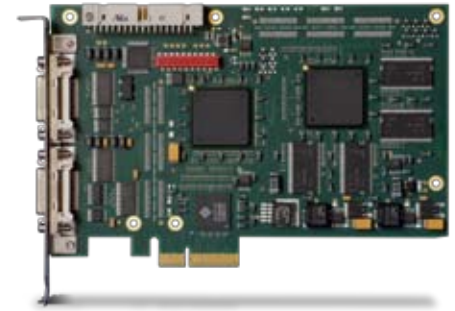


**SILICON SOFTWARE**

A-Series Camera Link

# microEnable IV AD4-CL



The fastest PCIe x4 frame grabber for Camera Link world-wide




The microEnable IV AD4-CL is a dual-port frame grabber for two independent Base configuration or one Full configuration Camera Link camera. With its DMA transfer rate of up to 900 MB/s the microEnable IV AD4-CL is the fastest PCIe x4 frame grabber world wide. As a result it supports the complete image transfer of the fastest 10-tap Full configuration Camera Link cameras.

The acquisition functions of the microEnable IV AD4-CL offer high performance, and robust and reliable acquisition technology at the same time. Additionally the range of functionality covers valuable image pre-processings that are executed in real time without loading of the host CPU.

The trigger system of the microEnable IV AD4-CL board possesses a wide functional range and high performance. As a result the user gains high flexibility and adaptability especially for line-scan camera applications.

microEnable IV AD4-CL is delivered with a powerful but intuitively to handle software development kit (SDK) and a wide range of drivers for 32bit and 64bit operation systems. A similar code base for software, drivers and even hardware applets and more over an common interface concept for hardware extensions and features guarantees highest compatibility between all frame grabber series.

Product Features	
✓	Acquisition Buffer
▶	256 MB DDR-RAM
✓	FPGA System Processor
	FPGA Vision Processor
	Xilinx Spartan 2
	Xilinx Spartan 3
✓	Sustainable Transfer Rate (max.)
▶	850 MBytes/sec. <b>DMA900</b>

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
▶	32k * 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 - 40°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
	SmartApplets Base
	SmartApplets Extended
	VisualApplets Base
	VisualApplets Blob
	VisualApplets Compression

### Processing Licenses (Base version)

SmartApplets enabled



VisualApplets enabled

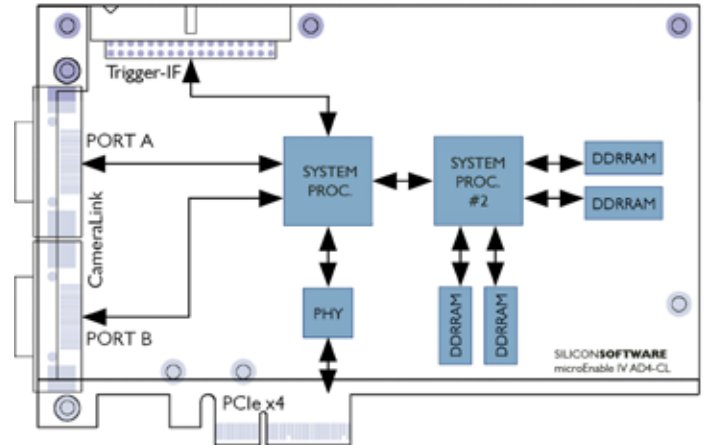
### Operation Systems

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

### Hardware/Software Compatibility

*new product line*

Schematic layout of microEnable IV AD4-CL



### Supported Features Sorted by Hardware Applets for

#### microEnable IV AD4-CL

	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	Single Area Gray Shading 16	Dual Area Bayer 12	FULL Area Gray 8	FULL Line Gray 8
CameraLink	BASE Configuration	■	■	■	■				■	■		
	MEDIUM Configuration				■	■	■	■				
	FULL Configuration										■	■
Camera Type	Area Scan / Line Scan	A	A	L	L	A	A	L	L	A	A	L
	GrayScale / RGB / Bayer	G	RGB	G	RGB	G	RGB	G	RGB	G	BAY	G
Color Processing	1- / 2-Camera Operation	2	2	2	2	1	1	1	1	1	2	1
	White Balancing		■		■		■		■	■		
	Bayer Filter Feature									■		
	Bayer Bilinear Algorithm									■		
Image Enhancement	Bayer High Quality Algorithm											
	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)	16	8	16	16	16	16	16	4	16	16	16
	Max. height (in k lines)	64	64	64	64	64	64	64	4	64	64	64
	Image frequency (in k fps)	20	20	10	10	10	10	10	10	10	10	10
Image Formats	Gray8 or RGB24	■	■	■	■	■	■	■	■	■	■	■
	Gray16 or RGB 48	■	■	■	■	■	■	■	■	■	■	■

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