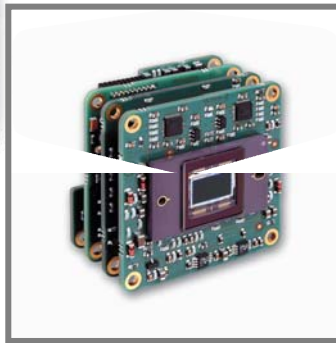# Digital GigE Vision Camera
Zelos – 02150 GV

NEW

Kappa introduces a new vision camera based on our modular high-performance platform with 14-bit digitization. The first model, the Zelos-02150 has a GigE Vision interface and offers a resolution of 1920 x 1080 and a frame rate of up to 30 fps. It fulfills all typical Kappa quality characteristics regarding hardiness and longevity.

The camera features several technical highlights. One of them is the 2/3" Kodak HD sensor KAI-02150, which supports HD standard 1080p and excels with an excellent dynamic range and the best image performance. A further plus is the high-performance GigE Vision interface.

The brilliant visualization of the smallest details with the lowest-contrast is the result of the numerous real-time signal processing functions based on a 14 bit digitization. Among the functions are adjustments of different exposure modes, read-out modes (e.g., binning, partial scan), frame rates, gain and exposure settings, measuring window functions, contrast and edge enhancement functions (e.g., histogram equalization), line and circular line generators and loadable look-up tables. The Kappa-made color processing offers adjustments for the RGB Bayer filter interpolation, and color saturation.

The modular camera platform can serve different sensors and signal interfaces and thus can fulfill the requirements for machine vision applications as well as other areas of application.

HD sensor,
1920 x 1080 pixel

Color | monochrome

Progressive scan

14-bit digitization

Up to 30 fps

GigE Vision

High transfer rate (1 Gbit/s)

Up to 100 m (300 feet) CAT5e cabling

Numerous real-time signal processing functions

Kappa-made first-class color processing

Binning |partial scan

Reset | restart, frame on demand, external sync

Image memory

Screw-in GigE cable

Free software development kit

Control software KCC

Robust quality according to DIN EN 60068

- High transfer rate (1 Gbit/s)
- low-priced interface on the PC
- Inexpensive cabling with thin CAT5e cables up to 100 m (300 feet)
- Standardized user-friendly communication protocol

realize visions .

kappa

Zelos - 02150 GV

Technical Data

Sensor-specific data

CCD sensor	2/3″ interline transfer CCD progressive scan with micro lenses (Kodak KAI 02150)
Pixel size (H x V)	5.5 µm x 5.5 µm
Light-sensitive area (H x V)	10.56 mm x 5.94 mm (16:9)
Number of pixels (H x V)	1920 x 1080 active, 2004 x 1144 total
Spectral sensitivity (without IR –filter)	350 nm – 1050 nm
Full well capacity	20 000 e⁻
A/D-conversion factor	1.2 e⁻ / increment
Filter	RGB Bayer Filter / IR-filter
Dynamic range	64 dB (measured in dark image, at 33 ms exposure time at 0 dB gain)

Interface-specific data

Interface	Gigabit Ethernet
Coding	▮▮▮ Color YUV 4:2:2, RGB 24, Mono 14 (RAW data), ▮▮ Mono 14, Mono 12, Mono 8

Camera output format				
	full frame:	1920 x 1080 pixel, 25 fps (▮▮▮ color); 30 fps (▮▮ monochrome),		
	▮▮ mono binning:	2 fold	4 fold	8 fold
	▮▮ image size (pixel):	960 x 540	480 x 270	240 x 135
	▮▮ frame rate:	approx. 60 fps	approx.120 fps	approx. 240 fps
	partial scan:	image size freely adjustable		

Exposure		
	manual:	1 µs up to 120 s
	automatic (AE):	1 µs up to 33 ms at 1920 x 1080 pixel

Signal Processing

System	14 bit digital
Gain	manual/automatic (AGC): 0 up to 18 dB
Enhancement	contrast: 1.0 up to 8.0 fold, brightness/subtraction 0 up to 16383 LSB, max. 50% balance; edge enhancement adjustable; histogram equalization; recursive filter; background image substraction
Color processing	▮▮▮ light source, color setting (RGB), automatic white balance, color saturation
Gamma	0.3 up to 2.2, loadable
Diagnostics	e.g. sensor/camera temperature, built-In test, image size, refresh rate, test pattern
Line generator	2 cross lines: position, color and style adjustable, circular line
Measuring window	Position and dimensions adjustable
Look-up table	loadable
Synchronization	intern/extern, reset/restart (delay <10 µs), frame on demand
Trigger	Hardware Trigger: Variable adjustable, fixe trigger delay < 10 µs; frame on demand Software Trigger: via Software Development Kit (SDK 4)
Image memory	32 MB buffer memory

System Integration

System requirements	separate data sheet
Software	separate data sheet (SDK4 - Software Development Kit and KCC - Control Software)
Interface Protocoll	GigE Vision

General

Interfaces	GigE Vision, 10-pol system connector (power supply, control and trigger signals)
Lens mount	C-mount, focal plane adjustable, CS-mount on request
Filter	IR-filter, removable
Temperature	operating temperature -20°C to +65°C, storage temperature -30°C to +70°C
Power supply	9 - 36 V DC, ~4 W
Dimensions / Weight	50 x 50 x 58 mm / approx. 200 g
Cable length	Ethernet (minimum CAT5e) up to 100 m
Order-no.	▮▮▮ Color: Zelos-02150C GV 961-2150 ▮▮ Monochrome: Zelos-02150M GV 951-2150
Standard equipment	Camera, CD (KCC, SDK4)

We are constantly checking the accuracy of the technical data. We are prepared to provide more detailed information on request. Technical data are subject to change without notice!

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