EFI R3225 and EFI H1625

This document provides information on how to drive the EFI R3225 and EFI H1625 printers from Fiery XF. It covers the following topics:

- Workflow
- Printers, including setting up in Fiery XF
- Fiery XF settings
- Creating base linearizations 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
- EFI Print Control
- Printer-specific DLL
- Printer hardware

Printers

Supported printers

The following EFI Wide Format printers are supported:

Printer model	Description
EFI H1625 LED White	6 head CMYKWW hybrid
EFI H1625 SD	6 head CMYKWW hybrid with SuperDraw ink for thermoforming applications
EFI H1625 RS	6 head CMYKRB hybrid with special inks for road sign applications
EFI R3225	8 head CMYK roll-to-roll

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Fiery XF 6.3

The R3225 printer is supported in Fiery XF version 4.5.5. The H1625 printer is available from Fiery XF 6.0 onwards. A special software patch may be needed for some versions. For more information, contact Fiery XF technical support.

Setting up the printer in Fiery XF

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

Set up the output device in System Manager to print to the IP address of the PC that is connected to the printer.

The Fiery XF server and client are normally installed on the printer PC. Set the IP address to 127.0.0.1. The preferred workflow when printing to an EFI Wide Format H1625 printer is the so-called RIP-then-print workflow where Fiery XF is configured with the printer set to offline in System Manager.

When set up this way Fiery XF RIPs the job and creates a *.bco file. Use the Print Control utility to select the *.bco file and print the job. For more information on how to use the Print Control utility, see the H1625 Operator's Guide.

If the output device is set to online and a file is released in Fiery XF, the job will RIP and print on the fly. In this workflow the Print Control utility is not used. 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 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

Print files are saved by default to F:\Output. You can access the Output folder directly from the printer's Print Control utility.

You can change the default folder by stopping the Fiery XF server and then clicking Fiery Server Maintenance in Fiery XF Control. Under "System Folders", browse to a different output folder, and click OK.

Print mode

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

- 4 or 8 levels
- Smoothing
- Double strike

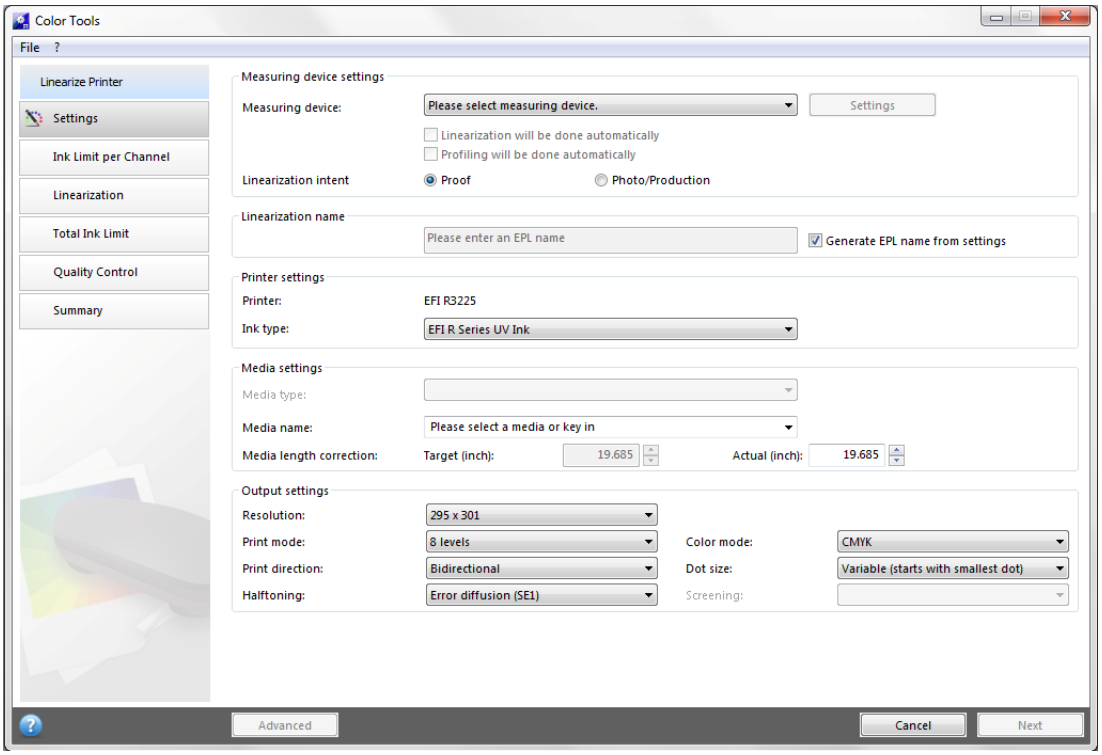
You can change the print mode on the Special Printer Settings pane. The print mode is also saved as part of the media profile, so be aware that if you change the print mode on the Special Printer Settings pane, it will affect the print quality of the media profile. For this reason, it is recommended 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. Be aware that you can set a uni-directional media profile to print bidirectional, but you cannot set a bidirectional media profile to print uni-directional. If necessary, create a new media profile for your requirements.

