SUMIX corporation

Megapixel USB2.0 CMOS

CAMERA

Guidelines on Use

of IR-cut filters with CommandShot Cameras

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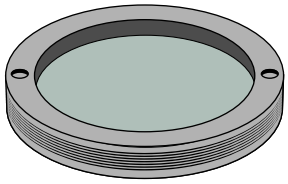
Overview

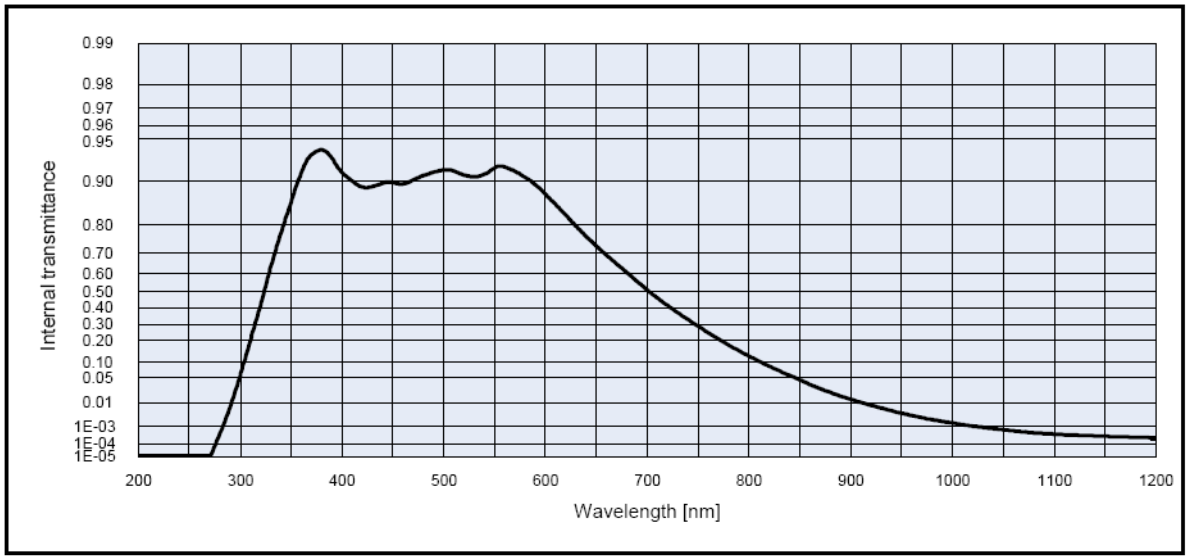
SMX-160C, SMX-M7x Color, **SMX-M95C**, **SMX-10Mx Color** and **SMX-11M5C Cameras** can be supplied with an **IR-cut filter**:

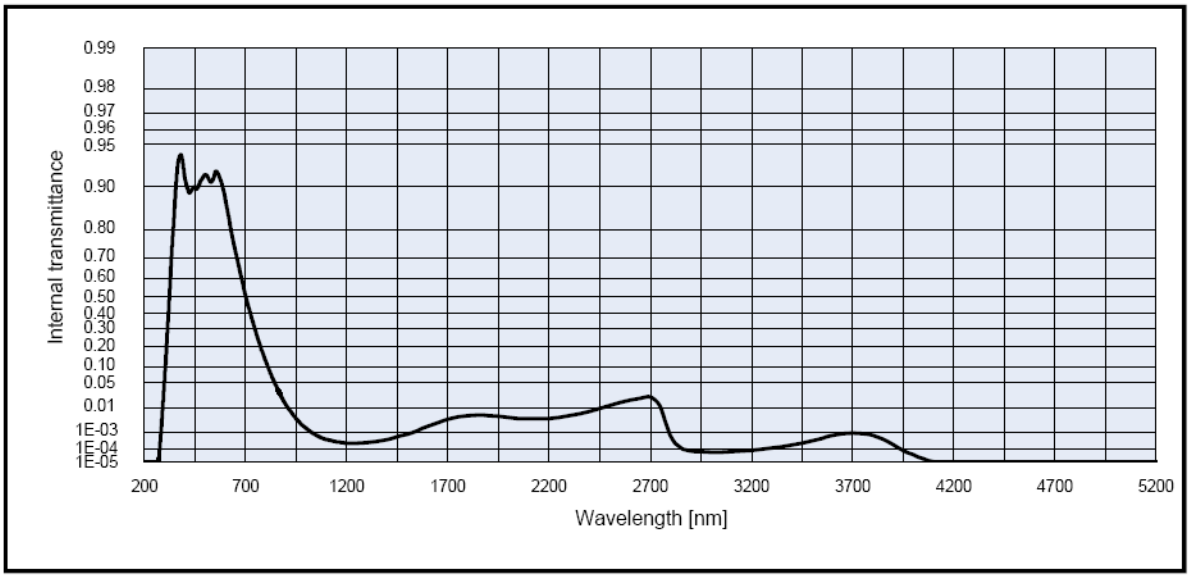


The **IR-cut filter** has the following characteristics:

