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📄 Armored-Core-PS1-enhanceme...	more editions for PP and MoA, and inv...	last year
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About

QoL enhancements for the oldgen PS1/PS2/PSP Armored Core games.

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README

QoL enhancements: dual analog controls for Armored Core 3 Portable - USA, Armored Core: Silent Line Portable - USA, Armored Core: Last Raven Portable - USA and Armored Core: Formula Front International - Japan (PPSSPP emulator, Vita)

⚠ **NOTE:** If you play AC: Last Raven Portable with the latest patch (inside weapon selection fix), or the new patch for the AC: Formula Front International, feedback would be very appreciated!

Adds *dual analogs* capability to these games, with actual analog processing for turning and looking up/down (right stick), when run from PPSSPP.

(For more details about how these patches work, see PS1 and PS2 sections)

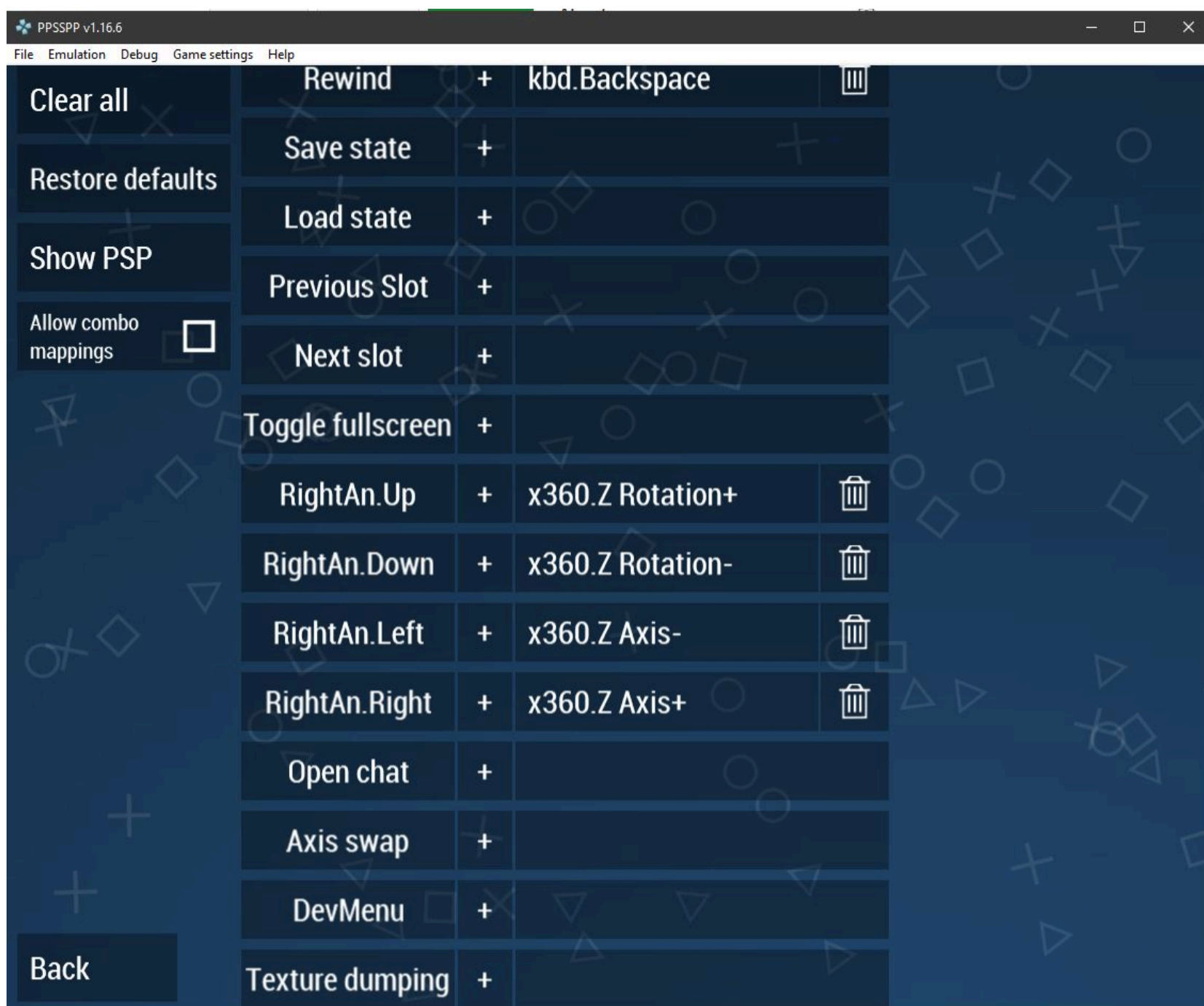


- feature complete, but there may be bugs
- PPF patch format for the decrypted EBOOT.BIN (*cwcheat* version was removed, since it was unstable)
- replays are (and will be) broken
- only tested on PPSSPP - should work on at least PPSSPP version 1.13.2 or newer (for AC:FFI, use PPSSPP v1.16+)

