

MemCard^{PRO}



User Manual

First Edition



for
PlayStation 1



Requires a
microSD card



FPGA
Technology Inside



WiFi and
Connected Features

INTRODUCTION

MemCard PRO is a modern reimplementaion of the original Memory Cards for the PlayStation console.

By utilising FPGA technology and a dual-core 240MHz microcontroller, it is able to provide mass storage through a microSD card interface to the Memory Card slot of your console. This allows the card to create an extraordinary amount of Virtual Memory Cards (VMCs) for your games.

On top of that, it is able to connect to your local wireless network, and provide more features through an intuitive Web User Interface (WebUI).

Finally, it implements a proprietary set of commands that allows other devices and peripherals, like optical drive emulators, to communicate with the card, for automated card switching and game detection.

With the MemCard PRO you can forget about stacks of Memory Cards, and running out of storage space at the most crucial moment of your gaming experience.

INITIAL SETUP

MemCard PRO requires a formatted microSD card in order to work. Any microSD card rated Class 4 and above will work, from 1GB to 2TB. Each gigabyte of storage space amounts to approximately 8,000 VMCs, each with 15 blocks of storage space.

To prepare your microSD card, you will need a computer and a microSD card reader (or a full size SD card reader with a microSD to SD card adapter).

Download the official "SD Card Formatter" software from the SD Card Association: <https://www.sdcard.org/downloads/formatter/>

Run the formatter and select your SD card. Select "Quick Format" and give it a "Volume Label" if you'd like. Press the "Format" button.

You will also require the MemCard PRO latest firmware and operating system. You can download the file from the following link: https://install.appcenter.ms/orgs/beta-ucu9/apps/memcardpro/distribution_groups/public

Once you download your file, extract its contents to the newly-formatted microSD card. You should have three new items in the root folder of your card:

- mcu.bin (file)
- fpga.bin (file)
- os (folder)

Safely-eject your microSD card from your computer and plug it into the microSD card slot of your MemCard PRO.

Please Note: if you decide to replace the microSD card on your MemCard PRO, you will need to repeat the instructions on this page for the new microSD card.

You can not plug the MemCard PRO in to either slot of your PlayStation, PSone, or PlayStation 2* console.

*PlayStation 2 support only works for PlayStation 1 games played on PlayStation 2 consoles. PlayStation 2 Slim consoles are not directly supported, as they do not provide enough power to the MemCard PRO. However, you can do a simple one-wire modification to the console to rectify this. The instructions to do this is located at the bottom of this manual.

Basic usage

1. Plug your card in to Slot 1 or Slot 2 of your PlayStation, PSone or PlayStation 2 console.
2. Power up your console. The logos "8BITMODS.COM" and "MemCard PRO" will appear on the OLED display in this order.
3. MemCard PRO will then load a VMC and display its name on the display. The first time you power up the card, "MemoryCard1" will be created on your microSD card, and will be loaded and displayed on the MemCard PRO OLED display (see fig. 1).
4. As soon as your game launches, it will detect the Memory Card. In-game usage is the same as a normal Memory Card, which means you can save and load games as you'd normally do.
5. Each Virtual Memory Card provides 8 channels of extra virtual cards. You can think of each channel as an extra whole memory card that you can use in your games. Each channel will provide storage for 15 blocks.
6. You can switch channels in many different ways. Most games support memory card hot-swapping, and MemCard PRO simulates the hot-swapping action every time you change a Channel or VMC.
7. To go to the next channel, you can press the right physical button on the MemCard PRO. Other ways to go to the next channel are:

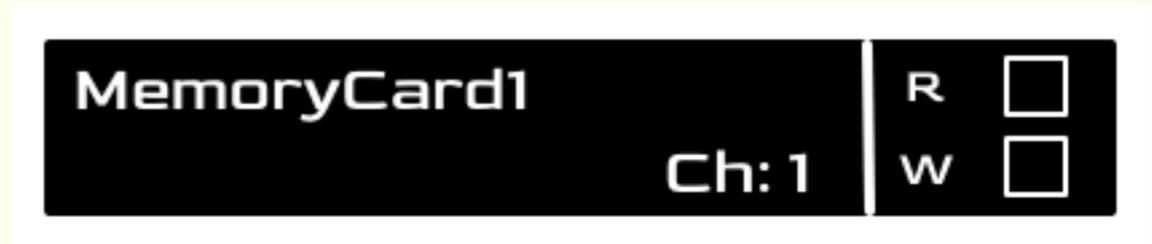


Fig. 1: The display after booting for the first time, showing the VMC name at the top-left, the current Channel at the bottom-right and the read and write indicators.

