

i1 Process Control 5



user manual



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Getting Started with i1 Process Control 5

About this manual

This document provides information and an overview of functions and features of i1 Process Control 5 for the Canon imagePRESS and imageRUNNER Advance devices.

This manual is arranged in the following main sections

- Getting started
- Calibrating and profiling your display
- Profiling your printer
- Create averaged profiles
- Optimizing your printer profiles
- Verifying your print quality
- Getting the best possible spot color conversion
- Creating and managing libraries of custom colors
- Troubleshooting Common Problems

This guide will help you to get the best results out of your software. Go to one of the topics above to begin exploring.

About X-Rite

X-Rite is the global leader in color science and technology. The Company, which now includes color industry leader Pantone, Inc., develops, manufactures, markets and supports innovative color solutions through measurement systems, software, color standards and services. X-Rite's expertise in inspiring, selecting, measuring, formulating, communicating and matching color helps users get color right the first time and every time, which translates to better quality and reduced costs. X-Rite serves a range of industries, including printing, packaging, photography, graphic design, video, automotive, paints, plastics, textiles, dental and medical.

Find out more about X-Rite at <http://www.xrite.com>

System Requirements

Windows

- Microsoft® Windows 7, 8, 10; 32-bit and 64 bit (with latest Service Packs and updates installed)
- Intel® Pentium® IV or higher processor
- 256 MB of available RAM
- 400 MB of available hard drive space
- Minimum display resolution 1280 x 1024

Mac

- Mac OS X version 10.10/10.11/10.12 (with latest updates installed)
- Intel Processor
- 528 MB of available RAM
- 400 MB of available hard drive space
- Minimum display resolution 1280 x 1024

Other Requirements

- An Internet connection is recommended to activate the software and to check for updates. If you do not have an Internet connection, please contact Canon for assistance with your licensing.
- You will need administrative privileges on your computer to properly install and run i1 PC5.

Supported Devices

- i1Pro (M0), i1Pro 2 (M0, M1, M2)
- i1iO and i1iO 2 (M0),
- i1iSis/i1iSis XL (M0, M2)
- i1iSis2/i1iSis2 XL (M0, M1, M2)

Installation

i1PC version 5 can just be over-installed on version 4. All custom made data files like verification presets, separation settings or spot color measurements and palettes will be kept and can be used in i1PC 5. Also, existing licenses for i1PC 4 will automatically be used by version 5, so you should not have to activate again.

Before installing version 5, disconnect any measurement instruments and quit running applications. Then launch the i1ProcessControlSetup.exe on Windows respectively the i1ProcessControl.dmg on Mac and follow the instructions of the installer. When completed, restart the computer.

Licensing

If you are installing and using i1PC the first time, you need to license it before you can use it. The license code is printed on the envelope of the software CD.

*Note: i1PC supports adding optional **Verification** and **Averaging** modules. The main application and every additional module use separate license codes for activation. The i1PC main application needs to be licensed first. The Verification and Averaging modules can be added afterwards.*

i1PC main application and Averaging module can be licensed on i1Pro / i1Pro 2 and i1iSis / i1iSis 2 instruments. The Verification module should be licensed on i1Pro / i1Pro 2 instruments only, because the media wedges for print quality verification cannot be measured with an iSis device.

The default procedure for licensing requires an internet connection to communicate with X-Rite's licensing server. Connect your i1Pro 2 or iSis 2 instrument and launch the software.

Quick Tip: If you have both devices and wish to be able to use the software (main application and Averaging module) in licensed mode if either is connected, connect both devices before licensing the software.

If not yet licensed, the Licensing window opens at software startup. It indicates which software modules are licensed and which not. When your connected instrument is detected the serial number will appear. Select your region. Depending on region more or less software modules are available to be licensed.. Enter your license code which you received with your product and click **Apply**. After activation has been applied successfully, you need to restart the software to load it with the newly licensed feature set.

To add other modules later, open the Licensing window with menu **Activation > Activate i1Process Control** and repeat the licensing procedure by entering an appropriate license code.

The screenshot shows the 'i1 Process Control Configuration' dialog box. At the top, it says 'Please configure this copy of i1 Process Control to the region and features that matches your activation code.' Below this are instructions for five steps: 1. Select a Region, 2. Connect an i1Pro, i1Pro2 or i1 iSis, 3. Enter your Activation Code, 4. Click Apply or Training Mode, and 5. If unable to activate via the Internet, contact X-Rite Support for a license file and follow manual instructions.

Region	Version and Features		
Europe	i1 Process Control	Verification	Averaging
North America	Click Apply	Unlicensed	Unlicensed

Select which device you would like to use to activate this copy of i1PC.

i1Pro Serial Number	1000207	Activation Key	iLEaaaaaaa
i1iSis Serial Number	NA		

Buttons: Training Mode, Cancel, Apply, Manually Activate

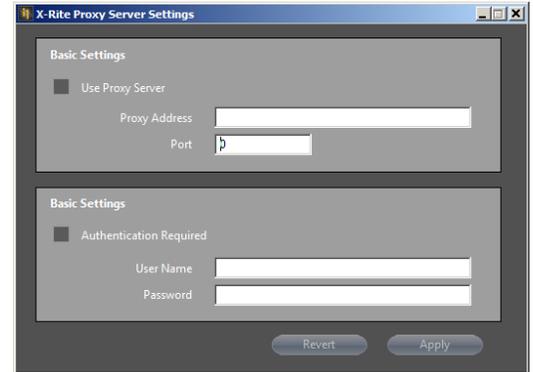
Activation History				
Date	Device	Region	Version	Activation Code

Quick Tip: License codes for i1PC main application start with the prefix iLE, license codes for Verification module with prefix iFF and for Averaging module with prefix iFA. Depending on the type of entered key, the software identifies automatically the type of module which is going to be added. An i1PC license is a one-seat license and belongs to one measurement instrument.

Proxy Settings

If you connect to the Internet through a proxy server and have difficulties completing the licensing process, the i1PC software includes an option that lets you specify the proxy server and port you use, and, if they are required, your user name and password. Providing this information will allow the proxy server to process the activation for i1 Process Control.

The **X-Rite Proxy Server Settings** tool can be accessed from the **Activation** menu in the i1PC software. Enter the required settings and click on **Apply**.



Offline Licensing

If you cannot connect to the Internet or your network's firewall may be preventing you from automatically retrieving your activation key, contact X-Rite's Customer Support department <https://my.xrite.com/partners/SupportCase.aspx> and provide license key and serial number of your instrument. You will get a **Manual Licensing File** with a .lic extension. Apply this manual license file by entering your belonging license code, then clicking on **Install License File Manually** and loading the received .lic file in the Licensing window.

Registration

It is recommended to register your i1PC software. When you launch the software the first time and did not register yet, a message will prompt you to register it. Follow the instructions. Or you can register the software any time later via menu **Activation > Register online** in the i1PC software.

What's new in this version?

- Updated the Verification module to FOGRA51, ISO 12647-7:2016 and FOGRAMW3 (i1PC v5.0)
- Added support of M1 measurement condition for i1 Pro 2 and iSis 2 devices (i1PC v5.0)
- Added support for ISO 15311-2:Rev2017 (PSD) to i1 Process Control Verification module (i1PC v5.0)
- Updated the 'Canon Top Colour 100GSM' verification preset to FOGRAMW 3 (i1PC v5.0)
- Added SRA3 paper size format for test chart printing (i1PC v5.0)
- Added ability to save/load measurement data as CXF3 files (i1PC v5.1)
- Added optional 'Average' module for creating averaged measurement data and profiles (i1PC v5.1)
- Added ability to export verification reports as .csv files (i1PC v5.1)
- Added a new version of i1Process Control Displaytool (i1PC v5.1)
- Re-designed Licensing window to simplify software activation procedure (i1PC v5.1)



Quick intro to ISO 13655 M0, M1, M2 measurement conditions

The X-Rite i1Pro 2 and iSis 2 instruments support the new ISO 13655 measurement illumination conditions M0, M1 and M2. The different illuminations are:

M0: Tungsten illuminant A spectrum: used by legacy spectrophotometers, including i1Pro and iSis first generation, suitable for papers without optical brighteners, conform for proof verifications according to FOGRA39, suitable for density based measurements like printer calibration, linearization

M1: D50 illuminant including specified UV spectrum: recommended for papers with optical brighteners, required for proof verifications according to FOGRA51

M2: UV filter: suitable for papers with optical brighteners, suitable for custom reproduction, but not conform to ISO print standards.

i1Process Control v5 is now also able to drive M0, M1, and M2 measurements in the profiling, profile optimization, print quality verification and spot color processing workflows.

