# ADLINK Solutions for Machine Vision



**micromax technology**

## Why ADLINK?

- Full product line support, including analog, GigE Vision, IEEE 1394b, Camera Link, HDMI, 3G-SDI and CoaXPress
- Compatible with most popular cameras and software
- Carefully selected embedded components ensure long term availability
- Highly integrated with ADLINK I/O cards and embedded computing platforms

## Vision Interface

| | CoaxPress | 3G-SDI | HDMI | GigE Vision | IEEE 1394b | Camera Link | Analog |
|---|---|---|---|---|---|---|---|
| Max. Cable length (Meter) | Up to 100 | 100 | 5 | 100 | 4.5 | Up to 15M (Depending on the Bandwidth) | 100 |
| Bandwidth (Mbps per Channel) | 6500-25000 | 3000 | 216-2880 | 1000 | 800 | 2400-4800 | 216 |
| Host CPU Loading | - | - | - | >5% | <5% | - | - |
| Realtime Signaling | v | v | - | - | - | v | v |
| Power over cable | 13 (PoCXP) | - | - | 13 (PoE only) | 45 | 45 (PoCL) | - |
| Plug & Play * | v | v | v | v | v | - | v |
| Real time trigger | v | - | - | - | - | v | - |
| Standards | CoaXPress standard | SMPTE | DVI 1.0 | AIA GigE Vision | Common IEEE 1394 Trade Association DCAM Standard | AIA Camera Link | - |

Note: Driver installation is required for frame grabbers or cameras.

# ADLINK Machine Vision Software

ADLINK's powerful application tools, ViewCreatorPro™ and CamCreator™, provide simple and effective setup, configuration, testing, and debugging for vision systems. These utilities assist developers in evaluating initial test functions with ADLINK frame grabbers. Both ViewCreatorPro™ and CamCreator™ support 32/64-bit Windows® 8/7/XP operating systems. In addition, CamCreator™ provides continuous grab, pixel values, zoom in/out and console functionality to expedite a Camera Link installation.

## Image Acquisition Tools for ADLINK Frame Grabbers

### ■ Easy image source access
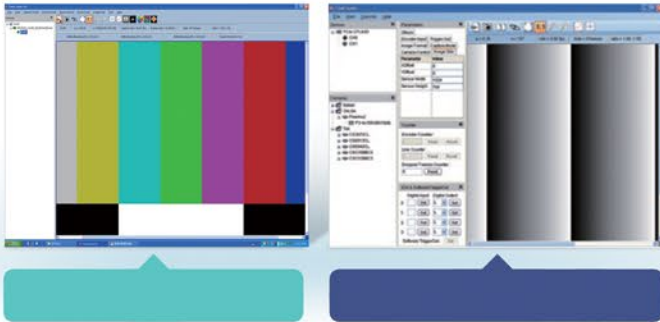
### Features
- Display, open and save image files from various cameras
- A simple tool for trouble shooting or configuration test
- Direct access of general purpose I/Os
- Creation and modification of camera files (CamCreator™ only)
- Instantaneous modification of camera parameters (CamCreator™ only)

## Software Selection Guide

| Products | Page | OS Information | | Software Compatibility | Software Recommendations | |
|---|---|---|---|---|---|---|
| | | Windows® Note(1) | Linux® Note(2) | LabVIEW™ Note(3) | ViewCreatorPro™ | CamCreator™ |
| PCIe-GIE64+ | 3-10 | v | | | | |
| PCIe-GIE62+ | 3-10 | v | | | | |
| PCIe-FIW64 | 3-11 | v | | | | |
| PCIe-FIW62 | 3-11 | v | | | | |
| PCIe-CPL64 | 3-12 | v | | | | v |
| PCIe-HDV62 | 3-9 | v | | v | v | |
| PCIe-HDV62A | 3-9 | v | v | v | v | |
| PCIe-RTV24/PCI-RTV24 | 3-17 | v | v | v | v | v |
| PCIe-2602 | 3-8 | v | | | v | |

Note:

(1) Windows Support for Windows® 8/7/XP x64/x86

(2) Linux Support for Ubuntu 11.0 &12.04 and Fedora Core 3

(3) Compatible with LabVIEW™ 2009 and above

1 Smart Cameras

2 Embedded Vision Systems

3 Frame Grabbers

4 Industrial Cameras

5 Image Analysis Tools

6 Distributed Motion Control

7 Centralized Motion Control
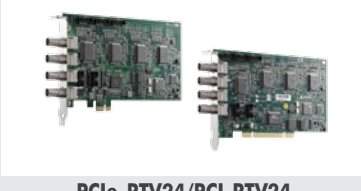
8 Intelligent Computing Platforms

# Frame Grabber Selection Guide

| Signal Type | Digital | | |
|---|---|---|---|
| **Model No.** | **PCIe-2602** | **PCIe-GIE64+** | **PCIe-GIE62+** |
| Standard | SDI | Power over Ethernet | Power over Ethernet |
| Configuration | SDI | Gigabit Ethernet | Gigabit Ethernet |
| Connector Interface | BNC x 2 | RJ45 x 4 | RJ45 x 2 |
| Resolution | 1920 x 1080p | depends on camera specification | depends on camera specification |
| Interface Bus | PCIe x4 | PCIe x4 | PCIe x4 |
| Max. Video Input | 2 | 4 | 2 |
| Max. Frame Rate | 60 | depends on camera specification | depends on camera specification |
| Audio Input | SDI embedded | – | – |
| TTL I/O | √ | – | √ |
| Area Scan Camera | √ | √ | √ |
| Line Scan Camera | – | √ | √ |
| Monochrome Camera | √ | √ | √ |
| Color Camera | √ | √ | √ |
| Interlaced Scan | √ | √ | √ |
| Progressive Scan | √ | √ | √ |
| Camera Tap | – | – | – |
| Pixel Depth | 8, 10, 12-bit | depends on camera specification | depends on camera specification |
| Max. Clock Frequency | – | – | – |
| On-board memory | – | – | – |
| Page No. | 3-8 | 3-10 | 3-10 |

| Signal Type | Digital | | |
|---|---|---|---|
| **Model No.** | **PCIe-HDV62A/PXIe-HDV62A** | **PCIe-CPL64** | **PCIe-FIW64/PCIe-FIW62** |
| Standard | HDMI | PoCL (Power over Camera Link) | IEEE 1394b |
| Configuration | Full HD | base, medium | - |
| Connector Interface | DVI-I | MDR26 | IEEE 1394b |
| Resolution | 1920 x 1080p | depends on camera specification | depends on camera specification |
| Interface Bus | PCIe x 4 | PCIe x4 | PCIe x4 / PCIe x1 |
| Max. Video Input | 1 | 2 | 4 / 2 |
| Max. Frame Rate | 60 | depends on camera specification | depends on camera specification |
| Audio Input | √ | – | – |
| TTL I/O | √ | √ | √ (FIW64) |
| Area Scan Camera | √ | √ | √ |
| Line Scan Camera | - | √ | - |
| Monochrome Camera | √ | √ | √ |
| Color Camera | √ | √ | √ |
| Interlaced Scan | √ | √ | √ |
| Progressive Scan | √ | √ | √ |
| Camera Tap | – | 1-tap, 2-tap, 3-tap, 4-tap | - |
| Pixel Depth | 8-bit, 10-bit | 8-bit, 10-bit | depends on camera specification (FIW64) 8 to 10-bit (FIW62) |
| Max. Clock Frequency | – | 85 MHz | - |
| On-board memory | 512 MB | 128 MB | - |
| Page No. | 3-9 | 3-12 | 3-11 |

