

PRELIMINARY

DATA SHEET

For the most current version visit www.phantomhighspeed.com
Subject to change Rev April 2018



*Inset: Back View
with cables*

*Phantom S990
Front View*

Phantom® S990

The Highest throughput streaming camera available.

Key Features:

- 9 Gpx/sec of streaming capability
- Scalable - Up to 4 banks of 4 CXP ports available
- Phantom 4K sensor in color or monochrome
- CXP protocol, Gen-i-Cam compliant
- Sturdy, metal body construction
- Made in USA

Key Benefits:

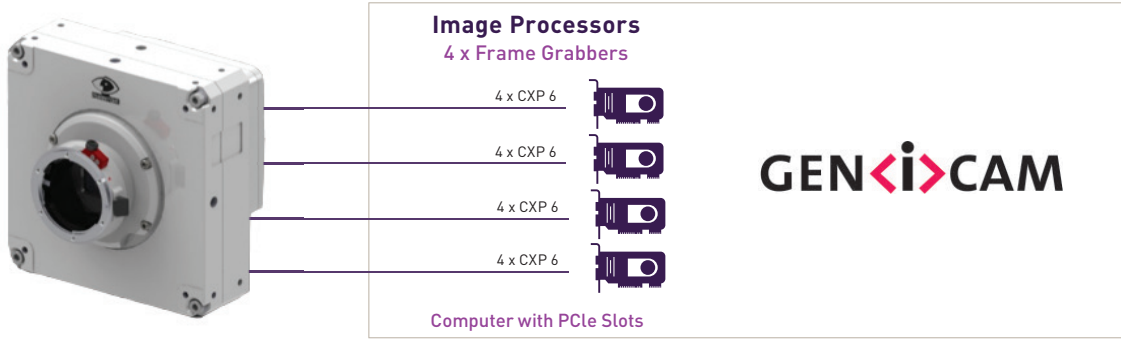
The Phantom S990 brings together Phantom premium sensor image quality, world class high speed technology, and record breaking direct data transfer speed to provide 9Mpx at up to 938 fps and almost 9Gpx/sec. Using up to 16 standard CXP6 channels, the Phantom S990 streams directly into PCI Express frame grabbers, and is Gen-i-Cam compliant.

Designed for exacting machine vision applications and beyond, the Phantom S990 brings inherent benefits from high speed imaging technology.

- World class high speed image quality:** The Phantom S990 uses the same Phantom-designed sensor found in the Phantom Flex 4K, with image quality high enough for media production.
- Expertise in super-fast image capture and transfer:** The Phantom S990 leverages know-how from our traditional high-speed cameras, some with capture rates of up to 26Gpx/sec.
- Signaling for any situation:** Standard machine vision signals, plus time code in and out, with a header for metadata
- Highest level of detail:** Images are captured in 12-bit, but can be transferred in either 8 or 12-bit.
- Crossover to Streaming:** CXP and Gen-i-Cam compliant, plus 4 Enhancements:

Designed for up to 4 frame grabbers, with image stitching	Metadata header including time code in each image
GPIO for flexible signaling and synchronization	Rolling / Global / Global Bright Field shutter selection

SET-UP FOR HIGH THROUGHPUT STREAMING APPLICATIONS



1. Acquires images, processes signals:

- FSYNC (in/out)
- IRIG
- Strobe (out)
- Trigger (SW)



2. Streamer establishes CXP link with FG SW:

- Transmits raw images as 1 to 4 virtual cameras
- Time stamp added in header
- Images are captured 12-bit, transmitted in 8-bit or 12-bit



3. FG receives images:

- DMA's image data in to PC ram
- Images are stitched



4. Viewer/Integrator receives images via Gen-i-Cam:

- Camera control
- Manages resolution / speed
- Performs color interpolation
- Places time stamp in header

- Up to 8 Gpx/sec
- 9Mpx @ 1000 fps



Phantom S990 - Back Panel

Flexible Data Transfer

The S990 streams only the amount of data needed, and lower frame rates or resolutions can use fewer ports. User programming stitches either 2 or 4 virtual cameras to maximize throughput up to standard Phantom VEO-4K performance levels.