- Diameter = 20 mm
- Thickness = 2 mm

Chart of the **IR-cut filter** transmission characteristics:





When to Use

The **IR-cut filter** can be used for both color and monochrome camera models.

Use of IR-cut Filers with SMX-160C, SMX-M7x Color, SMX-M95C, SMX-10Mx Color and SMX-11M5C Cameras

The **IR-cut filter** is a color filter that blocks infrared light. Since the **SMX-160C**, **SMX-M7x Color, SMX-M95C, SMX-10Mx Color and SMX-11M5C cameras** are sensitive to IR light, use the filter with color cameras to make image colors more realistic.

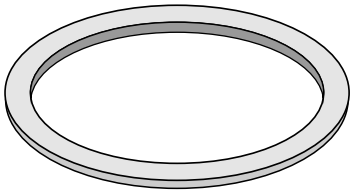
Many light sources, including the sun, emit infrared light, so the color camera in daylight will see significant amount of infrared light without the **IR-cut filter**. As a result, strange, non-realistic colors appear.

Another reason for using the **IR-cut filter** is the limited color correction for some lenses. A lot of lenses have different depth of focus for the visible and infrared spectrum. The **IR-cut filter** cuts away a significant amount of the overall collected light and thereby affects the sensitivity in a negative way. In general, color cameras are one factor less sensitive compared to monochrome (depending on the sensor). This is primarily due to the **IR-cut filter**.

Use of IR-cut Filers with SMX-M7x Monochrome Cameras

SMX-M7x monochrome cameras (the **SMX-M71M** cameras) are more sensitive to the infrared light than color models. Using the cameras in an environment rich for infrared light may result in highlighted images. To avoid this effect, use **IR-cut filters** for these cameras.

Note: *When the camera is used with an **IR-cut filter**, the focus distance is increased to 0.66 mm. To restore the focus distance to the original value (when the camera is used without IR-cut filter ring and a ring-adapter) we suggest using a ring-adapter:*



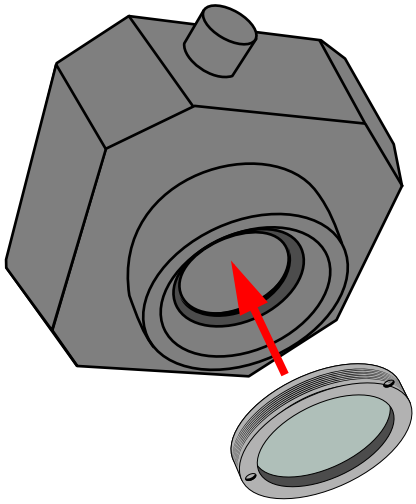
How to Use

Usually the camera is supplied with the **IR-cut filter** screwed in.

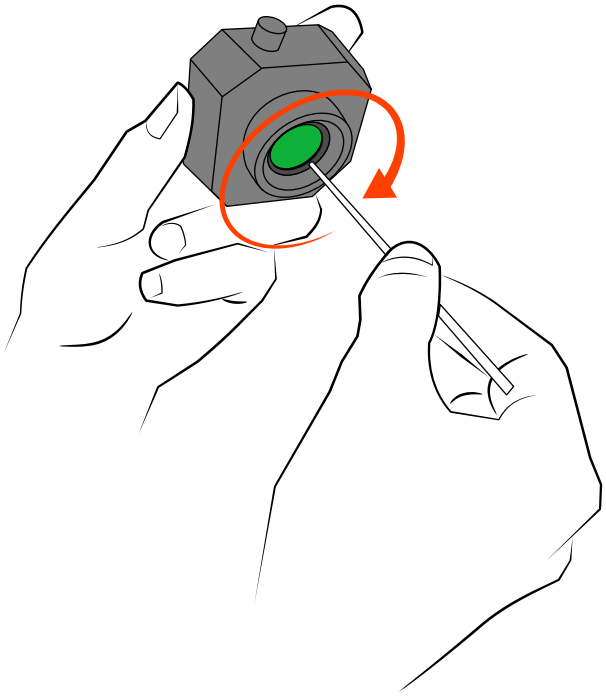
The procedure of screwing the **IR-cut filter** in and using the ring-adapter is described below.

