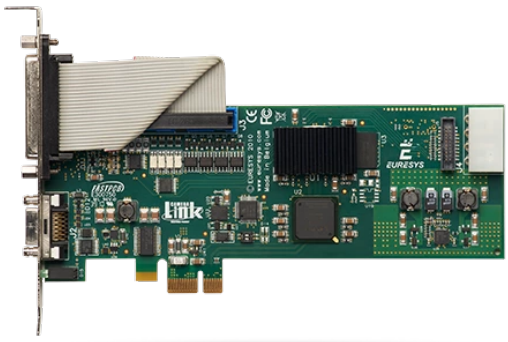
6/3/2024

# Datasheet

# Grablink Base

Frame grabber for one base-configuration Camera Link camera

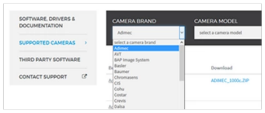


- For one Camera Link Base or Lite configuration camera
- Directly compatible with hundreds of Camera Link cameras available on the market
- Supports PoCL, Power over Camera Link
- ECCO: Extended Camera Link cable length
- PCIe x1 bus: 200 MB/s sustained delivery bandwidth
- Feature-rich set of 10 digital IO lines
- Memento Event Logging Tool

# Main benefits

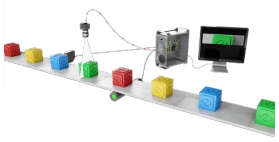
## ECCO: Extended Camera Link Cable Operation

- Use longer, up to 15 meters long, Camera Link cables!



## Directly compatible with hundreds of Camera Link cameras available on the market

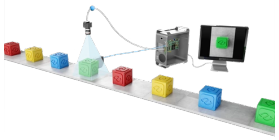
Check out our Camfiles page (in the Support menu)



## Line-scan triggering capabilities

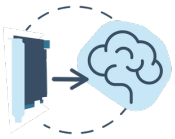
Euresys' frame grabbers offer many capabilities to synchronize line-scan or 1D cameras, sensors and lighting controllers. Frame grabbers can control the camera scanning rate based on the signals received from a motion encoder.

They support continuous web scanning (to inspect infinite, continuously moving surfaces without losing a single line) and discrete object scanning (to acquire the image of objects moving in front of the camera).



## Area-scan triggering capabilities

Euresys' frame grabbers offer many capabilities to synchronize area-scan or 2D cameras, sensors and lighting controllers, for stationery or moving objects in the field of view, or moving cameras.



## High-performance DMA (Direct Memory Access)

- Direct transfer into user-allocated memory
- Hardware scatter-gather support

# Windows and Linux drivers available

- Windows and Linux drivers available

# Other benefits

## General purpose I/O lines

- Compatible with a wide range of sensors and motion encoders.
- High-speed differential inputs: Quadrature motion encoder support up to 5 MHz.
- Isolated current-sense inputs: 5V, 12V, 24V signaling voltages accepted, up to 50 kHz, individual galvanic isolation up to 250VDC and 170VAC RMS.
- Isolated contact outputs.
- High-speed 5V-compliant TTL inputs/ LVTTL outputs.

## Flexible line-scan camera operation with the rate converter

- The rate converter is a smart, programmable frequency multiplier/divider.
- Used with motion encoders and line-scan cameras, it allows the user to choose the aspect ratio of the pixels in the image.
- It provides a way to calibrate the acquisition chain to easily reach square (1:1 aspect ratio) pixels.

# Specifications

## Mechanical

### Form factor

PCI Express card

### Format

Low profile, half length, 1-lane PCI Express card

### Cooling method

Air-cooling, fanless

### Mounting

For insertion in a low-profile or standard height, 1-lane or higher, PCI Express card slot

### Connectors

'A' on bracket:

- 26-position Shrunk Delta Ribbon (SDR) socket
- Camera Link Base connector

'EXTERNAL I/O' on standard bracket:

- 25-pin 2-row female sub-D connector
- I/O lines and power output

'INTERNAL I/O' on PCB:

- 26-pin 2-row 0.1" pitch pin header with shrouding
- I/O lines and power output

'POWER INPUT' on module:

- 4-pin MOLEX power socket
- 12 VDC power input for PoCL camera and I/O power

### Dimensions

PCB L x H: 167.65 mm x 68.90 mm, 6.6 in x 2.71 in

### Weight

Net weight: 93 g [3.3 oz]

Gross weight: 203 g [7.2 oz]

## Host bus

### Standard

PCI Express 1.0

### Link width

1 lane

### Link speed

2.5 GT/s (PCIe 1.0)

### Maximum payload size

1024 bytes

### DMA

32- and 64-bit

### Peak delivery bandwidth

256 MB/s

### Effective (sustained) delivery bandwidth

Up to 200 MB/s for a PCI Express payload size of 256 bytes

Up to 180 MB/s for a PCI Express payload size of 128 bytes

### Power consumption

Max. 4.5 W; Typ. 3.8 W (0.34 A @ 3.3V, 0.22 A @+12V)

## Camera / video inputs

### Camera interface standard

Camera Link

### Interface standard(s)

Camera Link 2.0

### Maximum link speed

85 MHz

### Maximum link width

24-bit (BASE)

### Camera powering

PoCL

## Connectors

One Shrunk Delta Ribbon (SDR) Miniature Camera Link (MiniCL)

## ECCO - Extended Camera Link Cable Operation

ECCO

## Number of cameras

One Base or Lite camera

## Maximum number of cameras

1

## Line-scan cameras supported

Yes

## Maximum aggregated camera data transfer rate

2.04 Gbps (255 MB/s)

## Camera Link configuration

Base or Lite

## Camera Link clock frequency

From 20 MHz up to 85 MHz

## PoCL (Power over Camera Link)

One PoCL SafePower compliant controller with overload, over-voltage and short-circuit protection

## Camera types

Grayscale and color (RGB and Bayer) area- and line-scan cameras

# Area-scan camera control

## Trigger

Precise control of asynchronous reset cameras, with exposure control.

