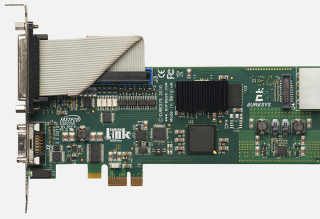




Grablink Base

Frame grabber for one base-configuration Camera Link camera



At a Glance

- 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

Benefits

ECCO: Extended Camera Link Cable Operation

- Use longer, up to 15 meters long, Camera Link cables!
- Download this document for more information

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-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 500VAC RMS.
- Isolated contact outputs.

High-performance DMA (Direct Memory Access)

- Direct transfer into user-allocated memory and hardware boards that expose PCI addresses
- Hardware scatter-gather support
- 64-bit addressing capability

Area-scan triggering capabilities

- A trigger is used to start the acquisition when the part is in position. Hardware triggers come from the Grablink's I/O lines. Software triggers come from the application.

- An optional trigger delay is available to postpone the acquisition for a programmable time.
- A trigger decimation function allows to skip some of the triggers.
- Camera exposure control allows the application to control the exposure time of the camera.
- When the acquisition starts, at the appropriate timing, the Grablink board generates a signal to control an illumination device connected to one of its output lines.

Line-scan triggering capabilities

Grablink supports 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).

- A trigger is used to start the acquisition when the part is in position. Hardware triggers come from the board's I/O lines. Software triggers come from the application.
- After it is started, the acquisition either:
 - Continues indefinitely (for web inspection applications)
 - Continues for a programmable number of lines (to acquire the image of objects of a known length)
 - Continues until an end trigger is received (to acquire the image of objects of a variable length)
- An optional trigger delay is available to postpone the beginning of the acquisition for a programmable number of lines.

Line-scan triggering capabilities

- The Grablink frame grabber controls the camera scanning rate based on the signals received from a motion encoder. When the parts move faster, the acquisition line rate of the camera increases. When the parts move slower, the acquisition line rate of the camera decreases.
- The Grablink boards interpret A/B signals from quadrature motion encoders to know in which direction (forward or backward) the part is moving.
- Optionally, the Grablink can be instructed to acquire lines only when the object is moving forward or only when the object is moving backward.
- A feature called Backward Motion Cancellation stops the acquisition when a backward motion is detected. The line acquisition automatically resumes when the motion is again in the forward direction, at the exact place where the acquisition was interrupted.
- A Rate Converter allows the camera to acquire lines at any programmable resolution lower or higher than the resolution of the motion encoder. This gives the designer incredible freedom and flexibility during the development of the application.
- A Rate Divider allows the camera to acquire lines at a resolution lower than the resolution of the motion encoder. It divides the frequency of the incoming encoder signal by a programmable integer.

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

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	<ul style="list-style-type: none">• 'A' on bracket:<ul style="list-style-type: none">– 26-position Shrunken Delta Ribbon (SDR) socket– Camera Link Base connector• 'EXTERNAL I/O' on standard bracket:<ul style="list-style-type: none">– 25-pin 2-row female sub-D connector– I/O lines and power output• 'INTERNAL I/O' 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• 'POWER INPUT' on module:<ul style="list-style-type: none">– 4-pin MOLEX power socket– 12 VDC power input for PoCL camera and I/O power
Dimensions	L 167.65 mm x H 68.90 mm L 6.6 in x H 2.71 in
Weight	98 g, 3.46 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	<ul style="list-style-type: none">• 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

Interface standard(s)	Camera Link 2.0
Connectors	One Shrunken Delta Ribbon (SDR) Miniature Camera Link (MiniCL)
ECCO - Extended Camera Link Cable Operation	ECCO
Number of cameras	One Base or Lite camera
Maximum aggregated camera data transfer rate	2.04 Gbit/s (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
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Camera types	<ul style="list-style-type: none">• Grayscale and color (RGB and Bayer) cameras• Area-scan and line-scan cameras
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Area-scan camera control

Trigger	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Accurate control of the strobe position for strobed light sources.• Support of early and late strobe pulses.

Line-scan camera control

Scan/page trigger	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Unpacking of 10-/12-/14-bit to 16-bit with selectable justification to LSb or MSb
Input LUT (Lookup Table)	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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: <ul style="list-style-type: none">• 2 differential inputs (DIN)• 4 isolated inputs (IIN)• 4 isolated outputs (IOUT)
Usage	<ul style="list-style-type: none">• The input lines can be used by the acquisition channel as:<ul style="list-style-type: none">– 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:<ul style="list-style-type: none">– 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	<ul style="list-style-type: none"> • DIN: High-speed differential inputs 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 LVTTTL, 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
Filter control	<ul style="list-style-type: none"> • Glitch removal filter available only 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 – 40 ns, 100 ns, 200 ns, 500 ns, 1 μs, 5 μs, 10 μs for line trigger sources
Power output	Non-isolated, +5V, 1A and +12V, 1A, with electronic fuse protection

Software

Host PC Operating System	<ul style="list-style-type: none"> • 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 <p>Refer to release notes for details</p>
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 61000-4-5 • EN 61000-4-6
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 code - Description	<ul style="list-style-type: none"> • 1624 - Grablink Base
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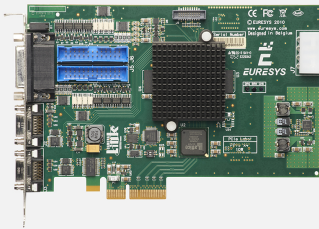
More at www.euresys.com





Grablink DualBase

Frame grabber for two base-configuration Camera Link cameras



At a Glance

- For two Camera Link Base or Lite configuration cameras
- 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 x4 bus: 850 MB/s sustained delivery bandwidth
- Feature-rich set of 20 digital IO lines
- Memento Event Logging Tool

Benefits

ECCO: Extended Camera Link Cable Operation

- Use longer, up to 15 meters long, Camera Link cables!
- Download this document for more information

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-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 500VAC RMS.
- Isolated contact outputs.

High-performance DMA (Direct Memory Access)

- Direct transfer into user-allocated memory and hardware boards that expose PCI addresses
- Hardware scatter-gather support
- 64-bit addressing capability

Area-scan triggering capabilities

- A trigger is used to start the acquisition when the part is in position. Hardware triggers come from the Grablink's I/O lines. Software triggers come from the application.

- An optional trigger delay is available to postpone the acquisition for a programmable time.
- A trigger decimation function allows to skip some of the triggers.
- Camera exposure control allows the application to control the exposure time of the camera.
- When the acquisition starts, at the appropriate timing, the Grablink board generates a signal to control an illumination device connected to one of its output lines.

Line-scan triggering capabilities

Grablink supports 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).

- A trigger is used to start the acquisition when the part is in position. Hardware triggers come from the board's I/O lines. Software triggers come from the application.
- After it is started, the acquisition either:
 - Continues indefinitely (for web inspection applications)
 - Continues for a programmable number of lines (to acquire the image of objects of a known length)
 - Continues until an end trigger is received (to acquire the image of objects of a variable length)
- An optional trigger delay is available to postpone the beginning of the acquisition for a programmable number of lines.

