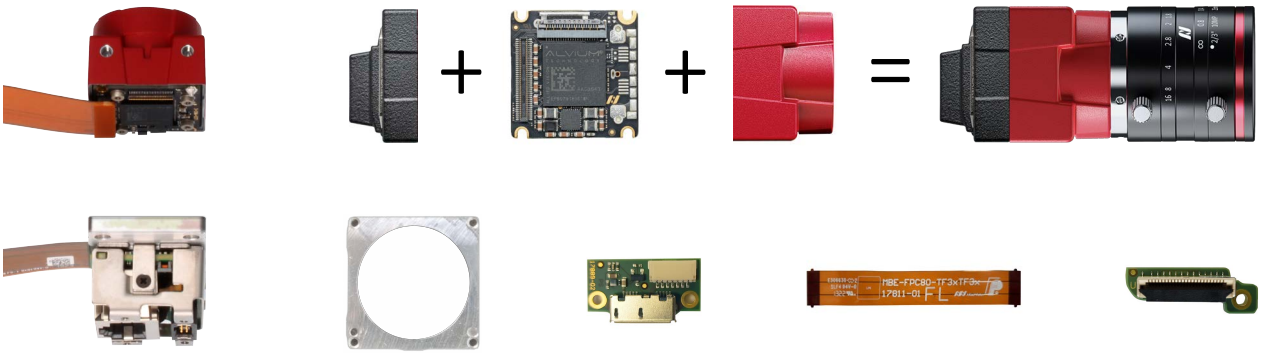
Allied Vision

APPLICATION NOTE

Assembling Alvium Cameras from CAD Components

All interfaces and modular options

V3.1.0
2026-Feb-18



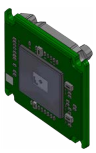
Scope

Learn to assemble from CAD (STEP) components:

- Various hardware options for housed standard Alvium cameras (all offered interfaces)
- Alvium modular options.

STEP file components for housed Alvium cameras

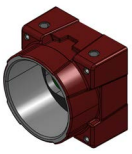
For bare board cameras, you only need the bare board STEP file. Housed cameras are assembled from bare board cameras and housing components. The following components are used for housed standard Alvium USB cameras. STEP files for other housed Alvium cameras are combined from similar components.



Bare board cameras

USB bare board cameras divide into USB 180° (standard) and USB 90°.

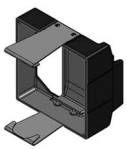
For other interfaces, CSI-2 bare board files are used.



Front housings

C-Mount, CS-Mount, or S-Mount are available.

Because lens mounts cause vignetting with some large sensors, by default, only C-Mount or C-Mount and CS-Mount are offered for theses sensors. Other lens mounts are available on request.



Back housings

Back housings divide into 180° (standard) and USB 90°. For the other interfaces, only one version exists.

Downloading STEP files

Bare board file versions (from 2023-Aug-17)

Files for Alvium bare board cameras have been updated to the new hardware design according to the product change notification: www.alliedvision.com/fileadmin/content/documents/tqm/PCN/PCN_2023-03-27_Alvium-CSI-2_USB_Mainboard-Version-Update.pdf.

If you need STEP data for the previous hardware design, please visit www.alliedvision.com/en/about-us/contact-us/technical-support-repair-/-rma/ to contact our technical support team.

