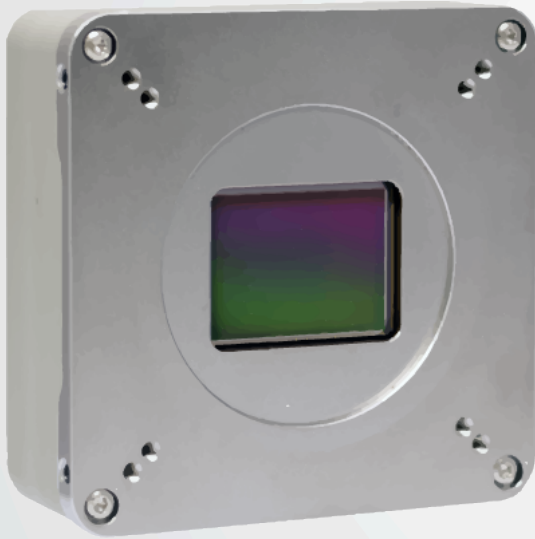


# Specification

## S-65A35-Kx/CXP-6



The SAPPHIRE 65 Megapixel camera delivers a superior performance in a 9344x7000 pixels resolution running at 35 fps. It uses state of the art global shutter sensor technology. The S-65A35 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 and S-50.

The S-65A35 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.

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



9344 x 7000 at 35 fps



Pixel based dark field and column based bright field uniformity correction



Low frequency flat field correction in bright



Monochrome and color



Device-to-device repeatability

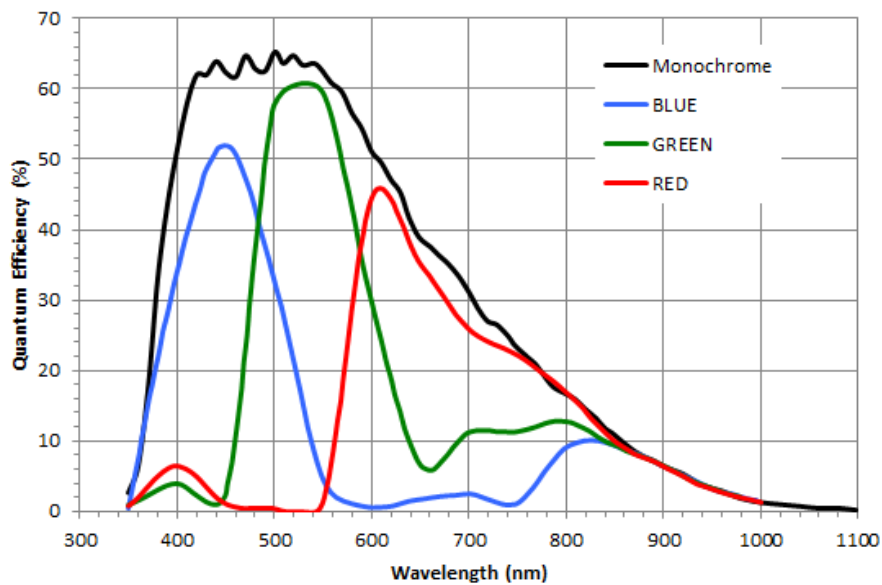


CoaXPress V1.1.1

## Performance

|                                          |                                                                         |                                                |
|------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------|
| Type                                     | GPIXEL GMAX3265                                                         |                                                |
| 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 μm x 3.2 μm                                                         |                                                |
| 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 8 $\mu\text{s}$ and 5 s in steps of 1 $\mu\text{s}$                                                                                                                                                                                                           |
| Gain                     | Digital fine gain selectable between 1x and 32x in steps of 0.001<br>Programmable 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 - Maximum (corrected) defect pixel cluster size of 4 pixels - Review and editing of defect pixel map - Factory calibrated                                                                                                                                        |
| Uniformity correction    | Up to 50 low frequency flat field correction sets can be saved in non-volatile memory (Mono only) - Up to 14 out of 50 can be live switched from frame to frame (Mono only)<br>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                                                                                                                                                                                              |
| 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                                                                                                                                                                                                                 |
| 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 - 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                                       |