Screw the **IR-cut filter** in as follows:

1. Remove the cover from the camera
2. Put the IR-cut filter to the camera so that the two holes on the filter are faced up - see the picture below



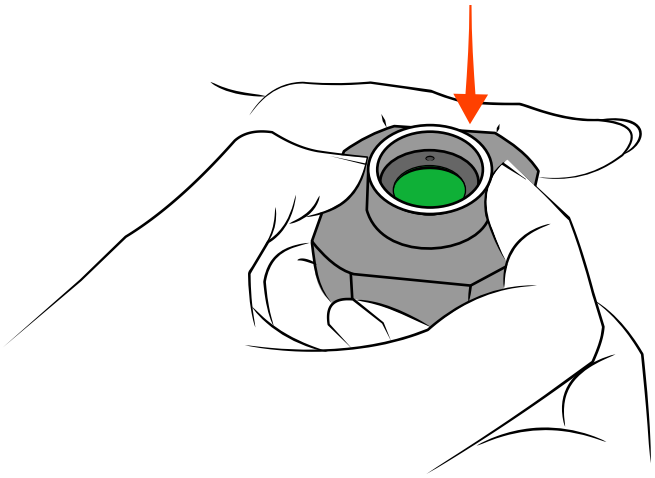
3. Use a needle-like tool (e.g. tweezers) and screw the IR-cut filter in, as shown on the picture below



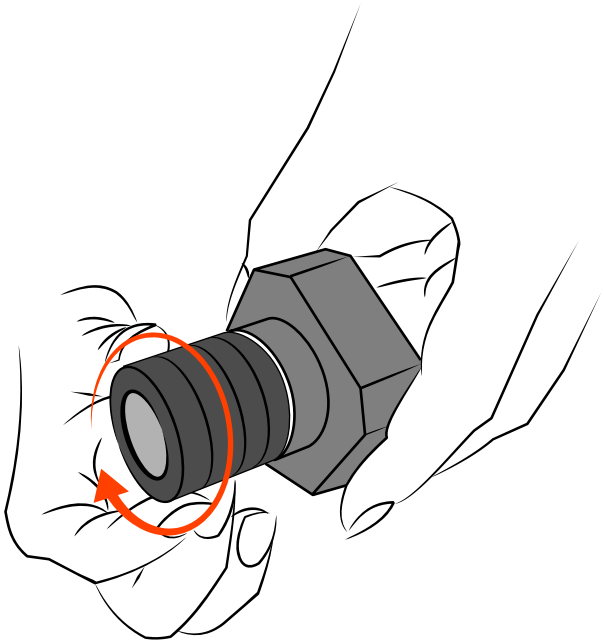
Note: *The latest **SMX-160C**, **SMX-M7x**, **SMX-M95C**, **SMX-10Mx Color** and **SMX-11M5C Cameras** have blocking elements on their inner thread to prevent the **IR-cut filter** from fallng on the sensor. Previously manufactured cam-*

*eras do not have these blocking elements, so when screwing the **IR-cut filter** in these cameras, do not make more than 10 - 11 full turns*

