Canon

imagePROGRAF PRO Series

DIGITAL
PHOTO
PRINT
ESSENTIALS

PRO-500

Canon

Professional Print & Layout, the software to lead photo printing into a new stage

Canon imagePROGRAF PRO Series is highly popular among photographers around the world for its dynamic large-sized print, high image quality, solid reliability, and high performance.

Canon, which develops everything from its own lens and cameras to sensors, printers, and papers, pursues achieving the ideal image quality that photographers wish to have, centred on its Crystal-fidelity technology that Canon is advancing.

Canon made further advances to EOS, improved the functions of Digital Photo Professional, and developed a professional print software called Professional Print & Layout to enable working in tandem with these improvements.

This software provides a solution to achieve a new dimension in photo printing that anticipates the advent of HDR workflows.

imagePROGRAF PRO Series

17"	24"	44"
12-colour Model / Pigment Ink System	12-colour Model / Pigment Ink System	12-colour Model / Pigment Ink System

imagePROGRAF
PRO-500

imagePROGRAF
PRO-520

imagePROGRAF
PRO-540

The imagePROGRAF PRO Series with a line-up that support various paper sizes.

60"

8-colour Model / Pigment Ink System

12-colour Model / Pigment Ink System

8-colour Model / Pigment Ink System

imagePROGRAF
PRO-540S

imagePROGRAF
PRO-560

imagePROGRAF
PRO-560S

imagePROGRAF PRO Series

DIGITAL PHOTO PRINT ESSENTIALS
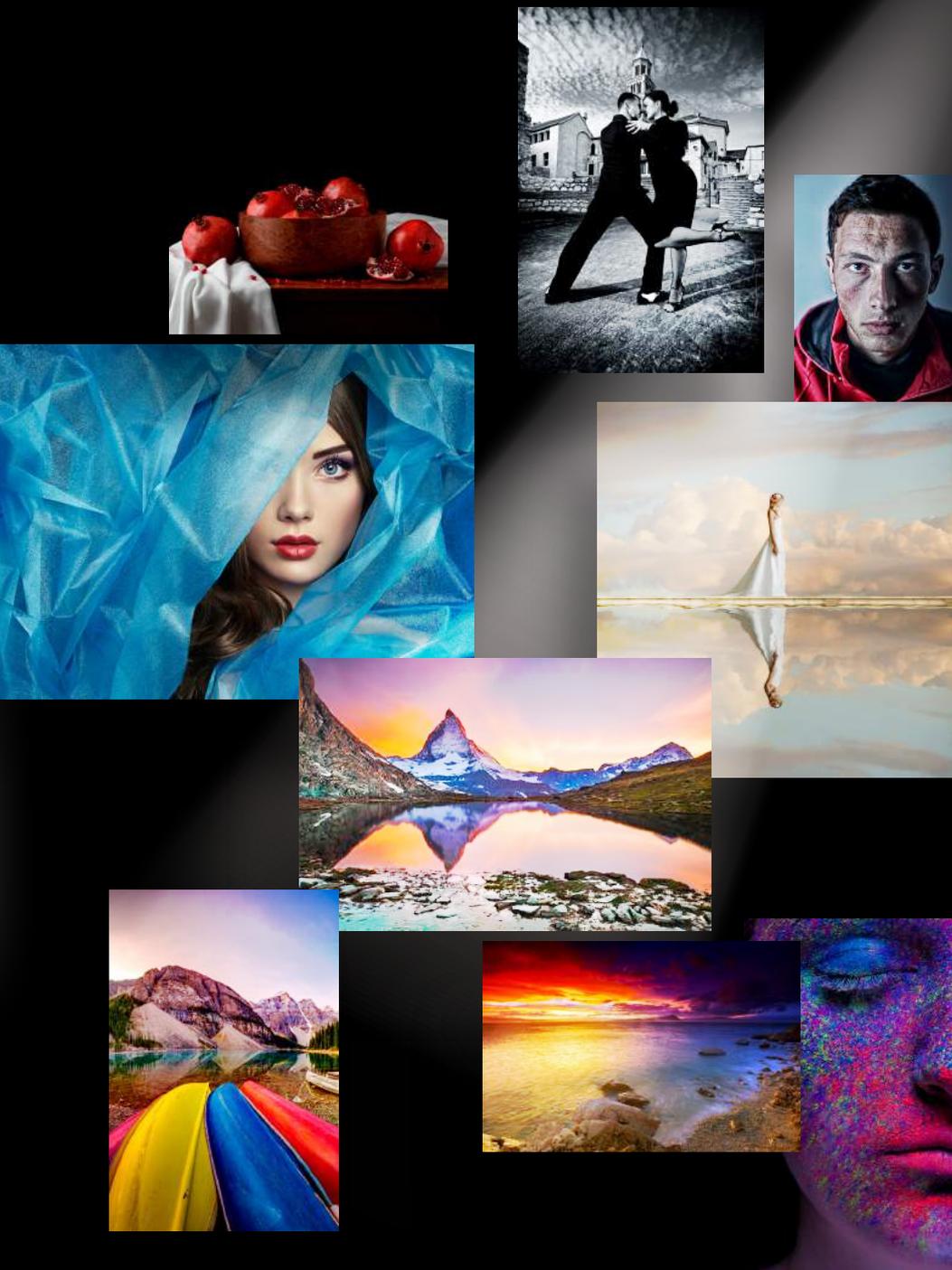
1

Digital Photo Print Workflow

Professional Print & Layout is compatible with Windows and macOS.

Both the existing print software, Print Studio Pro, and the new Professional Print & Layout can be installed at the same time, so that users can choose which software to use depending on what functions are required.

Print workflow for photographers is evolving from a "camera + print" orientation to more focus on monitor calibration.

In order to produce the photos captured on digital cameras into finalized work as print, the photos must undergo image development and adjustments using a monitor. However, the factors shown in the diagram below come into play from the point when the colours are displayed on the monitor until they are outputted as print.

Photo shooting → **Processing and confirmation** → **Printing**

Variable perception of colours on a monitor depending on ambient light
page 25

Monitor colour rendition varies according to the monitor's characteristics and conditions
page 25

Difference in colour ranges (gamut) achievable by the monitor and the printer
page 6

Monitor colour rendition varies according to the software settings
page 11

Erroneous colour operation due to complex colour settings
page 11

Colour reproduction differences depending on media type
page 16

Using colour management for a print workflow based on the colours displayed on the monitor

As colour management technology that provided photographers with effective control of colour reproduction on a monitor and transfer the settings to other software and devices became widespread, adjusting colour tones on the monitor and reflecting the resulting colours in the final print is becoming increasingly mainstream. The optimum mode used for this workflow is the Use ICC Profiles mode, which requires the photographer to have sufficient knowledge of colour management, including colour space management.

Photo shooting

Priority is placed on reproducing the data captured by the camera as much as possible.

Processing and confirmation → **Printing**

Retouching
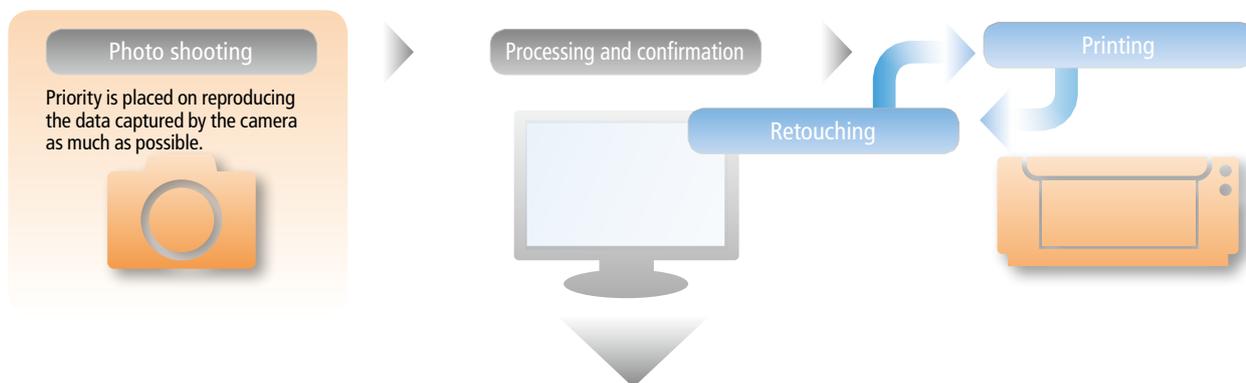
It has become common for photographers to use monitors with a broad gamut suited for checking and adjusting the colours, and to use colour management to control the colour settings between software and devices. By this, the workflow has changed so that it has now become mainstream to adjust the colour tones on the monitor, and reflect those colour results into the final print. This workflow is compatible with the Use ICC Profiles colour mode, but it requires sufficient knowledge of colour management, including colour space management.

Colour Management

Photo shooting → **Processing and confirmation** → **Retouching** → **Printing**

The picture on the monitor is the main working source and the data is finalized on the monitor.
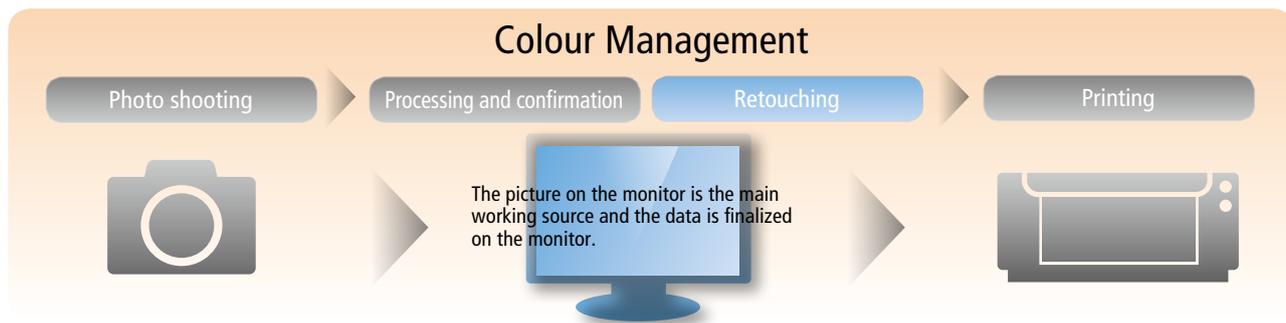
Making use of the wide gamut of RAW images and printers
Use ICC Profile made for professional photographers

Using Adobe® RGB and sRGB to choose the appropriate colour space for image processing

While sRGB has a colour scope that can be reproduced by many devices, Adobe® RGB, which enables expressing a broader range of colour space, makes it possible to print images with wider colour space and more vibrant colours, thus drawing out the full potential of the imagePROGRAF PRO Series.

