Basler pilot

Area Scan Cameras

- VGA to 5 megapixels and up to 210 fps
- Selected high quality Sony and Kodak CCD sensors
- Powerful Gigabit Ethernet interface
- Superb image quality at all resolutions and frame rates

BASLER
the power of sight

Excellent Image Quality and Attractively Priced

The Basler pilot camera family is based on four selected Kodak CCD sensors and one Sony CCD sensor for exceptional image quality. Equipped with a GigE Vision compliant interface, these cameras take maximum advantage of Kodak and Sony sensor technology and can often substitute for more cost-intensive Camera Link cameras and frame grabbers. Because Basler pilot cameras use the same sensors currently used in existing Camera Link cameras, no optics changes are required.

For more flexibility, this series offers additional software features that can be integrated into the image processing software on a remote computer.

Basler pilot cameras are a perfect fit for a variety of vision applications including semiconductor and component inspection, food inspection, manufacturing quality control, intelligent traffic systems, microscopy and medical imaging, biometrics, and many others.

Your benefits include:

- Resolutions from VGA to 5 megapixels
- 100 meter cable length provided by Gigabit Ethernet to give you the highest flexibility
- Cost-effective Gigabit Ethernet interface does not need a frame grabber
- Up to 12 bit depths and no bandwidth limitation on 8 bit data flow inside the camera
- Field-proven Basler pylon driver package with both filter and performance drivers
- Compliant with the newest vision industry standards including GenICam, GigE Vision, and EMVA 1288
- 100% quality checked and calibrated to give you consistent performance and reliability

Outstanding Image Quality

The Basler pilot family is equipped with four different Kodak CCD sensors and one Sony CCD sensor with each camera available in mono or color. These sensors were selected to provide outstanding image quality in combination with the Basler pilot's read-out and processing electronics. For precise imaging results, all Basler pilot cameras run in progressive scan mode.

Excellent Tap Balance

Basler has leveraged its years of experience in balancing the output from imaging sensors with two taps, so customers can expect a perfectly balanced, homogenous image. This technological advantage has already impressed many customers who use these Basler pilot cameras. All Basler pilot cameras have shown exceptionally good results compared to competitive cameras based on the same sensors. The following drawing shows the effect. (Left unbalanced camera, right factory balanced pilot camera)

Unbalanced sensor with visible line

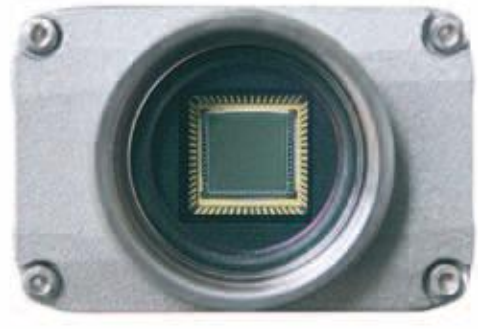
Basler pilot after calibration

Precise Sensor Alignment

In addition to Basler's standard CTT+ automated quality assurance and calibration system, the pilot camera family is tested and measured with another production tool. This unique tool is an ultrahigh precision sensor alignment device. The device automatically mounts the sensor board on the camera's front module in six degrees of freedom with reference to the optical axis. This ensures a constant depth of focus over the whole sensor and guarantees the best imaging results, even with sensors that have pixels smaller than 5 µm, like the piA2400gm/gc has.

Software Makes Image Processing Easy

The Basler pilot family comes with a fully tested package of software, the pylon driver package, that lets you easily evaluate and integrate pilot cameras. The package can be downloaded from Basler 's website. It includes a Viewer tool and the software development kit (SDK).



