



Baumer
Passion for Sensors

SENSORS
INCORPORATED

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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.

Simply focused on the essentials.

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 market-oriented, 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.



GEN< i >CAM

VisiLine® series

VisiLine® IP

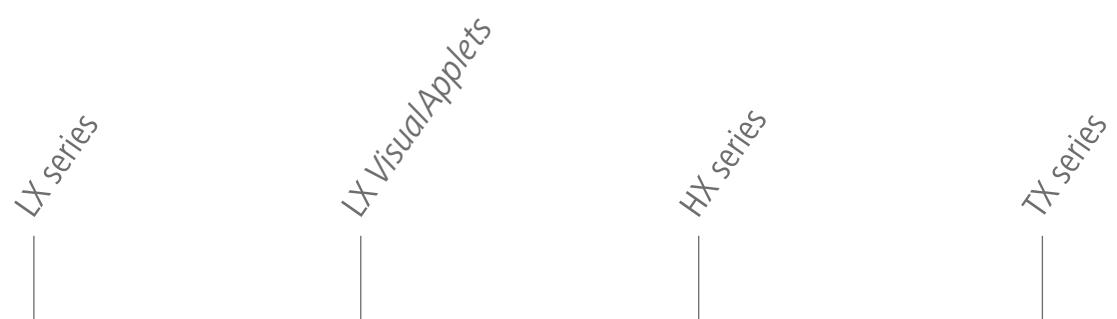
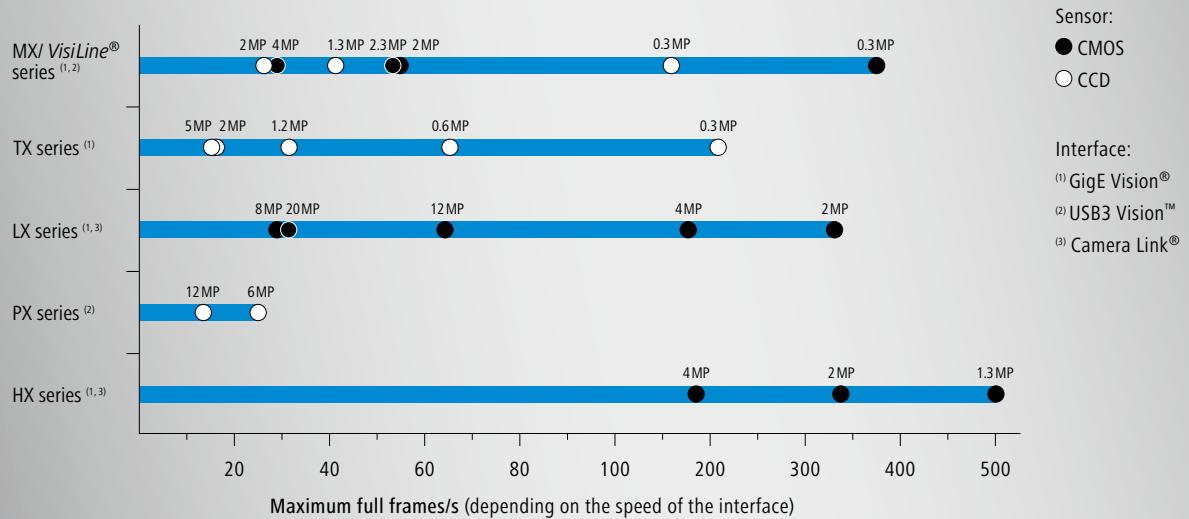
MX Series

PX Series



www.baumer.com/cameras

Find the best matching camera series



Perfect image quality ensures your competitive advantage in automated production.



