KAYA VISION

Datasheet
Zinc661 PCIe

Zinc661 PCIe
127.7 Megapixel, Global shutter, Small, Rugged, Low Power with Large Feature Set

KAYA Vision is a global leader in commercial, industrial and rugged cameras and imaging system solutions, providing high-performance products for over 15 years. Founded in 2010 by industry experts, KAYA designs, manufactures and supports both COTS and custom products for high-performance imaging needs.

KAYA cameras leverage cutting-edge technology to provide exceptional image quality in the smallest form factors. Our advanced camera lineup features built-in image pre-processing, enhancement, and correction, all while maintaining industry-leading power efficiency. Designed for reliability, our SWaP-C (Size, Weight, Power, and Cost) optimized cameras offer the highest durability, operating in extreme environments with the widest temperature ranges, superior shock and vibration resistance, and extended MTBF. KAYA cameras are the ultimate choice for high-performance imaging systems across commercial, industrial, medical, defense aerospace, and scientific applications.

Key Features:

- 127.7 Megapixel up to 21.5 fps
- Monochrome and Color sensor variation
- Up to 22 W power at full rate
- Full image processing feature set
- PCI Express Gen 3 standard compliant
- Gen<i>Cam compliant
- Up to 8 PCI Express links
- M72 lens mounts available
- Commercial and Industrial grade options
- Full EMVA1288 report
- Full built-in self-test (BIT)
- Full built-in voltage testing
- Customization as per user requirements

Applications:

- Perimeter vision
- Low light surveillance
- Special Effects
- Virtual Reality
- 3D

TECHNICAL DATA

General	
Pixel Size	3.45 µm x 3.45 µm
Resolution	13400 (H) x 9528 (V)
Sensor Size	56.7 mm diagonal
Sensor Format	3.6”
Sensor	Sony IMX661
Sensor Type	CMOS
Output Interface	PCI Express Gen 3
Supported Interface rates	Gen 1, Gen 2 or Gen 3
Interface Connector	Samtec
Number of Links	8
Output Resolution	8, 10, 12 or 14 bit
Maximum Frame Rate	• 21.5 fps @8 bit resolution • 21.5 fps @10 bit resolution • 19.6 fps @12 bit resolution • 12.9 fps @14 bit resolution
Tap Geometry	1X-2YE
Image Acquisition	Continuous / Triggered
Camera Control	Gen<i>Cam
Electronic Shutter	Global
Monochrome / Color	Monochrome or Color
Temporal Noise	<2.7 e- at 25℃
Full Well Charge	9825 e-
Dynamic Range	>70.8 dB at 520 nm
Signal-to-Noise Ratio (SNR max)	40 dB at 520 nm
Quantum Efficiency (QE)	>63% at 520 nm
Shortest Exposure	10 µs
IR Filter (optional)	• UV cut below 400 nm • IR cut above 700 nm
Exposure control	Automatic/Manual
Gain control	Automatic/Manual
Color Control	• RGB offsets • Auto / Manual White balance • LUT
Image enhancement	• Defect pixel correction • Gain (Analog / Digital) • Auto / Manual black level • Binning • Auto Exposure / Gain • Flat field / Fixed pattern noise correction

Additional on camera processing	• ROI • Image flip • Frame counter • Operational Time Counter • Binning
Power Input	• External 11 V - 13 V input
Power Consumption	<22 W at 12 V DC
Configuration software	Gen<i>Cam Standard software
Synchronization	Protocol/External I/O Trigger
Exposure Strobe output	Yes