1. Through the game pad with the following combo:
L + R + Select + D-Pad Right
 2. Through the WebUI on the Home page.
8. To go to the previous channel, you can press the left physical button on the MemCard PRO. Other ways to go to the previous channel are:
1. Through the game pad with the following combo:
L + R + Select + D-Pad Left
 2. Through the WebUI on the Home Page.
9. In order to create and select a new VMC with 8 more channels, press the following combination on your game pad:
L + R + Select + D-Pad Up
The card will switch to "MemoryCard2" and Channel 1. If the files for MemoryCard2 don't exist on the microSD card, they will be automatically created. If they already exist, MemCard PRO will mount that card instead. Pressing the same combination again, will go or create "MemoryCard3" and so on.

Using with an ODE

An Optical Drive Emulator is a device that allows playing your backups through a microSD card, a USB drive or a Hard Disk drive or SSD. These devices usually have a “launcher” menu system, where they list the available games on their storage medium. Selecting a game launches it, either by completely resetting the console, or by using a technique called “FastBoot” which can load the game without a reset.

MemCard PRO implements a proprietary protocol, that allows such a device to send the unique Game ID that is being launched to the card. This allows MemCard PRO to identify which game is being launched, and automatically create a VMC for that specific game. If the VMC already exists, it will mount it, making it easy to forget about switching to the right VMC that has your game saves for that specific game.

Furthermore, it allows MemCard PRO to make use of its internal game database, and show the full name of the game you are playing.

At the moment of writing “XStation ODE” has released an update that adds support for GameID, while “Mode” and “PSIO” are working on adding support as well.

You don’t need to do anything to enable this functionality. It is enabled by default, when an ODE is detected.

Limitations & Exceptions

While every effort has been made to add all known games to the database, some may still be missing. If you find a game that shows the GameID instead of a full name on the display, please let us know, and we will add it with a firmware update.

Known limitations:

- Homebrew games and translations / conversions may not have been mastered with a GameID. If that’s the case, MemCard PRO will revert to the first available generic VMC (MemoryCard1). You can reach out to the developers and ask them to assign a dummy ID, which we can then assign in the database for proper identification
- At the moment, you can switch to a generic card in-game with the previously mentioned game pad combos, but there is no way to return to the automatic card once this is done. You can return to the game-specific VMC by restarting the game and launching through the ODE’s launcher app.
- GameID is only possible when paired with an ODE. There is no other way for MemCard PRO to detect the running game.
- GameID identification can’t be disabled at the moment, but we plan to add an option to do so with a firmware update.

WiFi & Remote Features

1. MemCard PRO can connect to your local wireless network and allow you to change its hardware settings and manage the card's state and storage remotely. In order to connect your MemCard PRO to your local wireless network for the first time, please follow the instructions below.
2. With a microSD card plugged in and MemCard PRO connected to your console, power up your console and wait until MemCard PRO shows the default screen on its display (Fig. 1).
3. Using a Computer or Mobile device (phone or tablet), bring up the Wireless Networks. You should see a new network available in your area, called "MemCardPRO-(serial number)". Select it to connect to it.
4. Once you select the MemCard PRO access point, it will ask you for a password. The password is **mcpadmin**
5. Select OK or Connect. Your device should connect to the MemCard PRO access point.
6. Open your default Web Browser, and navigate to the following URL: <http://192.168.4.1>
7. You will be greeted by the WiFi Setup Wizard. Follow the instructions on your screen to complete the setup and connect your MemCard PRO to your wireless network.
8. On the final step the device will automatically restart after you click the button. The MemCard PRO access point will disappear and your device should connect back to your local wireless network. If this doesn't happen, please manually re-connect to your wireless network.
9. After the card finishes restarting, it should be connected to your wireless network.
10. To access the WebUI, you need to find MemCard PRO's assigned IP address first. You can easily see this by pressing and holding down the left physical button on MemCard PRO. The display will change to show the assigned IP address. Write this down somewhere convenient, and use it to access the WebUI from any device connected to the same network as your MemCard PRO.

For example, if your MemCard PRO's IP address was "192.168.1.230", open a web browser on a computer or mobile device, and type it in the address bar like "<http://192.168.1.230/>"
11. If you did everything right, you should be looking at the home page of the MemCard PRO WebUI.