Line-scan triggering capabilities

- The Grablink frame grabber controls the camera scanning rate based on the signals received from a motion encoder. When the parts move faster, the acquisition line rate of the camera increases. When the parts move slower, the acquisition line rate of the camera decreases.
- The Grablink boards interpret A/B signals from quadrature motion encoders to know in which direction (forward or backward) the part is moving.
- Optionally, the Grablink can be instructed to acquire lines only when the object is moving forward or only when the object is moving backward.
- A feature called Backward Motion Cancellation stops the acquisition when a backward motion is detected. The line acquisition automatically resumes when the motion is again in the forward direction, at the exact place where the acquisition was interrupted.
- A Rate Converter allows the camera to acquire lines at any programmable resolution lower or higher than the resolution of the motion encoder. This gives the designer incredible freedom and flexibility during the development of the application.
- A Rate Divider allows the camera to acquire lines at a resolution lower than the resolution of the motion encoder. It divides the frequency of the incoming encoder signal by a programmable integer.

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

Format	Standard profile, half length, 4-lane PCI Express card
Cooling method	Air-cooling, fanless
Mounting	For insertion in a standard height, 4-lane or higher, PCI Express card slot
Connectors	<ul style="list-style-type: none">• 'A' on bracket:<ul style="list-style-type: none">– 26-position Shrunken Delta Ribbon (SDR) socket– Camera Link Camera A• 'B' on bracket:<ul style="list-style-type: none">– 26-position Shrunken Delta Ribbon (SDR) socket– Camera Link Camera B• 'EXTERNAL I/O' on bracket:<ul style="list-style-type: none">– 26-pin 3-row high-density female sub-D connector– I/O lines and power output• 'INTERNAL I/O A' on PCB:<ul style="list-style-type: none">– 26-pin 2-row 0.1" pitch pin header with shrouding– I/O lines of camera A and power output• 'INTERNAL I/O B' on PCB:<ul style="list-style-type: none">– 26-pin 2-row 0.1" pitch pin header with shrouding– I/O lines of camera B and power output• 'POWER INPUT' on module:<ul style="list-style-type: none">– 4-pin MOLEX power socket– 12 VDC power input for PoCL cameras and I/O power
Dimensions	L 167.65 mm x H 111.15 mm L 6.6 in x H 4.38 in
Weight	137 g, 4.83 oz

Host bus

Standard	PCI Express 1.0
Link width	4 lanes
Link speed	2.5 GT/s (PCIe 1.0)
Maximum payload size	1024 bytes
DMA	32- and 64-bit
Peak delivery bandwidth	1,024 MB/s
Effective (sustained) delivery bandwidth	<ul style="list-style-type: none">• Up to 833 MB/s for a PCI Express payload size of 256 bytes and 64-bit addressing• Up to 844 MB/s for a PCI Express payload size of 256 bytes and 32-bit addressing• Up to 754 MB/s for a PCI Express payload size of 128 bytes and 64-bit addressing• Up to 780 MB/s for a PCI Express payload size of 128 bytes and 32-bit addressing
Power consumption	Max. 7.2 W; Typ. 6.0 W (0.47 A @ 3.3V; 0.37 A @ +12V)

Camera / video inputs

Interface standard(s)	Camera Link 2.0
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Connectors	Two Shrunk Delta Ribbon (SDR) Miniature Camera Link (MiniCL)
ECCO - Extended Camera Link Cable Operation	ECCO
Number of cameras	Two Base or Lite cameras
Maximum aggregated camera data transfer rate	4.08 Gbit/s (510 MB/s)
Camera Link configuration	Base or Lite
Camera Link clock frequency	From 20 MHz up to 85 MHz
PoCL (Power over Camera Link)	Two independent PoCL SafePower compliant controllers with overload, over-voltage and short-circuit protection
Camera types	<ul style="list-style-type: none"> • Grayscale and color (RGB and Bayer) cameras • Area-scan and line-scan cameras

Area-scan camera control

Trigger	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Accurate control of the strobe position for strobed light sources. • Support of early and late strobe pulses.

Line-scan camera control

Scan/page trigger	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Accurate control of the strobe position for strobed light sources.

On-board processing

On-board memory	128 MB (64 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
Input LUT (Lookup Table)	<ul style="list-style-type: none"> • Monochrome: 8-bit, 10-bit or 12-bit per pixel, up to 500 MPixel/s per camera • RGB: 3x8-bit per pixel, up to 125 MPixel/s per camera
Bayer CFA to RGB decoder	<ul style="list-style-type: none"> • Advanced interpolation method using average and median functions on a 3x3 kernel • Up to 125 MPixel/s per camera

General Purpose Inputs and Outputs

Number of lines	<p>2 sets of 10 I/O lines, each set including:</p> <ul style="list-style-type: none"> • 2 differential inputs (DIN) • 4 isolated inputs (IIN) • 4 isolated outputs (IOUT)
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Usage	<ul style="list-style-type: none"> • Each acquisition channel has a dedicated set of 10 I/O's <ul style="list-style-type: none"> – The I/O set of INTERNAL IO CONNECTOR A is dedicated to the acquisition channel of CAMERA A – The I/O set of INTERNAL IO CONNECTOR B is dedicated to the acquisition channel of CAMERA B • The input lines of an I/O set can be used by the corresponding acquisition channel as: <ul style="list-style-type: none"> – 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 of an I/O set can be used by the corresponding acquisition channel, as: <ul style="list-style-type: none"> – 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
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Electrical specifications	<ul style="list-style-type: none"> • DIN: High-speed differential inputs 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 LVTTTL, 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
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Filter control	<ul style="list-style-type: none"> • Glitch removal filter available only 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 – 40 ns, 100 ns, 200 ns, 500 ns, 1 μs, 5 μs, 10 μs for line trigger sources
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Power output	Non-isolated, +5V, 1A and +12V, 1A, with electronic fuse protection
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Software

Host PC Operating System	<ul style="list-style-type: none"> • 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 <p>Refer to release notes for details</p>
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 61000-4-5 • EN 61000-4-6
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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 code - Description	<ul style="list-style-type: none"> • 1623 - Grablink DualBase
Optional accessories	<ul style="list-style-type: none"> • 1625 - DB25F I/O Adapter Cable



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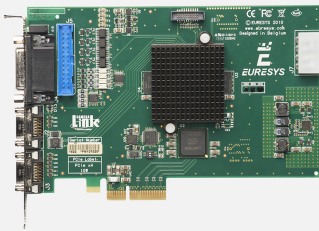
More at www.euresys.com





Grablink Full

Frame grabber for one full-configuration Camera Link camera



At a Glance

- For one Camera Link 80-bit, 72-bit, Full, Medium or Base configuration camera
- Directly compatible with hundreds of Camera Link cameras available on the market
- ECCO: Extended Camera Link cable length
- PCIe x4 bus: 850 MB/s sustained delivery bandwidth
- Feature-rich set of 10 digital IO lines
- Memento Event Logging Tool

Benefits

ECCO: Extended Camera Link Cable Operation

- Use longer, up to 15 meters long, Camera Link cables!
- Download this document for more information

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-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 500VAC RMS.
- Isolated contact outputs.

