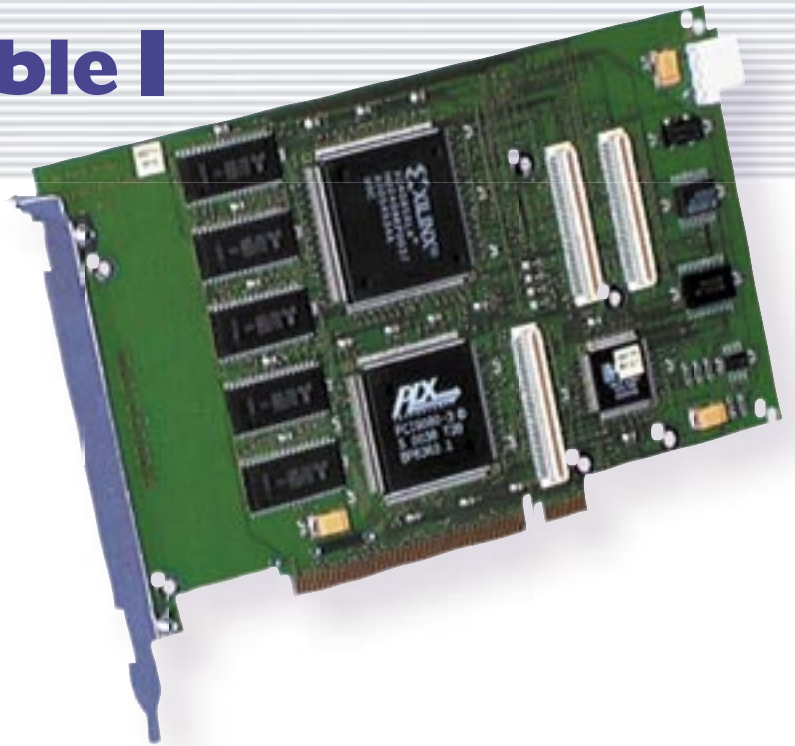


microEnable I



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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microEnable II

The adaptive hardware of microEnable 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.

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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.

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Entdecken Sie mit uns die neue Welt der FPGAs.



The Performance Framegrabber

Integrated realtime image preprocessing

Additional image memory up to 512 MByte

Efficient dual camera operation mode

Solution for time critical image processing tasks

High capacity by programmable image coprocessor

microEnable II

... the performance framegrabber

Benchmarks

- camera frequency up to 66 MHz clock rate
- area cameras up to 4K*4K pixels
- line cameras up to 16K pixels
- over 100 MByte/s continous datatransfer 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 continous datatransfer to HD

Technical feature



Hardware feature

- Xilinx Virtex XCV1000-4 FPGA with 2 * 512 KB fast memory SRAM
- optional SDRAM up to 512 MBytes
- PCI 32-bit /33 MHz Interface
- 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

- 2 cameraports per framegrabber
- simultaneous run of two cameras in dual operation modes
- independent operation and control of cameras
- asynchronous image recording in triggered mode
- seperated 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
- microDisplay for previewing and controlling of the camera parameters
- excellent collaboration with the image-recorder 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 /c/p/cp, A113 /c, A201b/bc, A202k, A301b/bc, A302b/bc, A501k, L101-1k/-2k, L101b-1k/-2k, L101k-1k/-2k, L103-1k/-2k, L104-1k/-2k, L201, L203, L301bc, L320c
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- Photonfocus
MV-D1024k-28CL, MV-D1024k-28CL10, MV-D1024k-80CL

Supported OS

- Windows NT Version 4.0
- Windows 2000
- Windows XP (beta)
- Linux (up to 2.4.18)

See also microEnable product line

microEnable I

- Xilinx XC4000 FPGA series with XC4044 (2048 kByte SRAM)
- Xilinx Spartan FPGA series with XCS40XL and 512 KB SRAM

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
- VHDL library (at the time only available for microEnable I product line)

microEnable interfaces

- microEnable I - interfaces for two CameraLink-, LVDS- and RS422-cameras
- TTL-trigger-interface with 4 inputs and 4 outputs



