



Doors CS version 5.0

User Manual

CEMETECH

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Doors CS v5.0

User Manual

Table of Contents

Introduction	1
Installation	2
Using Doors CS	3
Doors CS Tools	5
Shell Extensions	6
Appendix I: Features	7
Appendix II: Supported File Types	8
Appendix III: Developer Information	9
Appendix IV: Error Messages	10
Information	10

Introduction

Please note that this manual is incomplete and will be in a final form with the release of Doors CS v5.0 for both the TI-83 and TI-83+ in September 2004.

Doors CS is an assembly-language shell and user interface for TI-83 graphing calculators. It contains a variety of tools and features to facilitate using programs and managing your calculator. Doors CS combines a small program size and a range of features to offer everything you might need on your calculator. Doors CS v5.0 is the first fully assembly version of the program, now offering even more file support than previous versions. Ashell, Ion, and SOS assembly language programs can all be run from within Doors CS, as well as regular and Doors CS-optimized BASIC programs. Normal ASM programs and proprietary Doors CS assembly programs and files are also supported.

Within Doors CS are the tools necessary to protect/unprotect, delete, rename, and copy any of the files on your calculator. The built-in Contrast Wizard lets you modify settings to your needs without leaving the shell. You can also turn off the calculator and quickly see the level of your battery and free memory from icons on the Doors CS taskbar. Finally, Shell Extensions (SEs) provide support for external hardware and additional features to further extend the usefulness of the shell. Appended Library Extensions or ALEs can expand the library capabilities of the programs you have on your calculator to make program sizes even smaller.

This manual provides the information you need to use Doors CS to the full extent of its capabilities. If you are unclear about anything, feel free to email me at Kerm_Martian@yahoo.com. You can get continuing updates on the Doors CS project at <http://www.Cemetech.tk>.

Quick Start

You can use this section to quickly get Doors CS on your calculator without reading through the Installation section; when you have a chance take a look through this manual so you get an idea of the features that Doors CS offers.

Step 1: Connect your TI-83 to your GraphLink or other compatible linking hardware.

Step 2: Using the appropriate software, send [DoorsCS.83g](#) to your TI-83.

Step 3: Run prgmADCS at any time by going to [PRGM], choosing ADCS, and press [ENTER][ENTER].

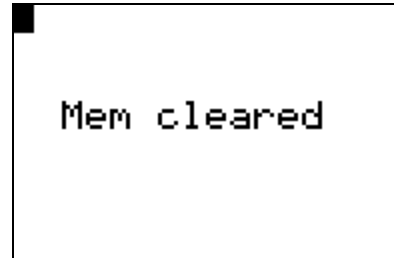


Fig 1.1: Memory Cleared

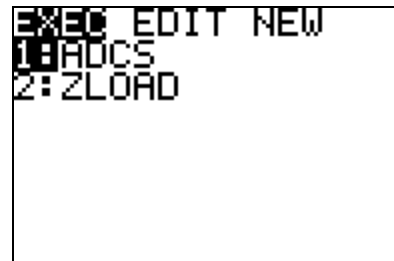


Fig 1.2: ADCS and ZLOAD on the calculator



Fig 1.3: Run prgmADCS to start Doors CS v5.0

Installation

To install Doors CS on your calculator, there is one group that you must send to your TI-83 or TI-83+ graphing calculator, namely Doors CS.83p (TI-83) or DoorsCS.8xp (TI-83+). These programs should be in the Program folder of the zip file this manual is in; if not, you can download them from <http://www.Cemetech.tk> > Programs > Shells > Doors CS. Send these programs to your calculator's RAM using your linking software (if you are using an emulator you can load the programs directly from the folder). If you do not have some sort of linking software and hardware, you cannot use Doors CS v5.0; since it is an assembly programs and contains symbols and commands not accessible to the user, you cannot type it in manually.

Once you have put these two program on your calculator, you can run Doors CS by executing prgmADCS. From the homescreen, press [PRGM], arrow down to ADCS, press [ENTER] to paste the name to the homescreen, and press [ENTER] again to run it. You do not have to configure any settings, as Doors CS will run immediately whenever you execute prgmADCS.

