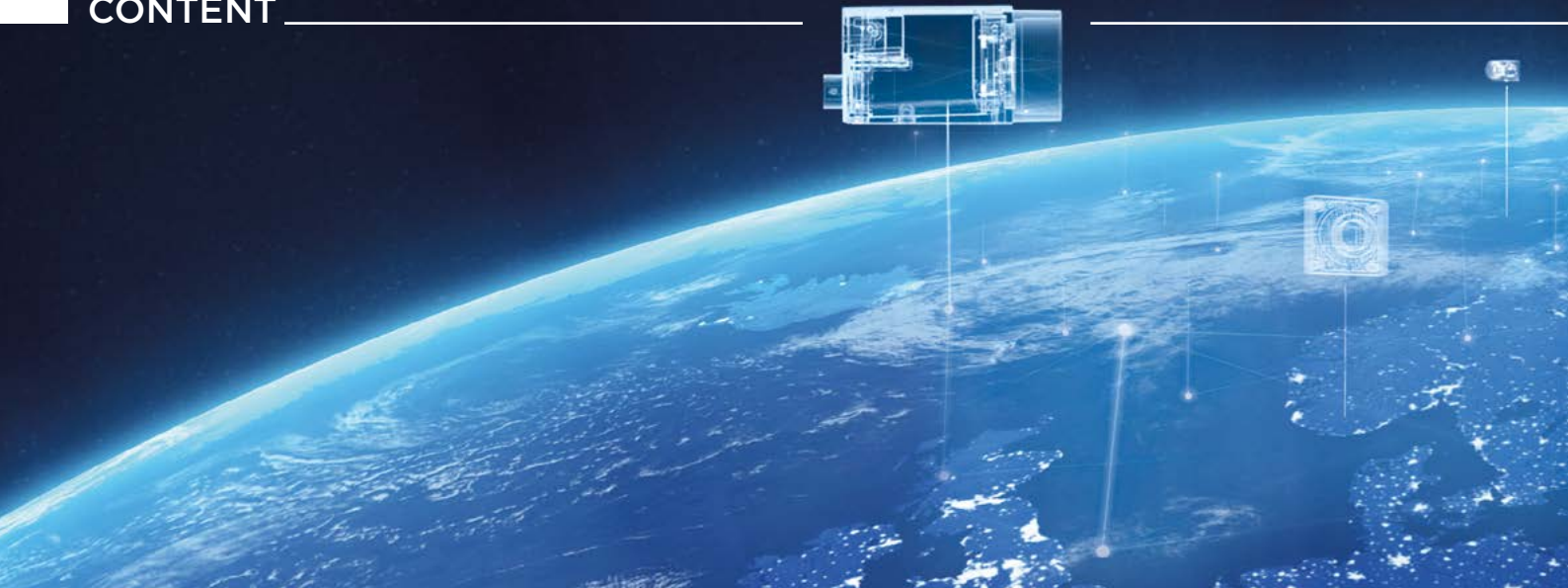


COMPUTER VISION PORTFOLIO





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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.

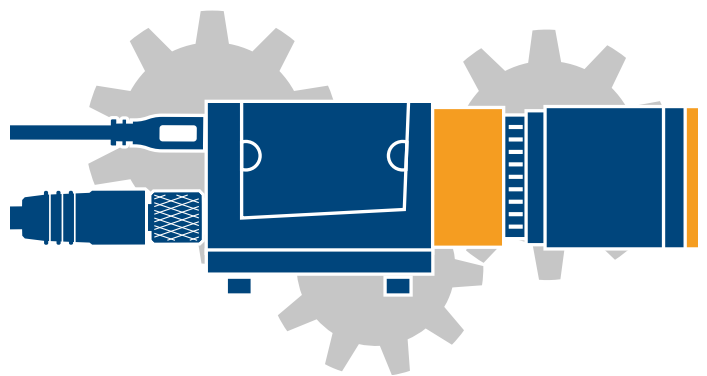
As a leader in technology, Basler is substantially involved in the development of new standards and offers all of the necessary, perfectly matched vision components from one source. As a result, our customers benefit from the superior reliability of their entire vision system.



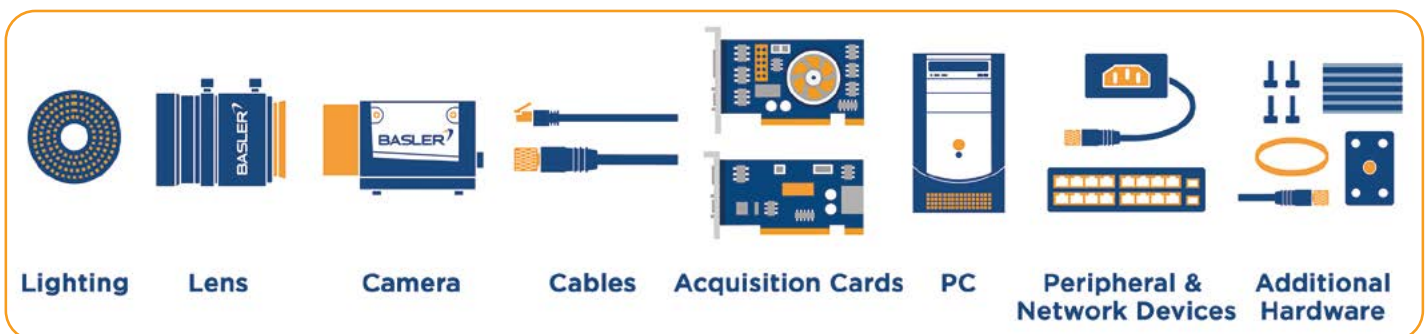
Need Help Selecting the Right Vision Components for Your Application?

