

A close-up photograph of a Raspberry Pi 3B+ single-board computer. The green PCB is populated with various components including a silver USB Type-C port, a black Ethernet port, two USB-A ports, a black HDMI port, and a yellow 4-pin GPIO header. A black SanDisk Ultra II 2.0 64GB SD card is placed to the right of the board. The entire setup is on a dark, reflective surface.

# RASPBERRY PI

NICO MAAS

PI AND MORE 13

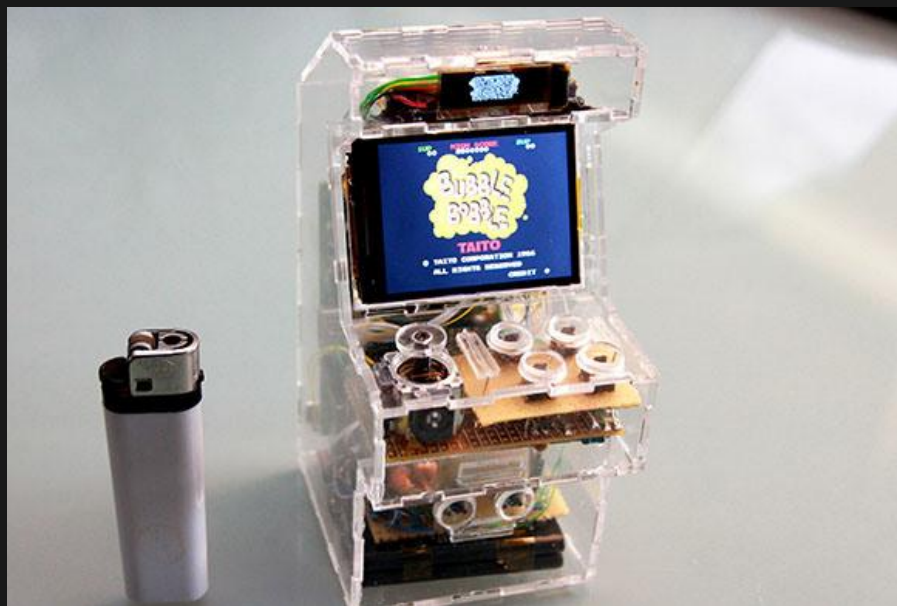
# WER BIN ICH?

- Nico Maas
- Master of Science
- IT Systemelektroniker
- [mail@nico-maas.de](mailto:mail@nico-maas.de)
- [www.nico-maas.de](http://www.nico-maas.de)
- Twitter: @nmaas87
- Mastodon: @nmaas87@chaos.social

# AGENDA

- Einführung
  - Geschichte
  - Nur der RPi?
  - Woher der Erfolg?
- Erste Schritte
- Einkaufstips
- Mehr Raspberry Pi
- Ende

