

## DATA SHEET



### v310

1 Megapixel at 3250 fps

Widescreen 1280 x 800 resolution

Maximum speed 500,000 fps

Minimum shutter 1  $\mu$ s

Phantom CineMag® compatible

#### Key Benefits:

#### WHEN IT'S TOO FAST TO SEE, AND TOO IMPORTANT NOT TO®

Vision Research sets a new standard for affordable, high-performance 1 megapixel digital high-speed cameras with the new Phantom v310.

**Take the wide view** with our custom-designed 1280 x 800 CMOS sensor. The wide aspect ratio of the v310 allows you to keep moving targets in-frame longer and see more of the event you are recording. The v310's widescreen aspect ratio also provides the unique ability to shoot 1280 x 720 HD with a one megapixel camera.

Get 3,250 frames-per-second (fps) at full resolution. At lower resolutions, you will get even higher frame rates, up to 500,000 fps.

With an active pixel size of 20 microns and improved quantum efficiency, the Phantom v310 camera has **sensitivity** you need for even the most challenging lighting conditions.

You can eliminate blur and see the most minute detail by using **short exposure times**. On the v310, you can set the exposure to as little as 1 microsecond.

#### Key Features:

Custom-designed 1280 x 800 CMOS sensor

3250 frames-per-second (fps) at full-resolution

High-resolution timing system: Better than 40 ns resolution

Extreme Dynamic Range (EDR): two different exposures within a single frame

Optional Internal Shutter: hands-free/remote current session reference (CSR)

Memory Segmentation: Up to 64 segments

Non-volatile, hot-swappable Phantom CineMag memory magazines (256 GB & 512 GB)

CineMag to CineStation®

Range Data input

Built-in Memory: 8 GB, 16 GB, 32 GB

ISO (ISO-12232 SAT): 7000 Mono, 2100 Color

Pixel Bit-depth: 8- and 12-bit

Gb Ethernet

View recordings immediately via video-out port

4:2:2 HD-SDI output

Phantom v310,  
setting a  
new price/  
performance  
standard for  
1 megapixel  
digital  
high-speed  
cameras.

The camera supports **8- and 12-bit pixel depth**. Smaller bit-depth gives you more recording time and smaller files. Greater bit-depth gives you more gray levels and finer detail. With the greater latitude of 12 bits, you can pull more detail out of the image.

The v310's **high-resolution timing system** yields a timing resolution of better than 40 ns. Frame rate, frame synchronization and exposure accuracy are all improved over previous generations of high-speed cameras. And, a frame synchronization signal is now available via a dedicated BNC for easier cabling and increased signal integrity. This makes the camera perfect for **PIV applications** with a 700 nanosecond straddle time and no image lag.

Of course, the v310 offers our unique **Extreme Dynamic Range** (EDR) feature giving you the ability to get two different exposures within a single frame. And, with **auto exposure**, the camera adjusts to changing lighting conditions automatically.

There is an optional **internal shutter** that can cut off all light to the sensor when doing a session-specific black reference (CSR). You can now do **remote CSRs** through software control without the need to manually cover the lens!

The v310 comes with 8 GB of high-speed dynamic RAM standard, but you can order 16 GB or 32 GB versions. Our **segmented memory** allows you to divide this into up to 64 segments so you can take multiple shots back-to-back without the need to download data from the camera.

Or, record directly to our **Phantom CineMag** non-volatile, hot-swappable memory magazines using the optional CineMag interface. Continuously record full resolution cines into non-volatile memory at up to 700 fps at full resolution. That's up to 5 minutes into the 256 GB CineMag or 10 minutes into the 512 GB CineMag. (A 128 GB version is coming later this year.) Or, record at higher speeds into camera RAM, then manually or automatically move your cine to the CineMag. With CineMag storage you get maximum data protection and an ideal storage medium for secure environments.

Move the CineMag from the camera to a **CineStation** connected to a PC and view, edit, and save your cines using the Phantom Software supplied with the camera. Keep them in their original cine raw format, or convert them to TIFF, QuickTime, AVI, or a number of other formats. Move the files from the CineStation to a disk or tape deck via 10Gb Ethernet, HD-SDI, or Component Video outputs.

When used on a tracking mount, elevation and azimuth data can be transferred to the camera and associated with image frames through our unique **Range Data** input.

**View your recordings immediately** in a variety of formats either through the HD-SDI ports on the camera, or through the component video viewfinder port. There are **two HD-SDI ports** each with 4:2:2 video out. And, any viewfinder compatible with our Phantom HD camera can now be used with the v310.

The v310 is controlled by the feature-rich Phantom Software. If you've used any Phantom camera before, you will know how to run the v310.

The v310 comes in two base models, either with or without a CineMag interface. All models come in either color or monochrome configurations.

H	V	FPS*
1280	800	3,250
1280	720	3,650
1024	800	4,040
1024	512	6,300
720	480	8,750
640	480	10,300
512	512	11,700
256	256	40,500
128	128	123,650
128	64	228,680
128	32	397,500
128	8	500,000

\*Typical results



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## v310



### Additional Features:

Analog Viewfinder Out: PAL, NTSC & HD Component (720p)

4:2:2 HD-SDI out

Lensing: F-mount, C-mount, PL-mount

Size (without lens): 12.25 x 5.5 x 5.0 in. (L,W,H)  
31.1 x 14 x 12.7 cm

Weight (without lens): 12 lbs (5.4 Kg)

Power: 60 Watts @ 24 VDC, without CineMag

Operating Temperature: 0°C to 40°C @ 8% to 80% RH

Storage Temperature: -10°C to 55°C

Non-operational Shock: 33G, half sine wave, 11ms, all axes without CineMag

Operational Shock: 30G, half sine wave, 11ms, 10 times all axes (without CineMag or lens) to Mil-Std-810 G

Operational Vibration: 0.25G, 5-500 Hz, all axes without CineMag

### Focused

Since 1950, Vision Research has been shooting, designing, and manufacturing high-speed cameras. Our single focus is to invent, build, and support the most advanced cameras possible.

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