



# LA VISION

WE COUNT ON PHOTONS

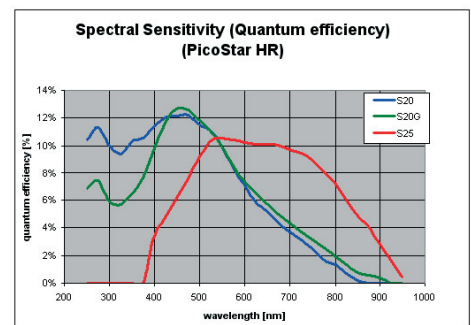
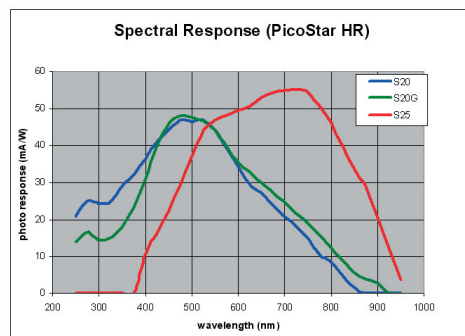
## PicoStar HR 12

intensified, gated, CCD camera  
system with exposure times  
down to 300 ps at  
gating rates up to 110 MHz

The **PicoStar HR 12** is a state-of-the-art intensified gated/modulated CCD camera system. It incorporates a very high trigger rate gated intensifier. The gate pulse driver has a bandwidth of 1 GHz and has internal pulse forming circuitry to provide gate widths to less than 300 ps at trigger rates from single shot to greater than 110 MHz. It is able to provide RF modulation of the intensifier gain at frequencies up to 1GHz. It features an internal micro-controller with a front panel LCD display and keypad. In addition it has an RS232 interface to allow remote operation. The camera head and the image intensifier controller are linked together by a 2 m long flexible connection. All camera functions (gate width, timing, gain, CCD-exposure time, binning, skipping, windowing etc.), peripheral devices as well as image acquisition and processing are controlled via LaVision's proprietary high performance DaVis software package.

### General system specifications

<b>Gate width</b>	300 ps - 1 ms
<b>Sensitivity</b>	> 200 counts/photoelectron @ max. gain
<b>System dynamic</b>	~ 2000:1
<b>Spatial resolution</b>	> 15 lp/mm
<b>Lens connector</b>	Nikon-F or optional C-mount
<b>Pixel size</b>	14 $\mu\text{m}$ x 14 $\mu\text{m}$
<b>Spectral range</b>	S20, S20G or S25 (see curves)



### CCD Camera

<b>Sensor</b>	Interline Progressive Scan with „lens-on-chip“
<b>Average dark current</b>	< 0.1 e-/pixel.sec
<b>Digitization/readout rate</b>	12 bit @ 16 MHz
<b>Readout noise</b>	4...5 e- (high gain); 5...6 e- (low gain)
<b>Frame rate</b>	10 frames/s, 20 frames/s ( 2 x 2 binning)
<b>Binning</b>	Horizontal (1...8), Vertical (1...32)

#### LA VISION UK LTD

DOWNVIEW HOUSE/ GROVE TECHNOLOGY PARK  
GROVE/ OXON/ OX12 9FF, UNITED KINGDOM

E-MAIL: SALES@LAVISION.COM/ WWW.LAVISIONUK.COM

PHONE: +44-(0)-870-997-6532/ FAX: +44-(0)-870-762-6252

#### LA VISION GMBH

ANNA-VANDENHOECK-RING 19  
D-37081 GOETTINGEN / GERMANY

E-MAIL: INFO@LAVISION.COM / WWW.LAVISION.COM

TEL: +49-(0)5 51-9004-0 / FAX +49-(0)51-9004-100

#### LA VISION INC.

301 W. MICHIGAN AVE. / SUITE 403  
YPSILANTI, MI 48197 / USA

E-MAIL: SALES@LAVISIONINC.COM / WWW.LAVISIONINC.COM

PHONE: (734) 485 - 0913 / FAX: (248) 465 - 4306



# LAVISION

WE COUNT ON PHOTONS

<b>Active image array</b>	1370 (H) x 1040 (V)
<b>Pixel size</b>	6.45 $\mu\text{m}$ x 6.45 $\mu\text{m}$
<b>Max. quantum efficiency</b>	65% @ 550 nm
<b>A/D conversion factor</b>	2 e-/count (high gain); 4 e-/count (low gain)
<b>Antiblooming</b>	Standard: > 1000; Low Light: > 4
<b>Cooling</b>	2-stage Peltier with forced air regulated to -12°C
<b>Exposure control</b>	var. exposure time (1 ms-1000 s),
<b>Camera interface</b>	PCI, data transfer (coax; FOL optional), control output, trigger input

## Image Intensifier Head and Electronics

<b>Design</b>	Gen. II single stage MCP
<b>Diameter</b>	18 mm
<b>Phosphor</b>	P43 (1% decay time: 3 ms)
<b>Coupling to CCD</b>	lens coupling ( $\eta > 12\%$ ; 2:1 )
<b>Vignetting of optics</b>	< 3%
<b>Jitter (fast gate mode)</b>	< 20 ps
<b>Trigger</b>	TTL, ECL variable
<b>Intrinsic delay</b>	< 30 ns (typ.)

