

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



PRELIMINARY

- **Large format 5 MP CMOS imager (global shutter)**
- **Up to 250 fps at full resolution (CoaXPress x4)**
- **5.0 μm square pixels in a 5:4 aspect ratio**
- **60 dB linear dynamic range with 100 dB piece-wise HDR mode**
- **On-chip 4-channel analog gain for individual R, G1, G2, + B control**
- **Binning 2X and 4X on-chip for increased sensitivity and maximum performance**
- **ROI and decimation modes for flexible readout, windowing, or increasing frame rate – 980 fps at 1280 x 1024 pixels, 1845 fps at 640 x 480 pixels**
- **Monochrome or color models with raw Bayer or in-camera RGB/YUV interpolation**
- **Multiple interface options including CoaXPress (x2/x4), Mini Camera Link, GigE Vision (LAG), and USB 3.0**
- **C-mount or F-mount lens mounts**
- **Automatic Level Control (ALC) for dynamic lighting conditions**
- **Programmable 3-axis control for motorized lenses, pan/tilt heads, and other analog accessories**



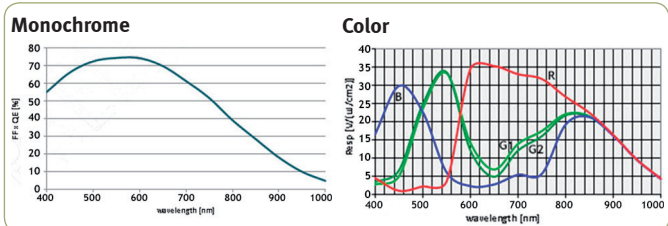
Specifications for SP-5000 family

PRELIMINARY

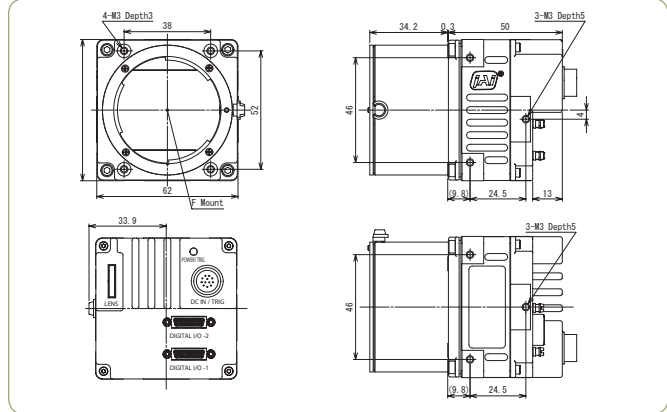
Specifications		SP-5000 family
Sensor		1" CMOS global shutter
Pixel Clock		70.5 MHz
Frame rate, full frame		250 frames/sec.*
Active area		12.8 mm (h) x 10.2 mm (v)
Cell size		5.0 μm (h) x 5.0 μm (v)
Active pixels		2560 (h) x 2048 (v)
Horizontal output frequency		TBD
Read-out modes		2560 (h) x 2048 (v) 250 fps*
Full ROI (mono)		Any start line, any height in 1 line steps, with X offset and width in 16 pixel steps
ROI (color)		Any start line, any height, in 2L steps with X offset and width in 16 pixel steps
Binning		2x and 4x, H and V
Sensitivity (SP-5000M)		2.5 Lux (shutter off, max. gain, f1.4, 50% video)
Sensitivity (SP-5000C)		4.8 Lux (shutter off, max. gain, f1.4, 50% green)
S/N ratio		mono >57 dB. (0 dB gain) color >55 dB. (0 dB gain, green)
Video signal output		8/10/12-bit monochrome 8/10/12-bit Bayer
in-camera interpolation		24/30-bit RGB, YUV411, or YUV422
Auto-iris lens video output		0.7Vp-p, with 0.3V horiz. sync
Gain		Monochrome Manual/automatic -3 dB to +24 dB Color Manual/automatic 0 dB to +24 dB
White balance (SP-5000C)		Manual, one-push auto, or continuous (3200K to 9000K)
Gamma		0.45-1.0 (16 steps) or 256-point LUT
Synchronization		Internal
Inputs/Outputs		GPIO in/out through Hirose 12-pin connector
Trigger input		Line1, Line2, PG1, PG2, Software1
Trigger modes		EPS, PIV, Trigger Width, RCT (with ALC)
Electronic shutter		Timed exposure 10 μs to 8 sec in 1 μs steps Auto shutter 1/44 to 1/100,000 sec.
Auto level control (ALC)		Shutter range from 1/44 to 1/100,000, 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		-5° C to +45° C
Storage temperature		-25° C to 60° C
Humidity		20 - 80% non-condensing
Vibration		10G (20 Hz to 200 Hz XYZ)
Shock		80 G
Regulations		CE (EN 61000-6-2, EN 61000-6-3), FCC part 15 class B, RoHS/WEEE
Power		12V to 24V DC ± 10%. 5.3W typical (full frame @ 12V)
Lens mount		F-mount, C-mount
Dimensions (H x W x L)		F-mount 62 mm x 62 mm x 84.5 mm C-mount 62 mm x 62 mm x 55 mm
Weight		F-mount TBD g C-mount TBD g

