EureCard™ GRABLINK™ series

Image acquisition from digital Camera Link cameras

The **GrabLink series** is a range of **high-speed** PCI frame grabbers for line- or area-scan digital Camera Link cameras. State-of-the-art cameras are **easily connected** with off-the-shelf Camera Link compliant cables. The GrabLink series is featured for industrial applications such as inspection of **high-speed** moving objects, web inspection or **high-resolution** acquisition.

The EureCard **GrabLink Value** is a **cost-effective** board acquiring images from one camera in the Camera Link Base configuration. The EureCard **GrabLink Expert** is a **high-performance 64-bit, 66 MHz PCI bus** board acquiring images in two Base or one Medium configurations.

All Euresys frame grabbers offer an unprecedented **control over the memory allocation process** thanks to scatter-gather DMA transfer into user allocated memory.

GrabLink comes with the **MultiCam driver** and is compatible with **eVision**, the image analysis tools from Euresys. This drastically simplifies the design of machine vision applications.

- **Support of line- or area-scan cameras in Base, dual Base or Medium Camera Link configurations**
- **PCI bus: 32 bits, 33 MHz / 64 bits, 66 MHz**
- **Acquisition: up to 24 bits / 48 bits at maximum 66 MHz**
- **On board memory: 8 / 16 Mbytes**
- **Asynchronous reset, exposure control and I/O lines (trigger & strobe)**
- **Camera Link serial line configurable as an additional PC COM port**
- **Multiple taps, tap reversal, tap multiplex, dynamic windowing**

Includes C, C++ libraries and ActiveX controls

CAMERA Link™

GRABLINK Value™

GRABLINK Expert™

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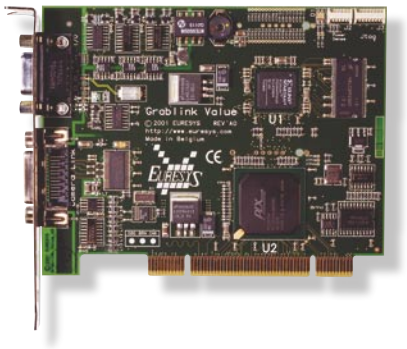
EURESYS™ Excellence in vision



GRABLINK Value™

Cost effective digital acquisition

Base configuration
24 bits at 66 MHz
8-MByte on board memory
PCI bus 32 bits, 33 MHz

The **EureCard GrabLink Value** is an affordable Camera Link frame grabber for **cost-effective industrial applications.** GrabLink Value is recommended for **single-camera systems**.
It acquires images at a maximum camera speed of **66 MHz** over the data path towards the on board memory.

Support of the Base configuration

Fitted with **one Camera Link connector**, the EureCard GrabLink Value supports the Base configuration of the Camera Link standard. GrabLink Value **supports various types of cameras**:

NUMBER OF CAMERAS	Monochrome single-tap	Monochrome dual-tap	RGB triple-tap	Monochrome quad-tap
Base configuration	one (8 to 16 bits)	one (8 to 12 bits)	one (8 bits)	
Extended Base configuration*				one (8 to 12 bits)

* Multiplex tap. Preliminary feature

Serial control of camera

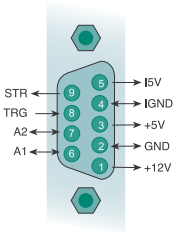
The EureCard GrabLink Value supports the Camera Link pseudo **RS-232 serial line**. The application software can use the Camera Link API functions to control the camera. Alternatively, the serial line can be **configured as an additional PC COM port** ensuring interoperability with existing camera control software.

On board memory

GrabLink Value incorporates an **8-Mbyte** on board memory. Used as a huge image FIFO, it is clocked at 80 MHz and provides a peak bandwidth of 320 Mbytes/s.

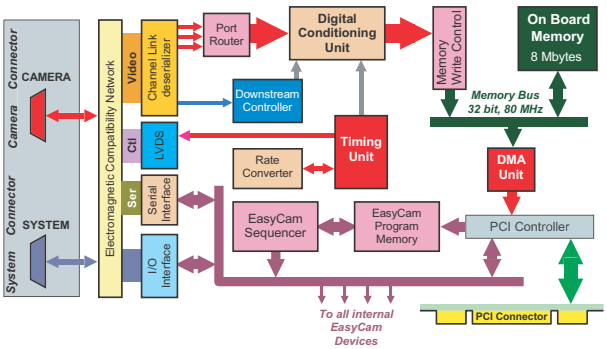
I/O lines

The EureCard Grablink Value is fitted with a **female DB9 connector**. It implements the **trigger and strobe** facilities offered by the MultiCam driver. System components such as motion encoder benefits from **isolated I/O lines and power supply.**



DB9 connector

Block diagram



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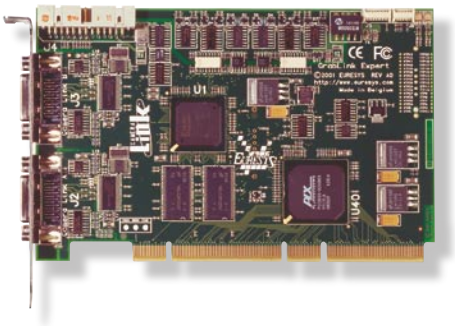

GRABLINK Expert™

Wide PCI, high-performance digital acquisition

Dual Base or Medium configuration
48 bits at 66 MHz
16-MByte on board memory
PCI Bus 64 bits, 66 MHz

The **EureCard GrabLink Expert** is a Camera Link frame grabber for **demanding industrial applications**. Supporting the **Base or Medium configuration**, it can be connected to **one or two cameras**. The GrabLink Expert is a **64-bit, 66 MHz PCI bus** frame grabber. Each camera delivers images at a maximum speed of 66 MHz over the data paths towards the on board memory.