In case of a connected i1Pro 2 or iSis 2 instrument, the different measurement modes are selectable in the appropriate measurement windows. Which mode to be used depends on your color reproduction aim and for which ISO print standard you want to be conforming.

Note: i1Process Control v5 does not support M1 or M2 measurements with an iO2 table.

More information about the M standards can also be found here:

<http://www.xrite.com/page/learn-more-about-m-standards>

http://www.xrite.com/-/media/xrite/files/whitepaper_pdfs/17-510-mfactorwhitepaper/17-510-mfactorwhitepaper-en.pdf

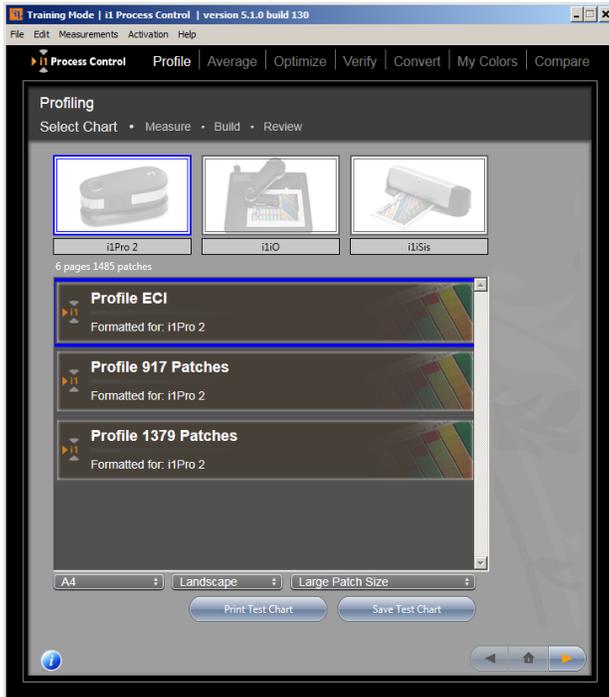
Overview of i1 PC 5

i1 Process Control 5 provides color management and verification tools for Canon digital presses. i1 PC 5 is based on X-Rite's color measurement, ICC profiling, and palette-building technology. It has been carefully designed to provide an easy and intuitive application that can be used on a daily basis with minimal effort.

With this solution, you can maximize Canon's imagePRESS and imageRUNNER Advance technology in your color management workflow to deliver consistent color and extremely reliable digital proofs.

- Calibrate and profile your display for accurate on-screen previews
- Profile Canon imagePRESS and imageRUNNER Advance printers to ensure predictable and repeatable color
- Create averaged profiles to ensure uniform print quality with printing systems at various locations
- Optimize your printer profiles to improve color reproduction
- Verify your print quality according to ISO print standards conformity
- Get the best possible spot color conversions
- Create and manage libraries of custom colors

Overview of the i1PC interface

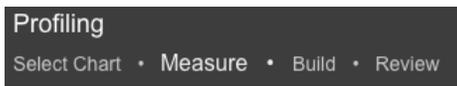


Navigate by clicking through the options in the top menu bar

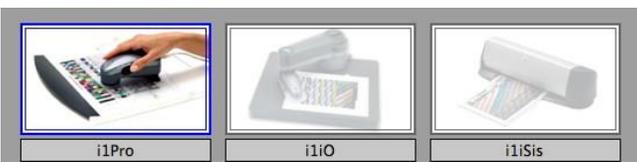


Note: The Verify and Average options are only available if they have been licensed additionally. To purchase these upgrades please contact your Canon dealer.

The status bar will guide you through each step of your process. Your current step will be highlighted in large text.



For sections that include measurement, your connected measurement device(s) will be highlighted.



If an i1Pro 2 is connected, the highlighted image will be of an i1 Pro 2 device. Same is true for i1iSis versus i1iSis 2.



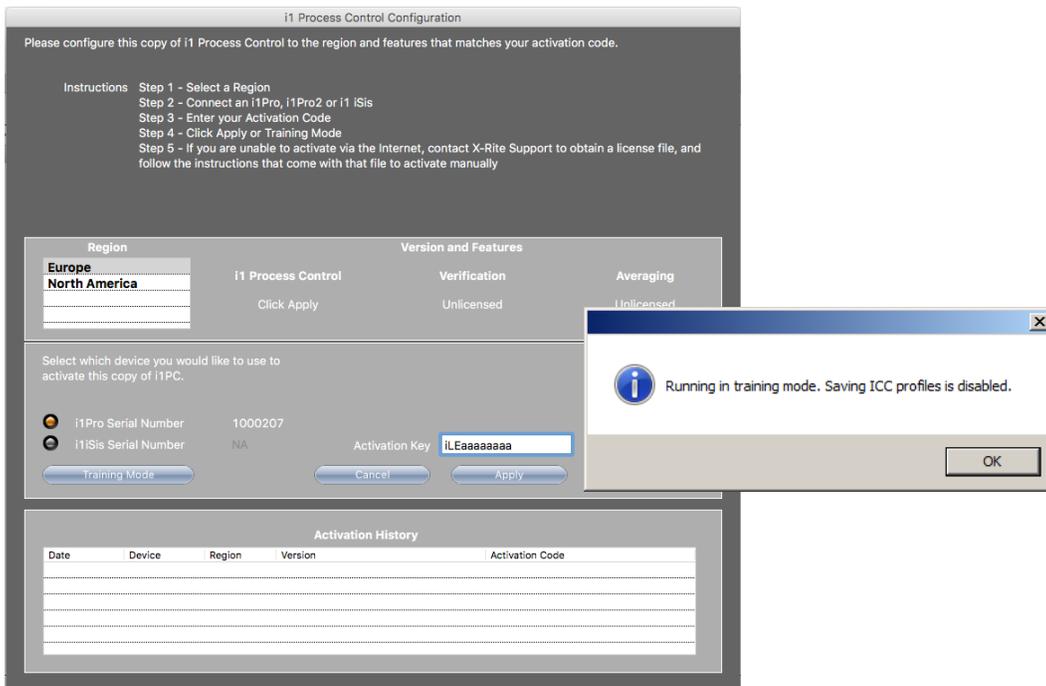
Navigate through your workflow or go home with the buttons in the lower right corner of the software.



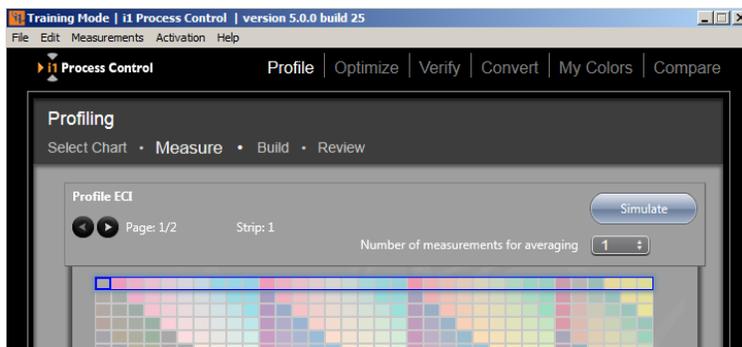
Training Mode

Training mode allows you to navigate through the application without a device attached and simulate measurements. All workflow steps and options are accessible, however ICC profile and verification reports cannot be saved. When launching the application, the i1Process Control Configuration and Licensing window appears. Click on **Training Mode**.

*Note: In Training Mode all functions including optional **Verification** and **Averaging** functions are enabled.*



Operate the software as usual. In any workflow steps, where usually measurements would be required to continue, click on the **Simulate** button. This loads dummy measurements and enables to go to the next steps.