The WebUI

After setting up the WiFi in the previous chapter, you should now be able to access the WebUI.

The WebUI allows you to do a couple of things that are not normally possible in any other way. You can

- See the mounted VMC and Channel from any remote device
- Force-mount any VMC
- Remotely browse your VMCs and download or upload files
- Change the device settings

At the moment, you can only see the current VMC, change channels and change settings.

The Card Browser will arrive with a firmware update

The WebUI also allows you to perform a firmware update remotely, by checking for the latest version and informing you of a newer version than the one installed in your MemCard PRO.

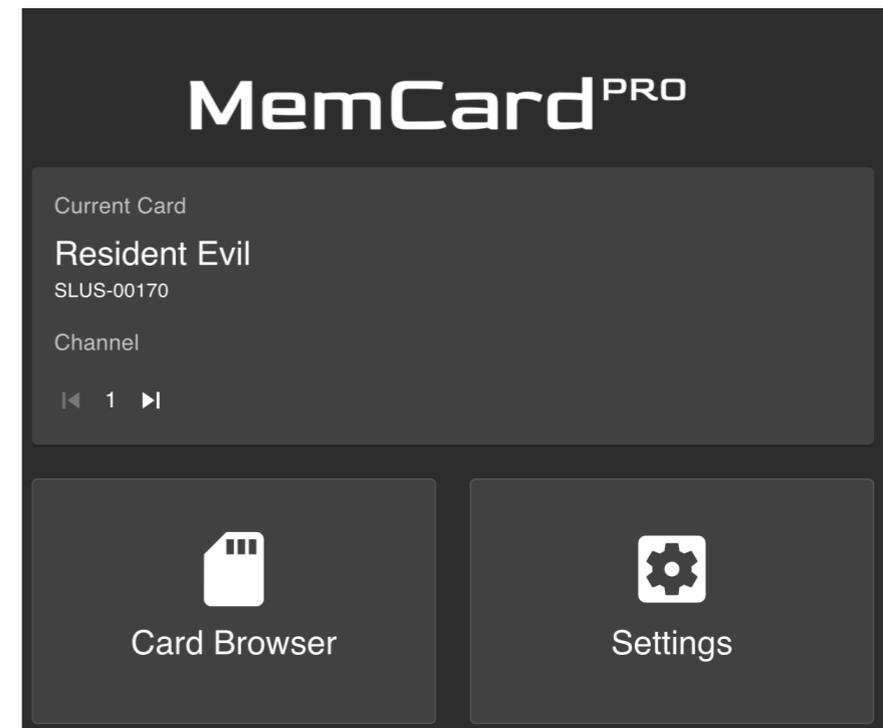
WebUI Home Page

The Home Page of the WebUI shows you information on the current VMC, and info detected from the ODE if you are using one. It also allows you to change the current VMC channel with the click of a button.

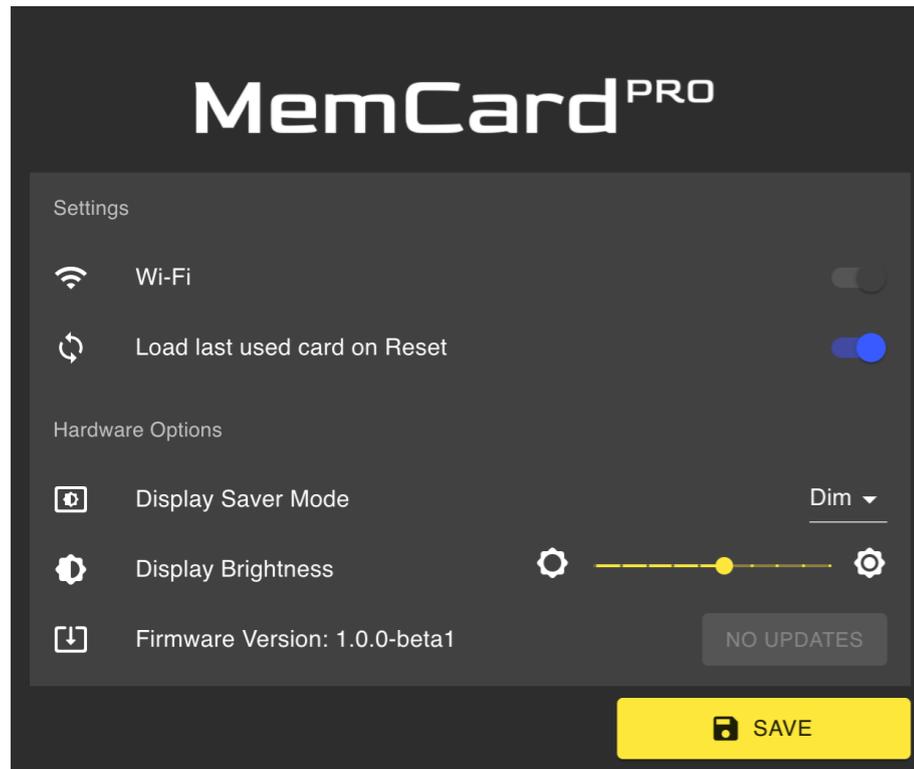
On the top side, the card name or game name is displayed. In ODE mode, the unique GameID is also displayed below the card name.

