1. Introduction: Presentation of EXTIF pro

All of you are familiar with the following problem: You want to prepare a document from any PC-application like MS Word, Excel or PowerPoint for printing. But how to convert the graphic information from the original document into color-separated, exposure-ready image files?

From your everyday experience you may know that the most conventional way via Portable Document Format (PDF) has been paved, so far with many inconsistencies regarding font, color fidelity and contrast of embedded matrix graphics objects; very often, the end-result, the printed version, clearly differs from the original document in color, font and contrast.

The new EXTIF pro relieves you from these burdens. EXTIF pro is a Virtual Printer Driver for Windows 2000 and Windows XP, which stores the graphical data of the document supposed to be printed rastered as file in TIFF format – in either RGB color space (Red Green Blue) or in CMYK color space (Cyan Magenta Yellow Black) - in other words, EXTIF pro is a Software-RIP (Raster Image Processor).

In this way, you will easily obtain color-separated, exposure-ready image data from all your PC-applications, the result being a perfect reflection of the original.

1.1. „Virtual Printer Driver"– What does it actually mean?

To some extent, a driver represents an extension of the operating system (OS) for a certain device (e.g. a printer or a computer screen), in other words, a software which adjusts the OS data for the hardware device.

(You may ask yourself, if it would be easier to embed the drivers into the OS, instead of having to add dozens of drivers to the system later on. However, these extensions are necessary because *at the time,* when the OS was created and programmed, no one could have possibly foreseen which devices each single computer equipped with this operating system would have to work with. For the reason alone, that most of the devices have been developed and brought on the market only after the operating system has been finalized – for example, Windows 2000 could not possibly predict the requirements of a printer brought on the market in 2004).

A Virtual Printer Driver – literally, should be called a "driver for a virtual printing device"- differs from usual printer drivers by the fact that it does not pass the graphical data of a document supposed to be printed, but saves the data as image file to hard disk. So when printing in MS Word document (*.doc) or a PowerPoint presentation (*.ppt), the image will not be sent to the printer, but saved on the hard disk.

In this manner you will obtain exposure-ready image data from all *the PC programs /applications*, as EXTIF pro is, a driver i.e. an extension of the operating system, and *not* a PC application / program.

1.2. TIFF format

In the same way in which a piece of information can be expressed in various ways, for example differing from one language to another, digital image information can be expressed in several quasi-grammatical conventions. These conventions are called file formats.

The most common formats for image files are for instance:

- Bitmap with file name extension *.bmp

- JPEG with file name extension *.jpg

- TIFF ("Tagged Image File Format") with file name extension *.tif

EXTIF pro extracts image files of any format and writes them in TIFF format on the hard disk - therefore the name "EXTIF".

The TIFF-format is considerably flexible, allowing [data compression](#) *without loss*, and is compatible with Windows-PCs as well as with Apple Mac's, so that the image files are easily portable from Windows to Mac.

The image file format also plays a very important role when we want to see the end-result using an [image viewer program](#) ("Image Viewer") or simply leaving the information to be processed by the typesetter.

The image file format also plays an important role later on, when it comes to viewing the end-result by an image viewer software or having the information processed by an exposure device.

1.3. Purpose of use: To whom is EXTIF pro useful?

EXTIF pro is mainly used in the printing industry and its' surrounding fields, e.g. Prepress, Repro and Graphic Design, and also in exposure services, advertising agencies and translation offices working for customers from countries that do not use Latin characters but, for instance, Cyrillic or Chinese symbols.

- As already mentioned, EXTIF pro provides exposure-ready image file from *all* programs / applications such as the following:

    - MS Word
    - Internet Explorer
    - PowerPoint
    - Adobe Acrobat
    - Excel
    - Adobe PhotoShop
    - Paintshop Pro
    - Corel Draw
    - Netscape
    - etc., etc...

    Among which EXTIF pro proves its performance most accurately when used with MS Office applications.

- In this process, EXTIF pro converts, if required, the graphical information or image data from [RGB color space](#) (Red Green Blue) into [CMYK color space](#) (Cyan Magenta Yellow BlacK), i.e. it builds [color separations](#),

- If required – this feature being internationally unique for a [Virtual Printer Driver](#) – *automatically* adds crop margins along with [crop marks](#), [register crosses](#) and [color wedges](#) (generic term: [Imprints](#)). Optionally, EXTIF pro also takes care of the "[Trimming](#) Problem.

- In particular, Graphic Design studios mostly don't use Windows-PCs, but Apple Mac's. Since TIFF format is familiar to both types of computers and operating systems, EXTIF pro bridges the gap between the Windows and Mac worlds.

    Example: A customer comes to you asking to convert a 300-page MS Word document into book form, but your exposure devices and printing machines operate under Mac. No problem, using EXTIF pro you simply transform the MS Word document into TIFF files and transfer them onto your Mac.

But EXTIF pro is also extremely suitable even when it comes to digital archiving,

- For instance, when you wish to "freeze" important documents like bills, contracts or quarterly reports (which you send to your customers or co-workers on printed paper), in the form of a "snapshot" for your internal archives – contrary to an unrastered file format, it is almost impossible to *unintentionally* modify the image file, just as hard as it is to modify a printed sheet of paper, and even doing so deliberately would take an enormous effort.

    Such a digital archive does not therefore require a storeroom, paper or printing ink and due to the search functions of Windows Explorer, is significantly more user-friendly and easy to manage.

Further possible modes of application:

- In the case that you develop software yourself that implements a printing functionality, EXTIF pro can be extremely useful for you by saving expensive color cartridges during testing phase.

- In case you actually need the graphic image files in

  - less common file formats like *.png

  - or non-loss-freely compressed file formats like *.jpg

  Then EXTIF pro will bring you one step nearer to your goal.

1.4. Comparison: "…but that's supposed be done with PDF…!"

So far, the road from MS Office documents to color separated image files went over the two related Page Distribution Languages (PDLs)PostScript and PDF (Portable Document Format, usually indirectly distilled via PostScript). The disadvantages of this method are sufficiently known from everyday practice.

1.4.1. Where PDLs fail in principle

In principle some documents can not be correctly converted into PostScript, for instance MS Word documents containing WordArt objects (for an example please click on the following link, www.DriverLab.de/EXTIFpro/TestDocums/WordArt.doc.):

Above:
Correct printing result with EXTIF pro: not transparent in the overlaid areas, just as in the original document.

Below:
Incorrect result in PDF (created by the most famous PDF converter on the usual indirect way via PostScript): transparent overlay area; two overlaid opaque areas resulting in erroneous transparency.

Another example:

Printing from within Adobe Acrobat in principle is restricted to 2^14=16384 Pixels, along vertical as well as horizontal coordinates, meaning that, for an A2-sized document with a resolution of only 900 dpi, some areas at the right hand side and at the bottom of the page remain erroneously unprinted.

This error does not appear when printing the same PDF document from within GhostView. Nevertheless, GhostView does not provide color separation, turning the situation into a perfect dilemma.

1.4.2. Translation losses: "Chinese Whispers" with PostScript

Usual file formats for *documents* such as:

- *.doc
- *.htm(l)
- *.xls
- *.ppt
- *.ps
- *.eps
- *.wmf
- *.emf
- or *.pdf

contain their information regarding the document generally in non-rastered form, as vector graphics. In order to print a document, it must be rastered sooner or later, meaning a conversion from a vector graphic into matrix graphic.

In contrast, *Image* file formats like *.tif are already present as rastered matrix graphics.

If the document is not being *directly and immediately* rastered by the operating system´s graphics engine (GDI), as EXTIF pro does, but translated in PostScript and/or in PDF before finally being rastered, then inevitably the final version will be a distorted picture of the original. For example, a text being translated from German into Spanish, via a translation into Russian, looses definition and the true meaning due to the intermediate steps. By using several steps, the situation cannot improve, and infact become increasingly distorted.

Let's take a look at an example:

When you print the original document www.DriverLab.de/EXTIFpro/TestDocums/HorzShift.doc, (the beige screenshot in the image below) with resolution "600 dpi Extremely Smoothed" using EXTIF pro, you obtain the result displayed in the green background field in the below image. The 4 red vertical auxiliary lines are meant to mark the outermost right hand side extension of these 4 lines. Comparing the relative position of those lines, you will notice that all the proportions of corresponding document "HorzSchrift.pdf" (see purple background field below) are displaced, while corresponding image "HorzSchrift.pdf" in green background field reflects the original image with high fidelity.
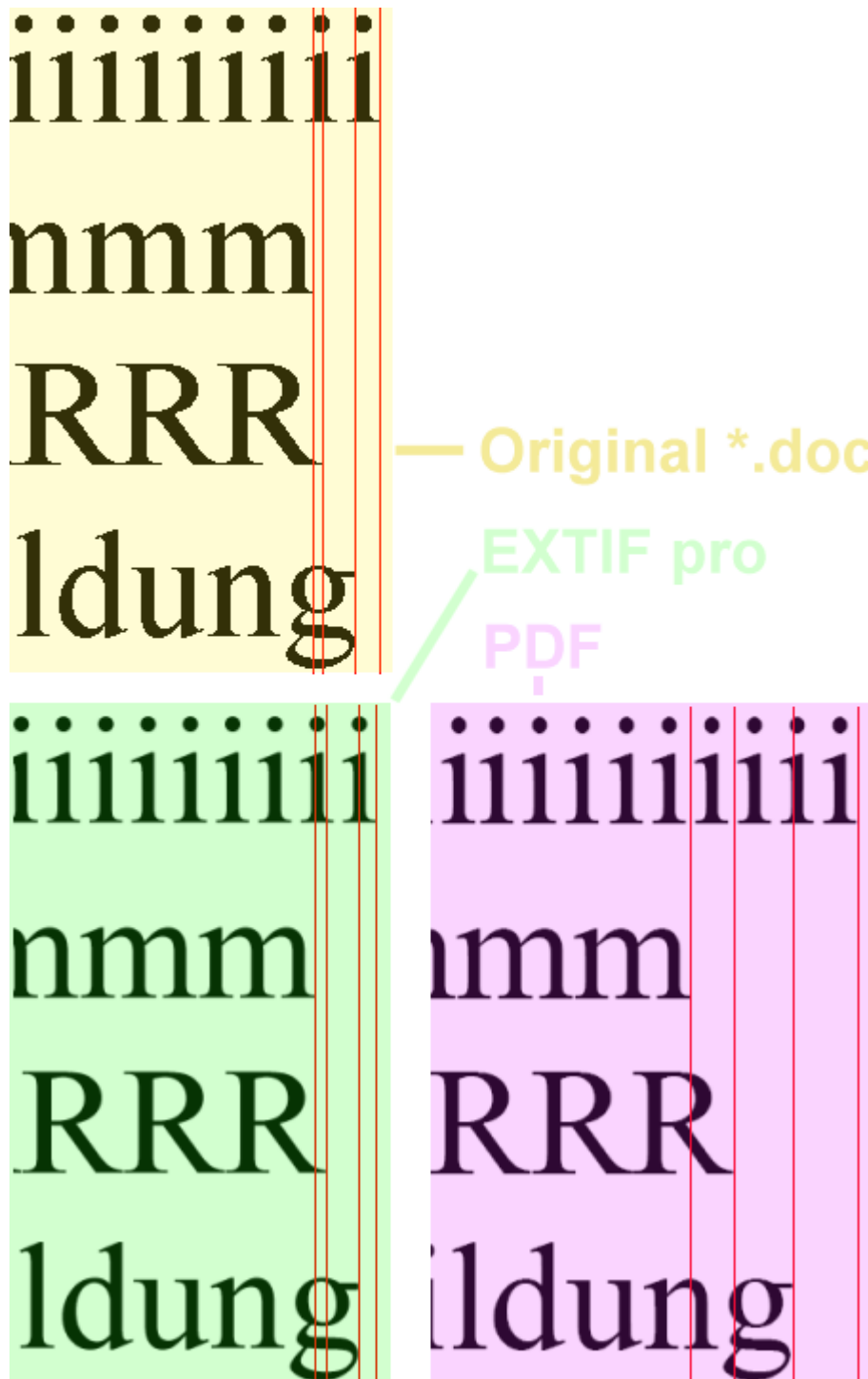
The chosen example may seem theoretical and non-practical, as in daily practice real text lines don't usually consist of the same recurrent letter; consequently the observed geometrical displacements on typesetting are reduced by the average. However the example disproves in a striking manner the general and common opinion that PostScript / PDF would provide a perfect and exact 1:1 copy of the original.

The desired snapshot or screenshot of the original document onto an abstract internal canvas can only be provided by a Software-RIP (*Raster* Image Processor) like EXTIF pro, as a real Screenshot (Ctrl + Print Screen) does not capture anything else but the image of the original document *rastered onto the monitors screen* by the *very same* Windows graphics engine (GDI). It is for a reason that printer drivers and screen drivers form a *common class* within the architecture of the Windows operating system. Printers and screens just like scanners and plotters belong to the same class of <u>raster devices</u>.

Whoever really wants to offer his customers the quality advantage of the highly-praised WYSIWYG ("What You See Is What You Get" - here meaning that the customer gets in the end, on the printed paper, exactly the same image that he saw on his screen when creating the original document) must raster the original document the *right away*, in the exact way that EXTIF pro does, instead of using intermediary formats, as in the case of PostScript or PDF.

Another example for translation losses is provided by measurements of the included inner surfaces of letters, here with the example of a simple Arial "a". The inner surfaces have been filled, in all the four cases, with red color and afterwards, an equally sized, light blue colored, drop-shaped optical auxiliary body has been inserted for better visibility:

As you can already see with bare eye, the inner surfaces are being slightly narrowed in the case of both PDF converters – much more obvious in the case of the bad converter – which, whether consciously or not, distorts the optical impression.

A more accurate statistical evaluation by means of histogram functions shows that, for example at a resolution of 600 dpi, the sums of the areas of the inside surfaces of such Arial "A"s deviate from the original as follows:

- EXTIF pro: 0,2%
- good PDF-Converter: 1,7%
- bad PDF-Converter: 4,7%

1.4.3. Suppression of Pixelation on embedded matrix graphics objects

Another significant advantage for practice of *immediate and direct rastering* in comparison to the usual detour via Page Distribution Languages like PostScript and/ or PDF consists in the suppression of Pixelation on embedded matrix graphics objects (which sometimes are also called raster graphics).

In order to clarify the phenomenon:

1. We first open any image file like www.DriverLab.de/EXTIFpro/TestDocums/Flower.tif by an Image Viewer, which allows users to choose the magnification („zoom") factor arbitrarily, as for example by Adobe Photoshop, at a zoom factor of 100%:

2. Find out the image resolution – i.e. in Adobe Photoshop under Menu item „Image / Image Size": in this case the resolution is 144 pixels per inch. (But the phenomenon described as follows is relevant for *all* image files, even for those which have a resolution *below* the "logical screen resolution" of 96 pixels per inch).

3. Choose the zoom factor:

$$500\% * 96 \text{ ppi / image resolution}$$

so in this case,

$$500\% * 96 \text{ ppi / } 144 \text{ ppi} = 333,3\%$$

notice that there has been a clear and inevitable Pixelation effect due to image enlargement:

4. Create a new, blank MS Word document "Flower.doc" and embed the image file "Flower.tif" with "Insert" / "Picture" / "From File…" into "Flower.doc".

5. Magnify image "Flower.doc" in MS Word by the maximum zoom factor of 500% in order to obtain exactly the same size on screen at which you initially displayed the original "Flower.tif" in Photoshop. The result is astonishing:

One can observe, particularly on the outlines of the flower petals how much weaker the Pixelation effect is in the embedded image compared to the original. This effect is increasingly intensified when using higher zoom factors, or resolutions respectively.

The same astonishing effect can also be observed when using PowerPoint and all the other MS Office applications and also in many other advanced PC applications not created by Microsoft.

But how is it possible for these applications to create a significantly better image *than their own original itself,* using *the same* restricted amount of color information on *the same* number of pixels? – contrary to human imagination, which is perfectly well capable of imagining how this flower *would* look like seen from the close-up perspective of a tiny insect, or through a magnifying glass, a computer program can not possibly "know", how a picture *would* look like when enlarged! – But the astonishing answer is: It can!

Sophisticated mathematical procedures like "Error Diffusion" algorithm, logically associated and related to the methods of optical signal reinforcement and carrier noise reduction, prove to be absolutely capable of recognising, clarifying, enhancing or smoothing outlines, areas of similar color, line guidance and optical structures. This technique is managed by automatically inserting image dots (that is, depending on the device, pixels for screens or dots for printers) with "reasonable" intermediate colors (the displayed detail of "Flower.tif" contains, for instance, only 10383 different colors, while the one of "Flower.doc" has 80333!). In summary: these procedures can "cosmetically recalculate" the picture by suppressing the undesired Pixelation on stretching the image.

Now if all these are features and characteristic capabilities for example of the *MS Office programs,* what does all that have to do with PostScript, PDF and EXTIF pro? – At this point, we must take another close look at the deep inner relation of all *raster devices*: Printer drivers and printers don't do anything else than screen drivers and screens do, too. In both cases it is the *same* Windows graphics engine (GDI), which

draws and paints – in technical terms – renders, *and in this process* rasters, the "<u>device context</u>" onto *the same* abstract internal canvas.

From the mathematical-logical point of view, enlarging a graphic object by a certain zoom factor, or printing it at a higher resolution than the <u>logical screen resolution</u> of 96 dpi, is *one and the same thing.* A zoom factor of x% equals a resolution of x% * 96 dpi.

Example:
When you enlarge on screen a square-shaped picture of edge length 100 pixels, by a zoom factor of 625%, you obtain a square-shaped picture of edge length 625 image dots (in this case: pixels); when you print the same picture at 625% * 96 dpi = 600 dpi, you also obtain a square-shaped picture of edge length 625 image dots (dots, in this case).

Now of course the ability to suppress Pixelation when enlarging a picture, or printing it at a higher resolution, of the PC applications mentioned above can only be withdrawn when the picture is actually being enlarged, or printed at a higher resolution. However, suppressing Pixelation does *not* actually happen when the PostScript or PDF converter merely *translates* the same document information from the one file format (e.g. *.doc, *.ppt or *.xls) into an other file format (*.ps, *.eps or *.pdf), *as it does not raster it*. As long as the document is not being rastered, i.e. an image dot raster is being filled by color, and then there are no pixels at all on the abstract internal target canvas, which such a cosmetic recalculation algorithm could paint with intermediate colors.

