

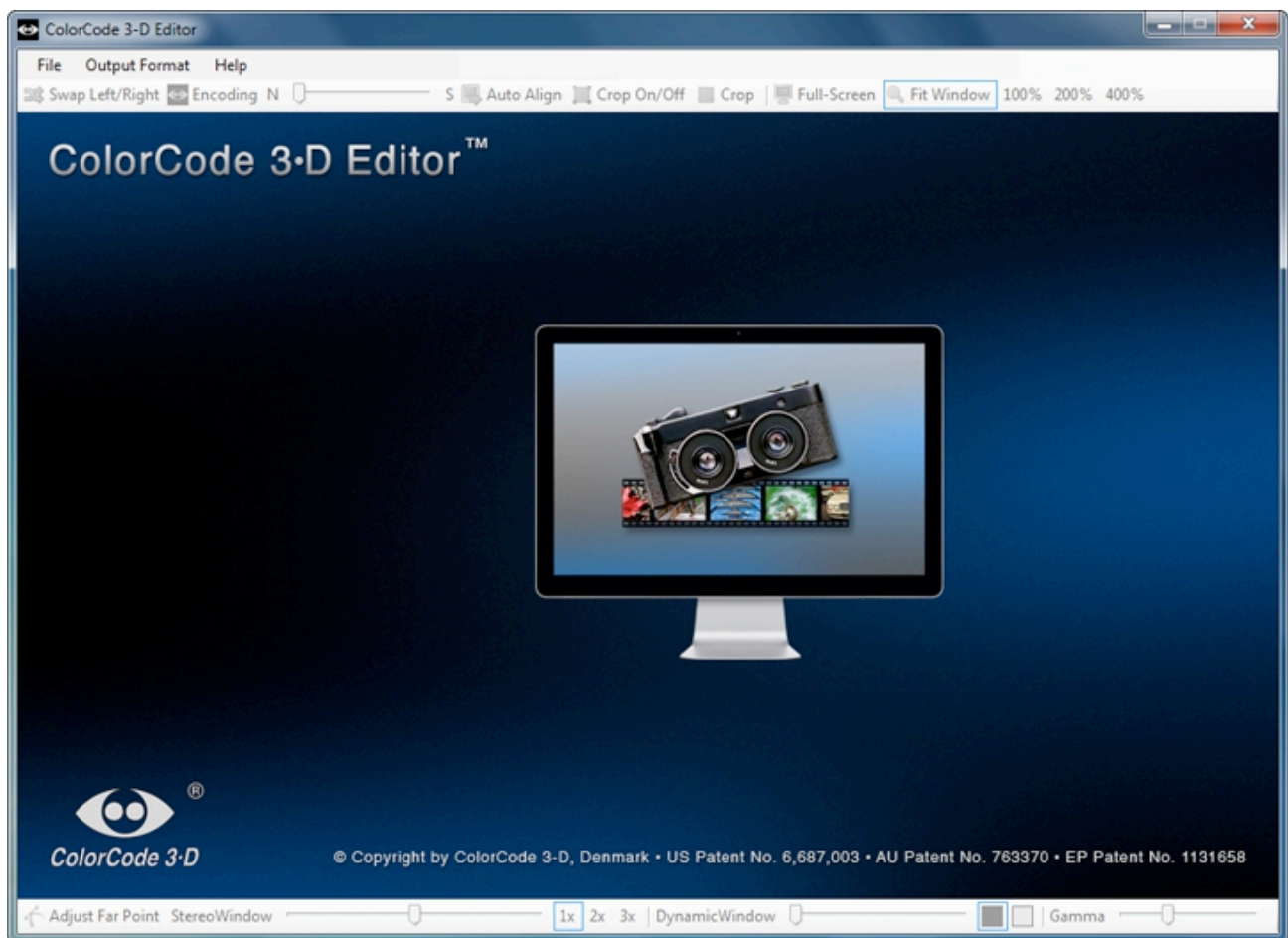


ColorCode 3-D

US Patent No. 6,687,003 • AU Patent No. 763370 • EP Patent No. 1131658

ColorCode 3-D Editor™ Version 1.2 • Manual

Make ColorCode 3-D®, Auto 3-D and Standard 3-D images on your PC



Introduction

ColorCode 3-D Editor is the perfect tool to create stunning and powerful 3-D images. It is the only tool you need as a companion to your favourite image editor such as Photoshop.