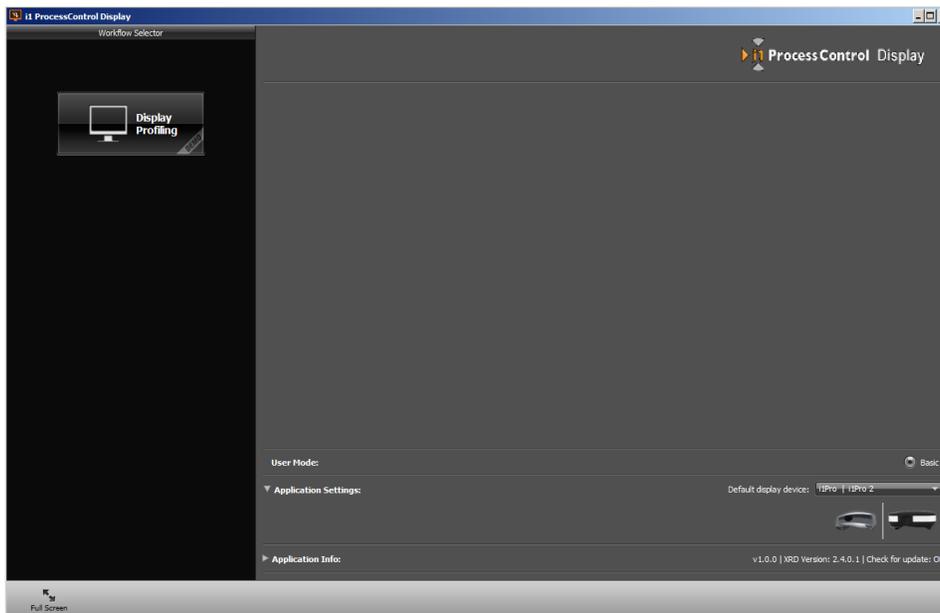
Calibrating and Profiling Your Display

The first step to accurate color is an accurate preview. Slight variations from one monitor to the next and color performance drift as your monitor ages can wreak havoc on your color workflow. Calibrating and profiling your monitor brings it back to a predictable, repeatable state. With monitor calibration and profiling tools from X-Rite you can correctly preview your printed output so you get your color right every time.

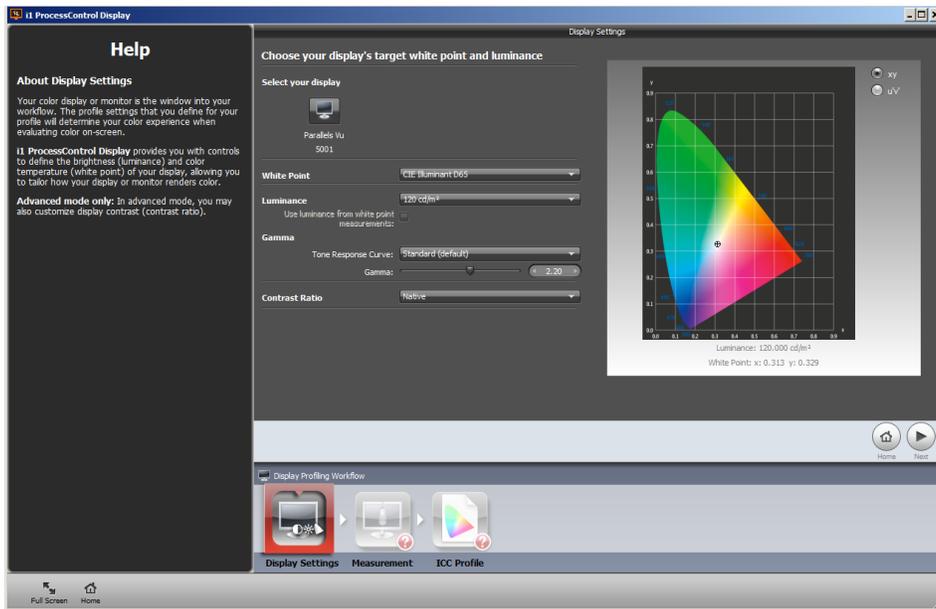
i1Process Control installs an extra tool 'i1Process Control Display' which allows to calibrate and profile all your monitors. i1Process Control Display can be launched without a license, so it is not limited to one workstation. Install i1Process Control on any computer, where you wish to calibrate the monitor.

Note: i1Process Control Display supports the i1Pro and i1Pro 2 instruments as well as the X-Rite i1DisplayPro colorimeter. Because of that the i1Pro/i1Pro 2 is bundled with Canon's i1Process Control software, the following instructions are based on the procedure with an i1Pro 2. However, the workflow with i1DisplayPro is very similar.

1. Connect an i1Pro or i1Pro 2, launch i1Process Control Display. Click on the **Display Profiling** button.

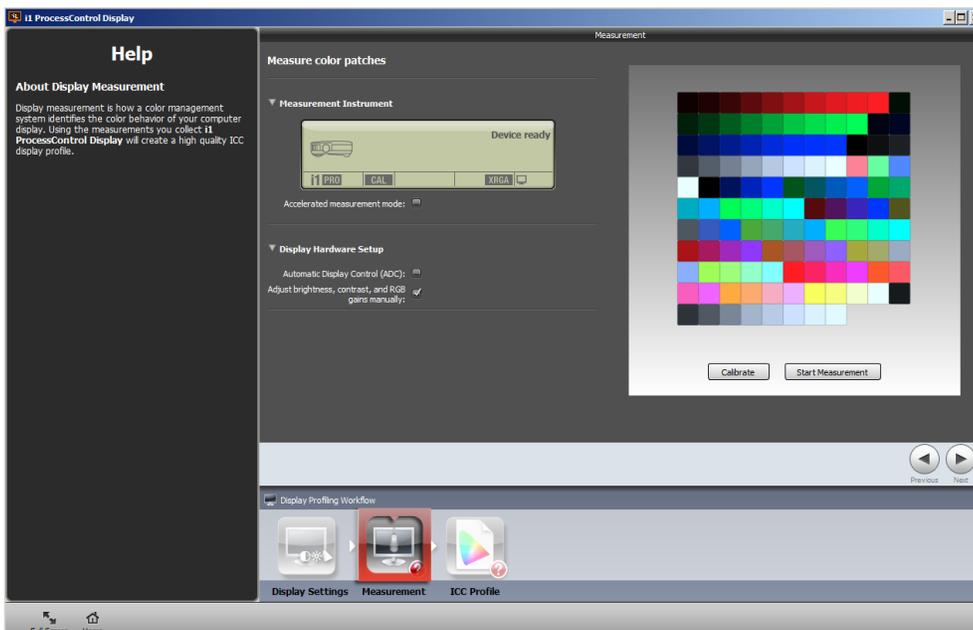


2. In step **Display Settings** select **White Point**, **Gamma** and **Luminance** to set your desired target values. The default settings D50, 2.2 and 120 cd/m² are a good starting point and commonly used in the graphics industry. The **Contrast Ratio** is recommended to be set to **Native**.

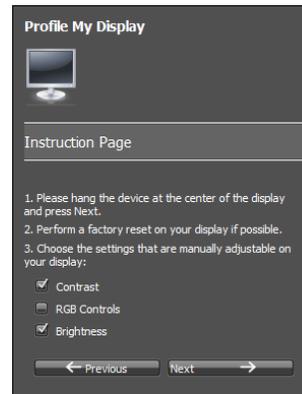


3. Go to next step **Measurement**. Turn off **ADC*** and turn on **Adjust brightness, contrast and RGB gains manually** for full control of calibration procedure. Depending on the type of monitor, more or less controls for Brightness, Contrast and Color Temperature (RGB Gains) are available in the OSD control panel of the monitor. If a certain function is not available, the step can just be skipped in the procedure.

