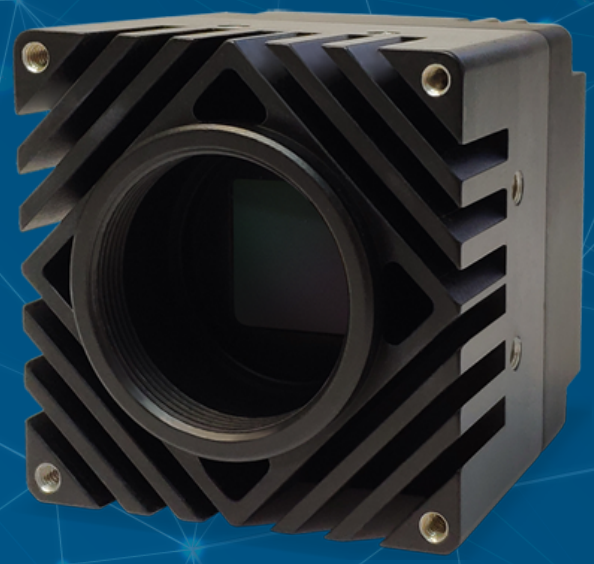
KAYA VISION



Datasheet
Iron305 SDI

Iron305 SDI

4k Resolution, 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 Vision designs, manufactures and supports both COTS and custom products for high-performance imaging needs.

KAYA Vision 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 Vision cameras are the ultimate choice for high-performance imaging systems across commercial, industrial, medical, defense aerospace, and scientific applications.

Key Features:

- Up to 4k Resolution up to 60.0 fps
- Monochrome and Color sensor variation
- Up to 3.2 W power at full rate
- Full image processing feature set
- SDI standard compliant
- 1 SDI link
- C lens mount 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
- Tri-Level Sync Input
- TTL Strobe Output
- SMPTE Compliance – Several Standards listed

Applications:

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

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TECHNICAL DATA

General	
Pixel Size	3.45 µm x 3.45 µm
Resolution	4096 (H) x 2160 (V)
Sensor Size	16.0 mm diagonal
Sensor Format	1”
Sensor	Sony Pregius IMX305
Sensor Type	CMOS
Output Interface	SDI
Supported Interface rates	HD-SDI, 3G-SDI, 6G-SDI or 12G-SDI
Interface Connector	Micro-BNC
Number of Connectors	1
Output Format	10-bit 4:2:2(Y’Cb’Cr’) / RAW (Bayer)
Maximum Frame Rate	60.0
Video output	4k, UHD, 2k, 1080p or 1080i
Image Acquisition	Continuous
Camera Control	RS232 direct ASCII protocol
Electronic Shutter	Global
Monochrome / Color	Monochrome or Color
Temporal Noise	<2.2 e- at 25℃
Full Well Charge	9828 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 • Color Multi-Matrix correction • Cross Color Correction • Gamma • High performance De-Bayering • Saturation Control

Image enhancement	• Defect pixel correction • Gain (Analog / Digital) • Auto / Manual black level • Binning • Auto Exposure / Gain • Knee Function • Noise reduction • Edge enhancement
Additional on camera processing	• ROI • Image flip • Frame counter • Operational Time Counter • Binning
Power Input	• External 11 V - 28 V input
Power Consumption	<3.2 W at 24 V DC
Configuration software	Open Source GUI with a full feature set [link]
Synchronization	Tri-Level Sync Input
Exposure Strobe output	Yes

Mechanical	
Dimensions (including lens mount)	44 mm x 44 mm x 35.3 mm (1.7” x 1.7” x 1.4”)
Weight (without lens)	90 g (3.2 oz)
Lens Mount	C
Sensor Alignment	Active
Ingress Protection	Optional IP67 (with protective lens tube)

