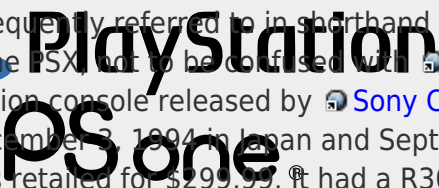


# Sony PlayStation

The  PlayStation (frequently referred to in shorthand as the PS1, PSOne or its codename PSX, not to be confused with the actual PSX) is a fifth generation console released by  Sony Computer Entertainment on December 3, 1994 in Japan and September 9, 1995 in the US. It was retailed for \$299.99. It had a R3000 CPU (which was used by NASA for a space craft to take pictures of Mars because of its reliability) at 33.8688 MHz with 2MB of RAM and 1MB of VRAM. It used a proprietary MDEC video compression unit, which is integrated into the CPU, allowing for playback of full motion video at a higher quality than other consoles of its generation. It also had a superior digital-to-analog converter than most CD players at the time.





It was a commercial success, partly due to Sony encouraging third-party developers with affordable dev-kits, being relatively easy to program for (compared to others at the time) and because its CD-based media was cheaper than the competition.

This system scrapes metadata for the psx group(s) and loads the psx set from the currently selected theme, if available.

Quick reference

- **Folder:** roms/psx/
- **BIOS required?** Optional, some games require one.

| Emulators                             | Accepted ROM formats                                       | BIOS files                                                                                            | Configuration via                          |
|---------------------------------------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------|
| <a href="#">DuckStation</a>           | .cue .img .mdf<br>.pbp .toc .cbn<br>.m3u .ccd .chd<br>.iso | psxonpsp660.bin<br>scph101.bin scph1001.bin<br>scph5500.bin scph5501.bin<br>scph5502.bin scph7001.bin | EmulationStation and<br>duckstation-config |
| <a href="#">libretro/PCSX ReARMed</a> | .bin .cue .img<br>.mdf .pbp .toc<br>.cbn .m3u .ccd<br>.chd | psxonpsp660.bin<br>scph101.bin scph1001.bin<br>scph5501.bin scph7001.bin                              | EmulationStation and<br>RetroArch          |
| <a href="#">libretro/swanstation</a>  | .cue .img .mdf<br>.pbp .toc .cbn<br>.m3u .ccd .chd<br>.iso | psxonpsp660.bin<br>scph101.bin scph1001.bin<br>scph5500.bin scph5501.bin<br>scph5502.bin scph7001.bin | EmulationStation and<br>RetroArch          |
| <a href="#">libretro/duckstation</a>  | .cue .img .mdf<br>.pbp .toc .cbn<br>.m3u .ccd .chd<br>.iso | psxonpsp660.bin<br>scph101.bin scph1001.bin<br>scph5500.bin scph5501.bin<br>scph5502.bin scph7001.bin | EmulationStation and<br>RetroArch          |
| <a href="#">libretro/mednafen_psx</a> | .cue .pbp .toc<br>.m3u .ccd .chd                           | psxonpsp660.bin<br>scph5500.bin scph5501.bin<br>scph5502.bin                                          | EmulationStation and<br>RetroArch          |

## BIOS

The BIOS files aren't strictly required for emulation, but can dramatically improve compatibility and accuracy. As a replacement for any of the first 3 BIOS files mentioned above, it is also possible to use the PSXONPSP660.bin BIOS. This BIOS comes from the PSP, is region-free and can sometimes offer better performance. Their md5 checksums and expected paths are as follows:

| MD5 checksum                     | Share file path      | Description                      |
|----------------------------------|----------------------|----------------------------------|
| c53ca5908936d412331790f4426c6c33 | bios/psxonpsp660.bin | Extracted from a PSP             |
| 6e3735ff4c7dc899ee98981385f6f3d0 | bios/scph101.bin     | Version 4.4 03/24/00             |
| dc2b9bf8da62ec93e868cfd29f0d067d | bios/scph1001.bin    | Version 2.0 05/07/95             |
| 8dd7d5296a650fac7319bce665a6a53c | bios/scph5500.bin    | PS1 JP BIOS                      |
| 490f666e1afb15b7362b406ed1cea246 | bios/scph5501.bin    | Version 3.0 11/18/96 PS1 US BIOS |
| 32736f17079d0b2b7024407c39bd3050 | bios/scph5502.bin    | PS1 EU BIOS                      |
| 1e68c231d0896b7eadcad1d7d8e76129 | bios/scph7001.bin    | Version 4.1 12/16/97             |

## ROMs

PlayStation ROMs typically come in the modern .cue/.bin format. The .cue sheets contain the metadata of where the 'data tracks' on the disc are physically located, and the .bin files are the actual data. They must retain the same filename (the .cue file is just a text file that points to the .bin file) and be in the same directory to function together. When loading PSX ROMs, be sure to select the .cue file, not the .bin file. Some games may work (with glitches) with just the .bin file loaded, but most don't. Refer to [CD image formats](#) for more info.

