

❖ **SP-12000-CXP4**
12-megapixel CMOS global shutter

CoaXPress®



- **Large format 12 MP CMOS imager (global shutter)**
- **APS-C optical format with 28.16 mm diagonal**
- **Up to 189 fps at full resolution**
- **5.5 μm square pixels in a 4:3 aspect ratio**
- **Exposure control from 15 μs to 8 seconds in 1 μs steps**
- **Single- and multi-ROI modes for flexible readout, windowing, or increasing frame rate**
- **Flat-field and blemish compensation plus in-camera CMOS pattern correction**
- **Built-in high dynamic range function provides up to 90 dB dynamic range (monochrome only)**
- **2X binning for increased sensitivity (monochrome only)**
- **Automatic Level Control (ALC) for dynamic lighting conditions**
- **8/10-bit digital output over four-channel CoaXPress interface**
- **Monochrome or Bayer color models available**
- **12-pin connector for power and GPIO, plus additional I/O via 10-pin auxiliary connector**
- **F-mount lens mount**

Specifications for SP-12000-CXP4

Spark Series

Specifications	SP-12000-CXP4
Sensor	APS-C size CMOS global shutter (CMV12000)
Frame rate, full frame	189 frames/sec. @ 8-bit, CXP-6x4
Active area	22.5 mm (h) x 16.9 mm (v), 28.16 mm diagonal
Cell size	5.5 μm (h) x 5.5 μm (v)
Active pixels	4096 (h) x 3072 (v)
Read-out modes	4096 (h) x 3072 (v) up to 189 fps
ROI	128-4096 wide with width and offset in 16-pixel steps
Binning	16-3072 high with height and offset in 2-line steps 1x2, 2x1, 2x2 (monochrome only)
EMVA 1288 Parameters	10-bit output format, 90 fps
Absolute sensitivity (mono)	35.76 p (λ = 525 nm)
Absolute sensitivity (color)	46.58 p (λ = 525 nm)
Maximum SNR (mono)	39.60 dB
Maximum SNR (color)	37.77 dB
Traditional SNR*	mono >53 dB (0 dB gain) color >50 dB (0 dB gain, green)
Video signal output	8/10-bit monochrome 8/10-bit Bayer (12-bit output available in IP Bypass mode)
Gain	Manual/automatic 0 dB to +24 dB
White balance (SP-12000C)	Manual, one-push auto, or continuous (3000K to 9000K)
Gamma	0.45-1.0 (9 steps) or 256-point LUT
Synchronization	Internal
Trigger input	TTL, CXP, Pulse Generators (4), Software, NAND Out (2), GPIO
Trigger/exposure modes	EPS, PIV, Trigger Width, Sequence
Electronic shutter	
Timed exposure	15 μs to 8 sec in 1 μs steps
Auto shutter	1/189 to 1/10000 sec.
Auto Level Control (ALC)	Shutter range from 1/189 to 1/10000, gain range from 0 dB to +24 dB Tracking speeds and max values adjustable.
Pre-processing functions	Flat field correction, color shading correction (SP-12000C), blemish compensation (1000 pixels), black level control, DSNU correction
Operating temperature	-5°C to +30°C †
Storage temperature	-25°C to +60°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 (12-pin or PoCXP)	12V to 24V DC ± 10%. 11.4W typical (12-pin, full frame, 4-lane @ 12V)
Lens mount	F-mount (46.5 mm flangeback)
Dimensions (H x W x L)	62 mm x 62 mm x 127.5 mm
Weight	510 g

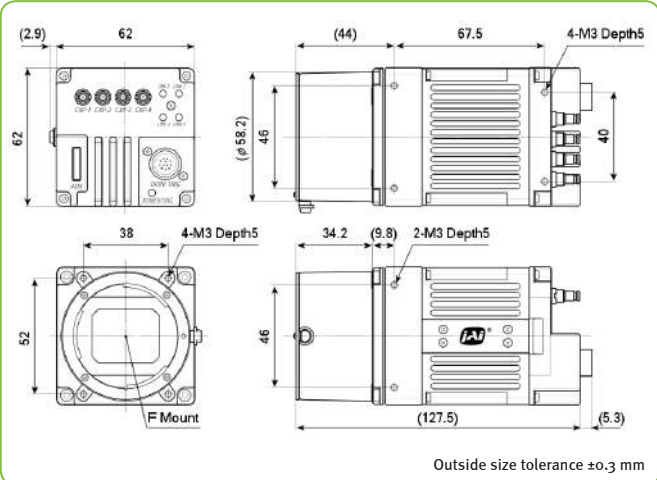
Ordering Information

SP-12000M-CXP4	Monochrome camera with four-channel CoaXPress
SP-12000C-CXP4	Color camera with four-channel CoaXPress

*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.

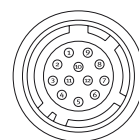
Note: System clock frequency is 60 MHz - used for Pulse Generator function.

Dimensions



Connector pin-out

DC In / Trigger

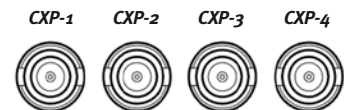


HIROSE HR10A-10R-12PB-01

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	

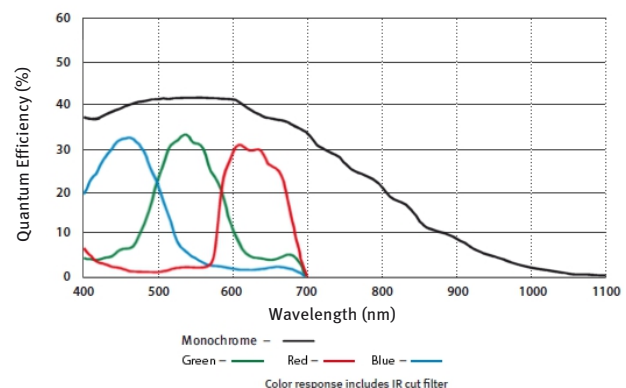
CoaXPress Interface



One-, two-, or four-channel output
Requires cable(s) with 75Ω
1.0/2.3 DIN-type connector
Supports up to 6.25 Gbps per channel

Auxiliary Connector
HIROSE 10-Pin Connector 3260-10S3(55)
Provides LVDS in plus TTL I/O
See user manual for details

Spectral Response



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