- 1 bank of 4 CXP ports = Max 2.2 Gpx/ sec
- 2 banks of 4 CXP ports = Max 4.4 Gpx/sec
- 4 banks of 4 CXP ports = Max 8.85 Gpx/sec

Standard protocols

- CoaXPress (CXP) 6
- Gene-i-Cam
- Jiia Certified

Specifications:

Resolution (H x V)	4096 x 2304	Sensor	Phantom 4K
Resolution Mpx	9.4 Mpx	Sensor Tpe	CMOS Color or Mono
Frame Rate	938 fps @ 8bit 625 fps @ 12bit	Image Data Interface	CXP6 (CoaXPress)
Sensor Size	27.6 x 15.5 mm	Data I/O	2 opto-isolated, 3 bi-directional, Timecode In/Out
Sensor Diagonal	31.72 mm	Power Requirements	40 Watt
Pixel Size	6.75µm	Cooling	Fan
Bits/Pixel	12, output in either 8 or 12	Lens Mount	F Standard
Electronic Shutter	Global / Rolling / Bright Field	Weight	1.62 Kg (3.6 Lb)
Dynamic Range	GS: 54.8 dB RS: 71.6 dB	Dimensions WxHxD	145 x 145 x 190 mm (5.7 x 5.7 x 7.5 in) Without lens mount
ISO	GS: 5,000(M), 640 (C) RS: 2,000 (M), 320 (C)	Operating Temperature	-10C to +55C
Minimum Exposure	2µs		

The S990 has 3 selectable shutter modes to customize to specific applications:

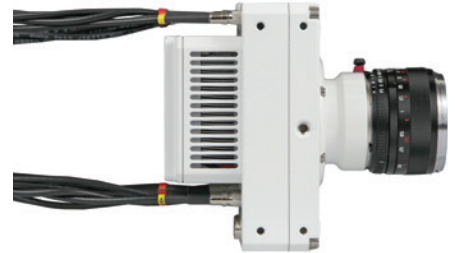
- Rolling Shutter: For images with the highest dynamic range and lowest noise
- Global shutter: For high-speed and precise applications
- Bright Field Mode: For the lowest noise in applications with bright backgrounds

Signalling: Hirose 12-pin Connector

GPIO 0 - 3 - Bi-directional	Input: Event In Trigger In Memgate	Output: Strobe Trigger out Ready Time Code Out
GPIO 3 - Bi-directional	Time Code In	
GPIO 4	Isolated Input: Event In Trigger In Memgate Time Code In	
GPIO 5		Output: Strobe Trigger out Ready Time Code Out

PRELIMINARY

Phantom[®] S990



Phantom S990 - Side View with Cables

Vision Research Global Support - for wherever you are

Our ultrahigh-speed 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 about our service and support options at www.phantomhighspeed.com/Support

Focused

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



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Resolution		Bit Depth	FPS		
H	V		8Gpx/sec	4Gpx/sec	2Gpx/sec
4096	2304	8 bit	938	465	235
		12 bit	625	310	155
2048	2304	8 bit	938	938	465
		12 bit	938	625	310
1024	1600	8 bit	1,345	1,345	1,345
		12 bit	1,345	1,345	895
4096	960	8 bit	2,215	1,105	555
		12 bit	1,475	735	730
2048	960	8 bit	2,215	1,865	935
		12 bit	2,215	1,245	625
1024	960	8 bit	2,215	2,215	2,215
		12 bit	2,215	2,215	1,475
4096	512	8 bit	4,065	3,030	1,020
		12 bit	2,710	1,355	675
2048	512	8 bit	4,065	4,065	2,030
		12 bit	4,065	2,710	1,355
1024	512	8 bit	4,065	4,065	4,065
		12 bit	4,065	4,065	2,710
4096	128	8 bit	14,200	7,100	3,565
		12 bit	9,465	4,730	2,370
2048	128	8 bit	14,200	14,200	7,100
		12 bit	14,200	9,465	4,730
1024	128	8 bit	14,200	14,200	14,200
		12 bit	14,200	14,200	9,465

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.