If you wish to print out the photos from a variety of printing environments with the same consistent look, it would be best to unify the work environment by using sRGB as the standard.

- Visible region
- Adobe® RGB
- sRGB
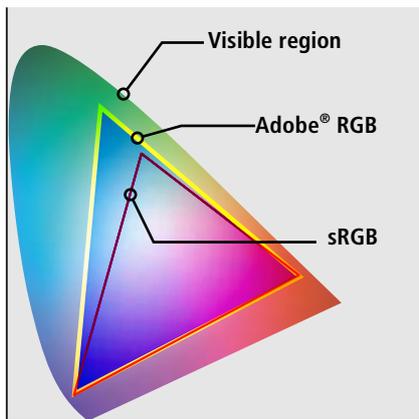
Subject with highly saturated colours enabled by Adobe® RGB

This picture shows the specific colours not reproducible with sRGB

Above left, is a photograph created using Adobe® RGB, and top right shows the extracted colours that cannot be reproduced in sRGB. The coloured areas in the top right photo indicate the colours beyond sRGB, and this is more obvious in bright and vivid greens and blues. The blackened areas are within the sRGB colour gamut, which covers most of the picture.

Photographs expected to be highly saturated, such as the emerald green sea view (right) can be produced as intended by shooting the scene in RAW format, and developing and printing using Adobe® RGB.

Sample photo with tones suitable to work and print using Adobe® RGB

Different print results depending on the rendering intent method

When the colour gamut on a monitor and that of the combination of printer and paper are significantly different, colours beyond the monitor gamut are reproduced on a printer through rendering intent. Among the different methods to achieve this rendering intent, you can choose Relative Colorimetric in addition to Perceptual in Professional Printing & Layout.

It is more likely that choice of different rendering intent methods on a paper with a smaller reproducible colour range, such as fine art paper or specialty paper, results in different colour tones.

[Original]

*Image

[Perceptual] (recommended): Prints by utilizing the colour space that can be reproduced on the printer. Select this when you want to print with an impression close to that on the monitor, as the characteristics of the data displayed on the monitor will be reflected correctly.

[Relative Colorimetric]: Converts the image to the printer's colour space in a way that the image's colours that are within the colour gamut of the printer are reproduced to the nearest level. Select this when you want to print in colours that are close to the original image.

Printing with the Use ICC Profile mode to make full use of the printer's capabilities

The Use ICC Profile mode is recommended for expert photographers who are accustomed to working with colour management, and who understand the differences between Adobe® RGB and sRGB and their impact on printing.

The imagePROGRAF PRO Series has an improved printer profile design, and Black Point Compensation has become even easier to use.

By selecting Black Point Compensation, the tone of the image will be adjusted so that the darkest point in the ICC profile of the image matches the darkest point in the ICC profile on the side of the printer being used to output the image.

Color Management
Color Mode:
Use ICC Profile
> Use ICC Profile
> Driver Matching
> No Color Correction
> Black and White Photo
Perceptual
☐ Use black point compensation
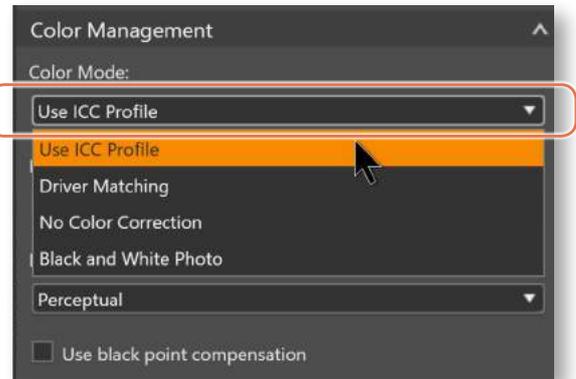
Taking a photograph in RAW format
Photo shooting

Confirming the data on a monitor that supports Adobe® RGB
Processing and confirmation

Printing colours beyond the sRGB colour gamut
Printing

Monitor adjustment is an indispensable operation by a user.

Variable perception of colours on a monitor depending on ambient light
page 25

Monitor colour rendition varies according to the monitor's characteristics and conditions
page 25

Difference in colour ranges (gamut) achievable by the monitor and the printer

In Adobe® RGB, improved perceptual rendering intent provides a print closer to the monitor colour

Check and operate quickly and with ease, with the Professional Print & Layout printer software.

Monitor colour rendition varies according to the software settings

Erroneous colour operation due to complex colour settings

The **Use ICC Profile** mode
— For photographers who utilize the wider gamut available in Adobe® RGB

Colour reproduction differences depending on media type
page 16

Professional Print & Layout provides efficient printing in a colour-managed environment

Professional Print & Layout, which is a software developed specially for the imagePROGRAF PRO Series, supports RAW files using Canon software Digital Photo Professional, as well as other image processing software such as Photoshop®, Photoshop® Elements, and Lightroom Classic®. It works as a plug-in each of the aforementioned software and uses a unified interface to significantly increase efficiency when printing.

Professional Print & Layout

Professional Print & Layout links with various image processing software including Digital Photo Professional to improve ease of performing printing work.

Links to various software, and also operates on its own, in accordance to the photographer's work environment.

Canon Digital Photo Professional

Choose a photograph to print, and select
Plug-in Printing... > Print Studio Pro

Photoshop® CC
Photoshop® Elements

Choose a photograph to print, then select
Automate > Canon Print Studio Pro...

*Set the colour mode to RGB Color to print out.

Lightroom® Classic CC

Choose a photograph to print, then select
Plug-in Extras > Canon Print Studio Pro...

Open Professional Print & Layout directly from the application

🖨️ Starting Professional Print & Layout

Features to enable photographers to concentrate on creating their work

Features to check and input accurate print instructions

Function to improve print efficiency

Able to print multiple images at once

Colour management that works together with image processing software

A3 (297.00x420.00)

Highly advanced adjustment functions, such as monochrome printing and contrast reproduction

Printing can be completed without opening the printer driver

imagePROGRAF PRO Series

DIGITAL PHOTO PRINT ESSENTIALS 2

Smooth, fine printing
with Professional Print & Layout

Professional Print & Layout is compatible with Windows and macOS.

Both the existing print software, Print Studio Pro, and the new Professional Print & Layout can be installed at the same time, so that users can choose which software to use depending on what functions are required.

Speedy, smooth, and accurate operations offered by Professional Print & Layout's advanced interface

Sophisticated operability responding to demands from professional photographers

Professional Print & Layout, which is a software dedicated to photo printing, reflects a variety of requests from professional photographers. This software is not only equipped with layout functions, but also has highly advanced printing options to enable photographers to print quickly, as they wish, with the optimum level of quality.

Evolved features for accurate and simple print settings

Being able to register print settings and layout in Stored Settings significantly improves efficiency in performing regular tasks.

Menu to hide items and organize the information

Features to enable photographers to concentrate on creating their work

Unobtrusive dark toned window design enables users to concentrate their attention on making photographic adjustments.

Large print preview area retains the same colour tone as the corresponding image editing software and enables real-time correction.

Operation panel can be hidden to allow for easy colour adjustments on an enlarged preview screen.

General Settings and Color Settings tabs make it possible to switch operations instantly from one to the other.

Easy-to-understand user interface enables completing print procedures by simply following the setting items from top to bottom.

Thumbnail area enables designating the sequential order for printing the images, and the number of copies to be printed per image.

Evolved features for printing efficiency

Optional settings to make batch printing more efficient by creating and transmitting print job information per page.
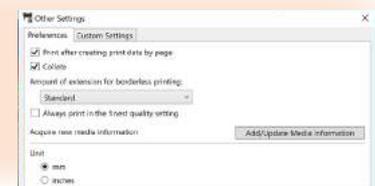
Preview in colour tones that are consistent with the image editing software

Professional Print & Layout is preinstalled with the optimum Display Color Matching settings to ensure that the colour tone displayed in the Preview is consistent with what is displayed by the image editing software, such as Digital Photo Professional and Photoshop®.

These settings make it possible to check the colour tone in Professional Print & Layout, without having to think about the differences in tone by different software.
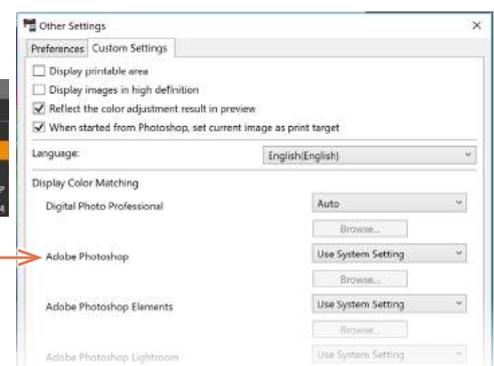
Print photos quickly and as desired with effortlessly fluid settings

Finish inputting the print settings, easily and accurately, just by following the setting items from top to bottom.

