

Iron4521 CoaXPress

Iron4521 CoaXPress Small Form Factor, Ruggedized Camera

Innovative Approach

The **Iron4521 CoaXPress** is a low-cost, low-power, high resolution global CMOS camera with up to 50 Gbps CoaXPress 2.1 interface (Micro-BNC connector) which supports 21 MP high quality video at rates of up to 232 fps.

Intelligent Design

The GSPRINT4521 is a global shutter sensor with a 4.5µm pixel size. With a compact outline the camera can be fitted into tight spaces. Superior sensor performance allows very low light vision capabilities.

Applications:

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

Key Features:

- 21 Megapixel video up to 232 fps
- Monochrome and Color models
- Up to 12W power at full rate
- Full image processing feature set
- Up to 50 Gbps CoaXPress interface
- F, EF, Birger EF or M42 mounts are available
- Commercial and rugged industrial grade options
- Full EMVA1288 report
- Full built-in self-test (BIT)
- Full built-in voltage testing
- Customization as per user requirements

Technical Data

Feature	Description
Pixel size	4.5 μm x 4.5 μm
Resolution	5120 (H) x 4096 (W)
Sensor size	23 mm x 18.4 mm APS-C
Sensor	Gpixel GSPRINT 4521
Video output	X4 channels CoaXPress 2.1 up to 50 (12.5 x 4) Gbps (CXP3, CXP6, CXP12)
Interface connector	x 4 Micro-BNC (HD-BNC)
Digitalization	8, 10 or 12-bit
Electronic shutter	Global shutter
Shutter speed	TBD
Exposure control	Automatic Exposure/Gain, manual Exposure/Gain
Image acquisition	Continuous/Triggered
Trigger input ^[1]	External, pulse generator, SW
Trigger mode	Free run, externally or internally triggered
Trigger options	Edge, de-bounce
Output resolution	8 bit, 10 bit, 12 bit
Maximal Frame Rate	NS model: <ul style="list-style-type: none"> ▪ 232 fps@8 bit ▪ 186 fps@10 bit ▪ 155 fps@12 bit
Subsampling	1 x 2 / 2 x 1 / 2 x 2 (user configurable)
Monochrome/color	Monochrome / color
Full well charge	32 ke- @ PGA gain x0.75 / 120 ke- (2 x 2)
Dynamic range	65dB @ PGA gain x1.25
Dark current	11.4 e- pxl/sec @ 50°C
Quantum efficiency (QE) X FF	<63% @570 nm
Temporal noise	6.1 e- @ PGA gain x 6
Angular response	17° (80% horizontal response)
Regulation	FCC Part 15 Class A, CE, RoHs2 (official certification is optional)
On camera processing	<ul style="list-style-type: none"> ▪ Defect pixel correction ▪ Digital binning (2 x 2) ▪ ROI ▪ Auto exposure/Gain ▪ LUT ▪ Gain (Analog/Digital) – manual/auto ▪ Auto/Manual black level ▪ Image H/V flip
Pulse generator	Yes, programmable at 8 ns increments
Additional features	<ul style="list-style-type: none"> ▪ Over/under voltage protection ▪ Three points of temperature sensing ▪ Per-pixel FPN (optional) ▪ Reverse-voltage polarity protection ▪ Frame-by-frame shutter speed change ▪ Global reset
GPIO connection	Two inputs, two outputs, external trigger & strobe controller

Mechanical & Electrical

Feature	Description
Dimensions (without lens mount)	75 mm x 75 mm x 44.4 mm (Height x Width x Depth)
Lens mount	F-Mount, Canon EF-mount, Birger EF-mount or M42-mount
Weight (without lens or mount)	450g
Typical current	375mA at 24V input
Power input	<ul style="list-style-type: none"> PoCXP full support External 10-28V input
Power consumption	<11W @ 24V DC
Mount	Front mount
Heat dissipation	Active airflow (Fan)
Operating temperature	Commercial: 0°C to 50°C, 20-85% humidity (non-condensing) Industrial: -40°C to 70°C, 20-85% humidity (non-condensing)
Storage temperature	Commercial: 0°C to 55°C, 20-85% humidity (non-condensing) Industrial: -40°C to 75°C, 20-85% humidity (non-condensing)
Shock/Vibration ^[2]	MIL-SPEC 810F

