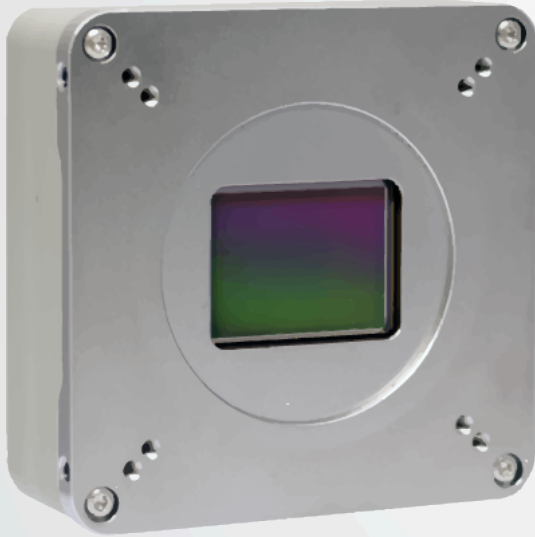


# Specification

## S-65A70-Kmrg/CXP-12

**Adimec**  
*Excellence in Imaging*

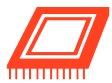


The SAPPHIRE 65 Megapixel camera delivers a superior performance in a 9344x7000 pixels resolution running at 70 fps. It uses state of the art global shutter sensor technology. The S-65A70 offers a high dynamic range with low noise levels and a high sensitivity. The camera is compatible with other CoaXPress cameras in the SAPPHIRE series: S-25, S-50 and S-65A35.

The S-65A70 CoaXPress 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 camera offers Adimec Connect & Grab™ allowing engineers to start system development at camera arrival.

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

**CoaXPress**



9344 x 7000 at 70 fps



Pixel based dark field and column based bright field uniformity correction



Low frequency flat field correction in bright



Monochrome



Hirose 12pin I/O connector



CoaXPress V1.1.1 with CXP12 speed capability and Micro BNC connectors

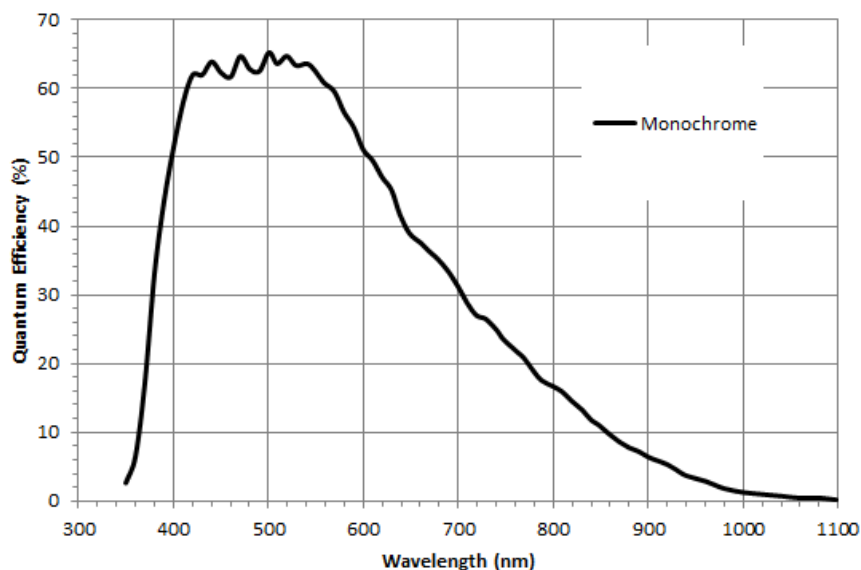
# High Resolution Metrology Camera

## Performance

Type	GPIXEL GMAX3265 removable coverglass	
Architecture	CMOS progressive scan Global Shutter (PLS < 1/15000, angular dependent)	
Sensor diagonal	37.4 mm (29.9 x 22.4 mm)	
Pixel size	3.2 $\mu\text{m}$ x 3.2 $\mu\text{m}$	
Active pixels	9344 (H) x 7000 (V)	
Microlenses	Yes	
Dynamic range	62.3 dB* @ 10 bit - PGA gain 1.25	61.5 dB** @ 10 bit - PGA gain 1.25
Full well	10.9 ke <sup>-</sup> * @ PGA gain 0.75	10.5 ke <sup>-</sup> ** @ PGA gain 1.25
Dark noise	7.5 e <sup>-</sup> * @ 10 bit - PGA gain 1.25	7.4 e <sup>-</sup> ** @ 10 bit - PGA gain 1.25
Sensitivity mono	67 DN <sub>10</sub> ·cm <sup>2</sup> /nJ @ 500 nm	

