PHANTOM®
MACHINE VISION

DATASHEET

Phantom S641
Front View

Phantom S641
Back View

PHANTOM S641

4MPX HIGH-SPEED MACHINE VISION CAMERA

1490 fps at 2560 x 1600 resolution
CXP-over-Fiber for extreme high-speeds
High image quality, with low noise

FEATURES & BENEFITS

UNIQUE EXTREME HIGH-SPEED MACHINE VISION

- The Phantom S641 offers unique capability, providing very high frame rates at a 4 Mpx resolution. It achieves up to 6Gpx/sec (48 Gbps).
- Reach up to over 200,000 fps at reduced resolutions, for the power to support cutting edge applications.
- The S641 employs CoaXPress-over-Fiber (CXPoF) with CXP-12, the latest in high-speed machine vision technology, to deliver high throughput with ease of use. Two simple cables reliably transfer data, with very low latency.
- 4 Mpx resolution with a 10µm pixel and 12-bit capabilities provide exceptional detail.

ADD EFFICIENCY AND FLEXIBILITY WITH MULTIPLE ROI'S

- Up to 2 flexibly located Regions-of-Interest (ROI) focus on only the most critical parts of the event, reducing the amount of data transferred and allowing higher frame rates.
- Add flexibility to application setups: ROI's are flexibly placed in either the top half or bottom half of the image,
- Increase camera utilization: Each ROI feeds directly to its own frame grabber, allowing the camera to capture 2 events at once.

VISION RESEARCH / AMETEK®

IMAGE & SENSITIVITY

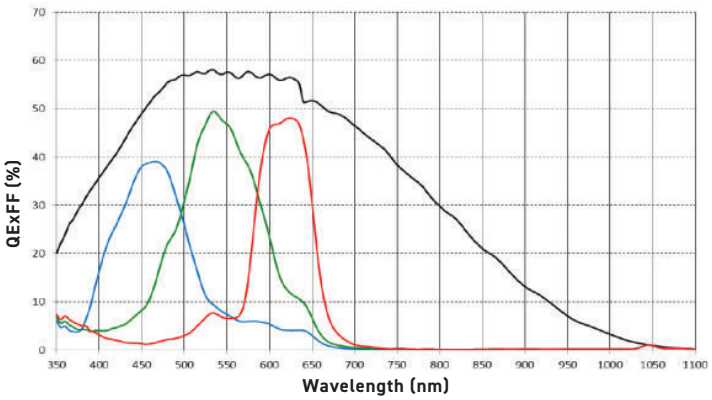
Sensor Type	CMOS, with Global Shutter
Maximum Resolution	2560 x 1600
CAR Increments	128 x 4 (Bank A); 128 x 8 (Banks A & B)
Pixel Size	10 µm
Sensor Size	25.6 x 16 mm: 30.18 mm diagonal
Bit Depth	12 bit, output in either 12-bit or 8 bit
	EMVA 1288 Measurements (at 532 nm) Standard Mode
Quantum Efficiency %	58.6% mono 45.1% color
Max. SNR (dB)	41.7
Absolute Sensitivity Threshold (p)	40.9 mono 53.4 color
Saturation Capacity (e-)	14714 mono 14219 color
Temporal Dark Noise (e-)	23.43
Dynamic Range (dB)	55.8

- *Reported measurements were taken at 532 nm with both monochrome and color cameras*
- *Visit: www.phantomhighspeed.com/emva for more information on EMVA 1288*

Phantom S641 Connectors

SPECTRAL RESPONSE

Quantum Efficiency Monochrome and Color



CONNECTIVITY & SIGNALS

QSFP+ Ports	Bank A Bank B	
Timecode	IRIG-B Modulated and Un-modulated	
Port Descriptions	Timecode-in	Dedicated BNC
	I/O BNCs	3 Ports
	Power	6-pin Fischer
	Ethernet (for programming only)	RJ45
I/O Signals - available on GPIO 0, 1, 2	**Signal**	**I/O**
	Trigger In	Input
	Trigger Out	Output
	Software Trigger Out	Output
	Strobe	Output
	Event	Input
	Ready	Output
	Memgate	Input
	Timecode In	Input
	Timecode out	Output
	User out	Output
	User in	Input