1 Smart Cameras

2 Embedded Vision Systems

3 Frame Grabbers

4 Industrial Cameras

5 Image Analysis Tools

6 Distributed Motion Control

7 Centralized Motion Control

8 Intelligent Computing Platforms

| Signal Type | Digital | | | |
|---|---|---|---|---|
| |  |  |  |  |
| Model No. | Grablink Base | Grablink DualBase | Grablink Full | Grablink Full XR |
| Standard | PoCL (Power over Camera Link) | PoCL (Power over Camera Link) | Camera Link | Camera Link |
| Configuration | base | Dual Base | Base, Medium, Full | Base, Medium, Full |
| Connector Interface | HDR26 x 1 | HDR26 x 2 | HDR26 x 2 | HDR26 x 2 |
| Resolution | depends on camera specification | depends on camera specification | depends on camera specification | depends on camera specification |
| Interface Bus | PCIe x1 | PCIe x 4 | PCIe x 4 | PCIe x 4 |
| Max. Video Input | 1 | 2 | 1 | 1 |
| Max. Frame Rate | depends on camera specification | depends on camera specification | depends on camera specification | depends on camera specification |
| TTL I/O | √ | √ | √ | √ |
| Area Scan Camera | √ | √ | √ | √ |
| Line Scan Camera | √ | √ | √ | √ |
| Monochrome Camera | √ | √ | √ | √ |
| Color Camera | √ (Bayer, RGB) | √ (Bayer, RGB) | √ (Bayer, RGB) | √ (Bayer, RGB) |
| Interlaced Scan | - | - | - | - |
| Progressive Scan | ü | √ | √ | √ |
| Camera Tap | 3-tap | 6-Tap | 10-Tap | 10-Tap |
| Pixel Depth | 8-bit, 10-bit or 12-bit | 8-bit, 10-bit or 12-bit | 8-bit, 10-bit | 8-bit, 10-bit |
| Max. Clock Frequency | 85 MHz | 85 MHz | 85 MHz | 85 MHz |
| On-board memory | 64 MB | 128 MB | 128 MB | 128 MB |
| Page No. | 3-13 | 3-14 | 3-15 | 3-16 |

| Signal Type | Digital | Analog | |
|---|---|---|---|
| |  |  |  |
| Model No. | COAXLINK Series | PCIe-RTV24/PCI-RTV24 | Picolo Series |
| Standard | CoaXPress | Color: PAL/NTSC Monochrome: CCIR/EIA (RS-170) | Color (PAL/NTSC) Monochrome (CCIR/EIA (RS-170) |
| Configuration | up to 4 | - | - |
| Connector Interface | DIN 1.0/2.3 | BNC x 4 | Picolo: BNC, DB9, S-video Picolo Pro2: BNC x 4 |
| Resolution | depends on camera specification | 640 x 480 (NTSC/RS170), 768 x 576 (PAL/CCIR) | 640 x 480 (NTSC/RS170), 768 x 576 (PAL/CCIR) |
| Interface Bus | PCIe x4 (2.0 and above) | PCIe-RTV24: PCIe x1 PCI-RTV24: PCI | 32-bit, 33 MHz PCI bus |
| Max. Video Input | up to 4 | 4 to 16* | Picolo: 1 to 3 Picolo Pro2: 4 |
| Max. Frame Rate | depends on camera specification | 120 fps | 30 fps |
| TTL I/O | √ | √ | √ |
| Area Scan Camera | √ | √ | √ |
| Line Scan Camera | √ | - | - |
| Monochrome Camera | √ | √ | √ |
| Color Camera | √ | √ | √ |
| Interlaced Scan | - | √ | √ |
| Progressive Scan | √ | - | - |
| Camera Tap | - | 1-tap (PCIe-RTV24) | 1-tap |
| Pixel Depth | depends on camera specification | 8-bit | 8-bit |
| Max. Clock Frequency | - | - | - |
| On-board memory | √ | - | - |
| Page No. | 3-7 | 3-17 | 3-18 |

# Ultimate in Performance with CoaXPress Frame Grabbers

## Overview

CoaXPress (CXP) is an asymmetric high speed serial over coaxial cable standard for the transmission of video and still images. The most common application is interface camera to computer interface via frame grabber, on applications such as Machine vision performing automated acquisition and analysis of images. When connected to a CoaXPress camera, a high speed downlink of up to 6.25Gb/s per cable for video, images and data is enabled, plus a lower speed 20Mb/s uplink for communications and control requiring no additional external power supply or cables, with cable lengths exceeding 100m may be achieved. CoaXPress combines the best features of each of these existing interfaces into a single solution:

- Data rates up to 6.25Gb/s over a single coax cable and up to 25Gb/s when using four cables.
- A single cable supports data transfer, camera control, trigger and power supply (up to 13W)
- Flexible, reliable and cost effective cable solution, through use of standard coax - e.g. RG59 and RG6.
- Precise triggering capability, low and fixed latency
- Plug-and-play capability detects camera to grabber system automatically
- Supports GenICam's standard protocol for higher level control

## Euresys COAXLINK™ Frame Grabber Series

Coaxlink is a series of four CoaXPress frame grabbers. They acquire images from the fastest and highest resolution cameras on the market. The Coaxlink cards uses standard coaxial cables and the latest DIN1.0/2.3 connectors featuring a robust push/pull latching system for reliable industrial application. The Coaxlink Quad G3, Coaxlink Quad, Coaxlink Duo and Coaxlink Mono target applications requiring high data rates, high frame rates, consistent real-time timings but also longer cable length, greater cable reliability and flexibility. Typical examples of applications for the Coaxlink frame grabbers are AOI, SPI and 3D SPI, printing inspection, Flat Panel Display or glass inspection.

## Acquire images from the fastest and highest resolution cameras

The Coaxlink cards benefit from the highest data acquisition rate in the industry. They are able to sustain up to 6.25 GBit/s over a single Coaxlink cable. This leads to an impressive data transfer rate of 25 Gbit/s with the 4 cable connections of Coaxlink Quad and Quad G3. The Coaxlink frame grabbers support multiple-camera applications. Coaxlink Quad and Coaxlink Quad G3 are designed to acquire images from up to four CoaXPress cameras. Two cameras can be connected to the Coaxlink Duo. Multiple Coaxlink cards can be used simultaneously in a single PC and all the cameras connected can be optionally synchronized.

1 Smart Cameras

2 Embedded Vision Systems

3 Frame Grabbers

4 Industrial Cameras

5 Image Analysis Tools

6 Distributed Motion Control

7 Centralized Motion Control

8 Intelligent Computing Platforms

## Use standard coaxial cables

Coaxial cabling allows for longer distances between the camera and the frame grabber. Moreover, these cables offer greater reliability and flexibility.
At full speed, a cable of up to 35 meters can be used and at half-speed, a distance of up to 100 meters can be achieved. This clearly reduces the need for repeaters. A single cable supports data transfer, camera control, trigger and power supply (up to 13W) simplifying the integration and decreasing the costs and the CoaXPress standard offers the real time triggering capabilities required by industrial machine vision applications. Moreover, the Coaxlink cards take advantage of the robust push/pull latching system of DIN 1.0/2.3 connectors for reliable industrial applications.

## Selection Guide

### COAXLINK Quad G3

Four CoaXPress connections : 25 Gbit/s I Four CXP-6 connections I Rich set of 20 digital IO lines I PCIe 3.0 (Gen 3) x4 bus: 3.9 GByte/s*

### COAXLINK Quad

Four CoaXPress connections : 25 Gbit/s I Four CXP-6 connections I Rich set of 20 digital IO lines I PCIe 2.0 (Gen 2) x4 bus: 2 GByte/s*

### COAXLINK Duo

Two CoaXPress connections : 12.5 Gbit/s I Two CXP-6 connections I Rich set of 20 digital IO lines I PCIe 2.0 (Gen 2) x4 bus: 2 GByte/s*

### COAXLINK Mono

One CoaXPress connection : 6.25 Gbit/s I One CXP-6 connection I Rich set of 10 digital IO lines I PCIe 2.0 (Gen 2) x4 bus: 2 GByte/s*

## NEW: Memento Event Logging Tool

Memento is an advanced development and debugging tool available with the Coaxlink driver. During operation, Memento records an accurate log of all the events related to the camera, the frame grabber and its driver as well as the application. It provides the developer with a precise timeline of time-stamped events, along with context information.
Memento provides valuable assistance during application development and debugging, as well as during machine operation.
Memento is non-intrusive and works with all Coaxlink cards in the PC.

