Specification
Q-12A180-Fx/CXP Issue 2.x
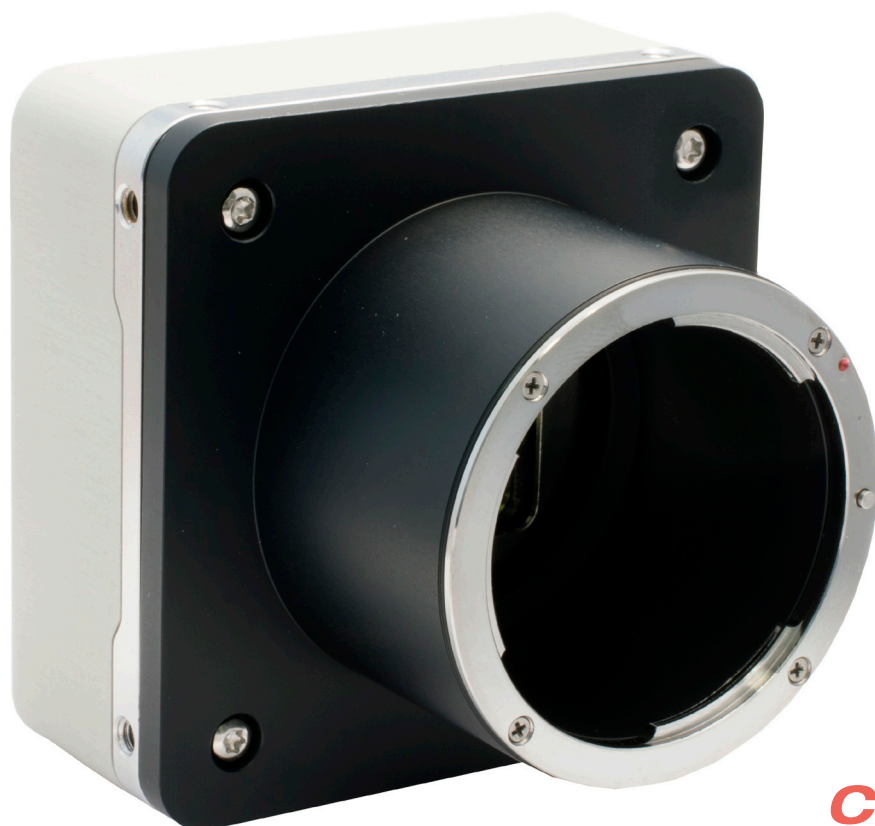
CoaXPress

Key characteristics

12 Mpx 5.5 µm^2	4096 3072	**187 FPS**
CMOS Global Shutter	APS-C Optical format	<9 W
<80 mm^2	<380 g	**60 dB DNR**

- AMS CMV12000 sensor
- True Global Shutter CMOS
- Monochrome and Color
- Dark and bright uniformity corrections
- Multiple Low Frequency Flat Field Correction sets
- CXP-3 and CXP-6 DIN 1/2/4 configurable
- M12 I/O connector
- CoaXPress V1.1.1 compliant
- CoaXPress V1.0 compatible

Introduction

The Quartz Q-12A180 CoaXPress camera brings 4096 by 3072 high quality pixels to the image for real time metrology tasks with a reliable high speed CoaXPress data interface. With 12 megapixel resolution and 187 frames per second of measurement speed in the Q-12A180 the precision and the throughput of your system can be improved. The accuracy of the information is preserved for each and every image by the use of Adimec's True Accurate Imaging technique and the AMS CMV12000 CMOS global shutter sensor.

As a CoaxPress pioneer we managed to develop a highly integrated 2nd generation CoaXPress V1.1.1 compliant 25Gb/s CoaXPress Quad interface. Fully backward compatible to existing V1.0 framegrabbers through a configuration tool for all major framegrabber brands.

