

Informations about the „Pi1541 Zero Adapter“ Board

(Final Prototype)

Last Changes

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1 Pi1541 General

The Pi1541 concept is based on a Raspberry Pi, which represent an emulated cycle-exact 1541 floppy, whereby the special thing about it is that the GPIO pins enable communication with the outside world via the serial Commodore interface, and thus the Raspberry Pi can be connected to a C64 and used as a normal 1541 floppy.

The advantage is literally obvious. Because instead of a big bulky 1541 Floppy, you now get a 1541 Floppy that is just the size of your hand.

2 Bare Metal Programming vs Linux

Normally a Raspberry Pi is operated with an operating system like Linux. However, this would very much limit the usage possibilities in interaction with the C64, because the boot time is about 20 seconds. This means that every time the C64 is turned on, the user would have to wait about 20 seconds. Especially with the C64, where the system is ready to use after 1 second, you don't want to connect components that make the system slower to use.

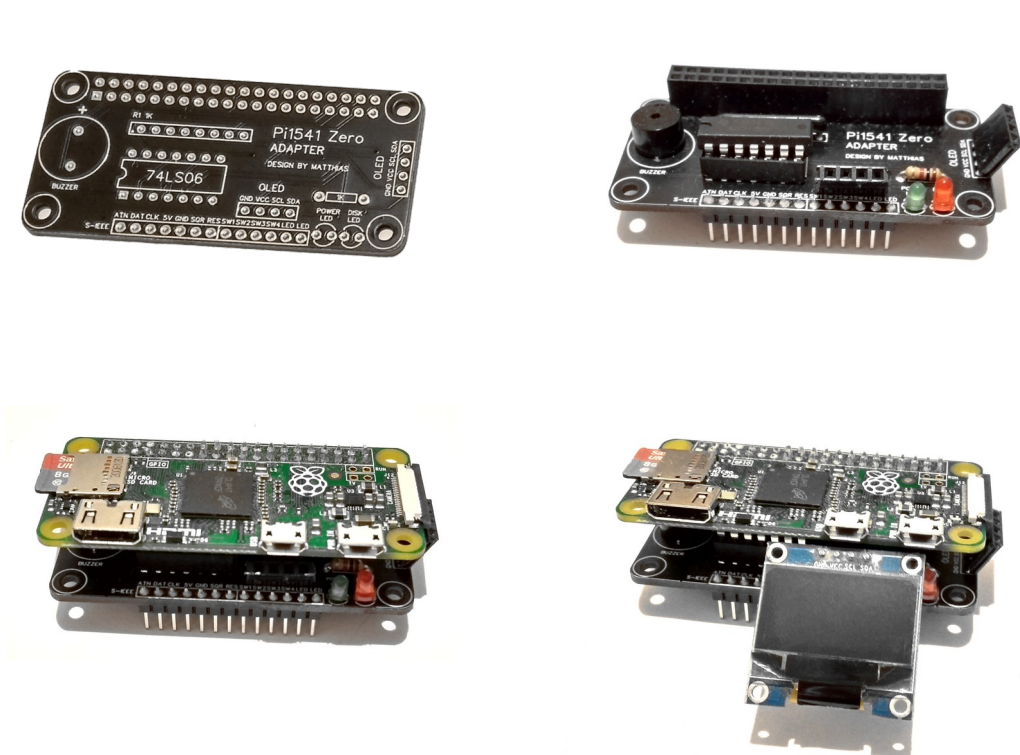
The remedy for this is the bare metal programming, which is used on the Pi1541, and which allows direct programming of the Raspberry Pi hardware without an operating system (like Linux). Thus, the small 1541 Floppy is ready for use about 2 seconds after power-on.

3 Die Pi1541 Zero Adapter Board

The Pi1541 Zero Adapter board goes one step further, because here the miniaturization is even more advanced. Instead of using a large Raspberry Pi board, only a very small and short Raspberry Pi Zero board is used. This allows the use in many new C64 computers like the "uEliteBoard64", "uHeld64", "uSIDTower64", „uAX64", "uBook64", ...

Simply plug the Raspberry Pi Zero from above onto the PI1541 Zero Adapter board, place a prepared SDCard, and the miniature 1541 Floppy is ready for use.

Below you can see the assembly steps of the adapter board. The final result is the Pi1541 Mini Floppy with adapter board and the Pi Zero plugged over it, plus an additional OLED display.



4 The Software

The Pi1541 Project: <https://cbm-pi1541.firebaseio.com>

Here you can find all files needed to create a working SDCard for the Raspberry Pi Zero (Pi0/1 firmware).

Also please copy the two files "config.txt" and "options.txt" onto the SDCard to replace the existing files on the SDCard. The files are available for download on UNI64 on the Pi1541 adapter boards page under "Settings → Files".

Compatibility

The compatibility is nearly 100%. However, with some computers it can happen that one or the other C64 Demo does not work, depending on which chip constellations were assembled on the C64 board. Then it can be necessary to use CIA 6526 chips with the imprint "CSG 216A" (at least for the userport CIA 6526 slot).

Headless 2-Buttons Kernel

Additionally there is a 2-Button "Headless_Pi0_Kernel.img" file. If you copy this file to the SDCard (before that rename it to „kernel.img“), a 2-Button instead of 4-Button operation is now possible. This makes it possible to change discs while playing a game without an OLED display. To do this, press the "Next" button so many times (press slowly), depending on which disc is to be selected (Disk2, Disk3, Disk3, ...). If you want to go back to disc1, you have to know which disc is currently selected in order to know how many times you have to press the "Prev" button (again, press it slowly, so let about 1 second pass after each press) to get to disc1.