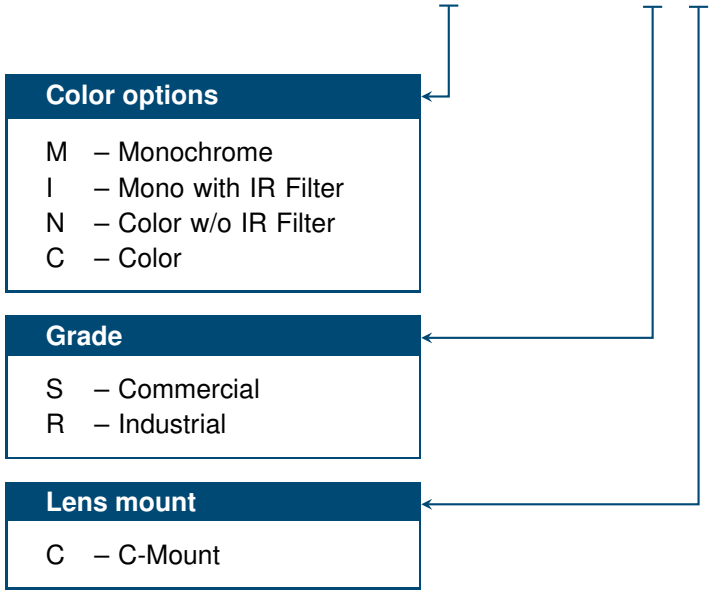
Environmental Conditions	
Operating ambient air temperature	Commercial : 0℃ to +50℃ (32℉ to +122℉) Industrial : -40.0℃ to +80℃ (-40℉ to +176℉) At 1 m/s airflow
Operating ambient air humidity	10% to 90% RH non-condensing
Storage ambient air temperature	Commercial : 0℃ to +55℃ (32℉ to +131℉) Industrial : -40.0℃ to +85℃ (-40℉ to +185℉)
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	2,100,000 hrs @ 50C (Telecordia)

Certifications	
Electromagnetic - EMC standards	• The European EMC Directive 2014/30/EU • The Unites States FCC rule 47 CFR 15
EMC - Emission	• EN 55032:2015 Class B • FCC 47 Part 15 Class B

EMC - Immunity	• EN 55035:2017 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

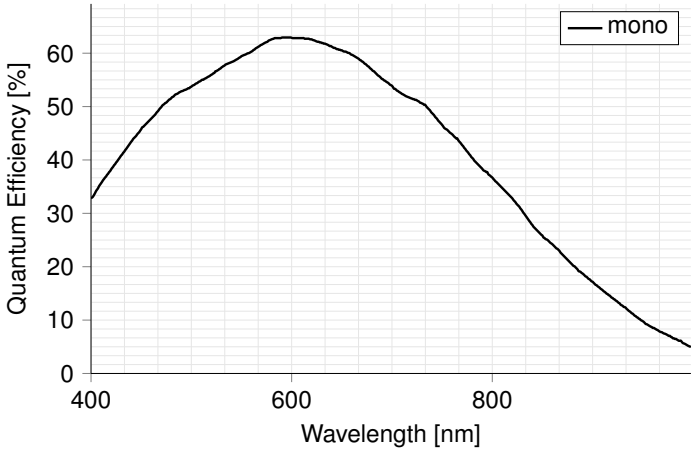
Iron305M-SDI-SC



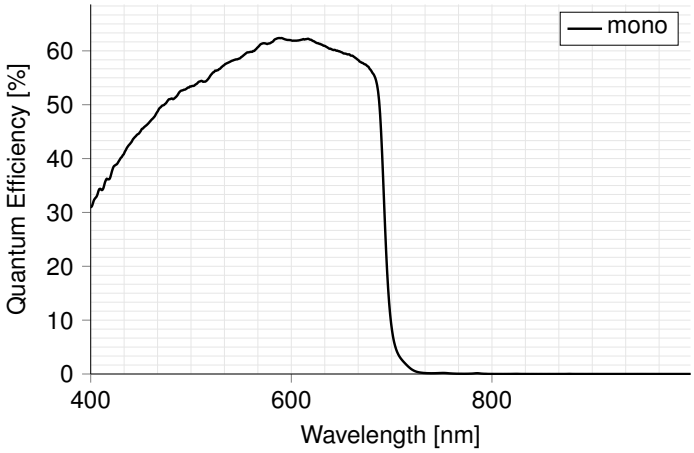
Accessories	
Optional accessories	• KY-PWR-12 12V power supply • PS12V06 GPIO cable
Accessories Included	-