4 Stored Settings

Frequently used settings can be added into Stored Settings. The saved settings can be summoned at once when needed.
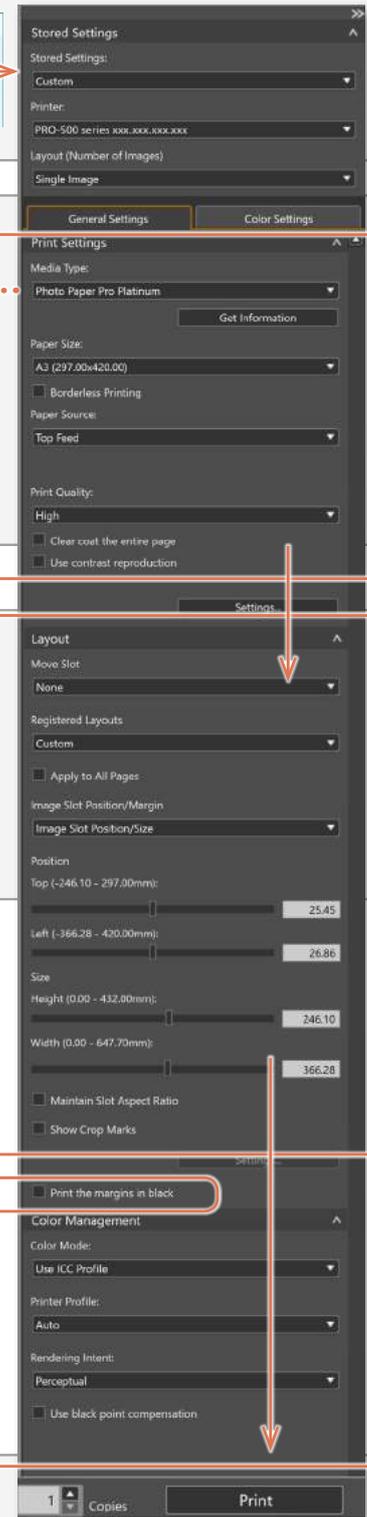
1 Print Settings

Basic settings, such as selecting printers, paper type, paper size and print quality, can be carried out here.

Detailed settings can be viewed by simply expanding each tab, enabling users to check all settings in one window.
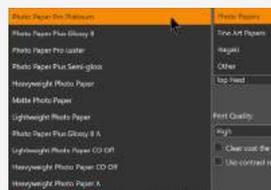
2 Layout

The border size can be fine-tuned by using the slider or inputting a numerical value. It is also possible to resize or move the photo directly with mouse operations.

Additional adjustments, such as trimming and rotation, can also be specified per photograph
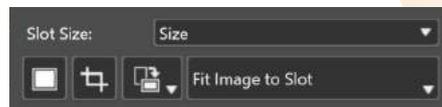
Customizable border depending on paper

When using fine art paper with a rougher surface, a large border can nicely emphasize the paper texture.

Choosing the option, Print the margin in black, on a photographic paper suitable for borderless printing creates a photograph with a sharp impression.

3 Print
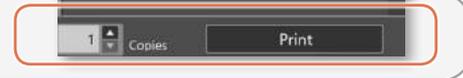
Layout (Number of Images) for index printing

Choose Layout (Number of Images) to print multiple images on one sheet with your desired layout. You can choose to have up to a maximum of 10 x 10 photos automatically laid out as a grid for each sheet, or add slots to lay out the photos as you like. The shape of the slots can be changed to allow multiple photos to be assembled together like a collage.
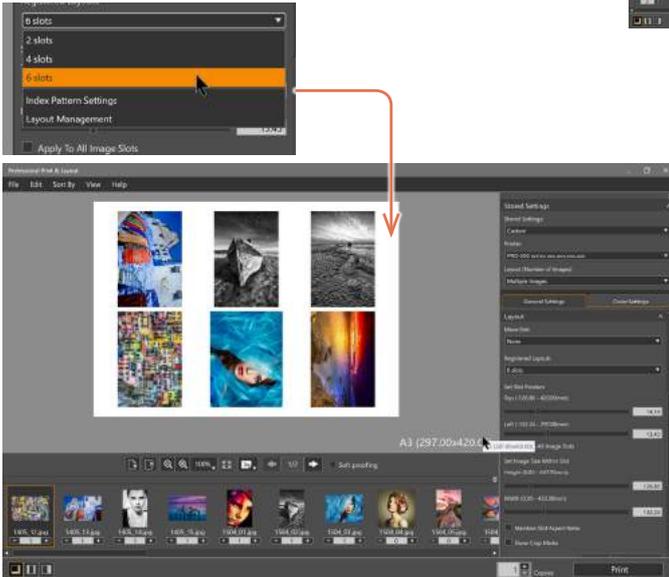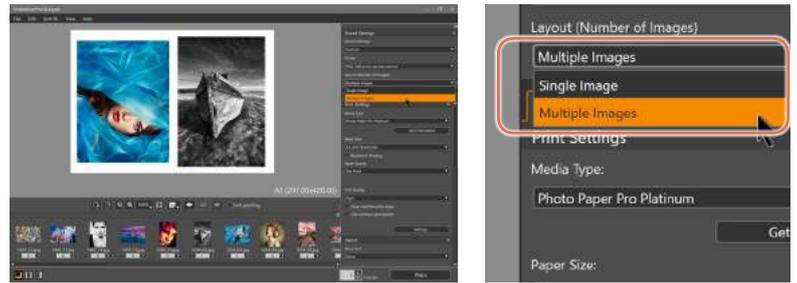
By choosing "6 slots" in Registered Layouts, six photos will be automatically laid out in sequence, which can be used as printed index.

The number and shape of the slots can be changed manually, to allow creating layouts in accordance to the user's preference.

Subtle colour balancing for a perfect print

If further adjustments are needed, the printing results can be finely tuned to the colour that you desire by selecting the Color Setting tab—without altering the original data.

• Adjusting brightness and contrast

• Adjusting colour balance

• Adjusting tone curve
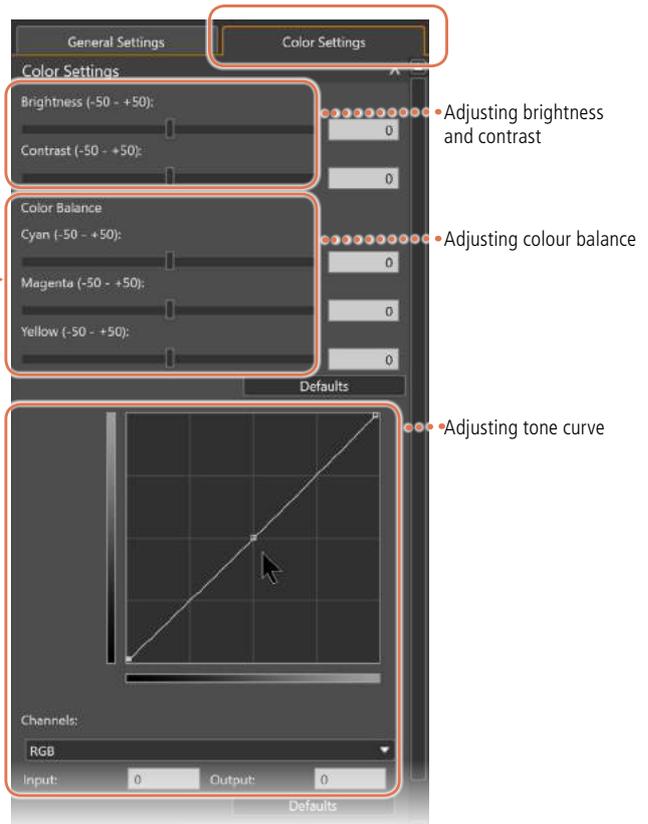
In addition to colour balance, you can also make detailed modifications in brightness, contrast, and tone curve.

Offering more advanced functions that are easy to use in order to print out higher-quality photos

High-quality black and white photos with easy operations

imagePROGRAF PRO Series uses grey ink to deliver black and white prints with little colour shift.

In Professional Print & Layout, when Black and White Photo is selected in the Color Mode setting, the photo will be printed with a stable grey balance by combining the use of grey and black ink.
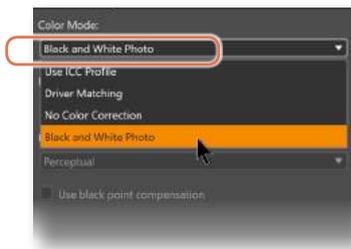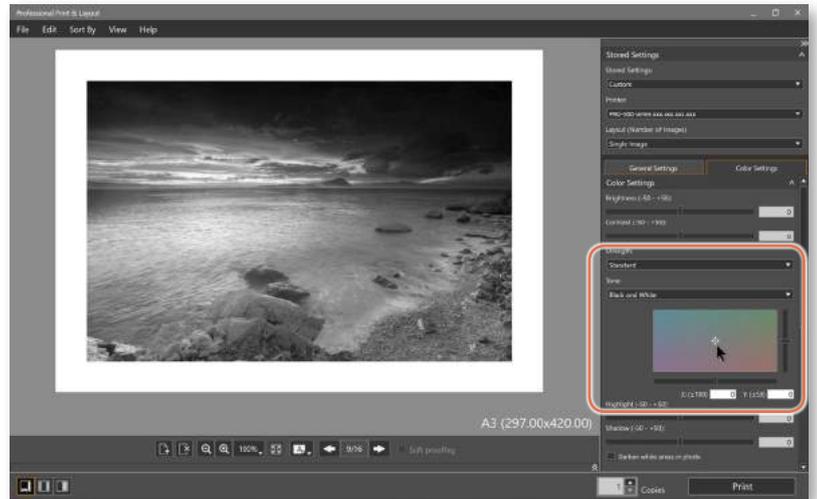
Professional Print & Layout allows you to finely adjust colour tones for black and white printing. Subtle colour tones can be achieved by combining Professional Print & Layout with the colour adjustment function of your image editing software. Also, specified settings can be stored so you can easily print with the same settings repeatedly.

Highly expressive black and white photos can be achieved just by choosing from the two preinstalled settings for tone adjustment and for black and white tone. And in addition to choosing from Cool Tone, Black and White, and Warm Tone, colours can be finely tuned even further to match your preference.