General Purpose Inputs and Outputs	
I/O lines	• 1 opto-isolated input • 1 opto-isolated output • 1 singled-ended TTL output • 1 singled-ended TTL/LVTTL input
Usage	• Any System I/O input lines can be connected to any I/O output line • Any I/O input line can generate any trigger event • Any I/O input line can trigger a timer • Any I/O input line can trigger a counter
Electrical specifications	• TTL lines: 5 V TTL compliant • LVTTL lines: 3.3 V LVTTL compliant • Isolated lines: opto-isolated lines with voltage range up to 30 V
Absolute Maximum	• TTL/LVTTL input voltage: -0.3 V to +6 V • TTL output current: 40 mA • Isolated input voltage: -4 V to +25 V • Isolated output voltage: -0.3 V to +25 V • Isolated input current: 30 mA • Isolated output current: 50 mA
Operating	• TTL/LVTTL input voltage: 0 V to +5 V • TTL output current: 0mA to 24 mA • Isolated input voltage: 0 V to +24 V • Isolated output voltage: 0 V to +24 V • Isolated input current: 6.3 mA to 15 mA • Isolated output current: 1 mA to 25 mA
Timers	• 4 general purpose timers • Configurable delay and duration • 32-bit accumulator
Counters	• 4 general purpose counters • Configurable value and duration • 32-bit counter

Mechanical	
Dimensions (including lens mount)	83 mm x 78 mm x 49 mm (3.3” x 3.1” x 1.9”)
Weight (without lens)	500 g (17.6 oz)
Lens Mount	M72
Sensor Alignment	Active

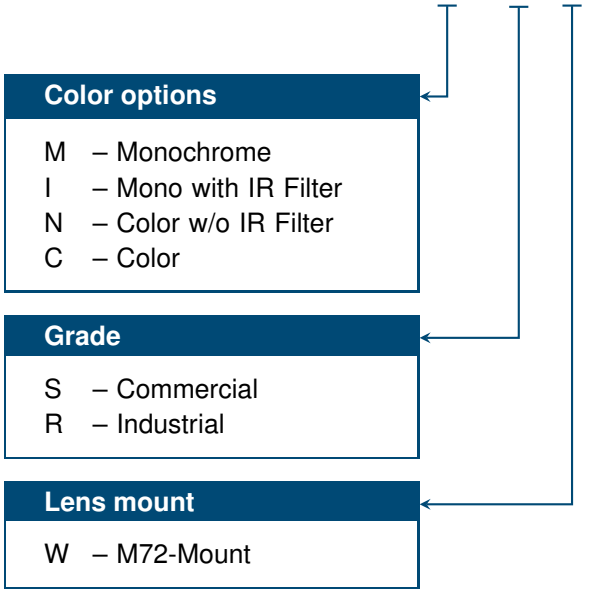
Ingress Protection	Optional IP67 (with protective lens tube)

Environmental Conditions	
Operating ambient air temperature	Commercial : 0℃ to +50℃ (32℉ to +122℉) Industrial : -40.0℃ to +70℃ (-40℉ to +158℉) At 1 m/s airflow
Operating ambient air humidity	10% to 90% RH non-condensing
Storage ambient air temperature	Commercial : 0℃ to +55℃ (32℉ to +131℉) Industrial : -40.0℃ to +75℃ (-40℉ to +167℉)
Storage ambient air humidity	10% to 90% RH non-condensing
Operational Shock	Tested per MIL-STD-810G Method 516.6, 3-axis Shock 75G
Operational Vibration	Tested per MIL-STD-810G Method 514.6, 3-axis Vibration Category 20
MTBF	1,600,000 (Without fan) hrs @ 50C (Telecordia)

Certifications	
Electromagnetic - EMC standards	• The European Council EMC Directive 2004/108/EC • The Unites States FCC rule 47 CFR 15
EMC - Emission	• EN 55022:2010 Class B • FCC 47 Part 15 Class B
EMC - Immunity	• EN 55024:2010 Class B • EN 61000-4-3 • EN 61000-4-4 • EN 61000-4-6
Flammability	PCB compliant with UL 94 V-0
RoHS	Compliant with the European Union Directive 2011/65/EU (RoHS2)
REACH	Compliant with the European Union Regulation No 1907/2006
WEEE	Must be disposed of separately from normal household waste and must be recycled according to local regulations

ORDERING INFORMATION

Zinc661M-SW



Accessories	
Optional accessories	• KY-PWR-12 12V power supply • Samtec FireFly PCIe Cable
Accessories Included	-