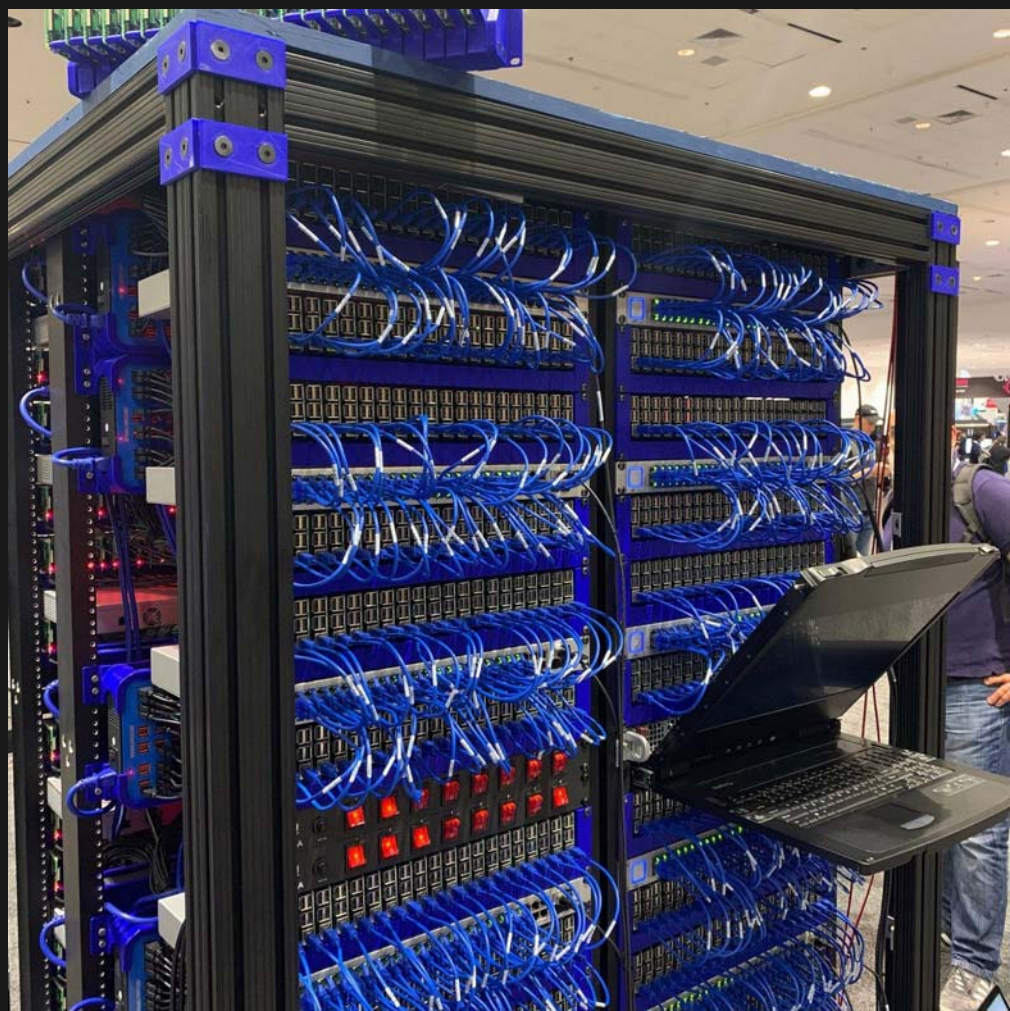
# EINFÜHRUNG



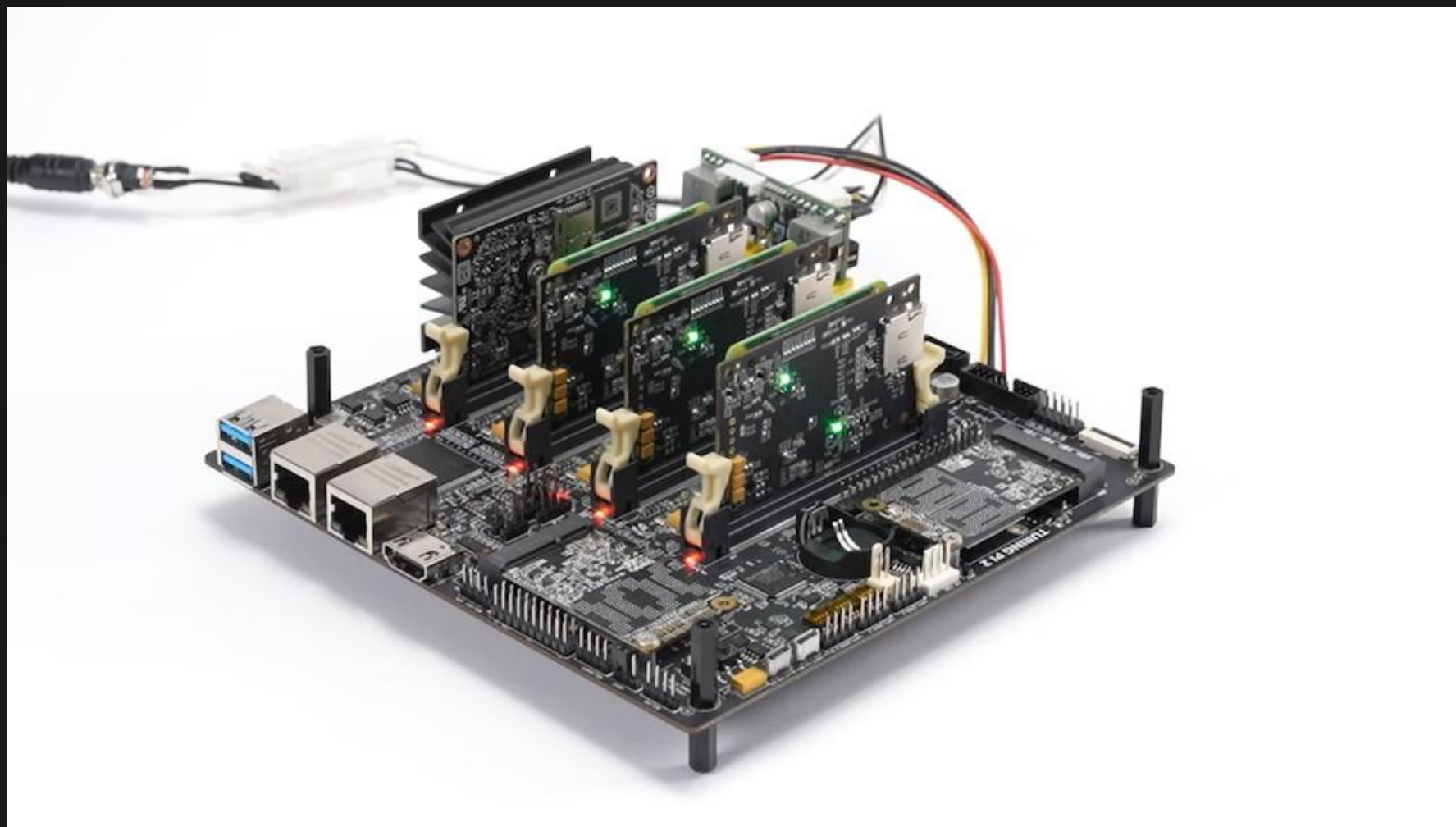








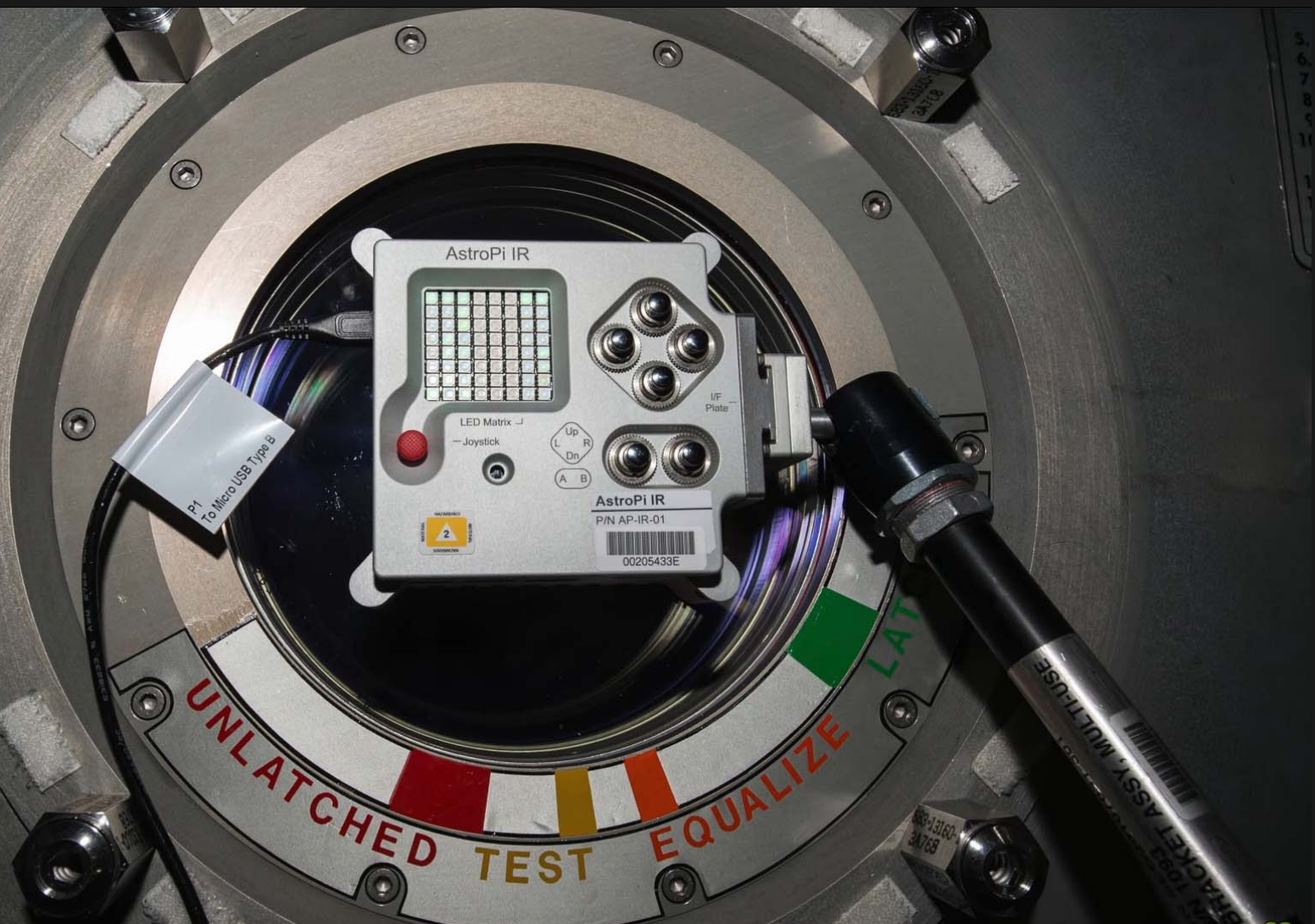












UNLATCHED TEST EQUALIZE

AstroPi IR



LED Matrix

Joystick



Up  
L R  
Dn  
A B

AstroPi IR  
P/N AP-IR-01

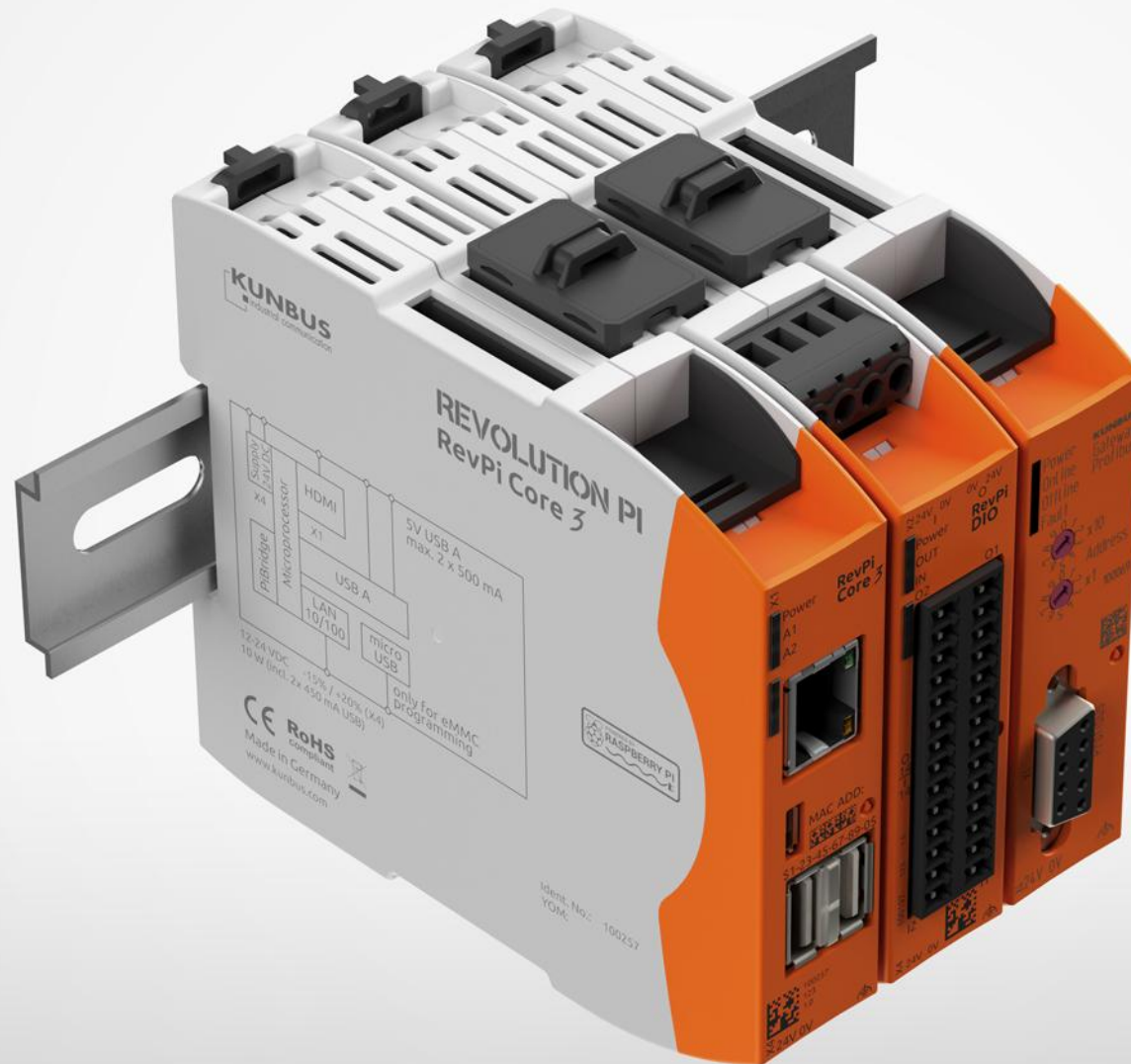


00205433E

I/F  
Plate

BRACKET ASSY - MULT-USE  
13160-09171-24768







# 29.02.2012 - LAUNCH

10.000 Einheiten verfügbar



> 100.000 Vorbestellungen

**08.09.2016 - ESTABLISHMENT**

~~➤ 100.000 Vorbestellungen~~

10 Millionen verkaufte Einheiten



# 28.02.2022 - CURRENT STATE

~~10 Millionen verkauft~~

BBC Micro: 1.5 Millionen

Sinclair ZX Spectrum: 5 Millionen

Raspberry Pi Family: > 45 Millionen

Allein im März 2020 640.000 Stück verkauft

# EINFÜHRUNG GESCHICHTE



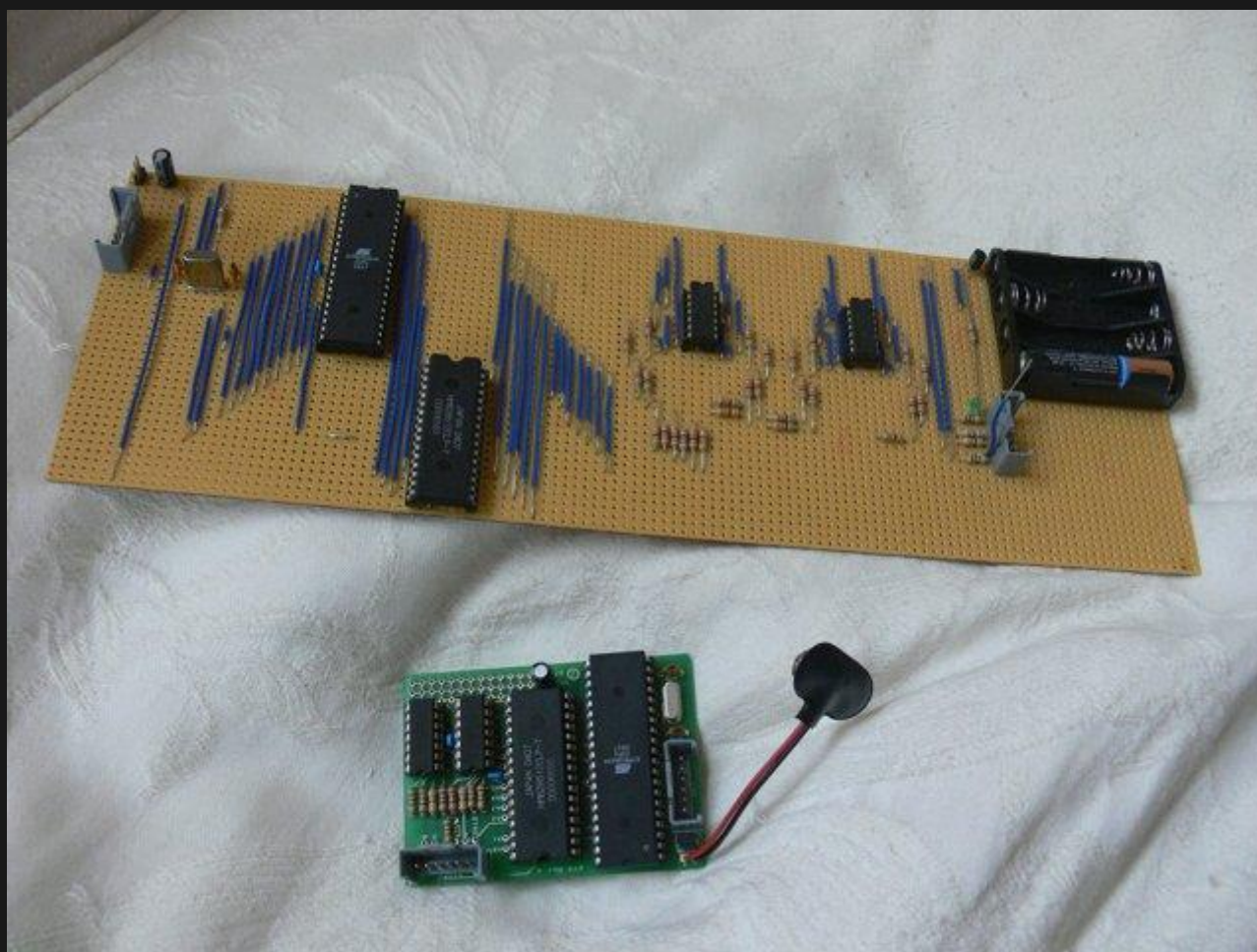
HOW DOES COMPUTER  
PROGRAMMING WORK?