Tone: Soft gradation

Black and white tone: Black and white
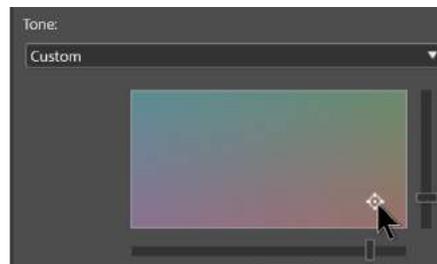
Black and white tone: Cool tone

Black and white tone: Custom settings

Black and white tone: Warm tone

Contrast Reproduction to reduce deterioration in colour vibrancy at the time of printing

Adjustments are made to faithfully reproduce the true sharp quality of the image, which can deteriorate by the characteristics of the printer or the paper being used.

This adjustment makes it possible to print highly defined photos that are true to how the scenes looked at the time when they were photographed. This effect will be further enhanced when used together with the Digital Lens Optimizer installed in Digital Photo Professional.
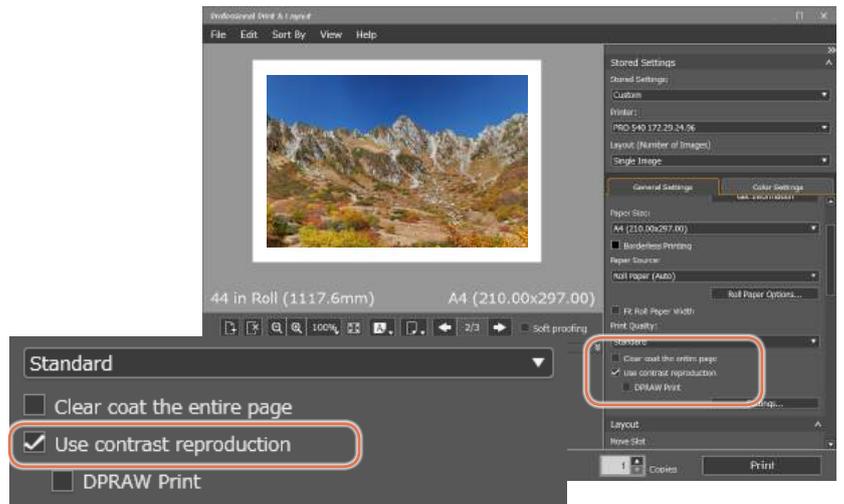
Original image

Contrast Reproduction: OFF

Contrast Reproduction: ON

The image is automatically adjusted depending on what paper is selected, in order to produce print with the most appropriate level of sharpness and contrast.

Great paper versatility enables the delivery of quintessentially deep, artistic expressions from printed photographs

Diverse papers to enhance the expressive print capabilities of the imagePROGRAF PRO Series

Inkjet printers use many types of fine art paper, which are classified according to base paper and structure. Using a different type of paper will give printed photographs a totally different look. Find and select the paper you want to use from various types such as Canon genuine paper and paper from other manufacturers.

Professional photographic paper
→ Same base paper as silver halide photographic paper
   → Barium sulphate (Baryta) coating → **(1) Baryta paper**
   → Resin coating → **(2) RC paper**
→ Base paper different from photographic paper
   → Printmaking or watercolour paper as base → **(3) Art material paper**
   → Resin coated canvas → **(4) Photo canvas paper**
   → Paper made with uniquely Japanese materials and production methods → **(5) Washi paper**

(1) Baryta paper

Baryta refers to barium sulphate, a material used to coat a paper to make it whiter. With its characteristically beautiful texture, baryta paper is commonly used by professional photographers to print photographs for exhibitions or for framed displays.

(2) RC paper

RC stands for "resin coated," where the surface of the base paper is coated with resin. Since glossiness can be controlled by changing the resin layer processing, there is a wide variety of RC-based papers, from high gloss to subdued semi-gloss.
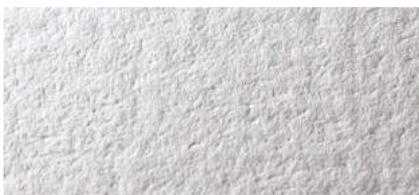
(3) Art material paper

The base paper is paper used for printmaking, watercolour painting or other forms of fine art but its surface is processed for inkjet printers. It has a unique texture enabling you to enjoy the pursuit of expressions that take advantage of the rough surface or the paper base tint.

(4) Photo canvas paper

Media made from flax or cotton cloth for oil painting or acrylic painting is called a "canvas." Luxurious photo canvases are made of woven cotton coated with polyester using the same method as that for printing papers using photographic paper as base paper.
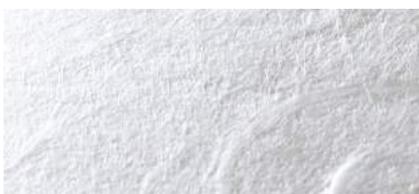
(5) Washi paper

"Washi" (Japanese paper) refers to papers made of materials with methods that originated in Japan. Their unique characteristics set Washi papers apart from other "western" types of papers. Washi is made from the barks of kouzo, a certain member of the mulberry family, mitsumata (also known as the Oriental paperbush), and other Japanese trees. It contains longer fibres than western paper.

Paper, on which an image is printed, is what finally fixes the photo's data, colours, and quality into place, so the difference in the paper's performance and quality dramatically changes the impression of the printed photo. Canon, as a manufacturer that develops printers and inks, also provides the best choice of paper for printing photos.

Photo Paper Pro Platinum

RC paper

This glossy photo paper with unparalleled texture and performance is the ultimate choice for both professional and advanced amateur photographers.

Weight (gsm): 300
Thickness (μm): 300
ISO whiteness (%): 98

Photo Paper Pro Premium Matte

Art material paper

This high-quality matte photo paper yields a smooth finish and possesses exceptionally rich colours.

Weight (gsm): 210
Thickness (μm): 310
ISO whiteness (%): 92
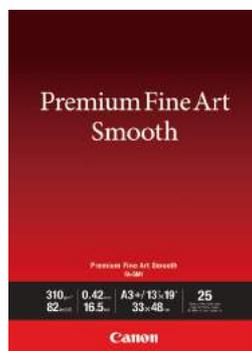
Premium Fine Art Smooth

Art material paper

This 100% cotton-based paper is free from fluorescent brightening agents. The thick and pliable paper with a smooth surface realizes a high-quality finish.

Weight (gsm): 310
Thickness (μm): 420
ISO whiteness (%): 85

Photo Paper Plus Glossy II

RC paper

Using the same base paper as silver halide photographic paper, this photo paper with a thick texture and a high-glossy feel produces remarkable, high-quality photo prints.

Weight (gsm): 275
Thickness (μm): 270
ISO whiteness (%): 92
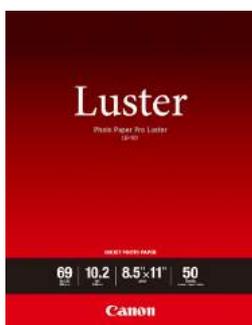
Photo Paper Pro Luster

RC paper

This "microporous" glossy paper with subdued texture possesses instant drying properties and is a great choice for professional photographers who seek high productivity. Since it is relatively insensitive to lighting variations, this paper is suited to photographs for exhibitions or display.

Weight (gsm): 260
Thickness (μm): 260
ISO whiteness (%): 92
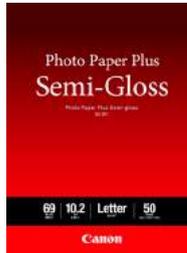
Photo Paper Plus Semi-Gloss

RC paper

The velvety texture of this semi-gloss paper gives your photos an amazingly rich quality.

Weight (gsm): 260
Thickness (μm): 260
ISO whiteness (%): 91

Canon's website offers information on third party papers that are compatible with Canon's inkjet printers, as well as other information such as their ICC profiles and details on how to set the printer driver. Some of these papers can be used without setting an ICC profile. Please download the profiles as needed.

Please note that information on third party papers provided on Canon's website is not a guarantee by Canon Inc. that normal operations (print out) will be performed by the use of these papers.

imagePROGRAF [PRO Series]

DIGITAL PHOTO PRINT ESSENTIALS 3

High-quality print linked with EOS

Digital Photo Professional and Professional Print & Layout are compatible with Windows and macOS.

Professional Print & Layout must be installed to use HDR Print or DPRAW Print. The previously existing software, Print Studio Pro, does not support HDR Print or DPRAW Print.

Linking the software in cameras and printers for results that come closer to the ideals of Crystal-fidelity

Developed by pursuing colour reproduction, tonality and sharpness—Crystal-fidelity is Canon's input and output link that faithfully reproduces the light captured by EOS into print. Further progress has been made to this, to advance another step forward in the possibilities of photographic expressions. The functions in the Digital Photo Professional image development software have been improved to enable printing that makes use of the dynamic range and focus information in RAW images. And the print software has been radically changed into the Professional Print & Layout software to enhance colour reproduction, tonality and sharpness that can only be achieved through the combination of Canon's cameras and printers.

| RAW/DPRAW data | → | **Digital Photo Professional** | → | **Professional Print & Layout** | → | **Printed image** |

Crystal-fidelity

- Colour reproduction
- Tonality
- Sharp details
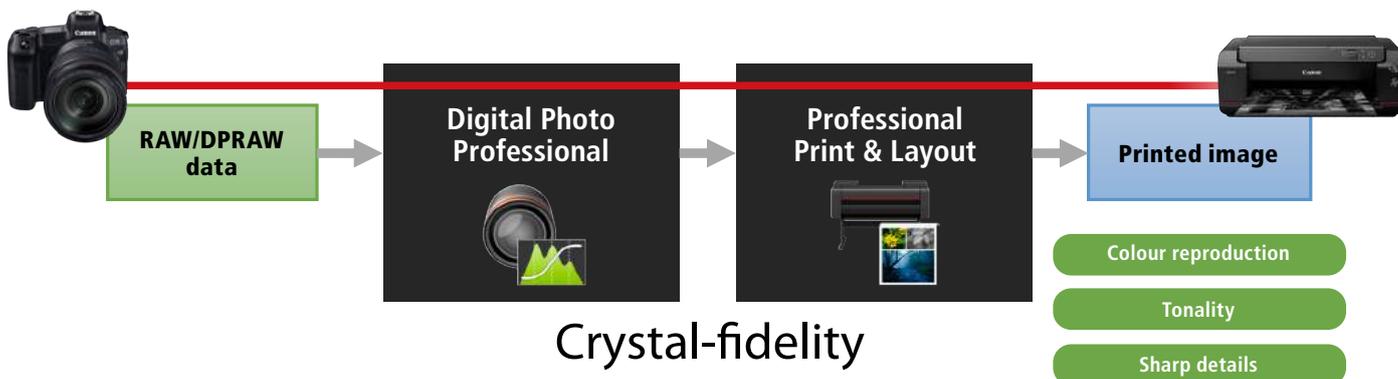
High-quality photo printing with Digital Photo Professional and Professional Print & Layout

Professional Print & Layout has been upgraded to further strengthen its ability to work together with Digital Photo Professional. It supports HDR Workflow, which is expected to become the next standard for image content creators, and is optimized to make use of the potential of the latest cameras and printers. Professional Print & Layout conducts image processing in an expansive colour space that is even beyond that of Adobe® RGB, and is designed to have both softwares to work together, thus achieving high colour reproduction, tonality and sharpness that cannot be achieved by other image processing software.

