Basler Camera Software Suite

ONE FOR ALL

pylon5

USB3 VISION · GiGE VISION · CAMERA Link · FireWire

- One software package for all camera interfaces
- Easy-to-use tools for camera configuration, and for capturing and recording images
- GenICam technology provides flexible support for new camera features
- User-optimized SDK you can build your solutions on
- Windows and Linux support

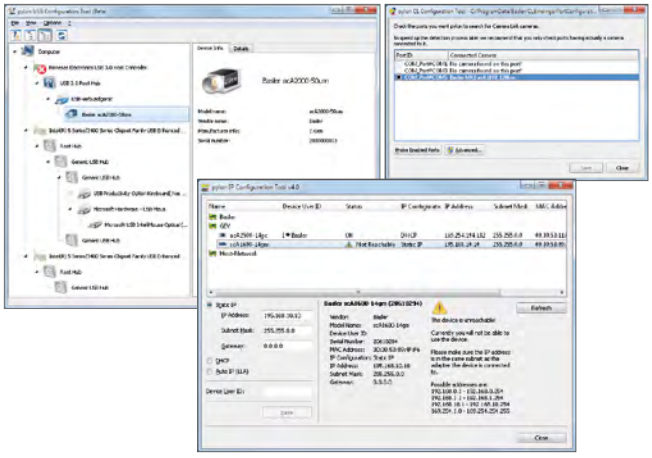
BASLER
the power of sight

TECHNICAL DETAILS

Basler pylon 5 Camera Software Suite

The pylon Camera Software Suite is a collection of drivers and tools for operating any Basler camera with a Windows or Linux PC. As it is based on GenICam technology, it offers barrier-free access to the newest camera models and the latest features. Making changes to an existing camera device in your application essentially becomes a plug-and-play process.

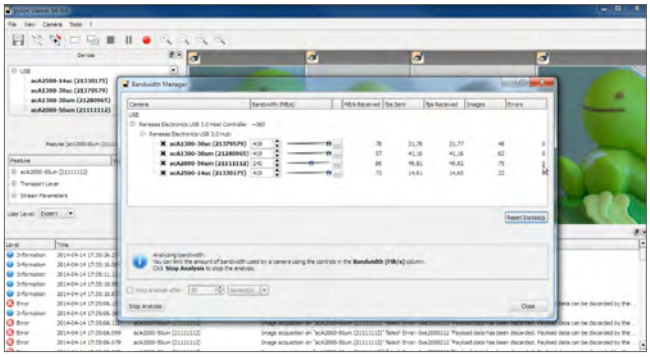
An easy-to-use set of **configuration tools** allows you to configure the camera's interface:



For example, you can easily configure the IP settings of a GigE Vision camera, fix driver or bandwidth problems for USB cameras, or configure baud rates for Camera Link cameras.

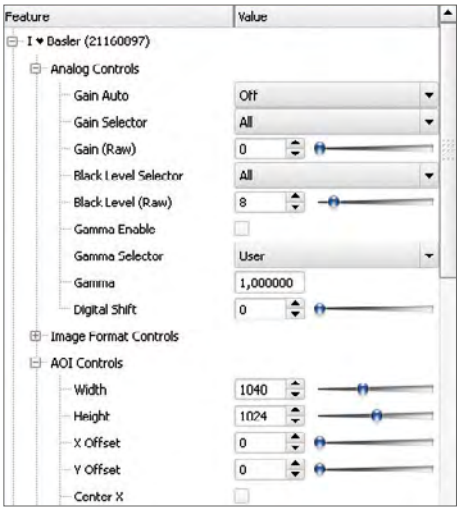
The **pylon Viewer** is a versatile application for testing and evaluating Basler cameras.

Camera images can be recorded to video files or into a sequence of single images.



With the viewer's new Bandwidth Manager you can quickly check whether your USB3 or GigE camera can reliably deliver all images to your application (e. g. the pylon Viewer) with the given bandwidth settings. You can adjust the camera's bandwidth load until all cameras connected to your PC will transmit their images without any losses.

The tree structure of the viewer's graphical user interface lets you easily find the best camera parameter setup, adjust image quality, and control advanced camera features.



The pylon **USB3 Vision Driver** fully supports the USB3 Vision standard. It allows Basler USB 3.0 cameras to use the full speed and bandwidth of USB 3.0 for image transmission, while reducing resource load and using off-the-shelf hardware components.

