COMPACT GUIDE FOR THE CRYPTRONICS 64K RAM EXPANSION.

TABLE OF CONTENTS:

INTRODUCTION

Now your Model 100 expands to 128K of RAM. The Cryptronics 96K RAM expansion is only possible because of the very latest advances in microchip technology. Even with the new chips, it is still an engineering tour de force, since so much circuitry has been packed into such a tiny space.

The designers of the 96K RAM took care to maintain compatibility with the Model 100. Both the expansion bus and the ROM socket are still available for other products, such as Lucid, the exceptional spreadsheet for the Model 100.

To complement this truly state of the art hardware, Portable Computer Support Group, the acknowledged leader in software for the Model 100, has created a remarkably powerful yet easy to use RAM management program on a snap-in ROM chip. This program is called RAM + . The Cryptronics 96K RAM makes your Model 100 four times as useful. It's like having four Model lOO's. But when you add the RAM + software, there is a quantum leap in usefulness. Simply at the touch of a function key you can perform

operations that used to take complicated BASIC functions, such as renaming or deleting files. Further, you can do things that were not previously possible, such as making a duplicate in RAM of a Lucid spreadsheet or a BASIC program.

Further, with RAM + you are no longer restricted from running large BASIC programs that consume all your RAM. With a few elegant, simple but powerful extensions to BASIC, RAM + permits a program to read and write files to any bank. This means that even if your program uses up all 32K of RAM in Bank 1, you still have 96K of RAM in the other banks available for data. This unique feature makes RAM + the answer to many users, urgent needs.

SECTION 2. HOW TO PLUG IT IN

First back up any files in your Model 100 that you do not already have copies of. This is simply a precaution. Under normal circumstances no data will be lost. Now after returning to the main menu, switch off your Model 100. Flip it over onto its back. You will observe two small covers.

One, the battery compartment in the corner of the machine.

Two, the expansion cover at the center edge of the machine.

Pry open the expansion cover with a coin or screwdriver.

IMPORTANT NOTE:

It is possible that the battery insulation on your 96K RAM expansion may be damaged upon installation. This may cause faulty operation of your 96K RAM unit.

To avoid this please perform the following steps:

Observe that there are two sockets under the expansion cover. Between the two sockets are some soldered contacts.

If these contacts protrude in such a way that they could puncture the plastic insulation on the 96K RAM batteries, simply bend them over with the tip of a screwdriver.

Now take the 96K RAM module from the shipping box. This is the larger circuit board, the one with the wire tail hanging off the corner. Inspect the module carefully. The shrink-wrapped thing at the end of the wire tail is the NiCad battery that provides backup power to the RAM. You will observe on one side of the module two rows of silver plated pins. You are going to plug these pins into the longer of the two sockets under the expansion cover. Insure that none of these pins is bent.

Place the module into the expansion socket, but without pressing it in. It will only fit one way. Now place the batteries down in the slot in the center of the expansion area, between the edge of the RAM board and the side of the raised black socket attached to the Model 100. Check very carefully that the pins of the RAM module are engaging in the sockets, by gently wiggling the board until you feel them engage.

Now press down on the RAM board with your thumbs, insuring it is firmly home in the socket, whilst also making sure that the batteries are eased into place. Be very careful not to bend or damage any pins as you are inserting the RAM.

The RAM is now installed, but it needs software to allow switch- ing between the four banks. This software is on the other chip in the shipping package, the one labeled RAM +. Take the RAM + chip from the shipping box, and inspect it carefully. It consists of a labeled ceramic chip soldered to a circuit board, and a spacer glued to the underside of the

board. Notice that there is a single tab sticking out at one end of the board, and that the black ceramic chip attached to the board has a little notch at the same end. Notice also that the raised black socket on the Model 100 has a single notch at one end and two notches at the other.

The tab on the RAM + engages into the single notch in the Model 100 socket. Place the RAM + in the socket and press it firmly in with your thumbs. Carefully turn the computer over so that it is face up. Switch it on. You will see the main menu on the screen. If you don't, switch it off and go through the installation process again.

SECTION 3. HOW TO START IT UP

With the wide bar cursor on BASIC, press ENTER. At the BASIC 'Ok' prompt, type

CALL 63012

And press ENTER. You will see the RAM + menu. If you don't, switch off the Model 100 and go through the installation instructions again.

Now you can explore the powerful features of the RAM + software.

