Add Powerdevices and Buttons to your Raspberry Pi 1 - 5

The Raspberry Pi 5 uses new GPIO code, the details below are not applicable for these boards, except for Argon One V3 at the bottom of the page

To keep the price down, the Raspberry Pi board doesn't ship with a power button, yet it's easy to add your own! This guide will show you how to add a power button to your Raspberry Pi that can turn on/off your BATOCERA system.

If you don’t want to build your own, several popular commercial options are available. They will add a power switch to your Raspberry Pu, sometimes provide a temperature-controller fan... and add a stylish look to your board.

- Commercial Power Switches
  - Provide real power cuts
  - Costs are around 10-25 USD
  - Usually need some space to build it in
- Simple Buttons or latching switches
  - Very simple setup
  - Low cost
  - No powercut possible

Why is a Raspberry Pi power button important?

You should never “yank” the power cord out of your Pi as this can lead to severe data corruption (and in some cases, physically damage your SD card). Even if Batocera is best prepared against file corruption it is recommended to safely shut down your Pi via Batocera's **Shutdown** Menu or even better, use a power button or switch.

When Batocera “shuts down” the Pi with a simple button/latching switch, it will send it into a halt state, which still consumes a very small amount of power. This is similar to how all modern computers work. In this guide we will only go into a halt state so that we can still power it up again later without having to replug the power source. You can safely disconnect the power supply (should you desire) without the worry of data corruption while in the halt state.

This method gives the best user experience if you use the GPi-case from Retroflag for example. This nice housing only has one button switch to simply turn on/off the Raspberry. Since Batocera 5.25 the OS is best prepared for all kinds of power devices connected to the Raspberry. But you will lose your game SRM save (your in-game save file) if you just trigger the power button *inside* a game session.

Save data protection

1. Download the provided script below
2. Save this to `/userdata/system`
3. Set executable bit with `chmod +x /userdata/system/custom.sh`
4. Setup your power device according to further below

custom.sh

```
#!/bin/bash
# custom.sh - place to /userdata/system
# by cyperghost 23/11/19
#

if [[ $1 == stop ]]; then
    batocera-es-swissknife --emukill
fi
```

Commercial Cases & Power Switches

Here are some commercial power switches/commercial cases with power switches that are currently supported. These offer a real power cut, that means the Raspberry is really switched off. Usually these small power devices are plugged on top of the Raspberry using it's 40 Pin header. For further install instruction use the links provided.

Here are the values you can put as `system.power.switch=<value_below>` in `batocera.conf`:

Device Name	system.power.switch	Where to buy and additional manufacturer information	Notes related to Batocera
Argon One for RPi4	ARGONONE	https://www.argon40.com/argon-one-raspberry-pi-4-case.html	Get more details here
ATXRaspi	ATX_RASPI_R2_6	http://lowpowerlab.com/atxraspi/#installation	
DeskPi Pro case	DESKPIPRO	https://deskpi.com/collections/frontpage/products/deskpi-pro-for-raspberry-pi-4	
Mausberry Circuits	MAUSBERRY	http://mausberry-circuits.myshopify.com/pages/setup	
msldigital PiBoard r2013	REMOTEPIBOARD_2003	http://www.msldigital.com/pages/support-for-remotepi-board-2013	
msldigital PiBoard r2015	REMOTEPIBOARD_2005	http://www.msldigital.com/pages/support-for-remotepi-board-plus-2015	
OneNineDesign Powerhat	POWERHAT	https://github.com/redoakcanyon/HATPowerBoard	
Pimoroni OnOffShim	ONOFFSHIM	https://shop.pimoroni.com/products/onoff-shim	
UUGear Witty Pi	WITTYPI	http://www.uugear.com/witty-pi-realtime-clock-power-management-for-raspberry-pi	Script uses WiringPi.
Retroflag cases	RETROFLAG	http://www.retroflag.com	**NEW** NESPi4 support! Get more details here.