If you would like to send Doors CS to another calculator, connect the two with a unit-to-unit link cable, press [2nd][LINK][>][ENTER] on the receiving calculator to enter Receive mode. Next, on the sending calculator, press [2nd][LINK][3], arrow down to ADCS, press [ENTER], arrow down to ZLOAD, press [ENTER], then press [>][ENTER] to send the two programs.



Fig 1.4: Run prgmADCS to start Doors CS v5.0

Using Doors CS

➤ Introduction

Once Doors CS v5.0 is installed on your calculator, you can start it at any time by running prgmADCS. The program use a special loader to reduce program size and increase speed, then counts the programs and files present on your calculator and renders the desktop.

The **desktop** is the main interface for Doors CS, consisting of the **program area**, where up to six programs can be listed at a time, the **scrollbar**, the means for browsing through programs and files, and the **toolbar**, the bar at the bottom that contains most of the user-accessible Doors CS tools.

➤ Navigating

To interact with Doors CS, you use the mouse cursor. To navigate, press the arrow keys. The [TRACE] button left-clicks, while the [GRAPH] button right-clicks. If you reach any edge of the screen, the mouse will stop. The ASO (AutoShutoff) feature will activate if you do not move the mouse cursor for three minutes. If you have any Ses (Shell Extensions), these will run in the background when the mouse is active. In addition, battery and memory error indicators will flash to alert you of low battery / low free RAM conditions at the desktop.

➤ Running Programs

The heart of the desktop is the programs. Program names and icons for up to six programs can be displayed at one time on the desktop. Simply left-click once on a program icon or name to run that program. If any error condition exists, Doors CS will alert you to prevent data loss (see Appendix IV: Errors). Doors CS can run normal BASIC and assembly language programs as well as Ion assembly programs, SOS programs (both with and without libs), AShell programs, and Doors CS BASIC and assembly programs. Each type can be identified by its icon, as shown in Fig. 1.2. When a program

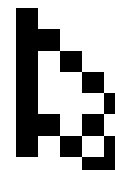


Fig 1.1: The Doors CS mouse cursor

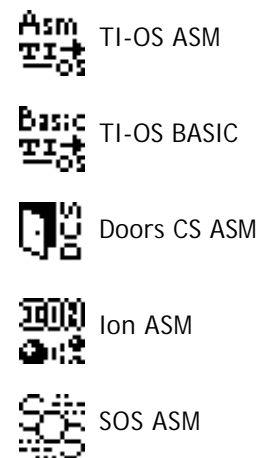


Fig 1.2: Primary program icons

finishes running, you will be returned back to the desktop. If for some reason a program quits, simply run prgmADCS again; your RAM will be recovered.

➤ Program Properties

You can edit the properties of programs from the desktop. Right-click on any program name or icon, then select an option from the menu that pops up. You can delete a program, rename a program, copy the contents of a program to a new program, or lock/unlock a program. If you would not like to do any of these, simply click outside the menu.

If you delete a program or file, it will be erased from memory and its VAT entry will be overwritten. It is recommended that you back up important files to your computer in case of accidental deletion.

If you copy or rename a program, you will be prompted for a name for the program, and then you will be returned to the desktop.

Locking or unlocking a program affects whether the program or file can be edited from the TI-OS. It is recommended that you keep assembly language programs and files locked to prevent accidentally modifying the program, although there is no such restriction on unlocking BASIC programs. Note that locking a program is not the same as archiving a program: it does not prevent deletion or loss in the event of a crash or freeze.

➤ Using the Toolbar

There are a variety of tools available on the Doors CS taskbar, the strip of the screen at the bottom that contains icons and meters. Among these are, from left, the Contrast Wizard, the PowerOff feature, the Restart button, the Memory Meter, the Battery Meter, and the Exit button. Most of these are detailed in the Doors CS Features section of this manual. The Exit button in the bottom right-hand corner is the way to exit Doors CS at any time.



