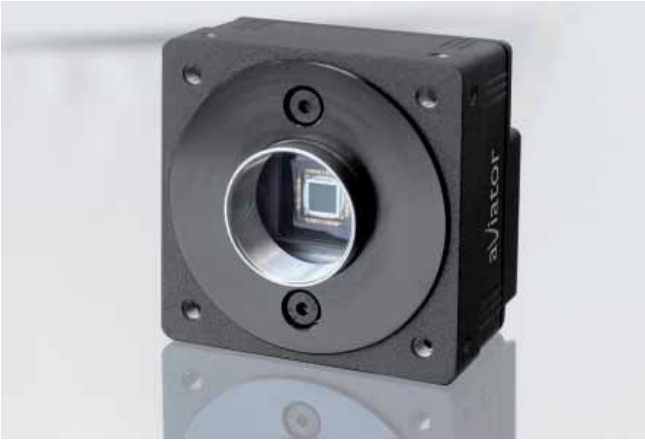
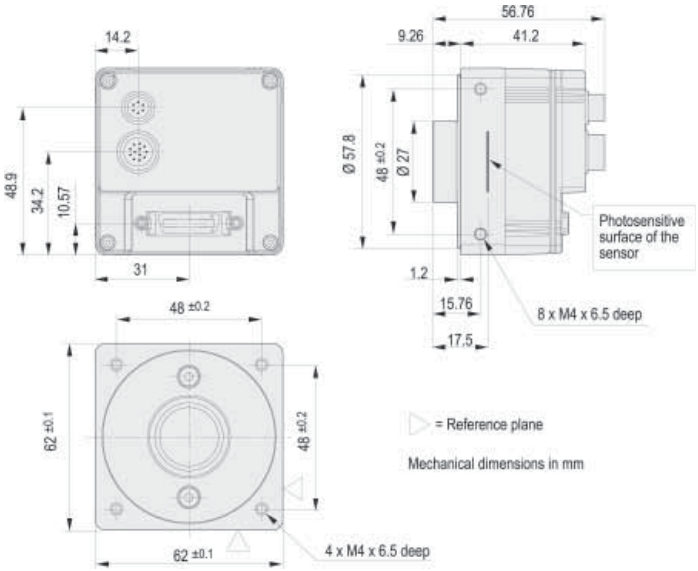
BASLER VISION TECHNOLOGIES

Comparison - aviator vs. A202



In November 2008, Basler Components launched its new aviator camera series. The aviator series will replace the A202 camera model that was introduced in 2001. The major characteristics of both cameras, such as resolution, acquisition speed, and the data interface, are quite equivalent, so the transition will be very smooth. This document compares both camera series in order to support a smooth transition from the A202 to the aviator and to minimize the risks of migration.

Mechanics (dimensions in mm):



Both camera series use the same type of housing with a footprint of 62 mm x 62 mm. All 12 mounting screw holes, two on each side and four on the front, are at the same position on each housing and have the same M4 size, so aviator cameras fit directly into mountings designed for the A202. On the aviator, the 26 pin MDR connector is centered in the lower part of the housing's back side, nearly the same position as the A202k. The power connector has been moved from the right middle of the back side to a position near the upper left. The aviator does have a third connector for the digital I/O. The position for the LED has also changed. The typical weight, the temperature range, and the vibration resistance are the same for both models.

Electrical:

The 40 MHz Camera Link clock speed used on the A202k has been changed on the aviator. For backward compatibility, the aviator will still have a 40 MHz clock speed available. And to address today's higher throughput requirements, the aviator can also operate at 48, 56, and 66 MHz clock speeds. The aviator's clock speed can be selected by changing software parameters. The Camera Link connector, a 26 pin MDR connector with screw locks, and the connector pinning are still the same. On both cameras, the power connector is a 6 pin Hirose connector, also with the same pinning. Because the power consumption of the aviator is half a watt less than that of the A202, existing power supplies can be reused. The aviator has a third connector, a 12 pin Hirose connector, which supplies access to the aviator's digital input and output ports, e.g., for directly inputting a trigger signal. Please see the aviator user's manual for more information.

Basic Specifications:

	avA1000-120km	A202k
Resolution	1024 x 1024	1004 x 1004
Sensor	Kodak KAI-1050	Kodak KAI-1020
Sensor Type	CCD	CCD
FPS	120	48
Pixel Size	5.5 x 5.5 µs	7.4 x 7.4 µs
Optical Size	1/2"	2/3"

At 1024 x 1024 pixels, the aviator's resolution is slightly higher than the 1004 x 1004 pixel resolution of the A202k. The aviator's pixel size is smaller.

