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Understanding Print Modes

There are many print modes to choose from in the Direct Jet device packages. Choosing the right print mode is essential for obtaining the desired output. Most print modes follow a specific naming structure. First is the order in which the channels will print (also called the Ink Setup), followed by a hierarchy name, then the resolution, and last the Print Direction.

Ink Setup

The first part of the print mode name is the Ink Order or Setup. Below is a list of all the Ink Setups followed by their intended uses and recommended substrates. The Ink Setup can be found under Printer Options within each print mode.

Clear Color Print Modes

2 Way Inline – 1 Clear Channel then CMYK w/1 Clear (2 Whites w/No Clear)

Intended Use: These modes are mainly used to increase adhesion on substrates where the ink does not adhere as well. The clear ink, mostly due to the fact that it does not have any pigment, adheres the best to most substrates. By printing clear first, the clear ink adheres to the substrate and the other colors adhere to the clear ink.

Substrates: White or lightly colored substrates that are difficult to adhere too

Materials: White Ceramic, Stainless Steel

Color Byte Front End Preparation: Prime objects with Clear or turn on Finish Coat in Print Setup

Third Party Preparation (Send with Underbase): Turn on Layer Profiles and select Apply Clear in the Bitmap processing options.

Third Party Preparation (Send To): Add a Cadlink Spot Clear Overprint to all objects.

Clear White Color Print Modes

3 Way Inline – 1 Clear Chanel then 2 White Channels then CMYK w/1 Clear

Intended Use: Similar to the Clear Color print modes, the Clear White Color print modes are used to increase adhesion on substrates where the ink does not adhere as well. The clear ink adheres the best to most substrates. By printing clear first, the clear ink adheres to the substrate and the other colors adhere to the clear ink.

Substrates: Dark or Transparent substrates that are difficult to adhere to and require a white primer.

Color Byte Front End Preparation: Prime with Duo Tone (Spot White/Spot Clear) Primer

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Third Party Preparation (Send with Underbase): Turn on Layer Profiles and turn on White Underbase and Apply Clear in the Bitmap Processing Options. Add a choke on the white underbase and/or spread on the clear if necessary.

Third Party Preparation (Send To): Add a Cadlink Spot White and Cadlink Spot Clear Overprint to all objects.

Color Clear Print Modes

2 Way inline – 2 Clear channels on the top of CMYK and White

Intended Use: These print modes will put down color with clear printed on top. This is mainly used for aesthetic purposes for customers who want a clear varnish coat on the top of a printed image. Sometimes these modes are also used for increasing adhesion. The user can apply a spread to the top clear coat which makes it difficult to scratch off any printed ink by eliminating the lip that is created.

Substrates: White or lightly colored substrates. Sometimes substrates that require extra scratch resistance

Color Byte Front End Preparation: Prime objects with Clear or turn on Finish Coat in Print Setup

Third Party Preparation (Send with Underbase): Turn on Layer Profiles and select Apply Clear in the Bitmap processing options.

Third Party Preparation (Send To): Add a Cadlink Spot Clear Overprint to all objects.

Color Only Print Modes

Non-Inline – CMYK with 2 Channels of Clear printed simultaneously and 2 channels of White

Intended Use: The most common of the print modes, Color Only print modes are used on a wide variety of substrates that do not require the need for a primer and/or a clear coat for enhanced adhesion.

Substrates: White or lightly colored substrates.

Color Byte Front End Preparation: Be sure there are no primers attached to any objects

Third Party Preparation (Send with Underbase): Use Send To

Third Party Preparation (Send To): No extra preparation

Color White Print Modes

2 Way Inline – CMYK and 1 Clear with 2 Whites and 1 clear on top

Intended Use: Most often used for second surface printing (mirrored image on the back of a transparent substrate). The color will go down first with the white ink then going on top to

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provide opacity. The color image can then be seen through the transparent piece of material without light shining through the back.

