

## DATA SHEET

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Phantom v641 Broadcast  
Shown with optional CineMag interface and On-Camera Controls

# v641 Broadcast

Ultra-slow motion for  
live sports and events

### Key Features:

Frame rates for up to 90X ultra-slow motion at  
1920 x 1080 or 1280 x 720 resolution

Breakthrough light sensitivity, ISO (ISO-12232 SAT  
method): 8,800 T Mono, 1,200 T Color (without OLPF),  
1,000 T Color (with blue OLPF)

Versatile Dual HD-SDI, two HD-SDI ports for dual-link  
4:4:4 or 2x 4:2:2 independent video outputs

Video matrix and advanced color control over the  
HD-SDI video

Multi-cine recording capability

EVS integration for camera control and playback

1  $\mu$ s minimum exposure times for sharp images of  
fast moving events

Internal mechanical shutter for hands-free /  
remote black referencing

8 GB, 16 GB or 32 GB built-in high-speed memory

8-bit or 12-bit pixel depth

Gb Ethernet for camera control

### Key Benefits:

#### WHEN IT'S TOO FAST TO SEE, AND TOO IMPORTANT NOT TO®

The Phantom v641 is the second generation v640 camera. It is smaller and lighter than its predecessor and retains the **unique ability to both record and playback ultra-slow motion footage simultaneously**. The internal high-speed dynamic RAM can be segmented into different partitions. It is possible to record into one partition of memory while playing back another partition at the same time. This extraordinary feature makes the v641 an ideal camera for live sports applications. The v641 can be connected to a controller in the studio or OB truck which can access the camera's memory for playback while the camera operator is framing and recording the live action.

The v641 provides a 4 megapixel sensor and can record full-resolution frame rates of 1450 frames-per-second, and 1920 x 1080 resolution of 2560 fps. The minimum frame rate is 10 fps.

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Phantom v641 Broadcast  
Back View

Leading slow-motion Solution Providers around the world have chosen Phantom cameras as the core of their broadcast-ready solutions.

The v641 technology has been used for ultra-slow motion at the **2010 FIFA World Cup**, the **Super Bowl**, the **2010 Olympics**, and baseball's **World Series**.

What makes the v641 so unique and so perfect for ultra-slow motion replay?

**Extremely high frame rates** at HD resolutions enables playback speeds as much as 90X times slower than live action. (For example, at 1280 x 720, the maximum recording speed is 5850 fps. Play that back at 60 fps to achieve a slow-down of 97 times.) Catch what the eye cannot see in live action. Marvel at the amazing skills of an athlete, watch muscles ripple, eyes focus, intense concentration. Ultra-slow motion playback evokes a deep visceral, emotional reaction in viewers.

**Excellent control of HD-SDI image quality.** The Phantom v641 image lends itself perfectly to the high-standards of the industry. Working with video matrix, hue, gamma and chroma adjustments enables the Phantom v641 to match the HD broadcast cameras shooting an event at normal speeds.

**An electronic global shutter capable of microsecond exposure times.** It is highly unlikely you need such short exposures to freeze motion and prevent blur in sporting activities. But, the roots of the v641 technology come from scientific, academic and industrial uses where short exposures are often required. We've brought industry leading performance required by those extreme applications to the v641 for the ultimate in flexibility.

**High light sensitivity.** Rated at 1200 ISO (color) using the ISO 12232 SAT method, the v641 has enough light-gathering capability to deal with high frame rates, short exposure times and unpredictable lighting conditions. Enabled by a custom-designed sensor with high quantum efficiency and a unique microlens technology, the v641 will produce well exposed images which lessens the need to introduce gain and possible noise.

**Multi-cine support.** Not only can you segment the internal memory into a maximum of 63 segments, you can record into one segment while playing back a slow-motion clip from another. One segment is always continuously recording the live action. When an important event takes place, trigger that segment to save the recording. The live recording automatically moves to the next segment. Meantime, you can view, trim, and playback the just-recorded clip from camera memory.

**Versatile Dual HD-SDI.** The multi-cine capability is supported with a dual independent video port architecture. The "live" image is always played through one of the two HD-SDI ports on the camera (and the viewfinder port), while the second port can simultaneously be used for playback of a saved clip. Either or both of these outputs can be fed to an external recorder or clip server. The camera operator never loses sight of the live action while waiting for a playback to finish. Alternatively, combine the two HD-SDI ports into a dual-link configuration to create a single 4:4:4 output for ultimate quality playback/recording.

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**EVS support via UltraMotion.** EVS software supports the v641 natively, enabling all these features from an OB truck. An operator in the truck can segment memory, start recording live images, trigger the camera, view any saved clip, scrub through the clip, trim it and queue it for playback – all without the need to first download the clip.

**Custom fit B4 adapter.** While the v641 comes standard with a Nikon F-mount allowing for full sensor coverage (2560 x 1600 pixels), for sports broadcast applications there is a B4 adapter that allows a B4 broadcast lens to exactly cover 1920 x 1080 for minimum light loss.

If you are looking for the ultimate in ultra-slow motion playback solutions for sports broadcast, consider the Phantom v641. Contact your local Vision Research representative today.



Phantom v641 Broadcast

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.

### 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.



**AMETEK®**  
MATERIALS ANALYSIS DIVISION

100 Dey Road  
Wayne, NJ 07470 USA  
+1.973.696.4500  
phantom@visionresearch.com

[www.visionresearch.com](http://www.visionresearch.com)