Operation Manual

Disk Speed Test

Blackmagicdesign

Mac OS X™

Windows™

May 2011

2 Disk Speed Test

Welcome to Disk Speed Test.

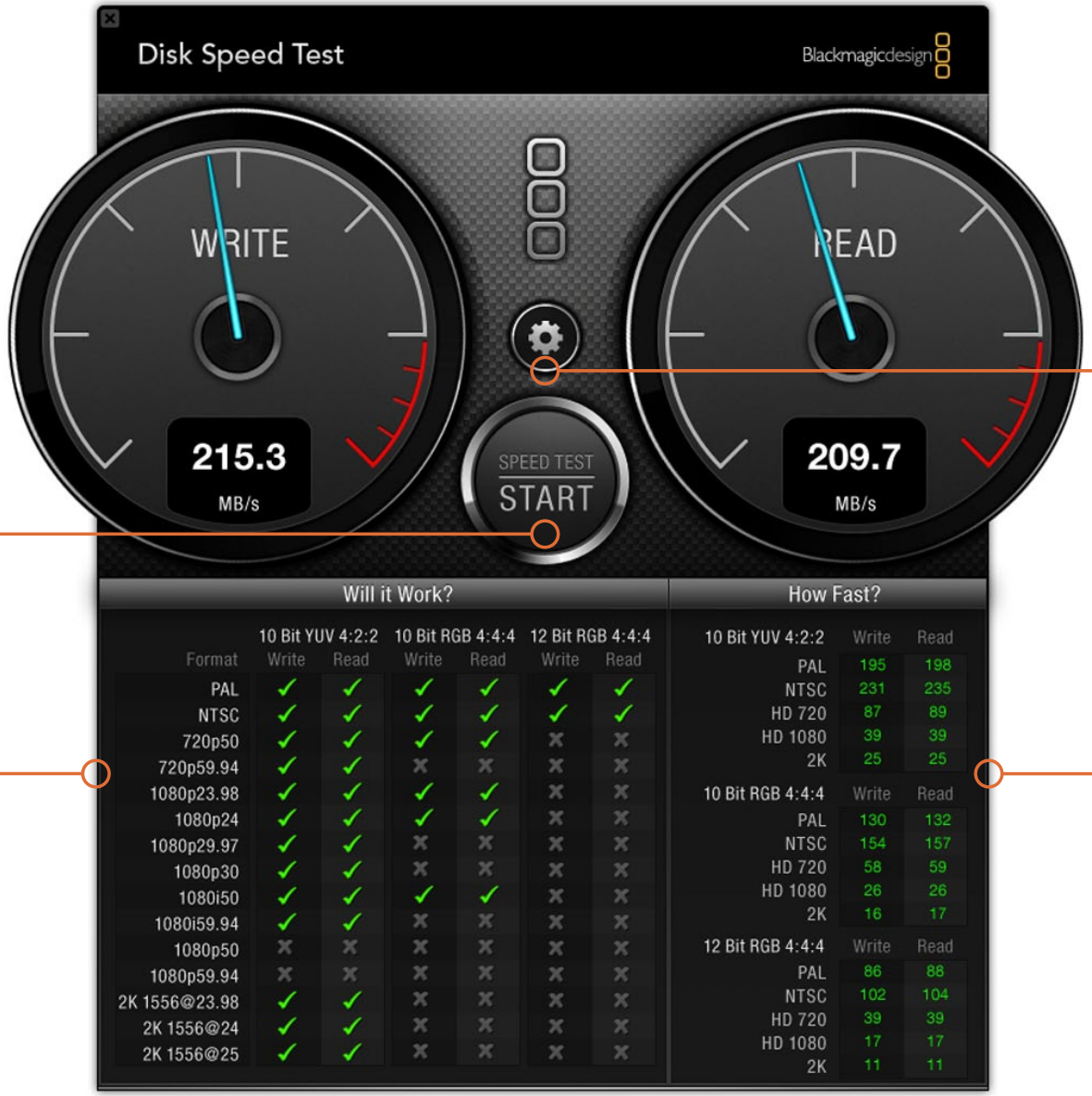
Blackmagic Design Disk Speed Test is a beautiful and fun to use application that measures the read and write performance of storage media in video frame sizes. The use of video frame sizes provide accurate measurement of how the disk storage will perform with video related applications.

If you have ever wondered whether your hard drive is suitable for playback ("read") of a particular video format, you can use Disk Speed Test to find out. With its user friendly interface and easy to understand layout, it is now simple to understand what performance you can get out of your media drives with a single click of the Start button! Disk Speed Test will even show you how many streams of video your storage is capable of handling!