Creating base linearizations and media profiles

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



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

Nom. res.	Exact res.	Levels	ips	Pass	Ink %	Var.	Robust	Coarse	Robust AB	Coarse AB	Big	Nor-mal	Fine	S-fine
300x300	295.3488x300.5917	4 8	40 40*	1 2	19 44	6-18 6-42	12-18 24-42	12-18 24-42	12-42	12-42	18 42	18 42	12 36	6 30
300x600	295.3488x601.1834	4 8	40 20	2 2	38 88	6-18 6-42	12-18 12-42	12-18 24-42	12-42	24-42	18 42	18 42	12 36	6 30
300x900	295.3488x901.7751	4 8	40 20	3 3	56 131	6-18 6-36	12-18 24-36	12-42	24-42	12-42	18 42	18 36	12 30	6 24
450x300	443.0233x300.5917	4 8	40 40*	3 3	28 66	6-18 6-42	12-18 24-42	12-18 24-42	12-42	24-42	18 42	18 42	12 36	6 30
450x600	443.0233x601.1834	4 8	40 40*	6 6	56 131	6-18 6-36	12-18 24-36	12-18 24-36	12-42	24-42	18 42	18 36	12 30	6 24

Nom. res.	Exact res.	Levels	ips	Pass	Ink %	Var.	Robust	Coarse	Robust AB	Coarse AB	Big	Nor-mal	Fine	S-fine
600x300	590.6977x300.5917	4 8	40 20	2 2	38 88	6-18 6-42	12-18 12-42	12-18 24-42	12-42	24-42	18 42	18 42	12 36	6 30
600x600	590.6977x601.1834	4 8	40 20	4 4	75 175	6-18 6-24	12-18 12-24	12-18 24	12-24	24	18 42	18 30	12 24	6 18
600x900	590.6977x901.7751	4 8	40 20	6 6	113 263	6-18 6-18	12-18 12-18	12-18 24	12-24	24	18 42	18 42	12 18	6 12
600x1200	590.6977x1201.3669	4 8	40 20	8 8	150 350	6-12 6-12	12 12	12 24	12	24	18 42	18 18	12 12	6 6
900x900	886.0465x901.7751	4 8	40 20	9 9	169 394	6-12 6-12	12 12	12 24	12	24	18 42	18 18	12 12	6 6
1200x600	1181.3953x601.1834	4 8	40 20	8 8	150 350	6-12 6-12	12 12	12 24	12	24	18 42	18 18	12 12	6 6

* Runs at the fast 40 ips head speed

When selecting a resolution and dot size observe the following:

