



ALVIUM CAMERAS

S-Mount Lenses User Guide

V1.2.1

**Quick links**

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Read before use

EN - English

Safety

Before using the product, read these safety instructions. Observe the warnings at all times. Use the product only as stated in the [Intended use](#) on page 22.

**CAUTION****Injuries by focused sunlight**

If the sunlight is focused by the lens, eyes or skin can be injured.

**CAUTION****Risk of cuts by sharp edges of lens mounts**

The threads of the lens mount can have sharp edges.

**CAUTION****Injury by a falling product**

The falling product can cause injury.

Intended use

Intended use of Allied Vision product is the integration into vision systems by professionals. All Allied Vision product is sold in a B2B setting.

DA - Dansk

Sikkerhed

Læs sikkerhedsanvisningerne, før produkt bruges. Overhold alle advarsler. Brug kun produkt som anført i [Intended use](#) på side 22.



FORSIGTIG

Skader ved fokuseret sollys

Hvis sollyset fokuseres af linsen, kan øjnene eller huden blive skadet.



FORSIGTIG

Fare for snitsår på linsemodulets skarpe kanter

Linsemodulets gevind kan have skarpe kanter.



FORSIGTIG

Kvæstelser, hvis produkt falder ned

Falder produkt ned, kan dette forårsage kvæstelser.

Tilsigtet brug

Allied Vision produktets tilsigtede brug er en indbygning i et visionssystem, udført af fagfolk. Alle Allied Vision produkter sælges i B2B.

DE - Deutsch

Sicherheit

Bevor Sie das Produkt benutzen, lesen Sie diese Sicherheitshinweise. Beachten Sie diese Hinweise immer. Verwenden Sie das Produkt nur wie beschrieben in [Intended use](#) auf Seite 22.



VORSICHT

Verletzungen durch fokussiertes Sonnenlicht

Wird das Sonnenlicht durch das Objektiv gebündelt, können die Augen oder die Haut verletzt werden.



VORSICHT

Schnitte durch scharfkantige Objektivgewinde

Objektivgewinde können scharfe Kanten haben.



VORSICHT

Verletzung durch das fallende Produkt

Das fallende Produkt kann Verletzungen verursachen.

Bestimmungsgemäßer Gebrauch

Allied Vision Produkte sind bestimmt für die Integration in Bildverarbeitungssysteme durch Fachpersonal. Alle Allied Vision Produkte werden in einer B2B-Umgebung verkauft.

ES - Español

Seguridad

Antes de utilizar el producto lea estas instrucciones de seguridad. Observe las advertencias en todo momento. Utilice el producto solo tal y como se estipula en el [Intended use](#) en la página 22.



ATENCIÓN

Lesiones por luz solar focalizada

Si la luz solar es enfocada por la lente, los ojos o la piel pueden resultar dañados.



ATENCIÓN

Riesgo de cortes debido a los bordes afilados del objetivo

Las roscas de los objetivos pueden tener bordes afilados.



ATENCIÓN

Lesiones en caso de que el producto se cae

Si el producto se cae puede provocar lesiones.

Uso previsto

El uso previsto del producto Allied Vision es la integración en el sistema de visión por parte de profesionales. Todos los productos Allied Vision se venden dentro de una relación B2B.

FI - Suomi

Turvallisuus

Lue nämä turvallisuusohjeet ennen tuotteen käyttöä. Noudata tuotetta joka hetki. Käytä tuotteen ainoastaan kohdassa [Intended use](#) sivulla 22 kuvatulla tavalla.



HUOMIO

Kohdennetun auringonvalon aiheuttamat vammat

Jos linssi keskittää auringonvalon, silmät tai iho voivat vahingoittua.



HUOMIO

Linssien kiinnikkeiden terävien reunojen aiheuttamien viiltovammojen vaara

Linssin kiinnikkeiden kierteiden reunat voivat olla teräviä.



HUOMIO

Putoavan tuotteen aiheuttamat vammat

Putoava tuote voi aiheuttaa vammoja.

Käyttötarkoitus

Allied Vision-tuotteen käyttötarkoitus on integrointi kuvajärjestelmiin ammattilaisten toimesta. Kaikki Allied Vision-tuotteet myydään B2B-ympäristössä.

FR - Français

Sécurité

Veuillez lire ces consignes de sécurité avant d'utiliser le produit. Respectez continuellement les avertissements. Utilisez le produit uniquement comme indiqué sous [Intended use](#), page 22.



ATTENTION

Blessures dues à la lumière solaire focalisée

Si la lumière du soleil est focalisée par la lentille, les yeux ou la peau peuvent être blessés.



