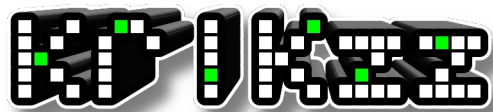
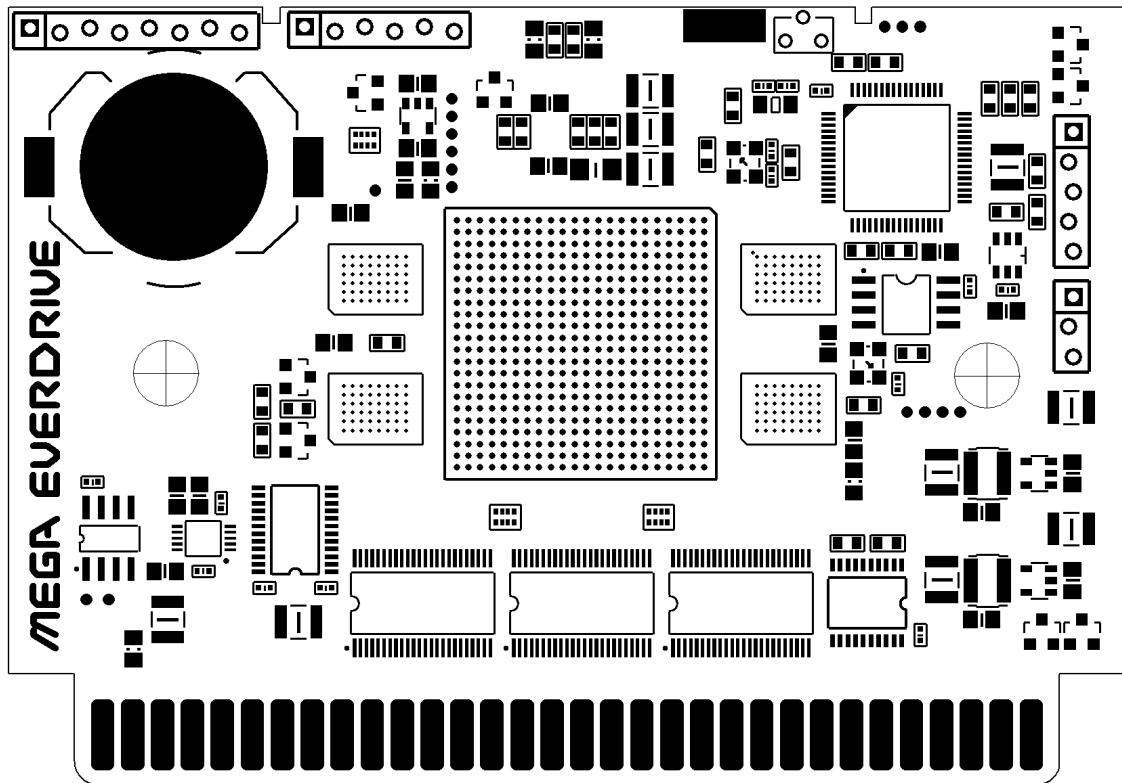


# MEGA EVERDRIVE PRO

## User Manual



[www.krikzz.com](http://www.krikzz.com)