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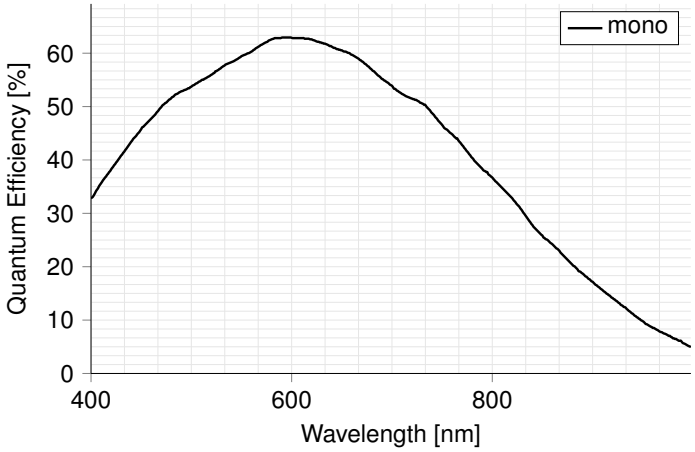
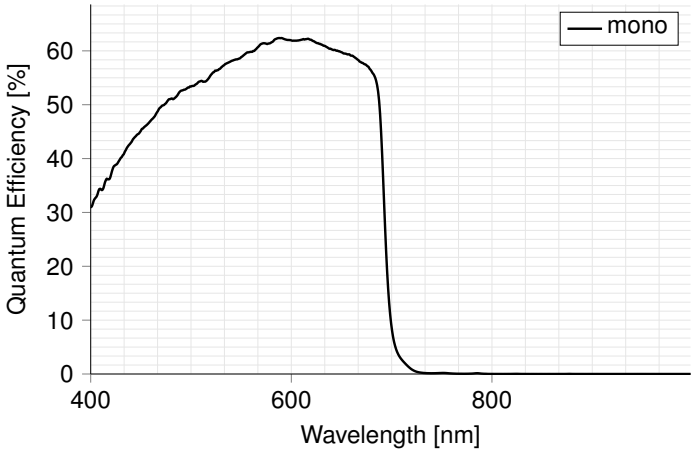
SPECTRAL RESPONSE