Moreover, how could a PDF converter, at the time of conversion, anticipate at which resolution the PDF document, that is currently being created, *will one day* be displayed or printed, so that the converter could during conversion "ask" the MS Office application, what the image *would* look like at one or the other magnification factors, or resolution respectively?

Just in the same manner, in which the capability of an opera singer to reach the C tone in the third octave can not be taken benefit of, when asked to merely recite a telephone book, it is also impossible for the MS Office applications to prove their capability to suppress Pixelation on stretching images, when the PDF converter does not enlarge that picture.

The inevitable conclusion is that a matrix graphic embedded in a PDF document must pixelate *at least* as heavily as the original image file does when zooming in with an Image Viewer, regardless of the converter settings selected when creating the PDF document.

On the contrary, at a resolution higher than 96 dpi EXTIF pro stretches and rasters the image. Therefore, the image files produced by EXTIF pro, as quasi-screenshots, to the full extent take on the suppression of Pixelation.

Another example:
Script on old parchment (http://www.driverlab.de/EXTIFpro/TestDocums/Kalligraphy.doc) at 900 dpi:

Above PDF, below EXTIF pro –please try to read what is written here:
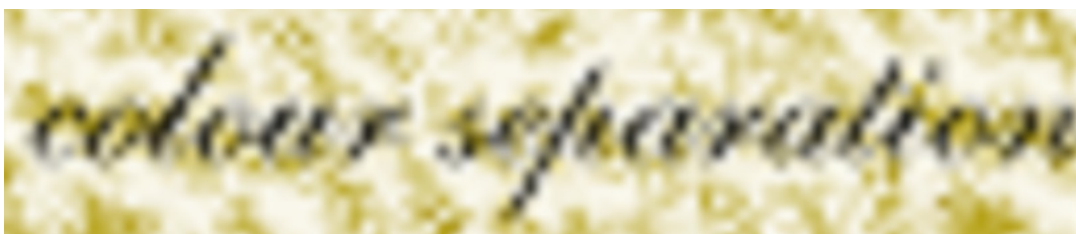
Finally, for the sake of honesty we should also mention, that there are some RIPs, which later on, when rastering, can suppress the Pixelation of matrix graphics embedded in PDF documents. This is completed in the same manner, in which the MS Office applications did when displaying matrix graphics embedded in MS Office documents on the screen, so that the final result, on the printed paper, would not suffer from pixelation worse than that on EXTIF pro. Though there is still the question why you would expose yourself any longer to the danger, that the RIP of the printing office where you have your documents printed, is *not* one of these high performance RIPs.

1.4.4. Fonts and True Types

When a document is being rastered, all the fonts used in it have got to either already exist in the rastering device or to have been previously embedded in the document.

Theoretically, this is supposed to be an easily achieved condition – but in the practice it usually comes to time-consuming and incalculable difficulties, especially when the PDF document to be printed is created, for instance, by the Prepress service, but the RIP is actually located elsewhere, i.e. at the printing office.

As Software-RIP, EXTIF pro cancels this spatial separation between creation of documents and rastering. Now you can create the original document on the same computer, on which you raster it. In any case, this fact guarantees that all the fonts used in the document are completely present when rastering. Again: What you see on your computer screen (e.g. in PowerPoint window) during the creation of the document is exactly what you will get as end result, if you use EXTIF pro (WYSIWYG).

For EXTIF pro, there are no "problem fonts", no matter how exotic these might be. Here, for instance, a Bulgarian Cyrillic font:

Chinese font printed on EXTIF pro:

1.4.5. Editing and Retouch

As you already know, a PDF can - if at all – be corrected, edited or retouched only with great difficulty after its finalisation; as there is no such thing as a PDF-*Editor.* In order to be able to edit a PDF document with an image processing program like Adobe Photoshop, you would first have to allow this program to raster the PDF document, but then again, this would make the document loose its PDF character.

On the other hand, the TIFF files provided by EXTIF pro can be easily and conveniently edited in any image processing program, of course offering opportunity to retouch each *single* color channel *separately*.

1.4.6. Striking colour fidelity - not just from MS Office

By using the PDF route, you generally obtain a very passable match between the colors of original document and those of the final result printed on the sheet of paper. But from distressing experience you might already know that this is not *always* the case in everyday practice, and that colors usually get merely *more or less* close to the original – in the end it remains, to some extent, a game of chance, which represents a rather unsatisfactory situation for someone, who desires to offer his customers reliable quality standards.

Actually, also these days again (see "c't" Issue 7/04) experts still controversially discuss the question what color deviations are still tolerable from a juridical point of view, and which colors a customer simply does not have to accept anymore.

EXTIF pro, on the other hand, guarantees you and your customers reliable and constantly high color fidelity – please convince yourself with a comparison test, which you can carry out even with the free demo version.

An example:
The original document, in this case a Photoshop file (*.psd), at first was once saved as PDF in Photoshop, and once put out by EXTIF pro as TIFF file. Then both were printed on the same day in the same printery on the same paper.
Result: The PDF on the left, EXTIF pro´s TIFF on the right; for comparison purpose the original below:

1.4.7. "Flashing" and the unsolved Trimming Problem

Concerning the "Trimming Problem", please consult chapter "3.2.12. Trimming". When doing this, it will become clear to you that in PDF method there is not even the slightest suggestion for solving this problem.

1.4.8. Complementing instead of replacing

The detailed enumeration, stretching over several pages, of all these advantages should obviously not arouse the presumption that the introduction of EXTIF pro supercedes the road via PDF, it being merely a traditional, obsolete method, which was only used out of lack of alternatives.

As proven, EXTIF pro *can* completely replace the road over PDF. Nevertheless, it rather considers itself as a complementary tool. For the first time, EXTIF pro offers you a serious alternative to PDF method, which releases you from the constraining situation of having to accept its numerous insufficiencies.

2. Installation hints

2.1. System requirements

EXTIF pro is a printer driver designed for <u>Windows 2000</u> and <u>Windows XP</u>. *EXTIF pro does not operate under any other operating systems!*

The computer on which EXTIF pro is to be installed should have at least 128 MB RAM and 500 MB memory available on hard disk. In this context please also consult chapter "<u>Huge files</u>".

2.2. Installation step-by-step guide

1. Double-click on "XTSetupEngl.exe" in Windows Explorer:
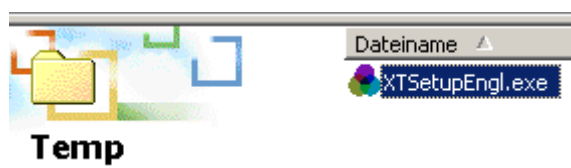
2. In the window "License agreement" click on "Accept" if you accept the License Agreement. To cancel the installation, click "Decline".

3. Choose an <u>installation path</u> within the computer´s directory structure and confirm by clicking "Install".

4. Click "OK" in "EXTIF pro installation" window. The actual installation process will begin and may take up to a minute, depending on the computer.

5. In "EXTIF pro registration" window choose between demo version and full version.
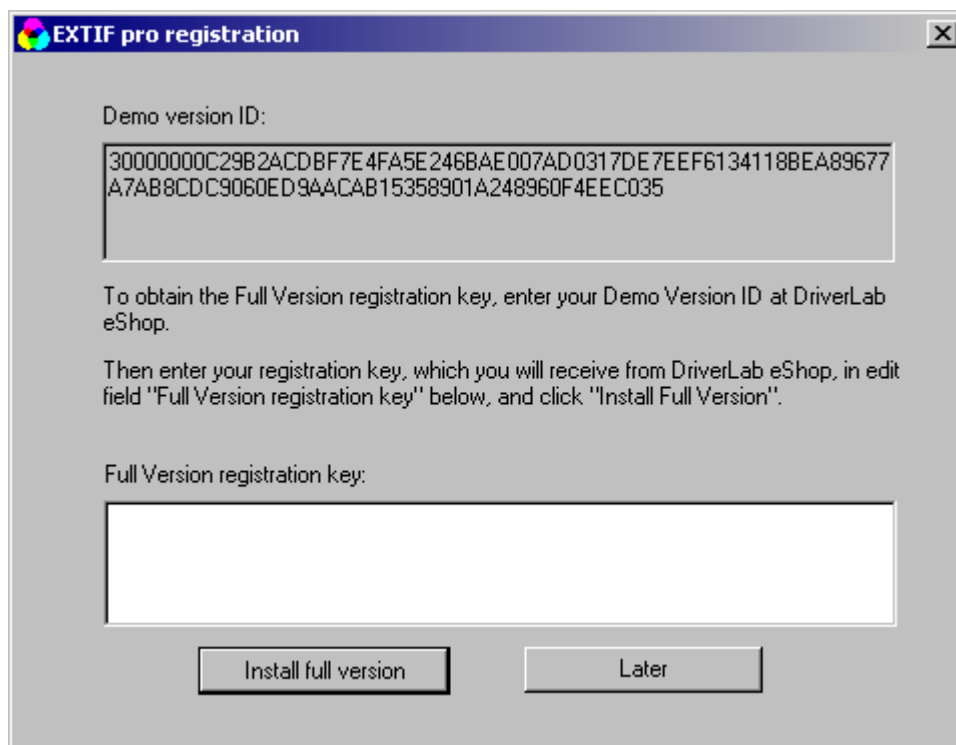
- If you have already purchased a registration key for the full version, (for instance if you need to re-install the full version on the same computer and you already have the registration key from the previous installation), insert the key in the input field "Full Version registration key" and then click „Install full version".

- Normally, in order to install the demo version, click "Later". Demo version can be upgraded to a Full Version at any time, even after the 30 day trial period has expired.

6. The message "Installation successful" confirms a successful installation process. Now click "Close".

2.3. Demo version

The EXTIF pro demo version differs from the full version in the fact that the provided image files are marked with a "Demo Version" imprint in order to devalue them.

At the initialization of every print process, the demo version will enquire whether you want to install the full version.
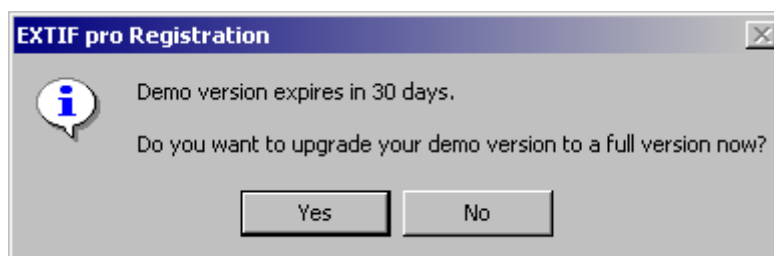
Occasionally, this window appears *minimized* in the task bar:

In such situations, you must click on the "EXTIF pro" icon on the task bar, and select "Yes" or "No", as EXTIF pro will not commence the printing process without a command (Yes or No).

If you want to install the Full Version later, simply click "No" – the driver *will still work* but with the "Demo Version" imprint, and only until the 30-days trial period expires.

Clicking "Yes" on the other hand will open the "EXTIF pro registration" window that you are already familiar with from the installation.

2.4. Full Version

To upgrade from the demo version to a full version requires registration as follows:

7. In the "Demo version ID" display field of the "EXTIF pro registration" window you will find your hexadecimal (number symbols: 0-9, A-F) <u>demo version ID</u> (approximately 80 digits long.)
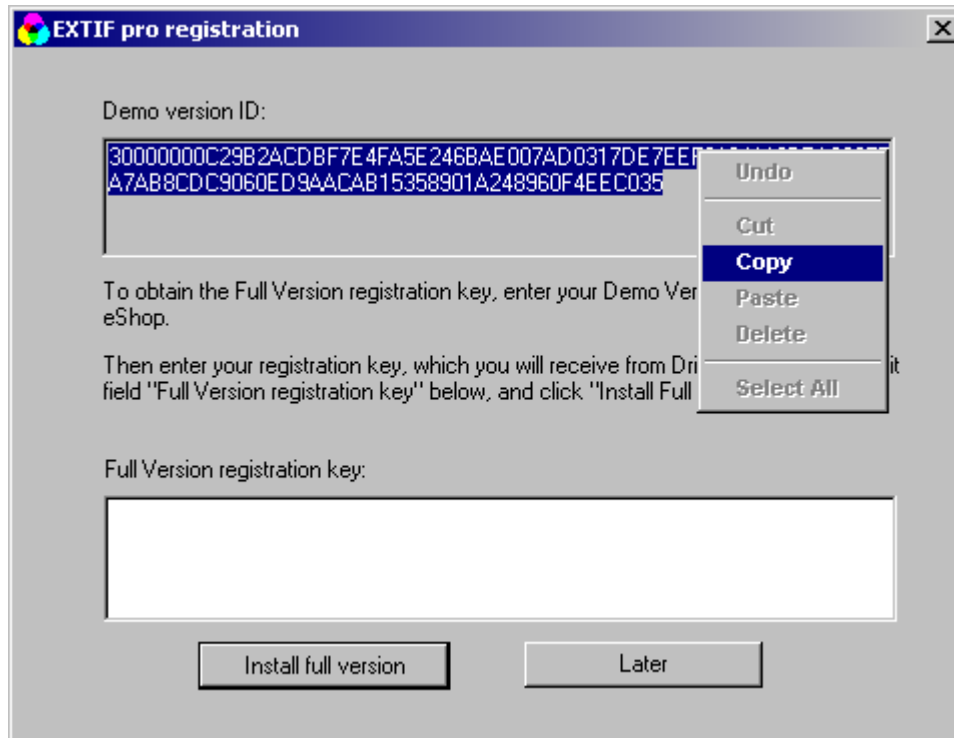
If you have *several* computers Computer A, Computer B, Computer C, etc., and wish to run EXTIF pro on only *one* of them, it is essential to actually read the demo version ID from the particular computer where the Full Version will be run, as the <u>registration key</u> belonging to demo version ID from Computer B is unique and thus does not fit to the demo version IDs from Computer A or Computer C.

At the purchase of your registration key at DriverLab eShop, insert the full hexadecimal demo version ID (please make sure you don't omit any characters when copying by means of mouse / Shift+Arrow and Ctrl+C) along with your address, credit card details, e-mail address, etc.

When purchasing the registration key at the eShop, you can choose between Single User Version and Network Shared Version. Please see the corresponding chapters.

8. In turn we will send you your personal, approximately 120 digits hexadecimal registration key for the full version via e-mail. Insert the complete registration key (please make sure you don't omit any characters when copying by means of mouse / Shift+Arrow and Ctrl+C) into the input field "Registration key for full version" in "EXTIF pro Registration" window and click "Install full version".
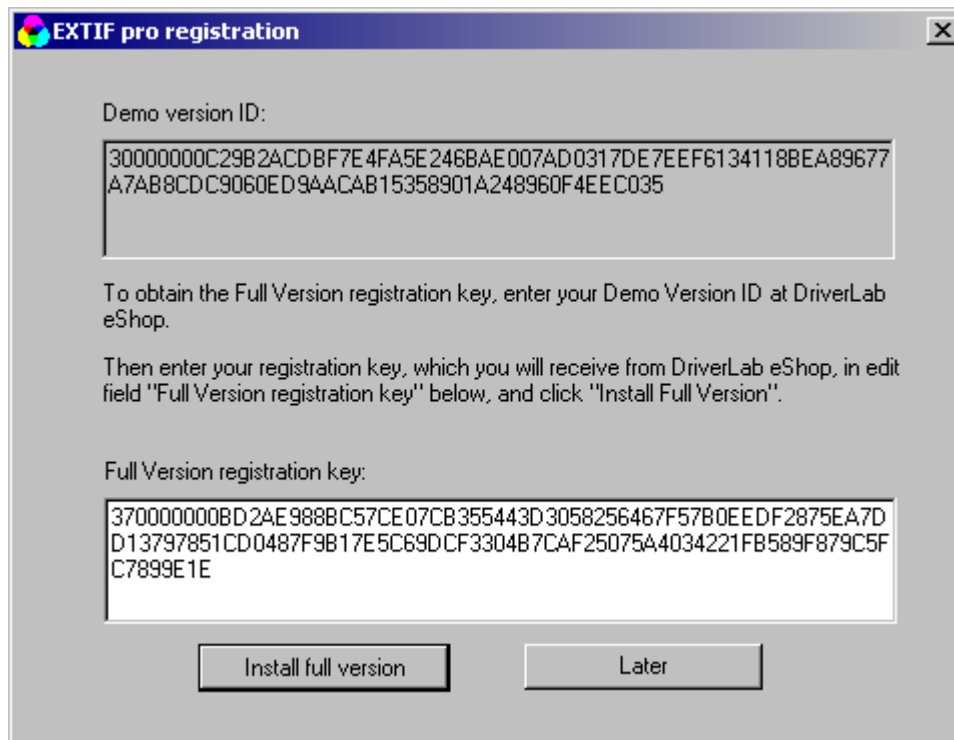
9. The successful registration is confirmed by the message "Full Version Registered":
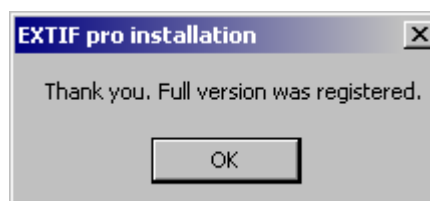
Now click "OK".