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

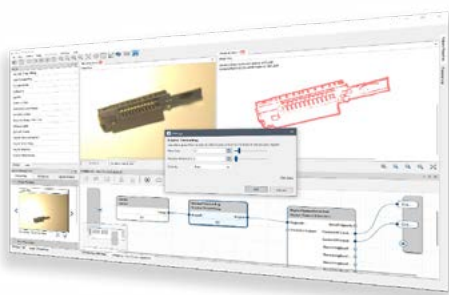
- Seamlessly integrated image processing with pylon
- High performant and robust
- Precisely matched to Basler cameras
- Easy and fast to create visually
- Easy to integrate into existing architectures
- Cost-optimized module cutting

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

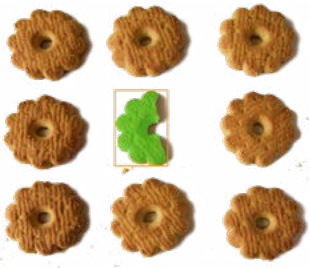
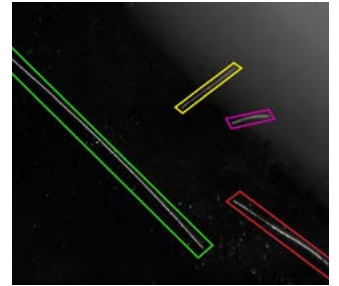
To integrate image processing functions into your own applications, the popular pylon APIs offer a variety of simple functions for loading and executing recipe files, and for evaluating the results in your program code. Adjust the settings of your application via recipe file using the pylon Viewer – 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:

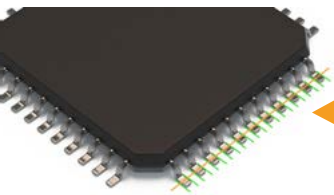
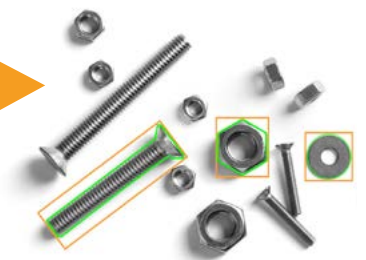
Training and application of a model for one class – including vTools for region morphology, object filtering, and feature extraction.

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:

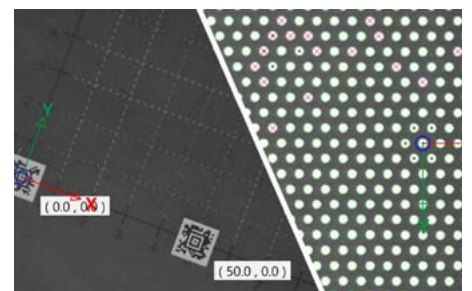
Measure distances between edges along a line.

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

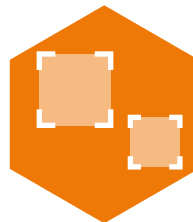
Besides the popular PGI feature set the ace 2 Pro cameras also include our new Beyond features which are especially characterized by the fact that their functionality is unique in the market and often even patented or patent-pending.



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.

