Raspberry Pi5 Buying Guide

1. PRESENTATION

Do you have a retro gaming project and want to use a Raspberry Pi5 to play classic video games?
The Raspberry Pi is the most affordable solution for this type of project. In this guide, we'll detail the essential components needed to build your gaming system, whether it's installed in a bartop, a mini arcade cabinet, or a full upright arcade machine.

2. LIST OF REQUIRED HARDWARE

2.1. The Raspberry Pi5

The Raspberry Pi5 is available in several versions.
We offer 2GB, 4GB, and 8GB models.
For retro gaming use, the 2GB and 4GB versions are more than sufficient.
However, if you want extra memory, the 8GB version is also available.

2GB Version: https://www.smallcab.net/raspberry-pi5-2Go-p-3104.html
4GB Version: https://www.smallcab.net/raspberry-pi5-4go-p-2971.html
8GB Version: https://www.smallcab.net/raspberry-pi5-8Go-p-2972.html

2.2. Power supply

To operate properly, the Raspberry Pi requires a 5V 3A power supply with a USB-C connector. It is essential to use a power supply that delivers at least 3A. Using a lower-rated power supply may cause the Raspberry Pi to fail to start or to reboot unexpectedly during use.

We offer two options:

Official Power Supply 5V - USB-C - Pi 5 - 27W
https://www.smallcab.net/alimentation-p-2973.html
This official power supply allows you to fully utilize the capabilities of your Raspberry Pi5.

Inside your arcade cabinet, mini cabinet, or bartop, you can also install a power strip unit:

https://www.smallcab.net/bloc-multiprise-rackable-p-1801.html

This power strip has the advantage of being mountable onto your wooden structure.
It will allow you to connect the power supplies for the Raspberry Pi, the audio amplifier, the LED strip, and the screen.

2.3. Connecting to the screen

To connect the Raspberry Pi5's micro-HDMI video output to a screen, you have three options:

1/ Use a Micro HDMI Cable

This is the simplest solution to connect your Raspberry Pi5 directly to your screen.

https://www.smallcab.net/cable-micro-hdmi-hdmi-male-male-p-2385.html

2/ Use a Micro HDMI to HDMI Adapter

This is an alternative solution that allows you to use a standard male-to-male HDMI cable you might already own.
https://www.smallcab.net/adaptateur-micro-hdmi-vers-hdmi-raspberry-p-2337.html

And if you don't have an HDMI cable:
50 cm HDMI Cable: https://www.smallcab.net/cable-hdmi-male-male-plaqu-p-1691.html
150 cm HDMI Cable: https://www.smallcab.net/cable-hdmi-ultra-p-1686.html

3/ Use a Micro HDMI to VGA Converter

https://www.smallcab.net/convertisseur-micro-hdmi-vers-pour-raspberry-p-2393.html

If your screen only has a VGA input, this adapter is the solution for you.
You will connect it between your Raspberry Pi5 and your screen using a VGA cable.

To connect the micro HDMI to VGA adapter to your screen, you'll need a VGA cable.
We offer a 1.4m VGA cable:

https://www.smallcab.net/cable-vga-p-439.html

2.4. Sound card

The Raspberry Pi5 has the particularity of not having a built-in sound card.

You will need an external USB sound card.

https://www.smallcab.net/carte-externe-raspberry-p-3160.html

2.5. Audio amplifier

We offer several types of audio amplifiers, including the following:

Mini stereo audio amplifier

https://www.smallcab.net/mini-amplificateur-audio-stereo-p-565.html
This audio amplifier has the advantage of being compact. It requires a 12V/2A power supply. If you've chosen a terminal block power supply, you can connect this amplifier to it. You will need a second jack cable:
https://www.smallcab.net/cable-alimentation-jack-p-1721.html
Otherwise, you will need to acquire a separate 12V/3A jack power supply.

Stereo audio amplifier

https://www.smallcab.net/amplificateur-audio-stereo-lepy-p-1355.html
This audio amplifier requires a 12V/3A power supply.
If you've chosen a terminal block power supply, you can connect this amplifier to it. You will need a second jack cable:
https://www.smallcab.net/cable-alimentation-jack-p-1721.html
Otherwise, you will need to acquire a separate 12V/3A jack power supply.

2.6. The speakers

Several amplifier/speaker combinations are possible. However, we particularly recommend this versatile model:

10cm Speaker - 8ohms 20W

2 x https://www.smallcab.net/haut-parleur-p-1330.html
You will need two speakers to enjoy stereo sound.

Speaker audio cable

Between 15 and 20 x https://www.smallcab.net/cable-audio-haut-parleur-p-1353.html

The cable is sold in 10 cm increments. You will need between 1.5m (quantity 15) and 2m (quantity 20) of cable to connect your speakers to your audio amplifier. However, make sure to check the appropriate length for your project.

Connectors

2 x https://www.smallcab.net/cosse-28mm-p-907.html
2 x https://www.smallcab.net/cosse-48mm-p-626.html
To connect the speakers to the speaker cable, you can either solder the wires or crimp a 2.8mm insulated connector onto the smaller (-) terminal and a 4.8mm insulated connector onto the larger (+) terminal.

2.7. Joystick and button kits

We offer a range of joystick/button kits designed specifically for Raspberry Pi setups. Some feature standard buttons, while others offer illuminated buttons. Our kits cover all the essential components for your needs. You can also create your own custom kits by purchasing the individual products.