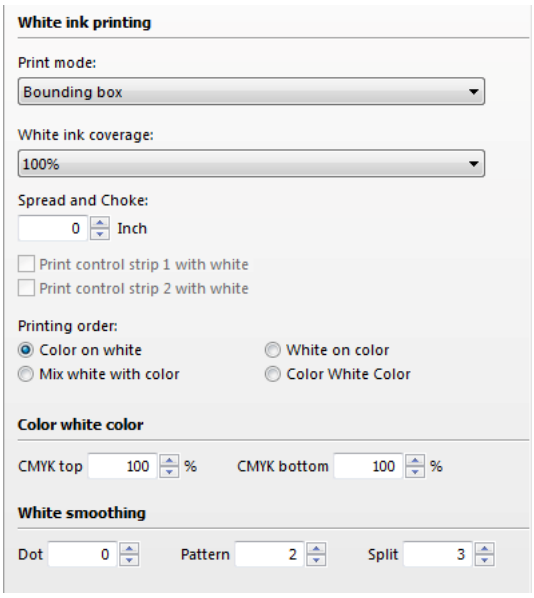
- Generally speaking, a fixed amount of ink per square inch is applied to all similar colors. In Color Tools, a resolution of 600 x 600 dpi uses by default 24 pl of ink to create the 100% ink limit. A percentage of less than 100 reduces the overall color gamut. For percentages above 100, Fiery XF automatically reduces the amount of color ink accordingly.
- The maximum dot size for 4-level print modes is 18 pl. The color gamut decreases at resolutions of less than 600 x 600 dpi as the ink droplets do not completely fill the available space.
- The maximum dot size for 8-level print modes is 42 pl. The color gamut decreases noticeably at resolutions of less than 300 x 600 dpi.
- You can adjust the amount of white ink separately. The 100% ink limit for 4-level color modes is 18 pl and for 8-level color modes it is 42 pl. A 1 : 1 linearization curve is used.
- A variable dot size is the best choice for most applications.
- Fixed dot sizes (Big, 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 and Coarse Variable dot sizes start with a bigger dot size — 12 pl or 24 pl instead of 6 pl. Their performance lies in between that of variable and fixed dot sizes.
- Robust Variable AB and Coarse Variable AB dot sizes address banding by applying the biggest dot size to the mid-tones. These dot sizes are recommended for a vertical resolution of 300 dpi.
- 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. 30 pl at 600 x 600 dpi.

Printing with white ink

This section applies to the H1625 LED White and the H1625-SD White printers.

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.
Inked image*	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 base linearization 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.

* “Inked image” and “Bounding box” are applied to separated and composite jobs.

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

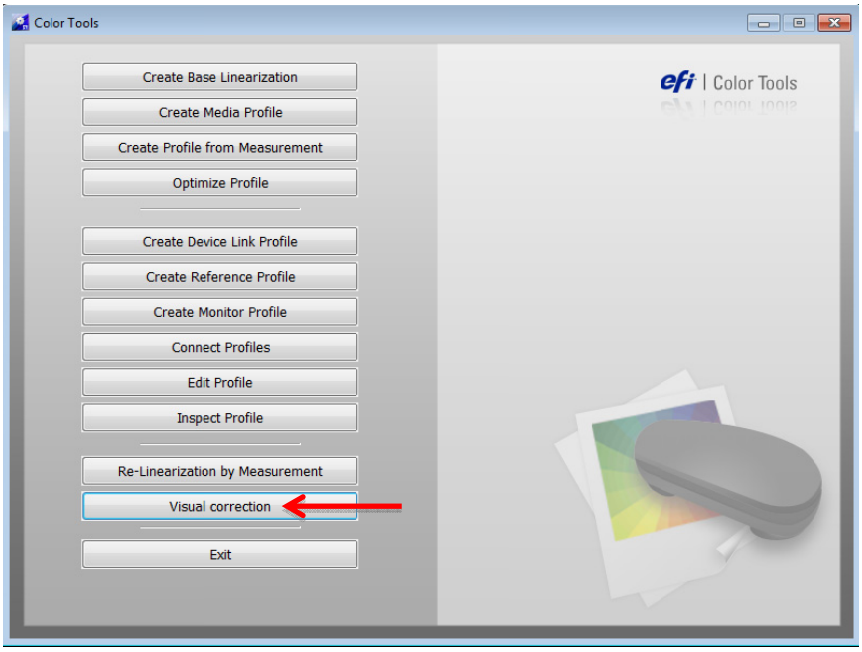
1 Do one of the following:

- 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.