Note: **ADC (Automatic Display Control) enables a fully automatic calibration to your target settings. This option requires a DDC interface (Digital Display Channel) on your monitor. If **ADC** is turned on, the software checks automatically, if your connected and selected monitor has a DDC interface. If yes, calibration is performed fully automatically. If not, the software falls back to manual calibration mode and guides you through the necessary steps. If you have connected an advanced monitor, turn on **ADC** and continue. If the calibration results are not as expected, the DDC interface might not work well. Turn off **ADC**, turn on **Adjust brightness, contrast and RGB gains manually** and repeat the calibration to improve the results.*



- Click on **Calibrate** to calibrate the i1Pro (2) instrument to its white tile.
- When the device is ready, click on **Start Measurement**. Now follow the instructions in the wizard. Insert the device in its monitor holder and place it with the aperture roughly in the middle of the screen. For accurate measurement it is very important the device is flat on the screen. Confirm which adjustment controls your monitor supports. Then click on **Next**.

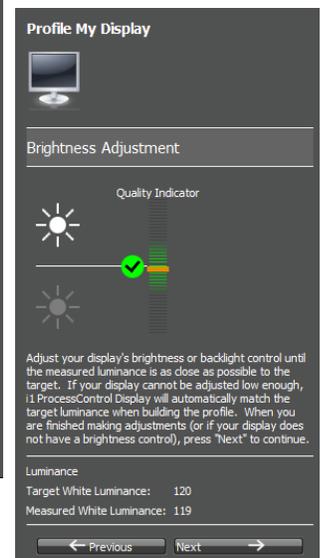
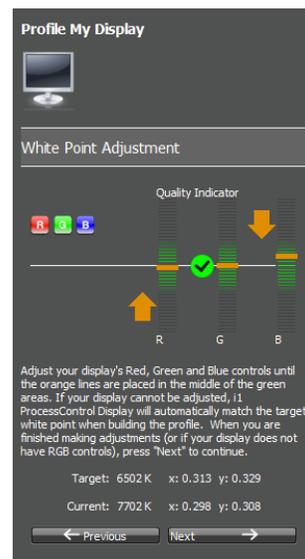


- To adjust your monitor to your target settings, use the appropriate controls on your monitor. You should make yourself familiar with the operation of your screen before you continue with the calibration. Refer to the User Manual for your monitor.

First adjustment step is the **Contrast**. On most LCD monitors it is already set ideal from manufacturing. If the software detects that it is OK, it immediately continues to next step, which is **White Point** adjustment. After the software has measured the current white point (color temperature), a little window appears, which indicates, how the Red, Green, Blue channels of your monitor need to be modified to hit your targeted value. Use the RGB Gains on your monitor to make the needed adjustments, until the little indicators are in the middle of the scales and marked with a green checkmark.

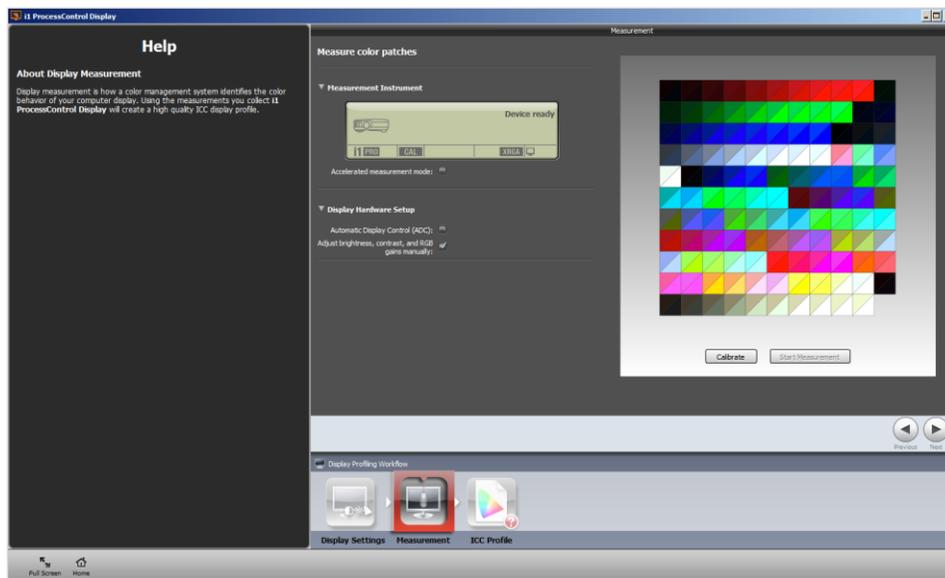
Quick Tip: If a channel is already set to 100% on your monitor, but the quality indicator still advises increasing the channel, decrease it instead. All channels will change. Now continue with adjusting the channel farthest away from the ideal level.

When finished, click on **Next** to continue with **Brightness** adjustment. Modify the Brightness control on your monitor as indicated by the software to hit your targeted value.





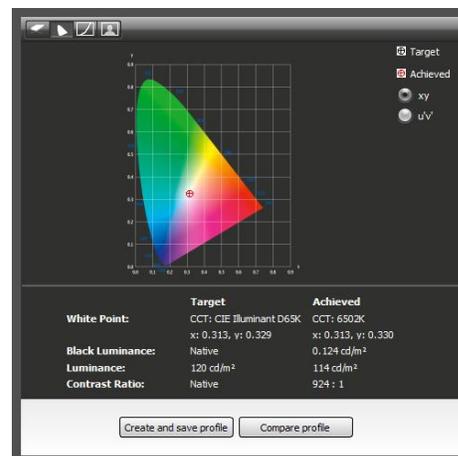
When completed, click on **Next**. The software continues to measure a couple of color patches to fine-tune the calibration curves, which will be set on-the-fly to your graphic card. After this, it continues to display further color patches (now already calibrated) for ICC profile generation.



7. When all adjustments and measurements are completed go to next step **ICC Profile**. Enter a meaningful name e.g. including monitor model, calibration targets and date. Click on **Create and save profile** to save it. It will be set automatically as your current monitor profile in the system. Your graphic design applications will then use the information from this profile to correctly display your image colors.

To toggle between the little icons on top of the preview area to review the achieved calibration values or curves or the profile's color gamut.

Click on **Compare profile** to load and compare other profiles (created with i1 Process Control Display software) to your currently created one.



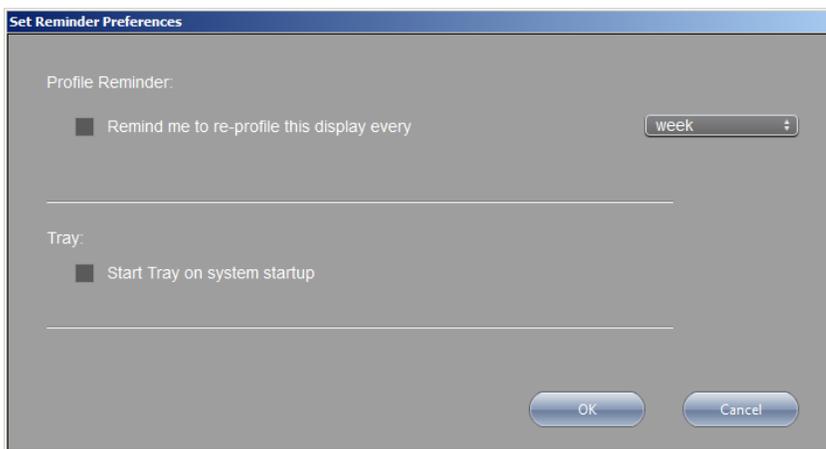
Quick Tip: For improved predictability, use the soft proofing functions available in most graphic design applications to preview how your images will output to your various substrates. Go to the link below to find out more about applying color management in your applications. http://www.xritephoto.com/ph_learning.aspx?action=guide

Display Profile Reminder

To ensure the accuracy of your monitor, i1 Process Control features a reminder function to let you know that you should update your monitor profile. The Profile Reminder can be enabled in the **i1 Process Control main application**. Go to the **File** menu and select **Preferences** to open the Set Reminder Preferences dialog. Select **“Remind me to re-profile this display every”** and select 1, 2, 3, or 4 weeks.

With this feature enabled an application will run in the system tray. The tray application icon will display the status of the current monitor profile—green for good and red for expired. A message will pop up to remind the user to update their monitor profile when it has expired.

Selecting the Tray checkbox will start the application in the system tray. The status of the current monitor profile will be displayed in the tray icon, but the user will not receive pop up reminders unless the Profile Reminder checkbox is selected.



