PHANTOM®
VEO-SERIES

DATASHEET

PHANTOM VEO E-310L VEO E-340L

HIGH-SPEED CAMERA

1280 x 800 up-to 3,200 fps (E-310L)
2560 x 1600 up-to 800 fps (E-340L)

PHANTOM VEO PRODUCT FAMILY

Phantom high-speed cameras are utilized every day in demanding test and measurement applications around the world. The VEO platform is well regarded for high quality and dependable image capture due to proprietary sensor design, rugged and compact housings, unique workflow features and overall system versatility.

VEO-E models leverage this platform, offer many of the same features and are:

- 20% smaller and lighter than the core VEO models
- Designed for an efficient and easy set-up with industry standard connections
- Cost-effective for laboratories and academic institutions

Now available: VEO-E E225 models with a maximum frame rate of 225,000 fps at reduced resolutions.

FRAME RATES & EXPOSURE		
Top FPS at Max Resolution	E-310L: 3,260	E-340L: 800
1 Megapixel FPS	E-310L: 3,260	E-340L: 2,950
Maximum FPS	E-310L: 650,000 E-310L-E225: 225,000	E-340L: 287,000 E-340L-E225: 225,000
Minimum FPS	24	
CAR Increments	E-310L: 64 x 8	E-340L: 128 x 4
Minimum Exposure	1 µs	
Electronic Shutter	Global	
PIV Features	Shutter-off mode with straddle time of 480 ns (310) and 1.7 µs (340); Supports Burst mode	
Exposure Features	Extreme Dynamic Range (EDR), Auto-Exposure, Overexposure indication over video and in PCC	

IMAGING		
Sensor Type	CMOS	
Maximum Resolution	E-310L: 1280 x 800	E-340L: 2560 x 1600
Bit Depth	12-bit	
Pixel Size	E-310L: 20 µm	E-340L: 10 µm
Sensor Size	25.6 x 16; 30.2 mm diagonal	
ISO Daylight (12232 STD)	E-310L: Mono 6400; Color 2,000	E-340L: Mono 6,400; Color 1,250
ISO Tungsten (12232 STD)	E-310L: Mono 16,000; Color 2,000	E-340L: Mono 16,000; Color 1,250
Exposure Index	E-310L: Mono 6,400 – 32,000; Color 2,000 – 8,000	E-340L: Mono 6,400 – 32,000; Color 1,250 – 6,400

FRAME RATE CHART

Table provides examples of common resolutions and frame rates. The record times shown are for 36GB RAM at the frame rate shown. Duration will be 1/2 the time for 18GB RAM.

Maximum Frame Rate - FPS; (36GB Record time - Sec)				
Resolution (H x V)	**E-310L**	**E-310L-E225**	**E-340L**	**E-340L-E225**
2560 x 1600	N/A	N/A	800 (3.9)	800 (3.9)
2560 x 1440	N/A	N/A	890 (3.9)	890 (3.9)
1536 x 1536	N/A	N/A	1,320 (4.1)	1,320 (4.1)
1920 x 1080	N/A	N/A	1,540 (4)	1,540 (4)
1280 x 1280	N/A	N/A	1,850 (4.2)	1,850 (4.2)
1280 x 800	3,260 (7.7)	3,260 (7.7)	2,950 (4.2)	2,950 (4.2)
1280 x 720	3,630 (7.7)	3,630 (7.7)	3,270 (4.2)	3,270 (4.2)
640 x 480	10,100 (8.3)	10,100 (8.3)	8,430 (4.9)	8,430 (4.9)
512 x 512	11,500 (8.5)	11,500 (8.5)	9,250 (5.2)	9,250 (5.2)
256 x 256	39,700 (9.9)	39,700 (9.9)	26,800 (7.3)	26,800 (7.3)
128 x 128	120,400 (13)	120,400 (13)	64,500 (12)	64,500 (12)
128 x 64	224,900 (13)	224,900 (13)	108,700 (14)	108,700 (14)
128 x 32	397,100 (15)	225,000 (25)	165,100 (19)	165,100 (19)
128 x 8	650,000 (38)	225,000 (100)	270,000 (46)	225,000 (50)
128 x 4	N/A	N/A	287,000 (87)	225,000 (100)

