

Digital industrial cameras

Capture the essential.



Inspired by nature – our technology as evolution.



The human eye can discern about 100 shades of gray. Our cameras can distinguish more than 4,000.

We can see no more than 16 individual images per second, but our cameras can capture more than 1,000.

Our cameras never get tired.

Machine vision with expertise and passion.

Baumer is a global leader in sensor solutions for factory and process automation. More than 2,300 employees in 38 subsidiaries in 19 countries are at your service across the globe.

Industrial image processing is an important business for us. Leading in innovation, we have been providing high-performance digital cameras for PC-based image processing systems and intuitive vision sensors for over 15 years.

Merging cutting-edge technologies with customer-focused consultancy has made us a premier global provider of high-quality industrial cameras. Our customers benefit from a diverse portfolio of sophisticated products for many different applications across varied industries. We are committed to long-term availability of our cameras to make sure our customers will obtain a high return on their investments in vision systems.

We develop customer-focused products, anticipate trends and shape the market by pointing the way with technology innovations. We put a particular emphasis on high performance, outstanding quality and durability as well as easy system integration.

Where standard products come to their limits, we develop marketoriented, customised components in close cooperation with our customers. The result: Your decisive competitive edge.

High-performance industrial cameras.

High frame rates, exceptional image quality and ease of integration – that's what our industrial cameras stand for. Their robust, industrial design is the basis for long-term stability and precise image analysis in your application.

The portfolio includes CCD- and CMOS-based matrix cameras in color and monochrome versions with resolutions ranging from VGA to 20 megapixel. Our many years of expertise make us understand your requirements to provide the optimum product for your application.















Highest quality for reliable, long-term stable image evaluation.

Focus on the essential.

The small, high-performance EX cameras excel by providing top Baumer quality at the best price. Focusing on essential standardcompliant basic functionalities, the industrial cameras are ideal for most varied standard machine vision applications.

The square housing in 29×29 mm design with M3 mount on each side ensures quick and cost-efficient mechanical integration in your image processing system with high flexibility. The robust, industry-capable camera design ensures long-term stable and reliable image evaluation. CMOS sensors of the latest generation for future-ready image processing CS-mount reduces system costs thanks to cost-effective lenses

Robust design for long-term stable image evaluation

4-pin M8 connector for easy and cost-efficient process connection

Baumer



EX series

- Integrating essential basic functionalities to match varied machine vision tasks
- CS-mount for use of cost-effective lenses



Camera Type	Model	Variants	Sensor Type	Sensor	Resolution [px]	Pixel Size [µm]	Full Fra	mes [fps]
	Mono	Color					GigE Vision®	USB3 Vision [™]
VEXG-02	•	٠	1/4" CMOS	PYTHON300	640× 480	4.8 × 4.8	217	-
VEXG-13	٠	٠	1/2" CMOS	PYTHON1300	1280 × 1024	4.8 × 4.8	61	_
VEXU-24	•	•	1/1.2″ CMOS	IMX249	1920 × 1200	5.86 × 5.86	_	38

Reliable detection and evaluation of fast processes.

Cutting-edge CMOS technology.

CX series

CMOS sensors

Up to 5 Megapixel and 403 fps

GigE power supply: 12 – 24 V externally or PoE
Camera temperature range up to 65 °C

Using the cameras of the CX series, you are banking on latest CMOS sensor generation Sony[®] Pregius[™] and ON Semiconductor[®] PYTHON for future-oriented applications. Among the wide variety of sensors you are sure to find the matching camera for most varied applications across all industries.

Thanks to extended functionality combined with excellent image quality and high frame rates, the CX cameras open up a wide range of applications. The 29×29 mm form factor ensures easy integration with high amount of flexibility – even in narrow installation environments.