Older PlayStation ROMs may have been ripped in .iso image format (which may also use the .img extension), which is a direct representation of the data on the disc. Some emulators are incompatible with this format. This format typically only allows loading the first .bin file, and no others. In order to properly use the ROM like this, get the .iso/.img file and [pair it with its CUE sheet](#). There are tools that can do this automatically for you.

.pbp is a proprietary format made by Sony to store PlayStation games (even multi-disc ones) in a compressed format for their PS1-on-PSP downloadable content games. There are tools to convert to and from this format. Using this format is **not** recommended as it can cause issues with certain games.

The .cue and .bin files are combined when compressed into a [CHD](#) file, so only the .chd file needs to be present and loaded. This is the recommended format.

Place your Sony PlayStation ROMs in /userdata/roms/psx/.

## Playing PAL copy-protected games

PAL copy protected games need a SBI subchannel file next to the .bin/.cue/.chd files in order to get past the copy-protection. For example:

```
Game (Europe).bin  
Game (Europe).cue  
Game (Europe).sbi
```



For proper PAL game compatibility, DuckStation should be set to show the BIOS animation, PCSX-ReARMED should be set to skip the BIOS animation (unless using a real BIOS) and Mednafen should be set to skip the BIOS animation (unless using a real BIOS).

## Multi-disc games

To automatically load the next disc of a game, you can use a .m3u playlist file. To make one, simply create a text file with the same filename as your intended game name (it could be anything, really). Within that text file, write the names of the .cue sheets or .chd files for your game discs. For instance, if your game's .cue sheets were structured like

```
roms/  
└─ psx/  
    └─ Final Fantasy VII (Disc 1).cue  
    └─ Final Fantasy VII (Disc 1).bin  
    └─ Final Fantasy VII (Disc 2).cue  
    └─ Final Fantasy VII (Disc 2).bin  
    └─ Final Fantasy VII (Disc 3).cue  
    └─ Final Fantasy VII (Disc 3).bin
```

you would put the following as text into the `Final Fantasy VII.m3u` text file:

### Final Fantasy VII.m3u

```
Final Fantasy VII (Disc 1).cue  
Final Fantasy VII (Disc 2).cue  
Final Fantasy VII (Disc 3).cue
```

Save the text file with the file extension .m3u and place it in the `roms/psx/` folder along with the game's discs. When you get to the end of that disc, the next disc will be automatically loaded. If this fails, you can utilize Retroarch's 'Disc Control' menu in the Quick Menu ( [H0TKEY] +  in-game) to eject a disc and insert another (Swap Disc is for legacy purposes and should not be used). Refer to [multi-disc games](#) for more info.

## Emulators

### DuckStation

**DuckStation** is focused on playability, speed, and long-term maintainability. The goal of the emulator is to be as accurate as possible while maintaining performance on a broad range of devices. "Hack" options are discouraged, and the default configuration should support all playable games with only some of the enhancements having compatibility issues. 64-bit CPUs are required for recompiler support for maximum performance.

Batocera uses the latest standalone version of Duckstation. Performs well on lower end x86\_64 systems.

## DuckStation configuration

Standardized features available to all cores of this emulator: `psx.videomode`, `psx.ratio`

| ES setting name batocera.conf key                                           | Description ⇒ ES option key value                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>REWIND</b> <code>psx.duckstation_rewind</code>                           | Warning, this feature uses a lot of RAM & VRAM<br>⇒ Off false, 5 sec Accurate / 250 Mo RAM + 1200 Mo VRAM 5, 10 sec Accurate / 500 Mo RAM + 2400 Mo VRAM 10, 15 sec / Total 135 Mo RAM (Small boards) 15, 30 sec / Total 270 Mo RAM (Middle boards) 30, 60 sec / 300 Mo RAM + 240 Mo VRAM 60, 90 sec / 450 Mo RAM + 360 Mo VRAM 90, 120 sec / 600 Mo RAM + 480 Mo VRAM 120. |
| <b>GRAPHICS BACKEND</b> <code>psx.gfxbackend</code>                         | Choose your graphics rendering<br>⇒ OpenGL OpenGL, Vulkan Vulkan.                                                                                                                                                                                                                                                                                                           |
| <b>CPU EXECUTION MODE</b><br><code>psx.duckstation_executionmode</code>     | Interpreter is the more accurate but the slowest<br>⇒ Recompiler (Fastest) Interpreter, Cached Interpreter (Faster) CachedInterpreter, Interpreter (Slowest) Recompiler.                                                                                                                                                                                                    |
| <b>VULKAN THREADED</b><br><code>psx.duckstation_threadedpresentation</code> | Turns on threaded rendering for Vulkan. Presents frames on a background thread when fast-forward or V-sync is disabled. Considerably improves performance. If using V-sync, only improves fast-forward so it is safe to leave it on.<br>⇒ Off 0, On 1.                                                                                                                      |
| <b>VSYNC</b> <code>psx.duckstation_vsync</code>                             | Turns on V-sync to avoid screen tearing. Introduces a negligible amount of input delay. Significant performance cost. Only should be disabled if experiencing slowdown.<br>⇒ Off 0, On 1.                                                                                                                                                                                   |
| <b>FRAME SKIP</b> <code>psx.duckstation_frameskip</code>                    | Skips frames to improve performance. Values: 0 for off, 1 for on. Can cause motion sickness if enabled, only use if the game is unplayable without it.<br>⇒ Off 0, On 1.                                                                                                                                                                                                    |

