



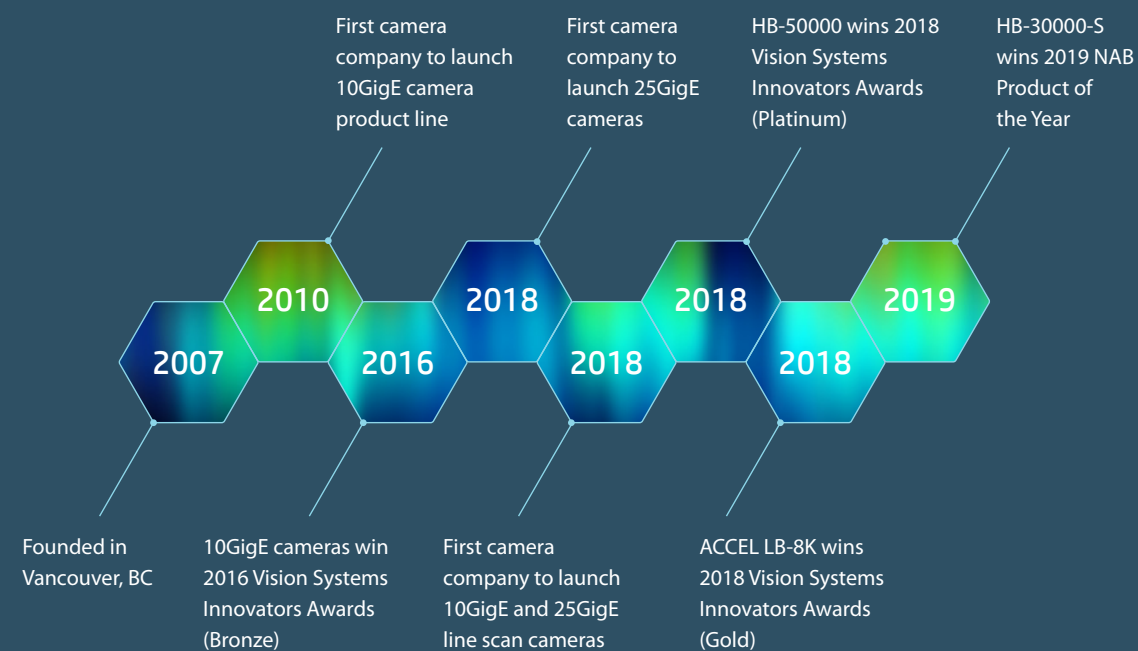
WORLD LEADER IN  
IMAGING INNOVATION



## Ultra High-Speed Ethernet Cameras

More Detail | More Speed | Lower Costs

# We are the world's first provider of 10 Gigabit and 25 Gigabit Ethernet cameras



## What makes us different

### <1% CPU utilization

We take responsibility for the complete solution by developing technologies to keep the server-side CPU utilization and latency to incredibly low levels. For this, we leverage technologies such as Mellanox's VMA and Rivermax and Cspi's MVA to offload all packet processing to the Network Interface Cards (NICs). This results in less than 1% CPU utilization and approximately only 100µs added latency.

### Multi-camera accurate synchronization

Many of our customers in the virtual reality or broadcasting fields use multiple cameras per system. This means two or more cameras will be capturing images at the same time requiring precise synchronization to ensure optimal results to analyse high-speed events. All our cameras support IEEE1588 PTP synchronization. The PTP feature is supported through our Emergent eSDK software, which includes functional code examples to get you started.

### Cable options up to 10 kilometers

Our cameras feature connector options such as RJ45 and SFP+ (10GigE), and SFP28 (25GigE). They offer multiple options to cover the cable length requirements of all applications. Options include direct attach copper and single and multi-mode modules transceivers for cable lengths ranging from 1 meter and up to 10 kilometers.

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#### All About 10 and 25GigE Cameras

Download our white paper to learn more about the benefits of 10 and 25GigE cameras for your application.

<https://go.emergentvisiontec.com/10+25GigE>

# 10GigE Area Scan HR-Series Cameras



HR-Series cameras are equipped with a high-speed 10GigE SFP+ interface. They feature the latest CMOS sensors with global shutter technology from Sony and AMS.

Models range from 2 to 50 megapixels with frame rates up to 338 fps at full resolution. SFP+ provides three options to cover cable length requirements from one meter and up to 10 kilometers without the need for fiber converters or repeaters.

Other benefits include multi-camera synchronization at <1µs, low CPU overhead, and excellent price-performance ratio. Polarized and near-infrared options are available on selected models.