# COAXLINK Series

## 1-CH/2-CH/4-CH PCI Express® CoaXPress Frame Grabbers

**EURESYS**

**NEW**

COAXLINK Duo    COAXLINK Quad

COAXLINK Mono    COAXLINK Quad G3

Grayscale Camera - Color Camera - PCI - PCI EXPRESS® - Analog

## Introduction

Coaxlink is a series of four CoaXPress frame grabbers. They acquire images from the fastest and highest resolution cameras on the market. The Coaxlink cards uses standard coaxial cables and the latest DIN1.0/2.3 connectors featuring a robust push/pull latching system for reliable industrial application. The Coaxlink Quad G3, Coaxlink Quad, Coaxlink Duo and Coaxlink Mono target applications requiring high data rates, high frame rates, consistent real-time timings but also longer cable length, greater cable reliability and flexibility. Typical examples of applications for the Coaxlink frame grabbers are AOI, SPI and 3D SPI, printing inspection, Flat Panel Display or glass inspection.

## Features

- High data rate, up to 6.25Gbps over single cable
- Single cable for data, trigger, control and power (up to 13W)
- Standard Coaxial cable. Flexible, cost effective and Long distance
- Support DIN 1.0/2.3, robust and reliable
- Support GenICam and MultiCam
- Provide Memento Logging System, easy to De-bug
- Rich DI/O and On-board LUT function

## Applications

- AOI
- Semiconductor inspection
- PCB, FPD and Printing inspection
- On-the-fly image acquisition
- High data rate image acquisition

## Software Support

- Win 7/8, 32/64 bit

## Ordering Information

■ **Coaxlink Quad G3**

PCIe 3.0 x4 , 4CH CoaXPress grabber

■ **Coaxlink Quad**

PCIe 2.0 x4, 4CH CoaXPress grabber

■ **Coaxlink Duo**

PCIe 2.0 x4, 2CH CoaXPress grabber

■ **Coaxlink Mono**

PCIe 2.0 x4, 1CH CoaXPress grabber

## Specifications

| | COAXLINK Quad G3 | COAXLINK Quad | COAXLINK Duo | COAXLINK Mono |
|---|---|---|---|---|
| ■ PCI bus | PCIe 3.0 x4 | PCIe 2.0 x4 | PCIe 2.0 x4 | PCIe 2.0 x4 |
| ■ Format | Full height, half length | Full height, half length | Full height, half length | Full height, half length |
| **Image acquisition standard** | CoaXPress | CoaXPress | CoaXPress | CoaXPress |
| ■ Number of cameras | Up to 4 | Up to 4 | Up to 2 | 1 |
| ■ Max. data transfer rate | 25 Gbit/s | 25 Gbit/s | 12.5 Gbit/s | 6.25 Gbit/s |
| ■ Connectors | 4 x CXP-6 connections | 4 x CXP-6 connections | 2 x CXP-6 connections | 1 x CXP-6 connections |
| **Camera support** | | | | |
| ■ Gray scale cameras | √ | | | |
| ■ Color cameras | RGB and Bayer | | | |
| ■ Area scan cameras | √ | | | |
| ■ Line scan cameras | √ | | | |
| **Effective delivery bandwidth** -sustained bandwidth- | 3,350 MB/s | 1,700 MB/s | 1,700 MB/s | 1,700 MB/s |
| **On-board memory** | 1 GByte | 1 GByte | 1 GByte | 512 MBytes |
| **IO lines** | 20 | | | 10 |
| ■ Connectors | 2 internal and 1 on the bracket | | | 1 internal and 1 on the bracket |
| ■ Isolated current-sense inputs for a wide voltage input range up to 30V -trigger and general purpose- | 8 | | | 4 |
| ■ Isolated contact output -strobe and general purpose- | 4 | | | 2 |
| ■ High-speed differential inputs -quadrature encoder and general purpose- | 4 | | | 2 |
| ■ High-speed -5V-compliant TTL inputs/ LVTTL outputs- 4 2 | 4 | | | 2 |
| ■ Power output | Non-isolated +12V | | | Non-isolated +12V |
| **APIs** | Genicam and MultiCam drivers | | | |

# PCIe-2602

## 2-CH 3G-SDI Video/Audio Capture Card

1 Smart Cameras

2 Embedded Vision Systems

3 Frame Grabbers

4 Industrial Cameras

5 Image Analysis Tools

6 Distributed Motion Control

7 Centralized Motion Control

8 Intelligent Computing Platforms

**ADLINK** TECHNOLOGY INC.

## Introduction

The PCIe-2602 3G-SDI video/audio capture card, based on the PCI Express x4 interface, provides unparalleled features, enabling acquisition of 2 channels 3G-SDI for low latency, and uncompressed video data signals up to 1920x1080P/60fps (frames per second), and high accuracy color format support 4:4:4. The PCIe-2602, featuring 3G signal capture ability and support for highly accurate color formatting, is ideal for frame grab function in a wide variety of applications, including medical imaging and intelligent video surveillance or analytics.

Thanks to 3G-SDI signal capability, ADLINK's PCIe-2602 supports high accuracy color format, such as 12 bit 4:4:4 1080i/60fps or 10 bit 4:2:2 1080P/60fps, and when combined with a suitable 75Ω coaxial cable, 3G-SDI signals can be transmitted over 100 m, all with no need for changes to existing cabling, representing significant savings in construction costs.

The included ViewCreator Pro™ utility enables setup, configuration, testing, and system debugging without requiring any software programming. As well, ADLINK's drivers ate compatible with Microsoft DirectShow, reducing engineering efforts and accelerating time to market.

**1080p** Full HD | **3G-SDI** | **PCI EXPRESS®** | **Digital** | **Audio**

## Features

- Support for 2-CH 3G-SDI video signal, up to 1920 x 1080P/60fps video stream
- Low latency, uncompressed video streaming
- High accuracy color format support, 12 bit 4:4:4 1080i/60fps or 10 bit 4:2:2 1080P/60fps
- Cabling distances up to 100m (w/ compatible 75Ω coaxial cable)
- Directshow support
- RS-485 and digital I/O provided
- PCI Express x4 compliant signal
- Connection status LED

## Applications

- Medical imaging
- Military imaging
- Video analytics or IVS(Intelligent Video Surveillance)

## Software Support

■ OS Information
- Windows® 7/XP

■ Software Compatibility
- Microsoft® DirectX
- Visual C++, C#, VB. Net, C++ Builder

## Ordering Information

■ **PCIe-2602**
   2-CH 3G-SDI Video/Audio capture card

## Specifications

| | | |
|---|---|---|
| ■ Form Factor | PCI Express x4 | |
| ■ Connectors | BNC x2, D-SUB | |
| ■ Video Input | 8/10-bit 4:4:4 | 720p@24 fps, 720p@25 fps, 720p@30 fps, 720p@50 fps, 720p@60 fps 1080i@50 fps, 1080i@60 fps 1080p@24 fps, 1080p@25 fps, 1080p@30 fps |
| | 12-bit 4:4:4 | 1080i@50 fps, 1080i@60 fps 1080p@24 fps, 1080p@25 fps, 1080p@30 fps |
| | 8/10-bit 4:2:2 | 720p@24 fps, 720p@25 fps, 720p@30 fps, 720p@50 fps, 720p@60 fps 1080i@50 fps, 1080i@60 fps, 1080p@24 fps, 1080p@25 fps, 1080p@30 fps, 1080p@50 fps, 1080p@60 fps |
| | 12-bit 4:2:2 | 1080i@50 fps, 1080i@60 fps, 1080p@24 fps, 1080p@25 fps, 1080p@30 fps |
| | 8-bit 4:2:2 | 525i@30 fps, 625i@25 fps |
| ■ Audio Input | 2 channel embedded | |
| ■ Digital I/O | 4-CH digital input; 4-CH digital output | |
| ■ COM Ports | 2 RS-485 | |
| ■ Storage Environment | Temperature: -20˚C to +80˚C (-4˚F to 176˚F) | |
| | Humidity: 0 to 95% RHNC | |
| ■ Operating Environment | Temperature: 0˚C to +60˚C (32˚F to 140˚F) | |
| | Humidity: 5% to 90% RHNC | |
| ■ Power Requirements | +12 V max @ 1.2 A, +3.3 V max @ 1.5 A | |
| ■ Dimensions | 149 x 98.4 mm (5.96" x 3.93") (W x L) | |

