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Overview

ProJPEG™ is the most powerful tool available for creating optimized JPEG and progressive JPEG files for the Web. It has many advanced features that make producing JPEG files easy and efficient with no surprises in store.

ProJPEG™ is an Adobe Photoshop File Format* plug-in that provides seamless integration into Adobe Photoshop. It combines open and save simplicity with the most powerful features available for creating JPEG files.

> * Many applications claim to support simply "Adobe Photoshop plug-ins" but fail to make the distinction of what kind of Adobe Photoshop plug-ins meant. There are six different kinds of Adobe Photoshop plug-ins. Most often third party application support is limited to Filter, Export and Acquire plug-ins. To the best of our knowledge at the time of this writing there are no third party applications that properly support File Format plug-ins. Only Adobe products support File Format plug-ins, namely Photoshop and PhotoDeluxe.

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About JPEG

JPEG (pronounced 'jaypeg') is the common usage name of one of two graphics file formats historically supported by Web browsers. Note that JPEG is really only a compression method employed by both graphics file formats and not the actual name of either format.

JFIF and Adobe JPEG are the two actual graphics file format standards, which are integrated transparently together in "JPEG" format support so this is not a distinction that generally has to be made when creating or using "JPEGs".

JPEG compression and the JFIF graphics file format were developed by the Joint Photographic Experts Group to provide for efficient compression and storage of full-color and grayscale continuous tone images of natural real-world scenes, i.e. photographs. JPEG, referring to the common name of the format, supports 24-bit color (16.7 million colors) and uses JPEG compression, which is a 'lossy' method, meaning that image data is lost in the compression process, and the uncompressed image will not match the original perfectly, as it would if it were compressed with a 'lossless' method.

JPEG is highly optimized for compressing continuous tone, photographic images and does not perform as well, both in terms of the resulting visual quality and in terms of achievable compression, for other types of images. Generally, you should not use JPEG for images that are not photographic in nature.

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About Progressive JPEG

"Progressive JPEG" was defined by the original JFIF specification. It is not a new graphics file format or even a new extension to the JPEG format. It has always been, but until the advent of the Web there was very little practical need for implementing support for the progressive aspect of JPEG, which is able to provide incremental display during rendering much like interlacing in the GIF format does.

Netscape Navigator version 2.0 was the first Web browser and first common application of any kind to add Progressive JPEG support. Soon after, ProJPEG™ was the first professional production tool available for creating Progressive JPEG files for the Web circa 1995. Since then Progressive JPEG support has become standard in all Web browsers, but still is not commonly supported by other types of applications.

It is common for applications that do not support Progressive JPEG files to simply report that the file is corrupt because no provisions were made for determining if a JPEG file was progressively encoded or not, before reading began. This is not the case.

If any application reports that a file created by ProJPEG™ is corrupt, the most likely reason is the file was saved as progressive, and the application being used does not support Progressive JPEG. This may occur even with popular WYSIWYG HTML editors that still do not support Progressive JPEGs.

The solution is to re-save the file without the Progressive option in ProJPEG and all applications that have any JPEG support will be able to read them.

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Key differences between ProJPEG™ and Photoshop's JPEG module

There are key differences between ProJPEG™ and Photoshop's JPEG both in Photoshop 3.x and 4.x.

In Photoshop 3.x the JPEG module (for technical reference, Photoshop's own JPEG support is implemented internally within the application and not as a File Format plug-in like ProJPEG™) did not support Progressive JPEG files. If you save a Progressive JPEG file with ProJPEG™ from Photoshop 3.x you will have to use ProJPEG™ to open that file.* This is not an issue in Photoshop 4.x, which added internal support for Progressive JPEG files.

In Photoshop 3.x and 4.x you can save CMYK mode images as JPEG files, as well as open JPEG files saved in CMYK mode with the internal JPEG module, which is useful for archival storage of high resolution print images.

ProJPEG™ will open CMYK JPEG files when encountered, but it does not support saving CMYK JPEGs because it is a Web-graphics specific tool.

Although some browsers can correctly decode and display CMYK JPEG files, you should never save CMYK JPEGs for use on the Web. They require more redundant information to be encoded resulting in significantly larger files and offer no benefit for Web graphics.