2.4.1. Network Shared Version

The Network Shared Version can be used on both one single work station (computer) and shared with other computers over a local network:

1. To share over a Local Network select:

    "Start" / "Settings" / "Printers",
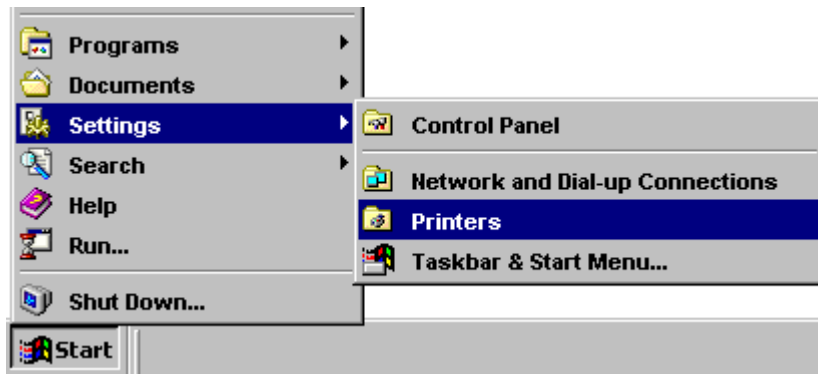
In order to open the "Printers" window, then right-click on the EXTIF pro icon and select "Sharing..." from the context menu:
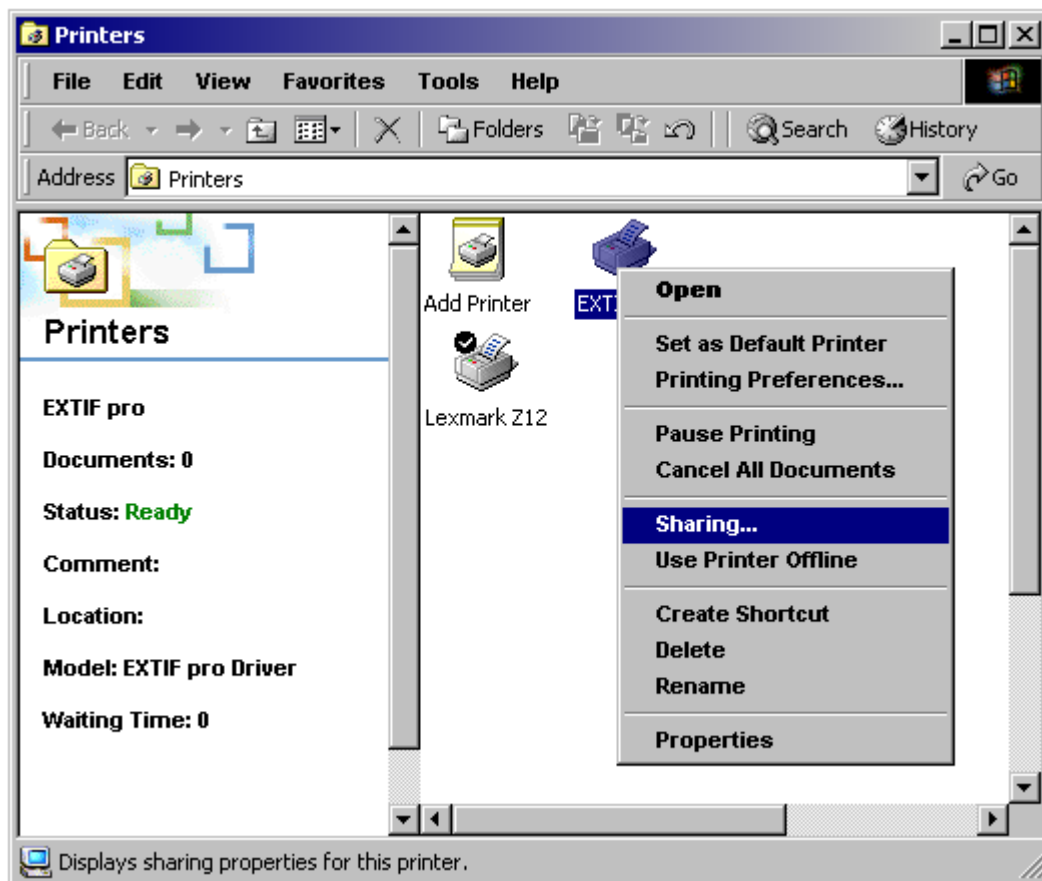
2. Consequently, tab control "Sharing..." will open. Select "Shared as" and insert a share name for EXTIF pro.
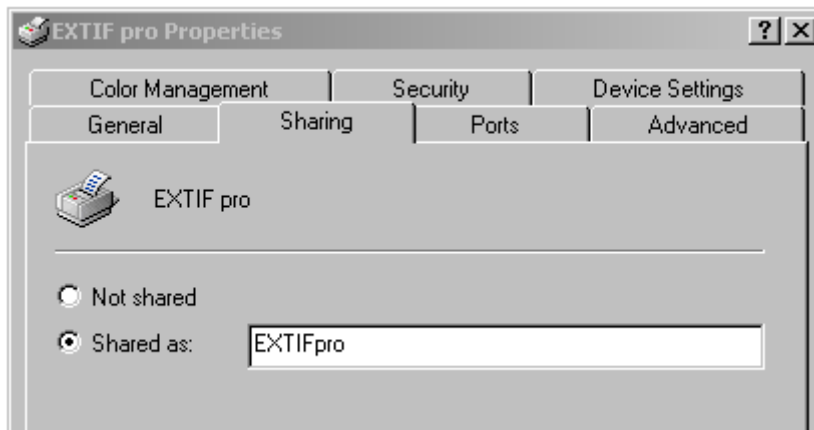
3. You can now access and print with EXTIF pro from other computers over the local network.

Please note:
Printing with the Network Shared Version is subject to some restrictions, which cause the relatively low price in comparison to several Single User Versions.

In the following part, we will call the computer on which EXTIF pro is installed, the "EXTIF-Server", and the other computers that access it via the network the "EXTIF-Clients":

- When you order a print job from one of the EXTIF-Clients on the EXTIF-Server, EXTIF pro's message boxes and file name dialog will not appear on *your* computer screen but on the EXTIF-Server's screen. This can be quite an interruption for the person using the EXTIF-Server, who is most probably working at something totally different.

- In order to avoid the appearing of the file name dialogs on the EXTIF-Server screen, which would force the person working there, to type in a file name on your behalf, we strongly recommend selecting "use default name". In this case, you must be aware that it is not the Default path displayed on the Property Pages of the EXTIF-Client, which will be used, but the one displayed on the Property pages of the EXTIF-Server.

- The EXTIF-Clients should not refer to the hard drive of the EXTIF-Server through drive letters, but *only* through "My Network Places".

2.4.2. Single User Version

Unlike the Network-Shared Version, the much cheaper Single User Version can only be used on one work station (computer). In the event that you try to share this version to other work stations on your local network, the following messages will appear:
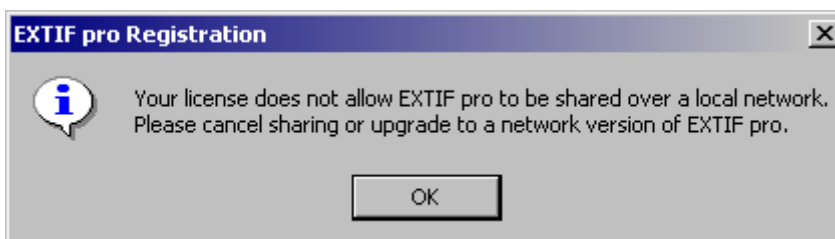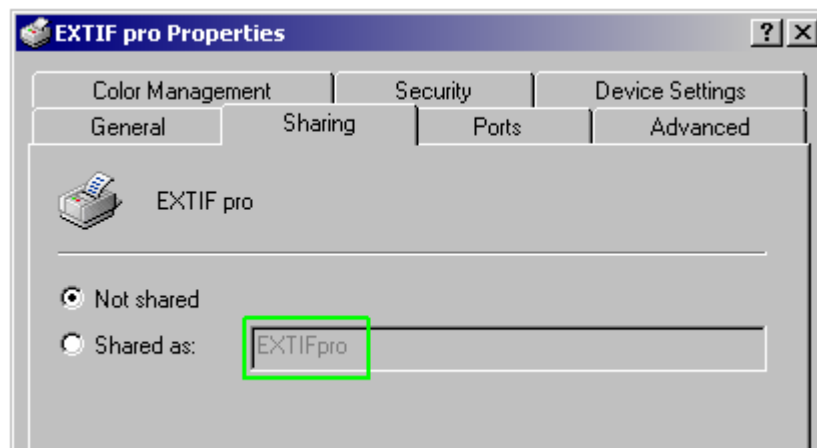

and
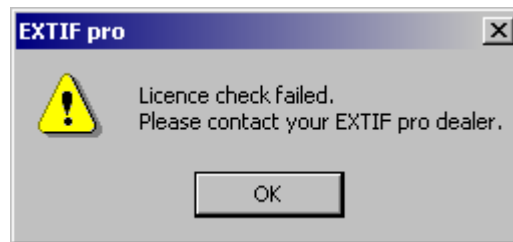
Important:

In order to restore an unauthorized network sharing, it is not sufficient to select "Not shared" in the "Sharing" tab control:

Instead, you have got to completely delete, as in the above illustration, the green-colored share name, and only afterwards select "Not shared".

2.5. Substitute registration key

As already mentioned, the demo version ID is characteristic and different for every computer in the world, and the registration key in turn is characteristic and unique for each demo version ID, therefore excluding any possibility of an illegal copy or pass on – at least as long the actual computer is not being passed on or even given away. (On the other hand, the demo version can be run on any computer.)

By rights you might ask yourself now, if this doesn´t consequently mean that you – who has though legally purchased your registration key – will not be allowed to use EXTIF pro any longer, in case you replace your computer with a new one? – In this case, just contact the DriverLab with your original demo version ID at

Service@DriverLab.de

2.6. Default Printer

Amongst *several* different printers installed on a computer, the Default Printer has a special role, being the one to automatically print a document, if user does not explicitly select another printer for this action.

If you want to set EXTIF pro as the Default Printer on your computer, after completing the installation process click on

"Start" / "Settings" / "Printers"
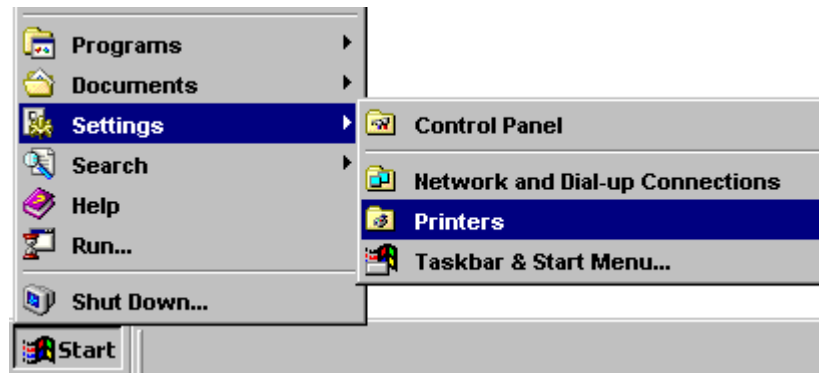
...for opening the "Printers" window, right-click on the EXTIF pro icon and select "Set as Default Printer" from the context menu:
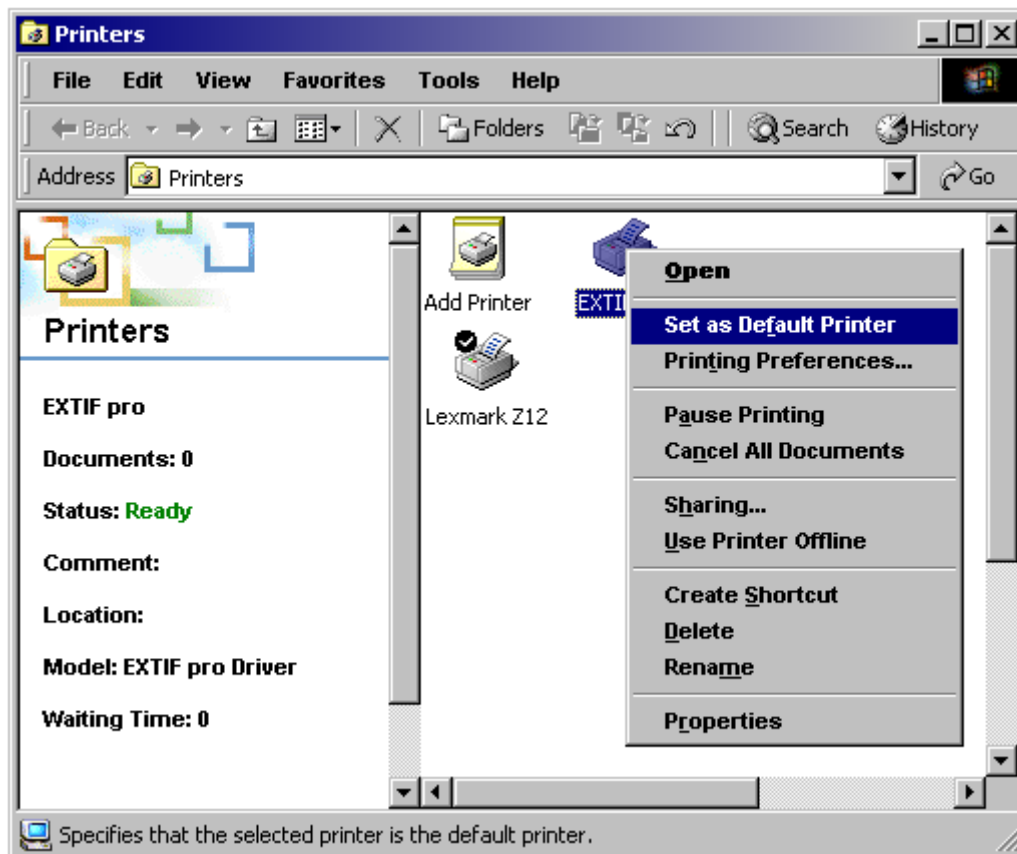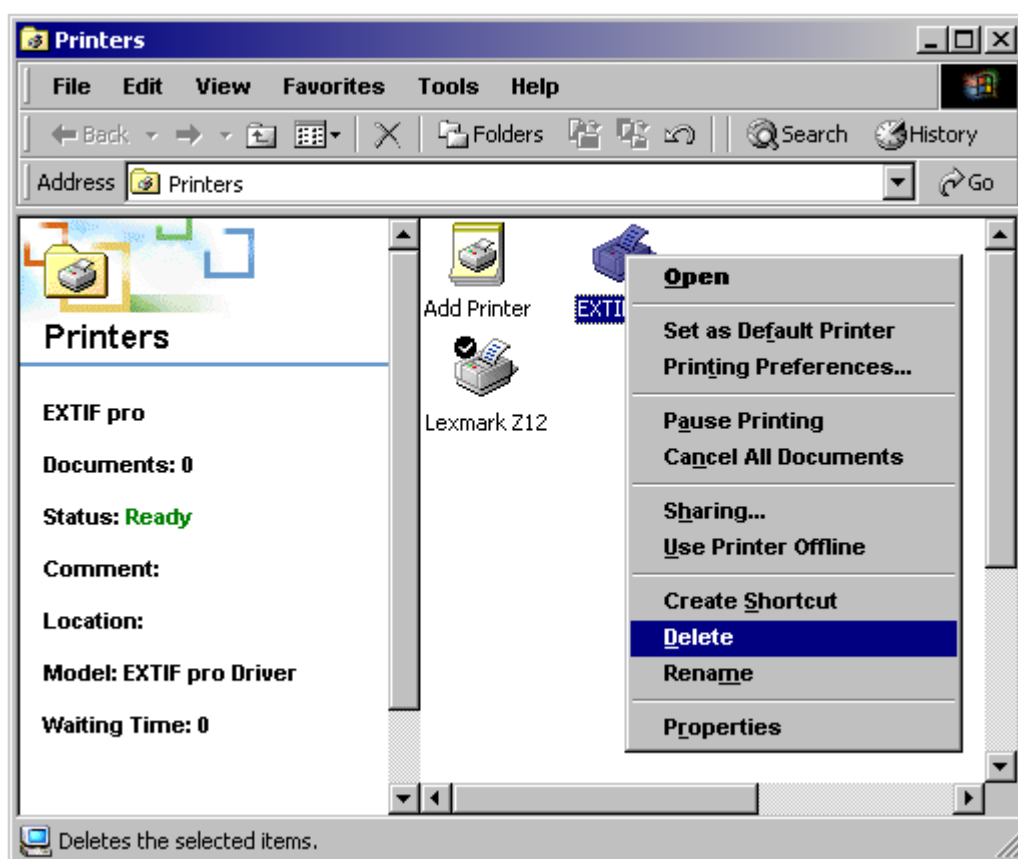

2.7. Uninstall

In order to uninstall EXTIF pro, choose
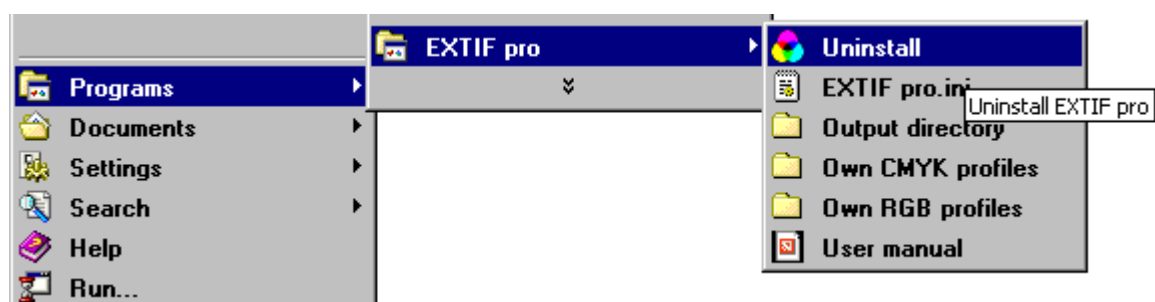
"Start" / "Settings" / "Printers"

to open the "Printers" window, and remove EXTIF pro

- either by click on the EXTIF pro icon, followed by pressing "Del" key

- or right-click on the EXTIF pro icon and selecting "Delete" from the menu:

Finally, we recommend to execute

„Start" / „Programs" / „EXTIF pro" / "Uninstall":

(No serious effect will be sustained if this final step is omitted.)

