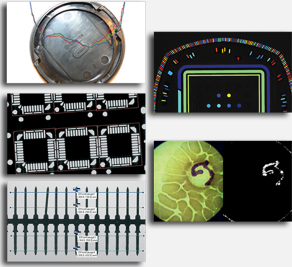


# Inspection Bundle

Bundle of Open eVision inspection libraries



## At a Glance

- Cost effective bundle of eVision's inspection libraries
- Includes EasyImage, EasyGauge, EasyMatch, EasyObject and EasyColor

## Benefits

### Open eVision Studio development and prototyping tool

Open eVision Studio is the development and prototyping tool of Open eVision. It includes a scripting function that generates code (C++, C# and Visual Basic ActiveX) using easy to understand menus and dialog boxes. The generated code can then be copied and pasted into your application's source code.

### EasyImage Description

- EasyImage includes operations usually performed as pre-processing steps to improve the image quality and obtain a good contrast between the background and the objects to be inspected.
- EasyImage supports gray-level and color images. Selected morphology functions are also optimized for binary (1-bit per pixel) and bi-level images.
- EasyImage includes numerous image processing functions, such as enhancement and restoration by linear or non-linear filtering, arithmetic and logic operations, geometric transformations for image registration, histogram analysis for thresholding, projection, ...

### Flexible Masks

- Flexible Masks provide a powerful way of restricting the processing to freely selected parts of the image.
- They are supported by selected image analysis functions.

### EasyGauge Description

EasyGauge is a cutting-edge measurement and dimension control library for use in gauging and metrology applications. By relying on proven sub-pixel edge detection and shape fitting algorithms, it allows determining the dimension, position, curvature, size, angle or diameter of manufactured parts with an excellent accuracy.

Robustness is ensured by powerful edge-point selection mechanisms that are intuitive and easy to tune, allowing measurement in cluttered images.

In addition, EasyGauge also supports the automatic measurement of parallel sides, thus providing means of measuring the thickness of flat or bent objects, as well as the precise location of corners.

## EasyObject Description

The EasyObject library handles image segmentation, i.e. the decomposition of images into separate objects, also called blobs.

Once the objects have been constructed, they can be handled as independent entities. Various geometric parameters or features, such as area, width, or ellipse of inertia, can be computed for each object.

Objects of interest can be selected by means of their position or of their computed features.

EasyObject also supports the inspection of holes in defined objects. Holes are managed as the objects themselves, benefiting from the same geometrical features. EasyObject manages the relationship between objects and holes, defining parent objects for holes.

## EasyColor Description

EasyColor includes a set of optimized color systems transformation functions and color analysis functions.

The color systems supported are RGB, XYZ,  $L^*a^*b^*$ ,  $L^*u^*v^*$ , YUV, YIQ, ISH, LSH, VSH, LCH and YSH.

EasyColor provides efficient means to convert images between these systems and to transform color images into gray level images and vice versa.

## EasyMatch Description

EasyMatch is a gray-level and color pattern matching library. It lets you train the system on a reference pattern and afterwards locate its occurrences in other images.

This tool is very convenient when the position of a given part is unknown in the field of view, or if the presence of parts must be controlled. The library works by using normalized correlation method, i.e. measuring discrepancies between the pattern and the target image.

## Choose the most suitable Licensing System

- Open eVision Dongle-based Licenses: Dongle-based Licenses offer the flexibility to be transferred from a PC to another. To purchase a Dongle-based License, select one of the Euresys dongles (USB or Parallel) plus the license(s) to be stored on this dongle. Licenses are delivered as activation codes, which are stored on the dongles.
- Open eVision Software-based Licenses: Software-based licenses do not require any dongle, they are linked to the PC on which they have been activated. Licenses are delivered as activation codes and can be managed online.

## Applications

### **MACHINE VISION FOR THE ELECTRONIC MANUFACTURING INDUSTRY**

#### **High speed image acquisition for inspection machines.**

The Coaxlink and Grablink cards are dependable industrial frame grabbers that provide robust and stable image acquisition from the fastest digital cameras available. They feature precise camera control and synchronization functions.

- AOI (Automated Optical Inspection) machines
- 3D SPI (Solder Paste Inspection) machines
- 3D lead/ball inspection machines

#### **Very high resolution line-scan image acquisition for inspection machines**

The Coaxlink and Grablink cards are dependable industrial frame grabbers that provide robust and stable image acquisition from the fastest digital cameras available. They feature precise line-scan camera control and synchronization functions.

- Flat Panel Display inspection
- Solar cell inspection

#### **Alignment**

EasyFind and EasyMatch are able to quickly and reliably locate PCB and other fiducial marks in the image.

#### **Pick and place**

EasyFind and EasyMatch are able to quickly and reliably locate fiducial components in the image.

#### **Wire bonding and Die bonding**

EasyFind and EasyMatch are able to quickly and reliably locate fiducial marks in the image.

#### **Lead inspection**

EasyGauge provides sub-pixel measurement functions for lead inspection.

#### **PCB inspection**

#### **LED inspection**

#### **3D image acquisition for electronic inspection machines**

### **MACHINE VISION FOR THE GENERAL MANUFACTURING INDUSTRIES**

#### **High frame rate image acquisition for inspection machines**

Glass inspection: bottles, vials

#### **Line-scan image acquisition for surface inspection machines**

The Coaxlink and Grablink cards are dependable industrial frame grabbers that provide robust and stable image acquisition from the fastest digital cameras available. They feature precise line-scan camera control and synchronization functions.

#### **Line-scan image acquisition for textile inspection**

#### **Image enhancement**

EasyImage is used to enhance the quality of printed characters or codes before recognition.

