FlashCmd 1.50b

file manager software for the FlashPlug™ memory module

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- preliminary -

General

The FlashPlug memory module offers 8 Megabyte of external storage to your Palm™ handheld (III/V/VII series of handhelds). It is not an expansion of the onboard RAM. It's closest equivalent on a desktop computer would be a disc drive.

FlashPlug uses the flash-memory technology that needs no power to hold the stored data. So FlashPlug needs no batteries or other power supply. Only when operating (e.g. writing or reading data) it consumes (very few) power. Typical consumption is about 2 mA of current when operating. The software turns the FlashPlug on only when needed, so you can leave it clipped onto your handheld without worrying for your batteries.

Communication between FlashPlug and handheld is done via serial interface at 115 kbps. Typically writing is done at 6kb/sec, depending on the handheld's CPU speed. Reading is a little bit faster.

The 8 Megabyte of storage can be divided into a maximum of 9 partitions. Each partition has a directory, storing the names and a few extra information of the databases on each partition. Each directory can hold up to 224 entries (128 with earlier versions up to 1.36b of FlashCmd). There is no support for subdirectories. JKS Technolgie initialises your FlashPlug so that it contains three partitions. The size of the first is 4 Megabyte, the two others can hold 2 Megabytes of data each. You can change this set up, details on changing partitions are described in "Edit partitions" of chapter "Using FlashCmd software".

A file manager application named FlashCmd is used to copy or move databases between the handheld memory (where they can be used by other programs or executed from PalmOS® launcher in case of applications) and the partitions of the FlashPlug. JKS Technologie has also developed and released a shared library based API that allows software developers to effortless write programs that directly read data from the FlashPlug without copying to onboard RAM. We hope that in the future a growing number of programs take benefit of this. For your convenience we include a reader for the popular "doc"-format (compressed text, e-books) that allows you to read texts directly from FlashPlug, so you can take megabytes of your favourite texts with you and save precious RAM on your Palm handheld.

You can also use the FlashPlug as a reliable backup medium, as the flash-technology used can hold data for 10 years without power supply. A special backup program FPBackup is also supplied, that allows you to create backups of the applications together with the databases they need in one file set.

Versions

This manual covers version 1.50b of the FlashCmd Software.
Higher version numbers starting with 1.5 (1.51, 1.52 etc. with or without b) will only be issued for bug fixes, so they will not change the user interface as described in this manual, or for additional file viewers as described in section "Special views". In the latter case refer to the release notes shipped with such versions.

Versions prior to 1.50b (1.27 to 1.38b) do not include the following features:
- Display of file types as described in section "Viewing databases" and paragraph nine of section "Using FlashCmd software".
- File viewers as described in section "Special views".
- "Preferences" as described in section "Menu commands".
- Renaming of partitions as described in section "Edit partitions".
- Versions with odd minor version numbers do not include the move action.
- There are no self flashable versions as described in section "Installation".

Also note that these versions may have a different file limit per partition as described in section "General" above. Versions prior to 1.36b can only display a maximum of 255 databases on the handheld.

Installation

FlashCmd comes in two versions: a "normal" one like most PalmOS software, and a self flashable one, using TRG InstallPro software. We recommend using the latter, as the program will then be available even after a hard reset, giving you the opportunity to restore previously backed up data from your FlashPlug even after the handheld suffered from a fatal crash.
If you do not want to copy FlashCmd into non-volatile ("flash memory" on the Palm handheld, not to be confused with flash memory on the FlashPlug), please use the FlashCmd.prc-file in the folder FlashCmd1.5 of your diskette. You can then skip the paragraph "self flashable version" in the installation instructions below.
Important: Do not use the self flashable version if you already have a program installed to access the onboard flash memory other than TRG FlashPro. In this case do a normal installation of the FlashCmd.prc-file and use your flash memory program to move FlashCmd to onboard flash memory.

On the floppy disk you will find the file FlashCmdPro.prc. This is the executable FlashCmd program in Palm .prc format. You can install it on your handheld using HotSync® manager. Usually this is done by double-clicking on the file in Windows-Explorer, clicking through the following dialogs and then pushing the HotSync button on the cradle of your Palm handheld.