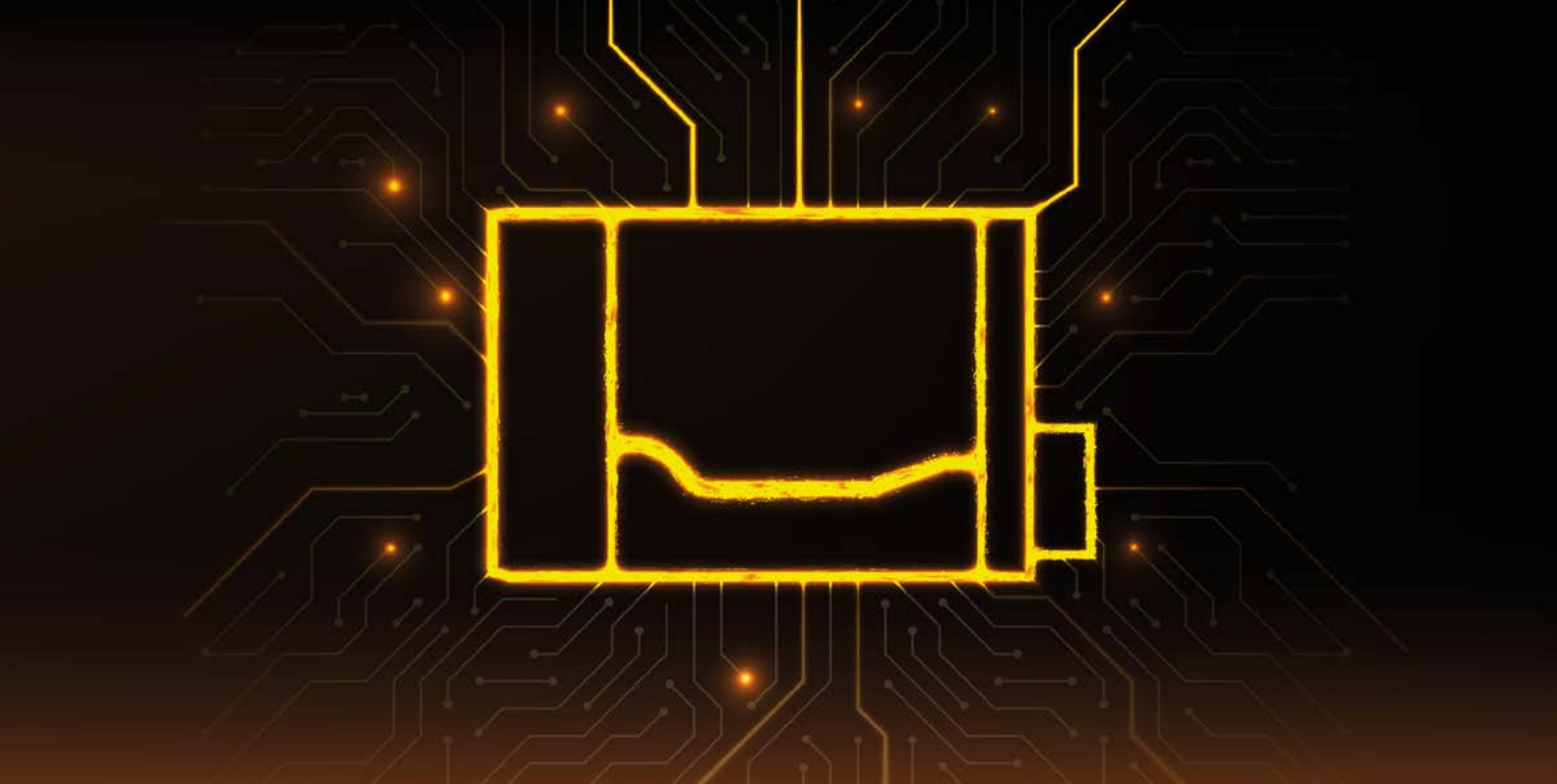
More information: baslerweb.com/compression-beyond



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

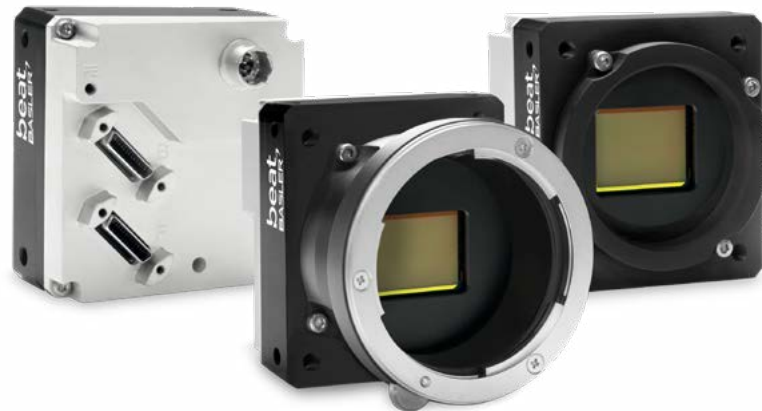
The convincing argument for this advanced camera family starts with its superior image quality even at high image capture rates and high resolutions. The Basler beat series uses the high-speed and very sensitive CMOS sensor CMV12000 by ams. It features both a mono and color model with a full resolution 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 x W x H]	40 mm x 56 mm x 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 x V PIXELS]	RESOLUTION [MP]	SENSOR TYPE	SHUTTER	FRAME RATE [FPS]	PIXEL SIZE [µm ²]	OPTICAL SIZE
Basler beat								
beA4000-62km	CMV12000	4096 x 3072	12.0	CMOS	Global	62	5.5 x 5.5	1.75"
beA4000-62kc	CMV12000	4088 x 3070	12.0	CMOS	Global	62	5.5 x 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, GenlCam, 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

Basler Lenses Give Vision Applications the Required Sharpness

Lenses depict the captured light on a camera's sensor. Combined with a camera and lighting, they are instrumental in determining the image quality. In the worst case, choosing the wrong lens can result in an irretrievable loss in image quality.