Substrates: Transparent materials

Color Byte Front End Preparation: Prime objects with Spot White

Third Party Preparation (Send with Underbase): Turn on Layer Profiles for the Color-White Queue and turn on White Underbase in the Bitmap Processing options. Set a choke value if necessary.

Third Party Preparation (Send To): Add a Cadlink Spot White Overprint to all objects.

Photo Modes (Color Only and White Color Print Modes)

Non-Inline and 2 Way Inline

Intended Use: Photo modes include Color Only (non-inline) and White Color (2 way inline – see White Color Print Modes for ink order). These modes are most commonly used for printing photographs or large areas of one solid color. These modes are designed to eliminate print artifacts that can be seen when printing large areas. Photo modes can also be used when printing on objects that require the ink to fall further than the recommended 0.040” (1.016mm). Because these modes use a larger droplet size, the ink is able to fall further while maintaining quality.

Substrates: Photo Color Only – White or lightly colored materials. Photo White Color – Dark or transparent materials

Color Byte Front End Preparation: No action required for Photo Color Only. For Photo White-Color, Prime objects with Spot White

Third Party Preparation (Send with Underbase): Do not use for Photo Color Only. For Photo White-Color, Turn on Layer Profiles for the Photo White-Color Queue and turn on White Underbase in the Bitmap Processing options. Set a choke value if necessary.

Third Party Preparation (Send To): For Photo Color Only no action is required. For Photo White-Color, Add a Cadlink Spot White overprint to all objects.

Texture Print Modes (White Color Print Modes)

2 Way Inline

Inline Texture: 2 Whites and 1 Clear then CMYK w/1 Clear

Inline Texture2: 2 Whites and 2 Clears then CMYK

Intended Use: Texture print modes are used to build extra height underneath the color by using clear channels and white channels in an inline ink setup. To be effective, a specific file will need to be setup in the Color Byte front end using the Create Texture Wizard. Because texture modes put down a large amount of ink, it is sometimes not recommended to print texture on thin materials as they can warp and bow. Also, because the texture is going down in only certain

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areas, some areas will not have any white underneath and therefore texture should not be printed on transparent substrates without special manipulation to the file and/or print mode.

Substrates: White or lightly colored thicker substrates. Special consideration for transparent or dark materials

Color Byte Front End Preparation: Create Texture Wizard for Bitmaps. Add a Spot White Primer to vectors.

Third Party Preparation (Send with Underbase): Not available

Third Party Preparation (Send To): Not available

White Color Print Modes

2 Way Inline – 2 white channels then CMYK w/ 2 Clear Channels

Intended Use: One of the most common print modes, White Color print modes are used for any material that requires white underneath the color, most commonly darker or transparent materials.

Substrates: Dark or transparent materials.

Color Byte Front End Preparation: Add Spot White Primer to objects. Enter choke amount in Print Setup before sending to the RIP.

Third Party Preparation (Send with Underbase): Turn on Layer Profiles for the White-Color Queue and turn on White Underbase in Bitmap Processing options. Set a choke value if necessary.

Third Party Preparation (Send To): Add a Cadlink Spot White Overprint to all objects.

White Color Clear Print Modes

3 Way Inline – 2 White channels then CMYK then 2 clear channels

Intended Use: Similar to the Color Clear print modes with the main difference being the substrate, these modes are mainly used for aesthetic purposes for customers who want a clear varnish coat on the top of a printed image. Sometimes these modes are also used for increasing adhesion. The user can apply a spread to the top clear coat which makes it difficult to scratch off any printed ink by eliminating the lip that is created.

Substrates: Dark or transparent substrates. Sometimes substrates that require extra scratch resistance.

Color Byte Front End Preparation: Add Duotone Spot White/Spot Clear Primer to all objects. Enter a choke and/or spread in the Primers Tab (White) and Finish Coat Tab (Clear) if necessary.

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Third Party Preparation (Send with Underbase): Turn on Layer Profiles for the White-Color-Clear Queue and turn on White Underbase and Apply Clear in Bitmap Processing Options. Set a choke and/or spread if necessary.

