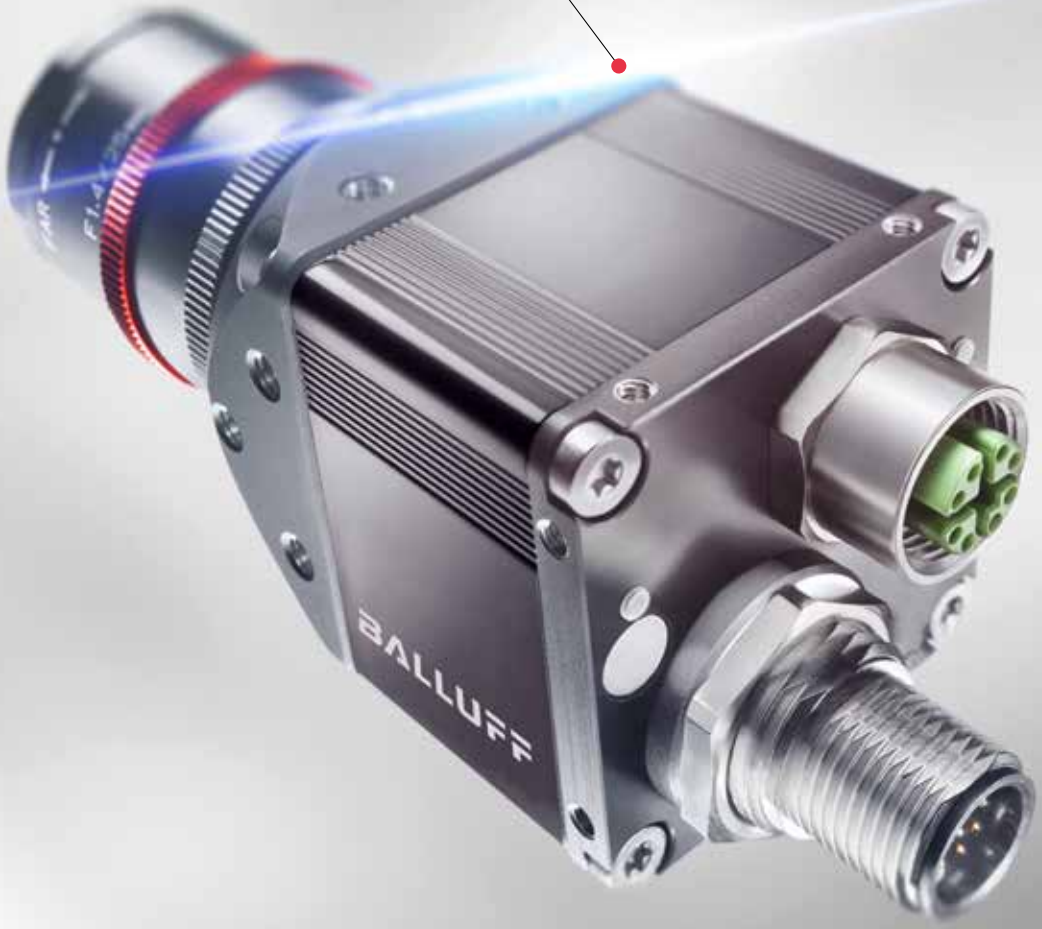
BALLUFF

For efficient automation

MACHINE VISION AND OPTICAL IDENTIFICATION

innovating automation



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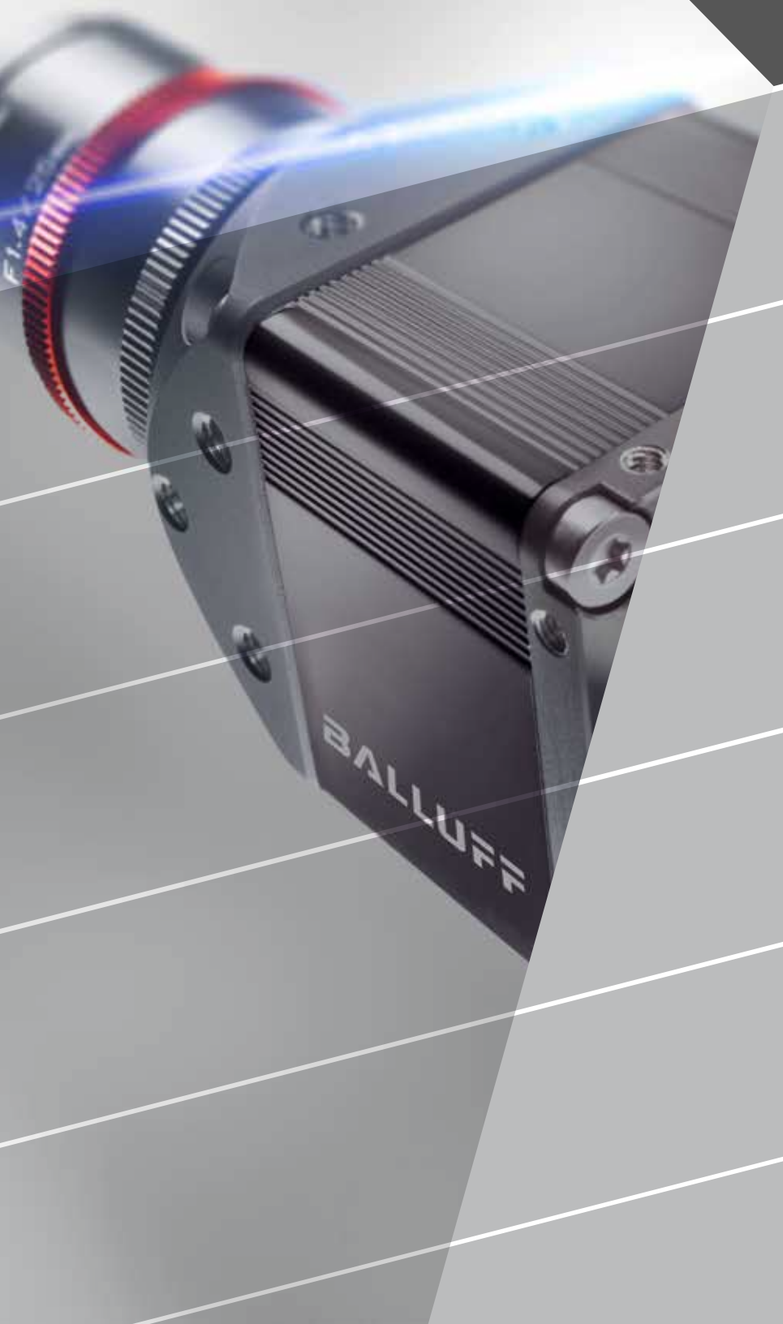

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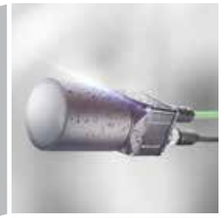
MACHINE VISION



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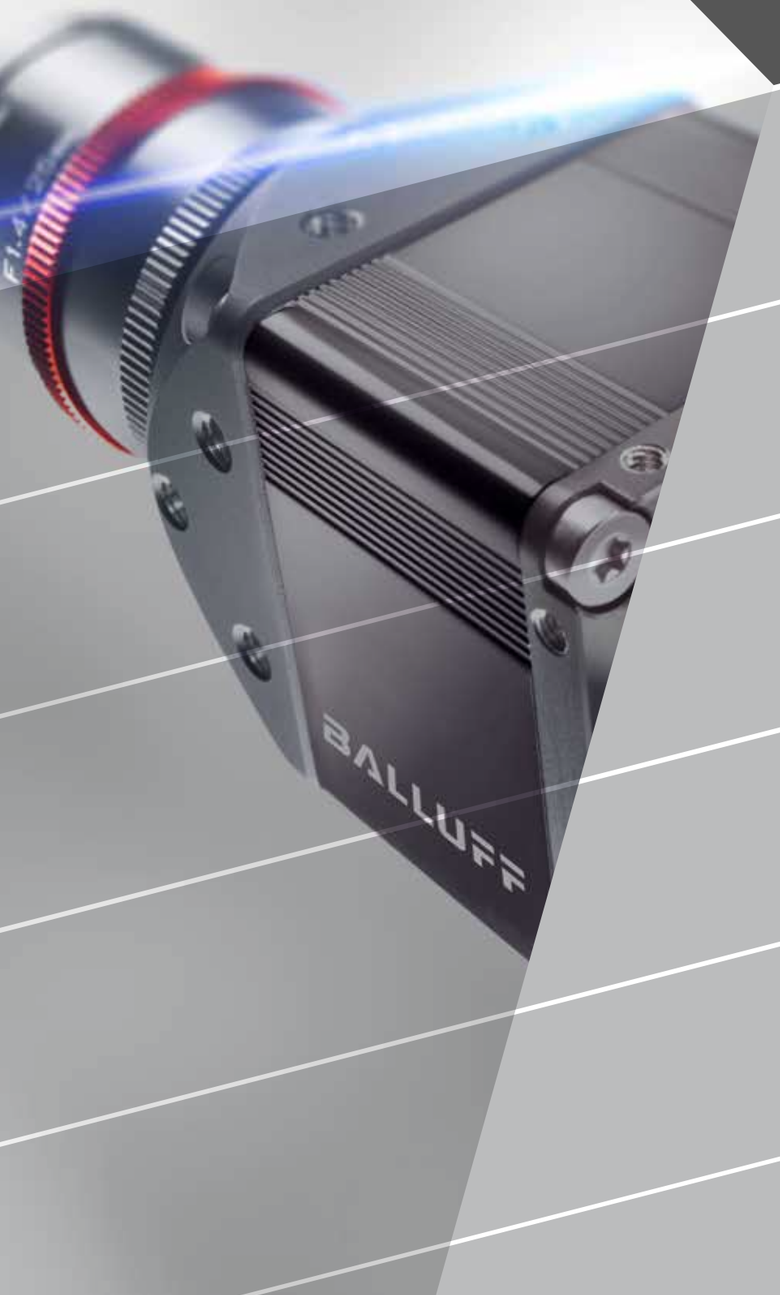

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Image processing devices for reliable detection and capture

MACHINE VISION

innovating automation

The demands on modern production equipment are high. They must be extremely productive and flexible, while achieving maximum quality. Our Balluff Vision Solutions are designed precisely to meet these requirements. They reliably detect errors, check quality, and are suitable for reliable reading and verification of codes. They scan objects, 1D and 2D barcodes, and plain text.

Our cameras and vision sensors are extremely flexible for parts checking in assembly or parts tracking in production. Thanks to their standardized interfaces, the devices are as easy to integrate as they are to operate.

Your Balluff solutions

- Industrial cameras
- Smart Vision
- Optical identification
- 3D machine vision
- Embedded vision
- Machine vision software
- Optics
- Lights for vision systems and machines

Industrial cameras with Smart features

The Smart features of our cameras –
Your advantage for meeting even the most demanding requirements

To really get the most out of our industrial cameras, we rely on Smart features that, for example, optimize camera control, image capture and image quality, or support multi-camera operation.

To this end, both our GigE and USB3 camera families are equipped with an FPGA (Field Programmable Gate Array) – an integrated circuit that allows logical circuits to be developed and executed in the industrial camera. While this is nothing new, it gives us the decisive edge in making industrial cameras smarter.

GigE Vision Cameras

The standard for high-performance machine vision camera requirements

GigE Vision is an interface standard for industrial image processing published in 2006. The underlying network structure GigE (Gigabit Ethernet) is effectively present in every company, which means that the existing infrastructure can be used for image processing applications without any problems. GigE Vision defines a transport layer for secure and transparent communication. It manages finding a device, configuring it, streaming the data, and handling events.

GigE Vision also includes, among other things, standardized communication and control modes for cameras. This reduces system integration costs while increasing the usability of machine vision systems. Since 2012, dual GigE and 10 GigE interfaces have also been supported – Balluff industrial cameras cover all three variants.

The advantages

The standardized GigE Vision camera communication protocol convinces with many features that were previously not available through a single interface.

Maximum flexibility

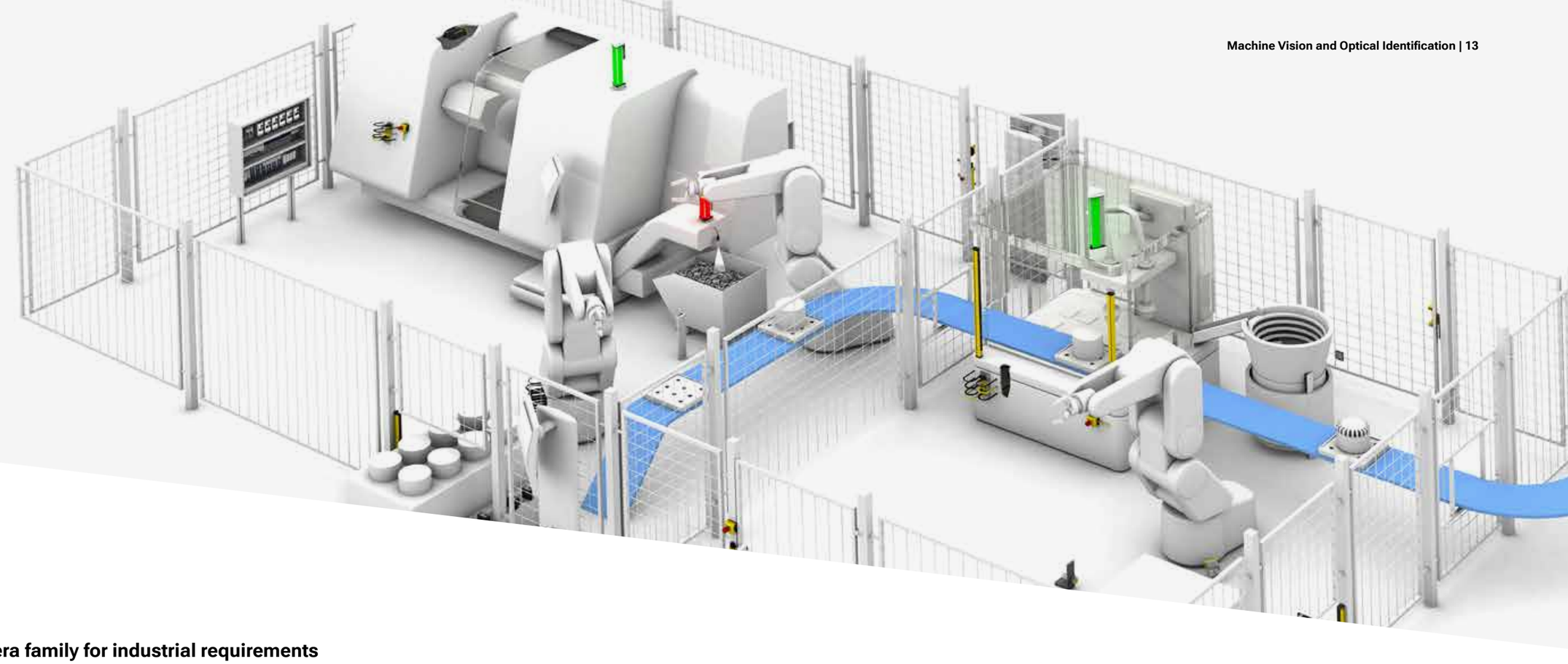
Special hardware such as frame grabber cards is not required. This allows you to employ flexibly the software used.