3. Directions for Use

3.1. Simple managing: Easy printing with EXTIF pro

Provided that installation was successfully completed:

1. Open any document (e.g. an .html or .xls file – for testing, it is recommended to choose a small file with only a few pages) with an application suitable for this type of action (Internet Explorer or Excel respectively), then

2. Select "File" / "Print" in the menu bar
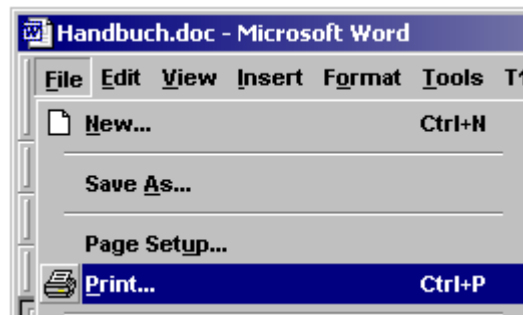
3. Then, in "Print" window, select EXTIF pro from the list of printers. (If EXTIF pro does not appear among the available printers, it means that the installation was unsuccessful.)
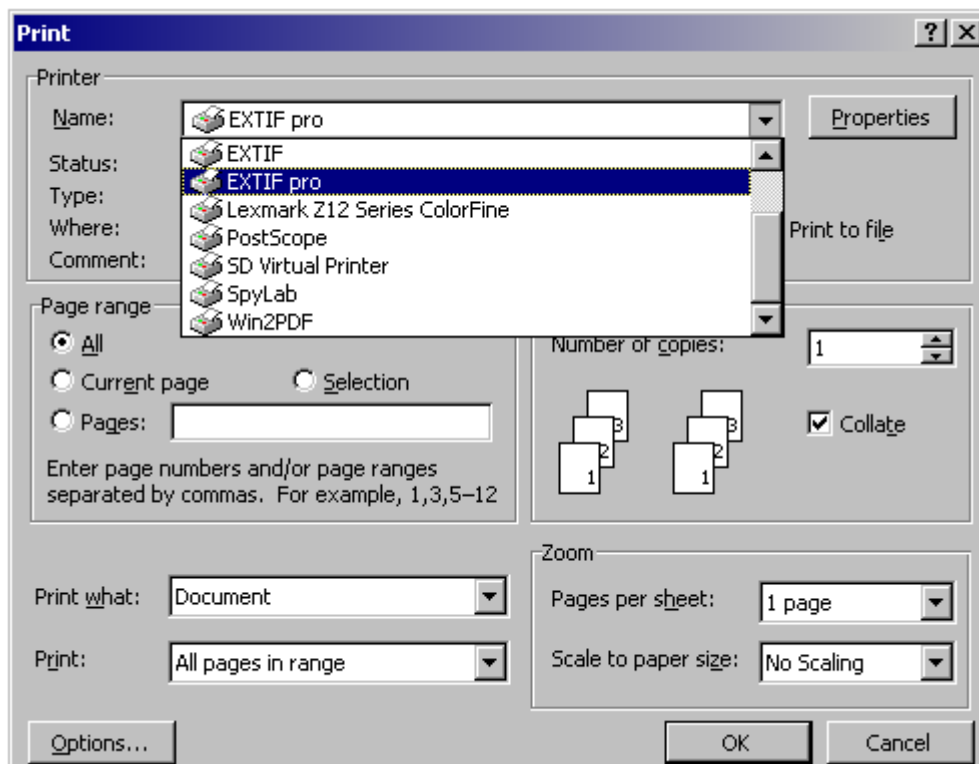

4. Click "OK" to start the printing process (with the default settings). In a few seconds, EXTIF pro will confirm the action by displaying a message which tells you that the printing process has started.
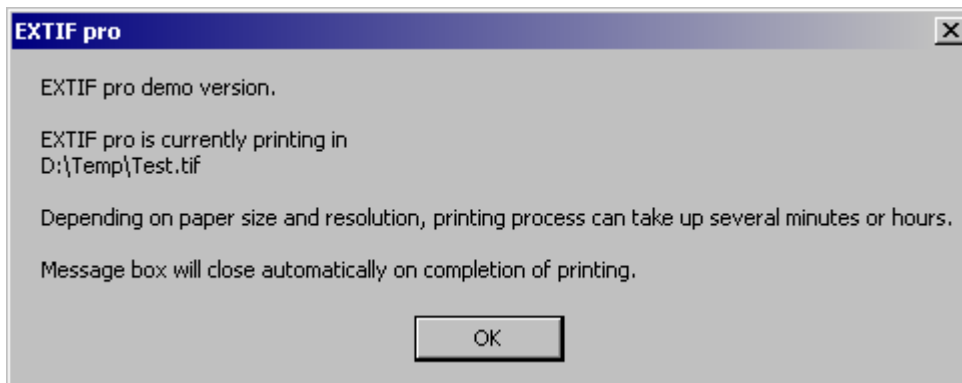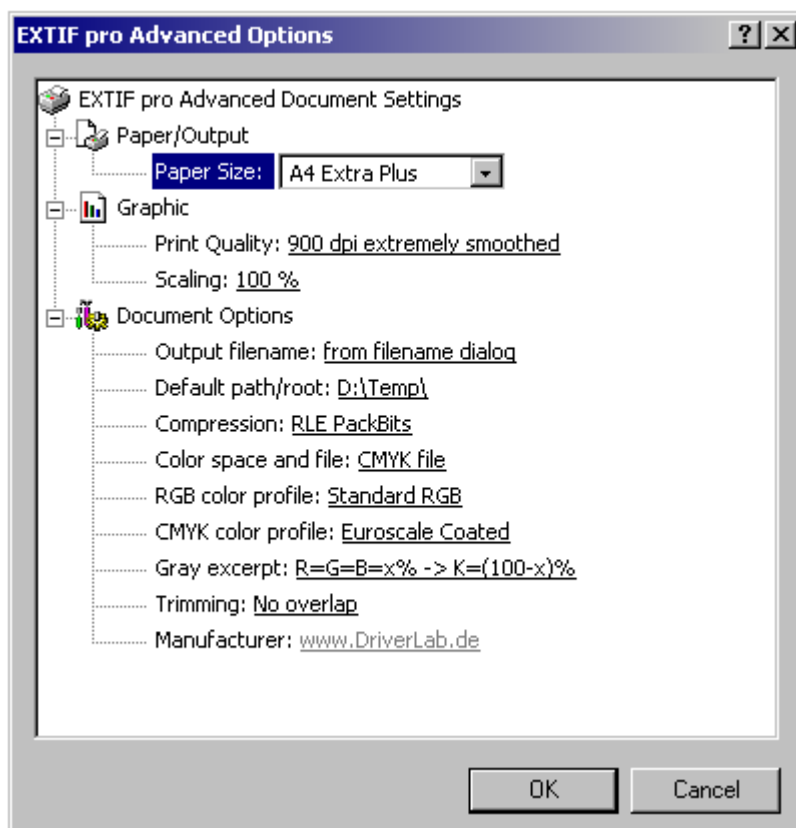
You can either close this message box by clicking "OK" however it will close automatically after the printing process is completed.

3.2. Property Pages

Click "Properties" in "Print" window to open the Property Pages, where you can view and edit the print settings.
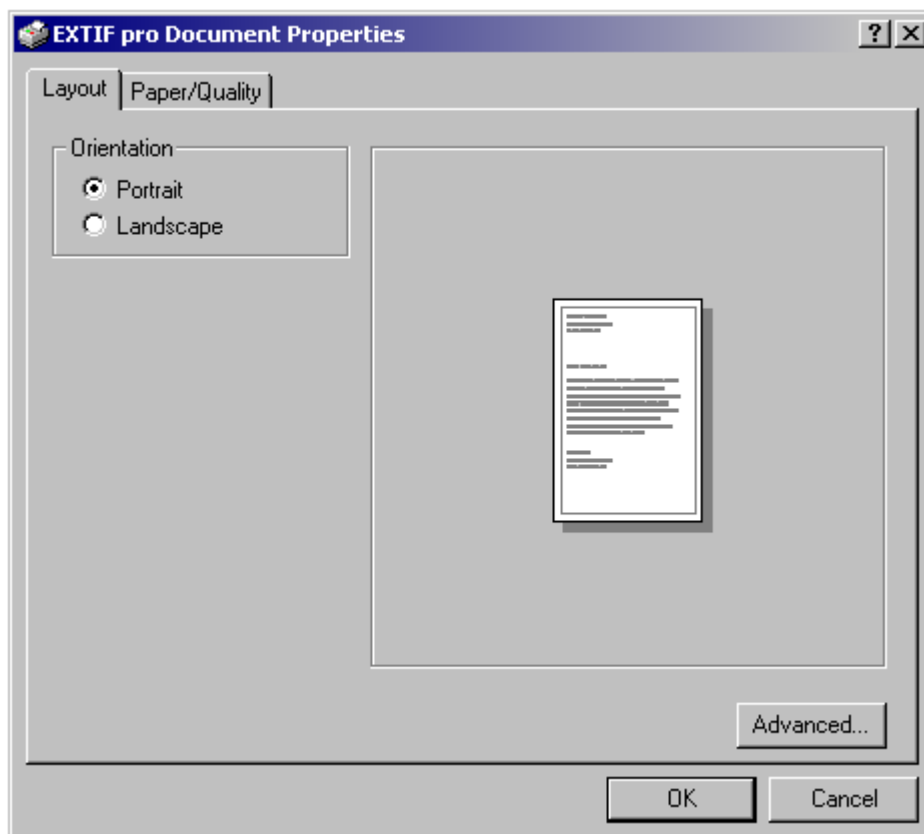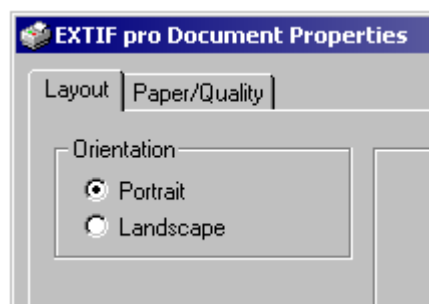

Most of the properties can only be seen by clicking "Advanced...", which will open the "Advanced Options" window:

Advanced users can choose from other print and printer settings in configuration file EXTIF pro.ini

3.2.1. Page Orientation: Portrait or Landscape?

On Property Page "Layout" you can select whether to print in Portrait or in Landscape orientation.

3.2.2. Paper Format

As EXTIF pro prints in an image file, the "Paper Format" refers to the dimensions of the area which *would* be occupied by this image when printed at a given resolution (in dpi = "Dots Per Inch") on a page of physical sheet of paper.

(To obtain the image size or the paper format for example in Adobe Photoshop using "Image" / "Image Size" from the menu bar, or in Paint Shop Pro under "Image" / "Edit Size" / "Print Size".)
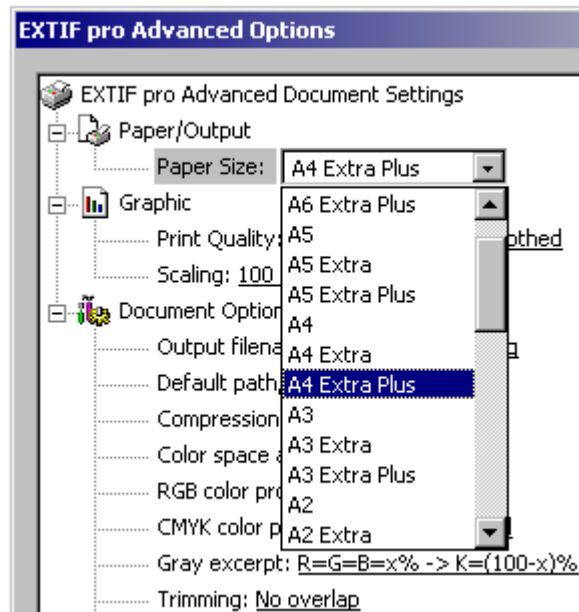
As you can see, most DIN formats have a corresponding "Extra" and an "Extra Plus" format. These two formats are wider by approximately one-finger-width crop margins than the corresponding normal DIN format.

Later on, during the actual printing process, no printing device is sufficiently capable of precisely arranging and printing the paper with the exactness of a tenth of a millimeter, even if the paper exactly fulfills the norm, without these crop margins there will always remain, at least at one margin, an undesired white stripe on the sheet of paper, if the colored regions of the document reach the papers borders.

In chapter "Trimming" you will receive detailed information regarding the way in which the crop margins help avoiding this undesired white stripe.

The provided image files can reach astonishing sizes when printed on large paper formats such as "A1" or "A0". For this subject, please consult chapter "Huge files".

Later on, in chapter "Paper Format Sections", you will find out how advanced users can define and access their *own* paper formats.

3.2.2.1. Suffix "Extra Plus"

The suffix "Extra Plus" instructs EXTIF pro to automatically add crop margins, each with a width of 12,5 mm, including register crosses, crop marks, gray-scale wedge and color wedge to the original document.

The register crosses are meant to serve as orientation marks in order to bring all four Cyan, Magenta, Yellow and Black exposure films into alignment.

After the actual printing process, the crop marks will indicate where the paper is supposed to be cut.

Finally, the color wedges indicate to those persons, who operate the typesetter and printing press, if the typesetting, or printing process respectively, has been completed correctly with regards to the colors. (keyword: "Color Proof")

The following illustration highlights the crop marks in yellow:
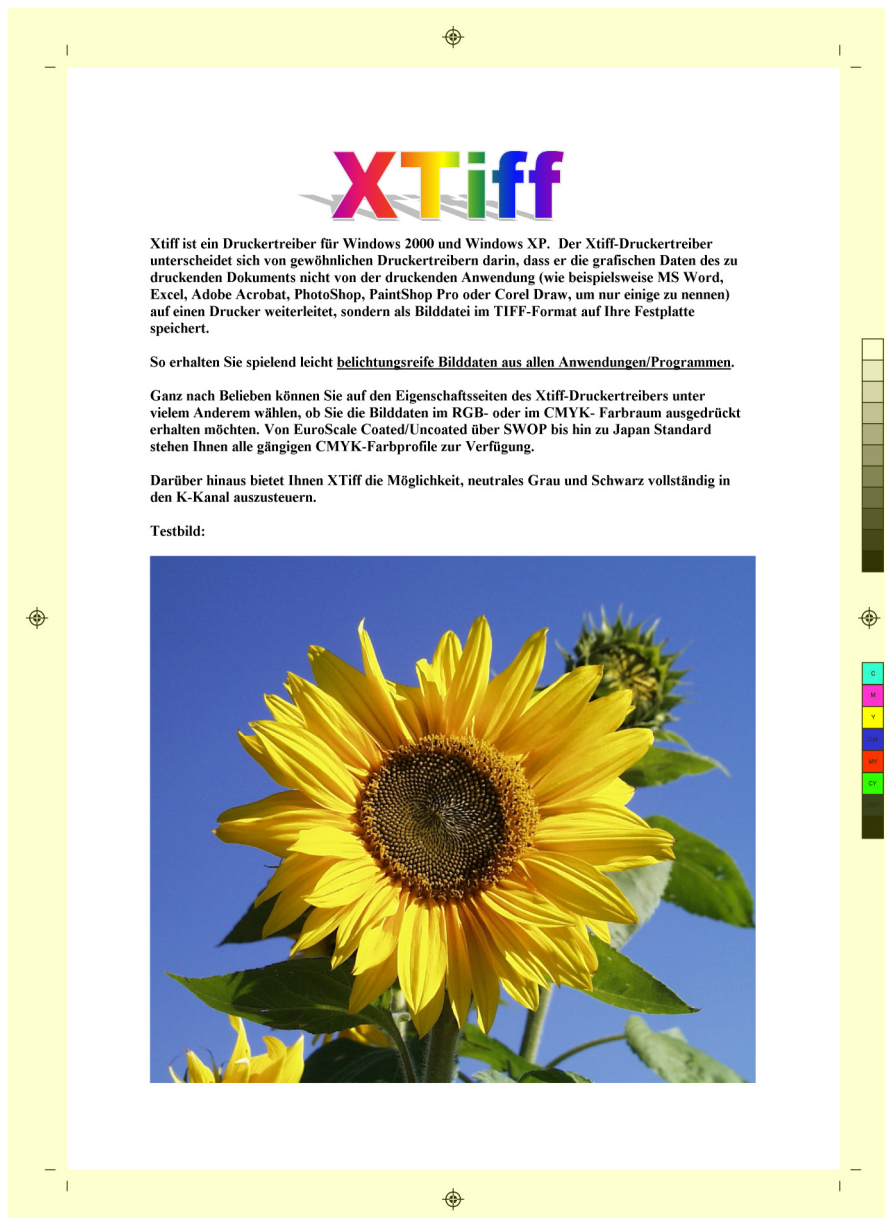
Example:
An A4 sheet has a height of 297 mm and a width of 210 mm. In conclusion, an "A4 Extra Plus" will have a width of

        210 mm + 2 x 12,5 mm = 235 mm

and a height of

        297 mm + 2 x 12,5 mm = 322 mm

Property Trimming makes sense only when choosing an "Extra Plus" format. Otherwise, the local settings are totally irrelevant.

### 3.2.2.2. Suffix "Extra"

The Paper Formats with suffix "Extra" (without "Plus") are just as large as the ones with the suffix "Extra Plus", but they are there in case you want to add the imprints onto the crop margins by yourself, using PC applications like "PageMaker" or "QuarkXPress".

As opposed to the "Extra Plus" formats, EXTIF pro will therefore not convey crop margins with register crosses, crop marks and color wedges, to the "Extra" formats. As both formats don´t otherwise differ.

3.2.3. Resolution or Print Quality

The resolution – also called print quality– is displayed in dpi (dpi = "Dots per Inch", 1 inch = 2,54 cm).
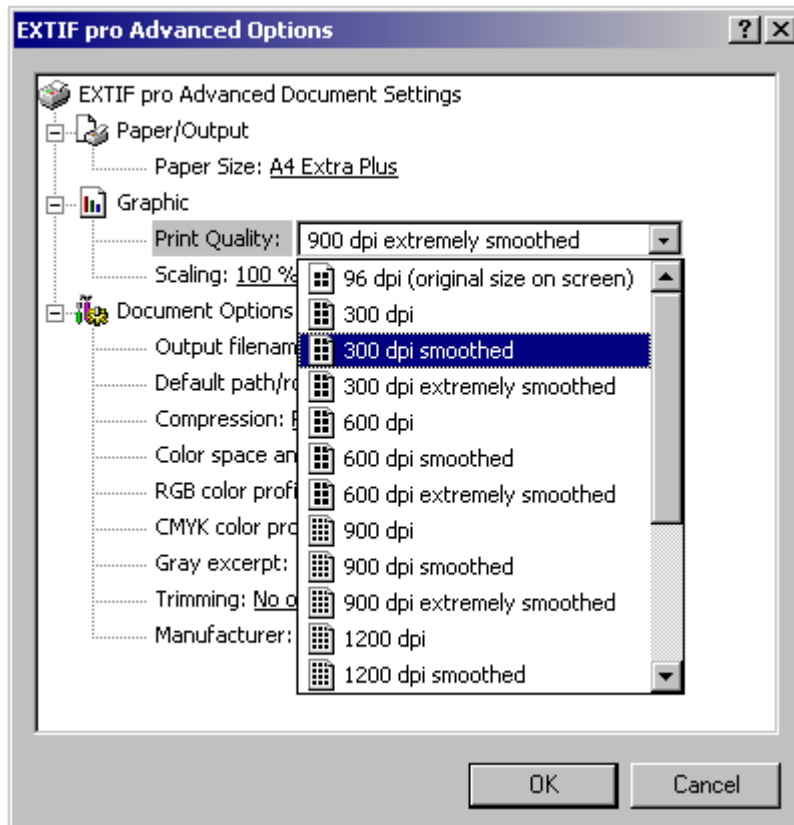
Therefore, the maximum resolution of 4800 dpi – exclusive for Art Printing – is equal to a spatial dot density of:

(4800 dpi / (25,4 mm/Inch))² = 35712 dots per square millimeter

or, for uncompressed image files in CMYK color space:

140 Kilobyte per square millimeter,

corresponding approximately to the *total* size of a usual image file.

