

4K Universal and 816^{2K} PC Specifications

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In general, we have worked hard to make this unit compatible with most any, off the shelf 64 bit system. While it can be used with a laptop, it is not recommended since laptops inherently limit future modifications or upgrades to the physical system. Also, laptops typically cost more since you are paying for convenience and portability over performance. The best value (in our opinion) is going to be a standard PC tower. They usually have plenty of room inside to allow the addition of extra drives and adding RAM is never an issue. The PC brand we find that seems to reliably work right out of the box is HP but others will likely work just fine. What we do not support are custom or home built PCs nor Windows running on a Mac system. We currently do not support Lenovo PCs as too much malware has been reported by customers. That may change.

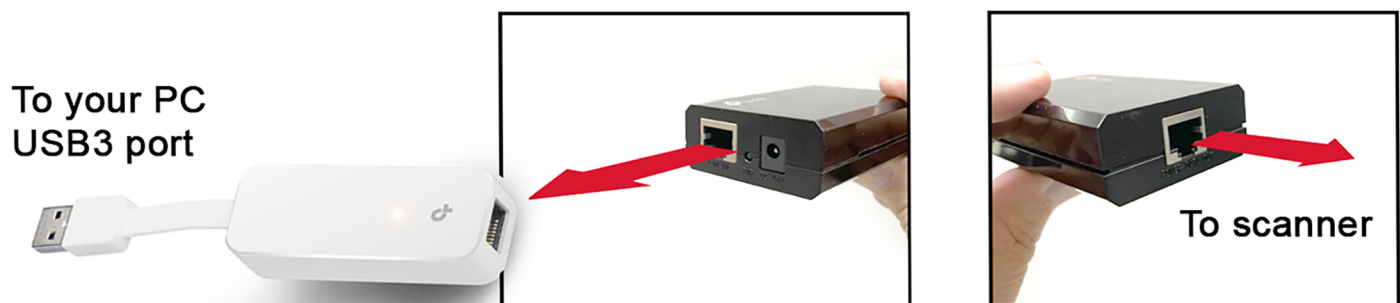
Hard Drive Choice

Because of their wide availability, low cost and proven dependability, regular 7200 rpm drives are still a preference. However, at this point, Solid State Hard Drives (SSD) are fast becoming the standard in all new PC systems. That said, not all SSDs are the same. If you are going to buy a system with an SSD in it, make sure that the SSD uses what's known as NAND flash memory. Regular flash memory is fine for things like Word or general storage or doing stationary graphics like Photoshop. Regular flash memory is also cheaper than NAND and allows more write/erase cycles but doesn't have the speed required to keep up with the Mark-II scanning process. NAND flash memory costs a bit more and has fewer write cycles but is lightning fast and seems to outperform spin drives. If you aren't sure about what SSD to purchase, you can always use a pair of regular spin drives in a standard Raid-0 configuration. Either way, you should not record to your system (C) drive nor should you record to an external drive during scanning. However, you can export to an external drive of any type with no issues.

Connectivity

The cameras in both the Universal 4K Mark-II and the 816^{2K} use an Ethernet connection and not a more typical USB. However, we have found through experience that most PCs will not function properly if connection from the scanner to the PC is limited to just the Ethernet port. Therefore, you will need to purchase the following two items. They are commonly available on Amazon.com:

TP-Link USB to Ethernet Adapter (UE300) **TP-Link 802.3af Gigabit PiE Injector**



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Windows 10 Pro

(Windows 11 seems to work ok but has had minimal trials)

3.1 GHz or faster Intel i7 or above (no AMD)

32 gigs of RAM

(16 gigs minimum might work, depending on system efficiency)

USB-3 port with TP-Link adapter

System (C) drive: 7200 rpm or SSD (any type)

Capture drive: Separate Internal NAND SSD

- OR -

**Separate Internal 7200 RPM drive (small resolution files)
2 x 7200 RPM in Raid-0 configuration (high resolution files)**

Conceptually, you will always have a separate system (C) drive that you (ideally) never record on.

For scanning, you will want a separate internal drive fast enough to keep up with the capture rate.

For compressed, low resolution capture files, you might get away with a separate, single, internal 7200 rpm spin drive for capturing as long as you never go above about 50% and defrag often.

For higher performance requirements and/or added volume, you should consider adding a separate, internal NAND type SSD of the appropriate size for your capture needs or a Raid-0 configuration using a pair of regular 7200 rpm spin drives. (If unfamiliar, see next page for explanation.)

But whether big or small, SSD or spin, you should allow for about 50% open space on your capture drive. When a drive gets above 50-60% full, the efficiency of the drive begins to degrade. And, if that drive is fragmented from deleting files, then the performance can be further affected. In all, I would suggest having a capture drive of at least 2TB since that would always guarantee you a bit over 1TB of reliable high performance drive space to capture on. But defragging is still highly recommended.

However, after capture, you will be exporting your files to a different drive which can be SSD or spin, internal or external. The export drive makes no difference, in terms of type or speed.

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What is a Raid-0 configuration?

There are essentially two main types of multi-drive configurations: Raid-1 and Raid-0.

A “Raid-1” uses two identical drives of the same make, manufacturer, model and size. Incoming data is written to one drive and also duplicated on the other drive. So the second drive is a back up of the first drive. If you have two identical 250 gig drives in a Raid-1, your PC will show that as only 250 gigs of drive space since the second drive is a “ghost” or “mirror” drive hidden from your system File Explorer. This configuration is very common in business computers where valuable data storage and retrieval is important. In this configuration, your C drive is typically also part of the Raid-1 drive. But, because it is writing the same information twice, a Raid-1 is obviously pretty slow and not fast enough to keep up with the scanning rate of the Mark-II.

A “Raid-0” also uses two identical drives. But, instead of one drive being a mirror of the other, all the incoming data is simultaneously split evenly across both drives. In this configuration, if you have two identical 250 gig drives, they will show up in your File Explorer as one 500 gig drive. So the beauty of this configuration is that your PC will see two ordinary 7200 RPM 250 gig drives as one, super fast, 14,000+ RPM 500 gig capture drive. Your system will also be able to read from those drives at about double the normal rate, as well. So playing back dense files is easier with no hang ups or stalls (Ideal for editing!) Two 250 gig drives was used as an example but you can use any two drives of any size as long as they are identical in all respects. But, and this is important, your C drive must NOT be on your Raid-0 array. So, in reality, if using a Raid-0 configuration, your PC will have three drives. One will be your C drive and the other two will form your Raid-0 array.

If you employ a NAND type SSD as your capture drive, then you don’t really need a Raid-0 configuration but there is nothing to prevent you from doing that with solid state drives. It would certainly be very fast! But, again, whether using SSDs or spin drives for your Raid-0 array, your C drive should always be separate.

If you have any questions, feel free to Roger Evans at 830-966-4664.
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