



Card Design Guide

Entrust Artista® CR805 Retransfer Printer



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SECURING A WORLD IN MOTION

Optimizing card designs for pigment ink retransfer printing

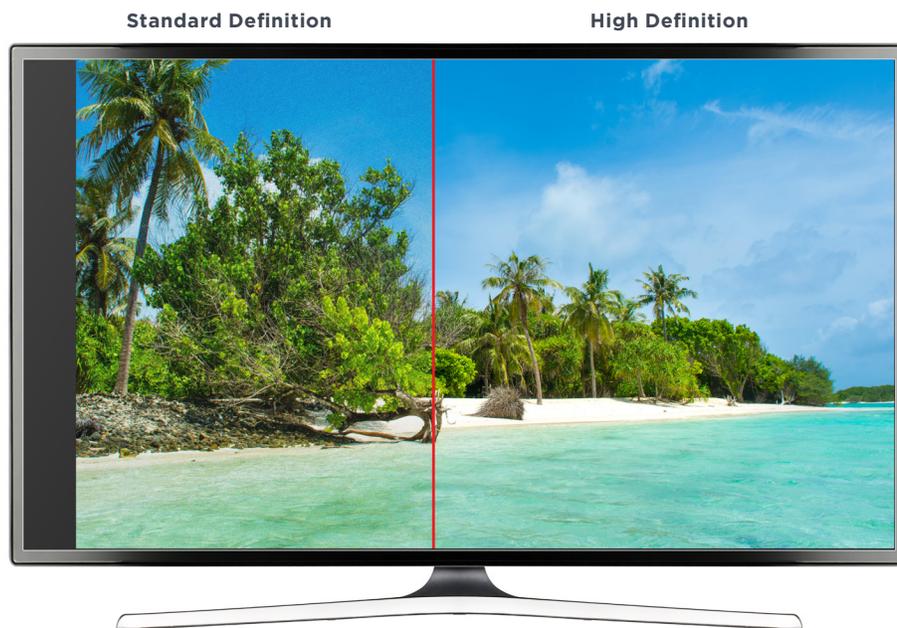
The Entrust Artista® CR805 Retransfer Printer is designed for printing vibrant, 600 dpi images with fine-line detail and extraordinary color. With over-the-edge printing capabilities, card designs that completely fill the background area (or smaller) are easy to produce. Pigment ink retransfer technology can accommodate a wide range of card images and design types, from detailed graphic images to vibrant lifestyle photographs.

Pigment ink vs. dye sublimation

The industry standard to date has been dye sublimation ink technology, in both direct-to-card and retransfer printing. Entrust uses pigment ink technology, which has a proven track record in the financial card market, and brings it to the desktop printer.

Pigment ink is a printing technology that results in dots on the card surface that are visible under a jeweler's loupe. The benefit is that there is greater clarity and definition to images, making it easier to see fine details like the pattern on a curtain or the sharp angles in a window frame.

The use of pigment ink with ID cards is similar to what we saw with early HDTV technology – when viewed at close range, you saw pixels, but when viewed at the proper distance, you saw a clear, crisp, high-quality image. Don't you want the same result for your ID cards?



| Pigment Inks | Dye Sublimation Inks |
|--|---|
| Adhere to the top of the card and are not absorbed into the surface. | Absorb into the surface. |
| Resist UV fading, so card images do not diminish over time. | Fade over time – especially if the image is exposed to direct sunlight. |
| Print dots on the card surface that are visible under a jeweler’s loupe. | Result in edges of the image that may be slightly blurred viewed under a jeweler’s loupe. |



Solid background colors

Just as with any type of printing, solid colors may not print uniformly on dye sublimation and pigment ink printing. Small changes in the color may be visible and are the result of minute variation in printing mechanics. These color changes may be more visible in neutral colors. To mitigate small changes in solid colors, add texture, fill the area with an image, or add a drop shadow to make them more distinct and bring the card design to life.



Figure 1: Solid colors may exhibit streaking or variation. Red and blue solid areas may print with different densities from top to bottom.