High-performance DMA (Direct Memory Access)

- Direct transfer into user-allocated memory and hardware boards that expose PCI addresses
- Hardware scatter-gather support
- 64-bit addressing capability

Area-scan triggering capabilities

- A trigger is used to start the acquisition when the part is in position. Hardware triggers come from the Grablink's I/O lines. Software triggers come from the application.
- An optional trigger delay is available to postpone the acquisition for a programmable time.

- A trigger decimation function allows to skip some of the triggers.
- Camera exposure control allows the application to control the exposure time of the camera.
- When the acquisition starts, at the appropriate timing, the Grablink board generates a signal to control an illumination device connected to one of its output lines.

Line-scan triggering capabilities

Grablink supports 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).

- A trigger is used to start the acquisition when the part is in position. Hardware triggers come from the board's I/O lines. Software triggers come from the application.
- After it is started, the acquisition either:
 - Continues indefinitely (for web inspection applications)
 - Continues for a programmable number of lines (to acquire the image of objects of a known length)
 - Continues until an end trigger is received (to acquire the image of objects of a variable length)
- An optional trigger delay is available to postpone the beginning of the acquisition for a programmable number of lines.

Line-scan triggering capabilities

- The Grablink frame grabber controls the camera scanning rate based on the signals received from a motion encoder. When the parts move faster, the acquisition line rate of the camera increases. When the parts move slower, the acquisition line rate of the camera decreases.
- The Grablink boards interpret A/B signals from quadrature motion encoders to know in which direction (forward or backward) the part is moving.
- Optionally, the Grablink can be instructed to acquire lines only when the object is moving forward or only when the object is moving backward.
- A feature called Backward Motion Cancellation stops the acquisition when a backward motion is detected. The line acquisition automatically resumes when the motion is again in the forward direction, at the exact place where the acquisition was interrupted.
- A Rate Converter allows the camera to acquire lines at any programmable resolution lower or higher than the resolution of the motion encoder. This gives the designer incredible freedom and flexibility during the development of the application.
- A Rate Divider allows the camera to acquire lines at a resolution lower than the resolution of the motion encoder. It divides the frequency of the incoming encoder signal by a programmable integer.

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

Format	Standard profile, half length, 4-lane PCI Express card
Cooling method	Air-cooling, fanless
Mounting	For insertion in a standard height, 4-lane or higher, PCI Express card slot
Connectors	<ul style="list-style-type: none">• 'BASE' on bracket:<ul style="list-style-type: none">– 26-position Shrunken Delta Ribbon (SDR) socket– Camera Link Base connector• 'MEDIUM/FULL'<ul style="list-style-type: none">– 26-position Shrunken Delta Ribbon (SDR) socket– Camera Link Medium/Full/80-bit connector• 'EXTERNAL I/O' on bracket:<ul style="list-style-type: none">– 26-pin 3-row high-density female sub-D connector– I/O lines and power output• 'INTERNAL I/O' 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• 'POWER INPUT' on module:<ul style="list-style-type: none">– 4-pin MOLEX power socket– 12 VDC power input for I/O
Dimensions	L 167.65 mm x H 111.15 mm L 6.6 in x H 4.38 in
Weight	133 g, 4.69 oz

Host bus

Standard	PCI Express 1.0
Link width	4 lanes
Link speed	2.5 GT/s (PCIe 1.0)
Maximum payload size	1024 bytes
DMA	32- and 64-bit
Peak delivery bandwidth	1,024 MB/s
Effective (sustained) delivery bandwidth	<ul style="list-style-type: none">• Up to 833 MB/s for a PCI Express payload size of 256 bytes and 64-bit addressing• Up to 844 MB/s for a PCI Express payload size of 256 bytes and 32-bit addressing• Up to 754 MB/s for a PCI Express payload size of 128 bytes and 64-bit addressing• Up to 780 MB/s for a PCI Express payload size of 128 bytes and 32-bit addressing
Power consumption	Max. 6.9 W; Typ. 5.7 W (0.48 A @ 3.3V; 0.34 A @ +12V)

Camera / video inputs

Interface standard(s)	Camera Link 2.0
Connectors	Two Shrunken Delta Ribbon (SDR) Miniature Camera Link (MiniCL)
ECCO - Extended Camera Link Cable Operation	ECCO

Number of cameras	One 80-bit / 72-bit / Full / Medium / Base configuration camera
Maximum aggregated camera data transfer rate	6.8 Gbit/s (850 MB/s)
Camera Link configuration	Base, Medium, Full, 72-bit, 80-bit Note: Unpacking to 16-bit and image reconstruction are not available for the 8x 10-bit variant of the 80-bit configuration.
Camera Link clock frequency	From 20 MHz up to 85 MHz
Camera types	<ul style="list-style-type: none"> • Grayscale and color (RGB and Bayer) cameras • Area-scan and line-scan cameras
Camera pixel formats supported	Monochrome, Bayer, and RGB (PFNC names): <ul style="list-style-type: none"> • Mono8, Mono10, Mono12, Mono14, Mono16 • BayerXX8, BayerXX10, BayerXX12, BayerXX14, BayerXX16 where XX = GR, RG, GB, or BG • RGB8, RGB10, RGB12, RGB14, RGB16

Area-scan camera control

Trigger	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Accurate control of the strobe position for strobed light sources. • Support of early and late strobe pulses.

Line-scan camera control

Scan/page trigger	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Accurate control of the strobe position for strobed light sources.

On-board processing

On-board memory	128 MB (64 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
Input LUT (Lookup Table)	<ul style="list-style-type: none"> • Monochrome: 8-bit, 10-bit or 12-bit per pixel, up to 1000 MPixel/s • RGB: 3x8-bit, 3x10-bit or 3x12-bit per pixel, up to 250 MPixel/s
Bayer CFA to RGB decoder	<ul style="list-style-type: none"> • Advanced interpolation method using average and median functions on a 3x3 kernel • Up to 225 MPixel/s

General Purpose Inputs and Outputs

Number of lines	10 I/O lines: <ul style="list-style-type: none"> • 2 differential inputs (DIN) • 4 isolated inputs (IIN) • 4 isolated outputs (IOUT)
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Usage	<ul style="list-style-type: none"> • The input lines can be used by the acquisition channel as: <ul style="list-style-type: none"> – 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 IOOUT 1 output line can be used by the acquisition channel as: <ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> • DIN: High-speed differential inputs 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 LVTTTL, TTL, 5V CMOS drivers, RS-422 differential line drivers, potential free contacts, solid-state relays and opto-couplers • IOOUT: Isolated contact outputs compatible with 30V / 100mA loads
Filter control	<ul style="list-style-type: none"> • Glitch removal filter available only 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 – 40 ns, 100 ns, 200 ns, 500 ns, 1 μs, 5 μs, 10 μs for line trigger sources
Power output	Non-isolated, +5V, 1A and +12V, 1A, with electronic fuse protection

Software

Host PC Operating System	<ul style="list-style-type: none"> • 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 <p>Refer to release notes for details</p>
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 61000-4-5 • EN 61000-4-6
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 code - Description	• 1622 - Grablink Full
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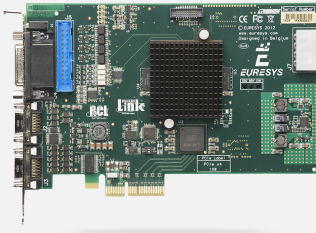
More at www.euresys.com





Grablink Full XR

Frame grabber for one full-configuration Camera Link camera with support for extra long cables



At a Glance

- For one Camera Link 80-bit, 72-bit, Full, Medium or Base configuration camera
- Directly compatible with hundreds of Camera Link cameras available on the market
- Supports PoCL, Power over Camera Link
- ECCO+: Double Camera Link maximum cable length
- PoCL SafePower compliant
- PCIe x4 bus: 850 MB/s sustained delivery bandwidth
- Feature-rich set of 10 digital IO lines
- Memento Event Logging Tool

Benefits

ECCO+: Extended Camera Link Cable Operation

- Use longer, up to 20 meters long, Camera Link cables!
- Download this document for more information

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-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 500VAC RMS.
- Isolated contact outputs.

