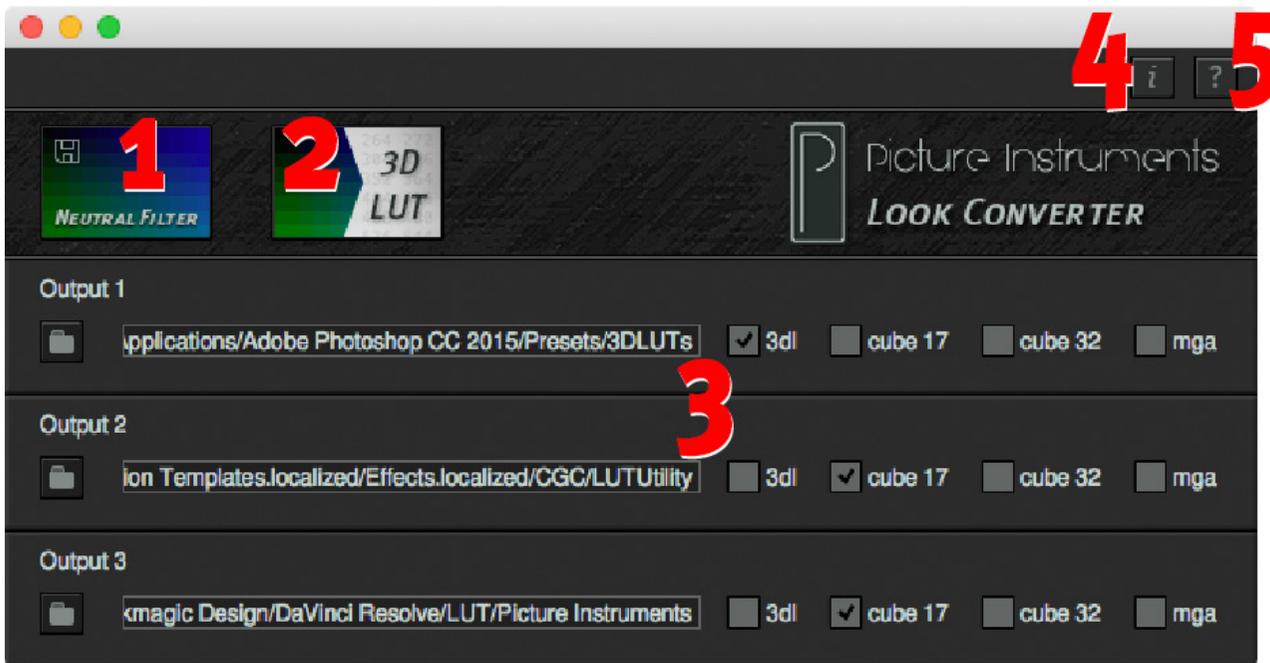


Manual



LOOK CONVERTER



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i. Introduction

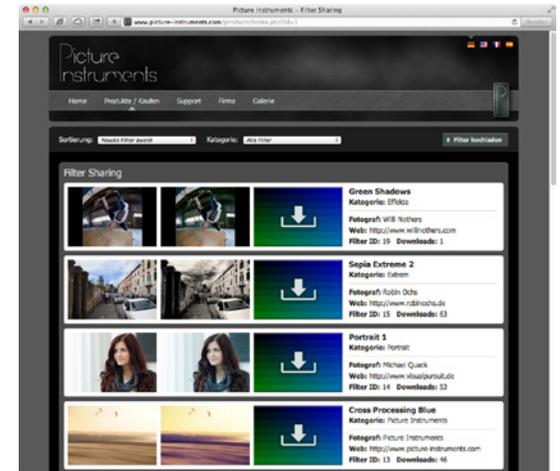
Using a neutral color filter in the JPG-format Look Converter lets you copy various color filters from other software applications or create your own filters in your favorite picture editing software. You can convert all filters you have thus created or found in the filter sharing area of our website into the 3D LUT formats .3dl .cube and .mga .

Lookup tables are constantly gaining popularity as universal filter formats. You can use 3D LUTs created with Look Converter as adjustment layers in Photoshop CS6 and higher as well as current versions of Premiere and After Effects or apply them to your videos in software like Final Cut Pro X or older versions of Photoshop, Premiere and After Effects through plug-ins.

You can create filters you want to apply to a video with Photoshop or Lightroom or you can professionally use an interesting coloration from a smartphone app in Photoshop. Whenever you feel like experimenting around you can even take a picture of a mobile filter with your analog camera and apply the effects of the analog development process to digital images and videos. Of course you have to make sure that the color patches in the scan must be fitted to the position of the patches in the original filter. As soon as you have familiarized yourself with the workflow in Look Converter, you will have a very powerful and flexible tool at your disposition.

ii. Filter Sharing

Filter sharing is a platform on our website (navigate to "products") where you can share filters you have created yourself with other users. If Unlimited Filters is new to you, you can download a great number of filters there and get started with filtering right away.



