Schäfter+Kirchhoff

USB3.0 Line Scan Cameras

USB3.0 interface

FEATURES

Line Scan Camera with USB3.0 interface starting at 512 pixels up to 8160 pixels

- Line frequency up to 53.5 kHz
- Shading correction with permanently stored profiles
- Programmeable Lookup Table
- Window Function (ROI)
- Line Trigger, Frame Trigger, Threshold Trigger
- Advanced Synchronization Control
- Thresholding (all monochrome models)
- Integration Control for R, G, B (all color models)
- Decoupling of line frequency
- Extra signals for diagnosis
- Data cable length up to 100m using active optical extension cable
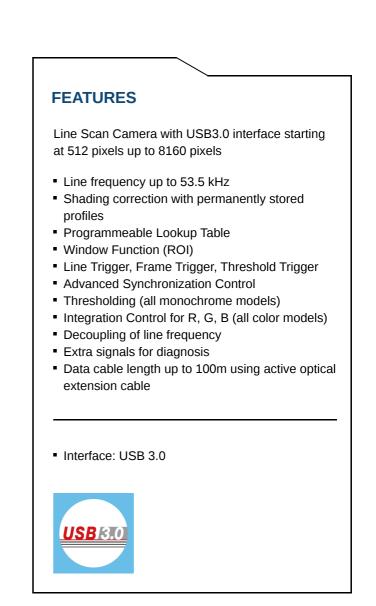
- Interface: USB 3.0

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.

USB 3.0 line scan cameras are ideally suited for fast and high-resolution scanning. The plug & play capability predestine the USB 3.0 line scan cameras for use in mobile scanner applications, either controlled by a laptop or when the controlling PC is often changed. The locking screw of the connectors and an industrial housing design make them robust and suitable for industrial environments.By using standard components, these USB 3.0 camera systems are comparatively inexpensive and provide a beneficial price-performance ratio. An external grabber is not required. Most of the USB 3.0 cameras are satisfied by the integral USB power. An external power supply is only necessary for some high performance cameras with higher power consumption.

In combination with the Smart-Control-Box, the USB 3.0 cameras can be used as line sensors to provide fast and stand-alone measurement systems, e.g. for measuring object widths, rod diameter or edges as well as the thickness of transparent materials such as glass.

- High performance cameras for industry and laborator
- High value-for-money ratio
- Securely attached connectors, robust casings
- No external power supply for the most cameras
- USB 3.0 SuperSpeed enables the use of sensors at their maximum line frequencies
- Default cable length of up to 3 m
- Active Optical Cable provides up to 100 m
- Software for Windows 7, 8.1, 10 - x64, x86 or for Linux kernel 3.13+
- Useable as sensor for the Smart-Control-Bo
- Downwards compatible with USB 2.0

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

- Article - Smart Line Scan Measurement Systems
  All you need for image acquisition and analysis

DOWNLOADS

Article_SmartControlBox.pdf (Technote)

ACCESSORIES

DATA CABLES	for USB3.0 Line Scan Cameras
SYNCHRONIZATION CABLES	for USB3.0 Line Scan Cameras
POWER SUPPLIES	for Line Scan Cameras
POWER CABLES 5V	for USB3.0 Line Scan Cameras
EXTENSION RINGS	for Line Scan Cameras
MOUNTING ACCESSORIES	for Line Scan Cameras
SOFTWARE FOR USB3.0 LINE SCAN CAMERAS	

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