When choosing the printing quality, bear in mind, that at a high resolution, the file size of the provided image files can get huge. Please consult chapter "Huge files".

At the logical screen resolution of 96 dpi, documents will be displayed having exactly the same size as the original. The resolution of 96 dpi is indicated for testing and archiving only, and should not be used with "Extra Plus" formats.

It is recommended to print images with a higher resolution, at a higher lpi-number (e.g.150 lpi) onto paper using a printing press.

3.2.3.1. Smoothing vector graphics

When a graphics engine like GDI renders vector graphic elements on differently colored backgrounds, it must decide for each dot whether it should be *either* foreground-colored *or* background-colored.

This means that when the GDI renders, for instance, black writing on a white background, there will be only either black or white pixels, but no gray ones or of any other intermediate color. This gets more obvious especially when looking at enlarged letters in text editing programs. The rounded letter edges appear disturbingly serrated, while the dimension of this serration is always 1 pixel, regardless the resolution or font size. (This phenomenon appears only for vector graphics and must not be mistaken for Pixelation, which appears only for matrix graphics, and whose dimension or order of magnitude increases along with resolution increase.)

EXTIF pro offers a helping hand also in this situation, by optionally coloring pixels located exactly on the outline with a mixed color, whereby the mixture portions of foreground and background color correspond exactly to the geometrical area portions of foreground and background of the area of the pixel square:

unsmoothed

smoothed

extremely smoothed

In the frequent case of black writing on white background this intermediate color is always neutral gray. Therefore, it is recommended to choose the Gray excerpt setting "R=G=B=x% -> K=(100-x)%"

Of course, smoothing also improves other vector graphic elements like Bezier curves and polygons.

| unsmoothed | smoothed | extremely smoothed |

Please pay special attention to the outlines of the Mexican dog's eyes.

3.2.4. Scaling

The scaling represents a magnification factor, or minimization factor, of the document to be printed, along with the included graphic elements like letters or embedded images, which will be magnified (stretched), or minimized (upset) by a factor

        scaling / 100

on printing.
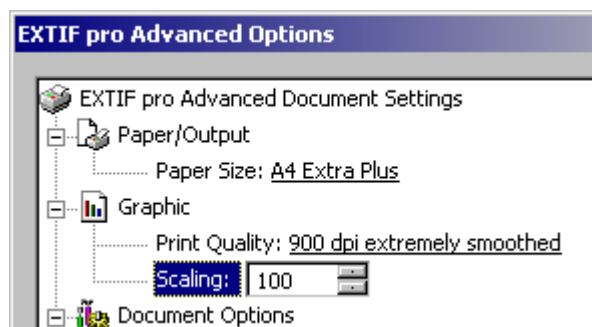
For instance, a scaling of 108 means that a picture document of 100 x 50 mm edge length is stretched by 108% of its original size, thus it will later measure 108 x 54 mm .

A deviation from the normal scaling default value of 100 (100% means original size) only makes sense for image documents like Bitmaps (*.bmp), as their original size is – unlike text documents in text editing programs - not bound, to pre-set paper formats like A4, A5 etc. It makes no sense to display a text document, whose lines and line breaks are adapted to A4, at a modified size. For this reason, MS Word, for example, refuses such requests by displaying the following warning message:
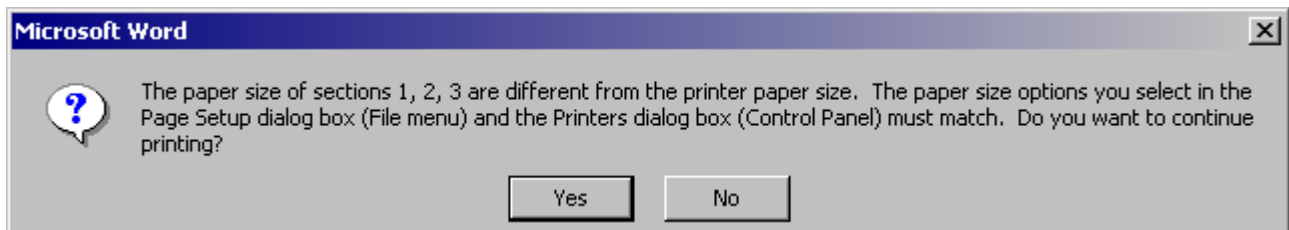

On the other hand, under some circumstances, it can make sense to print an image document which is just 2% too large to fit the next smaller paper format, on 98% of its original size.

However, in general, we advise you not to use other scaling values than the default value of 100.

3.2.5. File name of the output files

EXTIF pro offers you two possibilities to determine the file names of the output files: You can either choose a file name from the file name dialog or you can have EXTIF pro set a default name for the output files:
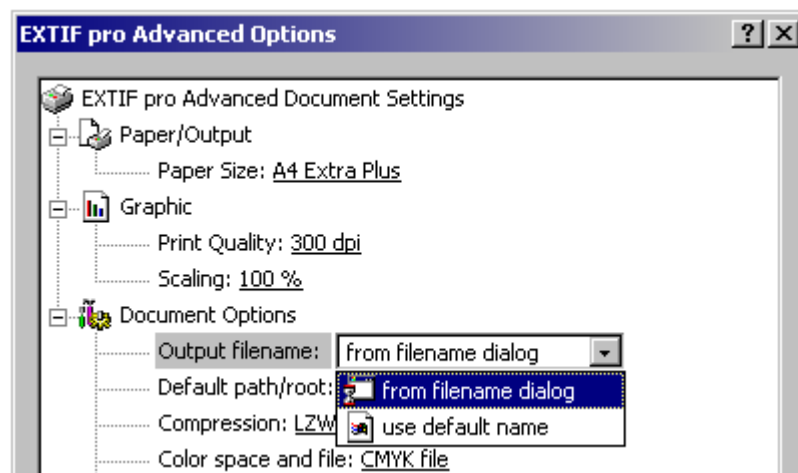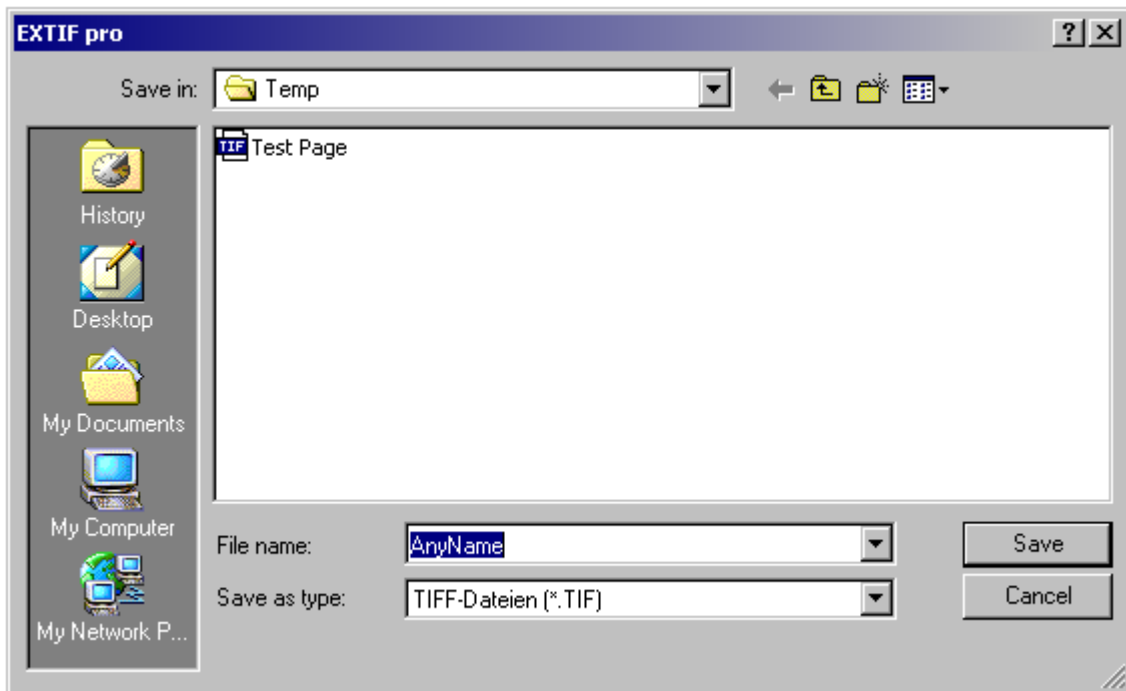

In both cases, EXTIF pro asks your permission before overwriting any existing files of same name:
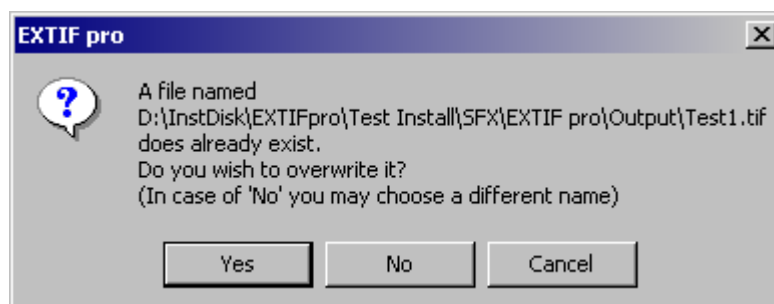
If you selected option "from file name dialog", EXTIF pro offers you opportunity to select a file name from a dialog window:

For example: If you selected „C:\Temp\" as the path and "AnyName" as *document* name, the *file name*s will be, according to page number:

      C:\Temp\AnyName1.tif
      C:\Temp\AnyName2.tif
      C:\Temp\AnyName3.tif   etc.

Thus obeying the following syntax:

      <path> + <document name> + <page number> + „.tif"

If the document has only *one* page or if you have only selected one of several pages for printing, then the <page number> is left out.

3.2.5.2. Default name

If you select the option "use default name", EXTIF pro automatically composes the file name according to the settings of properties "Color space and file" and "Default path/root", observing the following rules:

- either the Default path/root describes a *path*, which is actually present in the directory structure of your computer, and ends on a backslash ("\"), then EXTIF pro will save the picture in files named:

      <default path/root> + <document name> + "_" + <color space specifier> + "_" + <page number>

    Example:
    If default path is "C:\programs\DriverLab\EXTIF pro\Output\", the output file will have the name:

      C:\programs\DriverLab\EXTIF pro\Output\Microsoft Word - AnyName_CMYK_1.tif

- or the Default path/root describes a path which is actually present in the directory structure of your computer, followed by an identifier, which does *not* end on a backslash ("\"), then EXTIF pro will save the picture in files named:

    <default path/root> + "_" + <color space specifier > + "_" + <page number>

    If default path is "C:\programs\DriverLab\EXTIF pro\Output\AnyName", the output file will have the name:

    C:\programs\DriverLab\EXTIF pro\Output\AnyName_CMYK_1.tif

However, if the indicated path is not present in the directory structure of your computer, EXTIF pro will notify this by a message and will cancel printing process:


Again, if the document has only *one* page or if you have only selected one of several pages for printing, then the <page number> is left out.

3.2.6. Default path, or default file name root respectively

In order to choose another default path, or default file name root respectively, please click "Default path/root"…
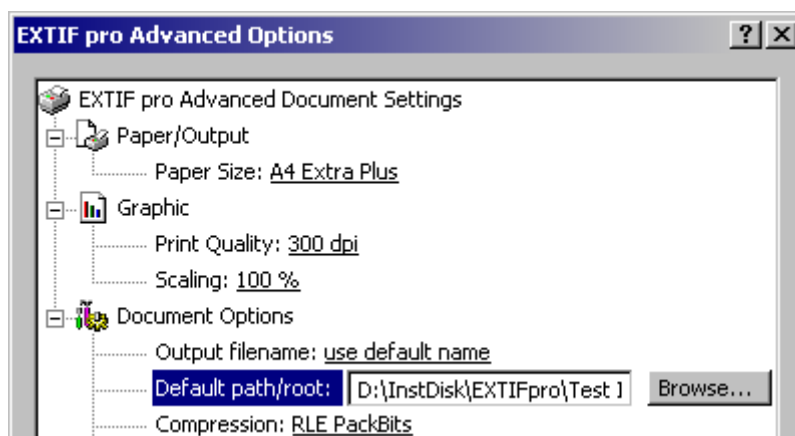
…, so that the "Browse" button appears. Then, click this button in order to open the "Browse for Folder" dialog window...
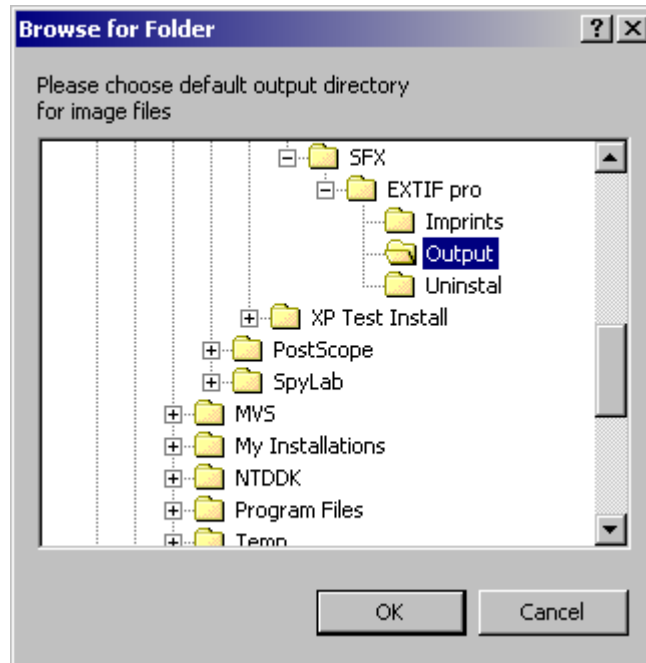
…so the desired directory can be selected.

Alternatively you can directly type the desired folder into input field "Default path/root".

3.2.7. Compression

In order to reduce the enormous quantity of resulting graphic data, which depends on selected resolution and Paper Format, the file has to undergo a compression algorithm. This algorithm scans the image data for indirect or direct recurrences of the same byte value sequences, and then stores where and how often it found certain sequences of byte values, instead of wasting memory space with the detailed repetition of the same sequences.
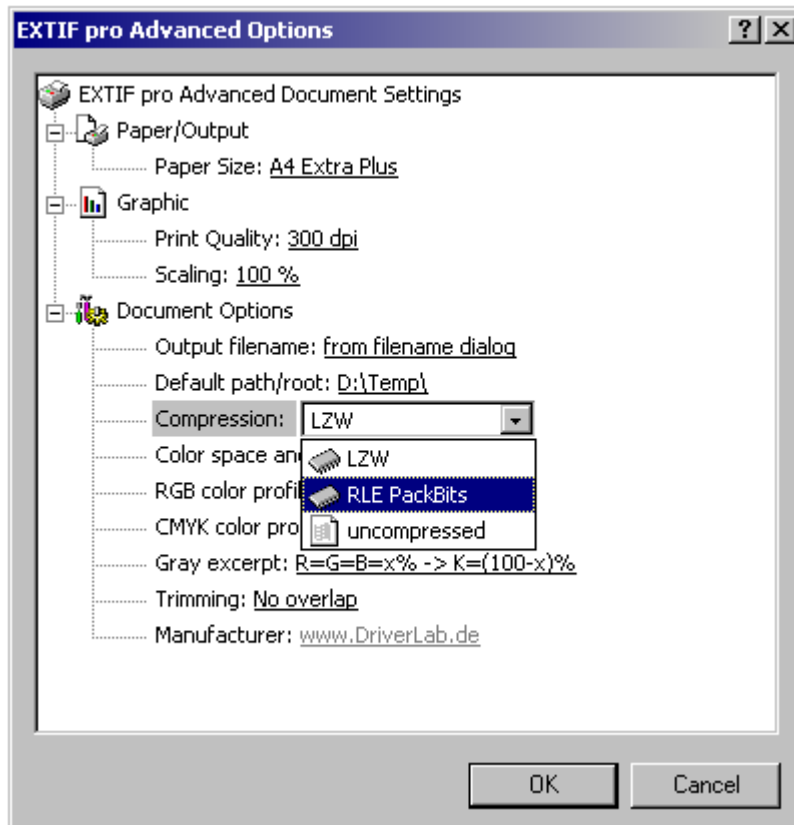
The most common compression algorithms for TIFF files are:

- LZW – named after its creators Lemple, Zif and Welch – is a very powerful, loss-free compression algorithm, which achieves outstanding compression rates for all kinds of image files.
  The patent for the LZW algorithm is held by the Unisys Company; the patent protection expired in the USA on 20th of June 2003, but it remains, however, valid until 18th of June 2004 in Germany, England, France and Italy. For reasons of patent law, we are allowed to offer you the upgrade including "LZW" option only after 19th of June 2004. The upgrade will take place automatically requiring no intervention from your or our side.

- RLE PackBits ("Run Length Encoding") is designed for gray scale images and therefore is most suitable for setting "Separate file for each CMYK channel" of property "color space and file ".

3.2.8. Color space and file

The most common and popular color spaces are:

- RGB (Red, Green, Blue):

  RGB merges colors from portions of *colored light*, so that 100% portions each of all RGB colors result in *white*. This process is also called Additive Color Blending.
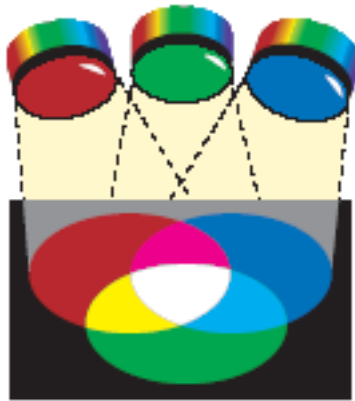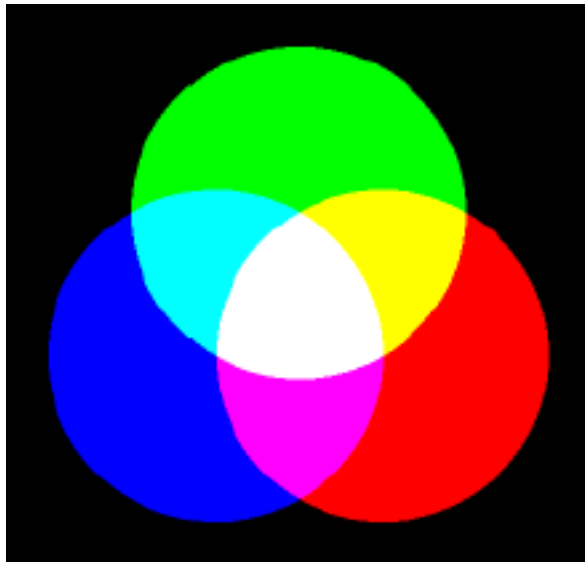
Color light is *emitted*, for example, by *screens* or monitors, so that RGB is particularly suitable for the representation of colors on a screen.

