

# Specification

## S-50A30-Jx/CXP issue 1.0



**CoaXPress**

### Key characteristics

<b>50 Mpx</b> 4.6 $\mu\text{m}^2$	<b>7920</b> <b>6004</b>	<b>30+ FPS</b> 12 bit
<b>CMOS</b> 8T Global Shutter	<b>35 mm</b> Optical format	<b>&lt;11 W</b>
<b>&lt;80 mm<sup>2</sup></b>	<b>&lt;400 g</b>	<b>64 dB</b> <b>DNR</b>

- 50 Megapixel at 30 fps
- AMS Cmosis CMV50000 sensor
- True Global Shutter CMOS
- Monochrome and Color
- Dark and bright uniformity corrections
- Configurable single, dual and quad CXP3 to CXP6 speeds
- Hirose 12pin I/O connector
- Adimec Connect & Grab™
- CoaXPress V1.1.1 compliant

### Introduction

The SAPPHIRE 50 Mpx CoaXPress camera delivers 7920x6004 pixel resolution at over 30 fps with 4.6 micron square pixels. The camera is fully compatible with the S-25 and Q-12 CoaXPress Adimec offers.

The S-50A30 CXP camera comes in a low power, compact outline design without forced cooling through a fan. This provides optimal design freedom for system integration with a maximum system reliability. The S-50A30 offers Adimec Connect & Grab™ allowing engineers to start system development immediately after camera installation.

The camera has a stable image performance to minimize customers' system calibration time. Typical applications examples: flat panel inspection - semiconductors metrology tools - solar panel inspection.

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# High Resolution Metrology Camera

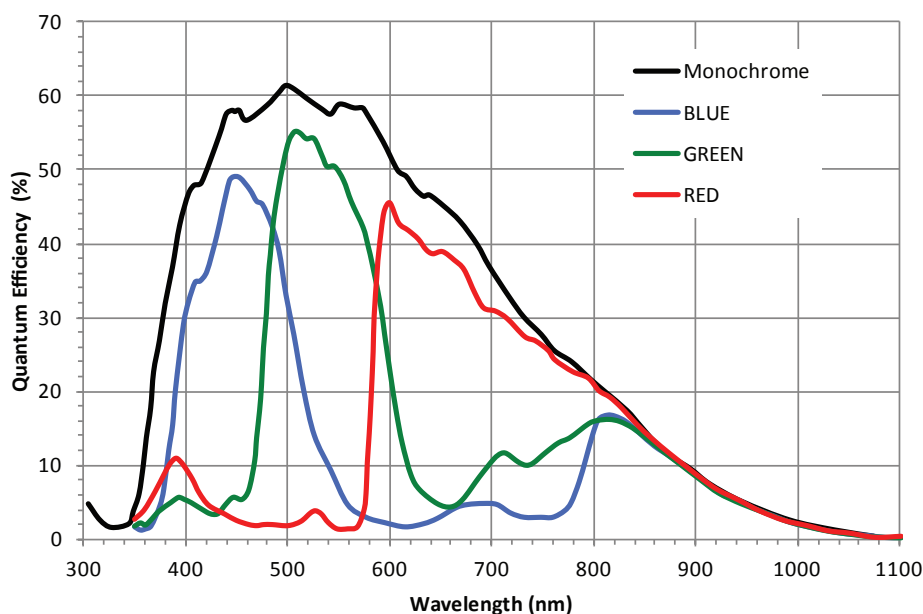
## Performance

Type	AMS CMOSIS CMV50000 sensor	
Architecture	CMOS Progressive scan 8T Global Shutter (PLS <1/18000)	
Optical format	35 mm	
Pixel size	4.6 $\mu\text{m}$ x 4.6 $\mu\text{m}$	
Active pixels	7920 (H) x 6004 (V)	
Microlenses	Yes	
Dynamic range	64 dB*	Including DSNU: 55 dB**
Full well	14.5 ke* <sup>*</sup>	12.8 ke** <sup>**</sup>
Dark noise	Read noise: 8.8 e* <sup>*</sup>	Read noise + DSNU: 23.5e** <sup>**</sup>
Sensitivity mono	350 LSB12/nJ/cm <sup>2</sup> @ 550 nm	