ATTENTION

Risque de coupures sur les bords tranchants des montures d'objectif

Les filetages des montures d'objectif peuvent présenter des bords tranchants.



ATTENTION

Blessures en cas de chute du produit

La chute de la produit peut entraîner des blessures.

Utilisation prévue

L'utilisation prévue du produit Allied Vision est son intégration dans des systèmes de vision par le soin de professionnels. Tout produit Allied Vision est vendu dans un cadre B2B.

עברית - HE

בטיחות

לפני השימוש במוצר, עליך לקרוא את הוראות הביטחון האלו. עליך לממש הוראות ביטחון אלו תמיד. השימוש במצלמה הוא רק לפי מה שכתוב ב"כוונת השימוש" (Intended use בעמוד 22).

זהירות

סכנת פגיעה על ידי קרני השמש בנקודת המוקד
עם דרך העדשה מתרכזות קרני השמש, יכולה העין וגם העור להיפגע.



זהירות

סכנה להחתך מתברג חד של העדשה
תברג תושבת העדשה עלול להיות חד עד כדי פגיעה.



זהירות

פגיעה מנפילת המוצר
נפילת המוצר עלולה לגרום לפגיעה.



שימוש מיועד

מוצרי AlliedVision מיועדים לשילוב במערכות ממוחשבת לעיבוד צילומים ע"י אנשי מקצוע. כל מוצרי AlliedVision נמכרים לשימוש בסביבת B2B.

IT - Italiano

Sicurezza

Leggere queste istruzioni per la sicurezza prima di utilizzare il prodotto. Osservare sempre tutte le avvertenze. Utilizzare il prodotto come descritto alla sezione [Intended use](#) a pagina 22.



ATTENZIONE

Lesioni da luce solare concentrata

Se la luce solare viene focalizzata dalla lente, gli occhi o la pelle possono subire lesioni.



ATTENZIONE

Pericolo di tagliarsi sui bordi affilati degli attacchi della lente

I bordi della filettatura dell'attacco della lente possono essere affilati.



ATTENZIONE

Lesioni dovute alla caduta del prodotto

Il prodotto può causare delle lesioni.

Uso previsto

Il prodotto Allied Vision è concepito per essere integrato in sistemi di monitoraggio in campo professionale. Tutti i prodotti Allied Vision sono venduti in uno scenario B2B.

JA - 日本語

安全性

本製品を使用する前に、この安全ガイドをお読みください。警告を必ず守ってください。必ず21ページのIntended use 22 ページに従って使用してください。



注意

太陽光の集光による傷害

太陽光がレンズで集光されると、目や皮膚を傷つける可能性があります。



注意

レンズマウントの鋭利な端部で切り傷の危険性

レンズマウントのギザギザの部分が鋭利である可能性があります。



注意

製品の落下によるケガ

本製品が落下すると、けがをするおそれがあります。

用途

Allied Vision製品は、専門家が視覚装置に統合することを意図したものです。すべてのAllied Vision製品は、企業間取り引き用に販売されています。

NL - Nederlands

Veiligheid

Lees deze veiligheidsinstructies voordat u het product gebruikt. Neem deze waarschuwingen altijd in acht. Gebruik het product uitsluitend, zoals aangegeven in het [Intended use](#) op pagina 22.



VOORZICHTIG

Verwondingen door gericht zonlicht

Als het zonlicht door de lens wordt gefocuseerd, kunnen ogen of huid worden verwond.



VOORZICHTIG

Risico van snijwonden door scherpe randen van lensbevestigingen

Het schroefdraad van de lensbevestiging kan scherpe randen hebben.



VOORZICHTIG

Letsel door het vallende product

Het vallende product kan verwondingen veroorzaken.

Beoogd gebruik

Het beoogde gebruik van het Allied Vision-product is de integratie in optische systemen door professionals. Alle Allied Vision-producten worden verkocht in de B2B-markt.

NO - Norsk

Sikkerhet

Les disse sikkerhetsinstruksene før du bruker produkt. Følg advarslene til en hver tid. Bruk kun produkt i samsvar med [Intended use](#) på side 22.



FORSIKTIG

Skader ved fokusert sollys

Hvis sollyset fokuseres av linsen, kan øyne eller hud bli skadet.



FORSIKTIG

Risiko for kutt fra skarpe kanter på linsefester

Sporene på linsefestet kan ha skarpe kanter.



FORSIKTIG

Skade ved det fallende produktet

Det fallende produktet kan forårsake skade.

Tiltenkt bruk

Den tiltenkte bruken av Allied Vision-produktet er integrering i visjonssystemer av profesjonelle. Alle Allied Vision-produkter selges i en forretning til forretning-situasjon.

