EFI Pro 16h / EFI Pro 24f

This document provides information on how to drive the EFI Pro 16h and 24h printers from Fiery XF. It covers the following topics:

- Workflow
- Printers, including setting up in Fiery XF
- Fiery XF settings
- Creating calibration files and media profiles
- Printing with white ink
- Special features, including skipping blank space during printing, and media and ink consumption

Workflow

The following components are required to print to an EFI wide format printer from Fiery XF:

- Fiery XF Server
- Fiery Command Workstation
- EFI Print Control Utility
- Printer-specific DLL
- Printer hardware

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Printers

Supported printers

The following EFI Wide Format printers are supported:

Printer model	Description
EFI Pro 16h White	6 head CMYKWW hybrid
EFI Pro 24f White	6 head CMYKWW flatbed

The Pro 16h and Pro 24f printers are available since Fiery XF 6.4 onwards.

PROGRAPHICS UV XA ink

This ink was introduced 2021. To use it you need either

- Fiery XF 7.2.3 plus patch (Contact your local support to get the needed patch) or
- Fiery XF 7.3 or higher

Setting up the printer in Fiery XF

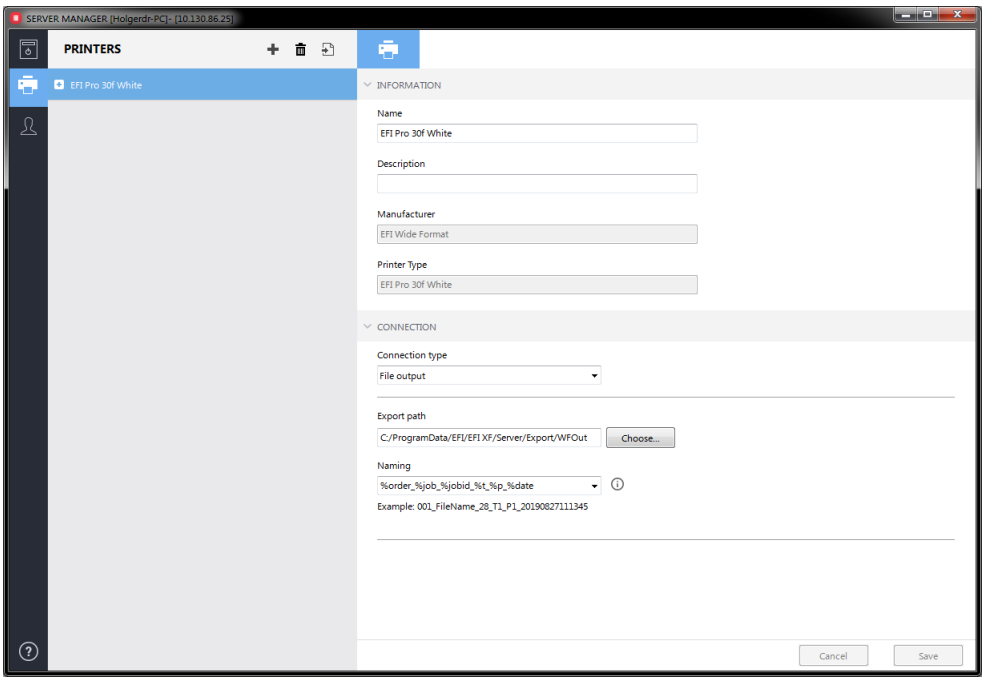
You require a license for the Printer Option EFI Wide Format.

Set up the printer in Server Manager to

- either use the **File output** option to generate a *.bco file which you can load into the EFI Print Control Utility. This is the default.
- or use the **Print via IP network** option to print to the IP address of the PC that is connected to the printer.

File Output

The Fiery XF server and Command WorkStation are normally installed on the printer PC. The preferred workflow when printing to the printer is the so-called RIP-then-print workflow where the Fiery XF server is configured for file output.



When set up this way, the Fiery XF server RIPs the job and creates a *.bco file. Use the EFI Print Control Utility to select the *.bco file and print the job. For more information on how to use the EFI Print Control Utility, see the printer's Operator's Guide.

Print via IP network

You can also set up the Fiery XF server to RIP the files directly to a certain IP address. When the Fiery XF server and printer software is installed on the same PC, use 127.0.0.1 as the IP address for printing.

If you import a job into Command WorkStation and select the job to be printed, the job will RIP and print on the fly. There is a risk of the printer stalling if you RIP and print jobs simultaneously.

If the Fiery XF server is running on a different PC, observe the following:

- Set the IP address to the IP address of the printer PC.
- Use the EFI Print Control Utility for printing.
- Make sure that you have a gigabit Ethernet connection as the average data transfer rate can reach 15MB/s.
- Firewalls, or any other Internet security software, must allow data transfer via the TCP port 9100 (outgoing on the Fiery XF PC, incoming on the printer PC). In Windows 7 and later, the network must be classified as a home or office network on both PCs. Do not select a public network because the Microsoft default security setting blocks communication with port 9100.

