VISION RESEARCH

PHANTOM

when it's too fast to see, and too important not to.®

DATA SHEET

For the most current version visit www.phantomhighspeed.com
Subject to change Rev June 2019

Phantom Machine Vision

Phantom® Machine Vision Product Family

True High-speed imaging for Machine Vision applications

Key Benefits:

The Phantom family of Machine Vision cameras brings true high-speed performance to machine vision applications ranging from electronics inspection to flow cytometry to extended duration recording and analysis. Built on proven custom CMOS sensors and technology used in traditional Phantom high-speed cameras, the Machine Vision cameras provide unique features and benefits:

- **Expertise in Super-fast Image Capture and Transfer:** Decades of high-speed imaging expertise ensures high quality high-speed performance.
- **Built on Renowned Phantom Platform:** Phantom high-speed cameras are known for excellence in image quality and data management at extreme and challenging frame rates
- **Metadata Ready:** Important metadata is available in each frame's header for precision analysis.
- **Signaling for Any Situation:** Standard machine vision signals, plus time code in and out, with a header for metadata.
- **CXP6 Protocol:** All Phantom Machine Vision Cameras use CXP6 and GenICam Protocols for ultimate flexibility in solution configurations.

Key Features:

Full family of high-speed streaming options

2Gpx/sec to 9 Gpx/sec

Standard Protocols

- CoaXPress (CXP) 6
- GenICam
- JIIA Certified

AMETEK®
MATERIALS ANALYSIS DIVISION

MACHINE VISION FAMILY

HIGHEST THROUGHPUT AND RESOLUTION

Media Quality **Flex 4K** sensor
9Gpx/sec (938 fps)
4096 x 2304 resolution
Up to 25,000 fps

HIGHEST FRAME RATES

Popular 1Mpx **VEO710** sensor
7Gpx/sec (7,400 fps)
1280 x 800 resolution
Up to 680,000 fps

4MPX WITH HIGH FRAME RATE

Proven **VEO640** sensor
6Gpx/sec (1,480 fps)
2560 x 1600 resolution
Up to 200,715 fps

2GPX/SEC, 1,730 FPS

Workhorse **C-Series** sensor
1.3 Mpx, 1,730 fps

2GPX/SEC, 6,950 FPS

VGA variant of **C-Series** sensor
640 x 480, 6,950 fps

Until now, most Machine Vision cameras provide only up to 2Gpx/sec (25 Gbps) of data. Phantom High-Speed Machine Vision cameras provide up to 9Gpx/sec by dividing and transmitting the image by rows, meaning higher frame rates and resolutions.

- **Divided by Rows:** 2 rows of the image are driven to the each of the frame grabbers simultaneously, then the process is completed until the image is fully transferred. The image can then be stitched back together with a simple algorithm.
- **Flexible Data Transfer Rates: :** Stream only the amount of data needed, down to 2Gpx/sec. Lower frame rates or resolutions can use fewer banks of CXP6 ports. User programming stiches either 2 or 4 virtual cameras to maximize throughput up to standard performance levels.

  1 bank of 4 CXP 6 ports = Max 2.2 Gpx/ sec (25 Gbps)
  2 banks of 4 CXP 6 ports = Max 4.4 Gpx/sec (50 Gbps)
  4 banks of 4 CXP 6 ports = Max 8.85 Gpx/sec (99 Gbps)

- **Data Conservation:** Don't need the full resolution of a sensor? Phantom cameras transfer only the data from the selected resolution, conserving the amount of total data transferred. This eases data management requirements for the entire system.