HDR — When connected to the HDR display*, it realizes more faithful screen display and printing.

Digital Photo Professional | **Professional Print & Layout**

| RAW/DPRAW data | → | New Development Processing | Wide colour gamut | Wide colour gamut | New Print Processing | → | Printed image |

- Colour reproduction — **NEW** HDR PQ mode
- Tonality
- **NEW** HDR Print
- **NEW** Exhibition Lighting Optimization
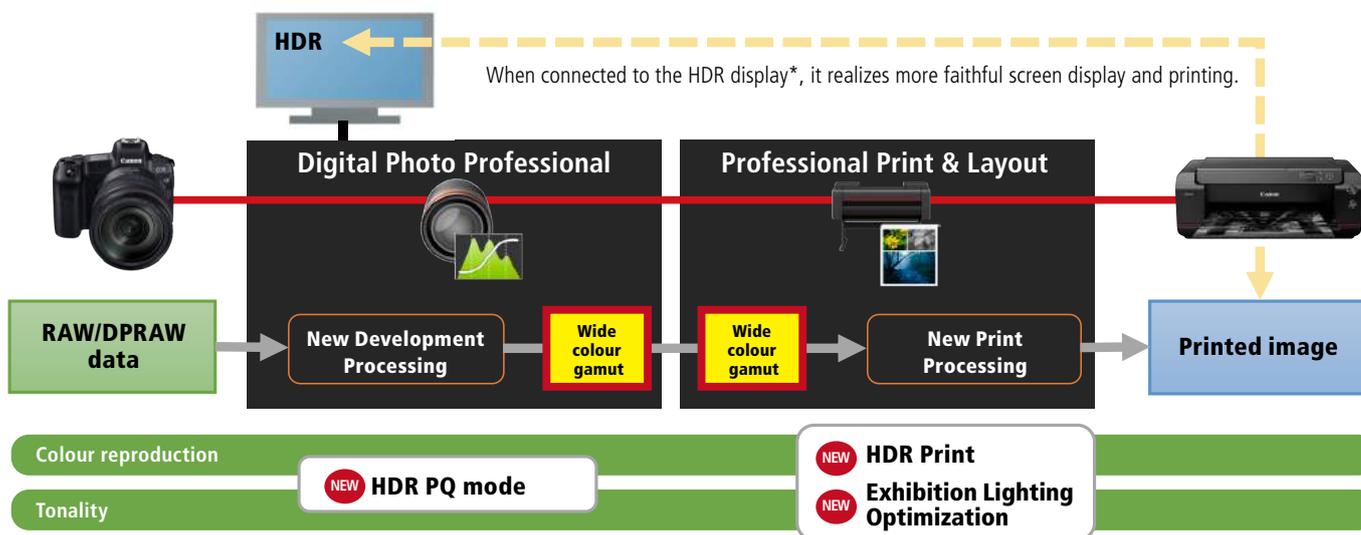
*If HDR display is not available, the image will be shown in simplified SDR format.

Start Professional Print & Layout by selecting the Print button in Digital Photo Professional

Professional Print & Layout can be linked with Digital Photo Professional version 4.9.20 software or later. Clicking the Print… button on the toolbar immediately launches Professional Print & Layout for faster operations.

Note: Professional Print & Layout must be selected in advance from the pull-down menu in the Print button.
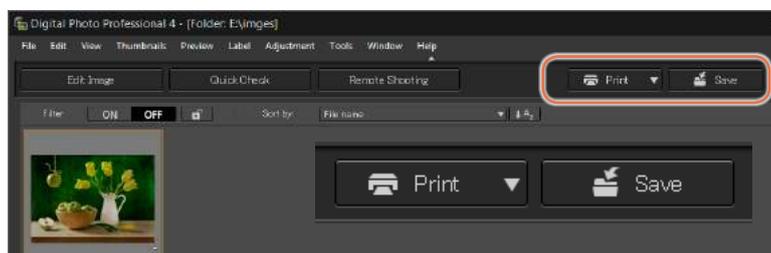
HDR Print can utilize RAW data from the new EOS with HDR PQ information.

HDR PQ mode is able to display truer level of brightness in the HDR workflow.

With the arrival of TVs and monitors that support HDR (High Dynamic Range), image content creators are increasingly drawn to a HDR workflow that provides more accurate level of brightness when compared to traditional SDR (Standard Dynamic Range) that targets TVs and printing based on the use of cathode-ray tubes (CRTs).

The new EOS and Digital Photo Professional (4.9.20 or later) are installed with the HDR PQ mode that, when connected to a HDR compatible monitor, can display RAW images from applicable cameras at a brightness that is closer to its actual look. This takes us one step closer to the ideal situation of recreating the world as we see it with our own eyes.

Note 1: HDR PQ (Perceptual Quantization) is a new gamma curve based on the characteristics of the human vision. It supports HDR recording under the ITU-R BT.2100 standard (PQ).
Note 2: A HDR compatible monitor (Ultra HD certified monitor) and OS (Windows 10 64bit) are required to achieve HDR display on the monitor.
Note 3: When used with monitors and OS that do not support HDR, the images will be converted and displayed in SDR mode.
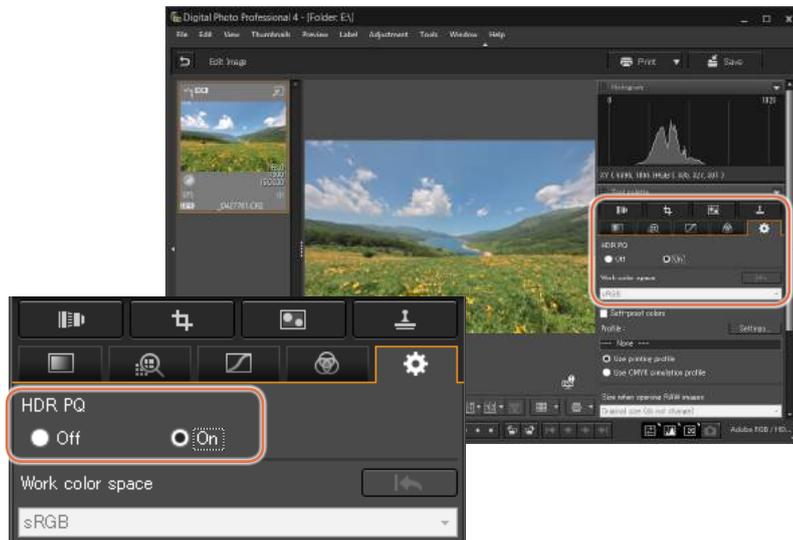
HDR Print makes use of the broad and dynamic range of RAW images.

RAW-formatted images by EOS have a broader dynamic range compared to JPEG images. HDR Print in Professional Print & Layout takes the RAW information and outputs it by bringing it closer to how the scene of the taken photo was actually seen by the human eye.Linking RAW images to printers that have a broad colour range enables the colours inherent in the RAW images to be expressed more accurately than before.
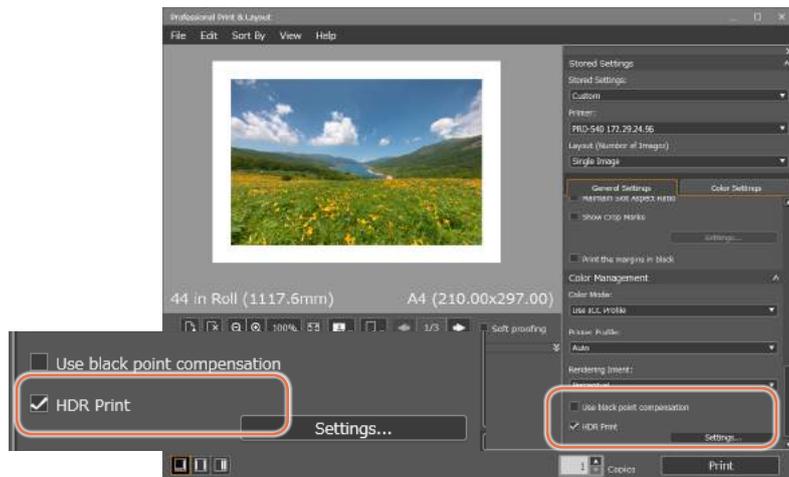
Improve reproduction of highlight tones

Improve colour reproducibility of the subject

HDR Print : OFF

HDR Print : ON

HDR Print display

Greater dynamic range of expression can be achieved with the printer, equal to or greater than that of a monitor. This is achieved by irradiating high bright lighting (200–400 cd/m^2, about 700–1400 lx) on par with that of HDR monitors onto the print, such as by using high-brightness LED spotlights, and using other display methods such as choosing a black background for the photo.

