

■ 4112 x 3008

■ 64 fps

Spark Series 



## ❖ SP-12400-PMCL

12.4 megapixel CMOS area scan



- **High resolution 12-megapixel CMOS imager (global shutter)**
- **64.6 fps at full resolution**
- **3.45  $\mu\text{m}$  square pixels**
- **User selectable ROI and multi-ROI functions**
- **Horizontal and vertical binning (monochrome model) for increased sensitivity**
- **Edge enhancement function**
- **Shading/blemish compensation, gamma correction, lookup table and more**
- **Excellent shock and vibration resistance**
- **8/10/12-bit\* output over GenICam-compliant Camera Link 2.0 interface**
- **Supports power over Camera Link or via separate 12-pin connector**
- **C-mount lens mount**

\* Some video processing functions not available with 12-bit output

# Specifications for SP-12400-PMCL

# Spark Series

| Specifications            |   | SP-12400-PMCL   |
|---------------------------|---|---|
| Sensor                    | 1.1" CMOS global shutter (IMX253)   |   |
| Active pixels             | 4112 x 3008 or 4080 x 3008, depending on tap geometry   |   |
| Frame rate, full frame    | 64.6 frames/sec. @ 8-bit (1x10_1Y)  |   |
| Active area               | 14.2 mm (h) x 10.4 mm (v) - 17.6 mm diagonal  |   |
| Pixel size                | 3.45 μm x 3.45 μm   |   |
| Camera Link clock         | 37.1 / 74.3 / 84.9 MHz  |   |
| System clock              | 74.25 MHz (for pulse generator)   |   |
| Read-out modes            | Full ROI (single) 4112 (h) x 3008 (v) up to 64.6 fps<br>H: 96 to 4112 pixels in 16 pixel steps<br>V: 8 to 3008 lines in 4 line steps<br>ROI (multi) Binning Up to 64 areas can be defined (non-overlapping).<br>1x2, 2x1, 2x2 |   |
| EMVA 1288 Parameters      | 10-bit output format  |   |
| Absolute sensitivity      | Mono: 3.50 p Color: 4.00 p (λ = 525 nm)   |   |
| Maximum SNR               | Mono: 40.03 dB Color: 40.10 dB  |   |
| Traditional SNR*          | >60 dB (0 dB gain, 10-bit)  |   |
| Video signal output       | Monochrome: 8/10/12-bits†<br>Color: 8/10/12-bit Bayer†  |   |
| Video modes               | Normal/ROI, Multi ROI, Sequencer (2)  |   |
| Gain                      | Manual/auto 0 dB to +24 dB  |   |
| White balance             | Off, 4 presets (3200K, 5000K, 6500K, 7500K), or one-push/continuous AWB (3000K to 9000K)  |   |
| Gamma/LUT                 | 0.45 to 1.0 (9 steps) or 257-point programmable LUT   |   |
| Shading correction        | Flat shading, color shading   |   |
| Trigger input             | TTL, Camera Link (CC1), Opto In (2), Pulse Generators (4), Software, NAND Out (2), User Output (4)  |   |
| Exposure modes            | Timed/EPS, RCT, Trigger Width, Auto   |   |
| Electronic shutter        | Timed: 15.26 μs to 8 s<br>Trigger width: 15.26 μs to ∞ s  |   |
| Auto Level Control (ALC)  | Shutter range from 100 μs to 1/frame rate, gain range from 0 dB to +24 dB. Tracking speeds and max. values adjustable.  |   |
| Pre-processing functions  | Edge enhancer, blemish compensation (800 pixels)  |   |
| Operating temp. (ambient) | -5°C to +45°C (20 to 80% non-condensing)  |   |
| Storage temp. (ambient)   | -25°C to +60°C (20 to 80% non condensing)   |   |
| Vibration                 | 10G (20 Hz to 200 Hz, XYZ directions)   |   |
| Shock                     | 80G   |   |
| Regulations               | CE (EN61000-6-2, EN61000-6-3)<br>FCC Part 15 Class B, RoHS/WEEE   |   |
| Power                     | 12-pin PoCL   | +12V to +24V DC ± 10%. 5.1 W typical @ +12 V<br>+10V to +13 V DC. 5.2 W typical @ +12 V |
| Lens mount                | C-mount   |   |
| Dimensions (H x W x L)    | 44 mm x 44 mm x 44 mm (excl. connectors)  |   |
| Weight                    | 135 g   |   |