Install instructions (PPSSPP emulator)

In order for this mod to work, you will need to set the following PPSSPP settings:

- the controller configuration needs to have mappings added for the in-game right analog (even if the real PSP didn't have a right analog pad), matching the axis of your controller (see picture below).



PPF patch on the decrypted EBOOT.BIN

1. PPSSPP can be configured to generate a decrypted EBOOT.BIN (or you can extract the EBOOT.BIN from the ISO with 7zip, then use the command-line tool "[pspdecrypt](#)" on the .BIN file)
2. Next, use **PPF-O-MATIC 3.0** or other compatible tool to apply the PPF patch on that decrypted EBOOT.BIN
3. Finally, use **UMDGen** or a similar tool to insert the new, patched EBOOT.BIN inside the original ISO in place of the old EBOOT.BIN.

This convoluted method is necessary since creating a PPF patch directly on the game ISO is legally problematic: the original EBOOT.BIN file is encrypted, and patching that would create a file that will contain information about **the whole** executable, instead of just a difference.

Purging

Normally, to purge weapons/parts in this game one has to press a combination of five buttons, which works with the default in-game button keymap, but: changing the in-game button keymap has a large number of combinations that will simply disable purging completely. When using dual analog controls, it is expected that the user will want to change the default keymap (for example moving boost to L1, right weapon to R1 etc.)

The mod includes an extra 'Purge' modifier button, *functional with **any** custom keymap*, by adding into the game the formally unused PSP MUSIC_NOTE button:

- for *Armored Core 3 Portable* and *Silent Line Portable*: pressing this modifier button will send the "strafe left/strafe right/look up/look down" combo (no matter how the buttons are mapped in-game), which means the user only needs an extra button pressed (*weapon change, toggle extension or left weapon* - again taking into account the in-game button mapping), in order to specify what weapon/part has to be purged.
- for *Armored Core: Last Raven Portable*: pressing the purge modifier button will act as intended, but without sending the 4 buttons combo mentioned above (a special flag is used instead); the user similarly only needs an extra button pressed (*right weapon, toggle extension or left weapon*) to specify what to purge. Explicitely sending the normal combo "strafe left/strafe right/look up/look down" will work as before (but only when the in-game keymap allows it).

An extra key or controller button has to be mapped in the PPSSPP emulator to the PSP MUSIC_NOTE button, so that its value can be actually sent into the game, to act as 'Purge' modifier. For example (mapped to R2):



An exception to this is *Armored Core: FFI Portable (Japan)*: purging doesn't need any new buttons, the default method should still work (D-PAD UP + button used to select what part/weapon to purge, according to user button mapping).

Notes

The patch *might* work with the Adrenaline, if that emulator is also able to map a right analog pad and send the data inside the game, as PPSSPP does. Otherwise, somebody has to write a plugin for that. UPDATE: I got a couple of reports that at least AC3 Portable patched ISO mod does work with Adrenaline on Vita, if any plugins or mappings for the right analog are disabled.

The dual analog mod implementation from *Armored Core: Last Raven Portable* is different than the others: this game actually has extra, unused instructions left inside the executable that include analog processing for four axes of movement: either the code was a left-over from the PS2 implementation, or the developers had access to a special dual analog device hooked to the PSP developer kit during testing. In any case, the dual analog mod takes advantage of this existing analog processing code. Because of that, this mod is different than the others: when the analog axes are moved, there are no additional, corresponding digital buttons also "pushed", as it happens with the previous mods: for example, in all other dual analog mods (other than AC:LR Portable / PSP), when the user pushes the right analog, the L2 (PS2) or triangle (PSP) button is also automatically pressed (assuming the default in-game keymap). For AC:LR Portable, this is not the case. This has some consequences (latest mod version minimizes them):

- With the dual analog mod enabled, the player **has** to use the the analog pads for movement, the corresponding digital buttons mapped in the game will not work
- If the in-game keymap is changed and displays "DISABLED" instead of a purge button combo, the player **has** to map the PSP MUSIC_NOTE button as the purge modifier to be able to purge at all times.

