Analogue Pocket
User Guide

analogue.co V1.3 Apr.2024

Celebrate & explore the history of video games with the respect it deserves.

Congratulations on becoming an Analogue Pocket owner.

A multi-video-game-system portable handheld.

A digital audio workstation with a built-in synthesizer and sequencer, Nanoloop.

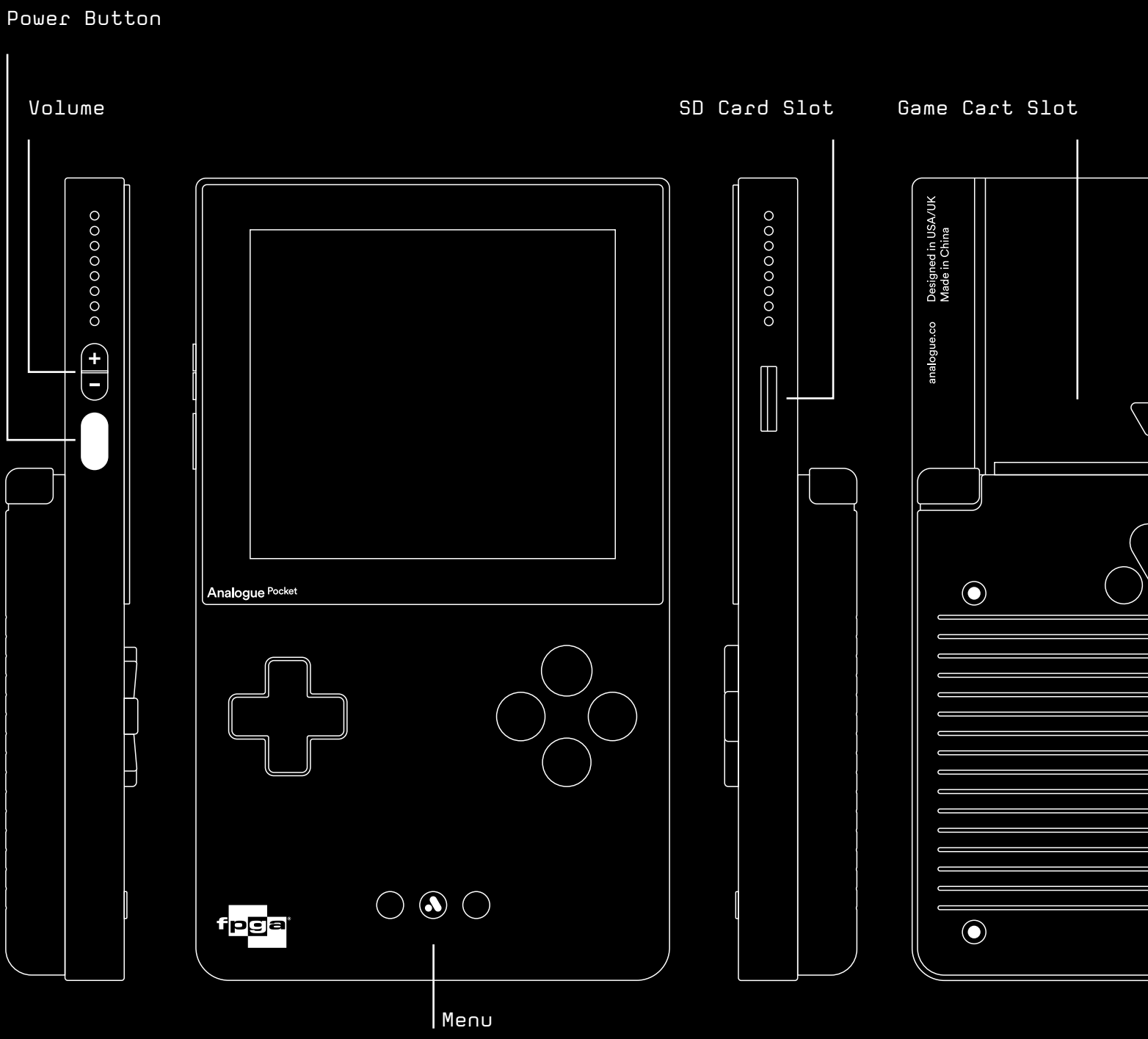
A tribute to portable gaming.

