

➤ **SP-5000-PMCL**  
5-megapixel CMOS Global Shutter



- **Large format 5 MP CMOS imager (global shutter)**
- **Up to 134 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 100 dB piece-wise HDR modes**
- **Auto-scaling analog front-end for improved dynamic range**
- **On-chip 4-channel analog gain for individual R, G1, G2, + B control**
- **Exposure control from 10  $\mu\text{s}$  (1/100,000) to 8 seconds in 1  $\mu\text{s}$  steps\***
- **2X and 4X binning for increased sensitivity (monochrome only)**
- **ROI modes for flexible readout, windowing, or increasing frame rate**
  - 270 fps at 1280 x 1024 pixels
  - 548 fps at 640 x 480 pixels
- **Monochrome or raw Bayer color models**
- **Accepts power over Mini Camera Link or 12-pin connector for maximum application flexibility**
- **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**

\*Some initial models may be limited to 50  $\mu\text{s}$  (1/20,000). Consult JAI.

[www.jai.com](http://www.jai.com)



See the possibilities

# Specifications for SP-5000-PMCL

# Spark Series

Specifications	SP-5000-PMCL
Sensor	1" CMOS global shutter (Lince5M250)
Pixel clock	48 MHz
Frame rate, full frame	134 frames/sec.
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)
Horizontal output frequency	47.989 kHz to 290.763 kHz depending on tap geometry and CL clock frequency
Read-out modes	<p>Full ROI (mono) 2560 (h) x 2048 (v) up to 134 fps Any start line, any height in 1 line steps, with X offset and width in 16 pixel steps</p> <p>ROI (RGB) Any start line, any height, in 2L steps with X offset and width in 16 pixel steps</p> <p>Binning 1x2, 2x1, 2x2 (monochrome only)</p>
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*	<p>mono &gt;55 dB (0 dB gain)</p> <p>color &gt;53 dB (0 dB gain, green)</p>
Video signal output	<p>mono 8/10/12-bit monochrome</p> <p>color 8/10/12-bit Bayer</p>
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 (8 steps) or 256-point LUT
Synchronization	Internal
Trigger input	TTL, CL, Pulse Generators (4), Software, NANDo, NAND1
Trigger modes	EPS, PIV, Trigger Width, Timed RCT (with ALC)
Electronic shutter	
Timed exposure	10 µs to 8 sec in 1 µs steps
Auto shutter	1/134 to 1/1000000 sec.
Auto Level Control (ALC)	Shutter range from 1/134 to 1/1000000, 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%. 4.5W 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

\*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.

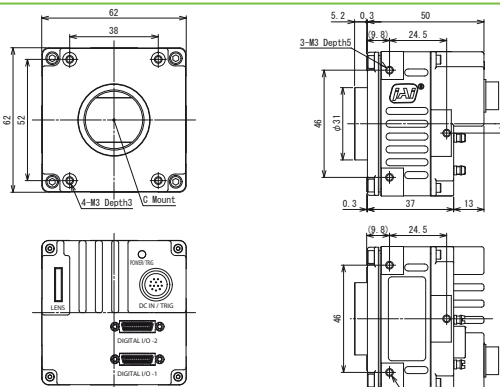
†Reduced performance may occur when operating outside the standard range of -5°C to +45°C

## Ordering Information

SP-5000M-PMCL	Monochrome camera with Mini Camera Link
SP-5000C-PMCL	Color camera with Mini Camera Link

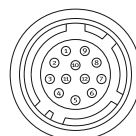
Note: Add -CX to model number for adjustable C-mount

## Dimensions



## Connector pin-out

### DC In / Trigger

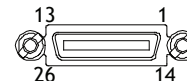


HIROSE HR10A-10R-12PB-01

Pin	Signal
1	GND
2	+12V to +24V DC input
3	GND
4	Iris video out
5	NC
6	NC
7	NC
8	NC
9	TTL out 1
10	TTL in 1
11	+12V to +24V DC input
12	GND

### Mini-CL interface

#### Interface 1



Pin	Signal	Function	
1	26	Power	+12V to +24V DC in
13	14	GND	Power return
2	15	-/+ TxOUT 0	CL Video Channel 1
3	16	-/+ TxOUT 1	
4	17	-/+ TxOUT 2	
5	18	-/+ TxClk	
6	19	-/+ TxOUT 3	
7	20	+/- RXD	Serial in
8	21	-/+ TXD	Serial out
9	22	CC1-/CC1+	Ext. trigger
10	23	CC2+/CC2-	Not used
11	24	CC3-/CC3+	Not used
12	25	CC4+/CC4-	Not used

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

## Spectral Response