SV - Svenska

Säkerhet

Läs igenom säkerhetsinstruktionerna innan du använder produkten. Var hela tiden särskilt uppmärksam på varningarna. Använd enbart produkten på det sätt som anges i [Intended use](#) på sida 22.



VARNING

Skador orsakade av fokuserat solljus

Om solljuset fokuseras av linsen kan ögonen eller huden skadas.



VARNING

Risk för skärsår från vassa kanter på objektivfattningar

Objektivets gängor kan ha vassa kanter.



VARNING

Risk för skador från fallande produkter

Fallande produkter kan förorsaka skador.

Avsedd användning

Den avsedda användningen av Allied Vision-produkter är integrering i visionsystem av fackmän. Samtliga Allied Vision-produkter säljs i en B2B-miljö.

ZH - 简体中文版

安全需知

在使用产品之前，请阅读这些安全说明。请务必遵守相关警告和 [Intended use](#) 于第 22 页。



注意事项

阳光集中照射造成的伤害

如果阳光被镜片聚焦，眼睛或皮肤就会受伤。



注意事项

镜头接口的锐利边缘划伤风险

镜头接口螺纹边缘可能较为锐利。



注意事项

由坠落的产品造成的伤害

产品可能会坠落并造成伤害。

预期用途

Allied Vision 产品的预期用途是由专业人士整合到视觉系统中。所有 Allied Vision 的产品均通过 B2B 渠道销售。

This document at a glance



Read this document carefully

Learn to use S-Mount lenses in the most safe and efficient way and avoid damage to Alvium cameras and lenses.

Shipping contents

- S-Mount lens
- Fixing nut

What else do you need?



Technical information and ordering

For all information about Alvium cameras and accessories, see

- For any documentation on cameras and accessories, see www.alliedvision.com/en/support/technical-documentation.
- Please contact your Allied Vision Sales representative for ordering and for additional information on hardware options for Alvium cameras.
- To find contact information, visit our website: www.alliedvision.com/en/contact.

Contact us

Website, email

General

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Distribution partners

www.alliedvision.com/en/avt-locations/avt-distributors

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Document history and conventions



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Document history

Version	Date	Remarks
V1.2.1	2023-May-09	Update product code for S-4.8-F2.2-1MP-T1-4-SWIR on page 28.
V1.2.0	2023-Apr-24	<ul style="list-style-type: none"> Added Read before use on page 2. Added S-4.8-F2.2-1MP-T1-4-SWIR on page 28. Applied editorial changes.
V1.1.0	2020-Jan-07	<ul style="list-style-type: none"> Added IR cut filter spectral transmission on page 25. Added convention for Lenses naming on page 20. Applied editorial changes.
V1.0.0	2019-May-23	Release version

Table 1: Document history

Conventions used in this user guide

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

Typographical styles

Style	Function
Emphasis	Highlighting important things
Web links and references	Links to webpages and internal cross references

Table 2: Typographical styles

Symbols and notes



CAUTION

General safety message

Precautions are described



CAUTION

Injury by falling cameras or lenses

Precautions are described


CAUTION
Risk of cuts by sharp edges of lens mounts

Precautions are described


NOTICE
Material damage

Precautions are described.


Additional information

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

Lenses naming

S-Mount lenses are named to identify model properties.

Lens mount	Focal length	Aperture (f/#)	Supported pixel resolution	Sensor size	Coating type
S-2.97-F4-5MP-T1-2.5-IRC is composed of:					
S	2.97	F4	5MP	T1-2.5	IRC
S-Mount	2.97 mm	F/4	5 MP*	Type 1/2.5	IR cut filter
S-2.97-F4-5MP-T1-2.5 is composed of:					
S	2.97	F4	5MP	T1-2.5	
S-Mount	2.97 mm	F/4	5 MP*	Type 1/2.5	IR-optimized
S-4.8-F2.2-1MP-T1-4-SWIR is composed of:					
S	4.8	F2.2	1MP	T1-4	SWIR
S-Mount	4.8 mm	F/2.2	1 MP*	Type 1/4	SWIR-optimized
*Megapixels					

Table 3: Lenses naming

Intended use and safety



This chapter includes:

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Intended use

Allied Vision's objective is the development, design, production, maintenance, servicing and distribution of digital cameras and components for image processing. We are offering standard products as well as customized solutions.

Intended use of Allied Vision product is the integration into Vision systems by professionals. All Allied Vision product is sold in a B2B setting.

