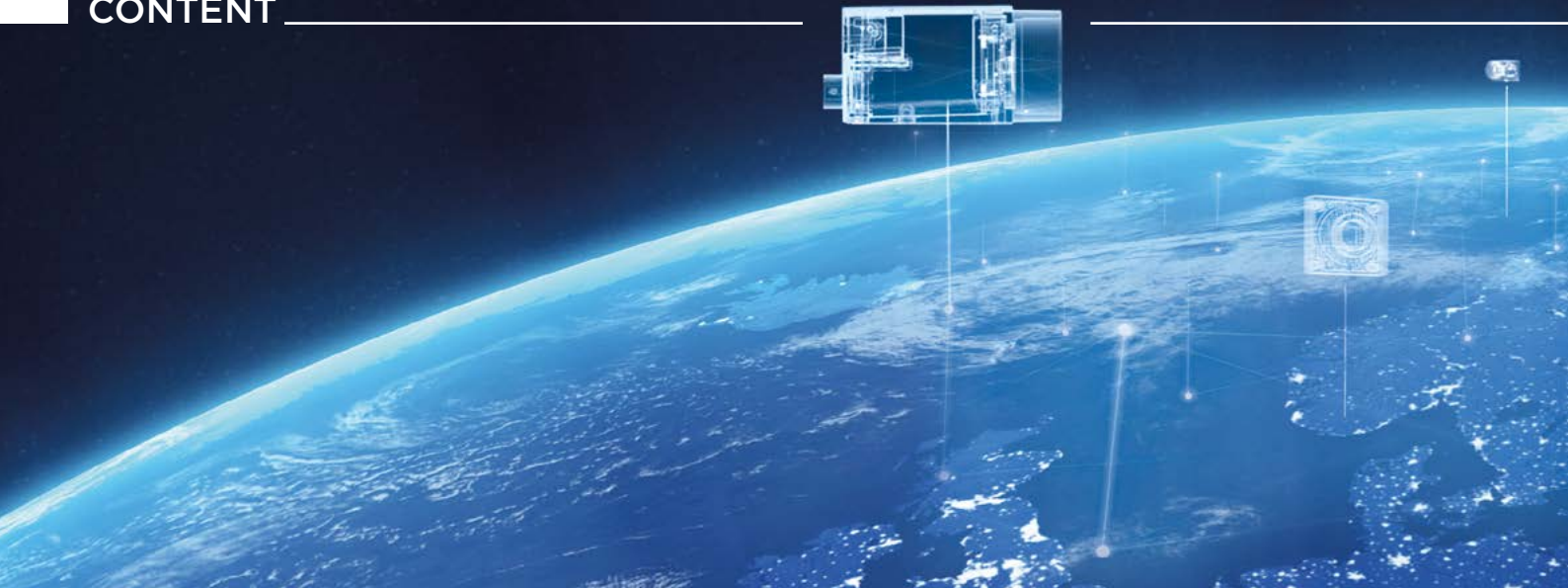




COMPUTER VISION PORTFOLIO





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Welcome to the Basler Product World

This brochure gives you a comprehensive overview of all our imaging components for your vision application. Whether you are looking for information about our camera series, lenses, frame grabbers, software, embedded vision solutions, or other vision components you will find it here. In addition to the "hard facts" – namely the most important product highlights and specifications – find out what makes Basler and our products special.

We have one of the largest product ranges in the industry with the right products for almost any application. Our worldwide sales organization is available to help you make the right choice. Contact our team and together we will find the right imaging components for your individual vision application.

baslerweb.com/sales

Our Online Tools

In addition to our strong sales team, we offer comprehensive tools to assist you in your research and decision-making process for suitable components for your vision system.

baslerweb.com/tools

One of these tools is the Vision System Configurator which supports you by configuring the matching image acquisition components for your vision system. Go step by step and select cameras, lenses, power and data cables as well as other accessories: baslerweb.com/vision-system-configurator



How to Read Our Camera Model Names

| AC | A | 2040 | 180 | K | M | NIR |
|---|--------------------------------|-------------------|---|---|-----------------------|---|
| Model | Type | Resolution | Frame Rate | Interface | Color | Spectrum |
| a2 = ace 2 ac = ace be = Basler beat bo = boost da = dart pu = pulse ra = racer | A = Area scan L = Line scan | Horizontal pixels | Number of frames per second (fps) at full AOI | k = CL c = CoaXPress g = GigE g5 = 5GigE u = USB 3.0 m = BCON for MIPI | m = mono c = color | NIR = Near Infrared Product Line BAS = Basic PRO = Pro ISP i = Internal ISP for MIPI cameras |

Specifications are subject to change without notice.

Latest specifications and availability can be found on our website baslerweb.com/products.

Please visit baslerweb.com/manuals for the detailed camera User's Manual and baslerweb.com/thirdparty for information on third party software.

Keys

New: ★ Coming soon: ⌚ Preliminary: !

About Basler

Basler is a leading international manufacturer of high-quality imaging components for computer vision applications. In addition to classic area scan and line scan cameras, lenses, frame grabbers, light modules, and software, the company offers embedded vision modules and solutions, 3D products, as well as customized products and consulting services. Basler's products are used in a variety of markets and applications, including factory automation, medical, logistics, retail, and robotics. They are characterized by high reliability, an excellent price/performance ratio, and long-term availability. Founded in 1988, the Basler Group employs around 1000 people at its headquarters in Ahrensburg and other locations in Europe, Asia and North America. Thanks to its worldwide sales and service organization and cooperation with renowned partners, it offers solutions that fit for customers from a wide range of sectors.



Markets We Focus on

Factory Automation



Medical & Life Sciences



Logistics



ITS



Retail



Management Board



We firmly believe that advances in vision technology improve the quality of our lives. Because of this, we give technology the power of sight.



Arndt Bake
CIO/CDO



Dr. Dietmar Ley
CEO



Hardy Mehl
CFO/COO



Alexander Temme
CCO

Core Values

When working with us, you can rely on our core values



RELIABILITY



EASY TO
WORK WITH



BEST VALUE
FOR MONEY



INDUSTRY LEADING

FORGET THE **PROBLEM**
SEE THE **SOLUTION.**

DISCOVER THE FULL SPECTRUM OF BASLER VISION SOLUTIONS.

BASLER
the power of sight

Seeing the solution can be challenging at times. Let us assist you in discovering the right setup for your application. With our extensive know-how and customer orientation, our vision experts will find the best solution for your imaging requirements. The Basler team supports and advises you in choosing perfectly harmonized components, be it cameras, lenses, framegrabbers, lighting, or processing boards. In addition we help you in dealing with more complex issues such as customer-specific product adaptations, consulting services, concept studies, or designing an embedded vision solution. This broad knowledge makes Basler the most trusted brand in the field of machine vision and one of the leading computer vision experts.

BASLER'S VISION COMPONENTS

Basler's Components Enhance Your Vision

An image processing system needs more than just a camera. Only a lens, light source, reliable data transfer and additional components such as frame grabbers, trigger cables, acquisition cards and power supplies turn a vision system into a functioning unit. High standards must be met in terms of quality, reliability and long-term availability with a good price/benefit ratio.

Basler offers a large selection of vision components that match each other perfectly. Carefully selecting compatible and reliable components for our portfolio is our top priority, as we strive to provide the right needs-oriented setup for complex, efficient systems as well as for cost-effective solutions.

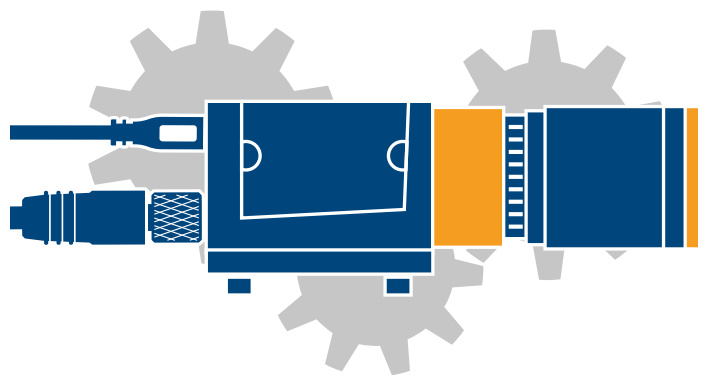
As a leader in technology, Basler is substantially involved in the development of new standards and offers all of the necessary, perfectly matched vision components from one source. As a result, our customers benefit from the superior reliability of their entire vision system.



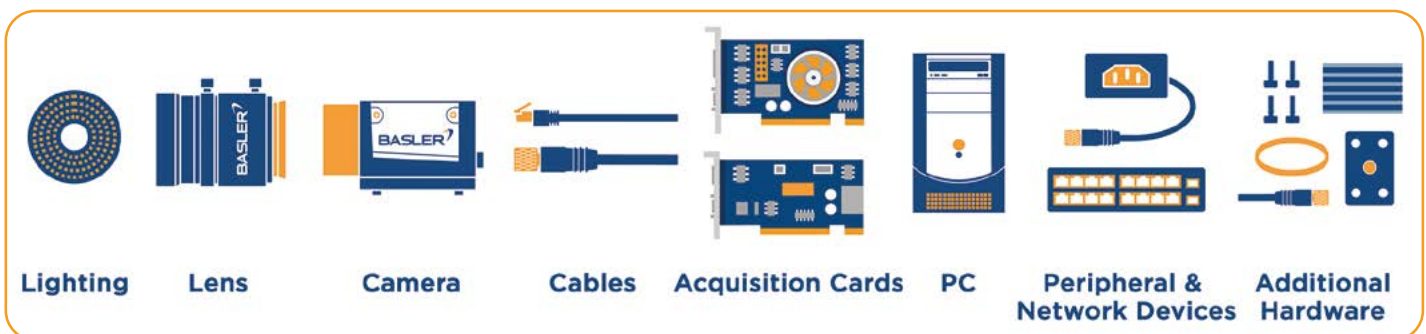
Need Help Selecting the Right Vision Components for Your Application?

Select compatible components for your vision system with the help of our Vision System Configurator: baslerweb.com/vision-system-configurator

Step by step you can pick cameras, lenses, power and data cables as well as other accessories. We ensure that the selected components fit together.



Typical set-up of a camera system





Basler's Vision Components – Benefits at a Glance

Cost savings

- In-house developments or developments in cooperation with other companies
- Needs-oriented products
- Complexity reduction thanks to perfectly harmonized components
- One-stop shopping
- Single point of contact (spoc)
- Long-term availability

High reliability

- Matching, certified and tested vision components
- Regular function and interoperability tests
- Provision of all required certifications

Good delivery times & long-term availability

- In-house logistics
- Same deliverability for camera and compatible accessories
- Spare parts supply throughout the entire lifecycle

Easy system setup & simple integration

- Broad and harmonized product portfolio
- Time-saving tools to configure and select components
- Professional consulting before and after the buying decision

For more information, please visit baslerweb.com/vision-components



AS EASY AS CONNECTING THE DOTS. SAVE TIME. SAVE MONEY.

your camera

pylon Camera Software Suite

Easy and stable connection of your vision applications with Basler cameras requires the right software in place. The Basler pylon Camera Software Suite consists of reliable, certified drivers for all kinds of camera interfaces, a powerful and easy programming interface, and a comprehensive set of tools for camera set-up.



CONNECT Easy link to Basler cameras

Many ways to connect - With pylon you can connect your application in a standardized way via a pylon GenTL producer, or by writing your own code using one of the pylon APIs. With the pylon APIs, developers can either use convenient universal functions that encapsulate the GenICam standard, or use functions for access directly via GenICam.

GenICam and GenTL - Complex details of these standards are encapsulated by the pylon APIs.

Rich choice of supported interfaces - pylon allows connecting your cameras via USB3, GigE Vision, CoaxPress, Camera Link and others. If your application connects via one of the pylon APIs, switching from one interface to another becomes possible with minimal code changes.



CONFIGURE Powerful tools for camera set-up

Get the best possible image - pylon provides you with a rich set of powerful tools for getting the best image out of your Basler camera, such as Vignetting Correction, Sharpness Indicator, Bandwidth Manager and many more.

Fast access to product documentation - The pylon Viewer allows easiest centralized access to comprehensive camera feature documentation, including code samples.

Use the tools in your language - pylon tools can be used in English, Chinese, Japanese and Korean language.

Integrated camera emulator - pylon comes with a camera emulation that allows testing multi-camera connectivity without having to connect any camera.

your vision



Highlights

- Easy connecting of Basler cameras via GenTL standard
- Productivity and fast results with pylon SDKs
- Stable, certified drivers for Windows, Linux, macOS and Android
- Rich choice of supported interfaces
- Powerful tools for camera set-up

For more information, please visit baslerweb.com/pylon
See the pylon highlights in our video:



DEVELOP High productivity and fast results

80% time savings – Studies show that developers using a pylon API finished tasks in only 20% or less of the time that they needed to complete the same tasks with other comparable APIs.