Profiling Your Printer

i1 Process Control 5 enables you to create ICC output profiles for your Canon imagePRESS and imageRUNNER Advance printers. Great printer profiles are the critical first steps to accurate print previews, quick verifications, spot-on color conversions, and consistent, predictable results.

Generating your test chart

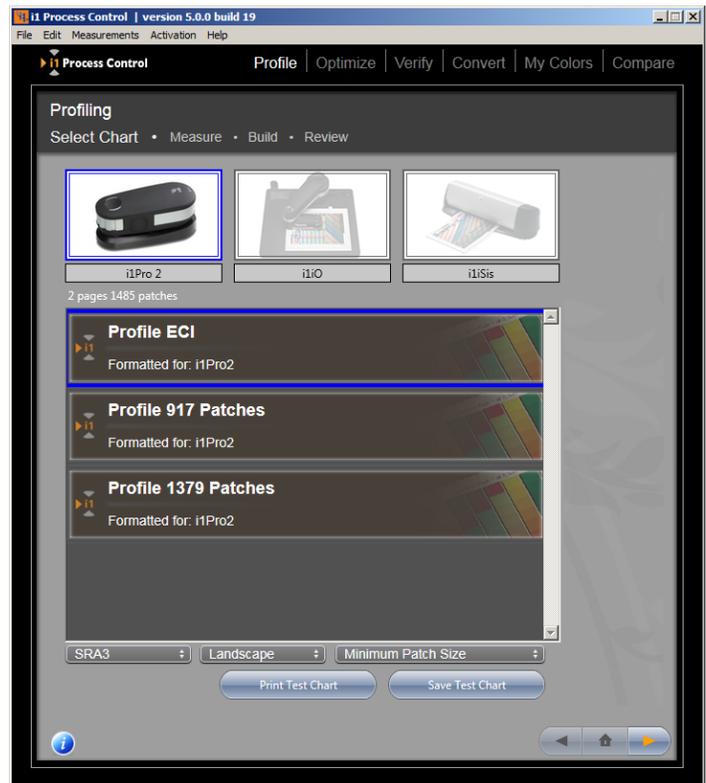
Start by selecting your color measurement hardware. The i1Pro, i1iO scanning table and i1iSis, first and second generations, are all supported in i1PC5.

Select the test chart you want to print. You will see a blue indicator around your desired patch pattern.

Pull down on the menus at the bottom of the page to configure your page size and layout.

Quick Tip: If you are measuring a test chart that you previously printed, be sure to select the same instrument, patch pattern, and page size that you used when you printed the chart to minimize measurement errors.

When you are happy with your configuration, click the **Save Test Chart** button, to save it and print it from another application. Browse to the location where you want to save your test chart images, select TIFF or PDF file type and select **Save**. i1PC will create an image for every page of the test chart. Or click the **Print Test Chart** button to print your chart directly from i1Process Control. If you've already printed your test chart, click the arrow to the right to move to the measurement screen.



Quick Tip: An ICC printer profile describes the current color behavior of your print process, including all influences like used paper type, print settings, calibration status and so on. Ensure, you are printing your test chart on your linearized printer, with correctly selected print media and quality settings, but without any ICC color management applied! Please refer to the user manual of your RIP engine (e.g. Fiery or Prism) on how to turn off ICC color conversions.

Measuring your output

Now that you've printed your test chart, you're ready to measure. Follow the detailed instructions for your instrument below.

i1Pro / i1Pro 2

Place your test chart on the backing board. Align the first row with the opening in the ruler.

Make sure the option **Spot Mode** is turned off to be able to measure the chart in scanning mode.

If you are using an i1Pro 2, select the desired measurement illumination condition M0, M1, M2. Refer to chapter 'Quick Intro to ISO 13655 M0, M1, M2 measurement conditions' in the 'Getting Started with i1Process Control' section for more information.



If the software indicates that your instrument is not calibrated, press the **Calibrate** button to calibrate the i1. Make sure your i1Pro is positioned correctly on the white calibration tile. Calibration can take about a minute.

Clip the chart to the board to hold it in position while you measure. Beginning in the white area, press the measure button on the i1Pro until you hear a small beep

Slide the i1Pro across the measurement area in a smooth, consistent movement. Hold down the measure button until you reach the white area and then release. Check your row on screen to make sure you haven't missed any patches before moving on to the next row. Move the ruler to align with the next row and repeat the process.

Quick tip: If you experience difficulty in measuring the test chart from side to side, rotate the test chart 90 degrees and try measuring with an up and down motion.

Row Identification Threshold

The automatic row identification with i1Pro, i1Pro 2 (with or without iO table) anticipates the measurements being within a specific DeltaE range to the reference colour patches. If a measured colour patch is out of this range, the software will show an error message and asks to measure a row again.

If a chart cannot be measured successfully in scan mode even if it is printed correctly (unscaled, without colour management, with correct linearization and paper type), you can try increasing the **Row Identification Threshold** in the software menu **Measurements**. Be careful in editing this value (read appropriate notes in the window of this option).

i1iO / i1iO 2

Connect the i1Pro / i1Pro 2 to the i1iO / i1iO 2. Make sure to gently press the i1Pro into the sled until it clicks into place. On an i1iO 2 closing the shutter on the slider ensures that the i1Pro / 2 is inserted correctly and opens the positioning target.

Quick tip: You should not see any light leaking out from the optics when the i1iO is measuring. If you do, stop your measurement and reseal the i1Pro.

Click the Setup button on the Measurement page to open the iO Setup page. Click the Calibrate button to calibrate the device, then align the target with the first, second and third coordinates of your test chart. Click the Measure button to begin measurement.

Quick tip: In some cases the second or third coordinate will be in an un-inked area of the chart. Be sure to select the correct coordinate and not the inked patch above it. If you experience measurement failures or notice that your i1iO is measuring the test chart in a diagonal pattern, stop the measurement and select your coordinates again.

Note: M1 and M2 measurement mode is not supported by i1Process Control in conjunction with an i1iO 2 with inserted i1Pro 2.



i1iSis / i1iSis 2 (A4 / A3)

Quick tip: If this is your first time using this unit, be sure to open the head lock located on the bottom of the instrument before measuring.

Connect the power cable and the USB cable to the i1iSis. Switch the power on the back of the unit. You should see a green light on the front of your device.

Select your desired measurement mode. If an iSis is connected, you can choose between M0 (analogue to UV included) and M2 (analogue to UV excluded). If an iSis 2 is connected, the options M0, M1 and M2 are available. Refer to chapter 'Quick Intro to ISO 13655 M0, M1, M2 measurement conditions' in the 'Getting Started with i1Process Control' section for more information.

When indicated, insert your test chart into the i1iSis. Be sure to keep it straight and aligned to the left guide as you feed it into the instrument.

Once you've finished your measurement, take a quick moment to review the split patches indicator. If the reference information does not match the measured patch (i.e. a green reference and a red measurement) go back and re-measure your test chart before building your profile.



Save and load measurements

With i1PCv5 it is possible to save and re-load measurements for test charts as CXF3 (Color Exchange Format) files for later profile calculation or for use in the **Average** workflow for creating averaged profiles (see next chapter). These files include spectral as well as LAB data for the selected measurement condition and the CMYK patch data of the test chart

After you have completed your measurements, click on **Save....** This opens a dialog which suggests a default but changeable file name as well as a pre-configured but changeable directory **Profile Measurements** for saving. It is recommended that you store the files in this directory because it will be opened by default when you later load a file in the **Profile** or **Average** workflows.

The pre-configured directories for profile measurements are:

Windows: C:\Users\\Documents\i1ProcessControl\ProfileMeasurements

Mac: <username>\Documents\i1ProcessControl\ProfileMeasurements

Quick Tip: CXF files from i1PC are not compatible with current versions of X-Rite's i1Profiler software (v1.7.1). To save CXF files from i1PC as a compliant file for i1Profiler, press the Shift key and click on Save.... A message appears that it is saved for i1Profiler. Please note, that these file versions cannot be opened in i1PC again.