29×29 mm to fit effortlessly into limited space M3 mount at each side for time and cost-saving integration with high flexibility



Opto-decoupled input and output with automation voltage levels

Burst Mode maximum sensor speed at any bandwidth





Camera Type	Model	Variants	Senso	r Type	Sensor	Resolution [px]	Pixel Size [µm]	Full Frai	nes [fps]
	Mono	Color						GigE Vision ^{® 1)}	USB3 Vision [™]
VCXG-02 2)	٠	٠	1/4″	CMOS	PYTHON300	640× 480	4.8 × 4.8	595 403	-
VCXG-13	•	٠	1/2″	CMOS	PYTHON1300	1280 × 1024	4.8 × 4.8	145 94	_
VCXG-25	•	٠	2/3″	CMOS	PYTHON2000	1920 × 1200	4.8 × 4.8	59 53	_
VCXG-53	٠	٠	1″	CMOS	PYTHON5000	2592 × 2048	4.8 × 4.8	28 23	-
VCXU-24 ²⁾	•	٠	1/1.2″	CMOS	IMX249	1920 × 1200	5.86×5.86	_	38
VCXU-23	•	٠	1/1.2″	CMOS	IMX174	1920 × 1200	5.86×5.86	_	165
VCXU-31 2)	•	٠	1/1.8″	CMOS	IMX252	2048 × 1536	3.45 × 3.45	_	120
VCXU-32 2)	٠	٠	1/1.8″	CMOS	IMX265	2048 × 1536	3.45 × 3.45	_	55
VCXU-50	•	٠	2/3″	CMOS	IMX250	2448 × 2048	3.45 × 3.45	_	77
VCXU-51	•	٠	2/3″	CMOS	IMX264	2448 × 2048	3.45 × 3.45	_	35

¹⁾ Burst Mode (image acquisition in the camera's internal memory) | interface ²⁾ available Q3/2016



Fast, high-resolution cameras.

LX series cameras are based on modern-day CMOS sensors with Global Shutter. They master complex inspection tasks with demanding requirements on detailed image acquisition and throughput. Their superb performance is owed to high sensitivity, excellent image quality and up to 20 megapixel resolution.

The GigE camera models feature Burst Mode to capture image sequences or selected regions of the image (ROI) at very high speed. Where using cameras with Dual GigE twice the frame rate for increased throughput is provided. For improved system stability, the Camera Link[®] models offer additional features, such as status information and checksum calculation. Camera Link[®] with up to 800 MB/s and easy system integration using GenICam[™]

Multi ROI and Multi I/O as well as PoE / PoCL for ultimate flexibility



Flexible lens mount M58, M42, F-mount or C-mount

Single or Dual GigE with 240 MB/s high frame rates and easy integration

LX series

- Up to 20 megapixel and 337 fps
- CMOS sensors
- Outstanding sensitivity
- HDR extended dynamic range



Camera Type	Мо	del Varia	ants	Sensor	Туре	Sensor	Resolution [px]	Pixel Size [µm]	Full Fran	nes [fps]
	Mono	Farbe	NIR ²⁾						GigE Vision ^{® 1)}	Camera Link [®]
LXG-20 / LXC-20	•	٠	•	2/3″	CMOS	CMV2000	2048 × 1088	5.5 × 5.5	337 111	337
LXG-40 / LXC-40	•	٠	•	1″	CMOS	CMV4000	2048 × 2048	5.5 × 5.5	180 59	180
LXG-80	٠	٠		4/3″	CMOS	CMV8000	3360 × 2496	5.5 × 5.5	61 29	_
LXG-120 / LXC-120	٠	٠		APS-C	CMOS	CMV12000	4096 × 3072	5.5 × 5.5	50 19	63
LXG-200 / LXC-200	•	•		35 mm	CMOS	CMV20000	5120 × 3840	6.4 × 6.4	32 12	32

¹⁾ Burst Mode (image acquisition in the camera's internal memory) | interface (Dual GigE) ²⁾ LXG models only

Minimizing system cost by innovation.

Cameras with image preprocessing.

LX camera models with VisualApplets technology enable integrated, application-specific image preprocessing directly in the camera's FPGA which reduces the data volume for transmission and processing. This way, the effort of algorithm calculation which requires considerable processing power is removed from the PC-based image processing system. Application performance will be enhanced while system cost is reduced.

With Visual Applets by Silicon Software, the graphic development environment for FPGA programming, even complex algorithms can be implemented quickly and easily. It enables efficient and economic image data processing at very high resolution and speed.