Easy to learn – With the easy-to-learn pylon APIs and context-related developer documentation, even new employees can become productive right away.

Faster results – The simple structure of the pylon APIs leads to fast development results, leaving the developers more time for other things.

Simple deployment – pylon's copy deployment concept allows installing all necessary pylon components used for your application just by simple file copies.



RUN Stable operation on all platforms

Certified drivers, reliable performance – Tried and used thousands of times, certified, and the performance speak for the stability of the pylon drivers, which have been optimized continuously for many years.

Real-time performance – In comparison studies, pylon demonstrated an outstanding performance with regard to latency and jitter, making pylon suitable for stable image acquisition even in real-time applications.

Platform-independent – With the pylon APIs, the target platform of the developed application doesn't play any role. It's very easy to switch from a Windows environment to a Linux ARM environment without major code changes. This makes pylon perfectly suitable for the development of embedded systems.


| | PYLON FOR WINDOWS | PYLON FOR LINUX X86 | PYLON FOR LINUX ARM | PYLON FOR MACOS | PYLON FOR ANDROID |
|--------------------------------------|--|--|--------------------------|--------------------------------------|-------------------|
| Platform | | | | | |
| Supported OS Version | 8.1 (64 bit), 10 (64 bit), 11 (64 bit) | Ubuntu 16.04 or newer (64 bit), CentOS 8.0-1905 or newer (64 bit) | Ubuntu 16.04 or newer | 10.14, 10.15, 11.1 (Intel 64 bit) | 8, 9, 10, 11 |
| Configuration Tools | | | | | |
| pylon Viewer | ● | ● | ● | ● | |
| pylon IP Configurator | ● | ● | ● | ● | |
| pylon USB Configurator | ● | | | | |
| pylon Camera Link Configurator | ● | | | | |
| Firmware Updater | ● | ● | ● | | |
| CXP Grabber Firmware Updater | ● | ● | | | |
| CXP gpioTool | ● | ● | | | |
| Color Calibrator for MED ace cameras | ● | ● | ● | ● | |
| MPEG-4 Video Recording | ● | ● | ● | | |
| blaze 3D viewer | ● | ● (Ubuntu 18.04 or newer) | | | |
| Application Development | | | | | |
| C++ API | ● | ● | ● | ● | ● |
| VB.Net / C# API | ● | | | | |
| C API | ● | ● | ● | | |
| Java API | | | | | ● |
| GenTL | | | | | |
| USB3 Vision | ● | ● | ● | ● | |
| GigE Vision | ● | ● | ● | ● | |
| CoaXPress 2.0 | ● | ● (64 bit) | | | |
| BCON for MIPI | | | ● (64 bit) | | |
| blaze 3D | ● | ● | | | |
| Interface Driver | | | | | |
| CoaXPress 2.0 Driver | ● | ● (64 bit) | | | |
| GigE Vision Driver | ● | ● | ● | ● | |
| USB3 Vision Driver | ● | ● | ● | ● | ● |
| Camera Link Driver | ● | | | | |
| BCON for MIPI Driver | | | ● (64 bit) | | |
| Direct Show Driver (U3V, GEV) | ● | | | | |
| TWAIN Driver (U3V, GEV) | ● | | | | |
| NeuroCheck Driver (U3V, GEV) | ● | | | | |

AS EASY AS CONNECTING THE DOTS. PYLON VTOOLS - IMAGE PROCESSING, SIMPLIFIED.



pylon vTools Seamlessly Integrated Image Processing with pylon

Use pylon vTools to quickly and easily create high-performance image processing functions for your applications. Design and test intelligent structure recognition, micrometer-precise object positioning, or robust code recognition and integrate everything into your own application – together with camera control and image acquisition, precisely tailored to Basler's camera portfolio.

 Before purchasing, Basler's pylon vTools can be tested for free in the pylon Camera Software Suite. Simply download pylon and activate the included pylon vTools with a valid email address for an 80 days demo period.

Highlights

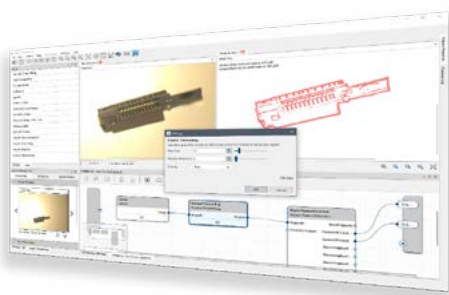
- Seamlessly integrated image processing with pylon
- High performant and robust
- Precisely matched to Basler cameras
- Easy and fast to create visually
- Easy to integrate into existing architectures
- Cost-optimized module cutting

For more information, please visit baslerweb.com/pylonvtools



Easy creation in pylon Viewer

Create image processing functions quickly and easily in the pylon Viewer's Workbench. Here you can select, insert, and configure individual processing steps as vTools. By connecting single vTools together, you can create and test complete image processing workflows. Save image processing workflows created in the Workbench as recipe files, to use them in your own applications.



Flexible integration with pylon APIs

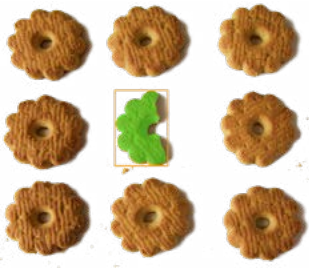
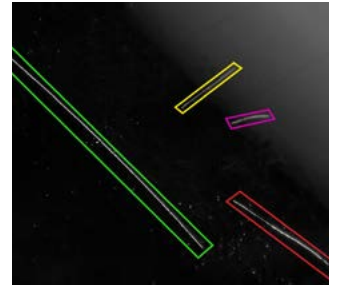
To integrate image processing functions into your own applications, the popular pylon APIs offer a variety of simple functions for loading and executing recipe files, and for evaluating the results in your program code. Adjust the settings of your application via recipe file using the pylon Viewer – without having to change or recompile the application code.

BLOB Analysis – based object recognition

This license includes vTools for thresholding based object recognition, to identify and analyze regions, objects and structures.

Basic:

Absolute thresholding, auto thresholding, and relative thresholding – including vTools for region morphology, object filtering, and feature extraction.



Color BLOB Analysis – Machine learning-based object recognition

The vTools for Color BLOB Analysis contain machine-learning based object recognition to identify and analyze regions, objects and structures.

Basic:

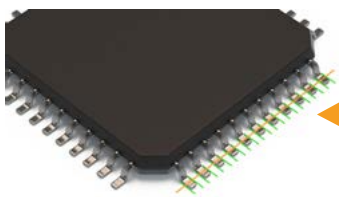
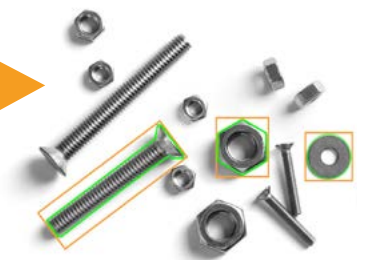
Training and application of a model for one class – including vTools for region morphology, object filtering, and feature extraction.

Geometric Pattern Matching – Edge-based algorithm for simple and robust recognition of shapes, logos and objects

The license for Geometric Pattern Matching provides vTools for easy training of shape models and adjustable recognition of trained shapes on live images.

Basic:

Single pattern search, 360° rotation, without further scaling.



Measurements – Measurement of distances between edges along a line

With this license for Measurements you are enabled to measure distances precisely between edges along lines.

Basic:

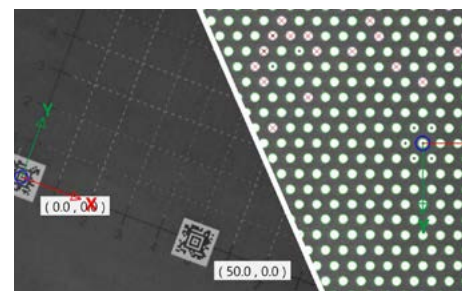
Measure distances between edges along a line.

Calibration and Rectification – Calibration for precise transformation from pixel to real world coordinates

This license comes up with a vTool to quickly and easily calibrate cameras for distortion correction and real world coordinate transformation.

Basic:

Single image, single camera calibration for entocentric cameras



Barcode Reading – Fast and robust recognition of all types of barcodes

The Barcode Reading license covers vTools for recognizing and decoding barcodes of up to 28 different barcode types with best-in-class recognition rates.

Basic:

For up to two barcodes per image and one group of barcode types per installation.



Data Matrix Code Reader – Fast and robust recognition of all types of Data Matrix codes

This license includes vTools for best-in-class recognition and decoding Data Matrix Codes.

Basic:

For up to three Data Matrix Codes per image, dark on bright background.

QR Code Reading – Fast and robust recognition of all types of QR codes

The QR Code Reading license comprises high performance vTools for recognizing and decoding QR Codes.

Basic:

For up to three QR Codes per image, dark on bright background.



Dongle – USB dongle for license activation for commercial use

For activation of commercial licenses, you need one USB dongle per system onto which the licenses are loaded. The licenses are then bound to the dongle and can be exchanged between different systems.

Compact USB dongle for license activation

EVEN THE BEST CAN GET BETTER. ACE 2. ENGINEERED FOR YOU.

Basler ace 2

One camera series, two product lines. Always the right choice!

Welcome to the next ace generation! With its optimized hardware design, the latest CMOS sensor technology and our unique Beyond features, the ace 2 addresses both: rising customer needs for cost-effective solutions for standard applications, and increased performance requirements.

Tailored to fulfil the individual tasks of your vision system, the two product lines – ace 2 Basic and ace 2 Pro – ensure higher frame rates, reduced data volumes and superior image quality. And the best part is: you only pay for what you really need. Engineered for you. ace 2.

Highlights

- Two product lines: ace 2 Basic and ace 2 Pro – tailored to different vision needs
- Including unique value-add features like Compression Beyond, Pixel Beyond and PGI
- Fast and cost-effective software integration
- Resolutions up to 24 MP
- 5GigE interface on ace 2 Basic

For more information, please visit baslerweb.com/ace2



Unique Features from Basler

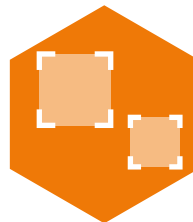
Besides the popular PGI feature set the ace 2 Pro cameras also include our new Beyond features which are especially characterized by the fact that their functionality is unique in the market and often even patented or patent-pending.



COMPRESSION BEYOND

This feature allows you to significantly expand the GigE bandwidth of your ace 2 Pro. Lossless compression enables faster frame rates and therefore higher throughput. To find the optimal balance between image size and image quality for your application, you can individually adjust the compression factor and also choose an even stronger, but then lossy compression.

