



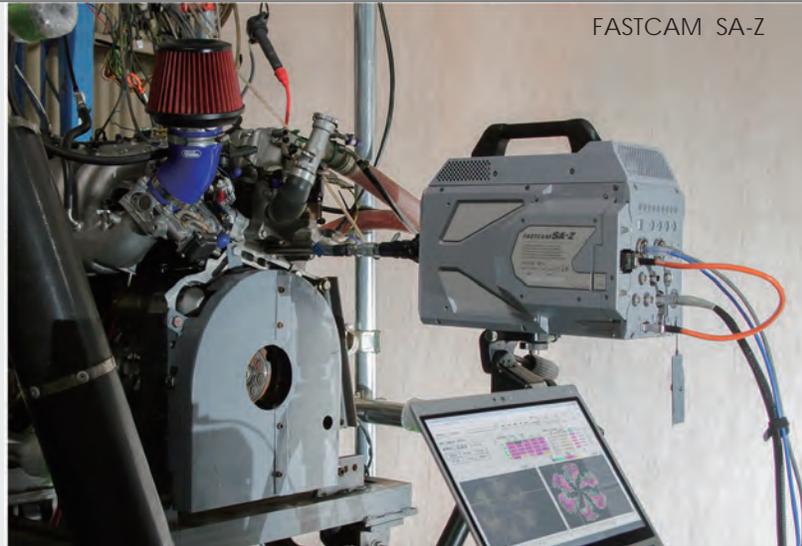
# Photron

High-Speed Imaging for Slow Motion Analysis

# FASTCAM SERIES



FASTCAM NOVA



FASTCAM SA-Z

## Ready for anything.

The FASTCAM series of high-speed cameras provide a range of high performance features in a stand-alone configuration. Some cameras in the series offer a sealed body design and employ heat pipe technology to provide a thermally stable and reliable high-speed imaging system for use in the most challenging environments.

### FASTCAM SA-Z

The ultra high-speed FASTCAM SA-Z provides megapixel image resolution at frame rates up to 21,000fps and exceptional light sensitivity (monochrome ISO 50,000) with 12-bit dynamic range delivering the ultimate imaging performance. The FASTCAM SA-Z provides frame rates greater than 2 million fps at reduced image resolution and shutter speeds as short as 159 nanoseconds (export restrictions may apply).

### FASTCAM NOVA S Series

The FASTCAM NOVA brings together unique CMOS image sensor technologies and extensive high-speed digital imaging expertise to provide a camera with the flexibility to be used in a wide variety of applications. Available in five different models, the FASTCAM NOVA offers 12-bit image recording rates up to 16,000 frames per second (fps) at megapixel image resolution, and shutter speeds down to 0.2µs. Recording rates to 1.1 million fps are available at reduced image resolutions.

### FASTCAM NOVA R2

The FASTCAM NOVA R2 offers 12-bit image recording rates up to 1,440 frames per second (fps) at 4-megapixel image resolution, and shutter speeds to 2.7µs. Recording rates to 100,000fps are available at reduced image resolutions.

DESCRIPTION	FASTCAM SA-Z	FASTCAM NOVA S6 / S9 / S12 / S16	FASTCAM NOVA R2
Speed at full image resolution	20,000	6.4K / 9K / 12.8K / 16K	1,440
Maximum image resolution (pixels)	1024 x 1024	1024 x 1024	2048 x 2048
Maximum speed at reduced image resolution (fps)	2,100,000	800,000 900,000 1,000,000 1,100,000	100,000
Sensitivity (excluding IR response) Mono (Color)	50,000 (20,000)	64,000 (16,000)	8,000 (2,500)
Minimum shutter speed (µs)	1	1	1
Free optional sub-microsecond shutter – Subject to export control	159ns	0.2µs	2.7µs
Memory capacity (Gigabytes)	32GB - 128GB	8GB - 128GB	8GB - 128GB
Base memory capacity (frames)	21,837	5,437	1,338
Recording duration (seconds) @ max fps and full image resolution (with minimum memory)	1.092	0.85 / 0.61 / 0.43 / 0.34	0.93
Non-volatile storage	2x SD, 1TB or 4TB external FAST Drive	1TB or 4TB external FAST Drive	1TB or 4TB external FAST Drive
Supports long record duration (streaming)	x	x	x
Pixel size (µm)	20	20	10
Bit-depth	12 / 8	12	12
Variable region of interest (ROI)	✓	✓	✓
Multi-head support	x	x	x
Lens mounts	Nikon F / G , EF, C	Nikon F / G , EF, C	Nikon F / G , EF, C
Closed Case "Range Version"	✓	✓	✓
High-G operation	25g	30g	30g
Fan Stop Function	✓	✓	✓
Gigabit Ethernet Connection	✓ (dual)	✓ (10GbE / 1GbE)	✓ (10GbE / 1GbE)
PC-Less operation with keypad	Optional	x	x
Saved image formats	BMP, TIFF, JPEG, PNG, RAWW, MRAW, AVI, MOV, MP4		
Supports Photron DAQ plugin	✓	✓	✓

# FASTCAM MINI

FASTCAM MINI CX



FASTCAM MINI AX

## Small cameras. Big performance.

With performance to meet the demands of a broad range of research and industrial applications, all models are also engineered for reliable operation under high-G loads, making them ideally suited for automotive and military applications.

### FASTCAM MINI AX

Three performance level models – Mini AX50, AX100 and AX200 – deliver 1-megapixel image resolution (1024 x 1024 pixels) at frame rates up to 2,000fps, 4,000fps and 6,400fps respectively. Sub-microsecond option available on MINI AX200, subject to export approval.