# PCIe-HDV62A/PXIe-HDV62A

## One Channel PCI Express®/PXI Express® HDMI Video & Audio Capture Cards

**ADLINK** TECHNOLOGY INC.

PCIe-HDV62A

PXIe-HDV62A

Grayscale Camera | Color Camera | PCI EXPRESS® | HDMI | Digital | Analog | Audio
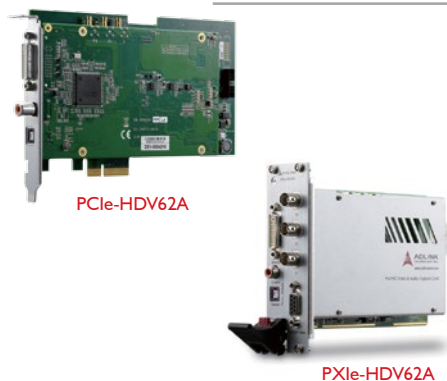
## Introduction

ADLINK's PCIe-HDV62A/PXIe-HDV62A series high definition video and audio capture cards enable single-card acquisition of full analog/digital video and digital audio signals. Featuring uncompressed full HD up to 1080p at 60 fps and 10-bit high-resolution ADC and HDCP support, the PCIe-HDV62A/PXIe-HDV62A series deliver serious benefits and reduced TCO for applications requiring simultaneous capture from both video and audio sources, such as multimedia device testing and medical imaging.

What's more, the PCIe-HDV62A/PXIe-HDV62A not only deliver uncompressed high-definition video data from DVI or HDMI, but also provide an analog video decoder comprehensively supporting RGB, CVBS, S-video and YPbPr, with an integrated audio decoder for HDMI and S/PDIF capture, providing a highly integrated solution.

**HDV62A I/O Bracket (Optional)**
- ◆ D-SUB9 female for CVBS and S-Video
- ◆ BNC x3 for YPbPr

## Features

- Uncompressed 1920 x 1080p, 60 fps video stream
- Support for CVBS, S-video, RGB and YPbPr video input
- Support for HDMI/DVI video and HDMI, S/PDIF audio inputs
- Support for 24-bit RGB or YUV 4:4:4
- Support for HDCP (PCIe-HDV62A/PXIe-HDV62A only)
- 32/64-bit Direct SDK support

## Applications

- Medical imaging
- Multimedia video/audio testing

## Software Support

■ **OS Information**
- Windows® 8/7/XP

■ **Software Compatibility**
- Microsoft® DirectX
- LabVIEW™
- C#/.NET/VC++/VB/C++ Builder/Delphi

■ **Software Recommendations**
- ADLINK ViewCreatorPro™

## Ordering Information

■ **PCIe-HDV62**
  1-CH PCI Express® HDMI video capture card

■ **PCIe-HDV62A**
  1-CH PCI Express® HDMI video / audio capture card

■ **PXIe-HDV62A**
  1-CH PXI Express® HDMI video / audio capture card

## Optional Accessories

■ **HDV62A I/O bracket**
  YPbPr, S-video and CVBS I/O

■ **DVI – DVI and VGA cable**
  DVI-I to VGA and DVI-D cable

■ **HDV62A DB9F to S-Video & RCA**
  D-sub to S-video and RCA cable

■ **HDV62 DB9F - RCA x 3**
  D-sub to YPbPr cable

## Specifications

| | |
|---|---|
| ■ Form Factor | PCIe-HDV62/PCIe-HDV62A: PCI Express® x4 compliant |
| | PXIe-HDV62A: PXI Express® specification Rev. 1.0 compliant |
| ■ Video Input | Digital: DVI 1.0, HDMI 1.3 |
| | Analog: PCIe-HDV62: YPbPr and RGB |
| | PCIe-HDV62A/PXIe-HDV62A: RGB, YPbPr, CVBS, S-video |
| ■ Video Input Format | HD: 720p@50 fps, 720p@60 fps |
| | 1080i@25 fps, 1080i@30 fps |
| | 1080p@25 fps, 1080p@30 fps |
| | 1080p@50 fps, 1080p@60 fps |
| | SD: 720 x 576@25 fps PAL, 720 x 480@30 fps NTSC |
| | (PCIe-HDV62A/PXIe-HDV62A only) |
| ■ Pixel Output Format | RGB: 32-bit RGB*, 30-bit RGB*, 24-bit RGB |
| | YUV: 4:4:4 or 4:2:2 |
| | Monochrome: 8-bit Y |
| ■ Audio Input | S/PDIF, HDMI (PCIe-HDV62A/PXIe-HDV62A only) |
| ■ Connectors | DVI: DVI-D, HDMI & RGB with sync input |
| | D-SUB on I/O Bracket : CVBS, S-Video (PCIe-HDV62A only) |
| | BNC on I/O Bracket: YPbPr (PCIe-HDV62A only) |
| | Toslink & RCA: S/PDIF (PCIe-HDV62A/PXIe-HDV62A only) |
| ■ Operating Environment | Temperature: 0 to 55°C (32°F to 131°F) |
| | Humidity: 5% to 90% RHNC |
| ■ Storage Environment | Temperature: 0 to 70°C (32°F to 158°F) |
| | Humidity: 0 to 95% RHNC |
| ■ Power Requirements | +12 V max @ 0.5 A, +3.3 V max @ 2 A |
| ■ Dimensions (not including connectors) | 174.62 x 111.15 mm (W x L) (6.81" x 4.33") |
| ■ Slot Requirement | 1 peripheral slot: PCIe-HDV62, PCIe-HDV62A |
| | 2 peripheral slots: PCIe-HDV62A with I/O bracket, PXIe-HDV62A |

# PCIe-GIE64+ / PCIe-GIE62+

## 4 / 2-CH PCI Express® Power over Ethernet Frame Grabbers

PCIe-GIE64+

PCIe-GIE62+

Grayscale Camera | Color Camera | PCI EXPRESS® | Digital | PnP

**ADLINK** TECHNOLOGY INC.
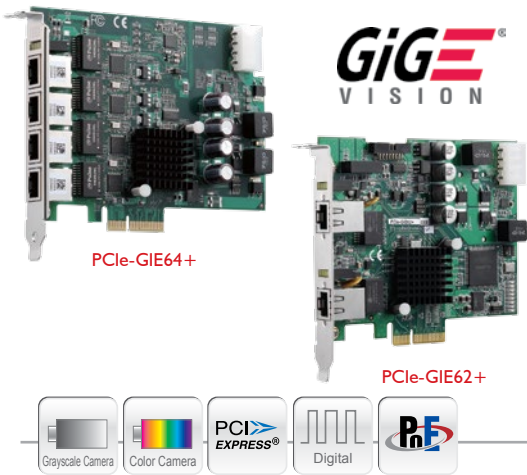
## Introduction

ADLINK's PCIe-GIE64+/PCIe-GIE62+ are PCI Express® x4 lane, PoE (Power Over Ethernet) frame grabbers supporting 4/2 independent Gigabit Ethernet ports for multiple GigE Vision device connections with data transfer rates up to 1000 Mb/s, as found with most GigE Vision cameras.
In addition, the PCIe-GIE64+ provides smart PoE APIs allowing remote switching of PoE status. With this feature, camera power consumption is easily monitored and controlled, controlling camera temperature and extending lifetime.

## PoE Technology

The PoE (Power over Ethernet) technology in the PCIe-GIE64+/PCIe-GIE62+ provides automatic detection for stable and reliable connection between PoE or non-PoE cameras and frame grabbers.

