

PRELIMINARY

## DATA SHEET

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# Phantom® Flex4K



- 4K at up to 1000 fps
- Low-noise, excellent dynamic range
- Records ultra high-speed and standard frame rates
- Will support both RAW and compressed recording formats

### Key Features:

Full resolution: 4096 x 2304

4096 x 2160 @ 1000 fps

1920 x 1080 @ 2000 fps

1° to 360° adjustable electronic shutter

New Phantom CineMag™ IV  
hot-swappable recording media

3G HD-SDI video outputs

Download & transcode support for both  
PC & Mac platforms now included

### Introducing the Phantom Flex4K, the Industry's Most Flexible Digital Cinema Camera

The Phantom Flex4K is a full-featured digital cinema camera, capable of speeds that range from standard frame rates to over 1,000 frames-per-second (fps) at 4K and up to 2,000 fps at 2K pixel resolution. Building upon the award winning technology of Phantom digital cinema products, the Flex4K combines features found in the latest cinema cameras with those found only in specialty cameras.

With the planned option to record either uncompressed raw or with industry-standard compression, the workflow will be just as flexible as the camera's frame rate. The latest in non-volatile storage technology is used to move data quickly, while a complete on-camera control menu eliminates the need for a computer on set.

## Flex4K

### Features (continued):

Advanced on-camera control interface

Playback and save controls on both sides of the camera

Internal mechanical shutter

Memory can be partitioned for multi-cine

Genlock for simplified 3D shooting and synchronizing video playback

Phantom RCU compatible

### Optional Battery Back

Choose between various, optional battery backs at time of purchase (or later as an accessory). Vision Research will soon provide more details, including recommended batteries and performance expectations.

### Viewfinder

A new Phantom-branded HD OLED viewfinder is also part of the system. This new EVF has full HD resolution, high quality optics and an extremely crisp and bright display. By incorporating the camera's ancillary data it includes features custom to the Phantom Flex4K, such as overlay menus and display modes.

The camera will also support existing component based HD viewfinders, and can be configured with a Fischer or optional Hirose viewfinder port.



### Cinematic Design, 35mm Depth of Field, Exceptional Image Quality

Designed with the cinematographer in mind, the form factor of the Phantom Flex4K adapts to a variety of shooting environments. From the studio to extreme conditions, the Flex4K is built to perform.

At 4K resolution the Flex4K offers super 35mm depth of field. The custom 9.4 megapixel sensor captures intricate detail with impressive dynamic range and low noise. This means excellent image quality and low-light performance. Intelligent temperature control and an all-new, streamlined design provides quick-to-shoot capability with an ultra stable image.

### Sensitivity & Exposure Index

The low noise performance of the Flex4K sensor allows for the effective ISO to be dialed in with the camera's Exposure Index function, without significant loss of image quality

**Exposure index (EI) range:** from 250 to 2,000

**Recommended EI =** 400 – 640

### Convenient and Intuitive Camera Controls

Controlling the Phantom Flex4K is easier than ever with a full-featured on-camera control interface for both basic and advanced camera operation. Set up universal capture and recording parameters before the shoot, while retaining access to the more commonly adjusted parameters like frame rate and exposure settings at the push of a button.

Capture, trigger, playback and save controls can be found on both sides of the camera in order to provide a seamless workflow for different shooting environments.

Remote control is also possible with a handheld Phantom RCU.

### PC & Mac Based Workflow Solutions

Each Phantom Flex4K will ship standard with both Mac and Windows-based download solutions. For the first time, Vision Research will provide one license of the popular Glue Tools Cine Toolkit, and Séance download software for the Mac. This provides the ability to download Flex4K raw files in Mac OSX, and direct compatibility with most Quicktime-based edit and color grading software.



The camera will also ship with our updated (PC-only) Phantom PCC controller software, for downloading, file conversion and full camera control. Phantom PCC software will now include both h.264 and Apple ProRes encoding for Phantom Cine raw files.

## Expanded Recording Options Cover All the Bases

The Phantom Flex4K is available with up to 64 Gigabytes of internal RAM. Select “Loop mode” for the fastest high-speed workflow. Loop mode records into the RAM buffer at the camera’s top speeds, then once the camera is triggered the files can be quickly offloaded to an installed Phantom CineMag IV, available in sizes up to 2TB.

For longer record times use run/stop (R/S) mode and record directly to the CineMag IV at speeds over 100 4K frames-per-second and record for several minutes. This is an excellent option when ultra high-speed is not required. In fact, at 24 fps almost two hours of raw 4K footage can be recorded directly to a 2TB CineMag IV.



Phantom cameras have always generated Cine raw files, and the Flex4K is no exception. These files are uncompressed and maintain the maximum information for post processing. They are compatible with many of the industry’s top color grading software packages, or they can be converted to a variety of formats using software provided with the camera.