Accelerated data transmission

GigE Vision ensures high-speed data transmission because it reduces overhead and latency thanks to User Datagram Protocol (UDP).

Convenient connection

Once an image processing software library supports GigE Vision, it can be used with any compatible camera.



Flexible and robust camera family for industrial requirements

GIGE INDUSTRIAL CAMERAS FOR STANDARD APPLICATIONS

Equipped with Sony global shutter CMOS sensors and a resolution of 0.4 to 20 MP, the GigE vision industrial camera family series provides great flexibility. And thanks to the GigE Vision standard, you can quickly, easily, and cost-effectively integrate this series into your application and implement sophisticated image processing systems with one or more cameras.

Use up to 100 meters of standard Cat5e cable – no router required. With standard network technology, you can link several cameras into a flexible system and carry out inspections from different perspectives. Synchronization is achieved via IEEE1588 Precision Time Protocol (PTP) and Ethernet. Further simplification of system cabling is possible with four digital high-side outputs. Peripheral devices such as lighting can thus be controlled and supplied with power directly from the camera.

The camera design completes the package: a robust camera body with multiple mounting options, status LED on the back, removable filter and a C-mount lens with adjustable flange focal length.

Features

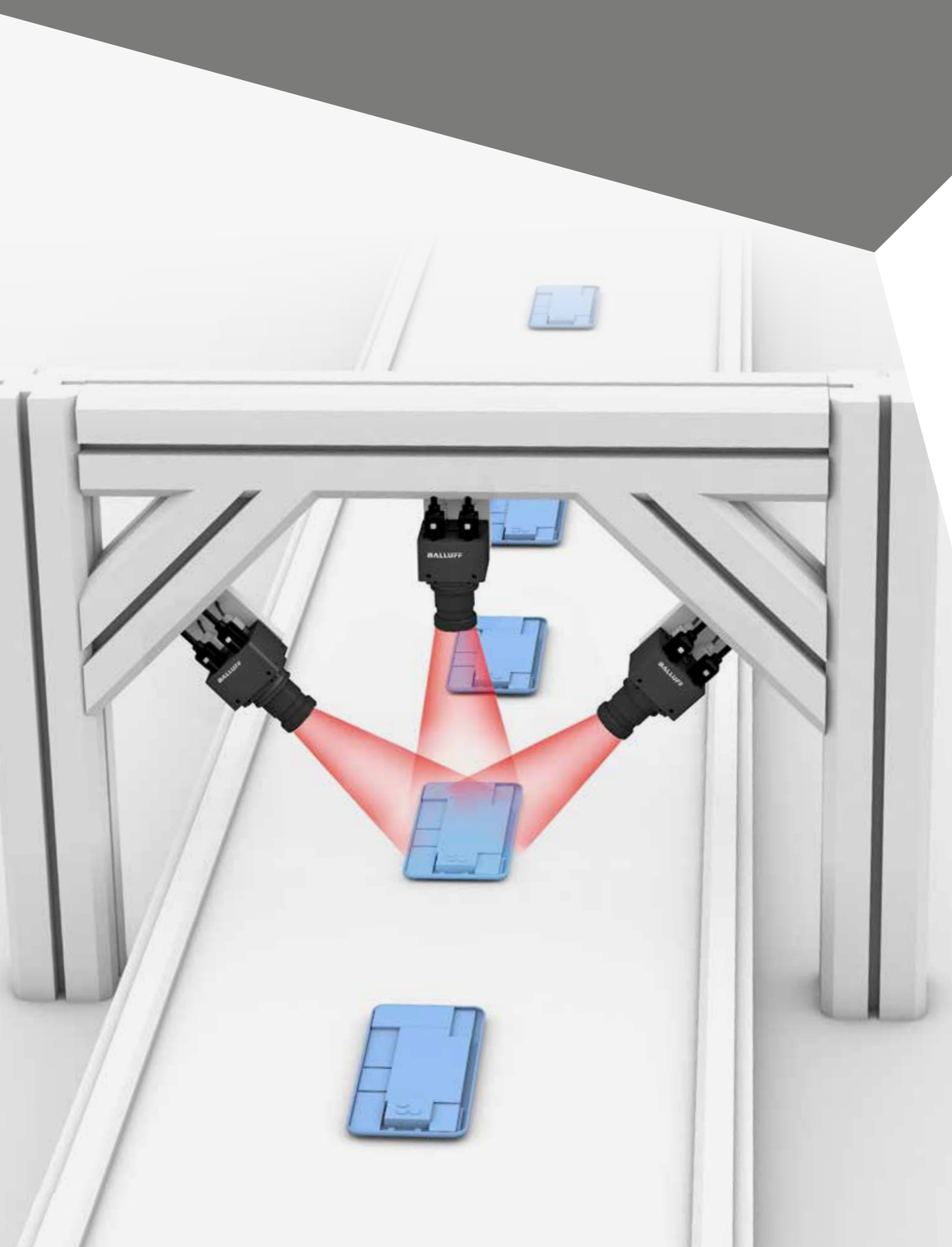
- Camera series with excellent price-performance ratio
- Sony CMOS sensors for optimum image quality
- Easy integration with the GigE Vision standard
- Robust product design and internal image memory
- System simplification thanks to four digital high-side outputs

GigE VISION
INDUSTRIAL CAMERA
BVS CA-GX0

	BVS CA-GX0 – **(xxxxxx) – (1) (2) (3) (4) (5) (6)** – 001
Interface	GX0 – GigE Vision
Sensors **(xxxxxx)**	Sony IMX series, 4...31.5 MP, global and rolling shutter, CMOS
Handling **(1)**	1 = Standard 2 = Extended temperature range
Lens holder **(2)**	1 = C-Mount, adjusted backfocus, fixed square filter 2 = C-Mount, adjustable backfocus, round filter with screw ring Ø 23.2 mm 4 = C-Mount, adjustable back focus, filter Ø 20 mm 5 = C-Mount, adjustable back focus, filter Ø 23.2 m
Filter **(3)**	0 = Without filter 1 = IR cut filter 2 = Glass filter Further filters on request.
Housing **(4)**	1 = Standard C = IP67C compact housing
I/O **(5)**	2 = Standard I/Os 3 = Optically isolated IOs 4 = Optically isolated input, high-side switch OUT, M12 connections 6 = Galvanically isolated input with PLC logic level, high-side switch OUT
Software **(6)**	0 = Standard

Double Gigabit Ethernet bandwidth for fast image capture

DUAL GIGE INDUSTRIAL CAMERA FAMILY



Experience improved data transmission and increased reliability with Dual GigE cameras. Benefit from the combination of two GigE ports that provide increased data bandwidth and redundancy for critical applications. The combination of the two Gigabit Ethernet interfaces increases net bandwidth to 240 MB/s, while the 256 MB internal frame buffer secures the transmission.

Equipped with Sony global shutter CMOS sensors and resolutions up to 31.5 MP, the Dual GigE industrial camera series meets a wide range of applications. And thanks to the GigE Vision standard, you can quickly, easily, and cost-effectively integrate this series into your application and implement sophisticated image processing systems with one or more cameras.

Use up to 100 meters of standard Cat5e cables – no router required. With standard network technology, you can link several cameras into a flexible system and carry out inspections from different perspectives. Synchronization is achieved via IEEE1588 Precision Time Protocol (PTP) and Ethernet. Further simplification of system cabling is possible with four digital high-side outputs. Peripheral devices such as lighting can thus be controlled and supplied with power directly from the camera. The camera design completes the package: a robust camera body with multiple mounting options, status LED on the back, individual filters and flexible lens holder options. The Dual GigE cameras execute preprocessing steps like automatic denoising directly in the camera, reducing the CPU load of the host system. Due to the high-speed buffer, images can be written faster to the camera's memory than transferred depending on the sensors.

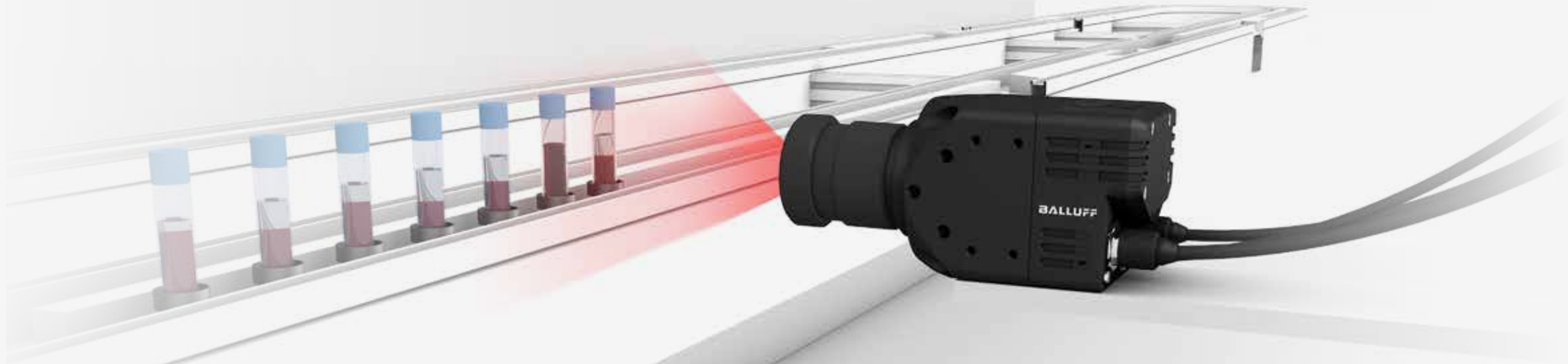
Thanks to the high data rate and compact size, Dual GigE cameras can be integrated into a variety of applications. They are designed for machine vision tasks with high resolutions and low latency times in the semiconductor industry and intralogistics, as well as for tasks with precise and optimized images, such as in the fields of life science and medicine.

Features

- High transfer rate up to 2 Gigabit/s
- Excellent image quality due to high-quality sensors up to 31.5 MP
- Robust product design and internal image memory
- Integrated Smart features to reduce CPU load
- Easy integration with the GigE Vision standard

DUAL GIGE
INDUSTRIAL CAMERAS
BVS-CA-GX2

	BVS CA-**(zzz) – (xxxxxx) – (1) (2) (3) (4) (5) (6)** – 001
Interface **(zzz)**	GX2 = Dual GigE
Sensors **(xxxxxx)**	Sony IMX series, 1.6...31.5 MP, global und shutter, CMOS
Handling **(1)**	1 = Standard 2 = Extended temperature range
Lens holder **(2)**	1 = C mount, adjusted backfocus, fixed square filter 2 = C mount, adjustable backfocus, round filter with screw ring Ø 23.2 mm 5 = C mount, cost-effective, adjusted backfocus, filter Ø 23.2 mm N = M42x1 mount, adjusted backfocus 12 mm, fixed square filter Q = F mount, adjusted backfocus 46 mm, fixed square filter
Filter **(3)**	0 = Without filter 1 = IR-Sperrfilter 2 = Glass filter Other filters on request.
Housing **(4)**	1 = Standard
I/O **(5)**	2 = Standard I/Os
Software	0 = Standard



With 10GigE interface:
Camera series for more detail and high speeds

HIGH FRAME RATES WITH 10GIGE FOR THE INDUSTRIAL ENVIRONMENT

The GigE Vision compatible camera range offers you the performance of state-of-the-art image sensor technology, such as the Pregius S Gen4 CMOS line from Sony. Featuring global shutter technology and backside illumination, the Gen4 sensors provide enhanced precision and higher resolution per sensor surface.

With PoE+ both the power supply and data transmission are made possible through one cable connection, reducing the complexity of wiring, as well as the space required for installation. Accessories such as motorized camera lenses, illumination, or control units can be easily managed directly through the camera, effectively reducing the number of system components required. Transmission of the images to several computers allows parallel processing of data. The integrated image memory of 2048 MB ensures reliability in data transmission.

With protection class IP67, as well as industrial plug connections, this camera series is designed for use in harsh environments. It is also available with active air cooling.