Latest stable version of the LR Portable patch re-enables "look reset" by pressing the in-game mapped look up/down buttons (if the in-game keymap shows a button combo, and not the "DISABLED" message), and also re-enables the default "4 button combo" purge modifier (same conditions).

Latest BETA version of the LR portable patch fixes the following **AC: LR Portable BUG**: can't select inside parts. Enabling the analog processing instructions described above had the side effect of disabling the usage of the inside part/weapon. It makes sense in a way, if the analog processing code is a leftover from the PS2 original version, that would correspond to the "Type A" (analog) controller scheme from that game; and "Type A" has a dedicated button for using the inside parts (and therefore no switching to the inside part as normal cycling through weapons). So now the modded game is left without a dedicated button for the inside part, *and* no way to switch to it.

Armored Core: FFI Portable (Japan)

Supported version: ULJS-19001 (dual language support: Japanese/English)

Status: very experimental.

By default, even in manual fights, in this game the vertical camera movement is automatic (follows the enemy). The analog patch disables this automatic vertical lock-on when doing manual fights, so that right analog stick *CAN* be used to manually control the camera on all 4 directions, similar to the other AC games in the series. There is no "camera reset" combo, though. Purging should work as usual (D-PAD UP + relevant part/weapon button).

QoL enhancements: analog controls for Armored Core PS1 series: AC1, AC: Project Phantasma and AC: Master of Arena

Supported versions:

- **AC1**: USA (SCUS_941.82), USA (SLUS_013.23 - Reprint edition), Japan (SLPS_009.00), Europe (SCES_008.42)
- **AC: Project Phantasma**: USA (SLUS_006.70), Japan (SLPS_011.30), Japan (SLPS_911.10 - Playstation the Best)
- **AC: Master of Arena**: USA 2CDs (SLUS_010.30 / SLUS_010.81), Japan (SLPS_018.55 / SLPS_018.56), Japan (SLPS_914.44 / SLPS_914.45 - PSone Books)

Each patch includes an "Inverted Look Up/Down" version in a separate folder.

The patches work **ONLY** with these versions, and only work if the relevant *.bin* files are clean, i.e. not already patched with something else (undubs etc.)



Analog input processing inside these games was retro-fitted using algorithms from AC Nine Breaker.

Left analog sends the following commands: strafe left, strafe right, forward, backward.

Right analog sends the following commands: turn left, turn right, look up, look down.

The analog controls keep working exactly the same ^, even if the user changes the control scheme for the digital buttons, so the buttons can be remapped in-game as you like.

Most importantly, the right analog movement uses the same algorithms as those from Armored Core: Nine Breaker, so it is not just a remapping: the movement is actually smoothed out, different areas of joystick displacement are treated differently based on the analog value received (not just 0 / 1). In other words, no more junky looking / turning around.

Note that even in these PS1 games, the control scheme is pretty much the same as "Type B" in later PS2 games (AC Nexus and after). Therefore implementing a kind of "Type A" control scheme (analog-based) should provide a big accessibility boost without adding an unfair advantage (i.e. the 'Fairness' paragraph in the PS2 section still applies). On the contrary, any old school AC player would tell you that "Type B" still has the advantage.

AC1 Notes:

The original game only works with the controller in 'digital' mode. Patched game only works with the controller in 'analog' mode.

Normally this can be configured in your PS1 emulator settings, or **by pressing the controller 'digital/analog switching mode' button**, if it has one.

