

## Installing Rasbian on the Raspberry Pi 4

The steps necessary to set up the Raspberry Pi 4 are explained below. The explanations are very brief. More detailed explanations can be found on the Internet in the various forums.

**Step 1:** Download the Rasbian image from the Raspberry homepage and unzip it.  
<https://www.raspberrypi.org/downloads/raspbian/> the 'Rasbian with Desktop' is sufficient.

**Step 2:** Transfer the Rasbian image to the SD card.  
This requires extra flash software to transfer the image to the SD card, e.g. balenaEtcher. at [www.balena.io/etcher/](http://www.balena.io/etcher/)

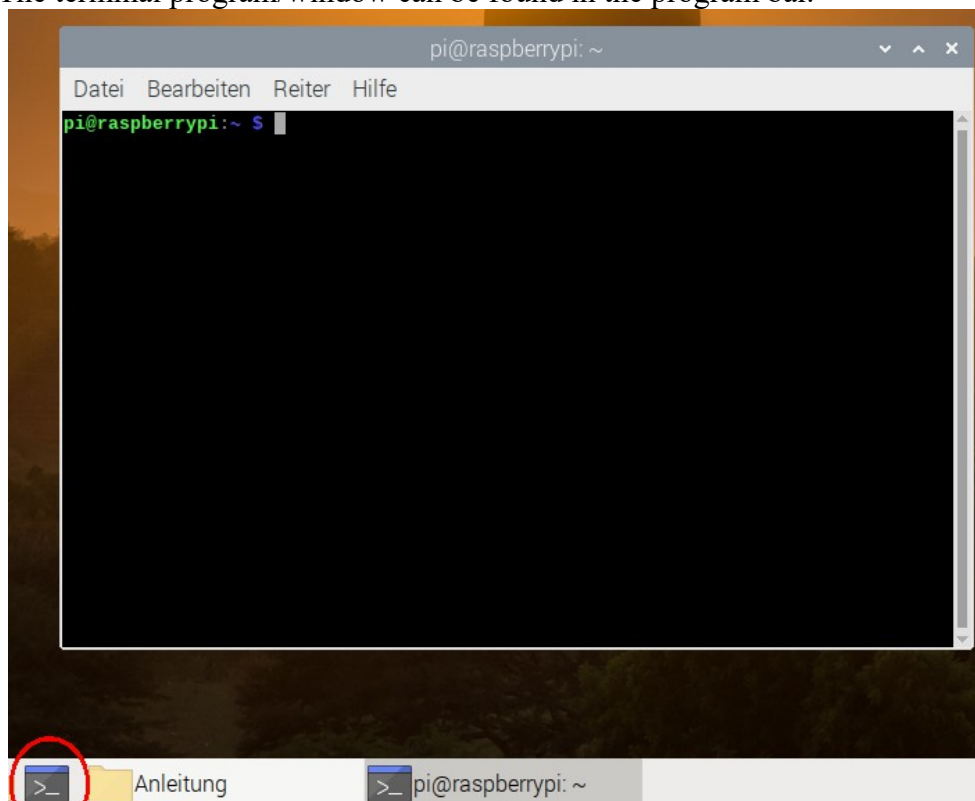
**Attention:** It is best to remove all connected USB\_Sticks before starting balena Etcher, or make sure that you really flash the SD card.

The SD card should be quite fast (class 10) and have at least 8GB storage space. Since the current Rasbian is a 32 bit operating system, the size should not exceed 64GB.

**Step 3:** Insert the SD card into the Raspberry Pi and start the Raspberry Pi. Then follow the on-screen instructions.  
You will need an internet connection.

### Fine tuning:

In the following we will talk more often about opening the terminal window and entering a command. The terminal program/window can be found in the program bar.



In contrast to the very graphically oriented operating systems (Windows, MAC), Linux and Raspberry Pi only have very rudimentary graphical interfaces. In order to be able to adjust some settings, you can't get around the terminal.