Features

- Sensors with up to 24.6 MP
- High net data rate of up to 1245 MB/s
- Compact IP67 housing
- Robust industrial connector
- Secure image transmission with 2048 MB image buffer
- Power supply through PoE+
- Precise synchronization with Precision Time Protocol (PTP) according to IEEE1588
- Identical API for Linux and Windows
- GenICam and GigE Vision compatible

10GigE INDUSTRIAL
CAMERA RANGE
BVS CA-GT1

	BVS CA-GT1 – **(xxxxxx) – (1) (2) (3) (4) (5) (6)** – 001
Interface	GT1 – 10 GigE Vision
Sensors **(xxxxxx)**	IMX487 (8.1 MP, 2848 × 2848 pixels, 2/3" global shutter UV CMOS, 2.74 µm pixel size) IMX530 (24.6 MP, 5328 × 4608 pixels, 1.2" global shutter CMOS, 2.74 µm pixel size) IMX531 (20.4 MP, 4512 × 4512 pixels, 1.1" global shutter CMOS, 2.74 µm pixel size) IMX532 (16.2 MP, 5328 × 3040 pixels, 1.1" global shutter CMOS, 2.74 µm pixel size) IMX535 (12.4 MP, 4128 × 3008 pixels, 1/1.1" global shutter CMOS, 2.74 µm pixel size) IMX536 (8.1 MP, 2856 × 2848 pixels, 2/3" global shutter CMOS, 2.74 µm pixel size) IMX537 (5.1 MP, 2472 × 2064 pixels, 1/1.8" global shutter CMOS, 2.74 µm pixel size)
Handling **(1)**	1 = Standard
Lens holder **(2)**	1 = C-Mount, fixed square filter
Filter **(3)**	0 = Without filter 1 = IR cut filter 2 = Glass filter Other filters on request.
Housing **(4)**	1 = Standard housing F = Standard housing with fan
I/O **(5)**	4 = Optically isolated input, high-side switch OUT, M12 connectors
Software **(6)**	0 = Standard

USB3 Vision Cameras

High performance with plug-and-play

USB cameras transmit image data via cost-effective and widely available standard interfaces on all computers. We offer cameras for various machine vision applications, whether on a PC-based or embedded system.

USB3 enables cost-effective real-time applications with low CPU load and is suitable for applications with high data volume, high resolution or high color depth in 24/7 operation and low cable length requirements.

The advantages

Cameras equipped with USB interfaces provide numerous advantages. In particular, considerable benefits result from their widespread use as, typically, even commonly used USB cables are sufficient for powerful industrial cameras.

- **Low price**
  USB components are widespread and inexpensive.
  The cameras are therefore correspondingly less expensive.
- **Available accessories**
  Thanks to the widespread use of USB, a large portfolio of affordable accessories is also available.
- **Easy handling**
  Commissioning of the camera does not require installation of special interface cards.

There is hardly any PC hardware that is not equipped with USB3. The advantages are obvious: The interface supports a gross bandwidth of 5000 MBit/s. With a maximum cable length of 3.5 m, and up to 8 m with selected cable material, USB3 is particularly suitable for applications with high resolutions, high frame rates and short distances between the camera and the evaluation unit.

USB3 Vision cameras with cost-effective CMOS sensors

COMPACT INDUSTRIAL CAMERAS WITH USB3 INTERFACE

A compact design and low cost are the defining features of the BVS CA-SF1 camera series, which combines a high-bandwidth USB3 interface with cost-effective CMOS sensors. USB cameras transmit image data via cost-effective standard interfaces available on all computers. They are are small and flexible – and it's hard to imagine medical technology and microscopy without them. We offer a wide range of different designs for different applications: with housing or as board-level variant, with or without digital connections.

Our USB3 Vision cameras offer various resolutions and frame rates as well as camera-based Smart features that significantly reduce the load on your host system – perfect for various machine vision applications, whether on a PC-based or embedded system.

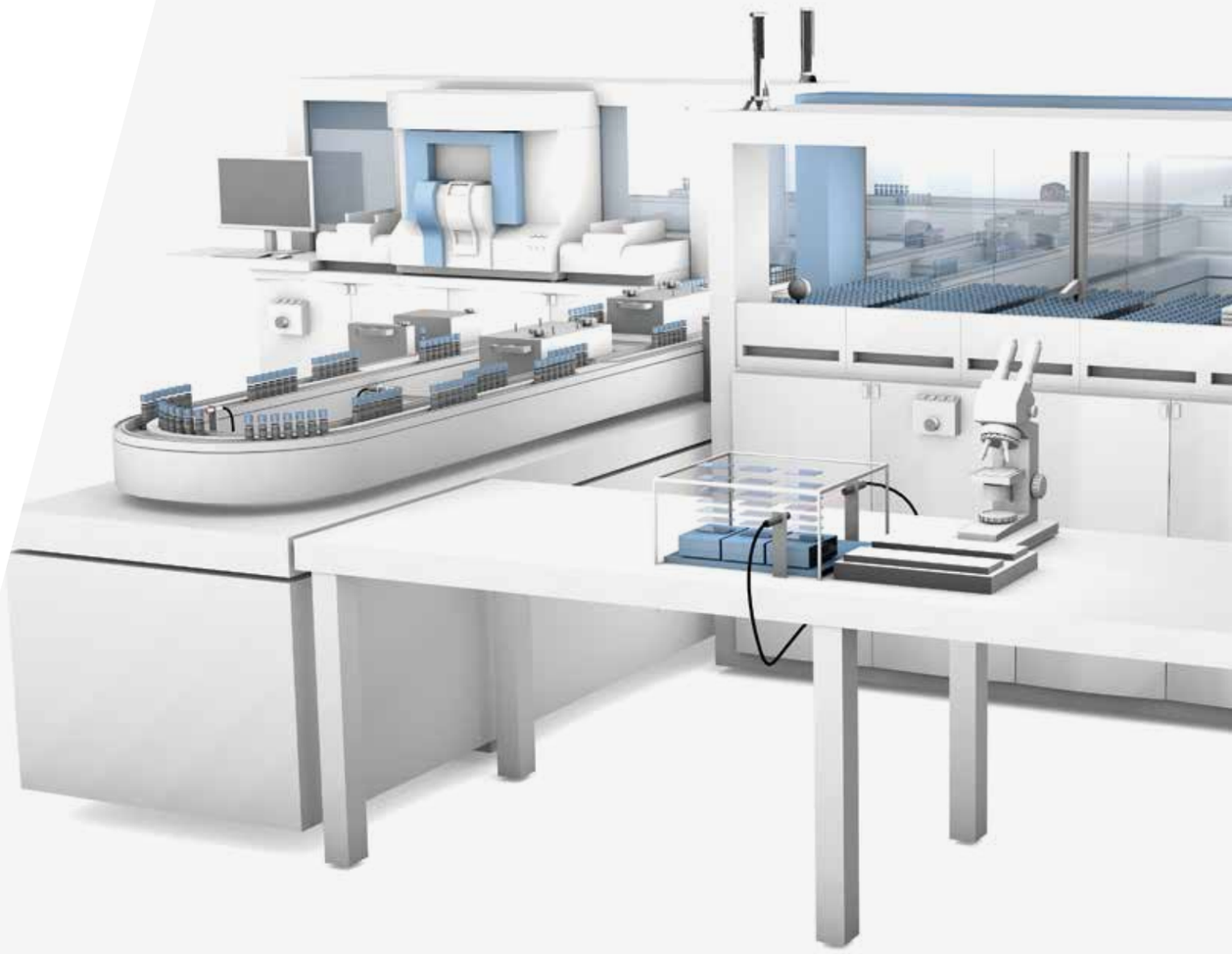
Features

- Compact USB3 camera series with excellent price/performance ratio
- Excellent image quality due to high quality sensors up to 10.7 MP
- Onboard Smart features for CPU unloading
- Internal image memory for lossless image transfer
- Flexible digital I/Os for easy process integration
- Easy integration thanks to Software Development Kit

USB3
INDUSTRIAL CAMERAS
BVS-CA-SF1

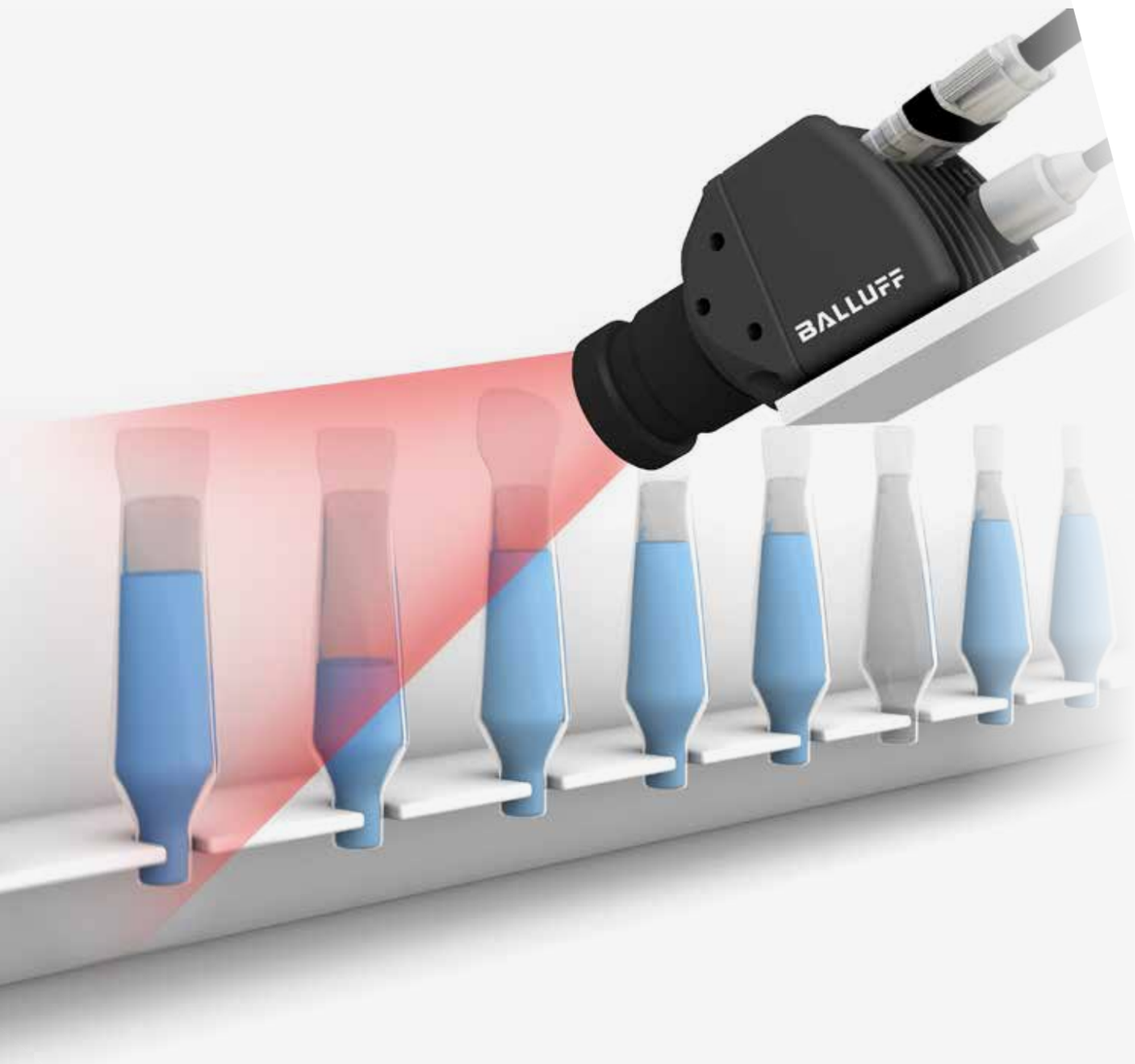
	BVS CA – **(zzz)** – **(xxxxxx)** – **(1) (2) (3) (4) (5) (6)** – 001
Interface **(zzz)**	SF1 = USB3
Sensors **(xxxxxx)**	0013ZG/C = E2V EV76C560 1.3 MP global shutter 0013EG = E2V EV76C661 1.3 MP global shutter, infrared enhanced 0020ZG/C = E2V EV76C570 1.9 MP global shutter, 51 framesr/s 0020AG/C = E2V EV76C570_AxT6 1.9 MP global shutter, 60 frames/s
Handling **(1)**	1 = Standard
Lens holder **(2)**	0 = Without lens holder [1)] 6 = CS-Mount, (no adjustment) 9 = C-Mount (CS-mount, same as 6 + 5 mm spacer) V = S mount, height 13 mm [1)]
Filter **(3)**	0 = Without filter 1 = IR cut filter 2 = Glass filter Other filters on request.
Housing **(4)**	0 = Without housing 1 = Standard
I/O **(5)**	0 = Without I/Os 2 = Standard I/Os
Software	0 = Standard

1) Only circuit board version without housing.



Camera modules for industrial image processing with standard USB3 interface

FLEXIBLE USB3 VISION INDUSTRIAL CAMERA SERIES



Our USB3 Vision cameras of the BVS CA-SF2 series offer high resolutions and frame rates as well as camera-based Smart features that significantly reduce the load on your host system. The modular design offers a wide range of selection and equipment options such as various sensors and lens mounts or variants with an extended temperature range. The cameras transmit image data via the cost-effective standard USB3 interface available on all computers. We offer a wide range of different designs for different applications: with housing or as board-level variant, with or without digital connections. This makes them suitable for a wide range of machine vision applications, whether on a PC-based or embedded system. Equipped with Sony CMOS sensors and resolutions of up to 24.6 MP, the USB3 Vision industrial camera family offers you state-of-the-art sensor technology with excellent image quality. And thanks to the USB3 Vision standard, you can quickly, easily, and cost-effectively integrate them into your application and implement sophisticated image processing systems with one or more cameras.