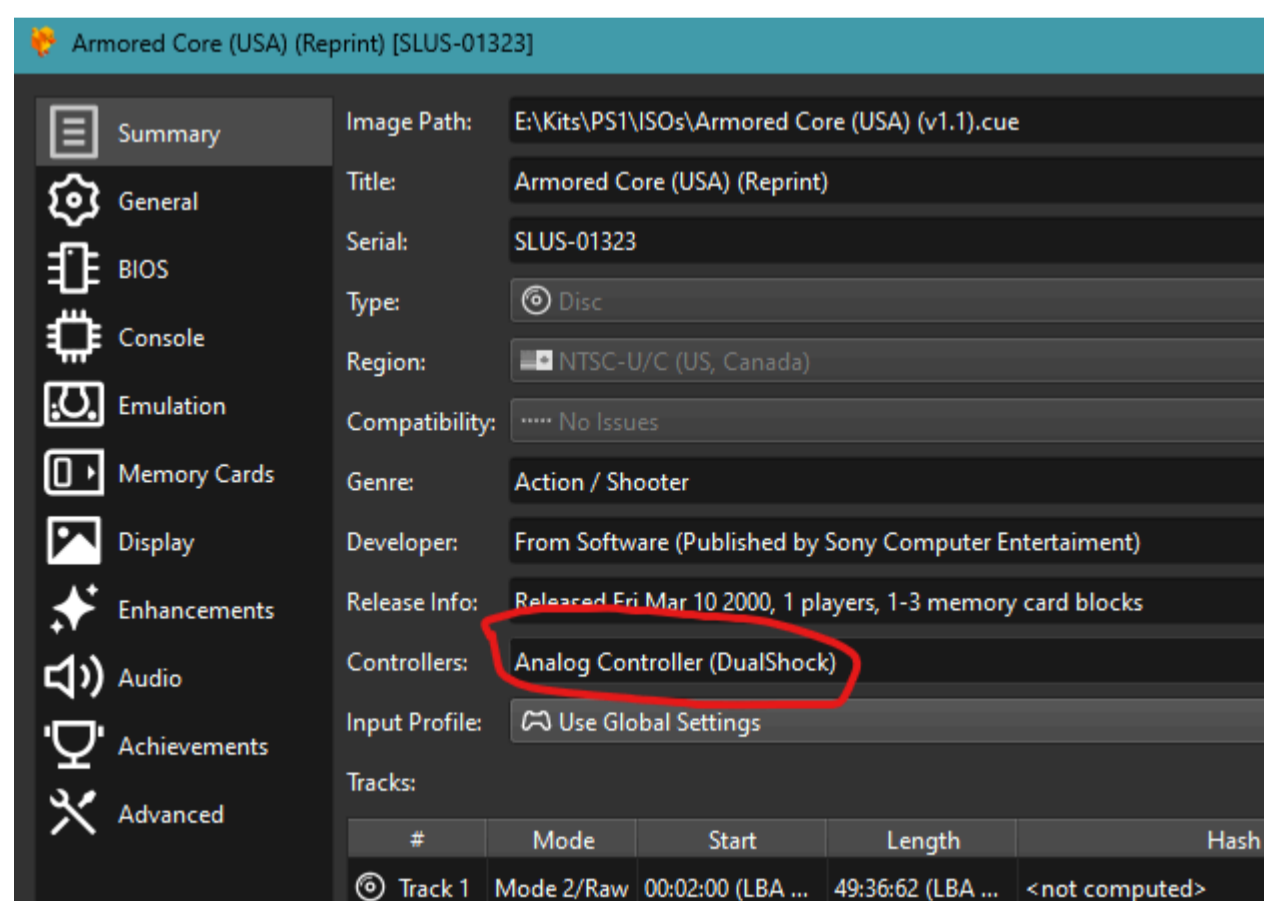
Duckstation emulator knows that the game only works in digital mode, therefore by default it won't allow switching to analog mode from the GUI. BUT, you can still switch to analog mode by pressing your controller's analog button (and this is the simple, recommended approach).

On PC at least, you can also press ESC and click the "Toggle Analog" option in the overlay menu that pops up.

Optional: to default to analog mode when the game starts, edit 'Duckstation/resources/gamesdb.json' with a text editor, search for 'SLUS-01323' and modify the "controller" entry value from "DigitalController" to "AnalogController".

```
{
  "serial": "SLUS-01323",
  "name": "Armored Core (USA) (Reprint)",
  "codes": [
    "SLUS-01323"
  ],
  "languages": [
    "English"
  ],
  "publisher": "Sony Computer Entertainment",
  "developer": "From Software",
  "releaseDate": "2000-03-10",
  "genre": "Action / Shooter",
  "minPlayers": 1,
  "maxPlayers": 1,
  "minBlocks": 1,
  "maxBlocks": 3,
  "vibration": false,
  "multitap": false,
  "linkCable": true,
  "controllers": [
    "AnalogController"
  ],
  "track_data": [
    {
      "tracks": [
        {
          "size": 524759424,
          "md5": "34a3f5ea63ac6a6e9753e5fd38425d7e"
        }
      ]
    }
  ]
}
```

This is how you it should look like, after editing 'gamesdb.json':



Note that, if Duckstation automatic updates are on, you will lose the modifications in 'gamesdb.json', so you have to either repeat the steps above, disable the updates, maybe make the file read-only, have a backup ready - or use the analog button on the controller to switch to analog after game starts.