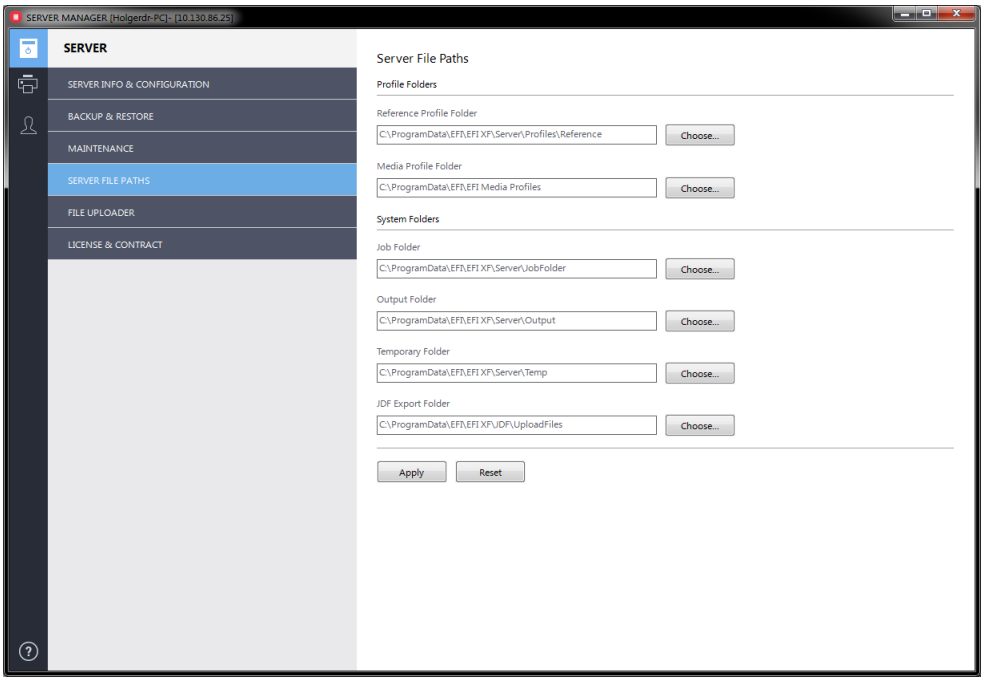
Fiery XF settings

This section is intended for printer operators who are familiar with Fiery XF. Do not submit print jobs if you are not an authorized printer operator.

Output folder

When the connection type is set to **File output** in Server Manager, you can specify where to save the print files. By default, the location is set to F:\Output.

When the connection type is set to **Print via IP network**, the output files are generated in F:\Output, by default. You can change the default folder by stopping the Fiery XF server and then clicking Configuration -> Server File Paths in Fiery Server Control, or in Server Manager at Server > Server File Paths.



In both cases you can access the Output folder directly from the EFI Print Control Utility.

Print mode

Fiery XF comes with a number of pre-configured print modes. Each print mode contains a unique combination of the following settings:

- Passes
- Double strike
- Max / standard speed (standard only available for Pro 24f)

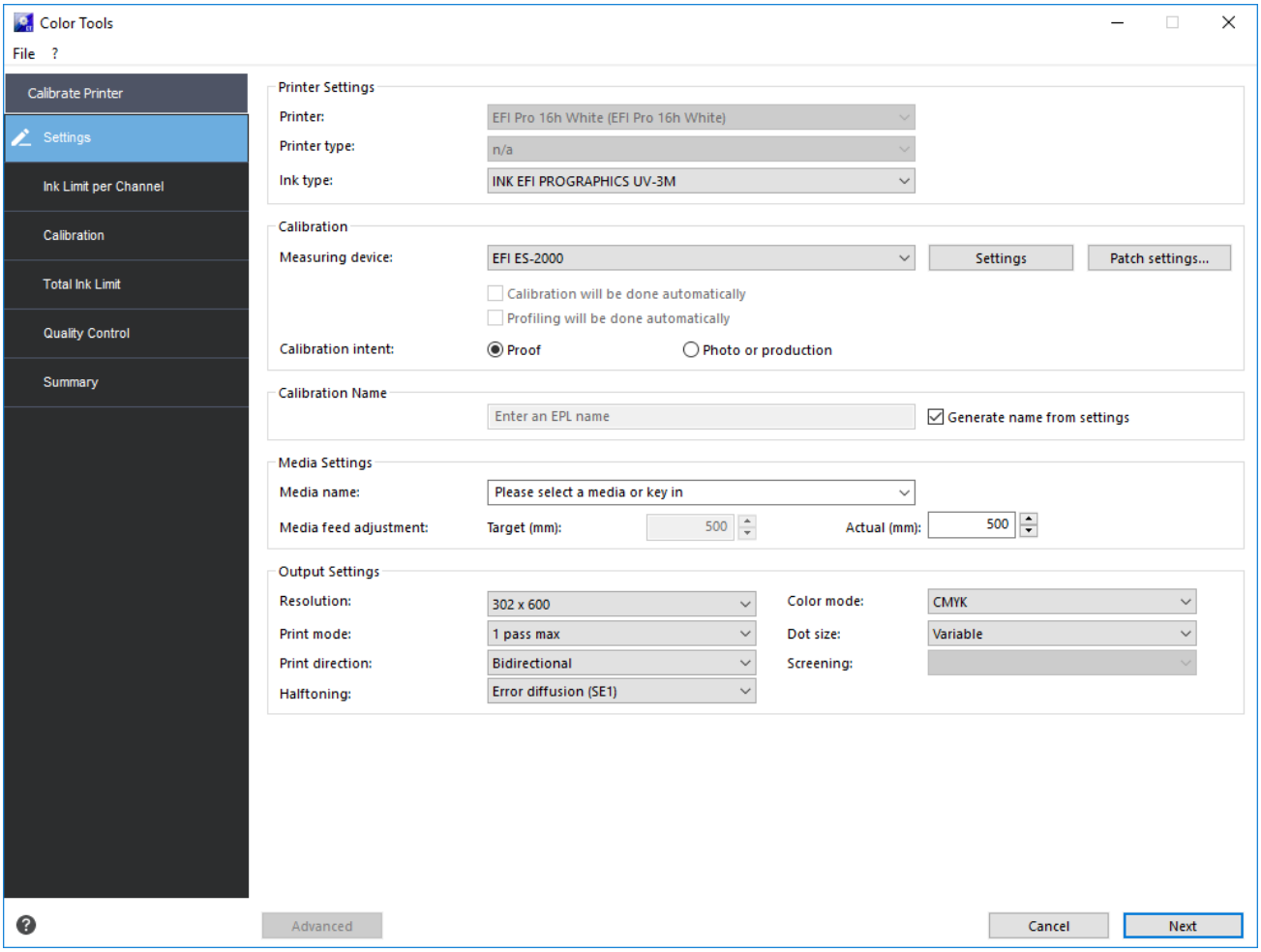
You can change the print mode on the Special Printer Settings pane. The print mode is also saved as part of the media profile, so be aware that if you change the print mode on the Special Printer Settings pane, it will affect the print quality of the media profile. For this reason, it is recommended that you select a media profile with the appropriate print mode settings, or create a new media profile for your specific requirements.

