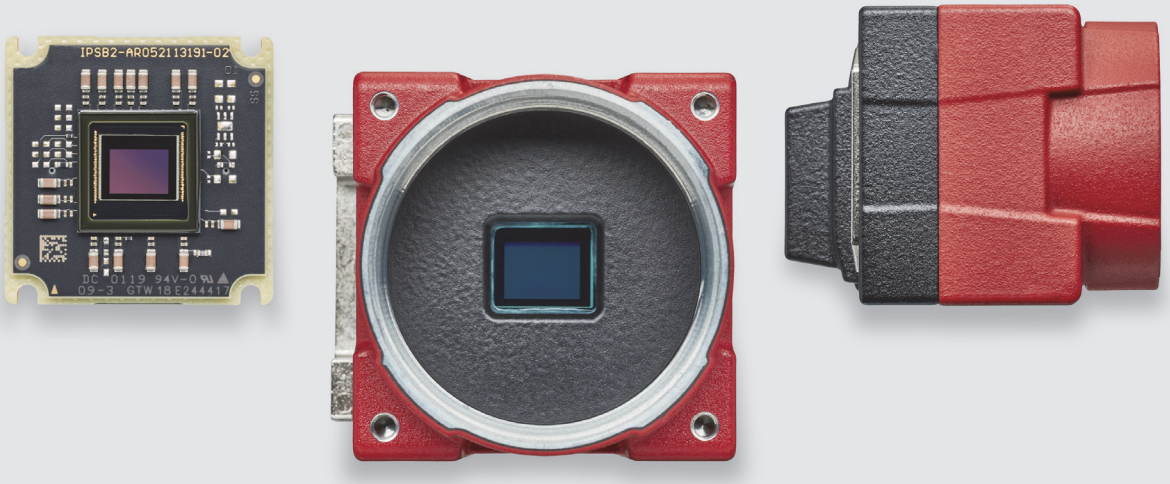
Allied Vision



MIPI CSI-2 | USB3.1. GEN1

Alvium Cameras

Accessory Guide

V2.0.0

Allied Vision Technologies GmbH // Taschenweg 2a, 07646 Stadtroda / Germany

2020-Jan-06

This document at a glance

The Alvium Cameras Accessory Guide provides an overview of various accessories for Alvium cameras.

What else do you need?

This is a selection of helpful downloads.

Document	Link
User guides for Alvium CSI-2 cameras and USB cameras	See document downloads for your Alvium camera at www.alliedvision.com/en/support/technical-documentation
Optimum Heat Dissipation for Housed Alvium Cameras application note	
Electromagnetic Compatibility for Open Housing Alvium Cameras application note	
Accessory documents	www.alliedvision.com/en/support/technical-documentation/accessory-documentation

Table 1: Downloads for Alvium cameras and accessories

Copyright and trademarks

Contact us

Website

General
www.alliedvision.com/en/contact

Distribution partners
www.alliedvision.com/en/about-us/where-we-are

Email

General
info@alliedvision.com

Support
support@alliedvision.com

Sales offices

Europe, Middle East, and Africa	T// +49 36428 677-230
North and South America	Toll-free: +1 877 USA 1394 T// +1 978 225 2030 California: +1 408 721 1965
Asia-Pacific	T// +65 6634 9027
China	T// +86 21 64861133

Headquarters

Allied Vision Technologies GmbH
Taschenweg 2a
07646 Stadtroda, Germany

T// +49 36428 677-0
F// +49 36428 677-28

Contents

Document history and conventions

This chapter includes:

Document history

Version	Date	Remarks
V2.0.0	2020-Jan-06	• Added adapter boards for: NVIDIA Jetson TX2 and AGX Xavier NVIDIA Jetson Nano Developer Kit Toradex Ixora Carrier Board. • Applied editorial changes.
V1.0.0	2019-May-29	Release version

Table 2: Document history

Conventions used in this manual

To give this document an easily understood layout and to emphasize important information, the following typographical styles and symbols are used:

Typographic styles

Style	Function
Emphasis	Programs, or highlighting important things
Web links and references	Links to webpages and internal cross references

Table 3: Typographic styles

Symbols and notes

Practical tip

Additional information helps to understand or ease handling.

Avoiding malfunctions

Precautions are described.

Additional information

Web link or reference to an external source with more information is shown.

Technology and components naming

The following table lists terms used with Alvium cameras.