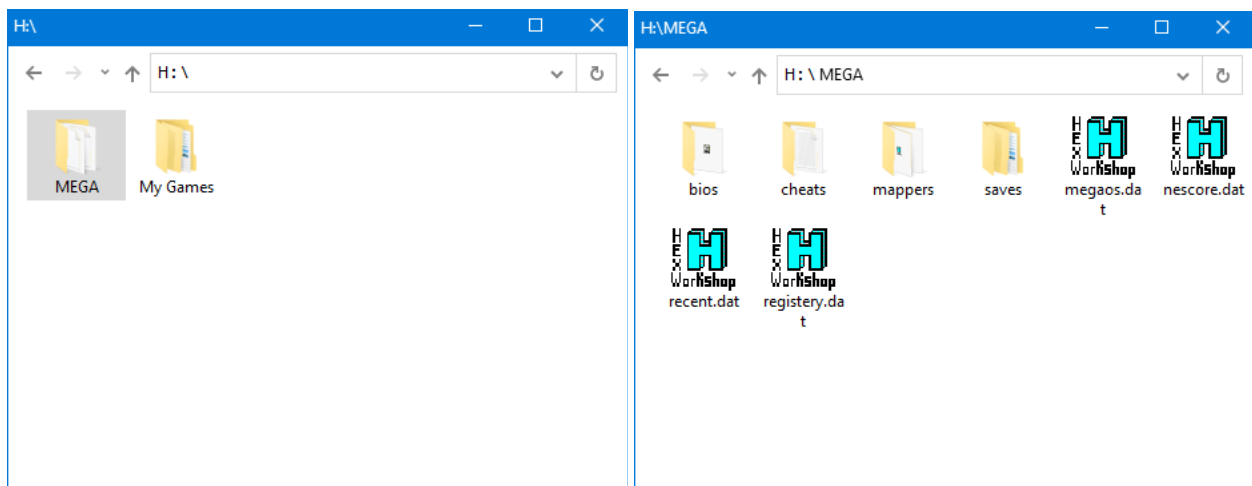
07.08.2020

## Features

- Cyclone IV FPGA
- 16MB PSRAM and 1MB SRAM memory
- High quality 6-layers PCB with hard gold surface finish
- Supported ROM formats: Genesis, 32X, Mega-CD, Master System, NES
- Ram cart for Mega-CD
- CD bios swap function turns off region locks for Mega-CD games
- Hardware MegaKey turns off region locks for Genesis games
- YM2413 core for Master System games
- SVP core support
- Pier Solar mapper support
- In-game menu. You can save game or return to system menu without physical reset
- In-game menu supported for Genesis and Master System modes
- EEPROM saves support
- Real time clock for logging date and time of saves
- ARM based 32bit I/O co-processor for SD and USB operations acceleration
- Up to 1024 files per folder or unlimited if file sorting is disabled
- Multi slot save states. 100 independent slots for save states
- Instant ROM loading
- USB port for development and system update without removing SD card
- Battery voltage monitoring. Battery can be replaced in time if it runs dry
- Game Genie cheats support

## Initial setup

- Format SD card
- Download MEGAOS-4.xx.zip from <http://krikzz.com>
- Unzip OS files to SD card
- Copy ROM files to SD card. ROM files should be located outside of system folder (MEGA)



## File Manager

- A – Open directory or file menu
- B – Back or Close
- C – Open main menu
- Start – Run last played game
- Left/Right – Switch page during file navigation

Upper bar shows current page and total number of pages in the current folder.  
Bottom bar shows the full name of selected file.

```
page: 1 of 1
bios
cheats
mappers
saves
megaos.dat
nescore.dat
ramdump01.srm
recent.dat
registry.dat
tstfile01.dat
bios
```

```
page: 3 of 3
Splatterhouse 3 (USA).md
Street Fighter II' - Special Champion
Streets of Rage 2 (USA).md
Streets of Rage 3 (USA).md
Sylvester and Tweety in Cagey Capers (
Taz-Mania (World).md
Teenage Mutant Ninja Turtles - The Hyp
Thunder Force II (USA, Europe).md
Thunder Force III (Japan, USA).md
Thunder Force IV (Japan).md
Toy Story (USA).md
Two Crude Dudes (USA).md
Vectorman (USA, Europe).md
Vectorman 2 (USA).md
Wonder Boy in Monster World (USA, Euro
X-Men 2 - Clone Wars (USA, Europe).md
Zero Tolerance (USA, Europe).md
Street Fighter II' - Special Champion
Edition (USA).md
```

## File Menu

File menu is used for file manipulating on SD card. Menu content is different depending on file type.

### Rom file menu

This menu is applied to gen, md, bin, smd, rom, 32x, iso, sms, sg, gg and nes file extensions.



