

Changelog (07/29/2020)

- Version 1.0 Catalina Loader 0.5.9

This document reflects the current state as of July 2020.

Before starting the installation on the iMac mid 2011 models get also the latest files from @highvoltage12v [post](#), especially the AppleGVA.framework and the AppleIntelSNB* files - there are patched versions for AMD card users out, now. And there are two different sets for Mojave and Catalina! This Guide is focussing on Catalina.

Additionally you may need to upgrade the Extensions [Lilu](#) und [WhateverGreen](#) stored on the OpenCore image and in the archive you downloaded from the post two lines up.

We deleted the sleep extensions for 2011 models entirely from the OpenCore 0.5.9 image. We also deleted the AMD BIOS versions from the image, you will find everything you need reading the [famous first post](#).

Installing and using the OpenCore Catalina Loader on an iMac 2009/2010/2011

Currently supported for the following cards [listed](#) online. Other cards may be added when new vBIOS versions become available.

We will be using OpenCore boot loader to give several Nvidia MXM graphics cards brightness control and the AMD card a boot screen functionality.

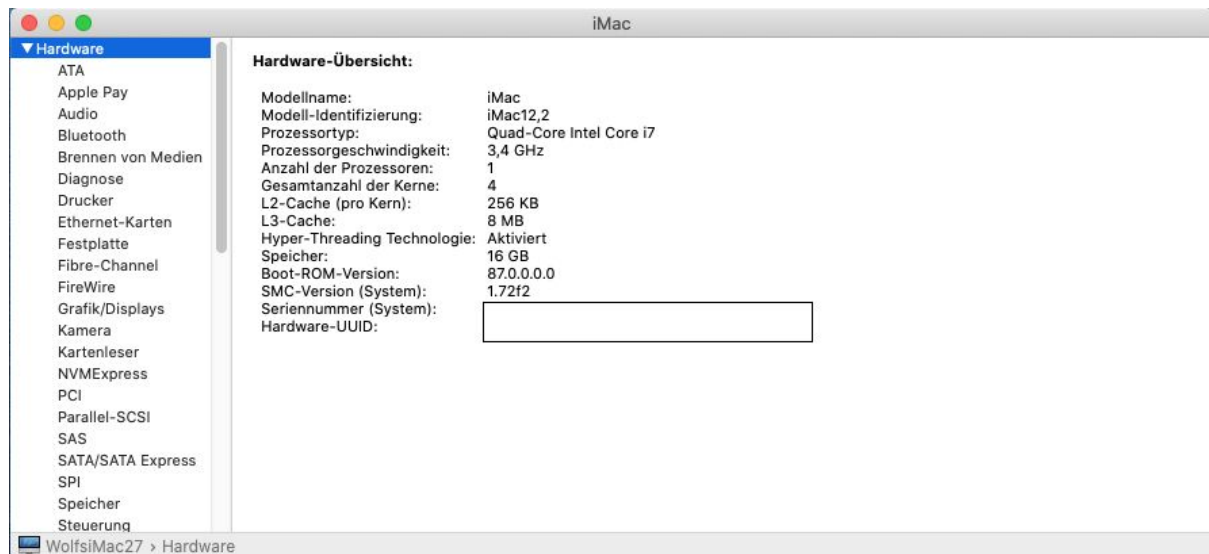
The complete feature list can be found on the boot image you are going to download in the file "iMac README.TXT" in the Docs Folder. **Please read this document** after download and writing the image in step 8.

1. Update the firmware of your iMac to the latest release.

The most easy way is to do the Internet Recovery installing High Sierra from Apple and load all subsequent updates available, the latest security update came out in May, 2020. Reboot after the last update and wait for the long lasting firmware upgrade included to be successfully applied to your machine. Check your success confirming the version you have currently installed from the About the Mac->System Report->Hardware panel and [this list](#).

Most recent firmware release numbers have the form xx.0.0.0.0 - if you see something really different repeat the installation and upgrade until you have the firmware upgrade installed. Without this there will be - probably - no way to use the OpenCore boot loader or Mojave or Catalina at all.

Even if you just have replaced a graphics card with an older MacOS version running you need the latest firmware release to get OpenCore working. There is no way around this!



2. MacOS Installation

Download the latest copy of Catalina or Mojave using the latest www.dosdude1.com patcher on your iMac or stick with your up to date High Sierra installation.