Fig 1.3: The Program Properties menu

Doors CS Tools



➤ Contrast Wizard 🖱

The Contrast Wizard is a tool that lets you change your current contrast settings without exiting from Doors CS. You can access the Contrast Wizard from the desktop by clicking the contrast icon at the lower left of the toolbar. A sliding menu will pop up. Click on the slider to set a new contrast level; the top is darker, the bottom is lighter. If your screen goes blank, press the up arrow once, click, and then repeat until you can see the desktop. If the screen goes dark, press the down arrow once, click, and then repeat until you can see the desktop. When you are satisfied with your settings, click anywhere outside the Contrast Wizard to return to the desktop.

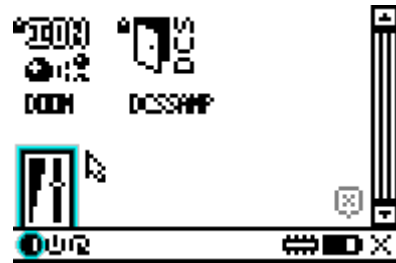


Fig 3.1: The Contrast Wizard

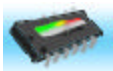


➤ PowerOff / ASO 🖱

You can turn off your calculator from within Doors CS; when you turn it on again you will still be in Doors CS—no need to exit, shutdown, and then go back in! To activate the PowerOff feature, simply click the power icon, the second from left at the bottom of the desktop. Doors CS will also automatically engage AutoShutOff (ASO) if you do not press any button for about four minutes. When you turn your calculator back on, you will still be at the desktop.



Fig 3.2: The PowerOff button

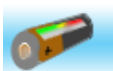


➤ Memory Meter

If you would like to be able to judge the amount of free RAM memory that you have on your calculator for programs and files, a glance at the meter in the lower right-hand corner of the screen provides a rough estimate. To the left of the Battery Meter, the Memory Meter graphically shows how much free RAM you have left. A full meter indicates a large amount of free RAM, while an empty one indicates low free RAM. You can free up RAM by deleting programs and files (see Program Tools). In addition, if there is an error icon flashing above the Memory



Fig 3.3: The Memory Meter



➤ Battery Meter

The Battery Meter provides an at-a-glance evaluation of the current power level of your main AAA batteries (it does not evaluate the backup battery). A dark Battery Meter indicates full battery, while a light one symbolizes low batteries. If an error icon is flashing above the Battery Meter, it is warning of a low battery condition that should be addressed to avoid loss of programs and/or files. Because the Battery Meter relies on your current contrast setting to judge the current power level of your batteries, it provides 40 shades of power for more complete power evaluation.

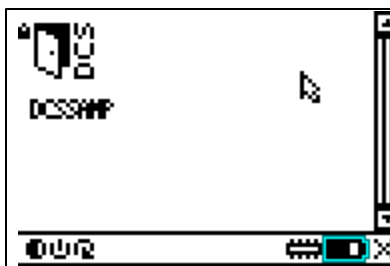


Fig 3.4: The Battery Meter



➤ RAM Recovery Tool

If you ever run a BASIC program or ASM program that causes the TI-OS to create an error, you will lose about 3 KB of RAM. However, the next time you run Doors CS, the RAM Recovery Tool will detect this and recover the lost memory.

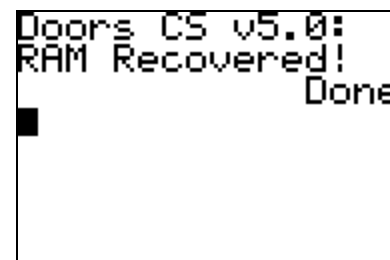


Fig 3.5: RAM Recovery Tool

Appendix I

Features



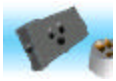
➤ Ultra Threading

Doors CS can run up to 255 Shell Expansions simultaneously from the desktop, small modules that can add extra capabilities to your calculator. Note that because of the low processor speed of the calculator, the more SEs that are being run, the slower Doors CS will run. This process is known as [Ultra Threading](#), and is similar to the multithreading process used in commercial computers to enhance available features.



