RPI High Speed Camera micro-SD Images

Source Media

Sandisk microSDHC UHS-I 32 GB
Maximum speed: 100 MB/s, 667X
App performance: A1
Video speed class: V30

inxi

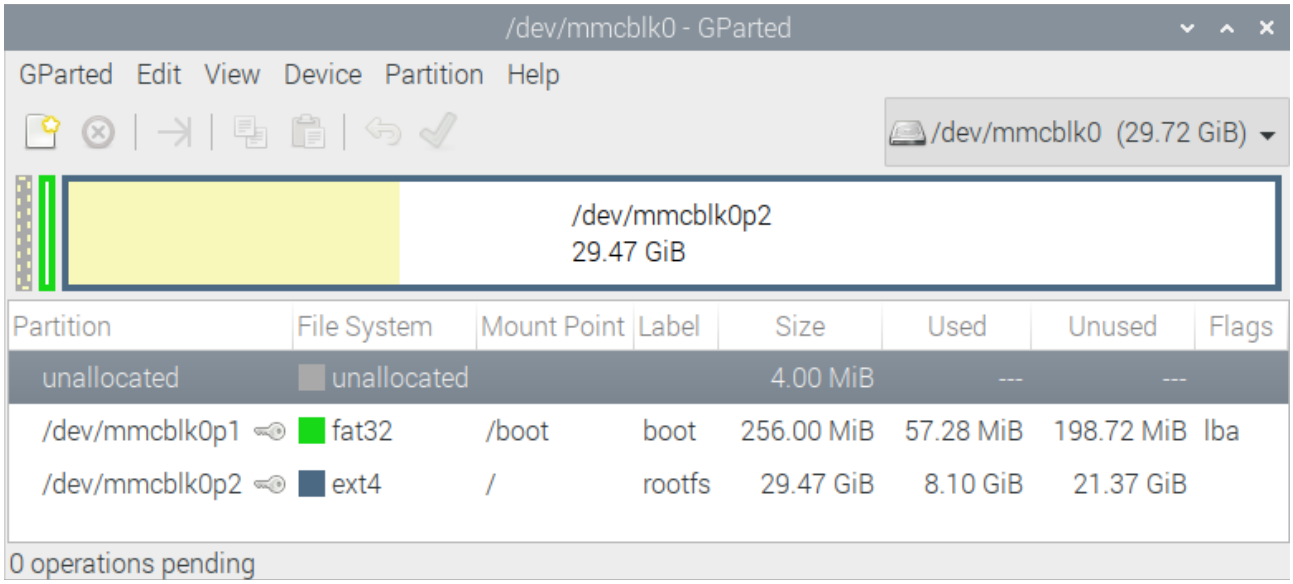
ID-1: /dev/mmcblk0 model: SM32G size: 29.72 GiB

fdisk -l

```
Disk /dev/mmcblk0: 29.7 GiB, 31914983424 bytes, 62333952 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x4b16a8ce

Device         Boot  Start      End  Sectors  Size Id Type
/dev/mmcblk0p1        8192   532479   524288  256M  c W95 FAT32 (LBA)
/dev/mmcblk0p2      532480 62333951 61801472 29.5G 83 Linux
```

Gparted



Hardware

The RPI high camera system was installed on a Raspberry Pi 4 computer with 4 GB memory. The system will probably work on a Raspberry Pi 3 with 4 GB memory. 512 MB memory for GPU must be available if using a RPI with small amount (<4 GB) of memory.

Operating System

OS: Raspberry Pi OS
Linux raspberrypi 5.4.51-v7l+ #1333 SMP Mon Aug 10 16:51:40 BST 2020 armv7l GNU/Linux

cat /etc/os-release

PRETTY_NAME="Raspbian GNU/Linux 10 (buster)"
NAME="Raspbian GNU/Linux"
VERSION_ID="10"
VERSION="10 (buster)"
VERSION_CODENAME=buster
ID=raspbian
ID_LIKE=debian
HOME_URL="http://www.raspbian.org/"
SUPPORT_URL="http://www.raspbian.org/RaspbianForums"
BUG_REPORT_URL="http://www.raspbian.org/RaspbianBugs"

