



## Alvium

### 1500 C-501c NIR

- AR0522 CMOS sensor
- ALVIUM image processing
- MIPI CSI-2 interface
- Mono and color models

Hardware option: Open Housing C-Mount

### **Alvium 1500 C – Powerful camera modules for embedded vision**

#### Revolutionary MIPI CSI-2 camera module

Alvium 1500 C-501 NIR with ON Semi AR0522 runs 68.0 frames per second at 5.0 MP resolution.

Alvium 1500 C is a revolutionary MIPI CSI-2 camera optimized for embedded vision applications. The Alvium 1500 C offers the performance and versatility of industrial cameras for the embedded world. Equipped with industrial-grade CMOS sensors from ON Semiconductor, Alvium 1500 C cameras deliver excellent image quality and high frame rates.

The standardized CSI-2 driver ensures quick integration with the flexibility to change camera models easily.

To operate Alvium CSI-2 cameras on your vision system, Allied Vision provides different access modes: - **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

|                                    |                                       |
|------------------------------------|---------------------------------------|
| Product code                       | 16540                                 |
| Interface                          | MIPI CSI-2, up to 4 lanes             |
| Resolution                         | 2592 (H) × 1944 (V)                   |
| Spectral range                     | 300 to 1100 nm                        |
| Sensor                             | ON Semi AR0522                        |
| 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 mount                         | C-Mount                               |
| Optical Filter                     | Type Hoya C5000 IR cut filter         |
| Max. frame rate at full resolution | 68 fps using 4 lanes, RAW8 (GREY)     |
| 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   | 84 %               |
| Temporal dark noise            | 6.9 $\text{e}^-$   |
| Saturation capacity            | 10600 $\text{e}^-$ |
| Dynamic range                  | 62 dB              |
| Absolute sensitivity threshold | 8.0 $\text{e}^-$   |

### Output

|                          |                                                    |
|--------------------------|----------------------------------------------------|
| Bit depth                | 10-bit                                             |
| Monochrome pixel formats | CSI-2: RAW8, RAW10, RAW12   FOURCC: GREY, Y10, Y12 |
| YUV color pixel formats  | CSI-2: YUV422 8-bit   FOURCC: UYVY                 |
| RGB color pixel formats  | CSI-2: RGB888 (default)   FOURCC: RGB3             |

### General purpose inputs/outputs (GPIOs)

TTL I/Os 2 programmable GPIOs

### Operating conditions/dimensions

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

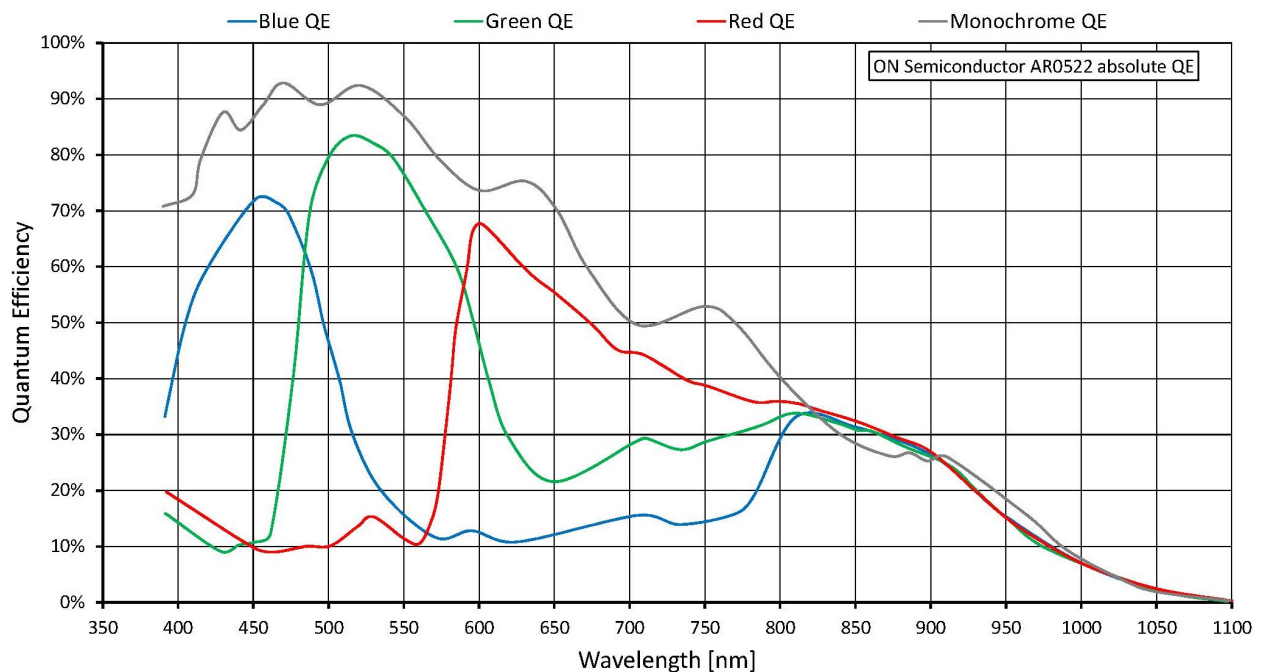
Power requirements (DC) 5 VDC over MIPI CSI-2

Power consumption Typical: 1.9 W

Mass 40 g

Body dimensions (L × W × H in mm) 26 × 29 × 29

## Quantum efficiency



## Features

### Image control: Auto

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

### Image control: Other

- Black level
- Color transformation (incl. hue, saturation; color models)
- De-Bayering up to 5×5 (color models)
- DPC (defect pixel correction)
- FPNC (fixed pattern noise correction)
- Gamma
- Reverse X/Y
- ROI (region of interest)

### Camera control

- Acquisition frame rate
- Firmware update in the field
- I/O and trigger control
- Temperature monitoring

## Technical drawing

