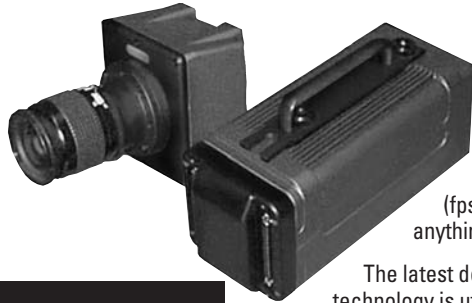


The Future of High-Speed Imaging has arrived!



Photron USA's new "Apex"

We are pleased to announce the imminent launch of the most exciting new high-speed imaging product since the 4540. Codenamed "Apex", it will operate at mega pixel resolutions well into the thousands of frames per second (fps) speeds, with a top speed in excess of anything seen before, even the 4540 (ultima SE).

The latest development in large pixel CMOS sensor technology is utilized in the "Apex" to provide light sensitivity currently only available from older type CCD sensor based products. Anyone familiar with the current generation of CMOS sensors knows how much more light is required to capture images comparable in quality to those from our CCD cameras. The "Apex's" increase in sensitivity will surpass that for CCD as well as the what is being promised by other manufacturers. "Apex" will retain all the benefits identified through our long involvement with current generation CMOS solutions, such as excellent anti-blooming, smaller camera head and processor packages, global electronic shuttering, and a single software interface that can be used with all our cameras.

Scheduled for full launch later this year, the "Apex" will be available in both "regular" and a high-G configuration, as seen at the recent SAE show in Detroit, which will be capable of reliable operation under the incredible shock and vibration levels experienced in military and automotive testing. Photron has produced a camera system that truly reflects their status as the leader in digital high-speed imaging.

Other innovative features offered by the "Apex" will include:

- Full resolution, 1,024 by 1,024 pixels to at least 2,000 fps, and reduced resolution to at least 100,000 fps.
- Available in both a single piece (stand alone) design, or with a tethered (remote) camera head with both 16 and 50 foot cable lengths.
- The ability to make a single recording at different frame rates. For example, a missile intercept test might feature the launch being recorded at 1,000 fps for 1 second, the flight at 125 fps for 5 seconds, and the intercept back at 1,000 fps.
- Up to sixty-four separate short recordings can be made without the need to download images or run the risk of losing earlier tests.
- The "Apex's" memory can be expanded to 8 Gigabytes, equating to 3 seconds at 2,000 fps with maximum resolution, or a staggering 13 minutes at the minimum resolution.
- Photron's Gigabit Optical Network facilitates long range control and image download, at speeds well in excess of anything currently available.
- Real time IRIG and GPS millisecond timing will be available to time stamp every frame in real time.

Please contact your Photron distributor to learn more about the "Apex" and our other exciting high-speed products.

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SPECIAL POINTS OF INTEREST:

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PC's become standard interface for Photron's High-Speed Imaging Products

Several years ago it was a novelty to see a personal computer that was dedicated to the study of motion. Rapid advancements in personal computer technology and the recent introduction of high performance camera and data acquisition products have come together to create a series of very powerful motion analysis tools that are now common on both factory floor and research locations.

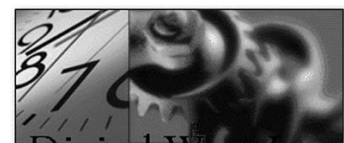
The evolution of the PC has resulted in computers that are designed for many types of environments and applications. High-performance tower designs handle many of the laboratory and R&D applications while the "lunch box" style of rugged industrial computers move around the factory floor addressing troubleshooting applications. For the ultimate in portability a notebook computer combined with a PC Expansion System provides for easy travel in a powerful package. With such PC platform flexibility it's no wonder that the PC is quickly becoming the standard interface for high-speed imaging products.

The value of the PC is in simplifying the operation of the high-speed image and data acquisition and the display/analysis of the recorded event. With a few "point & click" commands the system captures high-speed digital images (up to 16,000 images per second, up to 4 cameras per PC) with data (voltage, pressure, accelerometer, strain gauge, etc.) that is

synchronized at the time of recording. Once recorded, simply push the play button to see slow motion images and correlated data from the event displayed in a continuous waveform. Data can be seamlessly exported to Microsoft Excel to plot trajectories, velocity, and displacement of tracked points and much more.