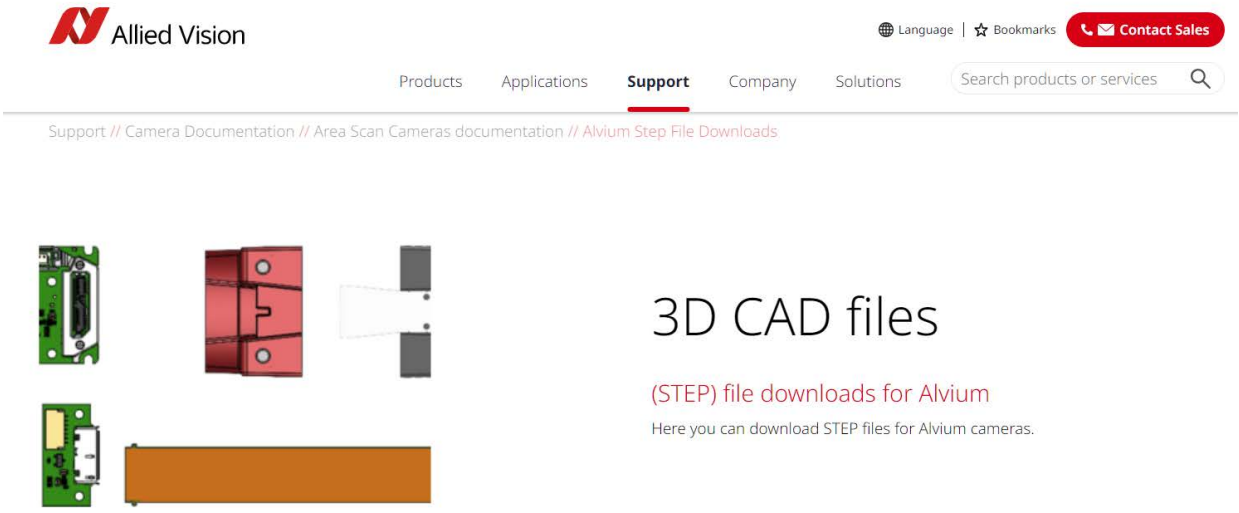
Downloading STEP files for Alvium

You can find STEP file downloads for Alvium at www.alliedvision.com/en/support/alvium-step-file-downloads:

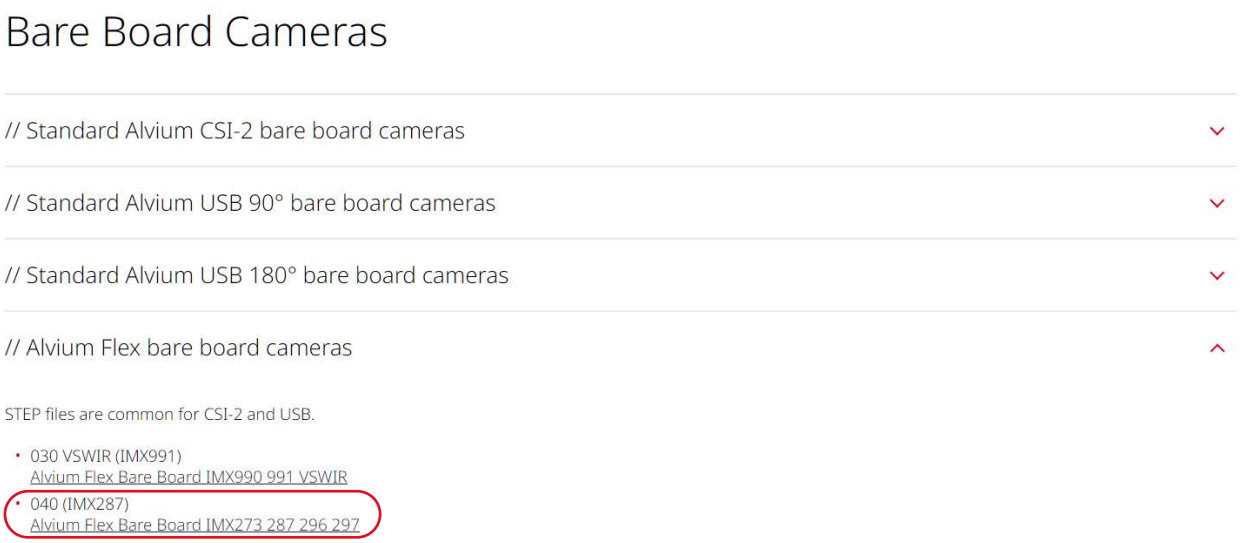
- Standard Alvium models, including CSI-2, G1, G5, and USB
- Alvium modular options, such as Alvium Flex, Alvium G1 BL (Board Level), and Alvium Frame
- Accessories, including Alvium Flex accessories, tripod adapter, heat sinks, and IP housings.

This is an example for Alvium Flex 040 Bare Board.

