Phantom®
VEO 440

2560 x 1600 at 1100 fps
1920 x 1080 at 2100 fps

Standard Features include Programmable I/O, SDI and HDMI video outputs, up to 72GB recording buffer and a compact design

VEO 440

The latest member of our VEO product family, the Phantom VEO440 is designed to perform in demanding industrial applications requiring reliable, high resolution imaging at 4Gpx/second frame rates.

- Choose the 'L' model for software-based imaging in a lab environment.

- Choose the 'S' model for additional signals, ruggedized connectors, and to deploy an untethered workflow with battery input, on-camera controls, and compatibility with removable CFast 2.0 storage media.

Imaging Specifications

VEO cameras incorporate custom CMOS sensors providing 12-bit pixel depth, a global shutter and super-35mm format at full resolution for use with a wide variety of high-quality optics.

Key Specifications

Memory: 18GB, 36GB, 72GB RAM options
Multi-Cine: Partition RAM up to 63 segments

Gb Ethernet (standard) and 10Gb Ethernet (optional) for control and download Both protocols use same port

Minimum exposure is 1 µs
Exposure features include Extreme Dynamic Range (EDR), Auto-Exposure, Shutter-Off mode (for PIV).

Available in two body styles: L and S

Size: Approximately a 5" (13cm) cube (not including lens mount)

Rugged design: High-G Rated (non-destructive up to 100G); Milled aluminum housing with electronics isolated from airflow

VEO 440	
Pixel Resolution	2560 x 1600
Pixel size	10 µm
Sensor Size	25.6 x 16mm
ISO (12232 STD)	Mono: 16,000T, 6400D Color: 1250T, 1250D
Exposure Index	Adjustable E.I. * Mono E.I. 6400 - 32,000 Color E.I. 1250 - 6400

* Recommended Exposure Index (E.I.) range is specified.

AMETEK®
MATERIALS ANALYSIS DIVISION

Example Frame Rates & Record Times*

VEO 440		
Resolution	**Frame Rate (fps)**	**72GB RAM (sec)**
2560 x 1600	1100	11.4
2560 x 1440	1230	11.6
1664 x 1600	1600	12
1920 x 1080	2110	11.6
1280 x 720	4430	12.6
640 x 480	11,000	15
128 x 4	290,000	340

* Many other resolutions and speeds are available.
For additional values visit ***phantomhighspeed.com/calc*** to use our recording time calculator.

'L' Model	Connectivity	'S' Model
RJ45 (Gb Ethernet Standard, 10Gb Optional)	Ethernet	8-pin Fischer (Gb Ethernet Standard, 10Gb Optional
6-pin Fischer 16-32VDC	Power Input	6-pin Fischer 16-32VDC; Secondary 12V input for Battery via Capture Port
2 BNC Ports	Programmable I/O	4 BNC Ports
Yes	Trigger Input	Yes
Yes (IRIG-B)	Dedicated Timecode Input	Yes (IRIG-B)
No	Rear SDI Port	Yes (3G HD-SDI)
Via 6-pin Power	Serial RS232	Via 6-pin Power
None	Range Data	Dedicated 6-pin Fischer
None	On-Cam Controls	Yes (buttons, encoder)
None	USB	Yes, for WiFi Dongle
None	Removable Media	CFast 2.0 Cards (NTFS)

Vision Research Global Support Network

The Phantom VEO camera line is supported by Vision Research's Global Service and Support network offering AMECare Performance Services from multiple sites around the globe. Maximize the value of your Phantom camera with a full menu of professional support services. Learn more at www.phantomhighspeed.com/Service-Support

Select Features Include

Video Monitoring: Standard HDMI and 3G HD-SDI on all VEO cameras provides 720 and 1080 video standards up to 60Hz for live and playback. Includes uninterrupted live video during high-speed capture.

10Gb Ethernet Option: Download entire 72GB of data in as little as 2 minutes

Image-Based Auto Trigger (IBAT): Trigger the camera (or even multiple connected cameras) from motion detected within the live image, per the parameters set up in PCC

CFast Workflow (S-model): Use standard CFast 2.0 cards, formatted NTFS. Transfer CineRAW files from RAM at speed of 90 MB/second. Drag-and-drop the files from card using standard readers on Windows or Mac operating systems.

Camera Control & File Formats

Phantom PCC software for setup, control, download, image manipulation and basic motion analysis

SDK with both Labview and Matlab support is available

Native File Format: Phantom Cine Raw (.cine). Cines can be easily converted to other formats including h.264 mp4, Apple ProRes .mov, AVI, Tiff, JPEG, DNG and more using PCC. Cine Raw files are compatible with many major video editing and motion analysis programs

Mechanical & Environmental

Dimensions: 5 x 5 x 5" (127mm3) L-model; 5 x 5 x 5.5" (S-model)

Weight: 5 lbs. (2.3 Kg) L-model; 5.6 lbs (2.5kg) S-model

Lens Mount: Choices include Nikon F with G-style lens support, C-mount, and Canon EF with electronic lens control

Mounting Points: 2X standard 1/4x20 on 3 sides, with additional points for custom mounting plates. VEO handle, Cheese Plates and other CAMEO VEO accessories are compatible.

Cooling: Actively cooled. Sealed system keeps electronics isolated from the airflow. Quiet mode temporarily disables the fan.

Operational Temperature: -10°C - +50°C

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

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

*Certain Phantom cameras are held to export licensing standards. Please visit www.**phantom**highspeed.com/export for more information.*