Self flashable version:
If you choose to install the self flashable version the handheld will reset after HotSync operation and then show up an installation dialog. If you tap on the "install" button the FlashCmd program will then be moved into the non-volatile ram of your Palm handheld. That way it will be available on your handheld even after a hard reset.

The FlashPlug memory module is simply plugged into the connector on lower side of your Palm handheld that usually connects into the cradle.

You can then start the FlashCmd software.

Using FlashCmd software

On program start FlashCmd will display screen like in figure 1. If you have forgotten to attach the FlashPlug, a dialog will inform you that there was no FlashPlug found, and the program terminates: attach the FlashPlug and start again.

The message "scanning directory" will disappear after a short time and the display will look like figure 2. On the display you will find the following controls:

- The name of the program in the top left corner
- A list of databases on either the Palm handheld or the active FlashPlug partition together with a scrollbar on the right that lets you navigate through the list. The number on the right of each database name is the size of the database in bytes
- Two push buttons named RAM and PLUG, these tell you whether the list displays databases on the handheld (when "RAM" is highlighted) or the active FlashPlug partition (when "PLUG" is highlighted).
- To the right of these push buttons there are buttons for the various *actions* available. These vary depending on the view displayed. (For example in "PLUG" view you will find a "Delete" button. If you don't see any buttons see note in paragraph "File set-viewer" in chapter "Viewing databases" further below.)
- A dropdown list (with the triangle on the left) telling you which partition is currently active on the FlashPlug (here "C:\"). Tapping on the triangle activates a list of partitions allowing you to change the active partition on the FlashPlug.
- Below the database list, above the "RAM/PLUG" push buttons you see the selection counter, two numbers displaying the number of files selected and their total size (in bytes). Here both are zero, as we haven't yet selected any databases.
- On the left of the list, or in the first column of the list, left of the vertical line, you can see a letter indicating the type of the database. We'll explain that later on.

figure 1

figure 2

Selecting source

Before you select databases, you have to decide whether the handheld or on the FlashPlug should act as source for the following actions, and which partition of the FlashPlug should be active. The first choice is done using the two push buttons labelled "RAM" and "PLUG". In figure 2 you are working on "RAM" (handheld) and have partition "C:\" (indicated by dropdown list next to program name) active, so if you choose to copy files you would be copying from handheld to partition "C:\" of the FlashPlug. Figure 3 shows a different situation. Here partition "E:\" of the FlashPlug is selected and the "PLUG" view is active, so you would be copying databases from FlashPlug partition "E:\" to handheld. After changing the active partition the program will read in the directory of that partition. A message "scanning directory" will be displayed.

figure 3

Note: you can switch the active partition while in „RAM" view. That does not mean that you are changing to FlashPlug as source of following copy or move actions, but that you are changing the destination for these actions.

Selecting databases

Before you can perform any actions, like copying databases between handheld and FlashPlug, you have to select which databases the action should be performed on. You select databases by tapping on their name, that is somewhere between the vertical line on the left and the scrollbar to the right. The name of the database will then be drawn inverse (white or greenish on black), and the selection counter will be updated. You can select as many databases as you like. You can also scroll through the list using the scrollbar or the (hardware) buttons on the bottom centre of your handheld. If you want to unselect a database simply tap it again. Figure 4 shows a typical screen after selecting a few databases, note that we selected four databases, as indicated by the selection counter, only three are currently visible in the list, the fourth was further down.
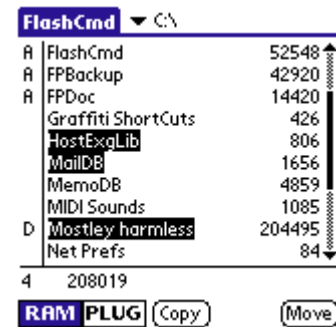

figure 4

Performing actions

Actions will always be performed from the currently active view, that means when in "RAM" view, indicated by the highlighted "RAM" push button as in figure 4 you will copy or move databases from handheld to the active FlashPlug partition (as indicated in the dropdown list on the top of the screen next to the program name). If you are in the "PLUG" view (the "PLUG" push button highlighted as in figure 3) you will copy or move databases from FlashPlug to handheld, or delete databases from the currently active FlashPlug partition. The following actions are implemented in FlashCmd:

- Copy: this will copy the selected databases from handheld to the active partition or vice versa. That means after this action there will be two identical databases on both sides.
- Delete: this is implemented only on the FlashPlug side. The memory and directory entries of the databases are freed.
- Move: this is implemented for both directions. Databases are copied to the other side (handheld or FlashPlug partition). If this was successful the original databases are deleted (from either FlashPlug partition or handheld).

During the action the screen will display the progress as shown in figure 5. Here it is indicated that database "Mostley harmless" is right now copied from handheld to FlashPlug (partition "C:\"). Copying of the database is 80% complete; the whole operation (for all selected databases) is 79% complete.

The selection indicator is updated after each processed file. If the operation could not be completed for a database (because of insufficient memory on handheld or active partition, or there are no more directory entries) the databases are left selected, so if you are copying to FlashPlug and run out of memory you can select another partition and try copying the remaining databases to this partition.
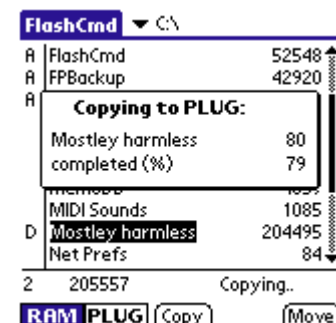

figure 5

Menu commands

FlashCmd offers two menu bar items. In the first named "Edit" (figure 6) you will find the actions described above (Copy, Delete and Move), again, depending on the current view, not all of these may be available. In addition you will find the commands "Select all", selecting all databases in the current view, "Unselect all", deselecting all databases in the current view, and "Exit" terminating
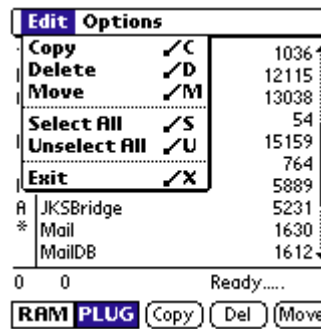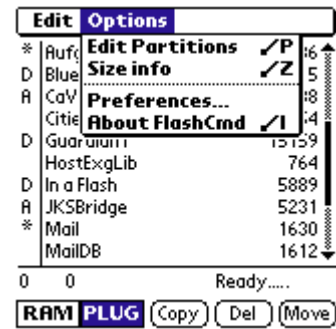
FlashCmd and returning to PalmOS launcher (or the whatever program was active before).
The second named "Options" contains some administrative tools (figure 7). Edit Partitions is a bit more complex than the others, and will be discussed in the next chapter.
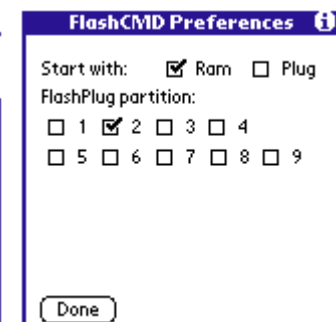
"Size info": This will display the size of memory and possible number of files left on the active partition (figure 8).

figure 6

figure 7

figure 8

figure 9

Note that the number of files may be smaller than the number of free directory entries if there are less free blocks than entries. If there is only one free block left there can be only one more file on the partition even if there are a hundred free directory entries.
"Preferences": this brings up the dialog shown in figure 9. It lets you choose the active partition and view on program start-up. The settings shown in figure 9 for example would start FlashCmd with the second FlashPlug partition active, but displaying the list of handheld databases. You may only set the number, not the name, of the FlashPlug partition, as the names may change. If you choose a higher number than the actual number of partitions the last partition will be selected.
"About FlashCmd": shows version and a few program info.