1. The output can be synchronized to the trigger on a frame by frame basis.

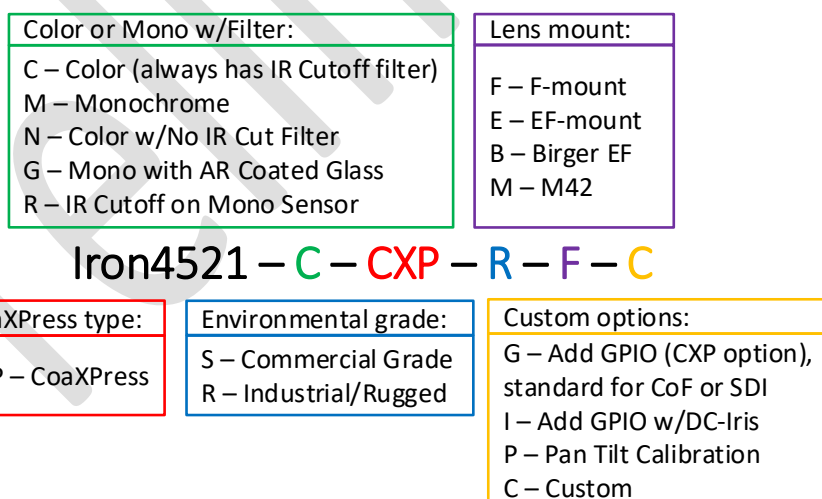
2. MIL 810F is only available for the Industrial/Rugged model and is not available in the commercial version.

* Performance is measured at full resolution, maximum bitness and the maximum frame rate for that bitness.

** KAYA Instruments reserves the right to update the data sheet from time to time without prior notice.

Ordering Information

KAYA's Part Numbers are intuitive and derived directly from the product's properties. Each index represents a different property of the camera, according to the following diagram:



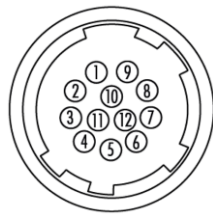
For example: a High-Speed Iron CXP 4521 with a colored sensor, UV-IR cut filter and F-mount, rated for commercial use would go by Iron4521C-CXP-RF. It is also possible to buy peripheral equipment in addition to the camera as listed in the following table:

Product name	Product part number
Cable, 12P Hirose connector	KY-CBL-006

Please contact a sales representative over at info@kayainstruments.com for a full list of peripherals including cables and frame grabbers.

General Purpose Input Output

GPIO Pinout – 12 Pin Hirose Connector



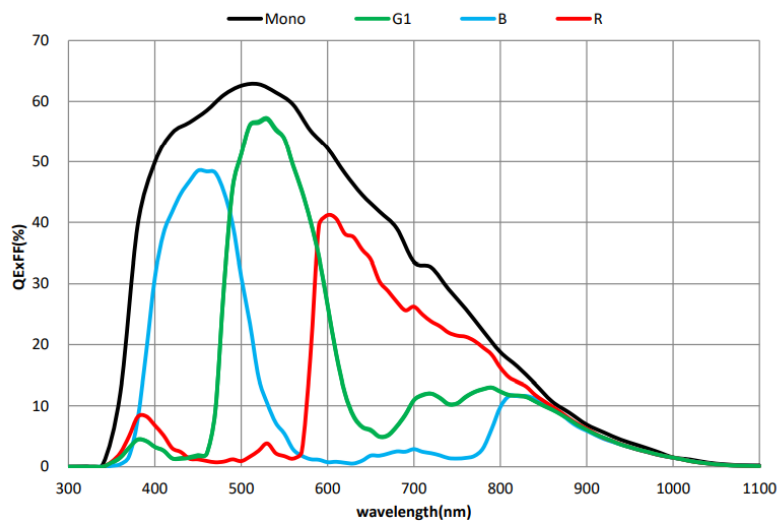
- | | |
|-----------------------|-------------------------|
| 1. DC Power return | 7. OUT1 (TTL) |
| 2. DC Power | 8. IN1 (OPTO) |
| 3. RS232 RX | 9. IN2 (TTL) |
| 4. RS232 TX | 10. IN1/OUT2 Return |
| 5. OUT2 Return (OPTO) | 11. IN2 Return (LVTTTL) |
| 6. RS232 Return | 12. OUT2 (OPTO) |

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

GSPRINT 4521 Spectral Responses

GSPRINT 4521



Mechanical Drawings

TBD

Compatibility

KAYA Instruments creates and maintains compatibility and interfaces for the most common and advanced vision image processing libraries and applications.

❖ Supported vision standards:



❖ Supported vision libraries:



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