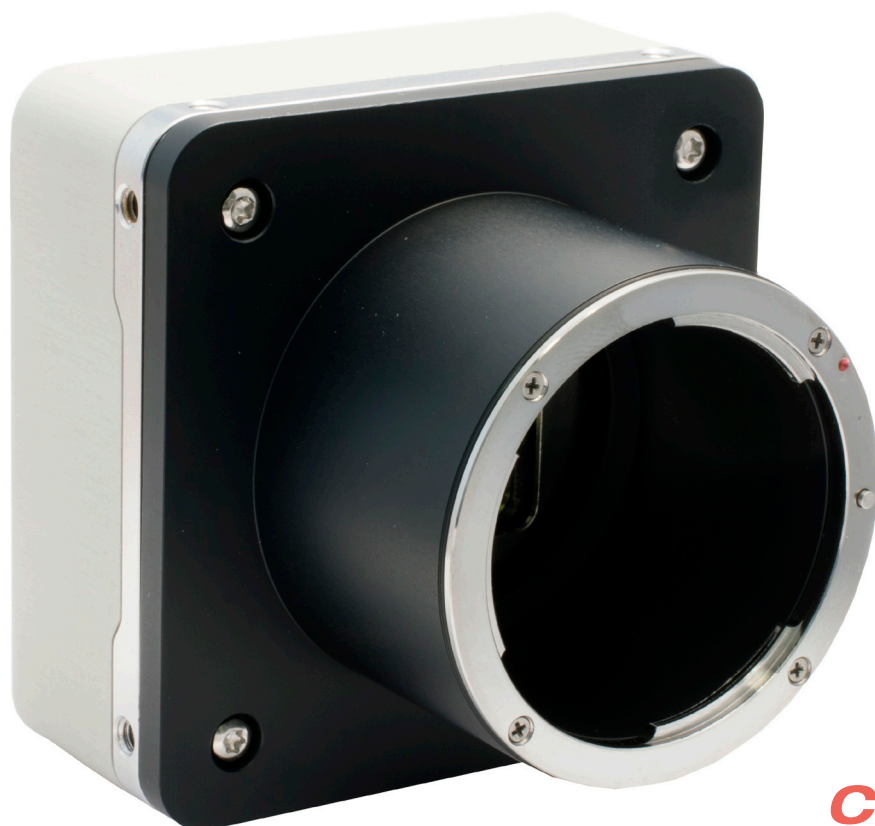


Concept Specification

S-65A70-Kx/CXP-12



CoaXPress

Key characteristics

65 Mpx
3.2 μm^2

9344
7000

70 FPS

Mono /
Color

37.4 mm
sensor
diagonal

8-10-12
bit

< 5e-
Read noise
unity gain

40 dB
SNR

66 dB
DNR

- 65 Megapixel at 70 fps
- Monochrome and Color
- Dark field DSNU uniformity correction
- Bright field column uniformity correction
- Low frequency flat field correction
- Configurable quad CXP12 speed
- Hirose 12pin I/O connector
- Adimec Connect & Grab™
- CoaXPress V1.1.1 and V2.0 compliant

Introduction

The SAPPHIRE S-65A70 offers the next leap for ultra-high-resolution in-line inspection tools by combining 65 megapixel together with frame speeds up to 70 frames per second. The camera delivers a superior performance with a resolution of 9344x7000 pixels, high sensitivity, low noise levels and good dynamic range. With a pixel size of 3.2 μm^2 this sensor has the right balance between performance, good angular sensitivity and optical format for cost effective optics. The camera functionality is compatible with other cameras in the SAPPHIRE series: S-25, S-50 and S-65A35.

The S-65A70 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 maximum system reliability. The S-65A70 offers Adimec Connect & Grab™ allowing engineers to start system development.

