VISION RESEARCH

PHANTOM

when it's too fast to see, and too important not to.®

Phantom® Flex

Shoot 10 - 1455 fps at 2560 x 1600

Shoot 10 - 2570 fps at 1920 x 1080

HQ Mode for ultimate image quality

Raw digital and/or video workflow solutions

Flexible lens options

Phantom Flex (equipped with optional accessories)

Key Benefits:

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

The Phantom Flex is a second-generation high-speed camera designed for the digital cinema industry. It extends the legacy of the groundbreaking Phantom HD – a camera that changed the world of high-speed imaging for television and motion picture production forever. The Phantom Flex provides exceptional flexibility in frame rate, workflow, lens format and overall storytelling ability. It goes **beyond HD** and supports 4 megapixel imaging when the ultimate in image resolution is required.

Flex your creative muscle with a camera that can shoot from **10 frames-per-second to over 10,000 frames-per-second** depending upon shooting mode and resolution.

Key Features:

Up to 2570 fps at 1920 x 1080 in Standard Mode

12-bit pixel depth

ISO (ISO-12232 SAT method):
   Color: 1250 T; 1600 D

HQ Mode provides ultimate in image stability under changing shooting conditions

Phantom CineMag compatible, CineMag interface has field-replaceable pin array

2 x 4:2:2 HD-SDI video ports, can be configured as dual-link 4:4:4 video (4:4:4 not available at 60fps video formats)

Global, electronic shutter to 1 us (shutter angles in HQ mode dependent upon frame rate)

Multi-cine capable via segmented memory

Internal mechanical shutter for hands-free and remote Current Session References

On-camera controls for camera modes, settings, playback, edit & save

Frame synchronization to external signal, allows multiple cameras to be synchronized – essential for stereo 3D recording

Two 12VDC auxiliary power outputs for powering external devices

External trigger signal on camera connector panel

Genlock for synchronizing video playback

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PHANTOM

Phantom® Flex

Key Features continued:

Timecode in/out

Remote port for connecting a Phantom Remote Control Unit

Component video viewfinder port

Two 24VDC power inputs to allow for "hot swapping" power

PL mount standard, Canon EOS, manual Nikon optional Adapter for 2/3" lenses available

Ultra-quiet dual-fan cooling with low-fan mode for silent shooting

16 GB and 32 GB models

ISO SAT	
Color	
ISO SAT T	ISO SAT D
1250	1600

Flexible lens options let you choose between 35mm (PL, Canon EOS, Nikon F Panavision), Super 16mm, and 2/3" lens alternatives.

Select a **raw digital workflow, a video workflow**, or combine workflows for maximum control and flexibility.

User selectable shooting modes allow you to adapt the camera to the shooting environment. In Standard Mode, the Phantom Flex is just like any other Phantom digital high-speed camera. Shoot at resolutions up to 2560 x 1600 pixels at anywhere from **10 frames-per-second** up to **1455 frames-per-second (fps)**. As you reduce the resolution, the maximum speed increases – **up to 2570 fps at 1920 x 1080, 5385 fps at 1280 x 720, and 10,900 fps at 640 x 480.**

In **Phantom HQ Mode** Vision Research's proprietary multi-sampling image enhancement technology is employed. This results in electronic image stability unprecedented in digital high-speed cameras: stable blacks, low noise, higher dynamic range and repeatable shots over the full range of supported resolutions, frame rates, and temperatures without the need for pre-shot black references. Maximum frame rates in HQ mode are approximately half those in Standard mode. That means the ultimate in image quality at speeds up to **1275 fps** at 1920 x 1080 or **2660 fps** at 1280 x 720 can be achieved.

If you are using **a video workflow** or you want the best possible video available on set, the Phantom Flex is for you. The video format available on the dual-link HD-SDI ports is independent of the camera resolution. Set the camera resolution to 2650 x 1440 (16:9) and the camera will automatically scale the oversampled

	STANDARD	HQ
Benefit	Standard Phantom camera use model, shoot at resolutions up to 2560 x 1600 with highest frames rates at any resolution.	Proprietary multi-sampling technology provides unprecedented image stability under changing shooting conditions.
Min Resolution	256 x 8	256 x 8
Max Resolution	2560 x 1600	2560 x 1600
Min FPS	10 fps	10 fps
Max FPS @ max resolution	1455	725
Max FPS @ 1920 x 1080	2570	1275
Max FPS @ 1280 x 720	5385	2660
Max FPS @ 640 x 480	10,900	5345
Max FPS @ 256 x 8	280,000	90,300

image when rendering the video signal. This technique increases the dynamic range in the video signal and virtually eliminates edge artifacts sometimes seen in other Bayer pattern cameras. The greater the oversample resolution, the better the image! It is up to you. And, this is something those "square" sensor cameras simply can't do without sacrificing pixels.

