Allied Vision

APPLICATION NOTE

Preparing Cameras without Sensor Cover Glass

Alvium, Bonito PRO, Goldeye and Goldeye Pro, Manta, Prosilica GT

V3.5.1
2026-May-11

1. Terms used in this document

Term	Description
Protection foil	Adhesive film to protect the sensor from dirt
Cover glass (CG)	Glass layer on top of the sensor surface, removed for RCG and TCG cameras
PCB	Printed circuit board
PCBA	Printed circuit board assembly as a set of multiple PCBs
Protection glass	Clear “filter” in the camera mount assembly
RCG	**Removed** Cover Glass sensor option
TCG	**Taped** Cover Glass sensor option

Table 1: Terms used in this document

2. Scope

Cameras without sensor cover glass must be handled with utmost care to avoid damage to the image sensor. Follow the instructions in this document to properly prepare these cameras for operation.

3. Safety notes

3.1. Electrostatic discharge (ESD)

Electrostatic charge builds up in the body when walking on carpeted floor. This can discharge when touching metal objects like a door handle. Such ESD can damage electronic devices, especially when tools or hands get in contact with connectors. We recommend measures to avoid damage by ESD:

- Unpacking: Remove the camera from its anti-static packaging only when your body is grounded.
- Workplace: Use a static-safe workplace with static-dissipative mat and air ionization.
- Wrist strap: Wear a static-dissipative wrist strap to ground your body.
- Clothing: Wear ESD-protective clothing. Keep components away from your body and clothing. Even if you are wearing a wrist strap, your body is grounded but your clothes are not.

3.2. Sensor damage

Follow the instructions thoroughly to avoid damage to sensor and camera. Work in a dust-free environment (class 100 or better) with humidity according to ESD requirements.

RCG sensors in Goldeye and Goldeye Pro cameras can be destroyed by condensation, especially when thermo-electric cooling is used. See 11.1. Avoiding damage to RCG models on page 11.

4. Warranty conditions

Allied Vision warranty does not cover any damage to the sensor as soon as the cover glass or the circular protection foil is removed. Cameras without sensor cover glass have the standard **warranty on the electronics, but excluding the sensor**:

Camera series	Alvium housed	Alvium bare board	Bonito PRO	Goldeye, Goldeye Pro	Manta	Prosilica GT
Electronics warranty	3 years	2 years	3 years	3 years	3 years	3 years

Table 2: Warranty duration by camera series

Warranty conditions for cameras and sensors

See www.alliedvision.com/en/company/legal-and-compliance/legal-and-privacy/terms-and-conditions.

5. Notes on RCG/TCG sensors

5.1. DPC and FPNC, bond wires

DPC (defect pixel correction) and **FPNC** (fixed pattern noise correction) are disabled for RCG/TCG sensor options.

Sensor's **bond wires** are sealed for all cameras with RCG/TCG sensor option. Please observe that for TCG options of cameras without lens mount, bond wires are not sealed for Sony IMX487 and IMX99x models. For more information, please contact our Support team at www.alliedvision.com/en/about-us/contact-us/technical-support-repair-/-rma.

6. Common instructions

NOTICE

Damage to the camera electronics and sensor

- Work in a dust-free environment (class 100 or better) with humidity according to ESD requirements.
- Observe notes for 3.1. Electrostatic discharge (ESD) on page 1.
- Follow the instructions thoroughly.

6.1. Unpacking cameras

Keep camera packaging

- To store the camera
- To ship the camera back in case of damage.

1. Open the shipping box.
2. Take out the ESD bag with the camera.
3. Take the camera out of the ESD bag.

6.2. Checking the camera function

With this simple test, you can check that the sensor of your new Allied Vision camera is working properly.

No lens is required.

1. Connect the camera to a PC.
2. Start **Vimba X Viewer** or another viewer application to acquire an image.
3. Wave your hand in front of the sensor.