High-performance DMA (Direct Memory Access)

- Direct transfer into user-allocated memory and hardware boards that expose PCI addresses
- Hardware scatter-gather support
- 64-bit addressing capability

Area-scan triggering capabilities

- A trigger is used to start the acquisition when the part is in position. Hardware triggers come from the Grablink's I/O lines. Software triggers come from the application.
- An optional trigger delay is available to postpone the acquisition for a programmable time.
- A trigger decimation function allows to skip some of the triggers.
- Camera exposure control allows the application to control the exposure time of the camera.
- When the acquisition starts, at the appropriate timing, the Grablink board generates a signal to control an illumination device connected to one of its output lines.

Line-scan triggering capabilities

Grablink supports 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).

- A trigger is used to start the acquisition when the part is in position. Hardware triggers come from the board's I/O lines. Software triggers come from the application.
- After it is started, the acquisition either:
 - Continues indefinitely (for web inspection applications)
 - Continues for a programmable number of lines (to acquire the image of objects of a known length)
 - Continues until an end trigger is received (to acquire the image of objects of a variable length)
- An optional trigger delay is available to postpone the beginning of the acquisition for a programmable number of lines.

Line-scan triggering capabilities

- The Grablink frame grabber controls the camera scanning rate based on the signals received from a motion encoder. When the parts move faster, the acquisition line rate of the camera increases. When the parts move slower, the acquisition line rate of the camera decreases.
- The Grablink boards interpret A/B signals from quadrature motion encoders to know in which direction (forward or backward) the part is moving.
- Optionally, the Grablink can be instructed to acquire lines only when the object is moving forward or only when the object is moving backward.
- A feature called Backward Motion Cancellation stops the acquisition when a backward motion is detected. The line acquisition automatically resumes when the motion is again in the forward direction, at the exact place where the acquisition was interrupted.
- A Rate Converter allows the camera to acquire lines at any programmable resolution lower or higher than the resolution of the motion encoder. This gives the designer incredible freedom and flexibility during the development of the application.
- A Rate Divider allows the camera to acquire lines at a resolution lower than the resolution of the motion encoder. It divides the frequency of the incoming encoder signal by a programmable integer.

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

Format	Standard profile, half length, 4-lane PCI Express card
Cooling method	Air-cooling, fanless
Mounting	For insertion in a standard height, 4-lane or higher, PCI Express card slot
Connectors	<ul style="list-style-type: none"> • 'BASE' on bracket: <ul style="list-style-type: none"> – 26-position Shrunken Delta Ribbon (SDR) socket – Camera Link Base connector • 'MEDIUM/FULL' <ul style="list-style-type: none"> – 26-position Shrunken Delta Ribbon (SDR) socket – Camera Link Medium/Full/80-bit connector • 'EXTERNAL I/O' on bracket: <ul style="list-style-type: none"> – 26-pin 3-row high-density female sub-D connector – I/O lines and power output • 'INTERNAL I/O' 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 • 'POWER INPUT' on module: <ul style="list-style-type: none"> – 4-pin MOLEX power socket – 12 VDC power input for PoCL camera and I/O power
Dimensions	L 167.65 mm x H 111.15 mm L 6.6 in x H 4.38 in
Weight	136 g, 4.80 oz

Host bus

Standard	PCI Express 1.0
Link width	4 lanes
Link speed	2.5 GT/s (PCIe 1.0)
Maximum payload size	1024 bytes
DMA	32- and 64-bit
Peak delivery bandwidth	1,024 MB/s
Effective (sustained) delivery bandwidth	<ul style="list-style-type: none"> • Up to 833 MB/s for a PCI Express payload size of 256 bytes and 64-bit addressing • Up to 844 MB/s for a PCI Express payload size of 256 bytes and 32-bit addressing • Up to 754 MB/s for a PCI Express payload size of 128 bytes and 64-bit addressing • Up to 780 MB/s for a PCI Express payload size of 128 bytes and 32-bit addressing
Power consumption	Max. 9.9 W; Typ. 8.2 W (1.0 A @ 3.3V; 0.41 A @ +12V)

Camera / video inputs

Interface standard(s)	Camera Link 2.0
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Connectors	Two Shrunk Delta Ribbon (SDR) Miniature Camera Link (MiniCL)
ECCO - Extended Camera Link Cable Operation	ECCO+
Number of cameras	One 80-bit / 72-bit / Full / Medium / Base configuration camera
Maximum aggregated camera data transfer rate	6.8 Gbit/s (850 MB/s)
Camera Link configuration	Base, Medium, Full, 72-bit, 80-bit Note: Unpacking to 16-bit and image reconstruction are not available for the 8x 10-bit variant of the 80-bit configuration.
Camera Link clock frequency	From 20 MHz up to 85 MHz
PoCL (Power over Camera Link)	Two independent PoCL SafePower compliant controllers with overload, over-voltage and short-circuit protection
Camera types	<ul style="list-style-type: none"> • Grayscale and color (RGB and Bayer) cameras • Area-scan and line-scan cameras
Camera pixel formats supported	Monochrome, Bayer, and RGB (PFNC names): <ul style="list-style-type: none"> • Mono8, Mono10, Mono12, Mono14, Mono16 • BayerXX8, BayerXX10, BayerXX12, BayerXX14, BayerXX16 where XX = GR, RG, GB, or BG • RGB8, RGB10, RGB12, RGB14, RGB16

Area-scan camera control

Trigger	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Accurate control of the strobe position for strobed light sources. • Support of early and late strobe pulses.

Line-scan camera control

Scan/page trigger	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Accurate control of the strobe position for strobed light sources.