Edit Partitions

Choosing "Edit Partitions" from the menu of the database list view, brings up a form allowing you to create, delete, or rename partitions on the FlashPlug memory device (figure 10). The form shows a list of the current partition names. Also start and size, expressed in blocks of 8kb are also displayed (start only for information, it is assigned automatically and starts with 2).
"Done" returns to the previously active view.
Tapping on a partition will select and highlight the partition. You can then delete or rename this partition.
Note: partitions are always contiguous, that means that when you are deleting a partition FlashCmd will shift the following partitions to fill the gap, unless it's the last partition. So if you want to delete all partitions it is faster if you do it "back to front".
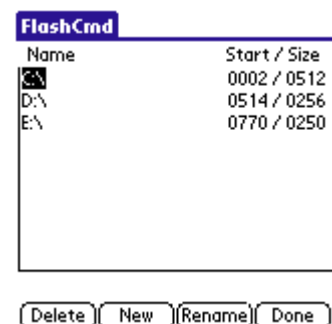

figure 10

Tapping the new button allows you to add a new partition (after the existing partitions). In the following dialog you can enter the size (in blocks of 8kb) and the name of the new partition. The size field will be assigned a value of 512 blocks and the name field "SFFS" as default, as shown in figure 11. Of course you can change these.
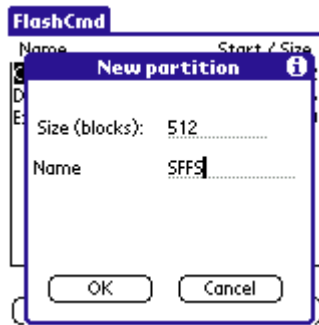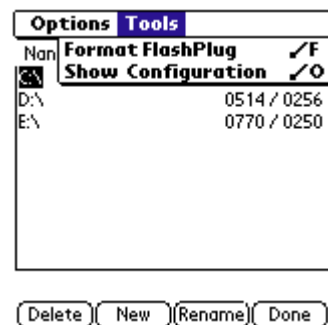
Note: partitions can't be smaller than 3 blocks, if the desired size exceeds the number of free blocks it will be reduced to the number of remaining free blocks. Partitions may have the same name, although this is not recommended.

Tapping the "Rename" button lets you assign a new name to the selected partition. A dialog similar to the one in figure 11 will appear, except that it will not show a "Size" field.

Additional menu commands: Edit Partition view offers an extra menu bar item "Tools" (figure 12).

Format FlashPlug: this will erase all data, including information about partitions on your FlashPlug. During formatting, FlashCmd also scans for bad blocks on the flash memory chip. Bad blocks are marked, so FlashCmd won't use them.

A progress indicator will inform you about the current status of the formatting process.

Formatting is done at JKS before shipping the FlashPlug unit. There usually is no need for you to format the FlashPlug.

Note: if you format a FlashPlug you have to add one ore more partitions before you can copy data to the FlashPlug.

Show Configuration: This will show the total size, the number of bad blocks found during the last formatting, and the number of bytes available for data (total bytes minus partition information), as shown in figure 13.
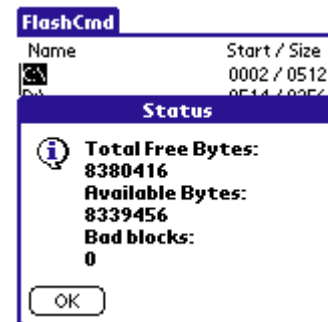
A few notes

FlashCmd will not display databases that are located in read only memory of your handheld (for example the built in applications like ToDo list). Of course we could copy these to the FlashPlug, but we could never copy them back, so they would just use up memory.

The sizes of the same database on the handheld and on the FlashPlug usually differ (they are a bit smaller on FlashPlug). This is no loss of information, the data is simply arranged a bit different, and PalmOS has to work with the data, whereas we can simply pack it onto the FlashPlug for later restoring, saving a few bits.

Viewing databases

FlashCmd offers you the possibility to view the contents of databases before copying them. In database list view (as in figure 2-4) you will notice that a few databases have a single letter to the left of their name (left of the vertical line). This letter shows you the type of data for a few common types of databases:

"A" will indicate that the database is an application (executable program).