   The viewer shows a camera image of a moving shadow. This proves proper camera function.

6.3. Instructions overview

Continue with the corresponding instructions:

- Preparing housed Alvium cameras – RCG on page 4
- Preparing Alvium bare board cameras – TCG on page 5
- Preparing Alvium IMX487/IMX99x bare board cameras – TCG on page 8
- Preparing Bonito PRO cameras – RCG on page 10
- Goldeye and Goldeye Pro cameras- RCG on page 11
- Preparing Manta cameras – RCG on page 13
- Preparing Prosilica GT cameras – RCG on page 14.

7. Preparing housed Alvium cameras – RCG

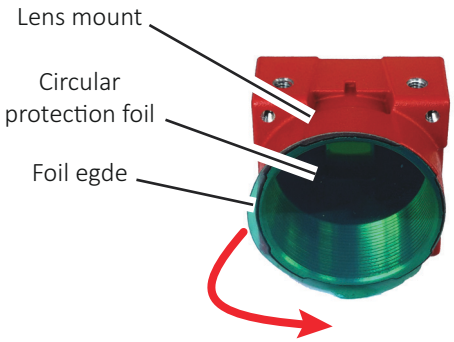
At delivery, sensors of housed Alvium RCG models are protected by the circular protection foil placed on the lens mount. This section instructs on removing the circular protection foil and mounting the lens.

NOTICE

Damage to the camera electronics and sensor

- Work in a dust-free environment (class 100 or better) with humidity according to ESD requirements.
- Observe notes for 3.1. Electrostatic discharge (ESD) on page 1.
- Follow the instructions thoroughly.

1. With your finger tips, starting from the edge, slowly pull the circular protection foil off the lens mount until removed completely.



Note

The bond wires are sealed for this sensor option.
See 5.1. DPC and FPNC, bond wires on page 2.

Figure 1: Removing the circular protection foil from the lens mount

NOTICE

Damage to the sensor

If you want to use your camera without lens, observe 3. Safety notes on page 1.

NOTICE

Damage to the sensor and lens

If the lens exceeds maximum protrusion, camera or lens may be damaged.

- To avoid damaging the sensor or the back lens, use lenses with a maximum protrusion within camera specifications. For details, see your camera's user guide.

2. Mount your optics according to the manual of the lens manufacturer and your camera's user guide.

Without compensation, cameras could not be focused to infinity after the sensor cover glass has been removed. Therefore, Alvium RCG cameras are calibrated for proper focus before shipping.

8. Preparing Alvium bare board cameras – TCG

At delivery, sensors of Alvium bare board TCG models are protected by the cover glass fixed by adhesive tapes. This section instructs on removing these tapes and the cover glass. Note that you must mount bare board cameras into housings immediately after the TCG has been removed. For **exceptions** see 9. Preparing Alvium IMX487/IMX99x bare board cameras – TCG on page 8.



NOTICE

Damage to the camera electronics and sensor

- Work in a dust-free environment (class 100 or better) with humidity according to ESD requirements.
- Observe notes for 3.1. Electrostatic discharge (ESD) on page 1.
- To protect the sensor from dirt, mount the camera into a housing immediately.
- Follow the instructions thoroughly.



NOTICE

Damage to the sensor and lens

If the lens exceeds maximum protrusion, camera or lens may be damaged.

- To avoid damaging the sensor or the back lens, use lenses with a maximum protrusion within camera specifications. For details, see your camera's user guide.



About the following instructions

The instructions consist of multiple steps. We recommend you to read the instructions first to get an orientation on camera preparation.



Ease handling

- Use a magnifying glass for better view.
- Read the instructions thoroughly and keep tools at hand for camera preparation.

