

# Z88 Quick Guide

## Upgrading Flash Cards

Every now and then, we upgrade and improve the applications that are supplied with the card.

Whenever I notify users that a 'new' version is out I am greeted with words like

**I am not yet confident with burning app's to (flash) ROM's**

so last night and most of today I thought I would show you how easy it is!

## Minimum Requirements

The files that are used are 16K, so with a 128K RAM you will only be able to have 3 of them at any one time before having to download some more.



**Z88 Computer**

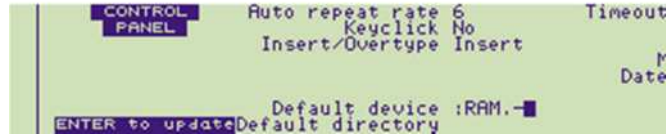


**Z88 Computer Link**, to download the new image files. It can be any type i.e. Mac Link Eazylink as long as you have the software for the Z88 end separately.



**128K RAM in Slot 1**

The [more RAM](#) you have in your Z88 the better! If you have another RAM pack, use that in Slot 2.



## Getting Ready

### ✓1 - Backup Z88

As I am assuming that you are using the minimum requirements, space is at a premium. Save all your important files off the Z88. (This is not so important if you have that 1M RAM!).

### ✓2 - Mains Adapter

The last thing we want when we do this is to run out of battery power, so plug in that mains adapter (or make sure you have a new set of batteries handy).

### ✓3 - Hard Reset

This is an important task, lets both start at the same place and get rid of any potential memory issues, lets give the Z88 a HARD RESET.

## ✓Fetch, Unzip and Transfer Files

The main files you need are the

### BBC BASIC

There are two program suites you can use. These are

- **ROMCOMBINER** which allows you to blow the full

### ✓4 - Default Device

We are going to use the Z88's temporary RAM. This is not normally used but has the advantage of using all the available RAM in the Z88 (RAM.0 + RAM.1). We will perform another Hard Reset when we finish so it should be safe!

Select the Panel [P], move the cursor down to the Default Device, move to the right (<> right-arrow) DELete and change to to - so that RAM.- is shown.

**Make sure you press the ENTER key** otherwise these changes will not take place.

To ensure that the Filer is also pointing to RAM.-, select the Filer, [F], then Select Device, <>SV, then you can change the 0 to - as above.

### ✓2 - Unzipping

As we are running a minimum setup here, you can just extract the files we need to replace the applications on you main computer first.

In romcombiner.zip the files we need are

- romcombiner.bas
- romcombiner.bin
- romutil.bas

In FLZIP files we need are

- FLZIP.60
- FLZIP.61

image onto your Flash Card.

- **ROMupdate** is easier to use but just updates a specific Z88 Application you already have.

### Image Files

ROMCOMBINER image files are in blocks of 16K and have a number at the end to indicate what position they are in the Flash Card. Filename.63 is at the top and Filename.0 is at the bottom.

ROMupdate image file is just a 16K file that gets replaced in your existing Flash card.

### **ROMCOMBINER example**

I am going to use the 64K block that is supplied with the Flash card. Larger images can be blown using the same technique. All that changes is the number of 16K files that need to be downloaded and blown.

### **1 - Fetch Files**

The files you need are

-  romcombiner.zip and
-  FLZIP.ZIP

which are fetched via the internet using your computer.

- FLZIP.62
- FLZIP.63

Put all these files into a directory ready to transfer to the Z88.

### **3 - Transferring files to the Z88 - 1**






There is only one problem with those files and that is that there are too many of them to fit on our Z88.

So lets just get what we can onto the RAM.

- romcombiner.bas
- romcombiner.bin
- romutil.bas
- FLZIP.60
- FLZIP.61
- FLZIP.62

Well that is all but the last one.