The following terminal commands are structured as follows:

*sudo program command arguments*

*sudo* means that you start the program with root rights (as root administrator).

A *program* is e.g. 'apt-get' with which you can download and install programs.

*command* and *arguments* depend on the *program*.

A program is started by pressing the return key after entering the complete command.

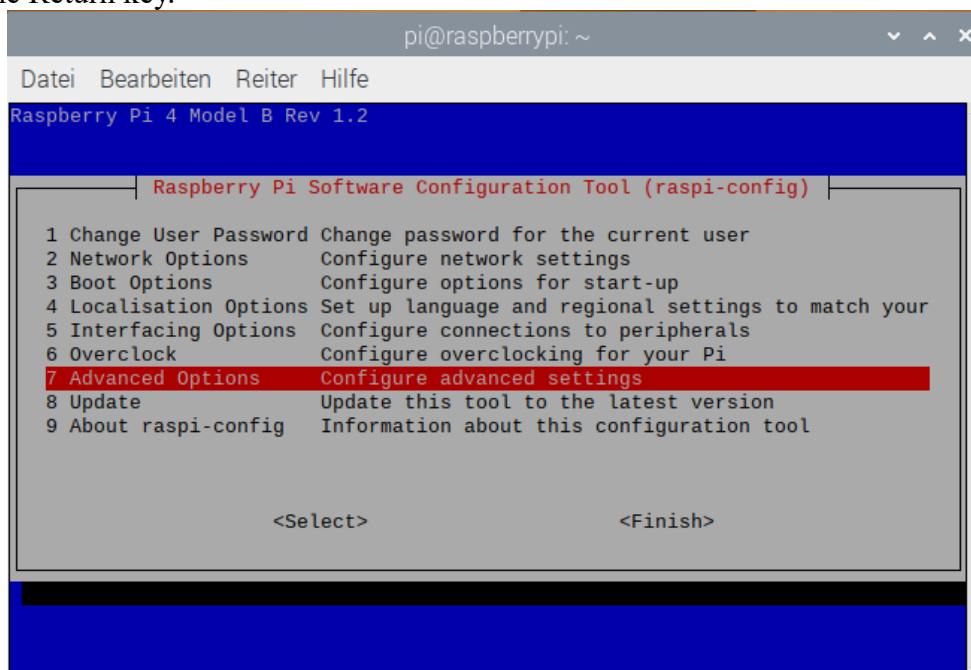
#### **Step 4:** Use the entire SD card

The flash program has only prepared a part of the SD card. In order to be able to use the entire SD card, the following must be done:

Open the terminal window and enter the following command:

***sudo raspi-config***

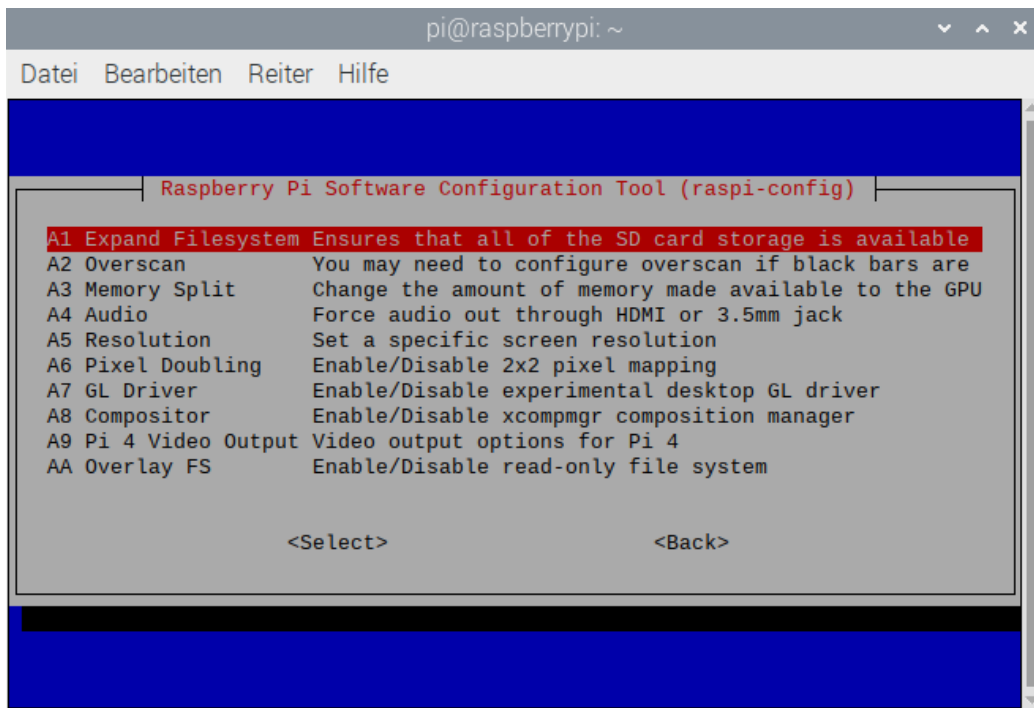
and press the Return key.



```
pi@raspberrypi: ~
Datei Bearbeiten Reiter Hilfe
Raspberry Pi 4 Model B Rev 1.2
Raspberry Pi Software Configuration Tool (raspi-config)
1 Change User Password Change password for the current user
2 Network Options Configure network settings
3 Boot Options Configure options for start-up
4 Localisation Options Set up language and regional settings to match your
5 Interfacing Options Configure connections to peripherals
6 Overclock Configure overclocking for your Pi
7 Advanced Options Configure advanced settings
8 Update Update this tool to the latest version
9 About raspi-config Information about this configuration tool

<Select> <Finish>
```

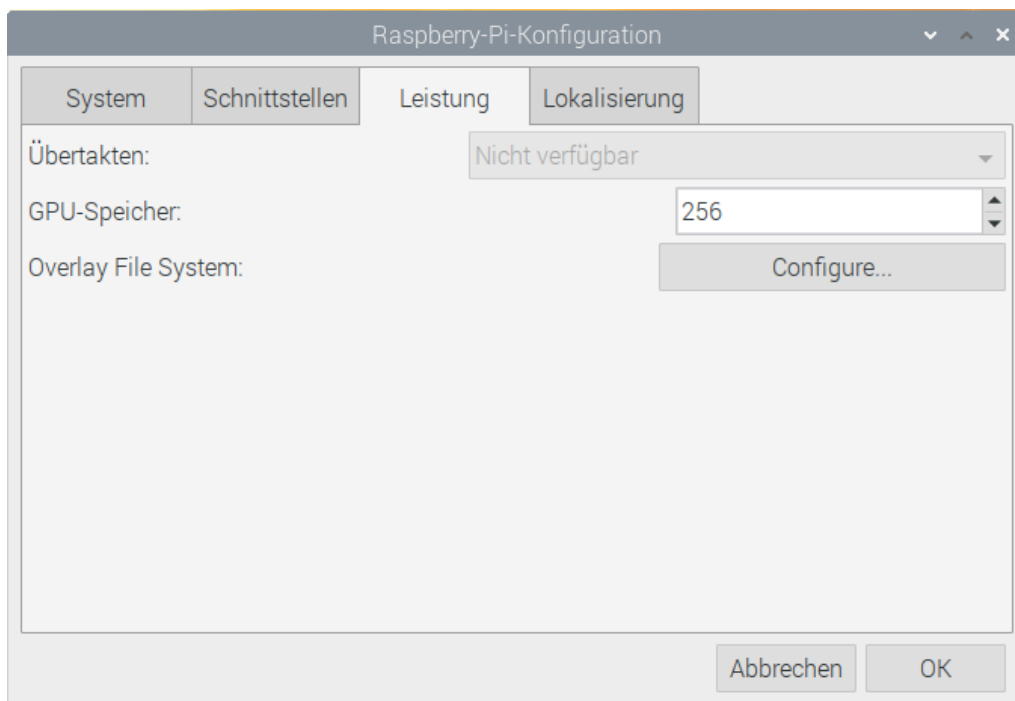
A window opens in which various settings can be made. Use the arrow keys on the keyboard to go to 'configure advanced settings' and press the return key.