Features

- Compact USB3 camera series with excellent price/performance ratio
- Excellent image quality due to high quality sensors up to 24.6 MP
- Onboard Smart features for CPU unloading
- Internal image memory for lossless image transfer
- Flexible digital I/Os for easy process integration
- Easy integration thanks to Software Development Kit

USB3
INDUSTRIAL CAMERAS
BVS-CA-SF2

	BVS CA – **(zzz) – (xxxxxx) – (1) (2) (3) (4) (5) (6)** – 001
Interface **(zzz)**	SF2 = USB3
Sensors **(xxxxxx)**	Sony IMX series, 0.4...24.6 MP, global and rolling shutter, CMOS
Handling **(1)**	1 = Standard 2 = Extended temperature range
Lens holder **(2)**	0 = Without lens holder [1)] 1 = C mount, adjusted backfocus, fixed square filter 2 = C mount, adjustable backfocus, round filter with screw ring Ø 23.2 mm B = C mount, adjusted backfocus, screwable filter V = S mount, height 13 mm [1)]
Filter **(3)**	0 = Without filter 1 = IR cut filter 2 = Glass filter Other filters on request.
Housing **(4)**	0 = Without housing 1 = Standard
I/O **(5)**	0 = Without I/Os 2 = Standard I/Os
Software	0 = Standard

1) Only board level version without housing:

High-resolution USB3 industrial camera for the finest details

USB3 INDUSTRIAL CAMERAS WITH HI-RES SENSORS UP TO 31 MP

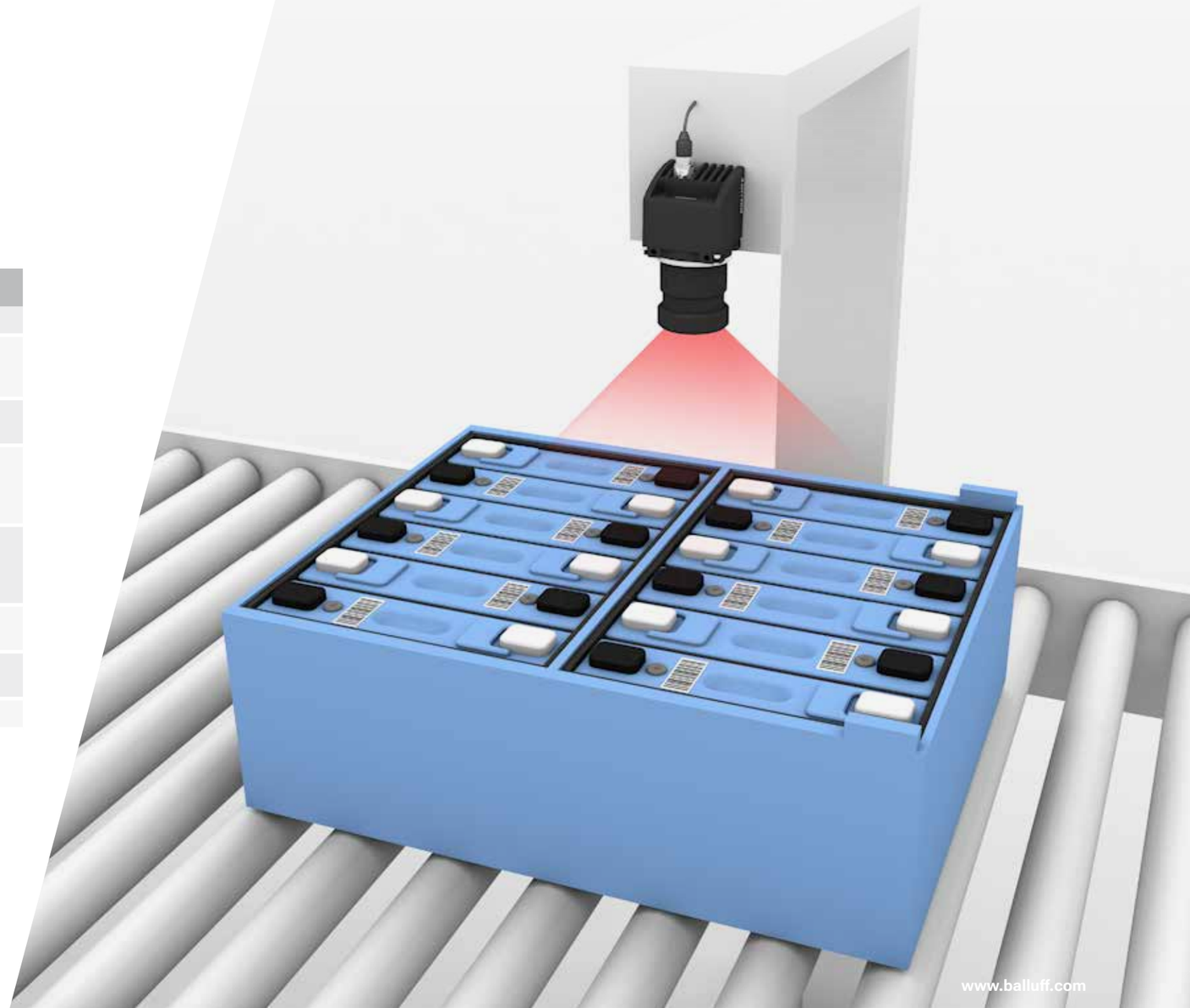
The USB3 Vision compliant cameras have generous FPGAs with many Smart features, which are carried out directly in the camera and thus relieve the host system. With the 2/4 digital inputs and outputs, the cameras can be triggered, or subsequent processes can be controlled. The cameras are primarily designed for use in the sectors of mechanical engineering, traffic engineering, surveying and inspection.

Features

- Compact form factor
- Reliable image transfer thanks to 256 MB image buffer
- FPGA based Smart features reduce system load and simplify the overall system
- More details using large sensors with sizes greater than 1“
- Higher resolution and frame rate
- Identical API for Linux and Windows

USB3 INDUSTRIAL CAMERA
BVS CA-SF4

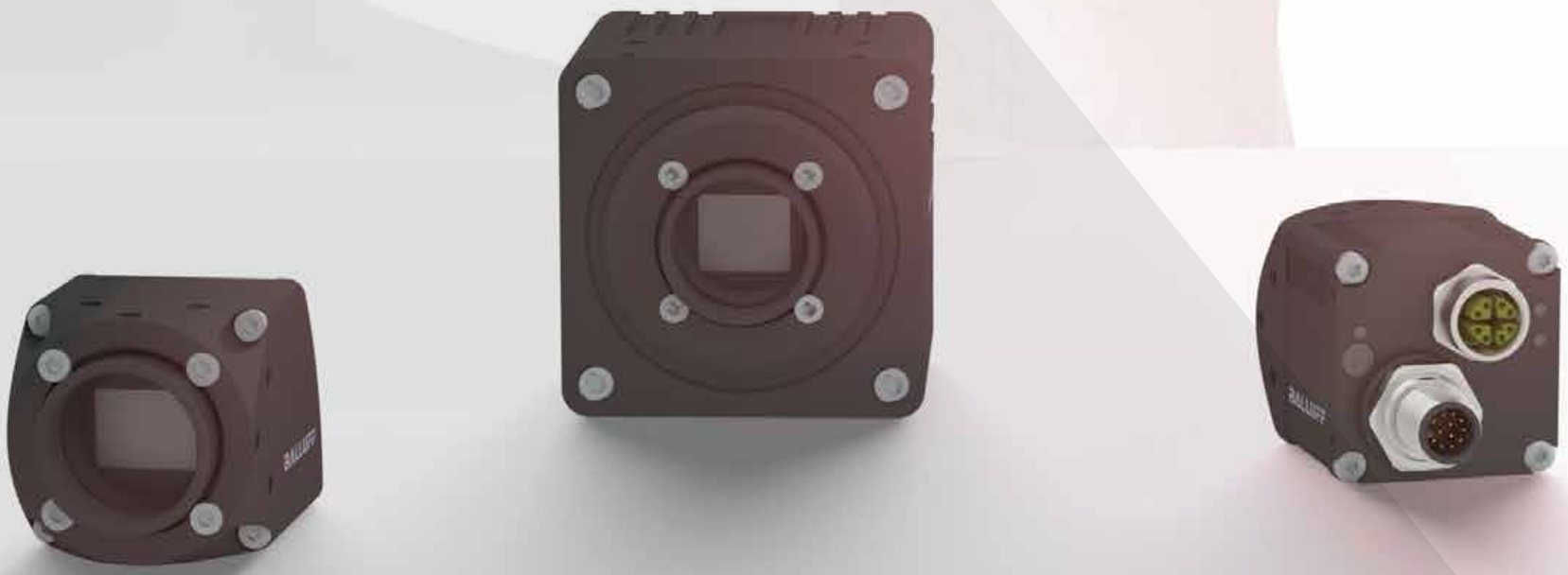
	BVS CA-SF4 – **(xxxxxx) – (1) (2) (3) (4) (5) (6)** – 001
Interface	SF4 = USB3 Vision
Sensors **(xxxxxx)**	IMX342 (31.5 MP, 6480 × 4856 pixels, APS-C global shutter CMOS, 3.45 µm pixel size) IMX367 (19.6 MP, 4432 × 4432 pixels, 4/3" global shutter CMOS, 3.45 µm pixel size) IMX387 (16.9 MP, 5472 × 3080 pixels, 4/3" global shutter CMOS, 3.45 µm pixel size)
Handling **(1)**	1 = Standard 2 = Extended temperature range
Lens holder **(2)**	N = M42×1 mount, backfocus 12 mm, fixed square filter P = M42×1 mount, backfocus 45.5 mm, fixed square filter Q = F mount, backfocus 46mm, fixed square filter T = TFL mount, backfocus 17.5mm, fixed square filter
Filter **(3)**	0 = Without filter 1 = IR cut filter 2 = Glass filter Other filters on request.
Housing **(4)**	1 = Standard housing F = Standard housing with fan
I/O **(5)**	0 = Without I/Os 2 = Standard I/Os
Software **(6)**	0 = Standard



SWIR AND UV CAMERAS

By integrating new short-wave infrared (SWIR) and ultraviolet (UV) image sensors into the proven GigE and USB3 cameras, Balluff has expanded its vision application possibilities to frequency ranges beyond visible light.

While most image processing applications are performed in the visible light range (380 nm –780 nm), some applications benefit from image capture outside of this range. Our latest camera models harness the extended capabilities of Sony Pregius S CMOS sensors with global shutter technology, enabling the generation of high-resolution, intricate images ranging from 200 nm (UV range) to 1700 nm (SWIR range).



Imaging beyond the visible spectrum

INDUSTRIAL CAMERAS WITH SWIR AND UV SENSORS

The use of the existing GigE, 10GigE and USB3 camera platforms makes the use of SWIR and UV technology particularly easy. There are no changes to the integration and handling of the cameras compared to previous models. You also benefit from GigE Vision, USB3 Vision and GenICam compatibility with these SWIR and UV models.

The wide range of applications in the ultraviolet range includes wafer inspection, differentiation of transparent plastics in waste sorting, and the detection of corona discharges in insulation defects on high-voltage cables.

In the SWIR light range, agricultural products, for example, can be inspected, as can fill levels in opaque plastic containers. SWIR sensors offer advantages in monitoring tasks, as the objects of interest can still be easily recognized even in smoke or fog, which become transparent. SWIR sensors are also used in semiconductor inspection, as silicon also appears transparent in SWIR light ranges.

Features

- Utilization of UV and SWIR technologies within proven camera series
- Excellent image quality and sensitivity
- Easy integration thanks to the GigE Vision or USB3 Vision and GenICam standards
- Robust product design and internal image memory
- Excellent price-performance ratio

INDUSTRIAL CAMERAS
BVS-CA-SF2 (USB3)
BVS CA-GX0 (GIGE)
BVS CA-GT1 (10GIGE)

	BVS CA-**(zzz) – (xxxxxx) – (1) (2) (3) (4) (5) (6)** – 001
Interface **(zzz)**	SF2 = USB3 GX0 = GigE GT1 = 10GigE
Sensors **(xxxxxx)**	IMX487 (8.1 MP, 2848 × 2848 pixels, 2/3" global shutter UV CMOS, 2,74 µm pixel size) IMX990 (1.34 MP, 1296 × 1032 pixels, 1/2" global shutter SWIR CMOS, 5 µm pixel size) IMX991 (0.34 MP, 656 × 520 pixels, 1/4" global shutter SWIR CMOS, 5 µm pixel size)
Handling **(1)**	1 = Standard
Lens holder **(2)**	1 = C-Mount, adjusted backfocus, fixed square filter 2 = C-Mount, adjustable backfocus, round filter with screw ring Ø 23.2 mm 4 = C-Mount, adjustable back focus, filter Ø 20 mm 5 = C-Mount, adjustable back focus, filter Ø 23.2 mm
Filter **(3)**	0 = Without filter Other filters on request.
Housing **(4)**	1 = Standard C = IP67C compact housing F = Standard housing with fan
I/O **(5)**	0 = Without I/O 2 = Standard I/Os 3 = Optically isolated IOs 4 = Optically isolated input, high-side switch OUT, M12 connections 6 = Galvanically isolated input with PLC logic level, high-side switch OUT
Software **(6)**	0 = Standard

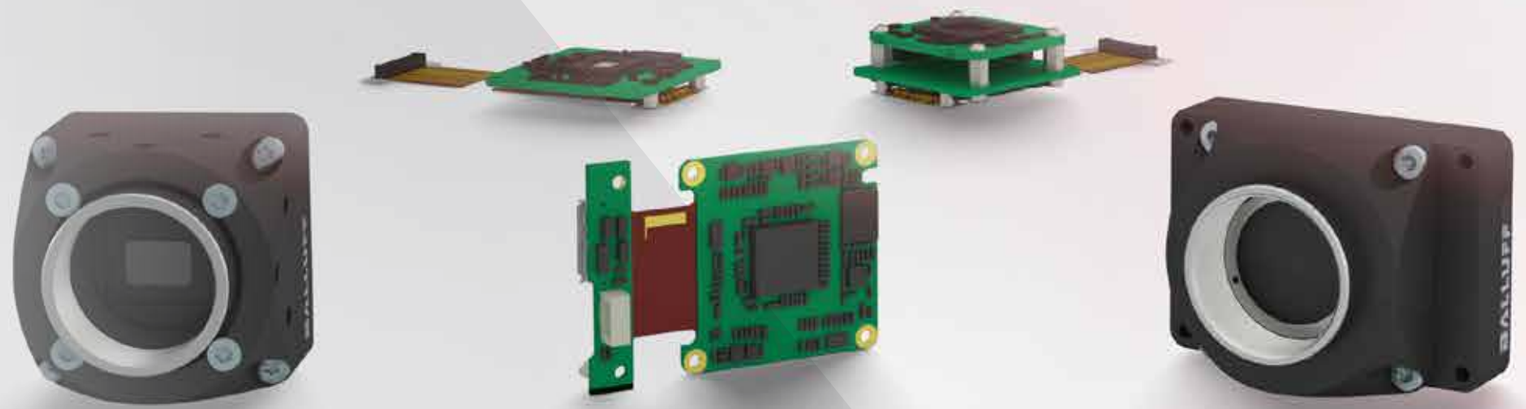
Embedded Vision

The best starting point for vision intelligence

Embedded vision solutions are becoming increasingly popular, whether because of limited installation space or special requirements that demand innovative image processing solutions with built-in intelligence. The improved performance of single board computers has especially boosted this trend and enables efficient, compact and mobile vision applications. Our embedded vision camera modules offer flexibility, high image quality and performance at low cost, and are part of our camera kit.