It is recommended to prepare your 3-D images in Photoshop, or a similar image editor, to make sure your 3-D images are fully color corrected, contrast corrected and sharpened before you work with them in ColorCode 3-D Editor and thereby get the highest possible quality in the final 3-D image.

3-D input formats

- Separate Left/Right Image (Stereo pair)
- Stereo Image in Interlaced, Side-By-Side and Over/Under format
- Stereo Image in MPO format (FujiFilm FinePix REAL 3D camera)

3-D output formats

- ColorCode 3-D image for any display
- Auto 3-D image for Miracube Glasses-free 3-D displays
- Stereo image in Interlaced, Side-By-Side (Standard & JPS) and Over/Under format

File formats

- BMP, JPG, JPS, PNG, Targa and Tiff (in 8 bit RGB without Alpha channel)

Features

- CXA™ encoding with Dynamic Range optimising
- ColorCode 3-D Preview
- Window and Full-Screen Mode
- Swap Left/Right
- Auto Alignment
- Manual Alignment
- Far Point Adjustment
- StereoWindow
- DynamicWindow
- Advanced Cropping
- Gamma Adjustment
- Auto Update

ColorCode 3-D Editor is super easy and intuitive to use. Further all the features are non-destructive apart from Auto Alignment.

The ColorCode 3-D software is a part of the patented ColorCode 3-D system - the only system in the world that can deliver full-color 3-D to any display and projector.

Recommended System Specs

- 3 GHz Pentium 4 or 2 GHz Core 2 Duo or higher (or compatible CPU of similar speed)
- 1 GB of RAM or more
- 1280 x 1024 screen resolution and highest color quality (32 bit)
- Internet connection for Authorisation of License Key and download of third party plug-in
- Works with Windows XP, Vista and 7

Installing ColorCode 3-D Editor

Simply double-click the ColorCode 3-D Editor Setup.exe file and follow the on-screen instructions.

Note: If you already have Microsoft .NET Framework 2.0 or higher installed on your PC, the install process only takes approx. 15 seconds. In case the installer ask you to install Microsoft .NET Framework 2.0 it will take approx. 6 minutes extra (depending on the speed of your Internet connection), but only the first time.

If you for one or another reason want to uninstall the software you can use the ColorCode 3-D Editor Setup.exe file to do the operation or you can choose Add or Remove Programs under Control Panels in Windows, and select ColorCode 3-D Editor and click Remove.

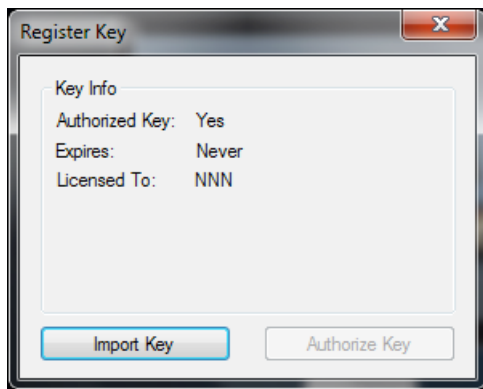
Registration & Authorization of the License Key

ColorCode 3-D Editor has a WaterMark implemented in both the preview and in all saved image files as long as it is in Demo mode. To remove the WaterMark you will need to buy a License Key. Simply click on “Help” in the menu bar and select “Purchase License Key”. Then you will be directed to our online Store where you can buy the License Key.



Register your License Key

Click on “Help” in the menu bar and select “Register License Key” to open the “Register Key” dialogue box. Then click on “Import Key” and select the Key (NN.cckey) you have received by E-mail when you purchased the License Key in our Store. Then close the dialogue box and you are good to go. The ColorCode 3-D Editor will now be fully functional for 10 days without WaterMark. You can even uninstall and reinstall the software on your PC and it will still work.