## Benefits of PoE

- Simplified installation
- Lowered maintenance
- Reduced total cost of ownership

## Features

- PCI Express® x4 compliant
- Support for 4 / 2 independent Gigabit Ethernet ports
- Support for smart PoE function, enabling easy power status programming (PCIe-GIE64+ only)
- LED indicating connectivity status
- Up to 20 W PoE power supply from PCIe bus (PCIe-GIE64+ only)
- Support for IEEE 1588, PTP technology (PCIe-GIE64+ only)
- Support for IEEE 802.3af for PoE (Power over Ethernet)
- Support for link aggregation/jumbo frames  (9 KByte)

## Applications

- Machine vision inspection systems
- Scientific research instrumentations
- Medical research instrumentations
- Intelligent transportation systems

## Software Support

- **OS Information**
  - Windows® 8/7/XP (Windows® 8 support available only on PCIe-GIE64+)

## Ordering Information

- **PCIe-GIE64+**
  4-CH PCI Express® power over Ethernet frame grabber

- **PCIe-GIE62+**
  2-CH PCI Express® power over Ethernet frame grabber with digital I/O and trigger I/O

- **PCIe-POE**
  2-CH PCI Express® power over Ethernet frame grabber without digital I/O and trigger I/O

## Specifications

| | |
|---|---|
| Form Factor | PCI Express® x4 |
| Ethernet Port | 4/2 fully-integrated Gigabit Ethernet Media Access Control (MAC) and physical layer (PHY) ports. |
| | Power over Ethernet, IEEE 802.3af compliant, supporting 0, 1, 2, 3, and 4, and providing up to 15.4 watts |
| | 9 kB jumbo frame support |
| Operating Environment | Temperature: 0˚C to +60˚C (32˚F to 140˚F) |
| | Humidity: 5% to 90% RHNC |
| Power Requirements | PCIe-GIE64+: +3.3 V max @ 2.5 A[1] |
| | PCIe-GIE62+: +12 V max @ 0.2 A, +3.3 V max @ 1.5 A[2] |
| Dimensions | PCIe-GIE64+: 145 mm x 101.26 mm (5.7" x 3.98") (W x L) |
| | PCIe-GIE62+: 129.5 mm x 101.26 mm (5.05" x 3.98") (W x L) |

Note: (1) Additional +12 V max @ 7 A for PoE camera (w/4-pin connetors)
(2) Additional +12 V max @ 3 A for PoE camera

# PCIe-FIW64/PCIe-FIW62

## 4-CH / 2-CH PCI Express® IEEE 1394b Frame Grabbers

ADLINK
TECHNOLOGY INC.



PCIe-FIW62

PCIe-FIW64

Grayscale Camera | RGB Camera | PCI EXPRESS® | 1394™ TRADE ASSOCIATION | Digital
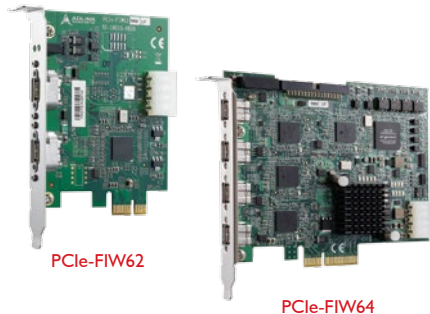
### Introduction

The PCIe-FIW64/PCIe-FIW62 are IEEE 1394b (FireWire 800) frame grabbers designed for high speed computer-based machine vision applications. The PCIe-FIW64/PCIe-FIW62 support up to four 1394b (FireWire 800) ports for multiple 1394b device connections with data transfer rates up to 3.2 Gb/s, as found with most IEEE 1394b cameras.

The PCIe-FIW64/PCIe-FIW62 provide four/two direct-connect IEEE 1394b connectors with a screw-lock mechanism. These screw-lock connectors provide a reliable connection between PCIe-FIW64/PCIe-FIW62 and up to four IEEE 1394b cameras.

A 4-pin ATX power connector on the PCIe-FIW64/PCIe-FIW62 support IEEE 1394b cameras that draw power directly from the frame grabbers. Each port has a green LED on the front panel that will illuminate when the PCIe-FIW64/PCIe-FIW62 are connected to a IEEE 1394b camera for convenient identification of channel connection status.

The PCIe-FIW64 provides four isolated digital inputs and outputs to connect to external devices such a position sensor. The PCIe-FIW64 also includes four isolated programmable trigger output pulses to manage trigger events such as activating a strobe light.

## Features

- Industrial screw lock connector
- Channel status LEDs
- Power supplied to the IEEE 1394b connectors

**FIW64**

- PCI Express® x4 compliant
- High-speed image transfer rates up to 3.2 Gbps
- Four isolated digital inputs/outputs
- Four isolated TTL level programmable trigger output pulses

**FIW62**

- PCI Express® x1 compliant
- High-speed image transfer rates up to 800 Mb/s

## Applications

- Machine vision inspection systems
- Automatic optical inspection machineries
- Scientific research instrumentations
- Medical research instrumentations

## Software Support

■ OS Information
  • Windows® 8/7/XP

## Ordering Information

■ **PCIe-FIW64**
  4-CH PCI Express® x4 IEEE 1394b frame grabber

■ **PCIe-FIW62**
  2-CH PCI Express® x1 IEEE 1394b frame grabber

## Accessories

**Cabling**

■ 1394b Cable
  4.5 M IEEE 1394b 9-pin cable with screw-lock connector

## Specifications

| | PCIe-FIW64 | PCIe-FIW62 |
|---|---|---|
| ■ Form Factor | PCI Express® x4 compliant | PCI Express® x1 compliant |
| ■ IEEE 1394b Port | Fully support provisions of IEEE P1394b-2002 Fully compliant with provisions of IEEE std 1394-1995 for a high performance serial bus and IEEE std 1394a- 2000 | |
| ■ Operating Environment | Temperature: 0°C to +55°C (32°F to 131°F) Humidity: 5% to 90% | |
| ■ Storage Environment | Temperature: -20°C to +85°C (-4°F to 185°F) Humidity: 0 to 95% RHNC | |
| ■ Digital and Trigger I/Os | Four isolated digital inputs/outputs Four isolated trigger inputs/outputs | - |
| ■ Power Requirements | +12 V max @ 0.2 A +3.3 V max @ 2.5 A | +3.3 V max @ 0.22 A Power provided to IEEE 1394 connection +12 V / per port, 1 A (over current protection) |
| ■ Isolated Voltage | 1000 V @ 60 seconds | - |
| ■ Dimensions | 129.5 mm x 111.15 mm (5.05" x 4.33") (W x L) | 78.6 mm x 111.15 mm (3.06" x 4.33") (W x L) |

# PCIe-CPL64

## 2-CH PCI Express® PoCL Frame Grabber

**ADLINK** TECHNOLOGY INC.

Grayscale Camera | RGB Camera | PCI EXPRESS® | CAMERA Link Camera Link | PoCL SafePower | Digital

## Introduction

The PCIe-CPL64 is a PoCL (Power over Camera Link®) frame grabber that is based on the PCI Express® x4 interface, and supports two-channel Camera Link "base" configurations, multi-tap area and line scan cameras. The PCIe-CPL64 frame grabber strikes a perfect balance between performance and cost. It is capable of simultaneously image acquisition from two completely independent Camera Link base configuration cameras, and supports image transfer rates up to 512 MB/s.

## PoCL Technology

The PoCL (Power over Camera Link®) standard allows the camera link cable to supply power to the camera through the Camera Link connector without losing backward compatibility with the previous Camera Link® standard, this solution is particularly suitable for a small camera.