To fence out upcoming problems after installing a new graphics adapter we recommend to test this new piece of hardware with the latest known by Apple supported OS (which is High Sierra), run benchmarks, check sleep mode and reboot. Then move on to more recent MacOS versions like Mojave or Catalina.

The latest Apple upgrade as of May 2020 brought us a new obstacle to overcome, after reboot some people have a black screen. For this reason Catalina 10.15.4 and newer need also the installation of another extension. It is done exactly the same way as described in steps 10-13 of this document and you will find the extension file [here](#) an a further note under point 18. below. High Sierra including the latest update as of May, 2020 may face the same issue.

With Catalina 10.15.6 Apple seem to correct this black screen issue, again!

If you plan to install Mojave or Catalina please use the latest version and install all available security upgrades before applying the patches mentioned later. Some of these files are based of more recent versions of Mojave or Catalina and will simply not work with the initial releases of Mojave and Catalina.

The use of OpenCore with the iMacPro1,1 board-id set in the AMD version of the config.plist files seems to hide most of these issues.

3. SD Card

Prepare the following tasks and get SD card or a USB memory stick of at least the 2GB size. I will refer to an SD card on the following lines.

4. OpenCore

Download the recent Catalina Loader [image](#) using the 0.5.9 version of OpenCore.

5. Get some Tools - BalenaEtcher

Download the [Balena Etcher](#) tool to write the image contents to the SD card and save it locally in your programs folder.

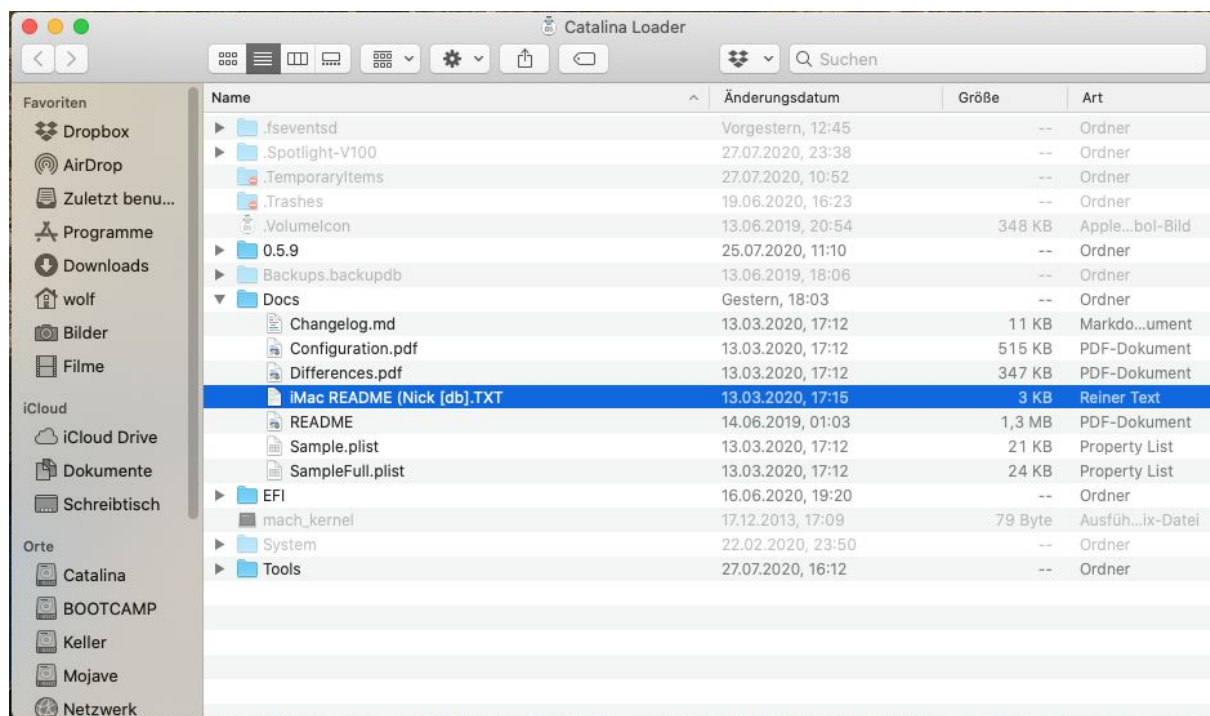
6. Copy OpenCore Image to SD card

Start Balena Etcher program and copy the OpenCore Image to the SD card. **An error message comes up, ignore it.** Alternatively you might use the disk utility to write the image to your SD card.

