

Digital GigE Vision Camera Zelos* - 02150

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V I S I O N



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 hardness and longevity.

The camera features several technical highlights. One of them is the 2/3" Kodak HD sensor KAI-02150, which supports 1080 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 dynamic look-up tables. The color processing offers adjustments for the Bayer filter interpolation, color space transformation 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 applica-

HD sensor, resolution 1920 x 1080
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
First-class color processing
Binning Partial scan
Reset restart, frame on demand, external sync
32 MB buffer memory
Screw-in GigE cable
Free software development kit
Control software KCC
Robust quality according to DIN EN 60068

* The product name of the camera has changed (the name before was Artemis).

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- 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

Zelos - 02150

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)	320 nm – 1100 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, GigE Vision
Coding	YUV 4:2:2, RGB 24, Mono 16 (RAW data), Mono 14, Mono 12, Mono 8
Camera output format	full frame: 1920 x 1080 pixel, 30 fps (monochrome), 15 fps (color) 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 color binning: raw data partial scan: image size freely adjustable
Exposure	5 µs up to 110 ms manual: 1 µs up to 120 s automatic (AE): 1 µs up to 33 ms at 1920 x 1080 pixel
Power supply	9 - 36 V DC, ~4 W

Signal Processing

Signal Processing Features	exposure-modes, readout-modes (e.g. binning, partial scan), frame rate, gain- and exposurecontrol, measurement window function, contrast and edge enhancement (e.g. histogram equalization), line generator, circular line generator and dynamic Look-Up-Table, adjustments for RGB Bayer interpolation, color space transformation, color saturation etc.
Programming tool	Software Development Kit, Kappa SDK 4; SDK 4 AL, Application Layer (.Net-class library and C function library for Windows); SDK 4 TL, Transport Layer (C function library for Windows and Linux)
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 subtraction
Color processing	light source, color setting (RGB), automatic white balance, color saturation
Gamma	0.3 up to 2.2
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
Synchronization	intern/extern, Reset/Restart (delay <10 µs)
Hardware Trigger	Variable adjustable, fixe trigger delay < 10 µs; Frame on Demand
Software Trigger	via SDK 4
Image memory	32 MB buffer memory

Technical Data

Interfaces	GigE Vision 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 0°C to +65°C, storage temperature -30°C to +70°C
Dimensions	50 x 50 x 58 mm
System requirements	minimum DualCore CPU, 2GB RAM, DirectX9c-enabled graphics card, GigE-network card; SDK4 TL: Windows XP, Vista, 7 (32+64 bit), Linux; SDK4 AL: Windows XP, Vista, 7 (32+64 bit)
Cable length	Ethernet (minimum CAT5e) up to 100 m
Order-No.	
Standard equipment	

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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