### Start Game

Cartridge will be configured to play selected game right after configuration game will be executed. Cartridge performs next steps during configuration:

1. Copy save-ram content to SD card if save-ram was modified by the last played game. File will be created in MEGA/saves folder. File name will match the name of last played game.
2. Configure hardware according to selected game.
3. Check if MEGA/saves folder contains file related to selected game and load this file to save-ram if exists.
4. Execute selected game.

After reset or power cycle the last selected game can be launched with START button.

### Cheats

Edit cheat codes for selected file.

### Rom Info

Show ROM configuration: mapper type, checksum, memory configuration, etc.



## Hex View

Open selected file in hex viewer.

```
00000100 of 00200000
000100 534547412047454E4553495320202020
000110 2843295345474120313939352E4A554E
000120 202020202020202020202020202020
000130 202020202020202020202020202020
000140 202020202020202020202020202020
000150 434F4D4958205A4F4E45202020202020
000160 20202020202020202020202020202020
000170 20202020202020202020202020202020
000180 474D204D4B2D31353639202D3030384E
000190 4A362020202020202020202020202020
0001A0 00000000001FFFFFF00FF000000FFFF
0001B0 20202020202020202020202020202020
0001C0 20202020202020202020202020202020
0001D0 20202020202020202020202020202020
0001E0 20202020202020202020202020202020
0001F0 34202020202020202020202020202020
..... SEGA GENESIS (C)SEGA 1995.JUN
.....
..... COMIX ZONE
.....
..... GM MK-1569 -008NJ6
.....
..... 4
.....
```

## Delete

Delete file from disk.

## Text file menu

This menu is applied to \*.txt file extension.

It is used for loading cheats from text file. Loaded cheats will be applied to last selected game.

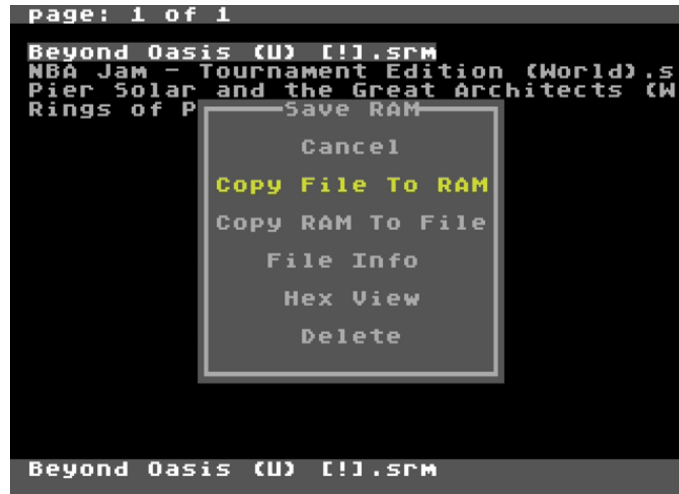
```
page: 1 of 1
codemasters-sms
demo
eep
gen-mini
hack
solar
SUP
4MB_Test.sms
Beyond Oasis
header.7z
mem-00.srm
mem-aa.srm
mem-ff.srm
mem-xx.srm
Sonic The He Europe).md
sonic.txt
Super Street Fighter II (USA).md
Thunder Force IV (Japan).md

sonic.txt

File Menu
Hex View
Load Cheats
File Info
Delete
```

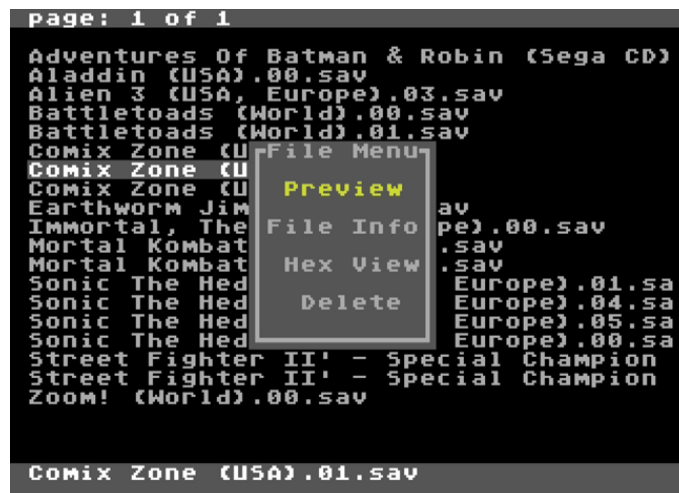
## Save-ram file menu

Allows to copy current save-ram content to file, copy file to save-ram, check file date and size, delete file.



