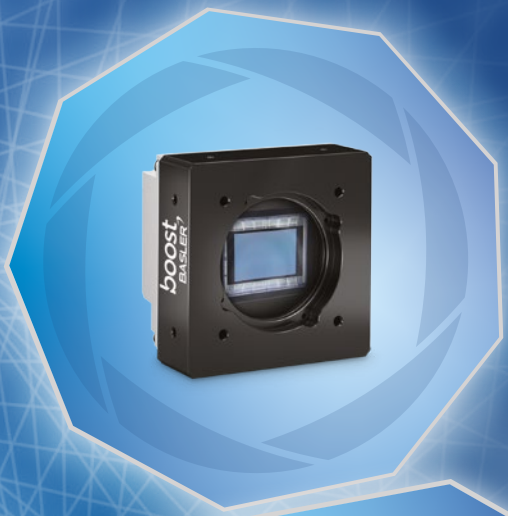
BASLER
the power of sight



COMPUTER VISION PORTFOLIO

USB VISION | GiGE VISION | 5GiGE VISION | BCON for MIPI | CAMERA Link REGISTERED PRODUCT | CoaXPress

CONTENT

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 bo = boost da = dart dm = dart M pu = pulse ra = racer r2 = racer 2	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 SWIR = Short Wavelength Infrared UV = Ultraviolet **Product Line** BAS = Basic PRO = Pro **ISP** i = Internal ISP for MIPI cameras

Specifications are subject to change without notice.

Keys

New: ★ Coming soon: 🕓 Preliminary: !

We Give Technology the Power of Sight

The needs and requirements of our customers drive us to create innovative and reliable vision solutions. Through lean product design and efficient production, we reduce effort, errors, and costs, allowing us to offer high-quality cameras, vision products, and software for vision systems at an attractive price-performance ratio.

Quality & Quality Assurance

We believe that the quality and reliability of our products are of the highest importance. To ensure these high quality requirements are met, we rely on seamless monitoring with standardized quality assurance processes. For example, every industrial camera we produce undergoes "9 + 1" tests: Nine standard tests and one additional customized test on request. Our suppliers are also subject to strict quality controls: Our R&D team thoroughly tests all supplier products, including regular functional and interoperability tests. This allows our customers to rely on our products for exceptional quality and unwavering performance.

Fast, Seamless Integration

With a portfolio of approximately 5,000 hardware and software products, we offer all the components needed to build a complete vision system. We ensure their full compatibility by developing our products according to dedicated system specifications and through systematic testing. When our customers develop a vision system based on our products, they can count on minimal investment and maximum efficiency.

Worldwide Support

With more than 35 years of experience from many successful customer projects and with a strong global presence, we provide a high level of application engineering and support. Our sales experts and regional application engineers are ready to support you with their knowledge.

The Management Board

Dr. Dietmar Ley
CEO

Ines Brückel
CFO

Hardy Mehl
CCO/COO

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

Basler Vision Solutions

Everything you need to build your vision system

A vision solution is more than just a camera. It is the software, lighting, lenses, cables, acquisition cards, and other components that make up a functioning unit. To achieve the best results, it is essential that all components are compatible and work together seamlessly. As vision experts, we not only provide the necessary hardware and software, but also guide you through the development process of your vision solution.

Vision Hardware Portfolio

All the components to set up your vision solution

Extensive product range
Coordinated vision products from a single source

High reliability
Certified and tested products for reliable performance

Long-term availability
Extensive product availability for long-term integration into your system

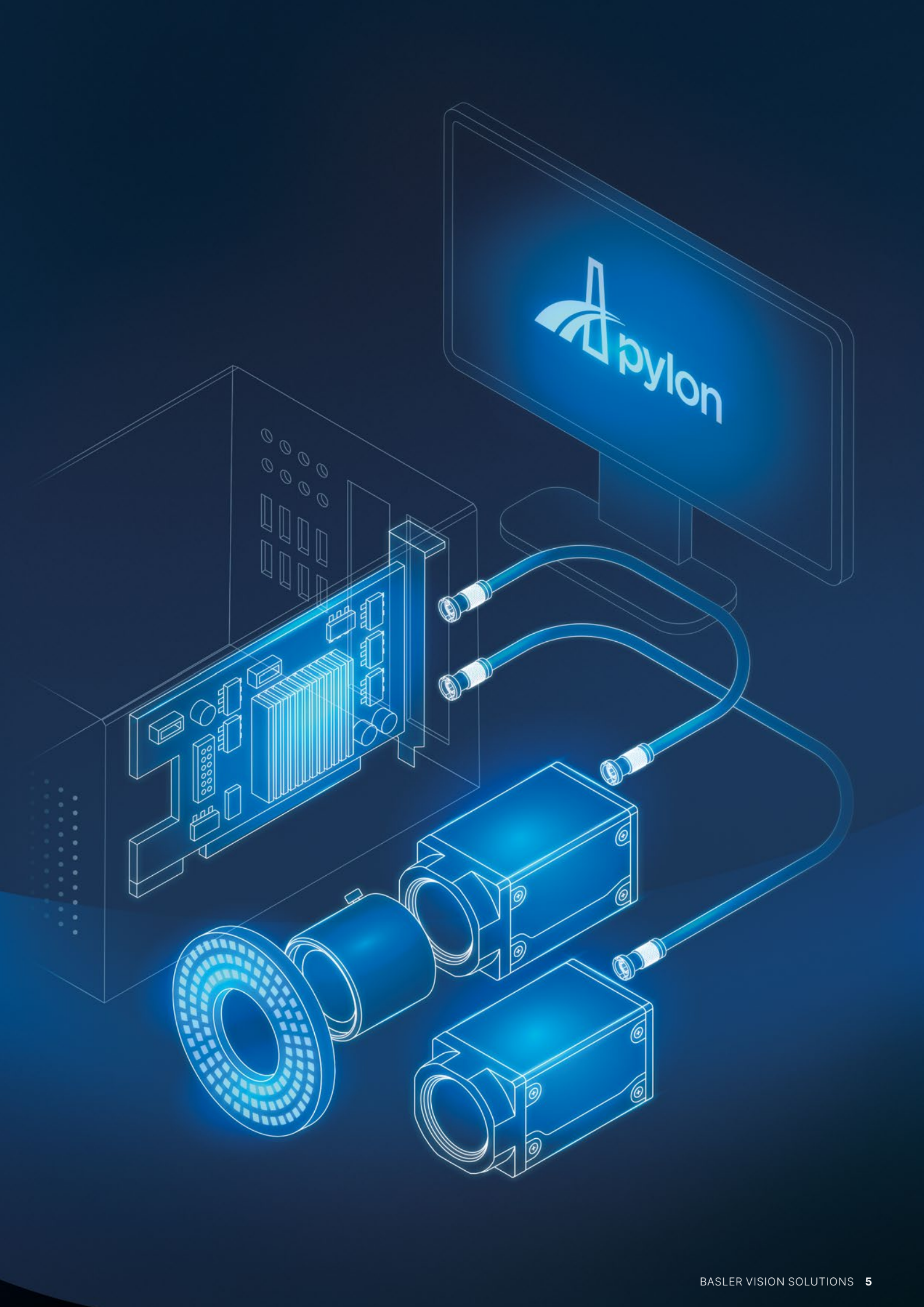
Easy system setup & simple integration
Supplemented by (local) FAE support before and after the buying decision

pylon Software Suite

The software that brings your vision solution to life

The pylon Software Suite is a collection of features and tools for creating computer vision applications. Handle the entire image processing pipeline in one software: Set image parameters and use pylon vTools and pylon AI for advanced, robust image analysis.

Learn more about the pylon Software Suite on page 6.


pylon

pylon Software Suite

The all-in-one machine vision software

The pylon Software Suite is a collection of features and tools for creating computer vision applications. Handle the entire image processing pipeline in one software: Set image parameters and utilize pylon vTools and pylon AI for advanced, robust image analysis. Quickly turn prototypes into target applications with the pylon SDK developer toolset.

Real-time image acquisition
Industry-leading low latency and jitter

Minimized development time
pylon SDK, pylon APIs and other tools simplify deployment to target applications and easy system debugging

NEW
AI image analysis
Now available: pylon AI for challenging use cases

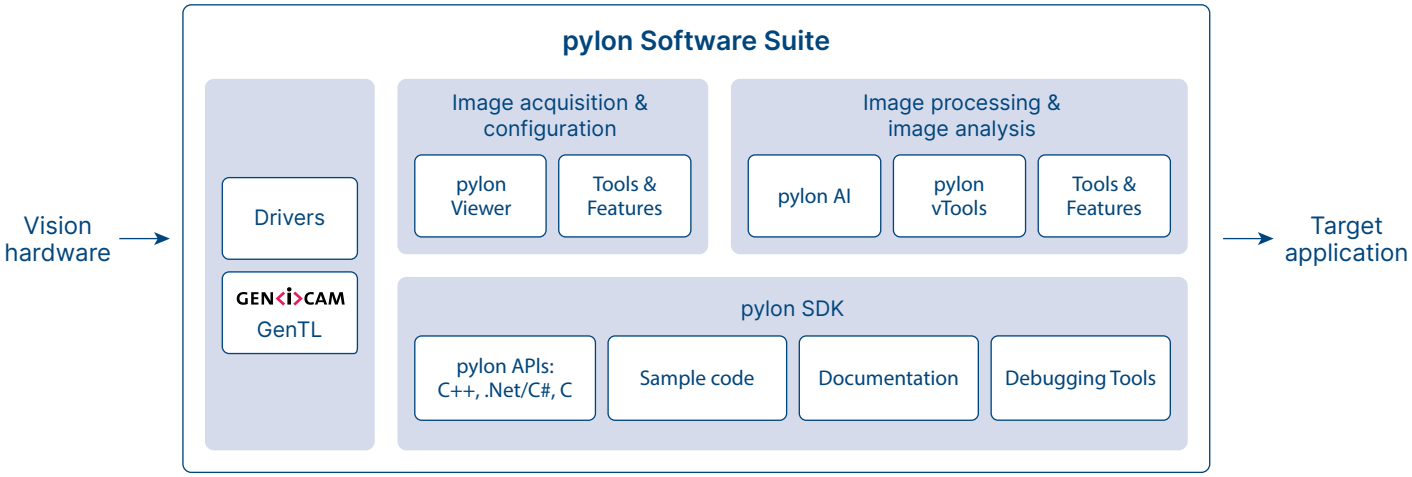
Best image quality
Configure camera and in-camera image pre-processing features for the best images

Add-ons for image processing and analysis
pylon vTools and pylon AI offer both classic and AI-based analysis algorithms that can be flexibly combined to meet your application needs

More information:
baslerweb.com/pylon-software-suite

The pylon Software Suite at a Glance

The pylon Software Suite includes all the software components needed to develop machine vision solutions.



Scope of the pylon Software Suite

The pylon Software Suite runs on common operating systems and provides easy, flexible, and universal integration with target applications.

Certified drivers

Reliable performance for Windows, Linux, macOS, and Android.

Supported interfaces

USB3, 5GigE and GigE, CXP-12, MIPI CSI-2, Camera Link, and others.

GenICam standard conformity

Connect machine vision hardware to your application in a standardized way using pylon GenTL producer. With the pylon APIs, we provide convenient universal functions that encapsulate the GenICam standard.

pylon Viewer

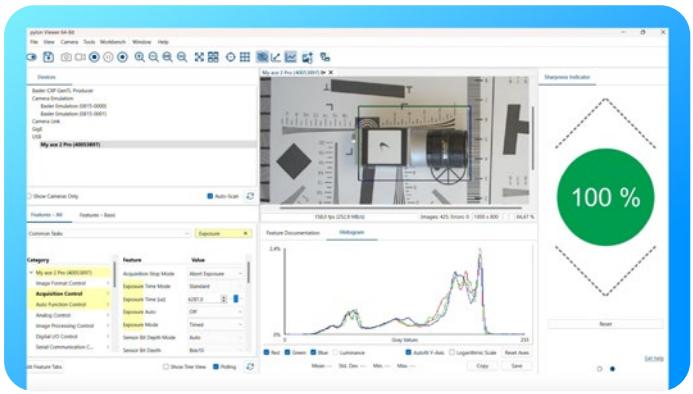
The pylon Viewer is the central tool to acquire images and set and configure image parameters. With a live image, the pylon Viewer allows for fast camera evaluation.

Best image quality with powerful tools

Features such as the Color Calibrator, Sharpness Indicator, or Bandwidth Manager help you get the best image from Basler cameras

Fast prototyping

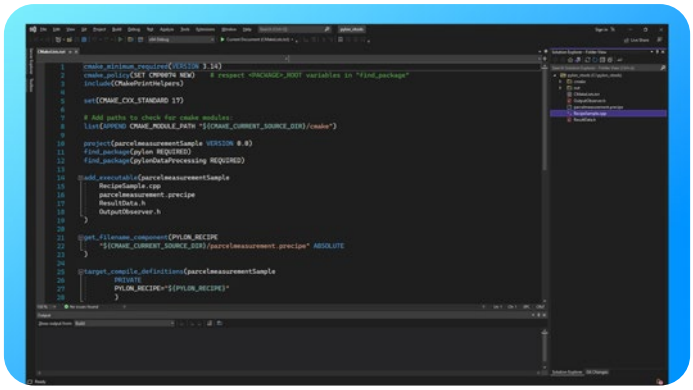
Easy-to-use GUI, live image, and tools and features simplify your development process



The Sharpness Indicator feature helps you to focus your lens correctly. It visualizes the optimal focus.

pylon SDK

The pylon SDK provides easy-to-learn programming interfaces that allow you to increase the productivity and stability of your applications. It includes the pylon APIs in C++, C and .Net programming languages, numerous code examples for all types of functionalities, as well as comprehensive developer documentation.



pylon vTools and pylon AI

pylon vTools and pylon AI are high-performance image processing and analysis functions with classic and AI algorithms, respectively. With the add-ons, flexibly create advanced, robust image analysis pipelines and with our set of tools, deploy everything you need into your application.

Image processing pipelines with drag-and-drop ease

Run and combine pylon vTools and pylon AI without programming

Get fast results

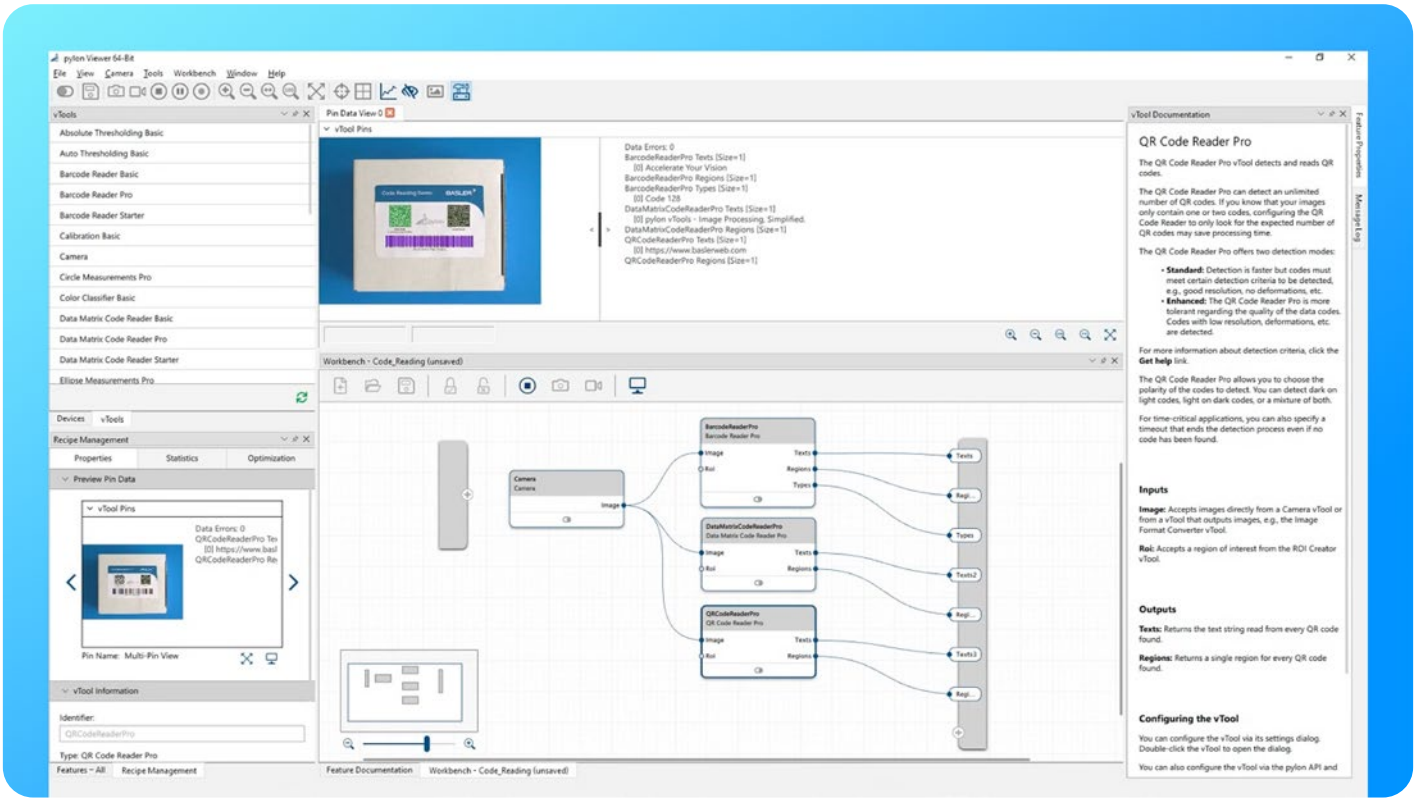
Test and adjust your image processing pipeline with a few clicks and evaluate your results using a live image.