➤ Appended Library Extensions (ALEs)

The concept of the library was first introduced with Joe W.'s [SOS](#), support for which is offered in Doors CS. A library is an external file that several programs can share that provides additional features and tools. Doors CS takes this a step farther, with libraries that can be *addended* to the included Doors CS libraries—that is, programs can choose between smaller size and a wider range of features simply by including ALEs.



➤ Shell Expansions (SEs)

Shell Expansions, for other shells known as modules, are the base of Doors CS's Ultra Threading capabilities. They are small segments of code, up to 255 of which can run simultaneously in the background while Doors CS is active for near-multitasking capabilities. Although they are limited to using certain areas of memory, Shell Expansions can select when they should be run (i.e. at the beginning, normal execution, or unloading of Doors CS). Thus, SEs can offer features such as external hardware support, password protection, and other tools to the built-in array of features.

```
Welcome!
```

Fig 3.1: An SE with a startup section (left) and an exit section (right). To save space, both are in a single program.

```
Thanks for using  
Doors CS v5.0
```

Appendix IV

Error Messages

Error # 501 : Unknown Type

If you receive this error, it indicates that you have tried to run a program type that Doors CS does not currently support. If you believe this is not true, file a bug report (see Contact section). Otherwise, get a version of the program in a format supported by Doors CS.

Error # 502: Missing Library

This error indicates one of two things. Either you have tried to run an SOS program without the required libraries present on your calculator, or you have tried to run a Doors CS ASM program without required ALE(s) on your calculator. Fix this by loading the required library or ALE.

Error # 503 : File Not Found

If a program has corrupted the Doors CS VFAT (Virtual File Allocation Table), a program may not be recognized. This error can usually be fixed by clicking the restart button on the toolbar at the bottom of the screen.

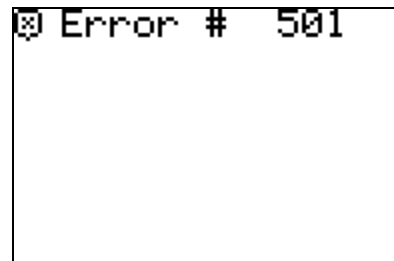


Fig 4.1: Unknown type error message

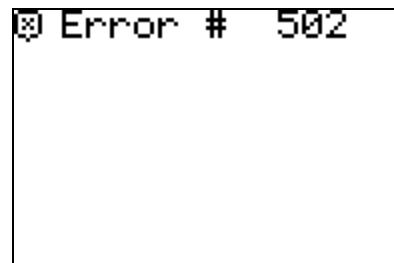


Fig 4.2: Missing library error message

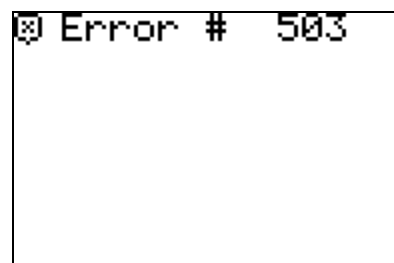


Fig 4.3: File Not Found Error message

Error # 504 : Insufficient Memory

This error occurs when you have tried to perform an operation for which you have insufficient free RAM. For example, if you have tried to copy or rename a program larger than the amount of free RAM you have, you will receive this message. Also, if you have tried to run a TI-OS BASIC or assembly language program under the same conditions, you will receive this message.

Error # 505 : No Programs

This error will appear if you have tried to run Doors CS but have no Doors CS-compatible programs on your calculator. Doors CS will quit to the homescreen after displaying this message.

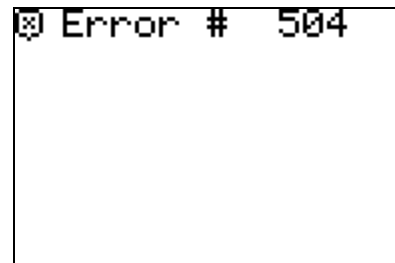


Fig 4.3: File Not Found Error message



Fig 4.3: File Not Found Error message