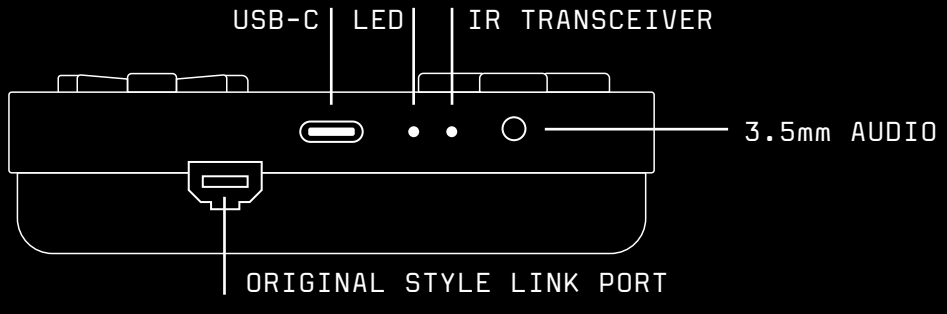
And now, a developer platform with openFPGA. The Future of Video Game Preservation.

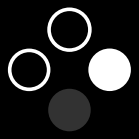
Out of the box, Pocket is compatible with the 2,780+ Game Boy, Game Boy Color & Game Boy Advance game cartridge library. Pocket works with cartridge adapters for other handheld systems, too. Like Game Gear, Neo Geo Pocket Color, Atari Lynx and TurboGrafx-16. Original Display Modes specific to every original system. Completely engineered with two FPGAs. Drag and drop GB Studio files to play user generated content.

What's in the box

— Analogue Pocket
— USB Type-C cable
— Quick-Start Guide


Power Button
Volume
SD Card Slot
Game Cart Slot
Designed in USA/UK
Made in China
analogue.co
Analogue Pocket
fpga
Menu


USB-C
LED
IR TRANSCEIVER
3.5mm AUDIO
ORIGINAL STYLE LINK PORT



Press to Continue
Press to go Back



Press Analogue for Menu



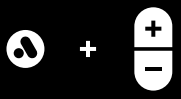
Press for Start



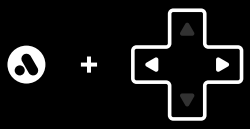
Press for Select



Press +/- for Volume
Press +/- together for Mute



Hold Analogue and Press
Volume for Brightness



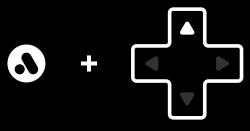
Hold Analogue and Press
Left or Right to cycle
Original Display Modes
[During Gameplay]



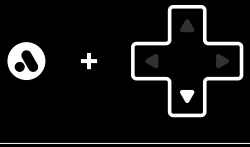
Quick press Power to Sleep and Wake



Hold Power for 2s for on/off

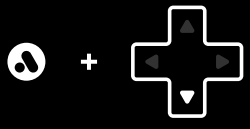


Analogue + Up
Create a Save State Memory



Analogue + Down
Quick Load last save state

Disabled by default. Enable in Settings › Memories › Enable Quick Load



Analogue + Down (Hold for 1s)
Quick Access for Memories

Disabled by default. Enable in Settings › Memories › Enable Quick Menu

Getting Started

To power on your Analogue Pocket hold the Power Button for 2s. SD cards, headphones, Game Link cables and USB cables can be inserted and removed while the power is on. Cartridges and Adapters also can be removed while Pocket is on, but make sure to Quit Game in the OS menu to avoid losing cartridge based saves.

Caution: Do not insert or remove Cartridges or Adapters while a game is running

Updating Analogue OS and Firmware

Before playing your Pocket for the first time, make sure to update to the latest Analogue OS at support.analogue.co. You will need a FAT or exFAT (recommended) formatted SD card (up to 1TB) to update the firmware.

In order to update the firmware, copy the latest firmware update file at support.analogue.co (with a .bin extension) to the root directory of your SD card. Make sure no other firmware files are in the root directory. Insert your SD card into the SD card slot on your Pocket and turn the power on.

The firmware update process will start automatically and take a few minutes to complete. A progress bar will be displayed while the firmware is updating. Do not power off your Pocket while the firmware is updating. If the power goes off for any reason or Pocket is removed from a charging source, don't panic. The system may not display anything but it will look for a firmware file to flash to once the power is restored. You cannot brick Pocket with a failed firmware update.

