

## flash.txt

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FlashStore Application Version 1.9  
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User Manual 4th edition, updated 17th April 2008.  
(Revised from 1st edition, Paris, 29 September 1997)

### 1M FLASH card =====

#### OVERVIEW -----

Thanks for using the new 1M (1024K) Flash card. Now, you will have a lot of room to save your files. The Z88 erases the Flash card, you no longer need an EPROM Eraser.

FAST ERASING - takes less than ten seconds to erase 1024K bytes.  
FAST SAVING - takes three seconds to save a 20K file.  
LOW POWER - takes a tenth of the power used by a standard EPROM.

#### FLASH CARDS AND EPROMS -----

Unlike RAM packs, FLASH CARDS AND EPROMS retain their memory even when power is removed. This makes them the ideal small file backup device for the Z88.

Individual files do not get deleted on their own. When you save the same file again to the card, the new file gets saved and the old file gets marked as deleted. It is still there taking up space and can be recovered. There is even an 'Erase file from Card' in FlashStore but again this only marks the file as deleted. The only way of removing files is by formatting the file area which removes all the files.

#### FLASHSTORE APPLICATION =====

FlashStore is supplied as an Application and is like the Filer (on the Z88) to save and fetch files.

This introduces a new concept for the Z88. In the past, applications used to be in a ROM and the files were stored on a separate EPROM. FlashStore splits the Flash card into two areas.

The ROM area which the Z88 recognises, is where FlashStore and other applications are stored.

The FILE area (the area that is left over) is where files are stored. This is the area that gets formatted (erased) when you want to clear the Flash card. Fortunately the Flash card can be erased in 64K sectors, allowing applications and files to be on the same device. Where the split is depends how many applications there are and where the 64K split line occurs. This FILE area is calculated by FlashStore when the Flash card is formatted and is displayed in the right-hand window.

INTEL stopped making Flash EPROM chips which were suitable for the Z88 in 2002 but at the end of 2004 AMD made a similar chip that we could use if the FlashStore core software was changed.

Gunther Strube re-wrote this program so the Flash card could still be used on the Z88 and added more features whilst he was at it. The INTEL stocks are now exhausted, the AMD version are now being used and the only difference the user will notice is that he can write to or erase

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the Flash card in any slot instead of just slot 3.

Rakewell only supply 1M Devices but Flashstore supports the following chips which is displayed in the information window.

INTEL	AMD
I28F004S5 (512K)	AM29F010B (128K)
I28F008SA (1024K)	AM29F040B (512K)
I28F008S5 (1024K)	AM29F080B (1024K)

EPROMS

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Flashstore is able to fetch files on EPROM packs in any slot. You should continue to use the Filer rather than Flashstore for all the other functions.

OZ 4.2

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The flash card is now sold with two versions of the software on it. These versions are with OZ 4.2 or without OZ 4.2.

To use the OZ 4.2 version the flash card needs to be in slot 1, then any RAM you have in slot 2 which still leaves slot 3 for additional storage or RAM.

To start running OZ 4.2 you need to do a HARD RESET (card flap open and press the small reset switch on the left side of the Z88 with an unbent paper clip.

The Z88 will ignore your internal ROM and run from the external card.

OZ 4.2 is in continous development, so check on our web site and <http://z88.wiki.sourceforge.net/what%27s+new+in+OZ+v4.2+%3F> for further information about it.

FOREVER APPLICATION BUNDLE

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As you would lose 64K's worth of space once FlashStore is on the Flash card, we have supplied it with Garry Lancaster's compilation FOREVER and ZIP utilities to use up the spare space.

Details of some of the Applications on Forever and ZIP utilities are:

XYModem

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A Z88 popdown application for transferring files using the Xmodem and Ymodem protocols. Transfer speed around 3300 cps at 38400 bps using 1K blocks. Currently supported features are checksum and crc error detection, 128 byte and 1K blocksize in any combination, streaming -G mode (only for sending). Mailbox function to send a file marked in Filer. Batch sending with wildcards. Use :\*//\* to send all files in all directories on all :RAM devices. Ymodem preserves name, size and modification date/time of transferred files. User interface similar to []X Imp-Export.

EP-Fetch2 - new version

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The version of EP-Fetch on this ROM has been specially modified to allow it to work with all sizes of EPROMs in any slot (1-3), including

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the new Flash cards.

It can also read files from combined ROM/EPROM cards created with the latest version of the RomCombiner program.