To load a saved CXF file in i1PC, click on **Load....** If a selected file does not match the profiling target which was chosen in first step of the Profile workflow, the pre-selected target will be overwritten. Additionally, the measurement condition of the loaded file overwrites the selected condition in the software. After a measurement file is loaded you can continue as usual with profile generation.

Profile building options

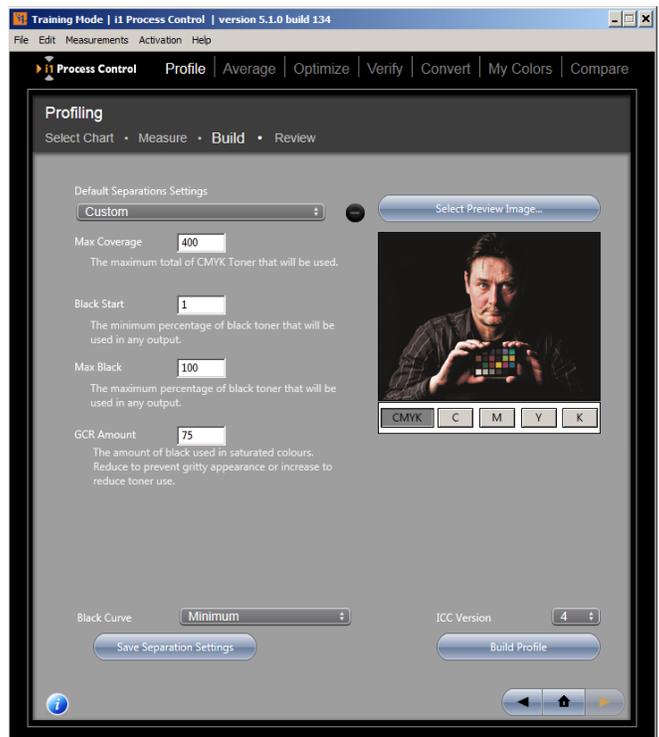
Define your black generation settings for your profile. You can choose between pre-defined or customized settings.

You can save your own custom settings as **Default Separation Settings**. Enter the desired settings, and click **Save Separation Settings** to save the file. The custom settings can later be loaded from the Default Separation Settings list.

Note: You can delete custom separation settings but not the standard settings. Click the minus icon to the right of the list to delete your custom separation settings.

Max Coverage sets your desired total amount of toner. The correct setting will depend on your substrate and toner combination, but 320 is often a good starting point.

Quick Tip: If you aren't sure where to set your max coverage, print a test chart at various coverage settings. Look for issues like bronzing or toner buildup (which would indicate too much toner) or flat, desaturated color (which would indicate that you need more coverage).





Black Start determines the level at which combinations of Cyan, Magenta, and Yellow will be replaced with Black. If you start your black low, you may see visible black speckling in your highlight areas and skin tones. The optimum setting will depend on the size of your toner particles, but 20 is often a good starting point.

Max Black is the maximum amount of black that your profile will use. For example, if you do not see any additional density gain between 90-100% coverage, you don't need the additional toner. Set your max black at the lowest point that gives you good density.

Quick tip: Build an image with 1% steps from 85-100% to use for visual evaluation.

GCR Amount - This scale controls the amount of GCR that will be implemented in your saturated colors. Set it higher if you want to use less toner and lower if you want less black in your saturated colors.

Note: GCR (Gray Component Replacement) replaces combinations of Cyan, Magenta, and Yellow with Black. Higher levels of GCR will use less toner and will give you more consistent output, since you won't be attempting to keep 3 color channels in balance. On the other hand, lower levels may appear less 'grainy' and will have richer color builds. The optimum setting will depend on your printer, paper, and sometimes your image file. Experiment with the tools below to find the best settings for your output.

Black curve - Use this selection to determine how GCR will be distributed in your CMY builds.

ICC version – select whether you want to build your profile in ICC version 2 or version 4.

Click on the **C**, **M**, **Y**, and **K** buttons below the sample image to preview your color separations as you make adjustments. Click the **Select Preview Image** button to choose a preview image.

Reviewing your results

Now that you've built your profile use the profile review tools in i1 Process Control to confirm that you are getting the best results from your printer.

Start by selecting General Info in the pull-down menu of the review area.

You will see L*a*b values for your paper white and each color channel. Quickly check these values and the visual reference to make sure your primary colors measured correctly.

To the right you will see your profile's curves - each channel's linear progression from 0-100% coverage. Look for obvious signs, such as flattening or spikes in a channel. If you see these results, your printer may not be behaving in a predictable fashion, and the accuracy of your profile may be affected. To correct this problem, go back to the linearization process described in your imagePRESS user manual to confirm that you are getting the expected density levels for the affected channel.

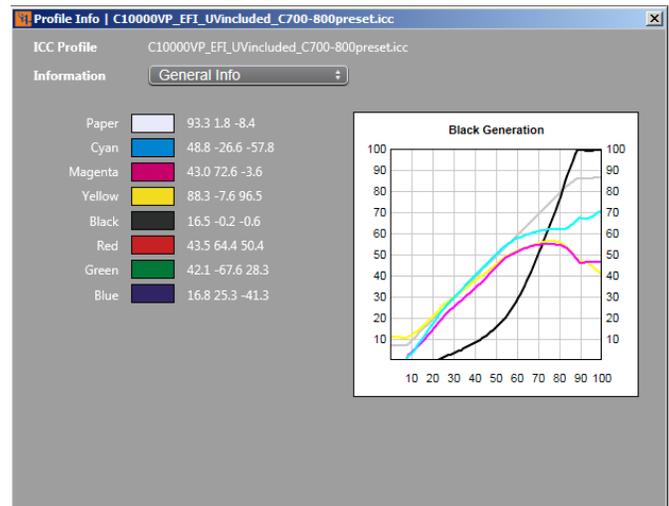
If desired, you can reopen an existing profile any time later and perform the last profiling stage with the ability to review the profile's properties. Go to Profile Info in i1Process Control's File menu to reopen a profile.

If you have also licensed the optional 'i1Process Control Verification' module, the profile review allows you to check if the profile meets a print verification standard. Select **Profile Info and Verification** from the **File** menu and choose the target Canon printer profile file you want to verify. The Profile Info dialog opens and you can review again your **General Info** results. Select **Verification Simulation** to check, if your printer profile is capable to simulate a certain ISO print standard. In the **Target** section select a desired verification preset. In the **Proofing** menu select a desired simulation profile, e.g. ISO Coated. The results will now indicate, if your Canon printer profile would pass or fail to simulate the selected printing condition, e.g. ISO Coated.

The results will now indicate, if your Canon printer profile would pass or fail to simulate the selected printing condition, e.g. ISO Coated.

If you are outside of your expected tolerances, here are some steps you can try to improve your results.

- Review your linearization to confirm that your printer has not drifted
- Verify that your used paper type is capable to simulate or is matching directly the paper type specification of your desired printing condition you want to simulate
- Run i1Diagnostics on your instrument to make sure it is measuring correctly



The screenshot shows the 'Profile Info' dialog box for the ICC Profile 'C10000VP_EFI_UVincluded_C700-800preset.icc'. The 'Verification Simulation' tab is selected. It shows target and proofing options:

Target: ISO 12647-7:2016 ...
Proofing: ISO Coated v2 (ECI)

