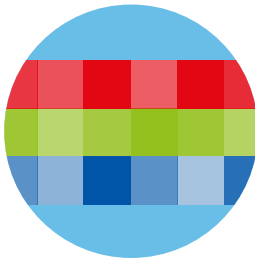


## RGB Color Line Scan Cameras

GigE / GigE Vision / USB3.0 / Camera Link interface



### FEATURES

Line Scan Cameras at 2096 pixels up to 7600 pixels

- Line frequency up to 9.3 kHz
- White balance with permanently stored profiles
- Programmeable Lookup Table
- Window Function (ROI)
- Line Trigger, Frame Trigger, Threshold Trigger
- Advanced Synchronization Control
- Integration Control for R, G, B (all color models)
- Decoupling of line frequency
- Extra signals for diagnosis
- Data cable length up to 100m

- RGB color sensor
- Interface: GigE
- Interface: GigE Vision
- Interface: USB 3.0
- Interface: Camera Link



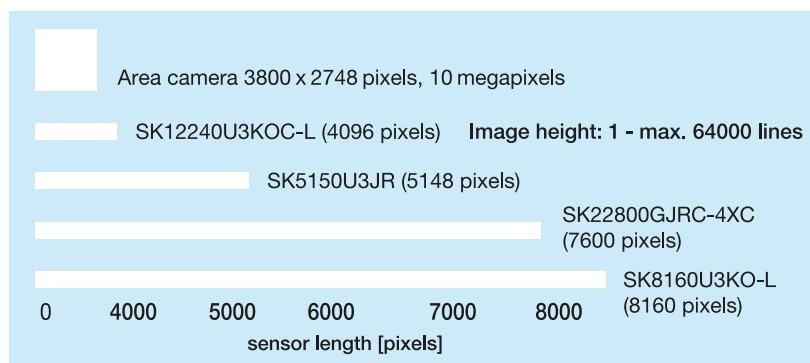
## DESCRIPTION

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

The image produced by a line scan camera is one-dimensional and represents the brightness profile of an object, captured at the current position of the line sensor. A two-dimensional image is generated by performing a scanning movement of either the object or the camera, during which the individual line signals are transferred to the computer and assembled one by one into a 2D image.

When acquiring color images, it must be taken into account that the red, green and blue sensor lines are spatially separated in the sensor and that there is also a gap between the sensor lines. This results in a working direction of the camera when processing the data. And also the extration of the color values for an image point from different image lines must be considered. The Software Development Kit from Schäfter + Kirchhoff provides convenient functions for this purpose, so that the temporally and spatially correct assignment of colors is guaranteed.

All lenses show some vignetting as a function of the field angle. Hence, even with homogeneous object illumination, the signal intensity of the image decreases with increasing image height. Shading correction (or flat field compensation) is used to compensate for lens vignetting as well as for inhomogeneity in the illumination. Shading correction is achieved by performing a white balance calibration during illumination of a homogeneous white target. The shading correction procedure is also used for white balance calibrations in color line scan cameras. The different sensitivities of the individual color channels of the sensor are compensated for, as well as any color inhomogeneity arising from the illumination source.



## 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.
- True color imaging technologies  
Color Calibration of RGB cameras
- 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

## RELATED PRODUCTS

### **GIGE LINE SCAN CAMERAS**

GigE interface

### **GIGE VISION LINE SCAN CAMERAS**

GigE Vision interface

### **USB3.0 LINE SCAN CAMERAS**

USB3.0 interface

**CAMERALINK LINE  
SCAN CAMERAS**

Camera Link interface

This is a printout of the page <https://sukhamburg.com/products/linescancamera/linescancamera/features/RGB.html>  
from 5/5/2024

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