PHARSIGHTED

Canadian Distributor:
High Speed Imaging Inc.
12-255 Dundas St E
Suite 331
Waterdown ON L8B 0E5
Phone: (905) 649-5445
E-mail: info@hsi.ca Web: www.hsi.ca

E9 • Product Family

KEY CAMERA FEATURES

Backside-Illuminated CMOS Image Sensor:

- 640 x 480 pixels at 489,000fps (E9●150S)
- 640 x 480 pixels at 326,000fps (E9●100S)
- 640 x 480 pixels at 272,000fps (E9●80S)
- 640 x 480 pixels at 164,000fps (E9●50S)

Maximum Frame Rate:

- 640 x 48 pixels at 2,720,000fps (E9●150S)
- 640 x 32 pixels at 2,720,000fps (E9●100S)
- 640 x 32 pixels at 2,457,000fps (E9●80S)
- 640 x 16 pixels at 1,980,000fps (E9●50S)

Class Leading Light Sensitivity:

- ISO 12232 daylight
- ISO 200,000 monochrome
- ISO 80,000 color

Global Electronic Shutter:

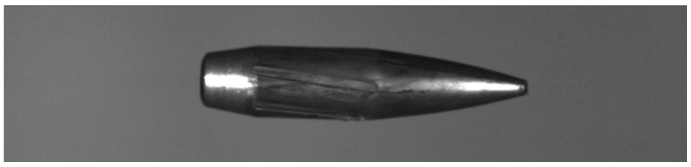
- 34ns minimum exposure time (E9●150S)
- 59ns minimum exposure time (E9●100S)
- 98ns minimum exposure time (E9●80S / E9●50S)

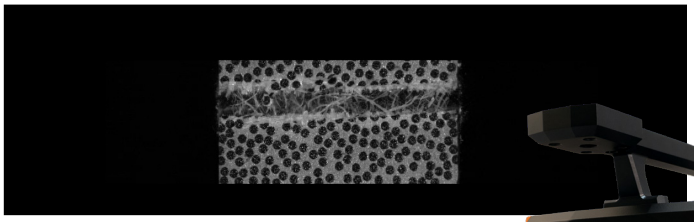
Fast, In-Camera Storage:

- Removable U.2 NVMe SSD

Internal Recording Memory:

- 162GB, 324GB, 648GB (E9●150S)
- 108GB, 216GB, 432GB (E9●100S / E9●80S)
- 54GB, 108GB, 216GB (E9●50S)





SAMPLE FRAME RATE CHART

Resolution	E9·150S*			E9·100S**			E9·80S**			E9·50S***		
Width x Height (pixels)	Max Frame Rate (fps)	Record Time 162GB	Frames 162GB	Max Frame Rate (fps)	Record Time 108GB	Frames 108GB	Max Frame Rate (fps)	Record Time 108GB	Frames 108GB	Max Frame Rate (fps)	Record Time 54GB	Frames 54GB
640 x 480	489,000	1.15 sec	562,000	326,000	1.15 sec	375,000	272,000	1.38 sec	375,000	164,000	1.14 sec	187,000
640 x 384	601,000	1.17 sec	705,000	404,000	1.16 sec	469,000	336,000	1.39 sec	469,000	203,000	1.15 sec	234,000
640 x 320	710,000	1.18 sec	842,000	481,000	1.17 sec	562,000	400,000	1.41 sec	562,000	242,000	1.16 sec	281,000
640 x 240	918,000	1.22 sec	1,125,000	629,000	1.19 sec	751,000	523,000	1.44 sec	751,000	318,000	1.18 sec	374,000
640 x 160	1,299,000	1.29 sec	1,674,000	910,000	1.23 sec	1,124,000	755,000	1.49 sec	1,124,000	462,000	1.21 sec	560,000
640 x 128	1,557,000	1.34 sec	2,093,000	1,108,000	1.27 sec	1,408,000	918,000	1.53 sec	1,408,000	565,000	1.24 sec	702,000
640 x 64	2,582,000	1.62 sec	4,186,000	1,961,000	1.42 sec	2,788,000	1,619,000	1.72 sec	2,788,000	1,014,000	1.38 sec	1,405,000
640 x 48	2,720,000	2.05 sec	5,582,000	2,428,000	1.53 sec	3,718,000	2,000,000	1.86 sec	3,718,000	1,267,000	1.46 sec	1,854,000
640 x 32	2,720,000	2.90 sec	7,880,000	2,720,000	2.05 sec	5,577,000	2,457,000	2.27 sec	5,577,000	1,685,000	1.65 sec	2,781,000
640 x 16	2,720,000	5.47 sec	14,886,000	2,720,000	4.10 sec	11,154,000	2,457,000	4.54 sec	11,154,000	1,980,000	2.81 sec	5,562,000

*To calculate Record Time and Number of Frames for the 324GB and 648GB memory versions of the E9-150S, muliply the values shown for 162GB by factors of 2 and 3 repectively.
**To calculate Record Time and Number of Frames for the 216GB and 432GB memory versions of the E9-100S/E9-80S, multiply the values shown for 108GB by factors of 2 and 3 respectively.
***To calculate Record Time and Number of Frames for the 108GB and 216GB memory versions of the E9-50S, multiply the values shown for 54GB by factors of 2 and 3 respectively.