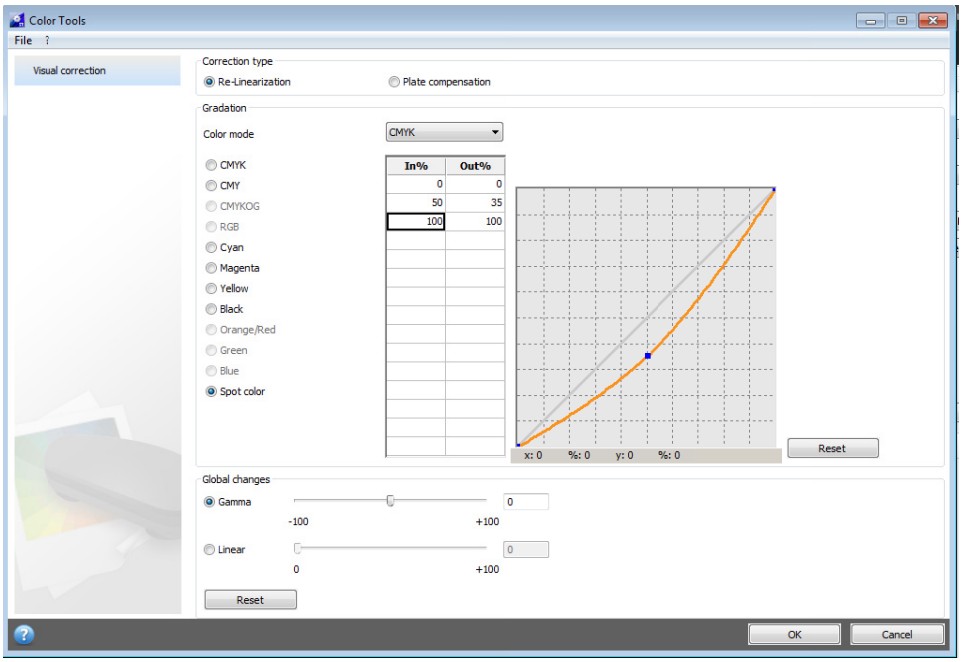
  Note: The white ink coverage is higher when printing with 8 levels of smoothing versus 4. If you want a more opaque white solid use 8 levels of smoothing.

- Create a visual correction file.

  1 Open Color Tools and click Visual Correction.



2 Select “Re-Linearization”.



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%.

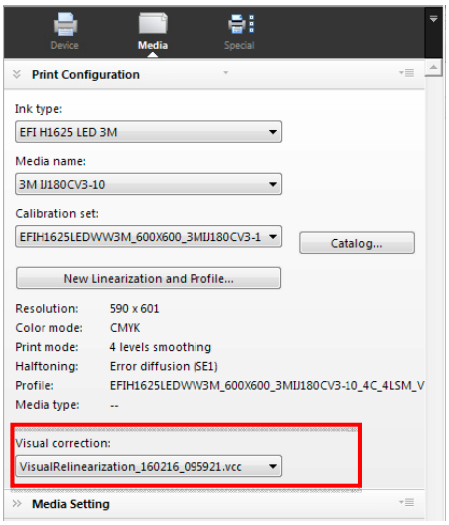
5 Enter the values in the empty row after 100%. Click an empty cell when finished to confirm the new values. Do not make any other changes in this dialog box as it may cause unexpected results.

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 System Manager, click the desired output device.

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



9 Click Save.

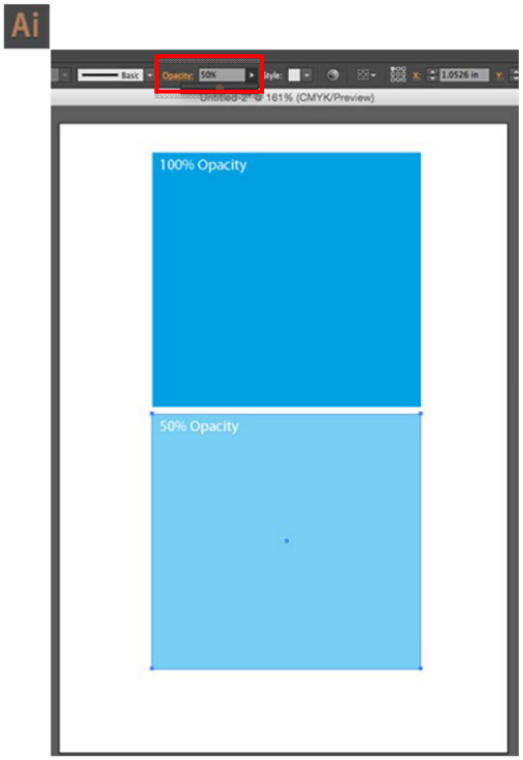
Note: You can use the same curve with any output device.