## Benefits of PoCL

- Easy installation
- Reduce wiring (Single cable for digital I/F, and power)
- Reduce camera size

## Features

- ■ **PCI Express® x4 compliant**
- ■ **Supports 2-CH Camera Link® Base configuration**
- ■ **Acquisition pixel clock rates up to 85 MHz**
- ■ **PoCL (Power over Camera Link®) safe power compliant with auto detection**
- ■ **128 MB of 200 MHz DDR SDRAM for acquisition**
- ■ **4 TTL Digital Input/Output, and 2 trigger Input**
- ■ **Supports 64-bit memory addressing**
- ■ **Two serial communication ports**

## Applications

- ■ **PCB/FPD/Wafer/Solar Cell surface inspections**
- ■ **Medical research instrumentations**

## Software Support

- ■ OS Information
  - • Windows® 8/7/XP
- ■ Software Compatibility
  - • C#/.NET/VC++/VB/C++ Builder/Delphi
  - • Sample program included
- ■ Software Recommendations
  - • ADLINK CamCreator™

## Ordering Information

- ■ **PCIe-CPL64**
  2-CH PCI Express® x4 PoCL frame grabber

## Accessories

**Cabling**

- ■ PoCL Cable
  5 M, power over Camera Link cable
- ■ Camera Link Cable
  5 M, robot type

## Specifications

| | |
|---|---|
| ■ Form Factor | PCI Express® x4 compliant |
| ■ Video Input | Camera Link® LVDS deferential signals |
| | Dual Base Configuration: Using two MDR26 pins connectors |
| | Maximum camera link data rate: 85 MHz |
| | Supports PoCL and standard Camera Link interface and auto detect |
| ■ Camera Control | LVDS camera control: CC1 to CC4 control signal in two MDR26 pins connectors |
| ■ External Signal Input | External RS422 level ABZ phase deferential signal for encoder input |
| | 2 channels TTL level Line /Area trigger input |
| | 2 channels TTL level Line trigger start input |
| | 2 channels TTL level exposure output |
| | Line trigger bypass output (encoder mode only) |
| | 4 channels digital input; 4 channels digital output |
| ■ Power over Camera Link® (PoCL) | Power line output per channel : DC +12 V max @ 1 A |
| | Over-current Protection function, auto detect when non-PoCL cable or PoCL camera connected. |
| ■ Operating Environment | 0°C to +50°C (32°F to 122°F) |
| | Humidity: 5% to 90% RHNC |
| ■ Storage Environment | Temperature: 0°C to 70°C (32°F to 158°F) |
| | Humidity: 0 to 95% RHNC |
| ■ Power Requirements | +12 V max @ 0.5 A |
| | +3.3 V max @ 1.6 A |
| ■ Dimensions | 167.65 mm x 111.15 mm (6.53" x 4.33") (W x L) |

1 Smart Cameras

2 Embedded Vision Systems

3 Frame Grabbers

4 Industrial Cameras

5 Image Analysis Tools

6 Distributed Motion Control

7 Centralized Motion Control

8 Intelligent Computing Platforms

# Grablink Base

## Cost-effective Single Channel PoCL Frame Grabber

EURESYS
*Excellence in vision*

Grayscale Camera | RGB Camera | PCI EXPRESS® | CAMERA Link Camera Link | PoCL SafePower | Digital

## Features

- Base Camera Link® configuration cameras
- On-board processing
  - LUTs operators, Bayer CFA decoder, pixel formatting, and image reconstruction
- 64 MB on-board memory
- PCI Express x1
- MultiCam drivers for Microsoft Windows® and Linux (32- and 64-bit)

## Applications

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

## Software Support

- Available for Windows® 7 SP1/Vista SP2 (32-bit/64-bit)
- Available for Windows® XP SP2 (64-bit)/SP3 (32-bit)
- Available for Windows® server 2008 SP2 (32-bit/64-bit)
- Available for Windows® server 2008 R2 SP1 (64-bit)
- Available for Red Hat Enterprise Linux 5.2 (Kernel 2.6.18-92) (32-bit/64-bit)

## Ordering Information

- **Grablink Base**
  Cost-effective single-channel PoCL frame grabber

## Accessories

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

### Cabling

- **PoCL Cable**
  5 M, Power over Camera Link cable

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

## Introduction

The Grablink Base is a cost-effective full-featured frame grabber for one Camera Link® camera applications. It supports one Camera Link® Base configuration camera as well as featuring on-board processing and one rich set of I/O lines. The Grablink Base features a 1-lane PCI Express® bus.

## Flexible and Reliable Area-scan Acquisition Modes

◆ **Trigger**
When the part is in front of the camera, a trigger is generated and sent to the Grablink to start the acquisition. This external signal is generated by any type of external hardware device, such as a sensor, which is connected to one of the input lines of the Grablink boards. A "software" trigger signal may also be generated by the host application.

- **Trigger delay:** In order to accommodate different positions of the sensor, an optional programmable trigger delay may postpone the start of the acquisition for a given number microseconds.
- **Trigger decimation:** In order to decrease the acquisition speed, the Grablink may be instructed to skip, at a regular defined rate, some of the pulses sent by the external trigger.

## High-Performance Line-scan Acquisition Modes

(Please refer to page 1-10 for details.)

◆ **The Grablink acquisition boards feature several acquisition modes dedicated to line-scan cameras:**
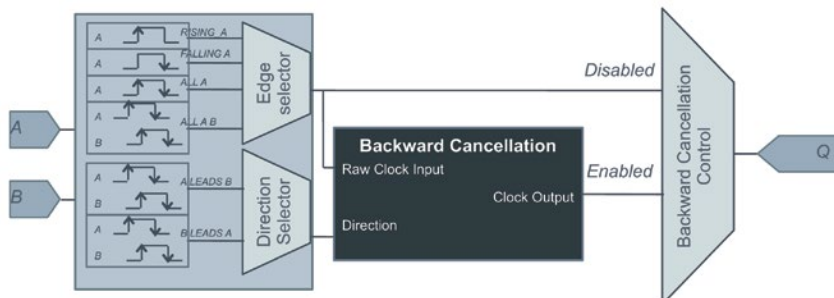- Continuous web scanning
- Successive object scanning

◆ **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 in 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 DualBase

## 2-CH PCI Express® PoCL Frame Grabber

EURESYS

### Introduction

The Grablink DualBase is a cost-effective full-featured frame grabber for two Camera Link cameras applications. It supports two Camera Link Base-configuration cameras as well as featuring on-board processing and two rich sets of I/O lines.

### Flexible and Reliable Area-scan Acquisition Modes

◆ **Trigger**

When the part is in front of the camera, a trigger is generated and sent to the Grablink to start the acquisition. This external signal is generated by any type of external hardware device, such as a sensor, which is connected to one of the input lines of the Grablink boards. A "software" trigger signal may also be generated by the host application.

- **Trigger delay:** In order to accommodate different positions of the sensor, an optional programmable trigger delay may postpone the start of the acquisition for a given number microseconds.
- **Trigger decimation:** In order to decrease the acquisition speed, the Grablink may be instructed to skip, at a regular defined rate, some of the pulses sent by the external trigger.

### High-Performance Line-scan Acquisition Modes

◆ **The Grablink acquisition boards feature several acquisition modes dedicated to line-scan cameras:**

- **Continuous web scanning** to inspect infinite, continuously moving surfaces without losing a single line.
- **Successive object scanning** to acquire the image of objects moving in front of the camera. The acquisition starts when each object enters the camera field of view, as signaled by an external trigger.

◆ **Trigger**

Typically, a trigger is used to start the acquisition of lines when the part to be inspected is in position. This external signal is generated by any type of external hardware device, such as a sensor, which is connected to one of the input lines of the Grablink boards. A "software" trigger signal may also be generated by the host application.

- Grablink supports start and end triggers. 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 with a known length)
  √ Continues until an end trigger is received (to acquire the image of objects with a variable length)
- Trigger delay: In order to accommodate different positions of the sensor, an optional programmable trigger delay is able to delay the start of the acquisition of a given number of lines.

### Quadrature Motion Encoder Supports

(Please refer to page 1-9 for details.)

Quadrature motion encoders use two signals (or phases) that the Grablink series can interpret to know in which direction (forward or backward) the part is moving.