Power LED Status

1	LED Amber	Charging
2	LED Green	100% Charged
3	LED White	Power on
4	LED Flashing Yellow	Updating OS

Charging Pocket

Pocket requires a USB-C to USB-C cable for charging, and a USB-C charger capable of 5V @ 3A (15 watts). There are a variety of existing charge cables that adapt USB type A to USB-C. These will only charge Pocket at a very slow rate while turned off, and cannot provide enough power to charge or even fully run Pocket while it is turned on. Generally, USB-A to USB-C cables will incorrectly report their current capacity even when plugged into a USB-A charger that could provide enough power. Further, many simply cannot support high current anyway. Only USB-C to USB-C cables should be used.

Pocket's bundled USB-C cable will provide the best charging performance

Battery Guidelines

- Store Pocket at 50-60% charged when you store it long term. Place your device in a cool, moisture-free environment that is less than 90° F (32° C)
- Do not store or leave Pocket at 0% charge. If you store a device when its battery is fully discharged, the battery could fall into a deep discharge state, which can make it incapable of holding or taking a charge.
- Do not leave Pocket in direct sunlight or a very hot environment.
- If you plan to store your device for longer than six months, charge it to 50-60% every six months.
- There is no need to remove the battery from the Pocket enclosure even when disassembling Pocket.

Ports and Indicators

Power Button
Hold 2s seconds for on/off. Quick press during gameplay for sleep and wake. Pocket will remain in sleep indefinitely until woke.

Cartridge Port
Used for Game Boy, Game Boy Color, Game Boy Advance games and Analogue Pocket Adapters.

Power LED/Infrared Transceiver
Shows Pocket status and Infrared is used by certain Game Boy Color games to send and receive data (distances between two IR devices should be very short).

Volume Up & Down Buttons
Used to control the audio volume.
Press together to Mute.

Power Port (USB-C)
Used to charge Pocket and interface with Analogue Dock.

Micro SD Card Slot
Used for loading openFPGA, Nanoloop files, GB Studio files, OS updates, Save States, Screenshots and Library images.

Headphone Jack
Connect headphones or external speakers via the 3.5mm stereo output jack.

Link Port
Used for Game Boy, Game Boy Color and Game Boy Advance games that support Game Link and Pocket to Pocket link cables

Buttons

D-pad
Eight way directional pad

Face Buttons & Shoulder Buttons

Left Button	Y
Bottom Button	B
Right Button	A
Top Button	X
Left Shoulder Button	L
Right Shoulder Button	R

Select, Analogue and Start Buttons
The left and right small buttons act as Select and Start, respectively, for Game Boy, Game Boy Color and Game Boy Advance Games. The right button functions as Start for Game Gear games. The middle Analogue button brings up Analogue OS menu.

Default Controller Key Assignments & Hotkeys

Confirm/Select Menu Option Key	A
Cancel/Back Key	B

Analogue
During Gameplay, pressing Analogue button toggles Analogue OS Menu. You can Quit Game and insert a new cartridge or Resume Game to exit the Menu and restore control to your game. Pressing the button a second time will also exit the Menu.

Analogue + Volume Up
Increase Display Brightness.

Analogue + Volume Down
Decrease Display Brightness.

Analogue + Left or Right
Cycle through Original Display Modes (during gameplay).

Analogue + Start
Create a Screenshot Memory.

Analogue + Up
Create a Save State Memory.

Analogue + Down
Quick Load last Save State. Disabled by default. Enable in Settings > Memories > Enable Quick Load

Analogue + Down (hold together for 1s)
Quick Access for Memories. Disabled by default. Enable in Settings > Memories > Enable Quick Menu

Volume Up + Volume Down
Mute audio.

Compatible Cartridges

— Official Nintendo-manufactured Game Boy, Game Boy Color and Game Boy Advance cartridges (all regions)
— Built-in Cartridge Tilt and Gyro sensors, Rumble motors, Real Time Clocks and IR Transceivers. Due to the way the cartridges are inserted, Solar Sensors are not supported
— GBA Video Cartridges
— Game Boy Camera
— Play-Yan, Play-Yan Micro
— Official Reproduction cartridges
— Official Game Gear, TurboGrafx 16, PC Engine, Lynx, Neo Geo Pocket & Neo Geo Pocket Color Game Cartridges when played with an appropriate Analogue Adapter (not included)

* Unlicensed cartridges from Wisdom Tree are not compatible with Analogue Pocket or any Game Boy Advance due to their cartridge shells not extending to the bottom of their edge connectors.