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.

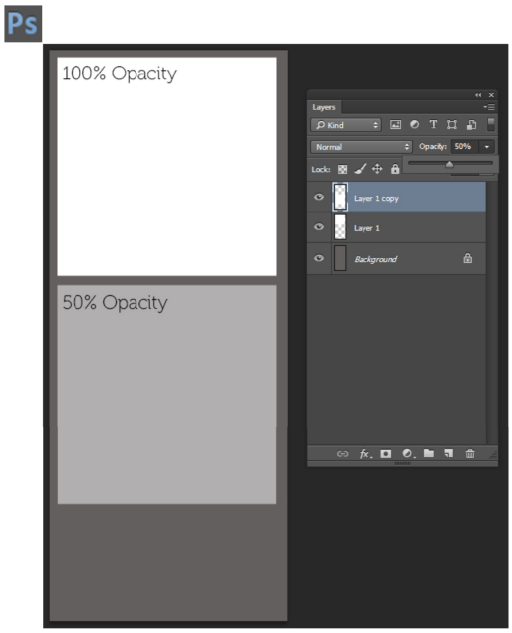


To adjust the white ink coverage in Adobe Photoshop

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	Mode	Description
Color on white	No	CYMK only	5	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	1	
White on color	No	CMYK only	5	Prints white on top of color. Use this setting for printing backlit transparencies.
	Yes	White on color	2	
Mix white with color			0	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			7	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.

White smoothing

White smoothing is available for the following printers: H1625 LED White and H1625-SD White. The white smoothing settings help you to achieve a more even white finish by determining the best combination of dot size and allocation of print data between print passes.

The individual settings are described below, but the recommended settings are:

Dot size: 0

Pattern: 2

Split: 3

- Dot size

  You can select a dot size for white ink.

  Note: To apply this setting, the base linearization file (EPL) must have been created for an 8-level print mode and a variable dot mode.

  The table below shows the available dot sizes. “Robust Variable” and “Coarse Variable” start with a bigger dot size than “Variable” — 12 pl or 24 pl instead of 6 pl.

  Enter a dot setting from 0 to 3.

Dot setting	CMYK	White 1	White 2
0 or > 3	Variable	Variable	Variable
1	Variable	Variable	Robust Variable
2	Variable	Variable	Coarse Variable
3	Variable	Robust Variable	Coarse Variable

- Pass mask settings (“Pattern” and “Split”)

  The “Pattern” and “Split” settings work in conjunction with each other. They determine how print data is distributed between print passes.

  - Pattern

    This setting activates the pass mask mode. The checkerboard pattern simulates the original behavior of the printer firmware. You can often improve the print quality by applying a stochastic pattern instead. A stochastic pattern of 60% + 40% illustrates the percentage of ink per white ink channel.

    Enter a pattern setting from 0 to 10.

Pattern setting	Effect
0 or >10	Pass mask off
1	Checkerboard pattern 50% + 50%
2	Stochastic pattern 50% + 50%
3	Stochastic pattern 40% + 60%
4	Stochastic pattern 60% + 40%
5	Stochastic pattern 33% + 67%
6	Stochastic pattern 67% + 33%
7	Stochastic pattern 67% + 67%*
8	Stochastic pattern 80% + 80%*
9	Full 100% + 100%*

Pattern setting	Effect
10	Stochastic pattern 75% + 75%*

* More than 100% ink

- Split

  This setting controls how the print data is distributed between the white channels.

Split setting	Name	Group	Channel
0 or >5	WW	Simulation*1	$W_1 \rightarrow W_1\ W_2$
1	CM	Simulation*1	$W_1 \rightarrow C\ M$
2	YK	Simulation*1	$W_1 \rightarrow Y\ K$
3	EOEO*3	Full*2	$W_1 \rightarrow W_{1E}\ W_{1O}$ $W_2 \rightarrow W_{2E}\ W_{2O}$
4	1212*4	Full*2	$W_1 \rightarrow W_{1E}\ W_{2E}$ $W_2 \rightarrow W_{1O}\ W_{2O}$

*1 The first white channel is the source. The print data is distributed between the two white channels. Each channel contains specific pixel data, as defined by the pass mask. The second white channel is not used.