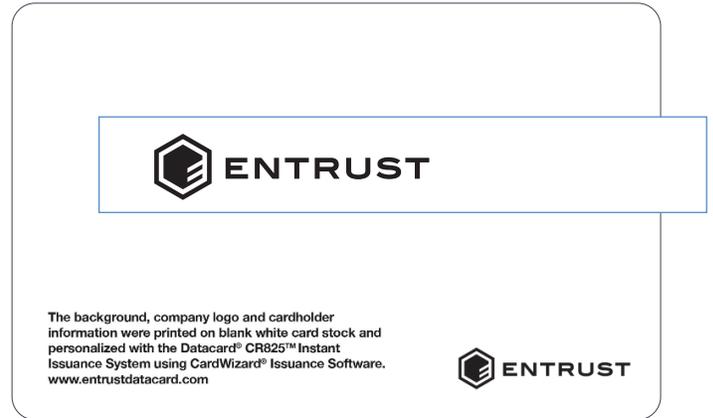
Figure 2: Texture was added to the red area, the blue area was filled with an image, and a drop shadow was added to the text to make it more distinct.

Crisp lines and text

Because it prints at 600 dpi, the Artista CR805 is capable of producing 2-point fonts, which means logos and text come out crisp and clear. Using anti-aliasing when combining image layers in Photoshop, for example, or compressing images like jpegs when saving the image can create visual artifacts that the printer attempts to reproduce. Ensure your images are crisp to get the highest resolution from your printer.



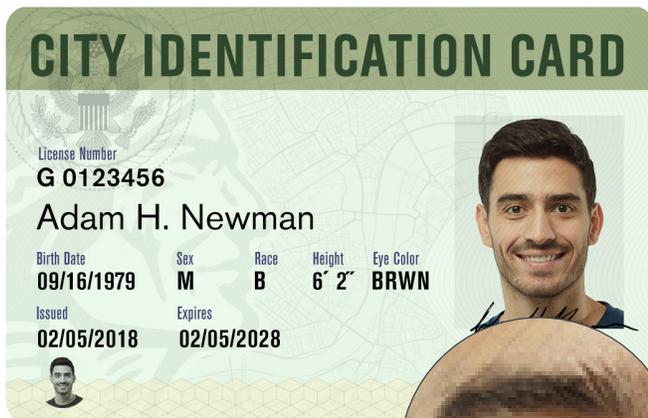
Anti-aliasing example



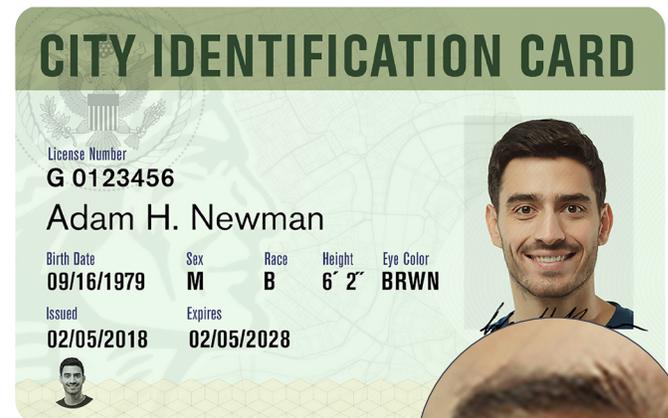
Aliasing example

Upscaling images

An image that is not 600 dpi needs to be upscaled to 600 dpi at some point. Often, the software program does this without your knowledge. But how and when this is done may impact the quality of the image. If you need crisp lines, like text, avoid an upscale process to 600 dpi. Upscaling busy color images, such as photographs or portraits, may not be noticeable if you have a good upscale process. If upscaling is done, starting from a known 300 dpi image provides the best result.



300 dpi



Upscaled to 600 dpi

Using legacy software

Some legacy software applications, such as ID Works, IDCentre, or other third-party products, do not support the larger retransfer page size used by the Artista CR805. These applications were designed to work with direct-to-card printers, such as the SD- and CD-series printers from Entrust.