7. Activate OpenCore SD card

Plug the SD card and reinsert it - the Catalina Loader image will be activated. If you have configured the Finder to show internal disks on the Desktop it will be shown there, otherwise open a Finder window and search it.

Open the Catalina Loader. Now you may also read the documents provided by Nick:



8. Installing Extensions to get sleep back and avoid kernel panics (iMac 2011, only)

As of Mac OS 10.14/10.15 it is necessary to re-add back the missing Sandy Bridge AppleIntelHD3000 kexts for proper sleep functionality, iGPU H.264 video encoding, and Airplay Mirroring. Proper functionality will only work if all HD3000 plugin/bundle files are either installed on disk in /S*/L*/E*.

To prevent your iMac from Kernel Panicking a patched copy of IOSurface.kext and AppleMCCSControl.kext must be installed to /System/Library/Extensions. **After every software update it is necessary to boot your iMac without Open Core and reinstall IOSurface.kext & AppleMCCSControl and the AppleGVA.framework as described above..**

Before starting the installation on the iMac mid 2011 models get the latest files from [@highvoltage12v post](#), especially the AppleGVA.framework and the AppleIntelSNB* files - there are patched versions for AMD card users out, now. And there are two different sets for Mojave and Catalina! This Guide is focussing on Catalina.

There are two ways to accomplish this goal, one is relying on terminal commands, the other one on applications giving an inexperienced user a better feeling doing this task. If you never used the terminal go ahead and follow the instructions created by [@highvoltage12v](#) in his post.

You have to disable SIP. Using a [@dosdude1](#) installed Mojave or Catalina including the post installed patches this has been already done by default.

Terminal:

First: Remount the system partition in read/write mode (default is read, only) - you will be asked for your password:

```
sudo spctl --master-disable
sudo mount -uw /
sudo killall Finder
```

Second: Open the target folders in Finder:

```
open /System/Library/Extensions
open /System/Library/PrivateFrameworks
```

Third:

Copy Extensions and single framework using Finder drag and drop, and answer with replace in any case! The [source](#) of the files is still the post of [@highvoltage12v](#).

You may use the sudo ditto command to copy the extensions (which are in reality folders, not simple files)

Fourth: Relink the prelinked Kernel:

```
sudo chown -R 0:0 /System/Library/Extension/
sudo chmod -R 755 /System/Library/Extension/
sudo kextcache -i /
```

```
sudo kcditto (Catalina, only)
```

Fifth: copy the AppleGVA.framework to the /System/Library/PrivateFrameworks Folder replacing the existing one using sudo ditto or Finder drag and drop and enter these commands

```
sudo chown -R 0:0 /System/Library/PrivateFrameworks/AppleGVA.framework/
sudo chmod -R 755 /System/Library/PrivateFrameworks/AppleGVA.framework/
```

Last: Restart the machine

```
sudo reboot
```

9. Configure OpenCore

We deliver now for different preconfigured config files, namely

```
config.AMD.plist
config.NVIDIA.plist
```

config.NVIDIA.iMacPro.plist (experimental)

config.WX7100.plist (the same as the AMD without setting a different device-ID of the GPU)