Only buy what you need

With pylon vTools and pylon AI, you don't purchase an extensive vision library – you only opt for the functions that you actually use.

Make your application robust

pylon vTools and pylon AI operate with performant, robust algorithms for better results with fewer errors.



An image processing pipeline, called a recipe. It consists of several code-reading vTools.

Free trial license

Test pylon vTools with the full range of features 180 days for free.

More information: *baslerweb.com/trial-license*

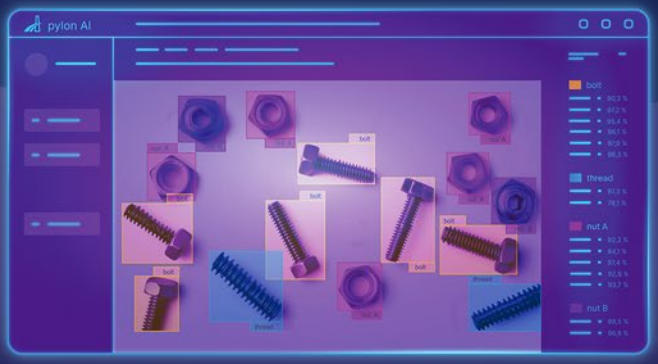
NEW

pylon AI

The efficient AI software for image analysis

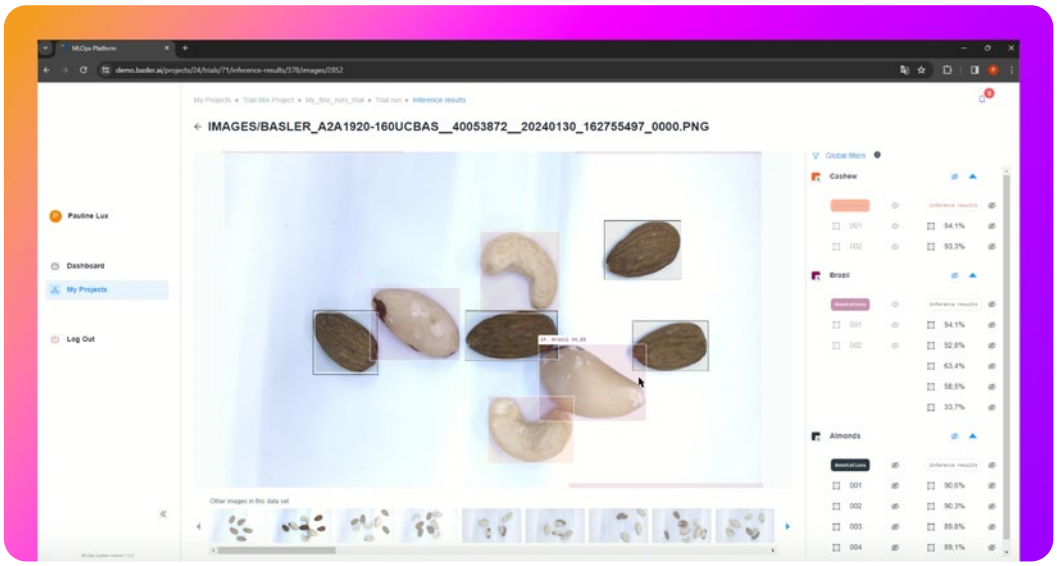
With its deep learning algorithms, pylon AI enables complex image analysis such as object detection or segmentation. Unique to computer vision software, the new performance benchmarking feature allows users to determine the most powerful processing hardware for their application.

More information: *baslerweb.com/pylon-ai*



AI Add-ons for Advanced, Robust Image Analysis

Choose flexibly from ONNX AI models, use your own data sets to enhance your AI model, and optimize your AI model for your target processing hardware. Without any programming, pylon AI can be used by anyone.



Object detection with plyon AI: Different types of nuts are detected. The inference results are output with a probability calculation.

Maximize the performance of your AI application

Benchmark the performance of your AI model across a range of processors and AI chips.

Optimize AI model for vision applications

Optimize your AI model for your processing hardware and enhance the AI vTool's specific algorithm.

Simple: No programming

Create image analysis functions with drag-and-drop ease and deploy them to target applications using proven pylon APIs.

Flexibility thanks to ONNX AI model format

Whether your AI model is trained in PyTorch, TensorFlow, or NVIDIA TAO – pylon AI is compatible with a wide range of AI frameworks thanks to the ONNX format.

Let's add AI to your vision application!

Schedule a demo with our AI experts or try pylon AI free for 30 days.

Schedule a demo: *baslerweb.com/pylon-ai-booking*

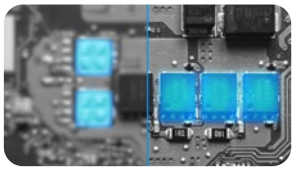
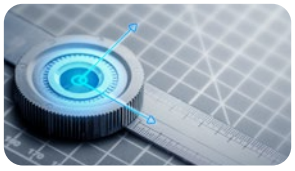
Try pylon AI for free: *baslerweb.com/ai-platform*

pylon vTools

Add-ons for image analysis with classic algorithms

vTool	Description	License Variants	Order No.	Price
OPC UA Client 	**Interoperability for your image processing system** The OPC UA standard offers a simple and standardized way to exchange data and information between machines, independent of platform and manufacturer.	**Basic:** For plug-and-play integration of image processing data exchange	20247	125.00 € [1]
Barcode Reader 	**Fast and Robust Recognition of All Types of Barcodes** Barcode reading licenses include pylon vTools for recognizing and decoding barcodes of up to 28 different bar code types. Easy to implement, they provide the fastest path to powerful bar code recognition with best-in-class recognition rates.	**Starter:** Up to two barcodes per image and one type of barcode instance, no timeout	20110	66.00 € [1]
		Basic: Up to two barcodes per image and one group of barcodes per instance	20085	88.00 € [1]
		Pro: Unlimited number of barcodes per image from each of the 28 different barcode types	20113	515.00 € [1]
Data Matrix Code Reader 	**Fast and Robust Recognition of Data Matrix Codes** Data matrix code reading licenses include pylon vTools for recognizing and decoding data matrix codes. Easy to implement, they provide the fastest path to powerful data matrix code recognition with best-in-class recognition rates.	**Starter:** For up to three Data matrix codes codes per image, dark on bright background, no timeout	20111	47.00 € [1]
		Basic: For up to three Data Matrix Codes per image, dark on bright background	20086	62.00 € [1]
		Pro: For an unlimited number of Data Matrix Codes per image, adjustable polarity, and enhanced recognition rate	20114	518.00 € [1]
QR Code Reader 	**Fast and Robust Recognition of QR Codes** QR code reading reading licenses include pylon vTools for recognizing and decoding QR codes. Easy to implement, they provide the fastest path to powerful QR code recognition with best-in-class recognition rates.	**Starter:** For up to three QR codes per image, dark on bright background, no timeout	20112	43.00 € [1]
		Basic: For up to three QR codes per image, dark on bright background	20087	57.00 € [1]
		Pro: For an unlimited number of QR codes per image, adjustable polarity, and enhanced recognition rate	20115	515.00 € [1]
PDF417 Code Reader 	**Fast and Robust Recognition of PDF417 Codes** This licenses include pylon vTools for PDF417 code recognition and decoding. These easy-to-use tools provide the fastest route to exceptional PDF417 code recognition with unmatched accuracy.	**Basic:** For up to three PDF417 codes per image, dark on bright background	20180	45.00 € [1]
		Pro: An unlimited number of PDF417 codes per image, adjustable polarity, and enhanced recognition rate	20181	511.00 € [1]
Aztec Code Reader 	**Fast and Robust Recognition of Aztec Codes** Aztec code reading reading licenses include pylon vTools for recognizing and decoding Aztec codes. Easy to implement, they provide the fastest path to powerful Aztec code recognition with best-in-class recognition rates.	**Basic:** For up to three Aztec codes per image, dark on bright background	20178	45.00 € [1]
		Pro: An unlimited number of Aztec codes per image, adjustable polarity, and enhanced recognition rate	20179	511.00 € [1]
OCR Basic 	**Optical Character Recognition (OCR) Made Easy** With this vTool Optical Character Recognition is made easy. Define the region of interest, choose from one of the standard fonts and adjust the segmentation to achieve fast character recognition.	**Basic:** Pretrained standard fonts	20209	88.00 € [1]

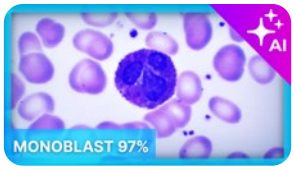
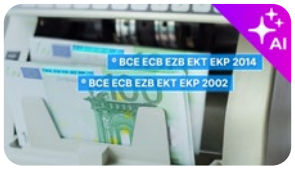
[1] For EMEA only. Regional pricing available at *baslerweb.com/pylon-vtools*

vTool	Description	License Variants	Order No.	Price
Geometric Pattern Matching 	**Edge-Based Algorithm for Simple and Robust Recognition of Shapes, Logos and Objects** Geometric Pattern Matching licenses provide pylon vTools for easy training of shape models and high-performance, adjustable recognition of trained shapes on live images. Create shape models by marking areas on live images or on images from files.	**Basic:** Single pattern search, 360° rotation, without further scaling	20116	303.00 € [1]
		Pro: Single pattern search including scaling, adjustable angle and polarity	20084	691.00 € [1]
Template Matching 	**Correlation-based algorithm for simple and robust matching** Template Matching licenses provide pylon vTools with robust correlation-based matching. Create a reference pattern by marking areas on live images or on images from files. The reference pattern is detected in the live image using normalized cross-correlation, making it robust to edge deformation, rotation, and blur. Images can be aligned with object positions from matching for further processing steps.	**Starter:** NCC matching at defined rotation levels	20152	82.00 € [1]
		Basic: Matching at defined rotation levels with freeform definition	20117	109.00 € [1]
Calibration & Rectification 	**Calibration for Precise Transformation from Pixel to Real World Coordinates** The Calibration and Rectification license provides you with a pylon vTool to quickly and easily calibrate cameras for distortion correction and real world coordinate transformation. Create a precise transformation model that converts pixel coordinates of object positions, angles, or dimensions to real-world values.	**Basic:** Single image, single camera calibration for entocentric cameras	20080	109.00 € [1]
		Pro: Single image, single camera calibration for entocentric and telecentric cameras	20182	521.00 € [1]
Measurements 	**Measure distances along lines and geometric shapes** The measurement license includes vTool for edge based measurement, along a line and geometric shapes. Also available in real world coordinates together with Calibration vTool.	**Basic:** Measure distances between edges along a line	20083	109.00 € [1]
		Pro: Measure along lines and geometric shapes	20151	511.00 € [1]
BLOB Analysis 	**Easy thresholding based image segmentation** The BLOB-Analysis license includes pylon vTools for typical thresholding based BLOB analysis tasks, such as identifying regions by their grey value range. The license includes three thresholding tools: absolute thresholding, auto thresholding (binary), and relative thresholding for dynamic thresholding relative to a mean image.	**Basic:** Absolute thresholding, auto thresholding, and relative thresholding - including vTools for region morphology, object filtering, and feature extraction	20082	76.00 € [1]
Color BLOB Analysis 	**Machine Learning-Based Object Recognition** The Color Blob Analysis licenses include pylon vTools for blob analysis tasks that cannot be solved with common grayscale thresholding techniques, such as identifying objects by color. They include a machine-learning based pixel classifier for training and applying a Gaussian Mixture Model.	**Basic:** Training and application of a model for one class - including vTools for region morphology, object filtering, and feature extraction	20081	76.00 € [1]
Preprocessing 	**High performant image preprocessing** The Preprocessing license provides vTools for arithmetic operations as well as smoothing and morphology operations on images. With these high performance algorithms image features can be enhanced, masked or weakened, to improve and optimize for further image processing steps.	**Starter:** Arithmetic, smoothing and morphology image operations	20177	47.00 € [1]
		Basic: Arithmetic, smoothing, enhancement and morphology image operations	20150	71.00 € [1]
Document Cropper 	**Fast and Easy Document Cropping** This license allows you to easily crop rectangular documents for archiving. Simply set the threshold and this tool will automatically align and crop the document from a dark background.	**Basic:** For automatic document cropping and alignment	20187	75.00 € [1]

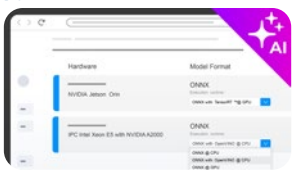
[1] For EMEA only. Regional pricing available at *baslerweb.com/pylon-vtools*

pylon AI vTools

Add-ons for image analysis with AI algorithms

AI vTool	Description	Order No.	Price
Object detection 	**Locating and counting different and complex objects** Object Detection licenses provide vTools for powerful, customizable, deep learning detection algorithms of objects on live images. Create object detection models by annotating objects on images from files. The free choice of deep learning algorithm in, for example, standard ONNX format enables an efficient training process customized to your requirements. Within the pylon AI Platform, you can optimize object detection models based on your performance needs and deploy the trained bundle to the pylon Software Suite. The images can be used for further processing steps based on the detected objects.	20211	599.00 €[1]
Classification 	**Classification and systematic grouping of objects into categories** Classification licenses provide vTools for powerful, customizable, deep learning classification algorithms of live images. Create classification models by annotating images from files. The free choice of deep learning algorithm in, for example, standard ONNX format enables an efficient training process customized to your requirements. Within the pylon AI Platform, you can optimize classification models based on your performance needs and deploy the trained bundle to the pylon Software Suite. The images can be used for further processing steps based on the classification prediction.	20212	599.00 €[1]
Semantic segmentation 	**Identification of pixel clusters for object classes and background regions** Semantic Segmentation licenses provide vTools for powerful, customizable, deep learning semantic segmentation algorithms of objects on live images. Create semantic segmentation models by annotating objects on images from files. The free choice of deep learning algorithm in standard ONNX format enables efficient, customizable training. Within the pylon AI Platform, you can optimize semantic segmentation models based on your performance needs and deploy the trained bundle to the pylon Software Suite. The images can be used for further processing steps based on the segmented objects.	20214	599.00 €[1]
Instance segmentation 	**Prediction of pixel-accurate boundaries of each individual object** Instance Segmentation licenses provide vTools for powerful, customizable, deep learning instance segmentation algorithms of objects on live images. Create instance segmentation models within the pylon AI platform by annotating objects on images from files. The free choice of deep learning algorithm in, for example, standard ONNX format enables an efficient training process customized to your requirements. Within the pylon AI Platform, you can optimize instance segmentation models based on your performance needs and deploy the trained bundle to the pylon Software Suite. The images can be used for further processing steps based on the segmented objects.	20213	599.00 €[1]
OCR Pro 	**Character recognition under difficult, changing readout conditions** The OCR vTool makes optical character recognition easy, even on difficult backgrounds. With the help of deep learning algorithms, even inhomogeneous characters can be reliably recognized. Define the relevant area (ROI), define a text format if possible and select a suitable deep learning model to achieve fast character recognition.	20210	Coming 2025
Anomaly Detection 	**Identifying unusual patterns and deviations from expected attributes** Anomaly Detection licenses provide vTools for advanced, customisable deep learning algorithms to detect inconsistencies and anomalies in live data streams. This enables product deviations to be recognised and provides precise quality assurance	20257	Coming 2025

[1] For EMEA only. Regional pricing available at *baslerweb.com/pylon-ai*

pylon AI Platform	Description	Order No.	Price
pylon AI Platform 	The pylon AI Platform is a web application for MLOps (Machine Learning Operations), where you can optimize your AI model based on your image data. The license is valid for 365 days. It includes 5 user accounts.	20238	7.000.00 €

	pylon for Windows	pylon for Linux x86	pylon for Linux ARM	pylon for macOS	pylon for Android
Platform					
Supported OS Version	10 (64 bit), 11 (64 bit)	Ubuntu 18.04 or newer (64 bit), CentOS 8.0-1905 or newer (64 bit)	Ubuntu 18.04 or newer (64 bit)	10.14, 10.15, 11.1 (Intel 64 bit)	8, 9, 10, 11
Configuration Tools					
pylon Workbench & vTools	●	●	●		
pylon Viewer	●	●	●	●	
pylon GigE Configurator	●	●	●		
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					
Data Processing C++ API	●	●	●		
C++ API	●	●	●	●	●
VB.Net / C# API	●				
C API	●	●	●		
Java API					●
GenTL					
USB3 Vision	●	●	●	●	
GigE Vision	●	●	●	●	
CoaXPress 2.0	●	●			
BCON for MIPI			●		
blaze 3D	●	●	●		
Interface Driver					
Direct Show Driver (U3V, GEV)	●				
TWAIN Driver (U3V, GEV)	●				
NeuroCheck Driver (U3V, GEV)	●				
CoaXPress 2.0 Driver	●	●			
GigE Vision Driver	●	●	●	●	
USB3 Vision Driver	●	●	●	●	●
Camera Link Driver	●				
BCON for MIPI Driver			●		

Our Unique Camera Features

Unique features that add real value to a vision system and help save time and money are key to an efficient and reliable setup. They are the most important element in determining productivity, performance, and ease-of-use.