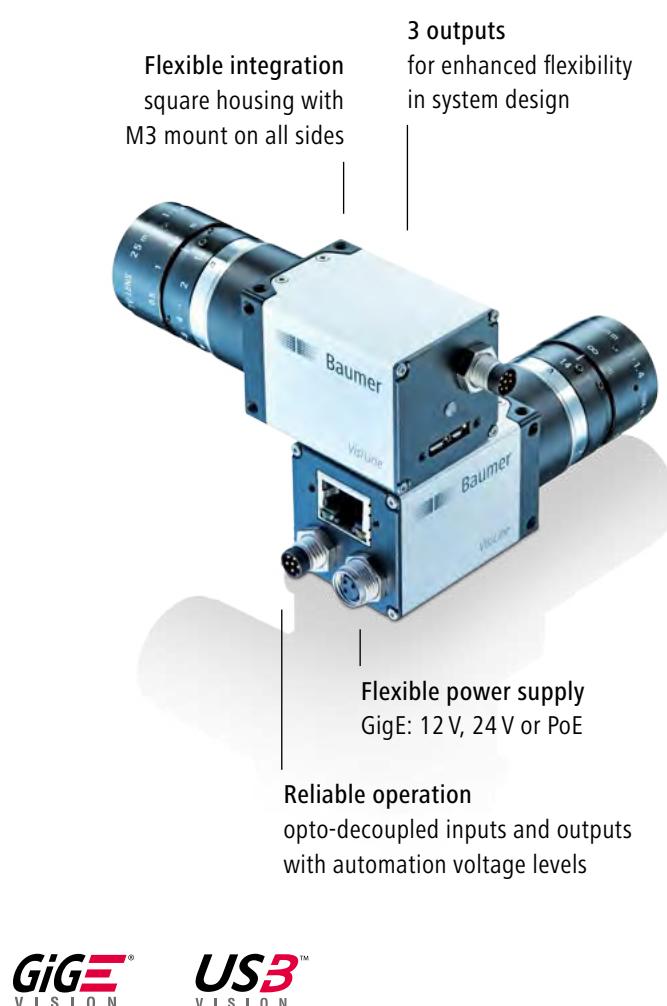
Proven products made even better.

With the *VisiLine*[®] camera series you are relying on innovative technologies and the proven quality of our successful TX series. Consistent further enhancement has upgraded the cameras in every aspect: higher frame rates with even better image quality and more functionality.

Both the GigE and USB 3.0 camera models incorporate everything that makes it easier to solve your image processing tasks. Color comparison as well as FPN correction and integrated HDR for selected CMOS models facilitate efficient image analysis. Multi I/O, PoE and replicable user sets will ease system integration even further.

VisiLine[®] series

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



GIGE
VISION

USB
VISION

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	•	•	1/4" CCD	ICX618	656 × 490	5.6 × 5.6	160	160	
VLG-03 / VLU-03	•	•	1/3" CMOS	CMV300	640 × 480	7.4 × 7.4	376	376	
VLG-12 / VLU-12	•	•	1/3" CCD	ICX445	1288 × 960	3.75 × 3.75	42	42	
VLG-20	•	•	1/1.8" CCD	ICX274	1624 × 1228	4.4 × 4.4	27	—	
VLG-22	•	•	2/3" CMOS	CMV2000	2040 × 1084	5.5 × 5.5	55	—	
VLG-23	•	•	1/1.2" CMOS	IMX174	1920 × 1200	5.86 × 5.86	53	—	
VLG-24	•	•	1/1.2" CMOS	IMX249	1920 × 1200	5.86 × 5.86	38	—	
VLG-40	•	•	1" CMOS	CMV4000	2040 × 2044	5.5 × 5.5	29	—	

Reproducible measured values and image quality



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.

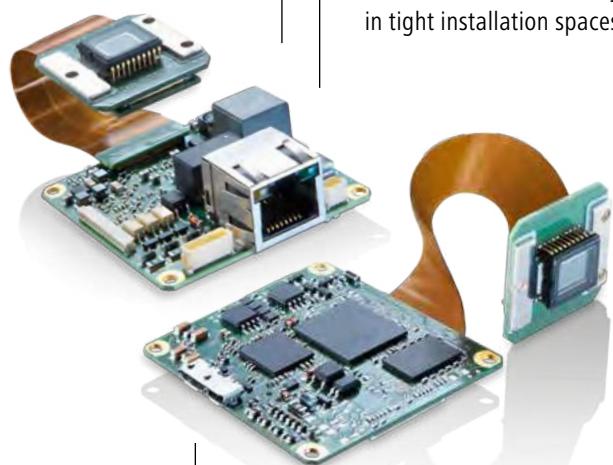
MX series

- Up to 4 megapixel and 376 fps
- CCD and CMOS sensors
- Multi I/O for increased flexibility
- CMOS models with FPN correction and HDR