#### **Presence / Absence check**

EasyImage gray-scale analysis functions are used for simple presence/absence checks

#### **Surface analysis**

EasyImage is used to reveal the surface defects, and the blob analysis functions of EasyObject is able to segment and measure them.

#### **Checking dimensional accuracy**

#### **Assembly inspection**

#### **Object positioning for pick and place**

#### **Color inspection**

#### **False color rendering**

#### **Color inspection in the pharmaceutical industry**

#### **Image acquisition for robots**

#### **3D image acquisition for inspection machines**

## **MACHINE VISION FOR THE PRINTING INDUSTRY**

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

- Printing inspection for packages
- Printing inspection for labels

### **Label and packaging inspection: Verification of the printing color**

## **MACHINE VISION FOR THE FOOD INSPECTION INDUSTRY**

### **Food inspection and sorting**

## **LIFE SCIENCES & MEDICAL**

### **Noise reduction for Xray imaging**

EasyImage contains spatial and temporal noise reduction functions.

### **Scientific research**

CoaXPress hyperspectral imagers can be installed in aircrafts or unmanned aerial vehicles for environmental or agriculture monitoring, land analysis or airborne remote sensing.

## **VIDEO ACQUISITION AND RECORDING**

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

## **ITS (INTELLIGENT TRANSPORTATION SYSTEM) & TRAFFIC MANAGEMENT**

### **Video acquisition from multiple cameras**

## **MILITARY & DEFENSE**

### **Transmission and acquisition of high-definition video over long coaxial cables**

CoaXPress is a recent powerful standard providing a high speed interface between the camera and the PC frame grabber. On a highway, high speed cameras can take images in a burst. The sharper images will enhance license plate recognition accuracy.

High frequency real time triggering and exposure time adjustment to the low light situations can be accommodated.

### **Airborne ISR**

Vision systems often integrate high resolution and high speed CoaXPress cameras for airborne Intelligence, surveillance and reconnaissance missions.

### **Camera turrets for airborne surveillance or gun turrets**

CoaXPress cameras can easily be integrated in 360° rotating stations with slip rings to allow continuous panning. High resolution video provides sharper images and a larger viewing area thereby potentially reducing the number of cameras required.

### **Unmanned applications, vehicle-based video capture**

The CoaXPress standard allows video transfer to the PC in a few milliseconds. The very low latency of the system will allow the control of land vehicles or remote control of UAVs.

## **VIDEO MONITORING, SURVEILLANCE & SECURITY**

### **Transmission and acquisition of high-definition video over long coaxial cables for traffic surveillance, monitoring and control**

### **Transport, security**

Thanks to a high resistance to extreme temperatures, shocks, vibrations and humidity, the Coaxlink Duo PCIe/104 board is particularly well suited for embedded security systems for rail and road transportation, police vehicles equipment or any mobile or outdoor video-surveillance applications.

### **Mobile embedded digital video recorder (DVR)**

Video surveillance on trains, busses

## Specifications

### Software

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#### Host PC Operating System

- Open eVision is a set of 32-bit and 64-bit libraries that require a processor compatible with the SSE2 instruction set.
  - Open eVision can be used on the following operating systems:
    - Windows 10, 8 and 7 (32- and 64-bits)
    - Windows Vista 32-bits Service Pack 1
    - Windows XP 32-bits Service Pack 3
    - Windows Server 2008 32-bits
    - Windows Server 2008 R2 64-bits
    - Windows Server 2003 32-bit Service Pack 1
    - Windows Embedded Standard 2009 32-bits
  - The Open eVision installer does not allow installation on virtual machines.
  - Minimum requirements:
    - Display size: 800 x 600. 1280 x 1024 recommended.
    - Color depth: 16 bits. 32 bits recommended.
    - Between 20 MB and 300 MB free hard disk space for libraries, depending on selected options.
    - Between 60 MB and 400 MB free hard disk space for development tools, depending on selected options.
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#### APIs

#### Supported Integrated Development Environments and Programming Languages:

- Microsoft Visual Studio 6.0 SP6 (C++, Basic)
  - Microsoft Visual Studio .NET 2003 SP1 (C++)
  - Microsoft Visual Studio 2005 SP1 (C++, C#, VB .NET, C++/CLI)
  - Microsoft Visual Studio 2008 SP1 (C++, C#, VB .NET, C++/CLI)
  - Microsoft Visual Studio 2010 (C++, C#, VB .NET, C++/CLI)
  - Microsoft Visual Studio 2012 (C++, C#, VB .NET, C++/CLI)
  - Microsoft Visual Studio 2013 (C++, C#, VB .NET, C++/CLI)
  - Borland C++ Builder 6.0 update 4 (C++)
  - CodeGear C++ Builder 2009 (C++)
  - CodeGear Delphi 2009 (Object Pascal)
  - Embarcadero RAD Studio XE4 (C++, Object Pascal)
  - Embarcadero RAD Studio XE5 (C++, Object Pascal)
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### Ordering Information

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#### Product code - Description

- 4014 - Inspection Bundle for USB dongle
  - 4016 - Legacy Inspection Bundle for USB dongle
  - 4064 - Inspection Bundle for PAR dongle
  - 4066 - Legacy Inspection Bundle for PAR dongle
  - 4114 - Inspection Bundle for board licensing
  - 4116 - Legacy Inspection Bundle for board licensing
  - 4164 - Open Inspection Bundle for USB dongle
  - 4214 - Open Inspection Bundle for PAR dongle
  - 4264 - Open Inspection Bundle for soft-based licensing
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