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## Seed Studio Fast PCB Assembly

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Seed Studio

## The 3DO Company - 3DO (Opera)

### Background

Opera is an open-source, low-level emulator for the 3DO Game Console. Opera is a fork of 4DO, originally a port of 4DO, itself a fork of FreeDO, to libretro. The fork/rename occurred due to the original 4DO project being dormant and to differentiate the project due to new development and focus.

The Opera core has been authored by

- trapexit
- JohnnyDude
- FreeDO team

The Opera core is licensed under

- [Modified GNU LGPL / Non-commercial](#)

A summary of the licenses behind RetroArch and its cores can be found [here](#).

### BIOS

One of the following system BIOSes is required to run software. Place in the frontend's system directory.

Filename	Description	md5sum
panafz1.bin	Panasonic FZ-1	f47264dd47fe30f73ab3c010015c155b
panafz10.bin	Panasonic FZ-10	51f2f43ae2f3508a14d9f56597e2d3ce
panafz10-norsa.bin	Panasonic FZ-10 [RSA Patch]	1477bda80dc33731a65468c1f5bcbee9
panafz10e-anvil.bin	Panasonic FZ-10-E [Anvil]	a48e6746bd7edec0f40cff078f0bb19f
panafz10e-anvil-norsa.bin	Panasonic FZ-10-E [Anvil RSA Patch]	cf11bbb5a16d7af9875cca9de9a15e09
panafz1j.bin	Panasonic FZ-1J	a496cfdded3da562759be3561317b605
panafz1j-norsa.bin	Panasonic FZ-1J [RSA Patch]	f6c71de7470d16abe4f71b1444883dc8
goldstar.bin	Goldstar GDO-101M	8639fd5e549bd6238cfee79e3e749114
sanyotry.bin	Sanyo IMP-21J TRY	35fa1a1ebaaeea286dc5cd15487c13ea
3do_arcade_saot.bin	Shootout At Old Tucson	8970fc987ab89a7f64da9f8a8c4333ff

## FONT ROM

Required for some Japanese games. Optional otherwise.

Filename	Description	md5sum
panafz1-kanji.bin	Panasonic FZ-1 Kanji ROM	b8dc97f778a6245c58e064b0312e8281
panafz10ja-anvil-kanji.bin	Panasonic FZ-10JA Kanji ROM	428577250f43edc902ea239c50d2240d
panafz1j-kanji.bin	Panasonic FZ-1J Kanji ROM	c23fb5d5e6bb1c240d02cf968972be37

## Extensions

Content that can be loaded by the Opera core have the following file extensions:

- .iso
- .bin
- .chd
- .cue

RetroArch database(s) that are associated with the Opera core:

- [The 3DO Company - 3DO](#)

## Features

Frontend-level settings or features that the Opera core respects.

Feature	Supported
Restart	✓
Screenshots	✓
Saves	✓
States	✓
Rewind	✓
Netplay	✓
Core Options	✓
RetroAchievements	✓
RetroArch Cheats	×
Native Cheats	×
Controls	✓
Remapping	✓
Multi-Mouse	×
Rumble	×
Sensors	×
Camera	×
Location	×
Subsystem	×
<a href="#">Softpatching</a>	×
Disk Control	×
Username	×
Language	×
Crop Overscan	×
LEDs	×

## Directories

The Opera core's library name is 'Opera'

The Opera core saves/loads to/from these directories.

### Frontend's Save directory

File	Description
*.srm	Per game NVRAM
3DO.nvram	Shared NVRAM
3DO.nvram.tmp	Only used for atomic saves

#### Frontend's State directory

File	Description
*.state#	State

## Geometry and timing

- The Opera core's core provided FPS is 60
- The Opera core's core provided sample rate is 44100 Hz
- The Opera core's base width is 320 when the 'High Resolution' core option is set to disabled.
- The Opera core's base height is 240 when the 'High Resolution' core option is set to disabled.
- The Opera core's max width is 320 when the 'High Resolution' core option is set to disabled.
- The Opera core's max height is 240 when the 'High Resolution' core option is set to disabled.
- The Opera core's base width is 640 when the 'High Resolution' core option is set to enabled.
- The Opera core's base height is 480 when the 'High Resolution' core option is set to enabled.
- The Opera core's max width is 640 when the 'High Resolution' core option is set to enabled.
- The Opera core's max height is 480 when the 'High Resolution' core option is set to enabled.
- The Opera core's core provided aspect ratio is 4/3

## Core options

The Opera core has the following option(s) that can be tweaked from the core options menu. The default setting is bolded.

Settings with (Restart) means that core has to be closed for the new setting to be applied on next launch.