MAGIC.



全  
家  
福





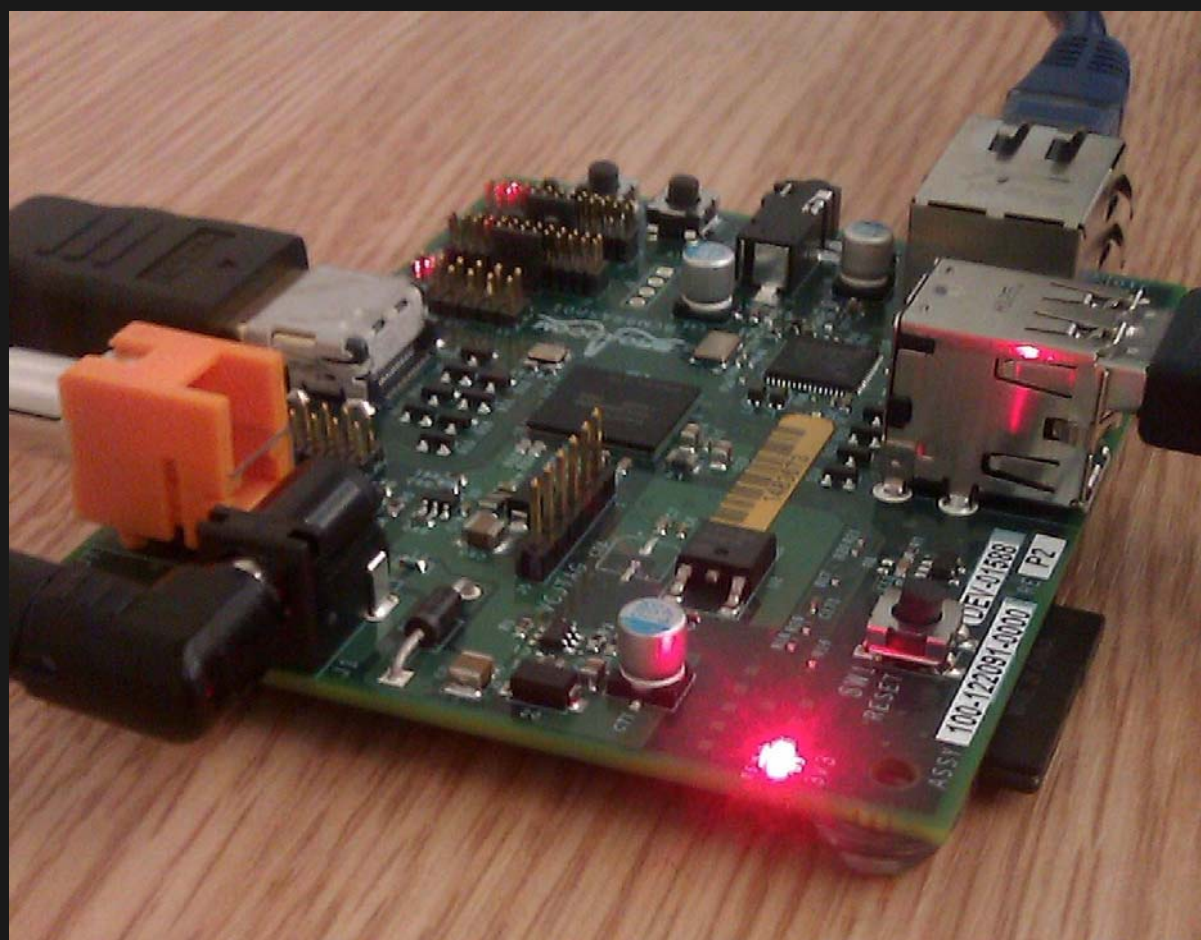
Welcome to ROBCO Industries (TM) Termlink  
Password Required

Attempts Remaining: ■■■■

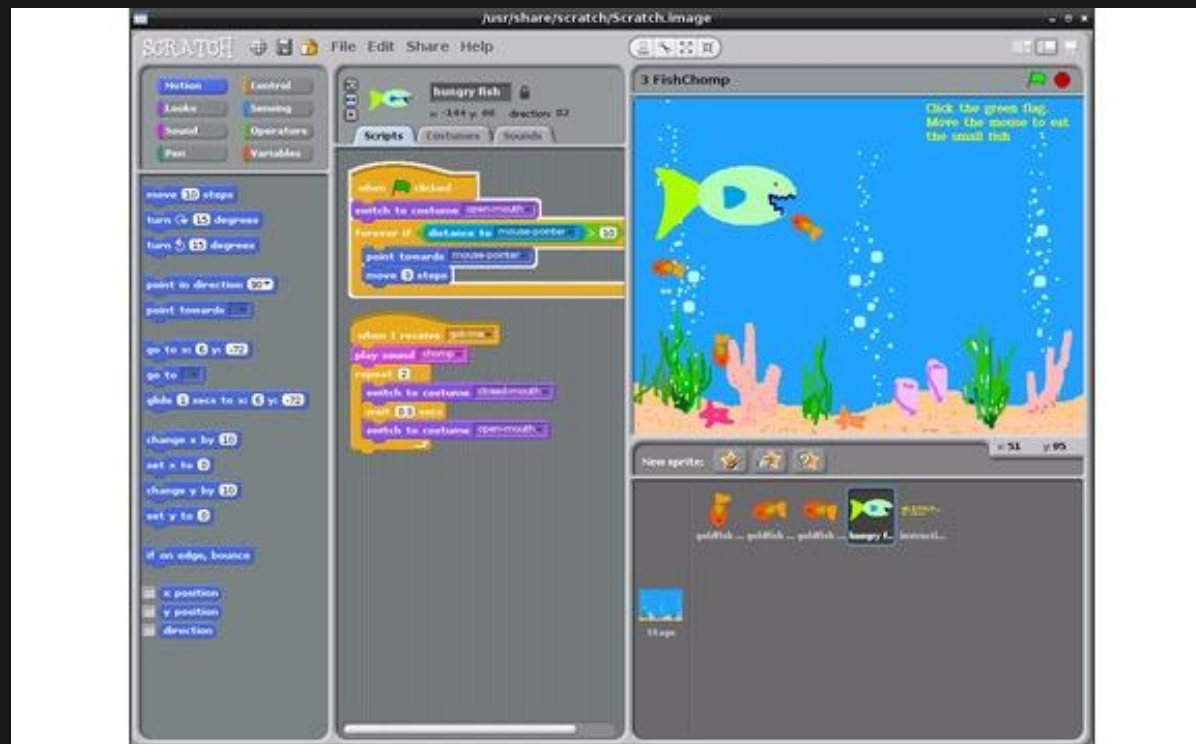
0x3700	:<.)!*"#[[:#	0x37C0	)+SIZE*='^#<
0x370C	/-^}%]@!(,?!	0x37CC	#[%%HUNT#}"}
0x3710	>}}:=#).=/?<	0x37D0	./\_){} PART
0x3724	/-){#"} H\$+)	0x37E4	'>ROLL: ;'
0x3730	}}})^%-%-S-=S	0x37F0	@BORN"@ ' \\
0x373C	ORT#-@^<#%/)	0x37FC	;=^,\$ [S@<%.
0x3748	*)*%_/SOME*	0x3800	< ( <~+> )(='
0x3754	\\''\}>+{!*#S	0x3814	=]BURN+>/'[:
0x3760	/'+TIME.--}	0x3820	,<{,\+;)}\$>:/
0x376C	-=CORE]'^!>\$	0x382C	SETS-;==]GUR
0x3778	* <,)[[[-\@	0x3838	U?=[\$;(H,^<
0x3784	>{[']=.#/*{:	0x3844	%"?)'?'?SS'\$
0x3790	'-->^NONE#+}	0x3850	]#:/^+,+ {[_'
0x379C	?!-!?'_{})?\\	0x385C	=WIRE?"","{S'
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0x37B4	:]<=<):;\\$%%	0x3874	='%]_//:;*},@>{+-#>)■













# RASPBERRY PI MODEL B, 2012



# RASPBERRY PI MODELL B V2

- 700 MHz ARM
- 512 MB RAM
- Full HDMI
- Cinch Video
- Stereo Audio
- USB 2.0
- 100 Mbit Ethernet
- 35 USD

