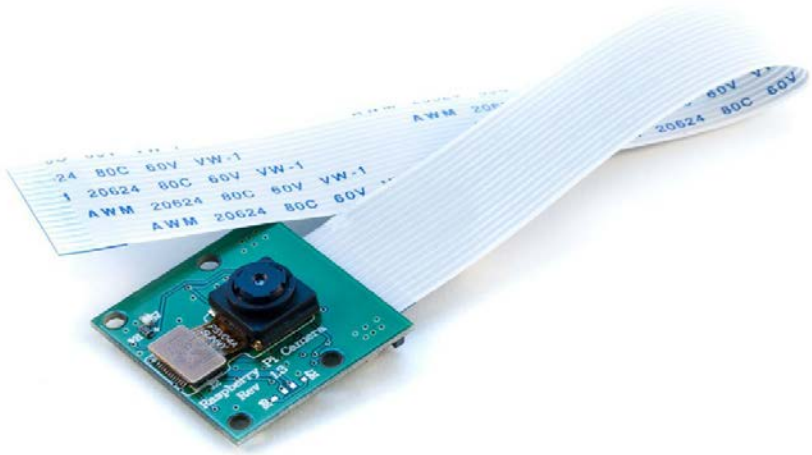
Welcome!

And thank you for purchasing our **AZ-Delivery Kamera v1.3 for den Raspberry Pi**! On the following pages, we will take you through the first steps of the installation process to the saving of your first camera picture.

We wish you a lot of fun!



http://flyt.it/RPI_cam_v1-3

The camera consists of a controller with a replaceable sensor and a 15-poligen flat- and connecting cable, which must be connected with the Raspberry Pi.

Overview of the most important information

» Dimensions: 25x20x9mm
» Weight: approx. 3g

» Fixed focus
» Automatic brightness and white balance
» Resolution up to 2592 x 1944px
» Video resolution:
  » 1920 x 1080 (30 Fps)
  » 1280 x 720 (60 Fps)
  » 640 x 480 (60 or 90 Fps)
» Power supply and data transmission via
  15-poliges flat cable

On the following pages, you will find information about the
» **set up of the camera**
And instructions for
» **viewing and saving the camera picture**.

This tutorial requires a Raspberry Pi with the installed Raspbian operating system from Jessie's Version. Instructions for that can be found on our AZ-Delivery eBook website:

» *http://flyt.it/eBook*

Overview of all links

Hardware used:

» Raspberry Pi: *https://az-delivery.de/products/raspberrypi3*
» Camera: *https://az-delivery.de/products/raspberrykamerav1-3*
» Flat cable: *https://az-delivery.de/.../15cm-ersatz-flexkabel-fur-raspberry-pi-kamera-und-das-raspberry-pi-display*

Software used:

» Raspbian: *https://www.raspberrypi.org/downloads/raspbian/*
» Thonny (Python IDE): *http://thonny.org/*
» PiCamera library: *http://picamera.readthedocs.org/*

Raspberry Pi Tutorials, Examples, Reference, Community:

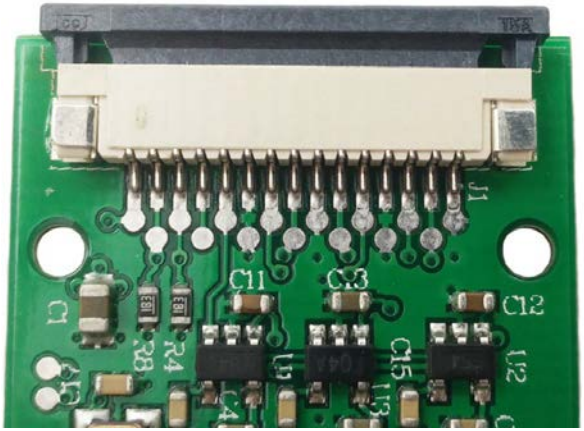
» *https://www.raspberrypi.org/documentation/*
» *https://www.raspberrypi.org/education/*

Interesting information from AZ-Delivery

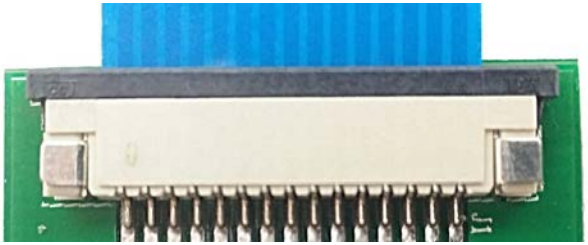
» All tutorial eBooks:
https://az-delivery.de/pages/ebooks-und-dokumentationen-zum-kostenlosen-download
» Raspberry Pi Accessories:
https://az-delivery.de/collections/raspberry-pi-zubehor
» AZ-Delivery G+Community:
https://plus.google.com/communities/115110265322509467732
» AZ-Delivery on Facebook:
https://www.facebook.com/AZDeliveryShop/