Features

- Space-saving: ready for use wherever installation space is limited
- Platform independent: plug & play on different processor architectures
- Custom-fit: select components to match your application



USB3 board camera with flexible interface design for a wide variety of installation situations

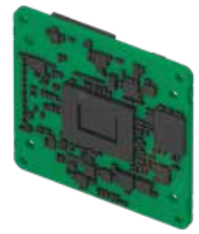
COMPACT USB3 BOARD-LEVEL CAMERA FOR EMBEDDED VISION

The USB3 compatible board-level cameras have large image memory and a powerful FPGA for on-board preprocessing as well as digital interfaces for flexible integration into a wide variety of environments. The modular design makes it possible to connect the sensor board directly to customer-specific embedded solutions using a board-to-board connector.

In addition to an available standard interface board with USB and I/O plugs, customized OEM solutions can be created with a wide variety of plug orientations and configurations.

Features

- Compact form factor
- Reliable image transfer thanks to 256 MB image buffer
- FPGA based Smart features reduce system load and simplify the overall system
- Easy integration into embbed systems with available USB interface
- Camera features independant of the used embedded system
- Same API as desktop Linux or Windows



USB3
BOARD-LEVEL CAMERA
BVS CA-SF3

	BVS CA-SF3-0064ZG – **(1) (2) (3) (4) (5) (6)** – 001
Interface	SF3 – USB3 Vision
Sensors	0064ZG = IMX178, 6.4 MP, 3096 × 2080 pixels, 1/1.8" rolling shutter, CMOS
Handling **(1)**	1 = Standard 2 = Extended temperature range
Lens holder **(2)**	0 = Without lens holder Y = S-mount, 13 mm length
Filter **(3)**	0 = Without filter
Housing **(4)**	0 = Without housing 5 = Mounting and heat conducting plate for board camera
I/O **(5)**	2 = Standard I/Os
Software **(6)**	0 = Standard

Modular camera for a wide range of installation situations

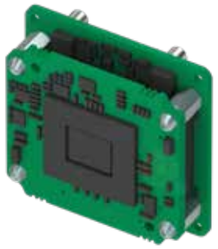
FLEXIBLE USB3 BOARD-LEVEL CAMERA FAMILY FOR EMBEDDED VISION

The USB3 Vision compatible camera family is based on a modular board design. With its embedded interface, access is provided to various USB3 connection boards from the embedded vision toolkit. The camera has a large image memory and a powerful FPGA for on-board preprocessing as well as digital interfaces for flexible integration in various environments.

Due to the board-to-board connector of the board-level camera, many integration scenarios are possible. You can connect the power supply, USB as well as the digital I/Os by using the connector. Custom solutions and direct connections to embedded computers can be implemented via the open BFembedded interface.

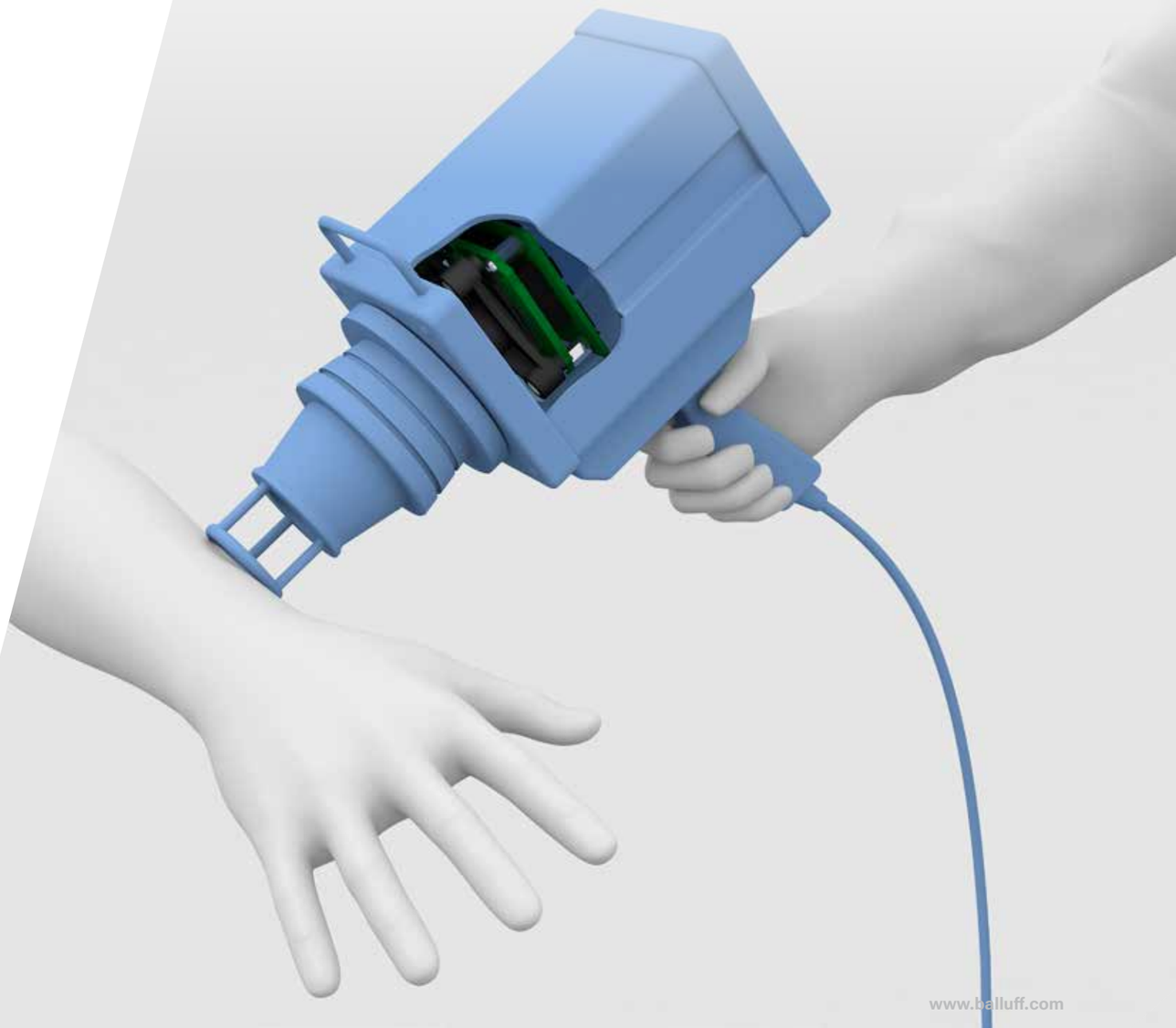
Features

- Compact form factor
- Reliable image transfer thanks to 256 MB image buffer
- FPGA based Smart features reduce system load and simplify the overall system
- Simple integration in embedded systems with USB interface
- Combination with various USB3 connector boards thanks to BFembedded interface
- Camera features are independent of the embedded system
- Completely identical API as in Desktop Linux or Windows



USB3 BOARD-LEVEL CAMERA
BVS CA-SF5

	BVS CA-SF5 – **(xxxxxx) – (1) (2) (3) (4) (5) (6)** – 001
Interface	SF5 – USB3 Vision
Sensors **(xxxxxx)**	Sony IMX series, 4...31.5 MP, global und rolling shutter, CMOS
Handling **(1)**	1 = Standard 2 = Extended temperature range
Lens holder **(2)**	0 = Without lens holder 1 = C-mount, adjusted back focus, fixed square filter 2 = C-mount, adjustable back focus, round filter with screw ring Ø 23.2 mm
Filter **(3)**	0 = Without filter 1 = IR cut filter 2 = Glass filter Other filters on request.
Housing **(4)**	0 = Without housing 5 = Mounting and heat conducting plate for board camera
I/O **(5)**	1 = Standard I/Os
Software **(6)**	0 = Standard



Embedded vision with PCI Express

High transfer rates without detours

In many areas of image processing, especially for mobile devices and in the field of edge computing, embedded vision modules are an increasingly relevant component. In order to be able to provide a camera platform even for demanding applications, Balluff offers camera modules that are equipped with the cross-platform high-performance interface PCI Express.

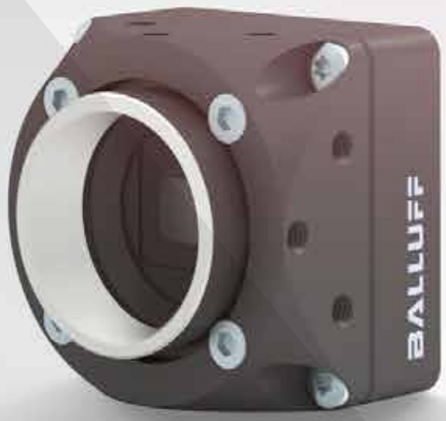
The PCI Express standard was introduced in 2003 and regulates the connection of peripheral devices with the chipset of the mainboard. It is a point-to-point connection with up to 16 lanes per connection, whereby the more lanes, the greater the available bandwidth.

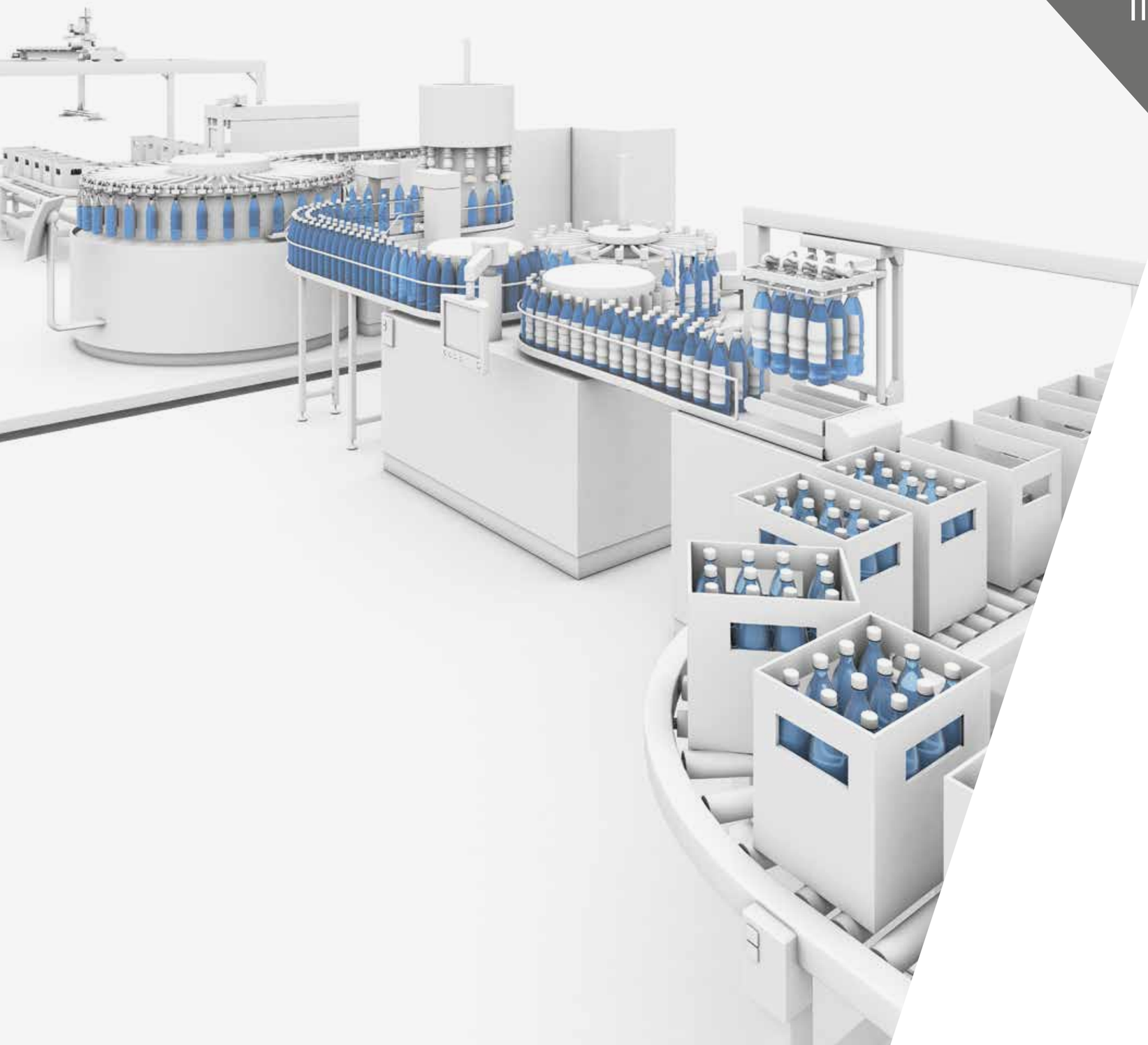
Thanks to guaranteed Direct Memory Access, i.e. the almost latency-free transfer of data directly into the memory, a large part of the gross bandwidth of 20 Gbit/s can be used. This makes the interface suitable for embedded vision applications with high resolutions, high frame rates and short distances between camera and evaluation unit.

The advantages

Cameras with PCIe interface offer various advantages. For example, a wide variety of processor architectures based on NVIDIA, ARM and x86 are supported by the Impact Acquire SDK that is included. The GenICam GenTL Producer ensures compatibility with existing developments and guarantees smooth switching between different hardware platforms. Customized connection boards can also be developed as required.