More information: baslerweb.com/compression-beyond

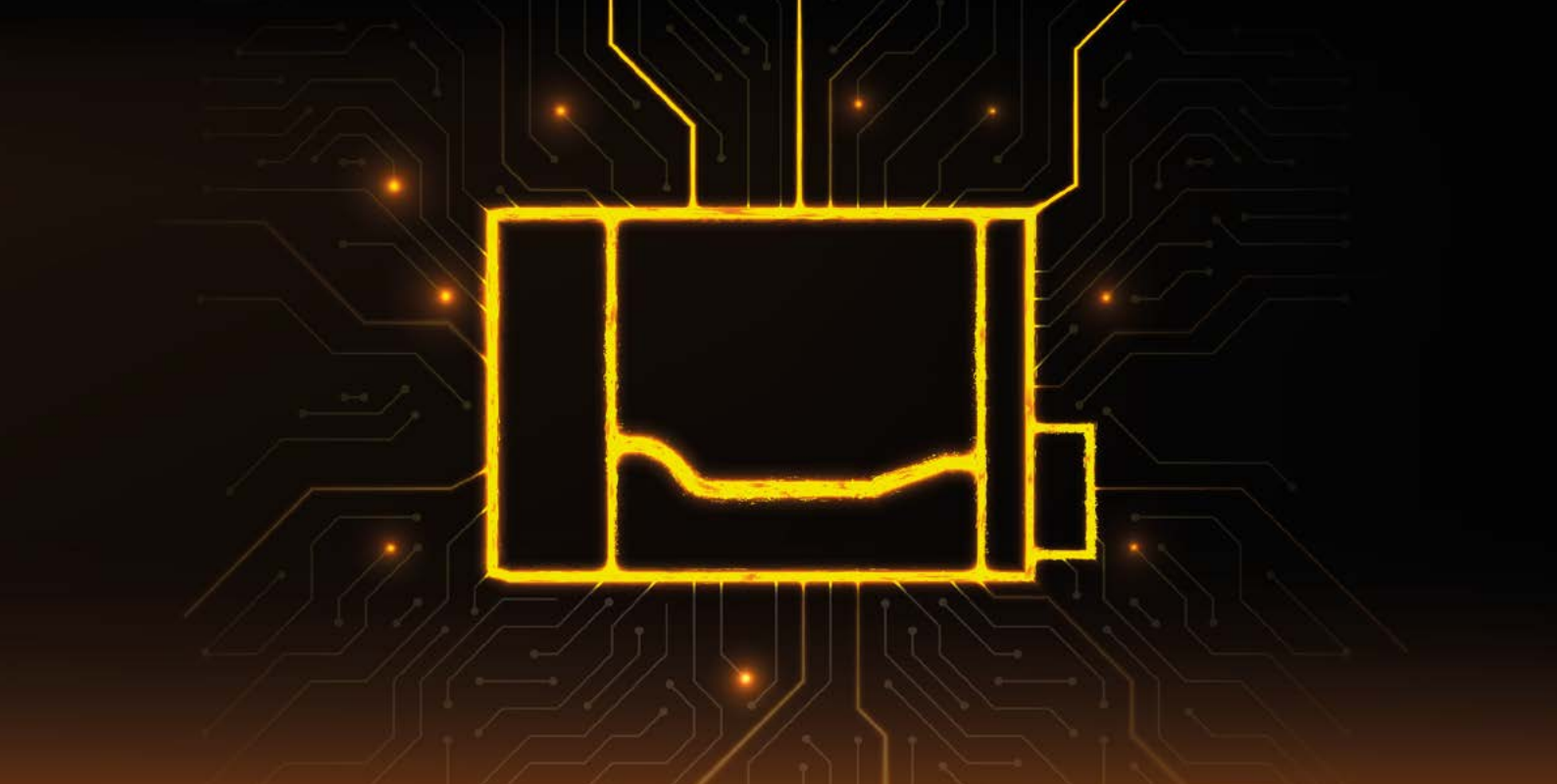


PIXEL BEYOND

With this feature you can change pixel sizes yourself and simulate certain sensor characteristics, such as those of discontinued sensors for example, which allows for an uncomplicated redesign.

Based on a novel interpolation method developed by Basler, Pixel Beyond overcomes the limits of conventional binning by allowing the use of decimal numbers in addition to integer factors. This results in significantly more flexibility.

More information: baslerweb.com/pixel-beyond



ace 2 Basic

Basler's proven reliability with extensive computer vision feature set for standard machine vision applications.

Highlights:

- Optimized hardware meets state-of-the-art CMOS sensor technology
- Powerful computer vision feature set
- Unbeatable price/performance ratio for standard vision applications
- Available with 5GigE interface

ace 2 Pro

All the benefits of the ace 2 Basic plus PGI feature set plus new, unique Beyond features for maximum performance.

Highlights:

- Compression Beyond for higher bandwidth on GigE using lossless compression
- Pixel Beyond for uncomplicated sensor redesign through individual adjustment of pixel size and sensor characteristics
- Popular PGI feature set from Basler included
- Excellent price/performance ratio for more demanding vision applications



Watch our [simpleshow](#) video to learn all about the benefits of the ace 2 camera series and Basler's Beyond features.





ace 2 Basic



ace 2 Pro

ACE 2 USB

Product Group Specifications

| | |
|--------------------------------------|--|
| Interface | USB 3.0 |
| Housing Size [L × W × H] | 42.8 mm × 29 mm × 29 mm |
| Housing Temperature during operation | ace 2 Basic: -10°C – 60°C, ace 2 Pro: 0°C - 50°C |
| Typical Weight | 85 g |
| Lens Mount | C-mount |
| Power Supply | Via USB 3.0 interface |
| Digital I/O | 1 opto-isolated input + 2 GPIO |
| Synchronization | Via hardware trigger, via software trigger or free-run |
| Exposure Control | Via hardware trigger or programmable via the camera API |
| Conformity | CE, RoHS, GenICam, USB3 Vision, IP30, UL, FCC, KC, EAC |
| Driver | Basler pylon Camera Software Suite or 3rd party USB3 Vision Software |
| Operating System | Windows, Linux, macOS |

| CAMERA MODEL | SENSOR | RESOLUTION [H×V PIXELS] | RESOLUTION [MP] | SENSOR TYPE | SHUTTER | FRAME RATE [FPS] | PIXEL SIZE [μm ²] | OPTICAL SIZE |
|----------------------|-----------|-------------------------|-----------------|-------------|---------|------------------|-------------------------------|--------------|
| ace 2 Basic | | | | | | | | |
| a2A1920-160um/ucBAS | IMX392 | 1920×1200 | 2.3 | CMOS | Global | 160 | 3.45×3.45 | 1/2.3" |
| a2A2590-60um/ucBAS | IMX334ROI | 2592×1944 | 5 | CMOS | Rolling | 60 | 2.0×2.0 | 1/2.8" |
| ★ a2A2448-75um/ucBAS | IMX547 | 2448×2048 | 5 | CMOS | Global | 75 | 2.74×2.74 | 1/1.8" |
| ★ a2A2600-64um/ucBAS | GMAX2505 | 2600×2160 | 5.6 | CMOS | Global | 64 | 2.5×12.5 | 1/2" |
| ★ a2A2840-48um/ucBAS | IMX546 | 2840×2840 | 8 | CMOS | Global | 48 | 2.74×2.74 | 2/3" |
| a2A3840-45um/ucBAS | IMX334 | 3840×2160 | 8.3 | CMOS | Rolling | 45 | 2.0×2.0 | 1/1.8" |
| ★ a2A4200-40um/ucBAS | GMAX2509 | 4200×2160 | 9.1 | CMOS | Global | 40 | 2.5×2.5 | 2/3" |
| ★ a2A4096-30um/ucBAS | IMX545 | 4096×3000 | 12.3 | CMOS | Global | 30 | 2.74×2.74 | 1/1.1" |
| a2A5320-23um/ucBAS | IMX542 | 5320×3032 | 16.1 | CMOS | Global | 23 | 2.74×2.74 | 1.1" |
| a2A4504-18um/ucBAS | IMX541 | 4504×4504 | 20.2 | CMOS | Global | 18 | 2.74×2.74 | 1.1" |
| a2A5328-15um/ucBAS | IMX540 | 5328×4608 | 24.4 | CMOS | Global | 15 | 2.74×2.74 | 1.2" |
| ace 2 Pro | | | | | | | | |
| a2A1920-160um/ucPRO | IMX392 | 1920×1200 | 2.3 | CMOS | Global | 160 ¹ | 3.45×3.45 | 1/2.3" |
| a2A2590-60um/ucPRO | IMX334ROI | 2592×1944 | 5 | CMOS | Rolling | 60 | 2.0×2.0 | 1/2.8" |
| ★ a2A2448-75um/ucPRO | IMX547 | 2448×2048 | 5 | CMOS | Global | 75 | 2.74×2.74 | 1/1.8" |
| ★ a2A2600-64um/ucPRO | GMAX2505 | 2600×2160 | 5.6 | CMOS | Global | 64 | 2.5×2.5 | 1/2" |
| ★ a2A2840-48um/ucPRO | IMX546 | 2840×2840 | 8 | CMOS | Global | 48 | 2.74×2.74 | 2/3" |
| a2A3840-45um/ucPRO | IMX334 | 3840×2160 | 8.3 | CMOS | Rolling | 45 | 2.0×2.0 | 1/1.8" |
| ★ a2A4200-40um/ucPRO | GMAX2509 | 4200×2160 | 9.1 | CMOS | Global | 40 | 2.5×2.5 | 2/3" |
| ★ a2A4096-30um/ucPRO | IMX545 | 4096×3000 | 12.3 | CMOS | Global | 30 | 2.74×2.74 | 1/1.1" |
| a2A5320-23um/ucPRO | IMX542 | 5320×3032 | 16.1 | CMOS | Global | 23 | 2.74×2.74 | 1.1" |
| a2A4504-18um/ucPRO | IMX541 | 4504×4504 | 20.2 | CMOS | Global | 18 | 2.74×2.74 | 1.1" |
| a2A5328-15um/ucPRO | IMX540 | 5328×4608 | 24.4 | CMOS | Global | 15 | 2.74×2.74 | 1.2" |

¹Higher frame rates possible with Compression Beyond. Please refer to our website baslerweb.com/ace2 for detailed information.



ace 2 Basic



ace 2 Pro

ACE 2 GIGE / 5GIGE

Product Group Specifications

| | |
|--------------------------------------|--|
| Interface | Fast Ethernet (100 Mbit/s), GigE (1000 Mbit/s), 2.5GigE (2500 Mbit/s), 5GigE (5000 Mbit/s) |
| Housing Size [L × W × H] | 55.5 mm × 29 mm × 29 mm |
| Housing Temperature during operation | ace 2 Basic ¹ : -10°C - 60°C, ace 2 Pro: 0°C - 50°C |
| Typical Weight | 100 g |
| Lens Mount | C-mount |
| Power Supply | Power over Ethernet (IEEE 802.3af) ² or 12-24 VDC (+/- 10%) |
| Digital I/O | 1 opto-isolated input + 2 GPIO |
| Synchronization | Via hardware trigger, via software trigger or free-run |
| Exposure Control | Via hardware trigger or programmable via the camera API |
| Conformity | CE, RoHS, GenICam, GigE Vision 2.0, IP30, UL ² , FCC, KC, EAC |
| Driver | Basler pylon Camera Software Suite or 3rd party GigE Vision Software |
| Operating System | Windows, Linux, macOS |

¹Please visit our website for latest specification information on ace 2 Basic 5GigE models.

²not available for ace 2 Basic 5GigE models

| CAMERA MODEL | SENSOR | RESOLUTION [H×V PIXELS] | RESOLUTION [MP] | SENSOR TYPE | SHUTTER | FRAME RATE [FPS] | PIXEL SIZE [μm ²] | OPTICAL SIZE |
|---------------------------|-----------|-------------------------|-----------------|-------------|---------|------------------|-------------------------------|--------------|
| ace 2 Basic – GigE | | | | | | | | |
| a2A1920-51gm/gcBAS | IMX392 | 1920×1200 | 2.3 | CMOS | Global | 51 | 3.45×3.45 | 1/2.3" |
| a2A2590-22gm/gcBAS | IMX334ROI | 2592×1944 | 5 | CMOS | Rolling | 22 | 2.0×2.0 | 1/2.8" |
| ★ a2A2448-23gm/gcBAS | IMX547 | 2448×2048 | 5 | CMOS | Global | 23 | 2.74×2.74 | 1/1.8" |
| ★ a2A2600-20gm/gcBAS | GMAX2505 | 2600×2160 | 5.6 | CMOS | Global | 20 | 2.5×2.5 | 1/2" |
| ★ a2A2840-14gm/gcBAS | IMX546 | 2840×2840 | 8 | CMOS | Global | 14 | 2.74×2.74 | 2/3" |
| a2A3840-13gm/gcBAS | IMX334 | 3840×2160 | 8.3 | CMOS | Rolling | 13 | 2.0×2.0 | 1/1.8" |
| ★ a2A4200-12gm/gcBAS | GMAX2509 | 4200×2160 | 9.1 | CMOS | Global | 12 | 2.5×2.5 | 2/3" |
| ★ a2A4096-9gm/gcBAS | IMX545 | 4096×3000 | 12.3 | CMOS | Global | 9 | 2.74×2.74 | 1/1.1" |
| a2A5320-7gm/gcBAS | IMX542 | 5320×3032 | 16.1 | CMOS | Global | 7 | 2.74×2.74 | 1.1" |
| a2A4504-5gm/gcBAS | IMX541 | 4504×4504 | 20.2 | CMOS | Global | 5 | 2.74×2.74 | 1.1" |
| a2A5328-4gm/gcBAS | IMX540 | 5328×4608 | 24.4 | CMOS | Global | 4 | 2.74×2.74 | 1.2" |

| | | | | | | | | |
|-------------------------|-----------|-----------|------|------|---------|-----------------|-----------|--------|
| ace 2 Pro – GigE | | | | | | | | |
| a2A1920-51gm/gcPRO | IMX392 | 1920×1200 | 2.3 | CMOS | Global | 51 ¹ | 3.45×3.45 | 1/2.3" |
| a2A2590-22gm/gcPRO | IMX334ROI | 2592×1944 | 5 | CMOS | Rolling | 22 ¹ | 2.0×2.0 | 1/2.8" |
| ★ a2A2448-23gm/gcPRO | IMX547 | 2448×2048 | 5 | CMOS | Global | 23 ¹ | 2.74×2.74 | 1/1.8" |
| ★ a2A2600-20gm/gcPRO | GMAX2505 | 2600×2160 | 5.6 | CMOS | Global | 20 ¹ | 2.5×2.5 | 1/2" |
| ★ a2A2840-14gm/gcPRO | IMX546 | 2840×2840 | 8 | CMOS | Global | 14 ¹ | 2.74×2.74 | 2/3" |
| a2A3840-13gm/gcPRO | IMX334 | 3840×2160 | 8.3 | CMOS | Rolling | 13 ¹ | 2.0×2.0 | 1/1.8" |
| ★ a2A4200-12gm/gcPRO | GMAX2509 | 4200×2160 | 9.1 | CMOS | Global | 12 ¹ | 2.5×2.5 | 2/3" |
| ★ a2A4096-9gm/gcPRO | IMX545 | 4096×3000 | 12.3 | CMOS | Global | 9 ¹ | 2.74×2.74 | 1/1.1" |
| a2A5320-7gm/gcPRO | IMX542 | 5320×3032 | 16.1 | CMOS | Global | 7 ¹ | 2.74×2.74 | 1.1" |
| a2A4504-5gm/gcPRO | IMX541 | 4504×4504 | 20.2 | CMOS | Global | 5 ¹ | 2.74×2.74 | 1.1" |
| a2A5328-4gm/gcPRO | IMX540 | 5328×4608 | 24.4 | CMOS | Global | 4 ¹ | 2.74×2.74 | 1.2" |