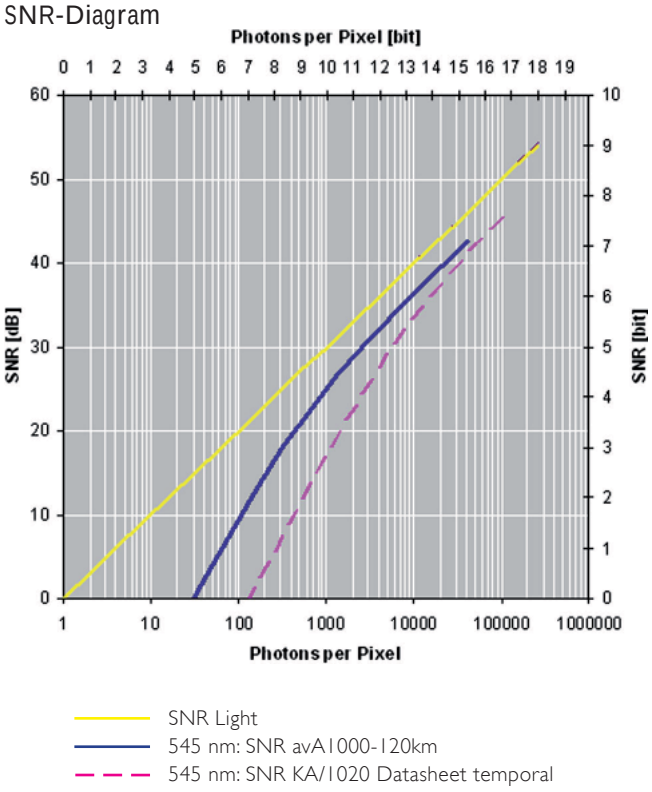
Sensitivity:

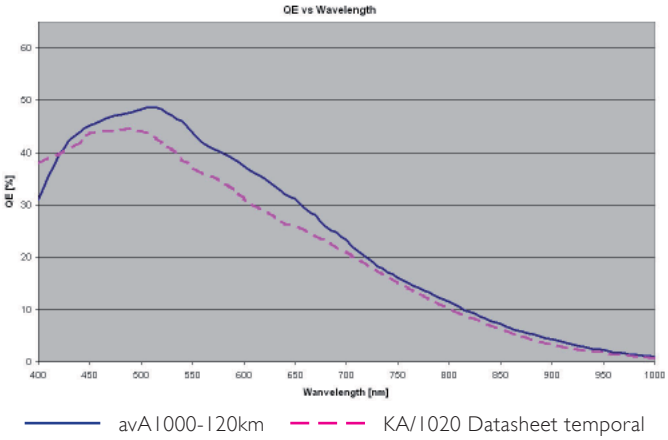
	avA1000-120km	A202k*
QE [%] @ 545 nm	45	38
Dark Noise [e-]	14	50
Saturation Capacity [ke-]	18.7	40
DSNU.1288 [e-]	3.8	
PRNU.1288 [%]	1.2	
1/Conversion Gain [e + /DN]	5.2	

* not measured, based on sensor data sheet

Even though the aviator has smaller pixels, the signal-to-noise curve shows a better sensitivity over the entire range. This means that existing lighting setups for the A202k camera can be reused for the aviator without any modifications.

SNR-Diagram





Note that the values in the SNR diagram for the A202k are theoretical and based on the sensor data sheet. Because the A202k is an older camera, the actual values can be expected to be worse.

Optics:

Due to the smaller pixel size, the focal length of the lens must be changed so that the image circle will properly cover the sensor. As a rule of thumb, the focal length must be lowered by about 25%. For example, if the A202 is using a 23 mm lens, the aviator would need a 17 mm lens.

Software:

Since the Camera Link interface is now integrated into the Basler pylon driver, aviator cameras can be easily configured using Basler pylon. All aviator parameters can be archived and adjusted via the pylon Viewer application. Basler still offers the CCT+ for configuring the A202k. Applications can directly change camera parameters via a low level register API using read and write commands. The new register layout of the aviator camera is detailed in the camera´s documentation package. Additional new libraries make it simple to handle transport parameters such as the parity bit. Code samples are available for the C, C++, and VB programming languages. Along with the low level register interface, the aviator offers the high level C++ interfaces of the pylon SDK, a first for cameras with a Camera Link interface. This means that the camera´s settings can be controlled in the same fashion as Basler FireWire of GigE Vision cameras.

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