Print direction

You can change the print direction setting on the Speed pane for the workflow.

Creating calibration files and media profiles

This section provides information on specific settings that are necessary when creating a calibration file in Color Tools. The calibration file defines the print conditions for the media profile. No special license is required to create a calibration file. The Color Profiler option license is required to create custom media profiles.



Select “Photo/Production” as the linearization intent. Selecting “Proof” will limit the gamut of the printer.

The following resolutions and dot sizes (pl) are available:

Nom. res.	Exact res.	Ink %	Var.	Robust	Unlimited
300x600	302.38x600	39	7-21	14-21	7-21
600x600	604.76x600	76	7-21	14-21	7-21
900x600	907.14x600	113	7-21	14-21	7-21
600x1200	604.76x1200	151	7-14	14	7-21
900x1200	907.14x1200	227	7-14	14	7-21
1200x1200	1209.52x1200	302	7	14	7-21

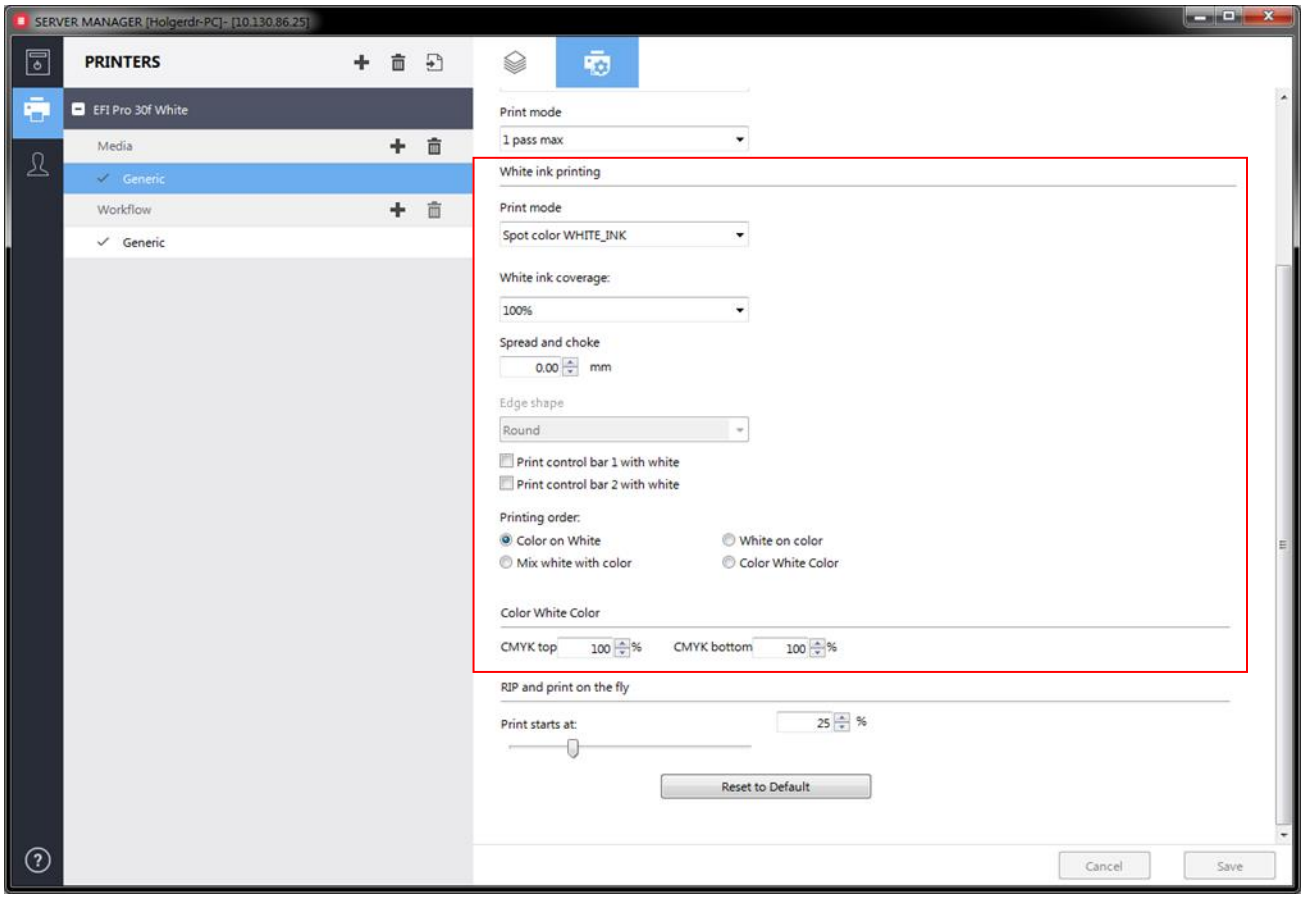
When selecting a resolution and dot size, observe the following:

- Generally speaking, a fixed amount of ink per square inch is applied to all similar colors. In Color Tools, a resolution of 600 x 600 dpi requires by default 28 pl of ink to create the 100% ink limit. A percentage of less than 100 reduces the overall color gamut. For percentages above 100, Fiery XF automatically reduces the amount of color ink accordingly.
- The maximum dot size is 21 pl. The color gamut decreases at 300 x 600 dpi as the ink droplets do not completely fill the available space.
- You can adjust the amount of white ink separately. The 100% ink limit for 4-level color modes is 21 pl. This does not depend on the resolution.
- A variable dot size is the best choice for most applications.
- Fixed dot sizes (Normal, Fine, Superfine) are more robust and are recommended if mist or banding is an issue. However, be aware that fixed dot sizes can result in a grainier print.
- Normal, Fine and Superfine dot sizes do not use Color Tool's pre-linearization. The dot sizes are adapted instead.
- Robust Variable dot size starts with a bigger dot size — 14 pl instead of 7 pl. Its performance lies in between that of variable and fixed dot sizes.
- Unlimited Variable applies full ink per pixel. With higher resolutions the ink amount rises up to 302%. Use this mode only in applications where you need that extra ink.
- For variable dot sizes, the table shows the effective dot range for color inks. Due to the stochastic nature of the halftoning, a small percentage of larger dots will be used at 100%, e.g. 21 pl at 600 x 1200 dpi.

Printing with white ink

There is no specific linearization available. However, you can control the white channel by using a visual correction curve.

To print white ink you must make the appropriate settings on the Special tab for the output device.



The settings are described below.

Print mode

Select one of the following print modes:

Print mode	White channel
Spot color WHITE_INK	Prints: The spot color that is defined as WHITE_INK in the document. Any color separation from the job that is mapped to WHITE_INK and saved as a spot color table (*.cxf). The spot color table must be selected on the Spot Colors pane. The spot color WHITE_INK is output without color management in Fiery XF.
Fixed ink amount on printed areas*	A white ink dot is created for all pixel information that is not 0,0,0,0,0 (including Spot color WHITE_INK). You can exclude WHITE_INK from the print job on the Spot Colors pane.
Bounding box*	All image pixels are printed in white ink. This is the recommended setting for creating a calibration file.
White_INVERSE	A white ink dot is created for all pixel information that is 0,0,0,0. You can exclude WHITE_INK from the print job on the Spot Colors pane.
Ink chroma map	Additional white ink is applied to light areas. White ink is reduced in darker areas to save white ink.
Off	White is not printed, even if there is an appropriate color separation.

* “Fixed ink amount on printed areas” and “Bounding box” are applied to separated and composite jobs.

Set the Print Mode to "Off" if you do not want to print white. If the Print Mode is not set to "Off" the print speed will be greatly reduced even if the job has no white ink content.

For more information on defining spot colors in Fiery XF, see the Fiery XF online help.