¹Higher frame rates possible with Compression Beyond. Please refer to our website [baslerweb.com/ace2](https://www.baslerweb.com/ace2) for detailed information.

| CAMERA MODEL | SENSOR | RESOLUTION [H×V PIXELS] | RESOLUTION [MP] | SENSOR TYPE | SHUTTER | FRAME RATE [FPS] | PIXEL SIZE [μm ²] | OPTICAL SIZE |
|----------------------------|--------|-------------------------|-----------------|-------------|---------|------------------|-------------------------------|--------------|
| ace 2 Basic – 5GigE | | | | | | | | |
| ★ a2A2448-105g5m/g5cBAS | IMX547 | 2448×2048 | 5 | CMOS | Global | 106 | 2.74×2.74 | 1/1.8" |
| ★ a2A2840-67g5m/g5cBAS | IMX546 | 2840×2840 | 8 | CMOS | Global | 67 | 2.74×2.74 | 2/3" |
| ★ a2A4096-44g5m/g5cBAS | IMX545 | 4096×3000 | 12.3 | CMOS | Global | 44 | 2.74×2.74 | 1/1.1" |
| ★ a2A5320-34g5m/g5cBAS | IMX542 | 5320×3032 | 16.1 | CMOS | Global | 34 | 2.74×2.74 | 1.1" |
| ★ a2A4504-27g5m/g5cBAS | IMX541 | 4504×4504 | 20.2 | CMOS | Global | 27 | 2.74×2.74 | 1.1" |
| ★ a2A5328-22g5m/g5cBAS | IMX540 | 5328×4608 | 24.4 | CMOS | Global | 22 | 2.74×2.74 | 1.2" |

Basler ace

Small, affordable and highly productive

High quality and performance, low list prices from 199 € and small cases with 29 mm×29 mm as well as 30×40 mm footprints: This combination makes the ace one of the top-selling cameras, with thousands of satisfied customers. With more than 130 models, the ace series is the largest camera series in the industrial image processing market

Highlights

- Broadest selection in the industry offering various resolutions, speeds, interfaces and sensors from all leading manufacturers
- State-of-the-art CMOS sensor technology
- High value-add features

For more information, please visit baslerweb.com/ace



ace Product Lines

(real sizes)



ace Classic Keyfacts

The ace Classic includes camera models with CMOS sensors from ams, e2V and onsemi (MT line) as well as CCD sensors from Sony. It offers a broad selection of interfaces (USB 3.0, GigE, Camera Link) and covers resolutions from VGA to 14 MP.

- First of its kind and the most successful camera series in the Machine Vision market
- Standard Feature Set



ace U Keyfacts

With speeds of up to 751 fps and the latest CMOS sensors from Sony (Pregius, STARVIS, Exmor R) and onsemi (PYTHON), the ace U represents the next evolution of the ace in the areas of sensor technology and firmware features.

- Advanced Feature Set including PGI, a unique feature combination, consisting of 5×5 Debayering, Color-Anti-Aliasing, Denoising and Improved Sharpness

PGI



ace L Keyfacts

The ace L profits from the same evolutionary steps in firmware features as the ace U. Furthermore, it is capable of carrying high resolution 9 and 12 MP Sony Pregius CMOS sensors with optical formats above 1".

- Brilliant image quality at speeds of up to 42 fps
- Advanced Feature Set including PGI, a unique feature combination, consisting of 5×5 Debayering, Color-Anti-Aliasing, Denoising and Improved Sharpness

PGI

PGI Feature Set

All cameras within the ace U and ace L product line come with Basler's powerful in-camera image optimization PGI that improves your images at the full speed of your camera. It is a unique combination of 5×5 Debayering, Color-Anti-Aliasing, Denoising and Improved Sharpness. This gives you the opportunity to get the best pictures directly from your camera without any

additional processor load. Use the options of the Basler pylon Camera Software Suite to enable PGI, or change settings for selected PGI components for optimal results.

Learn more about PGI at
baslerweb.com/PGI



ALL YOU NEED IS **ACE.**

ANY INDUSTRY. ANY NEED. WITH MORE
THAN 130 MODELS THERE'S AN ACE FOR IT ALL.



ACE USB

Product Group Specifications

| | |
|--------------------------|---|
| Interface | USB 3.0 |
| Housing Size [L × W × H] | ace Classic/ace U: 29.3 mm × 29 mm × 29 mm, ace L: 35.8 mm × 40 mm × 30 mm |
| Housing Temperature | 0 °C - 50 °C ¹ |
| Typical Weight | < 80 g |
| Lens Mount | ace Classic: C- or CS-mount (depending on model), ace U/ace L: C-mount |
| Power Supply | Via USB 3.0 interface |
| Digital I/O | 1 opto-isolated input + 1 opto-isolated output + 2 Fast-GPIO (configurable as In/Out) |
| Power Suspend Mode | Yes, less than 0.02 W, configurable |
| Synchronization | Via hardware trigger, via software trigger or free-run |
| Exposure Control | Via hardware trigger ² or programmable via the camera API |
| Conformity | CE, RoHS, GenICam, USB3 Vision, IP30, UL, FCC, KC, EAC |
| Driver | Basler pylon Camera Software Suite or 3rd party USB3 Vision Software |
| Operating System | Windows, Linux, macOS |

¹0 °C - 60 °C for acA2040-90um/uc, acA2040-90umNIR.

²Not applicable for ace models with sensors of the MT line from onsemi.

| CAMERA MODEL | SENSOR | RESOLUTION [H×V PIXELS] | RESOLUTION [MP] | SENSOR TYPE | SHUTTER | FRAME RATE [FPS] | PIXEL SIZE [μm ²] | OPTICAL SIZE |
|--------------------|----------------------|-------------------------|-----------------|-------------|---------|------------------|-------------------------------|--------------|
| ace Classic | | | | | | | | |
| acA640-90uc | ICX424 | 659×494 | VGA | CCD | Global | 90 | 7.4×7.4 | 1/3" |
| acA1600-20uc | ICX274 | 1626×1236 | 2 | CCD | Global | 20 | 4.4×4.4 | 1/1.8" |
| acA1920-25um/uc | MT9P031 | 1920×1080 | 2 | CMOS | Rolling | 26 | 2.2×2.2 | 1/3.7" |
| acA2000-165um/uc | CMV2000 | 2048×1088 | 2 | CMOS | Global | 165 | 5.5×5.5 | 2/3" |
| acA2000-165umNIR | CMV2000 NIR-enhanced | 2048×1088 | 2 | CMOS | Global | 165 | 5.5×5.5 | 2/3" |
| acA2040-90um/uc | CMV4000 | 2048×2048 | 4 | CMOS | Global | 90 | 5.5×5.5 | 1" |
| acA2040-90umNIR | CMV4000 NIR-enhanced | 2048×2048 | 4 | CMOS | Global | 90 | 5.5×5.5 | 1" |
| acA2500-14um/uc | MT9P031 | 2592×1944 | 5 | CMOS | Rolling | 14 | 2.2×2.2 | 1/2.5" |
| acA3800-14um/uc | MT9J003 | 3840×2748 | 10 | CMOS | Rolling | 14 | 1.67×1.67 | 1/2.3" |



| CAMERA MODEL | SENSOR | RESOLUTION [H×V PIXELS] | RESOLUTION [MP] | SENSOR TYPE | SHUTTER | FRAME RATE [FPS] | PIXEL SIZE [μm ²] | OPTICAL SIZE |
|------------------|-------------|-------------------------|-----------------|-------------|---------|------------------|-------------------------------|--------------|
| ace U | | | | | | | | |
| acA640-750um/uc | PYTHON 300 | 640×480 | VGA | CMOS | Global | 751 | 4.8×4.8 | 1/4" |
| acA720-520um/uc | IMX287 | 720×540 | VGA | CMOS | Global | 525 | 6.9×6.9 | 1/2.9" |
| acA800-510um/uc | PYTHON 500 | 800×600 | CCIR | CMOS | Global | 511 | 4.8×4.8 | 1/3.6" |
| acA1300-200um/uc | PYTHON 1300 | 1280×1024 | 1.3 | CMOS | Global | 203 | 4.8×4.8 | 1/2" |
| acA1440-220um/uc | IMX273 | 1440×1080 | 1.6 | CMOS | Global | 227 | 3.45×3.45 | 1/2.9" |
| acA1920-40um/uc | IMX249 | 1920×1200 | 2.3 | CMOS | Global | 41 | 5.86×5.86 | 1/1.2" |
| acA1920-150um/uc | PYTHON2000 | 1920×1200 | 2.3 | CMOS | Global | 150 | 4.8×4.8 | 2/3" |
| acA1920-155um/uc | IMX174 | 1920×1200 | 2.3 | CMOS | Global | 164 | 5.86×5.86 | 1/1.2" |
| acA2040-55um/uc | IMX265 | 2048×1536 | 3 | CMOS | Global | 55 | 3.45×3.45 | 1/1.8" |
| acA2040-120um/uc | IMX252 | 2048×1536 | 3 | CMOS | Global | 120 | 3.45×3.45 | 1/1.8" |
| acA2440-35um/uc | IMX264 | 2448×2048 | 5 | CMOS | Global | 35 | 3.45×3.45 | 2/3" |
| acA2440-75um/uc | IMX250 | 2448×2048 | 5 | CMOS | Global | 75 | 3.45×3.45 | 2/3" |
| acA2500-60um/uc | PYTHON5000 | 2592×2048 | 5 | CMOS | Global | 60 | 4.8×4.8 | 1" |
| acA3088-57um/uc | IMX178 | 3088×2064 | 6 | CMOS | Rolling | 59 | 2.4×2.4 | 1/1.8" |
| acA4024-29um/uc | IMX226 | 4024×3036 | 12 | CMOS | Rolling | 31 | 1.85×1.85 | 1/1.7" |
| acA5472-17um/uc | IMX183 | 5472×3648 | 20 | CMOS | Rolling | 17 | 2.4×2.4 | 1" |
| ace L | | | | | | | | |
| acA4096-30um/uc | IMX267 | 4096×2168 | 9 | CMOS | Global | 32 | 3.45×3.45 | 1" |
| acA4096-40um/uc | IMX255 | 4096×2168 | 9 | CMOS | Global | 42 | 3.45×3.45 | 1" |
| acA4112-20um/uc | IMX304 | 4096×3000 | 12 | CMOS | Global | 23 | 3.45×3.45 | 1.1" |
| acA4112-30um/uc | IMX253 | 4096×3000 | 12 | CMOS | Global | 30 | 3.45×3.45 | 1.1" |

ACE GIGE

| Product Group Specifications | |
|--------------------------------------|--|
| Interface | Fast Ethernet (100 Mbit/s) or GigE (1000 Mbit/s) |
| Housing Size [L × W × H] | ace Classic/ace U: 42 mm × 29 mm × 29 mm, ace L: 50 mm × 40 mm × 30 mm |
| Housing Temperature during operation | 0 °C - 50 °C |
| Typical Weight | <90 g |
| Lens Mount | ace Classic: C- or CS-mount (depending on model), ace U/ace L: C-mount |
| Power Supply | ace Classic: Power over Ethernet (IEEE 802.3af) or 12 VDC (+/- 10%) ace U/ace L: Power over Ethernet (IEEE 802.3af) or 12-24 VDC (+/- 10%) ¹ |
| Digital I/O | ace Classic: 1 opto-isolated input + 1 opto-isolated output ace U/ace L: 1 opto-isolated input + 1 opto-isolated output + 1 GPIO |
| Synchronization | Via hardware trigger, via software trigger or free-run |
| Exposure Control | Via hardware trigger ² or programmable via the camera API |
| Conformity | CE, RoHS, GenICam, GigE Vision, IP30, UL, FCC, IEEE 802.3af (PoE), KC, EAC |
| Driver | Basler pylon Camera Software Suite or 3rd party GigE Vision Software |
| Operating System | Windows, Linux, macOS |

¹ Also applies to ace Classic models acA3800-10gm/gc.