Digital, optically decoupled inputs and outputs
reliable protection against overvoltage

Flexible power supply
GigE: 12 V, 24 V or PoE

Remote sensor circuit board
maximum flexibility in tight installation spaces



USB3 Vision™
for reliable system integration

GIGE
VISION

USB
VISION

Camera Type	Model Variants		Sensor Type	Sensor	Resolution [px]	Pixel Size [μm]	Full Frames [fps]	
	Mono	Color					GigE Vision® USB3 Vision™	
MXG02 / MXU02	•	•	1/4" CCD	ICX618	656 × 490	5.6 × 5.6	160	160
MXGC03	•	•	1/3" CMOS	CMV300	640 × 480	7.4 × 7.4	376	–
MXG12 / MXU12	•	•	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	•	•	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

Image-controlled, high-precision gripping and positioning sequences.



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.

VisiLine® IP cameras

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

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

GIGE
VISION

Camera Type	Model Variants		Sensor Type	Sensor	Resolution [px]	Pixel Size [μm]	Full Frames [fps]
	Mono	Color					GigE Vision®
VLG-02.I	•	•	1/4" CCD	ICX618	656 × 490	5.60 × 5.6	160
VLG-12.I	•	•	1/3" CCD	ICX445	1288 × 960	3.75 × 3.75	42
VLG-20.I	•	•	1/1.8" CCD	ICX274	1624 × 1228	4.40 × 4.4	27
VLG-22.I	•	•	2/3" CMOS	CMV2000	2040 × 1084	5.50 × 5.5	55
VLG-23.I	•	•	1/1.2" CMOS	IMX174	1920 × 1200	5.86 × 5.86	53
VLG-40.I	•	•	1" CMOS	CMV4000	2040 × 2044	5.50 × 5.5	29

Industrial camera design – for demanding inspection tasks.

Proven versatility.

TX cameras were among the first compact GigE camera series and they are still a benchmark for market standards today. Tens of thousands have been successfully utilized in most varied applications.

The varied camera models with CCD sensors offer what it takes to meet nearly all of your application requirements: PoE models for reduced installation and maintenance, Multi I/O cameras for simplified process synchronization as well as water and dust proof IP 67 models.

TX series

- Up to 5 megapixel and 140 fps
- CCD sensors
- Multi-voltage supply ranging from 8 to 30 volt
- Matured electronics design for superior image quality