## Highlights



High-speed 10GigE SFP+ interface



Resolution: 2 to 50 megapixels



Frame rates: up to 338 fps



Latest CMOS sensors from Sony and AMS



GigE Vision® & Genicam™ compliant

## Applications

- Production Lines
- Microscopy Imaging
- Immersive 3D Content
- Goal Line Technology
- Finish Line Vision
- Referee Assist
- Sports, Broadcast, Entertainment
- Pharmaceutical Inspection

## Options

Visible, near-infrared and polarized options available.



## HR-Series Area-Scan Cameras – 10GigE SFP+ interface

Model	Sensor	Resolution	Megapixels	Sensor Type	Max Frame Rate	Cell Size	Standard Mount	Dimensions (mm)	Variants <sup>1</sup>
HR-2000	CMV2000	2048 x 1088	2 MP	2/3" CMOS	338 fps	5.5µm	C Mount	97 x 58 x 40	M, C, NIR
HR-3000-S	IMX252	2048 x 1536	3.2 MP	1/1.8" CMOS	216 fps	3.45µm	C Mount	97 x 58 x 40	M, C
HR-4000	CMV4000	2048 x 2048	4 MP	1" CMOS	179 fps	5.5µm	C Mount	97 x 58 x 40	M, C, NIR
HR-5000-S	IMX250	2448 x 2048	5 MP	2/3" CMOS	163 fps	3.45µm	C Mount	97 x 58 x 40	M, C, POL
HR-8000-S	IMX255	4096 x 2160	8.9 MP	1" CMOS	110 fps	3.45µm	C Mount	97 x 58 x 40	M, C
HR-12000-S	IMX253	4096 x 3000	12 MP	1.1" CMOS	80 fps	3.45µm	C Mount	97 x 58 x 40	M, C, POL
HR-12000	CMV12000	4096 x 3072	12 MP	28mm CMOS	84 fps	5.5µm	M42	97 x 58 x 50	M, C
HR-20000	CMV20000	5120 x 3840	20 MP	35mm CMOS	32 fps	6.4µm	M52	97 x 58 x 61	M, C
HR-50000	CMV50000	7920 x 6004	50 MP	35mm CMOS	23 fps	4.6µm	M52	97 x 58 x 61	M, C

<sup>1</sup> M = Monochrome, C = Color, NIR = Near-infrared, POL = Polarized



# 10GigE Area Scan HT-Series Cameras



HT-Series cameras are equipped with a 10GBaseT-RJ45 connection. With their sleek smaller case and CAT6A connection, these cameras have the familiarity of GigE but with 10 times the speed.

Using CAT6A cabling, you can get cable lengths up to 100 meters. They feature the latest CMOS sensors with global shutter technology from Sony and AMS. Models range from 2 to 50 Megapixels.

Other benefits include multi-camera synchronization at <1µs, low CPU overhead, excellent price-performance ratio. Polarized and near-Infrared options are available on selected models.

### Applications

- Virtual Reality
- Production Lines
- Microscopy Imaging
- Metrology
- Aerial Surveillance
- Pharmaceutical Pill Sorting
- PCB Solder Inspection Machines
- Amusement Attraction
- Photography

### Options

Visible, near-infrared and polarized options available.

### 10GIGE HT SERIES HT-Series Area-Scan Cameras – 10GBaseT-RJ45 interface

Model	Sensor	Resolution	Megapixels	Sensor Type	Max Frame Rate	Cell Size	Standard Mount	Dimensions (mm)	Variants <sup>1</sup>
HT-2000	CMV2000	2048 x 1088	2 MP	2/3" CMOS	338 fps	5.5µm	C Mount	88 x 58 x 39	M, C, NIR
HT-3000-S	IMX252	2048 x 1536	3.2 MP	1/1.8" CMOS	216 fps	3.45µm	C Mount	88 x 58 x 39	M, C
HT-4000	CMV4000	2048 x 2048	4 MP	1" CMOS	179 fps	5.5µm	C Mount	88 x 58 x 39	M, C, NIR
HT-5000-S	IMX250	2448 x 2048	5 MP	2/3" CMOS	163 fps	3.45µm	C Mount	88 x 58 x 39	M, C, POL
HT-8000-S	IMX255	4096 x 2160	8.9 MP	1" CMOS	110 fps	3.45µm	C Mount	88 x 58 x 39	M, C
HT-12000-S	IMX253	4096 x 3000	12 MP	1.1" CMOS	80 fps	3.45µm	C Mount	88 x 58 x 39	M, C, POL
HT-12000	CMV12000	4096 x 3072	12 MP	28mm CMOS	84 fps	5.5µm	M42	88 x 58 x 50	M, C
HT-20000	CMV20000	5120 x 3840	20 MP	35mm CMOS	32 fps	6.4µm	M52	88 x 58 x 60	M, C
HT-50000	CMV50000	7920 x 6004	50 MP	35mm CMOS	23 fps	4.6µm	M52	88 x 58 x 60	M, C