RESOLUTION			FPS	
H	V	Bit Depth	2 Fiber Banks	1 Fiber Bank
2560	1600	8-bit	1,490	1,080
		12-bit	1,450	720
1920	1600	8-bit	1,900	1,450
		12-bit	1,900	960
1280	1600	8-bit	2,610	2,160
		12-bit	2,610	1,450
1280	800	8-bit	5,180	4,300
		12-bit	5,180	2,880
1024	720	8-bit	6,740	5,960
		12-bit	6,740	3,980
640	680	8-bit	9,620	9,620
		12-bit	9,620	6,690
512	512	8-bit	14,280	14,280
		12-bit	14,280	10,760
256	256	8-bit	36,080	36,080
		12-bit	36,080	36,080
128	128	8-bit	74,460	74,460
		12-bit	74,460	74,460
128	16	8-bit	202,890	202,890
		12-bit	202,890	202,890
128	8	8-bit	N/A	231,400
		12-bit	N/A	231,400

FRAME RATES & EXPOSURE		
	12-bit	8-bit
Top FPS at Max Resolution	1,450	1,490
1 Megapixel FPS	5,180	5,180
Maximum FPS	231,400	231,400
Minimum FPS	24	
Minimum Exposure	1 µs	
Exposure Features	Extreme Dynamic Range (EDR), Auto Exposure	

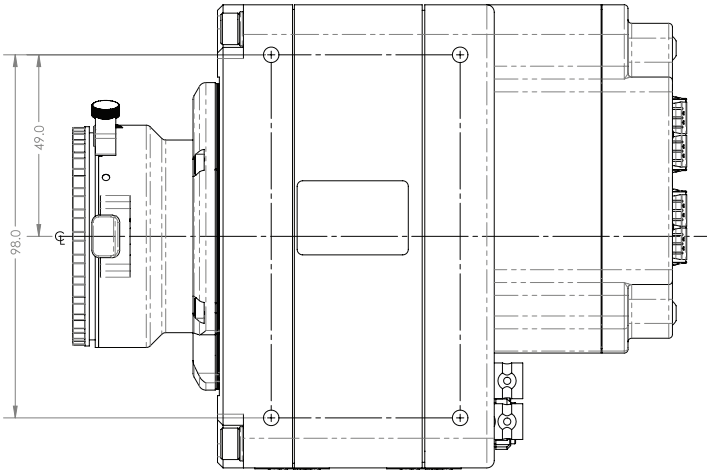
Phantom S641 with cables

CONTROL

Operational Protocols	CXP-12, CoaXPress-over-Fiber (CXPoF),CXP 2.0 protocol compliant
Exposure Start	Programmed in GenICam and operates as FSYNC
Metadata Available	Meta data including Event ID, Event timestamp, Event payload can be streamed

MECHANICAL

Size	5 x 5 x 6.3" (125 x 125 x 159.7 mm)
Weight	5.4 lbs (2.4 kg)
Lens Mounts	F Mount standard, EOS, C, M42 and PL Mounts optional
Mounting Points	6 x 1/4-20, 16 x M5-0.8 mounting points
Internal Shutter	Standard, for remote black references
Cooling	Active cooling. Fans can be disabled via Quiet mode.



POWER

AC Power	80W 24V power supply included
Voltage Range	16-32 VDC

ENVIRONMENTAL

Operating Temperature	0 to +50°C
Storage Temperature	-20 to +70°C
Operational Shock	30G, sawtooth wave, 11 ms, +/- 10 pulses all axes
Operational Vibration	MIL-STD-202H Method 214-I; Test Condition B 7.5 Grms, 15 min/axis
Regulatory	Made in the USA **Emissions** – CE & UKCA Compliant EN 61326-1 **Immunity** – CE & UKCA Compliant EN 61326-1 **FCC** – CFR 47, Part 15, Subpart B & ICES-0003, Class A **Safety** – IEC 60950-1

GLOBAL SUPPORT NETWORK

Phantom cameras are supported by Vision Research's Global Service and Support network, providing PhantomCare services from multiple sites around the globe.

ABOUT VISION RESEARCH

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.

VISION RESEARCH
AMETEK

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