Camera Control Protocol

|            |                 |
|------------|-----------------|
| Interface  | GenICam (SFNC)* |
| Throughput | 20 Mbps         |
| 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 | < 13 W @ 24 Vdc full continuous operation at maximal framespeed |
| Power connector   | DIN1.0/2.3 CoaXPress master connection                          |

Interface connectors

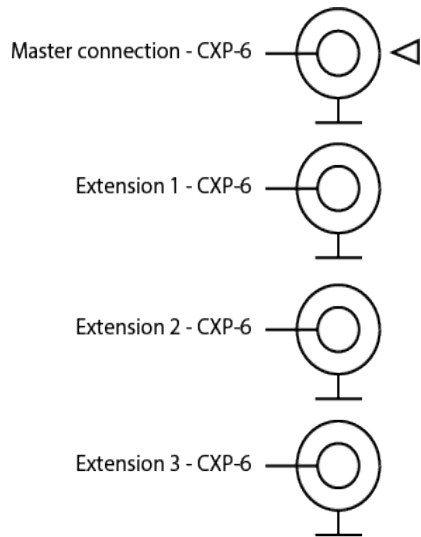


Figure 1. Quad CXP DIN1.0/2.3

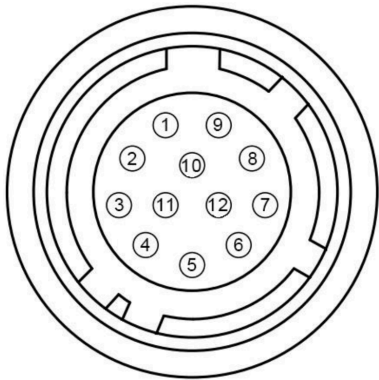


Figure 2. Hirose 12 pin HR10A-10R-12P(73) I/O connector

I/O pin connection table

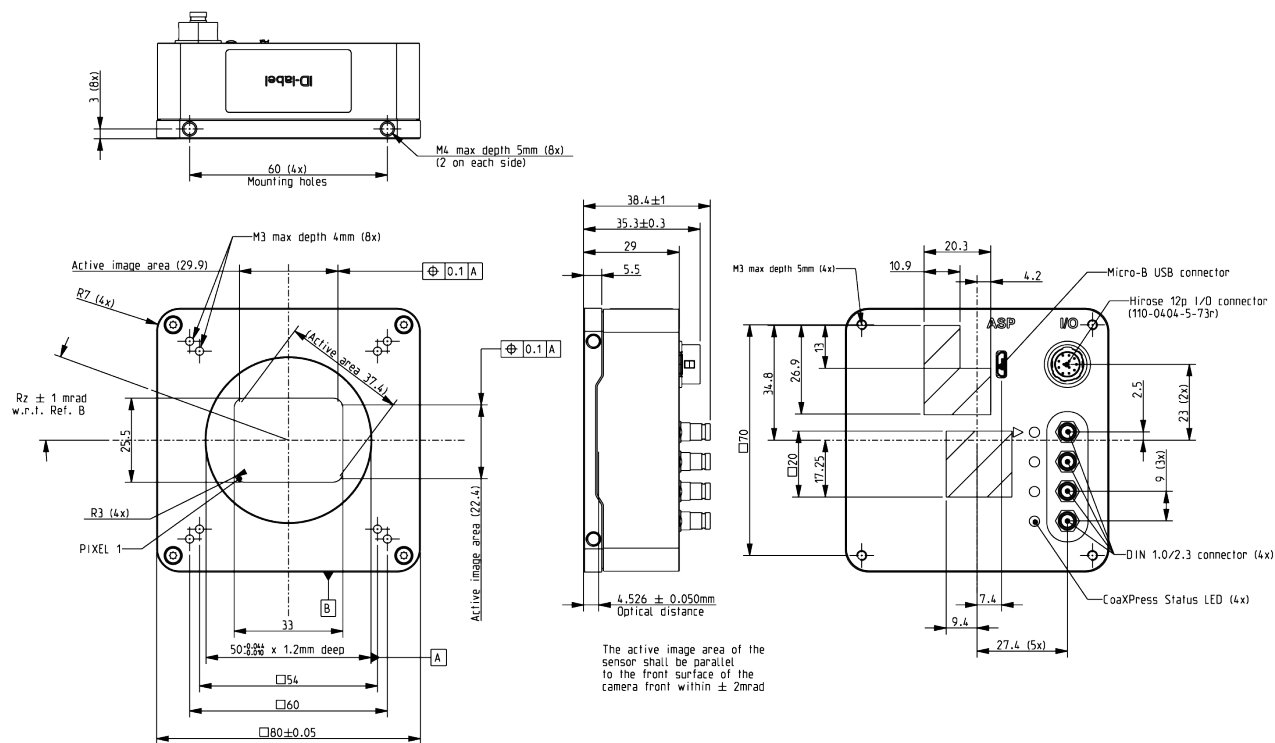
|    |                     |
|----|---------------------|
| 1  | Ground              |
| 2  | Not in use          |
| 3  | Flashstrobe out (-) |
| 4  | Flashstrobe out (+) |
| 5  | Not in use          |
| 6  | Not in use          |
| 7  | Not in use          |
| 8  | Not in use          |
| 9  | Ground              |
| 10 | Not in use          |
| 11 | Trigger in (-)      |
| 12 | Trigger in (+)      |