² Not applicable for acAI280-60gm/gc, acAI300-60gm/gc, acAI600-60gm/gc, acA3800-10gm/gc.



| CAMERA MODEL | SENSOR | RESOLUTION [H×V PIXELS] | RESOLUTION [MP] | SENSOR TYPE | SHUTTER | FRAME RATE [FPS] | PIXEL SIZE [μm ²] | OPTICAL SIZE |
|--------------------|----------------------|-------------------------|-----------------|-------------|------------------|------------------|-------------------------------|--------------|
| ace Classic | | | | | | | | |
| acA640-90gc | ICX424 | 659×494 | VGA | CCD | Global | 90 | 7.4×7.4 | 1/3" |
| acA1280-60gm/gc | EV76C560 | 1282×1026 | 1.3 | CMOS | Rolling | 60 | 5.3×5.3 | 1/1.8" |
| acA1300-60gm/gc | EV76C560 | 1282×1026 | 1.3 | CMOS | Global & Rolling | 60 | 5.3×5.3 | 1/1.8" |
| acA1300-60gmNIR | EV76C661 | 1282×1026 | 1.3 | CMOS | Global & Rolling | 60 | 5.3×5.3 | 1/1.8" |
| acA1600-20gc | ICX274 | 1626×1236 | 2 | CCD | Global | 20 | 4.4×4.4 | 1/1.8" |
| acA1600-60gm/gc | EV76C570 | 1602×1202 | 2 | CMOS | Global & Rolling | 60 | 4.5×4.5 | 1/1.8" |
| acA1920-25gm/gc | MT9P031 | 1920×1080 | 2 | CMOS | Rolling | 25 | 2.2×2.2 | 1/3.7" |
| acA2000-50gm/gc | CMV2000 | 2048×1088 | 2 | CMOS | Global | 50 | 5.5×5.5 | 2/3" |
| acA2000-50gmNIR | CMV2000 NIR-enhanced | 2048×1088 | 2 | CMOS | Global | 50 | 5.5×5.5 | 2/3" |
| acA2040-25gm/gc | CMV4000 | 2048×2048 | 4 | CMOS | Global | 25 | 5.5×5.5 | 1" |
| acA2040-25gmNIR | CMV4000 NIR-enhanced | 2048×2048 | 4 | CMOS | Global | 25 | 5.5×5.5 | 1" |
| acA2500-14gm/gc | MT9P031 | 2592×1944 | 5 | CMOS | Rolling | 14 | 2.2×2.2 | 1/2.5" |
| acA3800-10gm/gc | MT9J003 | 3840×2748 | 10 | CMOS | Rolling | 10 | 1.67×1.67 | 1/2.3" |
| ace U | | | | | | | | |
| acA640-121gm | ICX618 Replacement | 659×494 | VGA | CMOS | Global | 134 | 5.6×5.6 | 1/4" |
| acA640-300gm/gc | PYTHON 300 | 640×480 | VGA | CMOS | Global | 376 | 4.8×4.8 | 1/4" |
| acA720-290gm/gc | IMX287 | 720×540 | VGA | CMOS | Global | 291 | 6.9×6.9 | 1/2.9" |
| acA800-200gm/gc | PYTHON 500 | 800×600 | CCIR | CMOS | Global | 240 | 4.8×4.8 | 1/3.6" |
| acA1300-75gm/gc | PYTHON 1300 | 1280×1024 | 1.3 | CMOS | Global | 88 | 4.8×4.8 | 1/2" |
| acA1440-73gm/gc | IMX273 | 1440×1080 | 1.6 | CMOS | Global | 73 | 3.45×3.45 | 1/2.9" |
| acA1920-40gm/gc | IMX249 | 1920×1200 | 2.3 | CMOS | Global | 42 | 5.86×5.86 | 1/1.2" |
| acA1920-48gm/gc | PYTHON 2000 | 1920×1200 | 2.3 | CMOS | Global | 50 | 4.8×4.8 | 2/3" |
| acA1920-50gm/gc | IMX174 | 1920×1200 | 2.3 | CMOS | Global | 50 | 5.86×5.86 | 1/1.2" |
| acA2040-35gm/gc | IMX265 | 2048×1536 | 3 | CMOS | Global | 36 | 3.45×3.45 | 1/1.8" |
| acA2440-20gm/gc | IMX264 | 2448×2048 | 5 | CMOS | Global | 23 | 3.45×3.45 | 2/3" |
| acA2500-20gm/gc | PYTHON 5000 | 2592×2048 | 5 | CMOS | Global | 21 | 4.8×4.8 | 1" |
| acA3088-16gm/gc | IMX178 | 3088×2064 | 6 | CMOS | Rolling | 16 | 2.4×2.4 | 1/1.8" |
| acA4024-8gm/gc | IMX226 | 4024×3036 | 12 | CMOS | Rolling | 8 | 1.85×1.85 | 1/1.7" |
| acA5472-5gm/gc | IMX183 | 5472×3648 | 20 | CMOS | Rolling | 5 | 2.4×2.4 | 1" |
| ace L | | | | | | | | |
| acA4096-11gm/gc | IMX267 | 4096×2160 | 9 | CMOS | Global | 12 | 3.45×3.45 | 1" |
| acA4112-8gm/gc | IMX304 | 4096×3000 | 12 | CMOS | Global | 8 | 3.45×3.45 | 1.1" |



ACE CAMERA LINK

Product Group Specifications

| | |
|--------------------------------------|--|
| Interface | Camera Link (base, medium or full) |
| Housing Size [L × W × H] | 42 mm × 29 mm × 29 mm, ace |
| Housing Temperature during operation | 0 °C – 50 °C |
| Typical Weight | ≈ 100 g |
| Lens Mount | C-mount |
| Power Supply | Power over Camera Link (PoCL) or 12VDC (+/- 10%) |
| Digital I/O | 1 opto-isolated input or output (GPIO) |
| Synchronization | Via hardware trigger, via software trigger or free-run |
| Exposure Control | Trigger width or timed |
| Conformity | CE, RoHS, GenICam, Camera Link, IP30, FCC, KC, EAC |
| Driver | Basler pylon Camera Software Suite or 3rd party Camera Link Software |
| Operating System | Windows, Linux, macOS |

| CAMERA MODEL | SENSOR | RESOLUTION [H×V PIXELS] | RESOLUTION [MP] | SENSOR TYPE | SHUTTER | FRAME RATE [FPS] | PIXEL SIZE [μm ²] | OPTICAL SIZE |
|--------------------|---------|-------------------------|-----------------|-------------|---------|------------------|-------------------------------|--------------|
| ace Classic | | | | | | | | |
| acA2000-340km/kc | CMV2000 | 2048 × 1088 | 2 | CMOS | Global | 340 | 5.5 × 5.5 | 2/3" |
| acA2000-340kmNIR | CMV2000 | 2048 × 1088 | 2 | CMOS | Global | 340 | 5.5 × 5.5 | 2/3" |
| acA2040-180km/kc | CMV4000 | 2048 × 2048 | 4 | CMOS | Global | 180 | 5.5 × 5.5 | 1" |
| acA2040-180kmNIR | CMV4000 | 2048 × 2048 | 4 | CMOS | Global | 180 | 5.5 × 5.5 | 1" |



Basler boost

It's time to launch your application into new galaxies of performance

The boost is our first camera with a CoaXPress 2.0 interface that offers its users an unprecedentedly high bandwidth for data transfer. New CMOS sensors are combined with the latest frame grabber technology. This leads to easy and fast transmission of large amounts of data over long distances – for an extraordinary price/ performance ratio.

Evolve with CoaXPress 2.0 (CXP-12)

With the boost series, Basler is one of the first camera manufacturers on the market to expand its portfolio with a camera featuring the CoaXPress standard in its version 2.0 combined with modern CMOS sensor technology. High speed, high resolution and easy cabling are just some of the advantages of this match of latest technology developments. Upgrade your Camera Link or CXP-6 vision system and reduce your system costs significantly by switching to CoaXPress 2.0 with our boost series.

Evaluation Kit – Everything You Need for Testing

Testing is essential, but it's also a hassle, and can slow down your project plans, especially when dealing with new interface versions like e.g. CoaXPress 2.0. Therefore, we provide not only camera and interface card, but also all suitable vision components for your test scenario including CoaXPress cable, I/O cable, heat sinks and lens mount adapter. For more information on the CXP-12 interface cards, please see [page 46](#).

Highlights

- Excellent image quality via Sony sensors of the 2nd (Pregius) to 4th generation (Pregius S) and sensors of the XGS series from onsemi as ideal successors of CCD sensors
- 12.5 Gbps transfer rate through one channel
- Impeccable image transmission via powerful CoaXPress 2.0 (CXP-12) interface
- Easy installation with matching Basler CXP-12 interface card

For more information, please visit baslerweb.com/boost



BOOST
Product Group Specifications

| | |
|--------------------------------------|---|
| Interface | CoaXPress 2.0 (CXP-12) |
| Housing Size [L × W × H] | 45 mm × 80 mm × 80 mm |
| Housing Temperature during operation | 0 °C - 50 °C |
| Typical Weight | 480 g |
| Lens Mount | Flexible mount concept (e.g. adapters available for C-mount, F-mount, M42 × 0.75 and M42 × 1) |
| Power Supply | PoCXP or 24 VDC |
| Digital I/O | 1/2 inputs, 2 GPIO |
| Synchronization | Via hardware trigger, via software trigger, or free-run |
| Exposure Control | Via hardware trigger or programmable via the camera API |
| Conformity | RoHS, CE, GenICam, KC, UL, EAC ¹ , CoaXPress 2.0 |
| Driver | Basler pylon Camera Software Suite |
| Operating System | Windows, Linux (64-Bit) |

¹Only for selected models, please refer to our website baslerweb.com/boost for detailed information.

| CAMERA MODEL | SENSOR | RESOLUTION [H×V PIXELS] | RESOLUTION [MP] | SENSOR TYPE | SHUTTER | FRAME RATE [FPS] | PIXEL SIZE [μm ²] | OPTICAL SIZE |
|---|----------|-------------------------|-----------------|-------------|---------|------------------|-------------------------------|--------------|
| boost | | | | | | | | |
| ★ boa1936-400cm/cc | IMX421 | 1936 × 1464 | 3 | CMOS | Global | 400 | 4.5 × 4.5 | 2/3" |
| ★ boa2448-250cm/cc | IMX537 | 2448 × 2048 | 5 | CMOS | Global | 250 | 2.74 × 2.74 | 1/1.8" |
| ★ boa2832-190cm/cc | IMX536 | 2840 × 2840 | 8 | CMOS | Global | 190 | 2.74 × 2.74 | 2/3" |
| boA4096-93cm/cc | IMX255 | 4096 × 2168 | 9 | CMOS | Global | 93 | 3.45 × 3.45 | 1" |
| ★ boA4096-180cm/cc | IMX535 | 4096 × 3000 | 12 | CMOS | Global | 180 | 2.74 × 2.74 | 1/1.1" |
| boA4112-68cm/cc | IMX253 | 4096 × 3000 | 12 | CMOS | Global | 68 | 3.45 × 3.45 | 1.1" |
| boA5320-150cm/cc | IMX532 | 5320 × 3032 | 16.1 | CMOS | Global | 150 | 2.74 × 2.74 | 1.1" |
| boA4504-100cm/cc | IMX531 | 4504 × 4504 | 20.2 | CMOS | Global | 100 | 2.74 × 2.74 | 1.1" |
| boA5328-100cm/cc | IMX530 | 5328 × 4608 | 24.4 | CMOS | Global | 100 | 2.74 × 2.74 | 1.2" |
| boA4500-45cm/cc | XGS20000 | 4500 × 4500 | 20 | CMOS | Global | 45 | 3.2 × 3.2 | 1.3" |
| boA6500-36cm/cc | XGS32000 | 6560 × 4948 | 32 | CMOS | Global | 35 | 3.2 × 3.2 | APS-C |
| boA8100-16cm/cc | XGS45000 | 8192 × 5468 | 45 | CMOS | Global | 15 | 3.2 × 3.2 | Super 35mm |
| ★ CXP-12 Evaluation Kit boa1936-400cm/cc 1C | IMX421 | 1936 × 1464 | 3 | CMOS | Global | 400 | 4.5 × 4.5 | 2/3" |
| ★ CXP-12 Evaluation Kit boa2448-250cm/cc 2C | IMX537 | 2448 × 2048 | 5 | CMOS | Global | 250 | 2.74 × 2.74 | 1/1.8" |
| ★ CXP-12 Evaluation Kit boa2832-190cm/cc 2C | IMX536 | 2840 × 2840 | 8 | CMOS | Global | 190 | 2.74 × 2.74 | 2/3" |
| CXP-12 Evaluation Kit boA4096-93cm/cc 1C | IMX255 | 4096 × 2168 | 9 | CMOS | Global | 93 | 3.45 × 3.45 | 1" |
| ★ CXP-12 Evaluation Kit boA4096-180cm/cc 2C | IMX535 | 4096 × 3000 | 12 | CMOS | Global | 180 | 2.74 × 2.74 | 1/1.1" |
| CXP-12 Evaluation Kit boA4112-68cm/cc 1C | IMX253 | 4096 × 3000 | 12 | CMOS | Global | 68 | 3.45 × 3.45 | 1.1" |
| CXP-12 Evaluation Kit boA5320-150cm/cc 2C | IMX532 | 5320 × 3032 | 16.1 | CMOS | Global | 150 | 2.74 × 2.74 | 1.1" |
| CXP-12 Evaluation Kit boA4504-100cm/cc 2C | IMX531 | 4504 × 4504 | 20.2 | CMOS | Global | 100 | 2.74 × 2.74 | 1.1" |
| CXP-12 Evaluation Kit boA5328-100cm/cc 2C | IMX530 | 5328 × 4608 | 24.4 | CMOS | Global | 100 | 2.74 × 2.74 | 1.2" |
| CXP-12 Evaluation Kit boA4500-45cm/cc 1C | XGS20000 | 4500 × 4500 | 20 | CMOS | Global | 45 | 3.2 × 3.2 | 1.3" |
| CXP-12 Evaluation Kit boA6500-36cm/cc 1C | XGS32000 | 6560 × 4948 | 32 | CMOS | Global | 35 | 3.2 × 3.2 | APS-C |
| CXP-12 Evaluation Kit boA8100-16cm/cc 1C | XGS45000 | 8192 × 5468 | 45 | CMOS | Global | 15 | 3.2 × 3.2 | Super 35mm |