- **Availability**
  PCI Express interfaces are included on every motherboard – and availability for embedded boards is growing steadily.
- **Modular construction kit**
  The N4e modular kit allows a wide range of board cameras to be combined for different embedded boards.
- **Direct Memory Access (DMA)**
  PCI Express ensures virtually latency-free transfer of data directly into memory.
- **Compatibility**
  Different processor architectures are supported by the Impact Acquire SDK.





Compact camera modules for demanding applications with maximum transfer rate

COMPACT CAMERA MODULES WITH SCALABLE PCI EXPRESS INTERFACE

By using the platform-independent PCI Express interface (PCIe), this camera module family offers very high transfer rates at low cost. Due to a direct connection of the image sensor, almost latency-free transfer is possible. Transfer of image data directly into the memory is guaranteed (DMA – Direct Memory Access). Applications with high performance requirements in terms of resolution and frame rate are served with high image quality. Larger bit depths and FPGA- based debayering (in a 5 × 5 matrix) can be realized at low system costs. Our models in this camera module family stand out with an even faster sensor connection, optimized for the Gen4 sensors of the Pregius S series. Through PCIe, various processor architectures based on NVIDIA Jetson, ARM, and x86 are suitable, enabling optimal scalability in terms of performance. The camera hardware is connected using its own screwable flex cable (30 cm) or a standardized OCuLink signal cable with a length of up to 1 m. Appropriate adapter boards are available for the respective computer platforms.

The Impact Acquire software development kit (SDK) supports our cameras in the same way as all other industrial cameras. In addition, the included GenICam GenTL Producer ensures full compatibility with existing customer software as well as third party image processing packages and allows a smooth change of platform if required.

Features

- Platform independence – universal and scalable integration thanks to PCI Express
- Low system costs through camera on-board image preprocessing functions
- Shorten your time to market through fast integration and flexibility in platform selection
- High investment security due to the PCIe interface and the standardized GenICam software interface
- High efficiency and minimal latency due to a direct image sensor connection and FPGA-based preprocessing

PCI EXPRESS
CAMERA MODULE SERIES
BVS CA-BN2

	BVS CA-BN2 – **(xxxxxx) – (1) (2) (3) (4) (5) (6)** – 001
Interface	BN = PCIe
Sensors **(xxxxxx)**	IMX250 (5.1 MP, 2464 × 2056 pixels, 2/3" global shutter CMOS, 3.45 µm pixel size) IMX252 (3.2 MP, 2064 × 1544 pixels, 1/1.8" global shutter CMOS, 3.45 µm pixel size) IMX253 (12.4 MP, 4112 × 3008 pixels, 1.1" global shutter CMOS, 3.45 µm pixel size) IMX255 (8.9 MP, 4112 × 2176 pixels, 1" global shutter CMOS, 3.45 µm pixel size) IMX273 (1.6 MP, 1456 × 1088 pixels, 1/2.9" global shutter CMOS, 3.45 µm pixel size) IMX540 (24.6 MP, 5328 × 4608 pixels, 1.2" global shutter CMOS, 2.74 µm pixel size)
Handling **(1)**	1 = Standard
Lens holder **(2)**	1 = C-Mount, fixed square filter 5 = C-Mount, filter Ø 23.2 mm
Filter **(3)**	0 = Without filter 1 = IR cut filter 2 = Glass filter Other filters on request.
Housing **(4)**	1 = Standard housing
I/O **(5)**	1 = Standard I/Os H = OCuLink interface, 4 optically isolated I/Os, 2 non-isolated I/Os
Software **(6)**	0 = Standard

PCI EXPRESS
CAMERA MODULE SERIES
BVS CA-BN4

	BVS CA-BN4 – **(xxxxxx) – (1) (2) (3) (4) (5) (6)** – 001
Interface	BN = PCIe
Sensors **(xxxxxx)**	IMX530 (24.6 MP, 5328 × 4608 pixels, 1.2" global shutter CMOS, 2.74 µm pixel size) IMX531 (20.4 MP, 4512 × 4512 pixels, 1.1" global shutter CMOS, 2.74 µm pixel size) IMX532 (16.2 MP, 5328 × 3040 pixels, 1.1" global shutter CMOS, 2.74 µm pixel size) IMX535 (12.4 MP, 4128 × 3008 pixels, 1/1.1" global shutter CMOS, 2.74 µm pixel size) IMX536 (8.1 MP, 2856 × 2848 pixels, 2/3" global shutter CMOS, 2.74 µm pixel size) IMX537 (5.1 MP, 2472 × 2064 pixels, 1/1.8" global shutter CMOS, 2.74 µm pixel size)
Handling **(1)**	1 = Standard
Lens holder **(2)**	1 = C-Mount, fixed square filter 5 = C-Mount , filter Ø 23.2 mm
Filter **(3)**	0 = Without filter 1 = IR cut filter 2 = Glass filter Other filters on request.
Housing **(4)**	1 = Standard housing
I/O **(5)**	1 = Standard I/Os H = OCuLink interface, 4 optically isolated I/Os, 2 non-isolated I/Os
Software **(6)**	0 = Standard

Machine Vision Software

With Impact Acquire, you receive a uniform and comprehensive driver API for all major operating systems (Windows and Linux, x86_64 and ARM, incl. NVIDIA and MacOS) with helpful tools for controlling our hardware and acquiring images for our cameras.

In addition to numerous wizards for optimizing image settings, a configuration interface provides convenient access to camera parameters and useful analysis tools as well as image and video acquisition capabilities.

The Impact Acquire SDK is compatible with the current GenICam, GigE Vision and USB3 Vision image processing standards.

Extensive endurance testing during development ensures high stability and robustness, proven in many demanding applications in a wide range of industries.

If you wish to use different or more advanced software, this is no problem. Our hardware is supported by the most popular image processing packages.

Our SDK can also be used on Windows and Linux x86_64 with cameras from other manufacturers that are compliant with image processing standards such as GenICam, GenTL (Producer), GigE Vision and USB3 Vision.
A license is required for this.

The most important advantages

- Supports all common operating systems
- Compatible with the current GenICam, GigE Vision and USB3 Vision image processing standards
- Can also be used with cameras from other manufacturers with a license

3D Machine Vision

3D machine vision that is easy and flexible to use

Our 3D cameras are ideal for stationary and mobile robotic applications and offer high application flexibility. Whether high-resolution, for harsh environments or with application-specific, integrated software modules, our 3D portfolio offers the right answer for every requirement.

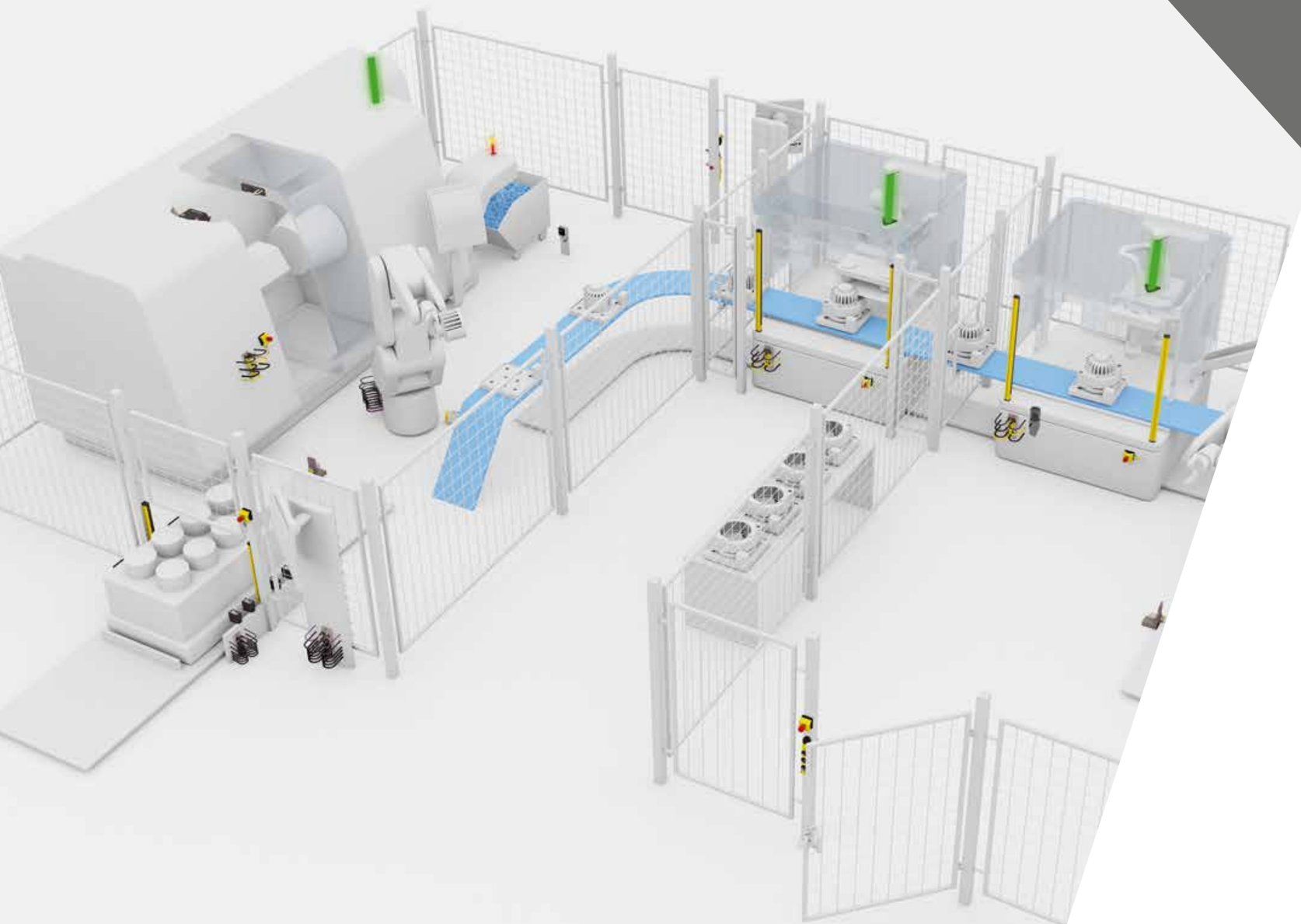
Data quality at the highest level

The high-resolution 3D stereo camera impresses with its unique depth image quality, making it suitable for use in particularly large work areas as well as for bin picking small objects from load carriers. Adjustable lenses on the cameras and on the projector allow the 3D stereo camera to be optimally adapted to the desired working area. The GigE Vision interface brings high flexibility to the software application.

Software modules for specific applications

The Smart 3D camera family is equipped with a comprehensive onboard software package. This allows efficient and reliable object detection, indoor navigation and grasp planning. Optional software modules such as BoxPick and ItemPick can be used in order to optimize use for custom application scenarios.

Alternatively, the GigE Vision interface can be used for customer-specific software applications.



Smart 3D camera family for stationary and mobile robot applications

EASY AND FLEXIBLE USE OF 3D MACHINE VISION

Low system costs, quick implementation, and a high degree of flexibility in use. This is what the 3D product family of Smart 3D cameras promises. With an integrated processor and application-specific software modules on the camera, the Smart 3D camera provides independently operating 3D machine vision and can therefore also be used very easily as a 3D stereo sensor. Processed 3D information such as pick points are forwarded from the Smart 3D camera directly to the robot application. It is configured via a user-friendly web-based user interface. Connection to a PC for further data processing is also possible. Custom 3D applications can be developed based on the camera data using the GigE Vision interface.

The camera models measure up to 1.2 million 3D data points and achieve frame rates of up to 25 Hz, depending on resolution. Various robot interfaces are already integrated for communication between robot and camera.

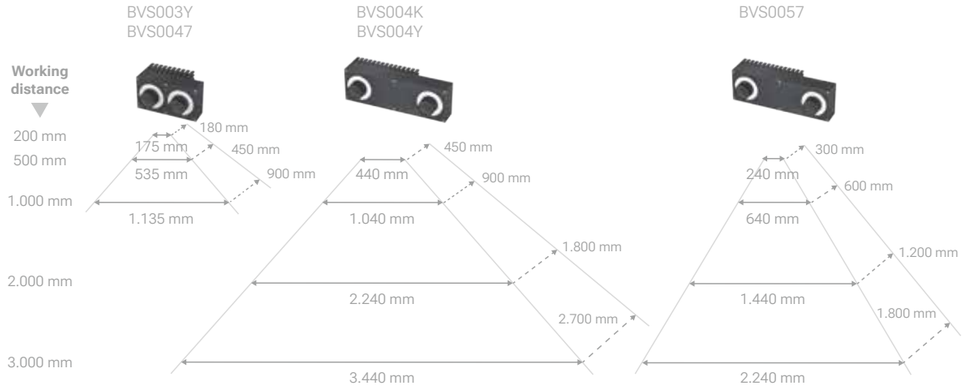
Features

- Fast implementation and easy to use thanks to user-friendly web-based user interface
- High application flexibility due to optional software modules and GigE Vision interface
- Low system costs and high system reliability with on-board processing and application-specific software modules
- Increased productivity due to Smart software modules

SMART
3D CAMERA FAMILY
BVS 3D-RV0

	BVS003Y	BVS0047	BVS004K	BVS004Y	BVS0057
2D codes	QR code, AprilTag	QR code, AprilTag	QR code, AprilTag	QR code, AprilTag	QR code, AprilTag
Application	Bin picking, object detection, gripping point calculation	Bin picking, object detection, gripping point calculation	Bin picking, object detection, gripping point calculation	Bin picking, object detection, gripping point calculation	Bin picking, object detection, gripping point calculation
Image resolution	1.2 MP (1280 × 960 pixels)	1.2 MP (1280 × 960 pixels)	1.2 MP (1280 × 960 pixels)	1.2 MP (1280 × 960 pixels)	1.2 MP (1280 × 960 pixels)
Sensor type Vision	CMOS 1/3" color global shutter	CMOS 1/3" monochrome global shutter	CMOS 1/3" monochrome global shutter	CMOS 1/3" color global shutter	CMOS 1/3" monochrome global shutter
Focal length	4 mm	4 mm	4 mm	4 mm	6 mm
Housing material	Aluminium, painted	Aluminium, painted	Aluminium, painted	Aluminium, painted	Aluminium, painted
Dimensions	135 × 75 × 96 mm	135 × 75 × 96 mm	230 × 75 × 84 mm	230 × 75 × 84 mm	230 × 75 × 84 mm
Interface	LAN (Gigabit Ethernet) GigE Vision 2.0 TCP/UDP	LAN (Gigabit Ethernet) GigE Vision 2.0 TCP/UDP	LAN (Gigabit Ethernet) GigE Vision 2.0 TCP/UDP	LAN (Gigabit Ethernet) GigE Vision 2.0 TCP/UDP	LAN (Gigabit Ethernet) GigE Vision 2.0 TCP/UDP
Connection 1	M12 male, 8-pin, A-coded	M12 male, 8-pin, A-coded	M12 male, 8-pin, A-coded	M12 male, 8-pin, A-coded	M12 male, 8-pin, A-coded
Connection 2	M12 female, 8-pin, A-coded	M12 female, 8-pin, A-coded	M12 female, 8-pin, A-coded	M12 female, 8-pin, A-coded	M12 female, 8-pin, A-coded
Operating voltage U_B	18...30 V DC	18...30 V DC	18...30 V DC	18...30 V DC	18...30 V DC
Ambient temperature	0...+50 °C	0...+50 °C	0...+50 °C	0...+50 °C	0...+50 °C
IP rating	IP54	IP54	IP54	IP54	IP54

WORKING RANGE



OUTPUT DATA

- Processed 3D information: grasp points, object dimensions, load carrier position, load carrier fill level
- Camera data via GigE Vision: left and right camera image, depth image (disparity image), confidence image, error image

For demanding 3D applications

HIGH RESOLUTION 3D STEREO CAMERA

Robust and high resolution 3D stereo camera with 12 MP sensors and integrated projector for industrial 3D applications.