AC: Project Phantasma notes

- Missions, garrage AC test and arena work, but 'Vs. (Splitscreen)' and 'ILINK' modes are not patched
- Since it's based on recording (digital) inputs only, the replaying system is broken

- The unpatched *Japan (SLPS_011.30)* version also starts with controller set in 'digital' mode, similar to the first Armored Core game, see the **AC1 Notes** above

AC: Master of Arena notes

- Missions, garrage AC test, arena and ex-arena work, but 'Vs. (Splitscreen)' and 'LINK' modes are not patched
- Since it's based on recording (digital) inputs only, the replaying system is broken
- For some reason, the *PCSX-Redux* emulator hangs when loading an Arena or Ex-Arena fight (at least for the USA edition), therefore I recommend using *Duckstation* for this game.

Usage:

Use the relevant *.ppf* file with **PPF-O-MATIC 3.0** and the game's original *.bin* file to create a patched *.bin*.

OR, when using the Duckstation emulator: if you go at 'Settings->Console' in the menu, you can enable an option called "Apply Image Patches". Then, if you have the *.bin/.cue* pair files in their own folder, AND you place there the proper *.ppf* file and rename it so that it has the exact same name as the *bin/cue* pair (but still keep the extension *.ppf*), Duckstation will "see" the patch and use it on the game automatically, while still leaving the *.bin* file intact.

Feedback welcome.

QoL enhancements: analog controls for Armored Core PS2 series (AC2, AC2: Another Age, AC3, AC: Silent Line).

Supported versions:

- **AC2:** USA (SLUS_200.14), Europe (SLES_500.79), Japan (SLPS_250.07)
- **AC2: Another Age:** USA (SLUS_202.49), Europe (SLES_509.05), Japan (SLPS_250.40)
- **AC3:** USA (SLUS_204.35), Europe (SLES_513.99), Japan (SLPS_251.12)
- **AC: Silent Line:** USA (SLUS_206.44), Europe (SLES_522.03), Japan (SLPS_251.69)

Each PPF patch includes an "Inverted Look Up/Down" version in a separate folder.

Analog input processing inside these games was retro-fitted using algorithms from AC Nine Breaker.

Left analog sends the following commands: strafe left, strafe right, forward, backward.

Right analog sends the following commands: turn left, turn right, look up, look down.

The analog controls keep working exactly the same ^, even if the user changes the control scheme for the digital buttons, so the buttons can be remapped in-game as you like.

Most importantly, the right analog movement uses the same algorithms as those from Armored Core: Nine Breaker, so it is not just a remapping: the movement is actually smoothed out, different areas of joystick displacement are treated differently based on the analog value received (not just 0 / 1). In other words, no more junky looking / turning around.

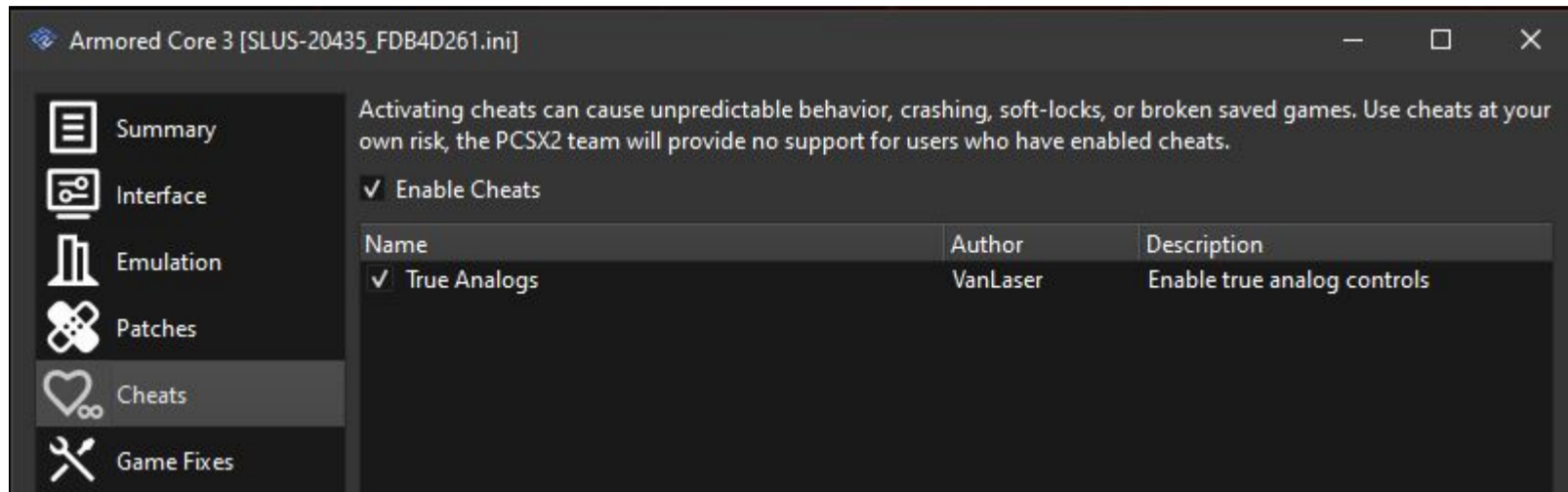
For games that mirrored left joystick to D-PAD buttons, that operation was removed during fights, and replaced with the left analog functionality described above (in other words, left joystick in game does not depend at all of how user mapped the D-PAD buttons).