IMAGE **STITCHING** PROCESS

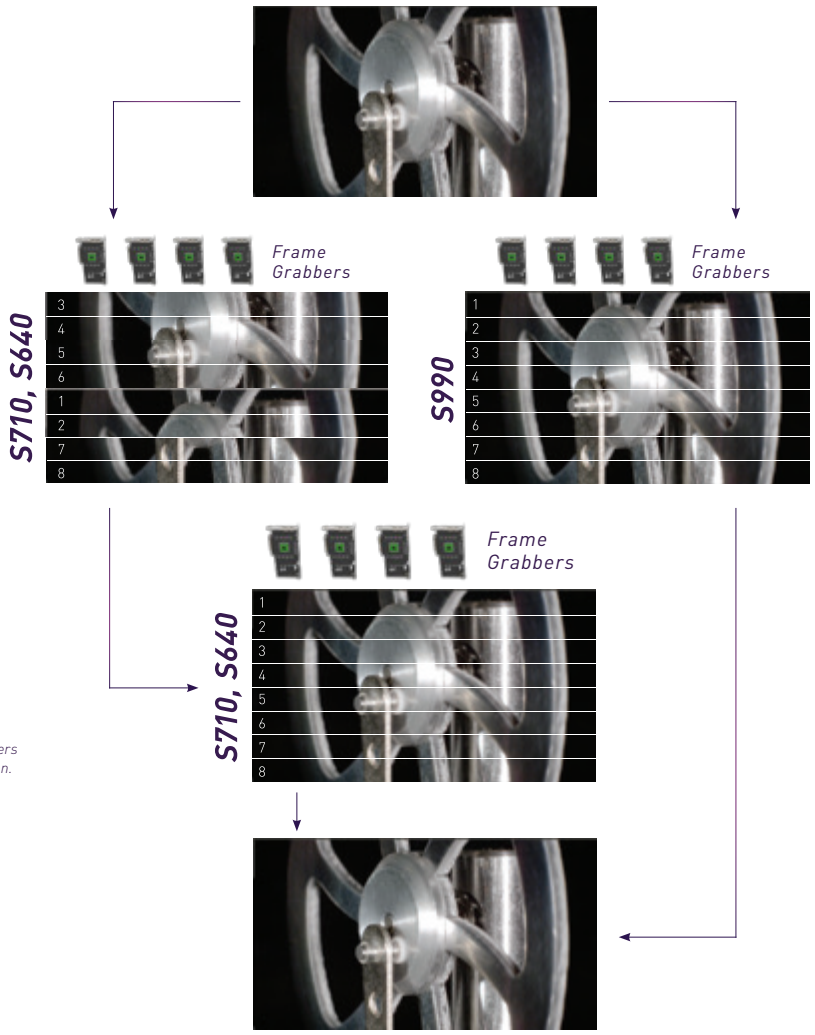
1 SHOOT ORIGINAL IMAGE

2 GRAB FRAMES

3 PROCESS FRAMES

**Select frame grabbers perform this function.*

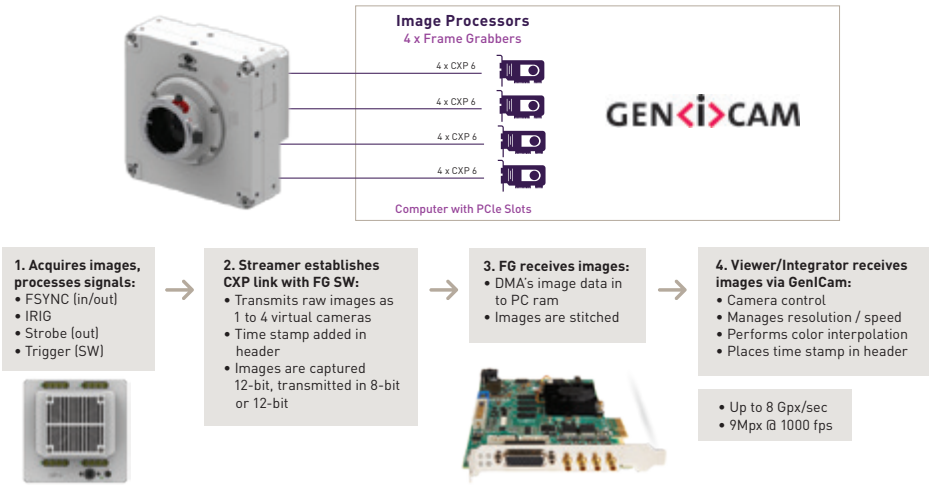
4 STITCH FINAL IMAGE



S990 -
Side Angle with Cables

S200-S210 -
Back Angle with Cables

SET-UP FOR HIGH THROUGHPUT STREAMING APPLICATIONS



All Phantom high-speed machine vision cameras offer these useful features:

Triggering: Through either Hardware or Software trigger signals.
Exposure Start: Programmed in GenICam and operates as FSYNC.
Exposure Active: Frame start and exposure duration are controlled by an input signal, for synchronizing with systematic processes.
Metadata Available: Frame timestamp, event flag, lock to timecode flag, frame count, and core ID are output as an additional line at row 0.

Signaling: Hirose 12-pin connector (Hirose H1210A-10P-12SC(73))		
GPIO 0-3 - Bi-directional	Input: Event In Trigger In Memgate	Output: Trigger out SW Trigger Out Strobe Ready Time Code Out
GPIO 4	Isolated Input: Event In Memgate	
GPIO 5		Isolated Output: SW Trigger Out Strobe Ready Time Code Out
Time Code In		

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.

Phantom® Machine Vision Product Family

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.**phantom**highspeed.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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