- Optional direction selector
- Backward motion cancellation

### Features

- Two Base Camera Link® 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

### Applications

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

### Software Support

- Available for Windows® 7 SP1/Vista SP2 (32-bit/64-bit)
- Available for Windows® XP SP2 (64-bit)/SP3 (32-bit)
- Available for Windows® server 2008 SP2 (32-bit/64-bit)
- Available for Windows® server 2008 R2 SP1 (64-bit)
- Available for Red Hat Enterprise Linux 5.2 (Kernel 2.6.18-92) (32-bit/64-bit)

### Ordering Information

- **Grablink DualBase**
  2-CH PCI Express® PoCL frame grabber

### Accessories

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

**Cabling**

- PoCL Cable
  5 M, Power over Camera Link cable

- Camera Link Cable
  5 M, robot type

1 Smart Cameras

2 Embedded Vision Systems

3 Frame Grabbers

4 Industrial Cameras

5 Image Analysis Tools

6 Distributed Motion Control

7 Centralized Motion Control

8 Intelligent Computing Platforms

# Grablink Full

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

**EURESYS**

### 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 1-9 for details.)

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

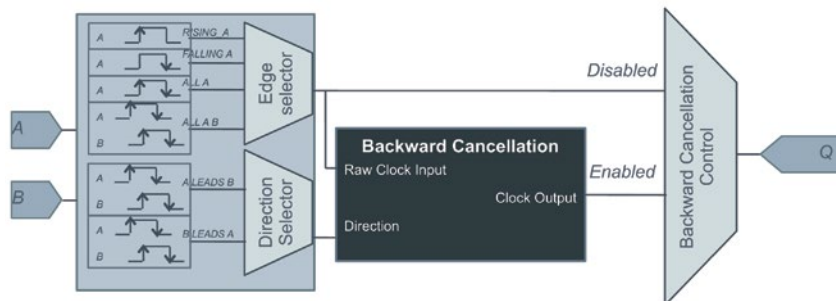### High-Performance Line-scan Acquisition Modes

(Please refer to page 1-10 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.
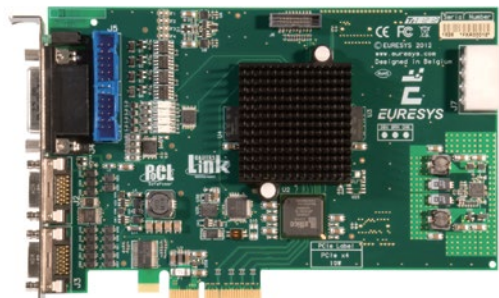
- ◆ With the **optional direction selector**, the user can define which direction is considered as the forward direction for the application, A to B or B to A. Optionally, the Grablink can be instructed to acquire lines only when the object is moving forward, or only when the object is moving backward.

- ◆ 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*

Grayscale Camera | RGB Camera | PCI EXPRESS® | CAMERA Link Camera Link | Digital

### 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® 7 SP1/Vista SP2 (32-bit/64-bit)
  - Available for Windows® XP SP2 (64-bit)/SP3 (32-bit)
  - Available for Windows® server 2008 SP2 (32-bit/64-bit)
  - Available for Windows® server 2008 R2 SP1 (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

# Grablink Full XR

## Full-Featured 80-bit, Full, Medium or Base Camera Link Frame Grabber



EURESYS™
Excellence in vision

Grayscale Camera — Color Camera — PCI EXPRESS® — CAMERA Link Camera Link — Digital

### Introduction

The Grablink Full XR (eXtended Reach) is a Camera Link frame grabber for single Camera Link applications featuring ECCO+. In most cases, ECCO+ allows Grablink Full XR users to double the maximum length of Camera Link cables, eliminating the need for a repeater. In addition, the Grablink Full XR supports 80-bit, Full, Medium and Base Camera Link configurations, is compliant with PoCL SafePower, and features a comprehensive set of robust I/O lines.

### ECCO+: Extended Camera Link Cable Operation

ECCO+ allows the Grablink Full XR to far exceed the Camera Link limit in terms of cable length and speed performance using standard Camera Link cables and standard Camera Link cameras. Depending on clock frequency and cable quality, which can drastically vary from one cable to another, ECCO+ allows the Grablink Full XR to work with cable lengths as much as twice those specified by the Camera Link standard as well as those acceptable by other boards, with a "conventional" implementation of the standard. Other ways to take advantage of ECCO+ include maintaining conventional cable length but achieve 100% higher speeds, or even simply using less costly cables. The increase in performance from ECCO+ is dependent on configuration of the standard used, and it is possible to achieve even more than a 100% performance improvement when using Base and Medium Camera Link. ECCO+ achieves impressive results in simply doubling effective cable lengths over those accepted as standard.

### Features

- Support for one 80-bit, Full, Medium or Base configuration camera
- Onboard processing- LUTs operators, Bayer CFA decoder, pixel formatting, and image reconstruction
- 128 MB on-board memory
- Effective delivery bandwidth: up to 850 MB/s*
- 10 digital I/O lines compatible with a wide range of sensors and encoders
- PCI Express x4, full-height, half-length

### Applications

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

### On-Board Pre-Processing

◆ 3 Look-up table (LUT) operators
  - Monochrome operation with selectable output bit depth: 8 bits, 10 bits, 12 bits or 16 bits
  - RGB and Bayer color operations with selectable output bit depth:
  - 3 x 8 bits, 3 x 10 bits, 3 x 12 bits or 3 x 16 bits

◆ Bayer CFA decoder computes the R, G and B components of the image

◆ Pixel formatting in the following formats: The monochrome video acquisition is compatible with CCIR and EIA (RS-170).
  - Monochrome formats: Y8, Y10, Y12, Y14 and Y16
  - Bayer CFA formats: BAYER8, BAYER10, BAYER12, BAYER14 and BAYER16
  - Three packed RGB components format: RGB24
  - Three planar RGB components formats: RGB24PL, RGB30PL, RGB36PL, RGB42PL and RGB48PL
  - Four packed RGB plus alpha components format: RGB32 and ARGB32

◆ Image reconstruction: tap re-ordering, H/V flipping

◆ High-performance DMA transfers into user allocated memory with 64-bit addressing capability with image cropping capability

### Software Support

■ Windows® Platform
- Available for Windows® 7 SP1/Vista SP2 (32-bit/64-bit)
- Available for Windows® XP SP2 (64-bit)/SP3 (32-bit)
- Available for Windows® server 2008 SP2 (32-bit/64-bit)
- Available for Windows® server 2008 R2 SP1 (64-bit)

### Ordering Information

■ **Grablink Full XR**
  Full-Featured 80-bit, full, medium or base Camera Link frame grabber

1 Smart Cameras

2 Embedded Vision Systems

3 Frame Grabbers

4 Industrial Cameras

5 Image Analysis Tools

6 Distributed Motion Control

7 Centralized Motion Control

8 Intelligent Computing Platforms

# PCIe-RTV24 / PCI-RTV24

## 4-CH PCI Express® / PCI Real-time Video Capture Cards for Standard Cameras

**ADLINK** TECHNOLOGY INC.

PCIe-RTV24

PCI-RTV24

Grayscale Camera | Color Camera | PCI EXPRESS® | Analog
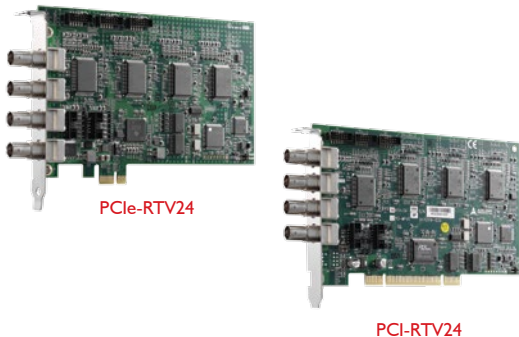
## Features

- **PCI Express® x1 compliant (PCIe-RTV24) , up to 30fps/channel**
- **Four color video digitizers operating in parallel**
- **Color (PAL / NTSC), monochrome (CCIR / EIA) camera supported**
- **Up to 16 channels extension**
- **On-board TTL I/O lines**
- **Built-in watchdog timer**
- **User-friendly ViewCreator utility**
- **Software trigger supported**

## Applications

- **PC-based surveillance systems**
- **Digital Video Recorder (DVR)**
- **Factory monitoring systems**
- **Machine vision inspection systems**
- **Scientific research instrumentations**
- **Medical research instrumentations**

## Software Support

- **OS Information**
  - Windows® 8/7/XP
  - Linux
- **Software Compatibility**
  - Microsoft® DirectX
  - C#/.NET/VC++/VB/C++ Builder/Delphi
  - Sample program included
- **Software Recommendations**
  - ADLINK ViewCreatorPro™

## Ordering Information

- **PCIe-RTV24**
  PCI Express® 4-CH real-time video capture card for standard cameras

- **PCI-RTV24**
  PCI 4-CH real-time video capture card for standard cameras

## Introduction

### General
The PCIe-RTV24/PCI-RTV24 acquisition board are designed without compromise for machine vision and video surveillance applications. They are the ideal devices for PC-based multiple-channel vision application.