Install instructions (emulator)

The `.pnach` files need a recent PS2 emulator, **PCSX2-qt nightly** is highly recommended.

- Copy the `.pnach` files into the '`<PCSX2 install dir>/cheats/'` folder. If there is no 'cheats' folder, use the 'patches' folder instead (you have an older version of PCSX2)
- Open PCSX2, don't start the game yet
- Select the Armored Core game you want to play from in the game list, right-click, click 'Properties' - this will open a 'Game Properties' window
- Select 'Cheats' entry on the left, make sure option 'Enable Cheats' is checked, then enable 'True Analogs' below
- You will need to restart the game every time you change the option (the patch modifies the game only once, when the game starts)



Notes

- if your PCSX2 is a bit older, there will be no 'Cheats' entry. In that case, use the 'Patches' entry instead
- if you see no 'True Analogs' entry, your PCSX2 may be too old to support the new `.pnach` file format
- if you see the 'True Analogs' entry, but it's greyed out (can't enable it), your Armored Core game CRC is "wrong", which means you're playing a patched Armored Core, or a different version of the game

To modify a game ISO directly, use the `.ppf` files instead. The `.ppf` files can patch the right ISO using **PPF-O-MATIC 3.0**

In some of the games, the look up/down motion feels more exacerbated than in others, even if the patching idea is the same, and the original coding also seems similar between games. To alleviate that, if you play in PCSX2 emulator, go to controller settings and adjust the "Analog Sensitivity" value - by default it's set to 130% (a good starting value to tweak from is 100%).

Technical details

The look up / look down analog displacement has three zones:

- inside deadzone, view speed converges to zero
- outside deadzone, view speed is proportional to joystick displacement (AC: Nine Breaker formulas)
- towards the edge (joystick pulled/pushed hard), movement is additionally accelerated using AC: Nine Breaker formulas.

The turn left / turn right analog displacement has two zones:

- inside deadzone, turn speed converges to zero
- outside deadzone, turn speed acceleration is proportional to joystick displacement (AC: Nine Breaker formulas)

Note that you won't be able to turn or look faster than before, just smoother.

The analog movement outside deadzone will also send the digital input mapped by the user in that direction, but the acceleration will be "intercepted" and computed using the above formulas instead of being based only on the digital button information.

Fairness:

- The later PS2 AC games, starting with Nexus, implement two controller schemes: classic, digital (Type B) and analog-based (Type A).
- The older games implement looking up/down and turning left/right in the same way as 'Type-B' in the later games.
- The patches retro-fit into the earlier games the 'Type-A' formulas for looking up/down and turning left/right from the later ones (namely, AC: Nine Breaker).

So: the advantages one has in playing with these patches should be the same as using 'Type A' instead of 'Type B' in the later games.

Limitations:

- Since in-game replays are performed by re-running the same sequence of digital inputs recorded by the game during the actual fights in the arena, the analog-based movement breaks the replaying system.
- The patches are meant for single player, hooked to the 1st controller. This doesn't mean the game should "break" in any multiplayer scenario, just that the 2nd player will only have access to default, non-enhanced controls.