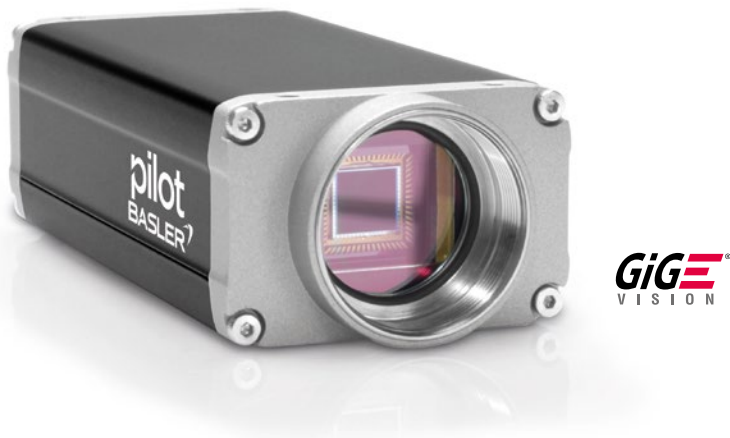


Basler pilot

AREA SCAN CAMERAS



- VGA to 2 megapixels and up to 210 fps
- Selected high quality CCD sensors
- Powerful Gigabit Ethernet interface
- Superb image quality at all
- Resolutions and frame rates

OVERVIEW

Excellent Image Quality and Attractively Priced

The Basler pilot camera family is based on selected ON Semiconductor CCD sensors for exceptional image quality. Equipped with a GigE Vision compliant interface, these cameras take maximum advantage of ON Semiconductor 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 2 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 pylon Camera Software Suite with both filter and performance drivers
- 100% quality checked and calibrated to give you consistent performance and reliability



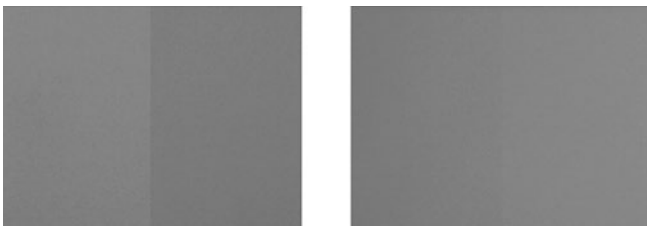
TECHNICAL DETAILS

Outstanding Image Quality

The Basler pilot family is equipped with different ON Semiconductor CCD sensors 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)



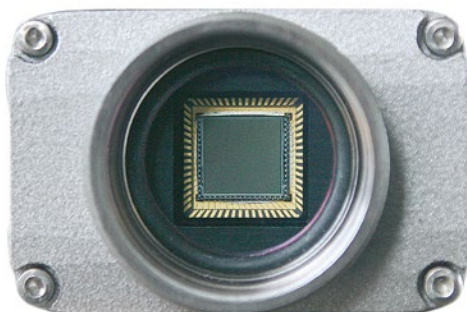
Unbalanced sensor with visible line Basler pilot after calibration

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.

Software Makes Image Processing Easy

The Basler pilot family comes with a fully tested package of software, the pylon Camera Software Suite, 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).



TECHNICAL DETAILS

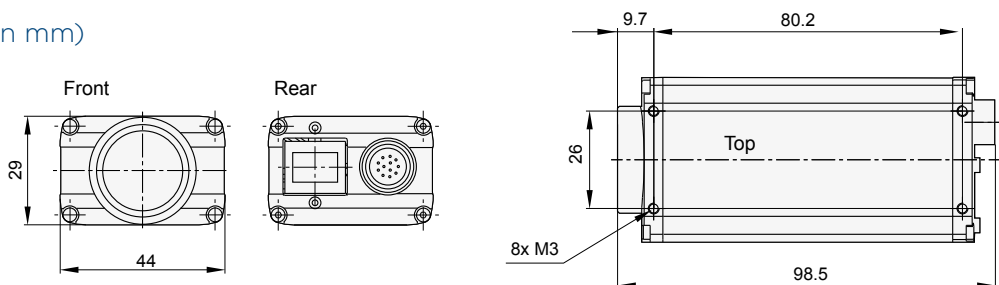
Specifications

Basler pilot	piA640-210gm/gc	piA1000-48gm/gc	piA1000-60gm/gc	piA1600-35gm/gc
Camera				
Resolution (H×V pixels)	646×486	1004×1004	1004×1004	1604×1204
Sensor	KAI-0340	KAI-1020	KAI-1020	KAI-2020
Sensor Size (optical)	1/3"	2/3"	2/3"	1"
Sensor Technology	Progressive Scan CCD, global shutter			
Pixel Size (µm)	7.4×7.4	7.4×7.4	7.4×7.4	7.4×7.4
Frame Rate	210fps	48fps	60fps	35fps
Mono / Color	Mono / Color			
Interface	Gigabit Ethernet			
Video Output Format	Mono 8:8 bits/pixel, Mono 16:16 bits/pixel, YUV 4:2:2:16 bits/pixel average Raw 8:8 bits/pixel (R,G or B), Raw 16:16 bits/pixel (R,G or B) and packed formats			
Synchronization	Via external signal, via software, or free run			
Exposure Control	Edge-controlled, level controlled, or programmable			
Mechanical / Electrical				
Housing Size (L×W×H)	86.7 mm×44 mm×29 mm			
Housing Temperature	Up to 50 °C			
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.)	<4.5W	<4.8W	<4.6W	<4.9W
Weight (typical)	~220g			
Conformity	CE, FCC, RoHS, IP30			
Software / Driver				
Driver	Basler pylon Camera Software Suite or 3rd party GigE Vision Software			
Operating Systems	Windows, Linux, macOS			
Conformity	GigE Vision, GenICam			

Specifications are subject to change without prior notice.

