



Photron USA's new HQ

## Photron Goes International

After over ten years of being the high-speed imaging industry's 'sleeping giant', Photron has opened two new offices to help serve their customers directly.

Since Photron developed the world's fastest high-speed video system back in the early nineties, the 4540, they have been exclusively represented by the old Eastman Kodak MASD company. With MASD's purchase last year by Roper Scientific and their ultimate merger with Redlake Imaging, this arrangement no longer represents Photron's best interests, and two new companies, Photron USA and Photron Europe were formed.

Working out of the San Diego area, Photron USA has the capacity to support both sales and service of their extensive product range. With support now supplied directly by the manufacturer, the level of experience and service is greatly superior to that which was available before.

Our sister company, Photron (Europe) is based in a new office complex just a few miles outside of London in the picturesque market town of Marlow in Buckinghamshire.

Photron is eager to become a leading supplier of your high-speed solutions and brings a commitment to developing innovative new products, as well as providing excellent support. These facts should help convince users of our commitment.

As part of an on-going drive to increase awareness of both the Photron name and products, we have launched this quarterly newsletter to keep our valued customers aware of any and all new developments.

Any publication is obviously only as good as its content, and for that we must rely on you, dear reader, so please let us have your comments, your feedback and your applications notes and anything else you think worthy of publication.

Thank you.

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### SPECIAL POINTS OF INTEREST:

- New North American distribution channel means better service for you.
- New and vastly improved product range offers unparalleled choices for all industries
- For the latest news, be sure to check out our new website at: [www.photron.com](http://www.photron.com)

## DIGITAL WEST IMAGING TEAM UP WITH PHOTRON USA

Photron is pleased to announce that in May of this year Digital West Imaging (DWI) became the exclusive distributor for Photron's high-speed video products in Colorado, Montana, New Mexico, Texas, Wyoming and Mexico.

DWI, staffed by some of the best people in the high-speed imaging world, has now joined forces with Photron to offer the widest range of high speed imaging solutions in the industry. DWI's Mark Green will be spearheading the effort and said "The decision to join the Photron team was based on three major factors: the superior technology, the product range, and the people; many of who I have enjoyed working with in the past. The primary difference is that we now have a wider selection of superior products available from which our customers can choose".

In addition to Photron's unequalled range of high-speed video products, DWI offers fast shutter/multiple exposure cameras, integrated high-speed video systems, and a full line of camera accessories. A complete stock of cameras and accessories will also be made available for rent or lease. Please visit DWI at [www.digitalwestimaging.com](http://www.digitalwestimaging.com) or call toll free on (866) 593-1900 for more information and assistance with your application.

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Digital West Imaging

## Photron at Zero-G



In May 2001 scientists at the European Space Agency in the Netherlands used our PCI in an

experiment to study liquid impacts under micro gravity conditions. The experiments were conducted as part of the ESA Parabolic Flight Campaign on board the Airbus A-300 Zero-G aircraft which flies parabolic flights to provide scientists with 20 second periods of weightlessness in which to conduct their experiments. Parabolic flights are used to conduct and validate scientific experiments prior to inclusion in space missions, and to train astronauts for space flight.

The liquid impact experiment and FASTCAM PCI system performed well during the parabolic flight providing unique data on the behavior of liquids under micro gravity conditions. Data from the FASTCAM is currently under analysis at the European Space Technology Centre, and will be published in the coming months.

Parabolic flights are practically the only means on Earth of reproducing weightlessness with human's on board. During a parabolic flight, the "Zero-G" Airbus pilot - flying at an altitude of approximately 20,000', usually in a specially reserved air-corridor above the Gulf of Gascogne - first performs a nose-up maneuver to put the aircraft into a steep climb (25,000'). This generates an acceleration of 1.8 G for about 20 seconds. Then the pilot reduces engine thrust to almost zero, injecting the aircraft into a parabola. The plane continues to climb until it reaches the apex of the parabola (28,000'), then starts descending. This lasts for about 20 seconds, during which time the passengers in the cabin float in the weightlessness resulting from the free fall of the aircraft. When the angle below the horizontal reaches 45°, the pilot accelerates and pulls up the aircraft to return to steady horizontal flight. These maneuvers are repeated 30 times per flight.

## Digital Video Recorder (DVR)



Ever since solid state memory replaced delicate conventional video tapes as the high-speed recording media of choice, there has not existed a high-speed video systems with the capability to record for long durations at anything approaching a desirable resolution. Now at last, thanks to the Photron FASTCAM DVR, there is.

A CMOS sensor is used to record bloom free images for up to thirty minutes with the standard memory without the tape instability of VHS based systems. A resolution of 640 by 480 pixels is available up to 500 fps and is reduced at the top speed of 2,000 fps. The use of 128 gigabytes (expandable) of removable fast access SCSI hard drives means the DVR can either make one long recording, or multiple, shorter recordings for those applications requiring extremely fast turn-around times between recordings.

Controlled by an intuitive hand-held remote control, the DVR can be configured as a standard computer, with all the benefits of the old-fashioned tape based systems, but with none of the shortcomings long-associated with delicate tapes.

