KAYA INSTRUMENTS

Datasheet
Iron2020BSI CoF

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4.2 Megapixel, Small, Rugged, Low Power with Large Feature Set

Innovative Approach

Iron2020BSI CoF is an ultra-thin high speed, low-cost, low-power Rolling shutter CMOS camera with a SFP+ interface which supports 4.2 Megapixel high quality video at rates up to 74.0 fps.

Intelligent Design

With an extremely compact form factor, the **Iron2020BSI CoF** fits into small spaces. The superior sensor performance provides high quality images with great dynamic range, low noise and excellent low-light vision capabilities.

Key Features:

- 4.2 Megapixel up to 74.0 fps
- Monochrome and UV Enhanced sensor variation
- Up to 4 W power at full rate
- Full image processing feature set
- CoaXPress-over-Fiber (CoF) v2.1 standard compliant
- Gen<i>Cam compliant
- 1 CoaXPress-over-Fiber (CoF) link
- C or CS 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	6.5 µm x 6.5 µm
Resolution	2048 (H) x 2048 (V)
Sensor Size	18.8 mm diagonal
Sensor	Gpixel GSENSE2020BSI
Sensor Type	CMOS
Output Interface	CoaXPress-over-Fiber (CoF) v2.1
Supported Interface rates	10G
Interface Connector	SFP+
Number of Connectors	1
Output Resolution	11 or 12 bit
Maximum Frame Rate	• 74 fps @11 bit resolution • 43 fps @12 bit resolution
Tap Geometry	1X-1Y
Image Acquisition	Continuous / Triggered
Camera Control	Gen\<i\>Cam
Electronic Shutter	Rolling
Monochrome / Color	Monochrome or UV Enhanced
Temporal Noise	<1.9 e- at 25°C
Full Well Charge	54000 e-
Dynamic Range	>88 dB at 550 nm
Signal-to-Noise Ratio (SNR max)	46 dB at 550 nm
Quantum Efficiency (QE)	>95% at 550 nm
Shortest Exposure	4.62 µs
IR Filter (optional)	-
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 - 28 V input

Power Consumption	<4 W at 24 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
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)	44 mm x 44 mm x 90.4 mm (1.7" x 1.7" x 3.6")
Weight (without lens)	233 g (8.2 oz)
Lens Mount	C or CS
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 ℉)
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 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

Iron2020BSIM-CoF-SC

Color options

M – Monochrome
T – UV Enhanced

Grade

S – Commercial
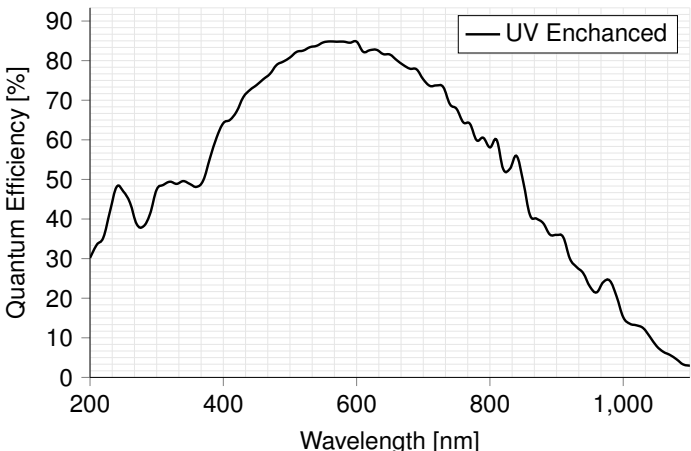R – Industrial

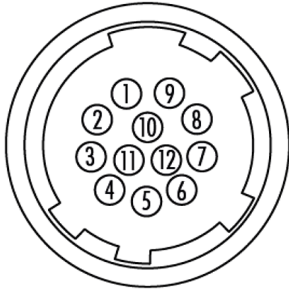### Lens mount

C – C-Mount
S – CS-Mount
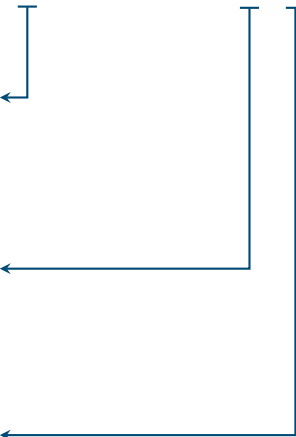
SPECTRAL RESPONSE

