

OVERVIEW

Phantom Flex

The Phantom Flex is a 2.5K digital cinema camera providing exceptional flexibility in all areas of high-speed image capture. Depending on the shooting mode and resolution, the Flex is capable of shooting from 5 frames-per-second (fps) to over 10,750 fps.

The Phantom Flex offers two user-selectable shooting modes, each adapted to a particular shooting environment. In Standard Mode, the Phantom Flex is just like any other Phantom **digital high-speed camera**. Shoot at resolutions up to 2560x1600 pixels at anywhere from 10 frames-per-second up to 1,455 frames-per-second (fps). Maximum speed increases as the resolution decreases – up to 2,570 fps at 1920x1080, 5,350 fps at 1280x720 and 10,750 fps at 640x480.

In Phantom HQ Mode, Vision Research's proprietary Academy Award® winning image enhancement technology results in electronic image stability for stable blacks, low noise, higher dynamic range and repeatable shots at all settings without the need for pre-shot black references. Maximum frame rates in HQ mode are about half those in Standard mode, which means that in HQ Mode Flex captures images at speeds up to 1,275 fps at 1920x1080 or 2,640 fps at 1280x720.

The Phantom Flex supports multiple workflows: a raw digital workflow, a video workflow, or combination of both for maximum control and flexibility.

With a video workflow, the high-speed digital camera offers a video signal on the dual-link HD-SDI ports independent of the camera resolution. Set the resolution to 2560x1440 (16:9), and the camera will automatically scale the oversampled image when rendering the video signal. This technique increases the dynamic range and decreases noise in the video signal.

The Phantom Flex high-speed digital camera accepts a wide range of industry standard lenses. 35mm (PL, Canon EOS, Nikon F), Super16mm and 2/3" lenses are all compatible.

TECHNICAL DATA

Resolution	FPS	
	Std	HQ
2560 x 1600	1455	725
1920 x 1080	2570	1275
1280 x 720	5350	2640
640 x 480	10750	5285

Short Description	The original Phantom Flex is a 2.5K, 4 megapixel high-speed camera designed for cinema applications. Production-friendly features include the CineMag interface, on-camera controls, power outputs and multiple HD-SDI and viewfinder outputs.
Throughput/Speed	6 Gpx/second Max speed at full resolution of 2560 x 1600 is 1455 fps in Standard mode and 725 fps in HQ mode At 1920 x 1080, max speed is 2570 fps in Standard mode and 1275 fps in HQ mode Record direct to CineMag at up to 800 Mpx/second
Sensor Specifications	CMOS sensor 2560 x 1600 pixels

	<p>10 µm pixel size 25.6 mm x 16.0 mm 12-bit depth ISO Color 1,250T; 1,600D TE cooled CAR in 256 x 8 increments Fill factor: 70% Dynamic range: 54.6 dB Read out noise at 20.6°C (typical): 21e- Full well capacity (typical): 11000e-</p>
Exposure	<p>1 µs minimum exposure in Standard mode Exposure range in HQ mode is dependent upon frame rate Global electronic shutter</p>
Memory	<p>16 GB, 32 GB high-speed internal RAM CineMag for non-volatile storage (128 GB, 256 GB, 144 GB, 512 GB)</p>
Record Times	<p>10.3 seconds at 1000 fps, 12-bit depth, 1920 x 1080 resolution and into 32 GB of internal memory (Standard mode), 5.1 seconds in HQ mode</p>
Special Features	<p>Dual shooting modes: Standard mode for highest frame rates HQ mode for ultimate image quality Segment memory for up to 63 cines in multi-cine mode Continuous recording Frame rate profile Frame timestamp IRIG in/out (modulated and unmodulated) SMPTE in/out Standard internal mechanical shutter for automatic/remote Current Session Reference (CSR) Secondary IP address Field-based firmware upgrade capable Mounting plates for optional gear on side and handle</p>
Triggering	<p>Programmable trigger location (pre/post trigger recording)</p>

	<ul style="list-style-type: none"> Trigger from software Hardware trigger BNC Trigger inputs also available on Aux ports
Timing & Synchronization	<ul style="list-style-type: none"> 20 ns timing resolution Frame synchronization to internal or external clock (FSYNC) IRIG in/out (modulated or unmodulated)
Signaling	<ul style="list-style-type: none"> Dual-link HD-SDI Genlock BNC FSYNC BNC Trigger BNC Timecode In BNC Timecode Out BNC Remote (RCU) port Viewfinder port Two 12VDC (1.5A) Aux ports (with trigger signal available)
Ethernet Connection	<ul style="list-style-type: none"> Gb Ethernet for both control and data
Camera Control	<ul style="list-style-type: none"> Phantom Camera Control (PCC) On-Camera Controls Remote Control Unit (RCU), connects direct to camera SDK available
Video Out	<ul style="list-style-type: none"> Dual-link HD-SDI Component viewfinder port
Lensing	<ul style="list-style-type: none"> PL-mount standard Nikon F-mount optional Canon EOS optional B4 lens support through the use of an adapter
Video Processing	<ul style="list-style-type: none"> Selectable auto-scaling of 2560 x 1440 to 1920 x 1080 or 1280 x 720 on video out Brightness Gain Gamma

	<p>Saturation</p> <p>Hue</p> <p>White Balance</p> <p>Color interpolation algorithm</p> <p>Filters</p> <p>Color matrix</p> <p>Image flip and rotate in PCC</p> <p>Crop</p> <p>Scale</p>
Data Acquisition	N/A
Motion Analysis	<p>Basic measurements via Phantom Application:</p> <p>Distance</p> <p>Speed</p> <p>Acceleration</p> <p>Angles and Angular Speed</p> <p>Manual and Automatic point collection for target tracking</p> <p>Compatible with 3rd party solutions</p>
Supported File Formats	<p>Cine, Cine Compressed, Cine RAW, AVI, h.264 mp4, Apple ProRes .mov, Multipage TIFF, MXF PAL, MXF NTSC, Uncompressed QuickTime, Windows BMP, OS/2 BMP, PCX, TGA, TIFF, LEAD, JPEG, JTIF, RAW, DNG, DPX</p>
Power	<p>100 - 240 VAC, 220 Watt power supply included</p> <p>There are two DC inputs on the camera back panel for hot-swapping power or providing battery backup when using AC power</p>
Mechanical Specifications	<p>Size (without lens, CineMag or handle): 11.5 x 5.5 x 5.0 inches (L x W x H); 29.2 x 14 x 12.7 cm</p> <p>Weight (without lens or CineMag): 11.75 lb; 5.33 kg</p>
Environmental Specifications	<p>Temperature: 0°C - 40°C</p> <p>Humidity: 80% non-condensing at 5°C</p>

APIs

Phantom SDK

Ships Standard With

Power supply

Ethernet cable

Phantom PCC software

Getting Started guide

Spare CineMag interface pin array

Case

Popular Accessories

CineMag

CineStation

RCU

Spare Cable Kit

Spare CineMag interface pin array

Canon EOS, Nikon F lens mounts