Allied Vision isn't a legal manufacturer of medical product. Instead, Allied Vision cameras and accessories may be used as components for medical product after design-in by the medical device manufacturer and based on a quality assurance agreement (QAA) between Allied Vision (supplier) and medical device manufacturer (customer). Allied Vision's duties in that respect are defined by ISO 13485, clause 7.2 (customer-related processes, equivalent to ISO 9001, clause 8.2).

Your safety

Threads of the lens and the camera lens mount have sharp edges. Be careful these edges do not cut your skin when handling lenses and lens mounts.

Product safety

To prevent material damage, read the following to understand risks in using S-Mount lenses.

Maximum protrusion

If the lens exceeds maximum protrusion, camera, lens, or electronics can be damaged. Do the following to avoid damage:

- Screw in lenses for Alvim cameras to 11.0 mm maximum protrusion.
- Be very careful when you focus S-Mount lenses. When your object distance requires focusing towards infinity, the camera sensor and the back lens can easily be damaged. We recommend to use a live image to avoid damage.
- See the **Lens position at infinity (approximately)** section for your lens in [Specifications](#) on page 24.
- Follow the instruction in [Using S-Mount lenses](#) on page 32.

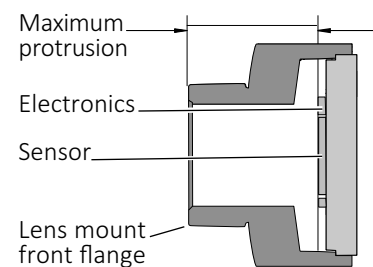


Figure 1: Maximum protrusion

Sensor

Sensors are sensitive to excessive radiation: focused sunlight, lasers, and X-rays can damage the sensor. Dirt and scratches can damage the sensor, too. Alvium cameras with S-Mount lenses are delivered without a filter to protect the sensor.

Alvium cameras do not need additional cleaning. Cameras are cleaned before shipping. Incorrect cleaning can damage the sensor. Therefore, never clean the sensor.

Protect the sensor from dirt, because dirt becomes more visible the closer it gets to the sensor. In addition, keep the back lens clean. Hold the camera with the lens mount facing the ground to keep dirt out of the lens mount

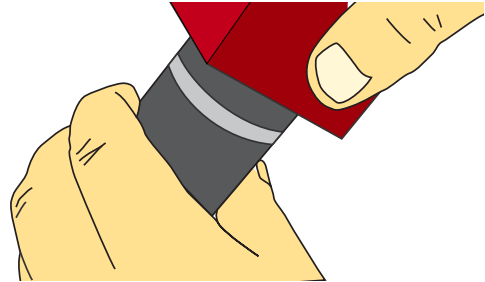


Figure 2: Protecting the sensor from dirt

Fixing nuts

If fixing nuts are screwed with too much force, threads are worn out and lenses cannot be locked anymore. Using pinch nose pliers, screw fixing nuts only with enough force to keep the lens in a fixed position.

Copyright and trademarks

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Specifications



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Lens coatings and spectral range

S-Mount lenses in this user guide are offered as different types:

Type	Description
IR cut	An IR cut filter improves color reproduction and focus (visible with monochrome cameras as well). See Figure 3 .
IR-optimized	Optical elements are coated for use in the visible and NIR spectrum.
SWIR-optimized	Optical elements are coated to increase sensitivity in the SWIR spectrum.