For more information on the CXP-12 interface cards included in the evaluation kits, please see [page 46](#).

Basler beat

High speed and high CMOS image quality combined in a proven design

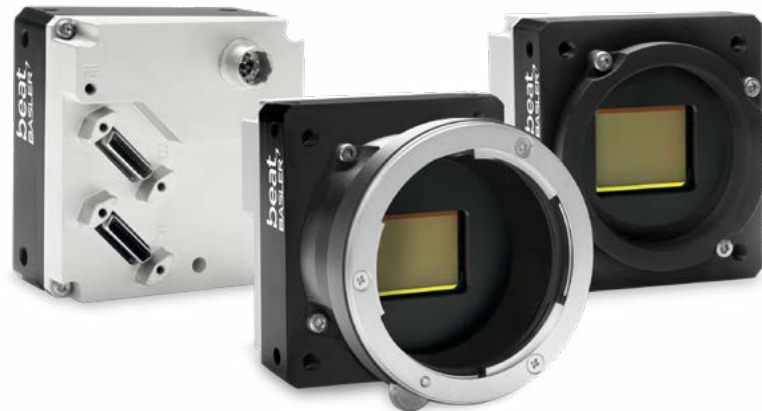
The convincing argument for this advanced camera family starts with its superior image quality even at high image capture rates and high resolutions. The Basler beat series uses the high-speed and very sensitive CMOS sensor CMV12000 by ams. It features both a mono and color model with a full resolution of 12 megapixels with progressive scan and global shutter technology. This CMOS sensor yields far better image quality than the older CMOS sensors. Its output is easily comparable to the image quality created by CCD sensors.

Highlights

- Ideal fit for price-sensitive applications where high speed and high resolution are a must
- High bandwidth connection for maximum grabbing speed with Camera Link, and compatibility with all common frame grabbers



For more information, please visit baslerweb.com/beat



BASLER BEAT

| Product Group Specifications | |
|--------------------------------------|--|
| Interface | Camera Link |
| Housing Size [L × W × H] | 40 mm × 56 mm × 62 mm |
| Housing Temperature during operation | 0 °C to +60 °C |
| Typical Weight | 210 g |
| Lens Mount | F-mount, M58 x 0.75, M42 x 0.75, M42 x 1 |
| Power Supply | 12-24 VDC |
| Digital I/O | Via camera control signals (max. 5) |
| Synchronization | Via hardware trigger, via software trigger or free-run |
| Exposure Control | Trigger width, timed or off |
| Conformity | CE, RoHS, GenICam, IP30, UL, FCC, Camera Link, KC, EAC |
| Driver | Basler pylon Camera Software Suite or 3rd party Camera Link Software |
| Operating System | Windows, Linux, macOS |

| CAMERA MODEL | SENSOR | RESOLUTION [H×V PIXELS] | RESOLUTION [MP] | SENSOR TYPE | SHUTTER | FRAME RATE [FPS] | PIXEL SIZE [µm ²] | OPTICAL SIZE |
|--------------------|----------|-------------------------|-----------------|-------------|---------|------------------|-------------------------------|--------------|
| Basler beat | | | | | | | | |
| beA4000-62km | CMV12000 | 4096 × 3072 | 12.0 | CMOS | Global | 62 | 5.5 × 5.5 | 1.75" |
| beA4000-62kc | CMV12000 | 4088 × 3070 | 12.0 | CMOS | Global | 62 | 5.5 × 5.5 | 1.75" |

Basler pulse

A compact and low weight camera, with elegant design

The pulse series stands out, starting with a sharp, robust metal housing including tripod adapter and a CS-mount which can easily be converted to C- or S-mount. pulse cameras are equipped with the USB3 Vision plug and play interface and offer great stability and impressively low power consumption - only 1.3 watts. These and other features make the pulse a very compact solution for easy system integration as well as for the switch from analog to digital vision technology.

Highlights

- Sharp design with elegant, lightweight and small-size metal housing
- Most pristine and colorful images with high-quality CMOS sensors with global and rolling shutter options
- Resolutions from 1.2 to 5 MP and up to 60 fps
- Including PGI feature set



For more information, please visit baslerweb.com/pulse



PULSE

Product Group Specifications

| | |
|--------------------------------------|--|
| Interface | USB 3.0 |
| Housing Size [L × W × H] | 38.8mm × 28.2mm |
| Housing Temperature during operation | 0 °C - 50 °C |
| Typical Weight | < 60g |
| Lens Mount | CS-mount |
| Power Supply | Via USB 3.0 interface |
| Digital I/O | - |
| Synchronization | Free-run |
| Exposure Control | Programmable via the camera API |
| Conformity | FCC Class B, CE, RoHS, GenICam, UL, USB3 Vision, KC ¹ , EAC |
| Driver | Basler pylon Camera Software Suite or 3rd party USB3 Vision Software |
| Operating System | Windows, Linux, macOS |

¹ Only for selected models, please refer to our website baslerweb.com/pulse for detailed information.

| CAMERA MODEL | SENSOR | RESOLUTION [H×V PIXELS] | RESOLUTION [MP] | SENSOR TYPE | SHUTTER | FRAME RATE [FPS] | PIXEL SIZE [µm ²] | OPTICAL SIZE |
|-----------------|----------|-------------------------|-----------------|-------------|---------|------------------|-------------------------------|--------------|
| pulse | | | | | | | | |
| puA1280-54um/uc | AR0134 | 1280×960 | 1.2 | CMOS | Global | 54 | 3.75×3.75 | 1/3" |
| puA1600-60um/uc | EV76C570 | 1600×1200 | 2.0 | CMOS | Global | 60 | 4.5×4.5 | 1/1.8" |
| puA1920-30um/uc | MT9P031 | 1920×1080 | 2.0 | CMOS | Rolling | 30 | 2.2×2.2 | 1/3.7" |
| puA2500-14um/uc | MT9P031 | 2592×1944 | 5.0 | CMOS | Rolling | 14 | 2.2×2.2 | 1/2.5" |

Basler racer

Exceptional line scan performance - low space requirement



Highlights

- Superior speed, reliability and image quality combined with low space requirement and highly attractive pricing
- CMOS sensors with 2k to 12k resolution and up to 80 kHz line rate
- Perfect fit for a wide range of applications — including multi-camera systems



For more information, please visit baslerweb.com/racer

RACER

| Product Group Specifications | |
|--------------------------------------|--|
| Interface | GigE, Camera Link |
| Housing Size [L × W × H] | GigE: 36.2 mm × 56 mm × 62 mm, CL: 33.8 mm × 56 mm × 62 mm |
| Housing Temperature during operation | 0 °C - 60 °C |
| Typical Weight | GigE: ca. 240 g, CL: ca. 210 g |
| Lens Mount | C-mount, F-mount, M42 × 1, M42 × 0.75, M58 × 0.75 |
| Power Supply | 12-24 VDC (±5%), PoCL ¹ |
| Digital I/O | GigE: 3 in/2 out, CL: via camera control signals (max. 4) |
| Synchronization | Via hardware trigger, via software trigger, or free-run |
| Exposure Control | Trigger width or timed |
| Conformity | CE, RoHS, GenICam, IP30, UL, FCC, GigE Vision/Camera Link, KC, EAC |
| Driver | Basler pylon Camera Software Suite or 3rd party Software |
| Operating System | Windows, Linux, macOS |

¹raL2048-80km and raL4096-80km only.

| CAMERA MODEL | SENSOR | RESOLUTION [H×V PIXELS] | RESOLUTION [PIXELS] | SENSOR TYPE | SHUTTER | LINE RATE [kHz] | PIXEL SIZE [µm ²] | SENSOR SIZE [mm ²] |
|--------------------------|------------|-------------------------|---------------------|-------------|---------|-----------------|-------------------------------|--------------------------------|
| racer GigE | | | | | | | | |
| raL2048-48gm | DR-2k-7 | 2048 × 1 | 2k | CMOS | Global | 51 | 7.0 × 7.0 | 14.3 |
| raL4096-24gm | DR-4k-7 | 4096 × 1 | 4k | CMOS | Global | 26 | 7.0 × 7.0 | 28.7 |
| raL6144-16gm | DR-6k-7 | 6144 × 1 | 6k | CMOS | Global | 17 | 7.0 × 7.0 | 43.0 |
| raL8192-12gm | DR-8k-3.5 | 8192 × 1 | 8k | CMOS | Global | 12 | 3.5 × 3.5 | 28.7 |
| raL12288-8gm | DR-12k-3.5 | 12288 × 1 | 12k | CMOS | Global | 8 | 3.5 × 3.5 | 43.0 |
| racer Camera Link | | | | | | | | |
| raL2048-80km | DR-2k-7 | 2048 × 1 | 2k | CMOS | Global | 80 | 7.0 × 7.0 | 14.3 |
| raL4096-80km | DR-4k-7 | 4096 × 1 | 4k | CMOS | Global | 80 | 7.0 × 7.0 | 28.7 |
| raL6144-80km | DR-6k-7 | 6144 × 1 | 6k | CMOS | Global | 80 | 7.0 × 7.0 | 43.0 |
| raL8192-80km | DR-8k-3.5 | 8192 × 1 | 8k | CMOS | Global | 80 | 3.5 × 3.5 | 28.7 |
| raL12288-66km | DR-12k-3.5 | 12288 × 1 | 12k | CMOS | Global | 66 | 3.5 × 3.5 | 43.0 |

Embedded Vision Meets Simplicity

We focus on the simple integration to embedded vision systems. In this way, we help our customers to develop applications that create a safer and smarter future.

Combining embedded design and vision technology is a rising trend. Embedded vision will replace a variety of PC-based image processing solutions and at the same time enable a number of new applications in which small size, low power consumption and low costs are important.

Basler Embedded Vision Solutions: We Bring Your Idea to Life

To do so we support you in every step for the realization of your embedded vision application: from consulting to development, production and life cycle management. Our broad product portfolio gives you everything you need to set up a system, and our software gets everything up and running immediately.



One-Stop Shopping: Your Benefits with our Embedded Vision Solutions

- Expert knowledge in vision technology: more than 30 years of experience in image processing
- Competent consulting and support in the development of your embedded vision system
- Broad product portfolio: Camera module, processor unit and application software from one source
- Integration: Extensive software and IoT competence

VISION WITH EMBEDDED VALUE

EMBEDDED VISION SOLUTIONS
BY BASLER



VISION EXCELLENCE

CONSULTING AND
SOLUTION DESIGN

BROADEST PRODUCT
PORTFOLIO

COMPREHENSIVE
SOFTWARE SOLUTIONS

DEVELOPMENT AND
PRODUCTION COMPETENCIES

Basler Embedded Vision Kits

Our standard is your starting point

As a standard, we have enabled specifically suited hardware and software components and put them together in our kits. They offer everything you need to evaluate our dart camera modules, the platform and their various interface technologies so they can be designed in easily. This way, you can start your embedded vision project as hassle free as possible! Our Embedded Vision Kits are powered by:



The first four kinds of Embedded Vision Kits all feature a dart color camera module with S-mount, a lens and necessary cabling. The Processing Kit does not include a camera, lens or cable.