Support of dual Base or Medium configuration

GrabLink Expert is a Camera Link compatible frame grabber fitted with **two Camera Link connectors**. It acquires images simultaneously and independently from two line-scan or area-scan digital cameras in a **dual Base configuration.** GrabLink Expert also supports one camera in the **Medium configuration**. It supports various types of cameras:

NUMBER OF CAMERAS	Monochrome single-tap	Monochrome dual-tap	RGB triple-tap	Monochrome quad-tap	Monochrome octal-tap
Base configuration	two (8 to 16 bits)	two (8 to 12 bits)	two (8 bits)		
Extended Base configuration*				two (8 to 12 bits)	
Medium configuration			one (10 to 12 bits)	one (8 to 12 bits)	
Extended Medium configuration*					one (8 to 12 bits)

* Multiplex tap. Preliminary feature

64-bit, 66 MHz PCI Bus

GrabLink Expert is designed for high-speed acquisition with a 64-bit, 66 MHz PCI bus. The data rate peaks at an impressive **528 Mbytes per second**!

Serial control of cameras

The EureCard GrabLink Expert supports two Camera Link pseudo **RS-232 serial lines**. The application software can use the Camera Link API functions to control the camera. Alternatively, the serial lines can be **configured as additional PC COM ports** ensuring interoperability with existing camera control software.

On board memory

GrabLink Expert incorporates a **16-Mbyte** on board memory. Clocked at 100 MHz, it provides a throughput of 800 Mbytes/s implementing a **huge FIFO for each camera**.

I/O board

GrabLink Expert is delivered with an auxiliary I/O board implementing the trigger and strobe facilities. The bracket is fitted with two connectors. On the female DB9 connector, system components (such as a motion encoder) benefit from **isolated I/O lines and power supply**. **TTL trigger and strobe lines** are available on a female DB25 together with **16 fully programmable general-purpose I/O lines**.

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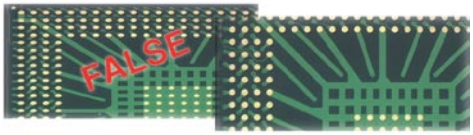
Line-scan systems

Camera modes: The EureCard GrabLink series interfaces to **state-of-the-art Camera Link line-scan cameras** with **line rate** and **exposure control**. Free running cameras are supported as well.

Continuous web scanning: The "**web mode**" allows inspecting a continuously moving surface without losing a line.

Successive object scanning: In "**page mode**", GrabLink acquires a set of consecutive lines constituting a 2D image. The acquisition starts when the object enters the camera field of view, as signaled by an external trigger.

Motion Encoder: When the observed web or object moves at a variable speed, the frame grabber imposes a camera scanning rate derived from a motion encoder. This **guarantees a fixed pixel aspect ratio**. **Perfect square pixels** are achievable. A built-in rate converter defines any ratio between the camera scanning rate and the encoder pulse rate with 1/1000 resolution. Thus, an off-the-shelf encoder can serve several applications. The exposure control feature guarantees a **constant sensitivity** despite the speed variation.



Area-scan systems

Camera modes: Features such as **asynchronous reset**, **exposure control**, **strobe lighting** often required in industrial applications are available on GrabLink series. The synchronous mode is also supported.

Trigger and exposure control: An external signal can be sent to the frame grabber to trigger the acquisition. GrabLink series is capable to consistently control the exposure time and the illumination.

Camera tap structure: For any tap structure, GrabLink delivers a **re-ordered bitmap image** to the PC memory. **Tap-reversal** is supported. With the **multiplex tap** technique, several taps are interleaved over Camera Link as long as the combined data rate remains below 66 MHz.

Bus mastering

All Euresys frame grabbers are **PCI bus mastering** agents that directly store the acquired images into the PC physical memory without CPU involvement. As a **unique feature**, the EureCard automatically recovers the **scatter-gather** virtual memory mapping to present the data as a regular bitmap image in a user allocated memory buffer.

MultiCam™

The **Multicam driver** enables the consistent control of several Euresys frame grabbers, using an arbitrary **number of cameras**, from **one or several software applications**. MultiCam allows defining **channels** linking cameras to buffers in the PC memory. The MultiCam channel **identifies all parameters** ruling the acquisition process from a camera. Every camera feature, such as its type, resolution or image format, is described and controlled through **simple parameters**, considerably easing the camera control task. For each channel-controlled camera, a set of dedicated parameters is created from a **CAM file**. Euresys delivers pre-defined files for many popular cameras; still the user can customize its CAM files. MultiCam complies with most development environments. The native API is **standard C. ActiveX controls** enable the use of Visual Basic.

EasyMultiCam™

Offered as a part of the **eVision** tools suite, **EasyMulticam** is **a set of powerful C++ classes** embedding the whole MultiCam functionality. The **object oriented** eVision functions define image containers suitable for **image processing and analysis**. The image objects inherit acquisition methods from EasyMultiCam. Implementing the image capture code into a machine vision application is now straightforward.

Interfaced cameras

The GrabLink series interfaces many different cameras. An up-to-date list is available on the web site www.euresys.com.

Ordering Information

PRODUCT NAME	PRODUCT DESCRIPTION	PART NUMBER
EureCard GrabLink Value	Digital 24-bit, 66 MHz Camera Link frame grabber	1191
EureCard GrabLink Expert	Digital 48-bit, 66 MHz Camera Link frame grabber	1192

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