Low system costs, rapid implementation, a high flexibility in the application and a robust housing characterize this 3D stereo camera. With 12 million 3D data points and a 12 MP resolution, the camera captures every detail and does so with a frame rate of up to 9 Hz, depending on resolution.

Furthermore, the adjustable lenses on the cameras and integrated projector lead to optimal results, regardless of the workplace in which the camera is used. Using the GigE Vision interface, custom 3D applications can be created based on the camera data.

With the software library included in the scope of delivery, 3D calculation can be automatically outsourced to a graphics card, thus increasing the camera's performance.

Features

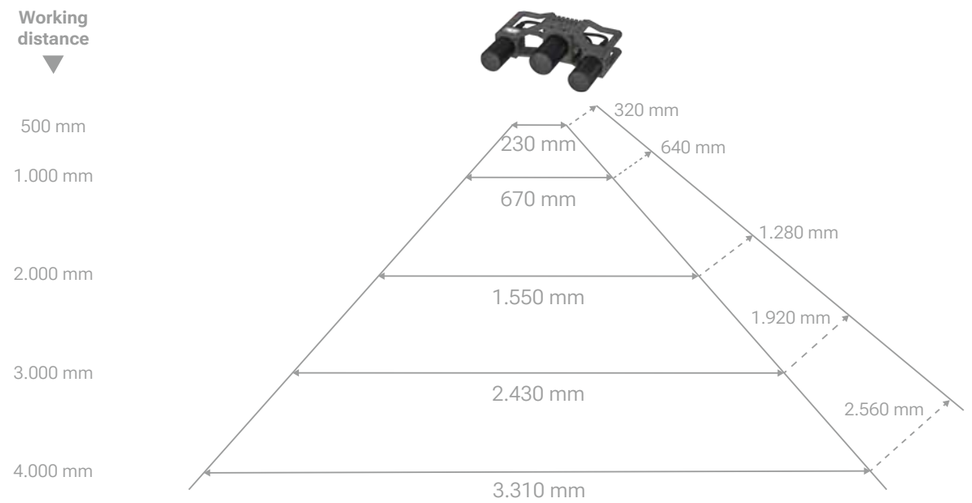
- High application flexibility thanks to GigE Vision interface
- Performs even in harsh environments due to IP54 protected housing
- Enables highly accurate 3D image processing due to 12 MP resolution of 3D data and 2D images
- Optimally adaptable to your workspace thanks to adjustable lenses on cameras and projector

3D STEREO CAMERA
BVS 3D-RV1

	BVS0199
Application	For 3D data acquisition, bin picking, object detection, gripping point calculation
Image resolution	12 MP (4112 × 3008 pixels)
Sensor type Vision	CMOS 1.1" monochrome global shutter
Focal length	16 mm
Housing material	Aluminum, painted
Dimensions	262 × 82 × 204 mm
Interface	LAN (Gigabit Ethernet), GigE Vision 2.0
Connection 1	M12 male, 8-pin, A-coded
Connection 2	M12 female, 8-pin, X-coded
Operating voltage U_B	22...26 V DC
Ambient temperature	0...+45 °C
Approval/conformity	CE, UKCA
IP rating	IP54

WORKING RANGE

BVS 3D-RV1-0124AG-1111ZZ-001



OUTPUT DATA

- Camera data via GigE Vision: left and right camera image, depth image (disparity image), confidence image, error image. For high-performance calculation of the depth image on the host PC, the use of a graphics card is recommended.

Smart vision

Exact quality test with image processing

Smart Vision products from Balluff meet the increasing demands for maximum quality and great flexibility in modern manufacturing plants through integrated industrial image processing.

They provide reliable error detection and thereby ensure an exact quality control.

The most important benefits

- The sensors can perform various functions, which reduces costs and raises efficiency
- Early defect detection reduces scrap and downtime
- Simple changing of the inspection task for changing lots means high system availability

BVS VisionSensor

- Reliable presence monitoring and object classification with extremely simple operation
- Position-invariant object detection
- Alternative, modern data interfaces: MQTT and REST API
- Consistent communication thanks to standardized automation and IT interfaces
- Vision sensors are part of the SAMS (Smart Automation and Monitoring System) from Balluff
- Vision sensors with Profinet or IO-Link interface provide additional condition monitoring information (vibration, temperature, humidity and operating time)

VisionSensor offers integrated lighting and autofocus

OPTICAL INSPECTION HAS NEVER BEEN SO EASY

Balluff is expanding its vision portfolio with its new VisionSensor, which raises the bar for speed and ease of use. With integrated lighting and autofocus optics without the need for additional components, optical quality control in automated production has never been easier.

Like Balluff's other Smart Vision products, the VisionSensor meets the increasing demands for high quality and great flexibility in modern production systems, thanks in part to its integrated industrial image processing. Their main advantage lies in its ability to perform multiple detections simultaneously and distinguish between complex brightness and shapes. This makes it an optimal solution, particularly in the automotive and electrical industries — whether for object verification or presence control.

Intelligence meets performance

The VisionSensor offers a simple way to obtain information about object characteristics for subsequent evaluation. Both predefined application tools and generic functions are available for presence monitoring. Access to condition monitoring data makes production safe, efficient and transparent.

Simple integration of the sensor into the Profinet or IO-Link network makes product control particularly easy. The independent process and IT interfaces are indispensable when it comes to future-proof and flexible applications. The VisionSensor has the REST API and MQTT features, and is IIoT-capable, making it the embodiment of a Smart product.

Features

- Easy operation during configuration
- Integrated lighting and autofocus optics
- Profinet or IO-Link interface for simple system integration
- IIoT programmability (REST API, MQTT)
- Access to condition monitoring data

BVS VISIONSENSOR

	BVS01ZC	BVS01ZE	BVS01ZF	BVS01ZH
Application	Presence check, object verification, brightness tool, BLOB tool, finder tool, code reader tool			
Functionality	Alignment light, locator, image analysis, reporting			
Condition monitoring	Temperature, vibration, humidity, position, signal quality, operating time			
Working distance	50...600 mm			
Image resolution	1.2 MP (1280 × 960 pixels)			
Light emitter, integrated lighting	LED white, LED red	LED white, LED infrared	LED white, LED red	LED white, LED infrared
Process data interface	IO-Link,TCP, UDP, REST API		Profinet, TCP, UDP, REST API	
IIoT interface and protocols	MQTT, REST API			
User interface	Sensor app as web client			
Dimensions	56 × 56 × 65.5 mm			
IP rating	IP67			

Optical Identification

Secure identification and decoding of objects

Optical identification via 1D and 2D barcodes is a well established method of identifying components and objects, while flawlessly managing systems and processes.

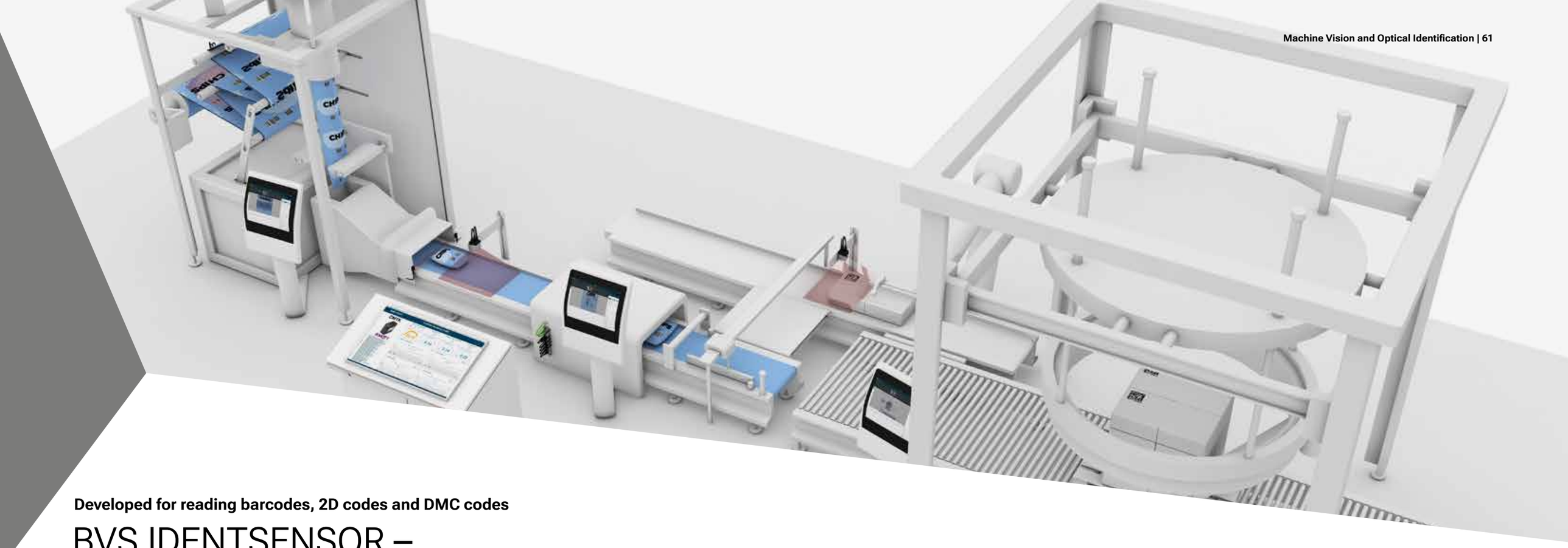
Our range of services in this area includes stationary barcode readers, mobile handheld readers and accessories for standard and industrial grade applications. All devices offer decoding options for the standard 1D or 2D barcodes.

Key benefits

- Reliable traceability of products and assembly
- On-site advice via a global sales network
- Simple startup

Application areas

- Controlling supply processes (e.g. Kanban system)
- Production control



Developed for reading barcodes, 2D codes and DMC codes

BVS IDENTSENSOR – FOR OPTICAL IDENTIFICATION

The new BVS IdentSensor expands the existing range of stationary code readers from Balluff. Designed for precise reading of barcodes, 2D codes and DMC codes, it provides simple and flexible communication interfaces to the process and IT network. Modern, forward-looking programming interfaces (REST API, MQTT) and dedicated industrial interfaces (Profinet or IO-Link, TCP, UDP or REST API) as well as additional condition monitoring information make the sensor unique and ideal for use in fast and difficult processes in automated production.

Reliably read out and transmit code contents

Through the use of optical codes, you can achieve reliable product identification in automated production and packaging settings.
The BVS IdentSensor from Balluff is especially suited to these industries. Thanks to this solution from Balluff, barcodes and 2D codes as well as DMC codes can be read easily, flexibly and reliably within production processes. Code contents and features as well as quality parameters are transmitted to the plant control system (PLC) or higher-level IT systems via industrial communication protocols. In addition, the BVS IdentSensor is part of Balluff's Smart Automation and Monitoring System (SAMS).
This allows you to read out or automatically receive sensor parameters or additional condition monitoring information from the machine environment at any time via the REST API and MQTT. All in unique multi-talent within optical identification.

Capture, verify and pass on optical codes

For product identification within production or logistics processes, barcodes or 2D codes are located on the product packaging or directly on the components. With the new IdentSensor from Balluff, such optical codes can not only be read, but also, depending on the application, their contents and types can be verified, provided, or analyzed for quality.

The results themselves can be passed on quickly and easily to the PLC or IT systems via various interface channels. The bottom line is that you ensure efficient workflows in your automated production or packaging processes.

Features

- Reliable code reading with the simplest operation
- Profinet or IO-Link as process and data interface, alternatively TCP, UDP or REST API
- This product is part of the SAMS (Smart Automation and Monitoring System)
- Additional IIoT data interfaces: MQTT and REST API
- Additional condition monitoring information for production optimization

BVS IDENTSENSOR

	BVS0060	BVS0061	BVS0063	BVS0064
Supported codes	Standard barcodes, standard 2D codes			
Functionality	1-click auto-setup, read optical codes, analyze, verify			
Condition monitoring	Temperature, vibration, humidity, position, signal quality, operating time			
Working distance	50...600 mm			
Image resolution	1.2 MP (1280 × 960 Pixel)			
Light emitter, integrated lighting	LED white, LED red	LED white, LED infrared	LED white, LED red	LED white, LED infrared
Process data interface	IO-Link, TCP, UDP, REST API		Profinet, TCP, UDP, REST API	
IIoT interface and protocols	MQTT, REST API			
User interface	Sensor app as web client			
Dimensions	56 × 56 × 65.5 mm			
IP rating	IP67			

Code reading is the leading application in machine vision. This form of optical identification allows you identify components and objects, and thus control systems and processes without errors. Our IdentSensors with USB interface are ideally suited for these tasks.