### **Final Checklist before running ROMCOMBINER**

-  **Backup Z88**
-  **Mains Adapter**
-  **Hard Reset**
-  **Default Device**
-  **Fetch Files**
-  **Unzip Files**
-  **Transfer Files**



```

RomCombiner v2.09 (C) Garry Lancaster, 2000-2011
Read ROM card to image files
Combine image files of cards
Verify EPROM banks properly erased
Blow image files to blank EPROM
Flash EPROM block erase
Emulator file conversion
Wait mode Quit

```

## Using ROMCOMBINER

As we haven't got the full ROM image in RAM we have to go for the Range of banks option.

### 1 - Start ROMCOMBINER.

First bank (0-63) **60**  
Last bank (0-63) **62**

```

BBC BASIC (Z80) Version 3
(C) Copyright R.T.Russell
>RUN "ROMCOMBINER.BAS"

```

```

First bank (0-63)? 60
Last bank (0-63)? 62
Blowing bank 60
Blowing bank 61
Blowing bank 62
Banks successfully blown!
Press any key to continue

```

[B Start BBC BASIC

Press the space bar to leave this.

RUN  
"ROMCOMBINER.BAS"

### 4 - Erase used files

### 2 - Flash EPROM block erase

Select the Filer [ ]F  
<>ER ERASE  
Name : FLZIP.\*  
Confirm each file ? No

Put the Flash card that you want to change the Application into Slot 3.

### 5 - Transferring file(s) to the Z88 - 2

We are only going to change the top 64K sector of the Flash card, so there is no need to erase the whole card.

Now we can get the last file.

- FLZIP.63

Press **F** to select the command.

Press -ESC- to get back to ROMCOMBINER.

We need to erase block 16 so type 16 followed by the return key.

### 6 - Blow image files to blank EPROM - 2

Follow the instructions as before but the banks are now

First bank (0-63) **63**  
Last bank (0-63) **63**

After seeing Successful!, wait until the menu appears and then select 0 to end.

### 7 - Hard Reset

Well thats it, just do a Hard Reset so that the temporary RAM is cleared out.

### 3 - Blow image files to blank EPROM - 1

Press **B** to select the command.

What EPROM type is in slot 3 **FLASH**

Card name? **FLZIP**  
Full ROM or Range of banks?

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## Blowing Larger Images



The only difference between doing the example above and Blowing larger images is that you need to go round the loop more often.

- Transferring files to the Z88
- Blow image files to blank EPROM
- Erase used files
- Transferring files to the Z88 . . .

The next section discusses the relationship between how many files you can save at any time v RAM packs and the order you should blow the files to the Flash Card.

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## More RAM = Less Loops

Before starting this, it would be useful to know how many 16K files you can store on the Z88 before having to going round the loop again.

The table below shows how many 16K files can be saved assuming 32K internal RAM.0.

This includes the BBC BASIC programs required and using RAM.- as before so that every byte is used.

RAM.1	RAM.2	No of 16K Banks
128K	-	3
128K	32K	6
128K	128K	12
512K	-	27

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## ERASING SECTORS

In the above example it was easy to decide which sector that needed to be erased because it was a 64K block and it was an application.

The table below shows the relationship between the 16K banks and the sector numbers that can be erased separately on the Flash card.

If you are replacing the same area of an application, the file may be left intact.

Bottom of Card - File Are End				
Sector No	Bank No			
0	0	1	2	3
1	4	5	6	7
2	8	9	10	11
3	12	13	14	15
4	16	17	18	19
5	20	21	22	23
6	24	25	26	27
7	28	29	30	31
8	32	33	34	35
9	36	37	38	39
10	40	41	42	43
11	44	45	46	47
12	48	49	50	51
13	52	53	54	55
14	56	57	58	59
15	60	61	62	63
Top of Card - Application End				

## Putting it all together

Let's have a look at a difficult example this time and see how it compares with the earlier example.

Application 2005 image files consists of APP2005.0 to APP2005.21 and then another range APP2005.40 to APP2005.63

Blocks 40 to 63 is the Application area