Since Photron's high-speed cameras and data acquisition and analysis products are modular (offered as PC peripherals) a complete system can be integrated to provide the right features to meet your specific applications demand. Digital West Imaging can perform a free application audit to determine what PC, high-speed camera and data products best fit your needs. With years of experience in high-speed PC-based camera and data systems, DWI offers complete integration and support services.

Please contact Digital West Imaging for a complete list of Photron's camera and data product descriptions.



Digital West Imaging

Photron Motion Tools Provides unequalled power to your PC

Power to your PC; that is the message served by the newest software now supplied with both the Photron FASTCAM PCI and FASTCAM-X 1280 PCI products. Photron Motion Tools, or PhoMoTo as we so affectionately call it, provides the perfect match of PC and PCI high-speed imaging solutions. The base software now supplied with all our PCI products enables users to easily control their cameras, save images and then perform some pretty elaborate analysis, with the built in auto-tracker, before automatically exporting the resultant data to Excel or similar spreadsheet software.

Available with several different expansion modules, including:

- *DATA ACQUISITION* to capture external data from load cells, accelerometers etc., and then combining that data with synchronized high-speed video imagery to provide insight into what happened where and why.
- *IRIG/GPS timing module* enables our military customers to append recognized timing to every frame, greatly easing the task of later synchronizing the images from camera systems located long distances apart.



- *ENHANCED ANALYSIS* takes over where the standard Photron Motion Tools leaves off, providing the ability to automatically track eight points within a whole range of industry standard image formats.
- *AUTOMATIC DOWNLOAD* enables operators to set up their Photron PCI cameras and leave them running indefinitely. The user decides how many frames will be saved to what networked drive, then the system is left in the record mode, awaiting a trigger. It then saves the desired number of images before rearming the system to await the next trigger. A great way of remotely locating and fixing those troublesome intermittent faults.

Please visit <http://www.photron.com/motiontools.html> for more information

Ultima 1024 used to test Mars Lander at NASA



Mars Lander airbags, courtesy of NASA/JPL

NASA's Jet Propulsion Laboratory in Pasadena, California has chosen the Photron Ultima 1024 to record tests of the Airbag/Lander Structure to be used for the upcoming 2003 Mars Exploration Rover. The rover is scheduled for launch in June 2003, arriving January 2004, and is protected during its landing by an airbag shell.

The landing will be similar to that of the Pathfinder mission; a parachute will deploy and slow the spacecraft, then just before impact rockets will fire to slow it further, and airbags will inflate to cushion the landing. Upon impact with the surface, the spacecraft will bounce about a dozen times, potentially rolling as far as half a mile. Upon coming to a stop the airbag will deflate and retract and the petals will open up, bringing the lander to an upright position and revealing the rover.

The airbag shell is being tested in the world's largest vacuum chamber at NASA's Glenn

Research Center in Ohio. The Ultima 1024 records the airbag as it falls more than one hundred feet to a simulated Martian surface within the chamber, capturing the impact from multiple angles including a "rock's-eye" view through a clear floor. The durability of the airbag structure is of primary concern since the lander is expected to bounce many times over a long distance before coming to a rest and delivering the rover safely to the Martian landscape.

To view videos of the airbag test, including footage taken with the Ultima 1024, visit <http://www.jpl.nasa.gov/videos/mars/index.html> and click on "Building Better Airbags".

Please contact your local distributor for a complete list of Photron cameras and more information on how they can be used for other out-of-this-world, as well as more down to earth high-speed imaging applications.

Photron is proud to participate at MIT's High-Speed Short Course

The use of high-speed cameras for motion analysis is rapidly expanding as more companies learn of the benefits of using high-speed imaging in manufacturing, research, design, packaging and testing. Engineers, technicians and researchers have taken to the "easy to use" technology and are getting results with little formal training. If you want to learn more about lighting, lenses, image and data acquisition and analysis consider attending the High-Speed Photography and Videography for Motion Analysis Short Course in June at MIT in Cambridge, Massachusetts.