White ink coverage

You can control white ink coverage:

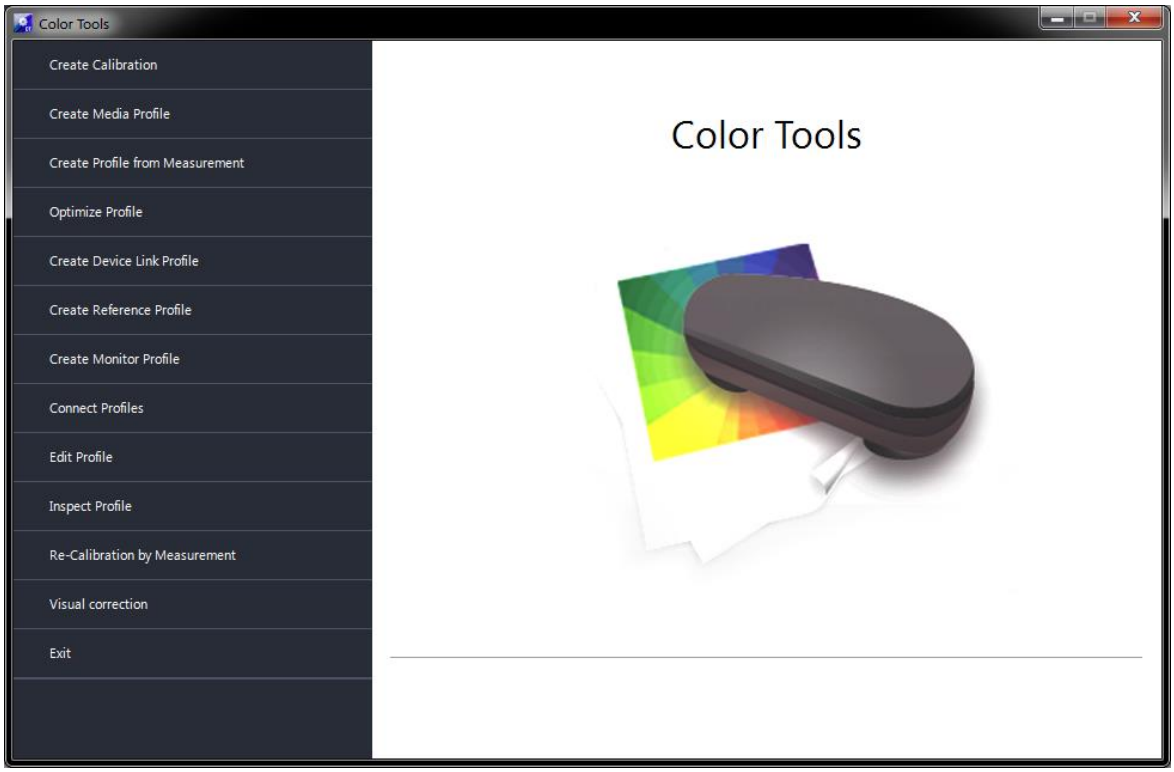
- In Fiery XF
- In Adobe Illustrator
- In Adobe Photoshop

To adjust the white ink coverage in Fiery XF

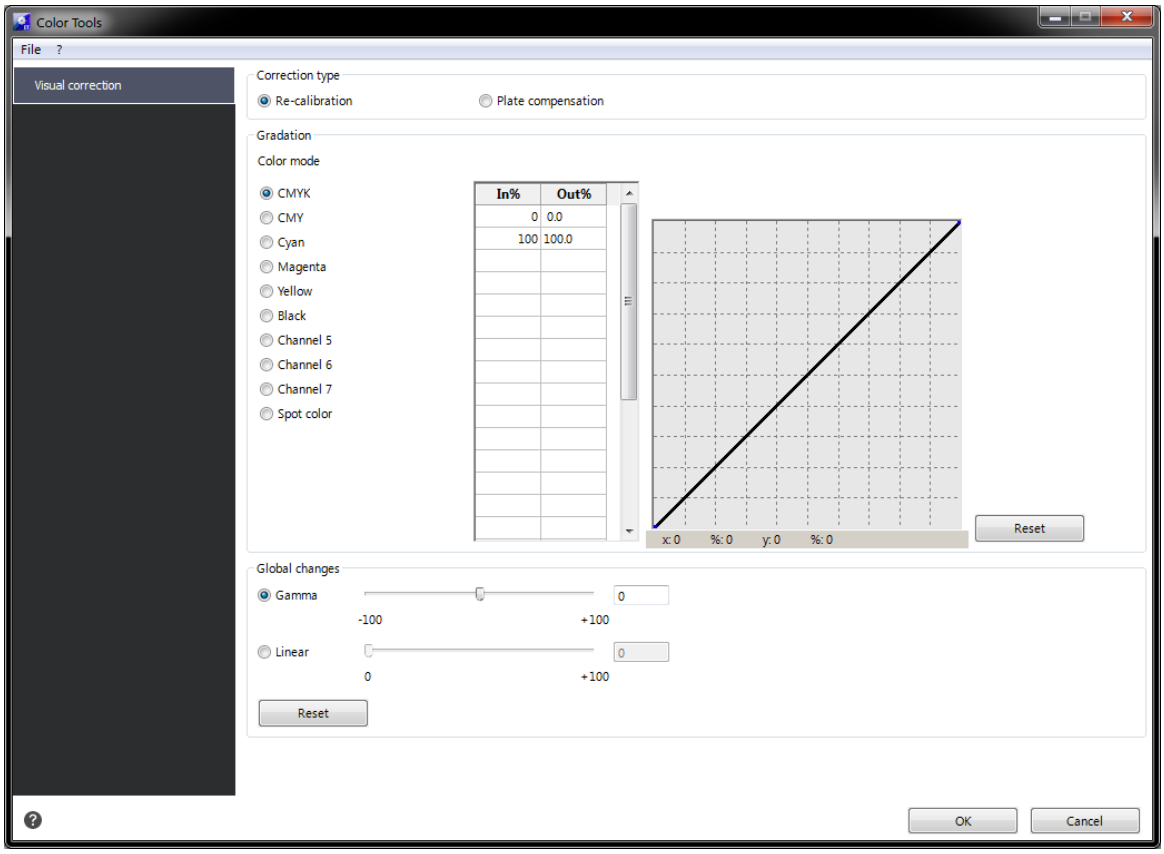
1 Do one of the following:

- On the Special Printer Settings pane for the output device, select the required percentage of white ink coverage. The selected white ink coverage percentage will be applied using the selected print mode.
- Create a visual correction file.