Adimec offers the Q-12A180 in a low power compact outline, which provides optimal design freedom for integrating optics. Sensor alignment and retention is well suited for industrial optics with large numerical apertures where focus and sensitivity over the complete image is critical.
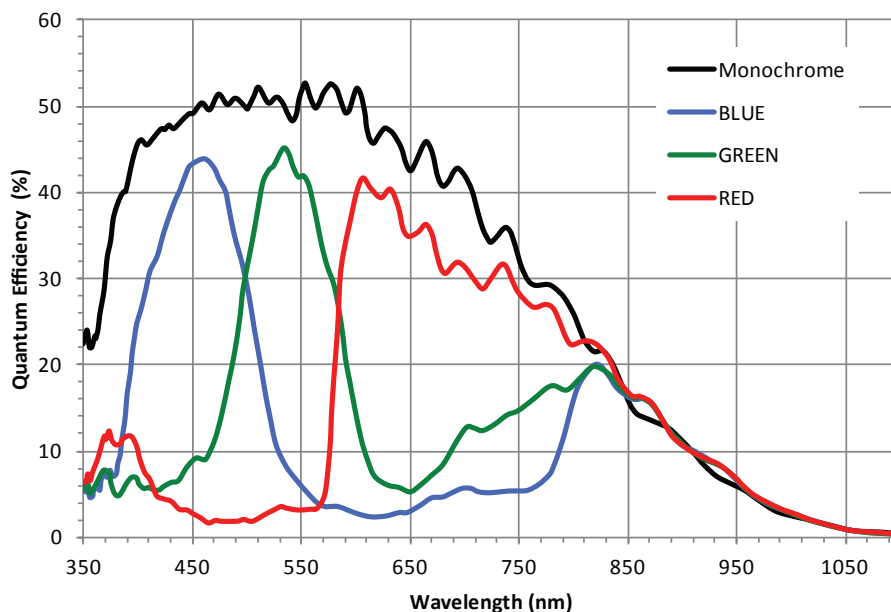
Adimec
Excellence in Imaging

Performance

Type	AMS CMV12000 sensor	
Architecture	8T CMOS Progressive scan Global shutter (PLS 1/50000)	
Optical format	APS-C format (Ø 28.1 mm)	
Pixel size	5.5 µm (H) x 5.5 µm (V)	
Active pixels	4096 (H) x 3072 (V)	
Microlenses	Yes	
Dynamic range	60 dB*	56.5 dB**
Full well	13.5 ke$^-$ *	9.9 ke$^-$ **
Dark noise	13 e$^-$ *	14.8 e$^-$ **
Sensitivity mono	4.64 V/Lux.s	

* Sensor specification
** Typical value

Quantum Efficiency

Functionality

Image acquisition	Continuous / Controlled
Integration time control	Programmable between 15 µs and 320 ms 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 – Automatic dark field shading correction – Manual/One push White Balance – User programmable or gamma Look Up Table in output stream (10 bit)
Region of interest	Size and position programmable Region of Interest (ROI) – Increased frame speed via ROI – Multiple band ROI readout – 2 x 2; 2 x 1 (Mono only); 1 x 2 (Mono only) binning
Defect pixel correction	On/Off switchable – Readout 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	Up to 50 low frequency flat field correction sets can be saved in non-volatile memory (Mono only) – Up to 18 out of 50 are live switchable 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 – Camera type, build state and serial number can be read via camera interface

High Speed Metrology Camera

Interfacing

Video

Video output	CoaxPress V1.1.1 /1.0 CXP-3 and CXP-6 DIN 1/2/4 configurable
External Sync	I/O or CXP controlled
Output resolution	8 / 10 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	Fully programmable flash strobe signal (duration, delay and polarity)
Input	Trigger signal with programmable polarity
Connector	M12 Binder 09-3432-216-04 (figure 2)

Power

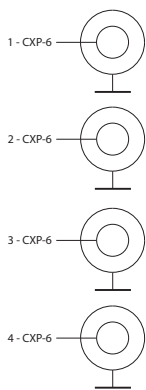|	
Input voltage	24Vdc PoCXP
Power dissipation	<9 W @ 24Vdc full continuous operation at maximal framespeed. Reduced power consumption @ reduced sensor and interface speed. When the Low Frequency Flat Field Correction is enabled the additional power dissipation is ± 0.5 W.
Power connector	DIN1.0/2.3 CoaXPress Masterlink (figure 1)

Figure 1: Quad CXP DIN1.0/2.3

1 Trigger in
2 Flash strobe out
3 Flash strobe return
4 Trigger return
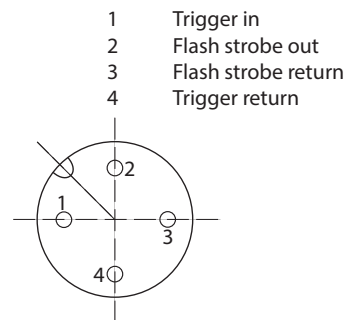
BINDER-09-3432-216-04

