



# Phantom v7.3

800 x 600 at 6,688 frames-per-second,  
and up to 500,000 fps with the new  
"turbo mode."

## THE UNDISPUTED KING OF SPEED

VRI expands the capabilities of its Phantom v7 Series cameras with the Phantom v7.3. Its full frame 4:3 aspect ratio 14-bit image depth (standard) 800 x 600 active pixel CMOS sensor the camera sports an exception recording rate of 6,688 frames per second at full resolution, and over 190,000 fps (standard mode) or an astounding 500,000 fps (turbo mode) at a reduced resolution adjustable in 32 x 8 pixel increments.

With all the features Phantom camera users have become accustomed to the v7.3 has added a larger memory module option for longer recording times, and a continuous video output HD/SDI interface.



- *Full frame 4:3 aspect ratio CMOS sensor composed of 800 x 600 pixels*
- *14-bit image depth (standard)*
- *6,688 frames per second full resolution, up to 190,000 fps (standard mode), 500,000 fps (turbo mode)*
- *"CAR" (Continuously Adjustable Resolution) in 32 x 8 pixel increments*
- *4800 ISO/ASA monochrome, 1200 ISO/ASA color sensitivity equivalency*
- *Global on-chip shuttering to 2 microseconds, optional 1  $\mu$ s (standard mode); fixed 1  $\mu$ s (turbo mode)*
- *"EDR" Extreme Dynamic Range <sup>TM</sup> and Auto Exposure control*
- *PIV - Particle Image Velocimetry (standard)*
- *Up to 16 Gigabytes DRAM, 24 Gigabytes non-volatile flash memory (optional)*
- *IRIG-B timing capture, modulated or unmodulated, IRIG lock w/phase shift*
- *Continuous video output (NTSC, PAL, HD/SDI 720p, 1080p, 1080i, 1080psf)*
- *Optional continuous data streaming up to 2000 fps (8-bits)*
- *Automated multiple session recording for remote unmanned operation*
- *Gigabit Ethernet or RS232 control*



## v7.3 Specifications

### FEATURES

*Auto Exposure*

*"EDR" Extreme Dynamic Range™*

*Continuous data streaming (optional)*

*Continuous recording*

*PIV (Particle Image Velocimetry)*

*Pre-trigger recording*

*On chip global shuttering*

*Strobe sync*

*Segmented image memory*

*Continuous color HD-SDI video output*

*IRIG-B timing capture with phase shift*

*10/100/Gigabit Ethernet*

**Sensor:** 800 x 600 pixel CMOS sensor.

**Image Bit Depth:** 14-bit (standard)

**Sensitivity:** 4800 ISO/ASA mono-chrome, 1200 ISO/ASA color

**Frames per Second (FPS):** Full sensor; to 6,688 fps

**Allocated formats:** to 190,476 fps (standard mode), 500,000 fps (turbo mode) with "CAR" (Continuous Adjustable Resolution) feature

**Exposure Time:** Variable, independent of sample rate (fps), to 2 microseconds, optional 1 μs (standard mode), fixed 1 μs (turbo mode)

**Trigger:** Continuously variable pre/post

**Imager Control:** 10/100/Gigabit Ethernet, RS232 serial interface, or HD-SDI

**Preview and Focusing:** Via computer monitor or continuous video out

**Lens Mounts:** Nikon mount standard. Many other lens mounts available, including C-mount

**INPUTS/OUTPUTS:** via integrated quick-release connector:

**Trigger:** Rising/falling TTL pulse w/filter, or switch closure

**Sync Image:** TTL pulse

**Event Marker:** TTL pulse or switch closure

**Ready Signal:** TTL pulse

**IRIG-B Timing:** IRIG-B code, modulated or unmodulated input, with IRIG-B output, lock, and variable phase shift

**Continuous Data Streaming:**

Up to 2000 fps (8-bits), 1300 fps (12-bit)

**Strobe Sync:** TTL Pulse

**RS232**

**Network:** 10/100/Gigabit Ethernet

**Video out:** NTSC, PAL, and HD-SDI (720p, 1080p, 1080i, 1080psf at 24, 25, 59.9, or 60 fps)

**Power:** 24VDC/1.5 Amp

### MEMORY

**Standard:** 2 Gigabytes integral image memory records 4,266 images for 0.6 seconds of continuous recording at 6,688 fps, full format (8-bits) or 2,133 images for 0.3 seconds of continuous recording at 6,688 fps, full format (14-bits). Longer recording times for lower sample rates and allocated formats.