New features have been added including printing filenames to a printer. See whatsnew.txt for more details.

### FreeRam

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FreeRam is a popdown which instantly displays the amount of memory available in the default RAM device, together with a graphical map showing exactly where the free and used memory areas are located.

Press a number key (0-3) to view the RAM device (:RAM.0 to :RAM.3) of your choice.

### Alarmsafe

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AlarmSafe is a popdown which allows you to save all your current alarms to a datafile for backup purposes. If you need to reset your Z88 for any reason, you can then simply load the datafile back into AlarmSafe which will automatically set all the alarms back up again.

### Lockup

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Lockup is a popdown giving your Z88 an elementary level of security, which can only be circumvented by resetting the machine.

After activating the popdown, type a password (twice for confirmation) and then press the ESC key to switch the Z88 off. When the Z88 is turned back on, you must re-enter the password correctly before you can cancel the popdown (again using ESC).

When entering passwords, every single key (including special keys like SHIFT and the square and diamond keys) counts as part of the password - only the ESC, DEL and ENTER keys cannot be included. Passwords can be up to 16 keystrokes long.

### Installer

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Installer allows you to run true Z88 applications from free RAM in your machine, rather than requiring them to be blown to EPROMs or cards. This makes it ideal for trying out new applications, or if you have no ROM-creating facility. It is also very useful for developers, who can test software in a fraction of the usual time. DO NOT RUN THIS if you are using OZ v4.2.

### Bootstrap - THIS IS NOT SUPPLIED ON OZ 4.2 VERSIONS

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Bootstrap is a popdown which runs automatically after every reset. It acts in a similar way to the built-in facility where a file called "boot.cli" on an EPROM or card in slot 3 is automatically executed after a reset.

However, Bootstrap is much more flexible and after a reset will execute a CLI file called "bootstrap.cli" which can be located:

in any directory of any device (eg :RAM.1/system/bootstrap.cli)

on any EPROM, Flash card or ROM/EPROM (created by RomCombiner) card in any slot, 1 to 3

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This means that you can have different boot routines depending on whether the Z88 does a hard or soft reset: keep the soft reset version in RAM, and the hard reset version on EPROM or card.

Note that EPROM or card files must not contain any directory names (ie just /bootstrap.cli is accepted).

This application only runs on original ROM Z88's, and it is being phased out due to the incompatibility of running it under OZ 4.2.

Other programs  
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Instructions on how to use the other programs are in the zipped file. Load them into PipeDream to read and print them. The file extensions are .pdd.

The FlashStore application should you want to use it.

ROMCOMBINER.zip allows you to add any applications you may have to the Flash card.

All files supplied are either zipped (.ZIP), Plain Text (.TXT) or in PipeDream (.PDD) format. They are as follows:-

- ROMCOMBINER.ZIP Adds Applications you already have
- ROMCOMBINER.TXT Romcombiner instructions
- FLASHSTORE.ZIP The Application of FlashStore - not supplied on OZ 4.2 versions
- INSTALLER.TXT Installer instructions
- WHATSNEW.TXT What's new in Forever
- XYMODEM.TXT XY-Modem instructions
- UNZIP.TXT Unzip Instructions
- ZIPUP.TXT Zip up instructions
- ZETRIZ.TXT Zetriz - (Game) instructions (on OZ 4.2 verion)
- FLASH.TXT This file

Please take this opportunity to MAKE A COPY of these files before reformatting the FILE AREA. Save them to another computer or to another EPROM or card.

Rakewell will charge users who lose these files and require another copy but the good news is that they can be downloaded from our web site.

TIPS  
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Filer, FlashStore & EP-Fetch2 with FLASH cards & EPROMs  
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All these applications are very useful. Here is a summary of what they can do.

	Filer	Flashstore	EP-Fetch2
Save a File to an EPROM card	YES		
Save a File to a FLASH card		YES	
Save all Files to an EPROM card	YES		
Save all Files to a FLASH card		BACKUP	
Copy all or single Files from a FLASH card to a FLASH card		YES	
an EPROM card to a FLASH card		YES	

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Fetch a File from an EPROM card	YES	YES	YES
Fetch a File from a FLASH card		YES	YES
Fetch all Files from an EPROM card		RESTORE	
Fetch all Files from a FLASH card		RESTORE	
Fetch deleted Files from EPROM card		YES	YES
Fetch deleted Files from FLASH card		YES	YES
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Delete a File from an EPROM card			
Delete a File from a FLASH card		YES	
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Format File area from EPROM card	[ERASE WITH THE EPROM ERASER]		
Format File area from FLASH card		YES	
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### Fetching all Files

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Don't forget the RESTORE function. Sometimes it is easier to fetch all the files and delete a few unwanted files afterwards.

