

# PHARSIGHTED

THE FIRST BACKSIDE-ILLUMINATED FULL-FRAME HIGH-SPEED CAMERA

## E9•100S | E9•80S

### KEY CAMERA FEATURES

#### Backside-Illuminated CMOS Image Sensor:

640 x 480 pixels at 326,000fps (E9•100S)

640 x 480 pixels at 272,000fps (E9•80S)

#### Maximum Frame Rate:

640 x 32 pixels at 2,720,000fps (E9•100S)

640 x 32 pixels at 2,457,000fps (E9•80S)

#### Class Leading Light Sensitivity:

ISO 12232 daylight

ISO 160,000 monochrome

ISO 40,000 color

#### Global Electronic Shutter:

59ns minimum exposure time (E9•100S)

98ns minimum exposure time (E9•80S)

343ns straddle time

#### Camera Size:

240mm (H) x 212mm (W) x 175mm (D)

9.45" (H) x 8.35" (W) x 6.89" (D)

Weight: 10kg (22.04 lbs.)

#### Fast, In-Camera Storage:

Removable U.2 NVMe SSD

#### Internal Recording Memory:

216GB or 432GB

#### Fast 10-Gigabit Ethernet Interface:

Provides camera control and high-speed image download to standard PC or MAC and Linux systems.



### FRAME RATE CHART

Resolution	E9•100S			E9•80S			Number of Frames	
Width x Height	Max Frame Rate	Time (sec) 216GB	Time (sec) 432GB	Max Frame Rate	Time (sec) 216GB	Time (sec) 432GB	216GB	432GB
640 x 480	326,000	2.31	4.61	272,000	2.77	5.54	753,000	1,507,000
640 x 448	349,000	2.31	4.62	290,000	2.78	5.56	807,000	1,615,000
640 x 416	375,000	2.31	4.63	311,000	2.78	5.57	867,000	1,736,000
640 x 384	404,000	2.32	4.65	336,000	2.79	5.59	940,000	1,882,000
640 x 352	439,000	2.34	4.67	365,000	2.81	5.62	1,027,000	2,055,000
640 x 320	481,000	2.34	4.68	400,000	2.82	5.64	1,126,000	2,254,000
640 x 288	531,000	2.36	4.72	441,000	2.84	5.68	1,252,000	2,507,000
640 x 256	593,000	2.38	4.78	492,000	2.86	5.75	1,410,000	2,832,000
640 x 240	629,000	2.39	4.79	523,000	2.88	5.76	1,506,000	3,014,000
640 x 224	671,000	2.41	4.81	557,000	2.90	5.80	1,614,000	3,231,000
640 x 192	772,000*	2.43	4.85	641,000	2.92	5.85	1,874,000	3,751,000
640 x 160	910,000*	2.47	4.95	755,000*	2.98	5.97	2,253,000	4,508,000
640 x 128	1,108,000*	2.54	5.09	918,000*	3.07	6.15	2,821,000	5,647,000
640 x 96	1,416,000*	2.63	5.26	1,172,000*	3.18	6.36	3,723,000	7,451,000
640 x 64	1,961,000*	2.83	5.70	1,619,000*	3.43	6.90	5,548,000	11,177,000
640 x 48	2,428,000*	3.07	6.14	2,000,000*	3.72	7.45	7,446,000	14,902,000
640 x 32	2,720,000*	4.11	8.22	2,457,000*	4.54	9.10	11,169,000	22,354,000
640 x 16	2,720,000*	8.21	16.44	2,457,000*	9.09	18.19	22,339,000	44,708,000

## Camera Performance Specifications

Model	E9-100S	E9-80S
Full Frame Performance	640 x 480 pixels at 326,000fps	640 x 480 pixels at 272,000fps
Example Frame Rates	640 x 384 pixels at 404,000fps 640 x 256 pixels at 593,000fps 640 x 128 pixels at 1,108,000fps	640 x 384 pixels at 336,000fps 640 x 256 pixels at 492,000fps 640 x 128 pixels at 918,000fps
Minimum Exposure Time	Global electronic shutter to 59ns selectable independent of frame rate	Global electronic shutter to 98ns selectable independent of frame rate
Dynamic Range (ADC)	9-bit	
Memory Capacity	216GB or 432GB	
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 .AVI & .TIFF	
Operating System Compatibility	Windows, MAC OS, and Linux	

## Mechanical and Environmental Specifications

### Mechanical

Lens Mount	Nikon F / G type compatible, Canon EF, 1" C mount
Internal Filter	58mm threaded
Minimal 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	10kg (22.04lbs)
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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### 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.

### 10G ETHERNET

- Supports IEEE 1588 (PTPv2) time code.
- Rugged IP68 RJ45 connector.

### NVMe SSD

- U.2 NVMe drives provide for fast, long-term, and cost-effective storage that is readily available.
- Write speeds allow for either 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 E9-80S 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 .AVI and .TIFF

