

## DATA SHEET

### v710

Ultra-fast – 1.4 million fps

1280 x 800 at 7500 fps

300 ns digital exposure

Phantom CineMag® compatible



#### Key Benefits:

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

**Introducing** the Phantom v710 – a megapixel camera capable of taking 1,400,000 pictures-per-second.

Building on the architecture of the award winning Phantom v12.1 digital high-speed camera, the Phantom v710 goes beyond ultra-high-speeds and delivers the user-convenience features you need: remote/automatic black referencing, Versatile Dual HD-SDI outputs, a component viewfinder port, high-speed synchronization, range data input and Phantom CineMag support.

**Take the wide view** with our custom-designed 1280 x 800 CMOS sensor. The wide aspect ratio of the v710 – 25% wider than square cameras – allows you to keep moving targets in-frame longer and see more of the event you are recording. The v710's widescreen aspect ratio also provides the unique ability to shoot 1280 x 720 HD with a one megapixel camera.

Get over 7500 frames-per-second (fps) at full megapixel resolution. At lower resolutions, you will get even higher frame rates, up to **1,400,000 fps** (optional).

#### Key Features:

Over 7500 frames-per-second (fps) at full resolution.

Maximum fps (128 x 8): 680,000 standard, 1,400,000 (optional & export controlled)

1280 x 800 CMOS sensor

Exposure Time (shutter speed): 1µs standard

Sub-microsecond shuttering: 300 ns (optional & export controlled)

High-resolution timing system: Better than 20 ns resolution

Extreme Dynamic Range (EDR): Two different exposures within a single frame

Internal Shutter: Hands-free/remote current session reference (CSR)

Memory Segmentation: Up to 64 segments

Non-volatile, hot-swappable Phantom CineMag memory magazines

Range Data input

Built-in Memory: 8 GB, 16 GB, 32 GB

ISO (ISO-12232 SAT): 7000 Mono, 2100 Color

Pixel Bit-depth: 8- and 12-bit

Gb Ethernet

View recordings immediately via video-out port

Versatile Dual HD-SDI ports configured to meet your needs

Phantom v710  
a megapixel  
camera  
capable  
of taking  
1,400,000  
pictures-  
per-  
second...

With an active pixel size of 20 microns and improved quantum efficiency, the Phantom v710 camera has unsurpassed **sensitivity**. So, even if you are using our sub-microsecond shuttering, you'll get the highest sensitivity with the lowest noise possible.

That's right. You can eliminate blur and see the most minute detail by using our optional **sub-microsecond shuttering**. Down to 300 nanoseconds, programmable in 18 ns increments.

Each camera supports **8- and 12-bit pixel depth**. Smaller bit-depth gives you more recording time and smaller files. Greater bit-depth gives you more gray levels and finer detail. With the greater latitude of 12-bits, you can pull more detail out of the image.

The v710's **high-resolution timing** system yields a timing resolution of better than 20 ns. Frame rate, frame synchronization and exposure accuracy are all improved over previous generations of high-speed cameras. And, a frame synchronization signal is now available via a dedicated BNC for easier cabling and increased signal integrity. This makes the camera perfect for **PIV applications** with a 500 nanosecond straddle time and no image lag. Another PIV-specific feature is the v710's unique shutter-off setting which keeps the electronic global shutter open throughout the entire frame acquisition time allowing external strobe lights or pulsed lasers to control the exposure for each frame.

Of course, the v710 offers our unique **Extreme Dynamic Range (EDR)** feature giving you the ability to get two different exposures within a single frame. And, with **auto exposure**, the camera adjusts to changing lighting conditions automatically.

There is an **internal shutter** for shading the sensor when doing a session-specific black reference (CSR). Whenever you do a CSR from the Phantom Software, the shutter closes automatically. You no longer have to manually shade the sensor with a lens cap!

The v710 comes with 8 GB of high-speed dynamic RAM standard, but you can order 16 GB or 32 GB versions. Our **segmented memory** allows you to divide this into up to 64 segments so you can take multiple shots back-to-back without the need to download data from the camera.

Or, record directly to our **Phantom CineMag** non-volatile, hot-swappable memory magazines. They mount on the CineMag compatible version of the camera. Continuously record full resolution cines into non-volatile memory at up to 700 fps. That's up to 5 minutes into the 256 GB CineMag or 10 minutes into the 512 GB CineMag. (A 128 GB version is coming later this year.) Or, record at higher speeds into camera RAM, then manually or automatically move your cine to the CineMag. With CineMag storage you get maximum data protection and an ideal storage medium for secure environments.

Move the CineMag from the camera to a **CineStation** connected to a PC and view, edit, and save your cines using the Phantom Software supplied with the camera. Keep them in their original cine raw format, or convert them to TIFF, QuickTime, AVI, or a number of other formats. Move the files from the CineStation to a disk or tape deck via 10Gb Ethernet, 4:4:4 HD-SDI, or Component Video outputs.

H	V	FPS
1280	800	7,500
1280	720 (720p)	8,360
1024	768	9,520
896	480 (DVD)	17,000
768	576 (PAL)	16,100
768	480 (NTSC)	19,300
640	480	22,400
512	512	25,000
512	256	49,500
512	128	97,200
384	256	60,900
256	256	79,000
256	128	153,200
256	64	288,800
128	128	215,600
128	64	397,100
128	32	685,800
128	16*	1,077,500
128	8*	1,400,000

\*Assumes FAST option installed, option is export controlled





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### Additional Features:

Analog Viewfinder Out: PAL, NTSC & HD Component (720p)

Lensing: F-mount, C-mount, PL-mount

Size (without lens): 12.25 x 5.5 x 5.0 in. (L,W,H)  
31.1 x 14 x 12.7 cm

Weight (without lens): 12 lbs (5.4 Kg)

Power: 90 Watts @ 24 VDC, without CineMag

Operating Temperature: 0°C to 40°C @ 8% to 80% RH

Storage Temperature: -10°C to 55°C

Non-operational Shock: 33G, half sine wave, 11ms, all axes  
without lens

Operational Shock: 30G, half sine wave, 11ms, 10 times all  
axes (without CineMag or lens) to Mil-Std-810 G

Operational Vibration: 0.25G, 5-500 Hz, all axes

### 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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