Authorize your License Key

At the end of the 10 days period you will need to register and authorize the software to continue using it. At this stage you will need to have the software installed on that specific PC where you want to use it in the future because the software will be locked to this PC when you authorize the License Key (Single User License). To authorize the software you simply need to make sure you are connected to the Internet and then click on "Help" and open "Register License Key" from the menu bar. Then click on "Authorize Key" and wait for the confirmation - that is all.

Getting started with ColorCode 3-D Editor

ColorCode 3-D Editor is super easy and intuitive to use.

We call it: 1 - 2 - 3-D • Load your material, press the button and view the result.

- Share the 3-D images with friends on your mobile device
- Let your image gallery come alive in 3-D
- Enjoy the 3-D images on your HDTV
- Present the 3-D images on your website
- Make stunning 3-D company and product presentations anywhere
- The possibilities with ColorCode 3-D images are nearly endless

The 3-D images produced with ColorCode 3-D Editor can be used anywhere from mobile devices, computer- and TV displays (CRT • LCD • LED • OLED • Plasma) and digital projectors (CRT • LCD • DLP) to inkjet, offset and digital photo print. The only accessory you need to experience the 3-D effect is ColorCode 3-D Glasses™.

How it works

Open ColorCode 3-D Editor. Then click on "File" in the menu bar and select "Open "Left/Right Image" when you want to open separate Left/Right image (stereo pair) or "Open Stereo Image" when you want to open a Stereo Image. Remember to choose the 3-D format for the Stereo Image file you want to open, either Interlaced, Side-By-Side, Over/Under or MPO. If you have a whole series of 3-D images in a folder you just need to select the folder(s) in question the first time, then the software will remember the location when you want to open the next image(s).

If you have recorded a perfect Left/Right Image (stereo pair) or Stereo Image you just need to adjust the StereoWindow and save the result as a ColorCode 3-D image in the file format you prefer. That is all - put on your ColorCode 3-D Glasses and enjoy.

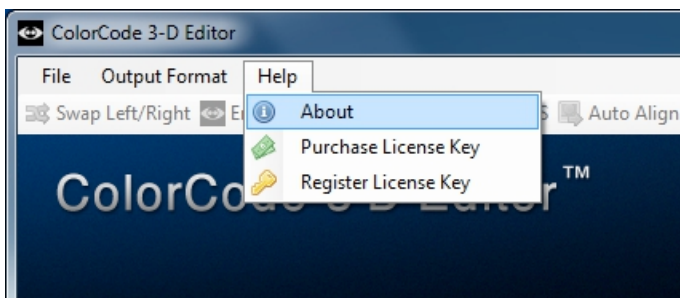
Because ColorCode 3-D Editor has a lot more to offer, we will take you through all the possibilities you have for making perfect 3-D images. The Editor offers a lot of facilities to make sure that your images shows at their very best. You can correct geometrically distorted 3-D images, optimise the Dynamic Range in the image, implement DynamicWindow to eliminate StereoWindow violation, make creative cropping with the advanced cropping tool, and even make sure your 3-D images are easy and pleasant to view on any screen size by using the Adjust Far Point tool.

Please see the following pages for further information.

User interface in ColorCode 3-D Editor

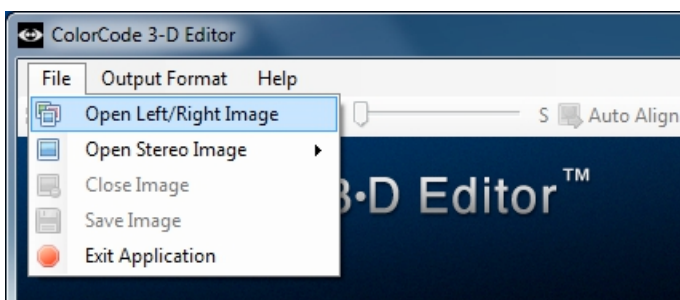
ColorCode 3-D Editor is very easy to use because of its straightforward user interface, which contains all the necessary and only the necessary menus and dialogue boxes.

