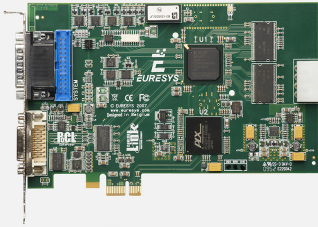


Grablink Express

Frame grabber for one base-configuration PoCL Camera Link camera



At a Glance

- For one Camera Link Base configuration camera
- Directly compatible with hundreds of Camera Link cameras available on the market
- Supports PoCL, Power over Camera Link
- PCIe x1 bus
- 32-MByte on board memory
- Feature-rich set of 9 digital IO lines

Benefits

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

Check out our camera compatibility page (in the Support menu) to download the relevant CamFiles

General purpose I/O lines

Compatible with a wide range of sensors and motion encoders.

High-performance DMA (Direct Memory Access)

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

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.

Windows and Linux drivers available

Applications

Machine Vision for the Electronic Manufacturing Industry

- High speed image acquisition for AOI, 3D SPI, 3D lead/ball inspection machines.
- Very high resolution line-scan image acquisition for Flat Panel Display inspection and solar cell inspection

Machine Vision for the General Manufacturing Industries

- High frame rate image acquisition for inspection machines
- Line-scan image acquisition for surface inspection machines
- Line-scan image acquisition for textile inspection

Machine Vision for the Printing Industry

- High speed line-scan image acquisition for printing inspection machines

Video Acquisition and Recording

- High-frame-rate video acquisition for motion analysis and recording

Specifications

Mechanical

Form Factor	PCI Express card
Format	Standard profile, half length, 1-lane PCI Express card
Cooling method	Air-cooling
Mounting	For insertion in a standard height, 1-lane or higher, PCI Express card slot
Connectors	<ul style="list-style-type: none">• 'CAMERA LINK' on bracket:<ul style="list-style-type: none">– 26-position Mini Delta Ribbon (MDR) socket– Camera Link connector• 'SYSTEM' on bracket:<ul style="list-style-type: none">– 26-pin 3-row high-density male sub-D connector– I/O lines and power output• 'SYSTEM' on PCB:<ul style="list-style-type: none">– 26-pin 2-row 0.1" pitch pin header with shrouding– I/O lines and power output• 'CAMERA POWER INPUT' on module:<ul style="list-style-type: none">– 4-pin MOLEX power socket– 12 VDC power input for PoCL camera
Dimensions	L 168 mm x H 111 mm L 6.61 in x 4.37 in

Host bus

Standard	PCI Express 1.0
Link width	1 lane
Link speed	2.5 GT/s (PCIe 1.0)
DMA	32-bit
Peak delivery bandwidth	256 MB/s
Effective (sustained) delivery bandwidth	180 MB/s (Host PC motherboard dependent)
Power consumption	Max. 5.35 W (500 mA @ +3.3V, 300 mA @ +12V), excluding I/O power output

Camera / video inputs

Interface standard(s)	Camera Link
Connectors	1 Mini Delta Ribbon (MDR) Camera Link (CL)
Number of cameras	One Base camera
Line-scan cameras supported	Yes
Maximum aggregated camera data transfer rate	2.04 Gbit/s (255 MB/s)
Camera Link configuration	Base
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 protections
Camera types	<ul style="list-style-type: none">• Gray-scale and color (RGB and Bayer) cameras• Area-scan and line-scan cameras

Video delivery

Raw video format(s)	<ul style="list-style-type: none">• Monochrome formats: Y8, Y10, Y12, Y14, Y16• Packed RGB color formats: RGB24, RGB32• Planar RGB color formats: RGB24PL, RGB30PL, RGB36PL, RGB42PL, RGB48PL• Additional formats: BAYER8, BAYER10, BAYER12, BAYER14, BAYER16, RAW8, RAW10, RAW12, RAW14, RAW16
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On-board processing

On-board memory	32 MB (16 MB for image data)
Image data stream processing	<ul style="list-style-type: none">• Unpacking of 10-/12-/14-bit to 16-bit with selectable justification to LSb or MSb

General Purpose Inputs and Outputs

Number of lines	9 I/O lines: <ul style="list-style-type: none">• 4 TTL input/output lines (ENHANCED I/O)• 2 differential inputs (TRA1, TRA2)• 1 isolated output (STA)• 2 multimode input/output lines (ISOA1, ISOA2)
Usage	<ul style="list-style-type: none">• Camera and image acquisition trigger• Light strobe trigger• Camera synchronization using motion encoder• General purpose IO
Electrical specifications	<ul style="list-style-type: none">• ISOA1, ISOA2: Inputs or outputs, isolated up to 500 V:<ul style="list-style-type: none">– Input: compatible with TTL or 12V signals– Output: TTL, open-collector or open-emitter• TRA1, TRA2: Inputs compatible with TTL, LVTTTL, differential LVDS, differential RS422, differential RS-485 signals, protected against electrostatic discharge, with choke for the rejection of common-mode noise• STA: Opto-isolated outputs, compatible with signals up to 60V, with 3 μs fall time, isolated up to 500V• ENHANCED IO Inputs or outputs compatible with TTL signals, protected against electrostatic discharge, with high-frequency noise filter
Filter control	<ul style="list-style-type: none">• Glitch removal filter available on input lines used as trigger sources:• Configurable with five time constants:<ul style="list-style-type: none">– 100 ns, 500 ns and 2.5 μs for trigger/ page trigger /page end trigger sources– 100 ns, 500 ns, 2.5 μs for line trigger source
Power output	<ul style="list-style-type: none">• Non-isolated +5V, 1A and +12V, 500 mA with self-resettable fuse protection• Isolated +5V 250 mA with electronic fuse protection

Software

Host PC Operating System	<ul style="list-style-type: none">• Microsoft Windows 10, 8.1, 8, 7 for x86 (32-bit) and x86-64 (64-bit) processor architectures• Linux, from kernel version 2.6 to 4.13, compatible with a wide range of distributions, for x86 (32-bit) and x86-64 (64-bit) processor architectures
APIs	<ul style="list-style-type: none">• MultiCam 32- and 64-bit binary libraries (Windows and Linux), for ISO-compliant C/C++ compilers

Environmental conditions

Operating ambient air temperature	0 to +50 °C / +32 to +122 °F
Operating ambient air humidity	10 to 90% RH non-condensing
Storage ambient air temperature	-20 to +70 °C / -4 to +158 °F
Storage ambient air humidity	10 to 90% RH non-condensing

Certifications

Electromagnetic - EMC standards	<ul style="list-style-type: none">• European Council EMC Directive 2004/108/EC• United States FCC rule 47 CFR 15
EMC - Emission	<ul style="list-style-type: none">• EN 55022:2010 Class B• FCC 47 Part 15 Class B
EMC - Immunity	<ul style="list-style-type: none">• EN 55024:2010 Class B• EN 61000-4-2• EN 61000-4-3• EN 61000-4-4• EN 61000-4-6
Flammability	PCB compliant with UL 94 V-0
RoHS	European Union Directive 2011/65/EU (ROHS2)
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 code - Description	<ul style="list-style-type: none">• 1621 - Grablink Express
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