  1 Open Color Tools and click Visual Correction.



2 Select “Visual correction”.



3 Select “Spot color” to create a curve that affects white ink, or select individual color channels, as needed.

4 Enter a value for the In% and Out%.

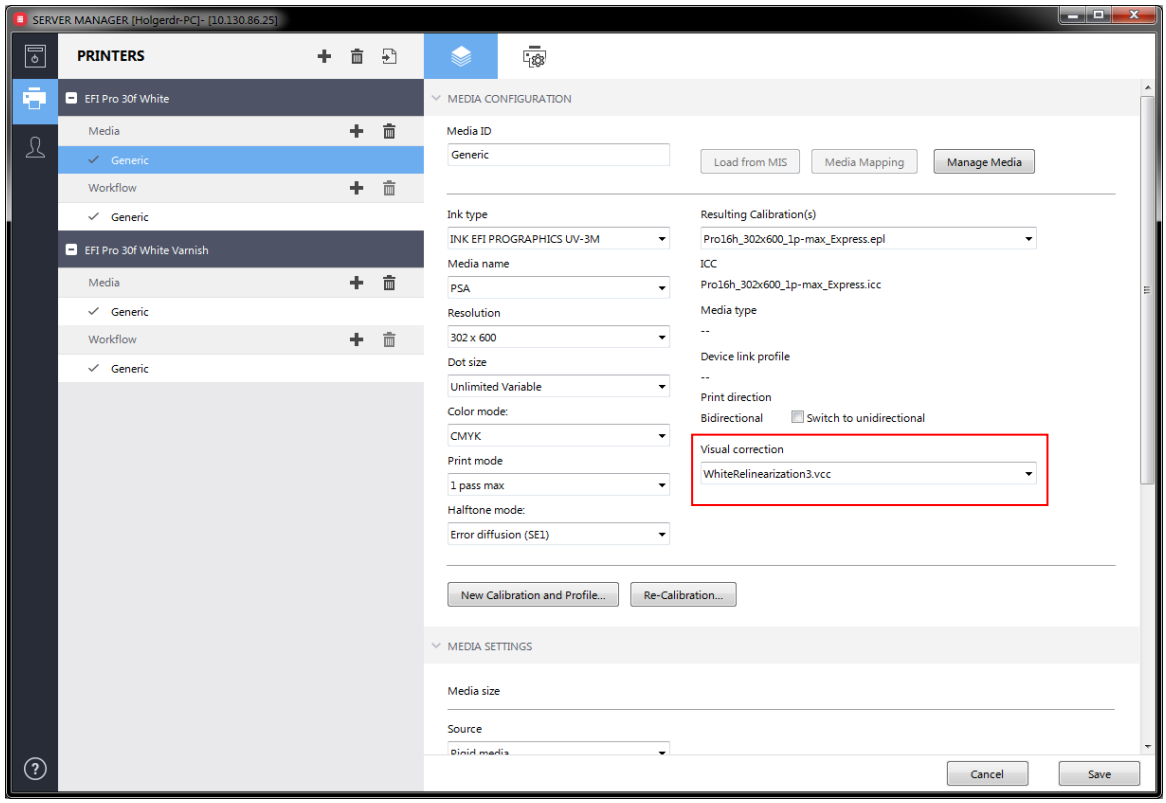
5 Enter the values in the empty row after 100%. Click an empty cell when finished to confirm the new values. Do not make any other changes in this dialog box as it may cause unexpected results.

6 Click OK.

By default the visual correction file is created in the Working folder, but it can be saved anywhere. You can also edit an existing curve by clicking Open on the File menu.

7 In Server Manager, click the desired output device and select the desired media.

8 On the Media tab, open the Media Configuration pane. Under “Visual correction”, select the visual correction file.



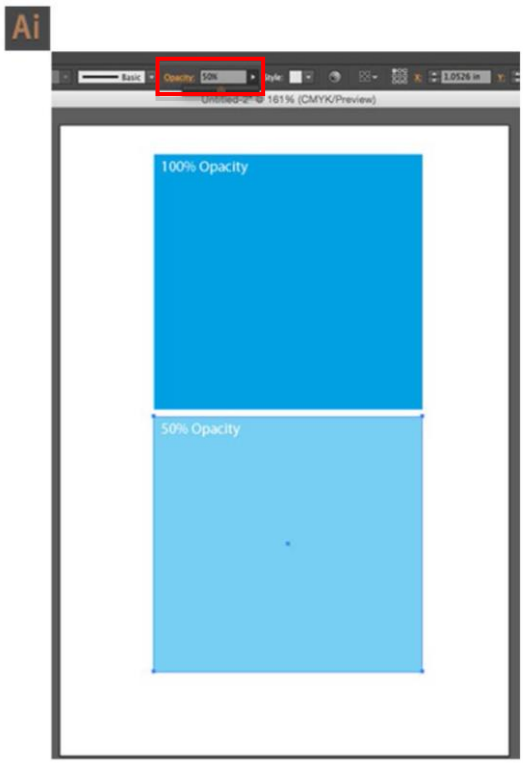
9 Click Save.