<sup>1</sup> M = Monochrome, C = Color, NIR = Near-infrared, POL = Polarized

### Highlights



High-speed 10GBaseT-RJ45 Interface



Resolution: 2 to 50 Megapixel



Frame rates: up to 338 fps



Latest CMOS sensors from Sony and AMS



GigE Vision® & Genicam™ compliant



# 10GigE Line Scan PACE-Series Cameras



8K line-scan camera – Choose between a 10GigE SFP+ or 10GBaseT– RJ45 interface.

PACE series feature the Gpixel GL0816 CMOS sensor. Both models come with a horizontal image resolution of 8192 effective pixels and a line rate of: Single Line – 137KHz, Trilinear – 45KHz. This enables high-speed and low-noise image capture at 8K vision, ensuring all your inspection, sorting and production control requirements are met.

### Applications

- Industrial Inspection
- Printing Inspection
- Label Inspection
- Film Inspection
- PCB Inspection
- Automotive Inspection
- Food Sorting and Grading
- Pharmaceutical Inspection



PACE Line-Scan Cameras – 10GigE SFP+ and RJ45 10GBaseT interface

Model	Interface	Sensor	Resolution	Line Scan Mode	Sensor Scanning Width	Cell Size	Standard Mount	Dimensions (mm)
LR-8KG	10GigE SFP+	GL0816 CMOS sensor	8192 pixels horizontal	Single line - 137KHz - 8K, Trilinear - 45KHz - 8K	40.96mm	5 µm (H) x 5 µm (V)	M52	97 x 58 x 60
LT-8KG	10GBaseT – RJ45	GL0816 CMOS sensor	8192 pixels horizontal	Single line - 137KHz - 8K, Trilinear - 45KHz - 8K	40.96mm	5 µm (H) x 5 µm (V)	M52	88 x 58 x 60

### Highlights



10GigE SFP+ or 10GBaseT–RJ45 interface



Gpixel GL0816 CMOS sensor



Single line – 137KHz – 8K, Trilinear – 45KHz – 8K



GigE Vision® & Genicam™ compliant



# 25GigE Area Scan HB-Series (BOLT)



BOLT-Series’ ultra high-speed 25GigE SFP28 interface offers unmatched performance with resolutions from 0.5 to 50 Megapixels and frame rates up to 1594.7 fps.

BOLT camera models feature the latest CMOS sensors with global shutter technology from Sony, AMS and Gpixel. The 25GigE SFP28 interface offers many benefits including low-cost accessories, low CPU overhead, low latency, low jitter, and accurate multi-camera synchronization using IEEE1588. In addition, SFP28 offers three supported cabling options for cable lengths from 1M to 10KM.

## Featuring Sony Pregius S sensor technology

BOLT camera models feature the latest CMOS sensors with global shutter technology from Sony, AMS and Gpixel. The 25GigE SFP28 interface offers many benefits including low-cost accessories, low CPU overhead, low latency, low jitter, and accurate multi-camera synchronization using IEEE1588. In addition, SFP28 offers three supported cabling options for cable lengths from 1M to 10KM.

## Applications

- Virtual Reality
- Volumetric Capture
- Motion Capture
- Referee Assist
- Industrial Inspection
- Automation
- Intelligent Transportation Systems
- Logistics
- Metrology