ISO 12647-7:2016 Contract Proof - Fogra39
Delta E Method: Delta E 2000

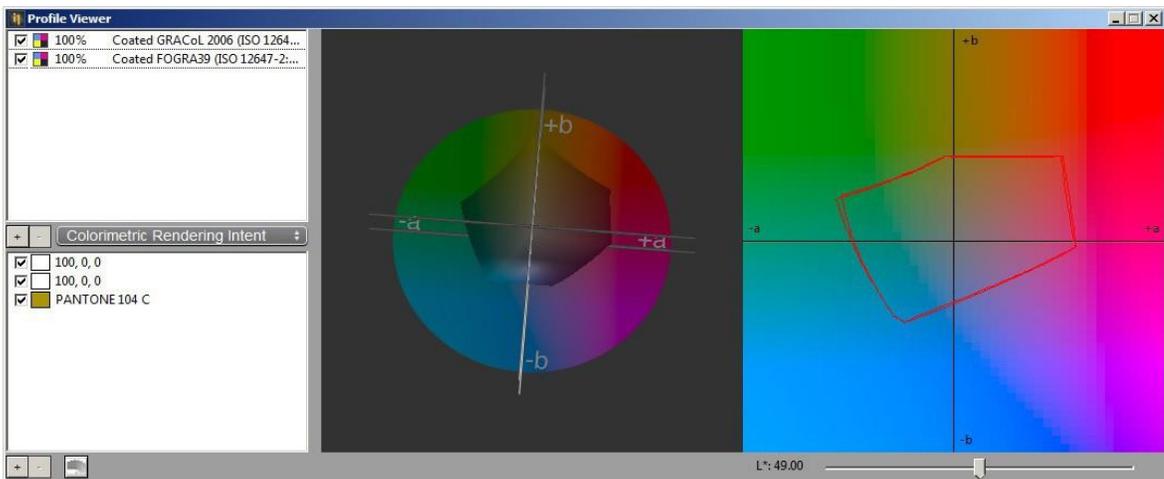
Test	Tolerance	Actual
Max Delta E	5	3.39
Avg Delta E	2.5	0.87
Paper Delta E	3	1.23
Primary Delta E	3	2.76
Primary Delta H	2.5	3.36
Composed Grey Max Delta Ch	3.5	0.16

Patch	Delta E	Delta H	Type
A1	2.57	3.36	Primary
A2	1.03	0.92	
A3	0.71	0.52	
A4	1.07	0.86	
A5	1.72	1.07	
A6	2.76	1.02	Primary

Gamut Viewer

Use the **Gamut Viewer** to visually assess your profile and make sure there are no significant errors in the profile calculation. You can select multiple profiles and view them simultaneously.

Plots appear in the 2D and 3D graphs. The 3D plots can be manipulated in space using your mouse. The arrow in the 2D plot shows the transition based on profile and rendering intent. Only plots that are within $\pm 5 L^*$ will be shown.



Select the profile to edit the transparency level of the gamut from 0 to 100% (default 100).

Click on the colored swatch next to the profile to adjust the display colors for easy comparison.

Click the + button in the middle to add another profile for gamut comparison.

Click the - button in the middle to remove a selected profile.

Select Colorimetric or Relative rendering intent.

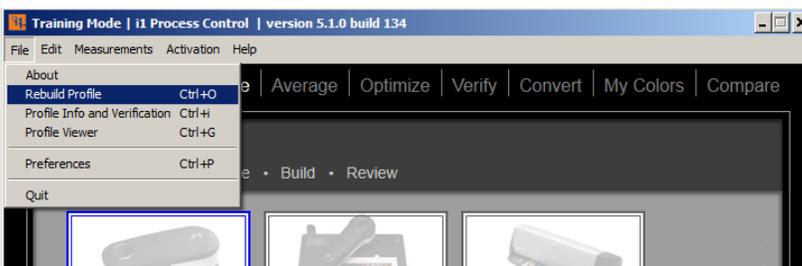
Click the + and - buttons at the bottom to create and remove plots. The color will appear in a patch. The $L^*a^*b^*$ values can be edited. If Pantone is selected only the color name will be displayed.

Click the button at the bottom to open a dialog where PantoneBook and PantoneColor are selected.

Slide the L^* control to move the slice of gamut in the 2D graph.

Rebuild Profile

i1PC allows you to re-build a profile without the need to re-measure the patch targets. This works with all those profiles, which were created with the same i1PC application. Go to menu **File > Rebuild Profile** and select the desired one from the list of available profiles. Change the separation settings as desired, and then save it using a different name.



Create Averaged Profiles

i1PC v5 includes an optionally licensable module to average measurement data and create an averaged profile of it. This can be useful to unify the color output of several print engines, which are for instance globally distributed in different production locations.

*Note: to get a license for the **Averaging** module, please consult your Canon contact.*

The **Average** function supports loading, comparing and averaging CXF3 files from test charts measured with in i1PC's **Profile** workflow.

*Note: It is also possible to load, compare and average measurements saved from i1PC's **Verify** workflow. While averaging these files is not recommended, using the **Comparison** feature (described below) will allow verification measurements to be compared directly..*

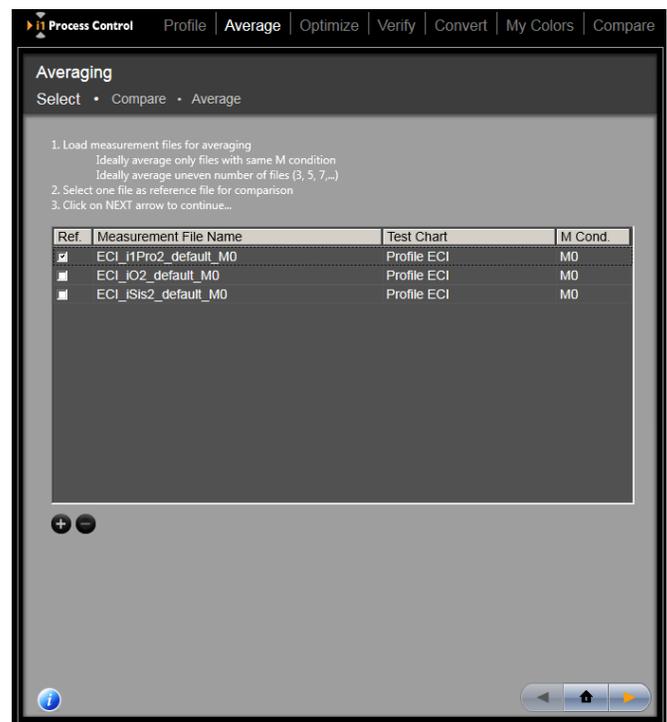
To begin averaging, click on **Average** in i1PC's HOME window. Click on + to load the desired measurement files to be averaged. The opening dialog directs by default to the **ProfileMeasurements** folder. Multiple files may be selected simultaneously using Shift or Control keys. Averaging requires opening files based on a same test chart with the same number and IDs of color patches. However, the measurements may be done with different measurement devices, e.g. ECI profile chart once measured with an i1Pro 2 and once measured with an iSis 2.

Quick Tips:

It is recommended that only files done with the same measurement condition, M0 or M1 or M2, are averaged. However, for analyzing purposes it might be interesting to compare M0, M1 and M2 data to learn differences or see the impact of optical brighteners within a printing paper.

Preferably average only measurement files from same printer models using the same print conditions (set-up, paper, inks, ...). The higher the deviations between measurement data, the lower the resulting quality of the averaged profile will be. Ideally average an un-even number of files to get statistically better results.

After all desired measurement files are loaded, select one file to use as a reference file in the comparison step. Which file is selected as a reference will not affect the averaged result, but it is necessary to select a reference in order to create a starting point for comparison calculations.

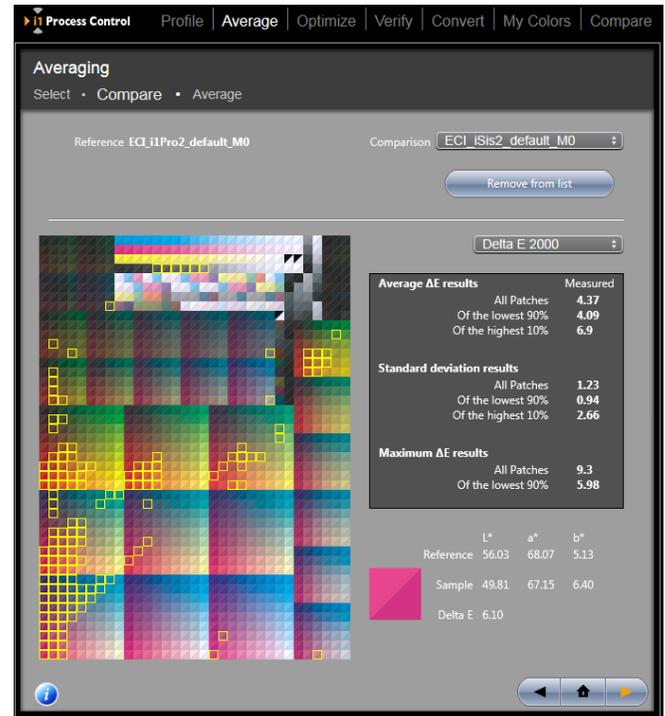


Click **Next** arrow to continue to step **Compare**. This step allows you to compare your measurement files and remove bad files which you do not want to include for averaging. Top left in the wizard your selected reference file is set. The pull-down menu top right contains all your other selected files. Toggle between them to compare each one against your reference and review the DeltaE statistics.

