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 transfered 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

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

RELATED PRODUCTS

GIGE LINE SCAN CAMERAS	GigE interface

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