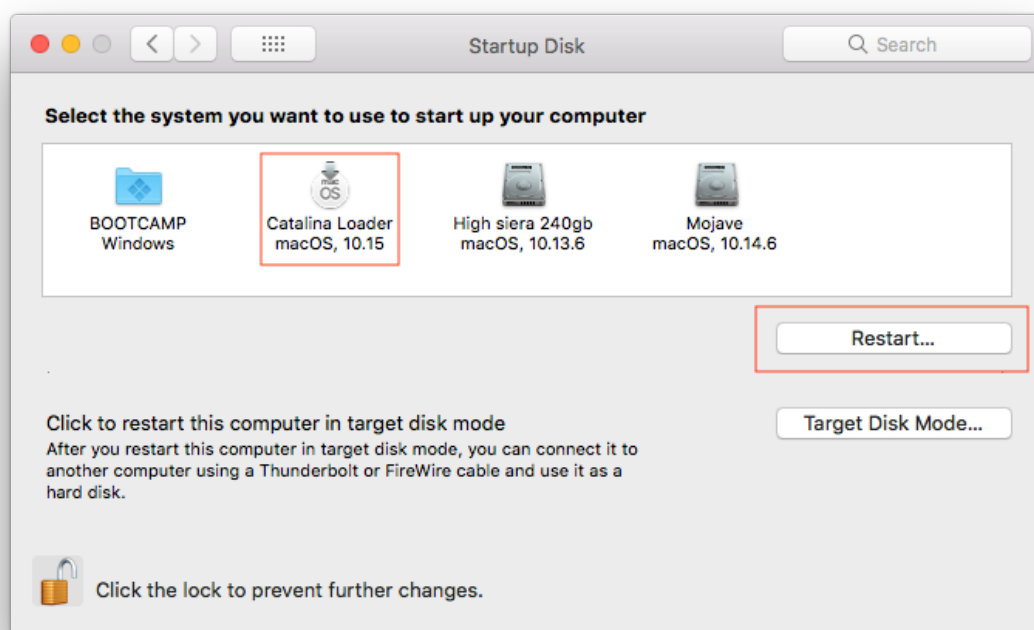
Pick you file and rename it to

config.plist

You are done with configuration!

10. Booting of the SD card or Catalina Loader

Open System Preferences and unlock the profile pane, select Catalina Loader macOS 10.15, then click restart and your iMac should boot to Open Core.

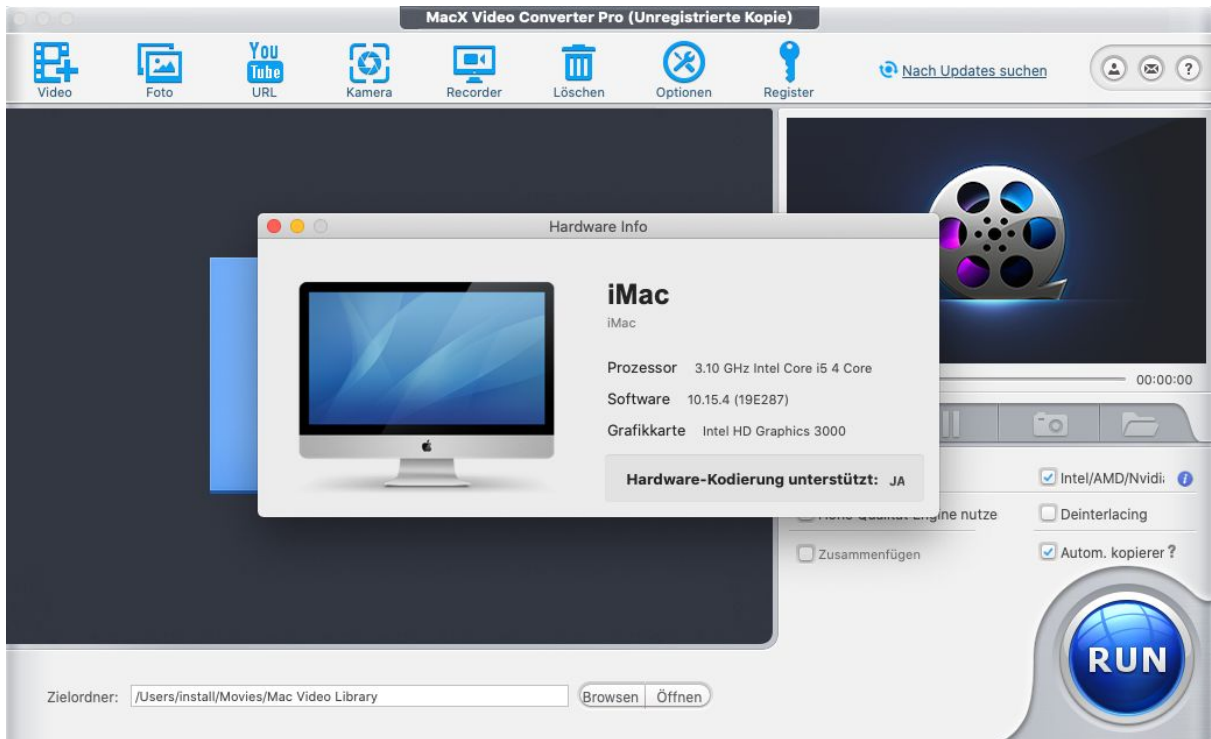


Now select "Restart...". Brightness control, sleep, wake up, Airplay/Intel H.264 should now be fully functional.