| ES setting name batocera.conf key                                             | Description ⇒ ES option key value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SHOW BIOS BOOTLOGO</b><br><code>psx.duckstation_PatchFastBoot</code>       | Enhancement. Skips the BIOS boot animation. Some games require the animation to function correctly, most can skip it fine. Duckstation uses the official BIOS, some games look for this specific animation before booting so turn it on for those games.<br>⇒ Off 1, On 0.                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>VIDEO RESOLUTION</b><br><code>psx.duckstation_resolution_scale</code>      | Enhancement. Multiplies the internal rendering resolution. Improves the clarity of 3D objects. Extreme performance cost.<br>⇒ 1x(native) 1, 2x 2, 3x/720p 3, 4x 4, 5x/1080p 5, 6x/1440p 6, 7x 7, 8x 8, 9x/4K 9, 10x 10, 11x 11, 12x 12, 13x 13, 14x 14, 15x 15, 16x 16.                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>ANTI-ALIASING (MSAA/SSAA)</b><br><code>psx.duckstation_antialiasing</code> | Enhancement. Applies <a href="#">MSAA</a> or <a href="#">SSAA</a> to smooth out jagged edges on 3D object polygons. Most noticeable at lower resolutions. Does not affect textures. The sharp edges of polygons are usually masked by the blurry video output of the PSX, but digital displays may feature them more prominently. This can alleviate that. The PSX does not have any native anti-aliasing. Enabling this can cause rendering errors. Cheaper than multiplying the rendering resolution, but not by much.<br>⇒ Off 1, 2x MSAA 2, 4x MSAA 4, 8x MSAA 8, 16x MSAA 16, 32x MSAA 32, 2x SSAA 2-ssaa, 4x SSAA 4-ssaa, 8x SSAA 8-ssaa, 16x SSAA 16-ssaa, 32x SSAA 32-ssaa. |
| <b>TEXTURE FILTERING</b><br><code>psx.duckstation_texture_filtering</code>    | Enhancement. Applies <a href="#">texture filtering</a> to all textures. Minimal performance cost. Nearest for an authentic experience, Bilinear for a “neutral” improvement (think N64), xBR/Jinc2 for smart upscaling (subjective improvement). Edge blending refers to the transparent edges, can make some objects look nicer while other objects look glitchier.<br>⇒ Nearest-Neighbor Nearest, Bilinear Bilinear, Bilinear (no edge blending) BilinearBinAlpha, JINC2 Jinc2, JINC2 (no edge blending) Jinc2BinAlpha, xBR xBR, xBR (no edge blending) xBRBinAlpha.                                                                                                              |
| <b>CROP MODE</b> <code>psx.duckstation_CropMode</code>                        | Zooms in the display to hide black borders. Not all PSX games have the same sized black borders.<br>⇒ Off None, Only Overscan Area Overscan, All Borders Borders.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| ES setting name batocera.conf key                                      | Description ⇒ ES option key value                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WIDESCREEN HACK</b><br><code>psx.duckstation_widescreen_hack</code> | Enhancement. Widescreen hack. Very glitchy. Only works when using a 16:9 video mode <b>and</b> with bezels (decorations) disabled. Recommended to use game patches where possible instead. Some games natively support 16:9 in their in-game options.<br>⇒ Off 0, On 1.                                                             |
| <b>CONSOLE REGION</b> <code>psx.duckstation_region</code>              | Changes the region of the emulated console. Region-locking is disabled so setting this isn't necessary, but some games will run at weird framerates if using out-of-region consoles. Duckstation will detect and switch to the right region unless specified otherwise.<br>⇒ Europe-Australia PAL, USA-Canada NTSC-U, Japan NTSC-J. |
| <b>FORCE 60HZ</b> <code>psx.duckstation_60hz</code>                    | Enhancement. Forces 50Hz PAL games to run at 60Hz. Has issues with certain games that tie framerate to logic, but most games (ones that use a variable FPS) should be fine.<br>⇒ Off 0, On 1.                                                                                                                                       |
| <b>CUSTOM TEXTURES</b><br><code>psx.duckstation_custom_textures</code> | Enhancement. Uses the hi-res texture pack for the game, if any. 0 for off, normal to load from disk as needed, preload to load textures into RAM first (increases boot time). Safe to leave on if no texture pack is present.<br>⇒ Off 0, Normal normal, Preload preload.                                                           |
| <b>RUMBLE</b> <code>psx.duckstation_rumble</code>                      | Activates rumble on supported controllers. Requires the Dualshock controller, Namco GunCon or NeGcon and a compatible game.<br>⇒ Off 0, On 1.                                                                                                                                                                                       |
| <b>DPAD TO JOYSTICK</b><br><code>psx.duckstation_digitalmode</code>    | Activates Joystick to D-pad, allowing the Joystick to function as a virtual D-pad. Useful for games that only support the digital controller.<br>⇒ Off 0, On 1.                                                                                                                                                                     |
| <b>MULTITAP</b> <code>psx.duckstation_multitap</code>                  | Enables multitap for the specified port(s). Not all games utilized it and may have issues with it on. Generally safe to leave on for port 2, though.<br>⇒ Off Disabled, Port 1 Port1Only, Port 2 Port2Only, Port 1+2 BothPorts.                                                                                                     |
| <b>CONTROLLER 1 TYPE</b><br><code>psx.duckstation_Controller1</code>   | Refer to <a href="#">Controls</a> .<br>⇒ None None, Digital Controller DigitalController, Analog Controller (DualShock) AnalogController, Analog Joystick AnalogJoystick, Namco GunCon (Rumble) NamcoGunCon, PlayStation Mouse PlayStationMouse, NeGcon (Rumble) NeGcon.                                                            |
| <b>CONTROLLER 2 TYPE</b><br><code>psx.duckstation_Controller2</code>   | Same as above but for port 2.                                                                                                                                                                                                                                                                                                       |