Compatible Controllers & Peripherals

— Analogue Dock
— Analogue Pocket Adapters including Game Gear, Turbografx 16/PC Engine, Lynx and Neo Geo Pocket Color
— Pocket to Pocket Link Cable, Nanoloop Pocket to MIDI IN Cable, Nanoloop Pocket to Analog Sync Cable, Nanoloop Pocket to MIDI USB-A Cable
— Multiplayer support using Official or Analogue Game Link Cables with Game Boy Pocket, Super Game Boy 2, Game Boy Light, Game Boy Advance, Game Boy Advance SP, Game Boy Player. With appropriate Link Cables or Adapters, the original Game Boy and Game Boy Micro can also be used.
— Four Player Adapter with appropriate Link Cables or Adapters
— Game Boy Printer
— Nintendo GameCube-Game Boy Advance Link Cable and Game Boy Advance Wireless Adapter (clips must be removed)
— e-Reader via Link Cable (e-Reader cannot fit in Pocket's cartridge slot)

Welcome to Analogue OS

Analogue OS is the start of something big. At its heart, Analogue OS is purpose built for exploring and celebrating all of video game history. Designed to be the definitive, scholarly operating system for playing and experiencing the entire medium.

Main Menu Options

*Play Cartridge**
Run a game Cartridge or Adapter in the cartridge slot.

Library
View a collection of the games you have played and how long you have been playing. Can be accessed on Library detail screen and via in game menu. Supports user generated images.

Memories
Access Save States and Screenshots.
Supports up to 128 memories on cartridges and 128 memories per openFPGA core.

Tools
Access Nanoloop 2, GB Studio and Developer features

Settings
Calibrate system by system specific video, audio and control settings.

* If no cartridge is inserted, Pocket will enter Link Mode, which is the equivalent of turning on a Game Boy Advance without a cartridge inserted. In this mode, the system will accept data via the Link Port.

Analogue OS Settings Menu

Shaded items are not yet available and subject to change.

A SYSTEMS

i GB

1 Video
- a Display Mode
  - i Analogue GB
  - ii Original DMG
  - iii Original Pocket
  - iv Original Light
  - v Pinball Neon Matrix
- b Color Palettes
  - i Grayscale
  - ii Mint
  - iii Blue
  - iv Green
  - v Purple
  - vi Custom
  - vii Edit/Load Custom
- c Frame Blending
- d Sharpness
- e Size/Position
  - i Width
  - ii Height
  - iii X Position
  - iv Y Position
  - v Reset to Defaults

2 Audio
- a Cart Volume

3 Controls
- a Super GB

4 Hardware
- a Auto-Detect
- a Force GB Mode
- a Force GBC Mode

5 Reset to Defaults

ii GBC

1 Video
- a Display Mode
  - i Analogue GB
  - ii Original GBC
  - iii Original GBC+
- b Frame Blending
- c Sharpness
- d Desaturation
- e Size/Position
  - i Width
  - ii Height
  - iii X Position
  - iv Y Position
  - v Reset to Defaults

2 Audio
- a Cart Volume

3 Controls
- a Super GB

4 Hardware
- a Run as GBA

5 Reset to Defaults

iii GBA

1 Video
- a Display Mode
  - i Analogue GBA
  - ii Original GBA/
  - iii Original SP101
- b Frame Blending
- c Sharpness
- d Desaturation
- e Size/Position
  - i Width
  - ii Height
  - iii X Position
  - iv Y Position
  - v Reset to Defaults

2 Audio
- a Original Audio
- b High Quality

3 Controls
- a Super GB
- b Mirror LR

4 Reset to Defaults

iiii GG

1 Video
- a Display Mode
  - i Analogue GG
  - ii Original GG
  - iii Original GG+
- b Frame Blending
- c Sharpness
- d Desaturation
- e Size/Position
  - i Width
  - ii Height
  - iii X Position
  - iv Y Position
  - v Aspect: Fit
  - vi Aspect: 4×3
  - vii Reset to Defaults