## Operating Modes

### ► Comb

The electronics routes the trigger signal via an impulse generator so that each transition of the trigger signal produces a narrow gate pulse. The trigger rate is up to 110 MHz. This mode is most suitable for use with mode locked laser sources:  
trigger input: sinusoid, TTL or ECL; max duty cycle: 50%;  
gate voltage: 30 V  
gate width: < 300 ps - 1 ns; spatial resolution: 15 lp/mm (typ.)

### ► Slave

Intensifier gate is slaved to a logic input (TTL or ECL). The trigger rate is up to 110 MHz:  
trigger input: TTL or ECL;  
LDC: max. duty cycle: 5%, gate voltage: 50 V;  
HDC: max. duty cycle ~ 40%, gate voltage: 30 V;  
gate width: 3 ns - 1 ms; spatial resolution: 15 lp/mm (typ.)

### ► Modulation (RF mode)

input sinusoidal, 2 V p-p into 50  $\Omega$  AC coupled, input frequency 1 MHz - 1 GHz, photo cathode modulation max. 20 V p-p.  
spatial resolution 10 lp/mm

## LAVISIONUK LTD

DOWNSVIEW HOUSE/ GROVE TECHNOLOGY PARK  
GROVE/ OXON/ OX12 9FF, UNITED KINGDOM

E-MAIL: SALES@LAVISION.COM/ WWW.LAVISIONUK.COM

PHONE: +44-(0)-870-997-6532/ FAX: +44-(0)-870-762-6252

## LAVISION GMBH

ANNA-VANDENHOECK-RING 19  
D-37081 GOETTINGEN / GERMANY

E-MAIL: INFO@LAVISION.COM / WWW.LAVISION.COM

TEL: +49-(0)5 51-9004-0 / FAX +49-(0)551-9004-100

## LAVISION INC.

301 W. MICHIGAN AVE. / SUITE 403  
YPSILANTI, MI 48197 / USA

E-MAIL: SALES@LAVISIONINC.COM / WWW.LAVISIONINC.COM

PHONE: (734) 485 - 0913 / FAX: (248) 465 - 4306

▶ **DC**

Active while the DC button is pressed.

**LaVision's DaVis software**

High performance Windows compatible software featuring camera control, single and continuous image grabbing, burst mode, powerful image and data processing tools, 3D on-screen graphics, process control via macro programs, binning, skipping and windowing, TTL synchronisation and control of peripheral devices such as laser, spectrograph, stepper motor, shutter, oscilloscope and other devices. Communication: RS232.

**Phase shift delay unit**

Picosecond Delay Unit 20-110 MHz (#1108035): see separate datasheet  
optional: Picosecond Delay Generator 0 - 20 MHz (#1108029): see separate datasheet

**Ordering Information**

part number	Description
1101090	PicoStar HR 12, S 20 photocathode
1101091	PicoStar HR 12, S 25 photocathode
1101096	PicoStar HR 12, S 20G photocathode
1108054	Sync. Board type PTU basic
1108035	Picosecond Delay Unit 20-110 MHz
1108029	Picosecond Delay Generator 0-20 MHz (optional)
1108027	Optical Trigger Unit - OCF

Systems with GaAs or GaAsP cathodes on request

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.

May-08

**LA VISION UK LTD**

DOWNSVIEW HOUSE/ GROVE TECHNOLOGY PARK  
GROVE/ OXON/ OX12 9FF, UNITED KINGDOM

E-MAIL: SALES@LAVISION.COM/ WWW.LAVISIONUK.COM

PHONE: +44-(0)-870-997-6532/ FAX: +44-(0)-870-762-6252

**LA VISION GMBH**

ANNA-VANDENHOECK-RING 19  
D-37081 GOETTINGEN / GERMANY

E-MAIL: INFO@LAVISION.COM / WWW.LAVISION.COM

TEL: +49-(0)5 51-9004-0 / FAX +49-(0)551-9004-100

**LA VISION INC.**

301 W. MICHIGAN AVE. / SUITE 403  
YPSILANTI, MI 48197 / USA

E-MAIL: SALES@LAVISIONINC.COM / WWW.LAVISIONINC.COM

PHONE: (734) 485 - 0913 / FAX: (248) 465 - 4306