Select the setting: 'Expand Filesystem.....' and press the return key.  
 Then use the arrow keys to go to 'Finish' and press the return key.  
 Now the Raspberry Pi has to be restarted to accept this setting.

**Step 5:** Increase the graphics memory slightly.

In the program menu under 'Settings' open the 'Raspberry Pi Configuration'.



Increase the graphics memory (GPU memory) to 256 under Performance and confirm with OK, a restart is also required here.

**Step 6: Download updates**

Connect to the Internet.

There is a network icon on the right side of the program bar. Click on the network icon with the left mouse button and click on the corresponding network. This may have been done the first time you started Raspberry Pi.

Start the terminal window and enter the following command:

***sudo apt-get update***

then press the Return key.

Then in the terminal window the command

***sudo apt-get dist-upgrade***

and press the return key.

During the upgrade, a message will appear which must be confirmed with the letter **j**.

### **Step 7 Optional: Remove black borders on the screen - use the entire screen.**

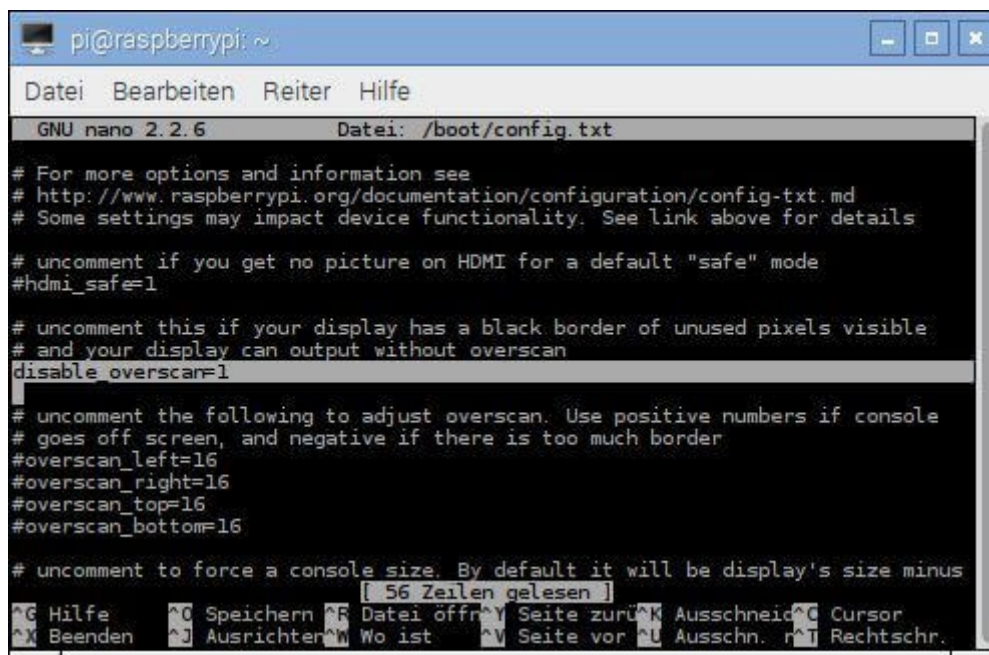
If your screen is not used completely, i.e. the display has black edges, you must deactivate overscan.

Since the earlier tube monitors could not display the border area correctly, the overscan is set as default for the Raspberry Pi. To fix this a small editor program 'nano' can be used to change a setting in the config.txt.

