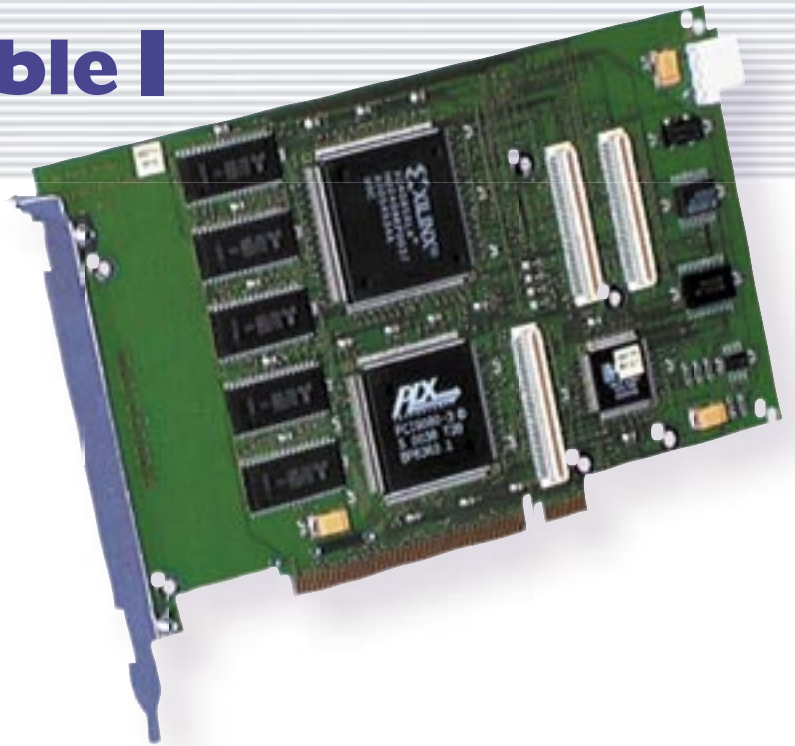


# microEnable I



The adaptive hardware of micro-Enable based on FPGA technology is the key for this freely programmable, intelligent frame grabber for real time image processing.

The FPGA technology allows it to reprogram the complete hardware and re-adjust it for new tasks within a fraction of a second. Your advantage: a frame grabber, which is individually optimized to each camera type and, through integrated preprocessing, frees your application from time-consuming tasks. Maintenance and upgrade of the grabber are carried out by mouse click. Additionally we offer you custom-made solutions for individual image processing tasks.

Through the combination of its free programmability and the high speed of the FPGA hardware the system is predestinated for high-quality real time image processing tasks for all ranges of industry.

Let's discover the new world of FPGA.

*Die adaptive Hardware von microEnable auf der Basis der FPGA-Technologie ist der Schlüssel dieses frei programmierbaren, intelligenten Framegrabbers für die Echtzeitbildverarbeitung.*

*Die FPGA-Technologie erlaubt es, innerhalb von Sekundenbruchteilen die komplette Hardware zu reprogrammieren und auf neue Aufgaben anzupassen. Der Vorteil für Sie: ein Framegrabber, der für jeden Kamerateyp individuell optimiert ist und mit integrierter Vorverarbeitung Ihre Applikation von zeitintensiven Aufgaben entlastet. Wartung und Upgrade des Grabbers nehmen Sie einfach per Knopfdruck vor. Darüber hinaus können Sie sich von uns mit maßgeschneiderten Lösungen individuelle Bildverarbeitungsaufgaben integrieren lassen.*

*In Verbindung mit der hohen Geschwindigkeit der FPGA-Hardware erhalten Sie ein System, das prädestiniert ist für anspruchsvolle Echtzeitbildverarbeitungsaufgaben aus allen Bereichen der Industrie.*

*Entdecken Sie mit uns die neue Welt der FPGAs.*

## The Universal Framegrabber

Grabbing with high framerates or high resolutions

fast grabbing

Integrated realtime image corrections

image corrections

Availability of a wide range of camera interfaces

camera interfaces

Scaleable performance models

scaleable

High adaptability through image-coprocessor

adaptability

# microEnable I

... the universal framegrabber

## Benchmarks

- camera frequency up to 50 MHz clock rate
- area cameras up to 4K\*4K pixels
- line cameras up to 16K pixels
- over 100 MByte/s continuous data transfer rate to user-memory
- framerate up to 10.000 f/s

In combination with marathonMan:

- duration of image-recording up to 60 minutes (depending of HD- and imagesize)
- 80 MByte/s continuous data transfer to HD

## Technical feature



### Hardware feature

- Xilinx XC4000-FPGA processor
- PCI 32-bit /33 MHz interface
- fast storage with 0,5 - 2 MB SRAM
- 2 x DMA-Channels

### General features

- exploitation of the complete physical memory
- multiprocessor-capability
- multi PCI-bus capability (only limited by numbers of available PCI-busses)
- programming of individual solutions by direct access to FPGA-coprocessor

### Preprocessing features

- image preprocessing applets included: Bayer correction, shading correction and spatial correction
- special feature: additional image preprocessing on demand

## Camera features

- simultaneous run of two cameras in dual operation modes
- independent operation and control of cameras
- asynchronous image recording in triggered mode
- separated framebuffers

## Software features

- software development kit (SDK) for programming interfaces between microEnable and your application
- diagnostic tools for a quick and uncomplicated overview of operational functionality and benchmarking of the system
- VHDL-library with basic applets for imagery functions and basis for programming individual applets
- microDisplay for previewing and controlling of the camera parameters
- excellent collaboration with marathonMan

## Additional interfaces

- interface for up to 2 CameraLink/Channel-Link cameras
- interface for up to 2 LVDS/RS644 cameras
- interface for up to 2 RS422 cameras
- trigger interface with 8 TTL I/Os

## Camera compatibility (selection)

- Basler  
A101, A101c, A101p, A101cp, A113, A113c, A201b, A201bc, A202k, A301b, A301bc, A302b, A302bc, A501k, L101-1k, L101-2k, L101b-1k, L101b-2k, L101k-1k, L101k-2k, L103-1k, L103-2k, L104-1k, L104-2k, L201, L203, L301bc, L320c
- Pulnix  
TM-6710, TM-9701, TM-1001, TM-1010, TM-1020-15, TM-1020-30, TM-1040, TM-1300, TMC-6700, TMC-1000
- Photonfocus  
MV-DI024k-28CL, MV-DI024k-28CL10, MV-DI024k-80CL

## microEnable models

- MXS40 microEnable with Xilinx XC4040XL-4 FPGA Coprocessor and 512 KB SRAM
- MXA44 microEnable with Xilinx XC4044XLA-0.9 FPGA Coprocessor and 2048 KB SRAM

## Supported OS

- Windows NT Version 4.0
- Windows 2000
- Windows XP (beta)
- Linux (up to 2.4.10)

## See also microEnable product line

### microEnable 2

- Xilinx Virtex XCV1000-4 FPGA with 2 Banks of 512 KB SRAM
- additional SDRAM modules up to 512 MByte

### microEnable 3

- Xilinx Spartan XC2S FPGA with 96 MByte on board
- PCI 64 bit/66 MHz high speed interface
- 2 x CameraLink interfaces

### microEnable features

- device driver for Windows NT4, 2000, XP (beta) and Linux
- software development kit (SDK)
- basic library, diagnostic tools, preview and controlling software included

### microEnable interfaces

- TTL-trigger-interface with 4 inputs and 4 outputs



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