

## GigE Vision Line Scan Cameras

GigE Vision interface



### FEATURES

Line Scan Camera with Gigabit Ethernet interface and the GigE Vision standard starting at 512 pixels up to 8160 pixels

- Line frequency up to 52.6 kHz
- Shading correction with permanently stored profiles
- Window Function (ROI)
- Line Trigger, Frame Trigger
- Data cable length up to 100m

- Interface: GigE Vision



## DESCRIPTION

Line scan cameras are semiconductor cameras used in many industrial environments e.g. in machine vision applications. The single photosensitive line sensor contains – depending on type – up to 22800 picture elements (pixels). Light energy incident on the sensor is transformed into an electric signal for digitization within the camera. At 8-bit resolution, the A/D converter transmits the output voltage of each pixel into one of 256 brightness levels, at 12-bit resolution into 4096 brightness levels. Color line scan cameras provide three separate line signals for Red, Green and Blue with either 3 x 8-bit or 3 x 12-bit per pixel. The digitized output signal is transferred to a computer.

Gigabit Ethernet line scan cameras are especially suited for applications that require high data transfer rates or long cables. The high data transfer rates of up to 1000 Mbps make them suitable for many demanding image processing applications.

GigE cameras can also be used in many locations remote from the dedicated computer because the Gigabit Ethernet technology allows cable lengths of up to 100 m.

Schäfter + Kirchhoff offers two types of line scan camera with a Gigabit Ethernet interface. The hardware is technically identical and they differ only in their respective firmware. Cameras of the V-series are 100% GigE Vision compatible and programming is performed using the GEN<i>CAM™ interface. G-series cameras are not GigE Vision compliant and their major strengths are in high performance, flexibility and additional functionality beyond the GigE Vision norm.

Additional features include:

- Customer-specific I/O signals in addition to video signal
- Special preprocessing algorithms can be implemented in the camera
- SDK from Schäfter+Kirchhoff with libraries and examples.

### Gigabit Ethernet or GigE Vision?

If the application is developed using GigE Vision compliant software, for example LabVIEW, Common Vision Blox or Halcon then a line scan camera of the V series is recommended, as these cameras are supported by the software directly. A line scan camera of the G series is recommended for customers planning to develop their own image processing routines, leaving them free to use alternative vision libraries like OpenCV. The G series is also the best choice when the application requires additional specific output control signals and more flexibility.

A detailed comparison of the advantages and disadvantages of all camera interfaces offered by Schäfter+Kirchhoff can be found [here](#).

## TECHNOTES

- [Line Scan Camera Basics \(10\)](#)  
[What are Line Scan Cameras? How do you create an image? etc.](#)
- [What are Line Scan Cameras?](#)  
[Introduction and advantages of Line Scan Cameras](#)
- [Creating an image using Line Scan Cameras](#)  
[How to create an image, definition of line frequency, and how to improve an image](#)
- [Optical resolution](#)  
[Definition and comparison to conventional area cameras](#)
- [Synchronization](#)  
[Reasons for synchronization and definition of different synchronization modes](#)
- [Shading correction and white balance](#)  
[Why do you need shading correction and how to use white balance](#)
- [Sensor alignment](#)  
[How to properly align the line scan camera sensor](#)
- [Blooming and Anti-Blooming Correction](#)  
[What is blooming and how to correct it](#)

[Spectral sensitivity](#)

[Spectral sensitivity of different line sensors](#)

- [True color imaging technologies](#)  
[Color Calibration of RGB cameras](#)
- [Bright and dark-field illumination](#)  
[Details about the different illumination techniques.](#)
- [Choosing the appropriate camera interface](#)  
[How to chose between GigE, GigEVision, USB3.0 and CameraLink.](#)
- [Setting up a Line Scan Camera](#)  
[Evaluation of correct focus](#)
- [Machine Vision Applications of Line Scan Cameras](#)  
[Applications of Line Scan Cameras](#)

## ACCESSORIES

<b>POWER SUPPLIES</b>	for Line Scan Cameras
<b>POWER CABLES 5V / 15V</b>	for GigE, GigE Vision, or Camera Link Line Scan Cameras
<b>POWER CABLES 24V</b>	for GigE / GigE Vision Line Scan Cameras
<b>DATA CABLES</b>	for GigE / GigE Vision Line Scan Cameras
<b>GRABBER CARDS</b>	for Gigabit Ethernet or GigE Vision Line Scan Cameras
<b>SYNCHRONIZATION CABLES</b>	for GigE / GigE Vision Line Scan Cameras
<b>EXTENSION RINGS</b>	for Line Scan Cameras
<b>MOUNTING ACCESSORIES</b>	for Line Scan Cameras
<b>SOFTWARE FOR GIGE- VISION LINE SCAN CAMERAS</b>	

## RELATED PRODUCTS

<b>GIGE LINE SCAN CAMERAS</b>	GigE interface
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