



PHANTOM

VEO4K 990

VEO4K 590

9.4 Mpx resolution 4096 x 2304
Up-to 938 fps (990); 540 fps (590)
L and S body styles

FEATURES & BENEFITS

HIGHEST RESOLUTION VEO

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**. Application examples include object tracking over a large area, subjects that require high magnification, and advanced motion analysis techniques that require the precision offered by a higher pixel count.

EXTREME CONFIGURABILITY

- * **Two sensor modes:** VEO4K employs a proprietary **global shutter** sensor that can be switched to **rolling shutter** mode for increased dynamic range. VEO4K-RLS models are also available for rolling-shutter only requirements.
- **L-model** is for basic, software based imaging in a lab or office environment
- **S-model** provides additional signals, on-camera controls for untethered and remote recording, ruggedized connectors and compatibility with removable CFast 2.0 storage media.

FRAME RATES & EXPOSURE

990: 938	590: 540
990: 64,300	590: 54,600
24	
2048 x 4	
5 μ s Standard	
VEO4K models include global shutter (GS) and rolling shutter (RS) modes by default. VEO4K-RLS models are also available for rolling-shutter only.	
Only available in GS mode. Enable shutter-off mode for straddle time of 3.7 μ s at max resolution, Supports Burst Mode	
Overexposure indication over video and in PCC	

IMAGING

CMOS (RS mode uses Correlated Double Sampling)	
4096 x 2304	
12-bit	
6.75 μ m	
27.6 x 15.6; 31.7 mm diagonal	
GS: Mono 2,500; Color 640	RS: Mono 1,000; Color 320
GS: Mono 5,000; Color 640	RS: Mono 2,000; Color 320
Recommended EI Range 4,000-8,000 Mono; 800-1000 Color (both Global and Rolling)	
GS: 54.8 dB (9 stops)	RS: 71.6 dB (12 stops)
GS: 31 e-	RS: 9.6 e-

FRAME RATE CHART

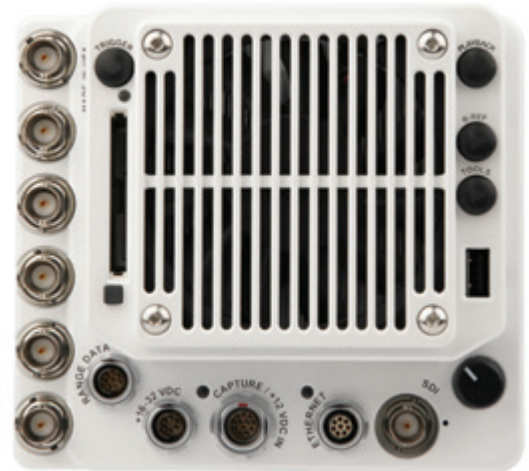
Table provides examples of common resolutions and frame rates. The record times shown are for 72GB RAM at the frame rate shown. Duration will be 1/2 the time for 36GB RAM.

Resolution (H x V)	VEO 990	VEO 590
	938 (5.5)	530 (10)
	1,000 (5.6)	570 (10)
	1,050 (5.8)	600 (10)
	1,850 (5.8)	1,070 (10)
	1,970 (5.8)	1,140 (10)
	2,930 (5.8)	1,700 (10)
	5,660 (6)	3,330 (10)
	64,300 (10)	54,600 (12)
	1,050 (11)	600 (10)
	1,850 (11)	1,070 (20)
	1,970 (11)	1,140 (20)
	8,220 (12)	4,900 (20)
	64,300 (21)	54,600 (25)



CONNECTIVITY & SIGNALS

Gigabit Standard, 10Gb Optional		
IRIG-B Modulated and Un-modulated		
	S-model	L-model
Ethernet	Fischer 8-pin	RJ45
Power	Fischer 6-pin	Fischer 6-pin
Range Data	Fischer 8-pin	N/A
USB	Yes for WiFi dongle	N/A
Video output	3G-SDI (2 ports), HDMI	3G-SDI (1 port), HDMI
Dedicated BNC	Trigger, Timecode-in, 3G-SDI	Trigger, Timecode-in
Programmable I/O BNC	4 ports	2 ports
Programmable I/O for Fsync, Strobe, Ready, Timecode-out, Event, Memgate, Pretrigger. Assign and define signals in PCC		
Dedicated BNC		
Trigger button (S-model); via Ethernet		
External Sync via FSync or IRIG Timecode		
Burst mode (GS mode), Continuous recording & AutoSave to CFAST (S-model)		
3G-SDI via BNC (rear, S-model only), Din and Micro HDMI type D port (front) <i>Cameras prior to 2021 had HDMI type A port</i>		
4-pin Hirose (front) for 12V monitors up to 1 Amp		



VEO S-model (Top),
L-model (Bottom)

CONTROL

Phantom PCC (Windows); SDK also available with MatLab and LabView drivers

S-models only. Access menu system with encoder, viewed on video monitor. Buttons for trigger, play and save – Color indicates current camera state

Phantom Cine RAW (.cine)

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

Continuous Recording for automated workflows, Integrated Data Acquisition (NI-DAQ), support for DIC Calibration with Sync-Snapshot menu, advanced Image Tools including Crop & Resample, Tone Curves, Filters and more

MEMORY & STORAGE

36GB, 72GB RAM options

Up-to 64 Partitions

VEO S-model supports CFAST 2.0 (NTFS format)
80 MB/s Cine Raw file transfer rate from RAM

MECHANICAL

L-model and S-model variants

L-Model: 5 X 5 X 6" (12.7 x 12.7 x 15 cm);
S-Model: 5 x 5.5 x 6" (12.7 x 14 x 15 cm)

L-Model: 6 lbs (2.7 kg); S-Model: 6.5 lbs (3 kg)

F-Mount standard (aperture support for Nikon G-style lenses). Also available: Canon EF (with electronic focus and iris control), PL, C-mount. Optional OLPF is available for color cameras.

Standard 1/4x20" mounting points on bottom. Top, bottom and side are compatible with Cameo cheese plate for added mounting points, riser, and custom handle

Standard, for remote black references

Active cooling. Quiet mode disables fans during capture

POWER

100-240 VAC, 80W power supply included

16-32VDC Primary; Secondary Power down to 12VDC via 12-pin capture port (S-models only)

65W typical

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

ENVIRONMENTAL

-10 to +50°C

-20 to +70°C

MIL-STD-202G Method 213-B. Rated 30G with shutter; 100G without; sawtooth wave, 11ms, +/- 10 pulses all axes

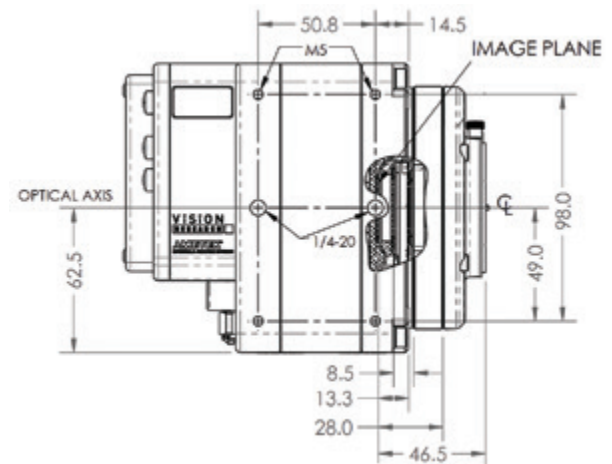
MIL-STD-202G Method 214-A. Rated 12Grms; Figure 2A-1, Test Condition D, 15 min per axis

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

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