

Embedded Vision Meets Simplicity

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

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

Basler Embedded Vision Solutions: We Bring Your Idea to Life

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



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

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

VISION WITH EMBEDDED VALUE

EMBEDDED VISION SOLUTIONS
BY BASLER



VISION EXCELLENCE

CONSULTING AND
SOLUTION DESIGN

BROADEST PRODUCT
PORTFOLIO

COMPREHENSIVE
SOFTWARE SOLUTIONS

DEVELOPMENT AND
PRODUCTION COMPETENCIES

Basler Embedded Vision Kits

Our standard is your starting point

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



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

Highlights

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



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

Evaluation Kit: USB 3.0 Interface

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



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

Add-on Camera Kits

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

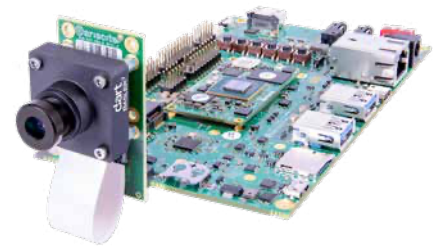


KIT	SUITABLE FOR ¹	ADAPTER BOARD	ON-CAMERA ISP	SENSOR	RESOLUTION [MP]	FRAME RATE [FPS]
daA2500-60mci-IMX8-EVK-AddOn	NXP® EVK i.MX 8M Mini i.MX 8M Quad i.MX 8QuadMax	Basler BCON for MIPI to Mini SAS	●	AR0521	5.0	60
daA4200-30mci-IMX8-EVK-AddOn	NXP® EVK i.MX 8M Mini i.MX 8M Quad i.MX 8QuadMax	Basler BCON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

¹Processing Board NOT included

Embedded Vision Development Kits

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



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

AI Vision Solution Kit

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



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

Embedded Vision Processing Kit

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



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

¹ Does not include a camera, lens or cable.

Basler dart

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

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

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

Highlights

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



For more information, please visit baslerweb.com/dart

Image processing in on-camera ISP



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

Image Processing in host ISP



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



dart BCON for MIPI



dart USB 3.0

DART

Product Group Specifications

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

¹Depending on model.

CAMERA MODEL	SENSOR	RESOLUTION [H×V PIXELS]	RESOLUTION [MP]	SENSOR TYPE	SHUTTER	FRAME RATE [FPS]	PIXEL SIZE [μm ²]	OPTICAL SIZE
dart BCON for MIPI								
daA2500-60mci ²	AR0521	2560×1920	5.0	CMOS	Rolling	60	2.2×2.2	1/2.5"
daA4200-30mci ²	AR1335	4208×3120	13.0	CMOS	Rolling	30	1.1×1.1	1/3"
daA2500-60mc	AR0521	2560×1920	5.0	CMOS	Rolling	60	2.2×2.2	1/2.5"
daA3840-30mc	AR0821	3840×2160	8.0	CMOS	Rolling	30	2.1×2.1	1/1.8"
dart USB 3.0								
★ daA720-520um/uc	IMX287	720×540	0.4	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"
daA1280-54um/uc	AR0134	1280×960	1.2	CMOS	Global	54	3.75×3.75	1/3"
daA1600-60um/uc	EV76C570	1600×1200	2.0	CMOS	Global	60	4.5×4.5	1/1.8"
daA1920-15um ¹	MT9P031	1920×1080	2.0	CMOS	Rolling	15	2.2×2.2	1/3.7"
daA1920-30um/uc	MT9P031	1920×1080	2.0	CMOS	Rolling	30	2.2×2.2	1/3.7"
daA1920-160um/uc	IMX392	1920×1200	2.3	CMOS	Global	160	3.45×3.45	1/2.3"
★ daA2448-70um/uc	IMX548	2448×2048	5.0	CMOS	Global	74	2.74×2.74	1/1.8"
daA2500-14um/uc	MT9P031	2592×1944	5.0	CMOS	Rolling	14	2.2×2.2	1/2.5"
daA3840-45um/uc	IMX334	3840×2160	8.3	CMOS	Rolling	45	2.00×2.00	1/1.8"

¹ Bare board only.

² Internal ISP.

For more information please contact:



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