## Save-state file menu

This menu supports preview for Genesis save state files. User can view the screenshot of the point where state was saved.



## Main Menu

Push C to open Main Menu.



## Options



### Options->In-Game Menu

Controls in-game menu and save state functions.

### Options->MegaKey

Bypass region locks. Turn it off for Mega-SG, console will use own region bypass functions.

### Options->Cheats

Switch on/off cheat functions.

### Options->SMS Bios

System may load SMS bios for Master System games, just like the original system. For using this function user should supply bios file. Expected file path: MEGA/bios/smsbios.sms  
SMS bios isn't required for Master System games.

### Options-> SMS YM2413

Audio enhancement for Master System games. Mostly was used by some japanese games.

### **Options->Reset To Menu**

ON: System will return back to the menu after reset.

OFF: Stay in game after reset.

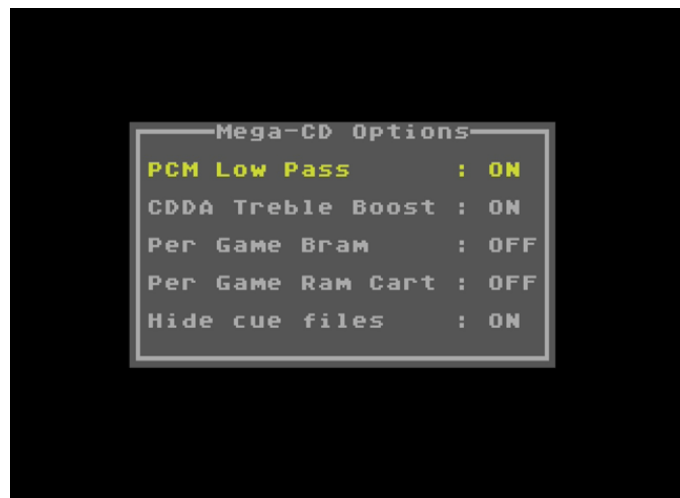
### **Options->File Sorting**

Controls file list sorting. Max amount of files per folder is 1024 if sorting enabled or unlimited if disabled. Sorting may slow down entering folders with large amount of files inside.

### **Options->Warning**

OS checks system configuration and refuses attempt to launch the game if current configuration isn't compatible with selected game. For example: attempt to launch 32X game without 32X addon. Turn off this function to try launch it anyway. It is recommended to keep this option turned on.

### **Options->Mega-CD options**



#### **Mega-CD options->PCM Low Pass**

Low Pass filter for PCM channel. Turn it on for matching original Mega-CD PCM audio.

#### **Mega-CD options->CDDA Treble Boost**

High Pass filter for CDDA channel. Turn it on for matching original Mega-CD CDDA audio.

#### **Mega-CD options->Per Game Bram**

Each game will have own bram copy.

#### **Mega-CD options->Per Game Ram Cart**

Each game will have own ram cart copy.



## Options->In-Game Combo



Controller hot-keys for In-Game menu and save state can be changed here. Two or more buttons can be used for combo. Keep START to switch-off combo.

"Save Key" and "Load Key" are for quick save/load in Genesis games. This type of saves skips in-game menu. Quick mode isn't available for SMS games.

"Menu SMD" is for in-game menu in Genesis games.

"Menu SMS" is for in-game menu in SMS games. For SMS menu combo can be used only B,C and D-pad arrows.