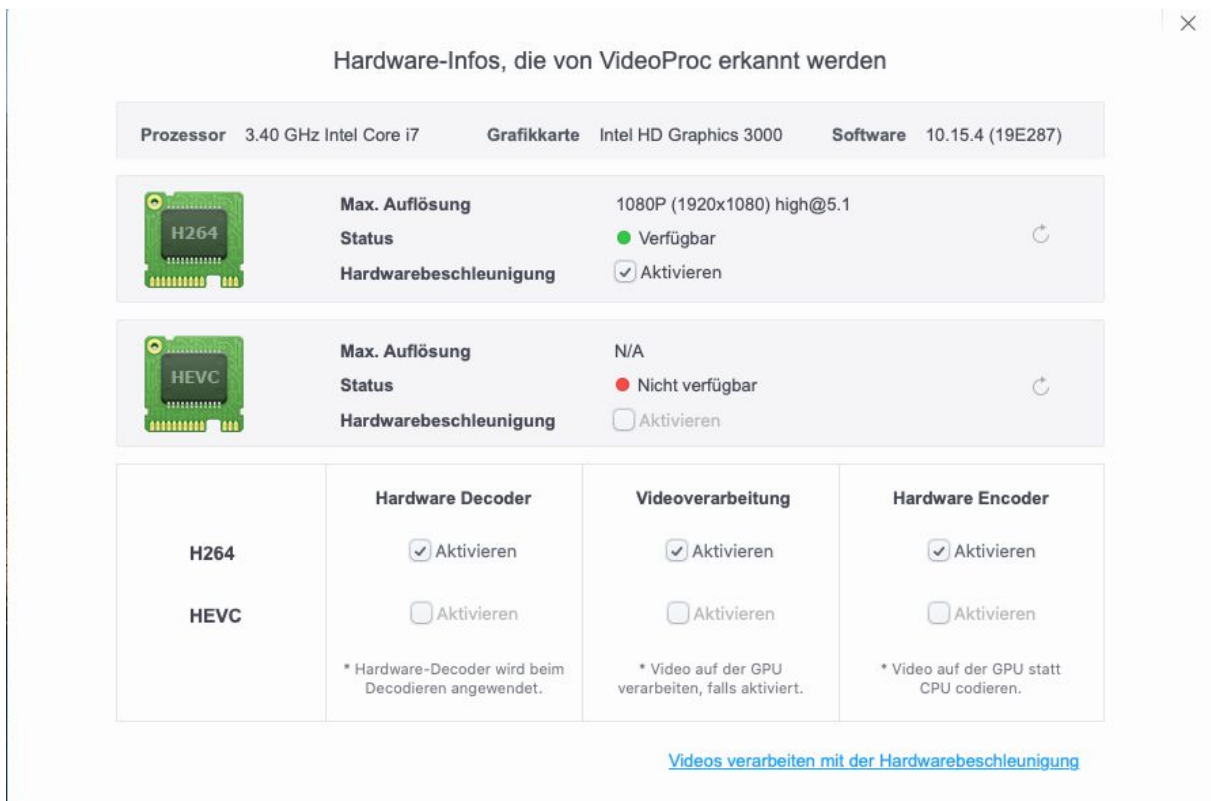
11. Checking your success (Video acceleration)

To check the H.264 and other features you might download a test version of [VideoProc](#) or [MaxC Video Converter Pro](#). With Nvidia cards you may just used the tool VDADecoderChecker from the Tools folder.