PGI Feature Set
For optimized images

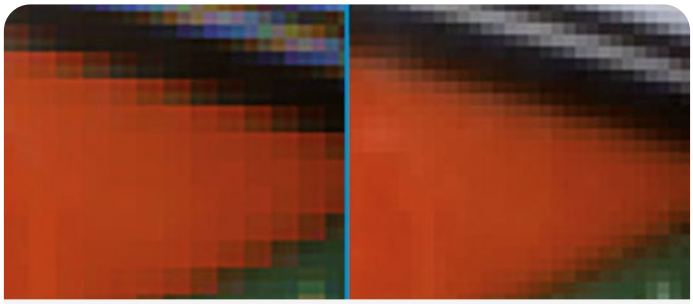
SWIR Imaging
Pixel Correction Beyond and Line Noise Reduction

Beyond Features
Compression Beyond and Pixel Beyond

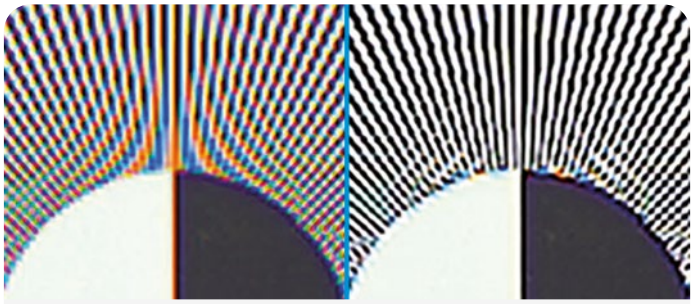
MED Feature Sets
Combine powerful hardware, firmware and software features

PGI

Several of our newest camera models come with our powerful in-camera image optimization technology already built in: This proprietary PGI feature set enhances your images at the full speed of your camera. PGI is comprised of a unique feature combination:



5x5 Debayering
Provides true color images without artifacts.



Color-Anti-Aliasing
Reduces the appearance of false colors at edges in the image.

Denoising
Improves the imaging of the finest structures.

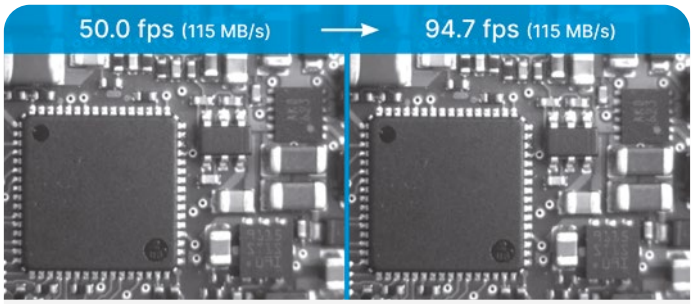
Improved Sharpness
Reduces the appearance of noise – inhomogeneities – in the image.

With PGI, your camera will produce better images than ever, without putting additional load on your processor. The PGI feature set is included in all color and mono cameras of the dart Classic, dart R, dart E and pulse series, as well as in color and mono cameras of the MED ace, ace U, ace L, and ace 2 Pro product lines.

Learn more about PGI at *baslerweb.com/PGI*

Beyond Features

Our ace 2 Pro and ace 2 X UV cameras offer unique features that provide you with immediate added value. The Beyond features are often patented or patent pending and are particularly characterized by functionality that is unique in the market.



Compression Beyond

Provides lossless data compression for faster frame rates and higher throughput.

Pixel Beyond

Allows flexible scalability of pixel sizes and adjustment in resolution.

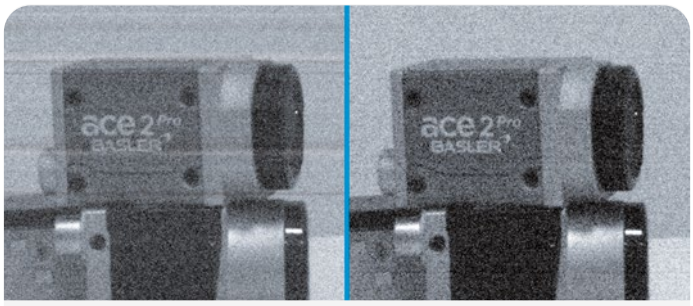
Learn more about our Beyond features at *baslerweb.com/beyond-features*

SWIR Camera Features

SWIR sensors (short wavelength infrared, or SWIR) based on InGaAs technology tend to have pixel defects and a higher noise level. Basler's innovative firmware features improve the images within the camera and are one of the reasons for the outstanding image quality of our ace 2 X visSWIR cameras.

Pixel Correction Beyond

Reduces pixel defects directly in the cameras's FPGA.



Line Noise Reduction

Minimizes background noise, which is visible as horizontal stripes in the image.

Learn more about our SWIR camera features at *baslerweb.com/ace2x-swir*

MED Feature Sets

MED Feature Sets are as versatile as your applications in medicine, medical technology, and life sciences. They are part of every MED ace camera and combine specially developed hardware, firmware, and software functions for superior performance.

Learn more about our MED Feature Set at page 26 and at *baslerweb.com/med-feature-sets*

Basler ace 2

As versatile as your application

The ace 2 camera, with its proven compact design, offers maximum versatility. Thanks to the wide range of sensors and interfaces, you will always find the right camera for your application. Commissioning and control are simple and the image quality can be individually adjusted.

Sensor variety
Up to 25 MP resolution, global and rolling shutter, from UV to SWIR

Interface variety
Choose from a CoaXPress, USB 3.0, GigE, or 5GigE interface

Optimal handling & image quality
Easy commissioning, wide range of control options, best image quality

Small housing
Space-saving thanks to the proven compact 29 mm x 29 mm housing

More Information: *baslerweb.com/ace2*

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: -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)[1] 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[1], FCC, KC, EAC
Driver	pylon Software Suite or 3rd party GigE Vision Software
Operating System	Windows, Linux, macOS, Android

[1] Not available for ace 2 Basic 5GigE models

Camera Model	Sensor	Resolution [H×V pixels]	Resolution [MP]	Sensor Type	Shutter	Frame Rate [fps]	Pixel Size [µm²]	Optical Size ["]
ace 2 Basic – 5GigE								
a2A1920-165g5m/g5cBAS	IMX392	1920 × 1200	2.3	CMOS	Global	168	3.45 × 3.45	1/2.3
★ a2A2048-114g5m/g5cBAS	IMX900	2048 × 1536	3.2	CMOS	Global	114	2.25 × 2.25	1/3.1
a2A2448-105g5m/g5cBAS	IMX547	2448 × 2048	5	CMOS	Global	106	2.74 × 2.74	1/1.8
a2A2440-98g5m/g5cBAS	IMX250	2448 × 2048	5	CMOS	Global	98	3.45 × 3.45	2/3
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
★ a2A3536-42g5m/g5cBAS	IMX676	3536 × 3536	12.5	CMOS	Rolling	42	2 × 2	1/1.6
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
★ a2A5060-21g5m/g5cBAS	E2525A	5060 × 5060	25	CMOS	Global	21	2.5 × 2.5	1.1

Camera Model	Sensor	Resolution [H×V pixels]	Resolution [MP]	Sensor Type	Shutter	Frame Rate [fps]	Pixel Size [µm²]	Optical Size ["]
ace 2 Basic – GigE								
a2A1920-51gm/gcBAS	IMX392	1920 × 1200	2.3	CMOS	Global	51	3.45 × 3.45	1/2.3
★ a2A2048-37gm/gcBAS	IMX900	2048 × 1536	3.2	CMOS	Global	37	2.25 × 2.25	1/3.1
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
★ a2A3536-9gm/gcBAS	IMX676	3536 × 3536	12.5	CMOS	Rolling	9	2 × 2	1/1.6
a2A5320-7gm/gcBAS	IMX542	5320 × 3032	16.1	CMOS	Global	7	2.74 × 2.74	1.1
a2A4508-6gm/gcBAS	GMAX2518	4508 × 4096	18	CMOS	Global	6	2.5 × 2.5	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
★ a2A5060-4gm/gcBAS	E2525A	5060 × 5060	25	CMOS	Global	4	2.5 × 2.5	1.1
ace 2 Pro – GigE PGI BEYOND								
a2A1920-51gm/gcPRO	IMX392	1920 × 1200	2.3	CMOS	Global	51[1]	3.45 × 3.45	1/2.3
★ a2A2048-37gm/gcPRO	IMX900	2048 × 1536	3.2	CMOS	Global	37[1]	2.25 × 2.25	1/3.1
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
★ a2A3536-9gm/gcPRO	IMX676	3536 × 3536	12.5	CMOS	Rolling	9[1]	2 × 2	1/1.6
a2A5320-7gm/gcPRO	IMX542	5320 × 3032	16.1	CMOS	Global	7[1]	2.74 × 2.74	1.1
a2A4508-20gm/gcPRO	GMAX2518	4508 × 4096	18	CMOS	Global	6[1]	2.5 × 2.5	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

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

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	pylon Software Suite or 3rd party USB3 Vision Software
Operating System	Windows, Linux, macOS, Android

Camera Model	Sensor	Resolution [H×V pixels]	Resolution [MP]	Sensor Type	Shutter	Frame Rate [fps]	Pixel Size [µm²]	Optical Size ["]
ace 2 Basic								
a2A1920-160um/ucBAS	IMX392	1920 × 1200	2.3	CMOS	Global	160	3.45 × 3.45	1/2.3
★ a2A2048-114um/ucBAS	IMX900	2048 × 1536	3.2	CMOS	Global	114	2.25 × 2.25	1/3.1
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 × 2.5	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
★ a2A3536-31um/ucBAS	IMX676	3536 × 3536	12.5	CMOS	Rolling	31	2 × 2	1/1.6
a2A5320-23um/ucBAS	IMX542	5320 × 3032	16.1	CMOS	Global	23	2.74 × 2.74	1.1
a2A4508-20um/ucBAS	GMAX2518	4508×4096	18	CMOS	Global	20	2.5 × 2.5	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
★ a2A5060-15um/ucBAS	E2525A	5060 × 5060	25	CMOS	Global	15	2.5 × 2.5	1.1
ace 2 Pro PGI BEYOND								
a2A1920-160um/ucPRO	IMX392	1920 × 1200	2.3	CMOS	Global	160[1]	3.45 × 3.45	1/2.3
★ a2A2048-114um/ucPRO	IMX900	2048 × 1536	3.2	CMOS	Global	114[1]	2.25 × 2.25	1/3.1
a2A2590-60um/ucPRO	IMX334ROI	2592 × 1944	5	CMOS	Rolling	60[1]	2.0 × 2.0	1/2.8
a2A2448-75um/ucPRO	IMX547	2448 × 2048	5	CMOS	Global	75[1]	2.74 × 2.74	1/1.8
a2A2600-64um/ucPRO	GMAX2505	2600 × 2160	5.6	CMOS	Global	64[1]	2.5 × 2.5	1/2
a2A2840-48um/ucPRO	IMX546	2840 × 2840	8	CMOS	Global	48[1]	2.74 × 2.74	2/3
a2A3840-45um/ucPRO	IMX334	3840 × 2160	8.3	CMOS	Rolling	45[1]	2.0 × 2.0	1/1.8
a2A4200-40um/ucPRO	GMAX2509	4200 × 2160	9.1	CMOS	Global	40[1]	2.5 × 2.5	2/3
a2A4096-30um/ucPRO	IMX545	4096 × 3000	12.3	CMOS	Global	30[1]	2.74 × 2.74	1/1.1
★ a2A3536-31um/ucPRO	IMX676	3536 × 3536	12.5	CMOS	Rolling	31[1]	2 × 2	1/1.6
a2A5320-23um/ucPRO	IMX542	5320 × 3032	16.1	CMOS	Global	23[1]	2.74 × 2.74	1.1
a2A4508-20um/ucPRO	GMAX2518	4508×4096	18	CMOS	Global	20[1]	2.5 × 2.5	1
a2A4504-18um/ucPRO	IMX541	4504 × 4504	20.2	CMOS	Global	18[1]	2.74 × 2.74	1.1
a2A5328-15um/ucPRO	IMX540	5328 × 4608	24.4	CMOS	Global	15[1]	2.74 × 2.74	1.2

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

ace 2 CXP-12

Product Group Specifications	
Interface	CoaXPress (CXP-12)
Housing Size [L × W × H]	42.8 mm × 29 mm × 29 mm
Housing Temperature during operation	0 °C – 50 °C
Typical Weight	76 g
Lens Mount	C-mount
Power Supply	PoCXP
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 (incl. RoHS), FCC, KC, UKCA, EAC, CoaXPress 2.0, GenICam, IP30, UL
Driver	pylon Software Suite
Operating System	Windows, Linux (64-Bit)

Camera Model	Sensor	Resolution [H×V pixels]	Resolution [MP]	Sensor Type	Shutter	Frame Rate [fps]	Pixel Size [µm²]	Optical Size ["]
ace 2								
a2A2448-120cm/cc	IMX547	2448 × 2048	5	CMOS	Global	122	2.74 × 2.74	1/1.8
a2A2448-210cm/cc	IMX537	2448 × 2048	5	CMOS	Global	212	2.74 × 2.74	1/1.8
a2A2840-86cm/cc	IMX546	2840 × 2840	8	CMOS	Global	86	2.74 × 2.74	2/3
a2A4096-67cm/cc	IMX545	4096 × 3000	12	CMOS	Global	67	2.74 × 2.74	1/1.1
a2A5320-52cm/cc	IMX542	5320 × 3032	16.1	CMOS	Global	52	2.74 × 2.74	1.1
a2A4504-42cm/cc	IMX541	4504 × 4504	20.2	CMOS	Global	42	2.74 × 2.74	1.1
a2A5328-35cm/cc	IMX540	5328 × 4608	24.4	CMOS	Global	35	2.74 × 2.74	1.2
★ a2A5060-35cm/cc	E2525A	5060 × 5060	25	CMOS	Global	35	2.5 × 2.5	1.1

Basler ace

Small, affordable, and powerful

With the Basler ace, you can rely on a renowned camera series with an unbeatable price/performance ratio. Various resolutions and speeds, diverse interfaces, extensive features, and a choice of sensors from all the leading manufacturers make the ace the perfect choice for a wide range of machine vision applications.

Small and compact
Thanks to the housing of 29 mm x 29 mm as well as 30 mm x 40 mm usable for numerous vision applications

Firmware features
With PGI for highest image quality at full camera speed without additional processor load

Broad sensor portfolio
Wide range of CCD, CMOS and NIR sensors from renowned manufacturers

Interface diversity
USB 3.0, GigE or Camera Link: Choose the right interface for your application

More information: *baslerweb.com/ace*

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, UKCA
Driver	pylon Software Suite or 3rd party USB3 Vision Software
Operating System	Windows, Linux, macOS, Android

[1] 0 °C – 60 °C for acA2040-90um/uc, acA2040-90umNIR.
[2] Not 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 [µm²]	Optical Size ["]
ace Classic								
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
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 [µm²]	Optical Size ["]
ace U PGI								
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	PYTHON 2000	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	PYTHON 5000	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 PGI								
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, UKCA
Driver	pylon Software Suite or 3rd party GigE Vision Software
Operating System	Windows, Linux, macOS

[1] Also applies to ace Classic models acA3800-10gm/gc, acA1280-60gm/gc, acA1300-60gm/gc, acA1300-60gmNIR, acA1600-60gm/gc.
[2] Not applicable for acA1280-60gm/gc, acA1300-60gm/gc, acA1600-60gm/gc, acA3800-10gm/gc.

Camera Model	Sensor	Resolution [H×V pixels]	Resolution [MP]	Sensor Type	Shutter	Frame Rate [fps]	Pixel Size [µm²]	Optical Size ["]
ace Classic								
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
acA1600-60gm/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
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 PGI								
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 PGI								
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, UKCA
Driver	pylon Software Suite or 3rd party Camera Link Software
Operating System	Windows, Linux, macOS, Android

Camera Model	Sensor	Resolution [H×V pixels]	Resolution [MP]	Sensor Type	Shutter	Frame Rate [fps]	Pixel Size [µm²]	Optical Size ["]
ace Classic								
acA2000-340km/kc	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 MED ace
For Medical & Life Sciences

Use MED ace cameras for your application in medicine, medical technology and life sciences. The cameras convince with best image quality, reliability and long-term availability. They also have special MED feature sets.