Typical applications examples: Flat panel glass inspection; Semiconductors metrology tools; Solar panel inspection; Medical

Adimec
Excellence in Imaging

High Resolution Metrology Camera

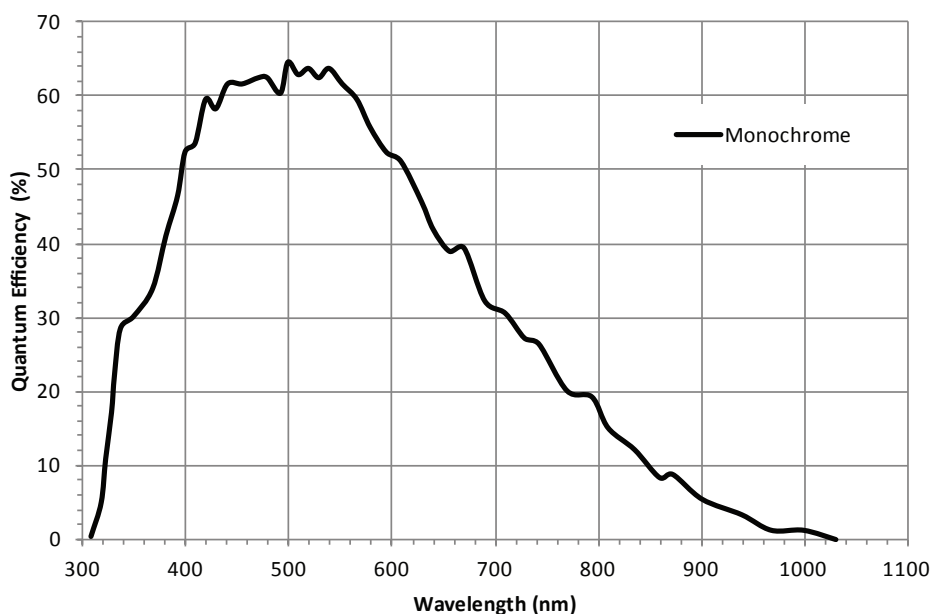
Performance

Type	CMOS	
Architecture	Progressive scan Global Shutter (PLS <1/25000, angular dependent)	
Sensor diagonal	37.4 mm (29.9 x 22.4 mm)	
Pixel size	3.2 μm x 3.2 μm	
Active pixels	9344 (H) x 7000 (V)	
Microlenses	Yes	
Dynamic range	> 66 dB*	> 66 dB**
Full well	10.9 ke *	10.0 ke **
Dark noise	at high gain: < 2.0 e- *	at unity gain: 5 e-; <2.0 e- at high gain **
Sensitivity mono	To be determined	

* Sensor specification

** Typical value

Quantum Efficiency



Functionality

Image acquisition	Timed, TriggerWidth, SyncControl, TimedTriggerControl
Integration time control	Programmable between 21 μs and the frame period in steps of 1 μs
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 - Digital binning
Region of interest	Programmable ROI; size and position of readout image - Increased frame speed via 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 and vertical direction
Uniformity correction	Flat field correction can be performed with multiple low frequency flat field correction sets User calibratable dark field and bright field uniformity correction, including pixel based Dark Signal Non-Uniformity correction
Miscellaneous functions	Programmable I/O polarity - 1 factory set and 8 user set for storage of camera settings - Frame counter - Temperature readout - Camera type, build state and serial number can be read via software

Interfacing

Video

Video output	CoaxPress V2.0 CXP3/6/12 1, 2, 4 lanes configurable (CXP12 speed can be also obtained with CXP V1.1.1 protocol)
External Sync	I/O or CXP controlled
Output resolution	8 / 10 / 12 bit
Connector	4 x micro BNC

Camera Control Protocol

Interface	GenICam via CoaXPress
Throughput	40 Mbps CXP V2.0 / 20 Mbps CXP V1.1.1
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	To be determined
Power connector	Micro BNC CoaXPress Masterlink

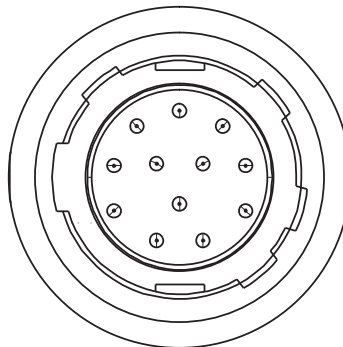


Figure 2: Hirose 12 pin I/O connector

High Resolution Metrology Camera

Mechanical

Mounting	TBD; expected 2 M4 mounting holes per side on camera front
Lensmount	TBD; expected 4 x M3 at 60mm pitch - 50mm G7 reference (optional: F, TFL-II, T2, M42)
Outline	TBD; The outline is expected to be in line with figure 3
Weight	TBD