Other configuration settings must be configured from within DuckStation's standalone emu-config

([F1] on the systems list → Applications).

## RetroArch

[RetroArch](#) (formerly SSNES), is a ubiquitous frontend that can run multiple “cores”, which are essentially the emulators themselves. The most common cores use the [libretro](#) API, so that's why cores run in RetroArch in Batocera are referred to as “libretro/(core name)”. RetroArch aims to unify the feature set of all libretro cores and offer a universal, familiar interface independent of platform.

### RetroArch configuration

RetroArch offers a **Quick Menu** accessed by pressing [HOTKEY] +  which can be used to alter various things like [RetroArch and core options](#), and [controller mapping](#). Most RetroArch related settings can be altered from Batocera's EmulationStation.

Standardized features available to all cores of this emulator: `psx.videomode`, `psx.ratio`, `psx.smooth`, `psx.shaders`, `psx.pixel_perfect`, `psx.decoration`, `psx.game_translation`

| ES setting name batocera.conf key                 | Description ⇒ ES option key value                                                                                        |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Settings that apply to all cores of this emulator |                                                                                                                          |
| GRAPHICS BACKEND <code>psx.gfxbackend</code>      | Choose your graphics rendering<br>⇒ OpenGL <code>opengl</code> , Vulkan <code>vulkan</code> .                            |
| AUDIO LATENCY <code>psx.audio_latency</code>      | Audio latency in milliseconds, turn it up if you hear crackles<br>⇒ 256 256, 192 192, 128 128, 64 64, 32 32, 16 16, 8 8. |

### libretro/PCSX ReARMed

[PCSX ReARMed](#) is an optimized PCSX fork for ARM based systems like the Raspberry Pi, but also works on x86.

#### libretro/PCSX ReARMed configuration

| ES setting name batocera.conf key                         | Description ⇒ ES option key value                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SHOW BIOS BOOTLOGO<br><code>psx.show_bios_bootlogo</code> | Shows the BIOS boot animation when starting the game. In PCSX ReARMed, this can cause some games to break when turned on. PCSX uses an emulated BIOS by default, running <i>this</i> emulated BIOSs' animation can cause some games to malfunction. Games that require the proper BIOS animation require an official BIOS present.<br>⇒ Off disabled, On enabled. |
| FRAMESKIP <code>psx.frameskip_pcsx</code>                 | Skip frames to improve performance. Can cause motion sickness if set to high values. Can cause motion sickness if set high. Only use if the game is unplayable without it.<br>⇒ Off 0, 1 1, 2 2, 3 3.                                                                                                                                                             |