On-board processing

On-board memory	128 MB (64 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
Input LUT (Lookup Table)	<ul style="list-style-type: none"> • Monochrome: 8-bit, 10-bit or 12-bit per pixel, up to 1000 MPixel/s • RGB: 3x8-bit, 3x10-bit or 3x12-bit per pixel, up to 250 MPixel/s
Bayer CFA to RGB decoder	<ul style="list-style-type: none"> • Advanced interpolation method using average and median functions on a 3x3 kernel • Up to 225 MPixel/s

General Purpose Inputs and Outputs

Number of lines	10 I/O lines: <ul style="list-style-type: none">• 2 differential inputs (DIN)• 4 isolated inputs (IIN)• 4 isolated outputs (IOUT)
Usage	<ul style="list-style-type: none">• The input lines can be used by the acquisition channel as:<ul style="list-style-type: none">– 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:<ul style="list-style-type: none">– 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	<ul style="list-style-type: none">• DIN: High-speed differential inputs 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 LVTTTL, 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
Filter control	<ul style="list-style-type: none">• Glitch removal filter available only 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– 40 ns, 100 ns, 200 ns, 500 ns, 1 μs, 5 μs, 10 μs for line trigger sources
Power output	Non-isolated, +5V, 1A and +12V, 1A, with electronic fuse protection

Software

Host PC Operating System	<ul style="list-style-type: none">• 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 <p>Refer to release notes for details</p>
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 61000-4-5 • EN 61000-4-6
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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 code - Description	<ul style="list-style-type: none"> • 1626 - Grablink Full XR
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More at www.euresys.com



Grablink Full

Cost-effective Single-Channel Full Camera Link® Frame Grabber



NEW



Features

- Supports Base, Medium, and Full Camera Link® configuration cameras
- 10-tap configuration cameras
- On-board processing
 - LUTs operators, Bayer CFA decoder, pixel formatting, and image reconstruction
- 128 MB on-board memory
- PCI Express® x4 full-height, half-length
- MultiCam drivers for Microsoft Windows® and Linux (32- and 64-bit)

Applications

- Quality control
- Semiconductor inspection
- PCB inspections
- FPD inspections
- On-the-fly image acquisition
- High frame rate image acquisition

Software Support

- Windows® Platforms
 - Available for Windows® Vista SP2/XP SP3 /7 (32/64-bit)
 - Available for Windows® server 2008 SP2 (32/64-bit)
 - Available for Red Hat Enterprise Linux 5.2 (Kernel 2.6.18-92) (32-bit/64-bit)

Ordering Information

- **Grablink Full**
Cost-effective single-channel full Camera Link® frame grabber

Accessories

For more information on cables, please refer to page 2-15

Cabling

- **Camera Link Cable**
5 M, robot type

Introduction

The Grablink Full is a cost-effective, full-featured frame grabber for single Camera Link camera applications. It supports one Base-, Medium- or Full-configuration camera, including 10-tap cameras. The Grablink Full features a 4-lane PCI Express bus. This high-end acquisition board is ideal for high-speed and high-resolution area-scan and line-scan applications such as printing, web, and flat panel display inspection, 3D inspection and manufacturing inspection for fast production lines.

Flexible and Reliable Area-scan Acquisition Modes

(Please refer to page 1-7 for details.)

- ◆ **Trigger**
 - Trigger delay
 - Trigger decimation

High-Performance Line-scan Acquisition Modes

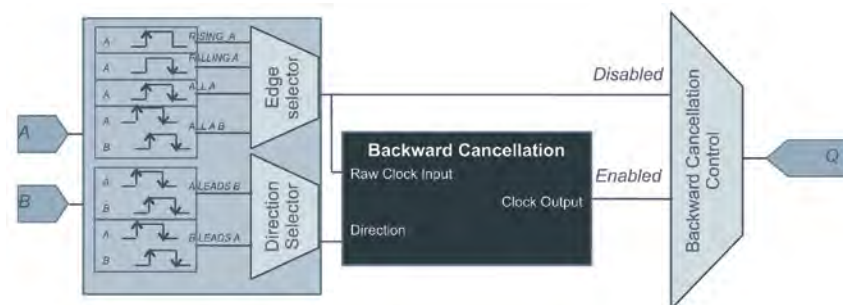
(Please refer to page 1-8 for details.)

- ◆ **The Grablink acquisition boards feature several acquisition modes dedicated to line-scan cameras:**
 - Continuous web scanning
 - Successive object scanning
- ◆ **Trigger:**
 - Grablink supports start and end trigger
 - Trigger delay

Quadrature Motion Encoder Supports

Quadrature motion encoders use two signals (or phases), called A and B, that the Grablink board can interpret to know which direction (forward or backward) the part is moving.

- ◆ With the **optional direction selector**, the user can define which direction is considered as the forward direction for the application, A to B or B to A. Optionally, the Grablink can be instructed to acquire lines only when the object is moving forward, or only when the object is moving backward.
- ◆ With the **backward motion cancellation**, the Grablink is capable of stopping the acquisition when a backward motion is detected. The line acquisition automatically resumes when the motion is again in the forward direction at the exact place where the acquisition was interrupted.



Quadrature Decoder Block Diagram



GRABLINK™ series

High-speed digital Camera Link image acquisition boards



GRABLINK Avenue™



GRABLINK Express™



NEW GRABLINK Quickpack CFA PCIe™

GRABLINK™ series

- GRABLINK Value™ – GRABLINK Value cPCI™ – GRABLINK Avenue™ – GRABLINK Express™
- GRABLINK Expert 2™ – GRABLINK Expert 2 cPCI™ – GRABLINK Quickpack ColorScan™
- GRABLINK Quickpack CFA™ – GRABLINK Quickpack CFA PCIe™

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EURESYS™
Excellence in vision