Disk Speed Test is included free with any Blackmagic Design product installation and can also be downloaded from our website free of charge.

Disk Speed Test takes the guess work out of configuring your storage system for optimal performance for any job you will be doing.

3 Disk Speed Test – Interface



START

Click this button once to start the disk speed test. Click again to stop the test

Will it Work?

This panel shows which video formats can be supported by your disk storage

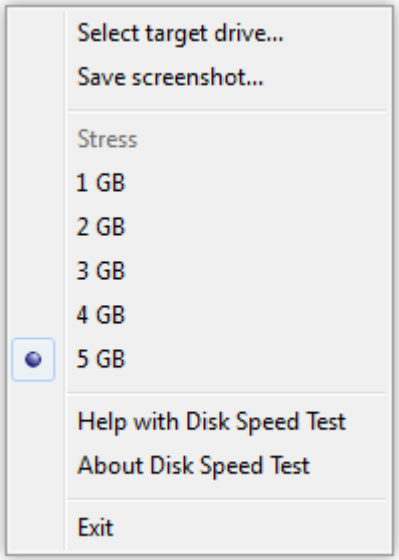
Settings

Click this button to access the settings before running a disk speed test

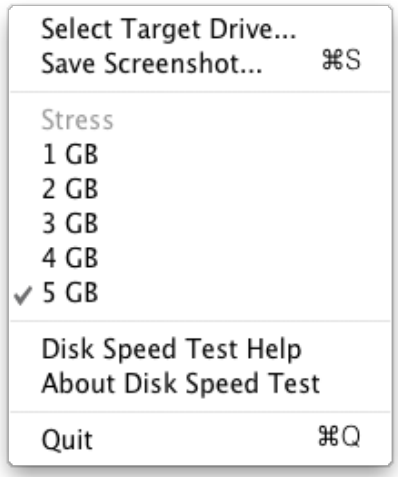
How Fast?

This panel shows results in frames per second (fps)

4 Disk Speed Test – Settings



Settings menu in Microsoft Windows



Settings menu in Mac OS X

Disk Speed Test settings are accessed by clicking on the Settings button, just above the Start button.
On Mac OS X, the same settings are also available from the Menu Bar at the top of your computer display.

Select Target Drive…

Click `Select Target Drive` to choose the storage volume you wish to test. Ensure you have Read and Write permissions for the selected volume as Disk Speed Test will write a temporary file to it. This file will be automatically deleted when you quit Disk Speed Test.

Save Screenshot

After testing your disk storage, click `Save Screenshot` to save a screenshot of the results to a chosen location. This option is very useful if you need to provide technical information to a support person or when you want to post disk speed results to a website. The screenshots are saved in the PNG format and it is a good idea to provide a descriptive file name that indicates which disk storage was tested or on what computer the test was performed or if a special configuration was used.

Stress

The `Stress` option lets you pick the size of the temporary file that Disk Speed Test will write to the selected disk. Disk Speed Test limits each write operation to a maximum of 8 seconds and each read operation to a maximum of 8 seconds so you do not have to wait long to obtain results.

Most people should select the `5 GB` option for the most technically accurate test which averages out any fluctuations in disk performance. Choosing the highest stress test value ensures that Disk Speed Test will not report artificially fast results due to the disk cache on conventional hard drives. Once the disk cache has been flooded with data, the real speed of the disks will be seen which will be slower than the disk cache speed.

Lower stress settings may be chosen if you want to demonstrate the speed of disk storage quickly. The `1 GB` option would be a good choice on a trade show booth to rapidly show the read and write performance of a disk array even though the results might not be quite as accurate as when the `5 GB` option is selected.