*2 Four white channels (W_{1E}, W_{1O}, W_{2E}, W_{2O}) are sent to the printer.

*3 EOEO stands for even, odd, even, odd and represents alternate print passes.

*4 1212 represents the print heads (W_1 and W_2).

It is recommended that you use a split setting of 0, 3 or 4.

Special features

Skip blank space during printing

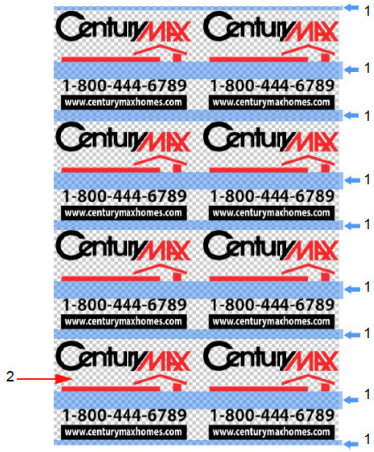
The Skip Blank Space feature enables the H1625 printer to advance media quickly through blank spaces in an image or in a group of nested or step-and-repeat images to provide faster printing. You must have printer software version 1.0.1.0 or higher to use the Skip Blank space feature. Contact Fiery Wide Format Support to upgrade to the latest version.

In order for the Skip Blank Space feature to work, the printed files must:

- Include true blank space, sometimes referred as “white space,” as opposed to a white fill blank field
- Include blank space that runs all the way across the image(s)

The illustrations below show examples of images with blank space.

Note that one has a background of true blank space (represented by check boxes, as opposed to white space) that runs the full width of the image.

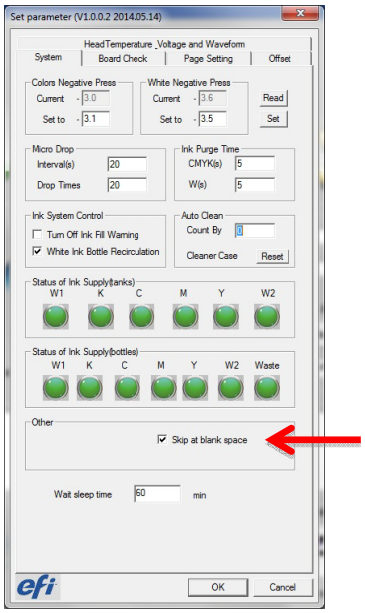


[1] Rows of blank space running the width of the image(s)
[2] Check boxes represent true blank space in the image

To skip blank space

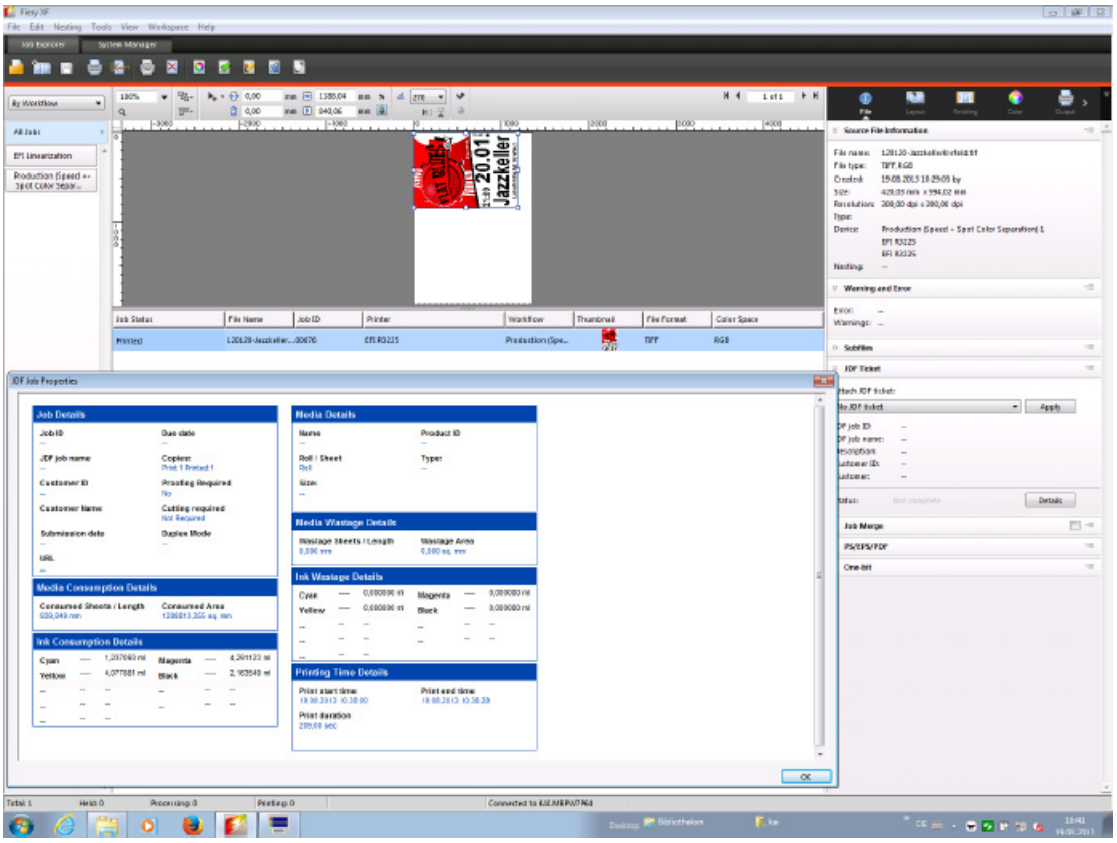
1 On the H1625 Control Screen, click the Parameters icon to open the Set parameter window.

