Tech Tip

Camera filters - Keep dust out, let the right light in

All IDS cameras come with a filter glass in front of the image sensor as standard. This filter fulfills two major functions:

- Protection against dirt and dust
- Spectral filtering of the incident light

Protection against dirt and dust
Camera filters protect the sensor against dirt and dust. To achieve optimum image quality the sensor needs to be kept free of dust. As pixels today are the same size as dust particles or even much smaller, a single speck of dust on the image sensor can drastically reduce the quality of the image. The short distance to the pixel means that a speck of dust on the image sensor can cast the pixel beneath it entirely in shadow. The speck of dust appears as a dark spot in the camera image.

In our cameras, the space in front of the image sensor is protected against ingress of dust. Once the camera has been closed in our cleanrooms, no dust can get onto the image sensor.

Spectral filtering of the incident light
The second purpose of the filter is the spectral filtering of light in front of the image sensor. Color camera pixels are also sensitive to light in the IR spectrum. If IR light hits the image sensor as well as visible light, this leads to color distortions and the image produced is dull.
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As the detection of IR light is not required in most applications, IDS fits all color cameras with a filter that blocks incident IR light as standard.

A different type of filter performs the exact opposite function. It lets IR light through and blocks the visible portion of the light. This is particularly useful in applications in which work is carried out using IR lighting. Light from other light sources is filtered out reliably by the IDS daylight cut filter “DL Cut”. 
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IDS fits cameras that are to remain sensitive to the entire light spectrum with a plain glass filter called the GL filter, which has no spectral filter characteristics.

The transmission curves for the various filters in the manual indicate which filter to use for a specific application. In some exceptional cases, therefore, it may be useful to also fit a GL filter to a color camera, for example.

Important information
We recommend that you do not remove the filters from the cameras. The manual contains specific information on cleaning, should this be necessary. As dust or dirt on the sensor cannot be removed without using special materials, please only ever operate the cameras with the filter installed. If you need to clean the filter, dry clean it without touching it using clean compressed air.

Changing the filter
If you want to convert a camera from one filter type to another, you must send the camera in to IDS. The danger of changing the filter is that dust particles may enter the camera and soil the image sensor.