**Optional:** 4 Gigabyte integral image memory continuously records 8,533 images for 1.3 sec (8-bits) or 4267 images for 0.6 sec (14-bits) at 6,688 fps full frame, 8 Gigabyte option will record 17,066 images for 2.6 sec (8-bits) or 8,533 images for 1.3 sec (14-bits) at 6,688 fps full frame, and the 16 Gigabyte option will record 34,133 images for 5.1 sec (8-bits) or 17,066 images for 2.6 sec (14-bits) at 6,688 fps full frame.

**Optional:** Non-Volatile Flash Memory, up to 24Gigabytes.

### ENVIRONMENTAL

**Ambient Temperature**  
32°F and 104°F (0°C and 40°C)

**Maximum humidity:** 80%, non-condensing, at 5°C

### SOFTWARE

Phantom® operates in Windows XP Pro or Vista environments with familiar commands found in familiar places. Standard functions include **Acquisition:** Image capture, IRIG-B timing capture & standard time annotation. Field of view & focus. Sample rate & aspect ratio selection. Shutter speed. Histogram. Brightness, contrast, & gamma adjust. Trigger modes. Continuous record. Save & recall setups.

**Analytical playback:** Immediate playback of cine. Variable playback speed in forward or reverse, including freeze frame & endless loop. Random Go-to-Image. View single images at random from any cine. Tile/cascade multiple images on one screen. Timing data displayed with each image. Cine editor. Multi Cine Viewer.

**Measurements:** Linear or angular measurements. English and metric units. Generate Velocity, RPM, or 100 data points per measurement reports. Report files & images are compatible with Phantom, TEMA Starter Software or any spread-sheet software, and image analysis software such as TrackEye®, Image Express®, or Falcon®.

**Image processing:** Smooth, sharpen, psuedocolor, negative image, and edge detection. Brightness, contrast & gamma adjust. 3x3 and 5x5 filter matrix for custom image processing.

**File management:** Organize, save, compress and export cines, or single images. File formats are compatible with most word processing, desktop, publishing, and presentation software.

### DIMENSIONS

**Size:** 4.3 x 4.0 x 9.5 inch (HWD)  
(10.9 x 10.16 x 24.13 cm) (HWD)

**Weight:** 7 lbs (3.18kg)

**Power:** 24VDC/1.5 Amp

**Mounting:** 1/4-20 inch and four 10-32 threaded hole pattern in base and top

**Mounting Axis:** Any position

**Country of Origin:** The United States of America

### STANDARD ACCESSORIES

Phantom® software, Single user license\*  
2 Gigabyte integral image memory

Ethernet, Sync output pulse, trigger, pretrigger, video out, and IRIG-B

110/220VAC -24VDC International Power Adapter, 12 foot (3.7 m) power cord

One year service contract included

### QUESTIONS?

For technical assistance, systems integration, custom options, or information on imaging techniques or training please call us toll free:

1.800.RESOLUTION

(US & Canada 1.800.737.6588)

For the most up-to-date information, specifications and options, please visit our website:

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

VISION RESEARCH

All specifications are subject to change. (Oct-07)

## Phantom v7.3 Maximum Recording Speed vs. Image Size

The Phantom v7.3 camera system can record up to 6,688 frames per second using the full 800 x 600 pixel CMOS imaging sensor array. The operator may also specify other aspect ratios to increase speeds or extend recording times.

The chart below details the Phantom v7.3 aspect ratio choices available in the setup screen pull down menu. Using the CAR (Continuous Adjustable Resolution) feature, speeds between these values are continuously adjustable in 32 x 8 pixel increments.

STANDARD MODE	
RESOLUTION	RATE
800 x 600	6,688
640 x 480	10,101
320 x 240	33,057
512 x 512	11,527
512 x 384	15,151
512 x 256	21,978
512 x 128	40,000
512 x 64	67,796
256 x 512	20,000
256 x 256	36,697
256 x 128	63,492
256 x 64	100,000
128 x 128	88,888
128 x 64	129,032
64 x 64	148,148
32 x 32	190,476

TURBO MODE	
RESOLUTION	RATE
800 x 600	6,814
640 x 480	10,389
320 x 240	36,697
512 x 512	11,869
512 x 384	15,810
512 x 256	23,391
512 x 128	44,943
512 x 64	83,333
256 x 512	21,052
256 x 256	40,816
256 x 128	76,923
256 x 64	137,931
128 x 128	117,647
128 x 64	200,000
64 x 64	250,000
32 x 16	500,000



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