PHANTOM®
VEO-SERIES

DATASHEET

PHANTOM VEO4K-PL

HIGH-SPEED CAMERA

VEO4K-PL pictured with Cameo handle

938 fps at 4096 x 2304
4K at up-to 1000 fps
10Gb Ethernet option

FEATURES & BENEFITS

VEO4K FOR MEDIA PRODUCTION

VEO4K cameras combine two platforms, the **compact and versatile VEO** and the **Flex4K** for high-speed imaging with the **ultimate in image quality and pixel resolution**. The VEO4K-PL includes an all-black housing, OLPF, all the required features for media production and accessories available for customization.

EXTREME CONFIGURABILITY

* **Two sensor modes:** VEO4K-PL default configuration employs a proprietary **global shutter** sensor that can be switched to **rolling shutter** mode for increased dynamic range.
* The **VEO4K-PL-RLS** model is also available for rolling-shutter only requirements.
* **S-model** provides on-camera controls for untethered and remote recording, secondary 12V battery input, ruggedized connectors and compatibility with removable CFast 2.0 storage media.

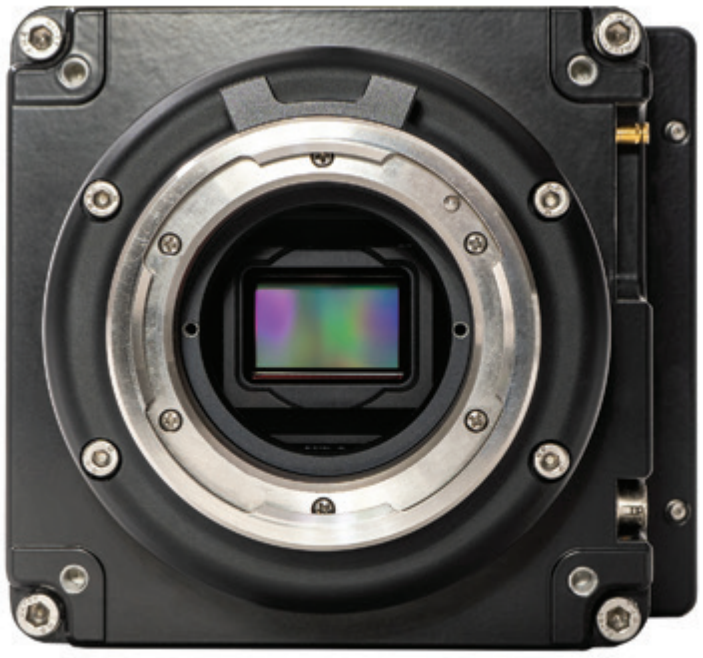
FRAME RATES & EXPOSURE	
Top FPS at Max Resolution	938
Maximum FPS	64,300
Minimum FPS	24
CAR Increments	2048 x 4
Minimum Exposure	5 µs Standard
Electronic Shutter	VE04K models include global shutter (GS) and rolling shutter (RS) modes by default. Choose VE04K-PL-RLS model for rolling-shutter only.
PIV Features	N/A
Exposure Features	Overexposure indication over video and in PCC

IMAGING		
Sensor Type	CMOS (RS mode uses Correlated Double Sampling)	
Maximum Resolution	4096 x 2304	
Bit Depth	12-bit	
Pixel Size	6.75 µm	
Sensor Size	27.6 x 15.6; 31.7 mm diagonal	
ISO Daylight (12232 STD)	GS: Color 640	RS: Color 320
ISO Tungsten (12232 STD)	GS: Color 640	RS: Color 320
Exposure Index	Recommended EI Range 800-1000 Color (both Global and Rolling)	
Dynamic Range	GS: 54.8 dB (9 stops)	RS: 71.6 dB (12 stops)
Readout Noise	GS: 31 e-	RS: 9.6 e-

FRAME RATE CHART

Table provides examples of common resolutions and frame rates. The record times shown are for 72GB RAM at the frame rate shown. Duration will be 1/2 the time for 36GB RAM.

Maximum Frame Rate - FPS; (72GB Record Time - Sec)	
Resolution (H x V)	**VE04K-PL**
4096 x 2304	938 (5.5)
4096 x 2160	1,000 (5.6)
4096 x 2048	1,050 (5.8)
4096 x 1152	1,850 (5.8)
4096 x 1080	1,970 (5.8)
4096 x 720	2,930 (5.8)
4096 x 360	5,660 (6)
4096 x 8	64,300 (10)
2048 x 2048	1,050 (11)
2048 x 1152	1,850 (11)
2048 x 1080	1,970 (11)
2048 x 240	8,220 (12)
2048 x 8	64,300 (21)