10 Repeat for other media as desired.

Note: You can use the same curve with any output device.

To adjust the white ink coverage in Adobe Illustrator

1. Open the file in Illustrator.
2. Select all areas of spot white.
3. Adjust the opacity as needed.

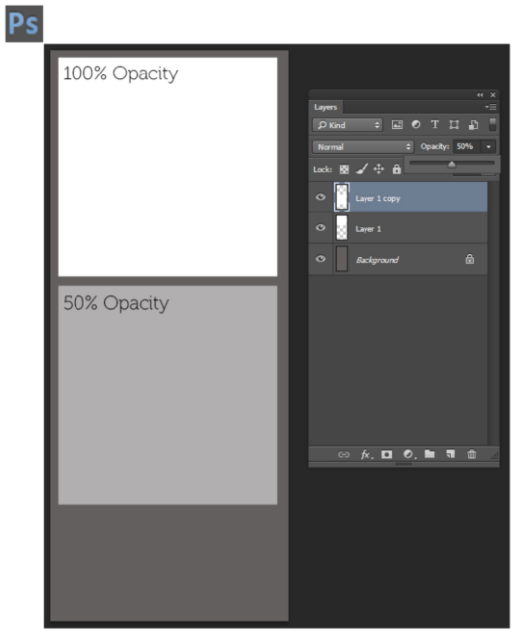


To adjust the white ink coverage in Adobe Photoshop

1 Open the file in Photoshop.

2 Select all areas of spot white.

3 Adjust the opacity as needed.



Spread and choke

There is a stark contrast between white and color inks. Even the smallest of registration errors can be visible. A small negative value (choke) reduces the size of white just enough to remove visible white edges. Often a correction of -0.04 mm (1 pixel at 600 dpi) can help. A positive value adds a uniform white border around images.

Print order

Due to the opaque properties of white ink, the print order is important. The settings are applied as follows:

Print order	Job has white ink	Effective print order	Description
Color on white	No	CYMK only	Prints white as the foundation layer, and then prints color on top. Use this setting for printing on dark or metallic materials.
	Yes	Color on white	
White on color	No	CMYK only	Prints white on top of color. Use this setting for printing backlit transparencies.
	Yes	White on color	
Mix white with color			Use this setting to print white only, but at the fastest possible speed. This setting is applied irrespective of the selected print mode.
Color White Color			Prints white ink as the middle of three layers. In daylight conditions, the top and white layers operate in reflective mode. In the dark, the backlight shines through all three layers. You can adjust the percentage of ink for the top and bottom layers separately. By default, 100% of ink is applied to the top and bottom layers. It is not possible to have a different image on the top and bottom. It is also not possible to mirror the back layer for window-cling applications. This setting is applied irrespective of the selected print mode.

Note: It is not possible to double-strike only the white layer.

Special features

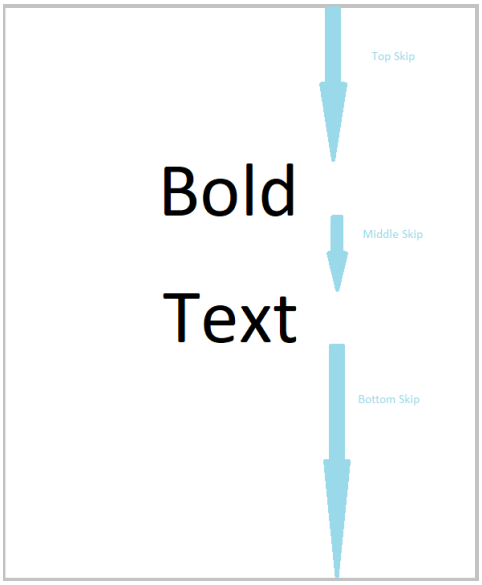
Skip blank space during printing

The Skip Blank Space feature enables the printer to advance media quickly through blank spaces in an image or in a group of nested or step-and-repeat images to provide faster printing. Because the printer has white ink, we prefer the term Blank Space instead of White Space in order to avoid confusion.

In order for the Skip Blank Space feature to work, the printed files must have bands of raster lines with the following properties:

- Each raster line is entirely blank. No single pixel of ink in the output raster data. White areas of the source images meet this condition. If there is some subtle texture, it is not white.
- Paper white (e.g. render intent absolute colorimetric) is OFF. Such areas would be inked, not blank.
- White or clear ink generation is off or only on areas which already have color ink. E.g. Bounding Box would make all raster lines non-blank.
- A blank area in the middle of the job (Middle Skip) must have a minimum height. Below the minimum height the area will not be skipped.