The pylon **GigE Vision Performance Driver** quickly separates incoming packets carrying image data from other traffic on the network, and makes the data available for use by your vision application while requiring the lowest CPU resources. This driver can only be used with network cards that include specific Intel chipsets. The pylon **GigE Vision Filter Driver** supports all kinds of hardware, common GigE network cards, and GigE ports on your motherboard as well.

The pylon **IEEE 1394 Driver** gives you access to a well-established interface technology, and the pylon **Camera Link Configuration Driver** offers easy access to all camera parameters of Basler's latest Camera Link families: ace, aviator, and racer.

PYLON SDK

New GenICam Version 3: FASTER and SMALLER!

Software Development Kit

The pylon Camera Software Suite also contains a **powerful SDK** and helps to develop any kind of camera application for Windows or Linux.

With the well-designed and user-friendly API you will need just a few lines of code to configure the camera and to grab and display images. The Instant Camera Class takes care of device lifetime and buffer management, as well as setting up a grab loop and handling camera events.

Documentation and Samples

Comprehensive documentation, plus a collection of programming samples for C ++, C, .NET languages (C#, VB.NET, etc.), illustrate various use cases for different grab strategies, multi-camera applications, recording video files, and many more.

The GenICam concept

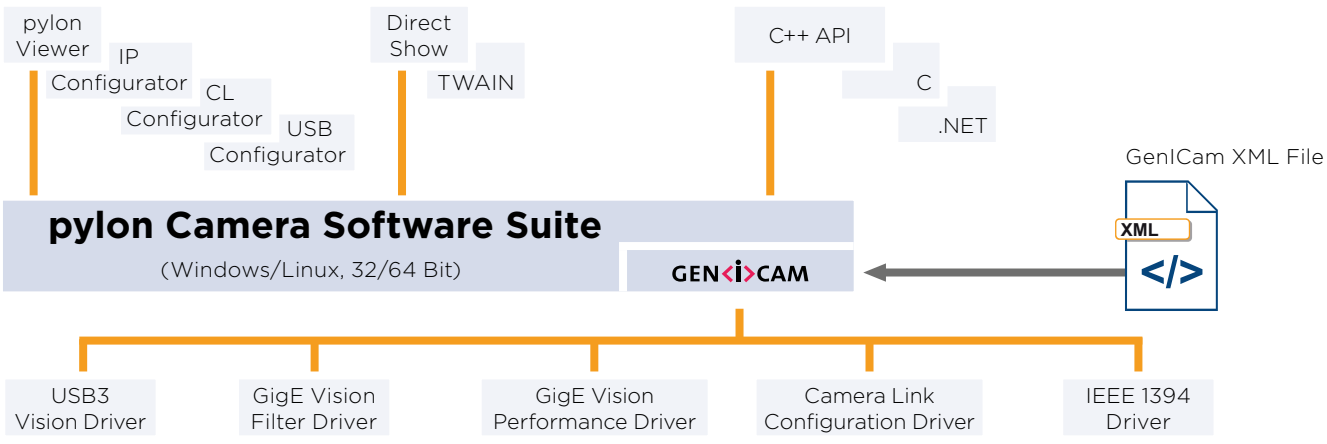
The pylon SDK is based on the concept of GenICam. This means in brief that the camera itself describes its features and parameters (name, data type, value range etc.) through an XML file which is part of the camera firmware.

When pylon opens the camera, it loads and processes the camera XML file and creates a generic API which provides access to all camera parameters and functions. The new GenICam Version 3 is performing these actions significantly faster than the previous versions while consuming a lot less user memory.

This approach allows the creation of generic camera applications compatible with all kinds of Basler camera, no matter what interface they use.

You can easily provide generic GUI feature controls which are generated dynamically when processing the camera XML, and which provide access to all camera features without having any prior knowledge about the existence of these features – the pylon viewer's feature tree is a good example of these kinds of controls.

The pylon Camera Software Suite operates with all Basler line scan and area scan cameras - no matter what interface they use. It offers stable, reliable and flexible data exchange between Basler cameras and PCs, for Windows and Linux on x86 and ARM based systems – at a very low CPU load.