Table 4: IR types

IR cut filter spectral transmission

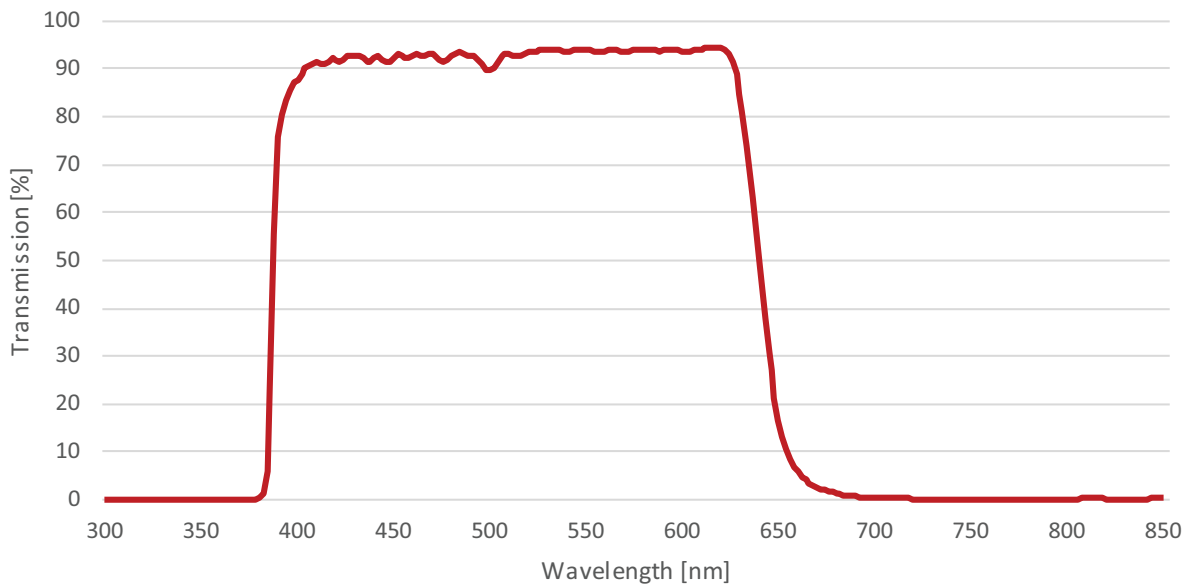


Figure 3: IR cut filter spectral transmission

Lens position for infinity

Tables for **Lens position at infinity** show nominal values.

The nominal value for flange focal distance (optical) is 12.63 mm. In tables for **Lens position at infinity (approximately)**, the value is rounded to 12.6 mm.

S-2.97-F4-5MP-T1-2.5

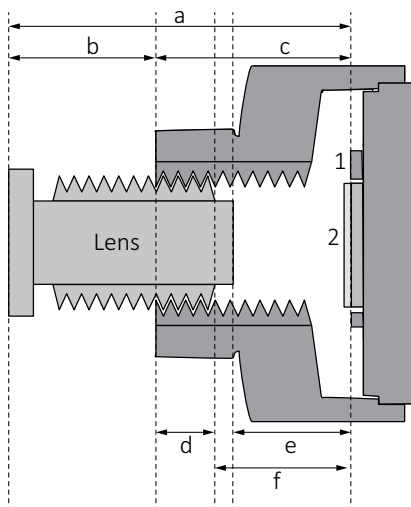


Feature	S-2.97-F4-5MP-T1-2.5	S-2.97-F4-5MP-T1-2.5-IRC
Product code	12338	12339
Camera mount	S-Mount (M12 × 0.5)	
Sensor size	Type 1/2.5	
Focal length	2.97 mm	
Aperture (f/#)	f/4.0	
Supported pixel resolution	5 megapixels	
Angle of view (diagonal)	102° with Type 1/2.5	
Back focus	3.5 mm	
IR correction type	IR-optimized	IR cut
Relative illumination	>66%	
Distortion	<1%	
Dimensions (diameter × length)	∅ 14 mm × 18.5 mm	∅ 14 mm × 18.1 mm
Mass	<10 g	

Table 5: S-2.97-F4-5MP-T1-2.5 specifications

Lens position at infinity (approximately)

Table 6 defines values for the position of the lens when focused to infinity. We recommend using a minimum thread engagement length of 1.0 mm (two 360 degree turns). Below this length, lens mounting is not stable enough.



ID	Component or distance type	IR-optimized	IR cut
1	Electronics component	-	-
2	Sensor with cover glass	-	-
a	Lens front to sensor ¹ distance	20.6 mm	
b	Lens front to front flange distance	8.0 mm	8.5 mm
c	Flange focal distance (optical) ¹	12.6 mm	
d	Thread engagement length	8.7 mm	
e	Lens back to sensor distance	2.1 mm	
f	Lens thread end to sensor ¹ distance	3.9 mm	

¹Optical distance measured to the active sensor surface, disregarding microlenses and cover glass.

Table 6: S-2.97-F4-5MP-T1-2.5 lens position at infinity (with schematic drawing)

S-4.1-F3-5MP-T1-2.5

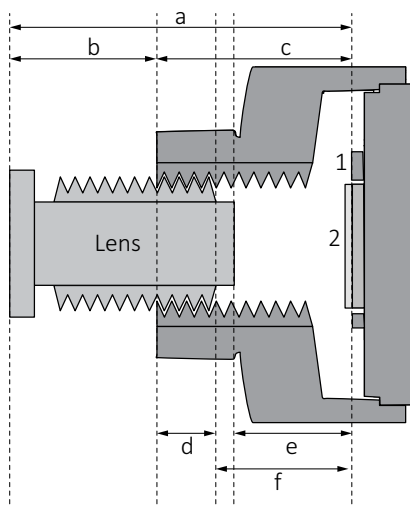


Feature	S-4.1-F3-5MP-T1-2.5	S-4.1-F3-5MP-T1-2.5-IRC
Product code	12340	12341
Camera mount	S-Mount (M12 × 0.5)	
Sensor size	Type 1/2.5	
Focal length	4.1 mm	
Aperture (f/#)	f/3.0	
Supported pixel resolution	5 megapixels	
Angle of view (diagonal)	82° with Type 1/2.5	
Back focus	5.3 mm	
IR correction type	IR-optimized	IR cut
Relative illumination	>70%	
Distortion	<0.4%	
Dimensions (diameter × length)	Ø 14 mm × 17.9 mm	Ø 14 mm × 17.8 mm
Mass	<10 g	