1. Go to the download page: www.alliedvision.com/en/support/alvium-step-file-downloads.



2. Scroll down and open the corresponding accordion.
3. Click the download link under **040 (IMX287)**:



Bare board files

- Standard Alvium USB: Alvium USB bare board files
- Standard Alvium CSI-2, G1, FP3, G5/G5X, GM2: Alvium CSI-2* bare board files
- Alvium Flex, G1 BL (Board Level): Alvium Flex bare board files

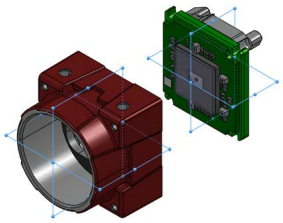
* The interface may be different for real cameras, of course.

Front housing type

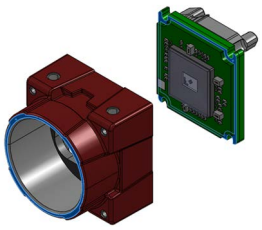
Housed Alvium monochrome and color cameras use front housings with **small** or **large** filter window for C-Mount and CS-Mount. See Filter size in front housings on page 7 for the corresponding front housing type to match your sensor model.

Assembling STEP files for housed Alvium cameras

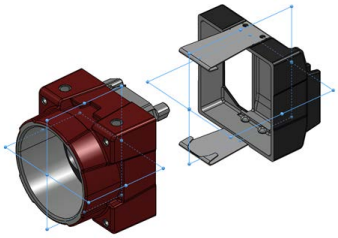
The following instructions show a closed housed standard Alvium USB camera. But they apply to all housed Alvium cameras, including all interfaces and modular options.



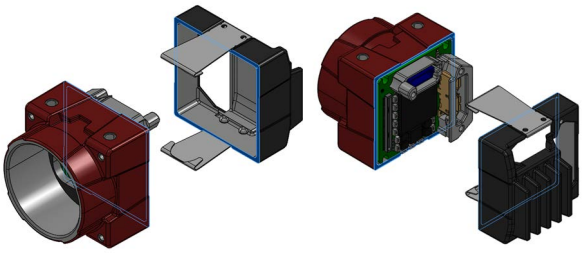
1. Set the vertical and horizontal planes congruent.



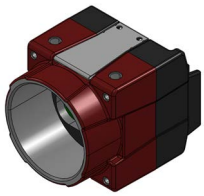
2. Set the distance between the mounting surface and the lens mount front flange. See Mechanical Length by Alvium camera model on page 8.



3. Set the vertical and horizontal planes congruent.

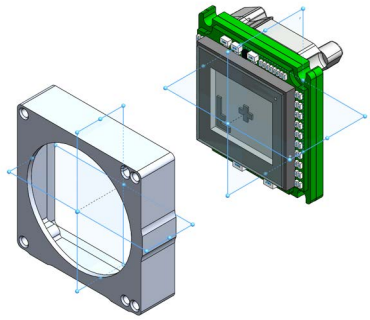


4. Set the blue marked surfaces congruent.

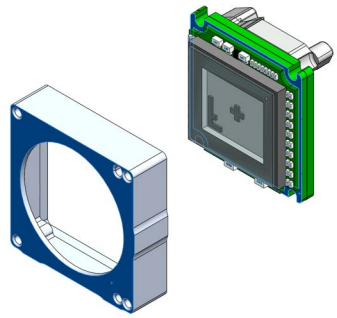


You are done!

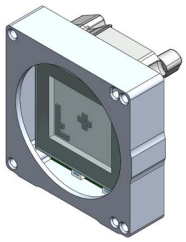
Assembling STEP files for Alvium Frame cameras



1. Set the vertical and horizontal planes congruent.

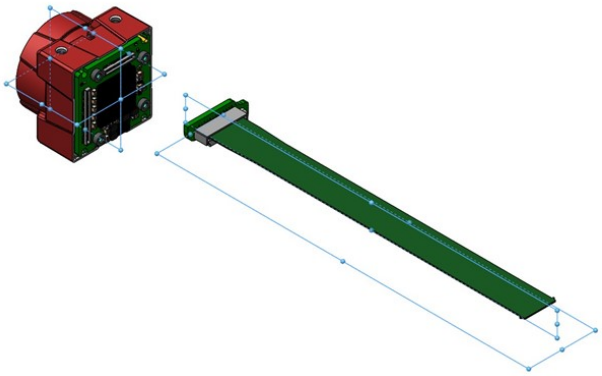


2. Adjust the distance between the front surface of the frame and the mounting surface of the bare board. See Mechanical Length by Alvium camera model on page 8.