## BOLT Area-Scan Cameras – 25GigE SFP28 interface

Model	Sensor	Resolution	Megapixels	Sensor Type	Max Frame Rate	Cell Size	Standard Mount	Dimensions (mm)
HB-500-S	IMX426	812 x 620	0.50 MP	1/1.7 CMOS	1594.7 fps	9µm	C Mount	97 x 58 x 40
HB-1800-S	IMX425	1604 x 1100	1.76 MP	1.1" CMOS	662.1 fps	9µm	C Mount	97 x 58 x 40
HB-2000-S	IMX422	1624 x 1240	2.01 MP	1/1.7 CMOS	477.6 fps	4.5µm	C Mount	97 x 58 x 40
HB-2800-S	IMX421	1936 x 1464	2.8 MP	2/3" CMOS	409.2 fps	4.5µm	C Mount	97 x 58 x 40
HB-5000-G	GMAX2505	2600 x 2160	5.61 MP	1/2" CMOS	290 fps	2.5µm x 2.5µm	C Mount	97 x 58 x 40
HB-7000-S	IMX420	3208 x 2200	7.06 MP	1.1" CMOS	207.1 fps	4.5µm	C Mount	97 x 58 x 40
HB-9000-G	GMAX2509	4200 x 2160	9.07 MP	2/3" CMOS	290 fps	2.5µm x 2.5µm	C Mount	97 x 58 x 40
HB-12000	CMV12000	4096 x 3072	12 MP	28mm CMOS	188 fps	5.5µm square	M42	97 x 58 x 50
HB-16000-SB	IMX532	5320 x 3032	16.13 MP	1.1 CMOS	145 fps	2.74µm x 2.74µm	C Mount	97 x 58 x 40
HB-17000-S	IMX387	5456 x 3076	16.8 MP	Four Thirds CMOS	61 fps	3.45µm square	M52	97 x 58 x 60
HB-20000-S	IMX367	4416 x 4428	19.5 MP	Four Thirds CMOS	43 fps	3.45µm square	M52	97 x 58 x 60
HB-20000-SB	IMX531	4504 x 4504	20.28 MP	1.1 CMOS	100 fps	2.74µm x 2.74µm	C Mount	97 x 58 x 40
HB-25000-G	GMAX0505	5120 x 5120	26.21MP	1.1 CMOS	75 fps	2.5µm x 2.5µm	C Mount	97 x 58 x 40
HB-25000-SB	IMX530	5320 x 4600	24.47 MP	1.2 CMOS	98 fps	2.74µm x 2.74µm	C Mount	97 x 58 x 40
HB-30000-S	IMX342	6464 x 4852	31.36MP	APS-C (4:3) CMOS	35.4 fps	3.45µm square	M52	97 x 58 x 60
HB-50000	CMV50000	7920 x 6004	50 MP	35mm CMOS	30 fps	4.6µm square	M52	97 x 58 x 60

## Highlights



Ultra high-speed 25GigE SFP28 interface



Resolution: 0.5 to 50 Megapixels



Frame rates: up to 1594.7 fps



Latest CMOS sensors from Sony, AMS, and Gpixel



GigE Vision® & Genicam™ compliant



# 25GigE Line Scan ACCEL-Series Cameras



## 8K line-scan camera with ultra high-speed 25GigE SFP28 interface

Our 25GigE line-scan cameras feature the SFP28 interface for cable lengths from 1 meter up to 10 kilometers without the need for costly fiber converters/repeaters. This results in lossless capture and ruthless processing efficiency. Powered by the Gpixel GL0816, the LB-8K provides multilinear scans at true 8K vision and a line rate of: Single Line – 200KHz, Trilinear – 66KHz.



### ACCEL Line-Scan Cameras - 25GigE SFP28 interface

Model	Sensor	Resolution	Line Scan Mode	Sensor Scanning Width	Cell Size	Standard Mount	Dimensions (mm)
ACCEL LB-8KG	GL0816 CMOS	8192 pixels horizontal	Single line - 200KHz - 8K, Trilinear - 66KHz - 8K	40.96mm	5 µm (H) x 5 µm (V)	M52	97 x 58 x 60

### Applications

- Industrial Inspection
- Printing Inspection
- Label Inspection
- Film Inspection
- PCB Inspection
- Automotive Inspection
- Food Sorting and Grading
- Pharmaceutical Inspection

### Highlights



Ultra high-speed 25GigE SFP28 interface



Gpixel GL0816 CMOS sensor



Single Line – 200KHz– 8K, Trilinear – 66KHz – 8K



GigE Vision® & Genicam™ compliant



LB-8KG (back)



## Applications

As the 10GigE and 25GigE specialist, we offer a wide range of area-scan and line-scan cameras for your high-speed application needs from virtual reality to sports broadcasting, inspection & automation, and ITS/traffic monitoring.



### Virtual Reality

#### Wide range of options for flawless high-speed capture

Our camera models are designed to increase both the quality and the efficiency of any VR, AR or MR production. Benefits include ultra high data/frame rates, camera network support and accurate multi-camera synchronization, multicast video technology, and cabling options.



### Sports Technology

#### High resolution, fast frame rates, and accurate synchronization

The proverbial photo finish in professional sports is likely the most classic imaging application a camera could be used in. The availability of high-speed cameras opens the door to new possibilities from improving the fan experience to making the correct call with goal line technology, instant replays, digital umpire/referee, or detailed motion analysis to name a few.



