

Raspberry pi Game System Emulation

Parts needed:

- Raspberry pi 3 Board: DIYRASPI3B1R
 - Case: DIYRAS16321R
 - Power Supply: DIY-RASP3PSU
 - Controller: DIYRAS37120R
 - SD Card: MEMPAT16GM1R
 - (Optional) heatsink DIY-FLFZ0578
 - (Optional) Flash drive for installing games: any drive will work
-

Software needed for system install:

Win32diskimager: <https://sourceforge.net/projects/win32diskimager/>

RetroPie: <https://retropie.org.uk/download/> (Note: Download for Raspberry pi 2/3)

OFFICIAL RETROPIE FIRST INSTALLATION GUIDE:

<https://github.com/retropie/retropie-setup/wiki/First-Installation>

Instructions:

- With SD card inserted into a computer use Win32diskimager to flash Retropie img file onto SD card
 - Remove SD card from computer and insert into raspberry Pi
 - Power Raspberry Pi on, Make sure game controller is plugged in
 - After system boots, configuration instructions for controller will appear on screen.
 - Follow the prompts, for the SNES controller there will be more buttons to configure than what are on the controller, so to skip these hold down any button on the controller until system skips that prompt.

 - From this point system is ready to go. All that is left is to find and install games. These are not provided by Central computers. Any game that is present in store is for demo purposes only.
-

Installing games from Flash drive:

- Once ROM files have been obtained, insert flash drive into a computer and make sure the drive is formatted FAT32.
 - Create an empty folder on the flash drive named: "*Retropie*" and remove from computer
 - Insert drive into raspberry pi and wait for indicator light to stop blinking and remove from pi
 - Re-insert into computer and now *Retropie* should have a file structure inside of it.
 - add the ROMs to their respective folder (Retropie/roms directory)
 - remove from computer and plug back into pi, wait for indicator light to stop blinking.
 - Reboot emulation station by pressing start on SNES controller and going down to quit option then select restart emulation station.
- Now your games are now on the Retropie system and are ready to play!

Overclocking your RetroPie emulation station:

WARNING: Overclocking your Raspberry Pi can damage the board and affect its lifespan due to the increased heat and voltage that comes from this process.

Furthermore following these steps **WILL VOID ALL WARRANTY ON THIS PRODUCT.**

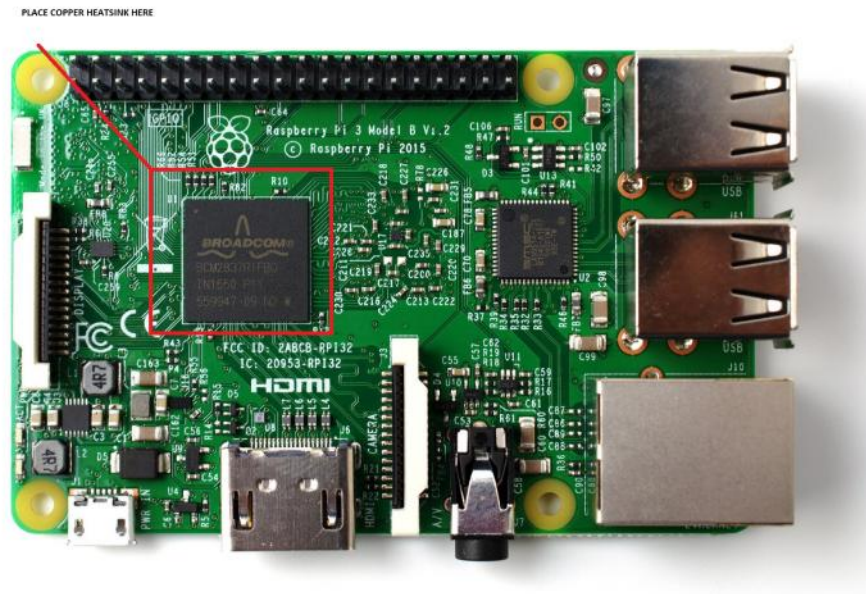
The Following instructions will allow you to overclock your Raspberry Pi 3, doing this will increase performance for n64 and DreamCast Roms due to poor optimization of games on both of these consoles. Stuttering and lag should be reduced if even present at all.

HARDWARE PART:

Part required: DIY-FLFZ0578

Since we are overvolting the RPI and this will create more heat than what the board was designed to handle we need to add a heatsink to the Broadcom SoC chip.

- Place one of the copper heatsinks on the chip that is highlighted in attached photo.



- Please note that the “Lid” of the RPI case should be left off in this situation to help air reach the heatsink

SOFTWARE PART:

On System SD card navigate on separate system (SSH works too) to “/boot/config.txt”

Near bottom of document there will be “#arm_freq=800”

Replace this line with the following lines:

- o “arm_freq=1300
gpu_freq=500
sdram_freq=500
over_voltage=6
v3d_freq=525”

- Insert SD card into RPI and turn system on (Or reboot if SSH)
- Navigate to the RetroPie window on main screen and go to Run command editor.
- Go to CPU configuration and set to “force Performance”
- Exit and reboot system.

Overclocking complete with optimal settings for N64 and Dreamcast!