The current channel is also displayed, and two arrow buttons next to it. Clicking the left or right buttons will switch to the previous / next channel accordingly.

There are also two buttons that allow you to navigate to the Card Browser (coming soon) and the Settings.



WebUI Settings Page



The **Settings** page allow you to configure your MemCard PRO. The available options are:

- **Wi-Fi Switch:** Allows you to turn off the WiFi receiver / transmitter on MemCard PRO. **Please note** that doing so will completely turn off the WiFi radio. You can only re-enable the WiFi radio by resetting the MemCard PRO settings back to factory defaults.

- **Load last used card on Reset:** This feature allows you to enable / disable loading the last used VMC automatically on power up. This option is enabled by default.

- **Display Saver Mode:** This option allows you to select what MemCard PRO does when triggering the display saver mode. The available options are "Dim" and "Turn Off". OLED displays are naturally bright, but can suffer from burn-in when showing

static text for long period of times. In order to reduce the effect of this, MemCard PRO will automatically dim or turn off the display after 30 seconds of inactivity. When there is activity it will automatically brighten or turn on the display, until the next period of inactivity.

- **Display Brightness:** You can select the display brightness by moving the slider. MemCard PRO offers 10 steps of brightness. This is the "bright" mode, and doesn't affect the brightness of the dimmed mode - which is always at the lowest scale.
- **Firmware Version & Update:** The currently installed firmware version is displayed here. Upon loading this page, MemCard PRO will check the latest available version on the remote server and enable the button if a newer version is available.
 - **Performing a firmware update:** If the Update button is available, clicking it will start the update process. Please let the process complete before removing MemCard PRO from the Console or turning the console off!

Frequently Asked Questions

1. **What file system formats does MemCard PRO support?**

MemCard PRO only supports a simple MBR partition scheme with a FAT32 or exFat volume. Please use the official SD Card Formatter software for maximum compatibility

2. **Can MemCard PRO work without an SD card?**

MemCard PRO will not work without a microSD card plugged in.

3. **What consoles does MemCard PRO support?**

MemCard PRO has only been tested with the original Sony PlayStation, Sony PSone and PlayStation 2 Consoles. PlayStation 2 Slim consoles and the PS3 Adapters do not work with MemCard PRO without modifications to these consoles.

4. **What VMC card formats does MemCard PRO generate / support?**

MemCard PRO can only create and use raw Memory Card images. The file extension used is ".mcd". And have no extra headers. Any header-less memory card image can be used with MemCard PRO, as long as it is properly named and has the .mcd extension.

5. **Can I use my MemCard PRO saves with an emulator / Can I use my emulator saves with MemCard PRO?**

Yes! Both use cases are possible as long as the files used have no extra headers. An easy way to check if your memory card file will work with MemCard PRO is to check its actual size. The file should be exactly 131,072 bytes long.

6. **The Gamepad combos are not working!**

MemCard PRO can only detect gamepads button presses from the controller connected to the same port as the card. I.e. if you've plugged your MemCard PRO to Slot 1, the controller should be plugged in to Slot 1 as well for MemCard PRO to detect the button presses.

7. **I have connected MemCard PRO to my local wireless network, but I can't open the WebUI page!**

A few different causes can lead to this, with the most common being that the remote device is not on the same subnet as MemCard PRO. You should connected to the same network as MemCard PRO in order to access its WebUI. Another reason is that MemCard PRO was unsuccessful connecting to your wireless network. You can try moving the console and MemCard PRO closer to your router if that's the case. If you don't see an IP address on MemCard PRO when holding the left physical button, then the card could not connect to the WiFi. If that's the case, MemCard PRO will default back to an Access Point after the next power cycle, and you can attempt the WiFi setup again.