Sensor Dust Protection System
maximum protection
for the image sensor

Square housing
image center is main-
tained in each position



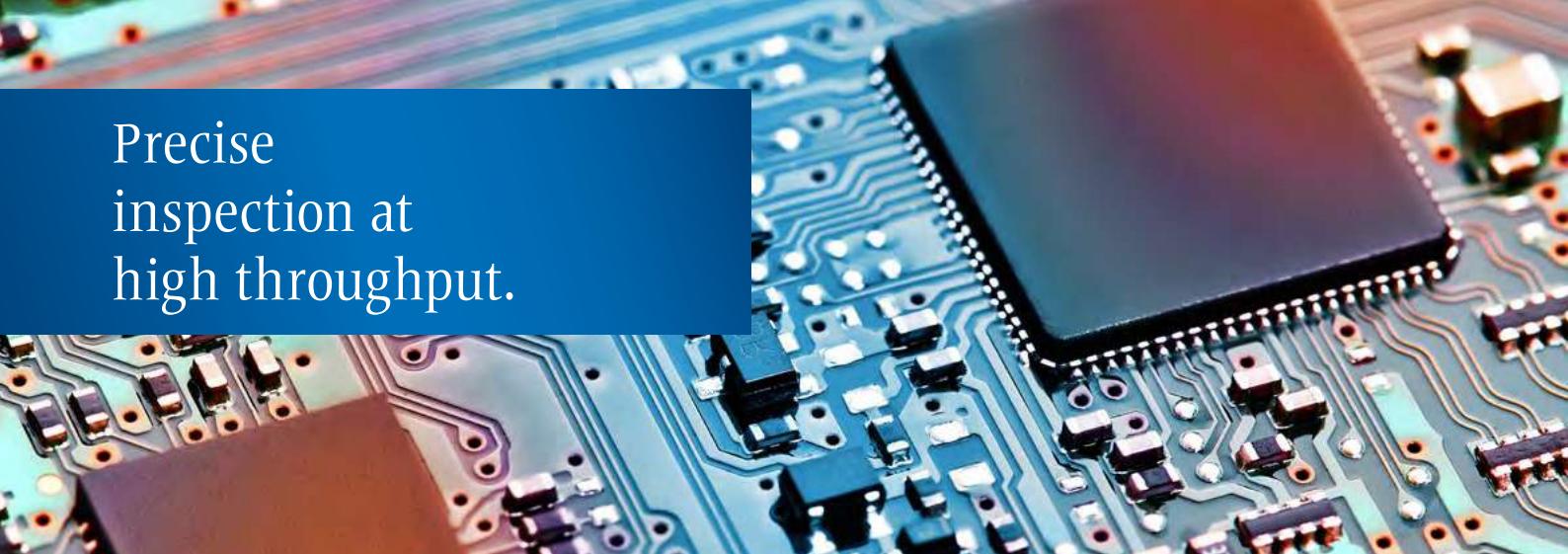
Reliable operation
opto-decoupled inputs and outputs
with automation voltage levels

GIGE
VISION

Camera Type	Model Variants						Sensor Type	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	•	•		•	•	•	1/3" CCD	ICX424	656 × 494	7.4 × 7.4	90
TXG04	•	•					1/2" CCD	ICX414	656 × 494	9.9 × 9.9	56
TXG04 v2	•	•					1/2" CCD	ICX414	656 × 494	9.9 × 9.9	93
TXG06	•	•					1/2" CCD	ICX415	776 × 582	8.3 × 8.3	64
TXG08	•	•		•	•		1/3" CCD	ICX204	1032 × 776	4.65 × 4.65	28
TXG12	•	•					1/3" CCD	ICX445	1296 × 966	3.75 × 3.75	32
TXG13	•	•		•	•	•	1/2" CCD	ICX267	1392 × 1040	4.65 × 4.65	20
TXG14	•	•	•				2/3" CCD	ICX285	1392 × 1040	6.45 × 6.45	20
TXG14f	•	•					2/3" CCD	ICX285	1392 × 1040	6.45 × 6.45	30
TXG20	•	•		•	•	•	1/1.8" CCD	ICX274	1624 × 1236	4.4 × 4.4	16
TXG50	•	•		•	•	•	2/3" CCD	ICX625	2448 × 2050	3.45 × 3.45	15

¹⁾ Resolution with color models can have minimal variations.

Precise
inspection at
high throughput.



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.

LX series

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

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

GIGE
VISION

CAMERA
Link

Camera Type	Model Variants			Sensor Type	Sensor	Resolution [px]	Pixel Size [µm]	Full Frames [fps]		
	Mono	Color	NIR ²⁾					Dual GigE	Camera Link®	
LXG-20 / LXC-20 ¹⁾	•	•	•	2/3"	CMOS	CMV2000	2048 × 1088	5.5 × 5.5	111	337
LXG-40 / LXC-40 ¹⁾	•	•	•	1"	CMOS	CMV4000	2048 × 2048	5.5 × 5.5	59	180
LXG-80	•	•		4/3"	CMOS	CMV8000	3360 × 2496	5.5 × 5.5	29	—
LXG-120 / LXC-120 ¹⁾	•	•		APS-C	CMOS	CMV12000	4096 × 3072	5.5 × 5.5	19	63
LXG-200 / LXC-200 ¹⁾	•	•		35 mm	CMOS	CMV20000	5120 × 3840	6.4 × 6.4	12	32

¹⁾ available Q1/2016 ²⁾ LXG models only

Minimizing system cost by innovation.