### Erasing all files in the RAM card before Restoring

If you are using Directories and you want to erase the complete RAM try using the wildcard // \* in the ERASE command in the Filer. It removes both files and directories.

### Restoring or Saving Files to base directories

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Restore is usually used to restore a complete Device in the root directory of the RAM. You can also add a Directory to restore the files as well. This could be used where you wish to compare files from two Flash Cards provided you have enough space.

### Using two Flash cards

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If you have the non OZ 4.2 version, you can have your Applications (including FlashStore) in slot 2 and read any of your "master" files from there, whilst using the another Flash card in slot 3 for current files.

In the OZ 4.2 version (which is in slot 1 and RAM in slot 2) you still have slot 3 to use the additional flash card to do what is described.

To use two Flash cards first prepare the Flash card which you want to use in slot 2, with your master files. This is done by using it in slot 3 to save your files first. You may elect to ZIP these files up beforehand (to save space).

When moving the Flash card from Slot 3 to 2, follow the following rules.

### REMOVING AND INSERTING APPLICATIONS

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Go into the INDEX and check you are not running any of the applications on the ROM. If (for example) the Flash card is in slot 3, a number '3' would be indicated in the CARDS column on the right-hand side of the display.

If you are, move the cursor over the SUSPENDED ACTIVITIES and use the <>KILL command to close it.

Open the card flap (the Z88 should beep) and remove the Flash card.

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Close the flap (the Z88 should beep again) and check that the INDEX flag has not appeared. This should not be displayed on the top right-hand corner.

Open the card flap (the Z88 should beep yet again) and put the Flash card in slot 2.

Close the flap and check that the Applications appear again in the list on the left-hand side.

Don't be tempted to put the Flash card out of one slot and into another without shutting the flap in-between times. The Index application manager needs to update its external application list and therefore needs closing of the flap after a card removal.

On the 2nd Flash card, you may want to clear the Application area to give the full 1024K space for files. You only need one copy of FlashStore, which, in this example is in slot 2. Use the Flash card block erase command in RomCombiner to do this.

You can only Save Files and Format the INTEL Flash card when it is in slot 3.

Provided there are no Applications on your Flash card, you may change them whilst in Flashstore. If the card does not get read properly you may need to refresh the display using the Select Card command.

#### RUNNING THE APPLICATION

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To start the application either move the cursor down to the FlashStore (the application name in the command window in the Index) or start it with [J]

The three windows (from left to right) are:-

The COMMAND window - selects the mostly used commands  
The FILE AREA window - displays, fetches and deletes files  
and shows you what flashstore is doing.  
The INFORMATION window - displays device statistics and commands.

The COMMAND window

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Seven commands are quickly available by moving the cursor over the command and pressing the 'ENTER' key.

The INFORMATION window

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When executing Flashstore commands the INFORMATION window replaces the FILE AREA window. It displays the following:-

Banner with the command name

Relevant statistical information to allow informed choices.

The filename already loaded in the command line ready for editing if required.

Warnings - if files are being overwritten or deleted.

SPACE is used to leave the window.

The INFORMATION window

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This displays two sets of information.

1. When the cursor is in the COMMAND window it shows the following:-

DEVICE INFORMATION

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which slot you are using in the Banner

Flash Chip Number or EPROM and Size

File Area Size

A Graphical Display of the complete file area. Deleted (grey), Saved files (black) and free area (white) give a quick indication of file usage and whether it is time to reformat the device and get rid of the deleted area.

Free and Used Space in bytes up to 1K or KBytes

Number of Deleted and Saved files.

2. When the cursor is in the FILE AREA window it shows the cursor movements and commands available.

CURSOR MOVEMENTS

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Flashstore supports all the cursor movement commands. These are useful when moving up and down in the FILE AREA or for moving the cursor to the beginning or end of line before editing.

<> Up Arrow - Top of the list  
SHIFT Up Arrow - Up a screen  
Up Arrow - Up a line  
Down Arrow - Down a line  
SHIFT Down Arrow - Down a screen  
<> Down Arrow - Bottom of the list

<> Left Arrow - Beginning of line  
SHIFT Left Arrow - Back a word  
Left Arrow - Back a character  
Right Arrow - Forward a character  
SHIFT Right Arrow - Forward a word  
<> Right Arrow - End of line

COMMANDS

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You have thirteen commands. They are selected using

the MENU using cursor keys and the ENTER key  
or using the <> key command sequence (useful for .cli files)  
or use the COMMAND window - seven quick access useful commands  
are here using cursor keys and the ENTER key.