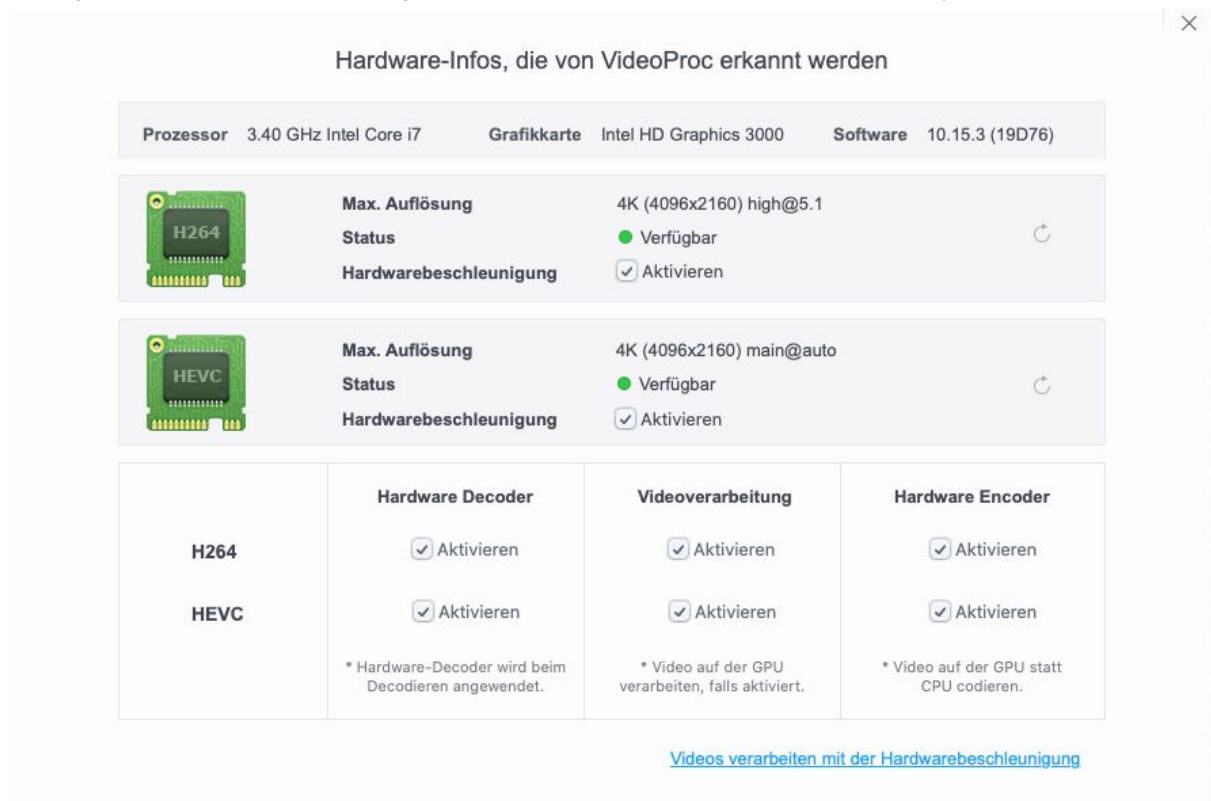
The VideoConverter started on an iMac 2011 with an Nvidia card will get a message like this (Hardware Converter Support: yes).



Nvidia users running VideoProc will get a feedback like this:



AMD users using the VideoProc should get this. You can force the program to search for graphics hardware by clicking the circle arrow icon on the right. It will take some time and then it comes usually back with this screen:



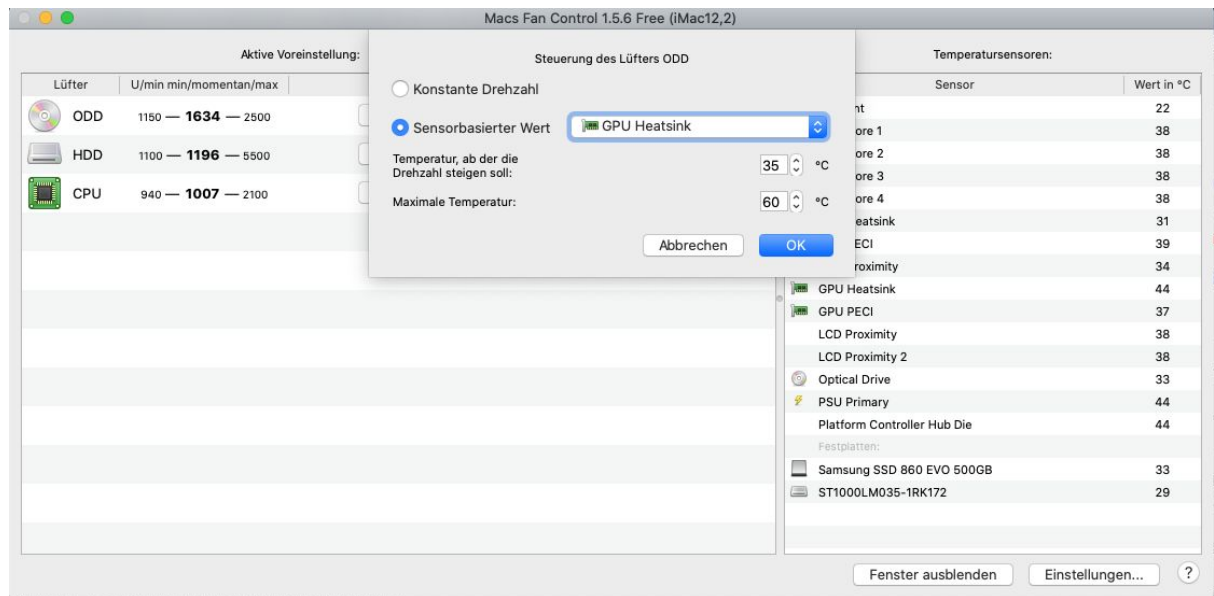
12. Heat Management

The final step before going into the long term use of your new graphics card is the management of the temperature inside your iMac. Because we still have no access to the original GPU die temperature we need to use Mac Fan Control (or a similar tool) and the GPU Peci or the GPU Heatsink temperature to control the ODD fan.