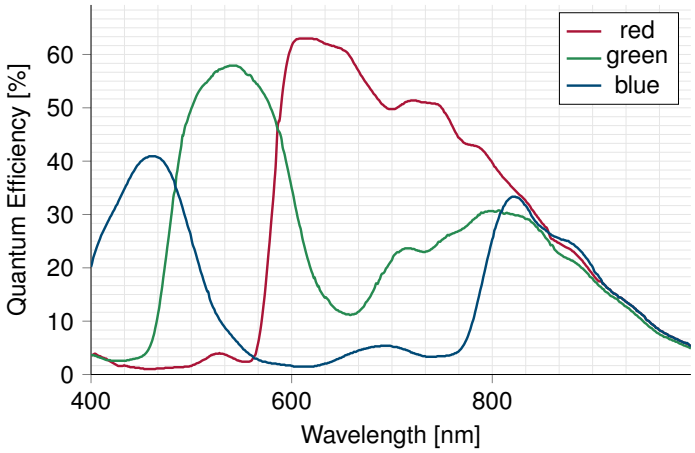
Monochrome



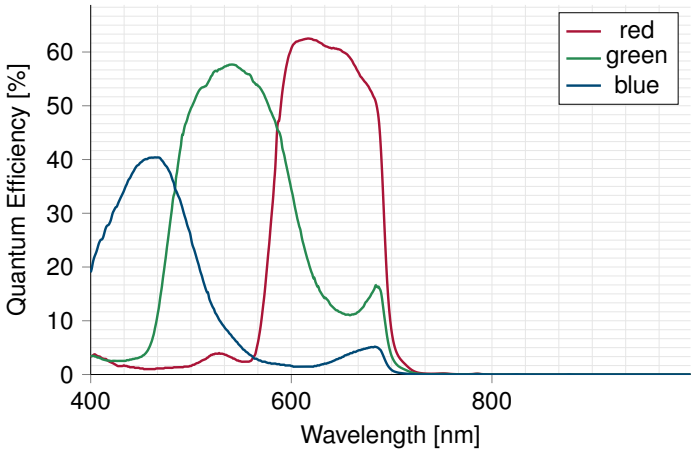
Monochrome with IR Cut Filter



Color



Color with IR Cut Filter



GENERAL PURPOSE INPUT OUTPUT

GPIO Pinout – 10 Pin Molex Header

1. IN1 Return
2. IN1 (OPTO)
3. IN2 (TTL/LVTTL)
4. IN2/OUT1 Return
5. OUT1 (TTL)
6. OUT2 Return
7. OUT2 (OPTO)
8. RS232 Return
9. RS232 RX
10. RS232 TX

Power Pinout – 4 Pin Molex Header

NOTE : The 12V power input have tolerance of 10%

1. 12V Input
2. 12V Input
3. GND
4. GND

The GPIO and Power connectors used on the camera are Molex headers. It is recommended to use a cable with a matching Molex receptacle. Molex manufacturer's part numbers are listed below:

Product Name	Product Part Number
GPIO Molex 10 pin header	5040501091
GPIO Molex 10 pin receptacle	5040511001
Power Molex 4 pin header	5040500491
Power Molex 4 pin receptacle	5040510401

PCI EXPRESS INTERFACE

The PCIe interface uses Samtec FireFly connection. The interfaces support only copper PCUE connection cables. The cable that should be used for PCIe is PCUE-G4-04-xxx-FF from Samtec where xxx is the cable length in centimeters. Please refer to cable datasheet for host PCIe connection. Please note cable swaps PCIe TX and RX pairs. The PCIE cable uses two separate connectors to interface to the camera. For mechanical properties of the connectors for host system design please refer to Samtec documentation with part numbers below.
All the electrical signaling is according to PCIe standard.
All the directions are relative to the camera side.
For additional information please refer to uec5-xxx-2-x-d-ra-1-footprint-mkt.pdf and pcue-g4-xx-xxx-ff-mkt.pdf documents from Samtec.