Basler pylon Driver Package

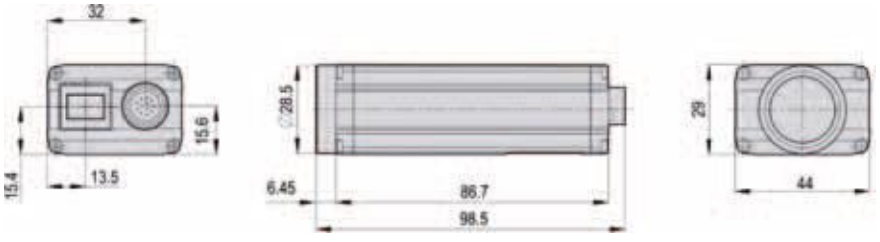
Basler provides its own fully tested Gigabit Ethernet drivers for the Basler pilot camera family compatible with the GigE Vision standard. To give you maximum flexibility, Basler provides two different drivers. The Filter Driver can be easily used with common Gigabit Ethernet network cards or with Gigabit Ethernet ports that are part of the computer's motherboard. By using the performance driver, even demanding applications with multiple cameras, high data rates, or very strict real-time requirements can be supported. When the performance driver is used in combination with a dedicated Intel network interface card, the load on the host computer's CPU is significantly reduced.

Specifications

Basler pilot	piA640-210gm/gc	piA1000-48gm/gc	piA1000-60gm/gc	piA1600-35gm/gc	piA1900-32gm/gc	piA2400-17gm/gc
Camera						
Resolution (H x V pixels)	648 x 488	1004 x 1004	1004 x 1004	1608 x 1208	1928 x 1084	2456 x 2058
Sensor	Kodak KAI-0340	Kodak KAI-1020	Kodak KAI-1020	Kodak KAI-2020	Kodak KAI-2093	Sony ICX625
Sensor Size (optical)	1/3"	2/3"	2/3"	1"	1"	2/3"
Sensor Technology	Progressive Scan CCD, global shutter					
Pixel Size (µm)	7.4 x 7.4	7.4 x 7.4	7.4 x 7.4	7.4 x 7.4	7.4 x 7.4	3.45 x 3.45
Frame Rate	210 fps	48 fps	60 fps	35 fps	32 fps	17 fps
Mono / Color	Mono / Color					
Interface	Gigabit Ethernet					
Video Output Format	Mono 8:8 bits/pixel, Mono 16:12 bits/pixel, YUV 4:2:2:16 bits/pixel average Raw 8:8 bits/pixel (R,G or B), Raw 16:12 bits/pixel (R,G or B) and Packed formats					
Syncronization	Via external signal or free run					
Exposure Control	Edge-controlled, level controlled, or programmable					
Mechanical / Electrical						
Housing Size (L x W x H)	86.7 mm x 44 mm x 29 mm					
Housing Temperature	Up to 50°C					
Housing Alternative	90° angled head					
Lens Mount	C-mount					
Digital I/O	2 opto-isolated input ports, 4 opto-isolated output ports					
Power Requirements	12-24 VDC; via Hirose 12-pin connector (max. 10 meter cable length)					
Power Consumption (typ.)	< 5.5 W	< 5.5 W	< 5.5 W	< 5.5 W	< 5.5 W	< 6.0 W
Weight (typical)	~ 220 g					
Conformity	CE, FCC, RoHS, IP30					
Software Environment						
Driver	Basler pylon driver package for Windows and Linux; 32/64 bit					
Operating Systems	Windows, Linux - 32 bit and 64 bit					
Conformity	GigEVision, GenICam					

Specifications are subject to change without prior notice.