The GRABLINK™ series Comparison Chart

NEW

NEW

	GRABLINK Value	GRABLINK Value cPCI	GRABLINK Avenue	GRABLINK Express	GRABLINK Expert 2	GRABLINK Expert 2 cPCI	GRABLINK Quickpack ColorScan	GRABLINK Quickpack CFA	GRABLINK Quickpack CFA PCIe
Form factor	32-bit, 33 MHz PCI Full height, half length	64-bit, 66 MHz cPCI 6U/4HP	64-bit, 66 MHz PCI Full height, half length	x1 PCI Express Full height, half length	64-bit, 66 MHz PCI Full height, half length	64-bit, 66 MHz cPCI 6U/4HP	64-bit, 66 MHz PCI Full height, half length	64-bit, 66 MHz PCI Full height, half length	x4 PCI Express Full height, half length
Camera Link configuration	Base	Base	Base	Base PoCL Safe Power	Base, dual-Base, Medium	Base, dual-Base, Medium	Base	Base	Base PoCL Safe Power
Tap demultiplexing incl. tap reversal	✓	✓	✓	✓	✓	✓	✓	✓	✓
Max. pixel-clock frequency	24 bits @ 60 MHz	24 bits @ 60 MHz	24 bits @ 85 MHz	24 bits @ 85 MHz	48 bits @ 60 MHz	48 bits @ 60 MHz	24 bits @ 60 MHz	24 bits @ 85 MHz	24 bits @ 85 MHz
Gray scale	✓	✓	✓	✓	✓	✓	-	-	-
Color	✓	✓	✓	✓	✓	✓	✓	✓	✓
Area scan	✓	✓	✓	✓	✓	✓	-	✓	✓
Line scan	✓	✓	ADP	ADP	✓	✓	✓	-	-
Max. delivery bandwidth	90 MB/s	90 MB/s	240 MB/s	180 MB/s	240 MB/s	240 MB/s	240 MB/s	240 MB/s	320 MB/s
On-board memory	8-MB	8-MB	32-MB	32-MB	16-MB	16-MB	128-MB	128-MB	128-MB
Pre-processing - Input images - Pre-processing functions -Max. processing rate	LUTs 3x (8-bit x 8-bit) for R, G, B	LUTs 3x (8-bit x 8-bit) for R, G, B	-	-	-	-	For color line-scan inspection 3 x 8-bit Scan delay compensation Shading correction LUTs 3x (8-bit x 8-bit) for R, G, B White balance Up to 50MPixels/s	For color area-scan inspection 8-bit, 10-bit or 12-bit Bayer decoding Luminance blender LUTs 4x (16-bit x 16-bit) for R, G, B, Y Automatic white balance Up to 80MPixels/s	For color area-scan inspection 8-bit, 10-bit or 12-bit Bayer decoding Luminance blender LUTs 4x (16-bit x 16-bit) for R, G, B, Y Automatic white balance Up to 80MPixels/s
I/O electrical style -system functions-	4 externally	4 externally	9 internally & externally	9 internally & externally	26 on an I/O board	26 externally	2 externally	9 internally & externally	9 internally & externally
Isol. multi-mode bidirectional I/O* & Isol. 5V power supply -IN (Trigger/Line trigger) OUT (Strobe)-	2	2	2	2	4	4	2	2	2
Non-isol. TTL input -Trigger/Line trigger-	1	1	-	-	3	3	-	-	-
Non-isol. TTL output -Strobe-	1	1	-	-	3	3	-	-	-
Non-isol. bidirectional CMOS I/O	-	-	-	-	16	16	-	-	-
Non-isol. universal differential input** -Trigger/Line-	-	-	2	2	-	-	-	2	2
Isol. contact output -Strobe-	-	-	1	1	-	-	-	1	1
Non-isol. bidirectional TTL I/O -Trigger/Line trigger-	-	-	4	4	-	-	-	4	4
5V Power supply	✓	✓	✓	✓	✓ (2)	✓ (2)	✓	✓	✓
12V Power supply	✓	✓	✓	✓	✓	✓	✓	✓	✓

*Input: Isolated TTL, Isolated 12V. Output: Isolated TTL, Isolated Open Collector, Isolated Open Emitter. **LVDS and more

The GRABLINK[™] series



GRABLINK Value™

GRABLINK Avenue™

GRABLINK Expert 2™

GRABLINK Express™

GRABLINK Quickpack ColorScan™

GRABLINK Quickpack CFA™

GRABLINK Quickpack CFA PCIe™

GRABLINK Value cPCI™

GRABLINK Expert 2 cPCI™

High-performance LINE-SCAN and AREA-SCAN Applications

Flexible and reliable LINE-SCAN acquisition



Camera modes The 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 single line.

Successive object scanning In «**page mode**», a 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 of the Grablink boards 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.

ADR Technology™*

Simple and reliable LINE-SCAN acquisition with constant lighting sensitivity and line rate

In many applications, a **line-scan camera** has to be operated at a **constant cycling rate** in order to maintain a constant sensitivity. The **Grablink Avenue** and the **Grablink Express** implement **ADR***, a **unique downweb resampling feature**, yielding a defined aspect ratio irrespective of web speed variations, even without an electronic shutter on the camera.

A built-in rate converter accommodates an off-the-shelf motion encoder to control the line acquisition process, enabling any **programmable aspect ratio, including perfect square pixels**.

ADR* makes the most of the line-scan camera, as the sensitivity is not impaired by the shuttering.

➤ *Download the "About ADR Technology" flyer from our web site: www.euresys.com.*



Full support of AREA-SCAN acquisition



Camera modes Features such as **asynchronous reset, exposure control, strobe lighting** often required in industrial applications are available on the 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. The Grablink series is capable of consistently controlling the exposure time and the illumination.

Camera tap structure For any tap structure, a 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 the pixel clock frequency specified for the board.

Main Features

- **Acquisition:**
Up to 24-bit / 48-bit at maximum 85 MHz
Camera Link configurations: Base, dual Base or Medium
Support of LINE-SCAN and AREA-SCAN cameras
Multiple taps, tap reversal, tap multiplex
- **Large on-board memory**
- **Asynchronous reset, exposure control and I/O lines -trigger & strobe-**
- **Camera Link serial line configurable as an additional PC COM port**
- **MultiCam drivers for Windows® and Linux**

The Grablink series is a range of **high-speed** PCI, PCI Express and Compact PCI frame grabbers for **line-scan 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 ideal for industrial applications such as inspection of **high-speed moving objects, web inspection or high-resolution acquisition**.



Serial control of camera

The Grablink series 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.

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**, a Euresys board automatically recovers the **scatter-gather** virtual memory mapping to present the data as a regular bitmap image in a user allocated memory buffer.

Windows Of Interest [WOI] support

The Grablink series seamlessly support the acquisition of a WOI rather than a full image.

Interfaced cameras

The Grablink series interfaces an impressive choice of different cameras.

► An up-to-date list is available on the *Interfacing Cameras* page on www.euresys.com.



GRABLINK Value™

Cost-effective Camera Link acquisition

Base configuration -24-bit at 60 MHz-
8-MB on-board memory

Form factors: Conventional PCI 32-bit 33 MHz bus
Compact PCI 6U/4HP 64-bit 66 MHz bus

The **Grablink Value** is an affordable Camera Link frame grabber for **cost-effective industrial applications**. The Grablink Value is recommended for **single-camera systems**.

Support of the Base configuration

CAMERA COMPATIBILITY	Monochrome or Bayer		Color RGB
	single-tap	dual-tap	single-tap
Tap configuration	Base_1T8, Base_1T10, Base_1T12, Base_1T14, Base_1T16	Base_2T8, Base_2T10, Base_2T12	Base_1T24
Camera Link configuration	Base	1 tap x (8-10-12-14-16 bits)	2 taps x (8-10-12 bits)
			1 tap x (24 bits)

4 I/O lines available on an external DB9 connector

I/O electrical style

- 2 isolated multi-mode bidirectional I/O and associated isolated 5V power supply
 - Input: isolated TTL, isolated 12V
 - Output: isolated TTL, isolated open collector, isolated Open Emitter
- 1 non-isolated TTL input
- 1 non-isolated TTL output
- 5V and 12V power supplies

I/O electrical style and function

- TTL trigger or page trigger input
- Opto-isolated trigger or page trigger input
- TTL strobe output
- Opto-isolated strobe output
- TTL line trigger or encoder input
- Opto-isolated line trigger or encoder input



GRABLINK Avenue™

Ultra-fast Camera Link acquisition

Base configuration -up to 24-bit at 85 MHz-

Full support of AREA-SCAN cameras -asynchronous reset and exposure control-
Simple and reliable RED-SCAN acquisition -ADR Technology™-

32-MB on-board memory
Form factors: Conventional PCI 64-bit, 66 MHz bus, 3V/5V signaling



The **Grablink Avenue** is an ultra-fast PCI frame grabber for **line-scan or area-scan digital Camera Link cameras**. Grablink Avenue is a high-performance **64-bit, 66 MHz PCI bus** board acquiring images from one camera in the Camera Link Base configuration. This board acquires the 24-bit data, with any tap structure, at the **maximum speed of 85 MHz** allowing to be interfaced to the fastest cameras.