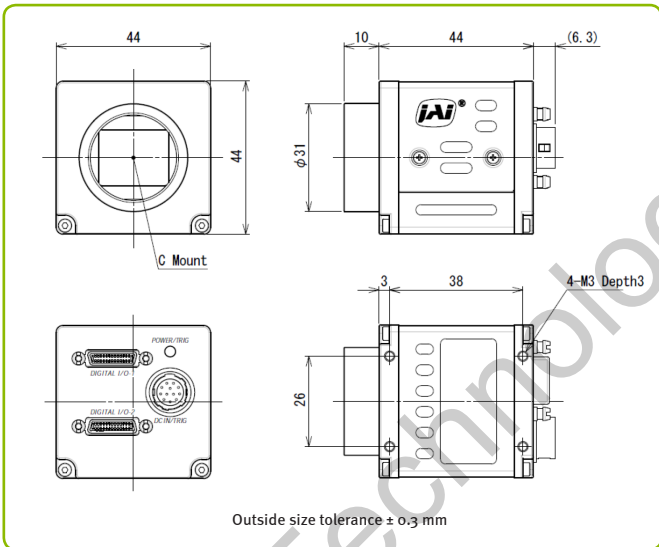
## Ordering Information

|                |                                    |
|----------------|------------------------------------|
| SP-12400M-PMCL | Monochrome camera with Camera Link |
| SP-12400C-PMCL | Color camera with Camera Link      |

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

†12-bit output available in video processing bypass mode. See manual for details.

## Dimensions



## Connector pin-out

### DC In / Trigger

HIROSE HR10A-10R-12PB(71)

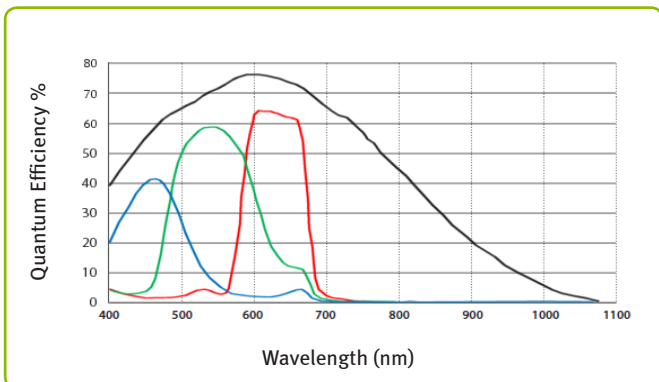
| Pin | Signal              |
|-----|---------------------|
| 1   | Ground              |
| 2   | DC in +12V to +24V  |
| 3   | Opto In 2-          |
| 4   | Opto In 2+          |
| 5   | Opto In 1-          |
| 6   | Opto In 1+          |
| 7   | Opto Out 1-         |
| 8   | Opto Out 1+         |
|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

### Min-CL Interface

| Pin | Signal | Function        |            |
|-----|--------|-----------------|------------|
| 1   | 26     | Power           |            |
| 2   | 15     | X0-/X0+         | CL Data    |
| 3   | 16     | X1-/X1+         | CL Data    |
| 4   | 17     | X2-/X2+         | CL Data    |
| 5   | 18     | Xclk-/Xclk+     | CL Clk     |
| 6   | 19     | X3-/X3+         | CL Data    |
| 7   | 20     | SerTC-/SerTC-   | Serial in  |
| 8   | 21     | SerTFG-/SerTFG+ | Serial out |
| 9   | 22     | CC1-/CC1+       | Trigger*   |
| 10  | 23     | CC2-/CC2+       | Reserved   |
| 11  | 24     | CC3-/CC3+       | Not used   |
| 12  | 25     | CC4-/CC4+       | Not used   |
| 13  | 14     | GND             |            |

\*Via Camera Link or 12-pin/10-pin connectors  
**Note:** Camera Link Base configuration shown. For other configurations, refer to Camera Link specifications or operation manual.

## Spectral response



Europe, Middle East & Africa  
 Phone +45 4457 8888  
 Fax +45 4491 8880

Asia Pacific  
 Phone +81 45 440 0154  
 Fax +81 45 440 0166

Americas  
 Phone (Toll-Free) 1 800 445 5444  
 Phone +1 408 383 0300

Visit our website on [www.jai.com](http://www.jai.com)

See the possibilities



Company and product names mentioned in this datasheet are trademarks or registered trademarks of their respective owners. JAI A-S cannot be held responsible for any technical or typographical errors and reserves the right to make changes to products and documentation without prior notice.