

❖ **SP-5000-CXP2**  
5-megapixel CMOS global shutter



- **Large format 5 MP CMOS imager (global shutter)**
- **Up to 211 fps at full resolution**
- **5.0  $\mu\text{m}$  square pixels in a 5:4 aspect ratio**
- **60 dB linear dynamic range with up to 84 dB piece-wise HDR modes**
- **Analog and digital gain control for less quantized noise in low-light situations**
- **Exposure control from 10  $\mu\text{s}$  (1/100,000) to 8 seconds in 1  $\mu\text{s}$  steps**
- **2X binning for increased sensitivity (monochrome only)**
- **ROI modes for flexible readout, windowing, or increasing frame rate**
- **Monochrome or color models with built-in color interpolation on color model**
- **8/10/12-bit digital output over two-channel CoaXPRESS interface**
- **Accepts power via CoaXPRESS or separate 12-pin connector**
- **C-mount lens mount**
- **Automatic Level Control (ALC) for dynamic lighting conditions**
- **Programmable P-iris lens control or 3-axis control for operation of motorized lenses, pan/tilt heads, or other analog accessories**

# Specifications for SP-5000-CXP2

# Spark Series

Specifications		SP-5000-CXP2
Sensor		1" CMOS global shutter
System clock		72 MHz (for pulse generator)
Frame rate, full frame		211 frames/sec. @ 8-bit
Active area		12.8 mm (h) x 10.2 mm (v), 16.39 mm diagonal
Cell size		5.0 μm (h) x 5.0 μm (v)
Active pixels		2560 (h) x 2048 (v)
Read-out modes		Full ROI: 2560 (h) x 2048 (v) up to 211 fps Any start line, any height in 1 line steps, with X offset and width in 64 pixel steps
Binning		1x2, 2x1, 2x2 (monochrome only)
Color interpolation (SP-5000C)		24-bit RGB output at 44 fps
EMVA 1288 Parameters		10-bit output format
Absolute sensitivity (mono)		23.50 p (λ = 525 nm)
Absolute sensitivity (color)		36.08 p λ = 525 nm
Maximum SNR (mono)		41.48 dB
Maximum SNR (color)		38.00 dB
Traditional SNR*		mono: >55 dB (0 dB gain) color: >53 dB (0 dB gain, green)
Video signal output		mono: 8/10/12-bit monochrome color: 8/10/12-bit Bayer or 24-bit RGB
Auto-iris lens video output		0.7Vp-p, with 0.3V horiz. sync
Gain		Manual/automatic 0 dB to +24 dB
White balance (SP-5000C)		Manual, one-push auto, or continuous (3000K to 9000K)
Gamma		0.45-1.0 (16 steps) or 256-point LUT
Synchronization		Internal
Trigger input		TTL, CXP, Pulse Generators (4), Software, NAND Out (2), GPIO
Trigger modes		EPS, PIV, Trigger Width, Timed RCT (with ALC), Sequence
Electronic shutter		Timed exposure: 10 μs to 8 sec in 1 μs steps Auto shutter: 1/211 to 1/100000 sec.
Auto Level Control (ALC)		Shutter range from 1/211 to 1/100000, gain range from 0 dB to +24 dB, auto iris control Tracking speeds and max values adjustable.
Pre-processing functions		Flat field correction, color shading correction (SP-5000C), blemish compensation (512 pixels)
3-axis control		Programmable control of motorized lenses, pan/tilt heads, and other analog accessories
Operating temperature		-45°C to +70°C†
Storage temperature		-45°C to +70°C
Humidity		20 - 80% non-condensing
Vibration		10 G (20Hz to 200Hz XYZ)
Shock		80 G
Regulations		CE (EN61000-6-2, EN61000-6-3), FCC Part 15 class B, RoHS/WEEE
Power		12V to 24V DC ± 10%. 5.9-6.8W typical (full frame @ 12V)
Lens mount		C-mount (fixed or adjustable)
Dimensions (H x W x L)		62 mm x 62 mm x 55.5 mm
Weight		215 g

## Ordering Information

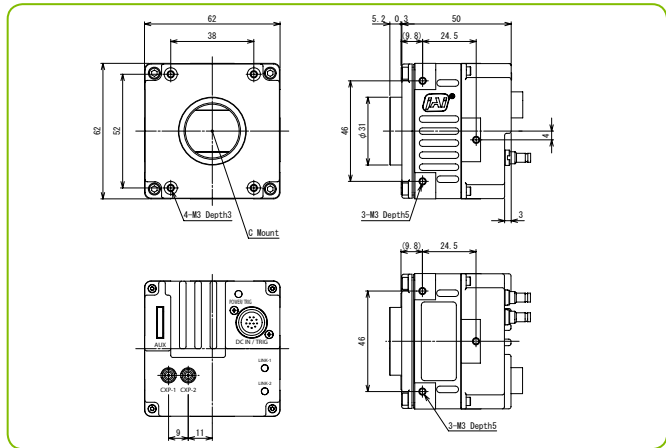
SP-5000M-CXP2	Monochrome camera with two-channel CoaXPress
SP-5000C-CXP2	Color camera with two-channel CoaXPress

Note: Add-CX to model number for adjustable c-mount.

\*Traditional SNR is based on random noise in a single frame, where EMVA SNR measurements consider more comprehensive noise sources and variance over time. For a more complete description, see the manual.

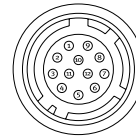
†Reduced performance may occur when operating outside the standard range of -5°C to +45°C

## Dimensions



## Connector pin-out

### DC In / Trigger

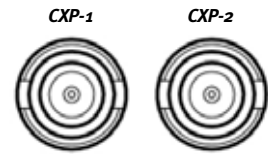


HIROSE HR10A-10R-12PB-01

### Connector Pin-out

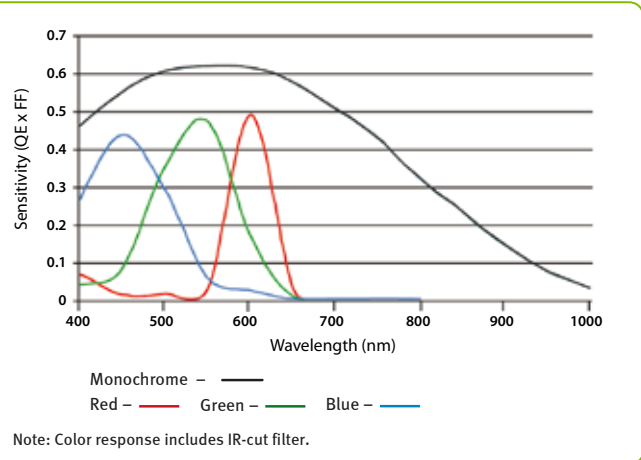
- Pin 1 GND
- 2 +12V to +24V DC input
- 3 GND
- 4 NC
- 5 Opto In-
- 6 Opto In+
- 7 Opto Out-
- 8 Opto Out+
- 9 TTL out 1
- 10 TTL in 1
- 11 +12V to +24V DC input
- 12 GND

### CoaXPress Interface



- One- or two-channel output
- Requires cable(s) with 75Ω 1.0/2.3 DIN-type connector
- Supports up to 6.25 Gbps per channel
- Power can be supplied on channel #1

## Spectral Response



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