Graphical FPGA development environment enables easy application development

> GigE Vision® easy, flexible and cost-efficient integration

Digital inputs and outputs

with precise control for

improved flexibility

Easy system integration via GenICam[™] compliant configuration

Camera Type	Model Variants	Sensor Type	Sensor	Resolution [px]	Pixel Size [µm]	Full Frames [fps]
	Mono					GigE Vision ^{® 1)}
LXG-40.P	•	1" CMOS	CMV4000	2048 × 2048	5.5 × 5.5	74 29
LXG-120.P	•	APS-C CMOS	CMV12000	4096 × 3072	5.5 × 5.5	25 9
LXG-200.P	•	35 mm CMOS	CMV20000	5120 × 3840	6.4 × 6.4	12 6

¹⁾ Image acquisition and processing with *VisualApplets* | interface

Up to 20 megapixel and 74 fps

Flexible user-specific function extension

CMOS sensors



Perfect image quality ensures your competitive advantage in automated production.

Proven CCD and CMOS cameras.

Using the cameras of the *VisiLine*[®] series, you are relying on proven Sony[®] CCD sensors as well as state-of-the-art CMOS sensors by CMOSIS and Sony[®]. Enhanced functionalities and GigE or USB 3.0 interface ensure easy implementation in most varied applications.

The industrial cameras feature numerous functions such as sequencer, Multi I/O and flexible wide-range power supply to help ease solving your machine vision task. The CCD models excel with excellent image quality – even at exposure times from 4 µs to 60 s. Selected CMOS models feature FPN correction and integrated HDR for efficient image evaluation.

12 mounting holes for maximum flexibility and reliable installation

Baumer

3 outputs for enhanced flexibility in system design

Flexible power supply GigE: 12-24 V or PoE

Reliable operation opto-decoupled inputs and outputs with automation voltage levels

VisiLine[®] series

- Up to 4 megapixel and 376 fps
- CCD and CMOS sensors
- Industry-capable design with M8 connection
- IP 40 protection



Camera Type	Model	Variants	Sensor Type	Sensor	Resolution [px]	Pixel Size [µm]	Full Frames [fps]	
	Mono	Color					GigE Vision [®]	USB3 Vision [™]
VLG-02 / VLU-02	•	٠	1/4″ CCD	ICX618	656 × 490	5.6 × 5.6	160	160
VLG-03 / VLU-03	•	٠	1/3" CMOS	CMV300	640× 480	7.4 × 7.4	376	376
VLG-12 / VLU-12	•	٠	1/3″ CCD	ICX445	1288× 960	3.75 × 3.75	42	42
VLG-20	•	٠	1/1.8″ CCD	ICX274	1624 × 1228	4.4 × 4.4	27	-
VLG-22	•	٠	2/3" CMOS	CMV2000	2040 imes 1084	5.5 × 5.5	55	-
VLG-23	•	٠	1/1.2" CMOS	IMX174	1920 × 1200	5.86×5.86	53	-
VLG-24	•	٠	1/1.2" CMOS	IMX249	1920 × 1200	5.86 × 5.86	38	-
VLG-40	•	•	1″ CMOS	CMV4000	2040×2044	5.5 × 5.5	29	_



Protected in harsh environments.

VisiLine[®] IP protected cameras are ideal for applications with rough ambient conditions. The IP 65 and IP 67 housings withstand both moisture and particulate contamination. They protect all critical camera components as well as the lens and eliminate the need for additional protective enclosures. The sophisticated mechanical design defies shock and vibration and ensures image acquisition with long-term stable reproducibility.

Thanks to high IP protection, light weight, robust design and single-cable solution capabilities by PoE the *VisiLine®* IP protected cameras match particularly the application requirements in robotics.

