

## 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 160,000 monochrome
- ISO 40,000 color

### Global Electronic Shutter:

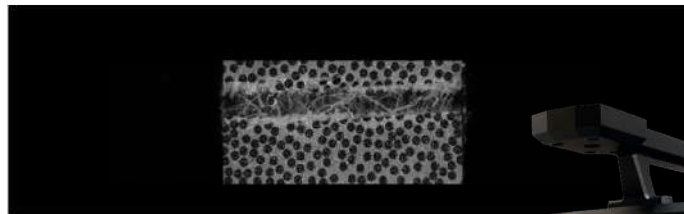
- 34ns minimum exposure time (E9●150S)
- 59ns minimum exposure time (E9●100S)
- 98ns minimum exposure time (E9●80S / E9●50S)

### 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<br>Width x Height<br>(pixels) | E9-150S*                |                      |                 | E9-100S**               |                      |                 | E9-80S**                |                      |                 | E9-50S***               |                     |                |
|------------------------------------------|-------------------------|----------------------|-----------------|-------------------------|----------------------|-----------------|-------------------------|----------------------|-----------------|-------------------------|---------------------|----------------|
|                                          | Max Frame<br>Rate (fps) | Record Time<br>162GB | Frames<br>162GB | Max Frame<br>Rate (fps) | Record Time<br>108GB | Frames<br>108GB | Max Frame<br>Rate (fps) | Record Time<br>108GB | Frames<br>108GB | Max Frame<br>Rate (fps) | Record Time<br>54GB | Frames<br>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, multiply the values shown for 162GB by factors of 2 and 3 respectively.

\*\*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.

## 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<br>640 x 240 pixels at 918,000fps<br>640 x 128 pixels at 1,557,000fps | 640 x 384 pixels at 404,000fps<br>640 x 240 pixels at 629,000fps<br>640 x 128 pixels at 1,108,000fps | 640 x 384 pixels at 336,000fps<br>640 x 240 pixels at 523,000fps<br>640 x 128 pixels at 918,000fps | 640 x 384 pixels at 203,000fps<br>640 x 240 pixels at 318,000fps<br>640 x 128 pixels at 565,000fps |
| Minimum Exposure Time          | Global electronic shutter to 34ns<br>selectable independent of frame rate                            | Global electronic shutter to 59ns<br>selectable independent of frame rate                            | Global electronic shutter to 98ns<br>selectable independent of frame rate                          | Global electronic shutter to 98ns<br>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 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 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)<br>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<br>24-28VDC<br>200W, SSD up to +30W<br>Input: 100-240VAC, 50/60Hz<br>Output: 24VDC, 280W |
| Environmental                       |                                                                                                             |
| Operating Temperature               | 0 to 40C, 32° to 104°F                                                                                      |



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