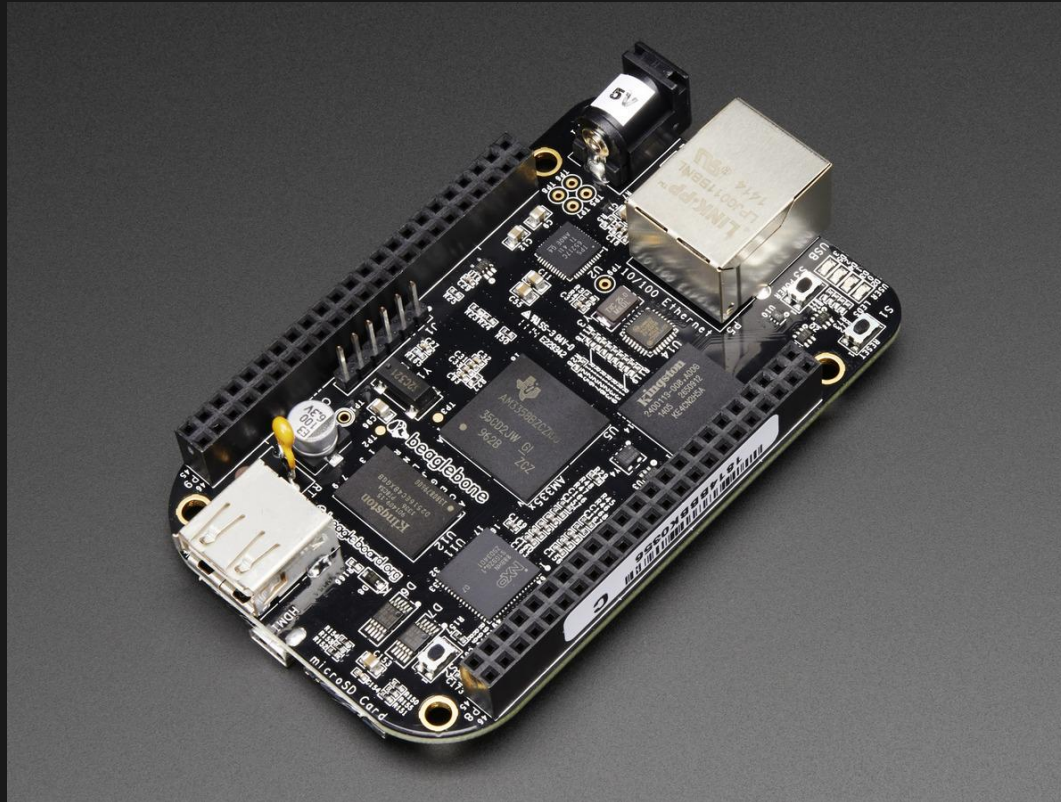
**EINFÜHRUNG**  
**NUR DER RPI?**

**WARS DAS SCHON ;)?**



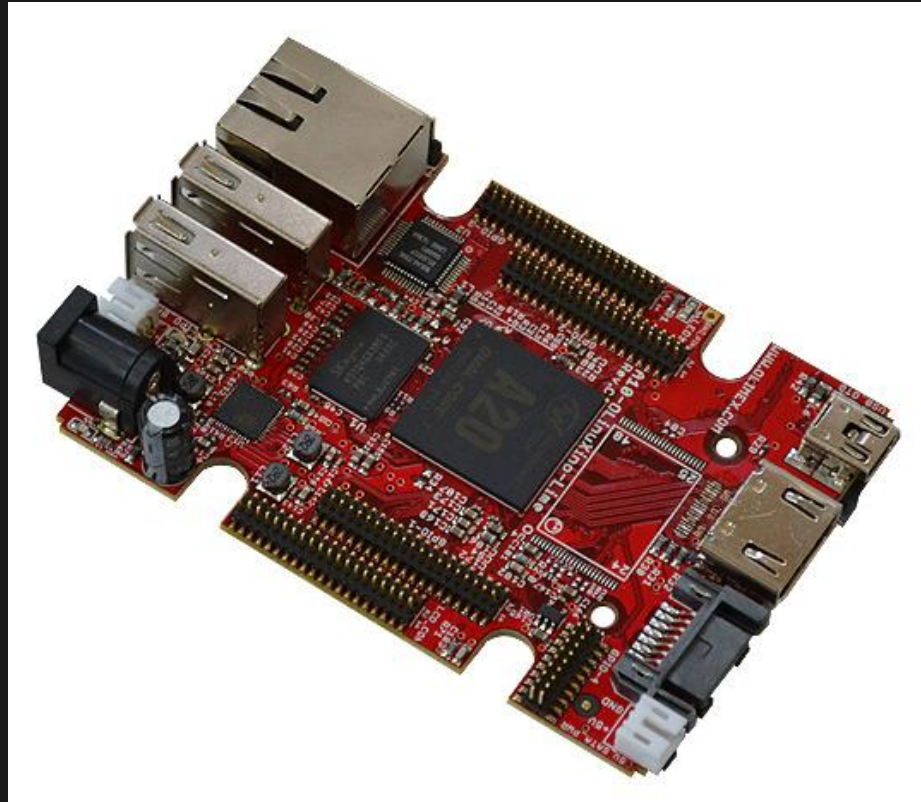
**NEIN :)!**

# BEAGLEBONE BLACK



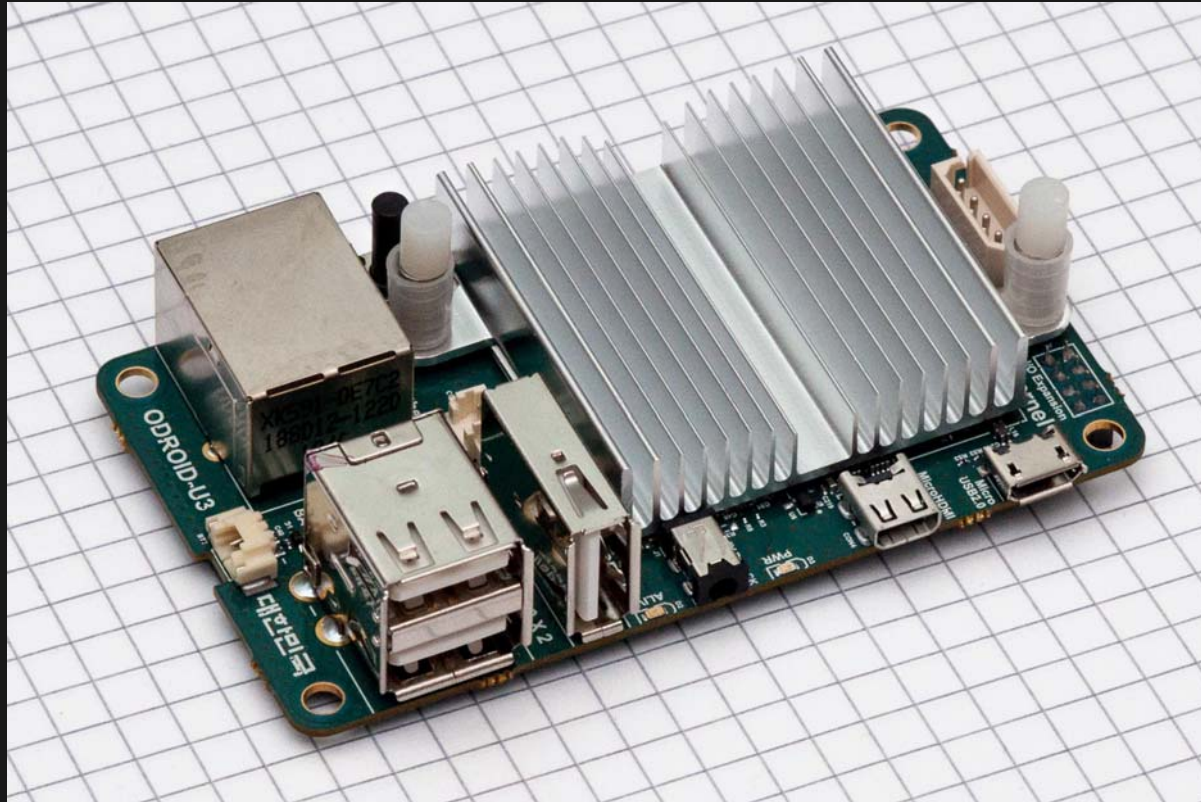
1 GHz, 512 MB RAM, 2 PRUs

# OLIMEX (Z.B. A20 OLINUXINO-LIME)



1 GHz Dualcore, 512 MB RAM, 160 GPIOs + SATA

# HARDKERNEL ODROID (Z.B. U3)

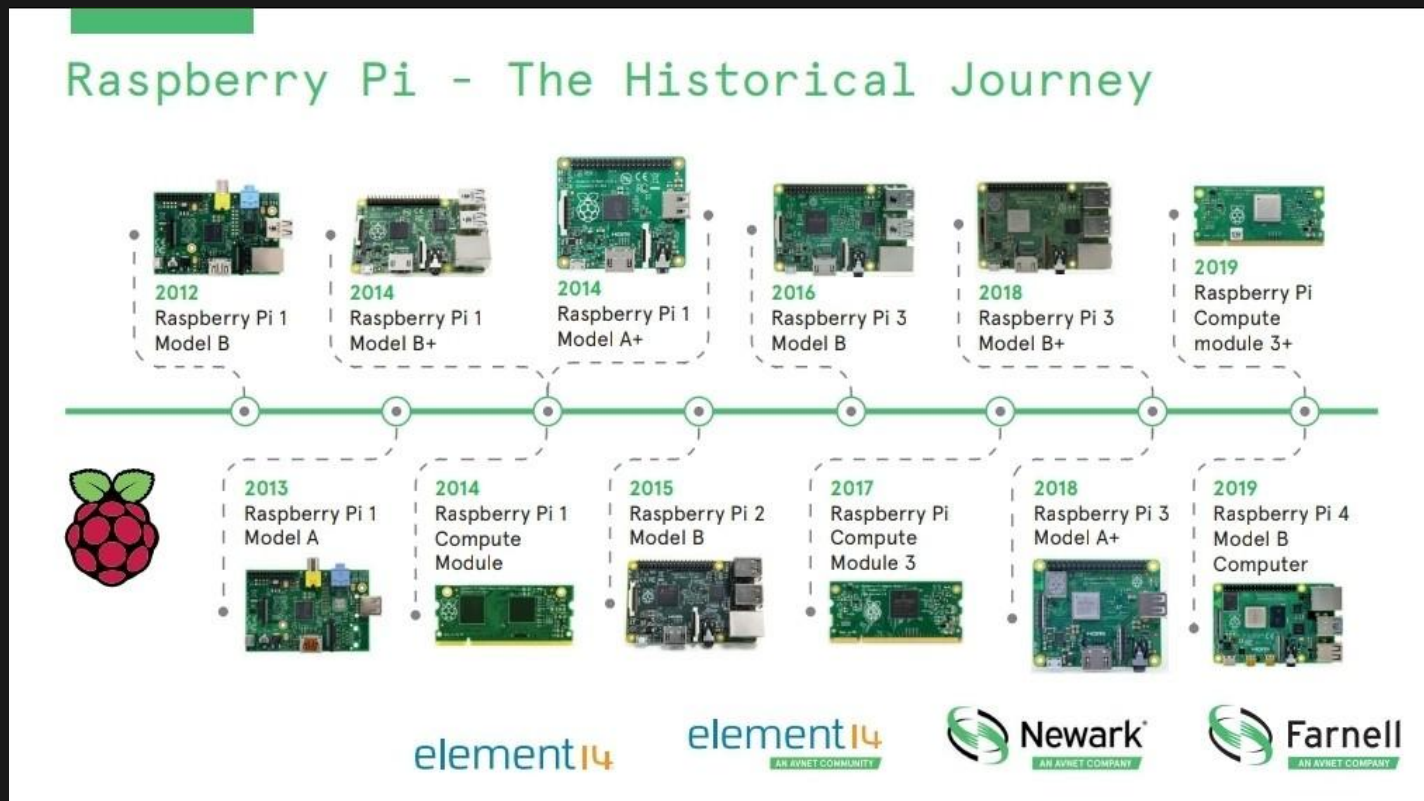


1.7 GHz Quadcore, 2 GB RAM, eMMC

**KONKURENZ BELEBT DAS GESCHÄFT!**

# EINFÜHRUNG

## WOHER DER ERFOLG?





# RASPBERRY PI MODEL B, 2012



35 USD

# 1.) PREIS












































Für 35 USD - ein “vollwertiger Rechner”\*?

\* Zubehör erforderlich...

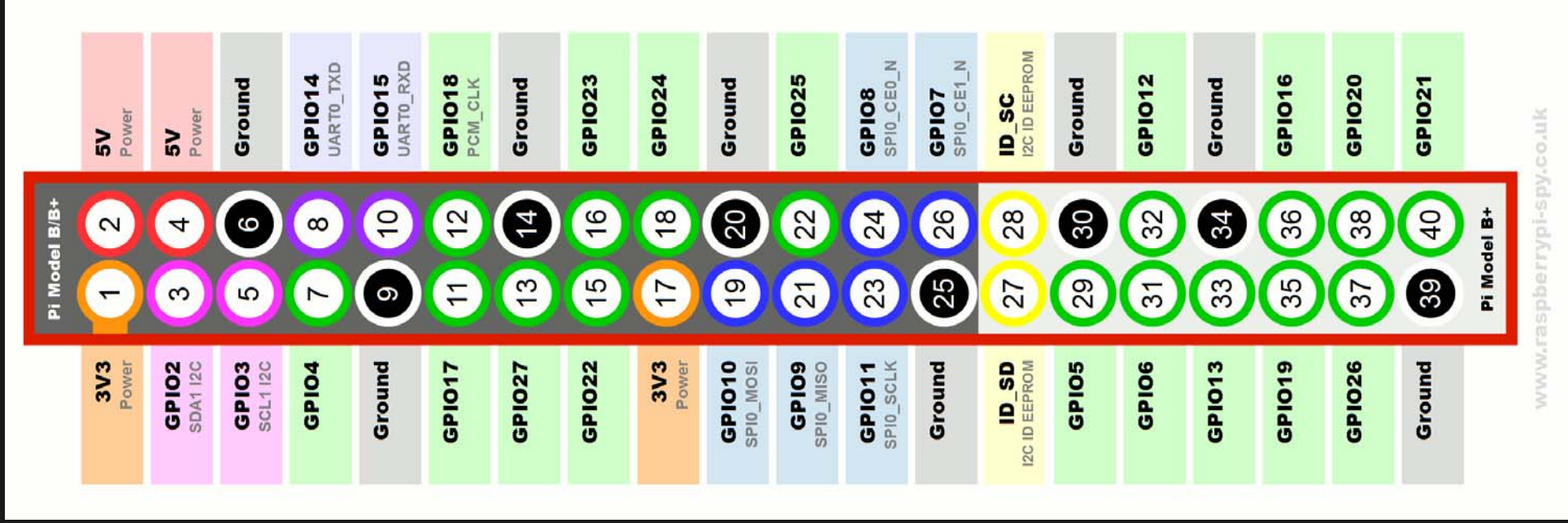
## 2.) GPIO



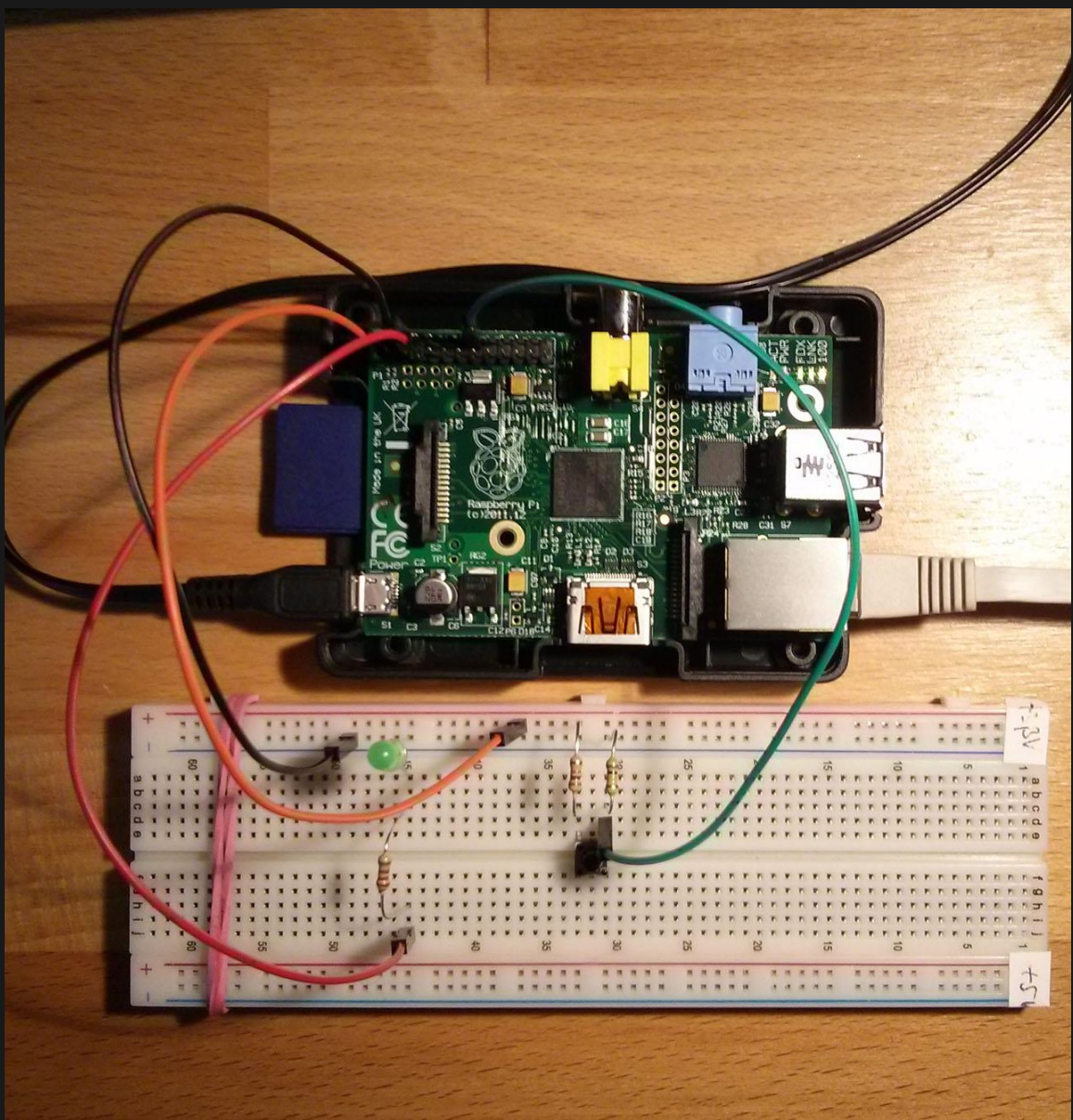
## Raspberry Pi GPIO connector (P1) pinout

		+5V		+5V
				GND
		GPI014 (TXD)		GPI015 (RXD)
		GPI018 (PCM_CLK)		GND
