some of the data. For this reason Saturn assumes no responsibility for the operation of VC-Expand/80 with multi-bank boards from other manufacturers.

8. Are all 16K boards OK?

Yes, as long as they are compatible with the Apple Language Card. As far as we know, all 16K boards on the market follow the Apple standard and work reliably with VC-Expand/80.

9. What if I have an Apple Language card and a Saturn board?

VC-Expand/80 will use both of them. You will get somewhat less memory than you would have with a (non-language) 16K RAM board and a Saturn board. This happens because the Apple Language Card contains an autostart ROM which must be cordoned off for operation of VisiCalc with more than one memory board. Your workspace memory can be calculated by the formula 33 + (memory on Saturn board) - 2 x (number of 16K memory banks on Saturn board). So the workspace memory table for Apple Language Cards and Saturn boards is:

BOARDS PRESENT	APPROX. WORKSPACE MEMORY
Language card	34K
Language + Saturn 32K	61K
Language + Saturn 64K	89K
Language + Saturn 128K	145K

Note that with a 128K board, you get the same workspace memory whether or not you use a Language card. It doesn't hurt to leave the Language card in the computer, but if you are running out of slots and/or power, we recommend that you replace the language card with a Saturn board. Remember that all Saturn boards perform all the functions of a Language card, as a standard feature.

10. Can I use more than 2 memory boards?

That depends on the power consumption, and on how many other boards you may have in the computer.

The Saturn 64K and 128K boards actually use less power than 16K boards, Language cards, and Saturn 32K boards. This happens because the larger Saturn boards feature on-board refresh; i.e., you don't have to pull a chip out to install them.

We recommend that you use no more than two boards with cables (you have to pull a chip to install these boards). This group includes the Apple Language Card, other 16K boards, and the Saturn 32K board. You may use two Saturn 32K boards, or one Saturn 32K board with a 16K board or Language card.

You may use as many Saturn 64K and 128K boards as you like, but the current version of VC-Expand/80 requires no more than one 128K board with one 32K board to reach the maximum workspace memory of 177K. If you plan to use your memory boards for other purposes as well (such as Saturn's Pseudo-Disk program), then you may want to use more than one large board.

11. What about other 80 column boards?

So far VC-Expand/80 only works with the Videoterm board, but
we are working on the software to support other 80 column boards
as well.

12. What happens if I don't enter anything in the configuration
dialog?

VC-Expand/80 will search all the slots and find the memory
boards by itself. It will assume that you want 40 column dis-
play. You may have some boards in your computer which object to
being searched by VC-Expand/80, and these could cause operational
problems. That is why VC-Expand/80 includes the configuration
dialog.

13. What if I add more boards?

Any time you add or move memory boards, you should go
through the configuration dialog again and tell VC-Expand/80 what
you did. If you add other devices without moving the memory
boards or the disk controller card, you don't need to change any-
thing for VC-Expand/80.

14. What should I do if my diskette is damaged?

Saturn provides a 90-day warranty on the VC-Expand/80 disk-
ette. If for any reason you are unable to read your diskette
when you first buy it, return it immediately to your dealer or
direct to Saturn for replacement.

You should make at least one back-up copy of your diskette
as soon as possible. Then if your VC-Expand/80 diskette becomes
damaged (perhaps from dust or just from being overworked and
tired), you can use the original copy to validate a back-up copy.
The master can be used to validate a back-up even when the master
cannot be booted.

In order to replace a damaged VC-Expand/80 diskette, Saturn
must be able to read the validation code from some part of the
diskette.

15. What about upgrades?

VC-Expand/80 is a well-supported software package with
constant attention being given to expanding business needs. As
new features are added to VC-Expand/80, upgrades are made
available to current users at minimal cost. Be sure to return
your warranty registration card so that Saturn will have a record
of your address.

LIMITED WARRANTY FOR DISKETTE

Saturn Systems, Inc (SSI) warrants only the diskette upon which VC-EXPAND/80 is recorded to be free of defects in material and workmanship for a period of ninety (90) days from the original date of purchase to the original user only. During this period, SSI will replace this product free of charge, provided that it is returned with dated proof of purchase to Saturn Systems, Inc., P.O. Box 8050, Ann Arbor, MI 48107. This warranty does not apply, if in the opinion of SSI, the product has been damaged by accident, misuse, neglect or misapplication as a result of service or modification by other than Saturn Systems.

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