

Alvium

1800 C-2040



- IMX541 CMOS sensor
- ALVIUM image processing
- MIPI CSI-2 interface
- Various hardware options

Model without hardware options

Alvium 1800 C – High-performance camera modules for embedded vision

Machine vision sensors for embedded system developers

Alvium 1800 C-2040 with Sony IMX541 runs 25 frames per second at 20.4 MP resolution.

The powerful Alvium 1800 C MIPI CSI-2 camera series gives embedded system developers access to Sony's high-performance image sensors popular in the machine vision industry. These sensors with resolutions up to 20 megapixels deliver excellent image quality and up to twice the frame rates compared to similar Alvium 1500 C models.

To operate Alvium CSI-2 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. All Alvium 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	MIPI CSI-2, up to 4 lanes
Resolution	4512 (H) × 4512 (V)
Spectral range	300 to 1100 nm
Sensor	Sony IMX541
Sensor type	CMOS
Shutter mode	GS (Global shutter)
Sensor size	Type 1.1
Pixel size	2.74 µm × 2.74 µm
Lens mounts (available)	C-Mount, CS-Mount
Max. frame rate at full resolution	25 fps using 4 lanes, Mono8, RAW8 (GREY)
ADC	12 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	68 %
Temporal dark noise	2.3 e ⁻
Saturation capacity	9400 e ⁻
Dynamic range	70 dB
Absolute sensitivity threshold	2.9 e ⁻

Output

Bit depth	12-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)

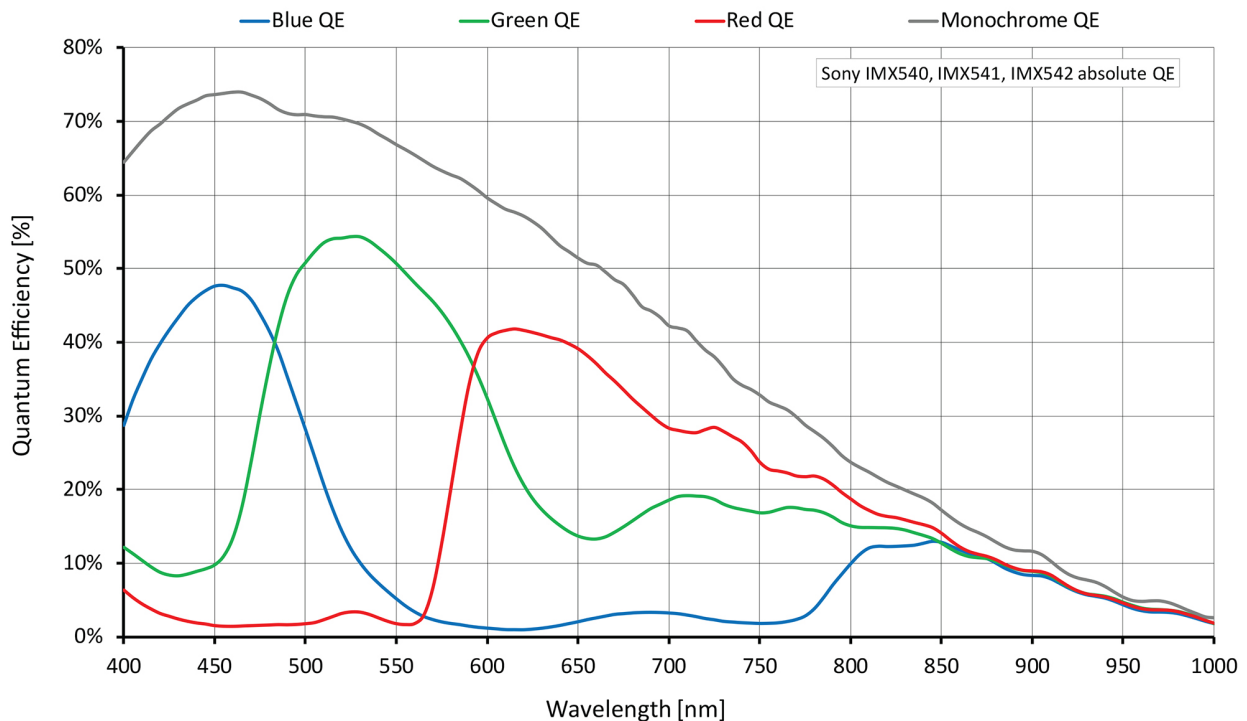
Power requirements (DC) 5 VDC over MIPI CSI-2

Power consumption Typical: 3.7 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

- Adaptive noise correction*
- Binning: Digital
- Binning: Sensor (Mono-Modelle)*
- 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