Support of the Base configuration

CAMERA COMPATIBILITY	Monochrome or Bayer			Color RGB
	single-tap	dual-tap	quad-tap	single-tap
Tap configuration	Base_1T8, Base_1T10, Base_1T12, Base_1T14, Base_1T16	Base_2T8, Base_2T10, Base_2T12, Base_2T14B2, Base_2T16B2	Base_4T8B2	Base_1T24, Base_1T24B3, Base_1T30B2, Base_1T36B2, Base_1T36B3, Base_1T42B2, Base_1T42B3, Base_1T48B2, Base_1T48B3
Camera Link configuration	Base	1 tap x (8-10-12-14-16 bits)	2 taps x (8-10-12 bits)	-
	Extended Base*	-	2 taps x (14-16 bits)	4 taps x (8 bits)
				1 tap x (24 bits)
				1 tap x (24-30-36-42-48 bits)

*Multiplex tap

9 various I/O lines available on an external HD26 connector and on an internal 26-pin header connector

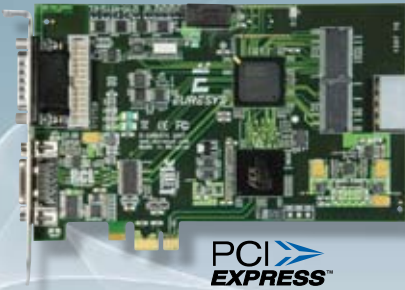
I/O electrical style

- 2 isolated multi-mode bidirectional I/O and associated isolated 5V power supply
 - Input: isolated TTL, isolated 12V
 - Output: isolated TTL, isolated open collector, isolated open emitter
- 2 non-isolated universal differential inputs (LVDS and more)
- 1 isolated contact output
- 4 non-isolated bidirectional TTL I/O
- 5V and 12V power supplies

I/O electrical style and function

- TTL trigger or page trigger input
- LVDS trigger or page trigger input
- Opto-isolated trigger or page trigger input
- TTL strobe output
- Opto-isolated strobe output
- Fast opto-isolated strobe output
- TTL line trigger or encoder input
- Opto-isolated line trigger or encoder input





GRABLINK Express™

Cutting-edge PCI Express Camera Link acquisition

- Base Camera Link 1.2 configuration** -24-bit at 85 MHz-
-Power over Camera Link compliant -PoCL-
- Full support of AREA-SCAN cameras** -Asynchronous reset and exposure control-
- Simple and reliable LINE-SCAN acquisition** -ADR Technology™-
- 32-MB on-board memory**
- Form factors: PCI Express Full-height, half-length, x1**

The **Grablink Express** is at the cutting-edge of the Camera Link technology through the compliance with the new **standard 1.2 including PoCL** - Power over Camera Link-. It allows a single Camera Link cable to supply power to the camera, on top of transferring high-speed images and controlling the camera. The Grablink Express PoCL frame grabber interfaces the **smallest and fastest cameras** on the market while still being **safely compatible** with cables and cameras from the previous Camera Link standards.

Support of Camera Link 1.2 Base configuration –including PoCL–

The Grablink Express supports the same type of cameras as the Grablink Avenue -see the chart on page 6-.



The **Power over Camera Link standard** specifies how to supply power to the camera through the Camera Link connector without losing backward compatibility with the previous Camera Link standard.

- Conventional and PoCL cameras and cables supported
- Over-Current Protection and Over-Voltage Protection circuits
- “SafePower” feature

9 various external and internal I/O lines identical to the Grablink Avenue I/O lines

*Patent pending



GRABLINK Expert 2™

High-performance Camera Link acquisition

- Dual Base or Medium configurations** -48-bit at 60 MHz-
- 16-MB on-board memory**
- Form factors: Conventional PCI 64-bit 66 MHz bus**
- Compact PCI 6U/4HP, 64-bit 66 MHz bus**

The **Grablink Expert 2** is a Camera Link frame grabber for **demanding industrial applications**.

Support of dual Base or Medium configurations

CAMERA COMPATIBILITY		Monochrome or Bayer			Color RGB	
		single-tap	dual-tap	quad-tap	single-tap	dual-tap
Tap configuration		Base_1T8, Base_1T10, Base_1T12, Base_1T14, Base_1T16	Base_2T8, Base_2T10, Base_2T12, Medium_2T14, Medium_2T16	Medium_4T8, Medium_4T10, Medium_4T12	Base_1T24, Medium_1T30, Medium_1T36, Medium_1T42, Medium_1T48	Medium_2T24
Camera Link configuration	Base	1 tap x (8-10-12-14-16 bits)	2 taps x (8-10-12 bits)	-	1 tap x (24 bits)	-
	Medium	-	2 taps x (14-16 bits)	4 taps x (8-10-12 bits)	1 tap x (30-36-42-48 bits)	2 tap x (24 bits)

Multiple Windows Of Interest [WOI] support

With some **specific CMOS cameras**, the Grablink Expert 2 supports their possible feature of acquiring up to **16 WOI in the image**, with **overlapping** of the windows.

26 I/O lines



The **Grablink Expert 2** is delivered with an auxiliary I/O board implementing the trigger and strobe facilities. On the **Grablink Expert 2 cPCI**, the two I/O connectors are located directly on the front panel.

I/O electrical style

- 4 isolated multi-mode bidirectional I/Os and associated isolated 5V power supply
 - Input: isolated TTL, isolated 12V
 - Output: isolated TTL, isolated open collector, isolated open emitter
- 3 non-isolated TTL inputs and 3 similar outputs
- 16 non-isolated bidirectional CMOS I/Os
- 5V and 12V power supplies

I/O electrical style and function

- TTL trigger or page trigger input
- Opto-isolated trigger or page trigger input
- TTL strobe output
- Opto-isolated strobe output
- TTL line trigger or encoder input
- Opto-isolated line trigger or encoder input





GRABLINK Quickpack ColorScan™

High-resolution Camera Link image acquisition and pre-processing for color LINE-SCAN inspection

Image pre-processing accelerated by the FPGA -up to 50MPixels/s-
 Scan-delay compensation Shading correction
 Look-up table transformation White balance

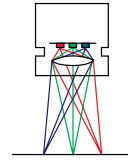
Base configuration 24-bit at up to 60 MHz
Output formats RGB 24- and 32-bit packed
 RGB 24-bit planar

128 MB on-board memory
Form factor: Conventional PCI 64-bit 66 MHz

The **Grablink Quickpack ColorScan** provides on its **FPGA** the **accelerated** image pre-processing functions necessary for color scanning applications. Color document scanning or PCB inspections are then considerably eased and accelerated providing on the fly enhanced images ready for further processing.