SECTION 4. THE RAM + MENU

On the top line of the menu, you see the date and time, just like on the main menu. Next to this is the version number of the RAM + software, and the copyright notice.

The list of files on the RAM + menu is just like on the main menu , except that the built in files are not shown. This leaves room on the sixth line for additional status information, namely the amount of RAM available in the

current bank, the current bank number (I thru 4) and the size of the file that the wide bar cursor is resting on.

The seventh line as usual contains the function key labels:

F1 - Bank

Moves you into the next bank, ie from I to 2, from 2 to 3, from 3 to 4 and from 4 to I. After pressing it, you will remain in the new bank until you press it again, or use the GOTO program discussed under F3 - Goto.

F2 - Name

Allows you to rename the file that the wide bat cursor is resting on . There is no need to type the extension (eg .DO, .CO or .BA) since you are not permitted to change it. To rename a file, simply press F2-Name. The screen will say:

New name: _

Type in the new name, up to six letters, and press ENTER. The file under the wide bar cursor will now have the name you just typed in.

F3 - Goto

This is for use if you wish to remove the directory entry for RAM + from the main menu. Under these circumstances, you will still need some way to get from bank to bank. Pressing F3 - Goto, in addition to removing the RAM + name from the main menu in all four banks, creates a new .CO file (only 8 bytes long) in each bank that lets you switch from bank to bank from the main menu, without the RAM + ROM software chip installed. The .CO file has a different name in each bank. In bank 1 it is called GOTO2.CO, which stands for Go to Bank 2. In bank 2 it is called GOTO3.CO, in bank 3 it is called GOTO4.CO and in bank 4 it is called GOTO1.CO.

After pressing F3 - Goto in any bank, you are returned to the main menu in bank 1.

To switch banks from the main menu, simply place the wide bar cursor on the GOTO1.CO file and press ENTER. You will find yourself at the main menu in the next bank.

F4 - Copy

This copies the file under the wide bar cursor from bank to bank, or to a new name in the same bank. Simply place the wide bar cursor on the file to be copied, and press F4-Copy. The screen will say:

To Bank #_

Type in the number of the bank you want to copy to. The file is instantly copied. If you type the number of the bank you are already in, for example if you are in bank 1 and you put

To Bank # 1

The screen will say:

New Name: _

Type in the new name just like with F2-Name, and press ENTER. The file will be exactly duplicated under a new name while continuing to exist under the old name also.

F5 - Kill

This kills (erases, removes, deletes) the file under the wide bar cursor. Once it has been erased, the file cannot be resurrected by any means, so this is a somewhat risky action. To make sure you don't erase any valuable data by accident, the screen asks you to confirm that you want to

erase the file and requires you to confirm by typing 'y' for yes.

F6 - CRLF

This is for those who find themselves constantly struggling with DIP switches on their printers, trying to stop it all being printed on one line. If you have never found yourself in this situation, you have no use for F6-CRLF.

CRLF stands for Carriage Return/Line Feed, and causes your Model 100 to insert the line feed character that so many printers require after each carriage return. Pressing F6-CRLF causes it to go into reverse video to indicate that from now on the line feed will be added. This remains active in all programs and even when the ROM is taken out.

Pressing it a second time switches off the reverse video and causes the Model 100 to print in the traditional way.

F7 - Date

When you press this key, the screen says

Date: _

Type in the current date in month/day/year format for example, for January I, 1900 (a date familiar to most Model 100 owners) simply type

Date: 01/01/00

And press ENTER. After you press ENTER (even without typing anything), the screen will go on to say

Day: _

Type in the first three letter of the day of the week, eg

Day: Sun

And press ENTER. Next the screen will ask you the time:

Time: _

Type in the time using a 24-hour clock. You must separate the hours, minutes and seconds with colons, and you must put two digits for each, so that for example 8.25pm would look like this:

Time: 20:25:00

After typing the current time, press ENTER to return to the RAM+ menu.

F8 - Menu

This takes you out of the RAM + menu back to the standard Model 100 main menu in the same bank. In order to help you keep track of what bank you are in, the menu shows the current bank in the second slot of the second line of the menu, under TEXT and to the right of SCHEDL.

For example in bank 1 this appears as

Bank # 1

To get back to the RAM + menu, simply place the cursor on this filename and press enter. If you wish to remove the RAM + chip in order to use another ROM such as Lucid or Write ROM, you can remove the Bank 1 name from the menu by pressing F3-Goto. This removes the bank filename from the main menu, and installs a .CO file that allows you to switch banks without the RAM + ROM installed.