All Raspberry Pi kits are built in the same way:

1/ Joysticks

- Short shaft option (suitable for metal joystick mounts).
- Long shaft option (suitable for wooden joystick mounts). Since most bartop/mini arcade or arcade kits on the market use wooden joystick/button mounts, you will need to choose the long shaft option.

In terms of quality/reputation, we offer the following joysticks:

- Sanwa Joysticks: High-quality Japanese joysticks, very smooth.
- Seimitsu Joysticks: High-quality Japanese joysticks, very versatile.
- Industrias Lorenzo Pear or Handle Joysticks: Spanish joysticks, firmer than Japanese ones.
- Standard Joysticks: An economical choice.

2/ Buttons

For each player, we offer six buttons, plus a start button and a service button. Additionally, we include a Hot Key (HK) button, which allows you to exit an emulator and return to the selection menu.

3/ Joystick/Button Connection System to the Raspberry Pi

By default, we offer wiring for the GPIO port. Unfortunately, this solution is no longer functional on the Raspberry Pi5, so you will need to select the "GPIO wiring with USB cable and Xin-mo PCB" option.

This two-player USB interface is compatible with RecalBox and Batocera distributions.

3. THE DISTRIBUTION

The distribution is essential as it is the engine of your retro gaming system. There are several distributions available for the Raspberry Pi5.

3.1. RecalBox

The RecalBox distribution is very dynamic and offers support in French.

https://www.recalbox.com/fr/download/stable/rpi/rpi5_64/

It also has a YouTube channel with many tutorials.

https://www.youtube.com/channel/UCfcqrtnHwB84YQIVN75PRfQ

The joystick/button wiring for players 1 and 2 must be done through a USB controller board.

3.2. Batocera

https://batocera.org/download

The joystick/button wiring for players 1 and 2 must be done through a USB controller board.

3.3. LAKKA

An alternative to the other distributions, a Raspberry Pi5 version is available:

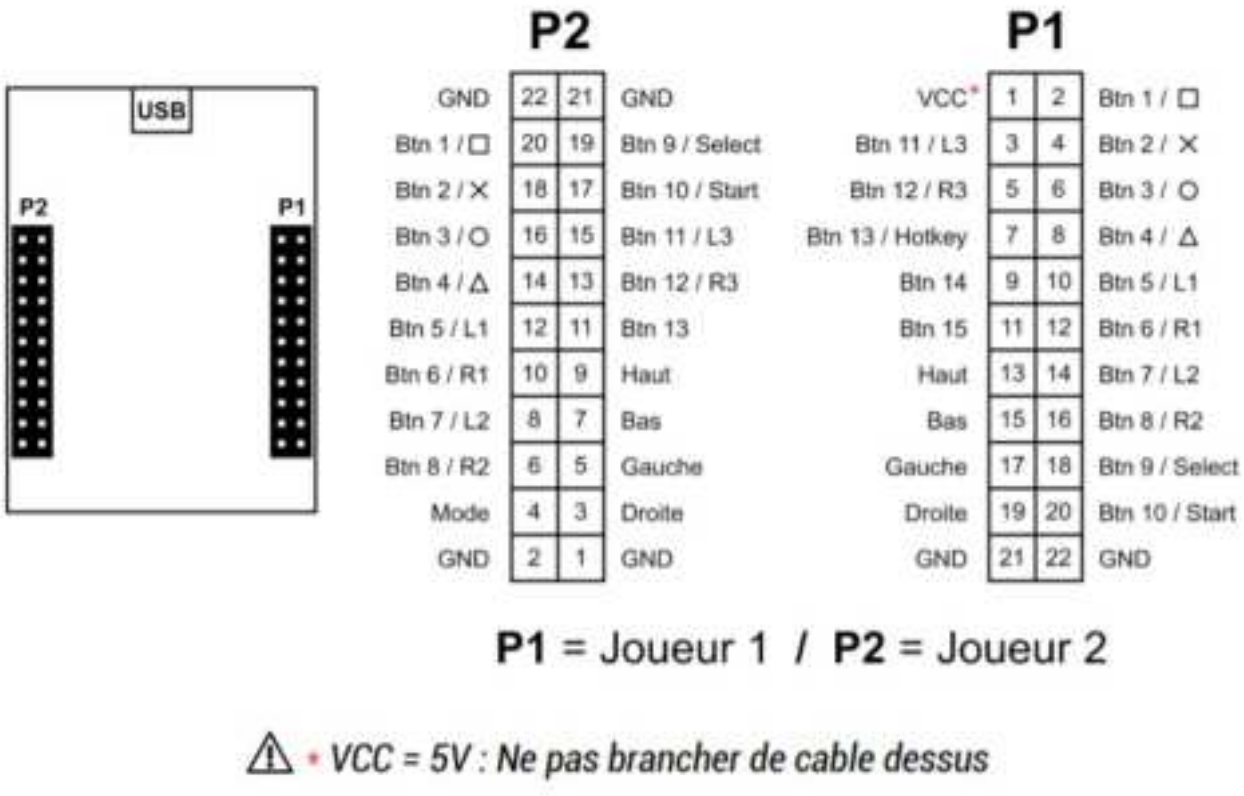
https://www.lakka.tv/get/linux/rpi/

4. WIRING

4.1. Xinmotek USB Interface

The wiring diagram is provided as a reference.

The configuration interface will allow you to assign specific functions to each button (A, B, X, Y, etc.).



* ***VCC = 5V: Do not connect any cable to this pin***