Precise positioning centered optical axis and stable sensor position IP-rated housing protection IP 65/67 and only 220 g in weight

> Flexible integration square housing with M3 mount on all sides and modular IP lens protection



Cost-efficient single-cable solution PoE Ethernet cable for robotics up to 100 m length

VisiLine[®] IP cameras

- Up to 4 megapixel and 160 fps
- Standard M12 connector
- Power supply 12 24 V or PoE
- Vibration 10 g, shock 100 g



Camera Type	Model	Variants	Sensor Type	Sensor	Resolution [px]	Pixel Size [µm]	Full Frames [fps]
	Mono	Color					GigE Vision [®]
VLG-02.1	•	•	1/4″ CCD	ICX618	656× 490	5.60 × 5.6	160
VLG-12.I	٠	٠	1/3″ CCD	ICX445	1288× 960	3.75 × 3.75	42
VLG-20.1	•	•	1/1.8″ CCD	ICX274	1624 × 1228	4.40×4.4	27
VLG-22.1	٠	•	2/3" CMOS	CMV2000	2040 imes 1084	5.50 × 5.5	55
VLG-23.1	٠	•	1/1.2" CMOS	IMX174	1920 × 1200	5.86 × 5.86	53
VLG-40.1	•	•	1″ CMOS	CMV4000	2040 × 2044	5.50 × 5.5	29

Reproducible measured values and image quality



R:0 () K:0 + 0.00 R1 0.00 7 0.00 R2 0.00

Flexible board level cameras.

Based on the *VisiLine®* platform, cameras of the MX series are particularly developed for use in embedded systems. The remote sensor circuit board is connected to the system circuit board via flexprint to make the board level cameras fit in almost any installation space.

USB 3.0 camera models provide you with simple Plug & Play functionality and a single-cable solution. GigE cameras master a transmission distance up to 100 meter cable length and support PoE. Digital, opto-decoupled inputs and outputs reliable protection against overvoltage

Flexible power supply GigE: 12-24 V or PoE

Remote sensor circuit board maximum flexibility in tight installation spaces



USB3 Vision[™] for reliable system integration





Camera Type	Model Variants		Sensor Type	Sensor	Resolution [px]	Pixel Size [µm]	Full Frames [fps]	
	Mono	Color					GigE Vision®	USB3 Vision [™]
MXG02 / MXU02	•	٠	1/4″ CCD	ICX618	656 × 490	5.6 × 5.6	160	160
MXGC03	•	٠	1/3" CMOS	CMV300	640 × 480	7.4 × 7.4	376	-
MXG12 / MXU12	•	٠	1/3″ CCD	ICX445	1288 × 960	3.75 × 3.75	42	42
MXG20 / MXU20	•	•	1/1.8″ CCD	ICX274	1624 × 1228	4.4 × 4.4	27	27
MXGC20 / MXUC20	•	٠	2/3" CMOS	CMV2000	2040 × 1084	5.5 × 5.5	55	55
MXGC40 / MXUC40	•	•	1" CMOS	CMV4000	2040 × 2044	5.5 × 5.5	29	29

MX series

- CCD and CMOS sensors
- Multi I/O for increased flexibility
- CMOS models with FPN correction and HDR

Capture the essential at the right moment.

CCD cameras for brilliant image quality.

Cameras of the PX series with USB 3.0 interface are based on state-of-the-art Sony[®] quad-tap CCD sensors with *EXview* HAD CCD II[™] technology merging brilliant image quality, resolutions up to 12 megapixel and high speed.

Outstanding sensitivity, dynamic properties and linearity in conjunction with USB 3.0 interface open up a wide application potential. The PX cameras master diffuse light conditions and meet the highest demands on image quality, for example in microscopy, measuring technology or traffic systems. Sequencer and Multi I/O for improved flexibility

Sony[®] CCD sensors with up to 12 MP resolution brilliant image quality, high frame rates and sensitivity



Precise installation square housing with 3-point mount on all sides

Compact C-mount interface wide selection of high-quality lenses

PX series

- Up to 12 megapixel and 25 fps
- Quad-tap CCD sensors
- Flexible exposure times from 4 µs to 60 s
- High dynamic range and excellent homogeneity



Camera Type	Model	Variants	Sensor Type	Sensor	Resolution [px]	Pixel Size [µm]	Full Frames [fps]
	Mono	Quad-tap					USB3 Vision [™]
PXU-60	•	•	1″ CCD	ICX694	2752 × 2200	4.54×4.54	25
PXU-120	•	•	1″ CCD	ICX834	4248 × 2832	3.1 × 3.1	13

Proven cameras with long-term availability.