HDR Print enhances the vivid impression given off by the photos by being creative with how the photos are displayed, such as with lighting.

Traditional photo display

Lighting of about 350 lx

Background of white to grey

HDR Print display

High bright lighting of about 700-1400 lx

Black background to emphasize the difference in brightness
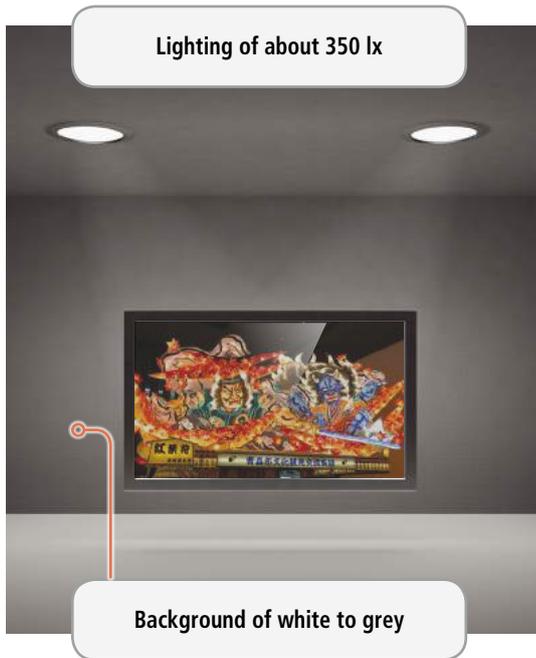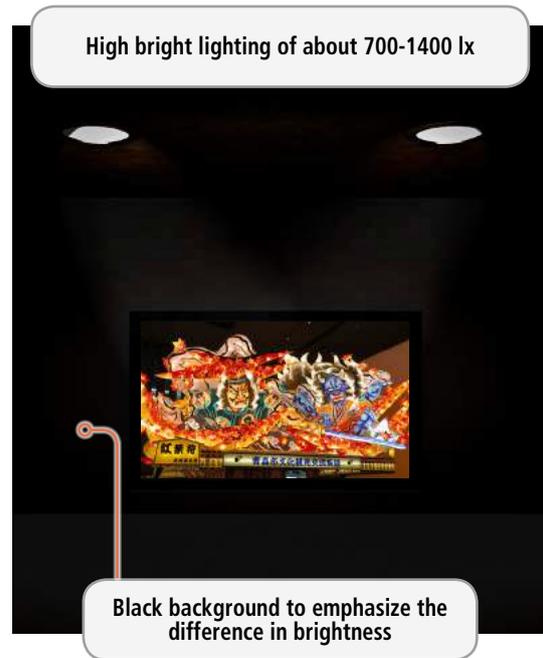
Exhibition Lighting Optimization

When brighter lights compared to traditional display lighting are irradiated onto the print, the look of the image will change—for example, the colours in the bright areas will look weaker, the colour tones will change, and the darkness of the shadows will not look dark enough. But with Professional Print & Layout, the image will be printed with adjustments made to make it look natural when displayed under bright light.
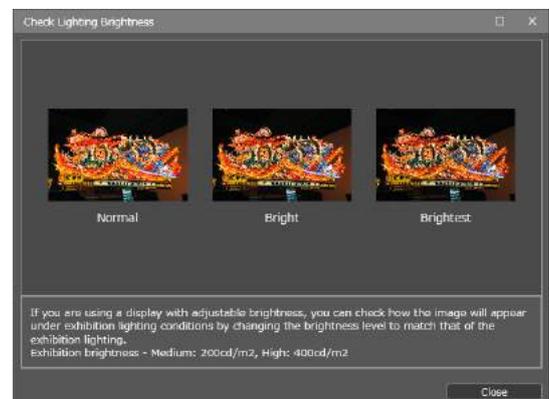
DPRAW Print to further enhance the texture and three-dimensionality of the photo

DPRAW Print is able to achieve optimal recovery of the reduced sharpness that occurs during printing by using the image's focus information

Canon's CMOS sensors, compatible with Dual Pixel CMOS AF, is composed of two photodiodes for each pixel, so that all pixels are equipped with phase-difference information, or focus information.

RAW images saved in DPRAW (Dual Pixel RAW) format can be outputted as DPRAW Print by linking with Digital Photo Professional and Professional Print & Layout. Pixels with the right focus will be adjusted to make them sharper, thus achieving a vivid print with an enhanced three-dimensional look, without the greater noise that is often seen with the use of sharpness filters.
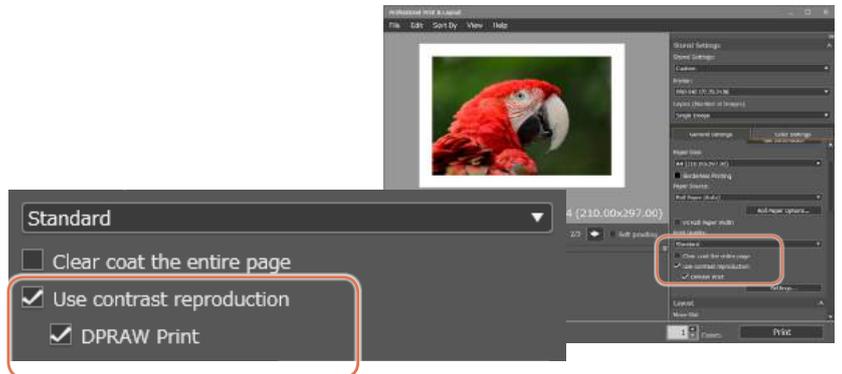
Note 1: DPRAW Print will be effective when use Contrast Reproduction is selected.
Note 2: DPRAW Print cannot be used if Dual Pixel RAW Optimizer in Digital Photo Professional software is used.

	Digital Photo Professional		Professional Print & Layout	
RAW/DPRAW data	New Development Processing	Focus Information	New Print Processing	Printed image

Sharp details	Digital Lens Optimizer	Contrast Reproduction NEW DPRAW Print
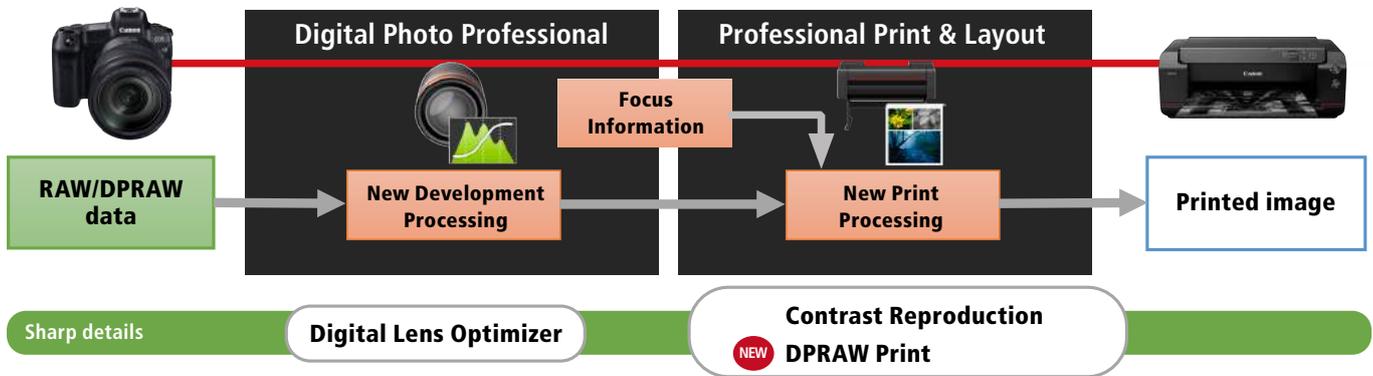
Image processing, in accordance to the focus, enables giving more three-dimensionality and reality to the photos.

Since only the pixels with the right focus are given higher definition, this increases the three-dimensionality of the photo, with a more vivid texture that achieves a reality of expression.
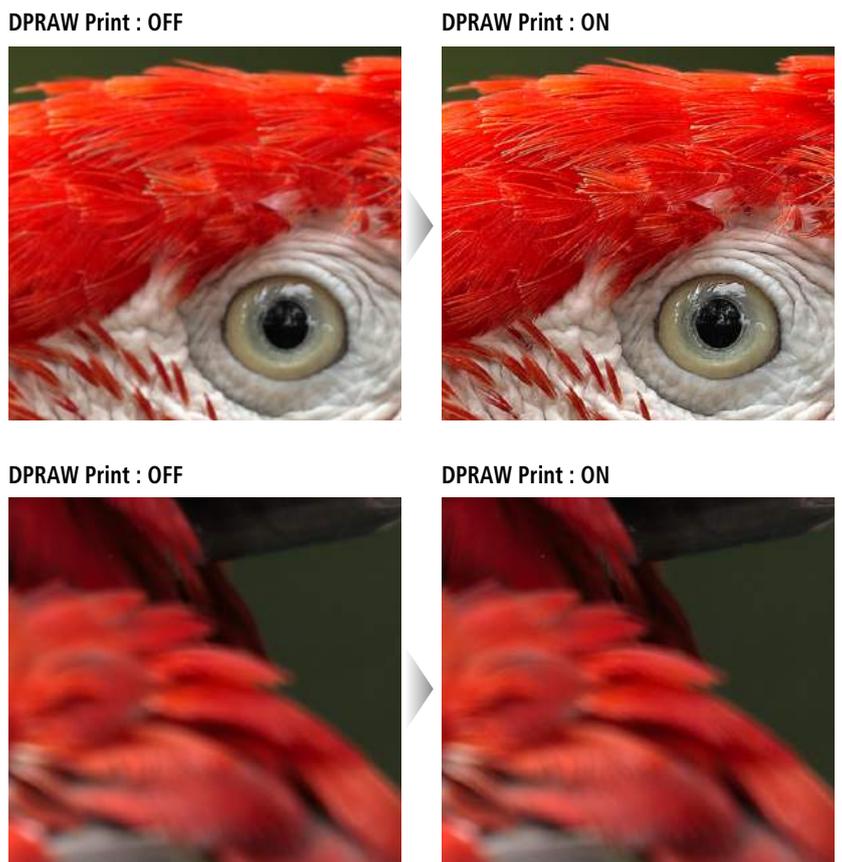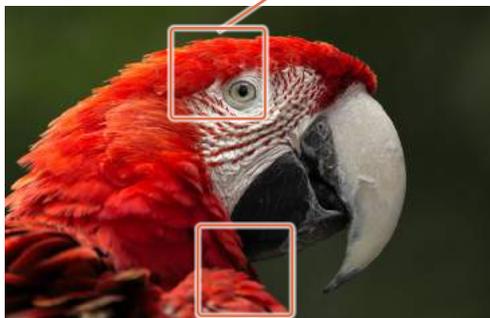
Pixels that do not have the proper focus are not emphasized, while taking into account the level of how out-of-focus they are. This helps maintain a smooth tonal expression without increasing the overall noise that often happens with the use of sharpness filters.