Table 7: S-4.1-F3-5MP-T1-2.5 specifications

Lens position at infinity (approximately)

Table 8 defines values for the position of the lens when focused to infinity. We recommend using a minimum thread engagement length of 1.0 mm (two 360 degree turns). Below this length, lens mounting is not stable enough.



ID	Component or distance type	IR-optimized	IR cut
1	Electronics component	-	
2	Sensor with cover glass	-	
a	Lens front to sensor ¹ distance	21.8 mm	
b	Lens front to front flange distance	9.2 mm	9.7 mm
c	Flange focal distance (optical) ¹	12.6 mm	
d	Thread engagement length	6.9 mm	
e	Lens back to sensor distance	4.1 mm	
f	Lens thread end to sensor ¹ distance	5.7 mm	

¹Optical distance measured to the active sensor surface, disregarding microlenses and cover glass.

Table 8: S-4.1-F3-5MP-T1-2.5 lens position at infinity (with schematic drawing)

S-4.8-F2.2-1MP-T1-4-SWIR

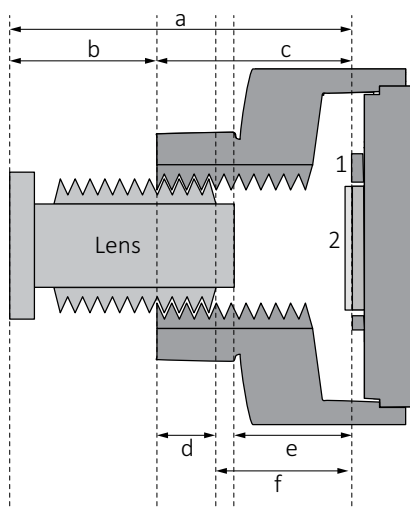


Feature	S-4.8-F2.2-1MP-T1-4-SWIR
Product code	19622
Camera mount	S-Mount (M12 × 0.5)
Sensor size	Type 1/4
Focal length	4.8 mm
Aperture (f/#)	f/2.2
Supported pixel resolution	1 megapixel
Angle of view (diagonal)	48° with Type 1/4
Back focus	5.6 mm
Spectral range	900 to 1700 nm
Relative illumination	>85%
Distortion	-4.3%
Dimensions (diameter × length)	∅ 17.95 mm × 26.8 mm
Mass	<11 g

Table 9: S-4.8-F2.2-1MP-T1-4-SWIR specifications

Lens position at infinity (approximately)

Table 10 defines values for the position of the lens when focused to infinity. We recommend using a minimum thread engagement length of 1.0 mm (two 360 degree turns). Below this length, lens mounting is not stable enough.



ID	Component or distance type	SWIR-optimized
1	Electronics component	-
2	Sensor with cover glass	-
a	Lens front to sensor ¹ distance	31.23 mm
b	Lens front to front flange distance	19.7 mm
c	Flange focal distance (optical) ¹	12.63 mm
d	Thread engagement length	7 mm
e	Lens back to sensor distance	5.6 mm
f	Lens thread end to sensor ¹ distance	6.5 mm

¹Optical distance measured to the active sensor surface, disregarding microlenses and cover glass.

Table 10: S-4.8-F2.2-1MP-T1-4-SWIR lens position at infinity (with schematic drawing)

