

SILICONSOFTWARE

V-Series Camera Link

microEnable 5 VD8-PoCL




High-speed image processing board for Camera Link




Camera Link is still a highly accepted and robust industry standard for the Machine Vision industry. Due to the availability of high-speed color cameras, based on the use of Bayer color filter arrays on greyscale sensors, and the need for advanced color inspection applications, microEnable 5 AD8-PoCL offers state-of-art technology for the Camera Link standard with up to 2,55 GB bandwidth for color image data processing and transfer. The DMA3600 technology guarantees a stable data transfer, avoiding data jam and additional CPU load.

The online color reconstruction from the Bayer CFA is based on a high-quality algorithm which processes the color data by a 5*5 matrix, offering enhanced color quality in comparison to hardware and software solution in the market. microEnable 5 AD8-PoCL is worldwide the fastest frame grabber for color image acquisition and preprocessing for Camera Link.

For implementing customized image processing the vision FPGA is able to be programmed with the graphical tool VisualApplets. The microEnable 5 VQ8-CXP6D is pre-licensed for VisualApplets (Base) and SmartApplets (Base).


The trigger system of the microEnable 5 owns a wide functional range and high performance. As a result the user gains high flexibility and adaptability even for sophisticated requirements in complex system setups. The board is delivered with Silicon Software's runtime environment including a comprehensive SDK.

Product Features	
✓	Acquisition Buffer
▶	1 GB DDR3-RAM
✓	FPGA System Processor
✓	FPGA Vision Processor
✓	Sustainable Transfer Rate (max.)
▶	3,6 GBytes/sec.
▶	DMA3600 Technology 

Camera Interface	
✓	Camera Link 
✓	Power over Camera Link 
	CoaXPRESS 
	Power over CoaXPRESS (PoCXP)

Camera Link Standards	
	BASE Configuration
	Dual BASE Configuration
	MEDIUM Configuration
✓	FULL Configuration
✓	10taps FULL Configuration

Camera Connector Interface	
✓	Camera Link Connectors
2	MDR26
	SDR26
	CoaXPRESS Connectors
	BNC with PoCXP Support
	DIN 1.0/2.3 with PoCXP Support

PC Interface	
✓	PCI Express 
	PCIe x4 (Gen 2)
▶	PCIe x8 (Gen 2)

Connectivity Features	
✓	Trigger/GPIO Connector
✓	Power Connector (PoCL)

Acquisition Features	
✓	Camera Pixel Clock Support
▶	85 MHz
✓	Camera Support
▶	1* Full Configuration/Deca Mode
✓	Area Scan Cameras
▶	16k * 64k max. image size
✓	Line Scan Cameras
▶	16k max. image width
✓	Grayscale Cameras
▶	8bit resolution*
▶	16bit resolution*
✓	Color Cameras (*requires VisualApplets)
▶	24bit resolution (RGB)*
▶	48bit resolution (RGB)*
▶	24bit resolution (Bayer CFA)
▶	36bit resolution (Bayer CFA)*
✓	Mixed Mode (*requires VisualApplets)
▶	Area Scan + Line Scan Cameras*
▶	Grayscale + Color Cameras*
▶	Arbitrary Combinations*

AddOn Products	
✓	Trigger/GPIO Boards
✓	Trigger/GPIO Boards, opto-isolated

Physical Board Properties	
▶	168 mm length x 111 mm height
▶	Operating temperature 0°C - 50°C

Any information without obligation. Technical specifications and scope of delivery are liability-free and valid until revocation. Mistakes are excepted.