DPRAW Print : OFF

DPRAW Print : ON

DPRAW Print : OFF

DPRAW Print : ON

Digital Lens Optimizer to draw out the features of Canon's EF / RF lens to their full potential

Using the Digital Lens Optimizer of the Digital Photo Professional software dramatically sharpens RAW images that were shot with a compatible EF / RF lens. With functions and filtering processes established for each EF / RF lens it supports, the Digital Lens Optimizer corrects lens-related optical effects such as aberrations or diffractions. It achieves significant improvement of resolution and descriptive quality at the periphery of the image, resulting in far greater improvement of overall print quality.
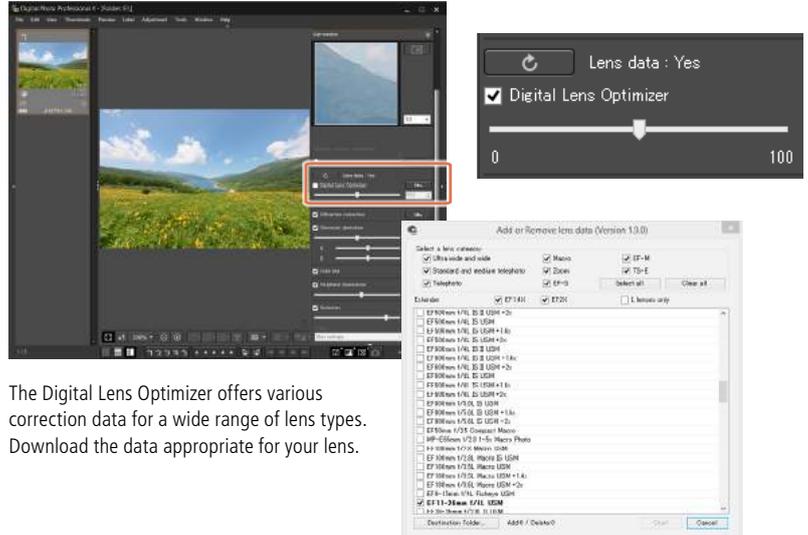
The Digital Lens Optimizer offers various correction data for a wide range of lens types. Download the data appropriate for your lens.

Reduce lens aberrations to create even sharper images

The Digital Lens Optimizer reduces aberrations and gives images a truly sharp finish.

Original image

With the Digital Lens Optimizer applied

Distortions, blurriness, and chromatic aberrations caused by the lens structure are improved.
This improvement has emphasized the three-dimensional appearance of details delivering the strong impact of the hard surface of the fuselage.

Reduce diffraction to sharpen every corner of photos shot with a small aperture

Photographers face the dilemma that closing the lens aperture to get sufficient depth of field sometimes loses sharpness of the entire image due to diffraction. The Digital Lens Optimizer offers freedom of aperture settings in any photographic situation.

Original image

With the Digital Lens Optimizer applied

Details of the flower bed that were undefined by diffraction blur have been improved, making leaves and flowers visibly sharper. The tone of the green has also been corrected to appear more three-dimensional.

imagePROGRAF **PRO** Series

DIGITAL
PHOTO
PRINT
ESSENTIALS 4

Tips to achieve stress-free photo printing

More accurate colour management through calibration between monitor and printer

Ambient light significantly influences the perception of colours displayed both on a monitor and on a print.

Therefore, it is important to select the appropriate ambient light (i.e. a fluorescent lamp) when working on colour management.

Ambient lighting recommended by Canon

D50 fluorescent lamps designed for colour evaluation (colour temperature: 5000 K, high colour rendering properties)

Brightness when viewing printed materials: 500 lx ± 125 lx

Notes on ambient light
- Avoid mixed light
- Use an achromatic colour as a background when working on photos
- Avoid outside light
- Avoid reflections from wallpaper, posters, etc.

Substituting with ambient lighting

Can be substituted with fluorescent or LED lighting of daylight colours (5000K) with a high Ra value (general colour rendering index)

Using a desk lamp as a fill light

If the lighting for the entire room cannot be changed to a fluorescent lamp for colour rendering, fluorescent stands for colour rendering can be used instead.

! **Take note of colour rendering when using LED lights**

Set up the PC desktop with an achromatic colour with no pattern

Cover the monitor with a hood to prevent ambient light reflections

Avoid vivid-coloured PC desktop

Monitor calibration

Changing colours in photographic data on an uncalibrated monitor often causes a variation in colours between the monitor and printer. This is why the monitor needs to be adjusted in advance. Using the monitor's colour calibration function, adjust the settings.

For even higher adjustment accuracy, make adjustments using a measuring instrument. Monitor adjustment using a monitor calibration tool measures the monitor's setting values automatically with a colour sensor, and adjusts the colour tone by creating an ICC profile for the monitor. In addition, by setting the created ICC profile on the computer, you can display accurate colour tones.

Monitor setting values recommended by Canon

Gamma: 2.2
Colour temperature: D50 (5000 K)
Luminance: 120 cd/m^2

Monitor calibration tips
- After powering on, wait until the monitor warms up before measuring
- Calibrate regularly to maintain stable colour reproduction

Accurate retouch

Enables subtle adjustments of colour tones and brightness of the artwork.

Accurate colour management

No printing for adjustment will be needed since you can print in the same colour tones as seen on the monitor, thus saving ink, paper, print time, etc.

Reduces changes in the monitor's colour reproduction

By periodically creating and using an ICC profile with a calibration tool, changes in the monitor's colour reproduction can be reduced.

Create a workflow with settings optimized for different purposes

Media Configuration Tool supports information on the latest papers, and also allows customization.

Media Configuration Tool is an imagePROGRAF PRO Series software that makes it possible to update or customize media information. This software supports additions and upgrades to genuine Canon paper, receives updated media information online, and reflects those updates to multiple printers. It helps increase the efficiency of printing operations, not only for single printers but also for the use of multiple printers.

Media Configuration Tool
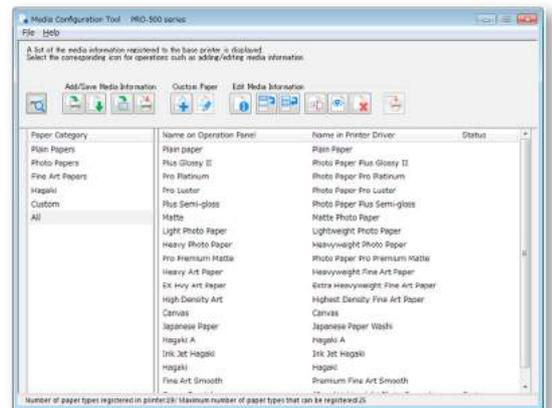
Enable the use of a new genuine Canon paper

Information on new genuine Canon paper is made available as a Media Information File (MIF) on Canon's official website. The latest MIF can be downloaded and reflected to your printer drivers by accessing the Internet through the Media Configuration Tool.

Edit media information and improve usability

Improve efficiency in selecting the paper of your choice by changing the display order of frequently used media, and hiding or deleting unused items.
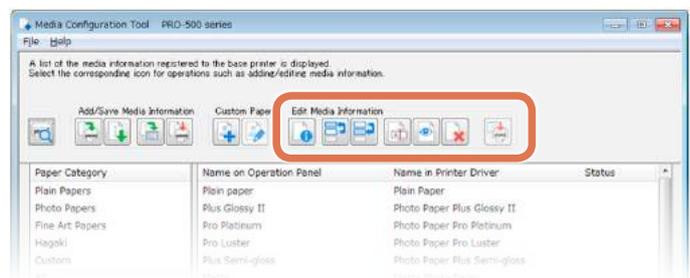
Add or edit customized paper to use paper by third parties

Existing media information can be customized, added, and edited as Custom Paper. This helps improve printing quality and paper feed smoothness when using media other than genuine Canon paper.
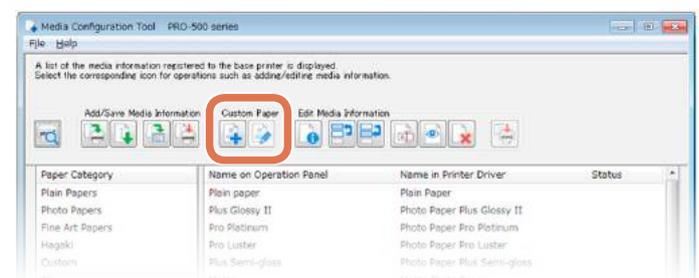
Propagating media information to multiple printers to unify the printing environment

In an office where multiple printers of the same model are running, the media information on the base printer can be propagated to printers of the same model in order to unify the printing environment within the office.

For photos printed for the purpose of general viewing, an image resolution of 300 ppi (pixels per inch, 1 inch =2.54 cm) is generally thought to be sufficient, which covers printing images taken by a digital camera with approximately 24 M pixels (6000 x 4000) or higher on A3 Plus size paper.

imagePROGRAF PRO Series printers support a maximum of 1200 ppi input depending on the combination of media type and Professional Print & Layout or other software. This capability enables high definition images greater than 600 ppi created by stitching to be printed without loss of information.