When choosing the right lens, the balance between the required imaging performance, i.e. high resolution with optical image quality, and price is of real interest. A very good imaging performance saves processing time in the further image analysis software and in many cases makes the analysis of even finest structures possible in the first place. If a basic imaging performance and average optical errors are acceptable or if these errors can actually be corrected through image processing, cost-efficient lenses are a better choice.

Whether there are high standards in terms of image quality or a focus on lower costs due to competitive pressure, Basler offers two product lines for both scenarios. The Standard product line stands for the best price/performance ratio and offers good basic performance. The Premium product line offers optimal imaging quality with much higher optical resolution but without neglecting the cost factor.

Both product lines support popular image circles of sensors available in Basler cameras, from 1/2.5" to Super 35 format, as well as all common focal lengths. The lenses are equipped with F-mount and C-mount and can also be conveniently used with CS-mount cameras with the help of an adapter.

For more information, please visit baslerweb.com/basler-lenses



Highlights of the Basler Standard Lenses

- Excellent price/performance ratio
- Solid basic performance
- Suitable for simple vision applications and price-sensitive systems
- Ideal for fast cameras with a low resolution



Highlights of the Basler Premium Lenses

- Designed and tested for the most demanding applications
- Best quality: very high resolution, low distortion, low vignetting
- Optimal for cameras with very high resolutions for the analysis of the smallest structures
- Still cost-optimized



Need Help Selecting the Right Lens for Your Application?

Find the right lens for your Basler camera! Several suitable lenses for your application are suggested to you based on data such as focal length, angle of view, working distance or object size. Test our convenient Lens Selector: baslerweb.com/lens-selector



BASLER LENS	MAXIMUM IMAGE CIRCLE	RESOLUTION [MP]	FOCAL LENGTH [mm]	MOUNT	MAXIMUM RELATIVE APERTURE
Basler Premium Lenses					
Basler Lens C125-0418-5M-P	1/2.5" (7.3 mm)	5	4	C-mount	1:1.8
Basler Lens C125-0618-5M-P	1/2.5" (7.3 mm)	5	6	C-mount	1:1.8
Basler Lens C125-0818-5M-P	1/2.5" (7.3 mm)	5	8	C-mount	1:1.8
Basler Lens C125-1218-5M-P	1/2.5" (7.3 mm)	5	12	C-mount	1:1.8
Basler Lens C125-1620-5M-P	1/2.5" (7.3 mm)	5	16	C-mount	1:2.0
Basler Lens C125-2522-5M-P	1/2.5" (7.3 mm)	5	25	C-mount	1:2.2
Basler Lens C23-0824-5M-P	2/3" (11 mm)	5	8	C-mount	1:2.4
Basler Lens C23-1224-5M-P	2/3" (11 mm)	5	12	C-mount	1:2.4
Basler Lens C23-1620-5M-P	2/3" (11 mm)	5	16	C-mount	1:2.0
Basler Lens C23-2518-5M-P	2/3" (11 mm)	5	25	C-mount	1:1.8
Basler Lens C23-3520-5M-P	2/3" (11 mm)	5	35	C-mount	1:2.0
Basler Lens C23-5028-5M-P	2/3" (11 mm)	5	50	C-mount	1:2.8
Basler Lens C11-0824-12M-P	1.1" (17.5 mm)	12	8.5	C-mount	1:2.4
Basler Lens C11-1220-12M-P	1.1" (17.5 mm)	12	12	C-mount	1:2.0
Basler Lens C11-1620-12M-P	1.1" (17.5 mm)	12	16	C-mount	1:2.0
Basler Lens C11-2520-12M-P	1.1" (17.5 mm)	12	25	C-mount	1:2.0
Basler Lens C11-3520-12M-P	1.1" (17.5 mm)	12	35	C-mount	1:2.0
Basler Lens C11-5020-12M-P	1.1" (17.5 mm)	12	50	C-mount	1:2.0
Basler Standard Lenses					
Basler Lens C23-0816-2M-S	2/3" (11 mm)	2	8.6	C-mount	1:1.6
Basler Lens C23-1216-2M-S	2/3" (11 mm)	2	12	C-mount	1:1.6
Basler Lens C23-1616-2M-S	2/3" (11 mm)	2	16	C-mount	1:1.6
Basler Lens C23-2518-2M-S	2/3" (11 mm)	2	25	C-mount	1:1.8
Basler Lens C23-3520-2M-S	2/3" (11 mm)	2	35	C-mount	1:2.0
Basler Lens C23-5026-2M-S	2/3" (11 mm)	2	50	C-mount	1:2.6
Basler Lens C10-0814-2M-S	1" (16 mm)	2	8	C-mount	1:1.4
Basler Lens C10-1214-2M-S	1" (16 mm)	2	12.5	C-mount	1:1.4
Basler Lens C10-1614-3M-S	1" (16 mm)	3	16	C-mount	1:1.4
Basler Lens C10-2514-3M-S	1" (16 mm)	3	25	C-mount	1:1.4
Basler Lens C10-3514-8M-S	1" (16 mm)	8	35	C-mount	1:1.4
Basler Lens C10-5014-2M-S	1" (16 mm)	2	50	C-mount	1:1.4
Basler Lens F-S35-2528-45M-S-SD	Super 35 (32 mm)	45	25	F-mount	1:2.8
Basler Lens F-S35-3528-45M-S-SD	Super 35 (32 mm)	45	35	F-mount	1:2.8
Basler Lens F-S35-5028-45M-S-SD	Super 35 (32 mm)	45	50	F-mount	1:2.8
Basler Lens F-S35-7528-45M-S-SD	Super 35 (32 mm)	45	75	F-mount	1:2.8