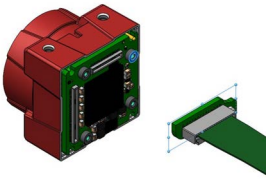


You are done!

Assembling STEP files for Alvium Flex applications



1. Set the vertical and horizontal planes congruent for the Add-on Board and for the camera.



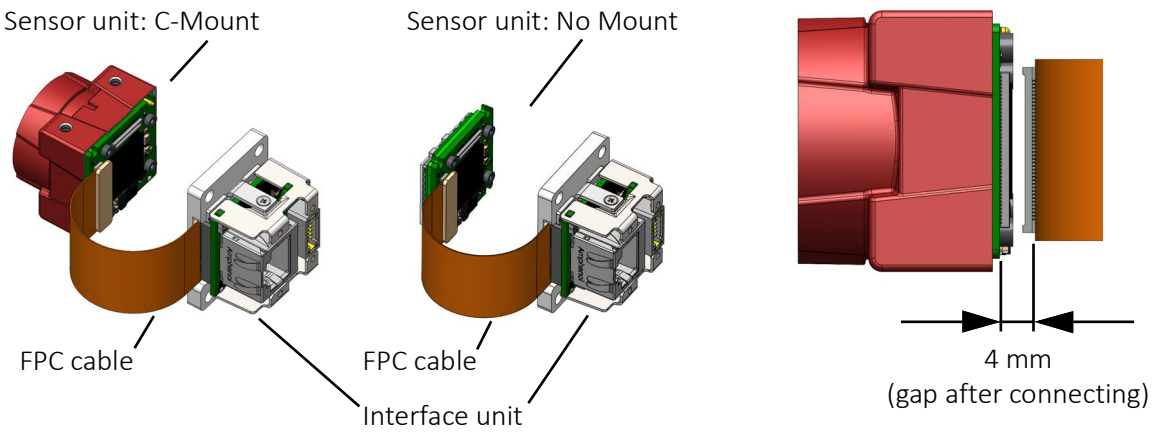
2. Set the remaining plane of the Add-on Board congruent to the surface of the threaded sleeves at the camera back panel.

3. Apply correspondingly to join FPC cables with Add-on Boards, Interface Boards, Adapter Boards and embedded boards.

You are done!

Assembling STEP files for Alvium G1 BL STEP applications

STEP files for Alvium G1 BL cameras are assembled from Alvium Flex bare board cameras, (front housings for sensor units with lens mount), and interface units with FPC cables. Please transfer the instructions shown for Assembling STEP files for Alvium Flex applications above.



Specifications for Alvium STEP files

Model availability

Some models in the following tables are not available for every camera interface. Please see the corresponding Alvium User Guide for availability.

Filter size in front housings

Housed Alvium monochrome and color cameras use front housings with **small** or **large** filter window for C-Mount and CS-Mount. The size of the filter window depends on the size of the sensor model.
For S-Mount, no filter is available.Therefore, a common front housing is used for S-Mount.

Table 1 shows the front housing type for housed Alvium color and monochrome models.

Availability of lens mounts

In general, all sensor models are available with C-Mount, CS-Mount, and S-Mount. To avoid vignetting, we do not offer large sensor models with S-Mount (or CS-Mount) by default where the lens mount does not match the size of the sensor. S-Mount (and CS-Mount) are available on demand for these sensor models.