| ES setting name batocera.conf key                                        | Description ⇒ ES option key value                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ENHANCED RESOLUTION (SLOWER)</b><br><code>psx.neon_enhancement</code> | (32-bit only) Enhancement. Doubles the internal rendering resolution. Extreme performance cost. "On (Speed hack)" is not recommended as it can cause glitches.<br>⇒ Off disabled, On enabled, On (Speed hack) enabled_with_speedhack.                                                                                                                                                                                         |
| <b>MULTITAP</b><br><code>psx.pcsx_rearmed_multitap</code>                | Enables multitap on the selected port. Values: disabled, port1, port2 or port12 for both ports. Most games don't utilize multitap, but is generally safe to leave in port2.<br>⇒ Off disabled, Port1 port 1 only, Port2 port 2 only, Port1+2 both.                                                                                                                                                                            |
| <b>ADDITIONAL GAME FIXES</b><br><code>psx.game_fixes_pcsx</code>         | Enables a per-game fix.<br>⇒ Off disabled, Capcom VS games Expand Screen Width Capcom_fighting, Chrono Chross Odd/Even Bit Hack Chrono_Chross, Dark Forces Flat Tex Triangles Fix Dark_Forces, Diablo Music Fix Diablo_Music_Fix, Lunar Ignore Brightness Color Fix Lunar, InuYasha Sengoku Battle Fix InuYasha_Sengoku, Pandemonium 2 Lazy Screen Update Fix Pandemonium, Parasite Eve 2/Vandal Hearts 1&2 Fix Parasite_Eve. |
| <b>CONTROLLER 1 TYPE</b><br><code>psx.controller1_pcsx</code>            | Refer to <a href="#">Controls</a> .<br>⇒ Digital Controller 1, Analog Controller 261, DualShock Controller 517, Namco GunCon 260, NeGcon 773, PlayStation Mouse 258.                                                                                                                                                                                                                                                          |
| <b>CONTROLLER 2 TYPE</b><br><code>psx.controller2_pcsx</code>            | Same as above but for port 2.<br>⇒ Digital Controller 1, Analog Controller 261, DualShock Controller 517, Namco GunCon 260, NeGcon 773, PlayStation Mouse 258.                                                                                                                                                                                                                                                                |

Other configuration settings must be configured from RetroArch's Quick Menu (Hotkey+ ).

## libretro/SwanStation

[SwanStation](#) is a port of an older version of DuckStation to a libretro core. This version does not receive the same upstream patches that DuckStation currently does, so as time goes on the feature set between this and DuckStation will diverge further.

SwanStation shares its configuration with [Duckstation](#), but omits `threaded_presentation`, `vsync`, `frameskip`, `region`, `custom_textures`, `rumble`, `digital_mode` and `multitap`.

### libretro/SwanStation configuration

| ES setting name batocera.conf key                                       | Description ⇒ ES option key value                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SHOW BIOS BOOTLOGO</b><br><code>psx.duckstation_PatchFastBoot</code> | Enhancement. Skips the BIOS boot animation. Some games require the animation to function correctly, most can skip it fine. SwanStation uses the official BIOS, some games look for this specific animation before booting so turn it on for those games.<br>⇒ Off true, On false. |

| ES setting name batocera.conf key                                       | Description ⇒ ES option key value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GPU SOFTWARE RENDERING</b><br><b>psx.gpu_software</b>                | Force use of software rendering<br>⇒ Off False, On True.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>VIDEO RESOLUTION</b><br><b>psx.duckstation_resolution_scale</b>      | Enhancement. Multiplies the internal rendering resolution. Improves the clarity of 3D objects. Extreme performance cost.<br>⇒ 1x(native) 1, 2x 2, 3x/720p 3, 4x 4, 5x/1080p 5, 6x/1440p 6, 7x 7, 8x 8, 9x 9.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>ANTI-ALIASING (MSAA/SSAA)</b><br><b>psx.duckstation_antialiasing</b> | Enhancement. Applies <a href="#">MSAA</a> or <a href="#">SSAA</a> to smooth out jagged edges on 3D object polygons. Most noticeable at lower resolutions. Does not affect textures. The sharp edges of polygons are usually masked by the blurry video output of the PSX, but digital displays may feature them more prominently. This can alleviate that. The PSX does not have any native anti-aliasing. Enabling this can cause rendering errors. Cheaper than multiplying the rendering resolution, but not by much.<br>⇒ Off 1, 2x MSAA 2, 4x MSAA 4, 8x MSAA 8, 16x MSAA 16, 32x MSAA 32, 2x SSAA 2-ssaa, 4x SSAA 4-ssaa, 8x SSAA 8-ssaa, 16x SSAA 16-ssaa, 32x SSAA 32-ssaa. |
| <b>TEXTURE FILTERING</b><br><b>psx.duckstation_texture_filtering</b>    | Enhancement. Applies <a href="#">texture filtering</a> to all textures. Minimal performance cost. Nearest for an authentic experience, Bilinear for a “neutral” improvement (think N64), xBR/Jinc2 for smart upscaling (subjective improvement). Edge blending refers to the transparent edges, can make some objects look nicer while other objects look glitchier.<br>⇒ Nearest Nearest, Bilinear Bilinear, JINC2 JINC2, xBR xBR.                                                                                                                                                                                                                                                 |
| <b>WIDESCREEN HACK</b><br><b>psx.duckstation_widescreen_hack</b>        | Enhancement. Widescreen hack. Very glitchy. Only works when using a 16:9 video mode <b>and</b> with bezels (decorations) disabled. 0 for disabled, 1 for enabled. Recommended to use game patches where possible instead. Some games natively support 16:9 in their in-game options.<br>⇒ Off false, On true.                                                                                                                                                                                                                                                                                                                                                                       |
| <b>CROP MODE</b> <b>psx.duckstation_CropMode</b>                        | Zooms in the display to hide black borders. Not all PSX games have the same sized black borders.<br>⇒ Off None, Only Overscan Area Overscan, All Borders Borders.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>CONTROLLER 1 TYPE</b><br><b>psx.duckstation_Controller1</b>          | Refer to <a href="#">Controls</a> .<br>⇒ None None, Digital Controller DigitalController, Analog Controller (DualShock) AnalogController, Namco GunCon NamcoGunCon, PlayStation Mouse PlayStationMouse, NeGcon NeGcon.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