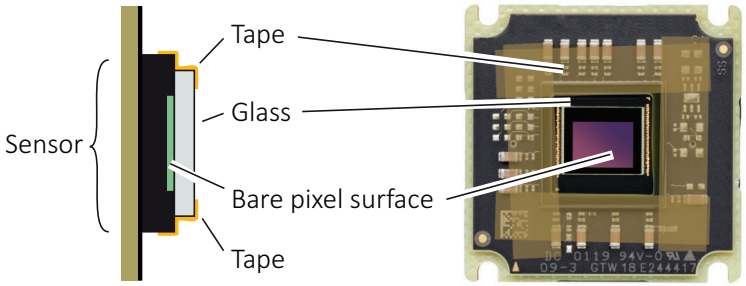


Required tools

Before you can remove the TCG, please obtain the required tools shown below.

Required tools	Tools short names	Purpose
Base magnifier or microscope	Magnifying glass	For better view
Wooden spatula	Spatula	To keep the cover glass in position until removed
Precision screwdriver	Screwdriver	To lift up the adhesive tapes
Pinch nose pliers	Pliers	To remove the adhesive tapes
Circular protection foil (optional)	Circular protection foil	To protect the sensor during camera storage before final hardware installation

Table 3: Required tools to remove a TCG



Note

The bond wires are sealed for this sensor option.

See 5.1. DPC and FPNC, bond wires on page 2.

Figure 2: Sensor with TCG (schematic view)

1. Place the camera on your work bench, with the sensor side facing up.
2. Place the magnifying glass above the camera, with sufficient space to access the TCG and the adhesive tapes with tools.
3. Take the spatula with one hand.
4. With the spatula, push the cover glass down to keep the sensor protected.
   Keep pushing down with the spatula until step 15.

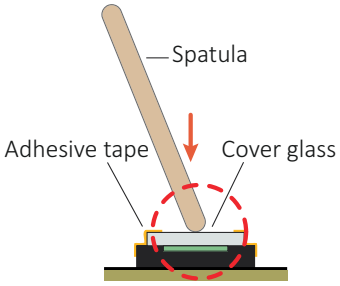


Figure 3: Spatula pushing down the cover glass (schematic view)

5. Take the screwdriver with the other hand.
6. On the left side of the sensor, carefully push the tool tip of the screwdriver against the corner of the adhesive tape until it starts to come off. Continue lifting up the corner, until pliers can get a grip.

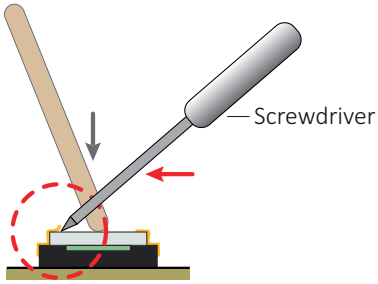


Figure 4: Screwdriver lifting up the adhesive tape (schematic view)

7. Put the screwdriver aside and take the pliers.
8. **Keep pushing down with the spatula until step** 15.

9. With the pliers, grip the detached corner of tape and slowly pull it off the cover glass and off the sensor baseplate.

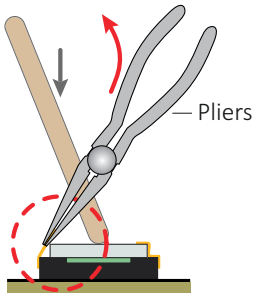


Figure 5: Pliers pulling the adhesive tape off the sensor (schematic view)

10. Strip off the tape from the pliers.
11. Put the pliers aside.
12. Repeat steps 5. to 11., until all adhesive tapes have been removed from the sensor.
13. With one hand pushing the spatula against the cover glass, take the camera into the other hand.
14. Rotate the camera with the sensor facing down.
15. Slowly release the spatula from the cover glass until it disengages from the camera.

