

# FASTCAM-SA1

## FASTCAM-SA1: High-Speed Video System

Next generation CMOS sensor technology  
providing 5,400fps, 1024 x 1024 pixels

The Photron FASTCAM-SA1 will meet the requirements of the most demanding applications in research and development due to its unrivaled sensitivity, frame rate and resolution.

This high specification will permit the SA1 to be applied to areas of research once dismissed as unsuitable for digital high-speed video.

Building on the success of the Ultima APX range of systems a new sensor design improves sensitivity, image quality and colour reproduction.

The Fastcam SA1 delivers mega-pixel resolution at 5,400fps, an impressive maximum frame rate of 675,000fps and a 1 microsecond exposure time.

Target applications include:

- Materials research
- Inkjet
- Cavitation
- Aerospace
- Fluid dynamics
- PIV



### FEATURES

- ❑ Performance examples:
  - 1024 X 1024 pixels @ 5,400fps
  - 512 x 512 pixels @ 20,000fps
  - 256 x 256 pixels @ 67,500fps
  - 128 x 128 pixels @ 180,000fps
- Up to 675,000 fps at reduced resolution
- ❑ Variable Region of Interest (ROI)
- ❑ Capture 12-bit uncompressed data
- ❑ 20µm pixels ensure best light sensitivity for demanding high-speed or low light applications
- ❑ 1µs global shutter can be set independent of selected frame rate.
- ❑ 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
- ❑ Optional battery back up
- ❑ Gigabit Ethernet interface

# Photron

**Frame rate / resolution table:**

Variable frame rate steps 64 x 16

Vertical resolution

Horizontal resolution

	1024	896	768	640	512	384	256	128	112	96	80	64	32	16
1024	5,400	6,250	7,500	9,000	10,800	15,000	22,500	45,000	50,000	54,000	67,500	86,400	150,000	270,000
896	6,250	7,500	8,000	10,000	12,500	16,000	25,000	50,000	54,000	62,500	75,000	93,750	150,000	270,000
768	7,500	8,000	10,000	12,000	15,000	20,000	28,800	54,000	62,500	75,000	86,400	108,000	180,000	300,000
640	8,000	10,000	10,800	13,500	16,000	22,500	30,000	62,500	75,000	86,400	100,000	120,000	216,000	300,000
512	10,000	12,000	13,500	16,000	20,000	27,000	40,000	75,000	86,400	100,000	120,000	144,000	250,000	400,000
384	12,500	15,000	16,000	20,000	25,000	33,750	50,000	90,000	108,000	125,000	144,000	150,000	270,000	450,000
256	16,000	20,000	22,500	27,000	30,000	45,000	67,500	125,000	135,000	150,000	180,000	216,000	360,000	500,000
128	27,000	30,000	36,000	40,000	50,000	67,500	100,000	180,000	200,000	225,000	250,000	300,000	450,000	600,000
64	36,000	40,000	48,000	54,000	67,500	90,000	125,000	225,000	250,000	270,000	300,000	360,000	500,000	675,000

- Sensor 12-bit CMOS (Bayer system color, single sensor) with 20µm pixel
- Shutter Global electronic shutter from 16.7ms to 2µs independent of frame rate
- Lens Mount Interchangeable F-mount and C-mount using supplied adapters
- Extended dynamic range Four presets prevent pixel over-exposure
- Memory 8GB (standard), 5457 frames (1024 x 1024 x 12-bits), 1.01 seconds  
16GB (option), 10,913 frames (1024 x 1024 x 12 bits), 2.02 seconds  
32GB (option), 21,841 frames (1024 x 1024 x 12 bits), 4.04 seconds
- 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, 720 x 576 PAL, 720 x 480 NTSC
- Camera Control Through optional keypad with integrated viewfinder and Gigabit Ethernet or RS-422A
- User preset switches 4 camera mounted user defined function buttons
- Low light mode Low light mode selection for simple camera adjustment when working in low ambient light, high frame rate or short exposure modes
- 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 such as IRIG or GPS (requires optional software module)
- Phase Lock Enables cameras to be synchronized precisely together to a master camera or external source
- 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
- Recording Modes Start, End, Center, Manual, Random, Random Reset, Random Center, Random Manual and Duals Speed Recording
- Saved Image Formats JPEG, AVI, TIFF, BMP, RAW (compressed or uncompressed) PNG (10bit) and FTIF (10 bit). 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 recordings in memory
- Data Acquisition Supports Photron MCDL
- Cooling Actively cooled
- Operating Temperature 0-40 degrees C
- Mounting 1x ¼-20 UNC, 1x 3/8-16 UNC, 6x M6
- Dimensions and Weight 286mm L x 156mm W x 191mm H, weight 6.3kg
- Power requirements 100V - 240V AC ~ 1.5A, 50-60Hz optional DC operation 18-36 VDC, 90VA

Specifications subject to change without notice.

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