

**Photron's ultima APX:  
the new standard in speed,  
sensitivity and versatility**



The Photron ultima APX sets new standards for high-speed imaging by offering a completely new and highly light-sensitive mega-pixel CMOS sensor. With over one million enormous 17 $\mu$ m pixels at speeds up to 2,000 frames per second (fps), the ultima APX enjoys a receptivity to light that until now only older, lower resolution CCD sensor technologies could achieve. This feature makes it ideal for lower-light applications or those that required expensive, hot lighting setups. The APX's sensitivity to light enables fast shutter speeds that prevent motion blur.

In addition to the ability to function under lower lighting conditions at very high speeds, the APX retains all the benefits long associated with Photron's existing CMOS cameras, including exceptional anti-blooming, an easy-to-operate approach and mega-pixel resolution. The APX provides full resolution up to 2,000 fps, and reduced resolution all the way up to a phenomenal 120,000 fps.

The APX comes standard with a 16-foot (5m) camera cable which allows the lightweight camera head easy access to hazardous or hard-to-reach locations.

Each APX is supplied with full control and image download software for those who prefer to operate multiple cameras via PC, as well as an intuitive handheld control unit for easy operation where a computer is not required.

## FEATURES

- Full, 1,024 x 1,024-pixel resolution, up to 2,000 frames per second (fps), and reduced resolution operation up to 120,000 fps
- 10-bit monochrome, 30-bit color CMOS sensor with large pixels and 4 $\mu$ s global electronic shutter provides superb light sensitivity and razor-sharp imagery
- 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 maximum resolution and 2,000 fps 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
- Over Exposure Protection™ ensure optimum image quality for every pixel regardless of illumination levels within the recorded image



# Specifications **ultima APX**



Frame Rates in frames per second

|     |     |       |       |       |       |       |        |        |        |        |        |        |        |         |         |
|-----|-----|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| 60+ | 500 | 1,000 | 2,000 | 4,000 | 6,000 | 8,000 | 12,500 | 15,000 | 24,000 | 30,000 | 40,000 | 50,000 | 87,600 | 100,000 | 120,000 |
|-----|-----|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|---------|---------|

Resolution 10-bit monochrome (1,024 steps), 30-bit color

| Frame Rate (fps) | Resolution Max |       | Resolution 2 |     | Resolution 3 |     | Resolution Min |    |
|------------------|----------------|-------|--------------|-----|--------------|-----|----------------|----|
|                  | H              | V     | H            | V   | H            | V   | H              | V  |
| 60 to 2,000      | 1,024          | 1,024 | 1,024        | 512 | 512          | 512 | 128            | 16 |
| 4,000            | 1,024          | 512   | 512          | 512 | 512          | 256 | 128            | 16 |
| 6,000            | 512            | 512   | 512          | 256 | 256          | 256 | 128            | 16 |
| 8,000            | 1,024          | 256   | 512          | 256 | 256          | 256 | 128            | 16 |
| 10,000           | 512            | 256   | 256          | 256 | 256          | 128 | 128            | 16 |
| 15,000           | 1,024          | 128   | 512          | 128 | 256          | 128 | 128            | 16 |
| 20,000           | 128            | 256   | 128          | 32  | —            | —   | 128            | 16 |
| 24,000           | 512            | 128   | 256          | 128 | 128          | 128 | 128            | 16 |
| 30,000           | 256            | 128   | 128          | 128 | 128          | 64  | 128            | 16 |
| 40,000           | 512            | 64    | 256          | 64  | 128          | 64  | 128            | 16 |
| 50,000           | 256            | 64    | 128          | 64  | 64           | 64  | 128            | 16 |
| 87,600           | 256            | 32    | 128          | 32  | —            | —   | 128            | 16 |
| 100,000          | 128            | 32    | —            | —   | —            | —   | 128            | 16 |
| 120,000          | 128            | 16    | —            | —   | —            | —   | —              | —  |

Record Time in seconds and frames

| Frame Rate (fps) | Standard         |                    | Expanded          |                    |
|------------------|------------------|--------------------|-------------------|--------------------|
|                  | Max. Res.        | Min. Res.          | Max. Res.         | Min. Res.          |
| 2,000            | 1s (2,048)       | 524s (1,048,576)   | 3s (6,144)        | 1,572 (3,145,728)  |
| 4,000            | 1s (4,096)       | 262s (1,048,576)   | 3s (12,288)       | 786s (3,145,728)   |
| 10,000           | 1.6s (16,384)    | 104.8s (1,048,576) | 3.9s (49,152)     | 314.5s (3,145,728) |
| 24,000           | 1.36s (32,768)   | 43.6s (1,048,576)  | 4s (98,304)       | 131s (3,145,728)   |
| 50,000           | 2.6s (131,072)   | 20.9s (1,048,576)  | 7.8s (393,216)    | 62.9s (3,145,728)  |
| 100,000          | 5.2s (524,288)   | 10.4s (1,048,576)  | 15.7s (1,572,864) | 31.4s (3,145,728)  |
| 120,000          | 8.7s (1,048,576) | 8.7s (1,048,576)   | 26.2s (3,145,728) | 26.2s (3,145,728)  |

- Sensor** CMOS (Bayer system color, single sensor) with 17µm pixel, 4µs global electronic shutter and overexposure protection
- 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** Interchangeable F-mount and 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 by a factor of four, 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 sequence 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): 4.72" (120mm) H x 4.33" (110mm) W x 3.34" (92.2mm) D **Weight:** 2.2 lb (1 kg) DC  
Processor: 8.39" (213.1mm) H x 5.51" (140mm) W x 12.08" (306.8mm) D **Weight:** 12.13 lb (5.5 kg) DC, 18.74 lb (8.5 kg) AC

Specifications subject to change without notice.

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