2 On the System tab, make sure that “Skip at blank space” is selected.



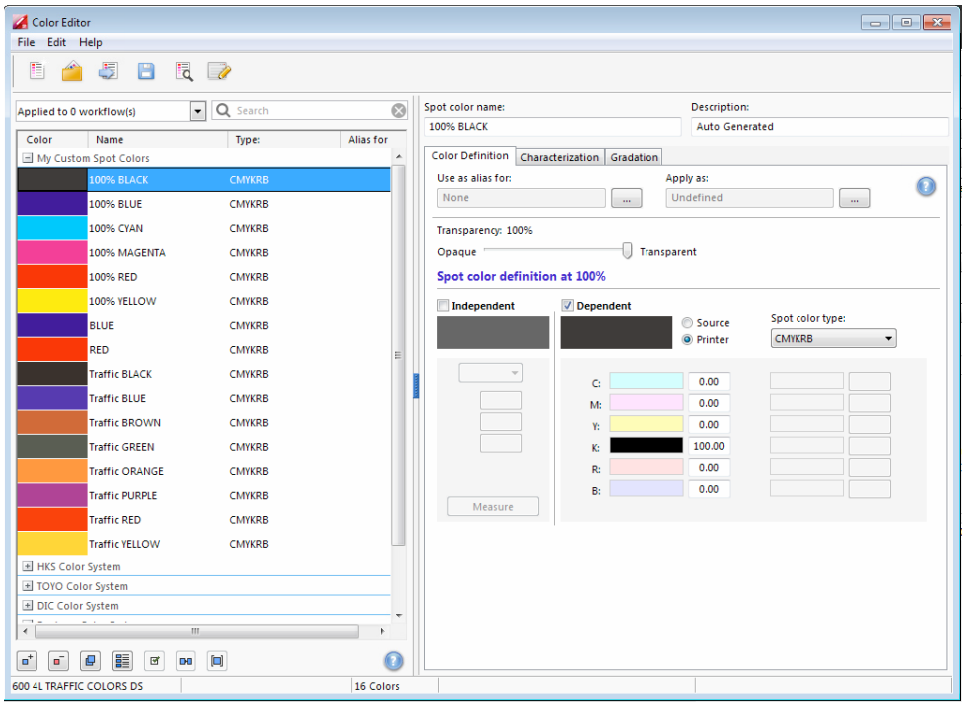
Media and ink consumption

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, select the job. On the File tab, open the JDF Ticket pane, and click Details to open the JDF Job Properties dialog box.

H1625 RS spot color table for road signage

A custom spot color table is available for the H1625 RS printer for specific road sign colors. This table contains spot colors for use with 3M reflective signage material for 600 dpi, 4-level printing with smoothing.