		GPI023		GPI024
		GND		GPI025
		GPI008 (CE0)		GPI007 (CE1)
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				

• = changed since board revision 2








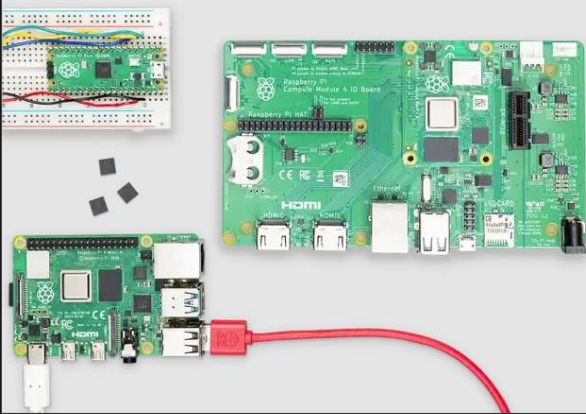


# 3.) COMMUNITY & DOKUMENTATION

**Raspberry Pi**

[For home](#) [For industry](#)


[Hardware](#) [Software](#) [Documentation](#) [News](#) [Forums](#) [Foundation](#)



## Computing for everybody


From industries large and small, to the kitchen table tinkerer, to the classroom coder, we make computing accessible and affordable for everybody.

[Buy Raspberry Pi](#)

 **Raspberry Pi** Camera Module 3

The classic compact camera for Raspberry Pi with a 12MP sensor, autofocus and your choice of standard or wide fields of view. Available from \$25.

[Buy Camera Module 3](#)



# 4.) BETRIEBSSYSTEME

## Raspberry Pi OS

Our recommended operating system for most users.