Highlights

- Ready-to-go with pre-installed BSP (Board Support Packages) and sample implementation
- pylon Software Development Kit (SDK) for the simple creation of applications in different programming languages



For more information, please visit baslerweb.com/embedded-vision

Evaluation Kit: USB 3.0 Interface

- Due to the USB 3.0 interface, the Evaluation Kit is an easy to install vision kit that works on every PC hardware and embedded system with USB 2.0 or USB 3.0 connector.
- For easy evaluation of camera utilization and pylon Software Suite features.



| KIT | SENSOR | RESOLUTION [MP] | FRAME RATE [FPS] |
|------------------|---------|-----------------|------------------|
| daA2500-14uc-EVA | MT9P031 | 5.0 | 14 |

Add-on Camera Kits

- Add-on Camera Kits are suitable to extend your existing processing board with Basler vision components.
- Suitable software components including camera driver and pylon Software Development Kit (SDK) can be downloaded from baslerweb.com/software.



| KIT | SUITABLE FOR ¹ | ADAPTER BOARD | ON-CAMERA ISP | SENSOR | RESOLUTION [MP] | FRAME RATE [FPS] |
|----------------------------------|---|---|---------------|--------|-----------------|------------------|
| daA2500-60mci-IMX8-EVK-AddOn | NXP® EVK i.MX 8M Mini i.MX 8M Quad i.MX 8QuadMax | Basler BCON for MIPI to Mini SAS | ● | AR0521 | 5.0 | 60 |
| daA4200-30mci-IMX8-EVK-AddOn | NXP® EVK i.MX 8M Mini i.MX 8M Quad i.MX 8QuadMax | Basler BCON for MIPI to Mini SAS | ● | AR1335 | 13.0 | 30 |
| ★ daA2500-60mc-IMX8MP-EVK-AddOn | NXP® EVK i.MX 8M Plus | Basler BCON for MIPI to Mini SAS | | AR0521 | 5.0 | 60 |
| ★ daA3840-30mc-IMX8MP-EVK-AddOn | NXP® EVK i.MX 8M Plus | Basler BCON for MIPI to Mini SAS | | AR0821 | 8.0 | 30 |
| ★ daA2500-60mci-JNANO-NVDK-AddOn | NVIDIA® Jetson™ Nano | Basler BCON for MIPI to Jetson Nano Developer Board | ● | AR0521 | 5.0 | 60 |
| ★ daA4200-30mci-JNANO-NVDK-AddOn | NVIDIA® Jetson™ Nano | Basler BCON for MIPI to Jetson Nano Developer Board | ● | AR1335 | 13.0 | 30 |

¹Processing Board NOT included

Embedded Vision Development Kits

- Embedded Vision Development Kits are ready-to-use development kits to immediately start prototyping your vision application.
- Software components including camera driver and pylon Software Development Kit (SDK) are already preinstalled.



| KIT | PROCESSOR | BOARD | ADAPTER BOARD | ON-CAMERA ISP | SENSOR | RESOLUTION [MP] | FRAME RATE [FPS] |
|----------------------------|----------------------|-----------------------------|--|---------------|--------|-----------------|------------------|
| ★ daA4200-30mci-MX8MM-VAR | NXP® i.MX 8M Mini | Variscite DART-MX8M-MINI | Basler BCON for MIPI to Variscite DART-MX8M-MINI Adapter Board | ● | AR1335 | 13.0 | 30 |
| ★ daA4200-30mci-JNANO-NVDK | NVIDIA® Jetson™ Nano | Jetson Nano Developer Board | Basler BCON for MIPI to Jetson Nano Developer Board | ● | AR1335 | 13.0 | 30 |

AI Vision Solution Kit

- The AI Vision Solution Kit is a ready to-use Development Kit with pre-installed cloud connectivity (Amazon Web Services).
- It provides an integrated software architecture for the deployment of machine learning modules from the cloud to the edge device.
- Application software: people detection, object detection



| KIT | PROCESSOR | BOARD | ADAPTER BOARD | ON-CAMERA ISP | SENSOR | RESOLUTION [MP] | FRAME RATE [FPS] |
|------------------------------|----------------------|-----------------------------|---|---------------|--------|-----------------|------------------|
| daA4200-30mci-JNANO-NVDK-AIA | NVIDIA® Jetson™ Nano | Jetson Nano Developer Board | Basler BCON for MIPI to Jetson Nano Developer Board | ● | AR1335 | 13.0 | 30 |

Embedded Vision Processing Kit

- The Processing Kit is based on a flexible SoM and carrier board approach and contains various interfaces optimized for image processing thus allowing the connection of different camera types with BCON for MIPI, GigE Vision or USB3 Vision.
- Due to its design developed for industrial applications, it can be used not only for prototyping but also in series production.
- Basler pylon API and Basler camera drivers included, AI ready (edge inference and intelligence)



| KIT | PROCESSOR | BOARD | INTERFACES |
|---------------------------|-------------------|--------|---|
| 🕒 prB-IMX8MP ¹ | NXP® i.MX 8M Plus | Basler | 2x MIPI-CSI 2, 2x USB 3.0, GigE, HDMI, GPIOs, I2C, SPI, LVDS, UART, CAN, USB 2.0, M 2.0, Bluetooth, Wi-Fi |

¹ Does not include a camera, lens or cable.

Basler dart

With its single-board design, the Basler dart camera series offers the latest technology in a small form factor. The dart not only scores points with its compact design, but also with its excellent price/performance ratio and flexible integration capabilities: The camera modules can be connected to a single board computer (SBC) via USB 3.0, for example, or directly to a SoC (System-on-Chip) or FPGA (Field Programmable Gate Array) via MIPI based data transmission. This allows the dart cameras to be used for a variety of embedded and machine vision solutions.

Image Signal Processing: on the camera or on the processing unit, just as required

dart cameras provide in-camera image pre-processing performed by an integrated Image Signal Processor (ISP). For those embedded systems that already provide an ISP we offer camera modules without ISP but with drivers utilizing the host's ISP – resulting in the leanest solution and a cost optimized set up.

Highlights

- Smallest board level cameras with extremely low weight and low power consumption
- Bare board: just 27 mm×27 mm and 5 g in weight; S- and CS-mount: only 29 mm×29 mm at 15 g
- Popular CMOS sensors from Sony, onsemi and e2v with resolutions from 1.2 to 13 MP and up to 160 fps
- USB3 Vision: Plug and play with a single cable solution compliant with industry standards
- Basler BCON for MIPI interface tailor-made for MIPI CSI-2 connections
- Excellent color reliability and image adjustment features for color-critical applications
- Best-in-class image pre-processing like debayering, denoising, improved sharpness, and more



For more information, please visit baslerweb.com/dart

Image processing in on-camera ISP



With on-camera ISP: Bare board and S-mount models with BCON for MIPI interface and 5 or 13 MP resolution. Here, specific drivers for NXP's i.MX 8M Mini, 8M Quad, 8QuadMax and NVIDIA's Jetson™ platform are available as a standard.

Image Processing in host ISP



Uses the ISP of NXP's latest processing board i.MX 8M Plus: The new 8 MP dart BCON for MIPI camera module features a premium 4K sensor with excellent High Dynamic Range (HDR) from onsemi. Further SoCs with integrated ISP can be supported upon request.

Small size, best image quality, top price – the new Basler dart USB 3.0 models

- Sony IMX548 BSI Pregius S 4th generation sensor for outstanding image quality.
- Small form factor, low weight and low power consumption for applications with challenging installation conditions in factory automation, robotics and medical & life sciences





dart BCON for MIPI



dart USB 3.0

DART

Product Group Specifications

| | |
|--------------------------------------|--|
| Interface | BCON for MIPI (MIPI CSI-2), USB 3.0 |
| Housing Size [W×H] | 27 mm×27 mm (bare board); 29 mm×29 mm (other mount versions) |
| Camera Depth | 5.3 mm – 8.0 mm (bare board); 18 mm – 19.9 mm (other mount versions) |
| Housing Temperature during operation | 0 °C - 50 °C |
| Typical Weight | 5 g (bare board); 10 g -15 g (other mount versions) |
| Lens Mount | USB 3.0: bare board, S-mount or CS-mount BCON for MIPI: bare board or S-mount |
| Power Requirements | 5V / 0.6 W – 2.0 W |
| Digital I/O | BCON for MIPI: 2 outputs/2 inputs, USB 3.0: 2 or 4 GPIO |
| Synchronization | Via hardware trigger, via software trigger, or free-run ¹ |
| Exposure Control | Via hardware trigger or programmable via the camera API ¹ |
| Conformity | CE, RoHS, GenICam, USB3 Vision, UL, FCC, KC ¹ , EAC ¹ |
| Driver | Basler pylon Camera Software Suite |
| Operating System | Linux, Windows (USB 3.0 only), macOS (USB 3.0 only) |

¹Depending on model.

| CAMERA MODEL | SENSOR | RESOLUTION [H×V PIXELS] | RESOLUTION [MP] | SENSOR TYPE | SHUTTER | FRAME RATE [FPS] | PIXEL SIZE [μm ²] | OPTICAL SIZE |
|----------------------------|----------|-------------------------|-----------------|-------------|---------|------------------|-------------------------------|--------------|
| dart BCON for MIPI | | | | | | | | |
| daA2500-60mci ² | AR0521 | 2560×1920 | 5.0 | CMOS | Rolling | 60 | 2.2×2.2 | 1/2.5" |
| daA4200-30mci ² | AR1335 | 4208×3120 | 13.0 | CMOS | Rolling | 30 | 1.1×1.1 | 1/3" |
| daA2500-60mc | AR0521 | 2560×1920 | 5.0 | CMOS | Rolling | 60 | 2.2×2.2 | 1/2.5" |
| daA3840-30mc | AR0821 | 3840 ×2160 | 8.0 | CMOS | Rolling | 30 | 2.1×2.1 | 1/1.8" |
| dart USB 3.0 | | | | | | | | |
| daA1280-54um/uc | AR0134 | 1280×960 | 1.2 | CMOS | Global | 54 | 3.75×3.75 | 1/3" |
| daA1600-60um/uc | EV76C570 | 1600×1200 | 2.0 | CMOS | Global | 60 | 4.5×4.5 | 1/1.8" |
| daA1920-15um ¹ | MT9P031 | 1920×1080 | 2.0 | CMOS | Rolling | 15 | 2.2×2.2 | 1/3.7" |
| daA1920-30um/uc | MT9P031 | 1920×1080 | 2.0 | CMOS | Rolling | 30 | 2.2×2.2 | 1/3.7" |
| daA1920-160um/uc | IMX392 | 1920×1200 | 2.3 | CMOS | Global | 160 | 3.45×3.45 | 1/2.3" |
| ★ daA2448-70um/uc | IMX548 | 2448×2048 | 5.0 | CMOS | Global | 74 | 2.74×2.74 | 1/1.8" |
| daA2500-14um/uc | MT9P031 | 2592×1944 | 5.0 | CMOS | Rolling | 14 | 2.2×2.2 | 1/2.5" |
| daA3840-45um/uc | IMX334 | 3840×2160 | 8.3 | CMOS | Rolling | 45 | 2.00×2.00 | 1/1.8" |

¹ Bare board only.

² Internal ISP.

Basler MED ace

Basler MED ace area scan cameras are our first camera series specifically designed for Medical & Life Sciences. They are also the perfect answer to the discontinuation of CCD sensors. Equipped with CMOS sensor technology at its best, the MED ace delivers even better image quality at much lower costs than CCD cameras.

With Sony's powerful PREGIUS sensors and exceptional PYTHON sensors by onsemi, the MED ace stands out with up to 164 fps and 20 MP, pixel sizes up to 5.86 μm and sensor sizes up to 1.1 inch.

Highlights

- Area scan camera specifically designed for Medical & Life Sciences
- Including Basler's powerful MED Feature Sets
- Latest CMOS technology with Sony PREGIUS and onsemi PYTHON sensors
- Compliant with ISO 13485:2016
- Ideal for applications such as microscopy, laboratory automation, ophthalmology

For more information, please visit baslerweb.com/MEDace



Basler's Powerful MED Feature Sets

Our unique and industry-leading MED Feature Sets for Medical & Life Sciences deliver everything that our customers are looking for. They combine market-leading hardware, firmware and pylon software features:

Easy Compliance



Brilliant Image



Perfect Color



Dust Protection⁺



Low Light Imaging



Industrial Excellence



High Speed



We developed these unique features specifically to address the high imaging demands in Medical & Life Sciences and to reduce our customers' development efforts.