All industrial cameras are made by Baumer – to you, this means top product quality and maximum supply reliability. We also ensure long-term availability of our proven TX and HX camera series, which are deployed all around the world in countless applications. Rely on us – for the years to come!



TX series

Camera Type		I	Model	Varian	ts		Sensor	Туре	Sensor	Resolution ¹⁾ [px]	Pixel Size [µm]	Full Frames [fps]
	Mono	Color	NIR	IP 67	PoE	Multi I/O						GigE Vision [®]
TXG02	•	•					1/4″	CCD	ICX618	656 × 494	5.6 × 5.6	140
TXG03	٠	٠		٠	٠	٠	1/3″	CCD	ICX424	656 × 494	7.4 × 7.4	90
TXG04	٠	•					1/2″	CCD	ICX414	656 × 494	9.9 × 9.9	56
TXG04 v2	٠	•					1/2″	CCD	ICX414	656 × 494	9.9 × 9.9	93
TXG06	٠	٠					1/2″	CCD	ICX415	776 × 582	8.3 × 8.3	64
TXG08	٠	•		•	٠		1/3″	CCD	ICX204	1032 × 776	4.65 × 4.65	28
TXG12	٠	٠					1/3″	CCD	ICX445	1296 × 966	3.75 × 3.75	32
TXG13	•	•		•	•	•	1/2″	CCD	ICX267	1392 × 1040	4.65 × 4.65	20
TXG14	٠	•	٠				2/3″	CCD	ICX285	1392 × 1040	6.45 × 6.45	20
TXG14f	٠	•					2/3″	CCD	ICX285	1392 × 1040	6.45 × 6.45	30
TXG20	٠	٠		٠	٠	•	1/1.8″	CCD	ICX274	1624 × 1236	4.4 × 4.4	16
TXG50	•	•		٠	٠	•	2/3″	CCD	ICX625	2448 × 2050	3.45 × 3.45	15

 $^{\scriptscriptstyle 1\!\!\!)}$ Resolution with color models can have minimal variations.



HX series

Camera Type	Model Variants		Sensor Type	Sensor	Resolution [px]	Pixel Size [µm]	Full Fran	nes [fps]	
	Mono	Color	NIR					GigE Vision ^{® 1)}	Camera Link [®]
HXC13	٠			1.4" CMOS	Lupa-1300-2	1280×1024	14 ×14	_	500
HXG20 / HXC20	٠	٠	•	2/3" CMOS	CMV2000	2048×1088	5.5×5.5	337 105	337
HXG40 / HXC40	٠	٠	•	1″ CMOS	CMV4000	2048×2048	5.5×5.5	180 56	180

¹⁾ Burst Mode (image acquisition in the camera's internal memory) | interface (Dual GigE)

Especially developed network components.

Our in-house developed network components are optimally harmonized and particularly conceived for industrial image processing. They complete your image processing system in an ideal way. Based on PoE standard they simplify power supply of the GigE Vision[®] cameras and reduce cabling effort.

The cameras support data rates up to 1000 Mbit/s. Copper cables allow for a maximum length of 100 m. SFP modules and fiber-optic cable allow for an even more extended range. Supporting jumbo frames cuts down on CPU load and processing effort. Selected models provide 24 V supply and eliminate the need for an additional power unit. DIN rails provide convenient mounting capabilities.

SFP module for fiber-optic transmission of more than 100 meter in length **1000BASE-T with PoE** matching Ethernet interface for single cable solutions



DIN rails for convenient mounting

Network components

- Simplifies the design of multi-camera systems
- Power supply via PoE
- Supporting jumbo frames
- Robust, industrial design



Component	Connections	Jumbo Frames [kByte]	DC Supply [V]	PoE	Performance per output [W]	Dimensions [mm]
GigE Power Injector	4x 8P8C (RJ-45)	-	48	٠	15.4	22.5 × 99 × 113.5
GigE Switch	4x 8P8C (RJ-45)	up to 10	12 24	-	-	22.5 × 99 × 113.5
GigE Power Switch (4 port)	4x 8P8C (RJ-45)	up to 10	48	•	15.4	22.5 × 99 × 113.5
GigE Power Switch Extended (6 port)	5x 8P8C (RJ-45) 1x SFP module	up to 10	48	٠	15.4	45 × 99 × 113.5

Intelligent software integration.