*CoaXPress x4, 8-bit

Spectral Response



Dimensions



Drawings and dimensions are for Mini Camera Link model and F-mount. Consult JAI for other configurations.

Connector pin-out

DC In / Trigger

HIROSE HR10A-10R-12PB-01

Connector Pin-out

Pin	Signal
1	GND
2	+12V to +24V DC input
3	Opto in 2(-)/GND
4	Opto in 2(+)/Auto iris lens
5	Opto in 1(-)
6	Opto in 1(+)
7	Opto out 1(-)
8	Opto out 1(+)
9	Opto out 2(-)
10	Opto out 2(+)
11	+12V to +24V DC input
12	GND

* Pins 3 and 4 can be configured by internal switch selection

Mini-CL interface

Interface 1

Pin	Signal	Function
1	GND	
13	GND	
14	GND	
26	GND	
2	15	-/+ TxOUT 0
3	16	-/+ TxOUT 1
4	17	-/+ TxOUT 2
5	18	-/+ TxClk
6	19	-/+ TxOUT 3
7	20	+/- RXD
8	21	-/+ TXD
9	22	CC1-/CC1+
10	23	CC2+/CC2-
11	24	CC3-/CC3+
12	25	CC4+/CC4-

For Medium or Full implementations a second Mini-CL interface is provided. Video channel Y is on pin pairs (2,15), (3,16), (4,17), (5,18), and (6,19). Video channel Z is on pin pairs (8,21), (9,22), (10,23), (11,24) and (12,25). Consult manual for specific bit depths and pin assignments.

Interfaces

Mini Camera Link (full)	133 fps (8-bit)
CoaXPress (x1)	119 fps (8-bit)
CoaXPress (x2)	209 fps (8-bit)
CoaXPress (x4)	250 fps (8-bit)
GigE Vision (LAG)	44 fps (8-bit)
USB 3.0	72 fps (8-bit)

Ordering Information

SP-5000M-MCL	Monochrome camera with Mini Camera Link
SP-5000C-MCL	Color camera with Mini Camera Link
SP-5000M-CX2	Monochrome camera with CoaXPress x1/x2
SP-5000C-CX2	Color camera with CoaXPress x1/x2
SP-5000M-CX4	Monochrome camera with CoaXPress x4
SP-5000C-CX4	Color camera with CoaXPress x4
SP-5000M-USB	Monochrome camera with USB 3.0
SP-5000C-USB	Color camera with USB 3.0

Note: Add -C to model number for C-mount or -F for F-mount

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