



Alpine Ridge Thunderbolt Card Installation for Mac Pro 4,1->5,1 and 5,1

This guide is for **advanced users** or users that want more explanation of each step. For simplified, plug and play instructions, please see the “Quick Setup Instructions” in the Dropbox link.

Hackintosh Users:

If you are installing the Alpine Ridge card on a Hackintosh, please contact me.

Mac Pro Users:

Follow these instructions for a Mac Pro 4,1 or 5,1. For all other Mac Pros, the installation is the same, but if you're using a 3,1 or older, do not install OpenCore.

Download all instructions and OpenCore versions here:

<https://bit.ly/GCAlpineRidge>

Installing your Alpine Ridge Card

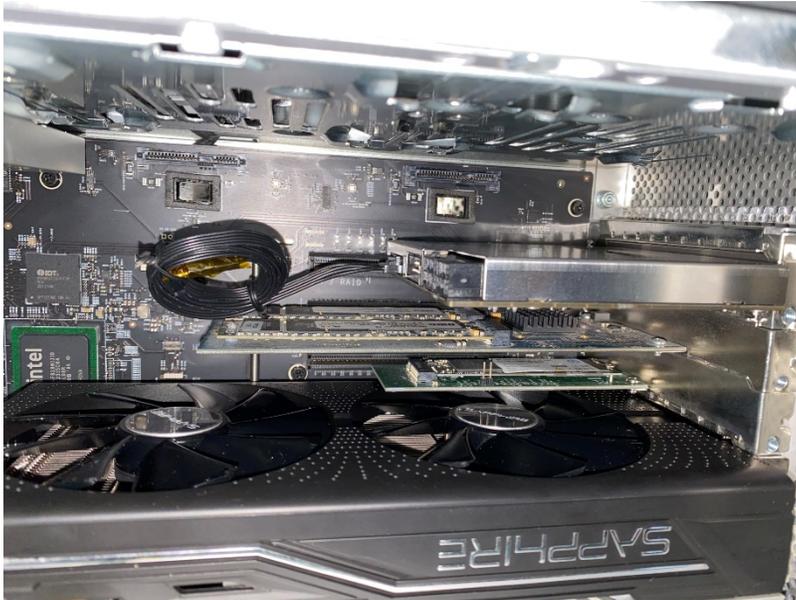
1. We recommend your macOS is High Sierra, Mojave or Catalina for Thunderbolt functionality to work. (Big Sur is not yet fully supported.) USB-C may work on older macOS versions, but this has not been fully tested – please let us know your results if you try older versions.
2. Insert the THB-C header cable into the Alpine Ridge card. The THB-C cable is the cable with the electrical tape on one side (the tape is covering a jumper for pins 1 and 3). This is necessary for your Alpine Ridge to work.

AR was designed for a PC motherboard with a C header, but an Apple logic board does not have header and therefore this jumper is required). Once plug it into the Alpine Ridge, you don't plug the end into anything else.



*The THB- this you other

3. With the power off/unplugged in your Mac Pro (cMP), make sure to install the Alpine Ridge card in slot 4 (the highest slot). You'll want to use a velcro strip or twist tie to make sure the cable doesn't touch anything else internally in your cMP (like a fan, etc). (For a 3,1, slot 3 often works better.)



If you have a USB add-in card, like a Sonnet, remove it until after you get the Alpine Ridge working. The USB speeds are excellent with the Alpine Ridge, so you'll probably find you no longer need your USB add-in card anyway. If you have a USB 3.1 AIC (Add-In-Card), this may conflict with the AR. USB 3.0 AIC seems to play nice with the AR, but I have heard mixed results from users. Some 3.1 AIC cards work just fine, so your mileage may vary.

4. Your Alpine Ridge card will work already, and I recommend testing it at this point. After changing any hardware, it's recommended to do a SMC/PRAM reset for three chimes and replacing your battery if you haven't done so in the last five years.

An SMC reset is simply unplugging your cMP for about 30 seconds. For a PRAM reset, hold the Alt/Option, Command, P, R keys right after hitting the Power button and don't let go until the 3rd chime.

If your Alpine Ridge is not showing up

I have seen that PCIe NVMe cards with multiple drives (4 drives for example) may be the reason. Try removing it temporarily to see if the AR shows up. Please contact me if you have this issue.