You can find the filter sharing area after clicking on the following link: <http://www.picture-instruments.com/products/index.php?id=1>

1. The Neutral Filter

Use this command button to save a neutral filter to your computer.



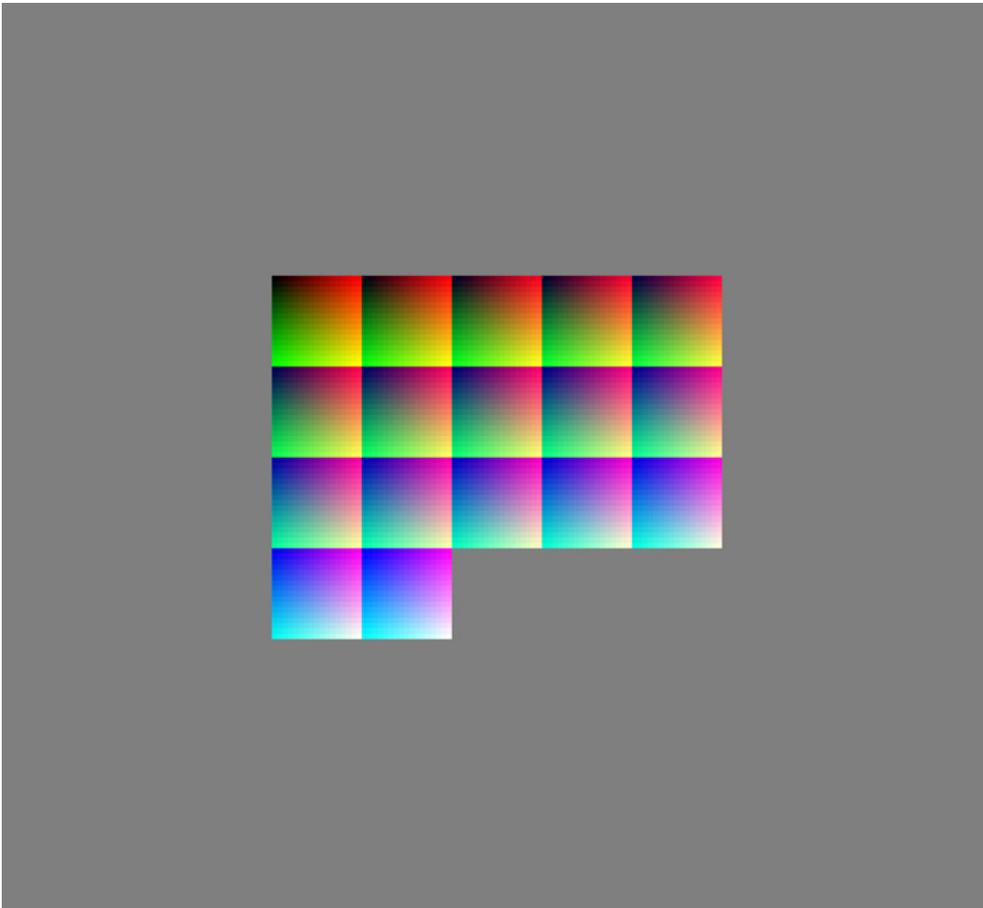
What is a neutral filter anyways?

The neutral filter can be viewed as a color table containing each color of the RGB model once. To make sure that you can edit this filter in any picture editing software we don't save it as a table but as an image. To make sure, filters from other applications, even from smartphone apps, can be scanned without causing artifacts by having uncontrollable local settings (i.e. blur effects, micro contrasts etc.) manipulate the image in unwanted ways, we have simply coarsened the filter table so that

only every 17th value (out of 256) is scanned. The values in between will be interpolated when you apply the filter.

Why a neutral filter?

To create your own filter or copy one from another application you have to open the neutral filter in



any application. Like with any other picture you can then apply various edits, corrections and changes to the neutral filter that affect the brightness, the color and the saturation of individual pixels (color patches). These can be tone curves, selective color

corrections, tonal value corrections, black and white conversions, changes in saturation and dynamics and many more. You can also simply apply a preset filter from another application to it. The result of your edits is now your filter, which you can convert into a 3D LUT via Look Converter. The difference in the respective color patches, the neutral one and the one you edited, creates the filter effect, which you can use as a 3D LUT in many software applications.



Note: Changes in sharpness (i.e. micro contrasts) or other localized adjustments (i.e. vignettes or gradients) change the color value of pixels that happen to be located at that specific point by coincidence. Vignettes are generally rendered harmless by the grey edge in the filter, which Look Creator ignores entirely. To a certain extent all other local edits mentioned above are rendered harmless by the size of the individual color patches (which are being used with averaged values). Nonetheless we recommend to avoid such edits.