S-6-F1.8-5MP-T1-2.5

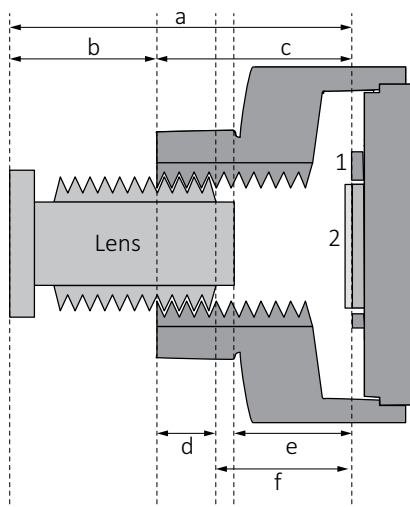


Feature	S-6-F1.8-5MP-T1-2.5	S-6-F1.8-5MP-T1-2.5-IRC
Product code	12342	12343
Camera mount	S-Mount (M12 × 0.5)	
Sensor size	Type 1/2.5	
Focal length	6 mm	
Aperture (f/#)	f/1.8	
Supported pixel resolution	5 megapixels	
Angle of view (diagonal)	61.5° with Type 1/2.5	
Back focus	9.6 mm	
IR correction type	IR-optimized	IR cut
Relative illumination	>64%	
Distortion	<-12%	
Dimensions (diameter × length)	Ø 14 mm × 18.8 mm	Ø 14 mm × 18.6 mm
Mass	<10 g	

Table 11: S-6-F1.8-5MP-T1-2.5 specifications

Lens position at infinity (approximately)

Table 12 defines values for the position of the lens when focused to infinity. We recommend using a minimum thread engagement length of 1.0 mm (two 360 degree turns). Below this length, lens mounting is not stable enough.



ID	Component or distance type	IR-optimized	IR cut
1	Electronics component	-	
2	Sensor with cover glass	-	
a	Lens front to sensor ¹ distance	26.2 mm	
b	Lens front to front flange distance	13.6 mm	13.4 mm
c	Flange focal distance (optical) ¹	12.6 mm	
d	Thread engagement length	2.7 mm	
e	Lens back to sensor distance	8.4 mm	
f	Lens thread end to sensor ¹ distance	9.9 mm	

¹Optical distance measured to the active sensor surface, disregarding microlenses and cover glass.

Table 12: S-6-F1.8-5MP-T1-2.5 lens position at infinity (with schematic drawing)

S-8-F1.8-5MP-T1-2.5

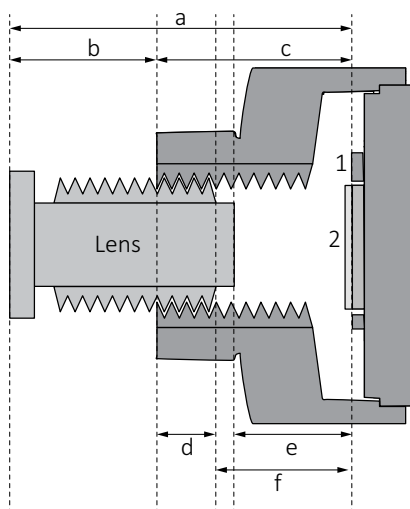


Feature	S-8-F1.8-5MP-T1-2.5	S-8-F1.8-5MP-T1-2.5-IRC
Product code	12344	12345
Camera mount	S-Mount (M12 × 0.5)	
Sensor size	Type 1/2.5	
Focal length	8 mm	
Aperture (f/#)	f/1.8	
Supported pixel resolution	5 megapixels	
Angle of view (diagonal)	48° with Type 1/2.5	
Back focus	7.8 mm	
IR correction type (S-8-F1.8-5MP-T1-2.5)	IR-optimized	IR cut
Relative illumination	>68%	
Distortion	<-7%	
Dimensions (diameter × length)	∅ 14 mm × 19.5 mm	∅ 14 mm × 21.2 mm
Mass	<10 g	

Table 13: S-8-F1.8-5MP-T1-2.5 specifications

Lens position at infinity (approximately)

Table 14 defines values for the position of the lens when focused to infinity. We recommend using a minimum thread engagement length of 1.0 mm (two 360 degree turns). Below this length, lens mounting is not stable enough.



ID	Component or distance type	IR-optimized	IR cut
1	Electronics component	-	-
2	Sensor with cover glass	-	-
a	Lens front to sensor ¹ distance	26.2 mm	
b	Lens front to front flange distance	13.6 mm	14.0 mm
c	Flange focal distance (optical) ¹	12.6 mm	
d	Thread engagement length	3.9 mm	
e	Lens back to sensor distance	7.1 mm	
f	Lens thread end to sensor ¹ distance	8.7 mm	

¹Optical distance measured to the active sensor surface, disregarding microlenses and cover glass.