The four and a half day short course is designed for researchers, engineers, technicians, and photographers who need to gather data on rapidly moving subjects

and events for study, motion analysis, and trouble-shooting.

Mornings are spent in the lecture hall learning the fundamentals for lighting, imaging technologies, and motion analysis. Afternoons are spent making high-speed images in the laboratory. In addition to carrying out the standard techniques, attendees will try out the latest in high-speed imaging and data equipment, with the manufacturer's representatives there to provide hands-on education and experience with the systems. The course is held at the Edgerton Center at MIT - the home of Doc Edgerton's Stroboscopic Light Laboratory, where much of the history of the field was written.

Photron USA's Sales Manager, Andrew



Bridges, will be giving a presentation entitled 'Digital High-Speed Imaging Systems For The Personal Computer' and running lab session aimed at providing users with experience of both CCD and CMOS PCI high-speed systems.

For more information contact your Photron representative or visit the MIT website at www.mit.edu and search for course 6.51s.

SEE PHOTRON AT THE FOLLOWING SHOWS

2002

June 5-7
East Pack
Jacob K. Javits Convention Center
Booth 1068
New York, NY

June 10-14
High-Speed Photography & Videography
for Motion Analysis Seminar
Edgerton Center, MIT
Cambridge, MA

July 8-10
SPIE Annual Meeting and Congress
Seattle, WA

Sept. 29 - Oct 3
25th Intl High Speed Congress - SPIE
Beaune, France

Nov. 3-7
Pack Expo
Chicago, IL
Lakeside Center Booth #6045

Nov. 4-8
Optical Systems Group (OSG)
Hawaii

Nov. 19-21
The Vision Show
Santa Clara, CA

December
ITEA Modeling & Simulation
Las Cruces, NM

Out with the old...

The Digital Video Recorder (DVR) provides a truly digital alternative to aging tape based high-speed video systems, such as NAC's HSV and Kodak's Ektapro series. To help introduce the DVR, Photron is offering a US\$7,500 rebate for anyone wishing to trade in an old system for a DVR.

The Photron DVR writes VGA resolution image data to a bank of removable 120 Gigabyte, fast access, IDE hard drives in real time and at speeds of up to 2,000 frames per second (fps). With a compact CMOS camera head, black and white or color, and with a camera to processor cable length of over thirty feet available, the DVR offers several key advantages over tape systems, including:

- *Record time depends on the framing rate used. From 500, to 2,000 fps there is 30 minutes available. This doubles at 250 fps, and quadruples to two hours at 125 fps.*
- *Immediate access to any part of any recording. Tape systems need to access every frame of every session in the order recorded. The DVR can immediately skip to any frame.*

- *Ruggedness. Tape based systems are fragile due to the necessary contact of a very thin tape against a spinning drum head. With digital systems the problems of images lost due to shock or over-pressure are prevented.*
- *Digital images. Tape based systems are analog. To get the recorded images into a digital format you had to use a frame grabber and live with the inevitable image degradation. DVR images are saved in digital format and can be easily accessed or transferred electronically.*

The DVR provides a means to make long record times, well above what can be achieved by systems utilizing conventional RAM memory, or it can make multiple shorter recordings with no 'down-time' between, where RAM based systems would have to transfer the recorded images from RAM to a hard drive or other media.

All in all, the DVR offers unparalleled performance and, with this \$7,500 introductory trade in offer, at an unbeatable price.

PHOTRON

PHOTRON USA, Inc.

See High Speed Applications, on line at:

www.photron.com

Photron's Sales Channel means better service for you.

To help serve you better, we have assembled what we honestly feel to be the single best sales team available anywhere in North America. Please contact the distributor responsible for your geographical region.

Not sure who to contact? Feel free to contact Photron directly at:

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Web: <http://www.photron.com>

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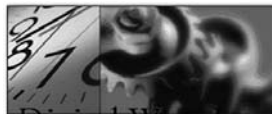
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