Three of the commands -\*\* are directly accessible from the FILE AREA window. These commands are displayed in the INFORMATION window to remind you what they are.

<> KEYS	DESCRIPTION
<>CE or <>CF	Catalogue Card Files
<>SC	Select Card
<>FS	Save files to Card
<>EF or <>FL	Fetch file from Card - ** (ENTER or F)
<>BF	Backup files from RAM

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                                Copy (file) to Card - ** (C)
<>FC                               Copy all files to Card
<>RF                               Restore files to RAM
<>SV                               Select RAM Device (Default RAM)
<>TFV                              Toggle File View
<>ER or <>FE                         Erase file from Card - ** (DEL or D)
<>FFA                              Format File Area
-ESC-                              Quits this application

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Notes  
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If the Z88's battery is low ("BATT LOW" displayed in right hand side of the Z88 screen), you might still be able to save files, but the result may be unreliable. SAVING FILES OR FORMATTING A FLASH CARD WITH A BATTERY LOW CONDITION IS NOT RECOMMENDED.

Before formatting make sure you have saved and have a copy of the files supplied! (See Format) After formatting, you will have the unused space for saving your files.

If the card you have selected does not support any of the commands due to slot position or type, that command will be greyed out.

The -ESC- key can interrupt a command at any time (when user input is required).

Select RAM Device (Default RAM)  
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Changes the default RAM device for this session.

FlashStore by default uses the RAM device that is the Default device set in the Panel [ ]S. This can be changed for this session only, using this command. Instructions on changing the device are given on the screen. All commands that use the RAM will default to the value set here.

The FILE AREA window  
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The middle window displays all files and size that are in your file card area. By moving the cursor over the filename (point and shoot) and pressing either

the ENTER or F key will fetch that file to RAM or  
the DEL or D key will mark the file deleted or  
the C key will copy the file to another Flash card.

Toggle File View  
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Changes between browsing only saved files or browsing all files (both saved and marked as deleted). The top banner displays which view is being shown.

Normally the FILE AREA window displays saved files only. By using the Toggle File View marked deleted files are displayed, allowing these to be fetched with the cursor.

Catalogue Files  
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Lists filenames on file card area to a PipeDream file.

This command creates a file (default name filearea.pdd) listing the filenames and size. Loading this file into PipeDream allows it to be

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viewed or printed. Depending on which File Area view is selected, it will either print saved files or saved and deleted files.

### Select Card

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Selects which file card to use when you have more than one.

This allows multiple Flash cards and EPROMs to be read using the same FlashStore application. Highlight the Slot number (0, 1, 2 or 3) with the cursor that you wish to use. You may also press digits '0', '1', '2' or '3' to select the actual slot. The selected device will be displayed at the top of the right-hand window with the file information with current information of file data and space left on the card.

The padlock indicates a read-only device (like an EPROM or an INTEL flash card not in slot 3). 'AMD' or 'INTEL' labels are displayed on top line of each visual card for identified flash chip.

### Save to Card

-----

Saves files from the RAM device to the file card area.

Wildcards are allowed,  
Filename: :RAM.1

You simply have to enter the filename. Always specify the device. You are allowed to use wildcards. For example, if you want to save all the files including sub-directories, in RAM.1, type :RAM.1/\*.

When files are saved, the file size is shown together with the "header," the amount of space needed for the filename to be stored on the Flash File card. The program checks the data being saved is correct. In the unlikely event of an error, a message will be displayed and the file will be saved again. When the 'no room' message is displayed, the last filename that was trying to be saved can be viewed after pressing the ESC key.

If the file does NOT save, this is usually because the filename has been mis-spelt or even that it does not exist.

### NOTE

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Normally the display stays on when saving files, but if the file area is on the same device as OZ, the display goes BLANK.

This is quite normal, just wait, the display will return after the file has been saved.

### Fetch from Card

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Fetches a file from the file card area to the RAM device.

Enter exact filename (no wildcard).

Filename:

You have to enter the exact filename, preceded with the slash (/).

Wildcards are not allowed.

Fetch as : /

[The slash is already there]

Overwrite existing file : Yes

[Yes overwrites, No doesn't]

Fetching... Done.