Compatible with:

[All Raspberry Pi models](#)

### Raspberry Pi OS with desktop

Release date: February 21st 2023

System: 32-bit

Kernel version: 5.15

Debian version: 11 (bullseye)

Size: 924MB

[Show SHA256 file integrity hash:](#)

[Release notes](#)

[Download](#)

[Download torrent](#)

[Archive](#)

### Raspberry Pi OS with desktop and recommended software

Release date: February 21st 2023

System: 32-bit

Kernel version: 5.15

Debian version: 11 (bullseye)

Size: 2.752MB

[Show SHA256 file integrity hash:](#)

[Release notes](#)

[Download](#)

[Download torrent](#)

[Archive](#)

### Raspberry Pi OS Lite

Release date: February 21st 2023

System: 32-bit

Kernel version: 5.15

Debian version: 11 (bullseye)

Size: 362MB

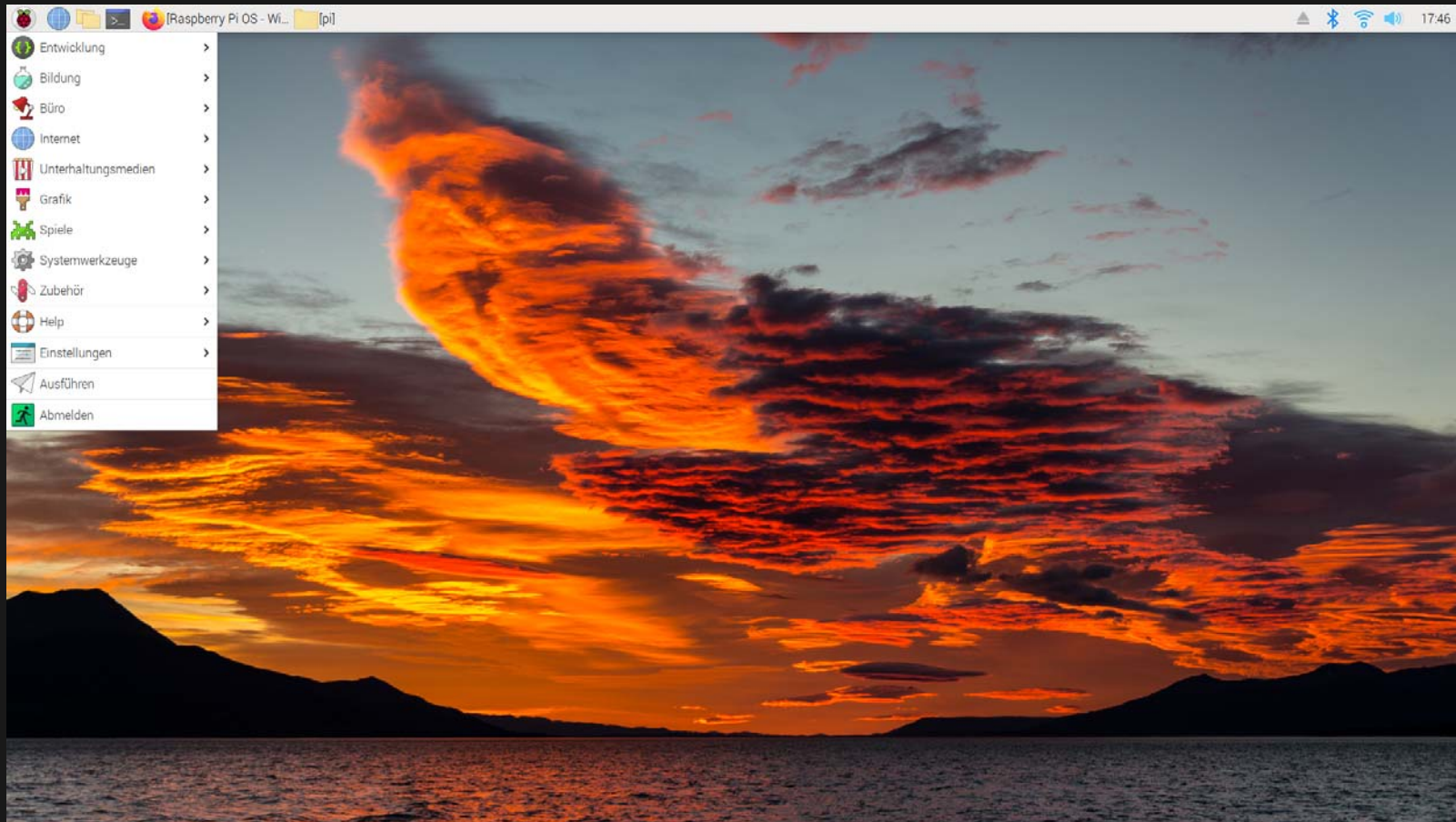
[Show SHA256 file integrity hash:](#)

[Release notes](#)

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### Ubuntu

Choose from Ubuntu Desktop, Server, and Core images



### Apertis

Debian-based distribution aimed at embedded systems



### RISC OS Pi

A fast and easily customised operating system for ARM devices





**LibreELEC**

A Kodi Entertainment Center distribution



**OSMC** 

A fast and feature filled open source media center



**Volumio** 

The Audiophile Music Player and Streamer



**moOde audio player** 

Audiophile music streamer for the Raspberry Pi







**Recalbox** 

The retro-gaming OS supporting 100+ gaming systems!



**RetroPie**

Turn your Raspberry Pi into a retro-gaming machine



**Lakka** 

The DIY retro emulation console





### 3D printing

3D printer operating systems



### Home assistants and home automation

Home assistant and home automation operating systems



### Anthias

Anthias

The most popular open source digital signage project



### Kali Linux

Kali Linux is an open-source, Debian-based Linux distribution geared towards various information security tasks, such as Penetration Testing, Security Research, Computer Forensics and Reverse Engineering.



### FullPageOS

Display a full page browser on boot in kiosk mode



### MoodleBox

MoodleBox is an open source distribution combining a wireless access point with a full featured Moodle server.



### Falcon Player (FPP)

Falcon Player (FPP) is an appliance used for managing and controlling animated light shows