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Camera Performance Specifications

Model	E9·150S	E9·100S	E9·80S	E9·50S
Full Frame Performance	640 x 480 pixels at 489,000fps	640 x 480 pixels at 326,000fps	640 x 480 pixels at 272,000fps	640 x 480 pixels at 164,000fps
Example Frame Rates	640 x 384 pixels at 601,000fps 640 x 240 pixels at 918,000fps 640 x 128 pixels at 1,557,000fps	640 x 384 pixels at 404,000fps 640 x 240 pixels at 629,000fps 640 x 128 pixels at 1,108,000fps	640 x 384 pixels at 336,000fps 640 x 240 pixels at 523,000fps 640 x 128 pixels at 918,000fps	640 x 384 pixels at 203,000fps 640 x 240 pixels at 318,000fps 640 x 128 pixels at 565,000fps
Minimum Exposure Time	Global electronic shutter to 34ns selectable independent of frame rate	Global electronic shutter to 59ns selectable independent of frame rate	Global electronic shutter to 98ns selectable independent of frame rate	Global electronic shutter to 98ns selectable independent of frame rate
Straddle Time	350ns	343ns	343ns	490ns
Memory Capacity	162GB, 324GB, or 648GB	108GB, 216GB, or 432GB	108GB, 216GB, or 432GB	54GB, 108GB, or 216GB
Dynamic Range (ADC)	9-bit			
Memory Partitions	Up to 1024 memory segments			
Sensor Size / Pixel Size	33.28 x 24.96mm / 52µm			
Camera Control Interface	1 / 2.5 / 5 / 10G Ethernet			
Video Output	HD-SDI signal			
Video Conversion	Conversion of .SLOW to common video and image formats such as MP4, .AVI & .TIFF			
Operating System Compatibility	Windows, MAC OS, and Linux			

Fast 10-Gigabit Ethernet Interface:

- Provides camera control and high-speed image download to standard PC or MAC and Linux systems.
- Supports IEEE 1588 (PTPv2) time code.
- Rugged IP68 RJ45 connector.

Camera Size:

- 240mm (H) x 212mm (W) x 175mm (D)
- 9.45” (H) x 8.35” (W) x 6.89” (D)
- Weight: 10.88kg (24 lbs)

Flexible I/O:

- Six 5V TTL, I/O BNCs, each settable as a Output, Input, or Open Drain Bi-Directional.
- Signal polarity, pulse delay, & pulse width are all configurable.
- Signals such as Trigger, Frame Sync, Ready, Shutter, and Event are available.
- Dedicated trigger, SDI, and analog BNCs.

NVMe SSD:

- U.2 NVMe drives provide for fast, long-term, and cost-effective storage that is readily available.
- Write speeds allow for etiher immediate backup of the image buffer or significant capture rates directly to the SSD.
- The .SLOW files stored on a drive can be viewed in a standard OS environment.
- Every E9 includes a ~1.6TB drive, drive tray, and USB-C dock.

SLOW Software

- Clean, intuitive control and monitoring of live cameras.
- Playback from the image buffer, on-board SSD, or local .SLOW files.
- Windows, MAC OS, and Linux Compatible.
- The .SLOW format contains both RAW image data and metadata.
- Conversion of .SLOW to common video and image formats such as MP4, .AVI and .TIFF.

Mechanical and Environmental Specifications

Mechanical	
Lens Mount	Nikon F / G type compatible, Canon EF, 1" C mount
Internal Filter	58mm threaded
Minimum Flange Distance	8.0mm
Mechanical Shutter	Internal, rugged
Camera Body (excluding protrusions)	240mm (H) x 212mm (W) x 175mm (D) 9.45" (H) x 8.35" (W) x 6.89" (D)
Camera Body	10.88kg (24 lbs)
Mounting	3/8-16, top, bottom, left side
Power	Primary and backup 24-28VDC 200W, SSD up to +30W Input: 100-240VAC, 50/60Hz Output: 24VDC, 280W
Environmental	
Operating Temperature	0 to 40C, 32˚ to 104˚F

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