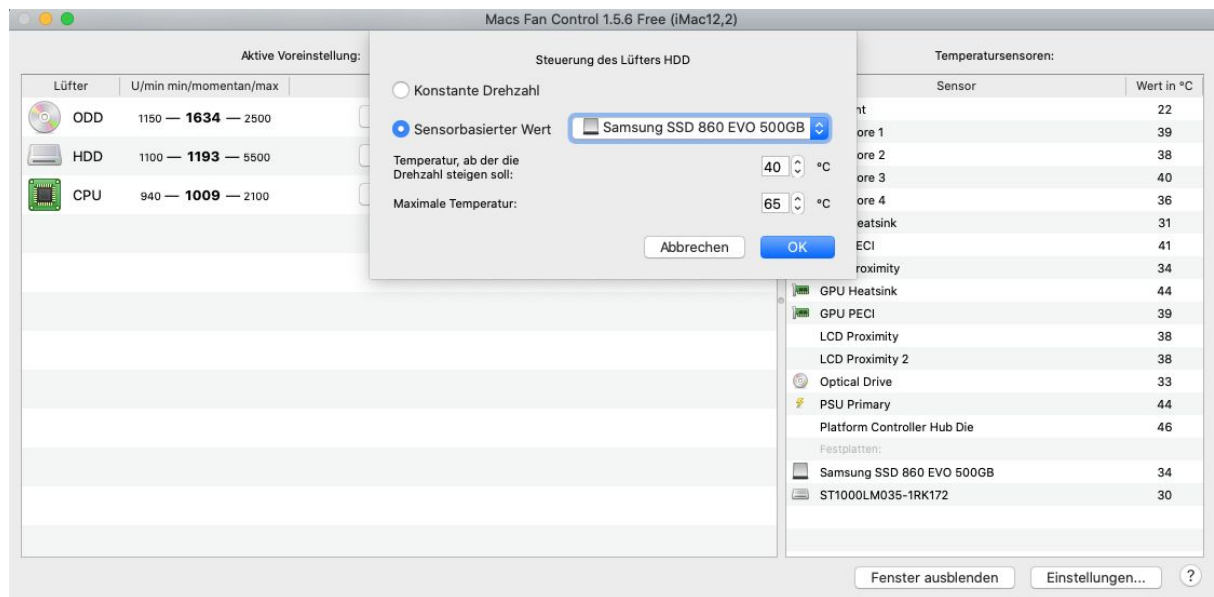
AMD user can check the temperature during operation using the tool GPU_Monitor_AMD found in the Tools folder. It opens a terminal window and reports every two seconds the recent data.

Since the GPU Peci may vary on a shorter timescale my recommendation is to use the heat sink temperature. Finally it is the heat sink which will be cooled directly by the fan, not the GPU itself. The same applies to the CPU heat sink. Assuming that you have additionally changed the old HDD with a new SSD and lost the temperature control there too you can use the following recommendations:

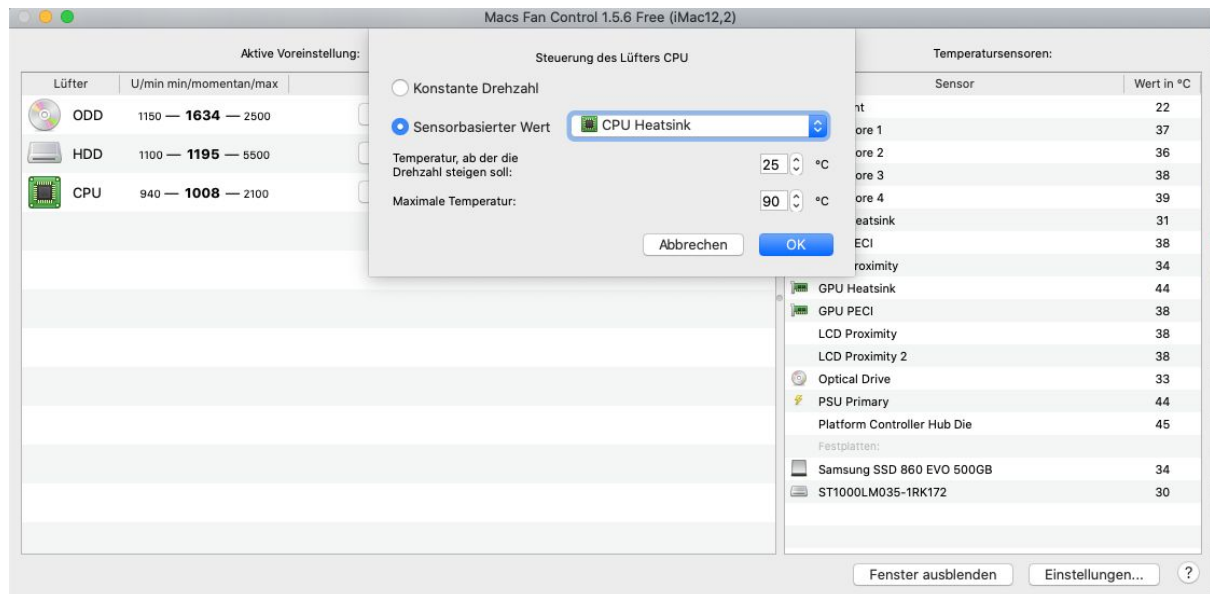
GPU and ODD:



HDD: (if you have installed the OWC sensor you do not need this)



CPU:



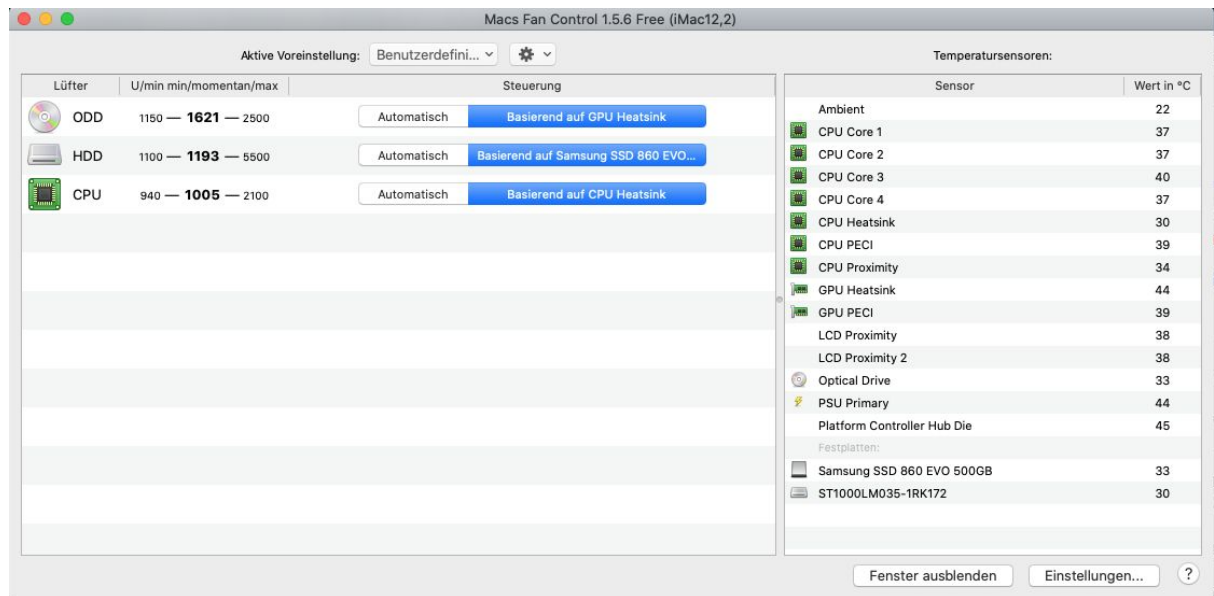
Automatic start on login:



Controlling the temperature of the machine is a complex task. While normal use never let the system run into the limits some hours of gaming might do this. If you know in advance this is coming ramp up the fans manually. Do not wait until the sink and components became so hot that even a fan at maximum cannot transport the heat out of the machine. You cannot cheat physics. Only with more physics.

You may chose also lower maximum values. Here at home we have barely more than 20 degrees room temperature, except in hot summers. Climate change is coming, but probably this iMac will not face it at the full extend.

Settings overview:



13. Finale

Please post your success and experiences in a brief message in our thread. Do not forget to describe your hardware settings.