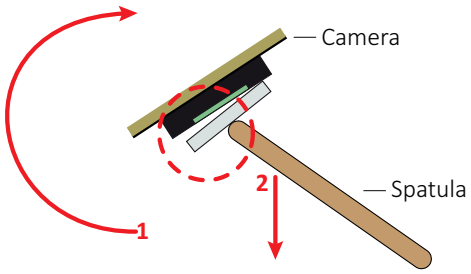


Figure 6: Rotating the camera to drop the cover glass (schematic view)



NOTICE

Damage to the sensor

If dirt penetrates the sensor surface, the sensor can be damaged.

- To protect the sensor from dirt, mount the camera into a housing immediately.

9. Preparing Alvium IMX487/IMX99x bare board cameras – TCG

At delivery, the sensors of Alvium bare board TCG models (using Sony IMX487 and Sony IMX99x) are protected by the cover glass **attached with a point of glue**. This section instructs on removing the cover glass. Note that the glue remains must not be removed and that you must mount bare board cameras into housings immediately after the TCG has been removed.



NOTICE

Damage to the camera electronics and sensor

- Work in a dust-free environment (class 100 or better) with humidity according to ESD requirements.
- Observe notes for 3.1. Electrostatic discharge (ESD) on page 1.
- To protect the sensor from dirt, mount the camera into a housing immediately.
- Follow the instructions thoroughly.



NOTICE

Damage to the sensor and lens

If the lens exceeds maximum protrusion, camera or lens may be damaged.

- To avoid damaging the sensor or the back lens, use lenses with a maximum protrusion within camera specifications. For details, see your camera's user guide.



About the following instructions

The instructions consist of multiple steps. We recommend you to read the instructions first to get an orientation on camera preparation.



Ease handling

- Use a magnifying glass for better view.
- Read the instructions thoroughly and keep tools at hand for camera preparation.

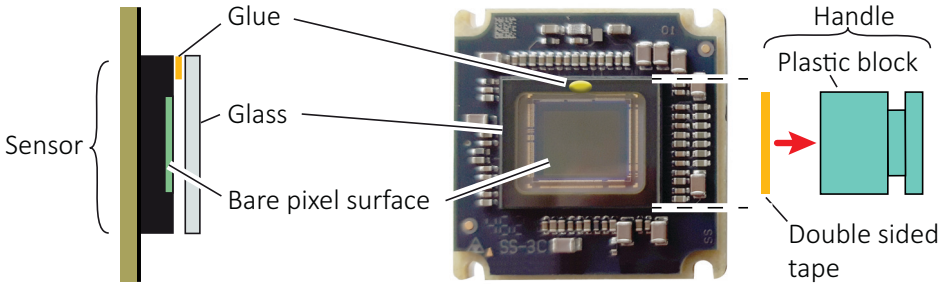


Required tools

Before you can remove the TCG, please obtain the required tools shown below.

Required tools	Tools short names	Purpose
Base magnifier or microscope	Magnifying glass	For better view
Block of plastic	Handle	To flip up and remove the cover glass
Double sided tape		

Table 4: Required tools to remove a TCG



Note

The bond wires are sealed for housed cameras, but **not** sealed for bare board cameras.

See 5.1. DPC and FPNC, bond wires on page 2.

Figure 7: Sensor with TCG attached with glue (schematic view)

1. Collect a plastic block matching the area of the TCG. Stick a piece of double sided tape to the plastic block. You are going to use this assembly as **Handle** tool.
2. Place the camera on your work bench, with the sensor side facing up.
3. Place the magnifying glass above the camera, with sufficient space to access the TCG with the **Handle**.
4. Take the **Handle** with one hand.
5. With the other hand, hold down the camera board at the edges.
6. **Holding down the camera board**, move the **Handle** down towards the TCG until you feel full contact. Slowly flip up the **Handle** until the point of glue breaks as shown below in Figure 8:

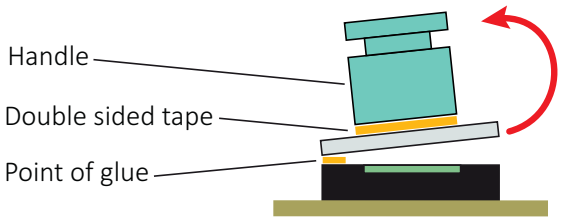


Figure 8: "Handle" flipping up the TCG (schematic view)

7. Put the **Handle** with the TCG aside.

NOTICE

Damage to the camera electronics and sensor

The glue material has hardened in manufacturing. Trying to remove the remains with a tool can result in dirt penetrating the sensor surface or damage to electronic parts.

