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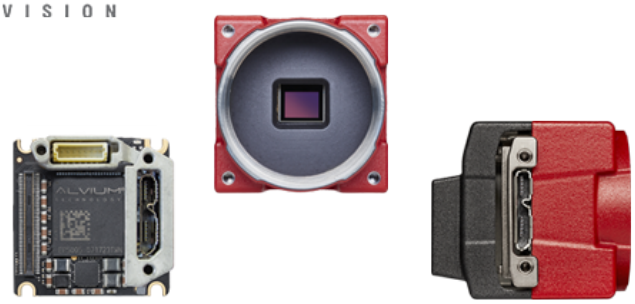

Alvium

1800 U-500

- AR0521 CMOS sensor
- ALVIUM image processing
- USB3 Vision
- Various hardware options

Versatile USB camera with AR0521 sensor

Alvium USB cameras are designed for use in both machine vision and embedded applications. Offering high image quality and reducing workload for the host, Alvium enables innovation among system designers. The innovative ALVIUM System on Chip (SoC) performs image corrections and preprocessing tasks onboard the camera instead of the host computer. Unlike FPGAs commonly used in machine vision cameras, the ALVIUM SoC is extremely power efficient. With Alvium, integrating hardware and software can be done effortlessly, which ultimately reduces development time. The ON Semiconductor AR0521 CMOS sensor enables high-quality imaging at 5.1 megapixels. Color models ship with an IR cut filter, monochrome models ship without a filter or protection glass.

Benefits and features

- Monochrome (1800 U-500m) and color (1800 U-500c) models
- ALVIUM® Technology for onboard image processing
- USB3 Vision interface for GenICam SFNC features
- Platform concept that enables the operation of different Alvium camera models with a common software
- Micro-B USB 3.1 Gen 1 connector with screw locks for industrial applications
- Precise sensor-to-lens mount alignment
- Standard M3 mounting holes for top and bottom mounting, standard M2 mounting holes for front mounting
- Industrial performance for both embedded and machine vision applications

Hardware options

- Housings: Alvium 1800 U cameras are available as bare board, open housing, or closed housing cameras.

- Various lens mounts: Select between S-Mount, CS-Mount, or C-Mount.
- USB connector position: Select between the back panel or the left side of the camera (seen from the sensor side).

For more information on hardware options, including product codes and technical data, such as technical drawings and mass, see the Alvium Cameras Hardware Options document.

Available accessories

- Tripod adapter
- USB 3.1 Gen 1 cable with screw connectors in various lengths
- I/O cables in various lengths
- Various lenses and Allied Vision S-Mount lenses with focal lengths 2.97 - 12 mm

Specifications

Alvium	**1800 U-500**
Interface	USB3 Vision
Resolution	2592 (H) × 1944 (V)
Spectral range	300 to 1100 nm
Sensor	ON Semi AR0521
Sensor type	CMOS
Shutter mode	Rolling shutter
Sensor size	Type 1/2.5
Pixel size	2.2 µm × 2.2 µm
Lens mounts (available)	CS-Mount, C-Mount, S-Mount
Max. frame rate at full resolution	67 fps at ≥350 MByte/s, Mono8
ADC	10 Bit
Image buffer (RAM)	256 KB
Non-volatile memory (Flash)	1024 KB
Output	
Bit depth	Max. 10 Bit
Monochrome pixel formats	Mono8, Mono10, Mono10p
YUV color pixel formats	YCbCr411_8_CbYYCrYY, YCbCr422_8_CbYCrY, YCbCr8_CbYCr
RGB color pixel formats	BayerGR8, BayerGR10, BayerGR10p, BGR8, RGB8
General purpose inputs/outputs (GPIOs)	
TTL I/Os	4 programmable GPIOs
Operating conditions/dimensions	
Operating temperature	+5 °C to +65 °C housing temperature (with heat sink)
Power requirements (DC)	Power over USB 3.1 Gen 1 | External power 5.0 V

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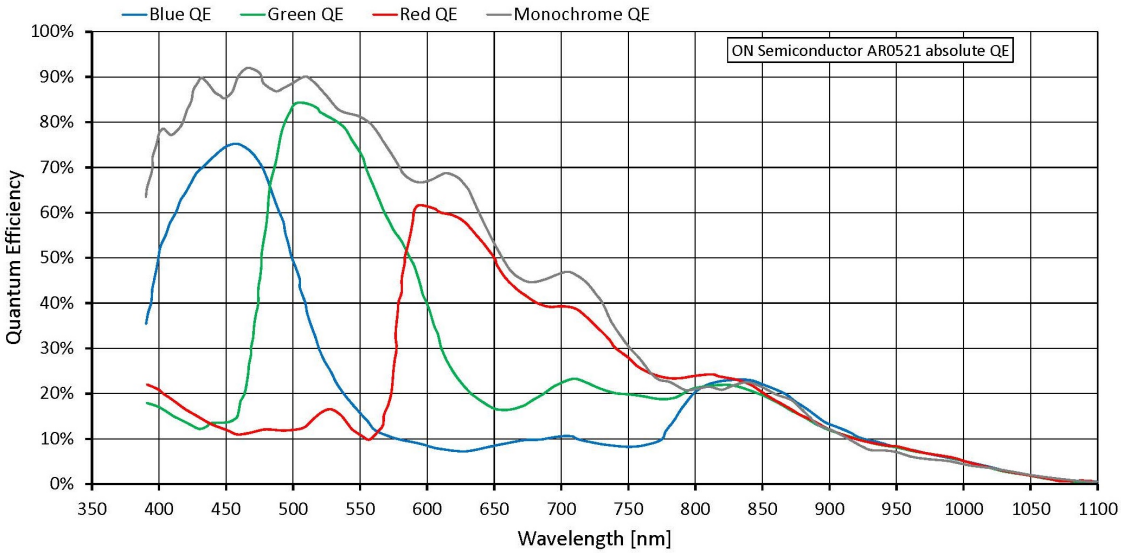
Alvium	1800 U-500
Power consumption	USB power: 2.2 W (typical), 2.3 W (max.) | Ext. power: 2.5 W (typical), 2.6 W (max.) | Values at 20 °C
Mass	15 g (bare board)
Body dimensions (L × W × H in mm)	13 × 30 × 26 (bare board | USB 90°), 13 × 26 × 26 bare board | (USB 180°)
Regulations	2011/65/EU, including amendment 2015/863/EU (RoHS)