# 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     | ± 0.050 mm       |
| Rotation         | ± 1 mRad         |
| Optical distance | 4.526 ± 0.050 mm |
| Perpendicularity | ± 2 mRad         |

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

## Compliance

|             |                                                                                    |
|-------------|------------------------------------------------------------------------------------|
| RoHS        | Yes                                                                                |
| 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 |
|------|--------------------------------------------------------------------------------------------------------------------------------|

# High Resolution Metrology Camera

## Environmental

### Operating

|                     |                                                                          |
|---------------------|--------------------------------------------------------------------------|
| Sensor temperature  | +5 °C to +70 °C                                                          |
| 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

|                     |                                                                          |
|---------------------|--------------------------------------------------------------------------|
| 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                              |

## Camera Types

| Camera               | Interface connector | I/O connector | Sensor                | Type       | Max. fps @ Full resolution |
|----------------------|---------------------|---------------|-----------------------|------------|----------------------------|
| S-65A35-Km/CXP-6-1.1 | 4 x DIN1.0/2.3      | Hirose 12 pin | GMAX3265 (monochrome) | Monochrome | 35 fps                     |
| S-65A35-Kc/CXP-6-1.1 | 4 x DIN1.0/2.3      | Hirose 12 pin | GMAX3265 (color)      | Raw Bayer  | 35 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.



**For maximum image quality, performance, and reliability in demanding applications - Choose Adimec**

|                                                                    |                                                            |                                                            |                                                            |                                                                  |
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| Fax: (+1)-781-279-0771                                             | -                                                          | (+81)3-5968-8388                                           | (+65)-6334-1436                                            | -                                                                |
| E-mail: <a href="mailto:salesus@adimec.com">salesus@adimec.com</a> | <a href="mailto:saleseu@adimec.com">saleseu@adimec.com</a> | <a href="mailto:salesjp@adimec.com">salesjp@adimec.com</a> | <a href="mailto:salesap@adimec.com">salesap@adimec.com</a> | <a href="mailto:salescn@adimec.com.cn">salescn@adimec.com.cn</a> |

Detailed information on request - Subject to change without notice - Actual products may differ from photos  
S-65A35-Kx/CXP-6 Revision 1.4

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