The stationary sensors are ideal for manual track and trace applications, e.g. at manual workstations. They are permanently installed, easy to operate, detect bar and 2D codes – and now also excel with an optimal price/performance ratio.

The ideal complement for comprehensive traceability

With our new BVS IdentSensor, less is actually more. A standard USB interface replaces more complex and costly industrial data interfaces. The reading speed is also adapted to applications such as simpler intralogistics situations.

This makes the IdentSensor with USB interface an optimal addition to your production. Individual components can be tracked internally with “clear” codes. The same applies to the identification of manual incoming goods. A green target bar assists with alignment and red LEDs act as integrated lighting for the sensor, which is compatible with all standard industrial 1D and 2D codes.

Features

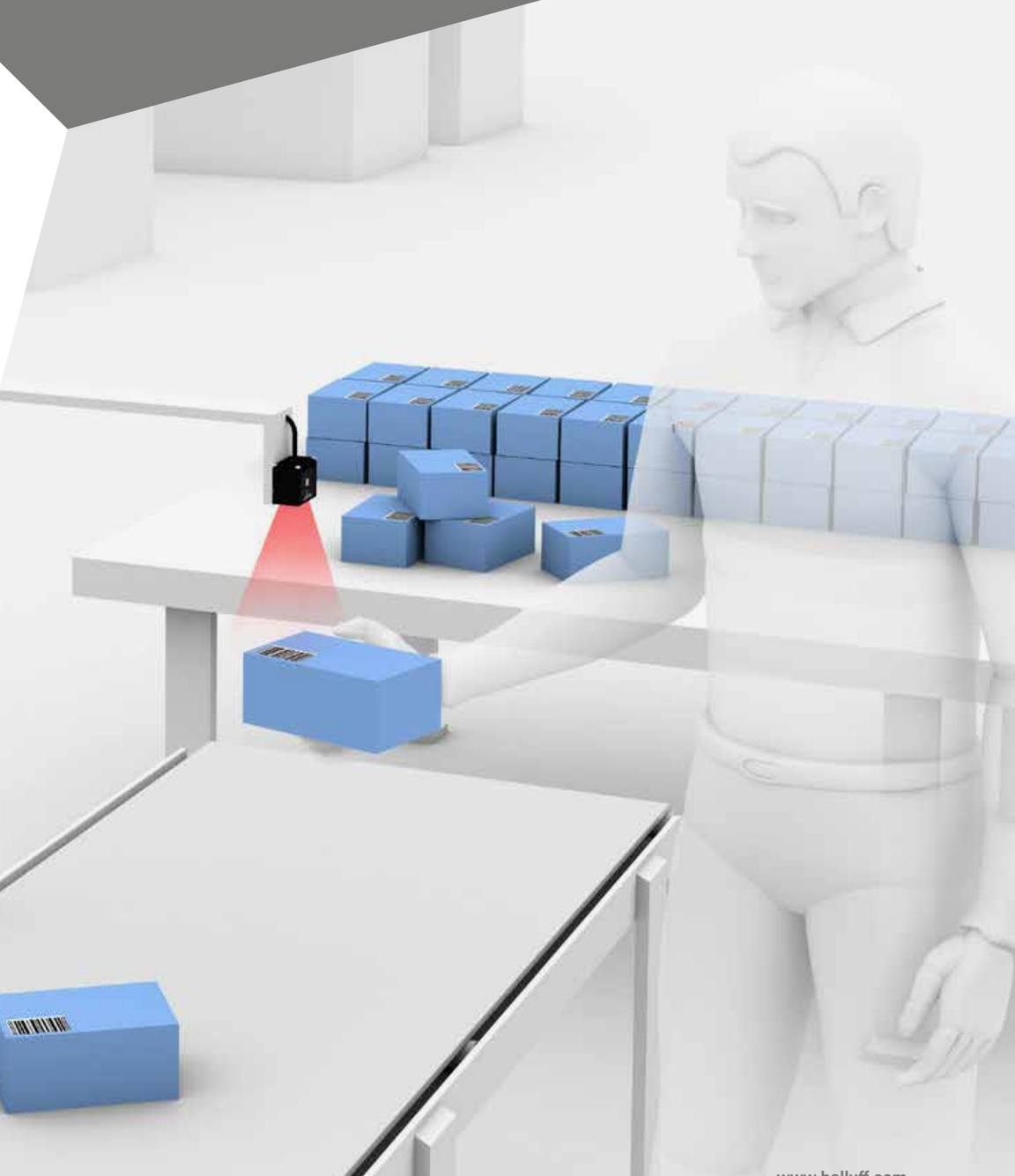
- Reliable optical code reading with easy operation
- Compatible with all standard codes (1D and 2D)
- Integrated red illumination LEDs
- Triggered read-mode via keystroke or software command or automatic scan mode
- Easy installation with alignment aid and acoustic reading confirmation
- Individual product configuration with programming codes
- Plug-and-play with USB connectivity
- IP65 protection class

BVS IDENTSENSOR USB

	BVS01A0		
Barcodes	▪ UPC-A ▪ UPC-A Add-on ▪ UPC-E ▪ UPC-E Add-on ▪ EAN-13 ▪ EAN-13 Add-on ▪ EAN-8 ▪ EAN-8 Add on ▪ JAN-8 ▪ JAN-13 ▪ Codabar/NW-7 ▪ Code 11	▪ Code 39 ▪ Code 93 ▪ Code 128 ▪ GS1 DataBar ▪ GS1 DataBar Limited ▪ GS1 DataBar Expanded ▪ Composite GS1 DataBar ▪ Composite GS1-128 ▪ Composite EAN ▪ Composite UPC ▪ IATA ▪ Industrial 2 of 5	▪ Interleaved 2 of 5 ▪ Matrix 2 of 5 ▪ MSI/Plessey ▪ S-Code ▪ Telepen ▪ Tri-Optic ▪ UK/Plessey ▪ Chinese Post ▪ Korean Postal Authority Code
2D codes	▪ Aztec Code ▪ China Sensible Code ▪ Codablock F ▪ Data Matrix ECC 200	▪ MaxiCode (modes 2 to 5) ▪ MicroPDF417 ▪ Micro QR Code ▪ Passport MRZ (OCR-B)	▪ PDF 417 ▪ QR Code
Image resolution	0.4 MP (752 × 480 pixels)		
ight type	LED red light		
Interface	USB		
Housing material	ABS, black		
Dimensions	41.1 × 24 × 33 mm		
IP rating	IP65		
Approval/conformity	CE, UKCA		

Simple (and) good: IdentSensor for manual workstations

IDENTSENSOR WITH USB FOR END-TO-END TRACEABILITY



ACCESSORIES

Optics

We offer a wide selection of lenses so you can find the right accessory for your camera and application.

Your Balluff solutions

C-mount lenses

- All common fixed focal lengths
- Designed and tested for industrial environments
- Fixing screws for aperture/focus or diagram insertion and counter focus
- Variants with IP67 protection class
- Long-term availability

S-mount lenses

- Various fixed focal lengths
- Supports sensor formats from 1/3“ to 2/3“
- Versions with IR-cut filter and without
- Resolution up to 12 megapixels

Optical filters

- Color filters in various wavelengths
- Dual band filters
- Polarization filters
- Various filter threads available

Lighting options for vision systems and machines

Optimum lighting conditions for your application

Image processing always depends on the right lighting. Balluff offers a wide array of robust auxiliary lights for your different installation spaces and tasks.

The energy-saving and long-lasting LED technology is impressive with homogeneous optical properties. Moreover, Balluff lighting options guarantee eye safety in accordance with IEC 62471. You can select between red light, white light, infrared light or laser variants.

Your Balluff solutions

- Ring lights
- Strip lights
- Background lights
- Dark field lights
- Coaxial lights
- Line lasers

Connectivity

Flexible and reliable – for us, these are essential characteristics of good connection technology. At Balluff, you get everything from a single source: sensors, systems and network technology, as well as suitable connectors and connection cables for a wide range of requirements and for optimal use in your industry. With our diverse, flexible and reliable connection technology, we support you with rapid integration and ensure fast and easy commissioning of your machines and systems. In our product range you will find various connection cables, distributors and connectors for reliable sealing, as well as signal and data transmission. The connections are used in both mobile and robust applications in all areas of industry.

Your Balluff solutions

- Single-ended cordsets
- Double-ended cordsets
- Bulk cables
- Y-splitters
- Tees
- Field attachables
- Bulkheads
- Receptacles
- Adapters
- Terminating resistors
- Junction blocks

CUSTOM DESIGN & ENGINEERING

When standard is not specialized enough

The breadth and variety of our product portfolio offers a suitable solution for a large number of applications. Nevertheless, there are always individual requirements with regard to design, interfaces or other specifications that cannot be covered by standard products.

For these cases, we offer special customized solutions for camera and sensor components from our Custom Design & Engineering (CDE) division. With our technologies and knowledge, we can supply solutions for demanding tasks beyond the standard portfolio. The modular architecture of our products allows us to quickly and flexibly adapt them to your requirements and optimize your time-to-market. In this way, we work with you to find the best solution for your individual needs.

Minimize risks and expand your competitive advantage

Thanks to our comprehensive expertise, we are the ideal development partner for customer-specific sensor and imaging technologies. We see ourselves as a partner at eye level and offer you holistic support throughout the entire product life cycle. In addition to hardware and software adaptations, we also offer other project-related engineering services.

This allows you to concentrate on your core competencies and, with our support, achieve an optimized project process. This minimizes development costs, saves on resources and helps you reach your goal faster.

Balluff in many industries at home

Balluff sensor solutions and systems stand for individual products that are optimally tailored to your industry, your application conditions and requirements. Our comprehensive sensor and networking expertise offers technological diversity for use around the globe.

Balluff

YOUR PARTNER FOR SUCCESS IN AUTOMATION

Balluff is a leading supplier of high-quality sensor, identification and image processing solutions, including network technology and software for all automation requirements. Family-run for more than 100 years, the company today employs about 3900 employees in 38 subsidiaries within sales, production, and development locations worldwide, all of whom are committed to your success. Together with our representatives, we guarantee the highest quality standards in over 60 countries so that you always get the best quality and service.

We deliver innovative solutions to increase your competitive ability. Our consistent digital orientation drives our joint progress and our innovative spirit factors directly into your success.

We adhere to our motto "innovating automation" as pacesetters of automation, refiners and new developers, and technical trailblazers. In our strategic incubation programs (SIPs), we develop new sustainable business models according to the lean startup principle. Open exchange with associations, universities and research institutes also helps us in this process. In this way, and in close contact with our customers, we create innovative industry solutions for automation. In doing so, we dedicate ourselves not only to the classic automation areas, but also to the development of digitalisation and IIoT applications for an increasingly digital and networked world.

We have the future firmly in view with everything we do. We plan with foresight, handle resources carefully and offer you long-term prospects.

You can rely on our commitment and Balluff quality –
all in the name of a mutually beneficial partnership.

WORLDWIDE

In more than 60 countries with 3900 employees

Thanks to our worldwide presence, we guarantee our customers best-in-class delivery performance and strive to achieve a high on-time delivery promise with full visibility. Agile working methods are our success factor here. And we do this while maintaining consistently high quality because that is crucial for our customers.

In addition, our network of local sales and service teams enables us to respond with speed and flexibility to meet the needs of customers efficiently and with an eye on future growth.

AT A GLANCE

More than 30,000 customers and partners worldwide

Comprehensive portfolio of sensor, identification and image processing solutions including network technology and software

On site in over 60 countries: with 38 own subsidiaries and numerous representatives

More than 100 years Balluff: since 1921

Experienced manufacturer with 7 production sites worldwide

4th generation family-owned company

599 million EUR in group sales 2023

About 3900 employees worldwide

More than just an online store

MY BALLUFF – WHY YOU SHOULD BE THERE

Available 24/7 My Balluff is much more than a Webshop

Designed to support both existing and new customers, My Balluff users can check live inventory, prices, create quotations and orders, track deliveries and download documents.

The My Balluff customer portal pays off!

Register and log in: your possibilities

As a registered customer you have access to your individual conditions in the webshop.

Create a new online account

Are you a new customer or haven't ordered online yet? After entering your email address, you will receive your personal access data from us. As an existing customer you benefit directly from your individual conditions.

Additional features

- Open and manage account online
- Compare products
- Obtain customs tariff numbers
- Use your own part numbers
- Quick Entry parts list
- Add frequently used part numbers to favorites

Order as guest

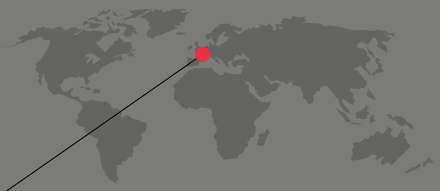
Choose this option if you want to make a one-time purchase without creating a permanent user account.

Register now:
www.balluff.com/my/home

Register and take advantage of all the advantages of our My Balluff customer portal

- Accept offers — Request and manage offers
- Address management — Change the Billing or Shipping address
- Order history — Use order history to view current and past orders
- User management — Manage team members access
- Order tracking — Track your delivery and get information about the current delivery date
- Demo software — Download demo software
- Invoices and delivery notes — Download and review quote, orders, invoices and delivery notes at any time
- RMA and credits — Use our new RMA form to process your return quickly and easily.
- Repeat previous order — Save time, repeat orders

Headquarters
Balluff GmbH
Schurwaldstrasse 9
73765 Newhausen a.d.F.
Germany



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WORLDWIDE
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