It's also recommended that you're on the latest Boot ROM Version. You can click on the Apple icon on the top left of your desktop, click, "About This Mac," and then, "System Report." For a 4,1->5,1 or a true 5,1, the latest version is 144.0.0.0.

You may have to boot once or twice for your Thunderbolt/USB device to activate. You don't need to boot to Windows anymore like in the old days, but simply rebooting (not doing a full shutdown, but a **Restart**).

Is the mini DisplayPort the same as TB2?

No, it is not! For further reading, please see the GC-Alpine Ridge manual on the Dropbox link or the latest revision that can be downloaded on Gigabyte's website. This will give you information about installing the (mini) DisplayPort cables, etc. Although it appears the DisplayPorts look exactly like a TB2 port, they are not TB ports. For TB2 or TB1 you will need an adapter.

Why is only one Thunderbolt port working?

This is normal. Both ports may not work at the same time on a Mac Pro. For this reason, if you have multiple Thunderbolt devices, we recommend daisy chaining them off of one port.

Installing OpenCore For a Boot Screen, Hardware Acceleration and Hot Plug Support

Should I install OpenCore?

Installing OpenCore (OC) may offer you some advantages. However, it may not. Many Universal Audio Apollo users report panics when using OC with the SSDT (versions 1 and 3 contain the SSDT). If you are using UA hardware, I recommend using your AR without OC or you can use Version 2, since it doesn't inject the SSDT. See below if your system qualifies.

When OC works properly, it often allows better hot-swapping/hot-plugging, devices will show up easier without the need to reboot, hardware acceleration, and a boot screen depending on which version you install.

The video benchmarks we've done have shown a 300% increase with your graphics card. You'll notice the speed increase.

Do I need the Alpine Ridge to use OpenCore?

Version 2 gives you hardware acceleration and a boot screen and will work even if you aren't using an Alpine Ridge card. I recommend re-installing your devices' drivers/software if you're having trouble making a connection to your device. This is especially true for UA hardware.

What to know before you install OpenCore

It's also been reported that certain NVMe drives/adapters may not allow OC to function if you install it on that drive. I recommend installing OC on a SATA drive (not your boot drive) - or even better, on a macOS USB installer thumb drive so you can test functionality (you can still leave your NVMe drive in your cMP). You can install OC on any SATA drive. It is not necessary to install it on your boot drive and also **NOT** recommended.

The reason I recommend installing it on a macOS USB installer thumb drive is because every now and then I'll hear from someone that installs OC, tries to boot, and then only sees black. If you install OC on the thumb drive, you simply pull out the USB, do a PRAM reset, and OpenCore is gone.

However, if you install OC on your boot drive, you'll be in a Catch 22. If you can't boot or only see a black screen, you won't be able to delete it. You'll need to hook up your boot drive to another computer externally to delete OC. This isn't worth the aggravation, so that's why I urge you to install it on thumb drive or at the very least a non-bootable SATA storage drive that can be removed if there's an issue (and followed by a PRAM reset because OpenCore will still continue to live in your NVRAM until you do a PRAM reset).

Don't see a boot screen after installing OpenCore?

If you don't see a boot-screen after installing OC, it has been reported that it's sometimes caused by using multiple monitors. Try disconnecting all but one monitor at boot as a test. If you're still not seeing it, try switching to a different port on your video card or changing your monitor cable.

OpenCore Installation Instructions

1. If you haven't done it already, before starting, this is a good time to do a SMC/PRAM reset because it re-enables SIP (you'll understand as you read on). An SMC reset is simply unplugging your cMP for about 30 seconds. For a PRAM reset, hold the Alt/Option, Command, P, R keys right after hitting the Power button and don't let go until the 3rd chime.
2. Disable SIP. To do this, boot to RECOVERY or a USB macOS installer, open Terminal, and Type:

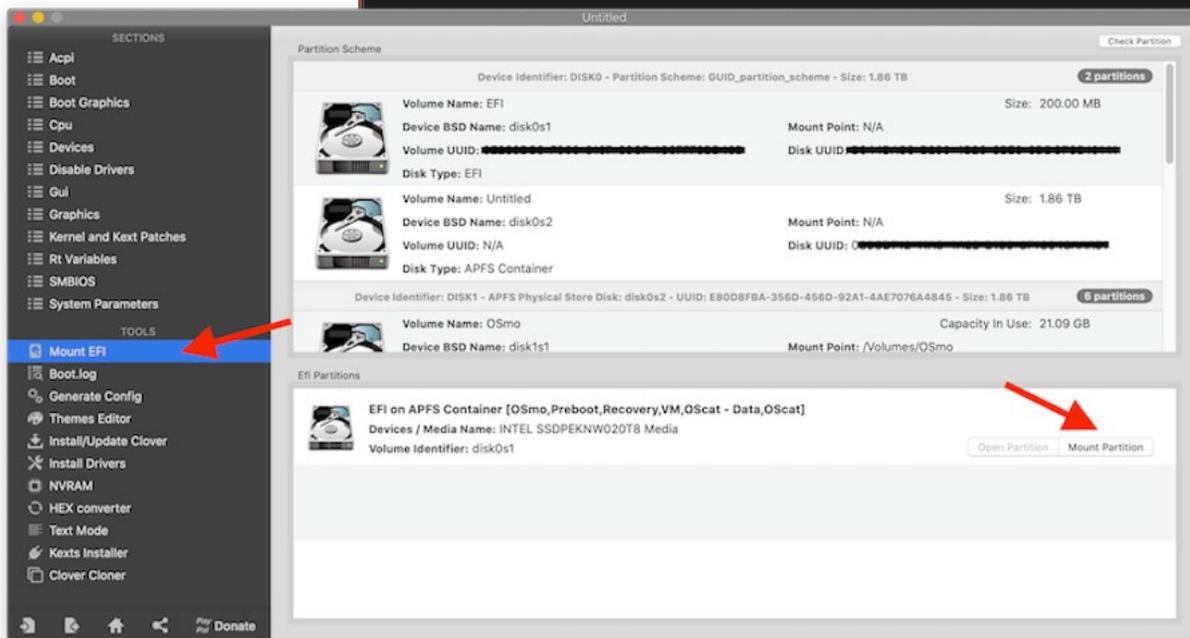
`csrutil disable`

Restart and boot to macOS as you normally would. You can check if SIP is disabled in macOS Terminal by typing:

`csrutil status`

```
anguilla — zsh — 80x24
Last login: Sun May  3 15:03:01 on ttys000
anguilla@Anguilla ~ % csrutil status
System Integrity Protection status: disabled.
anguilla@Anguilla ~ %
```

3. Open Clover Configurator (you may have to right-click and click Open).



Click Mount EFI (middle left and first one under Tools), find your local SATA or USB drive (you can experiment with your NVMe drive later), Mount Partition, and Open Partition.

4. In the EFI drive, you may already have an EFI folder or you may not. If you already have it, it most likely contains an APPLE folder. Don't delete the APPLE folder (although nothing bad would happen if you did). You're going to add the BOOT and OC folders to the EFI folder. If you don't have an EFI folder at all, you're going to copy the whole EFI folder from the choices below.



Which version of OpenCore should I install?

Now you have three choices:

OC Version 1

1) If you have a modern AMD video card (RX-460 or better) WITHOUT a boot screen like the popular RX-580, copy the OC and BOOT folders from the EFI folder under the, "1) OpenCore 0.6.3 BootScreen - Acceleration - Yes SSDT - 15 Second TimeOut." folder to the EFI partition you just mounted.

*Note: Advanced users can also try any older versions in the Archive folder to see if you gain added stability, but so far, we have found the newer versions are just as stable, but also contain additional bug fixes. This version gives hardware acceleration, a boot-screen, and also injects the Alpine Ridge SSDT. The SSDT helps with hot-swapping/hot-plugging and devices showing up on the first boot, but in some instances can cause kernel panics (I mostly hear from Apollo users about this, but some have no issues. Many Apollo still live with the panics because it offers them some added benefit and the panics aren't that big of a deal).

OC Version 2

2) If you have a modern AMD video card (RX-460 or better) WITHOUT a boot screen like the popular RX-580, but would rather not inject Titan Ridge SSDT (this will work even if you don't have a AR card), copy the OC and BOOT folders from "2) OpenCore 0.6.3 BootScreen - Acceleration - No SSDT - 15 Second TimeOut."

This version gives hardware acceleration, a boot-screen, but since there is no SSDT, hot-swapping/hot-plugging may not be as good. This may be nice to try especially if you have Universal Audio Apollo hardware.