Support of camera exposure/readout overlap.

Support of external hardware trigger, with optional delay and trigger decimation.

## Strobe

Accurate control of the strobe position for strobed light sources.

Support of early and late strobe pulses.

# Line-scan camera control

## Scan/page trigger

Precise control of start-of-scan and end-of-scan triggers.

Support of external hardware trigger, with optional delay.

Support of infinite acquisition, without missing line, for web inspection applications.

## Line trigger

Support for quadrature motion encoders, with programmable noise filters, selection of acquisition direction and backward motion compensation.

Rate Converter tool for fine control of the pixel aspect ratio.

Rate Divider tool

## Line strobe

Accurate control of the strobe position for strobed light sources.

# On-board processing

## On-board memory

64 MB (32 MB for image data)

## Image data stream processing

Unpacking of 10-/12-/14-bit to 16-bit with selectable justification to LSb or MSb

## Input LUT (Lookup Table)

Monochrome: 8-bit, 10-bit or 12-bit per pixel, up to 500 MPixel/s

RGB: 3x8-bit per pixel, up to 125 MPixel/s

## Bayer CFA to RGB decoder

Advanced interpolation method using average and median functions on a 3x3 kernel

Up to 125 MPixel/s

# General Purpose Inputs and Outputs

## Number of lines

10 I/O lines:

2 differential inputs (DIN)

4 isolated inputs (IIN)

4 isolated outputs (IOUT)

## Usage

**The input lines can be used by the acquisition channel as:**

- Camera frame trigger source (area-scan only)
- Acquisition sequence trigger source (area-scan only)
- Camera line trigger source (line-scan only)
- Page acquisition trigger source (line-scan only)
- Page acquisition end trigger source (line-scan only)
- (Quadrature) motion encoder input (line-scan only)

**The IOUT 1 output line can be used by the acquisition channel as:**

- Illumination strobe output

All the input lines can be used as general purpose inputs

All the output lines can be used as general purpose outputs

## Electrical specifications

DIN: High-speed differential inputs, up to 5 MHz, compatible with ANSI/EIA/TIA-422/485 differential line drivers and complementary TTL drivers

IIN: Isolated current-sense inputs with wide voltage input range up to 30V, compatible with totem-pole LVTTL, TTL, 5V CMOS drivers, RS-422 differential line drivers, potential free contacts, solid-state relays and opto-couplers

IOUT: Isolated contact outputs compatible with 30V / 100mA loads

NOTE: IIN and IOUT lines provide a functional isolation grade for the circuit technical protection. It does not provide an isolation that can protect a human being from electrical shock!

## Filter control

Glitch removal filter available only on input lines used as trigger sources

**Configurable with five time constants:**

- 100 ns, 500 ns, and 2.5 $\mu$s for trigger / page trigger / page end trigger sources
- 40 ns, 100 ns, 200 ns, 500 ns, 1 $\mu$s, 5 $\mu$s, 10 $\mu$s for line trigger sources

## Power output

Non-isolated, +5V, 1A and +12V, 1A, with electronic fuse protection

# Software

## Driver name

MultiCam

## Current release

MultiCam 6.19

## Host PC Operating System

Microsoft Windows 10, 8.1, 7 for x86 (32-bit) and x86-64 (64-bit) processor architectures

Linux for x86 (32-bit) and x86-64 (64-bit) processor architectures

Refer to release notes for details

### APIs

MultiCam 32- and 64-bit binary libraries (Windows and Linux), for ISO-compliant C/C++ compilers

### Memento supported

Yes

## Environmental conditions

### Operating ambient air temperature

0 °C to +50 °C / +32 °F to +122 °F

### Operating ambient air humidity

10% to 90% RH non-condensing

### Storage ambient air temperature

-20 °C to +70 °C/ -4 °F to +158 °F

### Storage ambient air humidity

10% to 90% RH non-condensing

## Certifications

### EMC standards

European Council EMC Directive 2014/30/EU

United States FCC rule 47 CFR 15

### EMC - Emission

EN 55022:2010 / CISPR 22:2008 Class B

EN 55032:2015 / CISPR 32:2012 Class B

FCC 47 Part 15 Class B

### EMC - Immunity

EN 55024:2010 / CISPR 24:2010

EN 55035:2017 / CISPR 35:2016

EN 61000-4-2:2009

EN 61000-4-3:2006

EN 61000-4-4:2004

EN 61000-4-5:2014

EN 61000-4-6:2014

### KC Certification

Korean Radio Waves Act, Article 58-2, Clause 3

### Flammability

PCB compliant with UL 94 V-0

### RoHS

European Union Directive 2015/863 (ROHS3)

### REACH

European Union Regulation 1907/2006

### WEEE

Must be disposed of separately from normal household waste and must be recycled according to local regulations

## Ordering Information

### Product status

Released

### Product code - Description

PC1624 Grablink Base

# Offices

- Europe, Middle East & Africa
  Euresys SA
  **Contact support : support.europe@euresys.com**

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