PCIe Pinout – UCC8-010-1-H-S-1-A Part

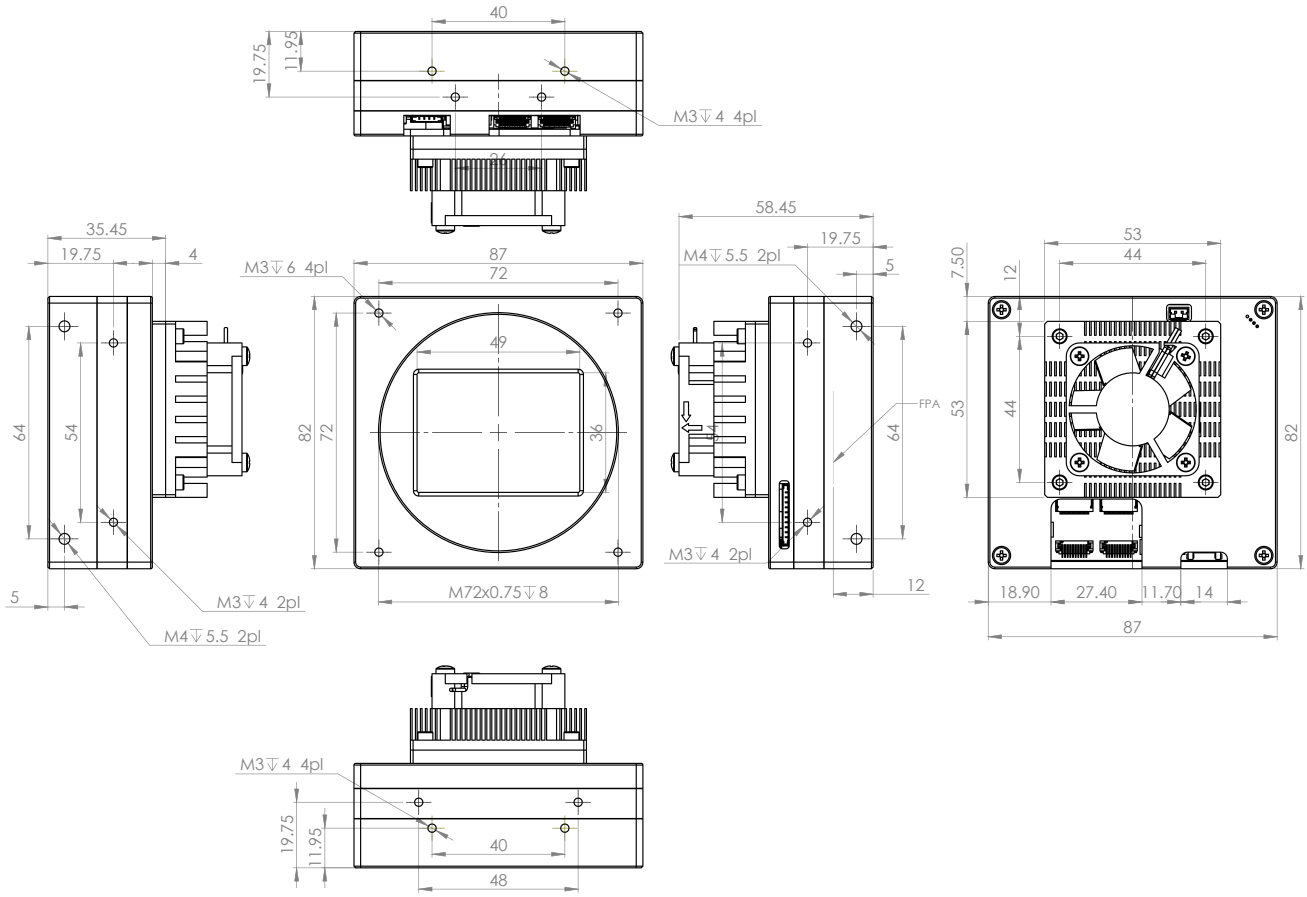
1. NC
2. NC
3. GND
4. NC
5. PERSTN# (Input)
6. PRESENT# (Output)
7. NC
8. NC
9. NC
10. NC

PCIe Pinout – UEC5-019-2-X-D-RA-1 Part

A1.	GND	B1.	GND
A2.	TX1n (Output)	B2.	TX0n (Output)
A3.	TX1p (Output)	B3.	TX0p (Output)
A4.	GND	B4.	GND
A5.	TX3n (Output)	B5.	TX2n (Output)
A6.	TX3p (Output)	B6.	TX2p (Output)
A7.	GND	B7.	GND
A8.	REFCLKp (Input)	B8.	NC
A9.	REFCLKn (Input)	B9.	NC
A10.	GND	B10.	GND
A11.	NC	B11.	NC
A12.	NC	B12.	NC
A13.	GND	B13.	GND
A14.	RX1p	B14.	RX0p
A15.	RX1n	B15.	RX0n
A16.	GND	B16.	GND
A17.	RX3n	B17.	RX2n
A18.	RX3n	B18.	RX2n
A19.	GND	B19.	GND

MECHANICAL DRAWINGS

Commercial/Industrial grade



Dimensions are in millimeters.

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COMPATIBILITY

KAYA Vision develops and maintains compatibility and interfaces for the most common and advanced vision image processing libraries and applications. We ensure seamless integration with major platforms to provide users with a flexible and convenient development environment, minimize integration effort, and accelerate time to deployment.

Supported vision standards:

CoaXPress GEN<i>CAM CoaXPress over-Fiber SMPTE

Supported vision libraries:

HALCON a product of MVTec OpenCV LabVIEW MATLAB COGNEX NORPIX

Supported operating systems:

Windows LINUX NVIDIA JetPack

Please check our website for an up-to-date list of other supported libraries and software package.

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Have questions about pricing, availability, documentation, or custom options?
We're always ready to assist and provide expert guidance.
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