Enter the following command in the terminal window and press the return key:

***sudo nano /boot/config.txt***

A window opens in which you can move with the arrow keys.



```
pi@raspberrypi: ~
Datei Bearbeiten Reiter Hilfe
GNU nano 2.2.6 Datei: /boot/config.txt
# For more options and information see
# http://www.raspberrypi.org/documentation/configuration/config-txt.md
# Some settings may impact device functionality. See link above for details
# uncomment if you get no picture on HDMI for a default "safe" mode
#hdmi_safe=1
# uncomment this if your display has a black border of unused pixels visible
# and your display can output without overscan
disable_overscan=1
# uncomment the following to adjust overscan. Use positive numbers if console
# goes off screen, and negative if there is too much border
#overscan_left=16
#overscan_right=16
#overscan_top=16
#overscan_bottom=16
# uncomment to force a console size. By default it will be display's size minus
[ 56 Zeilen gelesen ]
^G Hilfe ^O Speichern ^R Datei öffnen ^Y Seite zurück ^K Ausschneiden ^C Cursor
^X Beenden ^_ Ausrichten ^W Wo ist ^V Seite vor ^L Ausschn. r ^T Rechtschr.
```

In the line `#disable_overscan=1` remove the character `#` before `disable`....

Save the file with `Ctrl O`.

Exit the nano program with `Ctrl X`.

After a restart the whole screen should be in use.

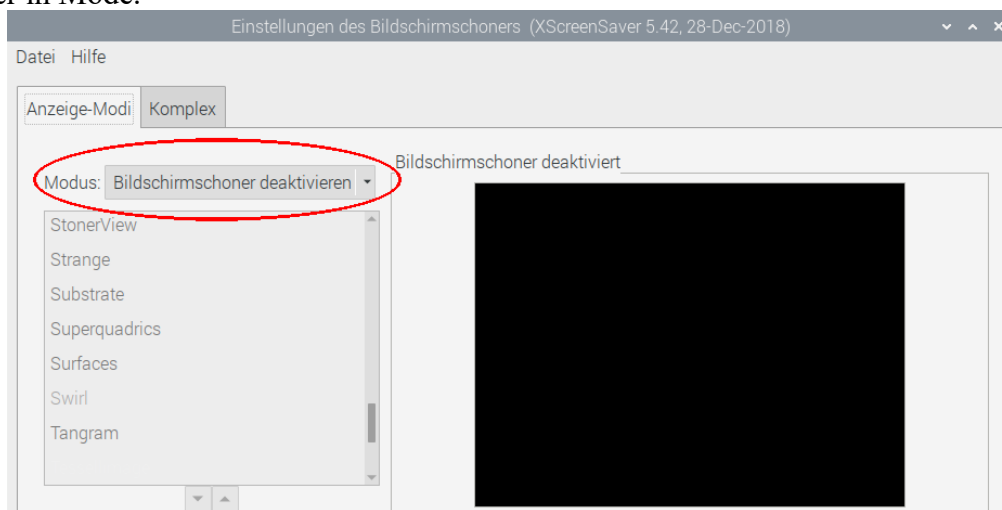
### **Optional Step 7: Switch off/configure screen saver**

The easiest way to do this is via the program Xscreensaver, which has to be installed first.

Enter the following command in the terminal window and press the return key:

***sudo apt install xscreensaver***

Then start the program via the program menu under Settings / Screensaver and deactivate the screensaver in Mode.



## Operation

### Setting the sound output

Rasbian treats the sound output, especially the sound output via Bluetooth, somewhat neglected. The easiest way is to use the HDMI output or the headphone output.

The standard output via HDMI or headphone output can be set under raspi-config.

Open the terminal window, enter the following command and press Return:

***sudo raspi-config***

select 'configure advanced settings' and then 'force audio out through hdmi or 3.5mm jack'.

### Screenshot / Create screenshot

The easiest program to use is Scrot. This program is pre-installed on the Raspberry Pi.

If your keyboard has a PrtSc (Print Screen) key, just press it. Scrot records the screen and saves the image in the Home folder (home/pi), the filename looks like this: *actualdate\_scrot.png*.