CMOS sensors
CMOS sensors from Sony and onsemi with up to 164 fps frame rate and 20 MP resolution

Dust Protection[+]
Sensor room sealing, clean room production and inspection for dust and other particles

MED Feature Sets
Combine powerful hardware, firmware and software features

Interface diversity
Plug-and-play USB 3.0 or GigE interface

More information: *baslerweb.com/MEDace*

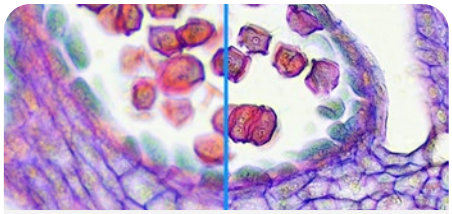
MED ace

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], UKCA	ISO 13485:2016, CE, RoHS, GenICam, GigE Vision, IP30, IEEE 802.3af (PoE), UL, FCC Class B, KC, EAC[1]
Driver	pylon Software Suite or 3rd party USB3 Vision Software	pylon Software Suite or 3rd party GigE Vision Software
Operating System	Windows, Linux, macOS, Android	Windows, Linux, macOS, Android

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

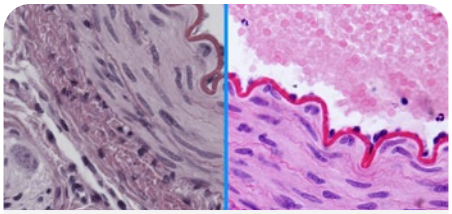
Camera Model	Sensor	Resolution [H×V pixels]	Resolution [MP]	Sensor Type	Shutter	Frame Rate [fps]	Pixel Size [µm²]	Optical Size ["]
MED ace U USB 3.0 PGI								
MED ace 2.3 MP 41 m/c	IMX249	1920 × 1200	2.3	CMOS	Global	41	5.86 × 5.86	1/1.2
MED ace 2.3 MP 164 m/c	IMX174	1920 × 1200	2.3	CMOS	Global	164	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 PGI								
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 PGI								
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



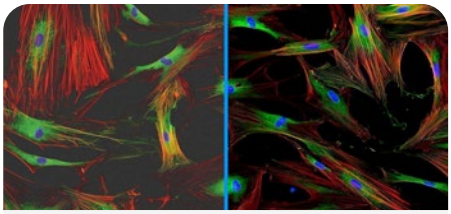
Brilliant Image

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.



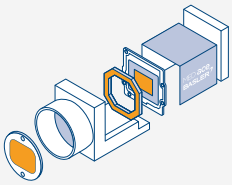
Perfect Color

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.



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.



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.

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.

More information: *baslerweb.com/med-feature-sets*

Camera	Brilliant Image	Perfect Color[1]	Low Light Imaging	Dust Protection+	Industrial Excellence	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	●	●		●	●	

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

Basler boost

CoaXPress 2.0 for high bandwidths and large resolution

The boost series features modern, high-performance cameras that deliver excellent image quality – even at high data rates – thanks to CoaXPress 2.0 and modern CMOS sensors. Combining these cameras with our coordinated accessories forms the perfect system for applications with high requirements.

High bandwidths
Bandwidth up to 50 Gbps over longer distances and in real time

Latest CMOS sensors
Latest global shutter CMOS sensors for best inspection results

High resolutions
Up to 127 MP for capturing the smallest details

Sensor diversity
Broad portfolio with CMOS sensors from Gpixel, Sony and onsemi for your individual requirement

More information: *baslerweb.com/boost*

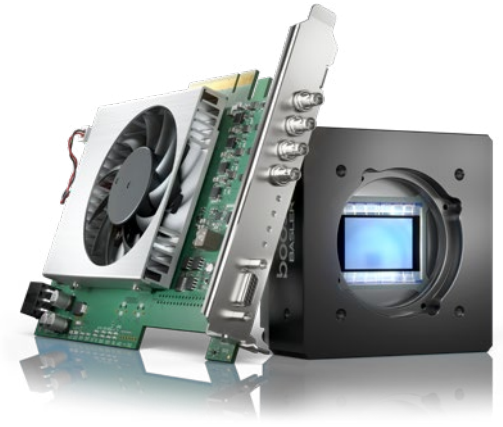
	boost R	boost V
Product Group Specifications		
Interface	CoaXPress 2.0 (CXP-12)	
Housing Size [L × W × H]	45 mm × 80 mm × 80 mm	66.6 mm x 65 mm x 65 mm
Housing Temperature during operation	0 °C – 50 °C	max. 70 °C
Typical Weight	400 - 525 g	400 g
Lens Mount	Flexible mount concept (adapters available for C-mount, F-mount, M42 × 0.75 and M42 × 1)	Flexible mount concept (adapters available for C-mount, F-mount, M58 × 0.75 and M42 × 1)
Power Supply	PoCXP or 24 VDC	
Digital I/O	1/2 inputs, 2 GPIO	1/2 inputs, 1 GPIO
Synchronization	Via hardware trigger, via software trigger, or free-run	Via hardware trigger, via software trigger
Exposure Control	Via hardware trigger or programmable via the camera API	
Conformity	RoHS, CE, GenICam, KC, UL, EAC[1], CoaXPress 2.0	RoHS, CE, GenICam, KC, UKCA, FCC, CoaXPress 2.0
Driver	pylon Software Suite	
Operating System	Windows, Linux (64-Bit)	

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

CoaXPress Evaluation Kit boost

For our boost R cameras, we offer evaluation kits for a time- and cost-saving evaluation and integration phase of your vision system. They include a boost camera, a suitable interface card and the pylon Software as well as all necessary components.

More information:
baslerweb.com/coaxpress-evaluation-kit-boost



Camera Model	Sensor	Resolution [H×V pixels]	Resolution [MP]	Sensor Type	Shutter	Frame Rate [fps]	Pixel Size [µm²]	Optical Size ["]
boost R								
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	2832 × 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	CMOS	Global	100	2.74 × 2.74	1.1
boA4500-45cm/cc	XGS 20000	4500 × 4500	20	CMOS	Global	45	3.2 × 3.2	1.3
boA5328-100cm/cc	IMX530	5328 × 4608	24.4	CMOS	Global	100	2.74 × 2.74	1.2
boA6500-36cm/cc	XGS 32000	6580 × 4935	32.4	CMOS	Global	35	3.2 × 3.2	APS-C
boA8100-16cm/cc	XGS 45000	8192 × 5460	44.7	CMOS	Global	19	3.2 × 3.2	35 mm
boA13440-17cm	IMX661	13376 × 9528	127	CMOS	Global	17	3.45 × 3.45	3.6
boost V								
boA5120-230cm/cc	GSPRINT4521	5120 × 4096	21	CMOS	Global	230	4.5 × 4.5	APS-C
boA5120-150cm/cc	GMAX0505	5120 × 5120	25	CMOS	Global	150	2.5 × 2.5	1.1
boA9344-30cm/cc	GMAX3265	9344 × 7000	65	CMOS	Global	30	3.2 × 3.2	2.3
boA9344-70cm/cc	GMAX3265	9344 × 7000	65	CMOS	Global	70	3.2 × 3.2	2.3

Basler dart

Compact, board level camera with excellent image quality

Looking for a flexible camera for factory or embedded applications? The Basler dart – with its small design, low weight, low power consumption, and various mounting options – is the right choice for you.

Board level design
For flexible and optimal integrability in the system setup

Diverse sensor options
Resolutions from VGA to 13 MP and frame rates from 14 to 523 fps

Variety of mounting options
Bare board, S-mount, and CS-mount

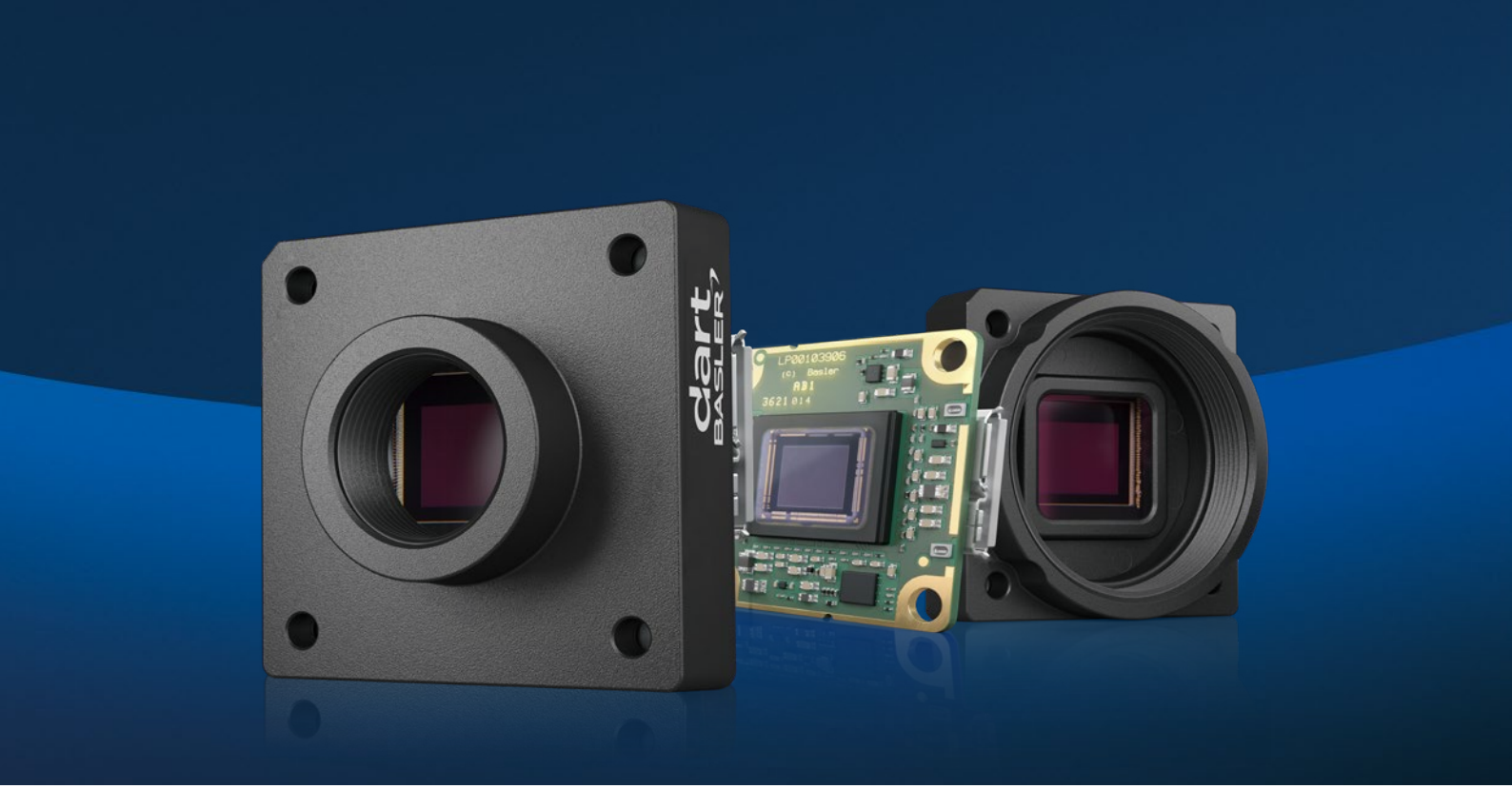
Interface diversity
GigE, USB 3.0, and BCON for MIPI interface options

More information: *baslerweb.com/dart*

dart Classic, dart R, dart E

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], UKCA
Driver	pylon Software Suite
Operating System	Linux, Windows (USB 3.0 only), macOS (USB 3.0 only), Android (USB 3.0 only)

[1] Depending on model.



Camera Model	Sensor	Resolution [H×V pixels]	Resolution [MP]	Sensor Type	Shutter	Frame Rate [fps]	Pixel Size [µm²]	Optical Size ["]
dart Classic USB 3.0 PGI								
daA1280-54um/uc	AR0134	1280 × 960	1.2	CMOS	Global	54	3.75 × 3.75	1/3
daA1600-60um/uc	EV76C570	1600 × 1200	2	CMOS	Global	60	4.5 × 4.5	1/1.8
daA1920-15um[1]	MT9P031	1920 × 1080	2	CMOS	Rolling	15	2.2 × 2.2	1/3.7
daA1920-30um/uc	MT9P031	1920 × 1080	2	CMOS	Rolling	30	2.2 × 2.2	1/3.7
daA2500-14um/uc	MT9P031	2592 × 1944	5	CMOS	Rolling	14	2.2 × 2.2	1/2.5
dart R USB 3.0 PGI								
daA720-520um/uc	IMX287	720 × 540	VGA	CMOS	Global	523	6.9 × 6.9	1/2.9
daA1440-220um/uc	IMX273	1440 × 1080	1.6	CMOS	Global	227	3.45 × 3.45	1/2.9
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	CMOS	Global	72	2.74 × 2.74	1/1.8
daA3840-45um/uc	IMX334	3840 × 2160	8.3	CMOS	Rolling Shutter	45	2 × 2	1/1.8

[1] Bare board only.

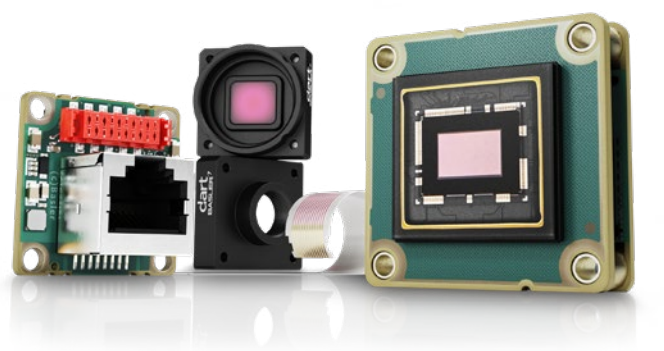
Camera Model	Sensor	Resolution [H×V pixels]	Resolution [MP]	Sensor Type	Shutter	Frame Rate [fps]	Pixel Size [µm²]	Optical Size ["]
dart E BCON for MIPI PGI								
daA2500-60mc	AR0521	2560 × 1920	5	CMOS	Rolling	60	2.2 × 2.2	1/2.5
daA2500-60mci[1]	AR0521	2560 × 1920	5	CMOS	Rolling	60	2.2 × 2.2	1/2.5
daA3840-30mc	AR0821	3840 × 2160	8	CMOS	Rolling	30	2.1 × 2.1	1/1.8
daA4200-30mci[1]	AR1335	4208 × 3120	13	CMOS	Rolling	30	1.1 × 1.1	1/3

[1] Internal ISP.

Basler dart M

A camera based on the modular principle

The dart M camera is a modular, board level camera with GigE interface that adapts to the installation situation of your application: based on the camera module, you can put together a modular camera that meets your requirements and obtain an easy-to-integrate, cost-efficient camera. The sensor on the camera module, distance between sensor and Ethernet socket, power supply, and lens mount can all be flexibly selected.

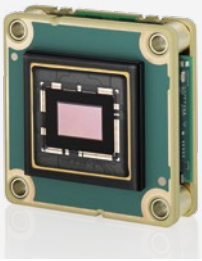


Camera Model	Sensor	Resolution [H×V pixels]	Resolution [MP]	Sensor Type	Shutter	Frame Rate [fps]	Pixel Size [µm²]	Optical Size ["]
dart M GigE								
dmA720-290gm/gc	IMX287	720 × 540	VGA	CMOS	Global	290	6.9 × 6.9	1/2.9
dmA1440-73gm/gc	IMX273	1440 × 1080	1.6	CMOS	Global	73	3.45 × 3.45	1/2.9
dmA1920-51gm/gc	IMX392	1920 × 1200	2.3	CMOS	Global	51	3.45 × 3.45	1/2.3
★ dmA2448-23gm/gc	IMX547	2448 × 2048	5.1	CMOS	Global	23	2.74 × 2.74	1/1.8
★ dmA2840-14gm/gc	IMX546	2840 × 2840	8.1	CMOS	Global	14	2.74 × 2.74	2/3
★ dmA4096-9gm/gc	IMX545	4096 × 3000	12.3	CMOS	Global	9	2.74 × 2.74	1/1.1
★ dmA3536-9gm/gc	IMX676	3536 × 3536	12.5	CMOS	Rolling	9	2 × 2	1/1.6

The dart M Building Block

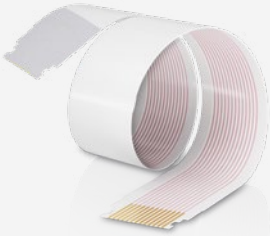
Camera module

Get the camera module with the latest CMOS sensors from Sony. To easily integrate the camera module into your application, continue with the selection of further components. If you would like to develop your own, the camera module can also be integrated into your own electronics via the provided FFC connector.



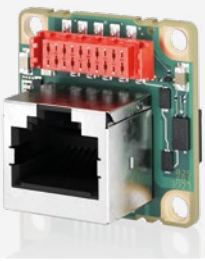
Flat flex cable (FFC)

Connect the camera module and interface board (or your own electronics) using a 5 cm, 15 cm, or 30 cm flat flex cable. This separation saves space at the image acquisition location and allows you to flexibly decide on the orientation of the interface board or your own electronics.



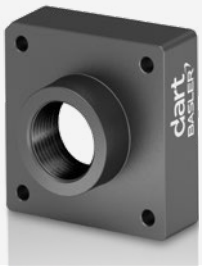
Interface board

If you decide to use the GigE standard RJ45 plug, you have two interface boards to choose from: either the one-cable solution via PoE (Power overEthernet) or the two-cable solution via AUX power to connect the camera from the interface board to the host system.



Lens mount

You can use the camera module as a bare board version or choose between the lens connections: S-, CS-, and CS-mount with IR cut filter. The camera is space-saving both without (27 mm x 27 mm at 10 g) and with lens mount (29 mm x 29 mm at 15 g).



Basler pulse

Compact and lightweight camera with rugged design

Basler's pulse area scan cameras provide great stability and impressively low power consumption. Benefit from easy system integration and proven Basler quality.