- Keep the remains of glue untouched.
- Include a gap in your mechanical design to avoid contact to the glue remains.

NOTICE

Damage to the sensor

If dirt penetrates the sensor surface, the sensor can be damaged.

- To protect the sensor from dirt, mount the camera into a housing immediately.

10. Preparing Bonito PRO cameras – RCG

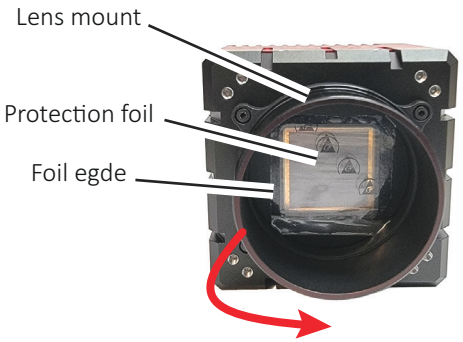
At delivery, sensors of Bonito PRO RCG models are protected by the protection foil placed in the lens mount. This section instructs on removing the protection foil and mounting the lens.

NOTICE

Damage to the camera electronics and sensor

- Work in a dust-free environment (class 100 or better) with humidity according to ESD requirements.
- Observe notes for 3.1. Electrostatic discharge (ESD) on page 1.
- Follow the instructions thoroughly.

1. With your finger tips, starting from the edge, slowly pull the protection foil off the sensor until removed completely.



Note

The bond wires are sealed for this sensor option.

See 5.1. DPC and FPNC, bond wires on page 2.

Figure 9: Removing the protection foil from the sensor

NOTICE

Damage to the sensor

If you want to use your camera without lens, observe 3. Safety notes on page 1.

NOTICE

Damage to the sensor and lens

If the lens exceeds maximum protrusion, camera or lens may be damaged.

- To avoid damaging the sensor or the back lens, use lenses with a maximum protrusion within camera specifications. For details, see the Bonito PRO User Guide.

2. Mount your optics according to the manual of the lens manufacturer and the Bonito PRO User Guide.

Without compensation, cameras could not be focused to infinity after the sensor cover glass has been removed. Therefore, Bonito PRO cameras are calibrated for proper focus before shipping.

Focus recalibration

Should you still want to optimize focus settings, the Prosilica GT User Guide from www.alliedvision.com/en/support/technical-documentation/prosilica-gt-documentation.

11. Goldeye and Goldeye Pro cameras - RCG

11.1. Avoiding damage to RCG models

NOTICE

Damage to the sensor

Condensation can cause short circuits on the sensor.

- During operation, avoid condensation of humidity on the sensor.
- **Read the following descriptions.**
- Set the `SensorTemperatureSetpointMode` feature to *`Manual`* (default), avoid using *`Auto`* mode.
- Set all values for `SensorTemperatureSetpointValue` carefully according to Figure 10.

Generally, condensation can destroy the sensor by short circuits of the sensor's wire bonds. In standard Goldeye and Goldeye Pro cameras, the sensor cover glass protects sensors against condensation. Goldeye and Goldeye Pro RCG models with removed cover glass do not have this protection.

In Figure 10, you can see the correlation between air temperature at the sensor surface and the dew point. If the sensor temperature is less than or equal to the dew point temperature, condensation occurs.
The example in Figure 10 applies to an air temperature of 20 °C at the sensor surface.
You can find other values in the diagram correspondingly.

