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SP-20000M-CXP2

Technical Datasheet

See the possibilities

CMV2000

Apex Series

Spark Series area scan cameras are the perfect choice for machine vision applications demanding high quality images with the highest possible throughput. They feature the latest CMOS imagers delivering high resolution images at speeds as much as 10 times faster than traditional CCD cameras.

For example, 45-megapixel (MP) models can deliver over 50 fps output while some 5-MP models run at 250 fps or more. Using the region-of-interest (ROI) feature, even higher frame rates can be achieved.

Specification Highlights

SENSOR:	CMV2000	**SHUTTER:**	Global Shutter
FORMAT:	41.0 mm	**FRAME RATE:**	30 fps
PIXEL SIZE:	6.4 x 6.4 µm	**INTERFACE:**	CoaXPress-2-Cable (PoCXP)
LENS MOUNT:	F-Mount	**RESOLUTION MP:**	20 MP
SPECTRUM:	Color (Visible + NIR)	**RESOLUTION WxH:**	5120 x 3840 px

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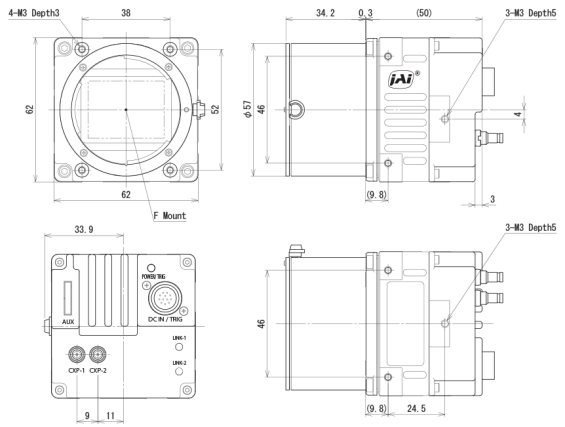
Specifications		SP-20000-CXP2
Sensor		41 mm CMOS global shutter (CMV20000)
System clock		40 MHz (for pulse generator)
Frame rate, full frame		30 frames/sec.
Active area		32.77 mm (h) x 24.58 mm (v), 41 mm diagonal
Cell size		6.4 µm (h) x 6.4 µm (v)
Active pixels		5120 (h) x 3840 (v)
Horizontal output frequency		15.6 kHz to 124.8 kHz depending on tap geometry and link configuration
Read-out modes Full ROI Binning (mono)		 5120 (h) x 3840 (v) @ 30 fps Any start position. 8-5120 pixels wide x 2-3840 lines high Width in 8 pixels/step Height in 2 lines/step 1x2, 2x1, 2x2 (frame rate does not change)
EMVA 1288 Parameters Absolute sensitivity (mono) Absolute sensitivity (color) Maximum SNR (mono) Maximum SNR (color)		10-bit output format 16.05 p (λ = 525 nm) 18.14 p (λ = 525 nm) 40.24 dB 38.32 dB
Traditional SNR*	mono color	>53 dB (0 dB gain) >51 dB(0 dB gain, green)
Video signal output	mono color	8/10/12-bit monochrome 8/10/12-bit Bayer or 24-bit RGB Some video functions not available with 12-bit
Interface		CoaXPress v1.1 (CXP-6, DIN 1.0/2.3 connectors) Link Configs: CXP6_X2, CXP6_X1, CXP3_X2, CXP3_X1
Gain		Manual/automatic 0 dB to +24 dB
White balance (SP-20000C)		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, CXP, Pulse Generators (4), Software, NAND Out (2), GPIO
Trigger modes		EPS, Trigger Width, Timed RCT (with ALC), PIV
Electronic shutter Timed exposure Auto shutter		 304 µs to 8 sec in 1 µs steps 1/30 to 1/3289 sec.
Auto Level Control (ALC)		Shutter range from 1/30 to 1/3289, gain range from 0 dB to +24 dB. Tracking speeds and max values adjustable.
Pre-processing functions		Flat field correction, color shading correction (SP-20000C), blemish compensation (up to 1000 pixels)
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	12-pin PoCXP	12V to 24V DC ± 10%. 7.9W typical @12V 24V DC ± 2V. 7.9W typical @24V
Lens mount		F-mount or M42-mount
Dimensions (H x W x L)		62 mm x 62 mm x 84.5 mm
Weight		350 g

Ordering Information	
SP-20000M-CXP2-F	Monochrome, dual-channel CoaXPress w/ F-mount
SP-20000C-CXP2-F	Color, dual-channel CoaXPress w/ F-mount
SP-20000M-CXP2-M42	Monochrome, dual-channel CoaXpress w/ M42-mount
SP-20000C-CXP2-M42	Color, dual-channel CoaXPress w/ M42-mount

Dimensions



Outside size tolerance ± 0.3mm

Connector pin-out

DC In / Trigger

HIROSE HR10A-10R-12PB-01

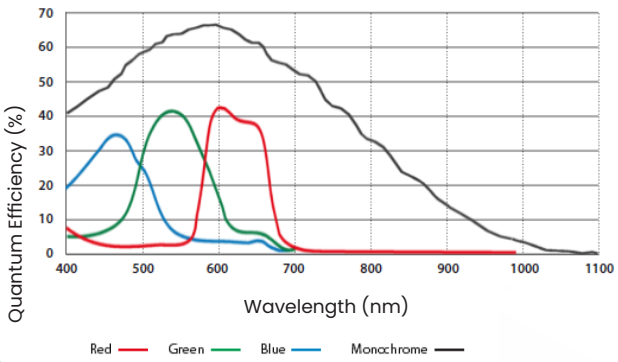
Pin	Signal
1	GND
2	+12V to +24V DC input
3	GND
4	NC
5	Opto In-
6	Opto In+
7	Opto Out-
8	Opto Out+
9	TTL out 1
10	TTL in 1
11	+12V to +24V DC input
12	GND

Auxiliary Connector

Type: 3260-10S3(55) HIROSE or equivalent

Pin	Signal	Note
1	TTL Out 2	Line 8
2	TTL Out 3	Line 9
3	TTL In 2	Line 10
4	NC	-
5	GND	GND
6	LVDS In 1+	Line 11
7	LVDS In 1-	
8	NC	-
9	GND	-
10	GND	-

Spectral response



Color response includes IR-cut filter

*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

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Product Highlights

- Large format 20 MP CMOS imager (global shutter)
- 30 fps at full resolution
- 6.4 µm square pixels
- User selectable ROI
- Horizontal and vertical binning (monochrome models) for increased sensitivity
- Flat-field and blemish compensation plus in-camera CMOS pattern correction
- CMOS imager includes correlated double sampling (CDS) function for improved uniformity
- 8/10/12-bit digital output over two-channel CoaXPress interface*
- Accepts power via CoaXPress or separate 12-pin connector
- Monochrome or color models with Bayer or built-in color interpolation on color model
- F-mount or M42 lens mounts
- Automatic Level Control (ALC) for dynamic lighting conditions

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

Additional Product Images

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