The PCIe-RTV24 PCI Express® x1 lane frame grabber can capture simultaneously four analog video streams in real time. It accepts standard composite colors (PAL, NTSC) or monochrome video formats (CCIR, EIA).

The supported resolution is programmable and includes square-pixel (640 x 480 or 768 x 576) and broadcast resolution. Before captured images are transferred to the PC's memory, images can be scaled down using available selectable ratios.

Arbitrary cropping to regions of interest is possible. The PCIe-RTV24 generates bitmaps in all popular color formats such as RGB, YUV, planar, or packed.

System integrators also benefit from a watchdog for fault-tolerant applications and easy-to-use standard connectors.

### Image Acquisition
- ◆ Frame Rate: 30 full-frame images acquired per second for each channel (at RGB16 mode)
- ◆ Color Image: Color video format is compatible with the following composite video input formats: NTSC-M, NTSC-Japan, PCL-B, PALD, PAL-G, PAL-H, PAL-I, PAM-M, PAL-N and SECAM
- ◆ Monochrome Image: The monochrome video acquisition is compatible with CCIR and EIA (RS-170).
- ◆ Optional Scaling: The acquire images or portions of images can be optionally scaled:
  - Acquisition of a programmable area of interest
  - Scaling of the image (down to 1:16)
  - Adjustment of hue (for NTSC signals), contrast (0 to 200%), brightness and saturation (0 to 200% for U and V signals)
  - Automatic chrominance gain control

### RTV-E4 Extension Board (Optional)
- ◆ Expandable up to 16 channels (3.5 fps/channel at 16 channel inputs)
- ◆ 10-pin ribbon cable to onboard 10-pin header connector for channel extension. Each header adds 4 video input channels.
- ◆ Three 10-pin header connectors onboard.

### I/O Lines
The PCIe-RTV24/PCI-RTV24 is fitted with TTL compatible I/O lines, supporting 4 inputs, 4 outputs and 4 soft trigger lines with protection against overloads and electrostatic discharges.

Every line maybe configured as an input or output or can be used to trigger an acquisition or report an alarm condition.

| Voltage | Min. | Max. |
|---|---|---|
| Input High Voltage (20 $\mu$A) | 2.0 V | 5.25 V |
| Input Low Voltage (-0.2 $\mu$A) | 0.0 V | 0.80 V |
| Output High Voltage (-1.0 mA) | 5.0 V | -- |
| Output Low Voltage (100 mA) | -- | 0.50 V |

### Watchdog
A hardware watchdog is available on the PCIe-RTV24/PCI-RTV24. The watchdog is able to monitor the PC's application operation and will automatically reset the PC after a programmable inactivity time-out. This ensures a reliable operation of remote systems.

# Picolo Series

## Color/Monochrome Frame Grabbers for Standard Cameras

Picolo

Picolo Pro2 PCIe

Grayscale Camera - Color Camera - PCI - PCI EXPRESS® - Analog
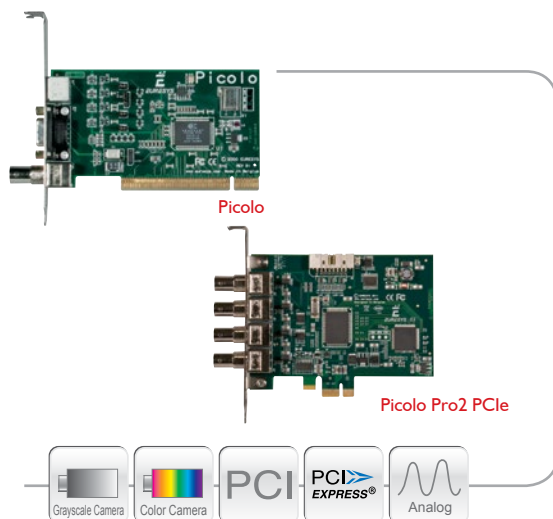
## Features

### Picolo/Picolo PCIe

- **Single channel real-time video capture**
- **BNC, DB-9, S-Video connectors**
- **4 TTL I/O lines**

### Picolo Pro 2/Picolo Pro 2 PCIe

- **Connection of up to 4 cameras**
- **High frame rate**
- **13 TTL I/O lines**

## Physical Information

- **Picolo/Picolo PCIe**
  PCI/PCIe board, 121 x 70 mm
  Power consumption: 1 W (+5 V max @ 200 mA)

- **Picolo Pro 2/Picolo Pro 2 PCIe**
  PCI/PCIe board, 121 x 85 mm
  Power consumption: 1.7 W (+5 V max @ 240 mA, +12 V @ 10 mA, -12 V @ 30 mA )

- **Extension Module**
  63 x 107 mm
  Power consumption: 0.3 W (+12 V max @ 20 mA, -12 V @ 5 mA)

## Software Support

- EasyMultiCam is the unique driver which serves the Picolo, Domino, and Grablink series frame grabbers.
- The EasyMultiCam driver runs under Microsoft Windows 2000®, XP®, Server 2003®, Vista®, and Linux 7® /Kernels 2.6.18 and 2.6.24

## Introduction

### General

- ◆ Picolo/Picolo PCIe: The Picolo/Picolo PCIe are low-cost frame grabber cards ideal for single camera applications. They provide a robust BNC connector, an S-video connector and a DB-9 connector for video input and I/O connections.
- ◆ Picolo Pro 2/Picolo Pro 2 PCIe: The Picolo Pro 2/Picolo Pro 2 PCIe are cost-effective frame grabber cards optimized for video surveillance applications. The synchronization stage, PCI management hardware and the MultiCam driver have been optimized to allow high-speed acquisition of full-resolution images from multiple unsynchronized cameras. The Picolo Pro 2/Picolo Pro 2 PCIe provide 4 BNC connectors (video input) allowing connection of up to four cameras.

### Image Acquisition

- ◆ Color Image: Color video format is compatible with the following composite video input formats: NTSC-M, NTSC-Japan, PCL-B, PALD, PAL-G, PAL-H, PAL-I, PAM-M, PAL-N and SECAM.
- ◆ Monochrome Image: The monochrome video acquisition is compatible with CCIR and EIA (RS-170).
- ◆ Optional Scaling: The acquire images or portions of images can be optionally scaled:
  - Acquisition of a programmable area of interest
  - Scaling of the image (down to 1:16)
  - Adjustment of hue (for NTSC signals), contrast (0 to 200%), brightness and saturation (0 to 200% for U and V signals)
  - Automatic chrominance gain control

### Multiple Cameras

The Picolo Pro 2/Picolo Pro 2 PCIe can acquire images from unsynchronized cameras within very short switching times. The switching time is < 33 ms for NTSC and <40 ms for PAL, therefore a total of 16 images can be acquired per second (typical).

### Image Transfer

The Picolo series supports PCI bus mastering. Images are transferred to the PC memory using DMA (Direct Memory Access) in parallel with the acquisition and processing. Several Picolo series boards can be simultaneously be in operation within a single PC is supported.

### Bitmap Image Formats

Before storing the acquired images to its located memory buffer, a pixel format conversion takes place in real-time. Numerous color or monochrome formats can be chosen: RGB32, RGB24, RGB16, RGB15, Y8, YCrCb 4:2:2, YCrCb 4:1:1, Planar YCrCb 4:2:2, Planar YCrCb 4:1:1

## Ordering Information

- **Picolo**
  Single channel true-color image acquisition card

- **Picolo PCIe**
  PCI Express single channel true-color image acquisition card

- **Picolo Pro 2**
  True-color image acquisition card supports up to 4 cameras

- **Picolo Pro 2 PCIe**
  PCI Express true-color image acquisition card supports up to 4 cameras

1 Smart Cameras

2 Embedded Vision Systems

3 Frame Grabbers

4 Industrial Cameras

5 Image Analysis Tools

6 Distributed Motion Control

7 Centralized Motion Control

8 Intelligent Computing Platforms

**micromax technology**

SUSTAINABLE CERTIFICATION
✔ ISO 9001
✔ AS/NZS 4801
✔ ISO 14001

JAS-ANZ