\* Sensor specification, \*\* Typical value

## Quantum Efficiency



## Functionality

Image acquisition	Timed, TriggerWidth, SyncControl, TimedTriggerControl
Integration time control	Programmable between 4 $\mu\text{s}$ and 5 s in steps of 1 $\mu\text{s}$
Gain	Digital fine gain selectable between 1x and 32x in steps of 0.001 Programmable analog gain amplifier selectable between 0.75x and 6x in steps of 0.25
Video processing	Manual/One push White Balance - User programmable LUT - Programmable gamma curve
Region of interest	Programmable ROI; size and position of readout image - Increased frame speed via ROI - Digital binning
Defect pixel correction	On/Off switchable - Correction of clusters up to 3x3 pixels - Review and editing of defect pixel map - Factory calibrated
Test mode	Internal test pattern generator available to check the complete digital image chain
Mirroring	The output can be flipped in the horizontal and vertical direction
Uniformity correction	Up to 50 low frequency flat field correction sets can be saved in non-volatile memory (Mono only) User calibratable pixel based dark field (DSNU) and column based bright field uniformity correction
Sensitivity Matching	Conversion gain calibrated per camera to achieve sensitivity matching between cameras
Miscellaneous functions	Programmable I/O polarity with deglitch function - 1 factory set and 10 user sets 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 V1.1.1 CXP3/6/10/12 - 1, 2, 4 lanes configurable
External Sync	I/O or CXP controlled
Output resolution	8 / 10 / 12 bit
Connector	4 x Micro-BNC

### Camera Control Protocol

Interface	GenICam (SFNC)*
Throughput	40 Mbps for CXP10 and CXP12 / 20 Mbps for CXP3 and CXP6
Protocol	GenTL*

\*Conform CoaXPress standard

### I/O

Output	LVDS - Fully programmable flash strobe signal (duration, delay and polarity)
Input	LVDS - Trigger signal with programmable polarity
Connector	Hirose 12 pin HR10A-10R-12P(73)

### Power

Input voltage	24 Vdc nominal, range: 18.5 Vdc to 26 Vdc PoCXP
Power dissipation	< 15 W @ 24 Vdc full continuous operation at maximal framespeed
Power connector	Micro-BNC master connection