| ES setting name batocera.conf key                              | Description ⇒ ES option key value                                                                                                                                                                                            |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CONTROLLER 2 TYPE</b><br><b>psx.duckstation_Controller2</b> | Same as above but for port 2.<br>⇒ None None, Digital Controller<br>DigitalController, Analog Controller<br>(DualShock) AnalogController, Namco<br>GunCon NamcoGunCon, PlayStation Mouse<br>PlayStationMouse, NeGcon NeGcon. |

In older Batocera versions, these settings can only be adjusted with RetroArch's Quick Menu (Hotkey+).

## libretro/Duckstation

A port of DuckStation as a libretro core. Is mostly the same as [DuckStation standalone](#) but conforms to the limitations of being a libretro core. ( what are the limitations?)

### libretro/DuckStation configuration

| ES setting name batocera.conf key                                       | Description ⇒ ES option key value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SHOW BIOS BOOTLOGO</b><br><b>psx.duckstation_PatchFastBoot</b>       | Enhancement. Skips the BIOS boot animation. Some games require the animation to function correctly, most can skip it fine. Duckstation uses the official BIOS, some games look for this specific animation before booting so turn it on for those games.<br>⇒ Off true, On false.                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>GPU SOFTWARE RENDERING</b> psx.gpu_software                          | Force use of software rendering.<br>⇒ Off False, On True.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>VIDEO RESOLUTION</b><br><b>psx.duckstation_resolution_scale</b>      | Enhancement. Multiplies the internal rendering resolution. Improves the clarity of 3D objects. Extreme performance cost.<br>⇒ 1x(native) 1, 2x 2, 3x/720p 3, 4x 4, 5x/1080p 5, 6x/1440p 6, 7x 7, 8x 8, 9x 9.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>ANTI-ALIASING (MSAA/SSAA)</b><br><b>psx.duckstation_antialiasing</b> | Enhancement. Applies <a href="#">MSAA</a> or <a href="#">SSAA</a> to smooth out jagged edges on 3D object polygons. Most noticeable at lower resolutions. Does not affect textures. The sharp edges of polygons are usually masked by the blurry video output of the PSX, but digital displays may feature them more prominently. This can alleviate that. The PSX does not have any native anti-aliasing. Enabling this can cause rendering errors. Cheaper than multiplying the rendering resolution, but not by much.<br>⇒ Off 1, 2x MSAA 2, 4x MSAA 4, 8x MSAA 8, 16x MSAA 16, 32x MSAA 32, 2x SSAA 2-ssaa, 4x SSAA 4-ssaa, 8x SSAA 8-ssaa, 16x SSAA 16-ssaa, 32x SSAA 32-ssaa. |

| ES setting name batocera.conf key                                    | Description ⇒ ES option key value                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TEXTURE FILTERING</b><br><b>psx.duckstation_texture_filtering</b> | Enhancement. Applies <a href="#">texture filtering</a> to all textures. Minimal performance cost. Nearest for an authentic experience, Bilinear for a “neutral” improvement (think N64), xBR/Jinc2 for smart upscaling (subjective improvement).<br>⇒ Nearest Nearest, Bilinear Bilinear, JINC2 JINC2, xBR xBR. |
| <b>WIDESCREEN HACK</b><br><b>psx.duckstation_widescreen_hack</b>     | Enhancement. Widescreen hack. Very glitchy. Only works when using a 16:9 video mode <b>and</b> with bezels (decorations) disabled. Recommended to use game patches where possible instead. Some games natively support 16:9 in their in-game options.<br>⇒ Off false, On true.                                  |
| <b>CROP MODE</b> <b>psx.duckstation_CropMode</b>                     | Zooms in the display to hide black borders. Not all PSX games have the same sized black borders.<br>⇒ Off None, Only Overscan Area Overscan, All Borders Borders.                                                                                                                                               |
| <b>CONTROLLER 1 TYPE</b><br><b>psx.duckstation_Controller1</b>       | Refer to <a href="#">Controls</a> .<br>⇒ None None, Digital Controller 1, Analog Controller (DualShock) 5, Analog Stick 517, Namco GunCon 260, PlayStation Mouse 258, NeGcon 773.                                                                                                                               |
| <b>CONTROLLER 2 TYPE</b><br><b>psx.duckstation_Controller2</b>       | Same as above but for port 2.<br>⇒ None None, Digital Controller 1, Analog Controller (DualShock) 5, Analog Stick 517, Namco GunCon 260, PlayStation Mouse 258, NeGcon 773.                                                                                                                                     |

## libretro/Mednafen PSX

[Beetle PSX](#) is a standalone fork of Mednafen PSX core to the libretro API. Offers a lot of options to enhance graphics and geometry. Highly recommended for x86\_64 systems with a decent GPU.