CONNECTIVITY & SIGNALS

Ethernet	Gigabit Standard, 10Gb Optional	
Timecode	IRIG-B Modulated and Un-modulated	
Port Descriptions	**S-model only**	
	Ethernet	Fischer 8-pin
	Power	Fischer 6-pin
	Range Data	Fischer 8-pin
	USB	Yes for WiFi dongle
	Video output	3G-SDI (2 ports), HDMI
	Dedicated BNC	Trigger, Timecode-in, 3G-SDI
	Programmable I/O BNC	4 ports
I/O Signals	Programmable I/O for Fsync, Strobe, Ready, Timecode-out, Event, Memgate, Pretrigger. Assign and define signals in PCC	
Hardware Trigger	Dedicated BNC	
Software Trigger	Trigger button via PCC over Ethernet	
Synchronization	External Sync via FSync or IRIG Timecode	
Recording Features	Continuous recording & AutoSave to CFAST	
Video Output	3G-SDI via BNC (rear), Din and Micro HDMI type D port (front) Cameras prior to 2021 had HDMI type A port	
Accessory Power	4-pin Hirose (front) for 12V monitors up to 1 Amp	

VE04K-PL (Back)

CONTROL

Software & OS	Phantom PCC (Windows); SDK also available with MatLab and LabView drivers
On-camera Controls	Access menu system with encoder, viewed on video monitor. Buttons for trigger, play and save – Color indicates current camera state.
Primary File Format	Phantom Cine RAW (.cine)
Alternative File Formats	Easily convert to formats including .mp4, Apple ProRes .mov, .avi, Tiff, JPG, DNG and many more using PCC. Cine files are directly compatible with many major video editing and motion analysis programs

FLEX4K-GS VS VE04K-PL

The VE04K can be considered a smaller, lightweight version of the Flex4K-GS. Some of the differences:

FLEX4K-GS	VE04K-PL
Up-to 128GB RAM	Up-to 72GB RAM
CineMag Support at 1GB/sec speed	CFast Support at 80MB/sec speed
Supports 4K video, max 2160p30	Supports 1080p only, max 1080p60
14 lbs (6.3kg)	6.5 lbs (3 kg)
Gb Ethernet on camera, CineStation required for 10Gb	Optional 10Gb Ethernet on camera
Integrated accessory outputs including Remote port	One 12V output on camera No integrated Remote port

MEMORY & STORAGE

RAM Buffer	36GB, 72GB RAM options
Multi-Cine	Up-to 64 Partitions
Non-Volatile Media	VEO S-model supports CFAST 2.0 (NTFS format) 80 MB/s Cine Raw file transfer rate from RAM

POWER

AC Power	100-240 VAC, 80W power supply included
Voltage Range	16-32VDC Primary; Secondary Power down to 12VDC via 12-pin capture port
Power Consumption	65W typical
Battery Options	S-model includes 12V input for compatibility with common 14.4V batteries. V-Lock and Gold-mount VEO side-mounts are available for VEO-S cameras.

MECHANICAL

Housing Variants	S-Model only with black housing. For white housing version of this camera see VE04K-990S
Size	5 x 5.5 x 6" (12.7 x 14 x 15 cm)
Weight	6.5 lbs (3 kg)
Lens Mounts	PL-Mount standard. Also available: Canon EF (with electronic focus and iris control) and Nikon F-mount. Custom optical low pass filter (OLPF) is standard on VE04K-PL models.
Mounting Points	Standard 1/4x20" mounting points on bottom. Top, bottom and side are compatible with accessories including Cameo cheese plate for added mounting points, riser and custom handle
Internal Shutter	Standard, for remote black references
Cooling	Active cooling. Quiet mode disables fans during capture

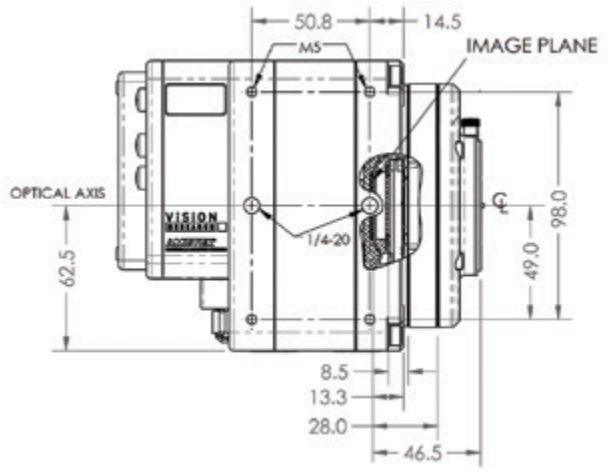
ENVIRONMENTAL

Operating Temperature	-10 to +50°C
Storage Temperature	-20 to +70°C
Operational Shock	MIL-STD-202G Method 213-B. Rated 30G with shutter; 100G without; sawtooth wave, 11ms, +/- 10 pulses all axes
Operational Vibration	MIL-STD-202G Method 214-A. Rated 12Grms; Figure 2A-1, Test Condition D, 15 min per axis
Regulatory	Made in the USA CE Emissions – CE Compliant EN 61326-1 CE Immunity – CE Compliant EN 61326-1 FCC – CFR 47, Part 15, Subpart B & ICES-0003, Class A KC Emissions – KC Compliant KC Immunity – KC Compliant Safety - IEC 60950-1

GLOBAL SUPPORT NETWORK

The Phantom VEO product line is supported by Vision Research's Global Service and Support network, offering PhantomCare Performance Services from multiple sites around the globe. Maximize the value of your Phantom camera with a selection of professional services from which to choose.

Learn more about our service offering at
www.phantomhighspeed.com/Service-Support



ABOUT VISION RESEARCH

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

VISION RESEARCH

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