Image pre-processing functions accelerated by the FPGA

- **Scan-delay compensation** A trilinear color camera captures the luminance information at three light wavelength ranges from three distinct locations. A gap between these lines analyzed in red, green and blue is resulting due to the sensor geometry and the optical arrangement. The scan-delay compensation offered in the Grablink Quickpack ColorScan gathers the color information coming from three different locations in order to **reconstruct consistent RGB information**.
- **On the fly shading correction on the three color components** After the calibration phase, the six profiles are compiled into the frame grabber hardware to correct the distortions. This correction is handled applying a **multiplicative -gain-** and an **additive -offset-** correction to each pixel issued in the scanned signal. This processing drastically improves the quality of the acquired images facilitating the application processing.
- **Three 8-bit x 8-bit Look-up Table Transformer for the R the G and the B components** They include the following setup methods: exhaustive definition of the transformation law, parametric shaping of the transformation law through a few intuitive controls, white balance by RGB gain correction implemented as special transformation laws.
- **White balance correcting for RGB channel imbalance** This imbalance can be due to differences in sensitivity of sensors, to the illumination system and to the optical filter. After calibration, a **correcting gain** is applied to each color channel to compensate for unbalanced R, G and B components.



Raw acquired image



Scan-delay compensated



Scan-delay compensated and shading corrected image



Scan-delay compensated, shading corrected and white balanced image

Image acquisition and transfer

• Support of Base configuration for RGB LINE-SCAN camera

Two kinds of RGB imagers are supported: trilinear and 3-CCD. Only RGB single-tap with **Base_1T24** tap configuration is supported.

• Downweb resampling feature for shutterless cameras

Most high-resolution color line-scan cameras have no electronic shutter capability. Consequently, they have to be operated at a constant cycling rate in order to maintain a constant sensitivity. The Grablink Quickpack ColorScan implements a unique downweb resampling feature yielding a **defined aspect ratio irrespective of web speed variations**. A built-in rate converter accommodates an off-the-shelf motion encoder to control the line acquisition process, enabling **any programmable aspect ratio**, including perfect square pixels.

2 I/O lines available externally on a DB-9 connector

I/O electrical style

- 2 isolated multi-mode bidirectional I/Os and associated isolated 5V power supply
 - Input: isolated TTL, isolated 12V
 - Output: isolated TTL, isolated open collector, isolated open emitter
- 5V and 12V power supplies

I/O electrical style and function

- TTL trigger or page trigger input
- Opto-isolated trigger or page trigger input
- TTL strobe output
- Opto-isolated strobe output
- TTL line trigger or encoder input
- Opto-isolated line trigger or encoder input





GRABLINK Quickpack CFA™ boards

Camera Link image acquisition and pre-processing for color AREA-SCAN inspection

Image pre-processing accelerated by the FPGA on 8-bit, 10-bit or 12-bit input images -up to 80MPixels/s-

Bayer Pattern decoder
Luminance blender

White balance operator
Four LUT operators

**Base configuration 24-bit at up to 85 MHz
128 MB on-board memory**

The **Grablink Quickpack CFA** -Color Filter Array- offers a set of dedicated on-board preprocessing functions to speed up image processing for applications such as PCB, food or pharmaceutical inspection without loading the host CPU.

Image pre-processing functions accelerated by the FPGA

All operators are compatible with **8-, 10- and 12-bit input images.**

- **A Bayer Pattern decoder** computes the R,G and B components of the image
- **An automatic white balance operator**
 - The white balance parameters can be specified by the user or computed automatically from the image.
 - They can be computed continuously (on each image) or once only (under user control).
 - Moreover, they can be computed from automatically selected white pixels in the image, or from a user-specified region of interest.
- **A luminance blender** computes the Y component of the image
- **Four 16-bit x 16-bit LUT operators** on R, G, B and Y channels

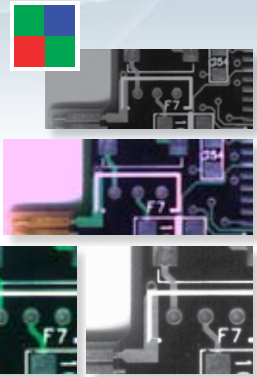


Image acquisition and transfer

Support of Base configuration for AREA-SCAN single or dual-tap cameras

- Bayer pattern color

- Also compatible with monochrome and RGB cameras

As a Base Camera Link configuration board, the Grablink Quickpack CFA supports the same type of cameras as the Grablink Avenue -see the chart on page 6-

9 various I/O lines available on external and internal connectors, similarly to the Grablink Avenue -page 6-

Output format

- 8-, 10-, 12- and 16-bit components (R, G, B and Y)

- A wide range of formats is available in the following classes:

- monochrome
- Bayer CFA
- three packed R G B components
- three planar R G B components
- four packed R G B a components
- four packed R G B Y components
- three packed R G B components + Y component
- three planar R G B components + Y component



Raw image



Bayer pattern decoder



White balance



Luminance blender



GRABLINK Quickpack CFA™

Form factor: Conventional PCI **64-bit, 66 MHz, 3V/5V signaling**
Image Resolution Up to 4096 by 4096



GRABLINK Quickpack CFA PCIe™

NEW

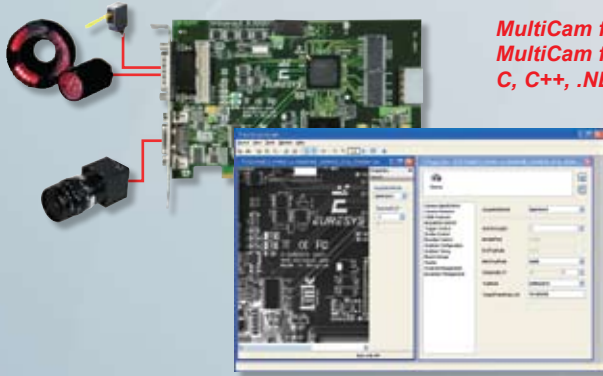
PoCL Safe Power compliant -see on page 7-

Form factor: PCI Express **Full-height, half-length, x4**
Image Resolution Up to 7616 x 4096

Trigger decimation: it controls the acquisition rate from an electrical signal by setting a programmable decimation factor.

Software support

MultiCam™ Drivers



*MultiCam for Microsoft Windows 2000®, XP®, Server 2003® and Vista®
MultiCam for Linux Suse Linux Enterprise Server 10
C, C++, .NET classes and ActiveX controls*

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 his **CAM files**.

► An up-to-date list is available on the *Interfacing Cameras* page of the Euresys web site.

MultiCam™ IDEs

LANGUAGE	Using ...	OS	Environment
C++	C API	Windows®	MS Visual Studio®
			Borland C++ Builder®
	Linux	gcc	
Pascal	DirectShow filters	Windows®	MS Visual Studio®
	ActiveX controls	Windows®	Borland Delphi®
	Pascal API	Windows®	Borland Delphi®
Visual Basic	ActiveX controls	Windows®	MS Visual Studio®
Visual Basic .NET	.NET objects	Windows®	MS Visual Studio®
C#	.NET objects	Windows®	MS Visual Studio®

Ordering Information

ORDER CODE

DESIGNATION

1191	GRABLINK Value
1194	GRABLINK Value cPCI
1198	GRABLINK Avenue
1621	GRABLINK Express

ORDER CODE

DESIGNATION

1197	GRABLINK Expert 2
1196	GRABLINK Expert 2 cPCI
1501	GRABLINK Quickpack ColorScan
1503	GRABLINK Quickpack CFA
6009	GRABLINK Quickpack CFA PCIe

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