Quantum efficiency



Features

Image control

Auto control

- Auto exposure
- Auto gain
- Auto white balance
- Auto features regions control
- Auto features algorithms control

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Other image controls

- Black level
- De-Bayering up to 5×5 (color models)
- Exposure time
- Gain
- Gamma
- Region of interest (ROI)
- Reverse X/Y

Camera control

- 4 user sets
- Sync out modes: Trigger ready, input
- Temperature monitoring (sensor board)
- Test image
- LED luminance control
- Firmware update

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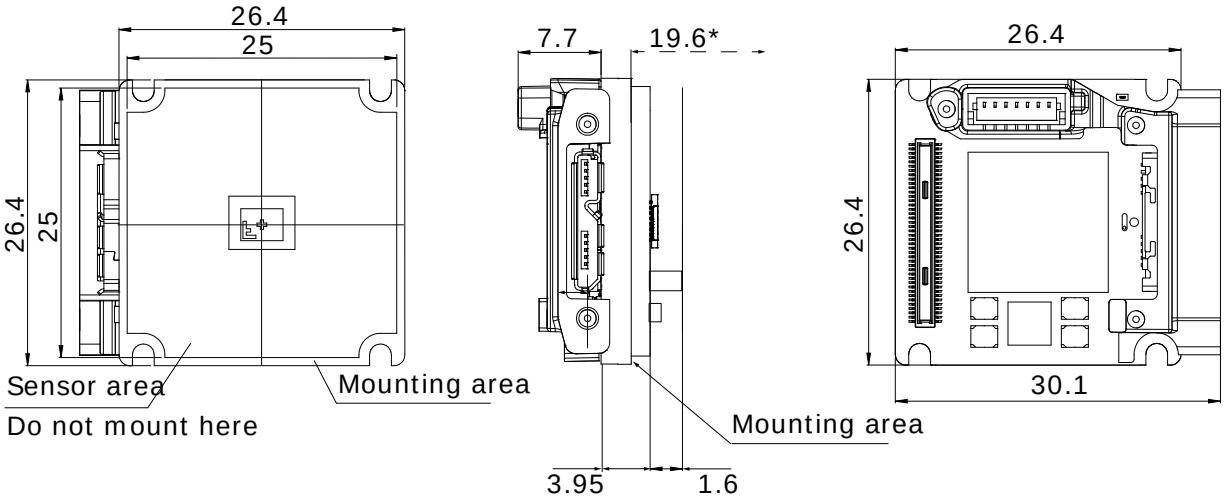
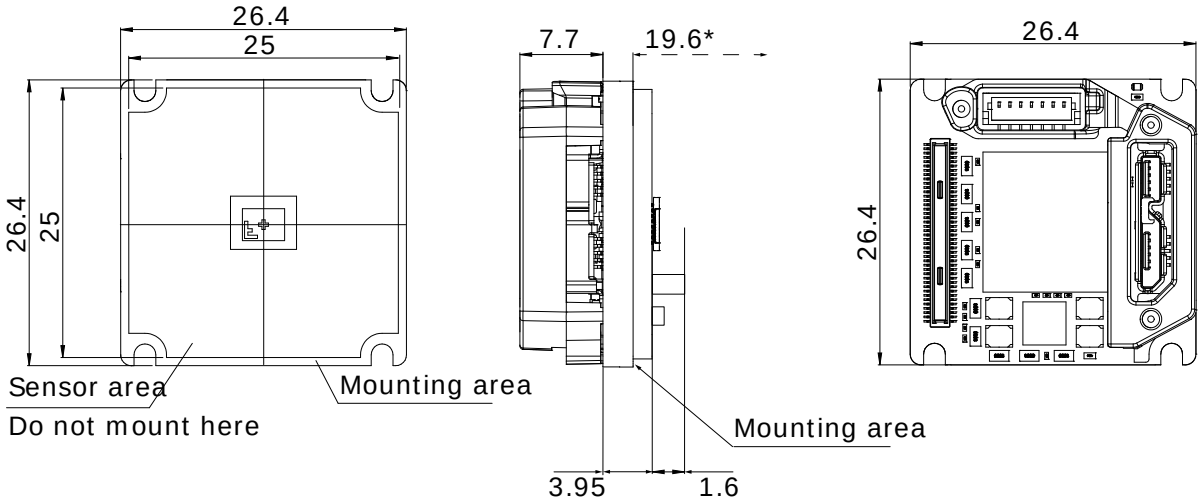
Technical drawing

Camera hardware options
The Alvium Cameras Hardware Options document informs about submodels, such as bare board or open housing cameras with different lens mounts.

Alvium USB 90° | bare board



Alvium USB 180° | bare board



*Mechanical distance from the mounting area to the C-Mount front flange

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Allied Vision

Applications

Powered by the ALVIUM® Technology, a unique System-on-chip designed by Allied Vision, the Alvium 1500 and Alvium 1800 Series deliver industrial performance to embedded vision with many benefits for system engineers.

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