Term	Official naming or description
adapter board	This printed circuit board (PCB) connects embedded boards, cameras, and I/Os.
FFC	Flat flexible cables connect embedded boards and adapter boards.
FPC cable	Flexible printed circuit cables connect embedded boards and cameras via adapter boards
MIPI CSI-2	Mobile Industry Processor Interface Camera Serial Interface 2
open housing	Camera housing that is open at the back side to be designed into an encompassing housing with other components

Table 4: Technology and components naming

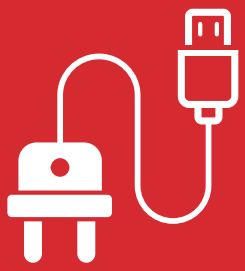
Third-party product naming

Names of third-party products in this document are partly shortened to ease reading. Nevertheless, we respect all manufacturer rights and trademarks.

Component	Reference
Boundary Devices Nitrogen6_MAX embedded board	www.boundarydevices.com
JST SHR-07V-S	www.jst.de
NVIDIA Jetson AGX Xavier Developer Kit	www.developer.nvidia.com
NVIDIA Jetson TX2 Developer Kit	
NVIDIA Jetson Nano Developer Kit	
Toradex Ixora Carrier Board	www.toradex.com
Wandboard i.MX6 embedded boards series	www.wandboard.org

Table 5: Third-party products naming

Accessories



Accessories in this chapter are recommended for use with Alvium cameras:

CSI-2 camera connections

Investigate embedded applications with Alvium CSI-2 cameras, using adapter boards and FPC cables by Allied Vision.

Designing your own embedded components

If you want to design your own components to connect Alvium CSI-2 cameras to embedded boards, contact your Allied Vision Sales representative or Allied Vision Support at support@alliedvision.com.

Adapter boards

Adapter boards align voltages and pinning of individual embedded boards to FPC cables by Allied Vision. The delivery contents include fixing material or FFCs where required.

FPC cables

FPC cables must be ordered separately. See FPC cables on page 10.

User Guides for adapter boards

For more details, see adapter board user guides at www.alliedvision.com/en/support/technical-documentation/accessory-documentation under MIPI CSI-2.

Product code	Product name	Supported embedded board
12314	MIPI CSI-2 adapter board for Boundary Devices Nitrogen6_Max	Boundary Devices Nitrogen6_Max: • Nit6Q_MAX_QCA_BRD i.MX6 Quad • Nit6Q_MAX_QCA_BRD i.MX6 QuadPlus
12362	MIPI CSI-2 adapter board for Wandboard i.MX6 Series	Wandboard i.MX6 series, revision D: • Wandboard Solo (i.MX6) WB-IMX6S-BW • Wandboard Dual (i.MX6) WB-IMX6U-BW • Wandboard Quad (i.MX6) WB-IMX6Q-BW • Wandboard QuadPlus (i.MX6) WB-IMX6QP-BW
14909	MIPI CSI-2 adapter board for NVIDIA Jetson TX2 and AGX Xavier	• NVIDIA Jetson TX2 Developer Kit • NVIDIA Jetson AGX Xavier Developer Kit
14918	MIPI CSI-2 adapter board for NVIDIA Jetson Nano Developer Kit	• NVIDIA Jetson Nano Developer Kit • All Raspberry Pi type 15-pin CSI-2 compatible boards (not tested, no driver available)
14908	MIPI CSI-2 adapter board for Toradex Ixora Carrier Board	Toradex Ixora Carrier Board

Table 6: Adapter boards

FPC cables

Connect Alvium CSI-2 cameras and embedded boards, using dedicated adapter boards. The 2-layers design reduces the sensitivity against electromagnetic interference (EMI). An arrow printed onto the cable ensures correct polarity.

Product code	Length
12316	120 mm
12317	220 mm
12318	420 mm

Table 7: FPC cables

USB camera connections

For proper function and maximum performance of Alvium USB cameras, we recommend using USB 3.0 accessories tested by Allied Vision.

Interface connections

USB 3.0 cables

Passive USB cables enable camera operation using cable lengths up to 8 meters, due to the extended shielding. Screw locks enable proper connection in industrial environments.

Passive USB 3.0 cables

To ensure proper operation, powered hubs can be used to increase the signal level.