Vision Research has plans to introduce in-camera compression as an alternative for the Phantom Flex4K. When available, the user can choose to record either raw or industry-standard compressed files directly to the CineMag IV. This increases record time, decreases file size, and simplifies the process straight out of the camera.

| Maximum Record Times <small>*recording times vary based on memory size, frame rate and resolution</small> |                  |             |                          |
|---|------------------|-------------|--------------------------|
| Resolution  | Frame Rate (fps) | 64GB RAM    | 2TB CineMag IV R/S Mode* |
| 4096 x 2304 (max res)   | 940 (max loop)   | 4.8 seconds | N/A                      |
| 4096 x 2160 (4K std)  | 1000 (max loop)  | 4.9 seconds | N/A                      |
| 4096 x 2160   | 125              | 38 seconds  | 20 minutes               |
| 4096 x 2160   | 24               | 3 minutes   | 100 minutes              |
| 1920 x 1080 (16 x 9)  | 2000 (max loop)  | 9.8 seconds | N/A                      |
| 1920 x 1080   | 250              | 78 seconds  | 20 minutes               |
| 1920 x 1080   | 24               | 13 minutes  | 200 minutes              |

\* Frame rates and duration to 2TB CineMag IV are estimates

| Resolution / Maximum Frame Rates |                   |
|----------------------------------|-------------------|
| Resolution                       | Max fps Loop Mode |
| 4096 x 2304 (max res)            | 940 fps           |
| 4096 x 2160 (4K standard)        | 1000 fps          |
| 3840 x 2160 (16 x 9)             | 1000 fps          |
| 1920 x 1080 (16 x 9)             | 2000 fps          |
| 1280 x 720 (16 x 9)              | 3000 fps          |

| Inputs/Outputs           |   |
|--------------------------|---|
| Power input              | 1x 3-pin 24V input (+14-28vdc)  |
| Battery mount (optional) | Selectable battery backs in support of several standard 12V and 24V solutions   |
| 12V Power aux outputs    | 1x 2-pin Lemo, 1x 4-pin Hirose for monitor  |
| 24V Power aux outputs    | 2x 3-pin Fischer with R/S (24V is unregulated)  |
| Ethernet                 | 1x 8-pin Fischer for optional software operation & file download  |
| Remote                   | 1x 5-pin Fischer for RS232 & +12-24V DC   |
| HD-SDI                   | 3x main 3G HD-SDI outputs, 1 additional SDI output at front for viewfinder. 1 SDI return (includes Genlock support)                         |
| Sync                     | 1 Fischer: F-sync, Time code in & out, trigger  |
| Viewfinder               | 1x selectable Fischer or Hirose for component video, and 1x 3G HD-SDI BNC for SDI-based viewfinders – including the new Phantom OLED HD EVF |

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## Phantom Flex4K

### Imaging Specifications:

Pixel size: 6.75 micron  
 Ultra-fast progressive scan shutter  
 (<1 millisecond scan time)  
 Sensor size: 27.7 x 15.5mm  
 Sensor @ 1080p: 13 x 7.3mm  
 Lens mount: PL (standard), Nikon F/G  
 & Canon EF (coming soon)

### Additional Specifications:

Up to 64GB internal RAM  
 Recording Media: Phantom CineMag IV (up to 2TB)  
 Size: 11.5 x 5.0 x 7.9 in (LxWxH); 29.2 x 14 x 20 cm  
 Weight: 14 lbs (6.3 kg) without lens or viewfinder

### Focused

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



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A third workflow option is recording the HD-SDI video playback with a video-based field recorder. These devices are easy to find, easy to use, and take advantage of the camera's in-camera video scaling for high-quality 4:4:4 1080p or 4:2:2 4K video via two 3G HD-SDI outputs.

### Image Monitoring & Video Outputs

Advanced video monitoring employs various configurations for the camera's 4x total 3G HD-SDI outputs, and 1x return. Each output is customizable for monitoring with adjustable frame guides, and/or a clean output for use with field recorders. The outputs can also be switched from displaying Rec709 equivalent and pre-set Log curves.

All HD-SDI outputs support video scaling for a sharp 4:4:4 1080p output of the camera's full sensor. Two of the 3G HD-SDI outputs can also be combined for a 4:2:2 ultra-HD signal, which will allow the full resolution to be viewed on 4K production monitors.

The viewfinder and monitor feeds can be set to always show a live feed, so the DP can follow the action and frame up the next shot while the last shot is still being saved or played from the other outputs. Zoom (focus assist) and threshold (exposure assist) functions are also included.



*AMETEK Vision Research's digital high-speed cameras are subject to the export licensing jurisdiction of the Export Administration Regulations. As a result, the export, transfer, or re-export of these cameras to a country embargoed by the United States is strictly prohibited. Likewise, it is prohibited under the Export Administration Regulations to export, transfer, or re-export AMETEK Vision Research's digital high-speed cameras to certain buyers and/or end users.*

*Customers are also advised that some models of AMETEK Vision Research's digital high-speed cameras may require a license from the U.S. Department of Commerce to be: (1) exported from the United States; (2) transferred to a foreign person in the United States; or (3) re-exported to a third country. Interested parties should contact the U.S. Department of Commerce to determine if an export or a re-export license is required for their specific transaction.*