Direct-to-Card and Retransfer Page Sizing

| Print Engine | Page Size - Pixels | Page Size - Inches | Card Surface |
|----------------|--------------------------|--------------------|---------------------|
| Direct-to-Card | 638 x 1013 (at 300 dpi) | 2.13 x 3.38 | ISO ID-1 |
| Retransfer | 1344 x 2100 (at 600 dpi) | 2.24 x 3.50 | ISO ID-1 Retransfer |

The XPS Card Printer Driver (version 7.4 and newer) supports printing to the Artista CR805 from these applications by adjusting the image origin to align the image on the card.

The diagram below shows the modifications made to the image by the XPS Card Printer Driver.



While you can print to the Artista CR805 from ID Works, IDCentre, and other third-party software applications, using the XPS Card Printer Driver has the following limitations:

- It does not print over the edge; instead, printing is “close” to the edge of the card
- Images are upscaled from 300 to 600 dpi to maintain 600 dpi printing (see “Upscaling images” section)

Entrust recommends using Adaptive Issuance™ Suite Software to take full advantage of the Artista CR805 card printer capabilities, such as over-the-edge printing and using 600 dpi images without having to upscale the image.

Using color modes

Best practice is to maintain an ICC color workflow by adjusting your image to produce the desired color. If that is not possible, the Artista CR805 allows you to select from several color modes.

Ideal Image Layout and Formats

| | |
|-------------------------------|--|
| Image Size | <ul style="list-style-type: none"> • 3.5" x 2.24", 2100 x 1344 pixels • True 600 dpi resolution (both directions) <p>Note: A small margin (bleed) on all edges remains on the retransfer film</p> |
| Color Depth | <ul style="list-style-type: none"> • 24 bits per pixel |
| Font Size | <ul style="list-style-type: none"> • Decorative and serif fonts may require a larger point size than sans serif fonts for readability • Test point size 2 (sans serif) and below for readability • Test point size 4 (decorative and serif) and below for readability |
| Supported Color Spaces | <ul style="list-style-type: none"> • All image rendering/compositing work is performed in a user-defined RGB working color space • sRGB IEC61966-2.1 (default) |
| When Saving Images | <ul style="list-style-type: none"> • Always work from a master version, keeping a large color gamut in known color space (such as sRGB IEC61966-2.1) and all layers and effects intact • Use Save As to create a new file (a copy) in a preferred format for production • Flatten production files to remove layers, remove embedded color profiles, and finalize transparency (see aliasing example above) • Save images as TIFF, PNG, or BMP <p><i>High levels of compression can remove some information from images and can cause image artifacts such as banding or posterization, especially in images that have gradients.</i></p> <p><i>Entrust recommends a file format with no compression or lossless compression (e.g., PNG). If this is not possible, then the lowest level of compression is most desirable.</i></p> |

| Supported Image File Formats in Preference Order | File Format | Color (24 bpp*) RGB Support | Grayscale (8 bpp) | Monochrome (1 bpp) | Compression (Typical default) | Typical Uses |
|--|-------------|-----------------------------|-------------------|--------------------|-------------------------------|------------------------|
| | PNG | Yes | Yes | Yes | Lossless | • High- to mid-quality |
| | TIFF | Yes | Yes | Yes | Lossless or no compression | • High- to low-quality |
| | BMP | Yes | Yes | Yes | Uncompressed format | • High- to mid-quality |
| | JPEG | Yes | Yes | No | Lossy | • Mid- to low-quality |

* Color 24 bpp uses 8 bits for each color channel (R, G, and B)

Artista CR805 image FAQs

Q: How can I produce brighter colors on my cardstock?

A: Using RGB to adjust colors produces brighter colors when using the CMYK ribbon.

Q: Why is there a white line around my magnetic stripe?

A: Color backs require additional blocking features to accommodate the preprinted element shifting on the cardstock and use double the ribbon.

Q: Is there a formula to help in color adjusting images?

A: Using ICC Workflow, begin with targeted RGB values, though additional adjustments may be necessary.

Q: Why can't I achieve the color I want?

A: As with all desktop printers, your color may be outside of the printer's gamut.

Q. Monochrome fonts in a PDF file do not print correctly. Why is that?

A. To print black text with the highest quality:

- Ensure the black text on the card design is pure black
- Check that the application does not print the image as a bitmap
- Make sure the text is set to print as black
- Confirm color is set to composite RGB for all card printing

For more information

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ABOUT ENTRUST CORPORATION

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