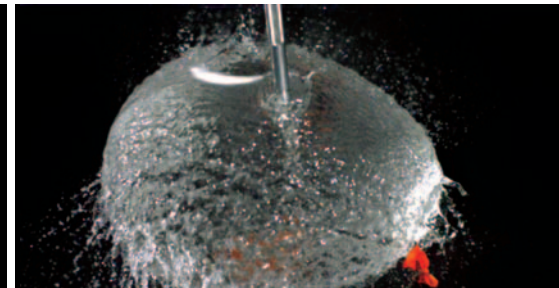
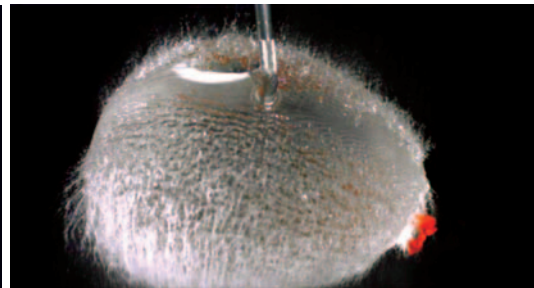
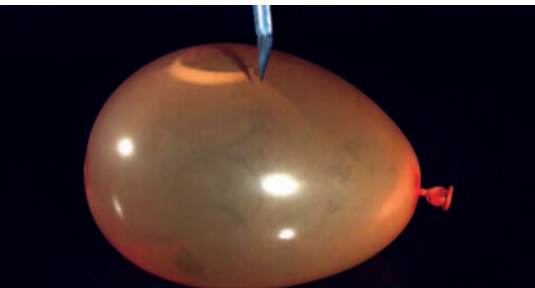
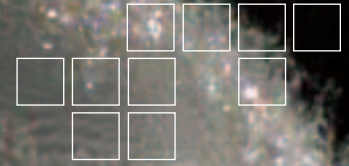


# FASTCAM SA1.1

ULTRA HIGH-SPEED VIDEO SYSTEM



## Next generation CMOS sensor technology providing 5,400 fps, 1024x1024 pixels

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

The FASTCAM SA1 uses the latest CMOS sensor to achieve sensitivity and speeds previously unattainable. With a top speed in excess of 600,000 fps (frames per second) and with true 12-bit dynamic range, the FASTCAM SA1 once again establishes Photron as the true leader of high speed imaging innovation.

With a global shutter operating independently of the frame rate selected; from 1/60th of a second to 1 $\mu$ s, and with the dead time between sequential frames less than a microsecond, the FASTCAM SA1 provides everything, yes, everything, even an SDI output as standard, that true high speed users demand.

For those not wanting to use a PC to control and operate the camera through the Gigabit Ethernet port, the FASTCAM SA1 can be controlled by an RS-422 remote control keypad with built-in 5" LCD monitor for complete camera set-up and operation.

For applications where ingress of dust or moisture would be hazardous, a sealed version (FASTCAM SA1 RV) is available.

### Target applications include:

- Ballistics
- Aerospace
- Materials research
- Fluid dynamics
- Defence
- PIV

## Benefits

- Performance:
  - 1,024 x 1,024 pixels @ 5,400 fps
  - 832 x 608 pixels @ 10,800 fps
  - 640 x 480 pixels @ 18,000 fps
  - 512 x 512 pixels @ 20,000 fps
  - 256 x 256 pixels @ 67,500 fps
  - 256 x 16 pixels @ 500,000 fps
  - 64 x 16 pixels @ 675,000 fps
- Variable Region of Interest (ROI)
- Capture 12-bit uncompressed data
- One microsecond global shutter
- Composite and SDI video output for real time monitoring during set up, recording and playback
- Memory options include 8GB, 16GB and 32GB
- Phase lock to IRIG/GPS

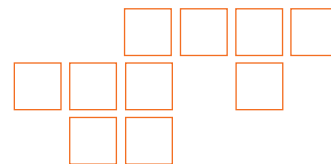


# Photron

[www.photron.com](http://www.photron.com)