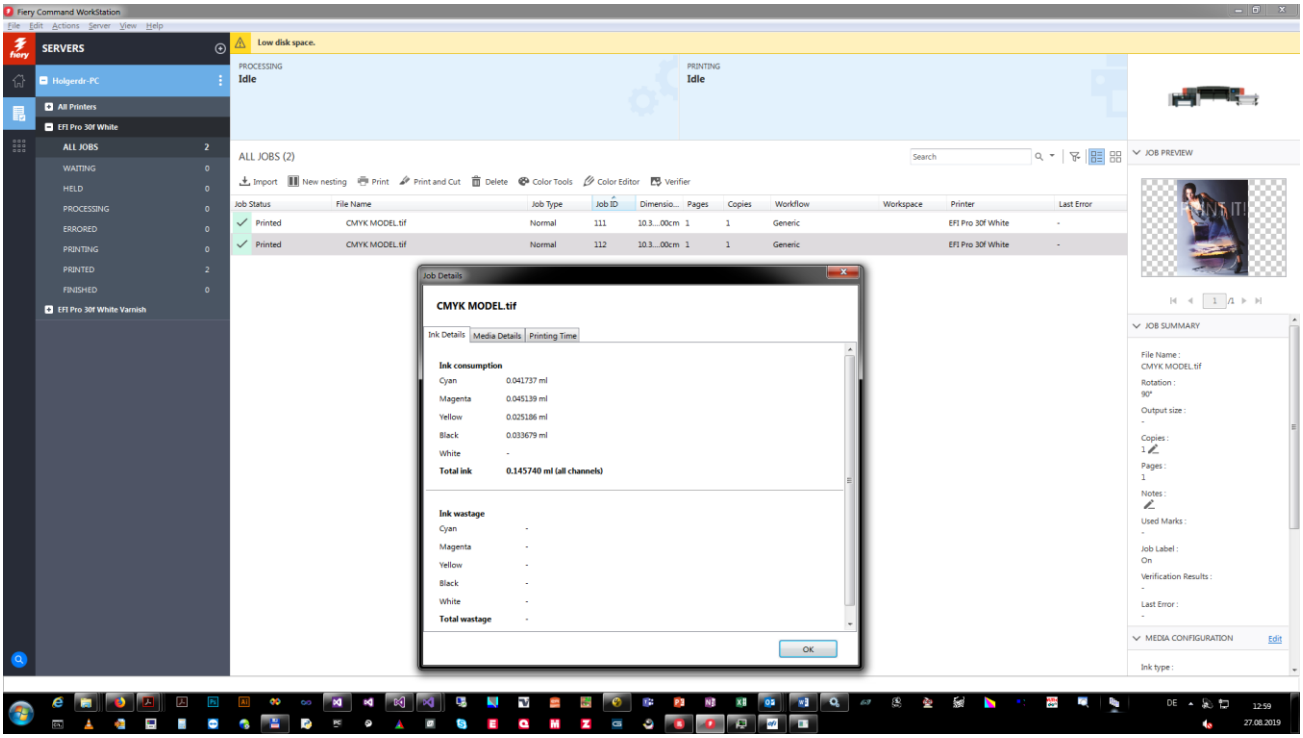
This example shows a simplified job with two big text lines:



You must enable the feature on the printer software as well. Only then the optimization is done.

Media and ink consumption

The Fiery XF printer driver supports JDF communication with MIS systems. The RIP and Print on the fly workflow must be used to return data to the MIS system. Even if the system is not connected to a Management Information System (print MIS device), you can still view estimated media and ink consumption values calculated by Fiery XF:



To view media and ink consumption for the current job

1 In the job list of Command WorkStation, right-click the job and then click Job Details. This is only available for output option **Print via IP network**

2 Import the *.bco file in the print application. The ink amounts are shown there as well.

Pro 24f origin

When we load an image into Fiery XF, it shows up left-aligned:



On most printers, including Pro 16h, 30f and 30h, it will show up like this:



The physical rotation makes sure that small images are at the operator side. Any movements in Fiery XF are rotated consistently.

The Pro 24f has the origin at the left side:



The image shows how the small job from Fiery XF prints on the table. To match this origin in Fiery XF, the origin of Fiery XF should be top right.

The image appears glued to the left side of the printer, regardless of how much you move the image to the right in Job Editor. This is because Fiery XF adds whitespace left of the image – with the physical rotation it appears right of the image and has no effect.

There are two solutions:

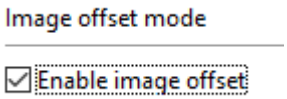
Move the image in print application

In Fiery XF, keep the image at the standard origin.

In the print application, move the image to where you want it to print.

Image offset mode

In Fiery XF, enable image offset mode in the special settings:



If this checkmark is activated, the following happens in the printer driver when Fiery XF processes a job:

- If you move the image in Fiery XF, any related top and left whitespace is stripped. Only the image is written.
- The driver calculates the offset from the upper right corner of the table to the upper right corner of the image and sets offset coordinates accordingly.

In the print application, the offset coordinates are used. In the file-based print application, the operator can still change the image position.

This approach allows setting the image position in Fiery XF.