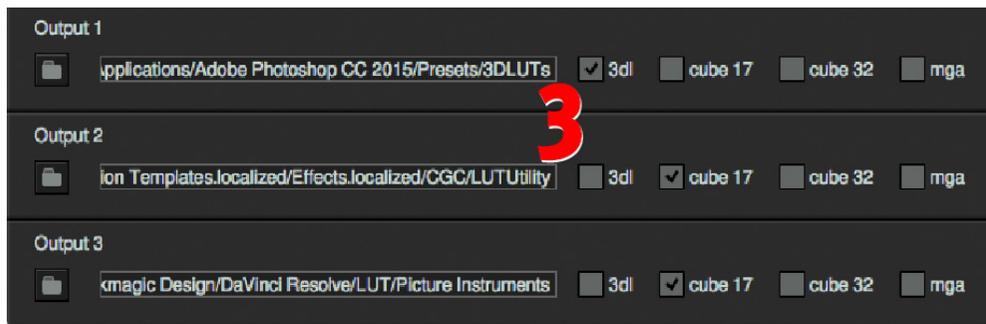
Note: If you want to create your own filters instead of using a preset with features you already know we recommend the use of a reference image on a separate layer. If you are happy with your settings you can delete the reference image and save the filter. In the next step (item 2) you can then convert it then.

2. Convert Filters into 3D LUTs



Use this command button to convert a filter which you have created yourself or which you downloaded from the filter sharing area of our website into one or more 3D LUT formats. You can convert one or several files at a time.

3. Output Formal and Path



Here you can set up to 3 output paths to determine where Look Converter saves the 3D LUTs.

If you further want to use your LUTs in Photoshop and have them listed in the Photoshop menu under Color Lookup in the adjustment layer you should simply copy your .3dl or .cube files directly to Photoshop's "3DLUTs" folder. I.e.: ../applications/Adobe Photoshop CC/Presets/3DLUTs

In addition you can select the output formats of your 3D LUTs by clicking on the respective checkboxes.

4. Info

In the info window you can find more information on the version of Look Converter and the license you use.



5. Help

The help window contains a link to our Look Converter tutorial videos as well as information on all shortcuts you can use to make your workflow more efficient.



6. What are 3D LUTs?

LUT stands for Lookup Table. A Lookup Table is a table outputting specific target values (the color value of a specific pixel in the filtered image) for all source values (the color value of a specific pixel in the original image). The entire table (LUT) contains corresponding target values for every possible color value (R, G, B). If we assume an RGB-image with 8 bit per color channel, every color channel contains 256 color values. That is to say, $256 \times 256 \times 256 = 16,777,216$ color values overall.



Note: To make our neutral filter more resilient yet smaller and faster to process we have coarsened it to a grid of $17 \times 17 \times 17$ points. Intermediate values are interpolated.

In order to be able to assign a source value to a target value it would ordinarily be necessary to double the amount of pixels. Since the Look Converter already knows the source values it is sufficient to just save the altered values (target values) to the filter in order to obtain the change of any possible

color value.

Apart from the advantage of being able to save all color corrections (tonal value corrections, selective color corrections, gradation curves, tinting etc.) in one single file (LUT), the second great advantage is the speed in which corrections can be applied. Video applications running in real time are no longer an issue. The speed in which edits can be applied is achieved by making complicated calculations for various color corrections obsolete since the software only has to look up color values in a table; and by the fact that modern graphics cards support 3D-LUTs.

Comparing 1D LUTs to 3D LUTs

The 3D in 3D LUT stands for the three axis or dimensions of the color channels R, G and B. Three independent 1D-LUTs for the R, G and B channels will only allow changes that are independent from the other two respective channels. I.e. this would mean that a red color value x would always be changed into another red color value y - disregarding the values for green and blue. In an 8-bit per channel image, three separate 1D LUTs only add up to $256 + 256 + 256 = 768$ values. The 3D LUT we use in Look Converter is very different. A 3D LUT can be imagined as a three dimensional cube. The X-axis represents the red value, the Y-axis represents the green value and the Z-axis represents the blue value. The three dimensions make it possible to assign a target value to every color value in relation to the two other colors. This in turn means that our 3D LUT has $256 \times 256 \times 256 = 16,777,216$ values. In terms of processing speed this is not an issue when it come to picture editing. But 3d LUTs are also very popular in video editing where a solution with a higher performance

has established itself: the $256 \times 256 \times 256$ cube is coarsed and the values between the remaining grid points are interpolated. The amount of grid points used for this purpose is not fixed. In practice, 3D LUTs in the size of $17 \times 17 \times 17 (=4913)$ color values have proven most useful.

We have used this size as orientation for our neutral filter. Not only did it show advantages in the processing speed of smaller 3D LUT files but coarsening by means of our filter file has also proven quite beneficial (see item 1). In addition, the 256^3 LUT and the 17^3 LUT don not display any significant differences in quality. If any differences are visible they can't necessarily be judged as superior or inferior.

More information and video-tutorials at:

www.picture-instruments.com

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