You should convert any CMYK mode images intended for the Web to RGB mode before saving them as JPEG files.

> * To use a specific file format plug-in or internal module to open a file, you use the Open menu command in Photoshop and select the specific one you want to use, much like you do when saving a file. Otherwise, Photoshop will automatically determine the default method for opening a file. In this case, Photoshop's internal JPEG module will be the default for opening JPEG files.
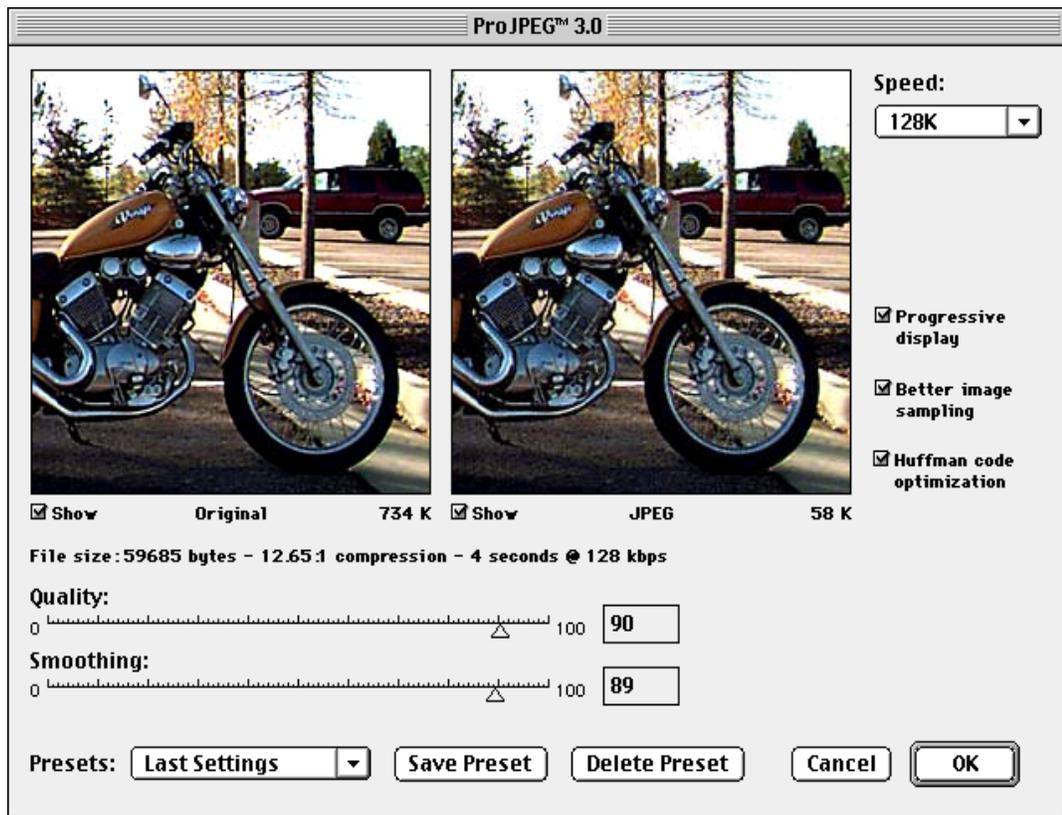
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The ProJPEG™ Interface

ProJPEG™ has one main options dialog for controlling compression settings when saving files.

1: The original image preview

The original image preview shows the original image quality so you can compare it to the compressed image quality in before-and-after fashion. Associated with the original image preview is a check box titled "Show" directly beneath the preview that allows you to turn it on and off. Also, beneath the original image preview, the uncompressed file size is shown.

2: The JPEG image preview

The JPEG image preview shows the exact image quality after lossy JPEG compression, so you can compare it to the original image quality in before-and-after fashion. Associated with the JPEG image preview is a

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check box titled "Show" directly beneath the preview that allows you to turn it on and off. Also, beneath the JPEG image preview, the exact compressed file size is shown.