Image Acquisition Features

- High image processing and transfer performance of up to 3*850MB/s=2,55 GB/s
- Real-time color interpolation onboard
- Support of high-speed line scan color cameras (e2v, Basler, Dalsa)
- Support of high-speed Bayer CFA area scan cameras up to CL-Deca/80bit
- Sensor Tap Sorting
- Knee Lookup Table
- Regions of Interest (ROI)
- Camera Detection Abilities
- No Need of Camera Configuration Files
- Support of Camera Link RS232 Interface clser
- Highly Customizable Trigger System
- ... and further ones

Special Features

- Shaft Encoder A/B Support (Revolving Direction Detection and Compensation)
- Software Trigger Control
- Support for Non-Standard Formats
- ... and further ones

Software Products

- ✓ Device Drivers
- ✓ Firmware Flasher
- ✓ microDisplay
- ✓ microDiagnostics
- Gen<i></i>Cam Explorer
- ✓ microEnable SDK

Processing Libraries (V-Series)

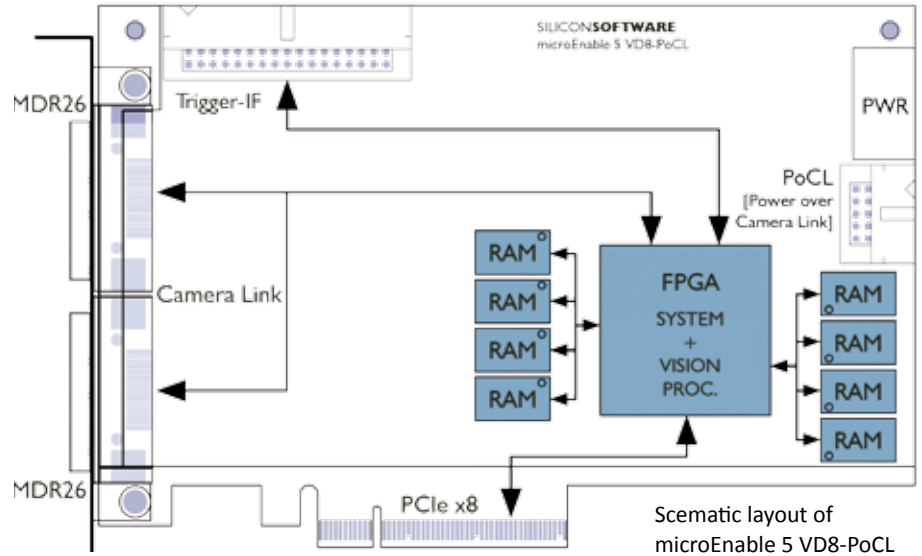
incl.	Acquisition Applets
incl.	SmartApplets Base
opt.	SmartApplets Extended
opt.	SmartApplets 3D
incl.	VisualApplets Base
opt.	VisualApplets Libraries

Processing Licenses (Base version, V-Series)

- SmartApplets enabled
- VisualApplets enabled


Operation Systems

✓ Windows 7 / 8	32bit	64bit
Linux	32bit	64bit


Supported Features
 Sorted by Acquisition Applets for

microEnable 5 VD8-PoCL

(Status 07/2014)

		Full Area Gray 8	Full Area Bayer 8	Full Line Gray 8	Full Line Bayer 8 (Opt 1)
Camera Support	Number of cameras	1	1	1	1
	Max. camera clock [in MHz]	85	85	85	85
	Camera Link Full Configuration (8 Tap, 8bit)	■	■	■	■
	Camera Link Deca/80bit (10 Tap, 8bit)	■	■	■	■
Camera Type	Area Scan / Line Scan	A	A	L	L
	GrayScale / RGB / Bayer	G	G	B	B
Color Interpolation	Bayer Line (Pattern 1: two lines, first blue/red, second green/green)				■
	Bayer (High Quality Extended, 5*5)		■		
Color Processing	White Balancing		■		■
Image Pre-processing	Knee-LUT Table (Full Resolution)	■	■	■	■
	Image Enhancements	■	■	■	■
	Noise Filter / Median	■		■	
Image Correction	Dead Pixel Interpolation	■	■	■	
	Area Shading Correction (2D) - Offset and Gain	■	■		
	Line Shading Correction (1D) - Offset and Gain			■	
Signal Processing	Line Trigger			■	■
	Area Trigger	■	■		
	I/O Boards Opto/TTL available	■	■	■	■
Performance	Max. image width [in k pixels]	16	16	16	16
	Max. image height [in k lines]	64	64	64	64
	DMA transfer performance [in MByte/s] dependent of the PC mainboard	1600	3400	1600	3200
Image Formats	Gray8 (8bit output)	■		■	
	RGB24 (BGR, 3x8bit output)		■		■

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