2 Audio

3 Controls
- a Rotated 1/2

4 Hardware
- a Region
  - i USA/Europe
  - ii Japan

5 Reset to Defaults

B POCKET

i Display
- 1 Brightness

ii Audio
- 1 High Impedance

iii Global Reset
- 1 Confirm
- 2 Cancel

B Analogue OS

i Startup Action
- 1 OS Menu
- 2 Cartridge
- 3 openFPGA

ii Set Date/Time

iii Detailed Browser

iv Resume Browser

v Group openFPGA

B Memories/Library

i Enable Quick Load

ii Enable Quick Menu

iii Thumbnail View

i Auto add to Library

iii Detailed Library

B About

i Analogue OS
- 1 Brightness

ii Support
- 1 User Guide
- 2 Pocket Tutorial

iii Legal

iv EULA

v Special Thanks

Settings - Pocket - Systems

Each System has its own unique settings, some may be mirrored in other Systems but others are unique.

Video Settings

Display Modes
The Game Boy (GB), Game Boy Color (GBC) and Game Gear (GG) had an original display resolution of 160×144 pixels with GB and GBC using square pixels. The native resolution of Pocket's display is 1600×1440, so by default the pixels are scaled 10x on each axis. The Game Boy Advance (GBA) had an original display resolution of 240×160 square pixels. The pixels are scaled to 1600×1067 to fill the horizontal display area and as much of the vertical area while maintaining the original aspect ratio.

GB System offers five Display Modes:

— "Analogue GB" Analogue pixel perfect display mode.
— "Original DMG" recreates original display of a DMG original Game Boy
— "Original Pocket" recreates the grayscale display of the original Game Boy Pocket.
— "Original Light" recreates the teal electroluminescent backlight of the original Game Boy Light.
— "Pinball Neon Matrix" recreates the display of a pinball neon matrix display.

GBC System offers three Display Modes:

— "Analogue GBC" Analogue pixel perfect display mode.
— "Original GBC" recreates the desaturated display of an original Game Boy Color with pixel grid lines.
— "Original GBC+" recreates the display of an original Game Boy Color with pixel grid lines, but enhances saturation.

GBA System offers three Display Modes:

— "Analogue GBA" Analogue pixel perfect display mode.
— "Original GBA" recreates the desaturated displays of the Game Boy Advance and Game Boy Advance SP AGS-001.
— "Original SP101" recreates the more saturated display of the Game Boy Advance SP AGS-101.

GG System offers four Display Modes:

— "Analogue GG" Analogue pixel perfect display mode.
— "Original GG" recreates the desaturated display of the original Game Gear.
— "Original GG+" recreates the display of the original Game Gear, but enhances saturation.
— "CRT Trinitron", for SMS games, recreates an original Sony Trinitron display with the following options:

  Med vs. Fine Aperture Grille – Adjusts the phosphor density simulating different TVL values.

  Soft vs. Hard Edges – Adjusts scanline horizontal transitions (slew rate) for a natural looking blending of dithered art or a sharper appearance.

  Heavy Scanlines – Enhances scanline depth.

Color Palettes
This option is available only for GB System. With the custom option, monochrome Game Boy games can show up to ten colors. The Game Boy supported four palette colors for background tiles and two sets of three palette colors (plus transparency) for sprite tiles.

You may use this option in combination with "Original GBC" Display Mode to add color to the pixel grid provided by "Original GBC Display Mode" to GB games when Force GB Mode is off and Pocket is in GBC System Mode.

Customized palettes are supported too. Learn more at https://www.analogue.co/developer/docs/custom-palettes

Frame Blending
The LCD panels of the 1980s and 1990s were not known for their fast pixel response times, and some games abused this feature to blend images by rapidly alternating drawn graphics on a specific area of the display. If you see flickering graphics in games like Wave Race or F-Zero: Maximum Velocity, this option will make them transparent.

Sharpness
Uses settings from 0-3, with 0, 1 & 2 giving lesser amounts of softness and 3 giving razor-sharp pixels. This setting will have no effect if a non-"Analogue" Display Mode is being used
Desaturation
This option recreates the amount of desaturation to be applied to an image, with 0 meaning no desaturation and 9 completely eliminating color. This setting works with non-Normal Display Modes, but is not available for GB System.

Size/Position
This option allows you to set the display resolution as you like, from as low as 320×288 for GB, GBC and GG Systems and 480×320 for GBA System (2x scale) and adjust the X and Y position values to center the image on the display. The maximum resolution is 1600×1440, which is the native resolution of Pocket's display.

Aspect: 4:3 and Aspect: Fit
These options are available only for GG system.