# FASTCAM SA1.1

HIGH SPEED VIDEO SYSTEM



Specifications: Frame Rate / Recording Duration Table

FRAME RATE (fps)	MAXIMUM RESOLUTION		SHUTTER EXPOSURE TIME	RECORD DURATION (12-BIT)					
	Horizontal	Vertical		TIME (Sec.)			FRAMES		
				8GB	16GB	32GB	8GB	16GB	32GB
1,000	1,024	1,024	1/Frame Rate to 1/ps	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
3,000	1,024	1,024		1.82	3.64	7.28	5,457	10,918	21,841
5,000	1,024	1,024		1.09	2.18	4.37	5,457	10,918	21,841
5,400	1,024	1,024		1.01	2.02	4.04	5,457	10,918	21,841
10,000	768	768		0.97	1.94	3.88	9,701	19,410	38,829
15,000	768	512		0.97	1.94	3.88	14,552	29,116	58,243
20,000	512	512		1.09	2.18	4.37	21,829	43,674	87,365
30,000	512	352		1.06	2.12	4.24	31,751	63,526	127,076
75,000	512	128		1.16	2.33	4.66	87,317	174,698	349,461
100,000	320	128		1.40	2.80	5.59	139,707	279,517	559,138
125,000	256	128		1.40	2.80	5.59	174,634	349,397	698,922
180,000	128	128		1.94	3.88	7.77	349,269	698,794	1,397,845
250,000	128	80		2.24	4.47	8.95	558,830	1,118,071	2,236,552
300,000	128	64		2.33	4.66	9.32	698,538	1,397,589	2,795,690
500,000	64	32		5.59	5.59	22.37	2,794,154	2,795,178	11,182,762
675,000	64	16		8.28	16.56	33.13	5,588,309	11,180,714	22,365,525

<b>Sensor</b>	12-bit ADC (Bayer system color, single sensor) with 20µm pixel
<b>Shutter</b>	Global electronic shutter from 16.7ms to 1µs independent of frame rate is standard
<b>Lens Mount</b>	Interchangeable F-mount and C-mount using supplied adapters
<b>Extended Dynamic Range</b>	Selectable in twenty steps (0 to 95% in 5% increments) to prevent pixel over-exposure
<b>Memory</b>	8GB (standard), 5457 frames, 1.01 sec @ 5400fps 16GB (option), 10918 frames, 2.02 sec @5400fps 32GB (option), 21841 frames, 4.04 sec @5400fps
<b>Video Output 1</b>	NTSC/PAL composite VBS (BNC). Ability to zoom, pan and scroll within image via keypad. Live video during recording.
<b>Video Output 2</b>	SDI:D1 digital component 1 channel (BNC) industry standard digital output NTSC and PAL
<b>Camera Control</b>	Available Gigabit Ethernet and RS-422 keypad with built in 5" LCD viewfinder
<b>User Preset Switches</b>	Four user selectable camera function control mounted on the cameras rear panel
<b>Low Light Mode</b>	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
<b>Triggering</b>	Selectable positive or negative TTL 5Vp-p or switch closure
<b>Trigger Delay</b>	Programmable delay on selected input and output triggers, 100ns resolution
<b>Timing</b>	Internal clock or external source such as IRIG or GPS

<b>Phase Lock</b>	Enables cameras to be precisely synchronized together, or to an external source, such as IRIG or GPS time codes
<b>Event Markers</b>	Ten user –entered event markers mark specific events within the image sequence in real time. Immediately accessible through software
<b>Dual Speed Recording™</b>	Enables the recording speed to be changed up or down by a factor of 2,4 or 8 during a recording
<b>Recording Modes</b>	Start, End, Center, Manual, Random, Random Reset, Random Center, Random Manual and Dual Speed Recording
<b>Saved Image Formats</b>	JPEG, AVI, TIFF, BMP, RAW, RAWW, PNG and FTIF. Images can be saved with or without timing and comment data
<b>Data Display</b>	Frame Rate, Shutter Speed, Trigger Mode, Date or Time (can be switched), Status (Playback/Record), Real Time, Frame Count and Resolution
<b>Partitioning</b>	Up to 64 memory segments for multiple recordings in memory
<b>Data Acquisition</b>	Supports Photron MCDL and DAQ
<b>Cooling</b>	Actively cooled
<b>Operating Temp.</b>	0-40 degrees C (Range version increases upper limit to 45C)
<b>Mounting</b>	1x ¼-20 UNC, 1x 3/8-16 UNC, 6x M6
<b>Dimensions and Weight</b>	160mm (6.30")H x 153mm (6.02")W x 242.5mm (9.55")D *excluding protrusions Weight 13 lbs (5.9 kg)
<b>Power Requirements</b>	100V - 240V AC ~ 1.5A, 50-60Hz optional DC operation 20 to 36V DC. AC adaptor provided

**PHOTRON USA, INC.**  
9520 Padgett Street, Suite 110  
San Diego, CA 92126-4446  
USA  
Tel: 858.684.3555 or 800.585.2129  
Fax: 858.684.3558  
Email: image@photron.com  
www.photron.com

**PHOTRON (EUROPE) LIMITED**  
The Barn, Bottom Road  
West Wycombe, Bucks, HP14 4BS  
United Kingdom  
Tel: +44 (0) 1494 481011  
Fax: +44 (0) 1494 487011  
Email: image@photron.com  
www.photron.com

**PHOTRON LIMITED**  
Fujimi 1-1-8  
Chiyoda-Ku, Tokyo 102-0071  
Japan  
Tel: +81 (0) 3 3238-2106  
Fax: +81 (0) 3 3238-2109  
Email: image@photron.co.jp  
www.photron.co.jp

**Photron**

SLOW MOTION IMAGING SOLUTIONS