- CMYK (Cyan, Magenta, Yellow, BlacK):

CMY merges colors from portions of dyes on printing paper, which *absorb* colored light, so that 100% portions each of all CMY colors result in *black*. Therefore, this process is also called the Subtractive Color Blending.
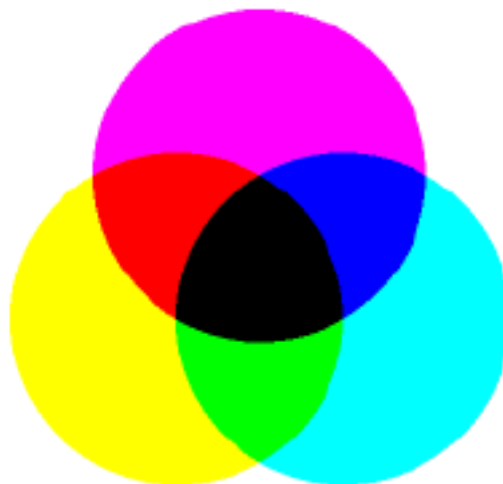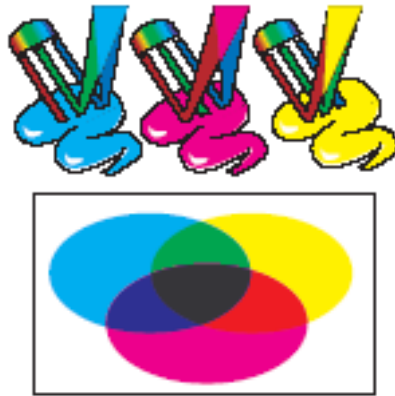
CMY is therefore suitable for the representation of colors on (white) printing paper, but *not* for the representation of colors on a screen - depending on the image viewer program that you use for displaying CMYK files on your screen, the representations of the CMYK colors tend to deviate, more or less, from the "real" colors. The following confrontation shows the same clipping of the same CMYK file on the same screen; Adobe Photoshop 7(on the left) and Paint Shop Pro 5 (on the right) in comparison with the "real" RGB colors (displayed in the center):
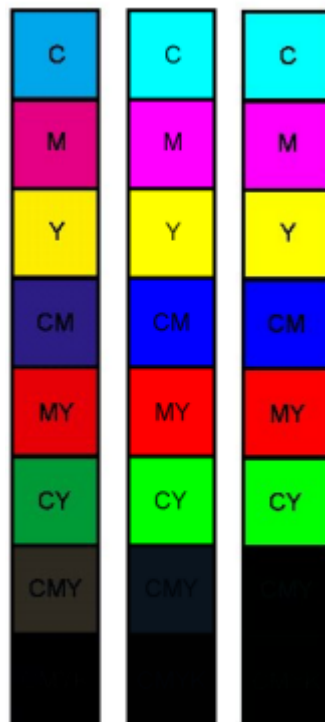
If you view a CMYK file, no matter whether or not it was created by EXTIF, with an image viewer program and you discover "wrong" colors like in the above illustration, then remember: it does *not necessarily mean that the colors are wrong, not even that the image viewer has made a mistake somewhere along the way, but screens are simply not suitable for correctly displaying CMYK colors - "truth lies on the paper" and not on the screen, at least concerning CMYK colors.*

Regarding the fourth color, "K" (blacK): *Theoretically*, it is considered that Cyan, Magenta and Yellow blend into 100% perfect black. *In practice*, however, the existing color dyes unfortunately mix into a dirty dark gray-brown only. In addition, color dyes cost quite a sum of money, so that one prefers to achieve the desired black by using *one* cheap dye, instead of blending three expensive dyes into an undesired color.
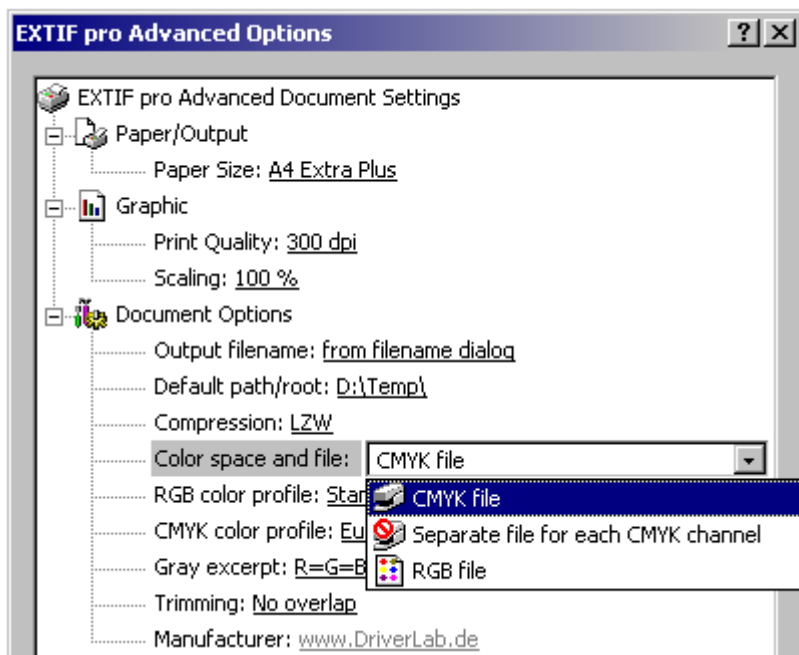
3.2.8.1 Which setting for which purpose?

For instance choose "RGB file" when

- the print result is not meant for printing machines or exposure devices, but – like in case of archiving – for the computer screen or for further processing, for example for converting into a different file format like *.jpg.

- you intend to subject the image, on your own, to less common or exotic color space transformations.

If you have selected option "RGB file", the settings of properties "CMYK color profile" and "Gray excerpt" become redundant.

Choose "Separate file for each CMYK channel" for example when:

- you want to edit individual CMYK channels using an Image Processing Program before exposing it, but the image processing program does not allow this directly in the CMYK file but in separate files for each CMYK channel. Paint Shop Pro 5 is such an image processing program while Photoshop, however, allows the editing of individual channels within *one* image file.

In all other cases, simply select the "CMYK file" as the default setting.
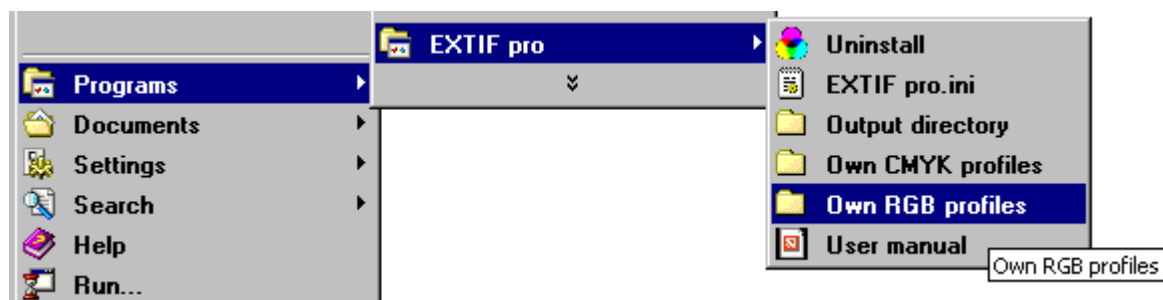

3.2.9. RGB Color Profile

The RGB Color Profile determines the ratio of the mixture of Red, Green and Blue with which individual colors will be represented for example on a screen. Therefore you sometimes might also hear the term „Monitor Profile" in this context.
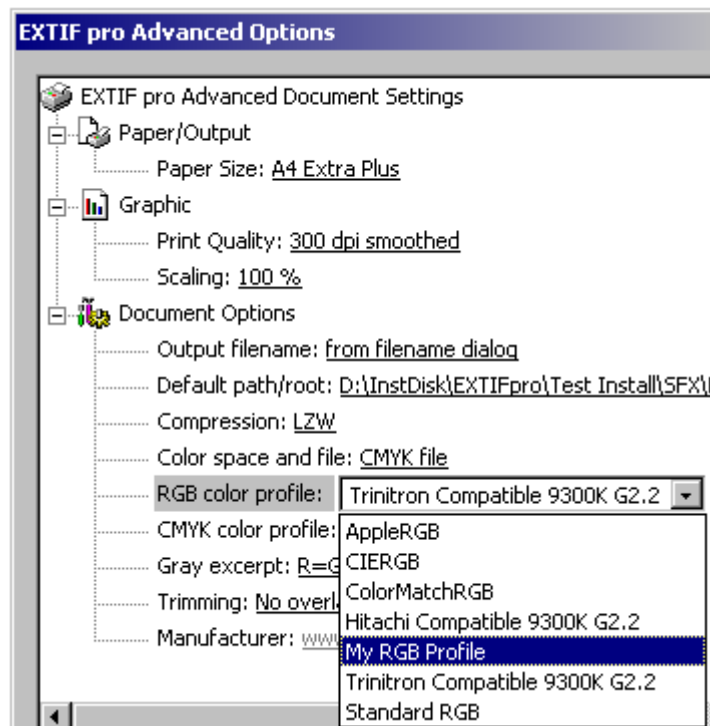
EXTIF pro by default provides the Standard RGB color profile „sRGB" – in case you furthermore wish to use other or own color profiles, then please just copy the corresponding *.icc or *.icm files to subdirectory „User RGB Profiles" of installation folder „EXTIF pro" and open the Property Pages again.

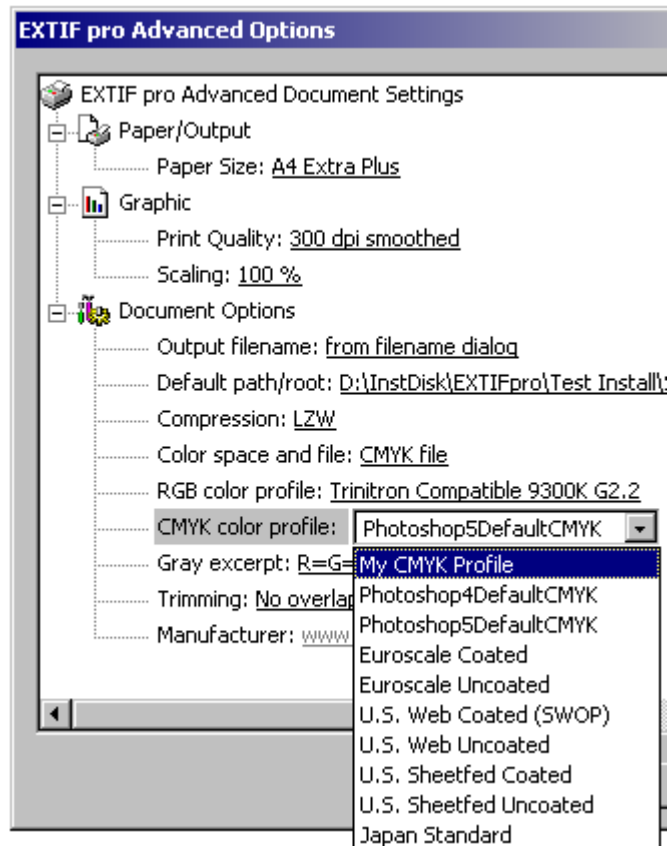You reach directory „User RGB Profiles" very comfortably via

   „Start" / „Programs" / „EXTIF pro" / "Own RGB profiles"

3.2.10. CMYK Color Profile

The CMYK Color Profile determines the ratio of the mixture of Cyan, Magenta, Yellow and Black with which individual colors will be represented on paper.

Depending on what color dyes you or your printing office use for printing on which paper, different color profiles are more or less suitable: For "coated" paper it is recommended to choose a color profile with the suffix "Coated" and for "uncoated" paper, a color profile with the suffix "Uncoated'. The most regularly used color profiles in Central Europe, for instance, are the "Euroscale" profiles. If you are not quite sure which color profile is the most suitable for your purposes, simply contact your printing office.

EXTIF pro by default provides the 7 most common CMYK color profiles – in case you furthermore wish to use other or own color profiles, then please just copy the corresponding *.icc files to subdirectory „User CMYK Profiles" of installation folder „EXTIF pro" and open the Property Pages again.

You reach directory „User CMYK Profiles" very comfortably via

„Start" / „Programs" / „EXTIF pro" / "Own CMYK profiles"
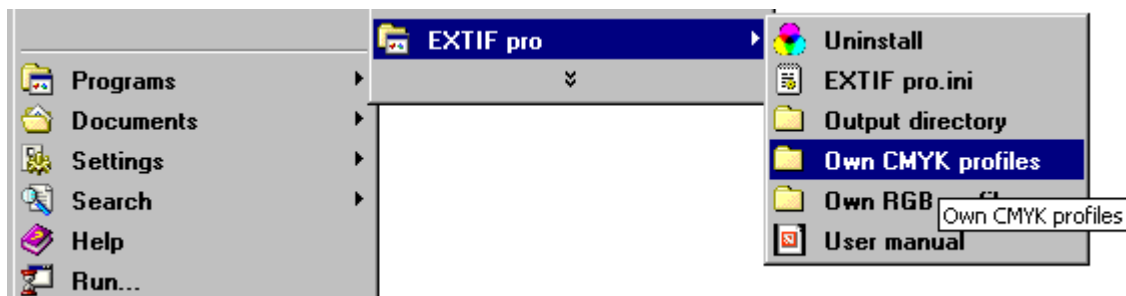
3.2.11. Gray Excerpt

The color of a dot in a document (e.g. a MS Word *.doc or a *.html in Internet Explorer) before printing with EXTIF pro, is called original color. As the document is usually meant for being displayed on the screen, these original colors are generally RGB colors.

Equal portions of red, green and blue result in a <u>neutral gray</u>. As already explained in paragraph "CMYK", in CMYK color space, especially the darker neutral gray can be obtained more cheaply and at higher color fidelity by adding a black ("K"-channel) portion to cyan, magenta and yellow, than by simply blending C, M and Y.

All common CMYK color profiles take this into account: They compose for example fullblack ("R=G=B=0%") as the darkest neutral gray, by approximately 90% K, 80% C, 70% M and 70% Y.
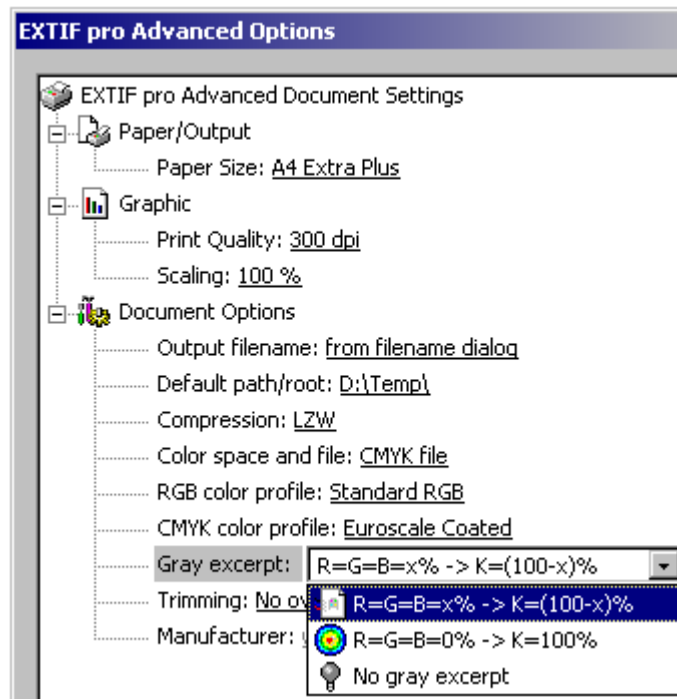
In order to maintain the mix ratios of neutral gray as they are pre-set by the CMYK color profiles, select option "No gray excerpt".

For text documents with embedded *colored* images, meaning documents with lots of fullblack pixels but few black-oriented color dispersions, it is recommended to *completely* represent the neutral fullblack ("R=G=B=0%") of the original document ("C=M=Y=0%") by K ("K=100%") in print output. In this case, please select "R=G=B=0% -> K=100%".

For documents that contain mainly gray scales, for instance text documents with embedded *black-and-white* images or *gray scale* images, you can go one step further by completely replacing the entire neutral gray with K. In this case, please select option "R=G=B=x% -> K= (100-x) %". Example: If a pixel of a document has the <u>original color</u> "R=G=B=37%", then the neutral gray will be represented by 63% K, 0% C, 0% M and 0%Y in print output.

Especially for smoothed fullblack writings on a white or neutral gray background, you should use „R=G=B=x% -> K=(100-x)%" instead of „R=G=B=0% -> K=100%", as in case of a fullblack excerpt, an undesired <u>Corona</u> surrounding the letters in the C, M and Y channels would remain.

3.2.12. Trimming

Theoretically, it would be sufficient to print an "Extra Plus" format right up to the inner edges of the crop margins. But in everyday practice, there is no knife or cutter that cuts with millimeter precision, so that, if a document has a colored background or colored areas stretching in some parts to the inner edges of the crop margins, and if the cut is not tight enough, white stripes will remain on the borders of the otherwise continuously printed paper. These white stripes are obvious especially on intense background colors; the phenomenon is referred to as "Flashing":
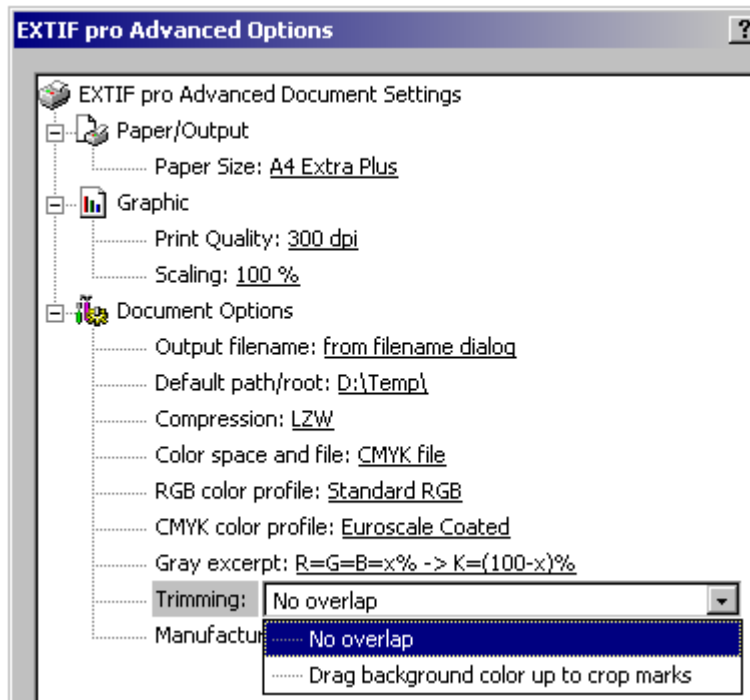

In the case that the colored sections on your document partly stretch up to the inner edges of the crop margins, select "Drag background color up to crop marks" in order to avoid Flashing. At this setting, EXTIF pro drags – this also being a world-widely unique characteristic – the color of the pixel located directly at the inner edge of the crop margin, further out to the crop margins by a few millimeters. (The exact extension of this overlap is set in LengthwaysOffsetAbsoluteValue parameter in EXTIF pro.ini).