### BASIC DVR SPECIFICATIONS:

RECORD RATES: 500 fps at 640 x 480 , 1,000 fps at 640 x 240 pixels, 2,000 fps at 640 x 120 pixels, all for 30 minutes duration.

SENSOR: 8 bit B&W, 24 bit color CMOS.

SHUTTER: Global electronic to 7.8 µs.

RECORDING MEDIA: 128 gigabyte removable hard drives.

COMPRESSION: JPEG 10:1.

Digital O/P: 100 BaseT Ethernet.

Video O/P: RS170.

External Control: RS232 & RS422.

OPERATING TEMP: 32 to 113 F. (0 to 45 C).

## FASTCAM PCI sets new standard for PC based HSV

The Fastcam PCI solves many of the issues long associated with mounting high-speed PCI imaging. Through carefully listening to the feedback of customers using other manufacturers PCI cards , we have been able to avoid many of their problems, including board flex which all too frequently results in chip damage and failure.

We also listened to your complaints about poor design meaning that expansion memory was poorly mounted; blocking off neighboring PCI slots and preventing their use.

And lastly, we worked long and hard to ensure that when we say you can mount four PCI cards in a single PC, you really can, not just three as with other lesser systems.

That plus the fact the Fastcam PCI operates up to 10,000 fps in both color and B&W, and at 512 by 480 has nearly 50,000 extra pixels a frame!

So go ahead you decide, which sounds better to you? Stronger, slimmer, faster & higher resolution, or those other guys?



The Photron FASTCAM PCI

The mega-pixel ultima 1024



## When more is definitely better

When it comes to pixels in high-speed imaging, more is most definitely better. That's one of the primary reasons the Photron ultima 1024 series of cameras is proving so successful.

The 1,024 by 1,024 pixel CMOS sensor adopted in the 1024 provides a staggering 1,048,576 twelve micron (12µm) pixels per frame. Now that's an awful large amount of data, especially when you realize we can capture five-hundred of those images per second, but the 1024 lets you choose which frames you wish to save, saving a whole load of disk space.

And that's not all; CMOS sensors represent a vast improvement over older CCD technology when it comes to anti-blooming. Blooming, also known as 'streaking,' is that annoying effect caused by a bright light in the recorded image causing a whole bunch of pixels immediately above or below the effected area to saturate, turning completely white and obscuring any data hidden beneath them.

CMOS does not suffer from this common but infuriating phenomena and here is why:

Imagine the CCD pixel is a bucket, it starts empty and as light falls upon it the bucket fills until it overflows, spilling onto the pixels around it.

Now CMOS is the opposite, it is like a bucket that starts full and then empties as the light hits it; the result is it can never be worse than empty, ensuring the surrounding pixels are not effected, regardless of how much light any pixel is exposed to.

Expect to see a lot more innovations like this arriving soon from Photron, we don't believe in promising vaporware solutions, but then again we don't need to, we already have the largest selection of models available today.

We really mean it when we say: "We're focused on technology!"

### SEE PHOTRON AT THE FOLLOWING SHOWS

#### 2001

October 15th to 18th  
Optical Systems Group (OSG) - Military  
Snowbird, UT

October 30th to November 1st  
Vision Show East  
Boston, MA

October 30th to November 1st  
Advanced Productivity Exposition  
Dallas, TX

November 15th to 17th  
STAPP Car Crash Conference  
San Antonio, TX

#### 2002

January 22nd to 24th  
SPIE Photonics West  
San Jose, CA

March 4th to 7th  
Society of Automotive Engineering (SAE)  
Detroit, MI

April  
NAB  
Las Vegas, NV

April  
ITEA Instrumentation Workshop  
Lancaster, CA

November  
PackExpo  
Chicago, IL

## Meet the family; the PHOTRON family

*The following is a brief over-view of our current product offerings:*

#### FASTCAM PCI:

Available in models covering 500 to 10,000 fps, the PCI is a simple to use computer peripheral comprised of a full-size PCI card, cable, CCD camera and software, available in either color or black & white versions.

#### Super 10K:

Utilizing the same CCD sensor as the PCI, the stand-alone Super 10K is recognized as an industry workhorse. Available in the same 500, 1K, 2K and 10K models as the PCI.

#### ultima 1024:

A new addition to the Photron family, the CMOS based 1024 offers provides over one million pixels a frame at speeds up to 500 fps. Available models include 500, 1K, 4K, and 16K fps, both color and B&W, all can be run via IEEE 1394 control.

#### ultima SE:

##### **Now with IEEE 1394 (Firewire) Capability**

The SE is the latest generation of one of our greatest cameras; the venerable 4540. A new processor is indicative of a whole host of new capabilities. The SE has a well earned reputation as the worlds fastest video camera; operating full-frame to 4,500 fps, and partial frame to 40,500 fps.

#### ultima RGB:

A color version of the popular SE.

#### ultima i2:

The addition of an image intensifier to the SE means we can now achieve gating times to 10 nanoseconds.

#### ultima Spectra:

Capable of recording three different spectral wavelengths at incredibly high-speeds, the Spectra has found a niche on combustion studies and other areas of research.