Software Versions

Python:	3.7.3
OpenCV:	4.4.0
rpi-camera suite:	20.8.2020

Memory Card Images

Clonezilla

Clonezilla version used to create this image: clonezilla-live-20180712-cosmic-amd64
URL: https://clonezilla.org
Image name: **rpi4-opencv4.4-2020-08-21-img**
Tar image name: **4-opencv4.4-2020-08-21-img.tar**

Clonezilla - Release 2020.08.26

Clonezilla version used to create this image: clonezilla-live-20180712-cosmic-amd64
URL: https://clonezilla.org
Image name: **rpi4-opencv4.4.0-scipy1.5.2-2020-08-26-img**
Tar image name: **rpi4-opencv4.4.0-scipy1.5.2-2020-08-26-img.tar**

dd and RaspberryPi Image Shrinkwrap

Version: 8.30
Image name: **rpi4-opencv4.4-2020-08-24.img**
Image was shrunk with shrinkwrap.sh (URL: https://github.com/mtyka/shrinkwrap). New size of partitions:

```
Device          Boot  Start      End  Sectors  Size Id Type
/dev/loop1000p1        8192   532479   524288  256M  c W95 FAT32 (LBA)
/dev/loop1000p2      532480 17920160 17387681  8.3G 83 Linux
```

Gzip image name: **rpi4-opencv4.4-2020-08-24.img.gz**

Deploying a Clonezilla image to a micro-SD card

Download the Clonzilla archive and SHA256SUMS file from rpi-camera/images. Verify the SHA-256 hash:

Release 2020.08.21

```
sha256sum -c SHA256SUMS 2>&1 | grep OK
rpi4-opencv4.4-2020-08-21-img.tar: OK
```

Extract the directory and files using the following command:

```
tar -xvf rpi4-opencv4.4-2020-08-21-img.tar
```

Release 2020.08.26

```
sha256sum -c SHA256SUMS 2>&1 | grep OK
rpi4-opencv4.4.0-scipy1.5.2-2020-08-26-img.tar: OK
```

Extract the directory and files using the following command:

```
tar -xvf rpi4-opencv4.4.0-scipy1.5.2-2020-08-26-img.tar
```

Deploy the extracted image to a new ≥32 GB mico-SD card using Clonezilla.

Deploying a dd image to a micro-SD card

Download the compressed dd archive and SHA256SUMS file from rpi-camera/images. Verify the SHA-256 hash:

Release 2020.08.24

```
sha256sum -c SHA256SUMS 2>&1 | grep OK
rpi4-opencv4.4-2020-08-24.img.gz: OK
```

Extract the image file (size ~32 GB) from the compressed file:

```
gunzip -k rpi4-opencv4.4-2020-08-24.img.gz
```

NB The -k option keeps the input file.

Get the micro-SD device name from lsblk output, i.e.:

```
lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sde           8:64   1 14.8G  0 disk
├─sde1        8:65   1  256M  0 part
└─sde2        8:66   1 14.5G  0 part
```

Clone the image to a new ≥32 micro-SD card using following command:

```
sudo dd bs=4M if=rpi-opencv4.4-2020-08-24.img of=/dev/sde
conv=fsync status=progress
```

Clone the extracted image

NB It is possible to clone the shrinked dd image to a 16 GB micro-SD card, but the cloning must be terminated when dd gives an error (dd: error writing 'dev/…': No space left on device).

Post Imaging Tasks

Insert the cloned micro-SD card into a Raspberry Pi. Start the computer and expand the root parition to fill SD card (if a shrinked dd image was used):

```
sudo raspi-config
```

```
7 Advanced Options <Enter>
A1 Expand Filesystem Ensures that all of the SD card storage is
available <Enter>
<Ok>
<Finish>
Reboot now? <Yes>
```

Finnish keyboard layout can be changed following way:

Preferences > Raspberry Pi Configuration
Select Localisation tab, press <Set Keyboard...> and select form the Layout drop down list the desired keyboard layout.

Change the default password

Default user: pi
Default password: raspberry

Preferences > Raspberry Pi Configuration
Press <Change Password...>

Update the system and software

```
sudo apt update && sudo apt dist-upgrade
```

Install SciPy (< Release 2020.08.26)

```
$ sudo apt install python3-scipy
```