### FASTCAM MINI UX

Two Mini UX camera models provide 1.3-megapixel (1280 x 1024 pixels) image resolution with frame rates up to 2,000fps from the Mini UX50 and 4,000fps from the Mini UX100. The Mini UX is suitable for operation with a range of optical systems such as microscopes due to its small sensor size.

### FASTCAM MINI WX

The FASTCAM Mini WX100 delivers exceptional high resolution imaging performance with 2048 x 2048 pixel resolution at up to 1,080fps, 1920 x 1080 pixel resolution at up to 2,000fps and frame rates up to 80,000fps at reduced image resolution.

### FASTCAM MINI CX

With a compact size, battery backup and auto download to Cfast Card, the Mini Cx is well suited for the space limited locations and High-G operating environments common to automotive safety testing as well as certain military/defense applications.

DESCRIPTION	MINI AX 50/100/200	MINI UX 50/100	MINI WX 50/100	FASTCAM MINI CX
Speed at full image resolution	2K / 4K / 6.4K	2,000 / 4,000	750 / 1,080	750 / 1,000
Maximum image resolution (pixels)	1024 x 1024	1280 x 1024	2048 x 2048	1920 x 1400 1920 x 1080
Maximum speed at reduced image resolution (fps)	170,000 540,000 900,000	160,000 800,000	67,500 80,000	10,000
Sensitivity (excluding IR response) Mono (Color)	40,000 (16,000)	10,000 (5,000)	6,400 (2,000)	10,000 (5,000)
Minimum shutter speed (µs)	1	3.9	2.7	4
Free optional sub-microsecond shutter – Subject to export control	260ns (AX200)	x	x	x
Memory capacity (Gigabytes)	8GB - 32GB	8GB - 32GB	8GB - 32GB	8GB
Base memory capacity (frames)	5,457	4,365	1,361	3,860 (Full HD)
Recording duration (seconds) @ max fps and full image resolution (with minimum memory)	2.73 / 1.36 / 0.85	1.09 / 0.54	1.81 / 1.26	3.86 (Full HD)
Non-volatile storage	x	x	x	Removable Cfast Card
Supports long record duration (streaming)	x	x	x	x
Pixel size (µm)	20	10	10	6.6
Bit-depth	12	12	12	10
Variable region of interest (ROI)	✓	✓	✓	x
Multi-head support	x	x	x	x
Lens mounts	Nikon F / G, EF, C, M42	Nikon F / G, EF, C	Nikon F / G, EF, C, M42	C
Closed Case "Range Version"	x	x	x	✓
High-G operation	100g	100g	100g	150g
Fan Stop Function	✓	✓	✓	Sealed body w/o fan
Gigabit Ethernet Connection	✓	✓	✓	✓
PC-Less operation with keypad	x	x	x	x
Saved image formats	BMP, TIFF, JPEG, PNG, RAWW, MRAW, AVI, MOV, MP4			
Supports Photron DAO plugin	✓	✓	✓	✓

# FASTCAM MULTI-HEAD CAMERA SYSTEMS



When one camera angle is not enough.

Various applications require simultaneous recording from multiple camera angles or for cameras to be located in hazardous or space limited locations. Photron offers unique high-speed imaging systems that allow multiple camera heads to be controlled from a single control module, providing a cost-effective solution to unique imaging applications.

## FASTCAM MULTI

The FASTCAM Multi is a unique high-speed camera system featuring two compact and lightweight, sealed camera heads tethered to a remote processor. Benefiting from a high light sensitivity sensor delivering 1.3 megapixel resolution at 4,800fps, built-in data acquisition and options for long duration direct-to-SSD recording with the addition of the optional FAST Drive, the FASTCAM Multi is truly innovative.

## FASTCAM MH6

The FASTCAM MH6 comprises up to six miniature HD camera heads coupled to a central processor which ensures precise synchronization of all views. All components are tested for high-G operation; therefore, the FASTCAM MH6 is ideally suited for onboard and offboard applications in the automotive and defense industry.

DESCRIPTION	FASTCAM MH6	FASTCAM MULTI
Speed at full image resolution	750 / 1,000	4,800
Maximum image resolution (pixels)	1920 x 1400 1920 x 1080	1280 x 1024
Maximum speed at reduced image resolution (fps)	10,000	750,000
Sensitivity (excluding IR response) Mono (Color)	12,500 (5,000)	10,000 (5,000)
Minimum shutter speed (µs)	4	3.9
Free optional sub-microsecond shutter – Subject to export control	x	x
Memory capacity (Gigabytes)	4GB / channel (6 heads) to 28GB / channel (single head) shared memory	
Base memory capacity (frames)	1 camera head: 12,600 2 camera heads: 5,400	3-4 camera heads: 2,700 5-6 camera heads: 1,800
Recording duration (seconds) @ max fps and full image resolution (with minimum memory)	1.8 (FHD 6 heads) to 12.6 (FHD single head)	
Non-volatile storage	512GB non-removable SSD	2TB external FAST Drive
Supports long record duration (streaming)	x	✓
Pixel size (µm)	6.6	10
Bit-depth	8	12
Variable region of interest (ROI)	x	✓
Multi-head support	6	2
Lens mounts	C	Nikon F / G, C, MFT
Closed Case "Range Version"	x	✓
High-G operation	160g	x
Fan Stop Function	x	✓
Gigabit Ethernet Connection (& USB3)	✓	✓
PC-Less operation with keypad	x	x
Saved image formats	BMP, TIFF, JPEG, PNG, RAWW, MRAW, AVI, MOV, MP4	
Supports Photron DAQ plugin	✓	2 channel, built-in

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