Basler SLP. Let Your Vision Shine.

Lighting plays a major role in a vision system as it provides the light that, in conjunction with other vision components such as cameras and lenses, ensures the best possible and repeatable image quality in a wide range of applications. With our new Basler SLP camera feature, we offer high quality lighting equipment that is perfectly matched to our most popular camera models and greatly simplifies the set-up and operation of your image processing system.

Reduced Complexity. Simplified Setup. Smooth Operation.

Our unique SLP camera feature will help you save valuable time thanks to the perfect and fully automatic synchronization of camera and lighting. Control your lighting via one single software interface, the pylon Camera Software Suite. Simplify the setup for your vision application, get easy access to the popular strobing and overdrive functions and ensure a smooth operation with Basler SLP. You can choose between two solutions.

Highlights

SLP feature is embedded in pylon Camera Software Suite

- One interface only
- Easy operation

Direct communication between camera and light

- Synchronization of the camera and lighting is fully automatic
- Time savings

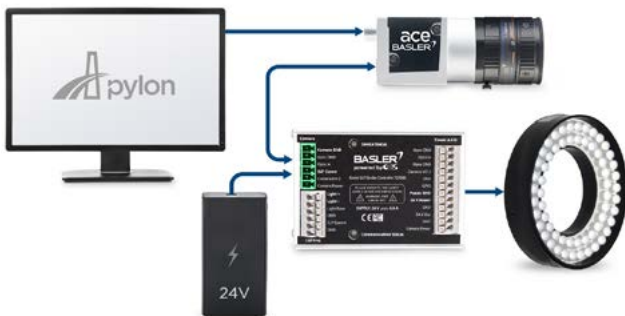
Simplified strobing & overdrive

- Longer lifetime or more light intensity achievable even for non-expert users
- Material cost savings realizable for all

For more information, please visit baslerweb.com/lighting



FLEXIBLE SOLUTION

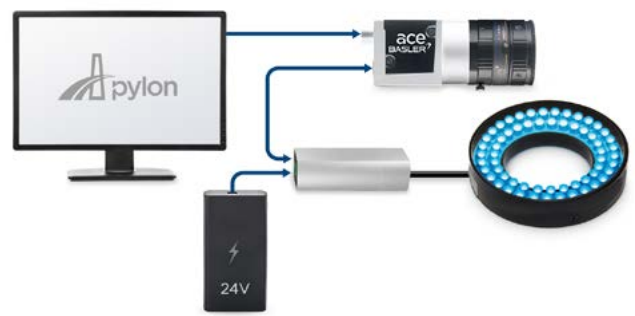


Basler SLP Controller

Easy access to the SLP feature without limiting lighting choices.

- Compatible with most machine vision LED lightings
- Choose the lighting which suits your specific needs
- Remain flexible

EASY SOLUTION



Basler Camera Light Series

Our carefully selected Camera Lights are equipped with an integrated SLP controller for quick and easy access to the SLP feature.

- Preconfigured hardware components
- Everything fits together
- Easy plugging

On the Winner's Podium: Basler SLP Lighting Solutions

The jury of the Vision Systems Design 2021 Innovators Awards recognized Basler and CCS Inc. for our unique Basler SLP lighting solutions as one of the best in machine vision.





BASLER SLP CONTROLLER

Basler SLP Strobe Controller 121040

Lighting modes	Continuous; Strobe incl. overdrive mode
Output current Continuous	0.05A - 2A
Output current overdrive mode	10A @200 μ s pulse width
Output voltage range	1.5V - 40V
Pulse width	50 μ s - 100 ms
Pulse step size	10 μ s
Max. frequency	200 Hz
Housing Size [L x W x H]	89 mm x 60 mm x 43,5 mm
Conformity	RoHS; CE; FCC; KC



BASLER CAMERA LIGHT SERIES

	Ring Light	Bar Light	Back Light	Flood Light
LED Color	Red, White, Blue	Red, White, Blue	Red, White, Blue	Red, White, Blue
Dimensions	50, 70, 90 mm - OD	100, 150, 200 mm	60 x 60 mm 120 x 120 mm	255 mm
Input voltage	24 VDC (+/-10%)			
Lighting modes	Continuous; Strobe incl. overdrive mode			
Pulse width	50 μ s - 100 ms			
Pulse step size	10 μ s			
Conformity	Lighting: CE, RoHS, IEC 62471 Compliant Product Controller: CE: EN61000-6-2, EN61000-6-4			

LET THERE BE LIGHT. WHENEVER YOU NEED IT.
CAMERA AND LIGHT - EASILY SYNCED WITH BASLER SLP.