Set up of the camera

Before we begin with the programming, we have to first make sure that the hardware arrangement is correct. For that, we need the Raspberry Pi, the camera module and a connecting cable. Your **AZ-Delivery camera v1.3** already comes with a connecting cable. In case you want to work with a longer cable, then place the module with the lens facing down on a clean surface, and gently and carefully pull outwards the black stripes at the connection on the sides, until it is loose.

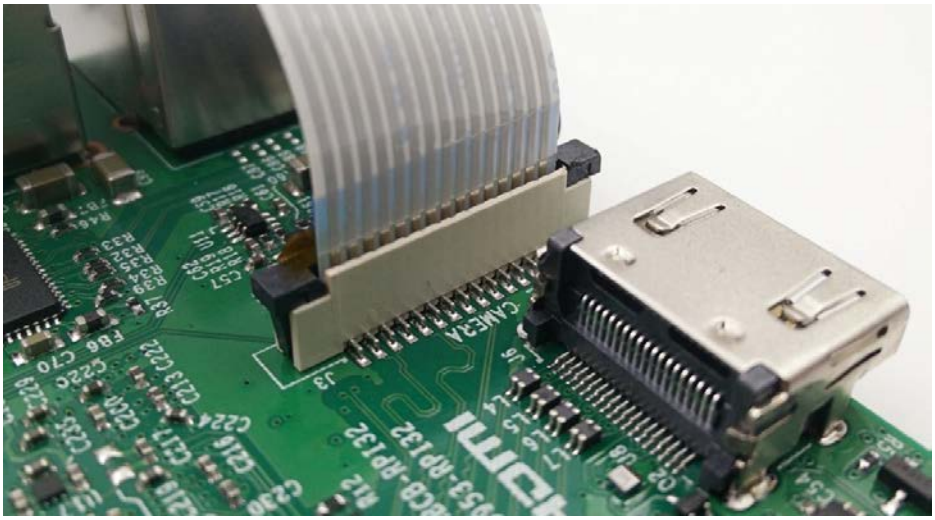


Then insert a cable-end, with the blue side facing upwards, straight into the slot between the stripe and the light case, until you feel resistance. Then gently push the stripe back until it clicks into place:



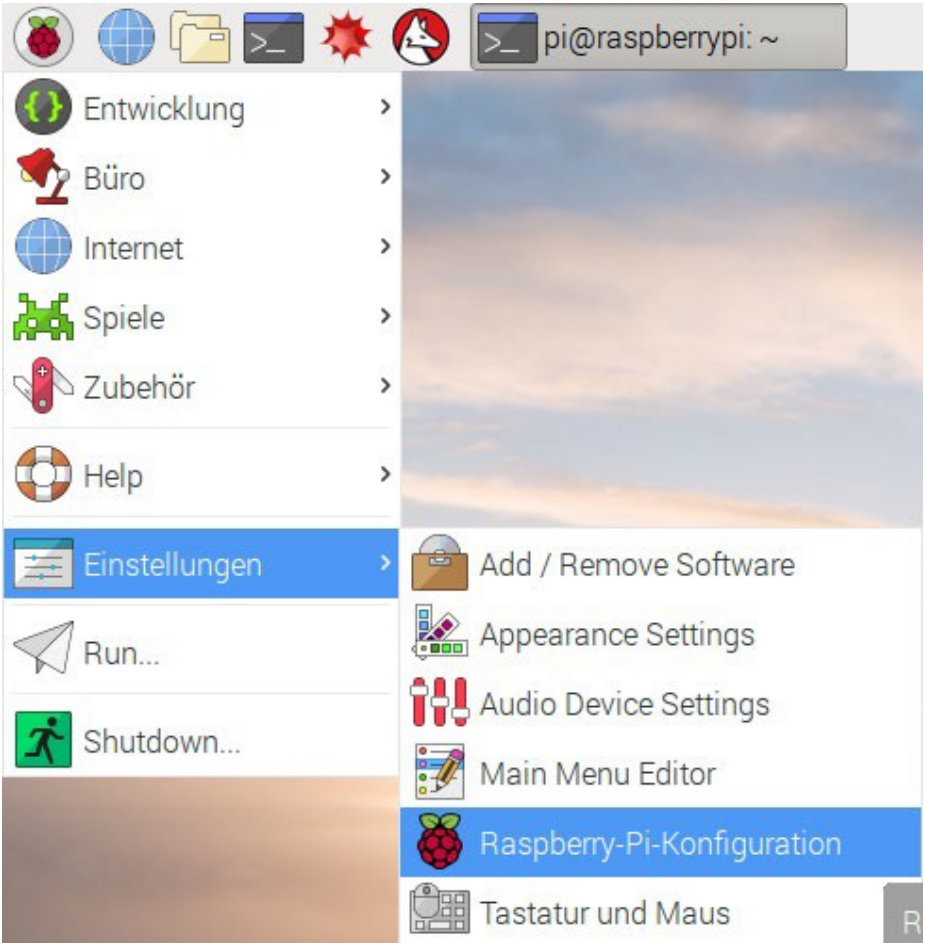
Do the same with the other side of the CAMERA-labeled port of your Raspberry Pi. The blue side must point towards the network side and the contact side towards the micro USB port.