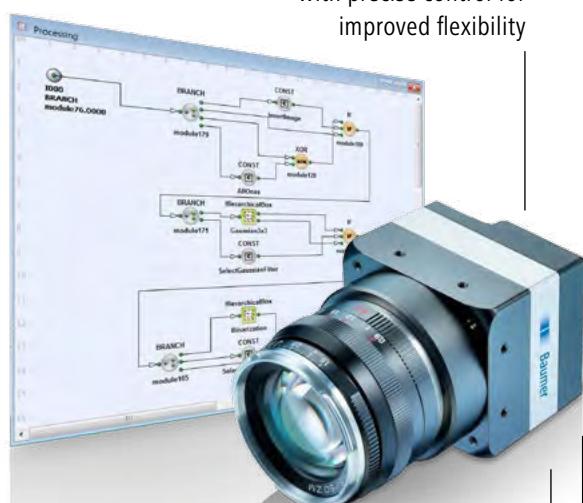


Cameras with image preprocessing.

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 *VisualApplets* 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



Digital inputs and outputs with precise control for improved flexibility

GigE Vision®
easy, flexible and
cost-efficient integration

Easy system integration via GenICam™ compliant configuration

LX *VisualApplets* cameras

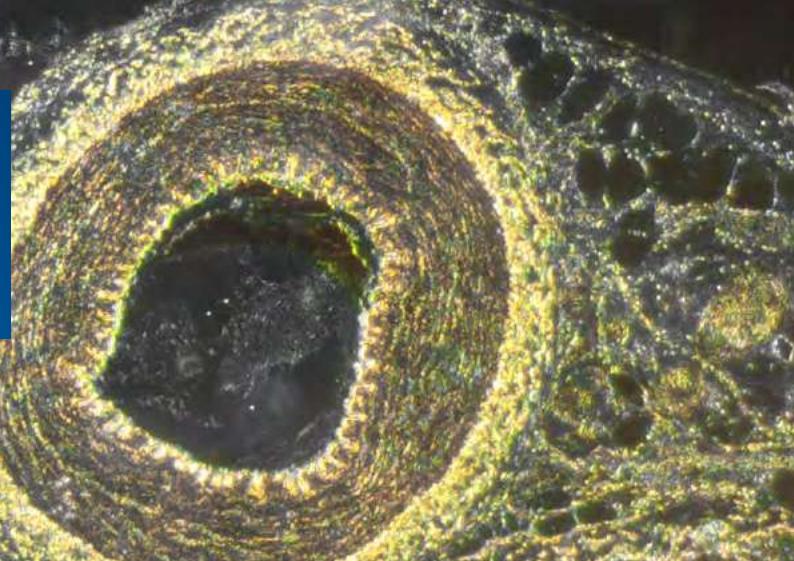
- Up to 20 megapixel and 74 fps
- CMOS sensors
- Hardware-based image preprocessing in real-time
- Flexible user-specific function extension

GIGE
VISION

Camera Type ¹⁾	Model Variants	Sensor Type	Sensor	Resolution [px]	Pixel Size [μm]	Full Frames [fps] ²⁾
Mono						
LXG-40.P	•	1" CMOS	CMV4000	2048 × 2048	5.5 × 5.5	74
LXG-120.P	•	APS-C CMOS	CMV12000	4096 × 3072	5.5 × 5.5	25
LXG-200.P	•	35 mm CMOS	CMV20000	5120 × 3840	6.4 × 6.4	16

¹⁾ available Q1/2016 ²⁾ sensor speed

Capture the
essential at the
right moment.



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

USBTM
VISION

PX series

- Up to 12 megapixel and 25 fps
- Quad-tap CCD sensors
- Very high dynamic range up to 65 dB
- 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

Highest frame rates for increased throughput.