Aspect: Fit fills Analogue Pocket's display using a 10x scale with square pixels. The original Game Gear screens did not use a 1:1 square pixel aspect ratio and was closer to 1.33:1. Aspect: 4×3 represents the stretched horizontal look of an original Game Gear screen.

Audio Settings

GBA Original/High Quality Audio
The Game Boy Advance was not known for the cleanliness of its sound, so this option helps to eliminate some of the noise inherent to the GBA's audio output.

Control Settings

Super GB and Mirror LR
Super GB lets you use Y and B as B and A.
Mirror LR lets you use Y and X as L and R.

Rotated 1/2
Rotates the location of 1 and 2 buttons for GG.

Hardware

Auto-Detect
Force GB Mode
Force GBC Mode
By default, Pocket is set to present itself to use GB Mode for monochrome Game Boy cartridges and GBC Mode for Game Boy/Game Boy Color hybrid cartridges and Game Boy Color-only cartridges.
By setting GB Mode, you can play the Game Boy versions of hybrid cartridges, but Game Boy Color-only games will not play until you change the mode.

By setting GBC Mode, you can use monochrome Game Boy games with color palettes and the Original GBC mode to simulate the LCD of the Game Boy Color. This mode will still run these games as if they were being run on a monochrome Game Boy to avoid compatibility issues with certain games.

Run as GBA
This option will allow you to run GBC games as if they were being run on a GBA. Certain GBC games like The Legend of Zelda : Oracle of Seasons and Oracle of Ages, Shantae and Wendy: Every Witch Way unlock special features if they detect they are running on a GBA.

Region
This option allows Game Gear games with dual Japanese/English language support like Tails Adventure if set to the appropriate setting.
A game may need to be set to the correct region to run otherwise.

Settings – Pocket – Display

Brightness
Allows you to set the brightness of your display or check the brightness of your display in increments of 5 from 0-100. A brightness level of 80 or above will significantly reduce battery life. If using Pocket in low light or darkness set the brightness level to 25 or lower for best performance.

Settings – Pocket – Audio

High Impedance
For high impedance headphones requiring additional power.

Settings – Pocket – Global Reset

Resetting will restore Pocket factory settings. Memories, Library, GB Studio, Nanoloop and openFPGA will not be affected.

Settings – Analogue OS

Startup Action
OS Menu
Pocket starts into Analogue OS menu on power-up.

Cartridge
Pocket starts the inserted cartridge on power-up.

openFPGA
Pocket powers up on the most recently used openFPGA platform.

Set Date/Time
Allows you to set Pocket's internal date and time. Memories are timestamped according to the date and time set. If Pocket is completely drained of battery life then you will need to enter the date and time again.

Detailed Browser
Provides more detailed information in the openFPGA browser.

Resume Browser
Return to where you left off in the openFPGA browser.

Group openFPGA
Groups openFPGA cores by the assinged platform.

Settings – Library

Auto add to Library
Automatically adds played games to your Library.

Detailed Library
Provides more detailed information in the Library browser.

Settings – Memories

Memories allows you to keep track of up to 128 save states for your cartridge games, and up to 128 save states per openFPGA core. You may save a state in a game at any time by pressing the save state hotkey. Save states will be visible with the name of the game, the system it was run on and the date and time it was created under Memories in the main menu. From the Memories menu you may load or delete a Save State.

Enable Quick Load
Enables the hotkey to quickly load the most recent Save State rather than having to enter the Memories menu. Even if this option is enabled, when you start a game you must first either make a new Save State or load a Save State from the Memories menu. This is to prevent accidental unwanted loading of a Save State.

Enable Quick Menu
Enables the hotkey which allows you to quickly access the Memories menu instead of navigating the in-game menu.

Thumbnail View
Display thumbnails of your Save States in the menu.

Developer/ openFPGA

Developer

Analogue is committed to helping Developers preserve video game history. Access free online resources to learn how to develop for openFPGA on Analogue Pocket.

For more information on our developer programme and full SDK documentation, visit analogue.co/developer

openFPGA

openFPGA is the first purpose built, FPGA driven hardware and ecosystem designed for 3rd party development of video game hardware. Created specifically for preserving video game history to play, study, academic use, and scholarly purposes. Engineered for decentralization.

Learn how to install and use openFPGA cores by installing the PDP-1:Spacewar! core available here analogue.co/support/resource



Analogue.
Distracting. *Seriously*.