Example (enlarged):
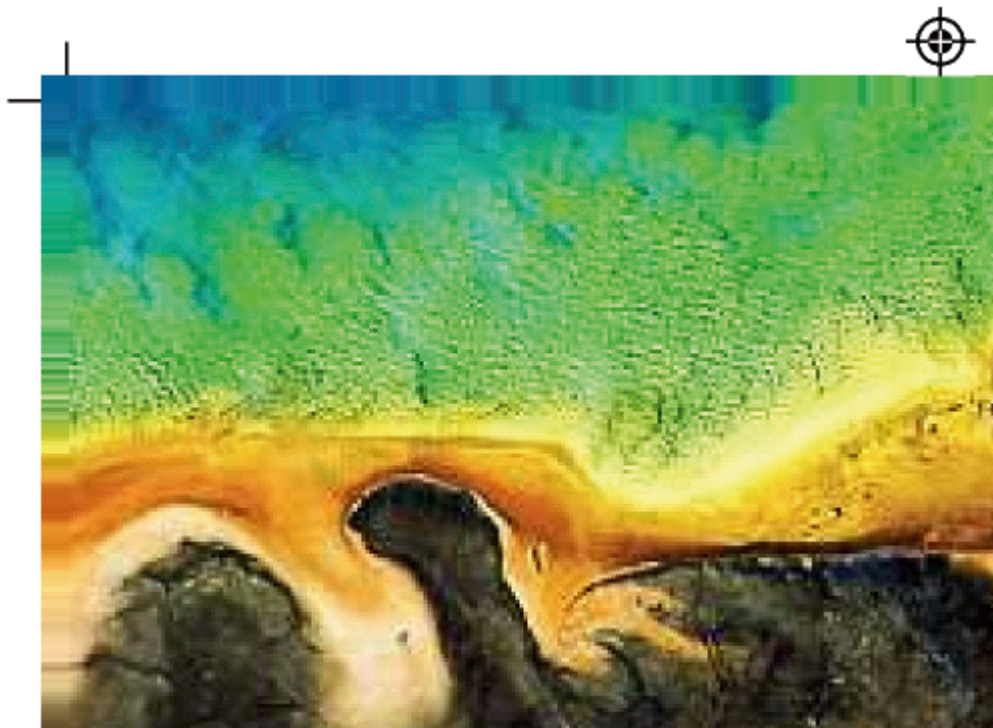
Comparison: For the same document the result would have looked as follows, if the setting "No overlap" had been selected. (Please pay special attention to the distance between the colored area and the crop marks at the upper left corner of the image.)
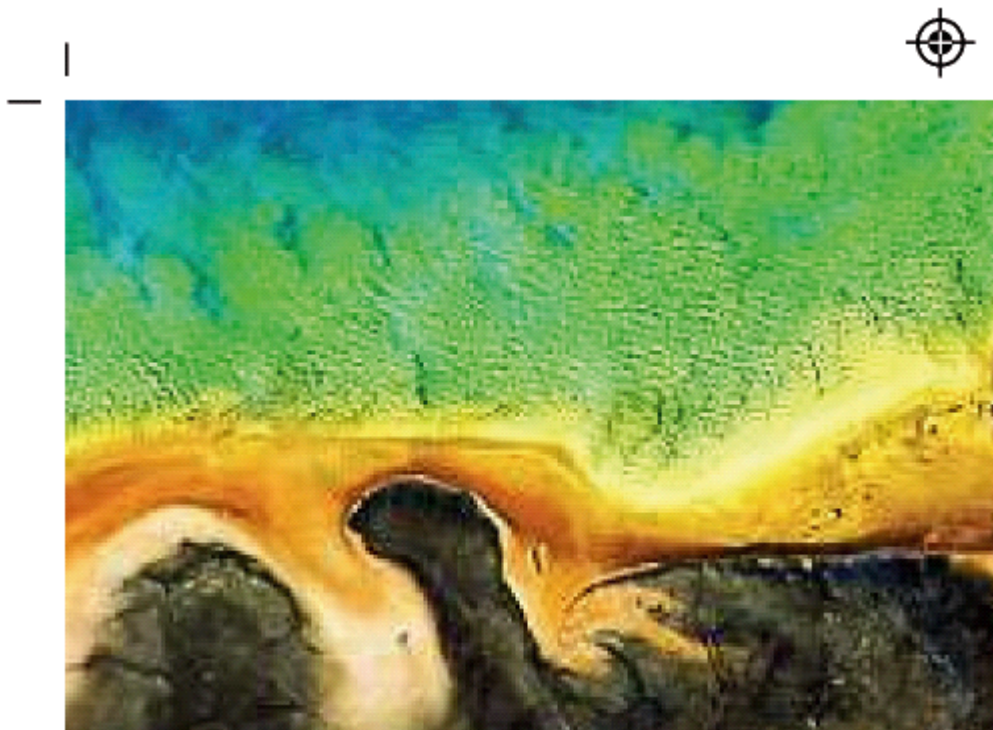
By default, EXTIF pro uses the option "No overlap", with regards to the case, in which the colored areas of the document do *not* reach out to the inner edges of the crop margins.

3.3. Image Viewer and Image Processing Programs

After printing a document, one would usually want to take a look at the result on screen before sending it to the exposure device. For this purpose, there are appropriate Image Viewer Programs like:

• ACDSee
• IrfanView
• Imaging
• or – in case of emergency - Internet Explorer
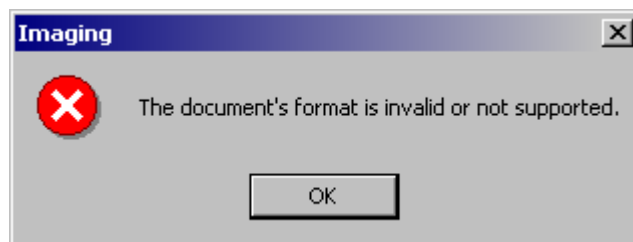
and Image Processing Programs such as:

• Adobe Photoshop
• QuarkXPress
• PageMaker
• Paint Shop Pro
• iPhoto Plus.

The difference between image viewing programs and image processing programs is that the image processing programs allow us to modify or edit pictures, while the image viewing programs only allow us to view the images.

As already mentioned in chapter "TIFF Format", there are numerous file formats for image files (from JPEG to EMF and from TIFF to Bitmap). Most of these formats are also divided into sub formats grouped by for instance:

• compression algorithm (RLE, LZW, JPEG, uncompressed, etc.)

• color space (RGB, CMYK, Lab, etc.)

• color depth (Black-and-white, gray scale, 24-bit-Colors, etc.).

It is not surprising that not all *image viewing programs can recognize and read all the types of formats and sub formats.* MS Imaging (in "Accessories package" of your Microsoft OS) for instance, reacts as below for CMYK-TIFFs:

Generally, nearly all Image Viewers and Image Processing Programs are capable of reading and displaying EXTIF pro's output files correctly.

3.4. Differences in behavior of Vector and Matrix Graphics on printers and screens

Let's suppose you are printing a document that contains an embedded image (here for instance blossom with inserted yellow writing) and also some "normal" text *outside* of the image;

at resolution 600 dpi on EXTIF pro. An amateur would perhaps be surprised, when viewing the result on a screen, that the outlines of the letters outside the inserted picture always remain sharp, regardless of the selected resolution, while the embedded picture appears increasingly blurred with increasing resolution:

The text that you are currently reading represents a so-called vector graphic: The outlines of each letter or symbol of a certain font are known to the operating system as geometrical objects and figures such as

straight lines, circles, squares, ellipses etc., like this:

"Draw a straight line of 17 length units from the starting point in the lower left corner towards the right, then 8.3 units upward, from there draw a circular arc of 5.1 units radius length by 30° in clockwise direction, then, from there, 11 units to the right, etc., until you get back again to the starting point. Then fill the enclosed area with the selected color and, on a differently colored background, the letter will become visible."

All of this, however, does not take place in a real physical space, but in an abstract mathematical space. Therefore - and this is crucial for the following train of thought - the mentioned length unit does not have any physical dimension such as meters, mm, inch or miles. It is likewise *abstract*, therefore you can assign *any arbitrary* longitudinal dimension to it, thus also the longitudinal dimension "Pixel". A square is always a square, no matter if its edge length measures 5 meters, 5 inches, 5 pixels or 137 dots. The outline sharpness remains completely unaffected.

When drawing or rendering, the graphics engine simply adapts the abstract length unit to the selected resolution (in pixels or dots) - the outline sharpness, however, remains consistent.

The embedded image along with the inserted writing, however, represents a matrix graphic, i.e. the graphic object "image" is represented by a matrix (table) of pixels. Schematically represented so:

Column	1	2	3	4 ...
Line				
1	green	lemon yellow	purple	blue
2	yellow	light green	red	turquoise
3	dark green	pink	black	light green
4	white	gray	red	pink
...				

For each pixel, characterized by its position in line/row and column within the matrix, table or dot raster, there is only *one* color information. If a picture, which appears sharp to the eye, is printed as it is displayed on the screen at 96 dpi resolution, the same picture, at a higher resolution, e.g. 600 dpi, then the 96 color information of the document must spread themselves over 600 pixels of the image file. Therefore the information *density*, i.e. the number of color informations per physical linear or area unit, is reduced. Consequently the picture seems blurred when viewed on a screen with 96 dpi resolution - instead of displaying it, according to its purpose, on an exposure device or a printer.

With exposure devices or printers, on the other hand, it is a totally different situation, as the device can adjust itself to the resolution of the image file - in contrast to screens, which operate at fixed, pre-set resolution. Exposure devices and printers can also actually represent one inch of the picture on one inch of the film, or of the paper respectively, and not on 600 / 96 = 8.33 inches as on screens. Therefore, no blurring actually appears on film or paper, although the same matrix graphic in the same image file appears to be (but *is* not!) blurred *when viewed on the screen*. And again, the truth lies on the paper and not on the screen.

Actually, it is not that the matrix graphic loses sharpness on film or paper when compared with the original document, but the vector graphic gains sharpness on film or paper in comparison to the original document!

3.4.1. Pixelation on certain fonts

Now if the graphics engine (GDI) of your operating system should be forced to treat characters, which usually represent vector graphic objects, as matrix graphic objects, because a certain font is improperly installed on this operating system, then Pixelation will occur.

The middle writing line in the following illustration shows this phenomenon very clearly:

nmer der Rechnur

atum Der Bestellur

nmer Der Bestellu

If, on your computer, certain Fonts should show Pixelation effect, which occurs quite rarely, but nevertheless every now and then, this is not due to EXTIF pro printer driver, but to the interaction of Font and GDI, of which you can convince yourselves easily, by

- either printing the same document on paper, using your "normal" (physical) printing device, and observe the same Pixelation effect in this process

- or using another Font in the document, whereupon the Pixelation will no longer occur

- or by printing the same document with EXTIF pro´s demo version on another computer, whereupon the Pixelation will no longer occur.

3.5. Huge files

As already mentioned in chapters "Paper Format" and "Resolution or Print Quality", high resolutions thus respectively large paper formats can lead to huge output files. In what concerns the uncompressed image files, EXTIF pro still takes care on its own that

- there is sufficient free space on the selected storage medium available

- and the general size restriction for image files of

    $2 ^ 32$ Byte = 4.2 Gigabyte

    is not exceeded.

However EXTIF pro cannot predict the future compression rate of compressed image files, so you have to ensure there is enough free space on the hard disk, and that the 4.2 gigabyte restriction will not be exceeded.

3.5.1. Duration of printing process

At high resolutions and / or with a large Paper Format, printing can occasionally take several hours.

In order to enable you to make an approximate estimation: On a computer with frequency of 1 GHz and a memory of 256 MB, printing an "A4 Extra Plus" format page at resolution 4800 dpi usually takes about 20 minutes; but at resolution 300 dpi, it only takes approx. 12 seconds.

3.5.2. Opening Huge files

If, after the completion of the printing process, you want the see the result using an image viewer program, i.e. to open the issued image file with the image viewer, you will notice that sometimes your computer's memory is not large enough for this action. Typical, partly misleading warnings of your image viewer could look like this:

- "System running out of virtual memory"

- "Image file header error"

- "Bad or unrecognized image header"

- "Unknown file format"

- "File too large".

3.6. Canceling running printing processes

Whether a printing process is still running or is already finished can be recognized as follows:

- The printer icon in task bar in the right bottom corner of the screen, adjacent to the digital clock, indicates that a printing is still in process.

If you do not simultaneously print on other printers than EXTIF pro, then you can tell from the icon display that the current printing process is run by EXTIF pro. If you want to make sure, simply double-click on the printer icon, in order to view a list of print jobs currently running or upcoming:
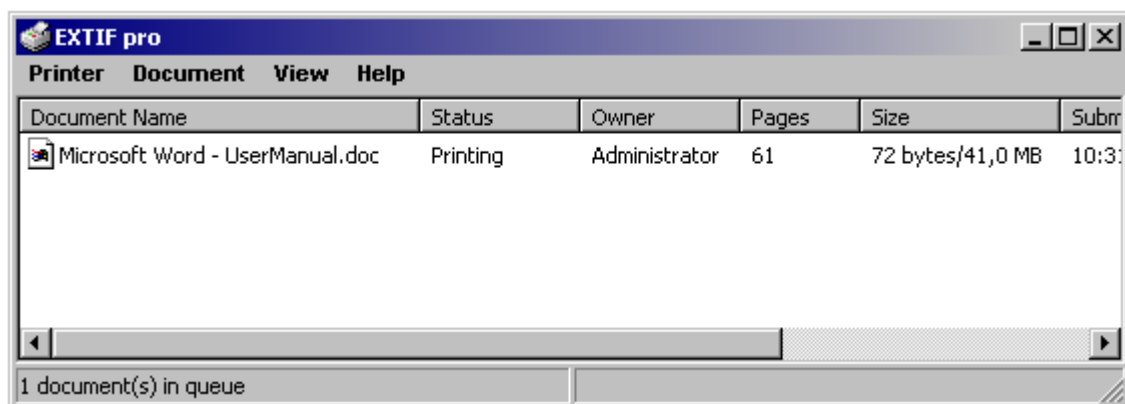

- The message window
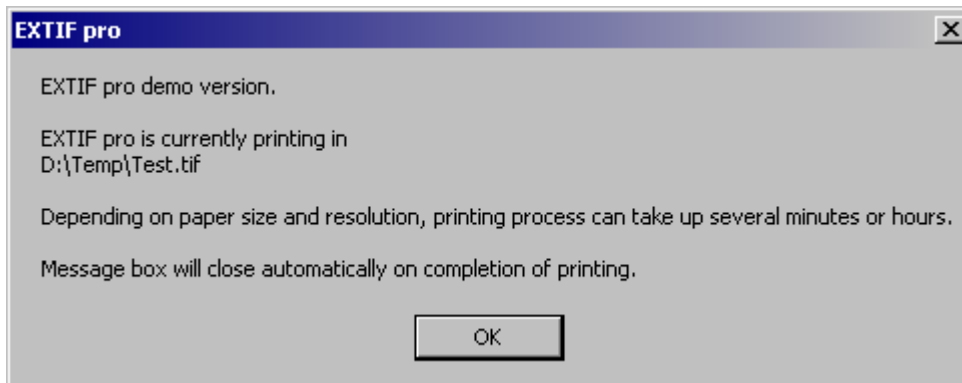
also indicates that printing is in progress, unless you did not already close it by clicking "OK".

You can cancel a current printing process by double-clicking on the printer icon in the task bar in the right bottom corner of the screen, adjacent to the digital clock, and thereby viewing a list of the currently running print jobs, then mark the desired print job, and finally click "Document" / "Cancel".
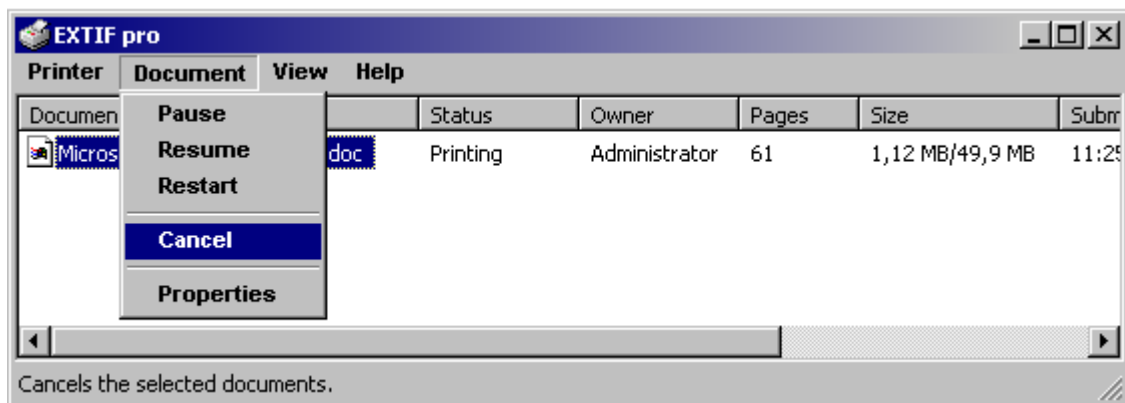
3.7. Acknowledged incompatibilities

- The attempt to open, from the print dialog in CorelDRAW 8, under Windows 2000, the Property Pages of *any* printer - thus not only those of EXTIF pro! - can lead under certain circumstances to incalculable, unusual behavior - from program abortion to displaying the property pages with Chinese characters.