SPECTRAL RESPONSE

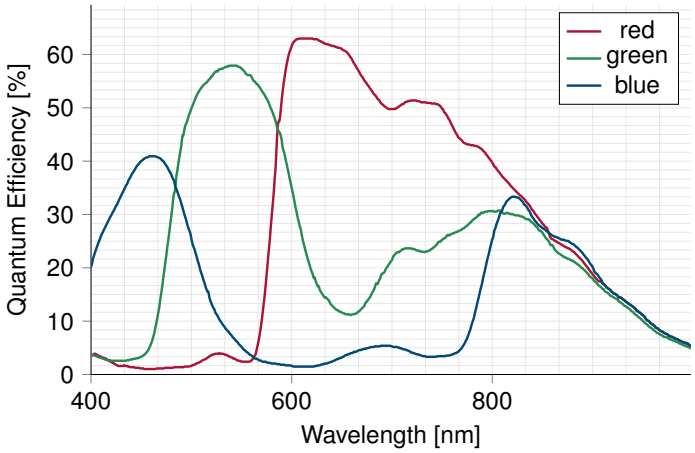
Monochrome



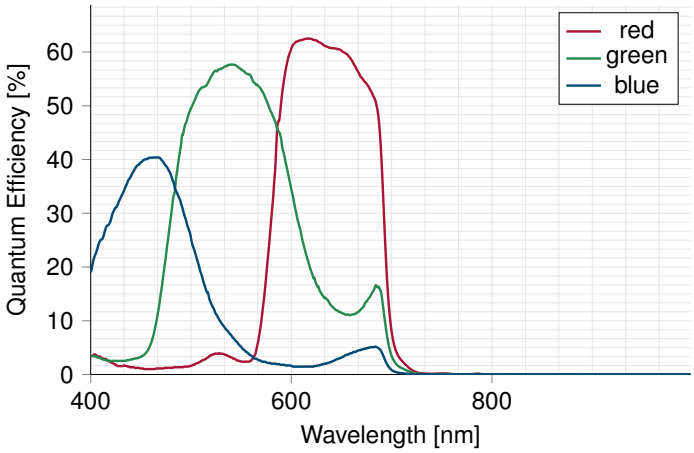
Monochrome with IR Cut Filter



Color

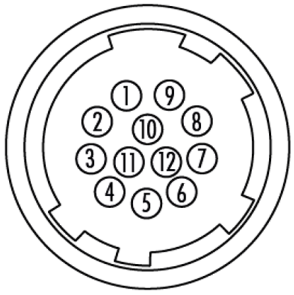


Color with IR Cut Filter



GENERAL PURPOSE INPUT OUTPUT

GPIO Pinout – 12 Pin Hirose Connector



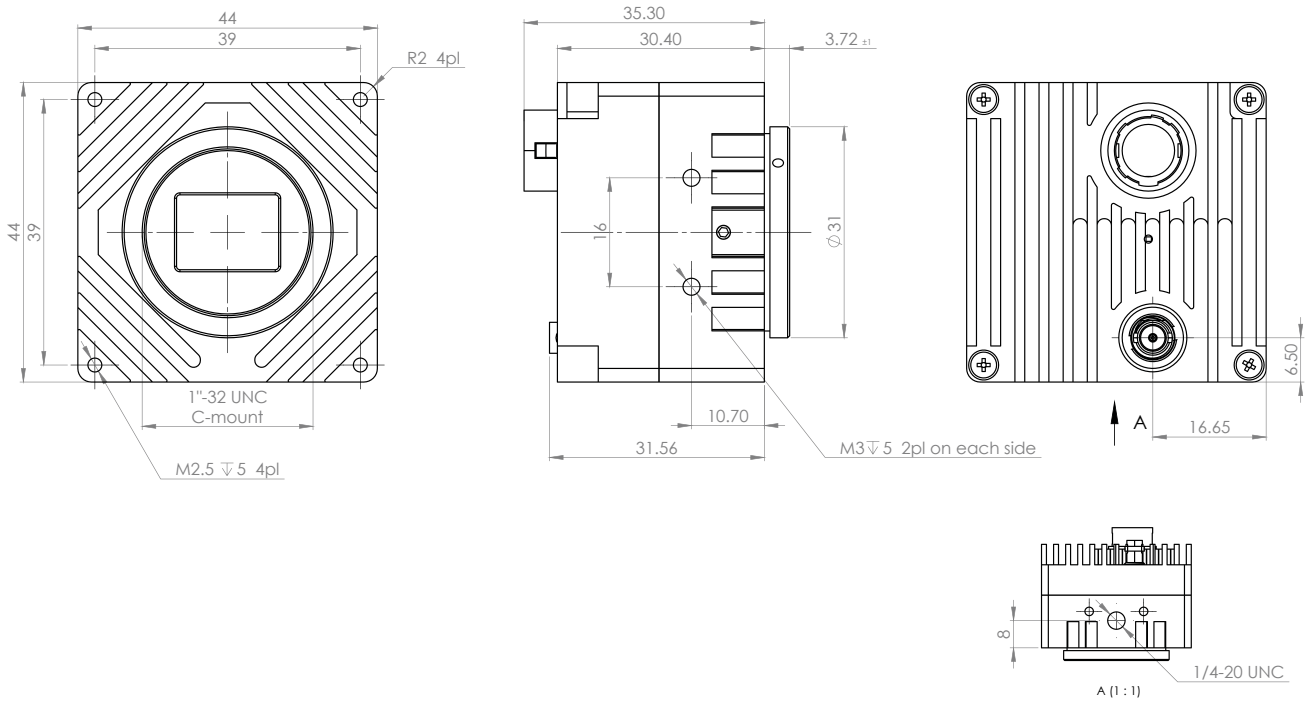
1. DC Power return
2. DC Power
3. RS232 RX
4. RS232 TX
5. Reserved
6. RS232 Return
7. Strobe output (TTL)
8. Tri-Level Sync input
9. Reserved
10. Tri-Level/Strobe return
11. Reserved
12. Reserved

The GPIO connector used on the camera is a 12-pin male Hirose connector. It is recommended to use a cable with a matching Hirose 12 pin female connector. Hirose's manufacturer's part number is listed below:

Product Name	Product Part Number
Hirose 12P connector, male	HR10A-10R-12PB
Hirose 12P connector, female	HR10A-10P-12S

MECHANICAL DRAWINGS

C-Mount



Dimensions are in millimeters.

SUPPORTED VIDEO MODES

Mode	Video Standard	Supported Resolution	Supported FPS
