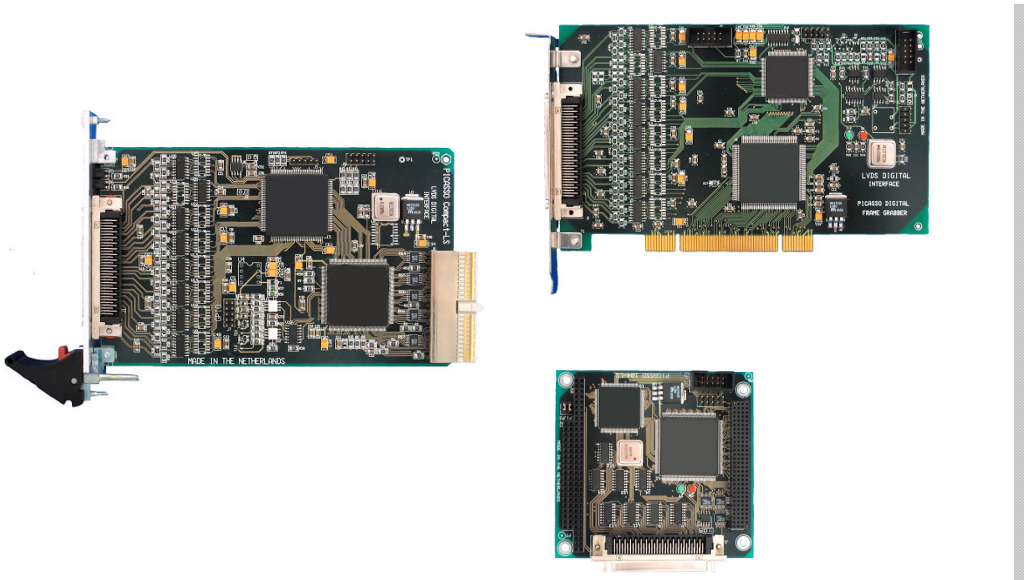
Datasheet picasso™ LS models



Key features

- digital LVDS (RS-644) interface (optional RS-422)
- available in 3 form factors:
  - standard PCI
  - Compact PCI
  - PC/104 *plus*
- support 8 to 16 bits data input formats
- sampling rates up to 40 MHz
- image size:
  - up to 4095 pixels/line (up to 8190 pixels/line if 8 bit/pix)
  - 4095 lines/frame
- programmable exposure time
- supports area and line scan cameras
- one or two taps per camera
- supports two independent 8 bit/pix cameras in parallel
- remote camera programming via RS-644, RS-422
- 2 digital inputs (optical isolated) for e.g.
  - start capture
  - interrupt generation
- 2 digital outputs (optical isolated) for e.g.
  - trigger stroboscoop
  - process control
- software support for several (real time) operating systems

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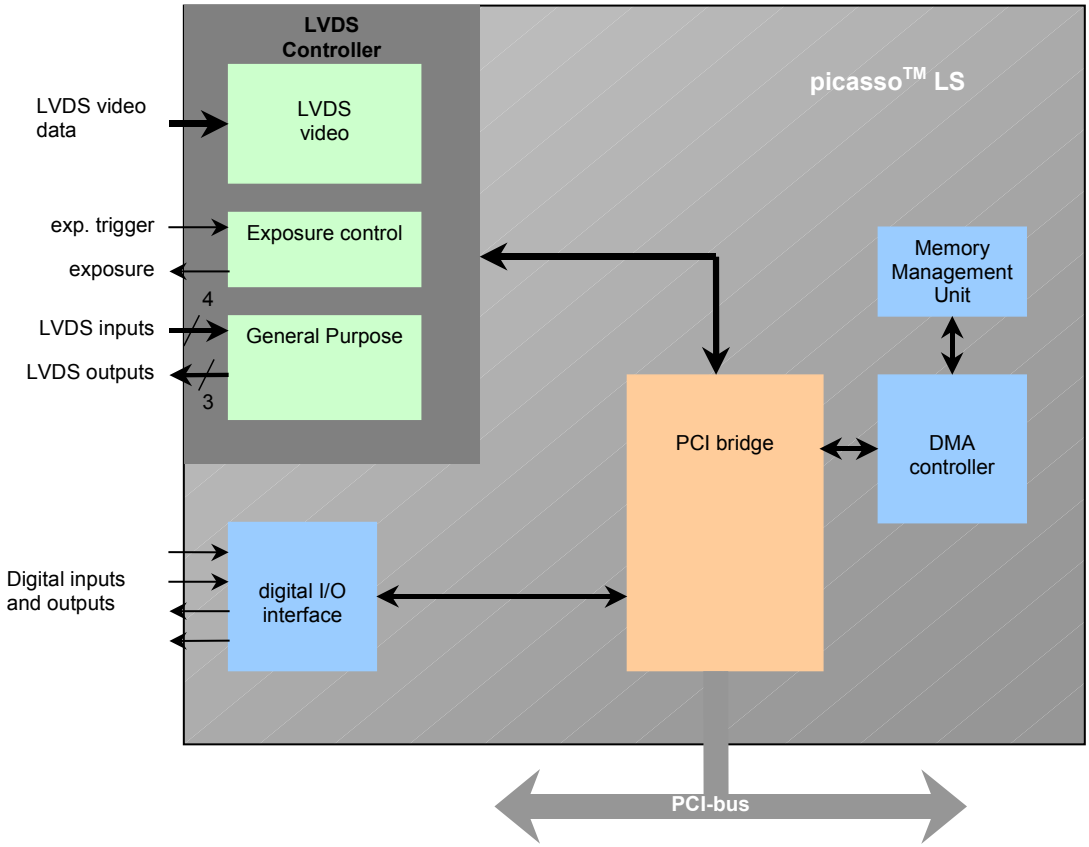
General