Compact and lightweight
Small form factor of 38.8 mm (deep) x 28.2 mm (long) and light weight (under 60 g)

Global and rolling shutter
Different sensor technologies available to meet your requirements

PGI feature set
Powerful in-camera image optimization that adjusts images at full camera speed

More information: *baslerweb.com/pulse*

pulse

Product Group Specifications	
Interface	USB 3.0
Housing Size [L × W × H]	38.8 mm × 28.2 mm
Housing Temperature during operation	0 °C – 50 °C
Typical Weight	< 60 g
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, UKCA
Driver	pylon 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 [µm²]	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 ace 2 X visSWIR

See beyond the visible spectrum

The ace 2 X visSWIR cameras deliver the best image quality in the visible and short-wave infrared (SWIR) spectrum. They are also compact and affordable, making them well suited for applications for which conventional SWIR cameras are too large or too expensive.

visible + SWIR
Image acquisition in the visible and short-wave infrared spectrum up to 1.7 µm

High image quality
This uncooled camera delivers exceptional image quality thanks to innovative SWIR camera features

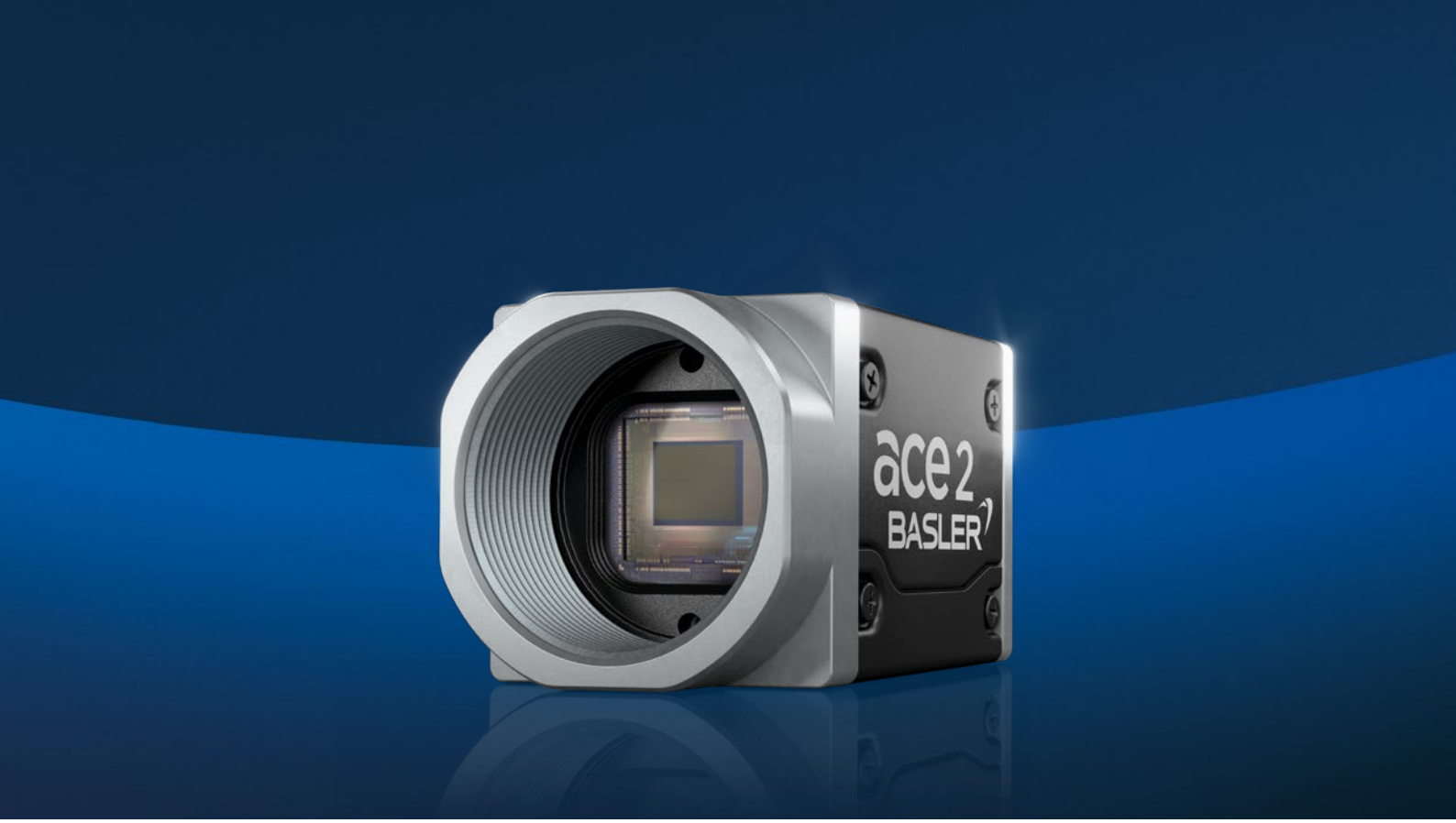
Small size, small price
Camera with a compact housing measuring just 29 mm x 29 mm at a low price

Extensive visSWIR accessories
Coordinated components for a complete vision system from a single source

More information:
baslerweb.com/ace2x-swir

ace 2 X visSWIR

Product Group Specifications			
Interface	USB 3.0	Fast Ethernet (100 Mbit/s) or GigE (1000 Mbit/s)	CoaXPress 2.0 (CXP-12)
Housing Size [L × W × H]	42.8 mm × 29 mm × 29 mm	55.5 mm × 29 mm × 29 mm	42.8 mm × 29 mm × 29 mm
Housing Temperature during operation	-10 °C – 60 °C		
Typical Weight	85 - 90 g	100 g	76 g
Lens Mount	C-mount		
Power Supply	Via USB 3.0 interface	PoE or 12-24 VDC	PoCXP
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 (incl. RoHS), EAC, FCC, GenICam, USB3 Vision 2.0, IP30, KC, RoHS, UL	CE (incl. RoHS), EAC, FCC, GenICam, GigE Vision 2.0, IP30, KC, RoHS, UL	CE (incl. RoHS), EAC, FCC, GenICam, CoaXPress 2.0, IP30, KC, RoHS, UL
Driver	pylon Software Suite		
Operating System	Windows, Linux, macOS, Android		



Camera Model	Sensor	Resolution [H×V pixels]	Resolution [MP]	Sensor Type	Shutter	Frame Rate [fps]	Pixel Size [µm²]	Optical Size ["]
ace 2 X visSWIR USB								
a2A640-240umSWIR	IMX991	640 × 512	VGA	InGaAs	Global	240	5 × 5	1/4
a2A1280-125umSWIR	IMX990	1280 × 1024	1.3	InGaAs	Global	125	5 × 5	1/2
a2A2048-110umSWIR	IMX993	2048 × 1536	3.1	InGaAs	Global	110	3.45 × 3.45	1/1.8
a2A2560-70umSWIR	IMX992	2560 × 2048	5.2	InGaAs	Global	70	3.45 × 3.45	1/1.4
ace 2 X visSWIR GigE								
a2A640-240gmSWIR	IMX991	640 × 512	VGA	InGaAs	Global	240	5 × 5	1/4
a2A1280-80gmSWIR	IMX990	1280 × 1024	1.3	InGaAs	Global	80	5 × 5	1/2
a2A2048-35gmSWIR	IMX993	2048 × 1536	3.1	InGaAs	Global	35	3.45 × 3.45	1/1.8
a2A2560-20gmSWIR	IMX992	2560 × 2048	5.2	InGaAs	Global	20	3.45 × 3.45	1/1.4
ace 2 X visSWIR CXP								
★ a2A2048-173cmSWIR	IMX993	2048 × 1536	3.1	InGaAs	Global	173	3.45 × 3.45	1/1.8
★ a2A2560-131cmSWIR	IMX992	2560 × 2048	5.2	InGaAs	Global	131	3.45 × 3.45	1/1.4

Basler ace 2 X UV

See in the ultraviolet spectrum

ace 2 X UV cameras operate in the ultraviolet (UV) spectral range, in which many materials have different optical properties than in the visible range. This predestines the technology for special applications beyond the visible wavelengths.

UV spectrum
Capturing images in the invisible light spectrum with wavelengths from 0.2 µm to 0.4 µm

Small design
Easy to design in, thanks to its compact 29 mm x 29 mm housing

High sensitivity
Thanks to the Sony IMX487 UV sensor with 8.1 MP resolution, global shutter, and back side illumination

UV accessories
Large selection of UV components suitable for ultraviolet applications

More information: *baslerweb.com/ace2x-uv*

ace 2 X UV

Product Group Specifications			
Interface	USB 3.0	Fast Ethernet (100 Mbit/s), GigE (1000 Mbit/s)	Fast Ethernet (100 Mbit/s), GigE (1000 Mbit/s), 2.5GigE (2500 Mbit/s), 5GigE (5000 Mbit/s)
Housing Size [L × W × H]	42.8 mm × 29 mm × 29 mm	55.5 mm × 29 mm × 29 mm	
Housing Temperature during operation	0 °C – 50 °C		
Typical Weight	85 g	100 g	102 g
Lens Mount	C-mount		
Power Supply	Via USB 3.0 interface or 12-24 VDC	PoE or 12-24 VDC	12-24 V
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 (incl. RoHS), UKCA, KC, EAC, FCC, GenICam, USB3 Vision, IP30, UL	CE (incl. RoHS), UKCA, KC, EAC, FCC, GenICam, GigE Vision 2.0, IP30, UL	
Driver	pylon Software Suite		
Operating System	Windows, Linux, macOS, Android	Windows, Linux, macOS, Android	Windows, Linux

Camera Model	Sensor	Resolution [H×V pixels]	Resolution [MP]	Sensor Type	Shutter	Frame Rate [fps]	Pixel Size [µm²]	Optical Size ["]
ace 2 X UV USB BEYOND								
a2A2840-48umUV	IMX487	2856 × 2848	8.1	CMOS	Global	48	2.74 × 2.74	2/3
ace 2 X UV GigE BEYOND								
a2A2840-14gmUV	IMX487	2856 × 2848	8.1	CMOS	Global	14	2.74 × 2.74	2/3
ace 2 X UV 5GigE BEYOND								
a2A2840-67g5mUV	IMX487	2856 × 2848	8.1	CMOS	Global	67	2.74 × 2.74	2/3

Basler racer

Outstanding speed, reliability, and image quality

The Basler racer is perfect for multi-camera setups and low-light applications. These cameras are available in multiple resolutions, with GigE and Camera Link interfaces to fit your needs.

Various resolutions
Available in 2k, 4k, 6k, 8k, and 12k resolutions

Diverse Interfaces
GigE or Camera Link interfaces for different applications

Line rates up to 80 kHz
For applications that require high throughput

More information: *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%), PoCL1
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, UKCA
Driver	pylon Software Suite or 3rd party Software
Operating System	Windows, Linux, macOS

[1] raL2048-80km and raL4096-80km only.

Camera Model	Sensor	Resolution [H×V pixels]	Resolution [Pixels]	Sensor Type	Shutter	Line Rate [kHz]	Pixel Size [µm²]	Sensor Format [mm]
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

Basler racer 2

Fast line scan cameras with up to 16k resolution

Basler racer 2 line scan cameras have resolutions of up to 16k and a line rate of up to 240 kHz. They are especially suitable for quality assurance in battery production, for example.

Various resolutions
Available in 2k, 4k, 8k and 16k resolutions

Latest CMOS sensors
Best images thanks to latest line scan sensors from Gpixel

Line rates up to 240 kHz
For applications that require high performance

More information: *baslerweb.com/racer2*

CXP-12 GigE Vision 5GigE Vision

	racer 2 S	racer 2 L
Product Group Specifications		
Interface	GigE, 5GigE, CoaXPress 2.0 (CXP-12)	CoaXPress 2.0 (CXP-12)
Housing Size [L × W × H]	GigE, 5GigE: 48.9 mm × 29 mm × 29 mm CoaXPress 2.0: 48.9 mm × 29 mm × 29 mm	36 mm × 80 mm × 90 mm
Housing Temperature during operation	-10 °C – 60 °C	0 °C – 50 °C
Typical Weight	< 105 g	420 g
Lens Mount	C-mount	M72 × 0.75
Power Supply	12–24 VDC	24 VDC
Digital I/O	1 opto-coupled input line 2 general purpose I/O (GPIO) lines	3 differential general purpose I/O (GPIO) lines
Synchronization	Via hardware trigger, via software trigger, or free-run	
Exposure Control	Via hardware trigger or programmable via the camera API	
Conformity	CE, CoaXPress 2.0, FCC, GenICam, KC, RoHS, UKCA, UL Listed, EAC, GigE Vision, IP30	CE, CoaXPress 2.0, FCC, GenICam, KC, RoHS, UKCA
Driver	pylon Software Suite or 3rd party Software	
Operating System	Windows, Linux	

Camera Model	Sensor	Resolution [H×V pixels]	Resolution [Pixels]	Sensor Type	Shutter	Line Rate [kHz]	Pixel Size [µm²]	Sensor Format [mm]
racer 2 L								
★ r2L 8192-240cm	GL7008m	8192 × 4	8k	CMOS	Global	240	7.0 × 7.0	57.3
★ r2L 8192-80cc	GL7008c	8192 × 4	8k	CMOS	Global	80	7.0 × 7.0	57.3
★ r2L 16384-120cm	GL3516m	16384 × 2	16k	CMOS	Global	120	3.5 × 3.5	57.3
★ r2L 16384-60cc	GL3516c	16384 × 2	16k	CMOS	Global	60	3.5 × 3.5	57.3
racer 2 S CXP-12								
r2L 2048-172cm	GL3504	2048 × 1	2k	CMOS	Global	172	7.0 × 7.0	14.3
r2L 2048-62cc	GL3504	2048 × 3	2k	CMOS	Global	62	7.0 × 7.0	14.3
r2L 4096-84cm	GL3504	4096 × 1	4k	CMOS	Global	84	3.5 × 3.5	14.3
r2L 4096-42cc	GL3504	4096 × 2	4k	CMOS	Global	42	3.5 × 3.5	14.3
racer 2 S 5GigE								
r2L 2048-172g5m	GL3504	2048 × 1	2k	CMOS	Global	172	7.0 × 7.0	14.3
r2L 2048-62g5c	GL3504	2048 × 3	2k	CMOS	Global	62	7.0 × 7.0	14.3
r2L 4096-84g5m	GL3504	4096 × 1	4k	CMOS	Global	84	3.5 × 3.5	14.3
r2L 4096-42g5c	GL3504	4096 × 2	4k	CMOS	Global	42	3.5 × 3.5	14.3
racer 2 S GigE								
r2L 2048-58gm	GL3504	2048 × 1	2k	CMOS	Global	58	7.0 × 7.0	14.3
r2L 2048-29gc	GL3504	2048 × 3	2k	CMOS	Global	29	7.0 × 7.0	14.3
r2L 4096-29gm	GL3504	4096 × 1	4k	CMOS	Global	29	3.5 × 3.5	14.3
r2L 4096-14gc	GL3504	4096 × 2	4k	CMOS	Global	14	3.5 × 3.5	14.3

Basler ToF Camera

3D imaging for industrial applications

Basler´s time-of-flight camera provides precise 3D images in real time thanks to Sony's DepthSense™ sensor technology and integrated depth image processing. The camera operates according to the time-of-flight principle at 850 nm or 940 nm wavelengths.

850 nm and 940 nm
Outstanding depth data thanks to the right wavelengths for indoor and outdoor use

3D images in real time
Minimal latency and precise hardware triggering provide fast 3D image capture

IP67 camera
Robust housing is dirt- and water-proof, with a M12 connector for demanding industrial applications

Dual Exposure HDR
Robust 3D imaging for scenes with large differences in brightness

More information: *baslerweb.com/tof*

Camera Model	blaze-101	blaze-102	blaze-112
Product Group Specifications			
Wavelength	940 nm	850 nm	850 nm
Field of View	67° × 51°	67° × 51°	108° × 77°
Sensor	Sony DepthSense™ IMX556		
Resolution	640px x 480px		
Frame rate	30 fps		
Interface	GigE Vision, GenICam		
Working 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]		
Software Support	pylon, Isaac, OpenCV, HALCON, MIL, Point Cloud Library (PCL), ROS, ROS2		

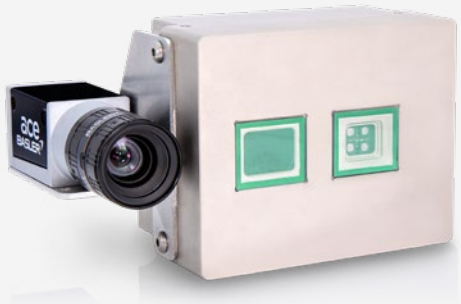
[1] Only for selected models, please refer to our website *baslerweb.com/ToF* for detailed information.

Basler RGB-D Solution

3D depth information in true colors

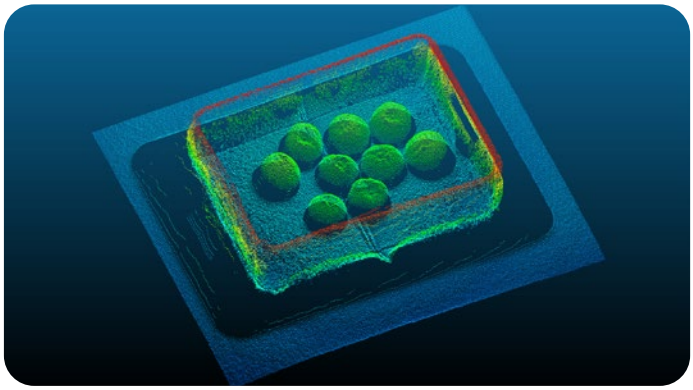
Combine spatial depth data from the Basler ToF Camera with RGB data from a 2D area scan camera and the result is a 3D point cloud in the colors seen by the human eye. The advantages: better scene understanding and more precise recognition of similar objects.