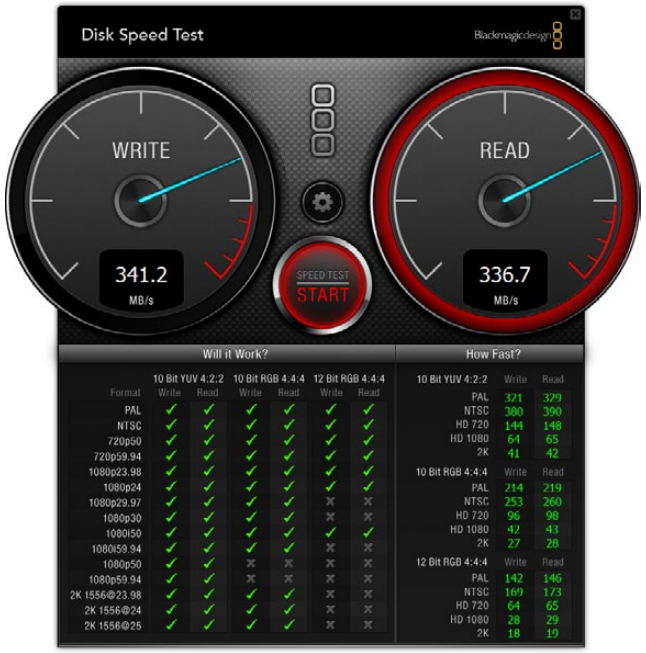
Disk Speed Test Help

Click `Disk Speed Test Help` to launch the PDF manual for Disk Speed Test.

About Disk Speed Test

`About Disk Speed Test` displays which version of the Disk Speed Test you are running.

5 Disk Speed Test – Results



Disk Speed Test interface during a test

Once you have chosen the desired settings, click the `Start` button to commence the disk speed test. Disk Speed Test will write a temporary file to the selected target drive. When the file has finished writing, or when 8 seconds has elapsed, Disk Speed Test will stop writing and start reading back the temporary file from the drive.

Disk Speed Test will continue writing and reading the nominated size of stress file until you stop the test by clicking the `Start` button again.

Each write test will write a new, temporary, stress file and the previous one will already have been deleted so Disk Speed Test will never use more disk space than the nominated size of stress file, e.g. 5 GB. When the Disk Speed Test application is closed at the end of testing, the final temporary file will also be deleted so your disk storage won't fill up with test files.

After each Read or Write test, the results will be displayed in the "How Fast?" panel. The "Will it Work?" panel can help to identify video formats where the Read performance might be significantly different to the Write performance. These differences might mean that you can capture a video format but not play it back in real time or else you can play back a video format but not capture it in real time.

The "Will it Work?" panel shows common video formats and instantly displays a check mark or cross to show if the disk performance will be adequate for the desired video format. We suggest you allow Disk Speed Test to perform several test cycles to help reveal any video formats for which the disk storage performance might be marginal. If you observe a check mark and a cross switching between each other for a video format, this would indicate that the disk storage cannot reliably support the video format.

6 Disk Speed Test – Results

The "How Fast?" results panel shows the frame rates your drive can achieve in frames per second and should be read in conjunction with the "Will it Work?" panel. If the "Will it Work?" panel shows a green check mark for 2K 1556@25fps in 10 Bit YUV 4:2:2, but the "How Fast?" panel shows that a maximum of 25fps will be supported, the disk storage performance is too marginal to be reliable. A faster disk array or a less demanding video format should be used for reliability. SSD storage does not fluctuate much in speed and so an SSD disk array would not need to perform much faster than the video format. However conventional hard disks slow down significantly as they fill up and a larger safety margin is required for reliability. In this example, it would be best if a conventional disk array of hard drives showed performance of at least 30fps to be safe.

The "How Fast" results panel also enables you to see how many streams of video can be supported by your disk storage. If the result for "HD 1080" is 70, you can run up to 70 frames of HD 1080 video per second.

This storage speed is capable of supporting the following video formats:

- 2 simultaneous streams of 1080i50 video at 25 fps per stream
- 1 stream of 1080p50 video at 50 fps per stream
- 1 stream of 1080p59.94 video at 59.94 fps per stream

Important note about Solid State Disk (SSD) speeds

Some models of SSD cannot save video data at the speed indicated by the manufacturer because the disk uses hidden data compression to reach these higher write speeds. This data compression technique can only save data at the manufacturer's claimed speed when storing simple files or simple data, such as blank data. Video data includes video noise, and more random pixel data which does not compress much, so the true speed of the disk is seen.

Some SSD's can have up to 50% lower write speed than the manufacturer's claimed speed, so even though the disk specifications claim an SSD is fast enough to handle video, in reality the disk is not fast enough for real time video data capture. Hidden data compression mostly affects capture and often these disks can still be used for real time playback.

Use Blackmagic Disk Speed Test to measure accurately if your SSD will be able to handle uncompressed video capture and playback. Blackmagic Disk Speed Test uses data to simulate the storage of video so you get results similar to what you will see when capturing video to a disk. This will let you find models of SSD that work well for video capture. In our testing, we have found larger newer models of SSD, and larger capacity SSD's are generally faster. Blackmagic Disk Speed Test also tests the speed of disks connected to eSATA docks and other interfaces, which can affect disk performance.