- Generally, almost all processes in 32-bit-computers are subject to a restriction to $2 ^ 32 = 4,294,967,296$ bytes = 4.2 GB. So, if you should impractically wish to print, in MS Word, an A4 page on 4800 dpi, with a side-filling embedded matrix graphic, MS Word will internally exceed this limit, so that EXTIF will receive only an empty, white page.

- If, under Windows XP, in the file name dialog you either create a new directory or rename an already existing one, these changes will be carried out, but yet become visible in the display only after updating it by means of the "F5" key. Windows 2000, however, updates the message display automatically.
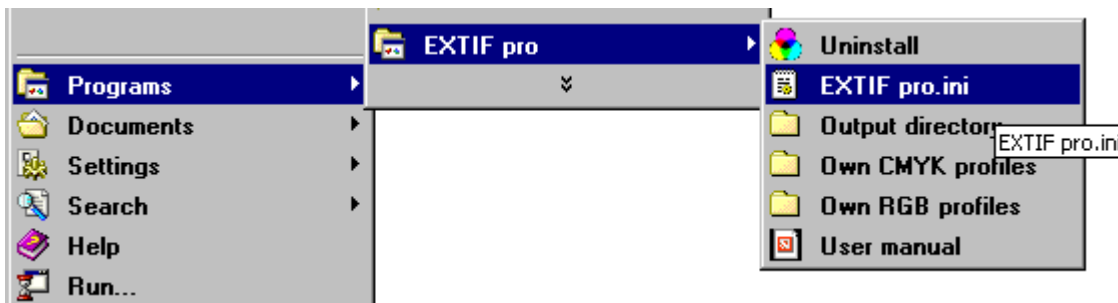
4. Configuration file EXTIF pro.ini

You can find EXTIF pro.ini in the system <u>Driver Path</u>.

- under Windows 2000 this usually is: "C:\WINNT\system32\spool\drivers\w32x86\3\"

- and under Windows XP: "C:\Windows\system32\spool\drivers\w32x86\3\"

But the most comfortable way to open EXTIF pro.ini is by clicking

"Start" / "Programs" / "EXTIF pro" / "EXTIF pro.ini"

4.1. What does EXTIF pro.ini offer?

EXTIF pro.ini offers to you the opportunity to adapt and customize the following aspects of the function mode of EXTIF pro printer driver to your individual requirements and desires, if this should be necessary:

(We explicitly point out here that EXTIF pro is fully operational immediately after the installation, *without any modification or individual customization of EXTIF pro.ini*, and also later on generally requires no further changes or individual adjustments - only experts should modify EXTIF pro.ini and only in case this really seems to be necessary.)

4.1.1. List of Paper Formats

(see also chapter "Paper Formats"). In practice it can under certain circumstances occur that you:

- want to print on a less usual, or possibly even self-defined paper format, which is not contained in the list of the paper formats, that EXTIF pro supports by default.

- want to print an image file on paper, with dimensions corresponding exactly to the dimensions of the picture (you can query the dimensions of an image file, for instance, in Adobe Photoshop under "Image" / "Image Size" or in Paint Shop pro under "Image" / "Change Size" / "Print Size"), meaning that the paper format has to adapt to a given document size, instead of adapting, as usual, the document size under "File" / "Page Setup" to given paper formats – think, for example, of the line breaks depending on the paper format in a text document.

In these cases, simply add the desired formats to the paper format sections.

4.1.2. Imprints on crop margins

EXTIF pro recruits the imprints (register crosses, color wedges and crop marks) from *.bmp files that you can freely select and / or change, by modifying the file name and file path in the Imprint Sections.

4.1.3. Imprint position on crop margins

You can choose the position of each individual imprint on the crop margins independently of the positions of the others imprints, by changing the position indications in the Imprint Sections.

Caution: Whatever settings can be freely chosen, they can also unfortunately be incorrectly chosen, e.g. a wrong path to a *.bmp file, which does not exist at all in there, or a position *outside of* the paper format; therefore, please read very carefully the provided explanations and always make sure you have a backup copy of EXTIF pro.ini, before applying any changes to it.

After being modified, EXTIF pro.ini must be saved back into the system <u>Driver Path</u> (under Windows 2000, this is usually

„C:\WINNT\system32\spool\drivers\w32x86\3\"

and under Windows XP

„C:\Windows\system32\spool\drivers\w32x86\3\")

otherwise the changes are not applied, and thus remain without effect. Besides, EXTIF pro.ini must not be renamed.

4.2. Syntax: How is EXTIF pro.ini structured?

EXTIF pro.ini is subdivided into sections. A section is structured as follows:

    [section name]
    variable name1 =value of variable1
    variable name2 =value of variable2
    …

For this, the following rules apply:

4.2.1. Assignment of character strings

If the value of variable is a character string, then this must be put between quotation marks. Examples:

    PaperName ="A4 Extra Plus"
    VertFilename ="C:\EXTIF pro\Imprints\ColorWedgeV600.bmp"

However, if the value of variable is not a character string, then the variable value must not be written between quotation marks.

4.2.2. Forbidden Control Characters

Section name and variable name must neither contain blanks (" "), nor equal signs ("=").

At the right hand side of the equal sign ("="), which generally indicates assignment, there must not be blanks (" "). Nevertheless, at the left hand side of the equal sign ("="), there can be one, several or no blanks (" ").

Within quotation marks, control characters are, however, permitted, e.g.:

    PaperName ="A4 Extra Plus"
    VertFilename ="C:\EXTIF pro\ColorWedgeV600.bmp"

4.2.3. Units

Absolute geometrical distances are always indicated in tenth of millimeter. Example for DIN A4 page with a 21cm width:

    ShortSideLength =2100

Relative geometrical distances - recognizable by the suffix "Rel" in variable names - are always indicated in percent and in positive values.

Example:

    [RegisterCross]
    ShortSideRel   =50

indicates that the register cross - *regardless of paper format* - should always stand in the middle (50% of length of short side) of the crop margins of the paper format.

Absolute and relative geometrical distances are always indicated in integers. Not permitted is thus e.g.:

    ShortSideLength =2100,78

4.2.4. Short and long side of a Paper Format

On its Property Pages, EXTIF pro offers you the possibility to select whether you want to print the imaginary paper, the drawing canvas, in Portrait or Landscape orientation. For this reason, position indications in x- and y-coordinates, or horizontal and vertical coordinates, would be unusable without determining Landscape or Portrait orientation.

That is why in EXTIF pro.ini you will often meet the terms "ShortSide" and "LongSide". These coordinates designate the short and the long side of a paper format - e.g. an A4 paper format has a short side of 21 cm and a long side of 29,7 cm.

Regardless whether you turn the paper in Portrait or Landscape orientation, the short side always remains the short side, and the long side always remains the long side. Rotation invariant ShortSide and LongSide coordinates determine distances along these two sides of the paper format.

All position indicators therefore refer to the origin (point zero) of this ShortSide - LongSide coordinate system, which is, when printing on Portrait orientation, in the left upper corner of the paper, and when printing on Landscape orientation, in the upper right corner, as shown below:
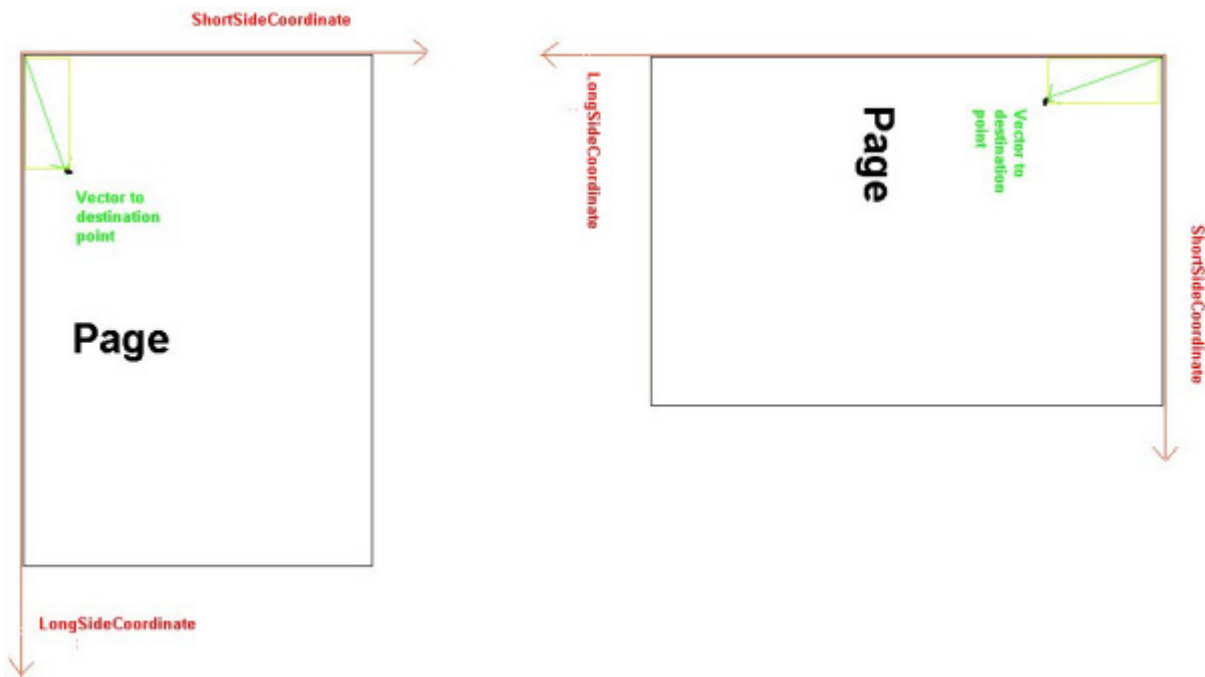
4.3. The sections, in detail

4.3.1. Paper Format Sections

Section name: „Paper" + <ordinal number>

Attention: The section with default format "A4 Extra Plus" must **not** be deleted.

4.3.1.1. Ordinal number

The ordinal numbers must begin from 1 and in an uninterrupted succession, as a missing ordinal number would interrupt the series. In the case of an interrupted series, the sequence will be read only up to the interrupting location within the ordinal number series.

Example:
If EXTIF pro.ini looks as follows,

        [Paper1]
        ...
        [Paper2]
        ...
        [Paper3]
        ...
        [Paper4]
        ...
        [Paper7]
        ...
        [Paper8]
        ...
        [Paper9]
        ...
        [Paper10]

then on EXTIF pro's Property Pages only the paper formats having ordinal numbers from 1 to 4 would be available – as Paper5 is missing - leaving out the ones from 7 to 10.

The length of the paper format name, which you assign to the variable "PaperName", must not exceed 32 characters. Therefore, a file name like this, for example, could not be used:

PaperName ="Paper format defined particularly for the requirements of customer Miller"

4.3.1.3. Imageable Area versus Paper Dimensions

The term "Imageable Area" designates the area of the paper format, without or excluding crop margins, in other words the particular area, which is actually available to the printing PC application (e.g. PowerPoint), while ShortSideLength and LongSideLength designate the area with or including crop margins.

In the above sketch, the crop margins are colored in yellow. The Imageable Area is thus the area within the yellow frame.

Example "A4 Extra Plus":

```
ShortSideLength =2350                    // (2100 + 2 * 125)
LongSideLength  =3220                    // (2970 + 2 * 125)
ImaginableAreaShortSideLength =2100      // regular A4 width
ImaginableAreaLongSideLength  =2970      // regular A4 height
```

The crop margins, on which the imprints (register crosses, crop marks, gray-scale wedge and color wedge) are situated, thus have a width of 1.25 cm each.

If ShortSideLength is larger than ImaginableAreaShortSideLength and LongSideLength is larger than ImaginableAreaLongSideLength, EXTIF pro automatically adds crop margins with imprints, otherwise it doesn't. Formats, which fulfill the above mentioned conditions, are accompanied by the suffix "Extra Plus" - but you can also choose any other name. Please make sure, however, to choose the crop margins, i.e. the difference between ShortSideLength and ImaginableAreaShortSideLength, or between LongSideLength and ImaginableAreaLongSideLength, respectively, are wide enough to hold the imprints.

Paper Formats suffixed by "Extra" (without "Plus") on the other hand serve in case you desire to add the imprints on the crop margins by means of programs like "PageMaker" or "QuarkXPress" on your own.

If you add a paper format with the name "XYZ", you do not necessarily need to add a paper format named "XYZ Extra Plus", too.

4.3.2. Imprint Sections

EXTIF pro recruits the imprints (register crosses, color wedges, crop marks) from *.bmp files, whose complete file name, including path, is indicated in the "FileName" variables. Image file formats other than *.bmp are not allowed.

Furthermore, EXTIF pro differentiates between vertical and horizontal imprints ("Vert" and "Horz"), as, for instance, the horizontal color wedge, which is used on Landscape orientation,
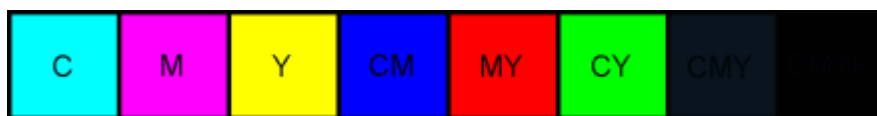
cannot be transformed into the vertical color wedge used on Portrait orientation, by simply rotating the image by 90°,

as you can easily tell from the fact, that the embedded letters remain vertical and easy to read in *both* cases.

In case you want to use your *own* *.bmp files as imprints, then width and height, *in pixels or dots*, of these *.bmp files should be sized in a way that they provide the desired size *in length units* (e.g. cm or inch) at a resolution of 600 dpi (= "Dots per inch" (1 inch = 2,54 cm)).

If you wish to use your *own* color wedges, we draw your attention upon the fact that, for imprints (and only for these), during the color space conversion from RGB to CMYK, the following substitution rules apply for the following prominent RGB colors, in order to make the color substitution independent of the selected CMYK Color Profile:

Color	RGB values	substituted by	CMYK values
Cyan	{ 0, 255, 255 }		{ 255, 0, 0, 0 }
Magenta	{ 255, 0, 255 }		{ 0, 255, 0, 0 }
Yellow	{ 255, 255, 0 }		{ 0, 0, 255, 0 }
Blue	{ 0, 0, 255 }		{ 255, 255, 0, 0 }
Red	{ 255, 0, 0 }		{ 0, 255, 255, 0 }
Green	{ 0, 255, 0 }		{ 255, 0, 255, 0}
CMY Dark Gray	{ 10, 20, 30 }		{ 255, 255, 255, 0}
CMYK Black	{ 1, 1, 1 }		{ 255, 255, 255, 255 }
10% Gray	{ 230, 230, 230 }		{ 0, 0, 0, 25 }
20% Gray	{ 204, 204, 204 }		{ 0, 0, 0, 51 }
30% Gray	{ 179, 179, 179 }		{ 0, 0, 0, 76 }
40% Gray	{ 153, 153, 153 }		{ 0, 0, 0, 102 }
50% Gray	{ 128, 128, 128 }		{ 0, 0, 0, 127 }
60% Gray	{ 102, 102, 102 }		{ 0, 0, 0, 153 }
70% Gray	{ 77, 77, 77 }		{ 0, 0, 0, 178 }
80% Gray	{ 51, 51, 51 }		{ 0, 0, 0, 204 }
90% Gray	{ 26, 26, 26 }		{ 0, 0, 0, 229 }
100% Gray	{ 0, 0, 0 }		{ 0, 0, 0, 255 }

Please notice that the cells of the gray-scale wedge are therefore filled only in the K channel, but not at all in the C, M and Y channels. Thus color applications over 300% are avoided, which otherwise, for example on "90% Gray - > { 229, 229, 229, 229 }" would soak through the wet paper. Substitution rules thus are rather conceived for printing than for exposures.

In general, please make sure you select the position indications of the imprints in a manner that they won't interfere with the overlap solving the Trimming Problem.

4.3.2.1. Crop marks

LengthwaysOffsetAbsoluteValue and CrosswaysOffsetAbsoluteValue indicate the distance – measured lengthways, or crossways respectively, to the orientation of the crop mark - between the nearest edge of the crop mark and that particular corner of the imageable area, which is meant to be marked by this crop mark:
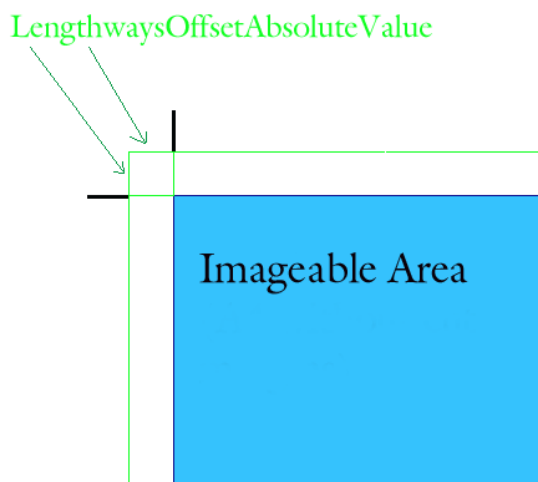
<u>4.3.2.2. Register crosses and color wedges</u>

The prefix "Rel" indicates relative positions. Relative positions always refer to the image area of a format and not to its total size – though even if these two are congruent for many paper formats like A4, for instance.

If relative positions ("Rel") take on the values 0% or 100%, then the associated absolute distances ("Offset") describe the distance between the edge of the image area and that particular edge of the imprint, which is facing the edge of the image area.

If relative positions ("Rel") take values other than 0% or 100%, then the associated absolute distances ("Offset") describe the distance between the geometrical center of the imprint and the point, which is given by the relative position.

Example: When printing on Portrait orientation, the below enlisted values mean as follows:

```
[ColorWedgeVector]      // place the color wedge ...
ShortSideRel=100        // ...onto to the right crop margin (100% to the right),
                        // its edge, which is facing the Image Area,...
ShortSideOffset=30      // …3 mm away from the edge of the Image Area,...
LongSideRel=50          // …vertically at the height level of in the middle of the Image Area,
                        // (50% of the LongSide – measured from top)...
LongSideOffset=320      // …and from there 32 mm down.
```

4.3.3. PrinterStatus section

Variable OutputPath stores the path you enter at "Default path/root" on EXTIF pro's Property Pages, so that your "favorite path" or your "favorite file name root" don't get lost when shutting down your computer, and you won't have to type it in again every time after restarting the computer.

It is thus advisable not to change OutputPath in EXTIF pro.ini, but under "Default path/root" on EXTIF pro's Property Pages.

5. Appendix

5.1. Keyword index