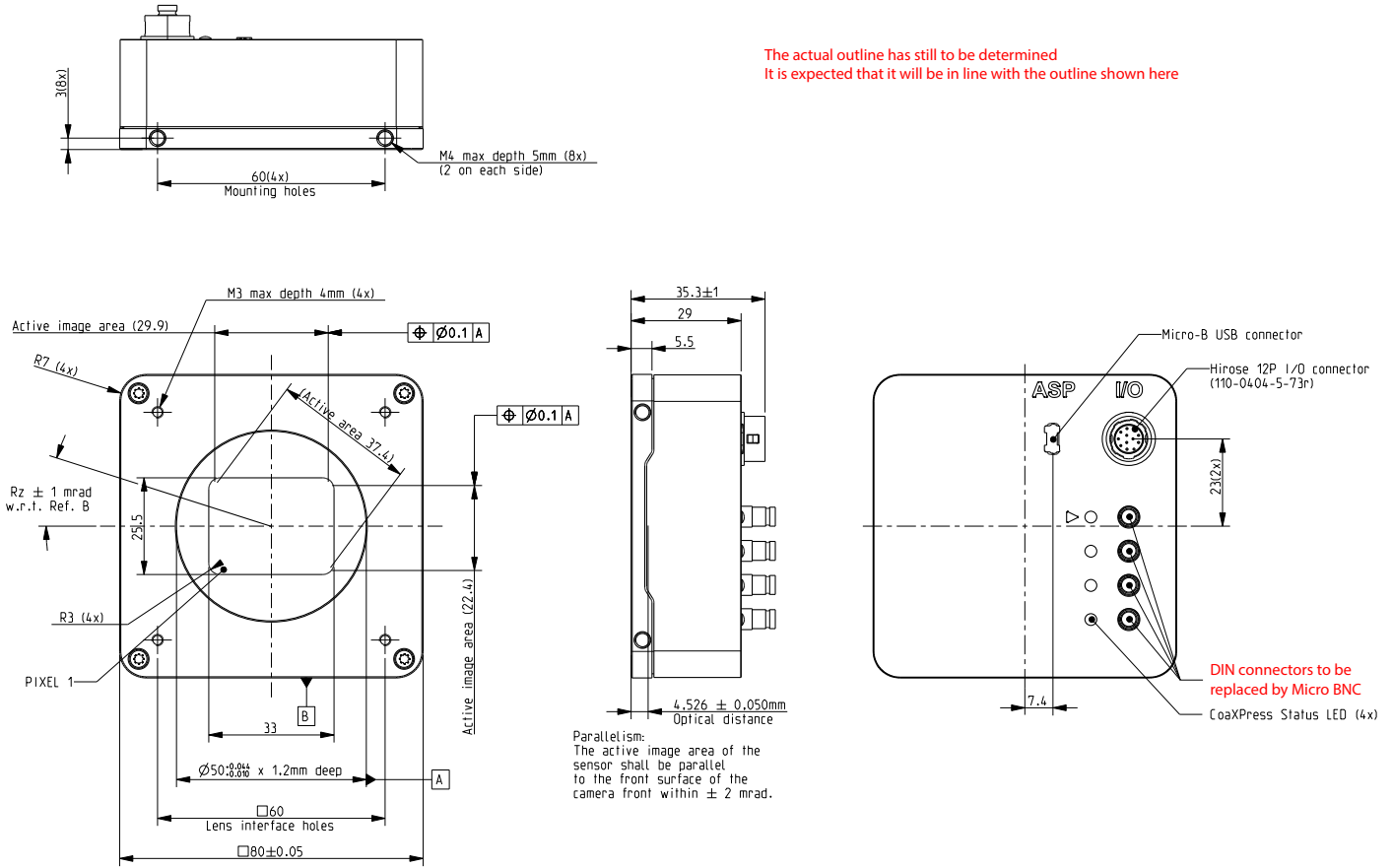


Figure 3: The actual outline is expected to be in line with this outline

Sensor Mounting Accuracy

XY-centering	± 0.050 mm
Rotation	± 1 mRad
Optical distance	4.526 ± 0.050 mm
Perpendicularity	± 2 mRad

Compliance & Reliability

RoHS

Directive	2011/65/EU
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CE-mark

Electromagnetic compability	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	TBD
Humidity (relative)	20% - 80% non-condensing
Shock	10 g, half sine shape, 6-10 ms 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, 6-10 ms 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-65A70-Km/CXP-12	4 x Micro BNC	Hirose 12 pin	CMOS	Monochrome	70 fps
S-65A70-Kc/CXP-12	4 x Micro BNC	Hirose 12 pin	CMOS	Raw Bayer	70 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 for product details.



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