OC Version 3

3) If you do not have a modern AMD video card, or if you have an nVidia video card, or if you have a video card WITH a native boot screen, copy the OC and BOOT folders from the EFI folder under the, "3) OpenCore SSDT ONLY" folder to the EFI partition you just mounted. Do not use any other version. This SSDT ONLY version *only* supports hot-swapping/hot-

plugging. It does not add any hardware acceleration or a boot-screen,etc.

Once you've copied an OpenCore Version to your EFI Partition

1. Whether you picked Choice 1, 2, or 3, either way:
Run **Bless OpenCore**

After Bless runs there is no confirmation afterwards. You may see the Automator icon run quickly up at the top right of your screen (left of your clock), but it happens fast so you may miss it.

2. Reboot. You may have to reboot to Recovery too and then boot back to macOS. Afterwards, Thunderbolt will show up each time on a regular boot.

*NOTE: Most Thunderbolt hubs & docks are helpful for making your connected devices mount as well as for hot swapping/hot plugging. My goal is to find the least expensive, most effective dock/hub. So far, though, I haven't heard a bad word about any of them. However, I would appreciate it if you could report back on your findings so I can share them with other users.

Have you replaced the battery in your Mac Pro recently?

This is a friendly reminder to replace the coin-sized battery in your Mac Pro (cMP) if you haven't done so in the last five years (this can cause all kinds of wonky problems). Be careful not to break the battery prong off - it's easy to do. Never lift the prong, but instead slide the battery out from the side with something that doesn't conduct electricity (I like to use a wooden chopstick).

Should I re-enable SIP?

When you do a PRAM reset it will re-enable SIP. Keep this in mind if you would like to easily enable SIP, but you will have to disable SIP again in Recovery or a USB installer Terminal if you prefer to keep it disabled to use OpenCore. If you enable SIP, OpenCore will not work.

How to Uninstall/Remove OpenCore or Try a Different OC Version

1. To remove OpenCore, you will follow the same installation instructions on mounting the EFI partition with Clover Configurator. After mounting the EFI partition, simply delete the OC and BOOT folders or alternatively you can delete the whole EFI folder (deleting the Apple folder will not cause any harm). If you installed OpenCore on a macOS USB installer thumb drive, you can either delete the OC and BOOT folders or simply remove the thumb drive.
2. **IMPORTANT:** After deleting the folders, shutdown your computer and do a PRAM reset for two to three chimes. This is important because OpenCore will continue to live in your NVRAM and will not fully go away until you do the PRAM reset.

This is also important to know if you'd like to try a different version. After deleting the OC and BOOT folders (or the whole EFI folder), you must do the PRAM reset, but because doing the

PRAM reset re-enables SIP, you'll now have to go through the process of disabling SIP again and following the installation instructions from square one.

**I understand this is a little frustrating and time consuming, but this is how it needs to be done and hopefully you can appreciate how much time it takes for testers like us to try new versions. Developing the new versions takes an enormous amount of our time because of all the steps involved!

How to Confirm Hardware Acceleration is Working

If you are using a Hardware Acceleration version of OpenCore and would like to test if Hardware Acceleration is working, go to this website and download the macOS version:

<https://www.videoproc.com/>

Mount the .dmg - you don't need to drag it to the Applications folder. Right click and click Open.

Click Remind me Later.

Click No thanks to any offers.