3: The speed menu

The speed menu provides a way to see approximate download times for your file at different transmission speeds. The speed menu does not have any real effect on the compression. It is simply a previewing mechanism. However, all figures for download time are only estimated. Under real world conditions on your Web site, they will vary based on many factors such as server load, line noise, and packet latency that cannot be accounted for during estimation.

4: The progressive display check box

The progressive display check box allows you to save a progressive JPEG that will display incrementally during download. You should be aware that not all applications, including many common WYSIWYG HTML editors, have support for progressive JPEGs. Refer to the "About progressive JPEG" section for more information on compatibility issues.

5: The better image sampling check box

The better image sampling check box controls the rate of sampling from the original image. Checking it will improve image quality, but will also increase the final file size. Normally, you will not need to use this option, but in cases where image quality is critical such as representing portfolio artwork on the Web, it is available.

6: The Huffman code optimization check box

The Huffman code optimization check box will improve image compression by generating a custom code table for the final Huffman compression of the image data sampled and transformed by the JPEG process. This option does increase the time required to regenerate previews and save files, but there are no other disadvantages in any case. In general, you should choose to use a custom code table for your files.

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7: The file size line

The file size line shows the absolute file size of the compressed JPEG file and the estimated download time for that file at the chosen speed. You will note that during the regeneration of previews, the numbers shown in the file size line will change rapidly, becoming more and more accurate until the entire image has been compressed in memory and the final file size determined.

8: The quality text box and slider

The quality text box and slider both allow control over the quality at which your JPEG will be compressed. This is the single most important setting that makes the biggest difference in both file size and image quality. The quality setting range is from zero to one hundred. It is not advisable to save files at settings lower than ten or greater than ninety; less or more is overkill.

9: The smoothing text box and slider

The smoothing text box and slider allows control over a smoothing process which reduces noise in images (noise that adversely affects the efficiency of the JPEG compression process.) This is the second most important setting and makes a big difference in file size and image quality. Higher smoothing settings will produce smaller files, but begin to degrade image quality in an effect similar to appearing out of focus and fuzzy.

10: The presets menu

The presets menu allows you to quickly select sets of saved settings to speed your work flow. The presets menu defaults to a special case of "Last settings" so that ProJPEG always remembers the last used settings whether they were set manually or by selecting a saved preset. Also, associated with the presets menu are the add preset and delete preset buttons. Hitting "Add Preset" will let you save the current settings in the dialog as a named preset. Hitting "Delete Preset" allows you to delete the preset that is current in the preset menu.

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11: The cancel and OK buttons

The cancel and OK buttons both do the usual thing. No special explanation is required for them.

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Saving files with ProJPEG™

There are two means of saving files using ProJPEG™. The first is using the "Save as..." command in Photoshop and the second is the "Save" command. You should be very familiar with save and save as from within Photoshop, and using ProJPEG™ is no different from using any other format module to save files from Photoshop.

If you perform a "Save as..." you first see Photoshop's file dialog where you select the destination and supply a name for the new file. Once you have done so and hit the OK button to proceed, ProJPEG™'s options dialog will be shown.

In ProJPEG™'s options dialog you need to set compression parameters. This process is very simple and fully interactive. The main setting you need to make is the quality setting. A good starting point for setting quality is 50. From there the quality setting can be increased or decreased as needed to achieve the desired image quality and file size.

You should review the previous section of this manual on the use of other controls in ProJPEG™'s options dialog, and spend time experimenting with various settings to get a feel for ProJPEG.

Remember that ProJPEG™ is absolutely WYSIWYG (what you see is what you get,) and the image quality shown in the JPEG preview is exact as is the file size displayed. Because of this it is very easy to use ProJPEG™.

After you have initially saved an open working file with ProJPEG™ once, you can simply use the save command to save updated versions of the file with the settings previously made. Normal saving in this manner will not show ProJPEG™'s options dialog.

As long as your document is open, ProJPEG™ will have the original RGB data to create the JPEG file. Multiple saves with ProJPEG™ on an open document won't degrade image quality. However, if you open existing JPEG files and re-save them, each compression process in that manner will degrade the image data slightly more.

It isn't advisable to use JPEG as a working document format because of the lossiness inherent in JPEG compression.