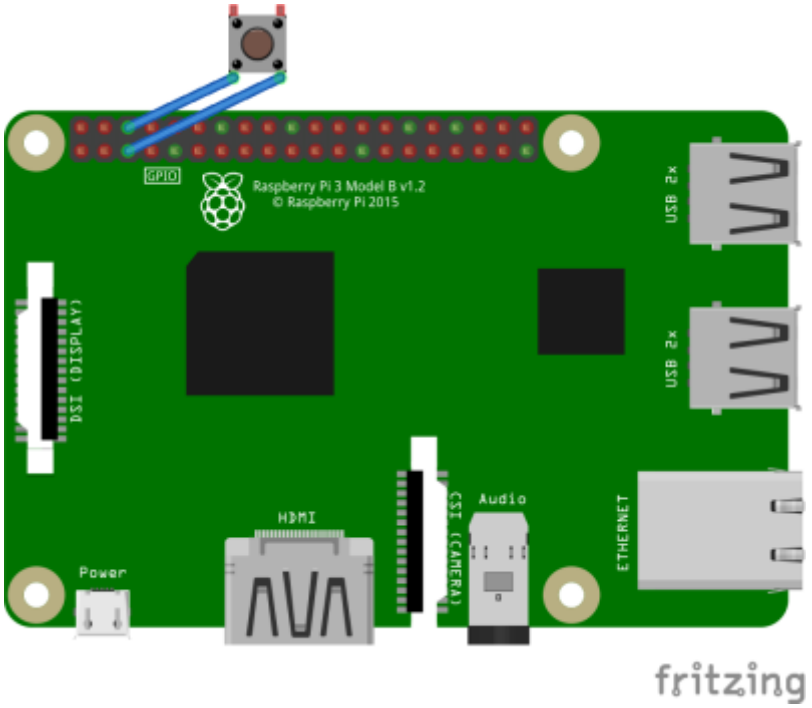
Device Name	system.power.switch	Where to buy and additional manufacturer information	Notes related to Batocera
Retroflag cases with buttons	RETROFLAG_ADV	http://www.retroflag.com	Same as the previous one, except the button can trigger actions, like stopping emulators
Retroflag GPIO case	RETROFLAG_GPI	https://www.retroflag.com/GPi-CASE.html	Get more details here.
Kintaro Super Kuma/Roshambo Retro Gaming case	KINTARO	https://www.amazon.com/dp/B079T7RDLX/?tag=electromake-20 / https://www.electromaker.io/blog/article/roshambo-retro-gaming-case-review	
Pironman Raspberry Pi 4 Case	PIRONMAN	https://www.sunfounder.com/products/raspberry-pi-4-case	Run pironman from the terminal to configure the OLED, RGB & Fan
Pironman Raspberry Pi 5 Case	PIRONMAN5	https://www.sunfounder.com/collections/cases/products/pironman-5-nvme-m-2-ssd-pcie-mini-pc-case-for-raspberry-pi-5	Run pironman5 from the terminal to configure the OLED, RGB & Fan

Simple push-button or switches

It is possible to add a button to turn on and turn off your Batocera console properly! But how?

Which GPIO PIN should I use?

You can add a power button to switch on/off Batocera. The button can be either a push button (momentary button) or a switch button (latching switch). Note on the push buttons: some GPIO have resistors pull-up built-in (resistors connected to the + 3.3V), so it is preferable to use switches normally open (abbreviated NO) with these pins.