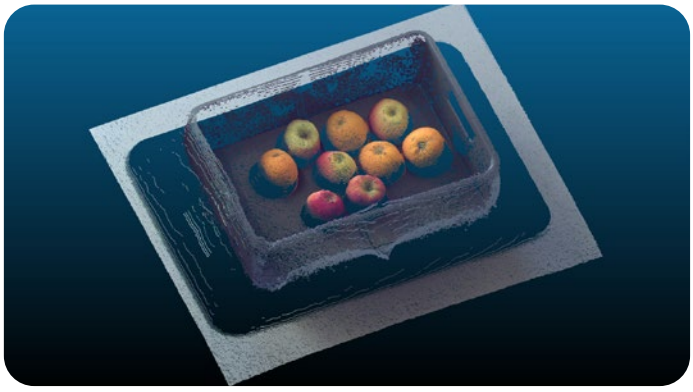
More information: *baslerweb.com/rgb-d-solution*



3D Point Cloud in False Colors

The Basler ToF Camera provides 3D data as a range map or point cloud containing the x/y/z 3D coordinates for each sensor pixel. To make the evaluation user-friendly, the points are often displayed in rainbow colors (rainbow color mapping). Depth values in the near range appear red to yellow while distant values are green to blue.





3D Point Cloud in RGB Colors

If the depth values of the Basler ToF Camera are combined with separately recorded color values from an RGB camera, point clouds can be displayed in the colors that are actually present. This can help compensate for missing depth information, allow additional classifications to be performed based on object color, or it can facilitate scene understanding.

Possible RGB-D Solutions

Basler RGB-D Solution	ToF Camera	ace 2 Camera	Lens
RGBD blaze-101 2.3MP	blaze-101	a2A1920-51gcBAS - IMX392	Basler C125-0418-5M F1.8 f4mm
RGBD blaze-101 5MP	blaze-101	a2A2448-23gcBAS - IMX547	Basler C125-0618-5M F1.8 f6mm
RGBD blaze-102 2.3 MP	blaze-102	a2A1920-51gcBAS - IMX392	Basler C125-0418-5M F1.8 f4mm
RGBD blaze-102 5 MP	blaze-102	a2A2448-23gcBAS - IMX547	Basler C125-0618-5M F1.8 f6mm

Basler Stereo Cameras

Industrial-grade hardware with intelligent 3D software modules

Basler stereo cameras are ideal for pick-and-place tasks in the fields of robotics, logistics, and factory automation. They impress with their outstanding image quality, low latency, and simple commissioning thanks to intuitive software. Compatibility with Basler 3D application software and third-party software offers many possible applications.

Plug-and-play
Easy integration thanks to intuitive software and numerous interfaces

Modular software suite
Intelligent 3D software modules for your individual image-controlled robotics application

Industrial grade
Rugged design engineered for high performance in demanding industrial environments

Cost efficiency
Overall system costs are optimized thanks to a modular hardware and software concept

More information: *baslerweb.com/stereo*

Basler Stereo visard

Industrial-grade 3D stereo vision for image-guided robotics

Thanks to the Basler Stereo visard series, robots can perceive their environment in real time. With the pre-installed, onboard software package and matching application software, these cameras are suitable for typical robotics tasks, such as pick-and-place.

Camera Model	Stereo Camera rc_visard 65m	Stereo Camera rc_visard 65c	Stereo Camera rc_visard 160m	Stereo Camera rc_visard 160c	Stereo Camera rc_visard 160m-6
Product Group Specifications					
Baseline	65 mm	65 mm	160 mm	160 mm	160 mm
Working Range	0.2 m - 1 m	0.2 m - 1 m	0.5 m - 3 m	0.5 m - 3 m	0.5 m - 3 m
Field of view	175 × 180 at 0.2 m 535 × 450 at 0.5 m 1.135 × 900 at 1 m	175 × 180 at 0.2 m 535 × 450 at 0.5 m 1.135 × 900 at 1 m	440 × 450 at 0.5 m 1.040 × 900 at 1 m 2.240 × 1.800 at 2 m	440 × 450 at 0.5 m 1.040 × 900 at 1 m 2.240 × 1.800 at 2 m	240 × 300 at 0.5 m 640 × 600 at 1 m 1.440 × 1.200 at 2m
Dimensions [W x H x L]	135 mm x 75 mm x 96 mm	135 mm x 75 mm x 96 mm	230 mm x 75 mm x 84 mm	230 mm x 75 mm x 84 mm	230 mm x 75 mm x 84 mm
Resolution	1.2 mpx (1280 × 960 px)				
Active Pattern	Optional with White, 5500 K				
Hardware Interface	1x Gigabit Ethernet, M12, 1× 24 V DC M12				
Software Interface	REST, ROS, GenICam, Robot specific				

Basler Stereo ace

High 3D image quality, even with challenging surfaces

The Basler Stereo ace impresses with its high resolution and outstanding image quality, even with demanding surfaces. This is achieved through factory pre-calibration and the integrated pattern projector. Thanks to extremely low latency times, the cameras are ideal for pick-and-place applications in the logistics sector.

Camera Model	Stereo ace 100	Stereo ace 200	Stereo ace 300
Product Group Specifications[1]			
Baseline	100 mm	200 mm	300 mm
Field of view	789 × 737 at 1 m 1677 × 1475 at 2 m	630 × 710 at 1 m 1915 × 1770 at 2 m 2305 × 2125 at 3 m	836 × 669 at 1.1 m 1470 × 1470 at 2.0 m 2360 × 2210 at 3.0 m 3250 × 2940 at 4.0 m 4140 × 3680 at 5.0 m
Software Interface	GenICam, pylon SDK, Aravis		
Dimensions [W x H x L]	146 × 70 × 132 mm, 1500 g	245 × 70 × 159 mm, 1700 g	345 × 70 × 158.5 mm, 1800 g
Working Range	0.6 m - 2 m	0.71 m - 3 m	1.1 m - 5 m
Resolution	5.1 MP (2472 × 2064 px)		
Active Pattern	White, 5700 K		
Hardware Interface	2x Gigabit Ethernet RJ45, 1 × 24 V DC M12		
Host Requirements	Linux / Windows, x86-64, Nvidia GPU RTX 2070 or similar		

[1] Preliminary Specifications

Basler Application Software for Robotics

Modular suite for specific 3D applications

Our plug-and-play software modules are suitable for typical robotics applications, such as: object recognition, picking tasks, and navigation. Choose exactly what you need for your requirements and keep your overall system costs low.

Plug-and-play
Intuitive software modules are easy to activate and use

Modular application
Each module is precisely matched to the task at hand

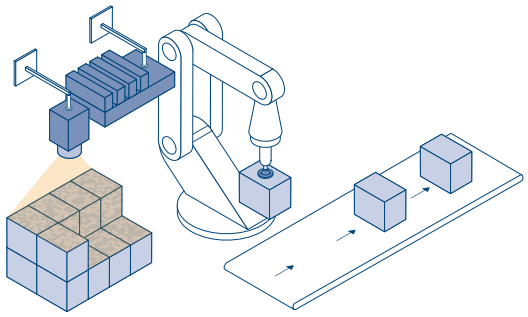
Key robotics applications
Application-related modules support typical robotics tasks

Reduced system costs
Individually selectable modules offer greater flexibility than complete packages and avoid unnecessary costs

More information:
baslerweb.com/3d-application-software

Software Modules for Robotic Tasks

Tailored to typical robotics applications, the 3D Application Software Suite includes six modules for tasks such as: object recognition and identification, picking, navigation, and CAD matching. Individual modules are designed to address the unique requirements of each of these tasks. The software modules are compatible with all Basler Stereo Camera models. When combined with the 3D Camera Cube, the Basler 3D ItemPick and Basler 3D BoxPick modules can also be used with the Basler ToF Camera.



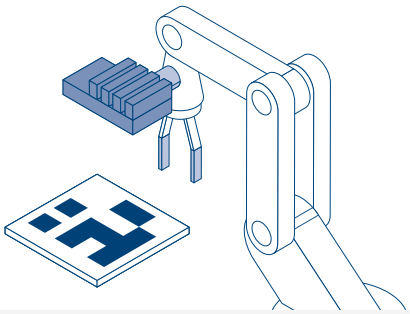
3D BoxPick

The 3D BoxPick Module enables the robot to detect the position, orientation and size of stationary rectangular objects, and to place them in a defined position.

3D BoxPick +Match: Pick and place for printed items

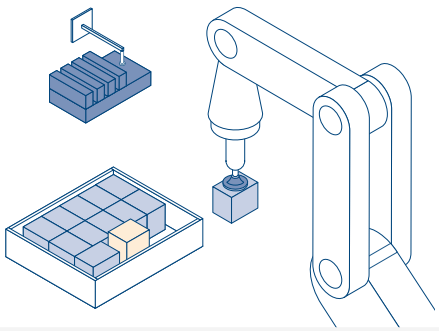
NEW

Enhanced with the innovative +Match extension, it demonstrates an advanced ability to detect and identify multiple rectangles with identical appearance.



3D TagDetect

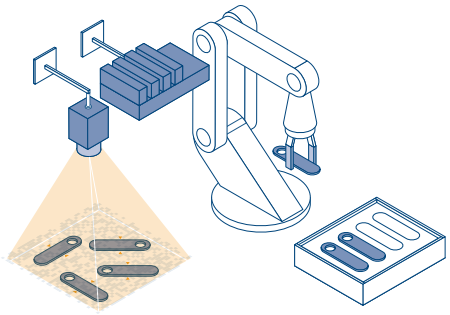
The 3D TagDetect Module enables the robust detection of AprilTags and QR codes which makes it a fundamental component for the efficient identification and manipulation of labelled objects, such as in pick-and-place applications.



3D LoadCarrier

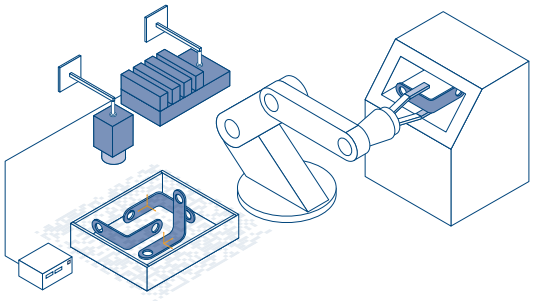
NEW

3D Software LoadCarrier to recognize containers and fill level. The LoadCarrier module is used to recognize containers and can be combined with BoxPick, BoxPick +Match, ItemPick, SilhouetteMatch and CADMatch.



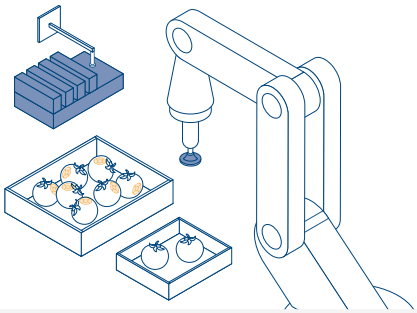
3D SilhouetteMatch

The 3D SilhouetteMatch Module lets robots detect the position and orientation of flat objects on a plane surface, by matching the specific scene against a previously taught template.



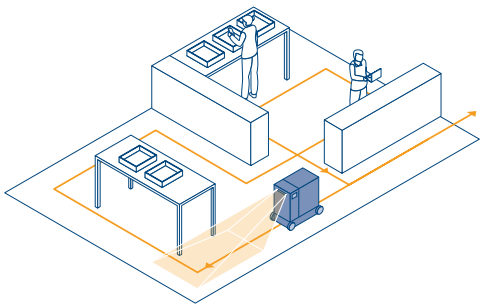
3D CADMatch

The 3D CADMatch Module enables the robot to reliably detect, localize and pick unmixed objects, based on CAD data and fully independent of the objects' position and orientation.



3D ItemPick

The 3D ItemPick Module is an ideal choice for robotic pick-and-place systems that operate with suction grippers, as it calculates surface grasp points on given objects.



3D SLAM

The 3D SLAM Module is a key element of most mobile navigation applications as it provides drift-free and accurate localization without GPS.

PC Cards

Reliable image acquisition and stable operation

PC cards offer an easy, flexible connection between your cameras and the host PC, delivering the highest performance and reliable image acquisition via your chosen interface. Our PC cards are tested for continuous operation under common operating conditions and against operating system updates to ensure optimal performance.

Reliable capture
Reliable image acquisition enables continuous operation

Simple system integration
Flexible connection between the camera and host PC allows multi-camera systems or additional functions

Carefully tested
All of our products are tested under common operating conditions over the product's lifecycle, including operating system updates

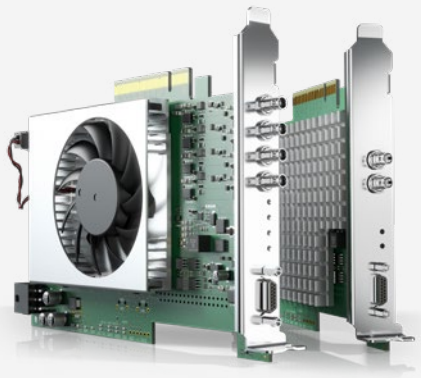
Best price/performance ratio
Constant testing of the interface cards ensures the highest performance

More information: *baslerweb.com/pccards*

CXP-12 Interface Cards

Interface cards with the powerful CoaXPress 2.0 standard are used for particularly demanding applications. Basler CXP-12 interface cards are characterized by the following features:

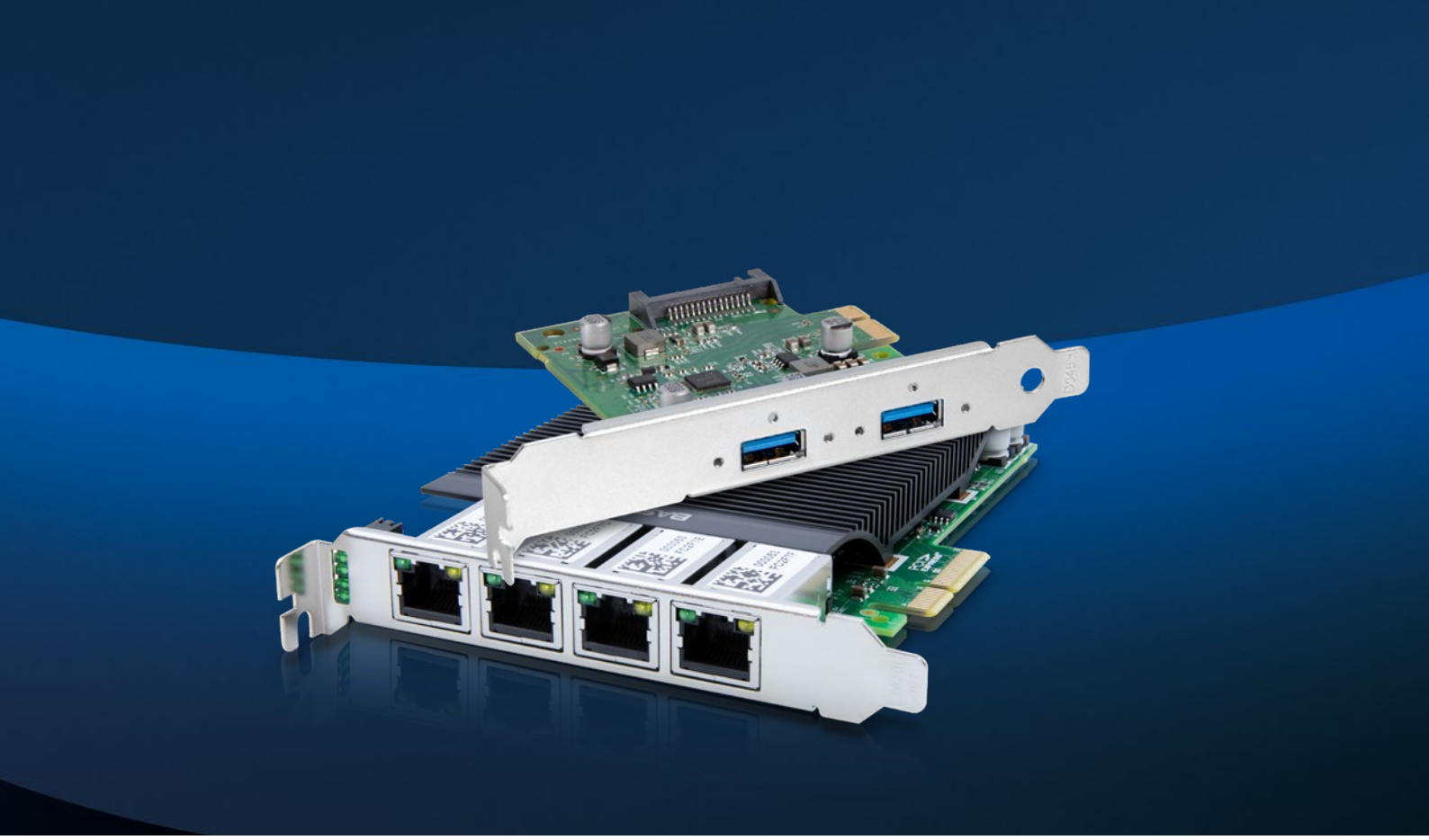
- Latest FPGA technology ensures the lowest load on the CPU for data transfer and storage
- Hardware-based image preprocessing
- Precise camera synchronization
- Lowest latencies



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 ×4	PCIe 3.0 ×8	
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	pylon Software Suite (version 6.1 or higher)		
Operating System	Windows, Linux (64-Bit)		
Conformity	CE, RoHS, WEEE, REACH, GenICam, EAC[1], PCB compliant with UL 94 V-0		

[1] Only for selected models



USB 3.0 Interface Cards

For trouble-free vision systems

They are the ideal solution for multi-camera setups with USB3 Vision: with 2, 4 or 8 ports, easy installation, and up-to-date drivers (even for software updates), you can expect a stable vision system.