HS-SDI	ST 292(ST 274) ST 292(ST 2048-2)	1080i 10-bit 4:2:2/RAW 1080p 10-bit 4:2:2/RAW 2K 10-bit 4:2:2/RAW	50, 59.94, 60 23.98, 24, 25, 29.97, 30 23.98, 24, 25, 29.97, 30
3G-SDI	ST 425-1(ST 274) ST 425-1(ST 2048-2)	1080p 10-bit 4:2:2/RAW 2K 10-bit 4:2:2/RAW	50, 59.94, 60 47.95, 48, 50, 59.94, 60
6G-SDI	ST 2081-10 M1,(ST 2036-1) ST 2081-10 M1, (ST 2048-1)	UHD 10-bit 4:2:2/RAW 4K 10-bit 4:2:2/RAW	23.98, 24, 25, 29.97, 30 23.98, 24, 25, 29.97, 30
12G-SDI	ST 2082-10 M1, ST 425-5(ST 2036-1) ST 2082-10 M1, ST 425-5(ST 2048-1)	UHD 10-bit 4:2:2/RAW 4K 10-bit 4:2:2/RAW	50, 59.94, 60 47.95, 48, 50, 59.94, 60
Analog CVBS	PAL	720 x 576	Not Supported
Quad 6G-SDI	ST 2082-11 M,(ST 2036-1)	UHDTV2 10-bit 4:2:2/RAW 8K 10-bit 4:2:2/RAW	Not Supported Not Supported
Quad 12G-SDI	ST 2082-12 M1,(ST 2036-1)	UHDTV2 10-bit 4:2:2/RAW 8K 10-bit 4:2:2/RAW	Not Supported Not Supported

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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KAYA VISION

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