	Size	No. of pixels in 300 ppi print	No. of pixels in 600 ppi print
A2	420 mm × 594 mm	4950 × 6900	——
A3+	329 mm × 483 mm	3886 × 5705	7772 × 11410
14"×17"	356 mm × 432 mm	4205 × 5102	8409 × 10205
A3	297 mm × 420 mm	3508 × 4961	7016 × 9922
10"×12"	254 mm × 305 mm	3000 × 3602	6000 × 7204
A4	210 mm × 297 mm	2480 × 3508	4960 × 7016
8"×10"	203 mm × 254 mm	2398 × 3000	4796 × 6000
2L	127 mm × 178 mm	1500 × 2102	3000 × 4204
4"×6"	102 mm × 152 mm	1205 × 1795	2410 × 3590
Hagaki	100 mm × 148 mm	1181 × 1748	2362 × 3496
L	89 mm × 127 mm	1051 × 1500	2102 × 3000

imagePROGRAF PRO Series uses pigment ink. A pigment is a particulate, water-insoluble colouring material; ink particles remain on the paper surface. Because of the water insolubility, blurring can be reduced, even when wet, and has outstanding stability in preserving the printed colours. Dye is a water-soluble colouring material; ink seeps into the paper together with the water contained in the ink. The ink leaves no roughness on the paper, and the resulting print is characterized by an even glossiness.

Printing on gloss paper using pigment ink sometimes results in uneven glossiness due to the light dispersion caused by the varying height of the adhering ink. Chroma Optimizer, Canon's own clear coat finish that comes with the imagePROGRAF PRO Series, solves this problem. The clear coat finish helps provide uniform glossiness by evenly coating the surface of the print.

By giving the entire surface a clear coating, it resolves uneven reflections, and also reduces the phenomenon where the paper gives off a complicated, bronze-like metallic shine that is different from its original base colour, when the printed surface is looked at from different angles.

	Pigment ink	Dye ink
	Paper	Paper
Benefits	• Water resistant and less blurring • Prints have excellent stability and longevity	• Excellent colour saturation on gloss paper • Faster printing speed
Disadvantages	• Print on gloss paper may produce uneven appearance due to reflections • Weak against rubbing and pealing	• Weak against water and easily blurs • Some types of dye ink show less print stability and longevity compared with pigment ink
Tips	• Use Chroma Optimizer to eliminate the uneven ink surface • Avoid contact with glass and other flat surfaces in storage	• Dry prints thoroughly until the ink becomes stable (leave 24 hours or longer before framing the picture) • Store in relatively air-tight conditions, such as framing with a glass cover

☐ Print Black and White Photo
☑ Clear coat the entire page
Layout
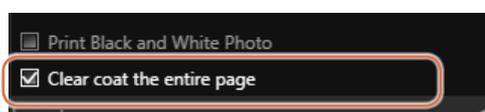
Chroma Optimizer

Selecting the Clear coat the entire page checkbox in Professional Print & Layout specifies Chroma Optimizer to be printed to make the entire paper surface even, including non-coloured paper areas.
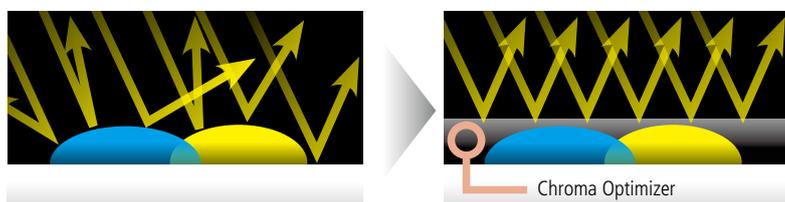
Over time, the colours of printed photographs will fade to some degree. The degree of colour fading largely depends on the conditions of the environment where a photograph is stored, such as air and lighting exposure. The less exposure to air, the less photograph colour degradation / fading takes place.

To minimize colour degradation and fading and maximize the life of your printed photos, you may wish to keep your photos framed, in an album or in plastic sleeves. In particular, framing is recommended, as it makes your work look even more attractive while protecting it from fingerprints, water spillage, and other external factors.

Guide to framing to ensure the maximum life of your print

- **Dry fully before framing.***
- **Do not dry with a hair drier or in direct sunlight.**
- **Do not use acid or adhesive laminates.**
- **If framed behind glass, ensure that some space is left between the image and the glass.**
- **Avoid using a UV protection spray or other chemical product that may cause yellowing over time.**
- **Avoid storing or displaying in areas exposed to direct sunlight or intense light.**
- **Avoid high temperature and high humidity. Store or display in an area at normal room temperature and under normal conditions.**

* To learn how to handle photo paper, please read the instructions printed on the packaging of your paper products.

Settings for printing photos by sending them directly from Photoshop® to the printer driver

Print settings to directly specify an ICC profile from Photoshop®

An ICC profile can be specified directly from Photoshop® when printing photo data without using Professional Print & Layout.

Note that the Adobe® CMM (Color Management Module) colour conversion engine is used when using Photoshop®'s printing function. As this engine uses a different colour conversion method from that of Print Studio Pro's colour engine, your printer may not produce the same colour tones as printed from Print Studio Pro, even when the printing conditions—including the paper—are the same.

Photoshop® print settings (for both Windows and macOS)

In the Color Management pane of the Photoshop® Print Settings window, select Photoshop manages colours in the Color Handling pull-down menu. Specify the appropriate profile in the Printer Profile menu to suit the loaded paper.

By selecting Black Point Compensation, the tone of the image will be adjusted so that the darkest point in the ICC profile of the image matches the darkest point in the ICC profile on the side of the printer being used to output the image. The printer profile for the imagePROGRAF PRO Series has been designed by taking into account the possibility that the Black Point Compensation may be turned on.

Printer driver settings

Windows:

Open the Manual Color Adjustment dialog box from the Printer Properties window. In the Matching tab, select None under the Color Correction pull-down menu.

macOS:

Selecting Photoshop® Manages Colors overrides printer driver settings. No additional setting is required.

Photoshop® print settings (Photoshop® CC)

*Although the screen interface may vary depending on the OS or software versions, the setting items remain the same.
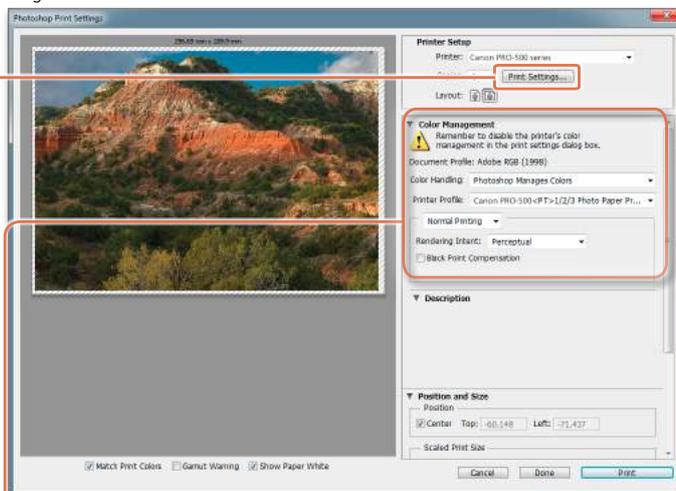
1 Color Handling: <u>Always</u> select **Photoshop manages colors.**

3 Rendering Intent: Select either **Perceptual** or **Relative Colorimetric.**

2 Printer Profile: Select the profile suitable to the output media type.
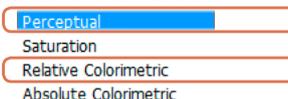
4 Select **Black Point Compensation**
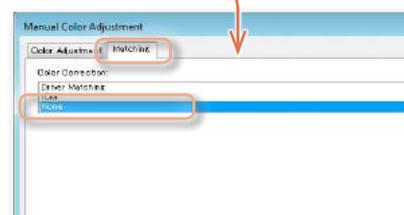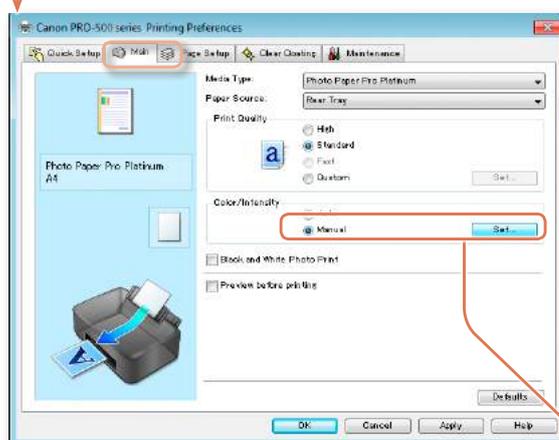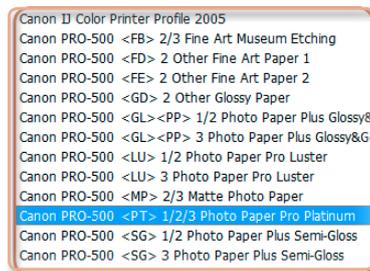
For system requirements of each software and application, please refer to Canon's Website.

Using the Contrast Reproduction Function / DPRAW Print Function

- The contrast reproduction function requires a large amount of memory for its process. For optimal use, we recommend that you use the function on a computer with 16 GB or more of memory. At the least, use it on a computer with 8 GB or more of memory.

- If it is used on a computer with 16 GB or less of memory, the computer may run slow due to memory shortage. To prevent memory shortage, consider taking the following actions.

    - If unnecessary applications are running, close them.

    - Do not print multiple items at one time; print one sheet at a time.

    Even if the above actions are taken, the computer may run slow depending on the environment. In that case, reducing the print paper size may improve the situation.

- The contrast reproduction function prevents degradation of sharpness in the details when printing. Therefore, the effect may not be obvious depending on the subject.

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