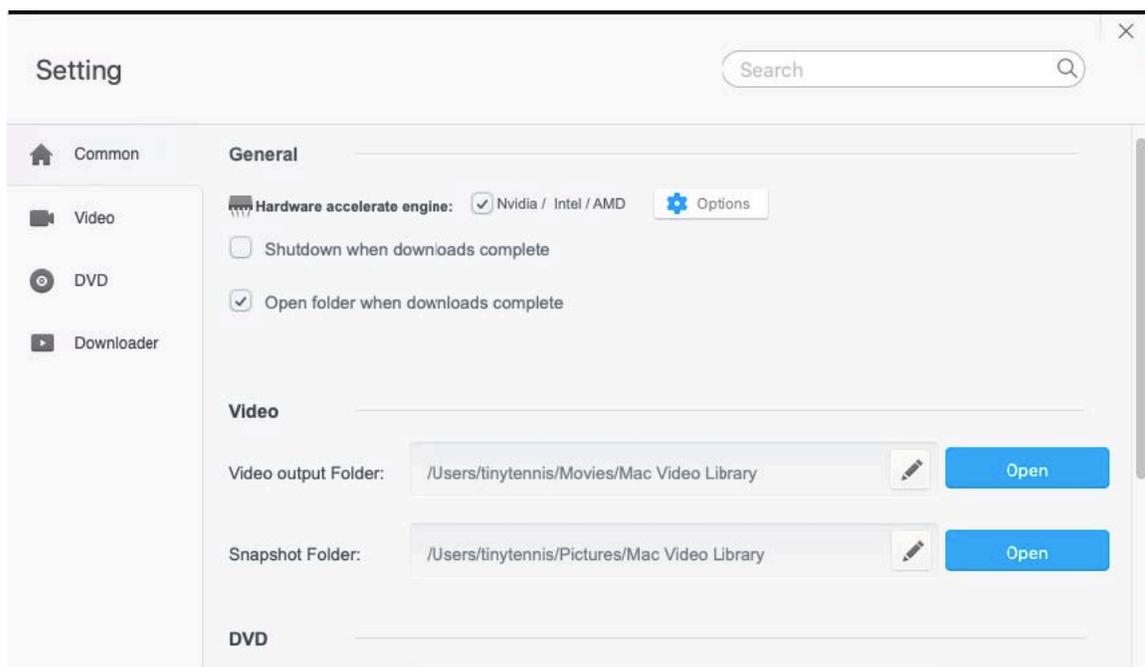
Click Setting in the bottom right corner.

Up top make sure there is a check mark for Hardware Acceleration. Click Options to the right of it.

You can test/see here if Hardware Acceleration is working. It should be enabled if everything is working properly.

If it's running, you will notice significant speed improvements. You can close VideoProc and delete it.

See the two pictures below taken from a NUC Hackintosh working successfully.



Hardware Info Detected by VideoProc

Processor	2.30 GHz Intel Core i5	Graphics	Intel Iris Plus Graphics 655	Software	10.15.4 (19E287)
	Max Resolution	4K (4096x2160) high@5.1		Status	● Available 
	Hardware Accel	<input checked="" type="checkbox"/> Enable			
	Max Resolution	4K (4096x2160) main@auto		Status	● Available 
	Hardware Accel	<input checked="" type="checkbox"/> Enable			
	Hardware Decoder	Video Processing	Hardware Encoder		
H264	<input checked="" type="checkbox"/> Enable	<input checked="" type="checkbox"/> Enable	<input checked="" type="checkbox"/> Enable		
HEVC	<input checked="" type="checkbox"/> Enable	<input checked="" type="checkbox"/> Enable	<input checked="" type="checkbox"/> Enable		
	<small>* Hardware decoder will be applied in decoding.</small>	<small>* Process video in GPU if enabled.</small>	<small>* Encode video in GPU instead of CPU.</small>		

FINAL NOTES

I'm constantly testing as many devices as I can and keeping a log, so please report back to me what devices work and what don't. I update these instructions from time to time as well as useful files like OpenCore, and I'm also testing new firmware, so check back to the DropBox link every now and then.

We strive to give you the best customer service. If you have any issue, please reach out to us first before opening a case with eBay. You can also call me if you're having a hard time or if you send an email and we don't get back to you within three days.

We were featured/spotlighted in Low End Mac. This article will provide even more information about the Titan Ridge as well as the Alpine Ridge.

<https://lowendmac.com/2020/the-mac-pro-31-to-51-gets-thunderbolt-3/>

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Contact us if you use more than 6 disk drives or 15+ TB in storage. We can show you to achieve SSD speeds, but with HDD spindle drives and achieve NVMe speeds with SATA SSD drives. You heard that correctly. Don't buy another drive or external enclosure without reaching out to us first. You'll spend about the same amount of money and have a *far* superior storage system (powerful enough to transcode Plex).

Apple

We can unlock most Apple computer 2017 or older (EFI, iCloud, and password locks), delid any processors you need, and add a native boot screen to HD 7950, HD 7970, and R9 280X graphics cards.

When was the last time you updated the GOP on your video card? Please reach out if you'd like to gain added stability with your system.

Hackintosh

Ask about our Apple Mac Pro 7,1 Hackintosh! Our builds run smooth because they are custom programmed and/or flashed. We will make a custom BIOS if needed.

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