\* Sensor specification

\*\* Typical value

## Quantum Efficiency



## Functionality

Image acquisition	Timed, TriggerWidth, SyncControl, TimedTriggerControl
Integration time control	Programmable between 100 $\mu\text{s}$ and 1 s in steps of 1 $\mu\text{s}$
Gain	Digital fine gain selectable between 1x and 32x in steps of 0.001
Video Processing	Automatic black level control loop - Manual/One push White Balance - User programmable LUT - Gamma
Region of interest	Programmable ROI; size and position of readout image - Increased frame speed via ROI - Band ROI - Digital binning
Defect pixel correction	On/Off switchable - Review and editing of defect pixel map - Factory calibrated
Test mode	Internal test pattern generator available for checking of the complete digital image chain
Mirroring	The output can be reversed in the horizontal direction
Uniformity correction	Up to 20 low frequency flat field correction sets can be saved in non-volatile memory (Mono only) - Up to 8 out of 20 can be live switched from frame to frame (Mono only) User calibratable dark field and bright field uniformity correction
Miscellaneous functions	Programmable I/O polarity - 1 factory set and 1 user set for storage of camera settings - Frame counter - Temperature readout - Camera type, build state and serial number can be read via software

# High Resolution Metrology Camera

## Interfacing

### Video

Video output	CoaxPress V1.1.1 CXP3/6 1, 2, 4 lanes configurable
External Sync	I/O or CXP controlled
Output resolution	8 / 10 / 12 bit
Connector	4 x DIN1.0/2.3 (Figure 1)

### Camera Control Protocol

Interface	GenICam via CoaXPress
Throughput	20 Mbps
Protocol	GenTL

### I/O

Output	LVDS Fully programmable flash strobe signal (duration, delay and polarity)
Input	LVDS Trigger signal with programmable polarity
Connector	Hirose 12 pin (figure 2)

### Power

Input voltage	24 Vdc PoCXP
Power dissipation	<11 W @ 24 Vdc full continuous operation at maximal framespeed.
Power connector	DIN1.0/2.3 CoaXPress Masterlink (figure 1)

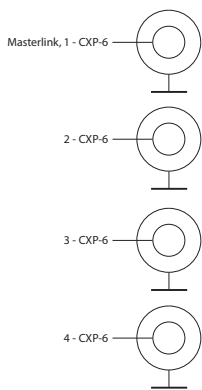


Figure 1: Quad CXP DIN1.0/2.3

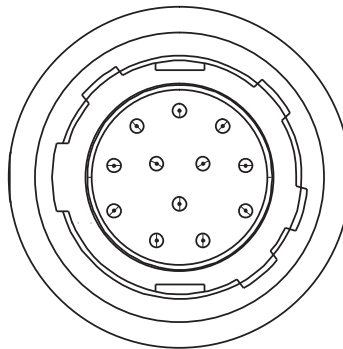


Figure 2: Hirose 12 pin I/O connector

# High Resolution Metrology Camera

## Mechanical

Mounting	2 M4 mounting holes per side on camera front
Lensmount	4 x M3 at 60mm pitch - 50mm G7 reference (optional: F, TFL-II, T2, M42, on request: M72)
Outline	See figure 3
Weight	400 g +/- 5% excl. lensmount