Cold Start.

If you wish to erase all the files in a particular bank, or if you suspect that one of the banks has become scrambled, you can 'cold start' that bank without affecting the other two banks. This is done by moving to the RAM + menu in the bank that you wish to wipe, and holding down the SHIFT and CTRL keys and pressing the PAUSE function key.

If you find yourself unable to get into the next bank (for example from Bank 1 to Bank 2), the chances are that the next bank has been scrambled. This can occasionally happen when installing or removing the RAM. Version 1.3 allows you to cold start a bank without being in it. It works just like F1 - Bank, except that instead of putting you into the next bank it cold starts the next bank before moving to it. Since you don't want to do this by accident, you must press four keys simultaneously to do it.

To cold start bank 2, get into the RAM + menu for bank 1, and press Ctrl, Shift, Code and Pause simultaneously. You will move into bank 2 and the menu will be cleared.

To cold start bank 3, get into the RAM + menu for bank 2, and press Ctrl, Shift, Code and Pause simultaneously. You will move into bank 3 and the menu will be cleared.

To cold start bank 4, get into the RAM + menu for bank 3, and press Ctrl, Shift, Code and Pause simultaneously. You will move into bank 4 and the menu will be cleared.

To cold start bank 1, simply use the conventional method of holding down the CTRL and PAUSE keys simultaneously while turning the Model 100 off and on again.

SECTION 5. BATTERY LIFE

The batteries will typically last over six months on a single charge, depending on manufacturing variations in the chips.

If they are half discharged it will take about 4-6 hours of having your Model 100 switched on to fully recharge. If they are 25% discharged, it will only take about 2 hours to recharge.

SECTION 6. EXTENSIONS TO BASIC

You can now open a data file in another bank from a BASIC program. The program can be in any bank, and the file can be in any bank. The syntax is as follows:

OPEN "A:test" FOR OUTPUT AS 1

The four banks are given the device names A:, B:, C: and D:. The reason they are not called by their numbers (1,2,3,4) is to avoid conflicts within programs that access the Holmes/PCSG Chipmunk disk drive.

Once the file is opened (for input, output or append), it can be accessed by any of the standard file 1/0 commands such as:

```
INPUT #1,A$
PRINT #1,B$
A$=INPUT$(1,1)
LINE INPUT #1,0$
```

Additionally, programs in other banks can be RUN, MERGEd, LOADed and SAVEd. They must be saved as '.DO' files, however. You cannot LOAD a .BA file from another bank. To save a program as a .DO file you simply add the .DO extension to the file name, or append' , ,A ' to the save command. Examples:

```
SAVE"D:TEST.DO"
SAVE"D:TEST",A
```

The A stands for ASCII. A .DO file is known as an ASCII file, since it consists exclusively of regular text. A .BA file is known as a tokenized file, since it consists of data in BASIC's internal format with all sorts of control and graph characters in it.

SECTION 7. SOME COMMON QUESTIONS

How do I recharge the RAM's batteries?

Under some rare conditions of use, it is possible that the NiCad batteries could become completely exhausted, causing the expansion RAM memory to become cleared. Your NiCad batteries recharge while the Model 100 is switched on. It is advisable to charge them all night every now and then (for example monthly). Unfortunately the Model 100 automatically powers down after 10 minutes, so your unattended charge time is drastically reduced. You can easily over- come this using the following technique:

From the main Model 100 menu, place the wide bar cursor on BASIC and press ENTER. At the familiar BASIC Ok prompt type:

POWER CONT

This will disable the automatic power down feature of the Model 100. To restore it in the morning after you have charged your NiCads, simply type:

POWER 100

And press ENTER.

What if I want to put in another ROM?

In order for the extended RAM BASIC to work, you must have the RAM + ROM in the option socket. Before you

remove the RAM + ROM it is essential to disable the extended BASIC. This is done by pressing F3 (Goto), which also removes the Bank # 1 names from the menus. Having done this, you should switch the Model 100 off and then on again to ensure that you are in bank I. You can then replace the ROM with another, or if you have the PCSG 6 ROM Bank, simply turn the switch to the ROM you wish to access.