High Speed CMOS cameras.

Based on top-of-the-line CMOS sensors, we developed the HX series especially for applications that put high demands on frame rate, resolution and sensitivity. All cameras feature FPN correction, HDR and a global shutter to ensure top image quality.

Dual GigE cameras will tackle any inspection task with all the benefits of GigE Vision® technology – with a frame rate that is even twice as high. For applications with even higher speed requirements you can rely on the Camera Link® Full models.

Fixed Pattern Noise (FPN) Correction for homogenous images

Multi ROI (Region of Interest)
maximum frame rate with reduced amount of data



Burst Mode

to capture image sequences with full sensor speed

HX series

- Up to 4 megapixel and 500 fps
- CMOS sensors
- Excellent sensitivity
- HDR for a higher dynamic range



Camera Type	Modell Variants			Sensor Type	Sensor	Resolution [px]	Pixel Size [μm]	Full Frames [fps]	
	Mono	Color	NIR					Dual GigE	Camera Link®
HXC13	•			1.4" CMOS	Lupa-1300-2	1280 × 1024	14 × 14	—	500
HXG20 / HXC20	•	•	•	2/3" CMOS	CMV2000	2048 × 1088	5.5 × 5.5	105	337
HXG40 / HXC40	•	•	•	1" CMOS	CMV4000	2048 × 2048	5.5 × 5.5	56	180

Software integration made easy.

Besides the right camera, the matching software for evaluation and integration is essential in a powerful image processing system. For any of our cameras you can draw upon the Baumer GAPI software development kit (SDK) or on third party software.

Convenient implementation: The Baumer GAPI.

The Baumer GAPI is the generic application programming interface (API) for easy camera integration into user-specific Windows® or Linux software environment. Drivers with low CPU load, particularly optimized to comply with the established interface standards, numerous example programs and documentation support the integration process.



Software Download
Baumer GAPI SDK
www.baumer.com/GAPI-SDK

High-performance SDK
for efficient image capturing

Single-source support
in both camera and software

Camera test tool
Camera Explorer



Operating systems
Windows® and Linux

Future-oriented integration
by standard compliance

Just one click to the first image: The Baumer Camera Explorer.

As from software version 2, the new Camera Explorer for quick camera evaluation becomes available. Also acting as an intuitive test tool, it supplies the first image with just one click. All camera parameters are configurable for image display in real-time sequence or as a recording. Extended functionalities furthermore simplify deployment in visualization tasks.

Baumer GAPI	v2.x
Interfaces	• GigE / Dual GigE (GigE Vision®) • USB 3.0 (USB3 Vision™)
Operating systems	• Windows® XP 7 8 10 ¹⁾ • Linux (Debian / Ubuntu / Fedora / OpenSuse)
Programming languages and compatibility	– • •

¹⁾ available Q1/2016 ²⁾ GigE Vision® support

Camera Link® configuration tool

A separate tool for configuration and evaluation is available for Camera Link® models.

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.



GEN< i >CAM

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 trouble-free integration of our cameras in any of your application tasks.

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



Baumer sustains partnership with¹⁾:



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

Ideally connected.

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

GIGE
VISION

Component	Connections	Jumbo Frames [kByte]	DC Supply [V]	PoE	Performance per output [W]	Dimensions [mm]
GigE Power Injector	4x 8P8C (RJ-45)	–	48	•	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	•	15.4	45 × 99 × 113.5

Making it all easy.

We provide you with everything you need to integrate our cameras quickly and easily into your system: From proper accessories on to individual starter kits, you will obtain all 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.