Quick and platform-neutral camera integration in the application and software environment is conveniently realized by high-performance Software Development Kits (SDK) Baumer GAPI and Camera Link[®] SDK with Application Programming Interface (API).

		GAPI SDK v2.x	Camera Link [®] SDK ¹⁾
Interfaces	GigE/Dual GigE	•	-
	USB 3.0	•	-
	Camera Link [®]	_	•
Hardware platform	x86/x64 ARM®	• •	• -
Operating systems	Windows [®] XP 7 8 10	• ²⁾ • • •	- • • -
	Linux [®] (Debian [®] / Ubuntu [®] / Fedora [®] / openSUSE [®])	• ²⁾	-
Programming languages	C++ C#	• •	• -

¹⁾ For LX cameras with Camera Link[®]. Other Baumer cameras with Camera Link[®] run with GAPI SDK v1.7.1.

²⁾ Supporting GigE Vision[®] compliant cameras



Download Software Development Kits www.baumer.com/cameras/SDK

Baumer GAPI SDK

Fully supporting GenICam[™] and GenTL, Baumer GAPI ensures flexible and easy camera integration. Numerous programming examples and documentations as well as varied options for testing and visualization of the camera explorer ease integration even further.

For embedded vision applications with Linux® ARM®-based systems, the SDK features several standard and basic packages to utilize the manufacturer evaluation kit's respectively own software designs.

Baumer Camera Link[®] SDK

The Camera Link[®] cameras of the LX series feature GenCP (Generic Control Protocol) for convenient and quick configuration. Increasingly supported by frame grabber manufacturers, the need for an additional SDK will be eliminated. Alternatively, the Baumer Camera Link[®] SDK may also be used for evaluation and integration. It includes a configuration tool to setup and test all camera functions and to use extended features such as events. The camera will conveniently integrate in your software environment based on GenICam[™] reference implementation.



Flexibility by compatibility.

Every task in image processing is unique and imposes individual requirements on both camera and related machine vision software. We meet them all.

Flexibility by standard compliance.

Hassle-free compatibility of GenICam[™], the Baumer GAPI generic application programming interface, together with standard-optimized drivers for GigE Vision[®], USB3 Vision[™] and Camera Link[®] simplify camera integration and allow for drop-in replacement across all series.





Third Party Software Support.

Full compliance to all relevant standards in camera engineering and development, regular compatibility tests and the close cooperation with our software partners give you the freedom to implement user-specific third party software and ensure troublefree integration of our cameras in any of your application tasks.

Among others, Baumer cameras are compatible to the following third-party software:



¹⁾ Software support of individual models may be provider-specific and is recommended for corresponding validation.

Making it all easy.

We provide you with everything you need to integrate our cameras quickly and easily into your systems: From proper network components and accessories up to individual Starter Kits, you will have everything that's necessary.

Matching accessories for your system.

There is more to an image processing system than just a camera: cables, PCI interface cards, filters, adapters and mountings or lenses. We help you to find the accessories that match your application and provide you with a comprehensive range of cross-interface accessories that are optimally harmonized. Since the system is only as reliable as its individual components, you can be sure our components underwent comprehensive testing and inspection – for long-term longevity and reliability in the image processing application.

Starter Kits: Just unpack and go.

Our starter kits are individually compiled to match the related camera series and will support you in evaluating a camera. You can focus entirely on the solution while we provide you with everything required for set up - from cable to mountings on to software.





Your Starter Kit Request today your individual starter kit: www.baumer.com/vision/starterkits



Machine vision competence at a glance.



High-performance digital industrial cameras





Customer-specific hardware and software design

Worldwide presence.



Russia

Serbia

Slovakia

Slovenia Spain Sweden Switzerland

Turkey

Represented by:

United Kingdom



For more information about our worldwide locations go to: www.baumer.com/worldwide



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