IMPORTANT NOTE: Before you pullout any ROM, it is essential that you are back at the main Model 100 Menu, with the Microsoft copyright notice showing in the top right comer. Then switch off the M100, flip it over and pullout the ROM. Put in the replacement ROM, flip the computer right side up, and switch it on. If the old ROM name still shows on the menu it doesn't matter. As soon as you place the cursor on it and press ENTER you will find yourself in the ROM you just plugged in, and when you exit, you will see the new name.

Some ROMs have plastic carriers, with protruding lugs at the ends, which may interfere with the edge of the RAM board, making it difficult to plug the ROM in. The simple remedy for this is to trim the lugs just enough to make them fit. You can use a file, xacto knife or scissors to do this.

Is there another way to move from bank to bank?

You can use the following one-liner to move to another bank from in BASIC:

POKE-2,211:POKE-1,1:CALL-2

This will move you from any bank into bank 2. The relevant parameter is the number immediately before the CALL statement. To get to bank 1 put a 0 there, to get to bank 2 put a I, to get to bank 3 put a 2 and to get to bank 4 put a 3.

ADDEMDUM FOR RAM VERSION 2.0

Enhancements:

1. An additional 32K bank of RAM.
2. 2. Extensions to BASIC to allow access to data files in any other bank.

Additional RAM

Your new RAM+ adds three extra banks of RAM to the 32K of system RAM. This means that you can now have a total of 128K of RAM in your Model 100.

Extensions to BASIC

You can now open a data file in another bank from a BASIC program. The program can be in any bank, and the file can be in any bank. The syntax is as follows:

OPEN "A:test" FOR OUTPUT AS 1

The four banks are given the device names A:. B:. C: and D:. The reason they are not called by their numbers (1,2,3,4) is to avoid conflicts within programs that access the Holmes/PCSG Chipmunk disk drive.

Once the file is opened (for input, output, of append), it can be accessed by any of the standard file I/O commands such as:

        INPUT #1,A$
        PRINT #1,B$
        A$=INPUT$(1,1)
        LINE INPUT #1,G$

Additionally, programs in other banks can be ROM, MERGEd, LOADed and SAVEd. They must be saved as '.DO' files,

however. You cannot LOAD a .BA file from another bank. To save a program as a .DO file you simply add the .DO extension to the file name, or append ',A' to the save command. Example:

> SAVE"D:TEST.DO"
> SAVE"D:TEST",A

The A stands for ASCII. A .DO file is known as an ASCII file, since it consists exclusively of regular text. A .BA file is known as a tokenized file, since it consists of data in BASIC's internal format with all sorts of control and graph characters in it.

SOME COMMON QUESTIONS

How do I recharge the RAM's batteries?

Under some rate conditions of use, it is possible that the NiCad batteries could become completely exhausted, causing the expansion RAM memory to become cleared. Your NiiCad batteries recharge while the Model 100 is switched on. It is advisable to charge them all night every now and then (for example monthly). Unfortunately the Model 100 automatically powers down after 10 minutes, so your unattended charge time is drastically reduced. You can easily overcome this using the following technique:

From the main Model 100 menu, place the wide bar cursor on BASIC and press ENTER. At the familiar BASIC Ok promt type:

> POWER CONT

This will disable the automatic power down feather of the Model 100. To restore it in the morning after you have charged your NiCads, simply type:

POWER 100

And press ENTER.

What if I want to put in another ROM?

In other for the extended RAM BASIC to work, you must have the RAM+ ROM in the option socket. Before you remove the RAM+ ROM it is essential to disable the extended BSAIC. This is done by pressing F3 (Goto), which also removes the Bank #1 names from the menus. Having done this, you should switch the Model 100 off and then on again to ensure that you are in bank 1.

IMPORTANT NOTE: Before you pull out any ROM, it is essential that you are back at the main Model 100 menu, with the Microsoft copyright notice showing in the top right corner. Then switch off the Model 100, flip it over and pull out the ROM. Put in the replacement ROM, flip the computer right side up, and switch it on. If the old ROM names still shows on the menu it doesn't matter. As soon as you place the cursor on it and press ENTER you will find yourself in the ROM you just plugged in, and when you exit, you will see the new name.

Is there another way to move from bank to bank?

You can use the following one-liner to move to another bank from in BASIC.

POKE-2,211:POKE-1,1:CALL-2

This will move you from any bank into bank 2. The relevant parameter is the number immediately before the CALL statement. To get to bank 1 put a 0 there, to get to bank 2 put a 1, to get to bank 3 put a 2 and to get to bank 4 put a 3.