Product code	Connectors	Length
12326	Standard-A to micro-B plug, screw-locks on both sides	1.0 m
12327	Standard-A to micro-B plug, screw-locks on both sides	3.0 m
12328	Standard-A to micro-B plug, screw-locks on both sides	5.0 m
12329	Standard-A to micro-B plug, screw-locks on both sides	8.0 m

Table 8: USB 3.0 cables

I/O connections

The GPIO port uses a JST BM07B-SRSS-TBT connector on the camera side.

I/O cables JST 7-pin to open ends

JST 7-pin cables can be used to power and to connect the camera to an external device using the GPIOs.

I/O cables and EMI

Please consider the following for I/O cables by Allied Vision:

- 12319 JST I/O cables without screw lock have no shielding and are designed to be used with bare board or open housing Alvium cameras.
- For applications without an additional EMC housing, use shielded cables, such as 12322 JST I/O cables **with screw lock**.

Product code	Connector type	Screw locks	Length
12319	JST SHR-07V-S	No	0.4 m
12322	JST SHR-07V-S	Yes	3.0 m

Table 9: I/O cables JST SHR-07V-S to open end

Camera mounting

Tripod adapter

Enables bottom and top mounting of Alvium open and closed housing cameras. The delivery contents include screws to mount the camera to the tripod adapter.

Product code	Properties
12310	Tripod adapter to M6 and UNC 1/4"-20

Table 10: Tripod adapter

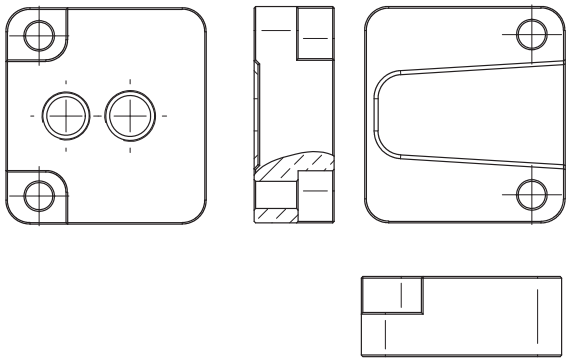


Figure 1: Tripod adapter technical drawing

Lenses

S-Mount lenses

S-Mount lenses enable small sized applications at reasonable prices. They are screwed into and out of the lens mount to adjust focus. To avoid that vibration moves lenses out of focus, S-Mount lenses by Allied Vision are shipped with fixing nuts.

Alvium color models with S-Mount have no filter. For color cameras, we recommend using S-Mount lenses with integrated IR-cut filter for better image quality.

Product code	Product name	Sensor type	Focal length	Aperture (f/#)	Pixel resolution	IR correction type
12338	S-2.97-F4-5MP-T1-2.5	1/2.5	2.97	f/4.0	5 MP[1]	IR-optimized
12339	S-2.97-F4-5MP-T1-2.5-IRC	1/2.5	2.97	f/4.0	5 MP[1]	IR cut
12340	S-4.1-F3-5MP-T1-2.5	1/2.5	4.1	f/3.0	5 MP[1]	IR-optimized
12341	S-4.1-F3-5MP-T1-2.5-IRC	1/2.5	4.1	f/3.0	5 MP[1]	IR cut
12342	S-6-F1.8-5MP-T1-2.5	1/2.5	6.0	f/1.8	5 MP[1]	IR-optimized
12343	S-6-F1.8-5MP-T1-2.5-IRC	1/2.5	6.0	f/1.8	5 MP[1]	IR cut
12344	S-8-F1.8-5MP-T1-2.5	1/2.5	8.0	f/1.8	5 MP[1]	IR-optimized
12345	S-8-F1.8-5MP-T1-2.5-IRC	1/2.5	8.0	f/1.8	5 MP[1]	IR cut
12346	S-12-F2.8-5MP-T1-2.5	1/2.5	12.0	f/2.8	5 MP[1]	IR-optimized
12347	S-12-F2.8-5MP-T1-2.5-IRC	1/2.5	12.0	f/2.8	5 MP[1]	IR cut

[1]Maximum recommended resolution in megapixels

Table 11: S-Mount lenses for 1/2.5 type sensors.

Information about S-Mount lenses

For focal length vs field of view, see your camera's user guide at www.alliedvision.com/en/support/technical-documentation/alvium-documentation.html.

To use S-Mount lenses safely, read the S-Mount Lenses User Guide at www.alliedvision.com/en/support/technical-documentation/accessory-documentation under Lenses.

Information about C-Mount lenses

For recommended C-Mount lenses, see www.alliedvision.com/en/products/accessories.