If you choose to oversample when you are using a raw digital workflow, you can still get the benefits of increased dynamic range and fewer edge artifacts in a saved RGB file because the Phantom Camera Control software (and compatible 3rd party solutions) know your intentions and can apply appropriate scaling technology!

New for 2013:

Vision Research is now offering bundles of the Phantom Flex and related accessories at a discounted rate, and with a guaranteed quick delivery.

Bundle configurations are as follows:

- Flex Lite Bundle: 16GB Flex + 1x 144GB CineMag & CineStation

- Flex Medium Bundle: 32GB Flex + 1x 256GB CineMag & CineStation

- Flex Complete Bundle: 32GB Flex + 2x 256GB CineMags & CineStation

- Flex Ultra Bundle: 32GB Flex + 2x 512GB CineMags & CineStation-X2SR

Service Protection:

With the purchase of a new Phantom Flex, you will receive at no additional cost, 3 years of camera service protection. If anything goes wrong with your camera within three years of purchase, we will repair it free-of-charge at one of our service locations. Your camera will receive expedited service for fast turn-around-time. You will be entitled to web-based support at no charge. And, any software and firmware updates are also available at no charge.

Standard warranty terms and conditions apply. Major upgrades that add new functionality are not included.
The 3-year warranty is implemented as a 2-year service contract extension to the standard 1-year warranty. The special 3-year warranty does not apply to the new Phantom Flex4K.

*Flex-Front View

*Flex-Top View

*Flex-Back View

Phantom® Flex

Typical recording times for various configurations:

Recording Times into Camera RAM	16 GB Flex Standard (1)	16 GB Flex HQ (1)	144 GB CineMag II (2)
2560 x 1600			
1450 fps	1.8 sec	n/a	n/a
727 fps	3.7 sec	1.8 sec	n/a
195 fps	14 sec	7 sec	2.2 min
60 fps	45 sec	22 sec	7.4 min
24 fps	114 sec	57 sec	18.6 min
2560 x 1440			
1600 fps	1.8 sec	n/a	n/a
800 fps	3.7 sec	1.8 sec	n/a
217 fps	14 sec	7 sec	2.2 min
60 fps	51 sec	25 sec	8 min
24 fps	125 sec	64 sec	20 min
1920 x 1080			
2570 fps	1.9 sec	n/a	n/a
1275 fps	3.9 sec	1.9 sec	n/a
361 fps	14 sec	7 sec	2.2 min
60 fps	86 sec	43 sec	13.5 min
24 fps	211 sec	105 sec	33 min
1280 x 720			
5385 fps	2.2 sec	n/a	n/a
2660 fps	4 sec	2 sec	n/a
868 fps	14 sec	7 sec	2.2 min
60 fps	207 sec	103 sec	33 min
24 fps	8.6 min	4.3 min	82 min

(1) Double record times for 32 GB configuration, (2) Valid for both Std and HQ modes, double for 256 GB

Additional Features:

12-bit CMOS sensor with Bayer color filter array

Quantum efficiency: 60% peak

Noise Equivalent Power (NEP) 0.011 fJ

10 micron pixel size with microlens technology for improved sensitivity

Size (without lens, CineMag or handle):
 11.5 x 5.5 x 5.0 in (L x W x H)
 29.2 x 14 x 12.7 cm

Weight (without lens, CineMag or handle):
 11.75 lbs. (5.33 kg)

Mounting: Two ¼-20 and three 3/8-16 mounting holes on the bottom of the camera body, with additional mounting points on left side panel, right side panel and on the top camera handle

Temperature: 0°C to 40°C @ 8% to 80% relative humidity

Shock: 30G, half sine wave, 11 ms, 10 times all axes (without CineMag or lens)

Vibration: 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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