"D" indicates the popular "doc"-format, a compressed format for text files.

"P" indicates databases containing pictures of the Kodak PalmPix camera.

"*" indicates backup sets created with JKS' FPBackup software. These contain multiple databases grouped by a common creator (an information PalmOS stores with each database indicating to which application the database belongs) and packed together to save directory entries.

If the space left to the database name is blank it is none of the above (an ordinary database so to speak).

figure 14

To view the contents of a database simply tap on this letter (or the blank space). This will not select/deselect the database but open a form showing a few information about the database. Figure 14 for example shows a typical database, MemoDB the database containing the current memos created with the built-in application of your handheld.

On PalmOS handhelds data within a database is stored in units and not as a long stream as in most operating systems. There are two types of databases: resource databases store a (four letter) type and a number with each unit (called a resource). This could be a for example a string (piece of text), the type would then be "tSTR" and together with an arbitrary number needed to find the right piece of text. Applications are of this type.

In databases containing other data the units are simply numbered (starting at 0) and are called records.

In figure 14 you will find the following information: the first line shows two pieces of information: that this is a record based database and resides on the handheld ("Record view palm database")

For resource databases the first would read "Resource view", and for databases on the FlashPlug the latter would read "plug file".

The next line shows the name of the database. A list of records is displayed below the horizontal line showing the number of the record and a bit of data from the record start (32 bytes maximum, displayed as string, so a zero may terminate the display).

For resource databases the type and number of the resource is displayed instead of the record number.

Below the record/resource list you will find the type and creator of the database. This information is stored together with the database by PalmOS allowing it to keep track, which databases belong to which applications. Thus it can delete databases together with their application, avoiding "orphaned" databases filling up memory.

When finished tap on the done button, this will return you to the last active view.

Note that usually the data is not readable like in the example above but looks a bit strange. There also might be nothing displayed, this does not necessarily mean that the record is empty, just that we can't display the data. If there are no records/resources in the databases "empty" is displayed, the database might still have a size, as PalmOS stores additional information about the database.
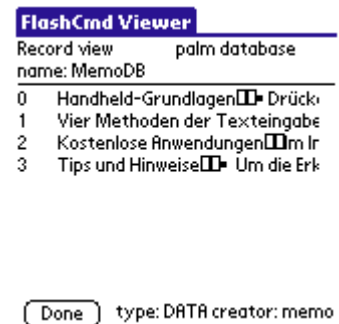
Special views:

Doc-viewer: when viewing doc files FlashCmd will display the database as readable text. Figure 15 shows a passage of Douglas Adams wonderful book "mostley harmless". The four push buttons in the lower left corner let you change the font used for displaying the text. You can scroll through the text with the hardware buttons on the lower centre of your handheld or by tapping on the upper and lower half of the text. The popup list on the lower right corner lets you jump to a record. When finished viewing tap on the done button.

Note: FlashCmd stores the name of the current doc database, and the position where you last were reading. If you view the same database again you will be placed at that position. If you open another doc database this information will be lost.

figure 15

File set-viewer: if you view a file set created with JKS' FPBackup program you will be shown, after a short message "scanning file set", a view similar to the database list views of section "Using FlashCmd software" above (figure 16). The only difference is that you will find fewer action buttons, as you can only copy files out of a backup file set, and a "done" button to return to normal view. You can select databases in a file set as in normal list view and copy them back to your handheld, or you can view the contents as described in this chapter (so you can read a doc file within a file set).

figure 16

Note: changing the active partition while in file set-view will terminate file set-view and return to normal view. If you change to "RAM" view while in file set-view you will be displayed the list of databases on the handheld, but without any action buttons, as you cannot copy anything into an existing file set. If you want to work (perform actions) on the "RAM" side, please go back to "PLUG" view and terminate file set-view by tapping on the "Done" button first, then return to "RAM" view.

JKS Technolgie may add further special viewers for other types of databases in future releases of FlashCmd. See our website www.flashplug.de for updates.