## **5.) EIN RPI FÜR JEDEN VERWENDUNGSZWECK**

# RPI 4B+

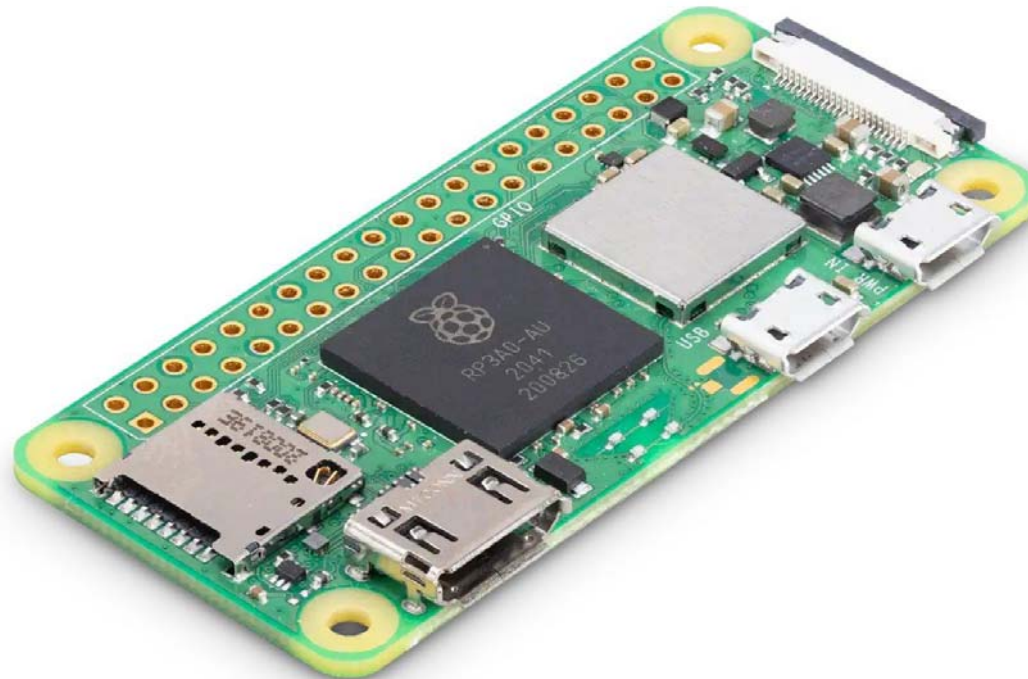


# RPI 400

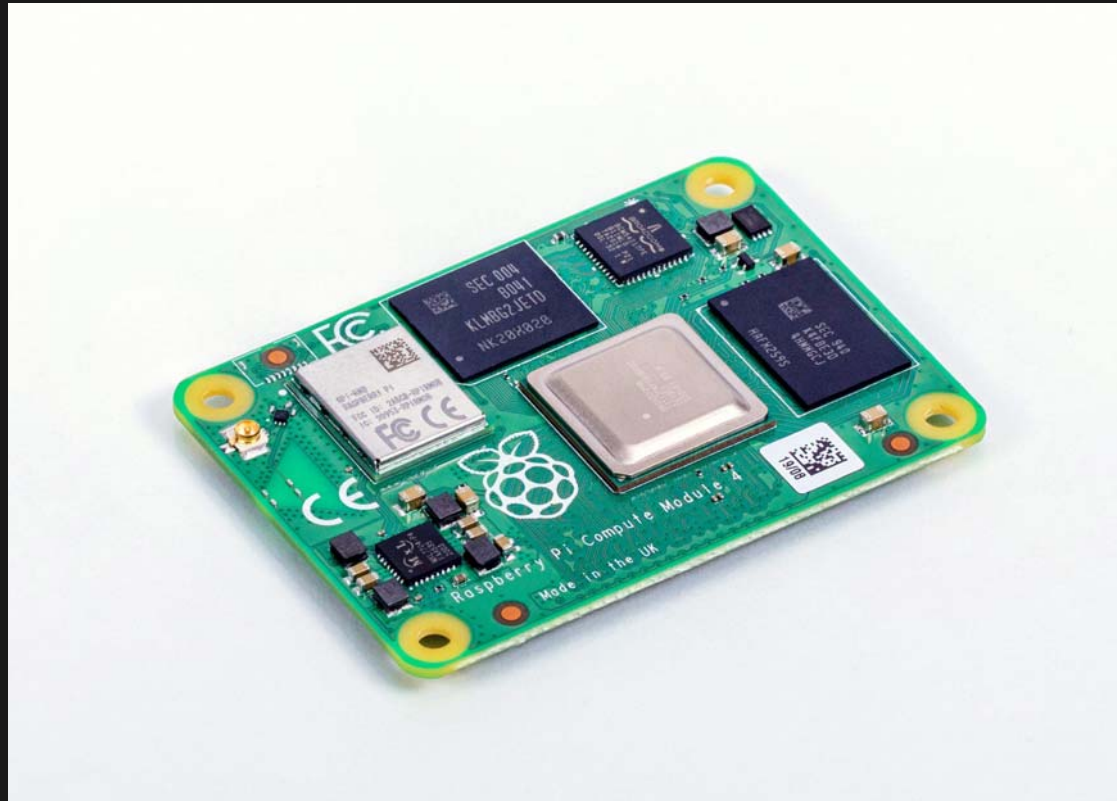




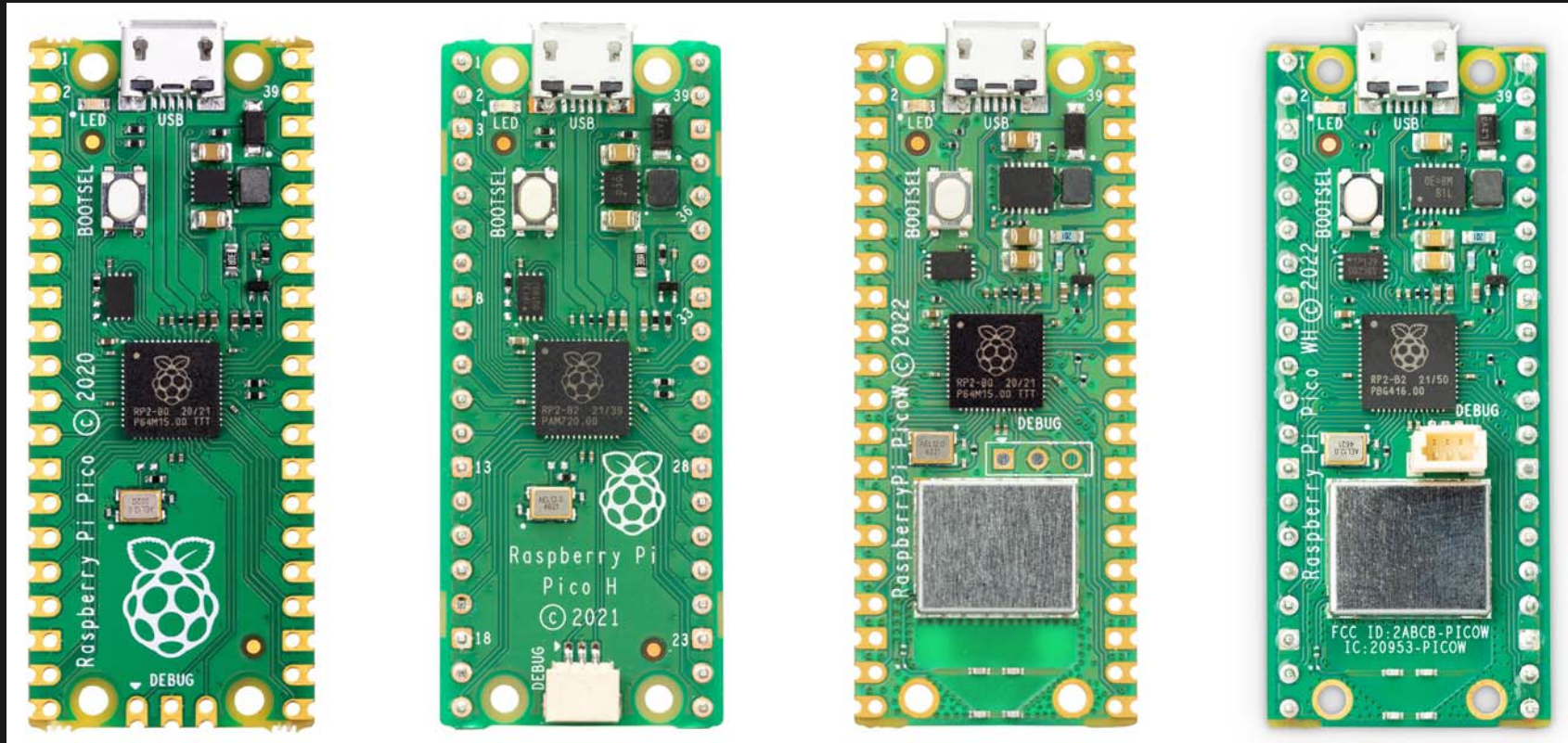
# RPI ZERO 2 W

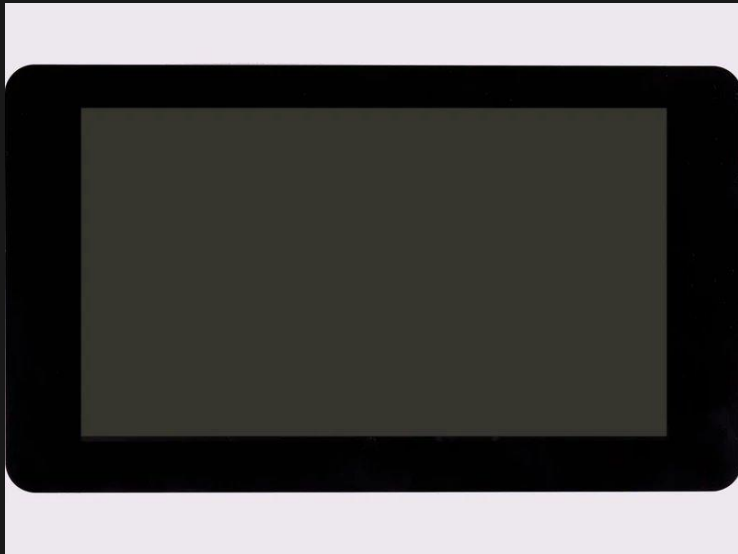
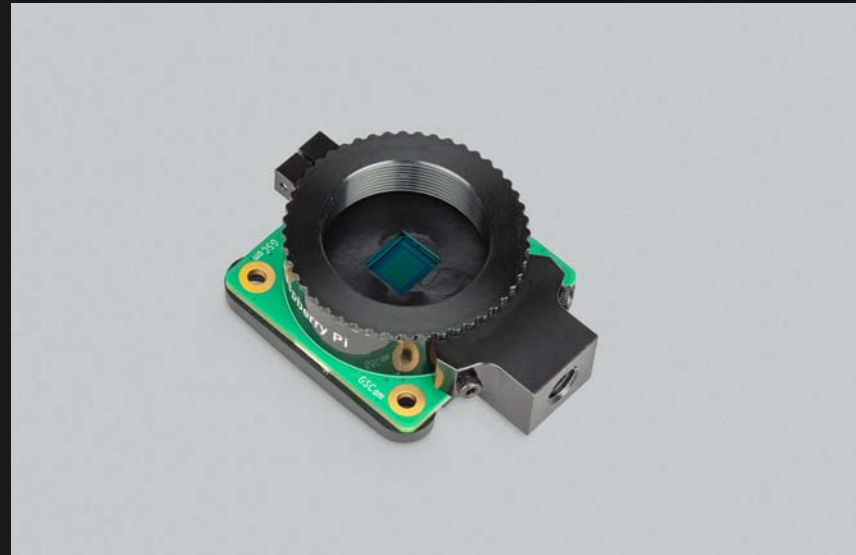
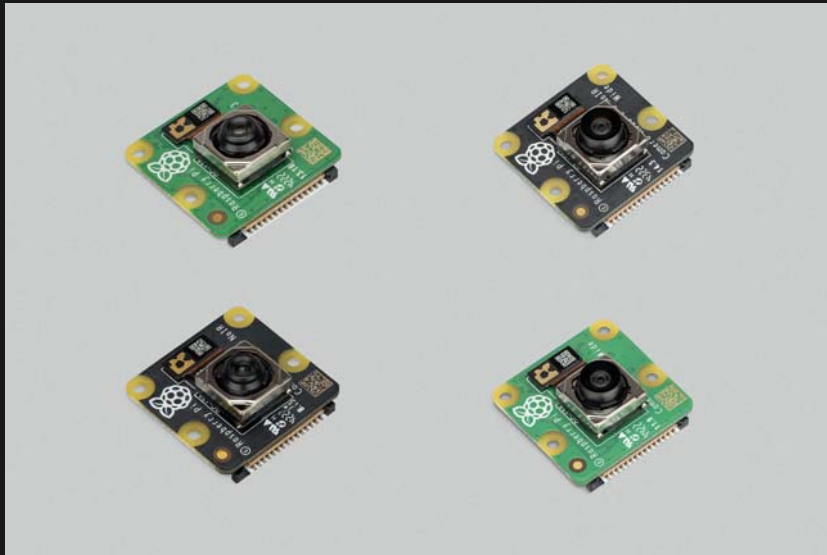


# RPI COMPUTE MODULE 4

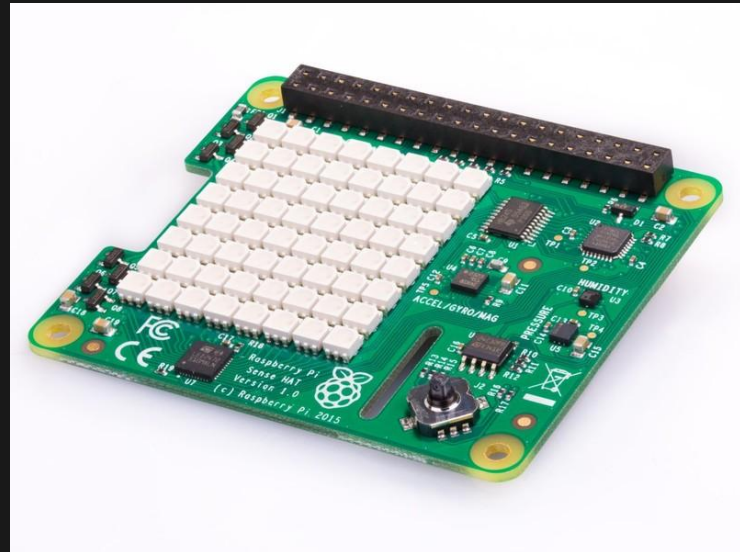
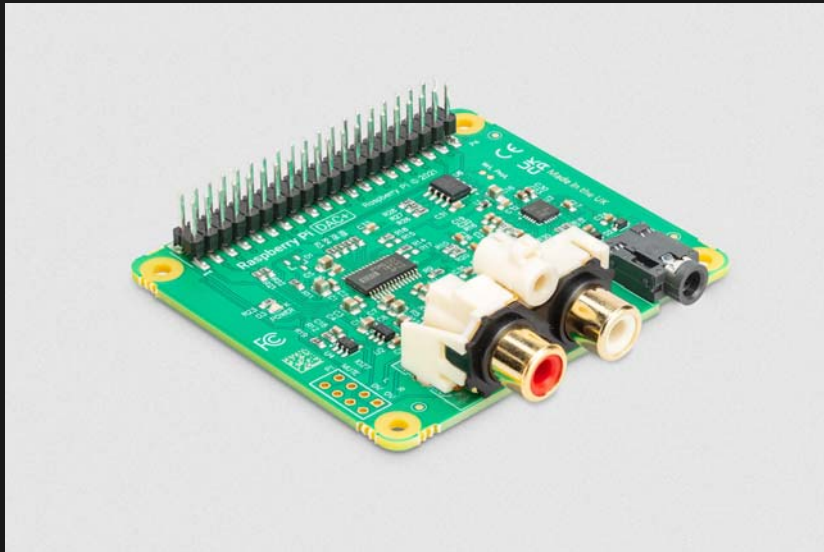