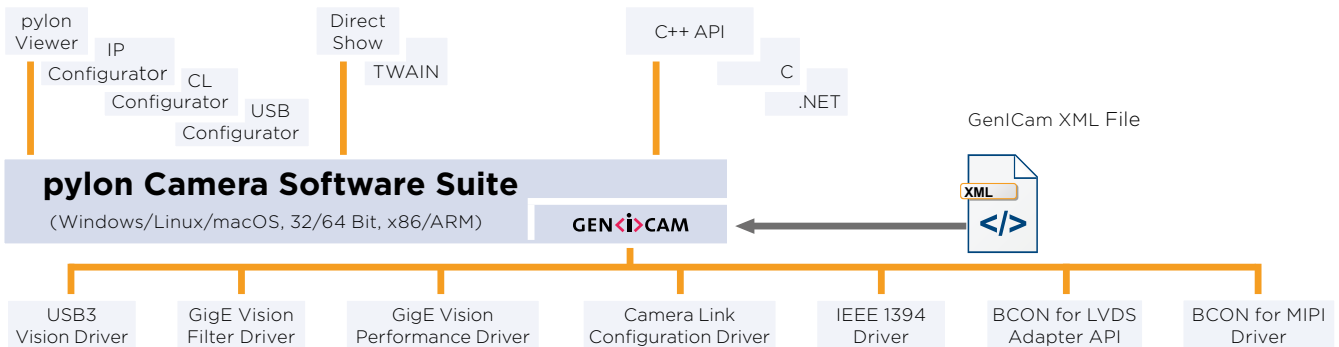
Latest specifications and availability can be found on our website baslerweb.com/pilot. Please visit baslerweb.com/manuals for the detailed camera User's Manual and baslerweb.com/thirdparty for information on third party software.

Dimensions (in mm)



Basler pylon Camera Software Suite

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, macOS, Linux on x86 and ARM based systems - at a very low CPU load.



The architecture of the pylon Camera Software Suite 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.

An easy-to-use set of tools lets you configure the camera's interface. Use the **pylon Viewer** to set camera parameters, to capture and display images, and to evaluate the camera.

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 Drivers** quickly separate incoming packets carrying image data from other traffic on the network and make the data available for use by your vision application while requiring the lowest CPU resources.

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

The **BCON Adapter API** allows easy implementation of an adapter to communicate with the systems I²C interface. A ready to use sample adapter implementation is also provided.

The **MIPI Driver Package** offers plug and play experience with Basler MIPI-CSI-2 camera modules for supported platforms

The pylon Camera Software Suite also contains a powerful SDK that 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:

- USB3 Vision Driver
- GigE Vision Filter Driver
- GigE Vision Performance Driver
- IEEE 1394 Driver
- BCON Adapter API
- MIPI Driver Package
- Camera Link Serial Communication Driver
- pylon Viewer
- SDK for all cameras; C, C++, .NET (C#, VB.NET, ...); the 'pylon for Linux' version only supports the GigE and USB 3.0 interface via a C++ API

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

OTHER INFORMATION

How Does Basler Measure and Define Image Quality?

Basler is leading the effort to standardize image quality and sensitivity measurement for cameras and sensors. We are giving the EMVA 1288 standard our strongest support because it describes a unified method to measure, compute, and present the specification parameters for cameras and image sensors. Our cameras are characterized and measured in 100% compliance with the EMVA 1288 standard. Measurement reports can be downloaded from our website.



3-Year Warranty

Basler offers a 3-year warranty for their cameras and the Basler Lenses 1/2.5". We make this unprecedented promise because we have unparalleled confidence in our products. We continually reinvest in research, development and superior manufacturing capabilities so that our customers can fully rely on the products we manufacture.

About Basler

Basler is a leading manufacturer of high-quality cameras and camera accessories for industry, medicine, traffic and a variety of other markets. The company's product portfolio encompasses area scan and line scan cameras in compact housing dimensions, camera modules in board level variants for embedded vision solutions, and 3D cameras. The catalog is rounded off by our user-friendly pylon SDK plus a broad spectrum of accessories, including several developed specially for Basler and optimally harmonized for our cameras.

How Does Basler Ensure Superior Quality and Reliable High Performance?

Our approach to quality assurance is rigorous: we continually audit all facets of our business to ensure powerful performance, increase efficiency and reduce costs for our customers. We are compliant with all major quality standards including ISO 9001, CE, RoHS, and more. To ensure consistently high product quality, we employ several quality inspection procedures during manufacturing.

Every Basler camera is subjected to exhaustive optical and mechanical tests before leaving the factory. We have developed a unique combination of optics, hardware, and software tools that can quickly and efficiently calibrate a camera and measure its performance against a set of standard performance criteria. Regardless of what technology or camera model you choose you can be assured of consistent performance.



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