

# GigaPX Tools

Utilities for gigapixel images

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## Introduction

GigaPX Tools is a program capable of **converting** gigapixel images from one format to another. It supports (for input and output) three of the most used file formats : **RAW**, **KRO** and **bigTIFF**. It reads **TIFF** files too, but the bigTIFF format is always used for output.

The software offers two other useful tools : “**Split**” and “**Merge**”.

**Split** is used to divide the big image into small tiles. This could be necessary when the image needs to be retouched in some areas and it’s not possible to edit the whole image due to the size of the picture. **Merge** is used to recombine the tiles into one single image, but it could be used to paste different images into a single image too.

The program doesn't need much memory, thus it can be used successfully with a 32-bit operating system. Using a test image of 76,8 gigapixel it ran smoothly and all procedures were completed with success.

## Free and Pro

GigaPX Tools is offered in two different versions : **Free** and **Pro**. The **Free** version is free for personal or commercial use. The **Pro** version supports bigger images.

Differences between the two versions:

	FREE	PRO
Maximum image side dimension (width or height)	1.000.000 pixels	100.000.000 pixels
Maximum image size	1,5 gigapixel	No limits
Maximum tile side dimension (width or height)	300.000 pixels	10.000.000 pixels
Can select the destination directory	NO	YES

## Format conversion

As stated in the introduction, the program is capable of managing **RAW**, **KRO** and **bigTIFF** files both **8-bit** or **16-bit**.

RAW and TIFF must have **3 channels** (RGB), while KRO must have **4 channels** (RGB + Alpha). The byte order of the 16-bit RAW files must be "**PC-IBM**".

The conversion tool can open any image in one of the supported formats (plus the normal, not big, **TIFF** files) and save it in any other supported format. The saved images always have the same bit depth of the input files.

Before proceeding with the conversion, the user has to select the input file (the image to be converted). Click "**Input file**" and select the image.

When a RAW file is selected, a new small window appears asking the number of bits, the width and the height of the image (this data is not stored in the file). Press the 8-bit or 16-bit button, then, while the width or the height value is typed in the proper input box, the program automatically calculates the value of the other dimension.

*[PRO]* The **Free** version always saves the file in the same folder (or directory) as the source image. The **Pro** version allows the user to select a different folder for the output file. This could be useful to save time in moving the image after conversion, and it could also be useful to increase the conversion speed if the computer has two or more physical hard disks (one physical disk with two or more partitions counts as one disk). Saving the image to a different disk (relative to the position of the source image) dramatically reduces the disk heads movements, increasing the read/write operations speed.

Click "**Output directory**" and choose the disk/folder you want.

[!] If this field is left empty the program saves the image in the same directory as the source file. To clear a previous selection double click the "**Output directory**" input box.

To convert the image into one of the three formats, press the appropriate button : "**--> RAW**", "**--> KRO**" or "**--> bigTIFF**".

[!] The check box under the bigTIFF button enables or disables the LZW compression (lossless compression). This option is valid only for bigTIFF files.

Depending on the image dimensions the conversion process could take from some minutes to some hours.

## Split image

Stitching many photos into a gigapixel image is not a problem using recent software. These programs are powerful and precise, and often there is the possibility of removing ghosts artifacts automatically. However, it could happen that small areas of the stitched image need to be retouched by hand using software like Photoshop, Gimp or something similar. In most cases it is not possible to load the whole image in the editor due to the huge file size.

To bypass this problem **GigaPX Tools** offers the “**Split**” function. This tool divides the picture into small pieces, so it’s possible to edit the tiles that need to be adjusted easily.

When all the required changes are done, it’s possible to combine the tiles into the gigapixel image again using the “**Merge**” function.

Before proceeding, choose the input file as described in the previous chapter.

**[PRO]** The **Pro** version allows the user to select the destination directory if required (leave the “Output directory” field empty to save the tiles in the same directory as the source file).

Press the “**Advanced**” button, and the program will show two new panels. In the bottom left panel “**Split image**” insert the dimension in pixel of a single tile, then press the “**Split**” button. It could take a while, depending on the image size, but in the end the user will find X \* Y tiles saved on the disk.

[!] The tiles are always saved as RAW files, which can be easily opened with many image editing programs.

[!] Don’t change the file name of the tiles or the merge function will fail. For more info about the file name convention see the “**Merge tiles**” chapter.

## Merge tiles

This function is normally used after the “Split” function to recombine all the tiles generated into a single gigapixel image, but the same tool could be useful to merge two or more separated images obtained with a stitch software.

**In the first case** (merge after split) proceed as follows : press the “**Advanced**” button, and the program will show two new panels. In the bottom right panel “**Merge tiles**” insert the number of tiles for the X and Y dimensions (the same reported by the split tool). Choose the file type for the output image and then press the “**Merge**” button. A new window will let the user select all the tiles. The selection order is not important, the program knows how to find the right position for every tile.

[!] To select two or more files: click the first file using the mouse, press and hold the SHIFT key, click the last file then release the SHIFT key.

If an error message is displayed, check if the number of X and Y are right and if the number of the selected files is exact.

**In the second case** (merge images without a previous split) it’s important to follow two simple rules :

1. **Tile size:** all tiles must have the same dimensions (the shape can be square or rectangular). The tiles of the last column can be thinner, and the tiles of the last row can be lower.
2. **File name:** all tiles must have the same base name (let’s say “Test”). After the base name, add the underscore “\_” and the size in pixel (ie “1000x500”), then a new underscore “\_” and the X/Y position of the tile (ie “X1Y1”, which is the topmost left tile). Finally add the file extension “.raw”  
Example: “Test\_1000x500\_X1Y1.raw”, “Test\_1000x500\_X2Y1.raw”, “Test\_750x500\_X3Y1.raw”. The X3 is thinner so it has a different width.

When the tiles follow these rules it’s possible to merge the files as described in the previous paragraph.

## Contacts

Website : **[www.bigmike.it/gigapxtools](http://www.bigmike.it/gigapxtools)**

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