### libretro/Mednafen PSX configuration

| ES setting name batocera.conf key                            | Description ⇒ ES option key value                                                                                                                                                            |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SHOW BIOS BOOTLOGO</b><br><b>psx.beetle_psx_skip_bios</b> | Enhancement. Skip the BIOS animation when starting content. Can be enabled but some games may have issues, notably <a href="#">copy protected PAL games</a> .<br>⇒ Off enabled, On disabled. |

| ES setting name batocera.conf key                                       | Description ⇒ ES option key value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OVERCLOCKING (CPU HEAVY)</b><br><b>psx.beetle_psx_cpu_freq_scale</b> | <p>Enhancement. Enable overclocking (or underclocking) of the emulated PSX's CPU. The default frequency of the MIPS R3000A-compatible 32-bit RISC CPU is 33.8688 MHz; running at higher frequencies can eliminate slowdown and improve frame rates in certain games at the expense of increased performance requirements. Overclocking can lead to audio and video desynchronization on certain games, underclocking can improve performance on weak devices.</p> <p>⇒ 50% 50%, 60% 60%, 70% 70%, 80% 80%, 90% 90%, 100%(native) 100%(native), 110% 110%, 120% 120%, 130% 130%, 140% 140%, 150% 150%, 160% 160%, 170% 170%, 180% 180%, 190% 190%, 200% 200%, 250% 250%, 300% 300%, 350% 350%, 400% 400%, 450% 450%, 500% 500%, 550% 550%, 600% 600%, 650% 650%, 700% 700%, 750% 750%.</p> |
| <b>VIDEO RESOLUTION</b><br><b>psx.beetle_psx_internal_resolution</b>    | <p>Enhancement. <a href="#">Increases the rendering resolution for 3D geometry</a>. 2D elements are generally unaffected by this setting from the core's perspective. Significant performance cost. Although not exact, set to 4x for 1080p resolution.</p> <p>⇒ 1x(native) 1x(native), 2x 2x, 4x 4x, 8x 8x, 16x 16x.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>WIDESCREEN HACK</b><br><b>psx.beetle_psx_widescreen_hack</b>         | <p>Enhancement. Forces content to be rendered with an aspect ratio of 16:9. Produces best results with fully 3D games. Can cause graphical glitches or alignment/stretching issues in games that mix 3D and 2D elements. Recommended to use game patches instead. Some games natively support 16:9 in their in-game options.</p> <p>⇒ Off disabled, On enabled.</p>                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>FRAME DUPING (SPEED UP)</b><br><b>psx.beetle_psx_frame_duping</b>    | <p>Enhancement. When enabled, provides a small performance increase by redrawing/reusing the last rendered frame (instead of presenting a new one) if the content of the current frame is unchanged based on the internal fps heuristic. Enabling may cause inaccurate behavior or lost animation frames.</p> <p>⇒ Off disabled, On enabled.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>CPU DYNAREC (SPEED UP)</b><br><b>psx.beetle_psx_cpu_dynarec</b>      | <p>Dynamically recompile CPU instructions to native instructions. Much faster than interpreter, but CPU timing is less accurate, and may have bugs. Extreme performance cost if disabled. Only enable if on a weak device.</p> <p>⇒ Disabled (Beetle Interpreter) disabled, Max Performance execute, Cycle Timing Check execute_once, Lightrec Interpreter run_interpreter.</p>                                                                                                                                                                                                                                                                                                                                                                                                           |

| ES setting name batocera.conf key                                            | Description ⇒ ES option key value                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DYNAREC CODE INVALIDATION</b><br><b>psx.beetle_psx_dynarec_invalidate</b> | Switches between full invalidation mode and DMA only mode. DMA only mode is slightly faster, however some games require full invalidation to run correctly. This option has no effect when beetle_psx_cpu_dynarec is not enabled. Only use dma on weak devices.<br>⇒ Full full, DMA Only (Slightly Faster) dma. |
| <b>MULTITAP</b> <b>psx.multitap_mednafen</b>                                 | Enables/disables multitap functionality and allows up to 8 players. Not all games utilized it and may have issues with it on. Generally safe to leave on for port 2, though.<br>⇒ Off disabled, Port 1 port1, Port 2 port2, Port 1+2 port12.                                                                    |
| <b>CONTROLLER 1 TYPE</b><br><b>psx.beetle_psx_Controller1</b>                | Refer to <a href="#">Controls</a> .<br>⇒ Digital Controller 1, Analog Controller 261, DualShock Controller 517, Analog Joystick (Flystick) 773, Namco GunCon 260, NeGcon 1029, PlayStation Mouse 258.                                                                                                           |
| <b>CONTROLLER 2 TYPE</b><br><b>psx.beetle_psx_Controller2</b>                | Use DualShock type for games with Rumble mode<br>⇒ Digital Controller 1, Analog Controller 261, DualShock Controller 517, Analog Joystick (Flystick) 773, Namco GunCon 260, NeGcon 1029, PlayStation Mouse 258.                                                                                                 |