- Simple integration: All of our components are compatible and easy to connect to target systems using pylon software
- Long-term product availability: Our vision portfolio products are all available on a long-term basis, allowing you to future-proof your system design
- Carefully tested: All of our products are tested under common operating conditions over the product's life-cycle, including operating system updates
- USB3 Vision certified: For stable communication between hardware and software

USB 3.0 Interface Cards	No. of Ports	Chipset	PCIe Connection
Basler USB Interface Card, 1HC, 5G, 2Port	2	Renesas	PCIe x1 Gen2
Basler USB Interface Card, 1HC, 10G, 2Port	2	ASM	PCIe x4 Gen 3
Basler USB Interface Card, 1HC, 5G, 4Port	4	Renesas	PCIe x1 Gen2
Basler USB Interface Card, 4HC, 5G, 4Port	4	Fresco FL1100	PCIe x4 Gen2
Basler USB Interface Card, 4HC, 5G, 8Port	8	Fresco FL1100	PCIe x4 Gen2

GigE Interface Cards

For flexible multi-camera setups

Expand your GigE Vision applications with 1, 5 and 10GigE interface cards: Configure multi-camera systems with up to four cameras at full bandwidth and benefit from single-cable solutions for data transfer and power supply via the Power over Ethernet+ (PoE+) function.

- Optional PoE+ function: Only one cable needed to transmit data and power
- Failsafe: Interface card and cameras work together to ensure uninterrupted operation
- Simple integration: Easy system and network setup through pylon software and plug-and-play components
- GigE Vision certified: Easy integration into image processing programs through software libraries

GigE Interface Cards at a glance

- Large selection: Numerous industrial-grade GigE interface cards for receiving image data and operating multiple cameras on a single PC
- Data bandwidth: 1, 5 or 10 Gbit/s
- Number of ports: one port, two ports, or four ports for single- or multi-camera systems
- With or without PoE+ function
- High performance and reliability: Performance optimizations via the pylon software and Basler GigE Performance Driver

GigE Interface Cards	Connectors	POE (IEEE 802.3AF)	PTP (IEEE 1588)	PC BUS IF
Basler 10GigE Interface Card, 1 Port	RJ45×1	no	yes	PCIe x4 (3.0)
Basler 5GigE Interface Card, 4 Port	RJ45×4	no	no	PCIe x4 (3.0)
Basler 5GigE Interface Card, 4 Port PoE+	RJ45×4	yes	no	PCIe x4 (3.0)
Basler GigE Interface Card, 1 Port	RJ45×1	no	yes	PCIe x1 (2.1)
Basler GigE Interface Card, 1 Port PoE	RJ45×1	yes	yes	PCIe x1 (2.1)
Basler GigE Interface Card, 2 Port	RJ45×2	no	yes	PCIe x1 (2.1)
Basler GigE Interface Card, 2 Port PoE	RJ45×2	yes	yes	PCIe x4 (2.1)
Basler GigE Interface Card, 4 Port	RJ45×4	no	yes	PCIe x4 (2.1)
Basler GigE Interface Card, 4 Port PoE	RJ45×4	yes	yes	PCIe x4 (2.1)

We Engineer Your Vision Application

While we offer a broad portfolio of off-the-shelf products, one of our value propositions is our ability to deliver application engineering and custom vision solutions tailored to your needs. At Basler, we work closely with our customers to develop the design and specifications that provide an optimum performance, cost, quality, and time-to-market.

Our Goal Is to Make Your System Perform

Machine vision systems are complex and dynamic at the same time. As experts in this field, we will guide you competently through the development process: from the initial inquiry to the finished product concept, and regardless of whether you need advice on the entire system or individual components.

> *Basler is our partner of choice for outstanding camera and vision systems characterized by high quality hardware and comprehensive service that support us in implementing future-proof AI-enabled complex automation systems.*
> *Prof. Dr.-Ing. Jens Lambrecht, Managing Director Gestalt Robotics*

> *Basler was the first choice by our engineers and purchasing department.*
> *Dr. Eugen Funk, Managing Director Gestalt Robotics*

Our Capabilities in Detail

We offer a range of capability packages for different project sizes. Whether you need a custom camera, application engineering, or a complete project-based solution, we carefully consider all aspects of a vision system. With our experience from many successful customer projects, our commitment to quality and our regional presence, you can be sure that your project is in safe hands with us.

Custom camera hardware and software

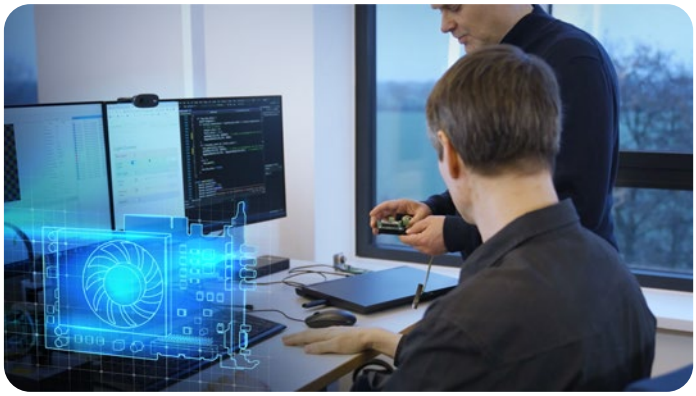
Our range of services include:

- Mount conversion, interface connector alignment, different housing colors or branding
- Extended temperature limits, IP67 capability, integration of various filters, polarization cameras
- Different binning modes, exposure time reduction or extension, HDR mode

Frame grabber and FPGA programming

Our range of services include:

- Programming: Graphical programming of frame grabbers with VisualApplets designs
- Verification: Verification of your VisualApplets designs, resource and error analysis
- Customized applications on request, simulation of applications
- Workshops: VisualApplets workshops for beginners and advanced users



Solutions for AI and classic image analysis

Our range of services include:

- Development and training of AI models and convolutional neural networks (CNNs) with different architectures, e.g. U-Net architecture, MobileNet backbone.
- Adaptation and training of existing CNNs
- Integration with target systems, optimization for AI accelerators

Frame Grabber

Control center of the vision system

Frame grabbers are one of the key components for robust, high-speed image acquisition and signal control. At the core of the image acquisition boards are FPGA processors that ensure extensive image data processing in real time.

Reduced CPU load
Thanks to efficient image preprocessing, which creates lower data volume

Real-time image processing
Thanks to image and trigger processing with deterministic latencies

Bandwidths up to 62.5 Gbps
For joint processing of high data rates and high resolutions

Customizable
Individually programmable with our frame grabber services

More information:
baslerweb.com/framegrabbers

Our Frame Grabber Series

imaFlex

imaFlex are powerful, individually programmable CoaXPress 2.0 frame grabbers for high-end vision applications.

- Graphical FPGA programming via VisualApplets for application-specific real-time processing of image data
- Services for individual customization of the frame grabber
- With four or five CXP-12 channels
- Up to 62.5 Gbps bandwidth
- Multi-frame grabber and multi-camera support

imaWorx

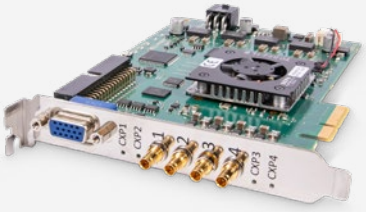
imaWorx CXP-12 Quad is a CoaXPress 2.0 frame grabber for high-speed image acquisition in demanding machine vision applications.

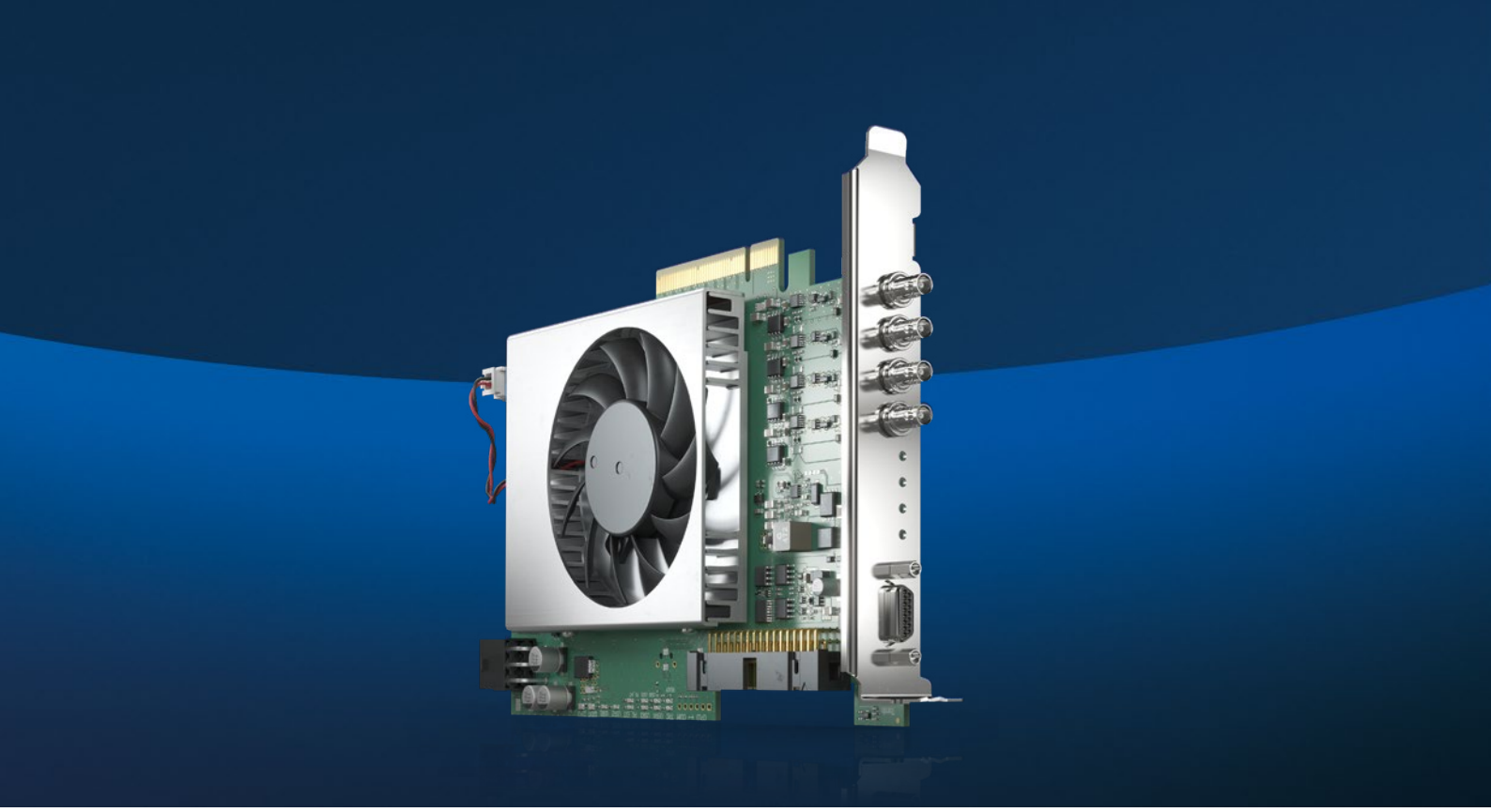
- With four CXP-12 channels
- Up to 50 Gbps bandwidth
- Power over CoaXPress
- Multi-frame grabber and multi-camera support

microEnable 5 marathon

The marathon frame grabbers are powerful image acquisition and pre-processing cards with Camera Link or CXP-6 interfaces for a wide range of applications.

- Graphical FPGA programming via VisualApplets for application-specific real-time processing of image data
- Services for individual customization of the frame grabber
- With four CXP-6 or two Camera Link channels
- Up to 25 Gbps bandwidth
- Special deep learning frame grabber with high computing power available





Frame Grabber	Camera IF	Connectors	Max. Data in	FPGA programming	PC Bus IF	Resolution A:Area, L:Line
CoaXPress 2.0						
imaFlex CXP-12 Quad	CoaXPress 2.0	4x Micro-BNC	4× 12.5 Gbps	programmable	PCIe x8 (Gen 3)	A: 32 k x 65 k, L: 32 k
★ imaFlex CXP-12 Penta	CoaXPress 2.0	5x Micro-BNC	5× 12.5 Gbps	programmable	PCIe x8 (Gen 3)	A: 32 k x 65 k; L: 32 k
imaWorx CXP-12 Quad	CoaXPress 2.0	4x Micro-BNC	4× 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	4× 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	4× 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	1× 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	2× 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	4× 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	4× 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+	2× 10 Gbps	configurable	PCIe x4 (Gen 2)	A: 32 k x 64 k, L: 16 k
mE5 marathon VF2	Camera Link HS	2x SFP+	2× 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

VisualApplets

The graphical FPGA programming software

With VisualApplets, programming FPGAs on a graphical user interface is possible completely without hardware programming.

Intuitive graphical user interface
Simplified creation of custom, proprietary designs for complex image processing workflows

Robust performance
Efficient and robust image acquisition and processing on the hardware FPGA

Pre-processing on the FPGA
Offloads the host IPC CPU by pre-processing images on the hardware FPGA

Image-based simulation
Move quickly and easily from idea to solution with an image-based simulation of the vision pipeline

Operators library
Integrated library for key image processing tasks

More information:
baslerweb.com/visualapplets

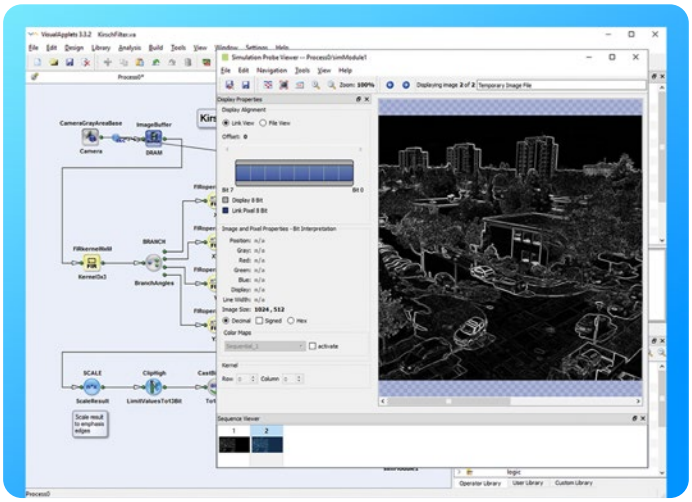
VisualApplets Software

The VisualApplets software revolutionizes FPGA programming by offering a graphical user interface (GUI), eliminating the need for traditional hardware programming. This intuitive approach allows software developers and application engineers to effortlessly create custom designs for sophisticated image processing workflows using dataflow models. By streamlining the programming process, VisualApplets significantly enhances productivity.

Image pre-processing with VisualApplets for high performance applications

Almost no CPU load
By performing initial image processing on the FPGA, the CPU is freed from computing tasks. This allows the CPU of the IPC to be fully dedicated to actual system control, thereby improving overall system efficiency.