Frame Grabber Portfolio – High Performance, Reliable and Flexible

Frame grabbers are the control center for robust high-speed image acquisition and processing in real time on FPGAs including image pre-processing, which minimizes the CPU load. Paired with graphic FPGA programming (VisualApplets), software and appropriate components, our frame grabbers play a vital role in the success of your individual image processing project.

Frame Grabbers and Accessories

Select the right board for your image processing task from one of the most extensive frame grabber ranges in the market.

The boards excel with robust image capture, image preprocessing, minimal latencies and top speeds for all conventional camera interfaces.

We realize solutions in the field of real-time image processing and industrial use. Frame grabbers have powerful FPGA processors to integrate high-quality image preprocessing functions into the firmware.

For programmable frame grabbers, further FPGA resources and larger memory expansion are available for carrying out even complex image processing directly on the frame grabber without loading the CPU. Our extension products offer new opportunities for building new system solutions, and include signal processing boards, image data replicators, image processing library and many more.

CXP-12 Interface Cards

The CXP-12 interface cards with one, two and four channels are based on the PCIe Gen 3.0 industry standard which delivers high speed access to the memory of the host computer. It enables a bandwidth of up to 12.5 Gbps per transmission channel and seamless plug and play integration of our boost cameras via the pylon Camera Software Suite.

This eliminates the need to install and program an additional SDK for the interface card: simply plug in the card and start image acquisition. All in all, the CXP-12 interface cards significantly reduce both system costs and configuration effort.

Basler CXP-12 interface cards are also available as part of a boost evaluation kit. Please see [page 26](#) for detailed information on our evaluation kits.

Highlights

- High-performance image acquisition cards for all conventional camera interfaces
- High data rates and resolutions are possible, with bandwidths up to 50 Gbps for CXP-12 four-channel frame grabber
- Minimal latencies through image processing in real time
- Variant signal controls between frame grabber and surrounding (cameras, lighting, encoder ...)
- No CPU load thanks to effective image preprocessing

Highlights

- CoaXPress (CXP-12) 1C, 2C, 4C
- up to 6520 MB/s bandwidth via PCIe 3.0 bus
- Low-profile
- Passive heatsink
- Several trigger scenarios through front GPIO
- Fully harmonized with Basler boost cameras
- Simply install and start image acquisition via pylon SDK



For more information and a full model overview, please visit baslerweb.com/framegrabbers



FRAME GRABBER	CAMERA IF	CONNECTORS	MAX. DATA IN	FPGA PROGRAMMING	PC BUS IF	RESOLUTION A:AREA, L:LINE
CoaXPRESS 2.0						
imaWorx CXP-12 Quad	CoaXPRESS 2.0	4x Micro-BNC	4x 12.5 Gbps	configurable	PCIe x8 (Gen 3)	A: 32 k x 65 k, L: 32 k
CoaXPRESS 1.1						
mE5 ironman AQ8-CXP6D	CoaXPRESS 1.1	4x DIN 1.0/2.3	4x 6,25 Gbps	configurable	PCIe x8 (Gen 2)	A: 16 k x 64 k, L: 16 k
mE5 ironman VQ8-CXP6D	CoaXPRESS 1.1	4x DIN 1.0/2.3	4x 6,25 Gbps	programmable	PCIe x8 (Gen 2)	A: 64 k x 64 k, L: 64 k
mE5 marathon ACX-SP	CoaXPRESS 1.1.1	1x DIN 1.0/2.3	1x 6,25 Gbps	configurable	PCIe x4 (Gen 2)	A: 16 k x 64 k, L: 32 k
mE5 marathon ACX-DP	CoaXPRESS 1.1.1	2x DIN 1.0/2.3	2x 6,25 Gbps	configurable	PCIe x4 (Gen 2)	A: 16 k x 64 k, L: 32 k
mE5 marathon ACX-QP	CoaXPRESS 1.1.1	4x DIN 1.0/2.3	4x 6,25 Gbps	configurable	PCIe x4 (Gen 2)	A: 16 k x 64 k, L: 32 k
mE5 marathon VCX-QP	CoaXPRESS 1.1.1	4x DIN 1.0/2.3	4x 6,25 Gbps	programmable	PCIe x4 (Gen 2)	A: 64 k x 64 k, L: 64 k
Camera Link HS						
mE5 marathon AF2	Camera Link HS	2x SFP+	2x 10 Gbps	configurable	PCIe x4 (Gen 2)	A: 32 k x 64 k, L: 16 k
mE5 marathon VF2	Camera Link HS	2x SFP+	2x 10 Gbps	programmable	PCIe x4 (Gen 2)	A: 64 k x 64 k, L: 64 k
Camera Link						
mE5 ironman AD8-PoCL	Camera Link 2.0	2x MDR26	850 MBps	configurable	PCIe x8 (Gen 2)	A: 16 k x 64 k, L: 16 k
mE5 ironman VD8-PoCL	Camera Link 2.0	2x MDR26	850 MBps	programmable	PCIe x8 (Gen 2)	A: 64 k x 64 k, L: 64 k
mE5 marathon ACL	Camera Link 2.0	2x SDR26 (miniCL)	850 MBps	configurable	PCIe x4 (Gen 2)	A: 16 k x 64 k, L: 16-52 k
mE5 marathon VCL	Camera Link 2.0	2x SDR26 (miniCL)	850 MBps	programmable	PCIe x4 (Gen 2)	A: 64 k x 64 k, L: 64 k
mE5 marathon VCLx	Camera Link 2.0	2x SDR26 (miniCL)	850 MBps	programmable	PCIe x4 (Gen 2)	A: 64 k x 64 k, L: 64 k
mE5 marathon deepVCL	Camera Link 2.0	2x SDR26 (miniCL)	850 MBps	programmable	PCIe x4 (Gen 2)	A: 64 k x 64 k, L: 64 k