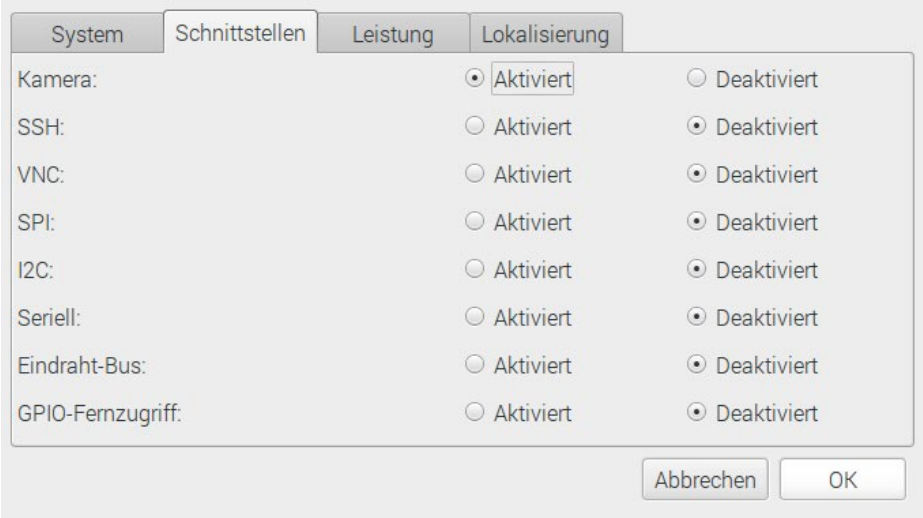
Make sure that your Raspberry Pi is disconnected from its power source! An inadvertent contact can be damaging to the board.



When the camera is securely and firmly connected to the Raspberry Pi, then you can reconnect and start your controller.

In a newly installed Raspbian system, all interfaces are normally deactivated, including those for the camera.
To change that, open the "**Raspberry-Pi-configuration**" application, located in the "**Settings**" area. Under the "**Interfaces**" tab, you can now set the option "**camera:**" to be "**activated**".