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microEnable III

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

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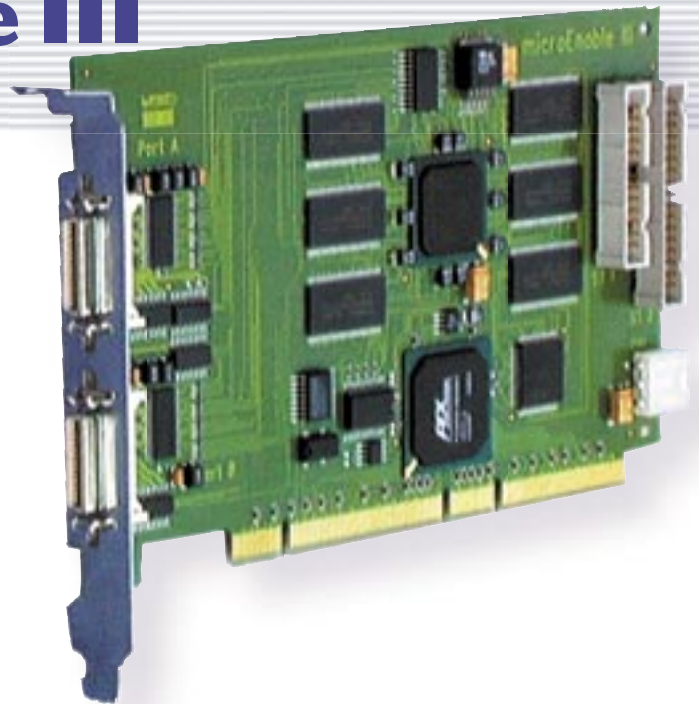
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Die FPGA-Technologie erlaubt es, innerhalb von Sekundenbruchteilen die komplette Hardware zu reprogrammieren und auf neue Aufgaben anzupassen. Der Vorteil für Sie: ein Framegrabber, der für jeden Kameratyp individuell optimiert ist und mit integrierter 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 **Link** Camera Framegrabber

High data transfer over **PCI 64-bit/66 MHz** interface

Simultaneous run of **two cameras**

Integrated realtime **image preprocessing**

Huge on board image memory of **96 MByte**

One board for all **camera types**

PCI 64-bit/66 MHz
two cameras
preprocessing
memory 96 MByte
one platform

microEnable III

... the **CAMERA Link** framegrabber

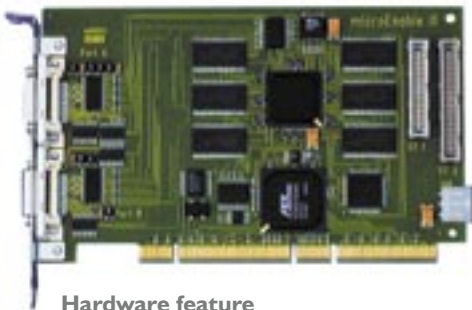
Benchmarks

- camera frequency up to 85 MHz clock rate
- area cameras up to 4K*4K pixels
- line cameras up to 16K pixels
- over 200 MByte/s continous datatransfer rate to user-memory
- framerate up to 10.000 f/s

additional highlights

- programmable FPGA on board
- real-time preprocessing features
- support of different sensor types

Technical feature



Hardware feature

- framegrabber with imageprozessor
- Xilinx Spartan 2 - FPGA processor
- PCI 64-bit / 66 MHz interface
- 96 MB SDRAM memory

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

CameraLink features

- 2 x CameraLink interfaces
- 2 x Base or Medium configuration
- all multi-tap modes
- simultaneous run of two cameras in dual operation modes
- independent operation and control of cameras
- asynchronous image recording in triggered mode
- seperated framebuffers

Preprocessing features

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

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
- microDisplay for previewing and controlling of the camera parameters
- excellent collaboration with the image-recorder marathonMan

Supported OS

- Windows NT Version 4.0
- Windows 2000
- Windows XP
- Linux (up to 2.4.18)
- RT Linux (RTAI)
- QNX (version 6)

Additional interfaces

- trigger interface with TTL I/Os

See also microEnable product line

microEnable 1

- Xilinx XC4000 FPGA series with XC4044 (2048 kByte SRAM)
- Xilinx Spartan FPGA series with XCS40XL and 512 KB SRAM

microEnable 2

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

microEnable features

- 2 x DMA channels
- device driver for Windows NT4, 2000, XP (beta) and Linux
- basic library, diagnostic tools, preview and controlling software included
- software development kit (SDK)
- VHDL library (at the time only available for microEnable 1 product line)
- support of a wide range of cameras

microEnable interfaces

- interfaces for up to 2 CameraLink-, LVDS- and RS422 cameras
- TTL-trigger-interface with 4 inputs and 4 outputs



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