



# Alvium

## FP3-500

- AR0521 CMOS sensor
- ALVIUM image processing
- FPD-Link III interface
- Various hardware options

## Model without hardware options

### Alvium FP3: Benefit from greater flexibility in cable lengths

## Robust CSI-2 based Alvium cameras with FPD-Link III interface

Alvium FP3 cameras with FPD-Link III (Flat Panel Display Link) interface have been designed to overcome the limitations of standard CSI-2 cameras. With a large choice of over 30 high-quality CMOS global and rolling shutter sensors Allied Vision is offering the broadest variety of FPD-Link III cameras in the market. The CSI-2 based closed housing cameras come with an integrated serializer, 2 GPIOs (General Purpose Input/Output) on the camera, and two rugged interface connectors to choose from.

To operate Alvium FP3 cameras on your vision system, Allied Vision provides different access modes:

- **GenICam for CSI-2 Access** controls the camera by GenICam features, using the Alvium CSI-2 driver and CSI-2 transport layer (TL) directly. Alvium FP3 models with equivalent 1800 C models are supported. Please find FAQs and installation instructions in the [Getting Started with GenICam for CSI-2](#) application note.
- **Direct Register Access (DRA)** to control the cameras via registers for advanced users.
- **Video4Linux2 Access** allows to control the cameras via established V4L2 API and applications like GStreamer and OpenCV. Open-source CSI-2 drivers are available on [GitHub](#) for different boards and system on chips (SoCs).

In addition to lens mount and housing options, see [Customization and OEM Solutions webpage](#) for additional options.

## Specifications

|                                    |                                                  |
|------------------------------------|--------------------------------------------------|
| Interface                          | FPD-Link III, based on MIPI CSI-2, up to 4 lanes |
| Resolution                         | 2592 (H) × 1944 (V)                              |
| Spectral range                     | 300 to 1100 nm                                   |
| Sensor                             | ON Semi AR0521SR                                 |
| Sensor type                        | CMOS                                             |
| Shutter mode                       | RS (Rolling shutter)                             |
| Sensor size                        | Type 1/2.5                                       |
| Pixel size                         | 2.2 $\mu\text{m}$ × 2.2 $\mu\text{m}$            |
| Lens mounts (available)            | C-Mount, CS-Mount, S-Mount                       |
| Max. frame rate at full resolution | Mainly depends on hardware and register settings |
| ADC                                | 10 Bit                                           |
| Image buffer (RAM)                 | 256 KByte                                        |
| Non-volatile memory (Flash)        | 1024 KByte                                       |

### Imaging performance

Imaging performance data is based on the evaluation methods in the EMVA 1288 Release 3.1 standard for characterization of image sensors and cameras. Measurements are typical values for monochrome models measured without optical filter.

|                                |                   |
|--------------------------------|-------------------|
| Quantum efficiency at 529 nm   | 79 %              |
| Temporal dark noise            | 5.9 $\text{e}^-$  |
| Saturation capacity            | 9890 $\text{e}^-$ |
| Dynamic range                  | 63 dB             |
| Absolute sensitivity threshold | 7.1 $\text{e}^-$  |

### Output

|                          |                                                                                                    |
|--------------------------|----------------------------------------------------------------------------------------------------|
| Bit depth                | 10-bit                                                                                             |
| Monochrome pixel formats | PFNC: Mono8, Mono10, Mono10p, Mono12, Mono12p   CSI-2: RAW8, RAW10, RAW12   FOURCC: GREY, Y10, Y12 |
| YUV color pixel formats  | PFNC: YCbCr411_8_CbYYCrYY, YCbCr422_8_CbYCrY, YCbCr8_CbYCr   CSI-2: YUV422 8-bit   FOURCC: UYVY    |
| RGB color pixel formats  | PFNC: RGB8 (default), BGR8   CSI-2: RGB888 (default)   FOURCC: RGB3                                |

Raw color pixel formats (Bayer)

PFNC: BayerGR8, BayerGR10, BayerGR10p, BayerGR12, BayerGR12p

### General purpose inputs/outputs (GPIOs)

TTL I/Os

2 programmable GPIOs

### Operating conditions/dimensions

Operating temperature -20 °C to +65 °C (housing)