### Interface connectors

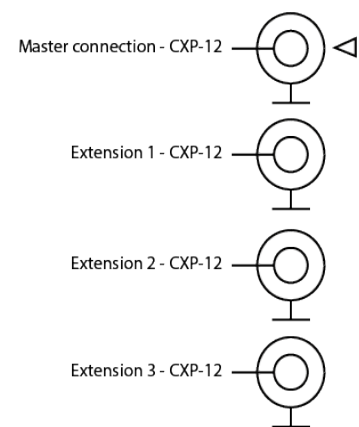


Figure 1. Quad CXP Micro-BNC

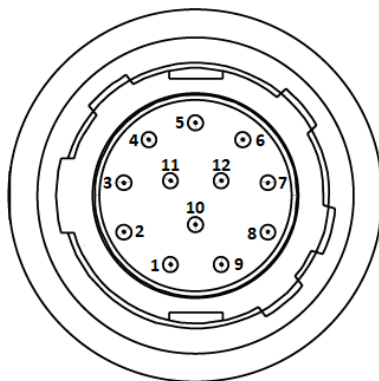


Figure 2. Hirose 12 pin HR10A-10R-12P(73) I/O connector

#### I/O pin connection table

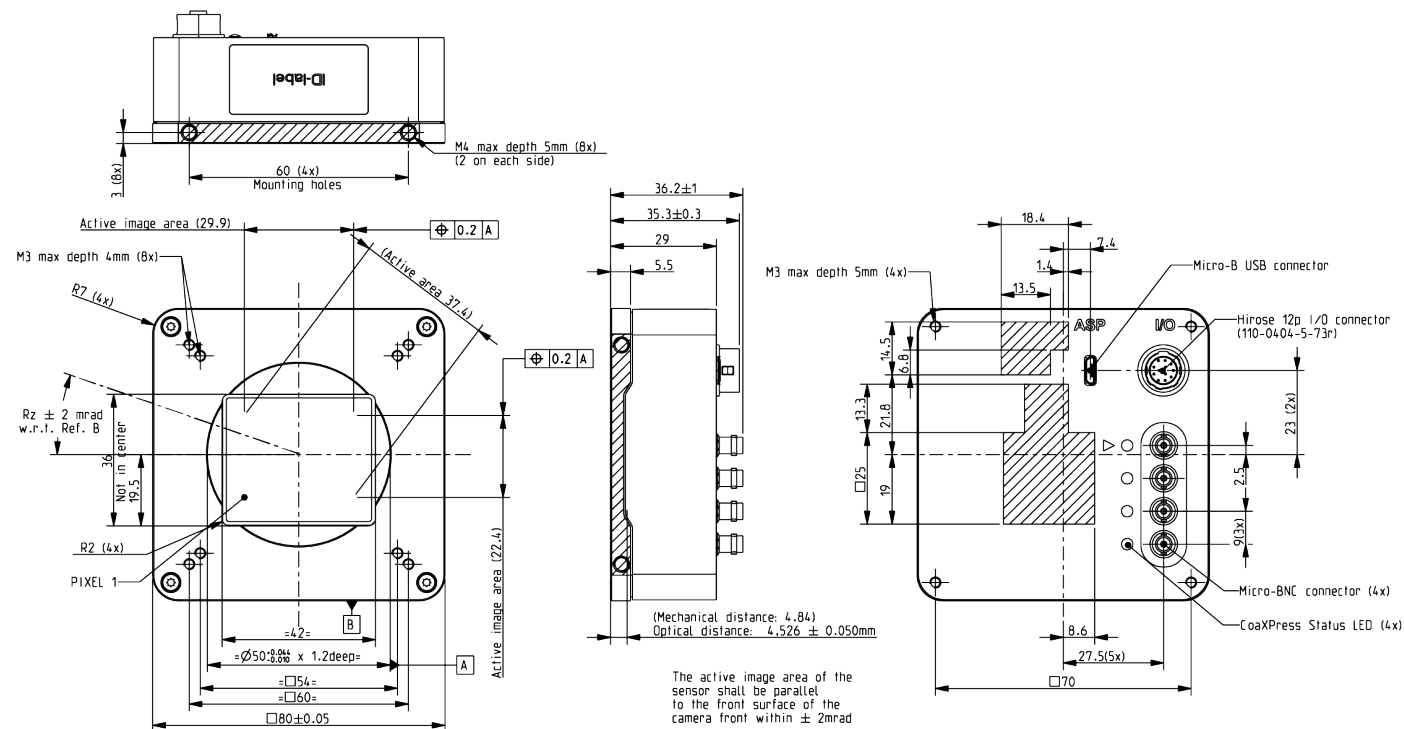
1	Ground
2	Not in use
3	Flash strobe out (LVDS -)
4	Flash strobe out (LVDS +)
5	Do not use
6	Do not use
7	Do not use
8	Do not use
9	Ground
10	Do not use
11	Trigger in (LVDS -)
12	Trigger in (LVDS +)

# High Resolution Metrology Camera

## Mechanical

Mounting	2 x M4 mounting holes per side on camera front
Lensmount	4 x M3 at 60mm pitch - 4 x M3 at 54mm pitch - 50mm G7 reference (on request: F, TFL-II, T2, M42)
Heatsink	4 x M3 at 70mm pitch on camera backplate (on request: Heatsink available)
Outline	See figure
Weight	400 g +/- 5% excl. lensmount and heatsink

## Mechanical outline



## Sensor Mounting Accuracy

XY-centering	$\pm 0.10$ mm
Rotation	$\pm 2$ mRad
Optical distance	$4.526 \pm 0.050$ mm (before removing coverglass)
Perpendicularity	$\pm 2$ mRad

All specifications on the sensor alignment are with respect to the camera front without lensmount and lens

## Compliance

RoHS	RoHS directive 2011/65/EU (incl. amendment 2015/863)
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 @ 30°C calculated according to the part stress analysis of MIL-HDBK-217F for ground fixed, uncontrolled environment.
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## Environmental

### Operating

Sensor temperature	+5°C to +70°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

Ambient 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

# High Resolution Metrology Camera

## Camera Types

Camera	Interface connector	I/O connector	Sensor	Type	Max. fps @ Full resolution
S-65A70-Kmrg/CXP-12-1.1	4 x Micro-BNC	Hirose 12 pin	GMAX3265 (monochrome)	Removable coverglass (monochrome)	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](http://www.adimec.com) for product details.



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Detailed information on request - Subject to change without notice - Actual products may differ from photos  
S-65A70-Kmrg/CXP-12 Revision 1.1

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