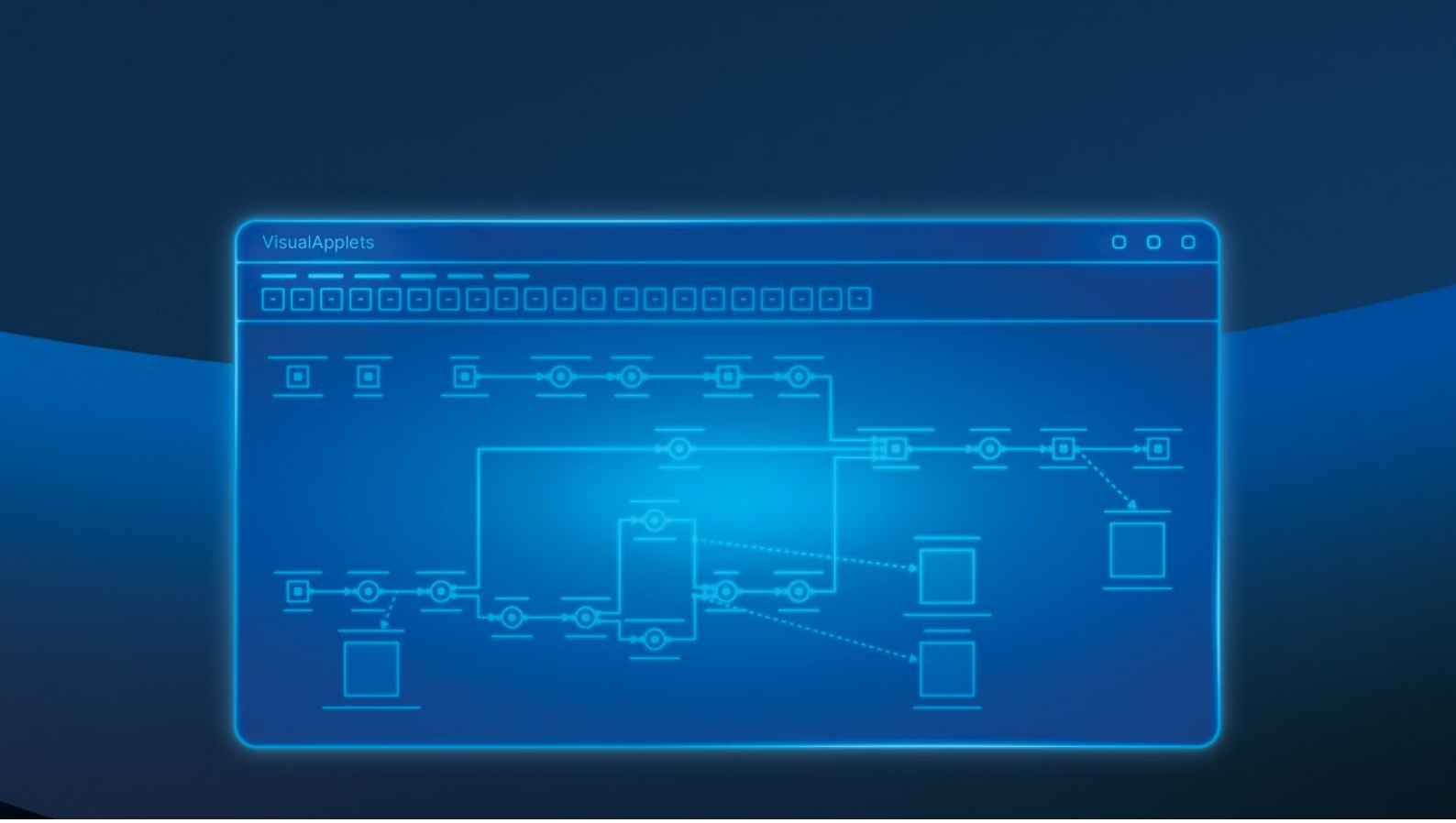
Real-time processing
FPGAs excel at handling high-speed data streams, enabling real-time image pre-processing. This makes them perfect for applications that require immediate feedback and low latency.



The graphical user interface (GUI) of VisualApplets software.

imaFlex programmable frame grabbers

imaFlex programmable frame grabbers are available pre-licensed for use with VisualApplets.



VisualApplets: Software Licenses, Extensions, and Dongle

Product	Type	Description	Variants	Order No.
VisualApplets IDE License	Software license	The VisualApplets IDE License is the central software license of VisualApplets, containing VisualApplets Core and VisualApplets GUI. It also contains all available extension modules, except for VisualApplets Embedder and VisualApplets Protection.	Single user	20025
			Multi user	20026
VisualApplets Protection	Software extension	Designed to protect intellectual property and proprietary applets, this license enables applets and frame grabbers to each be securely encoded with a lock.	Safety ID	20028
		The Safety ID (20028) codes the applet with a unique security identifier. Basler frame grabbers can be encoded with an appropriate Safety RTL (20029) for executing the safeguarded applets.	Safety RTL	20029
VisualApplets Dongle	Hardware	The VisualApplets Dongle is a storage and security medium for VisualApplets licenses.	-	109325

Free trial license

Evaluate VisualApplets with the full range of development features 90 days for free.

More information: *baslerweb.com/visualapplets*

Lenses

For optimal imaging quality in your machine vision application

Whether your application requires high image quality or you are looking for a more cost-effective solution, we offer product lines for both scenarios as well as carefully tested partner products. Our lenses are a perfect match for Basler cameras and offer an excellent price/performance ratio.

Reliability
Reliable performance and delivery, with short delivery times and long-term availability

Quality
Extensive quality control for reliable lenses

Flexibility
Find the right lens for your application thanks to different product lines and mounts

More information: *baslerweb.com/lens*

Basler Premium Lenses

Premium product line lenses have been designed and tested for more demanding applications. They offer the best image quality thanks to very high resolution, low distortion, and low vignetting. This makes them ideal for cameras with very high resolutions designed to analyze the smallest structures. Nevertheless, the cost aspect has not been neglected in the lenses of this product line.

Basler Standard Lenses

Standard product line lenses are suitable for standard vision applications at a very good price/performance ratio. The lenses have a demand-oriented design and meet the lower requirements of many cost-sensitive applications. They offer solid performance optimally suited for fast cameras with a lower resolution.

Basler Lens	Maximum Image Circle	Resolution [MP]	Pixel Pitch [µm]	Focal Length [mm]	Mount	Maximum Relative Aperture
Basler Premium Lenses						
Basler Lens C125-0418-5M-P	1/2.5" (7.3 mm)	5	2.2	4	C-mount	1:1.8
Basler Lens C125-0618-5M-P	1/2.5" (7.3 mm)	5	2.2	6	C-mount	1:1.8
Basler Lens C125-0818-5M-P	1/2.5" (7.3 mm)	5	2.2	8	C-mount	1:1.8
Basler Lens C125-1218-5M-P	1/2.5" (7.3 mm)	5	2.2	12	C-mount	1:1.8
Basler Lens C125-1620-5M-P	1/2.5" (7.3 mm)	5	2.2	16	C-mount	1:2.0
Basler Lens C125-2522-5M-P	1/2.5" (7.3 mm)	5	2.2	25	C-mount	1:2.2
Basler Lens C23-0824-5M-P	2/3" (11 mm)	5	3.4	8	C-mount	1:2.4
Basler Lens C23-1224-5M-P	2/3" (11 mm)	5	3.4	12	C-mount	1:2.4
Basler Lens C23-1620-5M-P	2/3" (11 mm)	5	3.4	16	C-mount	1:2.0
Basler Lens C23-2518-5M-P	2/3" (11 mm)	5	3.4	25	C-mount	1:1.8
Basler Lens C23-3520-5M-P	2/3" (11 mm)	5	3.4	35	C-mount	1:2.0
Basler Lens C23-5028-5M-P	2/3" (11 mm)	5	3.4	50	C-mount	1:2.8
Basler Lens C23-0828-16M	2/3" (11 mm)	16	2	8	C-mount	1:2.8
Basler Lens C23-1228-16M	2/3" (11 mm)	16	2	12	C-mount	1:2.8
Basler Lens C23-1628-16M	2/3" (11 mm)	16	2	16	C-mount	1:2.8
Basler Lens C23-2528-16M	2/3" (11 mm)	16	2	25	C-mount	1:2.8
Basler Lens C23-3528-16M	2/3" (11 mm)	16	2	35	C-mount	1:2.8
Basler Lens C23-5028-16M	2/3" (11 mm)	16	2	50	C-mount	1:2.8
Basler Lens C23-7538-16M	2/3" (11 mm)	16	2	75	C-mount	1:3.8
Basler Lens C11-0824-12M-P	1.1" (17.5 mm)	12	3.5	8.5	C-mount	1:2.4
Basler Lens C11-1220-12M-P	1.1" (17.5 mm)	12	3.5	12	C-mount	1:2.0
Basler Lens C11-1620-12M-P	1.1" (17.5 mm)	12	3.5	16	C-mount	1:2.0
Basler Lens C11-2520-12M-P	1.1" (17.5 mm)	12	3.5	25	C-mount	1:2.0
Basler Lens C11-3520-12M-P	1.1" (17.5 mm)	12	3.5	35	C-mount	1:2.0
Basler Lens C11-5020-12M-P	1.1" (17.5 mm)	12	3.5	50	C-mount	1:2.0
Basler Lens C12-1624-25M	1.2" (19.3 mm)	25	16	2.71	C-mount	1:2.4
Basler Lens C12-2524-25M	1.2" (19.3 mm)	25	25	2.71	C-mount	1:2.4
Basler Lens C12-3524-25M	1.2" (19.3 mm)	25	35	2.71	C-mount	1:2.4
Basler Lens C12-5024-25M	1.2" (19.3 mm)	25	50	2.71	C-mount	1:2.4
Basler Standard Lenses						
Basler Lens C23-0816-2M-S	2/3" (11 mm)	2	5.5	8.6	C-mount	1:1.6
Basler Lens C23-1216-2M-S	2/3" (11 mm)	2	5.5	12	C-mount	1:1.6
Basler Lens C23-1616-2M-S	2/3" (11 mm)	2	5.5	16	C-mount	1:1.6
Basler Lens C23-2518-2M-S	2/3" (11 mm)	2	5.5	25	C-mount	1:1.8
Basler Lens C23-3520-2M-S	2/3" (11 mm)	2	5.5	35	C-mount	1:2.0
Basler Lens C23-5026-2M-S	2/3" (11 mm)	2	5.5	50	C-mount	1:2.6
Basler Lens C10-0814-2M-S	1" (16 mm)	2	7.5	8	C-mount	1:1.4
Basler Lens C10-1214-2M-S	1" (16 mm)	2	7.5	12.5	C-mount	1:1.4
Basler Lens C10-1614-3M-S	1" (16 mm)	3	7.5	16	C-mount	1:1.4
Basler Lens C10-3514-8M-S	1" (16 mm)	8	7.5	35	C-mount	1:1.4
Basler Lens C10-5014-2M-S	1" (16 mm)	2	7.5	50	C-mount	1:1.4
Basler Lens F-S35-3528-45M-S-SD	Super 35 (32 mm)	45	3.2	35	F-mount	1:2.8
Basler Lens F-S35-5028-45M-S-SD	Super 35 (32 mm)	45	3.2	50	F-mount	1:2.8
Basler Lens F-S35-7528-45M-S-SD	Super 35 (32 mm)	45	3.2	75	F-mount	1:2.8

Illumination

For ideal lighting conditions in your vision application

The type of illumination in your image processing system is crucial for image acquisition quality and can greatly simplify subsequent image evaluation. Reliability, long-term availability, and a good price/performance ratio are important criteria to consider when choosing the appropriate illumination for your application.

Quality
Product qualification processes for industrial quality components

Simple integration
Thanks to modular design, plug-and-play setup with easy mechanical integration

Full-range supplier
Well thought-out portfolio of lighting products, perfect match for all cameras

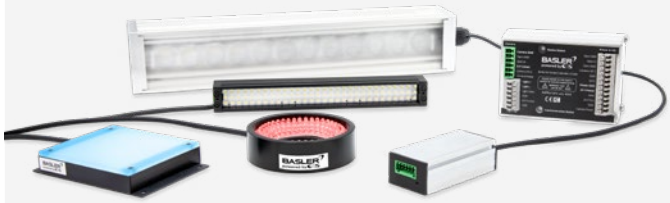
Long-term availability
For long-term integration into your system

More information:
baslerweb.com/illumination

Illumination Control Made Easy

Basler SLP Feature

The SLP feature provides easy lighting control directly from the camera. It ensures smooth communication between Basler's SLP Controller and Basler boost R, ace 2, and the ace U and L cameras. There are different light modes (such as continuous light, strobing, or overdrive) that can be executed with the SLP feature.



- Simplest lighting control, directly from the camera
- Smooth operation through pylon software
- Easy one-click access to strobe and overdrive modes
- Plug-and-play setup and easy mechanical integration

LED Illumination

Low integration effort and low costs

Ensure consistent image quality in your application with our carefully considered portfolio. By choosing the right illumination early, you can save both time and money.

Basler Lights – Premium

Want to achieve fast, error-free integration? The Premium product line combines unique lighting control and effortless integration.

- Innovative lighting control directly from the camera with the SLP feature
- Easy Integration and smooth operation with a single software - Basler's pylon Software
- Easy one-click access to strobe and overdrive modes

Basler Lights – Premium

	Ring Light	Bar Light	Back Light	Flood Light
LED color (peak wavelength; typical)	White (5500K), Red (630 nm), Blue (470 nm)	White (5500K), Red (630 nm), Blue (470 nm)	White (6000K), Red (635 nm), Blue (470 nm)	White (5500K), Red (625 nm), Blue (465 nm)
Dimensions [mm]	50, 70, 90 - OD	113 × 20 × 20 163 × 20 × 20 213 × 20 × 20	63 × 90 × 15 123 × 154 × 15	278 × 51 × 49
Input voltage	24 VDC (+/-10%)			
Power consumption	3.1 – 4.7 W 5.8 – 7.8 W 11 – 13 W	3.1 – 5.2 W 4.6 – 7.8 W 6.1 – 11 W	6.1 W 15 W	14 W
Lighting modes	Continuous; Strobe incl. overdrive mode			
Pulse width	50 µs – 100 ms			
Pulse step size	10 µs			
Conformity	Lighting: CE, RoHS, IEC 62471 Compliant Product Controller: CE: EN61000-6-2, EN61000-6-4			

Basler Lights – Standard

Looking for cost-effective, easy-to-use lighting? In this product line, flexible operation meets industrial-grade durability.

- Offering direct control of continuous verses triggered light and the option to operate with an external lighting controller
- Increased service life due to modern thermal management
- Made in Germany & Protection class IP54

Basler Lights – Standard

	Back Light	Bar Light	Flatdome Light	Dome Light	Wide Bar Light	High Power Wide Bar Light
LED color (peak wavelength; typical)	White (5000K), Red (625 nm), Blue (465 nm), IR (850 nm)					
Degree of protection	IP54					
Dimensions [mm]	100 × 120 × 12 120 × 150 × 12 120 × 250 × 12 220 × 250 × 12 220 × 350 × 12	18 × 110 × 20 18 × 175 × 20 18 × 210 × 20 18 × 310 × 20 18 × 410 × 20 18 × 510 × 20	90 × 130 × 12 140 × 130 × 12 140 × 230 × 12 240 × 230 × 12 240 × 330 × 12	100 × 100 × 52 150 × 150 × 80 250 × 250 × 129 350 × 350 × 179	54 × 110 × 23 54 × 215 × 23 54 × 310 × 23	54 × 110 × 23 54 × 215 × 23 54 × 310 × 23
Input voltage	24 VDC (+/- 5 %)					
Power consumption (voltage- / current controlled)	6-28 W / 300-1500 mA	3-14 W / 150-900 mA	6-28 W / 300-1500 mA	6-22 W / 300-1500 mA	8-24 W / 450-1800 mA	11-32 W / 120-2000 mA
Lighting modes	Current controlled (when used with external light controller) / Voltage controlled (24V steady light and triggered light)					
Pulse width	100 µs – ∞ ms					
Conformity	RoHS, CE, UKCA, FCC, KC					

Basler Lights – Standard

	Ring Light	High Power Ring Light	Darkfield Light	Spot Light	Coaxial Light
LED color (peak wavelength; typical)	White (5000K), Red (625 nm), Blue (465 nm), IR (850 nm)				
Degree of protection	IP54				
Dimensions [mm]	80 × 92 × 12 130 × 141 × 12	130 × 141 × 12	130 × 141 × 12	56 × 46 × 46	150 × 150 × 150 250 × 250 × 250
Input voltage	24 VDC (+/- 5 %)				
Power consumption (voltage- / current controlled)	6-11 W / 300-900 mA	11 W / 600-900 mA	6 W / 300-450 mA	8 W / 600 mA	11-22 W / 600-1500 mA
Lighting modes	Current controlled (when used with external light controller) / Voltage controlled (24V steady light and triggered light)				
Pulse width	100 µs – ∞ ms				
Conformity	RoHS, CE, UKCA, FCC, KC				

Lighting Controller

Illumination control for maximum flexibility

The Basler SLP Controller allows lighting to be easily integrated and configured using pylon. For cost-effective lighting control, use our standard 2C and 4C multi-channel controllers.

Basler SLP Controller

The Basler SLP feature enables direct communication between the Basler SLP Controller and almost all Basler cameras. This allows you to easily integrate any light source into your machine vision application.

Basler SLP Controller – Premium

Basler SLP Strobe Controller 121040	
Lighting modes	Continuous; Strobe incl. overdrive mode
Output current Continuous	0.05A – 2A
Output current overdrive mode	10A @200 µs pulse width
Output voltage range	1.5V – 40V
Pulse width	50 µs – 100 ms
Pulse step size	10 µs
Max. frequency	200 Hz
Housing Size [L × W × H]	89 mm × 60 mm × 43,5 mm
Conformity	RoHS; CE; FCC; KC

Basler Lighting Controller

Use our cost-effective Basler 2C and 4C standard controllers for vision system lighting control. They provide illumination control in a vision system with two to four light sources.

Basler Lighting Controllers – Standard

	Basler Light Controller 2C-1.25A-50W-24V	Basler Light Controller 4C-1.25A-84W-24V
Lighting modes	Continuous; Dimming mode; ON/OFF Trigger with High / Low active select	Continuous; Dimming mode; ON/OFF Trigger with High / Low active select; DHCP / Web Page Setup
Output current Continuous	0.10 A - 1.25 A	0.10 A - 1.25 A
Pulse width	100 µs - ∞	100 µs - ∞
Housing Size [L × W × H]	100 mm x 93 mm x 125 mm	147 mm x 100 mm x 129 mm
Conformity	RoHS; CE; UKCA; KC; FCC	RoHS; CE; UKCA; KC; FCC; PSE

BASLER WORLDWIDE

We maintain a worldwide network of subsidiaries, offices and distributors to ensure that Basler customers always have a knowledgeable contact person in their area.

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BASLER
the power of sight

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