

## Datasheet Iron2020E CoaXPress

### Iron2020E CoaXPress

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

#### Innovative Approach

**Iron2020E CoaXPress** is an ultra-thin high speed, low-cost, low-power Global shutter CMOS camera with a Micro-BNC interface which supports 4.2 Megapixel high quality video at rates up to 290.0 fps.

#### Intelligent Design

With an extremely compact form factor, the **Iron2020E CoaXPress** 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 290.0 fps
- Monochrome sensor variation
- Up to 4 W power at full rate
- Full image processing feature set
- CoaXPress v2.1 standard compliant
- GenCam compliant
- 1 CoaXPress link
- C 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 $\mu\text{m}$ x 6.5 $\mu\text{m}$
Resolution	2048 (H) x 2048 (V)
Sensor Size	18.8 mm diagonal
Sensor	Gpixel GSENSE2020E
Sensor Type	CMOS
Output Interface	CoaXPress v2.1
Supported Interface rates	CXP-12, CXP-6 or CXP-3
Interface Connector	Micro-BNC
Number of Connectors	1
Output Resolution	8 or 10 bit
Maximum Frame Rate	<ul style="list-style-type: none"> <li>• 290 fps @8 bit resolution</li> <li>• 230 fps @10 bit resolution</li> </ul>
Tap Geometry	1X-1Y
Image Acquisition	Continuous / Triggered
Camera Control	Gen<i>Cam
Electronic Shutter	Global
Monochrome / Color	Monochrome
Temporal Noise	<6.2 e- at 25 °C
Full Well Charge	19000 e-
Dynamic Range	>70 dB at 595 nm
Signal-to-Noise Ratio (SNR max)	41.5 dB at 595 nm
Quantum Efficiency (QE)	>72% at 595 nm
Shortest Exposure	2.6 $\mu\text{s}$
IR Filter (optional)	-
Exposure control	Automatic/Manual
Gain control	Automatic/Manual
Color Control	<ul style="list-style-type: none"> <li>• RGB offsets</li> <li>• Auto / Manual White balance</li> <li>• LUT</li> </ul>
Image enhancement	<ul style="list-style-type: none"> <li>• Defect pixel correction</li> <li>• Gain (Analog / Digital)</li> <li>• Auto / Manual black level</li> <li>• Binning</li> <li>• Auto Exposure / Gain</li> <li>• Flat field / Fixed pattern noise correction</li> </ul>
Additional on camera processing	<ul style="list-style-type: none"> <li>• ROI</li> <li>• Image flip</li> <li>• Frame counter</li> <li>• Operational Time Counter</li> <li>• Binning</li> </ul>
Power Input	<ul style="list-style-type: none"> <li>• PoCXP</li> <li>• External 11 V - 28 V input</li> </ul>

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	<ul style="list-style-type: none"> <li>• 1 opto-isolated input</li> <li>• 1 opto-isolated output</li> <li>• 1 singled-ended TTL output</li> <li>• 1 singled-ended TTL/LVTTL input</li> </ul>
Usage	<ul style="list-style-type: none"> <li>• Any System I/O input lines can be connected to any I/O output line</li> <li>• Any I/O input line can generate any trigger event</li> <li>• Any I/O input line can trigger a timer</li> <li>• Any I/O input line can trigger a counter</li> </ul>
Electrical specifications	<ul style="list-style-type: none"> <li>• TTL lines: 5 V TTL compliant</li> <li>• LVTTL lines: 3.3 V LVTTL compliant</li> <li>• Isolated lines: opto-isolated lines with voltage range up to 30 V</li> </ul>
Timers	<ul style="list-style-type: none"> <li>• 4 general purpose timers</li> <li>• Configurable delay and duration</li> <li>• 32-bit accumulator</li> </ul>
Counters	<ul style="list-style-type: none"> <li>• 4 general purpose counters</li> <li>• Configurable value and duration</li> <li>• 32-bit counter</li> </ul>

## Mechanical

Dimensions (including lens mount)	44 mm x 44 mm x 53 mm (1.7" x 1.7" x 2.1")
Weight (without lens)	136 g (4.8 oz)
Lens Mount	C
Sensor Alignment	Active
Ingress Protection	Optional IP67 (with protective lens tube)

## Environmental Conditions

Operating ambient air temperature	Commercial : 0°C to +50°C ( 32°F to +122°F) Industrial : -40.0°C to +80°C ( -40°F to +176°F)
Operating ambient air humidity	10% to 90% RH non-condensing
Storage ambient air temperature	Commercial : 0°C to +55°C ( 32°F to +131°F) Industrial : -40.0°C to +85°C ( -40°F to +185°F)
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)

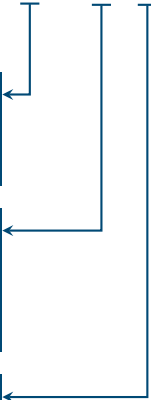
Certifications	
Electromagnetic - EMC standards	<ul style="list-style-type: none"> <li>• The European Council EMC Directive 2004/108/EC</li> <li>• The Unites States FCC rule 47 CFR 15</li> </ul>
EMC - Emission	<ul style="list-style-type: none"> <li>• EN 55022:2010 Class B</li> <li>• FCC 47 Part 15 Class B</li> </ul>
EMC - Immunity	<ul style="list-style-type: none"> <li>• EN 55024:2010 Class B</li> <li>• EN 61000-4-3</li> <li>• EN 61000-4-4</li> <li>• EN 61000-4-6</li> </ul>
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