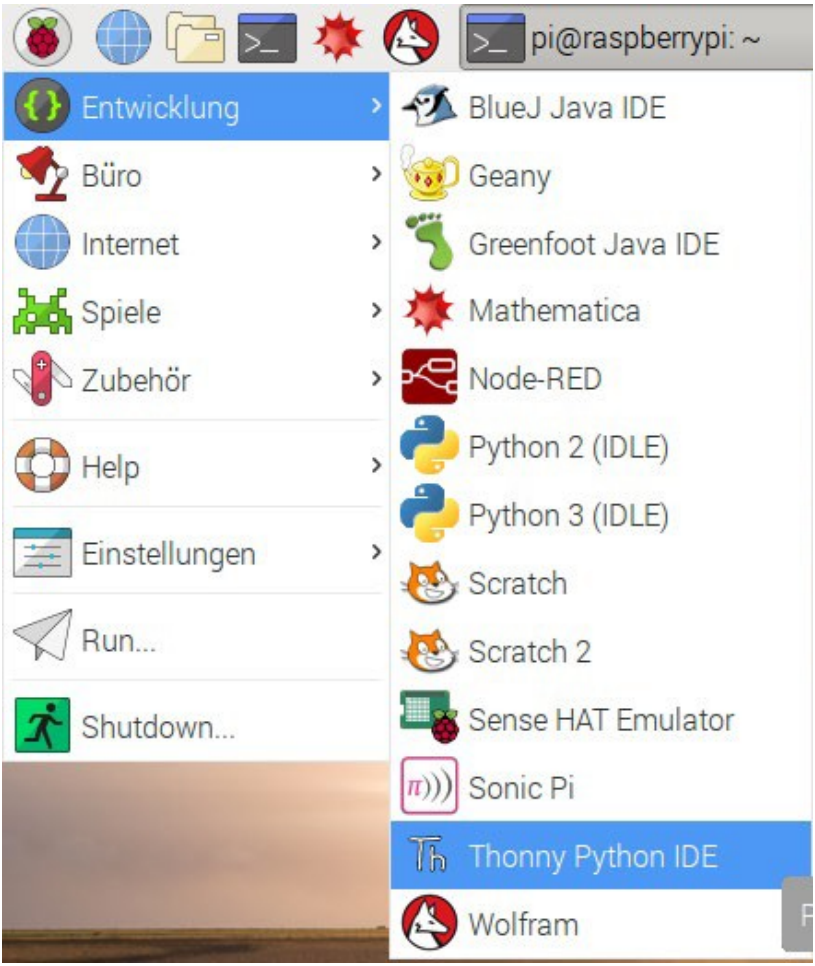

pi@raspberrypi: ~
Entwicklung
Büro
Internet
Spiele
Zubehör
Help
Einstellungen
Run...
Shutdown...
Add / Remove Software
Appearance Settings
Audio Device Settings
Main Menu Editor
Raspberry-Pi-Konfiguration
Tastatur und Maus


System
Schnittstellen
Leistung
Lokalisierung
Kamera: Aktiviert Deaktiviert
SSH: Aktiviert Deaktiviert
VNC: Aktiviert Deaktiviert
SPI: Aktiviert Deaktiviert
I2C: Aktiviert Deaktiviert
Seriell: Aktiviert Deaktiviert
Eindraht-Bus: Aktiviert Deaktiviert
GPIO-Fernzugriff: Aktiviert Deaktiviert
Abbrechen
OK

View and save the camera picture

Here you will learn how, with the help of the very popular script language **Python,** you can gain access to the camera, and how you can save a frame as picture after a set amount of time.

Python is already preinstalled on Raspbian, as well as (since June 2017) on **Thonny Python IDE**, which we will be using in this tutorial.



Start the IDE and write the following code in the editor's area. Save it as a *.py file in the directory of your choice.

```
1   import time
2   from picamera import PiCamera
3
4   def main():
5       camera = PiCamera()
6       camera.start_preview()
7       time.sleep(10)
8       camera.capture("/home/pi/Pictures/camera.jpg")
9       camera.stop_preview()
10
11  if __name__ == "__main__":
12      main()
```

Explanations:

`import time` loads the library, which we command `time.sleep(10)` pause code execution at a specific location for ten seconds.

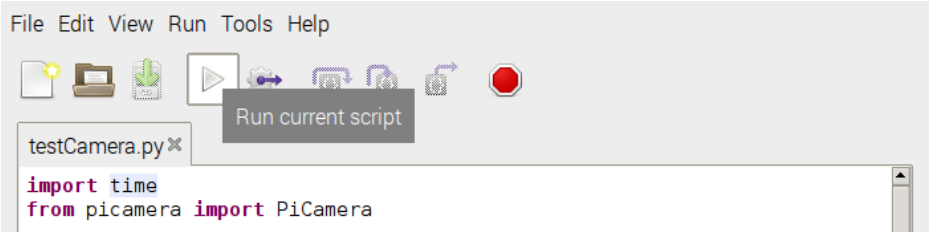
From `picamera` we obtain the methods

For full screen streaming `camera.start_preview()`

And to save `camera.capture("/.../camera.jpg")`the camera image.

The command `camera.stop_preview()`, at the end of the main methods, is also important and should always be followed by one

start_preview()-command will be added, because the full-screen view of the camera will not be able to be closed anymore, and you would have to restart your Raspberry Pi.



Once you have entered and saved the code correctly, you can execute it by clicking on the triangular **Play** icon and enjoy your camera picture. Now you have about ten seconds to select a motive, which would then end up as a JPG file on your Raspberry Pi.

(Our camera had just regarded its base.)

Congratulations!

You have successfully completed the tutorial, set up your camera and took the first picture with it! Now it is time to learn and try it out. Take a look at the documentation of the **PiCamera** library.
Now if you would like to see in infrared or simply look for more hardware, go ahead and check our online store, which has everything you are looking for, here at:

https://az-delivery.de

Enjoy!

Imprint

https://az-delivery.de/pages/about-us