Monochrome
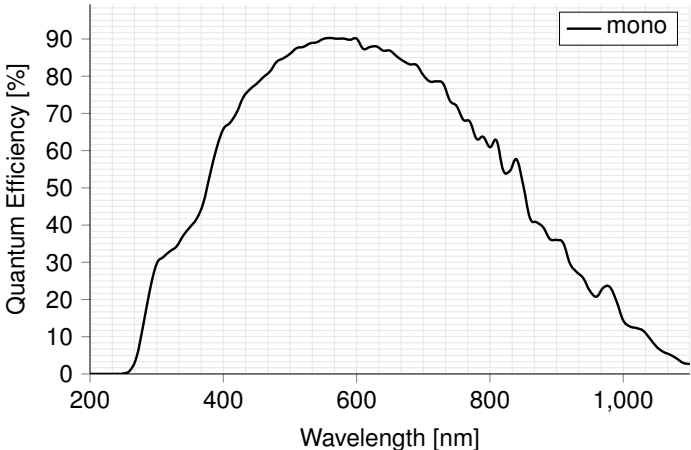
UV Enhanced

GENERAL PURPOSE INPUT OUTPUT

GPIO Pinout – 12 Pin Hirose Connector

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

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/CS-Mount
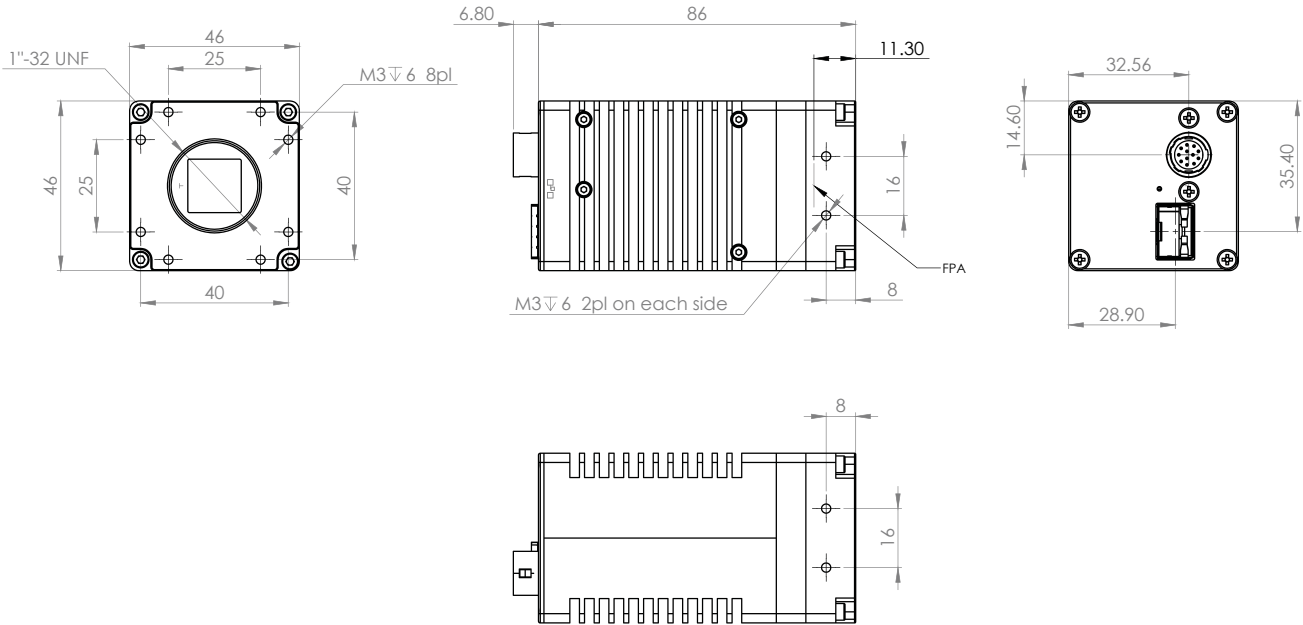
Dimensions are in millimeters.

COMPATIBILITY

KAYA Instruments creates and maintains compatibility and interfaces for the most common and advanced vision image processing libraries and applications. Major support is available for **MVTec Halcon, National Instruments' LabVIEW** and **MathWorks' MATLAB**.

Supported vision standards:

Supported vision libraries:

Supported operating systems:

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

KAYA Instruments

Please feel free to contact our sales team for pricing, availability, documentation or customization at our e-mails – we will be happy to provide assistance and consultation.
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