Other configuration settings must be configured from RetroArch's **Quick Menu** ( [HOTKEY] +  ).

## Controls

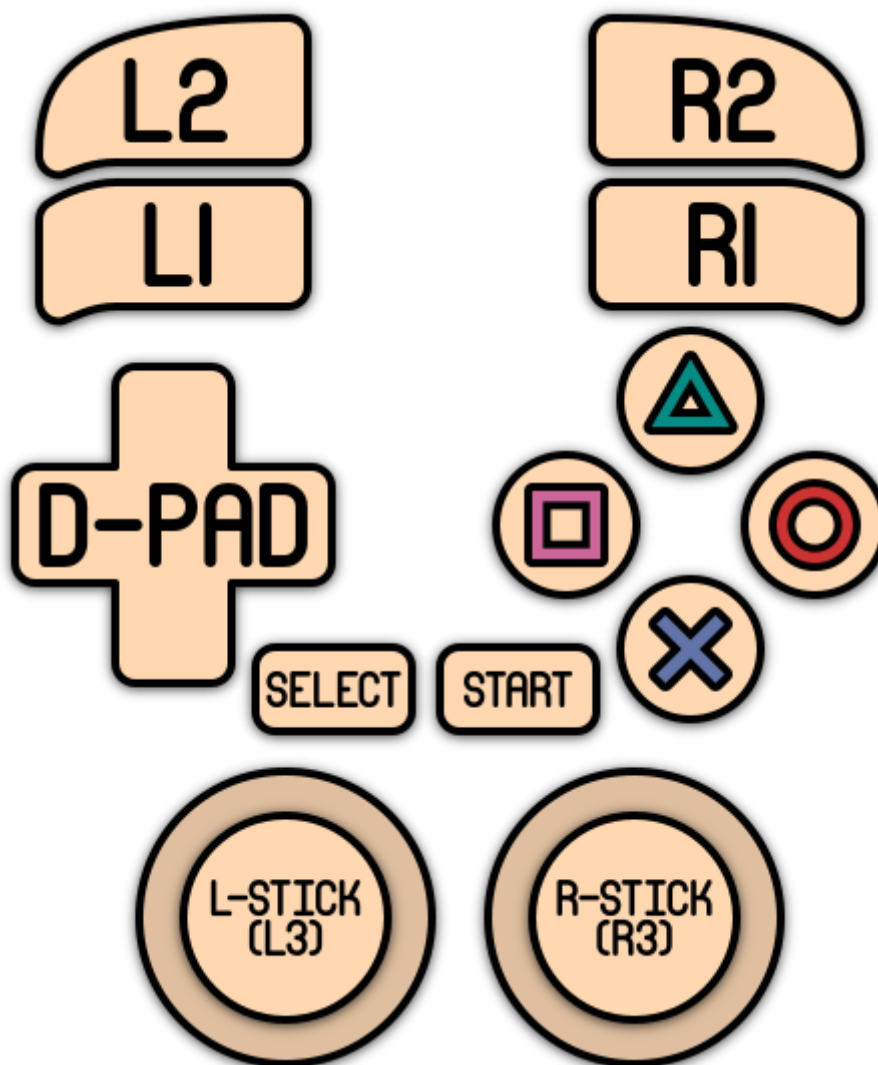


The PlayStation had many types of controllers throughout its life, starting with the digital controller which only had a D-pad, face buttons and shoulder buttons, then the Analog controller which added two joysticks to the center and finally the DualShock which added vibration. A game needs to explicitly support a controller to function with it, most supported at least the digital controller. The Analog and Dualshock controller had an “Analog” button to switch between being its native self or a virtual digital controller so it could function with older games; this is generally not emulated yet so the

best recommendation is to stick with digital controllers unless you know your game explicitly supports a later one. By default, Batocera will enable Joystick to D-pad so that the joystick will function as a virtual D-pad.

The PlayStation also had alternative controllers such as the dance mat (same as the digital controller) or the  [analog joystick](#) (same as the analog controller). Other controllers such as the  [Namco GunCon](#), the  [neGcon](#) or the  [PlayStation Mouse](#) would use their own interface, requiring the game to specifically support it.

The default button mapping to the PSX controller is as follows:



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