Figure 2: M12 I/O connector

Mechanical

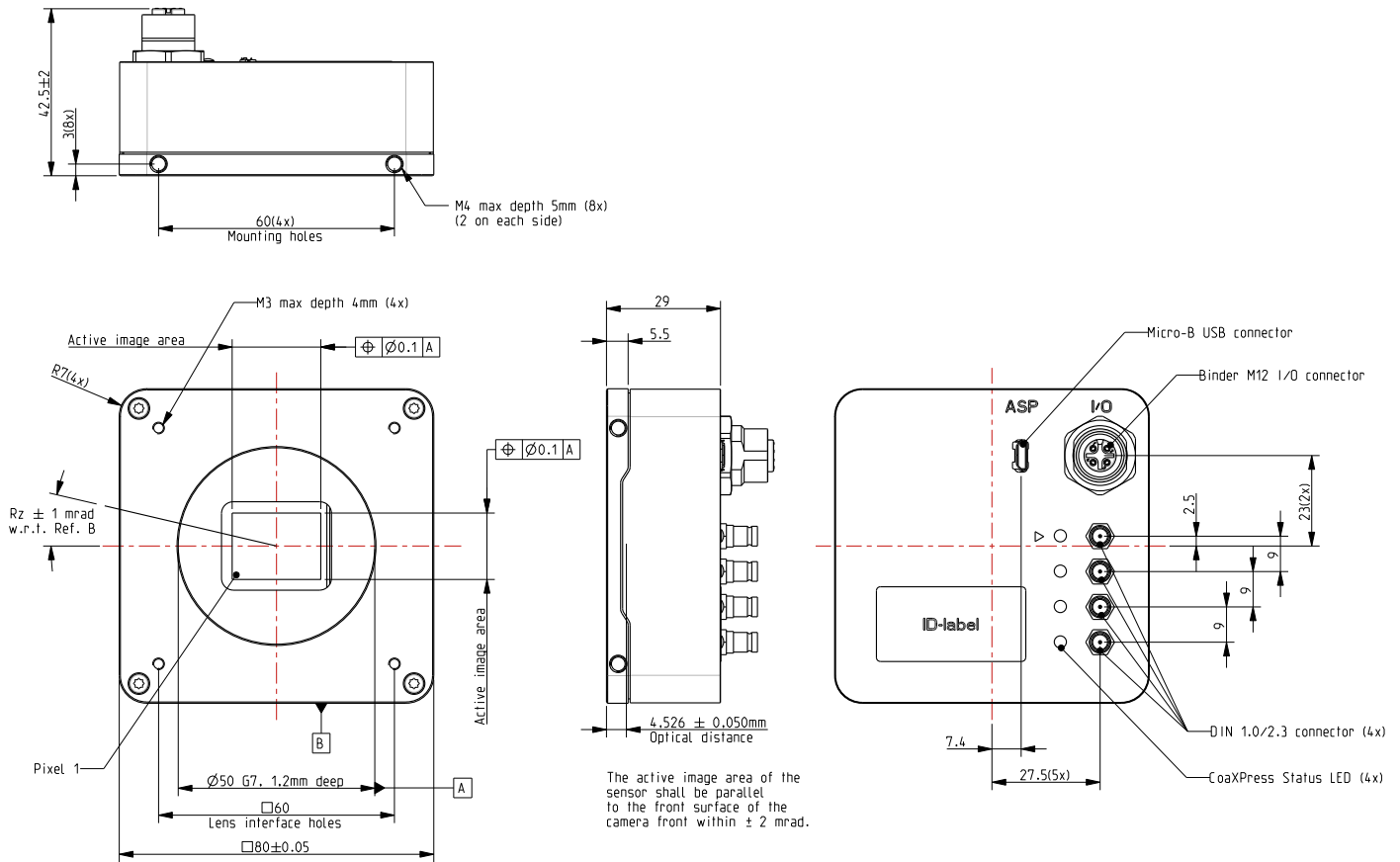|	
Mounting	2 M4 mounting holes per side on camera front
Lensmount	4 x M3 at 60mm pitch - 50mm G7 reference (Optional: F, M42, T2, TFLII, EF)
Outline	See figure 3
Weight	380g +/- 5% excl. Lensmount

Figure 3: Mechanical outline

Sensor Mounting Accuracy

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

Compliance & Reliability

RoHS

Directive	2011/65/EU

CE-mark

Electromagnetic compability	2004/108/EC: 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 according MIL-HDBK-217F Notice 2 (Ground Fixed, uncontrolled environment)

Environmental

Operating

Temperature	-10°C to +30°C or max housing temp 50°C
Humidity (relative)	20% - 80% non-condensing
Shock	10 g, half sine shape, 6-10ms duration
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
Vibration	10 g sinusoidal vibration sweeps 5 - 150 Hz

Camera Types

Camera Types	Interface connector	I/O connector	Sensor	Type	Max. fps @ Full resolution
Q-12A180-Fm/CXP-6-2.0	4 x DIN1.0/2.3	M12 4p	CMV12000-2E5M1PA	Mono	187 fps
Q-12A180-Fc/CXP-6-2.0	4 x DIN1.0/2.3	M12 4p	CMV12000-2E5C1PA	Raw Bayer	187 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.

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

www.adimec.com