With the picasso™ LS high speed digital video acquisition is possible. The picasso™ LS framegrabbers are high performance 'plug and play' PC-cards for the PCI-bus and provide high-resolution image capture for digital video cameras. It enables each standard PCI system to capture and store single images for image processing or full frame display of digital video in a window. The LS models operate as PCI-bus master and transfer images directly to the system memory without impacting the processor.

Architecture



Detailed Information

Video Inputs

The picasso™ LS-models accept video sources compliant with RS-644 and RS-422 (optional) LVDS video standards for area scan and line scan cameras. The image resolution is up to 8190 pixels x 4095 lines in 8 bit/pixel mode. In other modes the maximum image resolution is 4095 pixels x 4095 lines.
The picasso™ accepts 8, 10, 12, 14 or 16 bits single channel cameras. The video timing comes from FEN, LEN, FID (optional), PRSTB. The exposure output 0 (EXPO0) is active.
The framegrabber supports also a two camera mode. In this mode the picasso™ accepts video data of two independent 8-bit cameras simultaneously.

Exposure

The exposure output on the AIA-connector can be used in two ways:
1. Software triggered
2. Hardware triggered

1 Software triggered exposure
Under software control an exposure signal to the camera is generated. The exposure time is programmable between 6.375 µs and 417ms. The signal can be low or high active (software selectable).

2 Hardware triggered exposure
For the hardware trigger mode you should use the exposure header. In this mode the TTL compatible trigger signal is connected to the exposure input.

The LVDS exposure output depends on software controlled settings:
- Exposure output follows input
- Exposure output is inverted input
- Exposure output is triggered by a falling or rising edge of the input and will be active for the 'exposure time'. The exposure time is software adjustable between 6.375 µs and 417 ms.

Exposure-time: Refers to the period during which the image sensor of a camera is exposed to the light. As the length of this period increases, the image illumination will raise.

LVDS/RS-422 General Purpose Input/Output

On the AIA-connector some RS-644 or RS-422 signals are defined as general purpose. These signals are software controlled.

Technical Specifications

picasso™ LS models			
	standard PCI	Compact PCI	PC/104 plus
PCI Bus	PCI 2.1	Compact PCI 2.0 32-bit PCI interface PCI bus master up to 132 Mbytes/sec. Supports zero wait state burst transfers Plug and play no jumpers on PCI and Compact PCI	PC/104plus 1.0 3.3V or 5V
Video input	AIA RS-644 (LVDS), optional RS-422		
taps	one ore two taps		
Pixel formats	one tap: 8, 10, 12, 14, 16 bits two taps: 2 x 8 bits two cameras: 2 x 8 bits		
Image resolution	4095 pixels per line (8190 pixel per line if 8 bit/pixel) 4095 lines per frame		
Pixel clock	up to 40 MHz two cameras: two separate pixel clock inputs		
Capture format	Y8 Y16 RGB24 for color camera's with Bayer filter *post processing required*		
Exposure timer	adjustable between 6.375 µs and 417 ms (step is 6.375µs)		
Exposure input trigger	TTL signal		
LVDS general purpose	inputs (4 bits) SDI FEN1* LEN1* PSTRB1* **only available in one camera applications*	outputs (3 bits) SDO SCL* EXPO_1*	
Digital I/O	2 digital inputs 2 digital outputs TTL compatible inputs can be programmed as interrupt or as capture start optical isolated 5V, 100mA, 10kHz		5V, 10mA
LVDS Connector	AIA-standard 68-pin female		
Digital I/O connector	10-pins header on PCB		Digital I/O and Exposure on one 10-pins header
Exposure input connector	5-pins header on PCB	10-pins header on PCB	
Dimensions (mm)	106 x 175	100 x 160 3U Eurocard	90 x 96
Power consumption	5.75 W typical		
Operating temperature	0^0 C to 55^0 C		
Operating Systems	Windows 98/ Me/ NT/ 2000/ XP Linux Solaris 8 (x86 and SPARC)		
RT Operating Systems	RTLinux, QNX4 and QNX 6		
Software	Windows: Visual C++, Borland C (ANSI C compilers) Visual Basic, Delphi Linux, Solaris, QNX6: (GNU) C compiler QNX4: Watcom C compiler		

Options

Software

Windows Software Development Kit (98/Me/NT/2000/XP)

Linux Software Development Kit

Realtime Linux Software Development Kit

Solaris 8 (SPARC) Software Development Kit

Solaris 8 (i86) Software Development Kit

QNX4 Software Development Kit

QNX6 (x86) Software Development Kit

Cable set

double 64 pins AIA connector, 1 meter

Hardware modification

RS-422 modification

PC/104 stack through connector (for PC/104 *plus* model only)