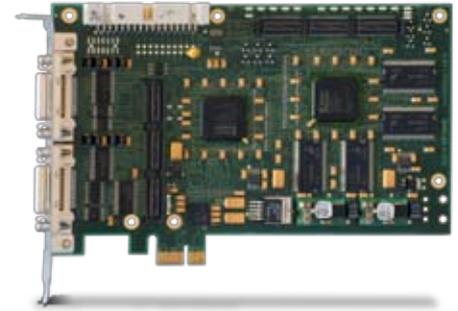


SILICON SOFTWARE

V-Series Camera Link

microEnable IV VD1-CL

Programmable FULL configuration PCIe frame grabber for Camera Link



The microEnable IV VD1-CL is a programmable processing board for two independent Base configuration, one Medium configuration, or one Full configuration Camera Link camera.

All integrated image acquisition and image pre-processing functions of microEnable IV VD1-CL are executed on the system FPGA in real time, and offer high performance and robust and reliable acquisition technology at the same time.

Exceptional features offer an image acquisition comfort, performance and reliability. Additional image pre-processing enhance the quality for successive image analysis. The robustness of the hardware is industrially approved long-termed.

Additionally you can use SmartApplets for loading application-related image processing operations. The processing takes place with high algorithmic quality and relieves the software-related image processing.

For implementing customized image processing the vision FPGA is able to be programmed with the graphical tool VisualApplets. The microEnable IV VD1-CL is pre-licensed for VisualApplets (Base) and SmartApplets (Base).

The trigger system of the microEnable IV VD1-CL possesses a wide functional range and high performance. As a result the user gains high flexibility and adaptability especially for line-scan camera applications.

Product Features	
✓	Acquisition Buffer
▶	256 MB DDR-RAM
✓	FPGA System Processor
✓	FPGA Vision Processor
	Xilinx Spartan 2
▶	Xilinx Spartan 3
✓	Sustainable Transfer Rate (max.)
▶	200 MBytes/sec.

Camera Interface	
✓	Camera Link 
	Power over Camera Link 
	GigE Vision 

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

Camera Interface	
✓	Camera Link Connectors
2	MDR26
	SDR26
	GigabitEthernet Connectors
	RJ45

PC Interface	
	PCI 32/64bit 
✓	PCI Express 
▶	PCIe x1 (single lane)
	PCIe x4 (quad lanes)

Connectivity Features	
✓	GPIO/Trigger Connector
✓	PixelPlant Connector
✓	CLIO Connector

Acquisition Features	
✓	Camera Pixel Clock Support
▶	85 MHz
✓	Area Scan Cameras
▶	16k * 64k max. image size
✓	Line Scan Cameras
▶	64k max. image width
✓	Grayscale Cameras
▶	8bit resolution
▶	16bit resolution
✓	Color Cameras
▶	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	
✓	GPIO/Trigger Boards
✓	GPIO/Trigger Boards, opto-isolated
✓	CLIO (Camera Link Replicator)
✓	PixelPlant (Processing Extension)

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

- Sensor Tap Sorting
 - Knee Lookup Table
 - Basic Image Processing, e. g. Brightness, Contrast and Gamma Correction
 - Internal 16bit Processing
 - Regions of Interest (ROI)
 - Minimal Latency of a Single Line
 - Hardware Generated Image Number
 - Camera Detection Abilities
 - No Need of Camera Configuration Files
 - Support of Camera Link RS232 Interface clser
 - Highly Customizable Trigger System
 - DigI/O and CC Signals
- ... 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
- GigE Explorer
- ✓ microEnable SDK

Processing Libraries

incl.	AcquisitionApplets
incl.	SmartApplets Base
opt.	SmartApplets Extended
incl.	VisualApplets Base
opt.	VisualApplets Blob
opt.	VisualApplets Compression

Processing Licenses (Base version)

- ✓ SmartApplets enabled
- ✓ VisualApplets enabled

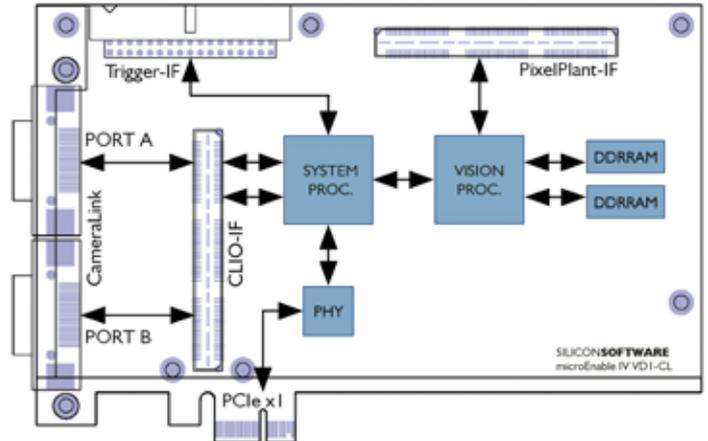
Operation Systems

✓ Windows XP	32bit	64bit
✓ Windows Vista	32bit	64bit
✓ Windows 7	32bit	64bit
✓ Linux (Kernel 2.6.23+)	32bit	64bit

Hardware/Software Compatibility

- ✓ microEnable IV FULL x1
(is discontinued)

Schematic layout of microEnable IV VD1-CL



Supported Features Sorted by Hardware Applets for

microEnable IV VD1-CL

		Single Area Gray Shading 16	Dual Area Bayer 12	Dual Area Gray 16	Dual Area RGB 48	Dual Line Gray 16	Dual Line RGB 30	MEDIUM Area Gray 16	MEDIUM Area RGB 36	MEDIUM Line Gray 16	MEDIUM Line RGB 36	FULL Area Gray 8	FULL Line Gray 8
CameraLink	BASE Configuration	■	■	■	■	■	■	■	■	■	■	■	■
	MEDIUM Configuration							■	■	■	■		
	FULL Configuration											■	■
Camera Type	Area Scan / Line Scan	A	A	A	A	L	L	A	A	L	L	A	L
	GrayScale / RGB / Bayer	G	BAY	G	RGB	G	RGB	G	RGB	G	RGB	G	G
	1- / 2-Camera Operation	1	2	2	2	2	2	1	1	1	1	1	1
Color Processing	White Balancing	■	■		■		■		■		■		
	Bayer Filter Feature		■										
	Bayer Bilinear Algorithm		■										
	Bayer High Quality Algorithm												
Image Enhancement	Knee-LUT Table	■	■	■	■	■	■	■	■	■	■	■	■
	Image Processing	■	■	■	■	■	■	■	■	■	■	■	■
Image Correction	Sensor Correction		■		■		■				■	■	
	Shading Correction 1D					■	■						
	Shading Correction 2D	■											
Acquisition Modes	Image Selector	■	■	■	■	■	■	■	■	■	■	■	■
	Area Trigger	■	■	■	■			■	■			■	
	Line Trigger					■	■			■	■		■
	Shaft Encoding												
Performances	Max. width (in k pixels)	8	4	16	8	16	16	16	16	16	16	16	16
	Max. height (in k lines)	4	64	64	64	64	64	64	64	64	64	64	64
	Image frequency (in k fps)	10	10	20	20	10	10	10	10	10	10	10	10
Image Formats	Gray8 or RGB24	■	■	■	■	■	■	■	■	■	■	■	■
	Gray16 or RGB 48	■	■	■	■	■	■	■	■	■	■	■	■

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