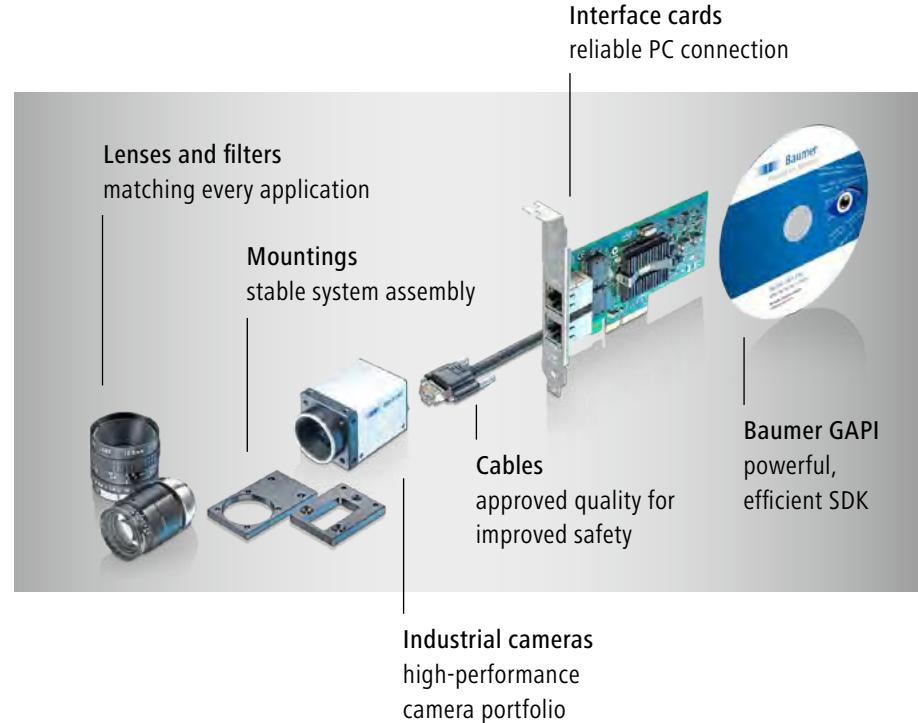


Your Starter Kit

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



Lighting



Third Party
Software

More than just a camera: From idea to implementation.

When conceiving a new image processing system, our customers focus on the whole. For this reason we attach great importance to continuous improvement of the entire value-added process in order to support you in cutting down on costs and improving efficiency.



Right from the beginning, we are with you every step of the way. Our experienced engineers and technicians provide on-side support when it comes to evaluating the appropriate camera and matching accessories. In close cooperation with you we elaborate on customized components where standard products meet their limits.

Our cameras enable cross-industry deployment in most varied applications. Our individual starter kits and the Camera Explorer in our Baumer GAPI software development kit allow you convenient testing of our products already in the evaluating stage. This way, you can be sure to always get the components optimally matching your system.

Easy and time-saving camera integration. Our Technical and Application Support Center will help you in implementing the camera in your application. Comprehensive compatibility tests of several system components and compliance to all relevant standards ensure perfectly reliable system integration, whereas camera integration is aided by our SDK Baumer GAPI or third party software.

The robust design of our industrial cameras is essential in long-term stable image processing. We are EN ISO 9001 certified and by compliance to EMVA 1288 our cameras achieve top results in supplier audits. Every camera is subject to strict controls and comprehensive electric and optical inspection. Development, production and support all merged in one single location – for best results.

Rely on us and on our cameras throughout the years: 38 locations in 19 countries ensure long-term availability of our products and short reaction channels. Our products are backed by first-class service throughout their entire service life – in general, the experienced experts of our international technical support will answer your questions within 48 hours.

Machine vision competence at a glance.



Worldwide presence.



Africa

Algeria
Cameroon
Côte d'Ivoire
Egypt
Morocco
Reunion
South Africa

America

Brazil
Canada
Colombia
Mexico
United States
Venezuela

Asia

Bahrain
China
India
Indonesia
Israel
Japan
Kuwait
Malaysia
Oman
Philippines
Qatar
Saudi Arabia
Singapore
South Korea
Taiwan
Thailand
UAE

Europe

Austria
Belgium
Bulgaria
Croatia
Czech Republic
Denmark
Finland
France
Germany
Greece
Hungary
Italy
Malta
Martinique
Netherlands
Norway
Poland
Portugal
Romania
Russia
Serbia
Slovakia
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Spain
Sweden
Switzerland
Turkey
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Oceania

Australia
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