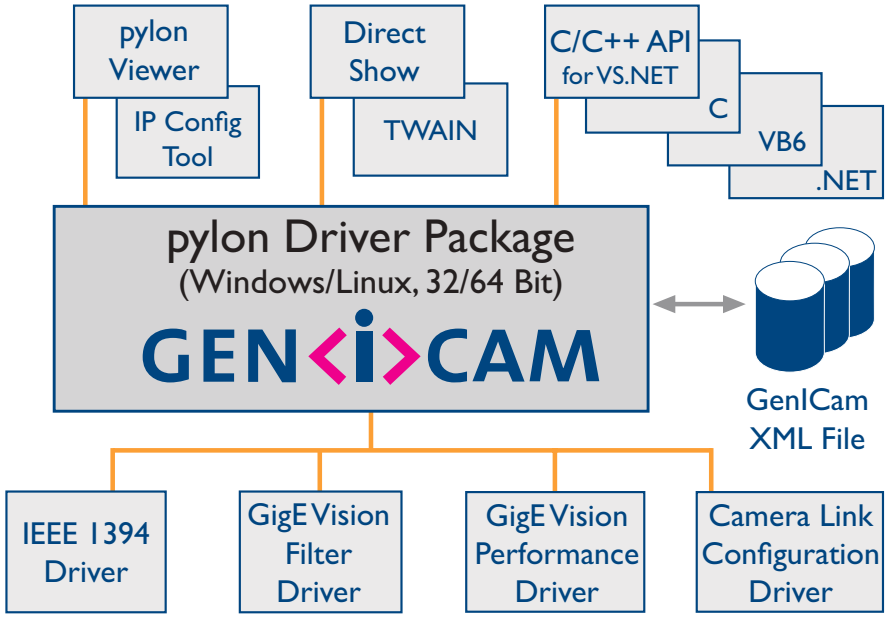
Dimensions (in mm)



Get your free version for Windows or Linux

Basler pylon Driver Package

The pylon driver package operates with all Basler line scan and area scan cameras. It offers stable, reliable and flexible data exchange between Basler cameras and PCs, at a very low CPU load.



The internal architecture of the pylon driver package is based on GenICam Technology, which offers you easy access to the newest camera models and the latest features. Changes to an existing camera device in your application essentially become a plug-and-play process.

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 1394b driver gives you access to a well-established interface technology. The pylon Camera Link Configuration driver offers a comfortable access to all camera parameters of Basler's latest Camera Link families aviator, ace, and racer.

The pylon Viewer offers you a convenient application for testing and evaluating Basler cameras. The pylon IP Configuration tool helps you to set up multi-camera systems easily via local network boundaries. The pylon SDK supports any type of application development. The pylon package 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.

- GigE Vision Filter Driver
- GigE Vision Performance Driver
- IEEE 1394 Driver
- Camera Link Serial Communication Driver
- pylon Viewer
- IP Configuration Tool
- pylon SDK for all Cameras; C,C++, C# and VB6 (the 'pylon for Linux' Version only supports the GigE interface via a C++ API)

The pylon driver package can be downloaded for free from our website. 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.

What Makes Basler Camera Quality So Special?

To ensure consistently high product quality, we employ several quality inspection procedures during manufacturing. The following list describes some of the most essential actions we take to meet your highest requirements:

- The back focal length on each camera is carefully measured and adjusted. This guarantees an optimum distance between the lens flange and the sensor and ensures compliance with optics standards.
- Our advanced Camera Test Tool (CTT+), the first fully-automated inspection system for digital cameras, checks all of the significant quality aspects of each camera we produce. The CTT+ is a unique combination of optics, hardware, and software that can be quickly and efficiently used to calibrate a camera and to measure its performance against a set of standards. For defined sets of conditions, an automated software program examines the camera's output, makes any calibration adjustments necessary, and compares the output to a strictly defined set of performance criteria.

Sensitivity Measurement – Reliable Camera Comparison

1288 EMVA Standard Compliant

Basler is leading the effort to standardize image quality and sensitivity measurement for machine vision cameras and sensors. All measurements done by Basler will be in 100% compliance with the new European Machine Vision Association EMVA 1288 standard. Because it describes a unified method to measure, compute, and present the specification parameters for cameras and image sensors used in machine vision applications, Basler is giving the EMVA 1288 standard our strongest support.

The pilot family is characterized and measured to provide information about the quality and sensitivity of our products. Data can be obtained from Basler's support team.

RoHS Compliance

The Basler pilot series is RoHS compliant. This is especially important in applications where the the end-user requires strict RoHS compliance in all system components.

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