This is how relative humidity affects condensation for setpoints of Goldeye and Goldeye Pro cameras:

Example values for `SensorTemperatureSetpointValue` for an **air temperature of 20 °C at the sensor surface** :

+25 °C: Safe for any relative humidity
Sensor damage cannot occur.

+20 °C: Safe for relative humidity <90%
Above 90% rel. humidity, the sensor can be damaged.

+15 °C: Safe for relative humidity <60%
Above 60% rel. humidity, the sensor can be damaged.

+5 °C: Safe for relative humidity <30%
Above 30% rel. humidity, the sensor can be damaged.

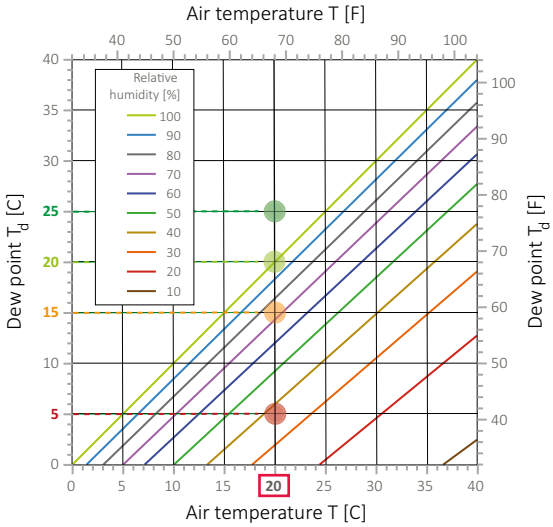


Figure 10: Dew points versus air temperature

Relative humidity values

Observe that typical values mostly exceed 30% relative humidity.

- Recommended value range for clean rooms: 30 to 40%
- Ideal surrounding for humans: 30 to 60%

11.2. Preparing Goldeye and Goldeye Pro cameras – RCG

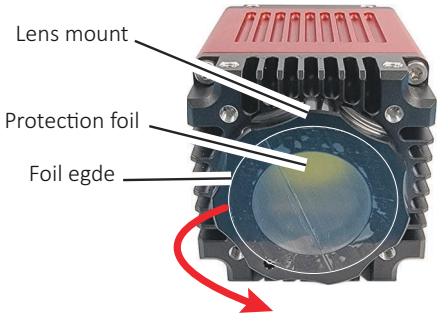
At delivery, sensors of RCG models are protected by the circular protection foil placed on the lens mount. This section instructs on removing the circular protection foil and mounting the lens.

NOTICE

Damage to the camera electronics and sensor

- Work in a dust-free environment (class 100 or better) with humidity according to ESD requirements.
- Observe notes for 3.1. Electrostatic discharge (ESD) on page 1.
- Follow the instructions thoroughly.

1. With your finger tips, starting from the edge, slowly pull the circular protection foil off the lens mount until removed completely.



Notes

The bond wires are sealed for this sensor option. See 5.1. DPC and FPNC, bond wires on page 2.

This figure shows a Goldeye camera. The Goldeye Pro front mount differs, but the handling is the same for both camera series.

Figure 11: Removing the circular protection foil from the lens mount

NOTICE

Damage to the sensor

Condensation can cause short circuits on the sensor.

- During operation, avoid condensation of humidity on the sensor.
- See 11.1. Avoiding damage to RCG models on page 11.

NOTICE

Damage to the sensor

If you want to use your camera without lens, observe 3. Safety notes on page 1.

NOTICE

Damage to the sensor and lens

If the lens exceeds maximum protrusion, camera or lens may be damaged.

- To avoid damage to the sensor or back lens, use lenses with a maximum protrusion within specifications defined in your camera's user guide.

2. Mount your optics according to the manual of the lens manufacturer and your camera's user guide.

Without compensation, cameras could not be focused to infinity after the sensor cover glass has been removed. Therefore, Goldeye and Goldeye Pro cameras are calibrated for proper focus before shipping.