In-Game Menu option must be enabled for using any save state functions including quick saves.

## Options->RTC Setup

Setup system date and time. RTC is used for dating of created and modified files.

## Recently Played

List of recently played games for fast access.



## Cheats

Edit cheat codes for the last selected game. Bottom bar shows the name of game codes will be applied to. Each game may have its own set of codes, they are saved in MEGA/cheats folder as text file and load automatically when game is played. The file name matches ROM name the codes are related to. Up to 16 codes can be applied at the same time. Alternative way to edit the codes for certain game is file menu, just hit the game in file manager. Cheats also can be loaded from text file selected in file manager.



## Run Mega-CD

Runs external CD addon without cartridge removing. Ram cart function is activated for this mode.

## Device Info

Information about the system.



- MegaKey Mode: Hardware mode if possible, software otherwise
- SEGA CD: External Mega-CD addon status
- SEGA 32X: External 32X addon status
- Battery: On-board battery voltage monitoring
- Build Date: Cartridge manufacturing date
- Serial Num: Unique serial number
- Games Played: Played games counter

## Diagnostics

Diagnostics menu checks cartridge health. All tests should be passed successfully if everything is fine. MegaKey test will fail if cartridge is used with 32x. Also MegaKey does not work with some modern clones, Mega-SG for example.

```
Mega EverDrive PRO diagnostics menu
-----
Testing ROM... OK
Testing SRM... OK
Testing BRM... OK
Testing SDC... OK
Testing RTC... OK
MegaKey... OK
Battery - 3.11 OK
UCC 5.0v - 4.67 OK
UCC 2.5v - 2.50 OK
UCC 1.2v - 1.20 OK
SD RD speed... 5019 KB/s
SD WR speed... 1343 KB/s
IO RD speed... 153 KB/s
IO WR speed... 137 KB/s
-----
Press any key
```

## In-Game menu

Allows to return to menu or save the game at any point. During game play hit Save-State combo on controller to open In-Game menu. Push **C** for selected Save-state preview.

- **Save State:** Save game state. System snapshot will be immediately saved on SD card in MEGA/saves/smd-snap or MEGA/saves/sms-snap folder depends on game type
- **Load State:** Load game state
- **Slot:** Current slot. System supports up to 100 slots. Slot can be changed without selecting "Slot" item in menu, just hit LEFT/RIGHT no matter what menu item is selected
- **Cheats:** Cheat codes editing for current game
- **Reset Game:** Reboot game
- **Exit Game:** Return to menu



## Mega-CD core

Cartridge has built-in Mega-CD core, it allows to play CD images without actual Mega-CD add-on.

### Supported formats

Supported bin+cue, cue+wav and multi-bin images. Sometimes bin images can be stored as img or iso, they can be played without renaming. Each CD image should be stored in a separate folder, except multi disk games.

### Multi disk images

For using multi disk images they all should have the same name, but with the number of disk in the end. When game will require another disk system will swap it automatically. All bin/cue files should be located in same folder.

### Mode1/msu-md games

So-called mode1 allows cartridge based games using CD hardware for enhancement, usually for replacement standard game music by CDDA tracks. To play such games CD image and ROM file should be located in the same folder, cue file name should match to the ROM name.

Example: game.md + game.bin + game.cue

Rom Info menu will show "SMD+CD" game mapper if CD image was recognized successfully.

### CD bios

Mega-CD core requires original CD bios files. These files don't come with cartridge software and user should supply them by himself. Particular bios file is required for each region, three files in total. One is for US images, another for Japanese and last the one for European region. Files should be stored in MEGA/bios/ folder. They should be named as follow: mcd-us.bin, mcd-jp.bin, mcd-eu.bin

## CD bios loading function

This function is related to external Mega-CD and designed to play multi region CD images. Simply it can swap internal CD bios to the file loaded from SD card. Just select required bios file in file browser and launch it like any other game. Along with this function cartridge will activate ram cart function for your Mega-CD.