# RP2040 / RPI PICO (H) / RPI PICO W(H)











**ERSTE SCHRITTE**

# RASPBERRY PI 4 MODELL B+



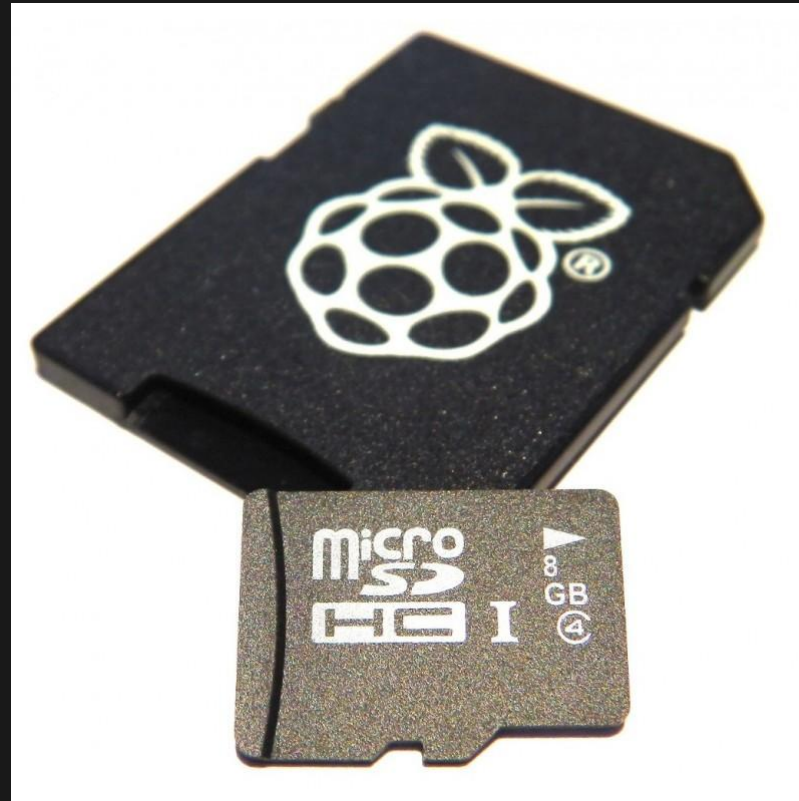
# RASPBERRY PI 4 MODELL B+

- 1.5 GHz ARM Quadcore (64 bit)
- 1 (nur bei Einführung), 2, 4 oder 8 GB RAM
- 2x Micro HDMI
- 3,5 mm Klinke Video / Audio
- 2x USB 3.0 / 2x USB 2.0
- Gigabit Ethernet (mit PoE Support)
- Bluetooth 5.0
- WLAN (802.11.b/g/n/ac)
- ~ 39,90€ (2 GB Version) \*

(\* mehr später...)

# ZUBEHÖR: MICRO SD CARD

$\geq 8$  GB, Markenhersteller, Class 10



# ZUBEHÖR: USB-C NETZTEIL

$\geq 3\text{ A}, 5\text{V}$





# ZUBEHÖR: GEHÄUSE



# ZUBEHÖR: ÜBERSICHT



# INSTALLATION

- Raspberry Pi Imager installieren:  
<https://www.raspberrypi.org/software/>
- Micro SD Karte in den PC stecken & Imager starten
- “Raspberry Pi OS (32-bit)” als OS wählen
- SD-Karte auswählen
- “Schreiben” klicken
- Sobald fertig, Micro SD entnehmen, in RPi einlegen
- Alle Stecker verbinden und mit Strom versorgen

**CORONA, SCALPER - UND NU?**  
**WIE MAN KEINE TIERWESEN, ABER RPIS**  
**FINDET...**

# NICHT SO ...



Raspberry Pi 4 Modell B (4 GB)

5,0 ★★★★★ (4)

175,50€

✓prime

GRATIS-Versand durch Amazon



Raspberry Pi 4 Modell B  
1GB/2GB/4GB/8GB RAM - Mini PC  
Computer - NEU

Neu · Gewerblich

**EUR 129,99**

Kostenloser Versand

ebayplus

Verkäufer mit Top-Bewertung



# OFFIZIELLE RESELLER








**Buy Raspberry Pi 4 Model B**

Select a model:  
4GB RAM

Country:  
Germany

[Home](#) [Industry](#) [Education](#)

This product is sold through the below Approved Resellers. You will be redirected to their website. Find out more about our [Approved Reseller network](#).



<https://www.raspberrypi.com/products/raspberry-pi-4-model-b/>

# BERRYBASE MAKER CLUB

<https://www.berrybase.de/berrybase-the-maker-club>

**MEHR RPI?**  
**GUTE QUELLEN**

# INTERNET

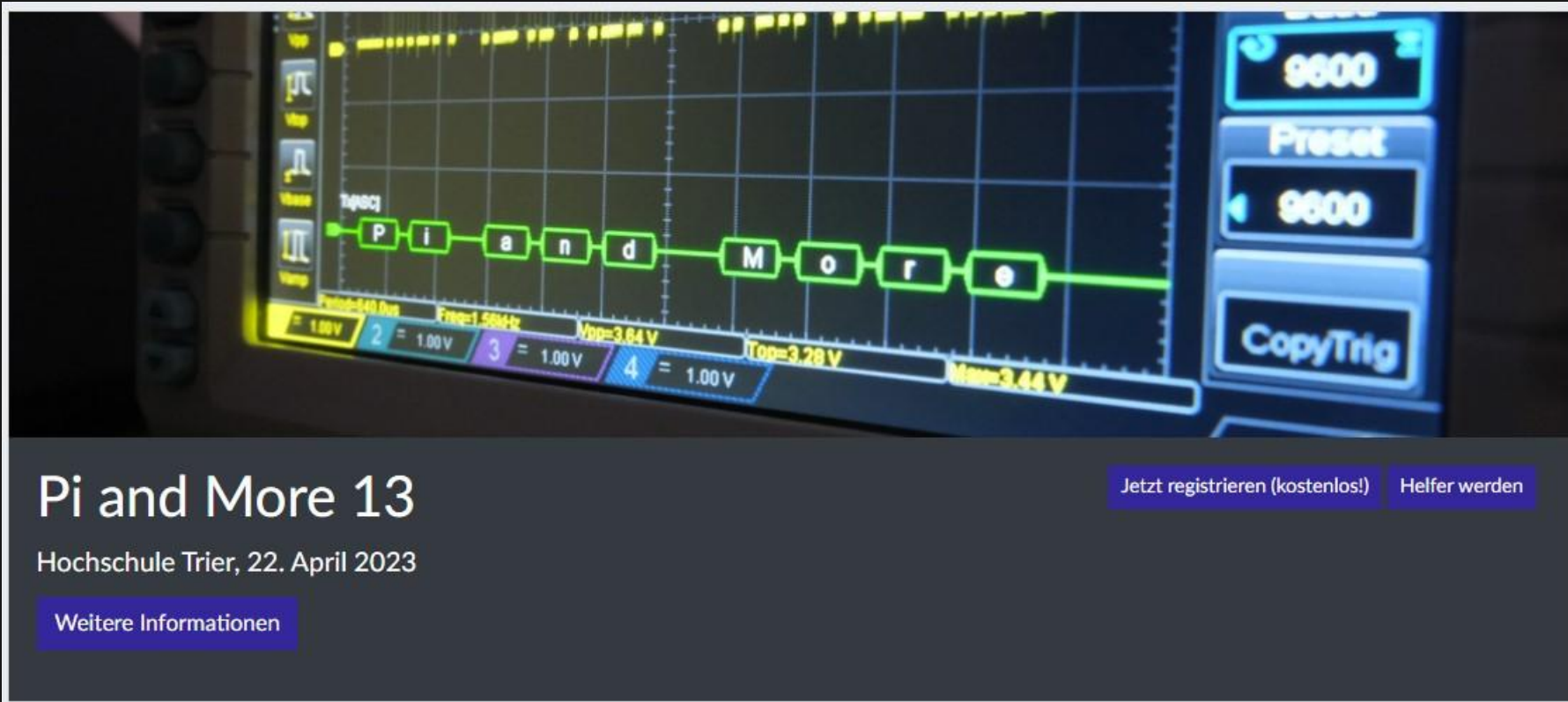
- Allgemein: <https://www.raspberrypi.com>
- Dokumentation:  
<https://www.raspberrypi.com/documentation/>
- Forum: <https://www.raspberrypi.com/forums/>

# BÜCHER & KITS

- Raspberry Pi Foundation
- elektor
- Rheinwerk
- Franzis
- Conrad
- ...



# RASPBERRY PI JAMS



Pi and More 13

Hochschule Trier, 22. April 2023

Jetzt registrieren (kostenlos!) Helfer werden

Weitere Informationen

<https://piandmore.de/>

# FRAGEN?

Danke für Ihre Aufmerksamkeit -  
und viel Spaß auf der Pi And More 13 :)!

[www.nico-maas.de](http://www.nico-maas.de)