12. Preparing Manta cameras – RCG

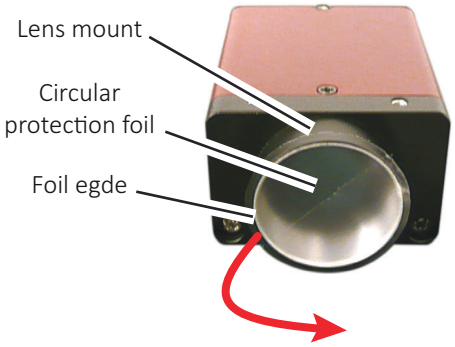
At delivery, sensors of Manta RCG models are protected by the circular protection foil placed on the lens mount. This section instructs on removing the circular protection foil and mounting the lens.

NOTICE

Damage to the camera electronics and sensor

- Work in a dust-free environment (class 100 or better) with humidity according to ESD requirements.
- Observe notes for 3.1. Electrostatic discharge (ESD) on page 1.
- Follow the instructions thoroughly.

1. With your finger tips, starting from the edge, slowly pull the circular protection foil off the lens mount until removed completely.



Note

The bond wires are sealed for this sensor option.

See 5.1. DPC and FPNC, bond wires on page 2.

Figure 12: Removing the circular protection foil from the lens mount

NOTICE

Damage to the sensor

If you want to use your camera without lens, observe 3. Safety notes on page 1.

NOTICE

Damage to the sensor and lens

If the lens exceeds maximum protrusion, camera or lens may be damaged.

- To avoid damaging the sensor or the back lens, use lenses with a maximum protrusion within camera specifications. For details, see the Manta User Guide.

2. Mount your optics according to the manual of the lens manufacturer and the Manta User Guide.

Without compensation, cameras could not be focused to infinity after the sensor cover glass has been removed. Therefore, Manta RCG cameras are calibrated for proper focus before shipping.

13. Preparing Prosilica GT cameras – RCG

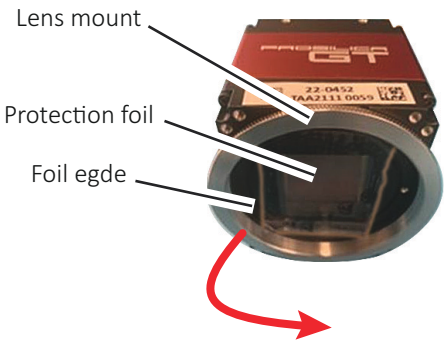
At delivery, sensors of Prosilica GT RCG models are protected by the protection foil placed in the lens mount. This section instructs on removing the protection foil and mounting the lens.

NOTICE

Damage to the camera electronics and sensor

- Work in a dust-free environment (class 100 or better) with humidity according to ESD requirements.
- Observe notes for 3.1. Electrostatic discharge (ESD) on page 1.
- Follow the instructions thoroughly.

1. With your finger tips, starting from the edge, slowly pull the protection foil off the sensor until removed completely.



Note

The bond wires are sealed for this sensor option.

See 5.1. DPC and FPNC, bond wires on page 2.

Figure 13: Removing the protection foil from the sensor

NOTICE

Damage to the sensor

If you want to use your camera without lens, observe 3. Safety notes on page 1.

NOTICE

Damage to the sensor and lens

If the lens exceeds maximum protrusion, camera or lens may be damaged.

- To avoid damaging the sensor or the back lens, use lenses with a maximum protrusion within camera specifications. For details, see the Prosilica GT User Guide.

2. Mount your optics according to the manual of the lens manufacturer and the Prosilica GT User Guide.

Without compensation, cameras could not be focused to infinity after the sensor cover glass has been removed. Therefore, Prosilica GT RCG cameras are calibrated for proper focus before shipping.

Focus recalibration

Should you still want to optimize focus settings, see Bonito PRO User Guide at www.alliedvision.com/en/support/technical-documentation/bonito-pro-documentation

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