ColorCode 3-D Editor Menus



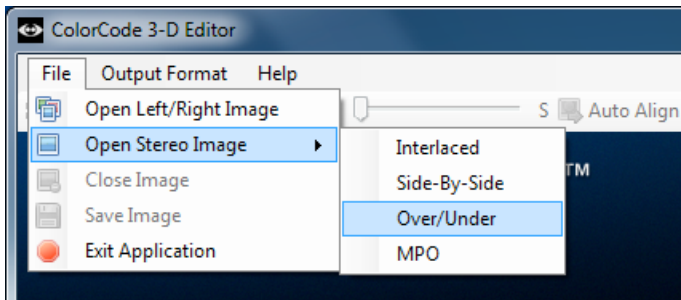
Help

Here you can open the “About ColorCode 3-D Editor” dialogue box with basic information about the software. This menu also contains active links for “Purchase License Key” and “Register License Key”. **Please see page 3 “Registration & Authorisation of the License Key” for further information.**



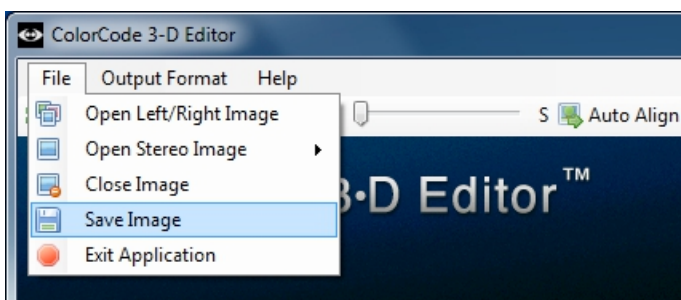
File / Open Left/Right Image

Here you can open separate Left & Right Images (stereo pair). If you have a whole series of 3-D images in a folder(s) you just need to select the folder(s) in question the first time, then the software will remember the location when you want to open the next image(s).



File / Open Stereo Image

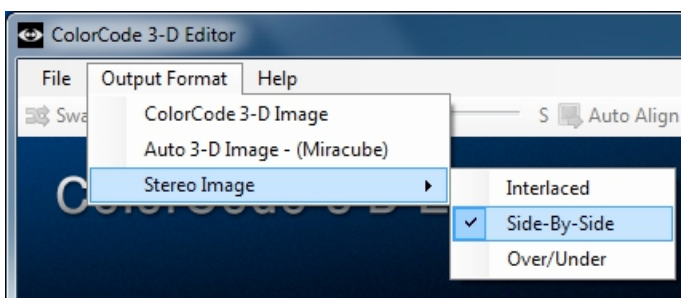
Here you can open Stereo Images in Interlaced, Side-By-Side, Over/Under and MPO format. The Editor automatically open MPO files recorded with the FujiFilm FinePix REAL 3D camera. If you have a whole series of 3-D images in a folder you just need to select the folder in question the first time, then the software will remember the location when you want to open the next image(s).



File / Save

Here you can save the 3-D image. It works as in any other software. Give the image a name and select the file format in which you want to save your image: BMP, JPG, JPS, PNG, Targa or Tiff. If you haven't selected a specific 3-D format at this stage the 3-D image will be saved as a ColorCode 3-D image by default.

How to save the 3-D image in another 3-D format

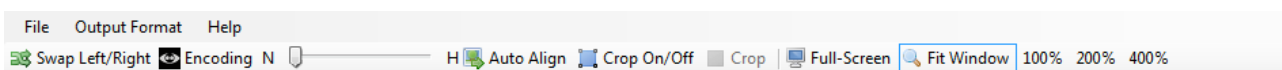


Output Format

Here you can choose between different Stereo Image formats. Auto 3-D that works with Miracube Glasses-free 3-D displays. Further you can choose to save the 3-D image in one of the following 3-D Standard formats: Interlaced, Side-By-Side or Over/Under.

ColorCode 3-D Editor Tool buttons & Sliders

The upper Tool bar



Swap Left/Right

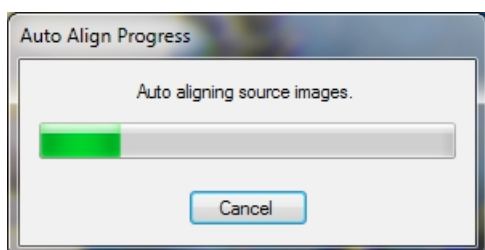
Swap Left & Right source image if you by accident has opened the images in the wrong order or if the images is named incorrectly.