Table 14: S-8-F1.8-5MP-T1-2.5 lens position at infinity (with schematic drawing)

S-12-F2.8-5MP-T1-2.5

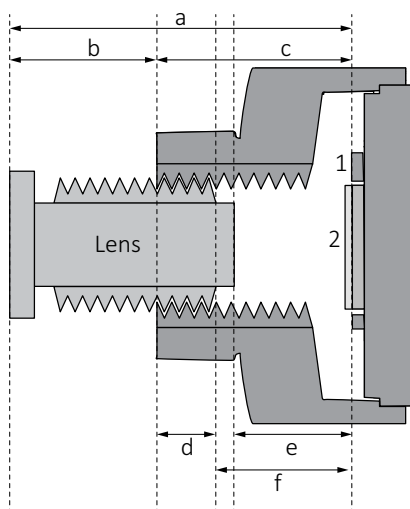


Feature	S-12-F2.8-5MP-T1-2.5	S-12-F2.8-5MP-T1-2.5-IRC
Product code	12346	12347
Camera mount	S-Mount (M12 × 0.5)	
Sensor size	Type 1/2.5	
Focal length	12 mm	
Aperture (f/#)	f/2.8	
Supported pixel resolution	5 megapixels	
Angle of view (diagonal)	33° with Type 1/2.5	
Back focus	8.57 mm	
IR correction type	IR-optimized	IR cut
Relative illumination	>82.5%	
Distortion	<-1.75%	
Dimensions (diameter × length)	∅ 14 mm × 10.2 mm	∅ 14 mm × 11.4 mm
Mass	<10 g	

Table 15: S-12-F2.8-5MP-T1-2.5 specifications

Lens position at infinity (approximately)

Table 16 defines values for the position of the lens when focused to infinity. We recommend using a minimum thread engagement length of 1.0 mm (two 360 degree turns). Below this length, lens mounting is not stable enough.



ID	Component or distance type	IR-optimized	IR cut
1	Electronics component	-	-
2	Sensor with cover glass	-	-
a	Lens front to sensor ¹ distance	17.5 mm	
b	Lens front to front flange distance	4.9 mm	5.6 mm
c	Flange focal distance (optical) ¹	12.6 mm	
d	Thread engagement length	5.0 mm	
e	Lens back to sensor distance	7.6 mm	
f	Lens thread end to sensor ¹ distance	7.6 mm	

¹Optical distance measured to the active sensor surface, disregarding microlenses and cover glass.

Table 16: S-12-F2.8-5MP-T1-2.5 lens position at infinity (with schematic drawing)

Using S-Mount lenses



Learn how to use S-Mount lenses.

Mounting and focusing S-Mount lenses

This section instructs on using Allied Vision S-Mount lenses with Alvium cameras safely. **Actual fixing nuts may vary from the instruction drawings.** We recommend using pinch nose pliers to tighten fixing nuts.

Figure 4 shows how fixing nuts lock S-Mount lenses. Follow the instructions to lock the lens in focus position.



Figure 4: Fixing nut locking an S-Mount lens



CAUTION

Cuts to the skin by sharp edges of lens mounts

The threads of the lens mount and the lens itself have sharp edges. Be careful when mounting or unmounting lenses.



NOTICE

Damage to sensor, optics, or electronics by improper handling

If an S-Mount lens is screwed against the sensor or electronics, sensor, lens, or electronics can be damaged. Follow the instructions carefully.

Mounting the fixing nut to the lens

1. Screw the fixing nut clockwise onto the lens until you can hold the front part (a) of the lens with your finger tips.

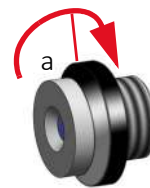


Figure 5: Lens and fixing Nut

Focusing the lens

Focus by live image. Avoid to screw in the lens deeper than for infinity focus. For a rough estimation, see [Specifications](#) on page 24.

2. Slowly screw the lens clockwise into the lens mount until the image is roughly in focus.
3. Slowly screw in and unscrew the lens until you have found the most accurate focus.



Figure 6: Adjusting focus


NOTICE
Damage to lens threads and fixing nut by excessive force

If the fixing nut is screwed with too much force, threads are worn out and the lens cannot be locked anymore.

Screw fixing nuts hand tight to keep the lens in a fix position.

Locking focus

Pinch nose pliers are used to screw the fixing nut:

4. Holding the lens in position with one hand, screw the fixing nut clockwise against the lens mount until you feel the lens is locked.



Figure 7: Locking the fixing nut

Checking focus is set and locked properly

5. Check No.1:
Try to rotate the lens with little force in both directions to ensure the lens is safely locked in position.



Figure 8: Checking lens is safely locked

6. Check No. 2:
The S-Mount thread allows a slightly tilted lens position. In this case, the focus for a common object plane varies over the image plane.
If the focus is constant over the image plane, you are done.
If the focus varies over the image plane, the lens is tilted. Continue with 7.
7. Loosen the fixing nut.
8. Continue with 3.

The lens is locked in focus and ready for operation.