- **CPU overclock** [opera\_cpu\_overclock] (**1.0x (12.50Mhz)**)|1.1x (13.75Mhz)|1.2x (15.00Mhz)|1.5x (18.75Mhz)|1.6x (20.00Mhz)|1.8x (22.50Mhz)|2.0x (25.00Mhz))

The 3DO used a 12.5MHz ARM60 CPU as its central processor. We have implemented a CPU overclocking feature in the Opera core so that you can increase performance upto 2x.

**May not have an impact on all games.**

<https://www.youtube.com/watch?v=7bT2ecwKdHQ>

- **High Resolution** [opera\_high\_resolution] (**disabled**|enabled)

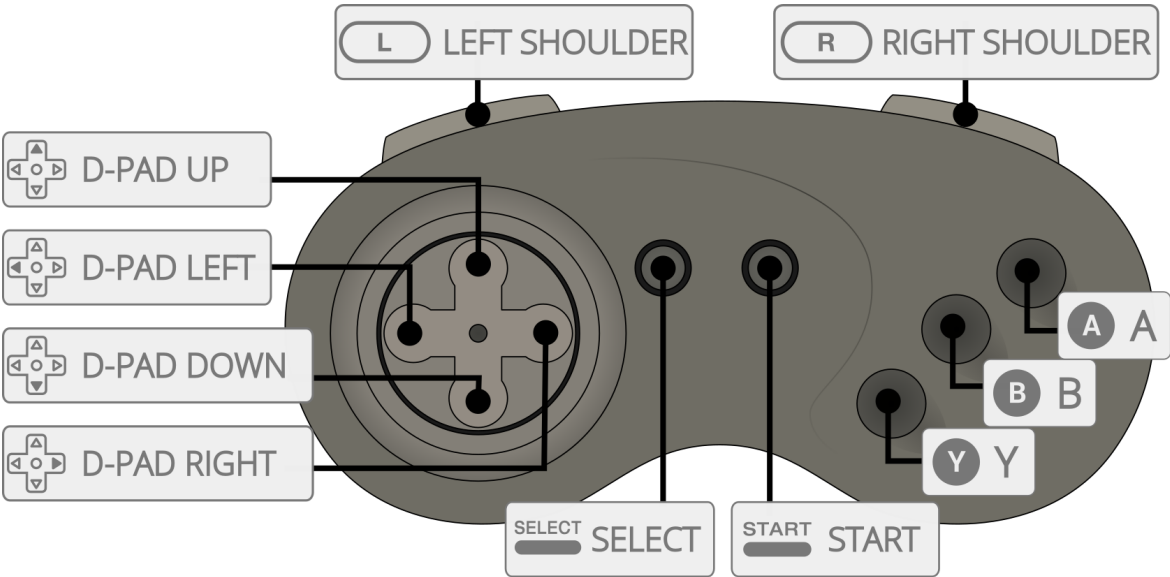
The default internal resolution is 320x240, but the output resolution is 640x480. This feature makes the system behave as if it has a 640x480 framebuffer.









- **NVRAM Storage** [opera\_nvram\_storage] (**per game**|shared)  
Choose whether NVRAM saves are per game or NVRAM saves are shared between all games.  
Look at the [Directories](#) section for more information.
- **Active Devices** [opera\_active\_devices] (1|2|3|4|5|6|7|8|0)  
There is a bug (maybe in Opera but possibly in certain games) in which having more than 1 controller emulated causes the game not to respond to input. This allows working around the issue.
- **Timing Hack 1 (Crash 'n Burn)** [opera\_hack\_timing\_1] (**disabled**|enabled)  
Enable this to fix Crash 'n Burn.
- **Timing Hack 3 (Dinopark Tycoon)** [opera\_hack\_timing\_3] (**disabled**|enabled)  
Enable this to fix Dinopark Tycoon.
- **Timing Hack 5 (Microcosm)** [opera\_hack\_timing\_5] (**disabled**|enabled)  
Enable this to fix Microcosm.
- **Timing Hack 6 (Alone in the Dark)** [opera\_hack\_timing\_6] (**disabled**|enabled)  
Enable this to fix Alone in the Dark.
- **Graphics Step Y Hack (Samurai Shodown)** [opera\_hack\_graphics\_step\_y] (**disabled**|enabled)  
Enable this to fix Samurai Shodown's background rendering.

## Joypad



User 1 - 2 Remap descriptors	RetroPad Inputs
B	
A	
X (Stop)	
P (Play/Pause)	
D-Pad Up	
D-Pad Down	
D-Pad Left	
User 1 - 2 Remap descriptors	RetroPad Inputs

D-Pad Right	
C	
L	
R	

## Compatibility

- [Opera Core Compatibility List](#)

## External Links

- [Official 4DO Website](#)
- [Official 4DO Wiki](#)
- [Official 4DO SourceForge Repository](#)
- [Libretro Opera Core info file](#)
- [Libretro Opera Github Repository](#)
- [Report Libretro Opera Core Issues Here](#)