## IPS patcher

Built-in auto patcher engine allow to use ips patches without using patching software. Rom stays unchanged on disk but patched in cart RAM.

ips-msu folder for games executed in pair with CD (SMD+CD), ips-std for all other games. There three ways for path and ROM association:

1. Patch name should match to ROM ID. ROM ID can be obtained in "Rom Info" menu.
2. Patch and ROM name should be the same. (located in system folder).
3. Patch and ROM name should be the same. (located in ROM folder).

## System folder structure

/MEGA	system root
/MEGA/bios	folder for storing Mega-CD and SMS bios files.
/MEGA/bios/mcd-eu.bin	European CD bios
/MEGA/bios/mcd-jp.bin	Japanese CD bios
/MEGA/bios/mcd-us.bin	North American CD bios
/MEGA/bios/mcd-ex.bin	Bios dumped from external Mega-CD addon
/MEGA/bios/smsbios.sms	Master System bios
/MEGA/cheats	Cheat files are located in this folder
/MEGA/ips-msu	ips patches for SMD+CD games
/MEGA/ips-std	ips patches for all games except ROM+CD
/MEGA/mappers	FPGA cores
/MEGA/saves	All save data are located in this folder
/MEGA/saves/mcd-bram	Mega-CD bram saves (Internal CD memory)
/MEGA/saves/mcd-bram	Mega-CD ram cart saves
/MEGA/saves/nes-bram	NES backup ram
/MEGA/saves/smd-bram	Genesis backup ram
/MEGA/saves/smd-snap	Genesis save states
/MEGA/saves/sms-bram	Master System backup ram
/MEGA/saves/sms-snap	Master System save states
/MEGA/megaos.dat	OS core
/MEGA/registry.dat	System settings
/MEGA/recent.dat	List of recently played games

## Limitations

- Built-In CD core can not be used in pair with 32X because 32X locks part of address space required for Mega-CD.
- Built-In CD core registers conflict with external Mega-CD addon registers. Due this reason CD games executed from cart may not work properly if external Mega-CD is installed. It is not recommended to leave external CD unit unpowered in attempt to solve this problem, it only will make things worse and may cause glitches even in regular Genesis or SMS games. Internal CD core can be executed in pair with external CD unit only if "warnings" option is turned off.
- There is no Mega-CD audio on Nomad and Genesis3 due the lack of audio inputs on cartridge port.
- SMS games do not work in pair with 32X due the SMS mode lock by the 32X hardware.
- SMS games do not work on Nomad and Genesis3 due the lack of SMS mode on these systems.
- In-game menu in SMS games does not work on One-chip Genesis because controllers state is invisible for cartridge on this system. One-chip ASIC was used mostly on Genesis3 and very late Genesis2 revision.
- Some SMS games may refuse to work if external Mega-CD is installed.
- 32X games require 32X addon to be installed.
- Hardware MegaKey does not work with Mega-SG or if 32X is installed.
- Genesis hardware wasn't designed for using such functions as save states, there is basically no way to save audio subsystem state. By this reason using save state function in some games may result glitches or even hangs. That's why this function is provided as is and it can not be improved to be fully stable. However few simple steps may help reduce glitches rate:  
Do state saving during the pause when audio is muted.  
Do not load state created in the game level if you have not enter the level yet, from the title screen for example. In this case the game will have a chance to initialize audio driver properly before state will be loaded. Save state system completely ignores audio subsystem initialization.
- In-Game menu does not work for games which do not use v-blank handler.
- In-Game menu does not work if 32x add-on is installed.
- NES core has limited compatibility. Due the Genesis hardware limitations there is no way to implement fully functional NES core. You may expect that simple games will work fine but games which intensely use mappers graphics hardware will be glitched. Limitation is mostly related to next factors:
  1. Intensive CHR content update. Bank switching during the frame, using bank switching for sprite update "on the fly" and so on. Bank switching for background animation in some cases may work fine.
  2. Manipulating with vertical scrolling settings during the frame.
- "Zero delay" option should be turned off for using NES mode at Mega-SG (console video settings)