Encoding N - H slider

Here you can slide continuously between Normal and High Dynamic Range. Normal is the default setting and will give a perfect result with most 3-D images. But when you have a high contrast 3-D image with few details in the highlights and shadows you can expand the Dynamic Range in the image by moving the slider from N towards H and thereby increase the amount of details in both highlights and shadows. This will deliver a more life-like image with a Dynamic Range closer to the range of the human eye.

Auto Align

This feature will attempt to align the two source images vertically and effectively removing rotational and dimensional errors. **This requires an external plug-in called Autopano-Sift to be installed. Please see "General information" on page 11 for further information.**



Warning: Running the Auto Align by pressing the 'OK' button (see below), will reset your current StereoWindow and Crop parameters. It is therefore recommended to run Auto Align as the first correction before using any of the other Tools. The Auto Align process is irreversible. This means that if you do not want to use the result of Auto Align you will have to reopen the 3-D images in question. All other functions in the software are non-destructive.

Crop On/Off & Crop

Here you can select and deselect the cropping tool and manage the cropping. Click on Crop On/Off to select the tool and choose your cropping area like with any other cropping tool. Then click the Crop button and you are done. Now comes the nifty part. If you do not like the result you simply click on the Crop On/Off button again and the frame shows up exactly as you left it before you made your cropping. This means you do not need to start all over again, but just need to adjust your setting and click the Crop button. If you after finalising your cropping decide that you do not want to have the image cropped anyway, then the only thing you need to do is to click twice on the Crop On/Off button and you are back to your original image.

Full-Screen

Here you can switch between Window and Full-Screen mode by clicking the Full-Screen button. Alternatively you can just double-click in the image. To leave Full-Screen mode you have 3 choices. Use the ESC key on your keyboard, click on the Full-Screen button in the Tool bar or double click in the image. The Tool buttons and Sliders in Full-Screen mode have exactly the same functions as the ones in Window mode.

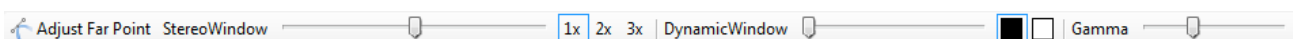
But there is one more Slider in the Full-Screen Tool bar - Vertical Align. By moving the Vertical Align slider (to the Left or to the Right) you can correct possible vertical offsets between the Left & Right image. It is very important to have no or an extremely small vertical offset between the Left & Right image because the eye-brain system cannot handle this, and viewing of a 3-D image with vertical offset will most likely result in either headache or diplopia (breakdown of the stereovision). The Vertical Align slider can be used either in cases where there is only vertical offset present in the 3-D image and thereby no reason to run Auto Align, or to fine-tune the result from the Auto Align process.

