



PHANTOM VEO 1310 VEO 1010 VEO 610

HIGH-SPEED CAMERAS

1.2 Megapixels, 1280 x 960
Up-to 10,860 fps (1310);
8,420 (1010); 5,610 (610)
L and S body styles

FEATURES & BENEFITS

PHANTOM VEO PRODUCT FAMILY

Designed to perform in a wide array of scientific and industrial applications, Phantom VEO high-speed cameras provide valuable insight into events that are otherwise too fast to be seen.

VEO 1310, 1010 and 610 models incorporate recent advancements in sensor technology to deliver exceptional image quality with **2.5X greater light sensitivity** and the **highest frame rates** available in the VEO platform. Binned mode boosts throughput and sensitivity at 640 x 480 and below.

EXTREME CONFIGURABILITY

VEO cameras are available in color or monochrome, up to 72GB RAM, with a variety of lens mounts and two body styles to allow users to **choose the best configuration** in terms of features and budget:

- **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

1310: 10,860	1010: 8,420	610: 5,610
1310: 12,900	1010: 10,010	610: 6,670
1310: 423,350	1010: 328,460	610: 218,970
50		
640 x 12		
1 μ s Standard	709 ns with Fast Option**, all models	
Global		
Shutter-off mode with a straddle time of 726 ns, Supports Burst Mode		
Auto-Exposure, Overexposure Indication over video and in PCC		

IMAGING

CMOS with Correlated Double Sampling	
1280 x 960	
12-bit	
18 μ m	
23 x 17.2; 28.7 mm diagonal	
Standard: Mono 25,000; Color 6,400	Binned: Mono 50,000; Color 8,000
Standard: Mono 80,000; Color 8,000	Binned: Mono 125,000; Color 10,000
Standard: Mono 25,000 - 125,000; Color 6,400 - 32,000	Binned: Mono 50,000 - 250,000; Color 8,000 - 40,000
Standard: 60.3 dB	Binned: 59.4 dB
Standard: 10 e-	Binned: 24 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 and 1/4 the time for 18GB RAM.

Resolution (H x V)	VEO 1310		VEO 1010		VEO 610	
	Standard	Binned	Standard	Binned	Standard	Binned
10,860 (3.6)		-	8,420 (4.4)	-	5,610 (7.1)	-
12,900 (3.6)		-	10,010 (4.4)	-	6,670 (7.1)	-
14,350 (3.6)		-	11,140 (4.4)	-	7,420 (7.1)	-
40,300 (3.9)		-	31,270 (4.8)	-	20,840 (7.6)	-
13,330 (3.9)		-	10,340 (4.8)	-	6,890 (7.6)	-
30,030 (5.1)	40,300 (3.9)		23,300 (6.4)	31,270 (4.8)	15,530 (10)	20,840 (7.5)
57,360 (5.3)	73,510 (4.2)		44,510 (6.8)	57,030 (5.2)	29,670 (10)	38,020 (8)
105,260 (5.7)	125,000 (4.9)		81,660 (7.2)	96,980 (6.4)	54,440 (11)	64,650 (9.4)
126,360 (5.9)	145,360 (5.2)		98,030 (7.6)	112,780 (6.8)	65,350 (11)	75,180 (10)
158,030 (6.3)	173,650 (5.8)		122,610 (8.0)	134,730 (7.2)	81,740 (11)	89,820 (10)
210,900 (6.9)	215,610 (6.9)		163,630 (8.8)	167,280 (8.8)	109,090 (12)	111,520 (10)
57,360 (10.3)	105,260 (5.7)		44,510 (13.2)	81,660 (7.2)	29,670 (20)	54,440 (10)
158,030 (11.9)	253,270 (7.6)		122,610 (15.2)	196,500 (9.6)	81,740 (23)	131,000 (14)
316,930 (15.3)	423,350 (11.9)		245,900 (19.6)	328,460 (15.2)	163,930 (29)	218,970 (22)

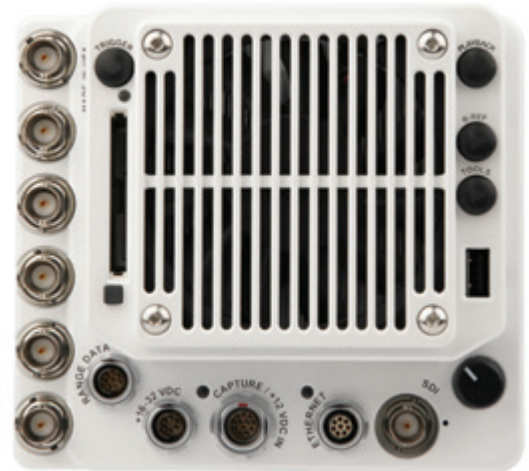
* Higher frame rates are available with shutter-off mode and FAST option at 640x12 and 320x24 resolution: 604,000 fps (1310); 468,000 fps (1010); 312,000 fps (610)

**Certain Phantom cameras are held to export licensing standards.
Details available at: www.phantomhighspeed.com/export



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; via Image-based auto trigger (IBAT)		
External Sync via FSync or IRIG Timecode		
Burst mode; Image-based auto trigger, 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

18GB, 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 5" (12.7 x 12.7 x 12.7 cm);
S-model: 5 x 5.5 x 5" (12.7 x 14 x 12.7 cm)

L-model: 5.0 lbs (2.3 kg); S-model: 5.6 lbs (2.5 kg)

Choose lens mount at time of purchase: F-mount
(with aperture support for Nikon G-style lenses),
Canon EF mount (with electronic focus and iris
control), PL, C-mount

Standard 1/4 x 20" 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

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

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

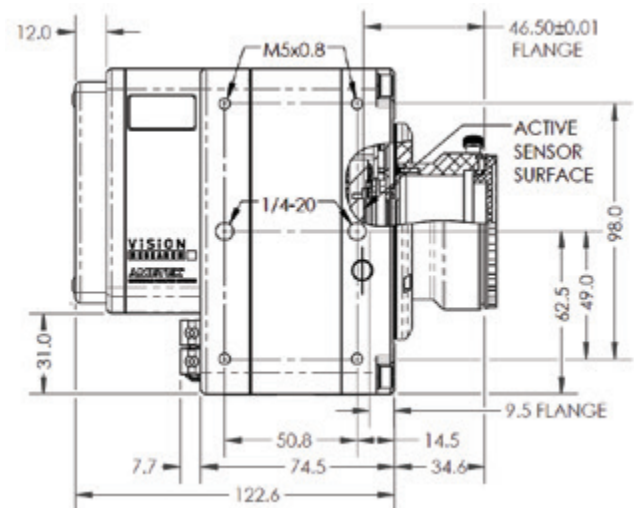
-20 to +70°C

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

≤85% non condensing

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



ABOUT VISION RESEARCH

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