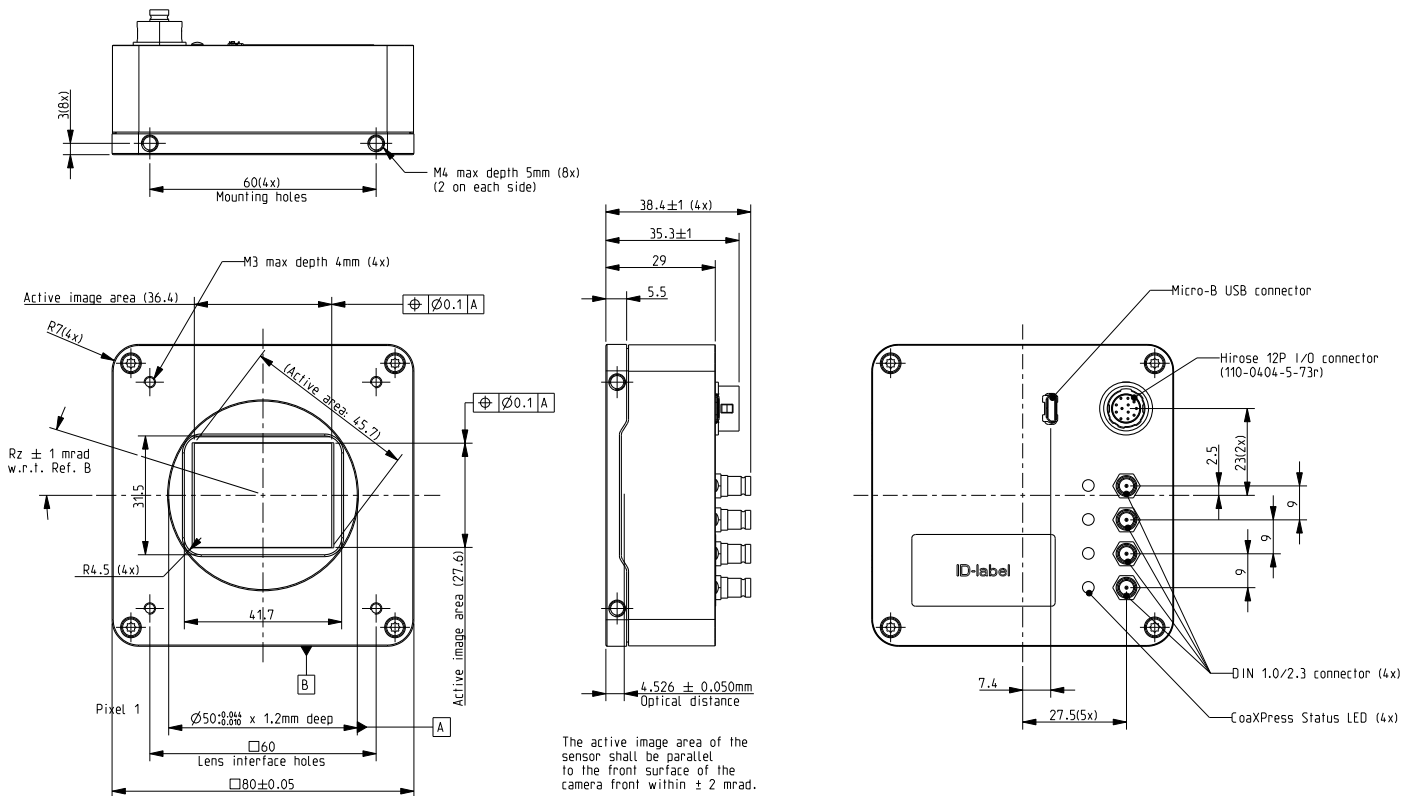


Figure 3: Mechanical outline

## Sensor Mounting Accuracy

XY-centering	$\pm 0.050$ mm
Rotation	$\pm 1$ mRad
Optical distance	$4.526 \pm 0.050$ mm
Perpendicularity	$\pm 2$ mRad

## Compliance & Reliability

### RoHS

Directive	2011/65/EU
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### CE-mark

Electromagnetic compatibility	2014/30/EU: EN61000-6-3 and EN61000-6-2
ESD	Contact discharge +/- 4 kV; Air discharge +/- 8 kV
Workmanship	In accordance with IPC-J-STD-001 class 2 and inspected according IPC-A-610 class 2

### Reliability

MTBF	> 75,000h @ 50°C calculated according to the part stress analysis of MIL-HDBK-217F for ground fixed, uncontrolled environment.
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# High Resolution Metrology Camera

## Environmental

### Operating

Temperature	-10°C to +30°C and a max housing temp +50°C
Humidity (relative)	20% - 80% non-condensing
Shock	10 g, half sine shape, 6-10ms duration in $\pm X$ , $\pm Y$ and $\pm Z$
Vibration	3 g sinusoidal vibration sweeps 5 - 150 Hz

### Storage

Temperature	-25°C to +65°C
Humidity (relative)	5% - 95% non-condensing
Shock	25 g, half sine shape, 6-10ms duration in $\pm X$ , $\pm Y$ and $\pm Z$
Vibration	10 g sinusoidal vibration sweeps 5 - 150 Hz

## Camera Types

	Interface connector	I/O connector	Sensor	Type	Max. fps @ Full resolution
S-50A30-Jm/CXP-6-0.3	4 x DIN1.0/2.3	Hirose 12 pin	CMV50000-1E3M1PA	Monochrome	30+ fps
S-50A30-Jc/CXP-6-0.3	4 x DIN1.0/2.3	Hirose 12 pin	CMV50000-1E3C1PA	Raw Bayer	30+ fps

### Adimec

Adimec is the leading supplier of high-end cameras for machine vision, medical and outdoor imaging applications. Our Adimec True Accurate Imaging® technology forms the foundation for a broad range of camera products, and brings new levels of precision and accuracy to vision systems.

### Custom cameras

Adimec has the ability to offer additional camera functionality and create customer specific cameras even for small volume programs. Built from platforms, our standard line of cameras give us a flexible base that can be tailored to fit your specifications. Contact us to discuss these options in more detail. Visit: [www.adimec.com](http://www.adimec.com) for product details.



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