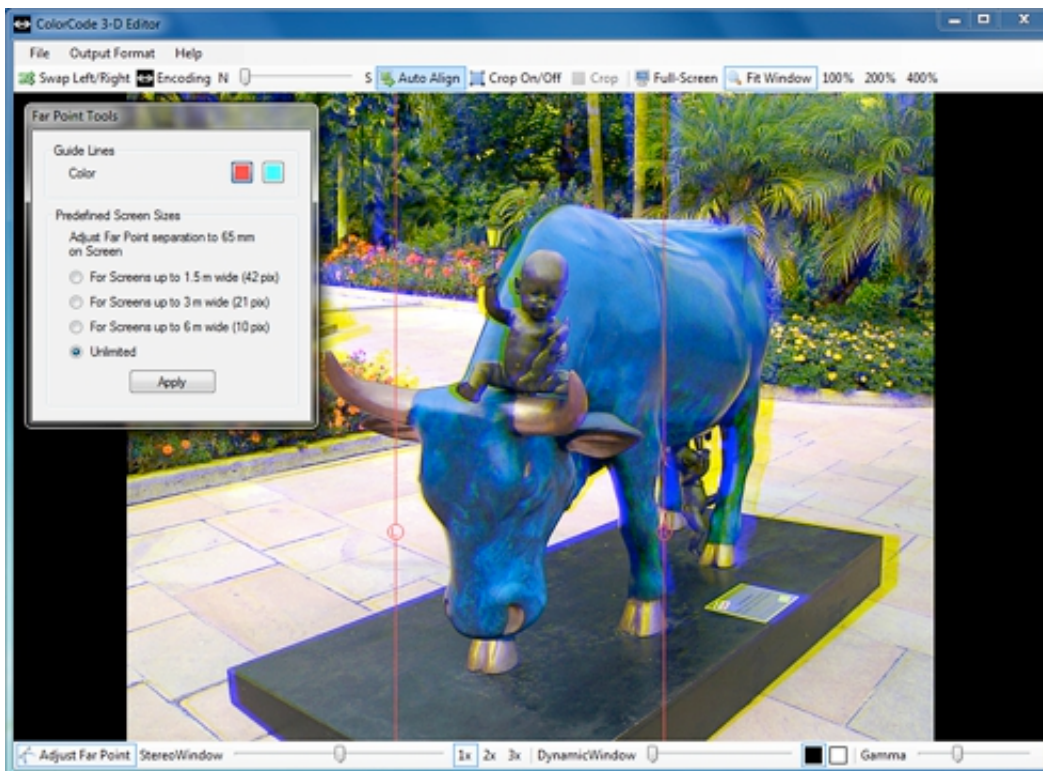


Fit Window, 100%, 200% & 400%

These buttons should be self-explaining. Here you can zoom the 3-D image to either Fit Window or to show the image in 100%, 200% or 400%. The image can be moved freely around when it is larger than the Window size.

The lower Tool bar





Adjust Far Point

Here you can adjust the Far Point separation in the 3-D image to fit a selected Screen size.

The separation between the corresponding Far Points must never exceed 65 mm when you scale up a 3-D image e.g. by projection. A larger than 65 mm Far Point separation can cause severe viewing problems including headache and diplopia (breakdown of the stereovision).

Here is how it works. Click the Adjust Far Point button to open the Far Point Tools. Then select that color for the Guide Lines, which are easiest to view through the ColorCode 3-D Glasses. Red Guide Lines usually work best with bright images (dark lines seen through the glasses), and Cyan Guide Lines usually works best with dark images (bright lines seen through the glasses).

Now, put on your ColorCode 3-D Glasses and find the point, which is farthest away in the 3-D image. Then Look at this point through the Amber filter in the 3-D Glasses and set the guideline marked L precisely on this point (in the Left image). Then look at the same point through the Blue filter in the 3-D Glasses and set the guideline marked R precisely on this point (in the Right image). Finally select the maximum Screen size you expect to use for the 3-D image and click Apply. The software has now calculated and implemented the Far point separation for the selected screen size according to your chosen Far Points.

After you have used the Adjust Far Point tool you will in many cases experience that the StereoWindow slider either can't be moved any further to the Right (positive parallax) or only a smaller fraction (equal to difference between the actual separation implemented in the image and the maximum separation allowed for the chosen screen size). If you still can move the Stereowindow slider to the Right, you are allowed to increase the Far Point separation to the point where the slider stops. The reason is that the Far Point distance you originally have chosen is less than the allowed maximum separation.

If you want to cancel your settings you just need to click on the Adjust Far Point button, choose Unlimited in the Toolbox and click Apply.

StereoWindow slider

Here you can adjust the StereoWindow. The StereoWindow slider is used to obtain the best possible 3-D Stereo experience. When you are moving the StereoWindow slider to the Left, or are pressing the Left arrow key, the scene is moving further out of the screen. When you are moving the StereoWindow slider to the Right, or are pressing the Right arrow key, the scene is moving further into the screen.

What is the StereoWindow

The StereoWindow, which is the display screen surround or the edges of an image, must never cut off or touch an object in viewer space.

If the surround or the edges of an image cuts off or touches an object in viewer space, there will be a conflict between two depth cues. One cue, interposition, tells you that the object must be behind the window since the surround cuts it off. The other cue, negative parallax, tells you that the object is in front of the window. Because this anomaly never occurs in the real world it will cause severe viewing problems.

