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<http://www.teledynedalsa.com/Genie-Nano>

G3-AN0001-V1: Genie Nano Application Note

Installing Custom Optical Filters

For Nano models with P/N: G3-xxxx-xxxx0NF and G3-xxxx-xxxx1NF

Overview

Nano cameras can have filters such as IR, optical bandpass, polarizing, colored or others, installed in field by the client. Filters are used to select or limit the spectrum visible to the camera sensor so as to improve the machine vision application. For more information about filter applications see *Edmund Optics: Filtering in Machine Vision* <https://www.edmundoptics.com/resources/application-notes/imaging/filtering-in-machine-vision/>

Back Focal Variance

Any filter will increase the back focal distance by ~1/3 mm, therefore if using a fixed focus lens, order Nano cameras with the **NF model** code. These models have case depth dimensions that are longer by 0.3mm — ready for a filter installation.

If the client uses variable focus lens, they can compensate by refocusing the lens for the variance. Therefore in this case any Nano model can have filters installed.

Required Purchases

Purchase from Teledyne DALSA one or more “Filter Insertion Jig” units, and one or more sets of Filter Clips and Shims (50 units per set)

- Filter Insertion Jig (part number: **G3-AJIG-FLTRA**)
- 50 Filter Clips and Shims set (part number: **G3-A00B-CLIP50L**)

Purchase from a Lens supplier the type of filter required for your application with the following physical specification:

- Round filters: 18.6 to 18.8mm in diameter — 1mm thick

Handling Caution

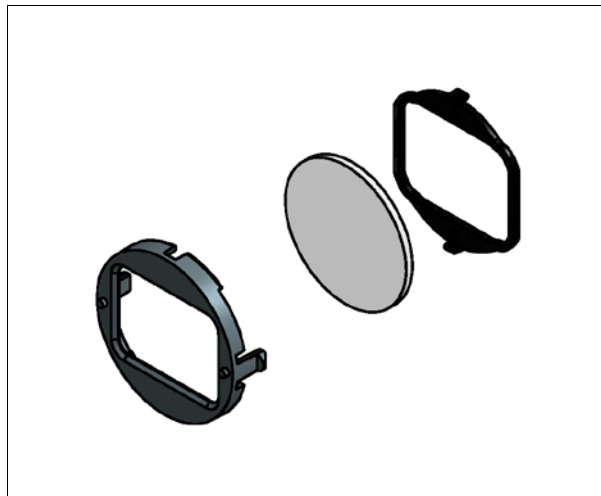
Note that installations need to be done in “clean room” conditions. The client is responsible for handling cameras and filters correctly to avoid contamination with dust or dirt of any kind. There are portable clean room products to consider such as <https://www.sentryair.com/specs/Clean-Room-Portable-ISO-Pure-Mini-118-PCR.htm>, to aid with users doing their own custom filter installations.

1. Required Components

The following figures show the Filter Insertion Jig and 10 piece packets of filter Clips and Shims as available from Teledyne DALSA. Filters are purchased from Lens suppliers such as Edmund Optics.



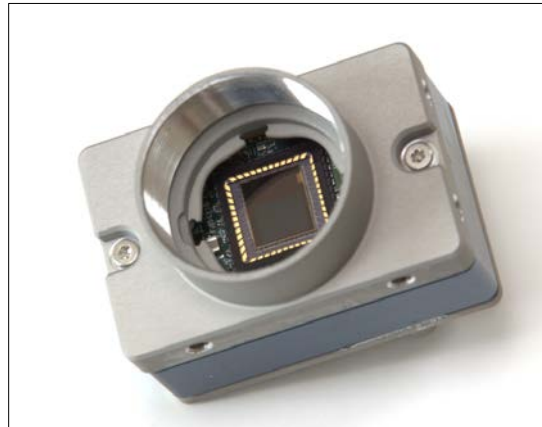
The following figure shows the exploded view of the “Clip – Filter – Shim” assembly.



2. Assembly Preparation

Note: It is expected that the client uses a proper clean room for assembly else dirt or dust will contaminate the filter or sensor surface.

The image below shows a Nano camera purchased without any filter installed.



The following figure shows all components ready for assembly and insertion.



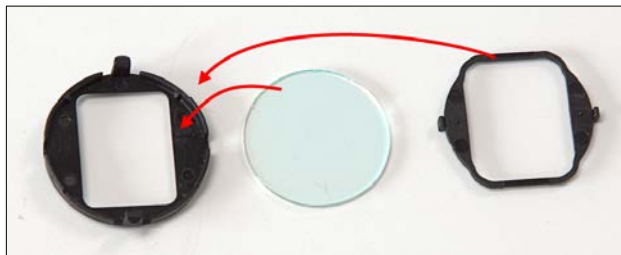
3. Assembly Instructions

Assembly is a quick one minute job.

- **First place the Clip into the Filter Insertion Jig** so that the two protrusions on the clip exterior fit into holes of the Jig center sockets.



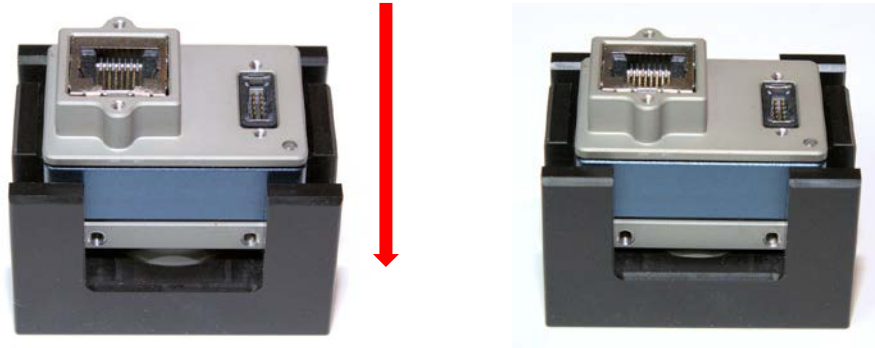
- **Add the Filter and Shim** to the stack within the Filter Insertion Jig.



- The following image shows the **clip, filter and shim stacked** ready for the camera.



- Place the Nano camera into the Filter Insertion Jig without disturbing the filter clip stack.
- Press down on the camera until hearing a click. The insertion distance when pressing down is short and does not require much force.



- The final image below shows the Nano camera with an installed filter.



4. Filter Removal

Warning: Any damage to the Nano sensor board or filter is the sole responsibility of the client.

Teledyne DALSA does not recommend removing the filter after installation. If a filter must be removed, use a tool with a hooked end such as a dental tool. Insert the tool just a millimeter or two behind the filter clip where the Nano case allows access, and pop out the filter clip stack.

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