

■ 4112 x 3008

■ 9 fps

Spark Series 

❖ **SP-12401-PGE**  
12.4 megapixel CMOS area scan

**GigE**  
VISION



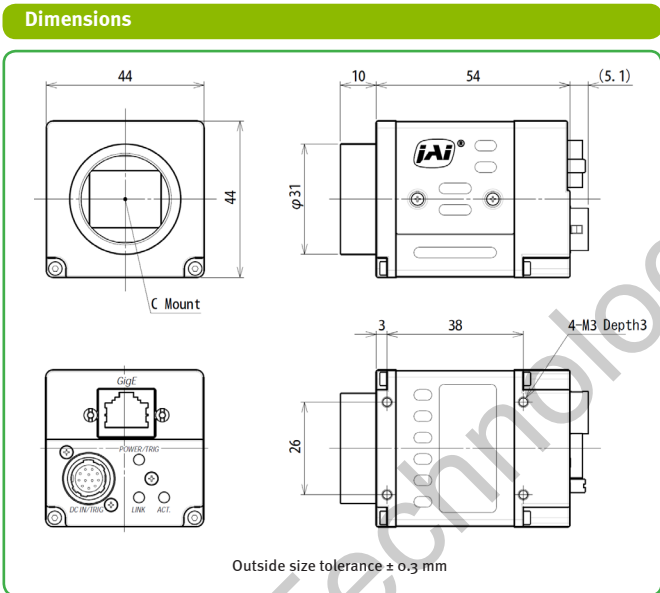
- **High resolution 12-megapixel CMOS imager (global shutter)**
- **9.3 fps at full resolution**
- **3.45  $\mu\text{m}$  square pixels**
- **User selectable ROI and multi-ROI functions**
- **Horizontal and vertical binning (monochrome model) for increased sensitivity**
- **Color model provides raw Bayer output or 5x5 in-camera color interpolation**
- **Edge enhancement function**
- **Color enhancer and RGB/HSI/XYZ color space conversion functions on color model**
- **Excellent shock and vibration resistance**
- **8/10/12-bit\* output over GenICam-compliant GigE Vision 2.0 interface**
- **C-mount lens mount**

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

# Specifications for SP-12401-PGE

# Spark Series

Specifications	SP-12401-PGE
Sensor	1.1" CMOS global shutter (IMX304)
Active pixels	Monochrome: 4112 (h) x 3008 (v) Color: 4088 (h) x 3000 (v)
Frame rate, full frame	9.3 frames/sec. @ 8-bit
Active area	14.2 mm (h) x 10.4 mm (v) - 17.6 mm diagonal
Pixel size	3.45 μm x 3.45 μm
System clock	74.25 MHz (for pulse generator)
Read-out modes	Full ROI (single) 4112/4088 (h) x 3008/3000 (v) up to 9.3 fps H: 16 to 4112/4088 pixels in 16 pixel steps V: 2 to 3008/3000 lines in 2 line steps ROI (multi) Binning Up to 5 overlapping scanning areas can be defined. 1X2, 2X1, 2X2
EMVA 1288 Parameters	12-bit output format
Absolute sensitivity	Mono: 3.47 p Color: 4.15 p (λ = 525 nm)
Maximum SNR	Mono: 40.09 dB Color: 40.27 dB
Traditional SNR*	>60 dB (0 dB gain, 10-bit)
Video signal output	Monochrome: 8/10/12-bits† Color: 8/10/12-bit Bayer or 24/30-bit RGB†
Video modes	Normal, Single ROI, Multi ROI, Sequencer
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	Opto In (2), Pulse Generators (4), Software, NAND Out (2), User Output (4)
Exposure modes	Timed/EPS, Trigger Width, Auto
Electronic shutter	Timed: 15.26 μs to 8 s Trigger width: 15.26 μs to ∞ s
Auto Level Control (ALC)	Shutter range from 100 μs to 107.5 ms, gain range from 0 dB to +24 dB. Tracking speeds and max. values adjustable.
Pre-processing functions	Color enhancer, edge enhancer, color space conversion (RGB to HSI, XYZ, sRGB, Adobe RGB), 5x5 de-Bayering, blemish compensation (800 pixels)
Time synchronization	Supports IEEE 1588 Precision Time Protocol (PTP)
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) FCC Part 15 Class B, RoHS/WEEE
Power	12-pin PoE +12V to +24V DC ± 10%. 4.0 W typical @ +12 V +36V to +57 V DC. 5.1 W typical @ +48 V
Lens mount	C-mount
Dimensions (H x W x L)	44 mm x 44 mm x 54 mm (excl. connectors)
Weight	160 g



## Connector pin-out

### DC In / Trigger

HIROSE HR10A-10R-12PB(71)

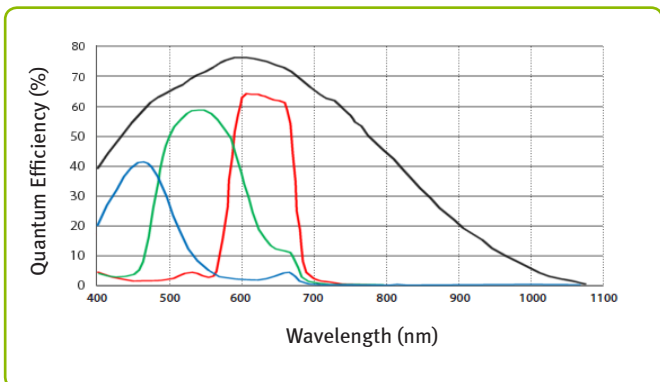
Pin	Signal
1	Ground
2	DC in +12V to +24V
3	Opto In 2-
4	Opto In 2+
5	Opto In 1-
6	Opto In 1+
7	Opto Out 1-
8	Opto Out 1+
9	TTL out 1
10	
11	DC in +12V to +24 V
12	Ground

### GigE Vision Interface

RJ-45 with locking screws

Pin	Signal
1	TRD+ (0)
2	TRD- (0)
3	TRD+ (1)
4	TRD+ (2)
5	TRD- (2)
6	TRD- (1)
7	TRD+ (3)
8	TRD- (3)

## Spectral response



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

## Ordering Information

SP-12401M-PGE	Monochrome camera with GigE Vision
SP-12401C-PGE	Color camera with GigE Vision

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

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