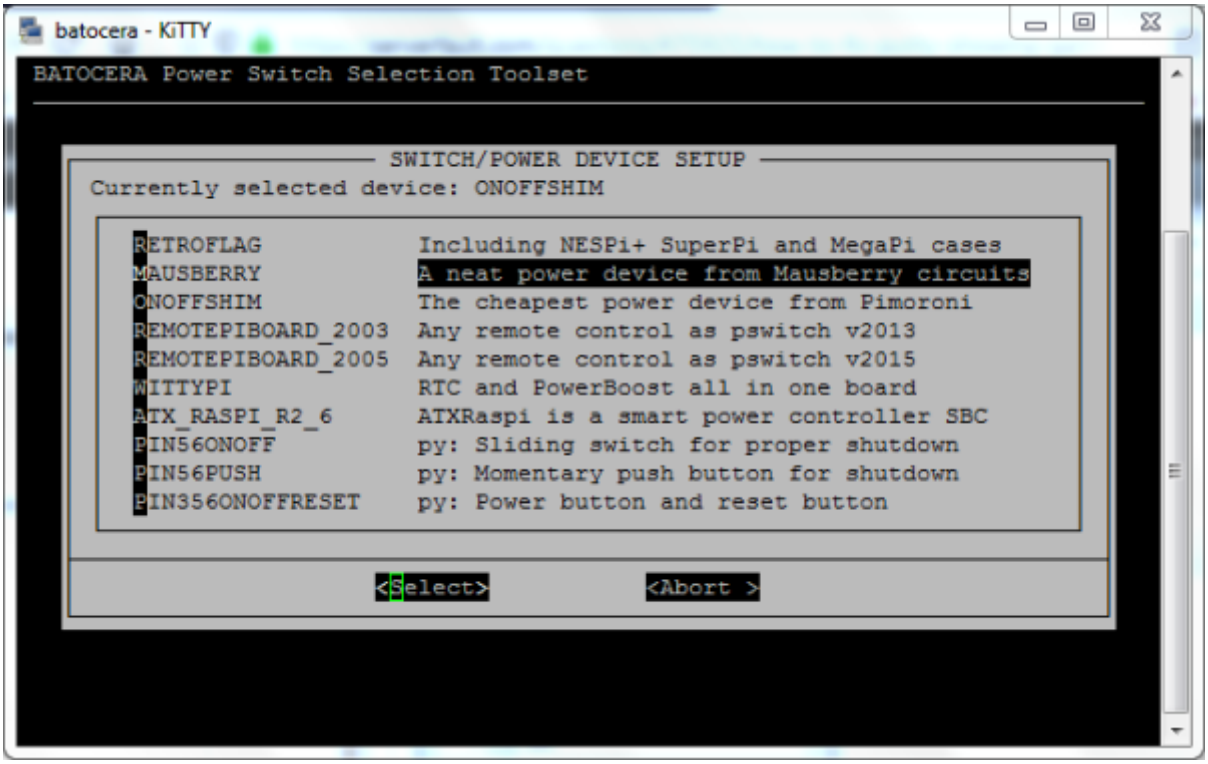


to connect the switch to the Raspberry Pi GPIO, plug a PIN on the GPIO3 (physical PIN 5 above on the left) and another on the mass located just to the right on the right (physical PIN 6)

Activation of the switch

GUI Menu Mode

Get a terminal window by quitting EmulationStation with a Keyboard or get a access to terminal by SSH. Now enter `/etc/init.d/S92switch setup` and you will see a terminal window like in picture below. From there you can select and activate your power or switch device. The script will show you an already activated device (**ONOFFSHIM** in this case) and will latter show you a small message box, if the value setup was successfully set up. After this reboot the device and everything should work fine.



Manual activation

Check in the table above what is the type of power switch you need.

Then, edit the config file `/userdata/system/batocera.conf` - in the example below with PIN56ONOFF.

- For a latching switch edit batocera.conf with your preferred text editor and add `system.power.switch=PIN56ONOFF`
- Reboot the system
- Alternatively, if you don’t want to edit the file and you are logged in with SSH or you have a terminal open then enter:

```
batocera-settings-set system.power.switch PIN56ONOFF
```

then reboot. Your Batocera system can now be turned on/off with a button!

Retroflag

Retroflag is the manufacturer who takes focus on retro case for Raspberry Pi series and for origin looking retro game controllers. In the last years they've managed to bring some pretty nice looking housings to the market. These are inspired of gaming devices from the golden era of game consoles. If you are a proud owner of a GPicase, then take a look here. Besides the nice looking there are **always** working buttons for power and/or reset possible. But you have to take a few steps there.

1. Enable the **Safe Shutdown Switch on the PCB**! This small switch depends on the used housing, refer to the shipped manual from Retroflag how to do this.
2. Edit `batocera.conf` and set the correct switch mode.
    - You can edit the config file from SAMBA share with your dedicated text editor

    - or use SSH and you can edit the config file with nano `/userdata/system/batocera.conf`
    - or use the GUI mode, you need SSH for this method, too.
3. Activate or Select the correct powerswitch `system.power.switch=RETROFLAG`
4. Reboot, this will activate the Safe Shutdown feature

For the NESPi 4 case only

You have to do an additional reboot! Sorry guys, but we need to make an autoconfig behind the scenes!

Also, for the NESPi4 case, you might experience some sluggishness using the HDD/SSD “cartridge”. Here is a Reddit link that gives you a way to fix it (even if the reddit post was written for RetroPie, it has been reported as OK on Batocera too).

Argon One

Until Batocera 40, only ArgonOne V1/V2 cases for Raspberry Pi4 are supported.

Batocera 41 introduces support for ArgonOne V3 for Raspberry Pi5, additionally to ArgonOne V1/V2 for Raspberry Pi5.

Activate the Argon One fan by adding `system.power.switch=ARGONONE` in the configuration file `batocera.conf` and that's it. Upon next reboot, the fan will be controllable by software (fan speed depending on the temperature) and double-clicking the button on the back will kill the running emulator and get you back to EmulationStation. **Don't use any external script**, the support for Argon One is already included in the Batocera Linux distribution.

By default, the fan starts at 55 degrees Celsius. Here is the default fan curve configuration:

argonone.conf

```
# Configuration file for Argon One Pi4 case
# temperatures are in Celsius
# fan_speed are from 0-100 percent
# syntax is: temp_threshold=fan_speed
# default is:
45=0
55=10
60=55
65=100
```

With this fan curve configuration, the behavior would be as follows:

1. At lower than 55°C, the fan is off
2. At 55-59°C, the fan runs at 10% speed
3. At 60-64°C, the fan runs at 55% speed
4. At 65°C and higher, the fan runs at 100% speed

From the vendor recommendations, it is safe to start the fan at 55 degrees only. Less noisy. 

You can define own temperature/fan speed ladder by creating a new `argonone.conf` file at `/userdata/system/configs/argonone.conf`.