

FASTCAM SA5

ULTRA HIGH-SPEED VIDEO SYSTEM



High-Speed Video System

Next generation CMOS sensor technology providing 7,500 fps, 1K x 1K pixels

The Photron FASTCAM SA5 will meet the requirements of the most demanding applications in research and development due to its unrivaled sensitivity, frame rate and resolution.

This high performance will permit the SA5 to be applied to areas of research once dismissed as unsuitable for digital high-speed imaging.

Building on the success of Photron's Emmy award winning high speed cameras our sensor design improves sensitivity, image quality and color reproduction.

The FASTCAM SA5 delivers mega-pixel resolution at 7,500 fps, an impressive maximum frame rate of 775,000 fps and a 1 microsecond exposure time. Optional one million fps and 369 ns shutter capabilities are available subject to export restrictions.

Target applications include:

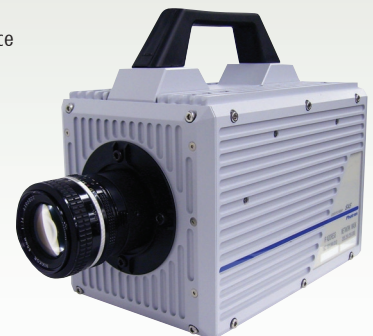
- Materials research
- Ballistics
- Aerospace
- PIV
- Combustion
- Cavitation
- Fluid dynamics

Benefits

- Performance examples:
 - 1,024 x 1,000 pixels @ 7,500 fps
 - 512 x 512 pixels @ 25,000 fps
 - 256 x 256 pixels @ 87,500 fps
 - 128 x 128 pixels @ 262,500 fps
 - 128 x 24 pixels @ 775,000 fps
- Variable Region of Interest (ROI)
- Capture 12-bit uncompressed data
- 20µm pixels ensure best light sensitivity for demanding high-speed or low light applications
- Equivalent ISO light sensitivity 6,400 (monochrome), 1,600 (color) measured to ISO 12232
- Phase lock to IRIG/GPS
- Composite and SDI video output for real time monitoring during set up, recording and playback
- Optional remote keypad control with integrated viewfinder
- 8GB, 16GB or 32GB memory options
- Gigabit Ethernet interface

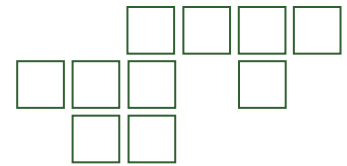
Photron

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Specifications: Partial Frame Rate / Recording Duration Table

| FRAME RATE (fps) | MAXIMUM RESOLUTION Horizontal Vertical | | MAXIMUM SHUTTER SPEED | RECORD DURATION (12-BIT) | | | | | |
|---------------------|--|-------|------------------------------|--------------------------|-------|-------|-----------|------------|------------|
| | | | | TIME (Sec.) | | | FRAMES | | |
| | | | | 8GB | 16GB | 32GB | 8GB | 16GB | 32GB |
| 1,000 | 1,024 | 1,024 | 1 μ s 1/1,000,000 sec | 5.46 | 10.92 | 21.84 | 5,457 | 10,918 | 21,841 |
| 2,000 | 1,024 | 1,024 | | 2.73 | 5.46 | 10.92 | 5,457 | 10,918 | 21,841 |
| 4,000 | 1,024 | 1,024 | | 1.36 | 2.73 | 5.46 | 5,457 | 10,918 | 21,841 |
| 5,000 | 1,024 | 1,024 | | 1.09 | 2.18 | 4.37 | 5,457 | 10,918 | 21,841 |
| 7,000 | 1,024 | 1,024 | | 0.78 | 1.56 | 3.12 | 5,457 | 10,918 | 21,841 |
| 7,500 | 1,024 | 1,000 | | 0.75 | 1.49 | 2.98 | 5,588 | 11,180 | 22,365 |
| 9,300 | 1,024 | 800 | | 0.75 | 1.50 | 3.01 | 6,985 | 13,975 | 27,956 |
| 10,000 | 1,024 | 744 | | 0.75 | 1.50 | 3.01 | 7,511 | 15,027 | 30,061 |
| 15,000 | 960 | 528 | | 0.75 | 1.51 | 3.01 | 11,289 | 22,587 | 45,182 |
| 20,000 | 832 | 448 | | 0.77 | 1.54 | 3.07 | 15,352 | 30,716 | 61,443 |
| 30,000 | 768 | 320 | | 0.78 | 1.55 | 3.11 | 23,284 | 46,586 | 93,189 |
| 50,000 | 512 | 272 | | 0.82 | 1.64 | 3.29 | 41,090 | 82,211 | 164,452 |
| 75,000 | 320 | 264 | | 0.90 | 1.81 | 3.61 | 67,737 | 135,523 | 271,097 |
| 100,000 | 320 | 192 | | 0.93 | 1.86 | 3.73 | 93,138 | 186,345 | 372,758 |
| 150,000 | 256 | 144 | | 1.03 | 2.07 | 4.14 | 155,230 | 310,575 | 621,264 |
| 300,000 | 256 | 64 | | 1.16 | 2.33 | 4.66 | 349,269 | 698,794 | 1,397,845 |
| 420,000 | 128 | 64 | | 1.66 | 3.33 | 6.66 | 698,538 | 1,397,589 | 2,795,690 |
| 525,000 | 128 | 48 | | 1.77 | 3.55 | 7.10 | 931,384 | 1,863,452 | 3,727,587 |
| 775,000 | 128 | 24 | | 2.40 | 4.81 | 9.62 | 1,862,769 | 3,726,904 | 7,455,175 |
| 930,000 | 128 | 16 | 369 ns | 3.00 | 6.01 | 12.02 | 2,794,154 | 5,590,357 | 11,182,762 |
| 1,000,000 | 64 | 16 | 1/2,712,000 sec | 5.59 | 11.18 | 22.37 | 5,588,309 | 11,180,714 | 22,365,525 |

