



LAVISION

WE COUNT ON PHOTONS

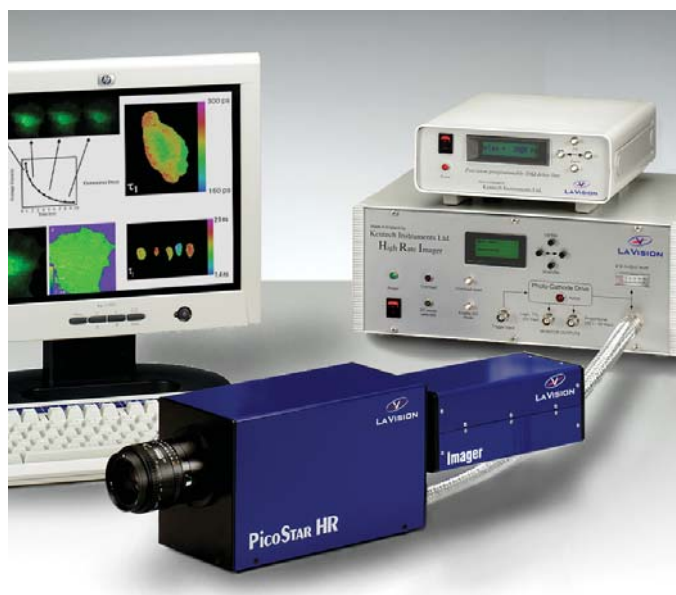
PicoStar HR

family of ultra-high rep. rate, fast gated camera systems for time-gated imaging and spectroscopy.

PicoStarHR is ideal for applications in conjunction with high rep. rate lasers.

Winner of the Photonics Circle of Excellence Award.

- ▶ **ultra-high gating rate:** up to 110 MHz
- ▶ **fast gating:** <300 ps
- ▶ **gain modulation:** up to 1 GHz
- ▶ **spectral response:** 200...900 nm
- ▶ **sensitivity:** single photon range
- ▶ **upgrade:** gate width down to 80 ps @10 kHz rep. rate



applications

- ▶ time-gated imaging spectroscopy and microscopy
- ▶ fluorescence lifetime imaging microscopy, FLIM
- ▶ dynamics of photo-induced processes
- ▶ gating and ranging, 3D LIDAR
- ▶ multifocal multi-photon microscopy
- ▶ single molecule imaging
- ▶ time-gated Raman imaging
- ▶ plasma spectroscopy
- ▶ combustion diagnostics
- ▶ magnetic domain switching

- ▶ **CCD:** interline, 1376 x 1040 or 640 x 480 array, 12 bit, 65% QE, binning and windowing, other CCDs optional
- ▶ **ultra-fast readout:** 16 MHz pixel rate at 12 bit
30 frames/s (640 x 480) or 10 frames/s (1376 x 1040)
- ▶ **dynamic range:** up to 16 bit
- ▶ **coupling:** via relay lens; fiber optic optional
- ▶ **system options:** delay lines and generators, optical trigger unit, trigger resynchronizer, intensifier cooling, imaging spectrographs, microscopes and accessories, ps and fs lasers, acousto-optical modulators, stepping motor, filters, A/D and D/A interfaces, application software.
- ▶ **DaVis software:** camera control, image acquisition, processing and analysis, application modules e.g. FLIM package (ImSpector software), control and synchronization to external devices, programming of all features in 'C' syntax

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PicoStar HR



PicoStar HR is a turn-key system.

It consists of camera head, image intensifier control unit, CCD, TTL-I/O interfaces, PC and software.

A variety of CCDs up to 16 bit are available.

The image intensifier is designed for fast gating at ultra high repetition rates. A state-of-the-art pulse generator drives the image intensifier at rep. rates up to 110 MHz and gate width < 300 ps.

The DaVis software allows control of all camera functions (gate width, gain, delay, binning, windowing) and synchronization with peripheral devices. Macros can be generated for automation of image acquisition, processing and analysis using 'C' syntax command language.

Note:

Above data is for PicoStar HR camera family. For the specific models see corresponding technical data sheets.

Data provided by LaVision is believed to be true. However, no responsibility is assumed for possible inaccuracies or omissions. All data are subject to change without notice. March-03

▶ A. General System Specifications

image intensifier gate _____ <300 ps FWHM @ up to 110 MHz rep. rate
system dynamic _____ depends on selected CCD
sensitivity _____ typical: >100 counts/photoelectron
spectral range _____ 200 – 900 nm

▶ B. CCD Chip and Control Unit

range of CCDs _____ 8 to 16 bit, full frame, frame transfer or interline, PCI camera interface, lens or fiber coupling

▶ C. Image Intensifier and Control Unit

design _____ GEN II, single (or double) stage MCP
diameter _____ 18 mm or 25 mm
photocathode _____ S20 (200-750 nm) or S25 (400-900 nm)
operating modes _____ comb, logic, modulation, DC
time-domain _____ <300 ps...1 ms; jitter <20 ps
frequency-domain _____ gain modulation up to 1GHz
spatial resolution _____ 10-15 lp/ mm

▶ D. DaVis software

operating system _____ Windows
data acquisition _____ camera, timing, user programmable
data processing _____ buffer, column, row or pixel addressing
command language _____ 'C' syntax for system and user functions
communication _____ RS 232 (GPIB optional), USB, TTL-I/O interface

▶ E. Personal Computer and TTL-I/O Board

PC with up-to-date processor, monitor, TTL-I/O and CCD interface

▶ F. Picosecond Delay Unit (optional)

adjustable delay range _____ 20 ns (no jitter)
increments _____ 25 ps or multiples
interstep error _____ ± 10 ps, reproducible
intrinsic delay _____ 6.5 ns
remote control _____ RS 232

▶ G. Options

spectrograph _____ various vendors; adapter for camera
microscope _____ various vendors; C or F-mount coupling
laser _____ pulsed or modulated laser diodes, LEDs
peripheral devices _____ delay generator, optical delay lines, spectrograph, stepping motor, shutters, filter wheel, piezo drives
optics _____ lenses (e.g. UV-Nikkor), telescopes, filters, long distance microscopes (Questar), macro lenses
additional A/D & D/A channels _____ simultaneous recording (e.g. single shot control)

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