Objects in a scene can also be moved too far into the space behind the StereoWindow. If you exceed 65 mm between the corresponding far points when you scale up a 3-D image e.g. by projection it will cause severe viewing problems too.

When using existing 3-D image files you will realise that many of these do not comply with the rules for correct implementation of the StereoWindow. This is due to the fact that a lot of 3-D photographers and film producers unfortunately have very little or no knowledge about how 3-D Stereo recordings interacts with the human eye-brain system.

The best working compromise is normally to set the StereoWindow to what we call MesoStereo™. This means that most of the scene is in behind the StereoWindow (screen), but still with some of the scene in front of the StereoWindow (screen).

Note: You should only use MesoStereo when it is possible to do this without violating the StereoWindow. In cases where this is not possible MesoStereo can be combined with the DynamicWindow™ to solve the problem.

DynamicWindow slider

Here you can adjust the DynamicWindow. The DynamicWindow slider is used to solve possible StereoWindow violation problems. When you are moving the DynamicWindow slider to the Right, or are pressing the Right arrow key, the StereoWindow is moving further out of the screen - floating in front of the screen - and a black border is added to make the image stand free of the display screen surround. This is a powerful feature, which needs to be used with care to obtain a perfect result.

What is the DynamicWindow

When the StereoWindow is forced to float in front of the screen or the print, and the objects in the 3-D image thereby is kept behind the DynamicWindow, the objects can come out of the screen without the need for difficult composing of the scene to keep the objects away from being cut off by the edges of the screen. This means that objects can still stand on the ground even when they are in front of the screen, and they can do so without violating the StereoWindow. The StereoWindow detached from the screen (DynamicWindow) is a phantom object and are not captured by the eyes, leaving the eyes free to glide forth and back in the image and thereby enhance the realism of the scene.

DynamicWindow buttons

Here you can choose the border color when using the DynamicWindow. Set the border color to Black for 3-D images to be used with display screens and to White for 3-D images to be used with prints.

Gamma slider

Here you can set the Gamma level (Brightness of the image). By moving the slider to the Left the image gets darker, and when moving the slider to the Right the image gets brighter.

It is recommended that you adjust the Gamma level to approx. 1.2 in the finalised image to get a perfect and easy to view ColorCode 3-D image. Please be careful not to “burn out” the highlights by making the 3-D image too bright. Make this correction as the last step when you have finalised a ColorCode 3-D image, which looks perfect to the naked eye (without the ColorCode 3-D Glasses).

General information

How to make Auto Align work

- To use the Auto Align function in ColorCode 3-D Editor you will need to download and install the free Autopano-Sift-2.3-Windows plug-in.
You can get it here: http://dl.dropbox.com/u/37484392/Autopano_Sift.zip
- You can download Auto Align test images [HERE](#)

How to obtain the best 3-D Stereo experience

- A viewing distance of 2x the display width in a dark environment will dramatically improve your 3-D experience.
- Keep your ColorCode 3-D Glasses clean.

What is Left/Right Image (stereo pair)

- Separate Left and Right images (stereo pairs) is the most used format by professionals and are usually recorded with either a real 3-D camera or a dual camera set-up.



Left image



Right image

(Stereo pair)

What is JPS Stereo Image

- The JPS file format is based on the JPEG standard. It is identical to the JPG file format, except that it includes a special embedded JPS tag stored in the JPEG file. Some JPS files do not contain the JPS tag, such images are simply JPEG files with the JPS extension. ColorCode 3-D Editor supports both JPS files with and without the JPS tag.
- **Note:** A 3-D image in the correct JPS file format are made in Side-By-Side layout with the Right image to the left and the Left image to the right - also known as Cross-Eyed viewing format. Despite of that some 3-D software's produces JPS 3-D images in reversed order with the Left image to the Left and the Right image to the right - also known as Parallel viewing format. ColorCode 3-D Editor works with both formats.



Right image

(JPS Stereo Image)

Left image

ColorCode 3-D ApS
Danmarksvej 19
DK-2800 Kgs. Lyngby
Denmark
E contact@colorcode3d.com
H www.colorcode3d.com