4. Once the **IR-cut filter** is screwed in, put the ring-adapter as shown on the picture below



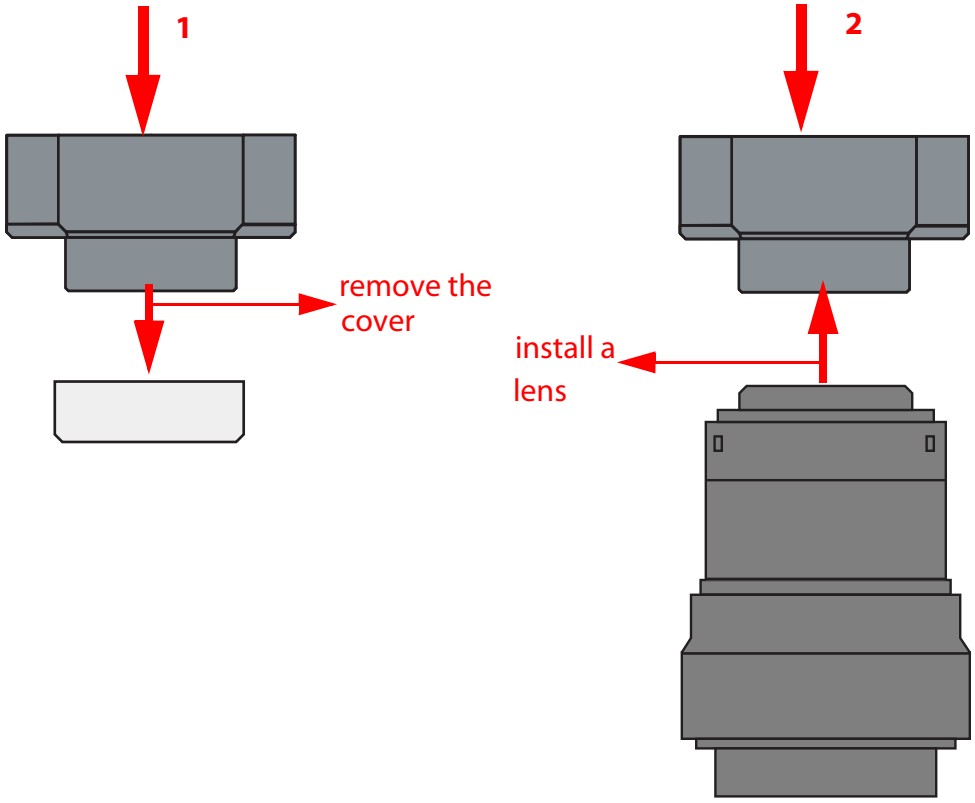
5. Screw the lens in as shown on the picture below



Please note, that it is recommended to remove the cover and install a lens (as well as to remove a lens and put on the cover) when the camera is faced down - to avoid contamination of the sensor or filter.

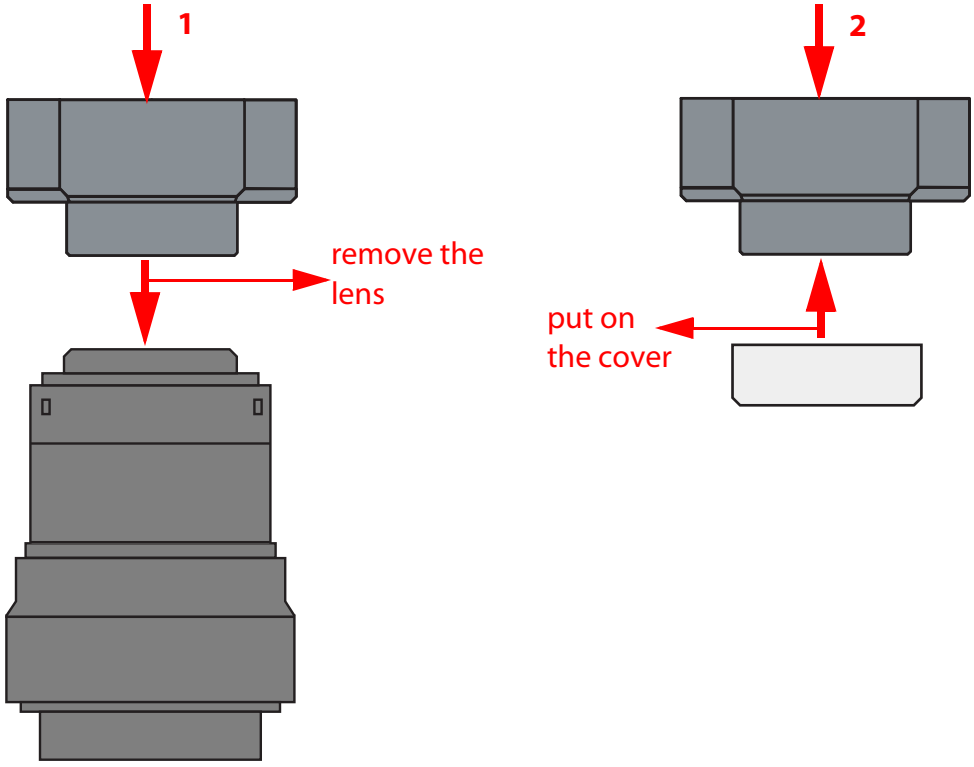
To install a lens to the camera that contains no **IR-cut filter**, face the camera down and do the following:

1. Remove the cover from the camera
2. Install lens as shown on the picture below



To remove a lens from the camera that contain no **IR-cut filter**, face the camera down and do the following:

1. Screw lens out
2. Put on the cover (see the picture below)



Note *Before screwing a lens in or putting on the cover, make sure that the surfaces are free from dust. When you remove the cover, put it facing down to keep dust out*