### Inspection & Automation

#### Area-scan, line-scan cameras, and polarized sensor options

Our cameras are used in a wide range of inspection and automation applications. High-speed cameras offer new opportunities for those looking to achieve higher productivity, better quality or safety control, or to improve automation tasks.



### ITS/Traffic

#### A solution to the challenges of outdoor imaging

From highway monitoring to open-road tolling or ANPR (Automatic Number Plate Recognition), machine vision and high-speed cameras offer many benefits for ITS and traffic applications to deliver reliable and high quality image data under the most challenging conditions.

# Software

Get imaging in no time with our two software packages: eCapture viewer software, and eSDK (Software Development Kit) for seamless integration of Emergent cameras into your system.

## eCapture

Our free viewer software package eCapture provides control of all camera functions for preview, capture and save. Advanced functions include Area Of Interest (AOI), integration control, and standard pre-processing such as brightness, gamma, frame rate control and many more.

eCapture also allows for remote firmware upgrades which maximizes your up-time while keeping you up-to-date on the latest features from Emergent. eCapture is GenICam compliant and designed to meet the needs for machine vision users.

### Features include:

- Real Time Preview and Capture
- Full control of Emergent Vision Technologies Cameras
- IP Configuration Settings
- Remote Firmware Upgrades
- GenICam Camera Feature Controls
- Custom GenICam XML Load
- Recording
- Drawing Tools
- LUT Utility
- File Saving



## eSDK

eSDK allows end-users, system integrators, or OEMs to integrate their Emergent Vision Technologies cameras into their own software and equipment. eSDK is available with concise API commands to facilitate simple integration with custom software for Windows® and Linux® Based Systems.

eSDK is GenICam compliant and includes numerous examples with source code and full documentation and support from our technical staff. The eSDK software solution also provides <1% CPU overhead for Windows and Linux when capturing a 9Gbps image stream from the cameras directly to application buffers.

### Features include:

- Full Control of Emergent Vision Technologies Cameras
- Visual Studio Express Support
- GenICam Compliant
- Custom GenICam XML Load
- Code Examples

**Free eSDK download**  
with the purchase of an  
Emergent camera system.



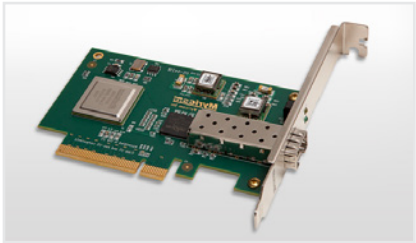
## Third-party Solutions

In addition to Emergent Vision Technologies eCapture and eSDK, all our cameras can be used with third-party software from four of our partners.

- Norpix StreamPix
- NI Vision Acquisition Toolbox
- MVTec Halcon
- Cognex VisionPro

# Accessories

A wide range of accessories are available directly from us to help you get the most out of our 10GigE and 25GigE cameras.



## Interface Cards

We have partnered with renowned suppliers to bring you high quality Network Interface Cards (NICs).

We offer up to three options for 10GigE NICs: Single NICs, Dual NICs (two cameras per card), and Dual SYNC NICs (two cameras per card that can be synced to sub 1 microsecond). All come with the MVA optimized driver for extremely low CPU utilization, low latency and jitter.

Two NIC options are available for 25GigE via our partnership with Mellanox Technologies : Single NICs and Dual NICs. Mellanox supplies their NICs pre-programmed with VMA.

All options are fully supported by the Emergent eSDK and eCapture for seamless integration.



## Power and I/O

We provide certified power supplies and GPIO accessories for easy setup and use with our cameras. The power supplies are tested to be of the highest quality and are thus very good at blocking line power transients to better protect your camera investment.



## Interface Cables

HR-Series and PACE series: Direct attach cables are available for applications up to 10 meters, while fiber cables are available for longer distance applications (up to 10 kms). HT-Series: CAT6A cable is available (up to 100 meters).

Three options are available for the 25GigE SFP28 BOLT and ACCEL Series: The first option utilizes SFP28 multi-mode fiber modules/transceivers and LC-LC multi-mode fiber cables for cable lengths from 1 meter to 70 meters. The second option utilizes SFP28 single-mode fiber modules/transceivers and LC-LC single-mode fiber cables for cable lengths ranging from 1 meter to 10 kms. The third option utilizes low-cost direct attach for cable lengths between 1 and 5 meters.



## Lens Mounts

Birger Engineering, Inc. manufactures a Canon EF Lens mount that can be used with all Emergent Vision Technologies cameras. The Mount allows the user to control the iris and focus of the lenses electronically through our software with all communications happening over the main camera interface.



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