Alvium model	Lens mount		
	C	CS	S
030 VSWIR	Small	Small	Default
040m/c	Small	Small	Default
050m/c	Small	Small	Default
052m/c	Large	Large	*Default*
120m/c	Small	Small	Default
130 VSWIR	Small	Small	Default
131m/c	Large	Large	Default
158m/c	Small	Small	Default
192m/c	Large	Large	Default
203m/c	Large	Large	Default
210m/c	Small	Small	Default
234m/c	Large	Large	*Default*
235m/c	Large	Large	*Default*
240m/c	Small	Small	Default
291m/c	Large	Large	*Default*
319m/c	Large	Large	Default
320 VSWIR	Large	Large	*Default*
321m/c	Small	Small	Default

Alvium model	Lens mount		
	C	CS	S
500m/c	Small	Small	Default
501m/c NIR	Small	Small	Default
507m/c (Pol)	Large	Large	*Default*
508m/c (Pol)	Large	Large	*Default*
510m/c	Large	Large	Default
511m/c	Large	Large	Default
530 VSWIR	Large	Large	*Default*
811m/c	Large	Large	*Default*
812 UV	Large	Large	*Default*
895m/c	Large	Large	*Default*
1236m/c	Large	*Large*	*Default*
1240m/c	Large	Large	Default
1242m/c	Large	Large	*Default*
1620m/c	Large	Large	*Default*
2040m/c	Large	Large	*Default*
2050m/c	Large	Large	*Default*
2460m/c	Large	Large	*Default*

Mount options in *italics* are available on demand. | (Pol): Including Pol models

Table 1: Filter window type of front housings by lens mount

Mechanical Length by Alvium camera model

Mechanical Length (ML) defines the sensor position along the z-axis. This value is common for Alvium cameras using the same sensor model, independent of the camera interface. Not all sensors are available for all interfaces.

Values for Mechanical Length

Standard Alvium, Alvium Flex, and Alvium G1 BL cameras

Mechanical length (ML) defines the mechanical distance from the mounting area of the sensor to the lens mount front flange, without optical filter.

The values for Mechanical length (ML) in Table 2 apply to C-Mount. For CS-Mount and S-Mount, values calculate [C-Mount value] – 5 mm.

Alvium Frame cameras

Mechanical length Frame (ML-Frame) defines the mechanical distance from the mounting area of the sensor to the front surface of the frame.

Values calculate [Mechanical Length (ML)] – 13.9 mm

Alvium model	Mono models ML[1] Mechanical length for C-Mount	Color models ML[1,2] Mechanical length for C-Mount
030 VSWIR	19.613 mm	N.a.
040m/c	19.879 mm	20.033 mm
050m/c	19.604 mm	19.758 mm
052m/c	19.713 mm	19.867 mm
120m/c	19.689 mm	19.843 mm
130 VSWIR	19.613 mm	N.a.
131m/c	19.845 mm	19.999 mm
158m/c	19.879 mm	20.033 mm
192m/c	19.845 mm	19.999 mm
203m/c	19.713 mm	19.867 mm
210m/c	19.739 mm	19.893 mm
234m/c	19.713 mm	19.867 mm
235m/c	19.713 mm	19.867 mm
240m/c	19.929 mm	20.083 mm
291m/c	19.713 mm	19.867 mm
319m/c	19.929 mm	20.083 mm
320 VSWIR	19.713 mm	N.a.
321m/c	19.863 mm	20.017 mm
500m/c	19.739 mm	19.893 mm
501m/c NIR	19.739 mm	19.893 mm
507m/c (Pol)	19.929 mm	20.083 mm
508m/c (Pol)	19.929 mm	20.083 mm
510m/c	19.713 mm	19.867 mm
511m/c	19.613 mm	19.767 mm
530 VSWIR	19.713 mm	N.a.
811m/c	19.613 mm	19.767 mm
812 UV	19.610 mm	N.a.
895m/c	19.826mm	19.983 mm
1236m/c	19.829 mm	19.983 mm
1240m/c	19.763 mm	19.917 mm
1242m/c	19.613 mm	19.767 mm
1620m/c	19.613 mm	19.767 mm
2040m/c	19.613 mm	19.767 mm
2050m/c	19.663 mm	19.817 mm
2460m/c	19.613 mm	19.767 mm

1Theoretical values | 2Values for standard filters with a thickness of 0.45mm | (Pol): Including Pol models

Table 2: Mechanical Length by Alvium camera model

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