# Iron2020EM-SC

Color options
M – Monochrome

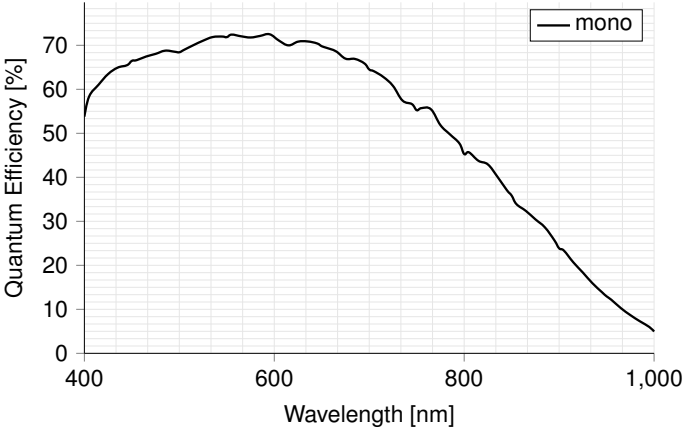
Grade
S – Commercial
R – Industrial

Lens mount
C – C-Mount



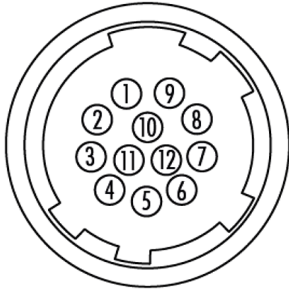
# SPECTRAL RESPONSE

## Monochrome



# GENERAL PURPOSE INPUT OUTPUT

## GPIO Pinout – 12 Pin Hirose Connector



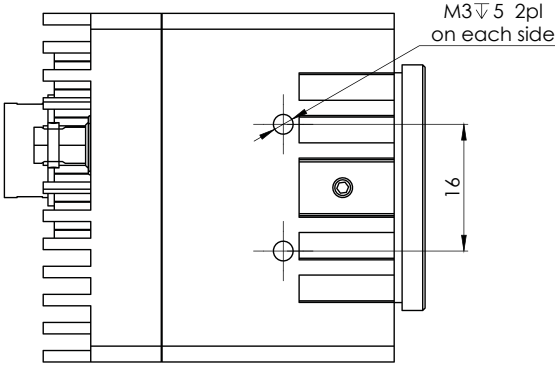
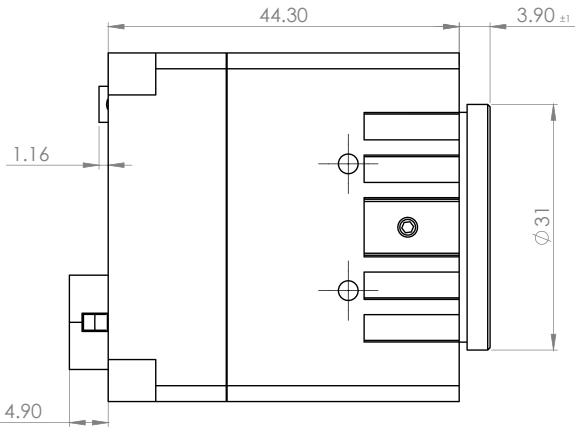
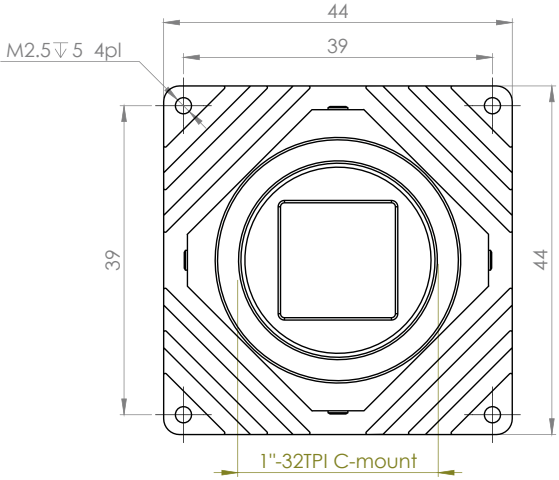
- |                    |                     |
|--------------------|---------------------|
| 1. DC Power return | 7. OUT1 (TTL)       |
| 2. DC Power        | 8. IN1 (OPTO)       |
| 3. RS232 RX        | 9. IN2 (TTL/LVTTL)  |
| 4. RS232 TX        | 10. IN1 Return      |
| 5. OUT2 Return     | 11. IN2/OUT1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

International Distributor



Sky Blue Microsystems GmbH  
Geisenhausenerstr. 18  
81379 Munich, Germany  
+49 89 780 2970, [info@skyblue.de](mailto:info@skyblue.de)  
[www.skyblue.de](http://www.skyblue.de)

## 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.

Sales Inquiries: [info@skyblue.de](mailto:info@skyblue.de)

Technical Support: [info@skyblue.de](mailto:info@skyblue.de)



© 2024 KAYA Instruments, Inc. All rights reserved. KAYA Instruments, the KAYA Instruments Komodo logo, JetCam logo, Predator, Iron and combinations thereof are trademarks of KAYA Instruments, Inc. in the United States and/or other jurisdictions. Microsoft Windows is a registered trademark of Microsoft Corporation. Other names are for informational purposes only and may be trademarks of their respective owners. KAYA Instruments is not liable for harm or damage incurred by information contained in this document.