

ultima 512

F A S T C A M

Lightweight High-G camera provides superb sensitivity at 2,000 fps and 512 x 512 resolution



Utilizing a high-sensitivity, third-generation CMOS sensor, the ultima 512 offers a realistic alternative to 16mm high-speed film recording where mega-pixel resolution is not required.

Providing 512 x 512-pixel operation to 2,000 frames per second (fps) and reduced resolution operation all the way to 32,000 fps, the ultima 512 delivers high-performance imaging. The robust and lightweight camera head connects to a compact processor unit via a 16-foot (5m) single flexible cable to allow operation in inaccessible and space-confined locations. Constructed from magnesium alloy, both the camera head and processor have been fully qualified for High-G operation.

High light sensitivity is achieved using a 10-bit monochrome (30-bit color) CMOS sensor with a 16 μm pixel size. The ultima 512 system incorporates Photron's latest unique operation feature, Dual Speed Recording™. This enables the user to program the system to record the initial stages of an event at one frame rate, and the later stages at a different frame rate, achieving the best possible combination of recording speeds and available memory. Memory partitioning allows up to 64 separate events to be recorded in quick succession without the need to download images.

Powerful software coupled with unmatched interconnectivity allows the ultima 512 to be operated remotely under different protocols: either by Ethernet, IEEE1394 (FireWire), or for long-distance operation via the Photron Gigabit Optical Network. In addition, the system can be used independent of a PC through the supplied intuitive handheld keypad.

FEATURES

- Full 512 x 512-pixel resolution up to 2,000 frames per second (fps)
- 10-bit monochrome, 30-bit color CMOS sensor with large 16 μm pixels for increased sensitivity
- Recording at frame rates up to 32,000 fps
- Global electronic shutter to 4 μs
- Memory segment feature – enables 64 different recordings to be made in one session
- IRIG or GPS timing is recorded in real time on every frame – not appended later
- Lightweight tethered camera head enables easy access to hazardous or hard-to-reach locations
- Camera controlled via the keypad and RS-422A and either by the Photron Gigabit Optical Network, Ethernet or FireWire
- Image memory can be expanded to facilitate 3-second record duration at 2,000 fps with full (512 by 512 pixel) resolution, or 6 seconds at 1,000 fps
- Optional MCDL enables users to record 4 channels of analog and 12 channels of digital data synchronized with high-speed video images
- Dual Speed Recording mode allows the frame rate to be changed "on the fly" during a recording



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Frame Rates in frames per second

60	125	250	500	1,000	2,000	4,000	8,000	16,000	32,000
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Playback Speeds in frames per second

1	2	5	10	15	30
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Resolution 10-bit monochrome (1,024 steps), 30-bit color (Resolutions are reversible)

	Horizontal	512	512	512	512	512	256	256	256	256	128	128	128	64	64
	Vertical	512	256	128	64	32	256	128	64	32	128	64	32	64	32
Frame Rate	60 to 500	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	1,000	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	2,000	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	4,000	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	8,000	-	-	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	16,000	-	-	-	✓	✓	-	-	✓	✓	-	✓	✓	✓	✓
	32,000	-	-	-	-	✓	-	-	-	✓	-	-	✓	-	✓

Record Time in seconds and frames

Frame Rate (fps)	Standard		Maximum	
	Max. Res.	Min. Res.	Max. Res.	Min. Res.
60	34.13s (2,048)	4,369.07s (262,144)	102.40s (6,144)	13,107.20s (786,432)
125	16.38s (2,048)	2,097.15s (262,144)	49.15s (6,144)	6,291.46s (786,432)
250	8.19s (2,048)	1,048.58s (262,144)	24.58s (6,144)	3,145.73s (786,432)
500	4.10s (2,048)	524.30s (262,144)	12.29s (6,144)	1,572.86s (786,432)
1,000	2.05s (2,048)	262.14s (262,144)	6.14s (6,144)	786.43s (786,432)
2,000	1.02s (2,048)	131.07s (262,144)	3.07s (6,144)	393.22s (786,432)
4,000	1.02s (4,096)	65.54s (262,144)	3.07s (12,288)	196.61s (786,432)
8,000	1.02s (8,192)	32.77s (262,144)	3.07s (24,576)	98.30s (786,432)
16,000	1.02s (16,384)	16.38s (262,144)	3.07s (49,152)	49.15s (786,432)
32,000	1.02s (32,768)	8.19s (262,144)	3.07s (98,304)	24.58s (786,432)

- Sensor** 512 x 512-pixel ultra-high sensitivity/speed CMOS 10-bit monochrome (1,024 steps), 30-bit color (Bayer system color, single sensor)
- Shutter** Global electronic shutter from 10ms to 4µs
- Saved Image Formats** JPEG, AVI, TIFF, BMP, RAW (compressed or uncompressed) and RS170 video output
- Phase Lock** Enables cameras to be synchronized precisely together to a master camera or external source
- Triggering** Selectable positive or negative TTL 5Vp-p, switch closure
- Lens Mount** C-mount standard. Optional High-G block mount
- Camera Cable** 16.4' (5m)
- Data Display** Frame Rate, Shutter Speed, Trigger Mode, Date or Time (can be switched), Status (Playback/Record), Real Time, Frame Count and Resolution
- Video Output** NTSC or PAL. Live video during recording. Ability to zoom, pan and tilt within image via keypad
- Dual Speed Recording™** Enables the recording speed to be changed up or down during a recording
- Timing** Internal clock or external source such as IRIG or GPS. Indicators show current status of timing source
- Event Markers** Ten user-entered event markers are available to mark specific events within the image in real time. Immediately accessible through software
- Recording Modes** Start, End, Center, Manual, Random, Random Reset, Random Center, Random Manual and Dual Speed Recording™
- Partitioning** Up to 64 memory segments for multiple recordings in memory
- Camera Control** Through supplied keypad and RS-422A. And either via the Photron Gigabit Optical Network, Ethernet or FireWire
- Shock** 100G @ 10ms any axis
- Dimensions and Weight** **Camera Head** (no lens mount): 3.54" (90mm) H x 3.07" (78mm) W x 2.22" (56.3mm) D **Weight:** 1.1 lb (0.5 kg)
Processor (no handle): 4.3" (109.2mm) H x 3.54" (90mm) W x 9.25" (235mm) D **Weight:** 3.9 lb (1.76 kg)

Specifications subject to change without notice.

PHOTRON USA, INC.
 9520 Padgett Street, Suite 110
 San Diego, CA 92126-4446
 858.684.3555
 800.585.2129
 fax 858.684.3558
 email: image@photron.com
 www.photron.com

PHOTRON (EUROPE) LIMITED
 Willowbank House
 84 Station Road
 Marlow
 Bucks. SL7 1NX
 United Kingdom
 +44 (0) 1628 894353 fax +44 (0) 1628 894354
 email: image@photron.com
 www.photron.com

PHOTRON LIMITED
 Shibuya 1-9-8
 Shibuya-Ku, Tokyo 150-0002
 Japan
 +81 (0) 3 3486-3471
 fax +81 (0) 3 3486-8760
 e-mail: image@photron.co.jp
 www.photron.co.jp