OPTION SUBJECT TO EXPORT LICENSE CONTROL RESTRICTIONS WHERE APPLICABLE

| | |
|-------------------------------|--|
| Sensor | 12-bit ADC (Bayer system color, single sensor) with 20 μ m pixel |
| Shutter | Global electronic shutter from 16.7ms to 1 μ s independent of frame rate |
| Lens Mount | Interchangeable F-mount and C-mount using supplied adapters |
| Extended Dynamic Range | Selectable in twenty steps (0 to 95% in 5% increments) to prevent pixel over-exposure |
| Memory | 8GB (standard: 5,457 frames @ maximum resolution) 16GB (option: 10,913 frames @ maximum resolution) 32GB (option: 21,841 frames @ maximum resolution) |
| Video Output 1 | NTSC/PAL composite VBS (BNC). Ability to zoom, pan and tilt within image via keypad. Live video during recording |
| Video Output 2 | SDI: D1 digital component 1 channel (BNC) industry standard digital output NTSC and PAL |
| Camera Control | Through optional keypad with integrated viewfinder and Gigabit Ethernet or RS-422 |
| User Preset Switches | Four user selectable camera function controls mounted on the camera's rear panel |
| Low Light Mode | Low light mode drops the frame rate and shutter time to their maximum values, while maintaining other set parameters, to enable users to position and focus the camera |
| Triggering | Selectable positive or negative TTL 5Vp-p or switch closure |
| Trigger Delay | Programmable delay on selected input and output triggers, 100ns resolution |
| Timing | Internal clock or external source |
| Phase Lock | Enables cameras to be synchronized precisely together to a master camera or external source, such as IRIG/GPS time codes |

| | |
|------------------------------|---|
| Event Markers | Ten user entered event markers mark specific events within the image sequence in real time. Immediately accessible through software |
| Dual Speed Recording | Enables the recording speed to be changed up or down by a factor of 2, 4 or 8 during a recording |
| Trigger Modes | Start, End, Center, Manual, Random, Random Reset, Random Center, Random Manual and Duals Speed Recording |
| Saved Image Formats | JPEG, AVI, TIFF, BMP, RAW, PNG, MOV and FTIF. Images can be saved with or without image or comment data |
| Data Display | Frame Rate, Shutter Speed, Trigger Mode, Date or Time, Status (Playback/Record), Real Time, Frame Count and Resolution |
| Partitioning | Up to 64 memory segments for multiple recording in memory |
| Data Acquisition | Supports Photron MCDL and DAQ |
| Cooling | Actively cooled |
| Operating Temperature | 0 - 40 degrees C (32 - 104 degree F) |
| Mounting | 1 x 1/4 - 20 UNC, 1 x 3/8 - 16 UNC, 6 x M6 |
| Dimensions | 165mm (6.50")H x 153mm (6.02")W x 242.5mm (9.55")D *excluding protrusions |
| Weight | 6.2 kg (13.67 lbs) |
| Power Requirements | 100V-240V AC ~ 1.5A, 50-60Hz DC operation 18-36 V DC, 100VA |

Specifications subject to change without notice

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