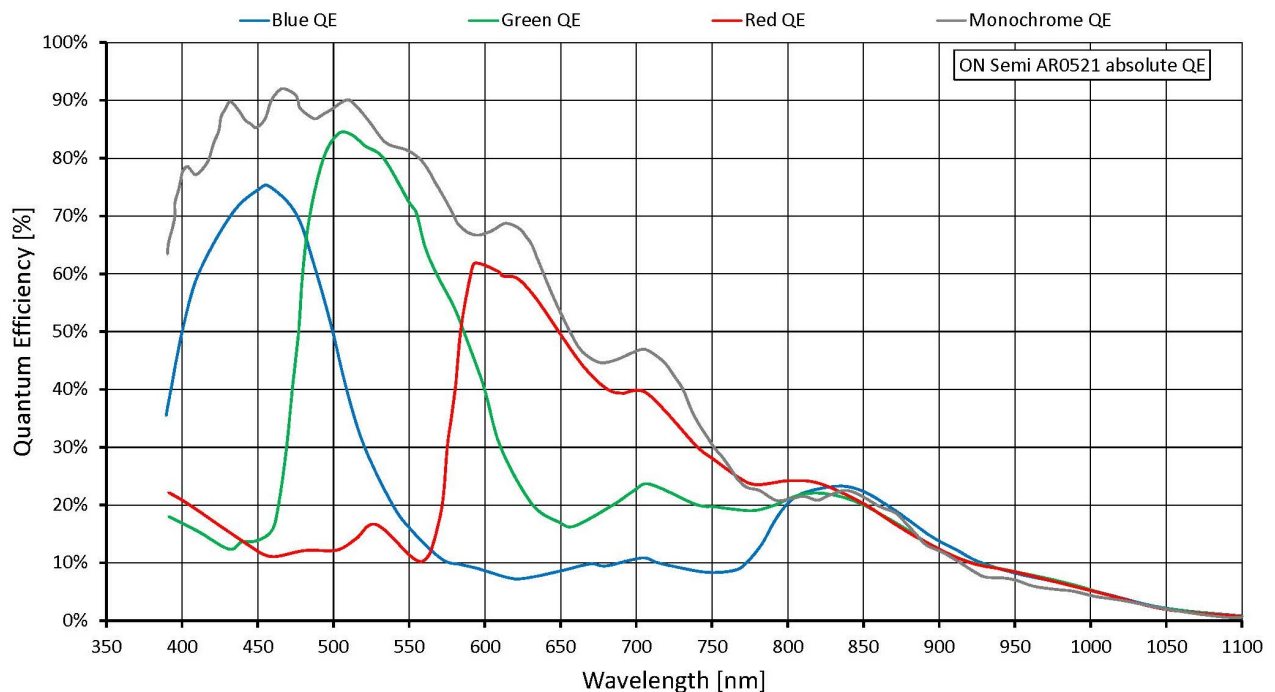
Power requirements (DC) 5 VDC over MIPI CSI-2

Power consumption Value for the integrated serializer adds to CSI-2 model value.

Mass 70 g

Body dimensions (L × W × H in mm) 41 × 29 × 29

## Quantum efficiency



## Features

### Image control: Auto

- Auto exposure
- Auto gain
- Auto white balance (color models)

### Image control: Other

- Adaptive noise correction\*
- Binning: Digital
- Binning: Sensor (mono models)\*
- Black level
- Color transformation (incl. hue, saturation; color models)
- Contrast\*
- Custom convolution\*
- De-Bayering up to 5×5 (color models)
- DPC (defect pixel correction)
- FPNC (fixed pattern noise correction)
- Gamma
- Lens shading correction\*
- LUT (look-up table)\*
- Reverse X/Y
- ROI (region of interest)
- Sharpness/Blur\*

### Camera control

- Acquisition frame rate
- Counters and timers\*
- Firmware update in the field
- I/O and trigger control
- Image chunk data\*
- Temperature monitoring
- User sets\*

\*GenICam for CSI-2 Access

# Technical drawing