PYLON FOR WINDOWS

Get your free version: www.baslerweb.com/pylon5Windows

pylon Camera Software Suite for Windows

Supports Windows 10

The pylon Camera Software Suite for Windows contains the following main modules. Each one can be individually selected/unselected during the installation process, preventing the installation of unneeded modules on your system:

- USB3 Vision Driver
- GigE Vision Filter and Performance Driver
- IEEE 1394 Driver
- Camera Link Serial Communication Driver
- pylon Viewer
- Configuration tools for GigE Vision, USB3 Vision and Camera Link

Standard Interface Adapter for 3rd Party Software

Pylon for Windows provides a number of adapters to interface with other 3rd party software:

- pylon DirectShow adapter – interfaces with any Direct Show conforming software (e.g. other Machine Vision software, video editing software).
- pylon TWAIN adapter – interfaces with any TWAIN conforming software (most commonly scanner or microscopy software).
- pylon AIK Driver – interfaces Basler USB3 cameras with Cognex Vision Pro.
- pylon Neurocheck Driver – interfaces Basler cameras with Neurocheck 6.1 or higher.

Runtime packages for easy deployment

Basler also offers "pylon redistributables", including the pylon runtime environment and separate drivers for USB3.0, GigE, IEEE 1394, or all of these. This helps you to deploy your pylon-based application to the end user.

Support for various programming languages

The pylon SDK for Windows supports all Basler cameras with the major programming languages: C, C++, and the .NET languages (C#, VB.NET, etc.).

Microsoft® .NET
Microsoft® Visual C++
Microsoft® VB.net Visual Basic
Microsoft® Visual C#®

pylon for Windows System Requirements

Windows XP SP3 (up to pylon 4.0), Windows 7, Windows 8, Windows 8.1, Windows 10, 32 or 64 bit

150 MB of free disk space and 50 MB RAM per camera required

The pylon Camera Software Suite for Windows can be downloaded for free at:
www.baslerweb.com/pylon5Windows.

For more information on the installation process, refer to the pylon Installation Guide. The helpful pylon Release Notes contain all improvements and bug fixes since the first pylon version.

Get your free version: www.baslerweb.com/pylon5Linux

pylon Camera Software Suite for Linux

The pylon 5 Camera Software Suite is also available for Linux on x86 and ARM architectures. pylon for Linux offers:

- User friendly, well-designed C++ API
- pylon Viewer and an IP Configuration tool for GigE vision
- Full support of Basler GigE and USB 3.0 cameras
- Support for 32 and 64-bit x86 architectures
- Support for **ARM** 32-bit in **soft and hard-float** options: pylon 5 for Linux was successfully tested on several systems including the following ARM systems: **Raspberry Pi, NVIDIA Jetson, MiraBox, Wandboard and TI DaVinci**. An application note about "pylon on ARM systems" is available on our **website**.
- **Zero Copy for USB 3.0 cameras**:
  As the only software supplier on the market offering this feature, Basler provides with pylon 5 an extension of the USB kernel subsystem, where the image data of the USB 3.0 camera is stored directly via DMA in the user memory (Zero Copy).

This means that the CPU load associated with the image data transfer is approximately halved, compared to a system without zero copy. This is a very powerful feature, especially for less powerful embedded systems such as ARM.

With the Zero Copy of pylon, enough CPU power is left for the actual image processing task. For Ubuntu 12:04 and 14:04, we provide corresponding installer packages. For other Linux distributions, the kernel must be built accordingly.

pylon for Linux System Requirements

pylon for Linux 4.1 and higher requires a reasonably up-to-date Linux kernel version

(LSB 4.1 on x86, ARM 3.x – USB3 and Zero Copy require kernel version 3.13 or higher)

150 MB of free disk space and 50 MB RAM per camera required

The pylon Camera Software Suite can be downloaded for free at **www.baslerweb.com/pylon5Linux.**

For more information on the installation process, refer to the pylon README and INSTALL file.

pylon 5 also runs on low-cost ARM Systems such as Raspberry Pi.

OTHER INFORMATION

About Basler

Founded in 1988, Basler is a leading global manufacturer of high quality digital cameras and lenses for factory automation, medical & life sciences, retail and traffic applications. The company employs 500 people at its headquarters in Ahrensburg, Germany and subsidiaries in the United States and Asia.

Basler's portfolio of products offers customers the vision industry's widest selection of industrial and network cameras as well as lenses. Today it includes some 300 camera models – and it's still growing. We're committed to developing technology that drives business results for our customers: cameras and lenses that are easy to use, easy to integrate, and deliver an exceptional price/performance ratio.

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