Third Party Preparation (Send To): Add a Cadlink Spot White and Cadlink Spot Clear Overprint to all objects.

Flexible Print Modes (F4 Edition Models Only)

Non-Inline, 2 Way Inline and 3 Way Inline Print Modes

Intended Use: Each print mode option described above, with the exception of Texture, has a flexible print mode within its family of print modes. This flexible print mode has the same intended use as described above with the additional use of being more flexible.

Color Byte Front End Preparation: See Preparation described above for the Ink Setup being used.

Third Party Preparation (Send with Underbase): See Preparation described above for the Ink Setup being used.

Third Party Preparation (Send To): See Preparation described above for the Ink Setup being used.

Economy Print Modes

Intended Use: These print modes will help the user save on ink cost. These modes try to maintain color accuracy and saturation while using as little ink as possible to cut down on cost.

Substrates: Flexible substrates

Color Byte Front End Preparation: See Preparation described above for the Ink Setup being used.

Third Party Preparation (Send with Underbase): See Preparation described above for the Ink Setup being used.

Third Party Preparation (Send To): See Preparation described above for the Ink Setup being used.

High Saturation Print Modes

Intended Use: The main difference between the High Saturation print modes and the regular print modes is that the High Saturation print modes use a different input and output profile. Color matching is not going to be as accurate as these print modes attempt to give the image a “pop”. These modes are also replicas of the print modes that were available in CB8 and CB9.0.

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So, users that are moving from previous versions may want to continue using these print modes for consistent output.

Substrates: Flexible substrates

Color Byte Front End Preparation: See Preparation described above for the Ink Setup being used.

Third Party Preparation (Send with Underbase): See Preparation described above for the Ink Setup being used.

Third Party Preparation (Send To): See Preparation described above for the Ink Setup being used.

Highlight White and Spot White Print Modes

Non-Inline

Intended Use: These modes are very similar to the Color Only Print Modes described above with the exception of where the Clear ink jets simultaneously. For Highlight White, 1 clear channel will go down with CMYK and 1 clear channel will go down with any spot white that is in the image. For Spot White Only, both channels of Clear will go down with White and neither channel of clear will go down with CMYK.

TIP: To have both channels of clear go down with the CMYK *and* both channels of clear go down with the White, turn on *Finish Coat* in the Color Byte front end.

Hierarchy Name

The next part of a print mode is the hierarchy name or a name that indicates the quality and/or speed of the print mode. Quality and Speed are negatively related. To achieve higher quality, the print takes longer and vice-versa. The goal is to find a print mode that has good quality but is also fast. This will change depending on artwork, substrate, customer need, etc.

Draft – Fastest print mode and lowest quality

Production – Fairly fast print mode with medium quality

Quality – Slower print modes with high quality

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Resolution

After the hierarchy name, the resolution that is used in the print mode is listed. Resolution is measured in DPI or Dots per Inch. The more dots in one inch, the better the quality, but the slower the print. The available resolutions are labeled below.

720 – (1440x720) – Fastest resolution and lowest quality

1440 – (1440x1440) – Fairly fast resolution with medium quality

2880 – (2880x1440) – Slowest resolution with high quality

Print Direction

The final part of the print mode name is the print direction. DCS Direct Jet printers have the ability to print Uni-Directional (Uni) or Bi-Directional (Bi).

Uni-Directional only jets ink when the print carriage is moving in the left to right direction. The machine prints Uni-Directional Left to Right because of where the UV Light is mounted. By printing this way, the UV light is trailing the carriage when the ink is being laid down and is therefore curing the ink instantly.

Bi-directional jets ink when the print carriage is moving in both directions. Because the light is only mounted on one side of the carriage, using Bi-Directional when printing large areas of color or large photographs, banding can sometimes be seen due to the different cure times from one pass to the other.

Similar to what was described above, Uni-Directional produces a higher quality but slower print times, while Bi-Directional produces lower quality but faster print times.