Compliant with ISO 13485:2016

With the certification according to ISO 13485:2016, we have proven our quality standards. We have adapted our quality management system to the requirements of the ISO 13485:2016 standard in selected organizational areas, according to which we produce, distribute and service the MED ace cameras.

For you, this means consistency, reliability and quality. Whether you want to operate internationally or expand locally. The quality management standards set for the ISO 13485:2016 certification help you to achieve quick time to market. Let us assist you with documentation and preparation for the certification of your medical device.





MED ACE

Product Group Specifications

| Interface | USB 3.0 | GigE |
|--------------------------------------|--|---|
| Housing Size [L × W × H] | MED ace U: 29.3 mm × 29 mm × 29 mm MED ace L: 35.8 mm × 40 mm × 30 mm | 42 mm × 29 mm × 29 mm |
| Housing Temperature During Operation | 0 °C - 50 °C | 0 °C - 50 °C |
| Typical Weight | 80 g | 90 g |
| Lens Mount | C-mount | C-mount |
| Power Supply | Via USB 3.0 interface | Power over Ethernet (IEEE 802.3af) or 12-24 VDC (+/- 10 %) |
| Digital I/O | 1 opto-isolated input + 1 opto-isolated output + 2 Fast-GPIO (configurable as In/Out) | 1 opto-isolated input + 1 opto-isolated output + 1 GPIO (configurable as In/Out) |
| Synchronization | Via hardware trigger, via software trigger or free-run | Via hardware trigger, via Ethernet connection or free-run |
| Exposure Control | Via hardware trigger or programmable via the camera API | Via hardware trigger or programmable via the camera API |
| Conformity | ISO 13485:2016, CE, RoHS, GenICam, USB3 Vision, IP30, UL, FCC Class B, EMV Class B, KC ¹ , EAC ¹ | ISO 13485:2016, CE, RoHS, GenICam, GigE Vision, IP30, IEEE 802.3af (PoE), UL, FCC Class B, KC, EAC ¹ |
| Driver | Basler pylon Camera Software Suite or 3rd party USB3 Vision Software | Basler pylon Camera Software Suite or 3rd party GigE Vision Software |
| Operating System | Windows, Linux, macOS | Windows, Linux, macOS |

¹Only for selected models, please refer to our website baslerweb.com/MEDace for detailed information.

| CAMERA MODEL | SENSOR | RESOLUTION [H×V PIXELS] | RESOLUTION [MP] | SENSOR TYPE | SHUTTER | FRAME RATE [FPS] | PIXEL SIZE [μm ²] | OPTICAL SIZE |
|--------------------------|-------------|-------------------------|-----------------|-------------|---------|------------------|-------------------------------|--------------|
| MED ace U USB 3.0 | | | | | | | | |
| MED ace 2.3 MP 41 m/c | IMX249 | 1920 × 1200 | 2.3 | CMOS | Global | 41 | 5.86 × 5.86 | 1/1.2" |
| MED ace 2.3 MP 164 m/c | IMX174 | 1920 × 1200 | 2.3 | CMOS | Global | 164 | 5.86 × 5.86 | 1/1.2" |
| MED ace 5.1 MP 35 m/c | IMX264 | 2448 × 2048 | 5 | CMOS | Global | 35 | 3.45 × 3.45 | 2/3" |
| MED ace 5.1 MP 75 m/c | IMX250 | 2448 × 2048 | 5 | CMOS | Global | 75 | 3.45 × 3.45 | 2/3" |
| MED ace 6.4 MP 59 m/c | IMX178 | 3088 × 2064 | 6.4 | CMOS | Rolling | 59 | 2.4 × 2.4 | 1/1.8" |
| MED ace 20.0 MP 17 m/c | IMX183 | 5472 × 3648 | 20 | CMOS | Rolling | 17 | 2.4 × 2.4 | 1" |
| MED ace L USB 3.0 | | | | | | | | |
| MED ace 8.9 MP 32 m/c | IMX267 | 4096 × 2160 | 9 | CMOS | Global | 32 | 3.45 × 3.45 | 1" |
| MED ace 8.9 MP 42 m/c | IMX255 | 4096 × 2160 | 9 | CMOS | Global | 42 | 3.45 × 3.45 | 1" |
| MED ace 12.3 MP 23 m/c | IMX304 | 4096 × 3000 | 12 | CMOS | Global | 23 | 3.45 × 3.45 | 1.1" |
| MED ace 12.3 MP 30 m/c | IMX253 | 4096 × 3000 | 12 | CMOS | Global | 30 | 3.45 × 3.45 | 1.1" |
| MED ace GigE | | | | | | | | |
| MED ace 5.3 MP 20 m/c | PYTHON 5000 | 2590 × 2048 | 5 | CMOS | Global | 21 | 4.8 × 4.8 | 1" |

Basler MED Feature Sets in Brief



Easy Compliance

We produce, distribute and service our MED ace cameras according to ISO 13485:2016. In addition, we comply with all relevant standards.



Brilliant Image

You get best quality pictures from the first time you activate the camera because MED ace cameras have optimal wake-up settings, Basler's PGI algorithm and auto-image functions.



Perfect Color

Design the color reproduction of your picture yourself: e.g., by adjusting the settings for hue, saturation, brightness and contrast over the entire picture as well as for individual colors.



Dust Protection*

We ensure high cleanliness by sealing the sensor room, producing the MED ace separately in a clean-room and strictly testing selected components for dust and other particles during assembly.



Low Light Imaging

Thanks to modern CMOS sensor technology and our mode for long exposure times, you produce best quality images even in low light.



Industrial Excellence

Our tested high quality cameras together with our pylon software package, our extended camera control functions and our individual customer support enable easy camera integration.



High Speed

Global shutter, CMOS sensor technology and USB3 Vision interface technology enable frame rates of up to 164 frames per second with the MED ace.

For more information, please visit baslerweb.com/med-feature-sets

| CAMERA | ISO 13485:2016 | Brilliant Image | Perfect Color | Dust Protection* | Low Light Imaging | High Speed |
|------------------------|----------------|-----------------|---------------|------------------|-------------------|------------|
| MED ace 2.3 MP 41 m/c | • | • | • | • ¹ | | |
| MED ace 2.3 MP 164 m/c | • | • | • | • ¹ | • | • |
| MED ace 5.1 MP 35 m/c | • | • | • | • ¹ | | |
| MED ace 5.1 MP 75 m/c | • | • | • | • ¹ | • | • |
| MED ace 5.3 MP 20 m/c | • | • | • | • | | |
| MED ace 6.4 MP 59 m/c | • | • | • | • | | |
| MED ace 8.9 MP 32 m/c | • | • | • | • | | |
| MED ace 8.9 MP 42 m/c | • | • | • | • | • | |
| MED ace 12.3 MP 23 m/c | • | • | • | • | | |
| MED ace 12.3 MP 30 m/c | • | • | • | • | • | |
| MED ace 20 MP 17 m/c | • | • | • | • | | |

¹This MED Feature Set is available for color cameras only.

Basler PowerPack for Microscopy

Highlights

Plug-and-play package for microscopy with all necessary components at hand:

- Microscopy camera with the latest CMOS sensors (Microscopy ace and Microscopy pulse)
- Professional microscopy software for image acquisition and analysis
- Quick Install Guide for quick and easy startup
- Compatible and tested accessories

For more information, please visit baslerweb.com/powerpack-for-microscopy



MICROSCOPY ACE & MICROSCOPY PULSE

Product Group Specifications

| | |
|--------------------------------------|--|
| Interface | USB 3.0 |
| Housing Size | Microscopy ace (L×W×H): 29.3 mm×29 mm×29 mm, Microscopy pulse (d×L): 38.8 mm×28.2 mm |
| Housing Temperature During Operation | 0 °C - 50 °C |
| Typical Weight | Microscopy ace: 80 g, Microscopy pulse: 60 g |
| Lens Mount | Microscopy ace: C-mount, Microscopy pulse: CS-mount |
| Exposure Control | Automatic, manual |
| Conformity | CE, RoHS, GenICam, USB3 Vision, UL, FCC Class B, KC ¹ , EAC |
| Driver | Basler Microscopy Software, Basler Video Recording Software |
| Operating System | Windows 7, Windows 8.1, Windows 10 - 32 bit and 64 bit |

¹Only for selected models, please refer to our website baslerweb.com/powerpack-for-microscopy for detailed information.

| CAMERA MODEL | SENSOR | RESOLUTION [H×V PIXELS] | RESOLUTION [MP] | SENSOR TYPE | SHUTTER | FRAME RATE [FPS] | PIXEL SIZE [μm ²] | OPTICAL SIZE |
|---|--------------|-------------------------|-----------------|-------------|---------|------------------|-------------------------------|--------------|
| PowerPack for Microscopy with Microscopy ace | | | | | | | | |
| Microscopy ace 1.3 MP 48 color | Sony PREGIUS | 1280×1024 | 1.3 | CMOS | Global | 48 | 5.86×5.86 | 1/1.8" |
| Microscopy ace 1.3 MP 145 color | onsemi | 1280×1024 | 1.3 | CMOS | Global | 145 | 4.8×4.8 | 1/2" |
| Microscopy ace 1.3 MP 200 mono | onsemi | 1280×1024 | 1.3 | CMOS | Global | 200 | 4.8×4.8 | 1/2" |
| Microscopy ace 2.3 MP 40 mono/color | Sony PREGIUS | 1920×1200 | 2.3 | CMOS | Global | 40 | 5.86×5.86 | 1/1.2" |
| Microscopy ace 3.2 MP 55 color | Sony PREGIUS | 2048×1536 | 3.2 | CMOS | Global | 55 | 3.45×3.45 | 1/1.8" |
| Microscopy ace 5.1 MP 35 mono/color | Sony PREGIUS | 2448×2048 | 5.1 | CMOS | Global | 35 | 3.45×3.45 | 2/3" |
| Microscopy ace 12.2 MP 15 color | Sony STARVIS | 4024×3036 | 12.2 | CMOS | Rolling | 15 | 1.85×1.85 | 1/1.7" |
| PowerPack for Microscopy with Microscopy pulse | | | | | | | | |
| Microscopy pulse 1.2 MP 54 color | onsemi | 1280×960 | 1.2 | CMOS | Global | 54 | 3.75×3.75 | 1/3" |
| Microscopy pulse 2.0 MP 30 color | onsemi | 1920×1080 | 2.0 | CMOS | Rolling | 30 | 2.2×2.2 | 1/3.7" |
| Microscopy pulse 3.3 MP 20 color | onsemi | 2048×1584 | 3.3 | CMOS | Rolling | 20 | 2.2×2.2 | 1/3" |
| Microscopy pulse 5.0 MP 14 color | onsemi | 2592×1944 | 5.0 | CMOS | Rolling | 14 | 2.2×2.2 | 1/2.5" |

Basler 3D Camera

We offer 3D solutions based on the Time-of-Flight (ToF) technology, which are suitable for the mass market and help our customers lower their total system costs and design their 3D applications more efficiently. The biggest benefit of Time-of-Flight Cameras is that they are compact, precise and affordable, yet less complex than other 3D cameras. Beyond this, a time-of-flight camera requires neither contrast nor additional light to work, and can be used on the fly, as objects move past.

Basler blaze

The fully-calibrated blaze 3D camera with integrated optics and GigE interface uses the time-of-flight principle to capture scenes and objects at a glance, generating 2D and 3D data with a multipart image from distance, intensity and confidence maps in real time. Elimination of moving components means robustness and stability for a variety of applications such as robotics, industrial automation, logistics and medicine. With integrated Sony DepthSense™ sensor technology the blaze makes 3D measurements more precise, accurate and faster.

Highlights

- Top-class precision by Sony DepthSense™ IMX556 sensor and advanced laser technology (940 nm VCSEL)
- Precise, millimeter-accurate optical measurement with the time-of-flight method
- Real-time streaming of 3D point clouds and grayscale images with 30 frames per second
- Daylight robust & independent of ambient light
- IP67 protection and shock-proof for stable results under difficult conditions



For more information, please visit baslerweb.com/blaze



CAMERA MODEL

blaze-101

| | |
|---------------------|---|
| Sensor | Sony DepthSense™ IMX556 |
| Resolution | 640 × 480 @ 30 fps |
| Interface | GigE Vision, GenICam |
| Field of View | 67° × 51° |
| Range | 0 m - 10 m |
| Accuracy (typical) | ±5 mm (0.5–5.5 m) |
| Housing Size | 100 mm × 81 mm × 64 mm |
| Conformity | CE, FCC, RoHS, REACH, IP67, Laser Class 1 IEC60805-1:2014, EAC ¹ |
| Third-Party Support | Isaac, OpenCV, HALCON, MIL, Point Cloud Library (PCL), ROS |

¹Only for selected models, please refer to our website baslerweb.com/blaze for detailed information.



TAKE CONTROL OF THE
THIRD DIMENSION