[The file has been fetched]

Completed

[The Fetch command is finished]

Press ESC to Resume

[ESC returns to Main Menu]

Don't forget you can use the point and shoot option in the FILE AREA window.

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### Copy all files to Card

-----

Copy saved files in current file card area to another flash card in a different slot.

This command is used when you wish to copy all the files from the current file area, to either an EPROM or flash card, to another flash card without having to load the files into RAM. Using two flash cards you can reclaim the deleted file area from one card by just copying all the files to the other flash card.

Individual files may be copied by using the Copy command whilst in the FILE AREA window.

If you have more than two flash cards to copy to, you will be prompted for its slot number.

### Backup from RAM

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Saves all the files from the RAM device to the file card area.

This backs up all the files (until the flash card is full) in your current RAM device. Instructions on changing the device are given on the screen.

### Restore to RAM

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Fetches all the files from the file card area to the RAM device.

All files (including sub-directories) on the Flash card are fetched using the sub-menu commands. You might choose to restore all files without checking for existing files. Directories are created automatically in your selected RAM device.

Enter Device (or path),	
Device :RAM.1	[Change RAM device and/or path]
Overwrite existing RAM files? No	[Will prompt user to overwrite file]
Fetching file to :RAM.1/filename	
Overwrite existing file : Yes	[Yes overwrites, No doesn't]
Fetching... Done.	[The file has been fetched]
Completed	[The Restore command is finished]
Press SPACE to Resume	[SPACE returns to Main Menu]

### Erase file from Card

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Marks a file in the file card area as deleted.

Although files cannot be deleted from the flash card to gain space, this command allows a single file to be marked as deleted. This is useful for getting rid of those obsolete files that do not get overwritten.

Don't forget you can use the point and shoot option in the FILE AREA window.

### Format File Area

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Formats and erases the complete file card area.

This erases the File Area of the Flash card and formats it. If you have two (or more) flash cards that can be formatted you will be invited to choose which one you want to format..

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When the command is executed, it says:

CAUTION! All data will be lost.  
Are you really sure? No [Yes formats, No returns Main Menu]

-ESC- Quit this program.

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ABOUT

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The version number of the application is found by pressing the HELP key when in the main screen of Flashstore.

MESSAGES

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All messages are factual i.e. they tell you what is happening. what they don't tell you is what you should do if you get an unusual message.

File not found.

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Usually caused by a spelling error. Use the interactive FILE AREA window to 'point & shoot screen' so that it picks up the correct name.

Last file failed.

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Usually happens when the target file has no room to be saved.

MESSAGES YOU SHOULD NOT NORMALLY SEE.

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File not saved properly - will be re-saved. Error. File was not marked as deleted.

This message indicates that the Flash card is not working correctly, usually because of a dirty card slot connector. If this message comes up a lot, please contact Rakewell so that we can check the card.

FILE IN USE

If this appears you have a file that has not been closed properly, usually by the Filer. You can clear this either by doing a soft-reset or <>PURGE in the INDEX.

NEWS - OTHER PRODUCTS

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Use EazyLink, Z88 to PC transfer and more - written by Interlogic. A ROM with both Eazylink and FlashStore.

Application 2006 has all the best applications written for the Z88. For information and supply on any of these, contact Rakewell Ltd.

OZ v4.2 (bundled with Flashstore and Eazylink) is available on a 1M flash card. Visit our website or call Rakewell for details.

DISCLAIMER

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We will not in any event be liable for any loss, including consequential loss, caused by any error, defect or inaccuracy in our hardware and software, including but not limited to loss of profit or loss of contracts.

FAQ

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- 1) Do I need to format the EPROM before I can start saving files to it?

No. You will notice that there are some files that have been included on the Flash EPROM that you may find useful. One of these files is this User Guide. Use the Catalogue files to see what there is.

- 2) Does the format only wipe out the text files? i.e. does formatting leave the 64k of applications untouched?

Only the file area is formatted. Applications remain on the Flash card.

- 3) When I FETCH something from the Flash card, where am I fetching it to?

To the default RAM device as set on the Panel [ ]S or to the Default RAM device set by this application.

- 4) Is this the same as loading a file into Pipedream?  
i.e. I can FETCH my documents from the EPROM?

You need to use the RAM device as an intermediate device when either fetching or saving files.

- 5) Can I EXPORT files from the EPROM directly to my PC or do I have to load them into :RAM.0 or :RAM.1 first?

No See above.

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