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Optimizing files

Optimizing JPEG files with ProJPEG™ is a process of interactivity. The way you optimize a file is simply finding the best ratio between image quality and file size that is best for the particular image and its intended use. Because of the interactive nature of ProJPEG™, this is a quick and easy process, whereas another tool would require you to save multiple copies of the file using many settings, then tediously comparing the results to see which one was the best to use. In ProJPEG™, the same process can be achieved on the fly in one easy step.

You should limit your use of the JPEG for Web graphics to continuous tone, full color, or greyscale images of a photographic nature. These are the types of images that excel as JPEG. Also, you should never save images that have been color reduced to 256 or fewer colors as JPEG files, and doing so can be very detrimental to image quality without improving file size. JPEG depends on continuous tone to achieve its results.

Besides those rules of thumb, there are no practical manual optimizations that can be performed on your images prior to saving as JPEG to improve compression or quality. The final outcome will be largely dependent on the settings used to create the JPEG file.

One thing to remember when you create graphics for the Web is that fast download times are often more critical than superb image quality. The goal is to find a mid-point between both extremes that allows for the smallest possible file while maintaining acceptable image quality, with what is acceptable image quality varying by the specific use of the image. For example a photographer's portfolio online would require much higher quality images than thumbnail images for an online catalog to achieve the desired effectiveness.

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Troubleshooting

Q: I saved a file with ProJPEG™ and my HTML Editor shows a broken image icon when I try to place it. Is the file corrupt?

No. The file is not corrupt. ProJPEG™ will never save a corrupt or malformed JPEG file. One of two possibilities has happened.

First, if you saved your file as progressive, it is very likely that the editor you are using does not properly support progressive JPEG files. In this case you need to re-save your file with the progressive option in ProJPEG™ turned off if you want the file to be visible in your HTML editor; although, browsers can display both progressive and non-progressive JPEG files correctly.

Second, make sure that the relative file path in your <IMG> tag is correct. If this path does not resolve to the location of the image file on your hard disk, your HTML editor will not be able to show the image in any case.

Q: I saved a rather large JPEG as progressive for my Web site and it takes a very, very long time for it to download and render. Snails are faster. What's going on?

Your browser does not have enough RAM to decode the progressive JPEG in memory and is using a disk based virtual memory method to decompress the image, which is very slow. It isn't a factor of download time. It is one of rendering time under low memory conditions.

Progressive JPEGs take substantially more memory to decode than normal non-progressive images. This can cause difficulty for browsers if too many and/or too large progressive JPEG files are used on a Web page.

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Q: I can't save my files with ProJPEG™ because the option is disabled all the time in Photoshop. Why not?

Photoshop disables file format modules when the working document has information that the file format module cannot save. No file format plug-in, such as ProJPEG™, can save a document that contains layers. The API doesn't support it, and documents containing more than the base layer are the most common reason ProJPEG™ and other file format plug-ins will be disabled for a file.

You can flatten the image and then save with ProJPEG™, or you can use the "Save a copy as…" command in Photoshop with the option to merge visible layers enabled. The latter will not affect your working document and is the one that is generally more convenient.

Another reason that ProJPEG™ may be disabled is image mode. ProJPEG™ only supports saving from greyscale and RGB image modes. If your document is CMYK, LAB, multi-channel, etc. ProJPEG™ will be disabled.

Q: I was trying to save a hi-res image with ProJPEG™ and it gave me an error instead of saving a file. Why?

Stop right at "hi-res". That is the problem. ProJPEG™ was designed to make Web graphics creation as easy as possible. Images for the Web tend to be small and are always screen resolution. Rarely is an original image being saved for use on the Web larger than 2MB.

ProJPEG™'s interactivity comes with the price of a very high RAM overhead for the needed interface. There is an upper limit to the size of images that can be saved effectively with ProJPEG. Hi-res, generally thought of as more than 220 ppi, images are almost always too large for ProJPEG™ to be able to save succesfully.

You should reduce the resolution of your image to 72 ppi if it will be used for the Web before trying to save with ProJPEG™, or use Photoshop's JPEG if you are instead saving a hi-res image for archival storage.

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