CXP-12 INTERFACE CARDS			
	CXP-12 Interface Card 1C	★ CXP-12 Interface Card 2C	★ CXP-12 Interface Card 4C
Data Rate	3260 MB/s		6520 MB/s
Interface Host	PCIe 3.0 x4		PCIe 3.0 x8
On-Board Memory		1 GB DDR4-RAM	1.5 GB DDR4-RAM
Size (L × W × H)	PCIe low profile card (167.65 mm × 68.9 mm × 18 mm)		PCIe standard height (167.64mm × 111.15 mm)
Camera Interface	1× Micro-BNC (HD-BNC)	2× Micro-BNC (HD-BNC)	4× Micro-BNC (HD-BNC)
Power Supply	PCIe 6-pin connector 12 V (required for PoCXP)		
Trigger Connector	D-Sub Micro-D 15pin		
Typical Weight	180 g		270 g
Software	Basler pylon Camera Software Suite (version 6.1 or higher)		
Operating System	Windows, Linux (64-Bit)		
Conformity	CE, RoHS, WEEE, REACH, GenlCam, EAC1, PCB compliant with UL 94 V-0		

¹ Only for selected models

Tested and Qualified Acquisition Cards for Various Interfaces – Rely on Our Expertise

With acquisition cards you can flexibly connect cameras to the host PC and obtain high-performance and reliable image acquisition via your optimal interface. Our acquisition cards are tested over the product life cycle with common operating conditions and against operating system updates. The advantage is a smooth integration of tested and qualified components into the image processing system and at the same time a noticeable cost advantage.



For more information, please visit baslerweb.com/pccards

USB 3.0 Interface Cards

With the USB 3.0 interface cards with 2 or 4 ports, you no longer have to worry about faulty drivers or operating system updates. Frequently occurring problems are also a thing of the past, such as when the PC's host controller has already been occupied with additional peripherals and conflicts occur on the data bus, which in turn lead to data errors or image loss. Furthermore, our vision components are available on the market longer than the chipsets used in common PCs.



USB 3.0 INTERFACE CARDS	NO. OF PORTS	CHIPSET	PCI-E CONNECTION
USB 3.0 Interface Card PCIe, Fresco FL1100, 1HC, x1, 4 Ports	4	Fresco FL1100	PCIe x1 Gen2
USB 3.0 Interface Card PCIe, Fresco FL1100, 4HC, x4, 4 Ports	4	Fresco FL1100	PCIe x4 Gen2
USB 3.0 Interface Card PCIe, Ren, 1 HC, x1, SATA, 2 Ports	2	Renesas	PCIe x1 Gen2
USB 3.0 Interface Card PCIe, ASM, x4, 2 Ports	2	ASM	PCIe x4 Gen3



GigE Interface Cards

GigE interface cards are required when the PC used has only a single LAN port, which is occupied by (for example) the machine controller, or does not have a Power over Ethernet (PoE) function for power supply. Using the GigE interface cards, a single cable solution can be implemented using the PoE function if required, thus enabling a multi-camera system to be developed with reduced system complexity. Depending on the application scenario and the camera used, our portfolio offers corresponding 1GigE interface cards with or without PoE function as well as 10GigE interface cards.