CONNECTIVITY & SIGNALS

Ethernet	Gigabit Ethernet
Timecode	IRIG-B modulated and un-modulated
Port Descriptions	Ethernet: Standard RJ45 port Power: Fischer 6-pin Range Data: N/A USB: N/A Video output: 3G-SDI (1 port), HDMI Dedicated BNC: 2 ports for Trigger, Timecode-in Programmable I/O BNC: 2 ports
I/O Signals	Programmable I/O (2 ports) for Fsync, Strobe, Ready, Time-code-out, Event, Pretrigger. Assign and define signals in PCC
Hardware Trigger	Dedicated BNC
Software Trigger	via Ethernet; via Image-based auto trigger (IBAT)
Synchronization	External Sync via FSync or IRIG Timecode
Recording Features	Burst mode; Image-based auto trigger, Continuous recording
Video Output	3G-SDI via Din and Micro HDMI type D port *Cameras prior to 2021 had HDMI type A port*
Accessory Power	4-pin Hirose (front) for 12V monitors up to 1 Amp

VEO L-model rear view

CONTROL

Software & OS	Phantom PCC (Windows x64); SDK available for C/C++, C#, Python, MatLab and LabView
On-camera Controls	N/A
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
Software Feature Highlights	Continuous recording can eliminate downtime between shots, Integrated Data Acquisition (NI-DAQ), Support for DIC Calibration with Sync-Snapshot menu, Image Processing

MEMORY & STORAGE

RAM Buffer	18GB, 36GB RAM options
Multi-Cine	Up-to 64 Partitions
Non-Volatile Media	N/A

POWER

AC Power	100-240 VAC, 80W power supply included
Voltage Range	16-32VDC Primary
Power Consumption	40W typical
Battery Options	Works with 16-32V battery sources only No battery mount option or dedicated backup port

MECHANICAL

Housing Variants	L-model only
Size	5 X 5 X 4.2" (12.7 x 12.7 x 10.8 cm)
Weight	4 lbs (1.8 kg)
Lens Mounts	F-Mount standard (aperture support for Nikon G-style lenses). Also available: Canon EF (with electronic focus and iris control), PL, C-mount
Mounting Points	Standard 1/4x20" mounting points on bottom, top and side of camera
Internal Shutter	Standard, for remote black references
Cooling	Active cooling. Quiet mode disables fans during capture

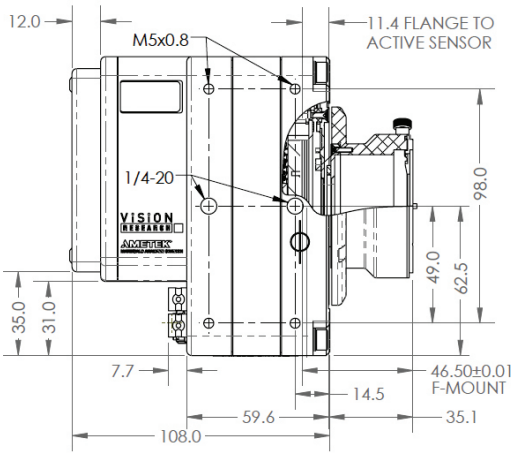
ENVIRONMENTAL

Operating Temperature	-10 to +50°C
Storage Temperature	-20 to +70°C
Operational Shock	30G, 11msec sawtooth, 3 axes, 2 directions per axis, 10 shocks per direction (60 pulses total)
Operational Vibration	MIL-STD-202G Method 214-A. Rated 12Grms; Figure 2A-1, Test Condition D, 15 min per axis
Relative Humidity	≤85% non condensing
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 KN32 KC Immunity - KC Compliant KN35 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/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

AMETEK®

100 Dey Road
Wayne, NJ 07470 USA
+1.973.696.4500