Highlights

- Technology for receiving image data and operating several cameras on one vision PC for the most demanding applications
- Performance optimizations using our pylon SDK and the Basler Performance Driver
- Harmonized for Basler cameras and cable solutions
- Same MAC address space as Basler cameras for easier network management



Basler Standard GigE Interface Cards

- 1GigE with 1, 2 or 4 ports
- 10GigE with 1 port
- Cost-optimized product design



Basler Premium GigE Interface Cards

- 1GigE with 1, 2 or 4 ports with PoE feature
- Ideal for single cable solutions with low installation effort



GIGE INTERFACE CARDS	CONNECTORS	POE (IEEE 802.3AF)	PTP (IEEE 1588)	PC BUS IF
Basler Standard GigE Interface Cards				
Basler 10GigE Interface Card, 1 Port	RJ45x1	no	yes	PCIe x4 (3.0)
Basler GigE Interface Card, 1 Port	RJ45x1	no	yes	PCIe x1 (2.1)
Basler GigE Interface Card, 2 Port	RJ45x2	no	yes	PCIe x1 (2.1)
Basler GigE Interface Card, 4 Port	RJ45x4	no	yes	PCIe x4 (2.1)
Basler Premium GigE Interface Cards				
Basler GigE Interface Card, 1 Port PoE	RJ45x1	yes	yes	PCIe x1 (2.1)
Basler GigE Interface Card, 2 Port PoE	RJ45x2	yes	yes	PCIe x4 (2.1)
Basler GigE Interface Card, 4 Port PoE	RJ45x4	yes	yes	PCIe x4 (2.1)

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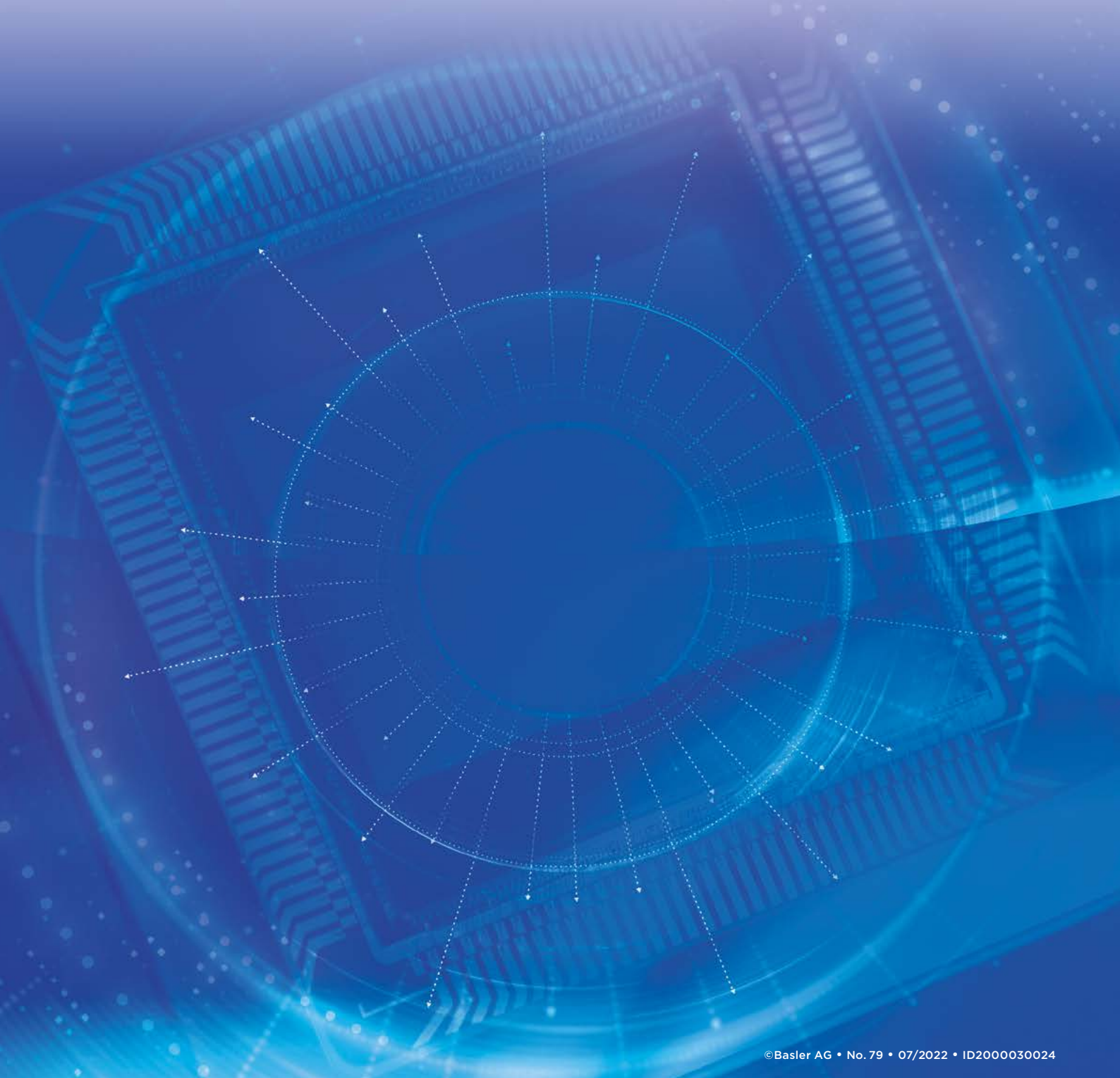
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