Select the desired DeltaE formula (DeltaE 2000, '94, '76 or CMC). The yellow framed color patches identify the 10% of patches with highest DeltaE values. Move the cursor to a color patch to view dedicated LAB and DeltaE values for this single patch.

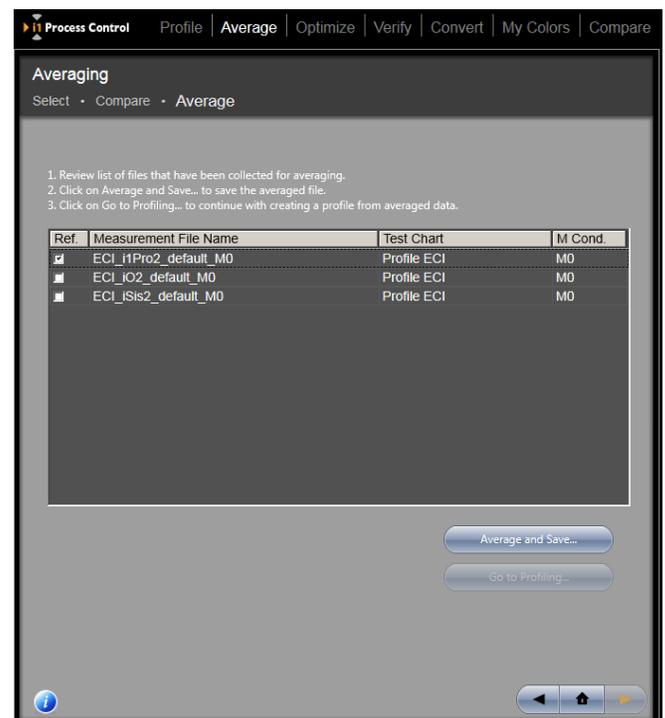
Comparing all data sets and reviewing DeltaE statistics will help you to find files which might show an exceptionally higher deviation than other files. To exclude such a file, click on **Remove from list**.

After comparison and final selection of files to be averaged is completed, click on **Next** arrow. The list on the next screen shows all files which will be used for averaging.. If there are still files you do not want to include, go back to previous step to remove them as described above. Then proceed again to the **Average** step.



If the list is final, click on **Average and Save....** The software calculates now an arithmetically averaged file and saves it in CXF3 format, by default in the pre-selected folder **AverageMeasurements**.

When the averaging is finished, you can click on **Go to Profiling...** to create a profile from your averaged file directly. The option links to the step **Profile Settings** within i1PC's **Profile** workflow. Or you can leave the **Average** workflow and load the averaged file at any time in the **Profile** workflow and use it to create a profile.



Optimizing your profile

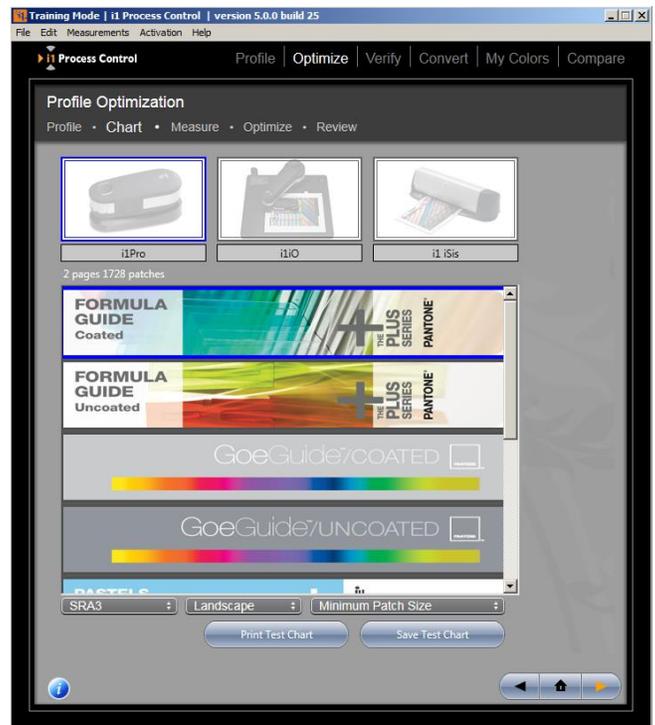
Optimizing your profile is a great way to ensure that critical colors in your output are converted as closely as possible.

The process is simple:

- First, create your custom ICC profile with i1ProcessControl.
- Select **Optimize** and choose your desired target or custom color collection.
- i1Process Control will generate a unique test chart based on your key colors. Output and measure this chart.
- The software will then calculate the differences between your ICC profile's build and the actual measured color to give you the closest possible output.

You can optimize your profiles as many times as you like - it's completely lossless.

After you optimize your profile, use the review tools to determine how close you are to your target colors.



Quick Tip: During a profile optimization procedure, ensure that the newly created optimization test chart is printed with exactly the same conditions like used for printing the initial profile's test chart. This includes using the same linearization status on the printer, same print media and print quality settings, disabled ICC conversions and so on. In addition to this, use same measurement conditions for measuring the printed optimization chart. If print and measurement conditions between original profile and optimization procedure would differ, the optimization can go bad.

Verifying your printer output

*Note: The Verification module is an extra licensable option for the i1 Process Control software. To purchase this upgrade please contact your Canon dealer. It adds two functions: the **Verify** function in the i1PC software main wizard and the Profile Info **and Verification** function in the File menu of the software.*

The **Verify** function allows you to check, if your print output is conform to a desired printing condition, which can be an ISO or a customized print standard. i1PC includes the following Verification presets:

Verification Preset	Purpose	Notes
Canon Top Color 100GSM (M0)	Verify that imagePRESS is calibrated and linearized accurately and ready for ICC profile generation	Use Canon Top Color 100GSM paper. Perform verification after calibration but before ICC profiling. Use M0 measurement mode.
ISO 12647-7:2016 Contract Proof - FOGRA39 (M0)	Verify that your simulation print conforms to ISO Coated v2 (FOGRA39) and meets Contract Proof criteria	Use FOGRA39 conform print paper. ICC conversion: ISO Coated v2 > Canon printer profile. Use M0 measurement mode.
ISO 12647-7:2016 Contract Proof - FOGRA51 (M1)	Verify that your simulation print conforms to PSO Coated v3 printing and meets Contract Proof criteria	Use FOGRA51 conform print paper. ICC conversion: PSO Coated v3 > Canon printer profile. Use M1 measurement mode.
ISO 12647-8:2012 Validation Print - FOGRA39 (M0)	Verify that your simulation print conforms to ISO Coated v2 and meets Validation Print criteria	Use FOGRA39 conform print paper. ICC conversion: ISO Coated v2 > Canon printer profile. Use M0 measurement mode.
ISO 12647-8:2012 Validation Print - FOGRA51 (M1)	Verify that your simulation print conforms to PSO Coated v3 and meets Validation Print criteria	Use FOGRA51 conform print paper. ICC conversion: PSO Coated v3 > Canon printer profile. Use M1 measurement mode.
ISO 15311-2:2017 Digital Print - FOGRA39 (M0)	Verify that your print meets the PSD (Print Standard Digital) print quality criteria, related to ISO Coated v2	Use paper without optical brightener. ICC conversion: ISO Coated v2 > Canon printer profile. Use M0 measurement mode.
ISO 15311-2:2017 Digital Print - FOGRA51 (M1)	Verify that your print meets the PSD (Print Standard Digital) print quality criteria, related to PSO Coated v3	Use paper with medium amount of optical brightener. ICC conversion: PSO Coated v3 > Canon printer profile. Use M1 measurement mode.

All Verification Presets are based on the FOGRA Media Wedge v3. i1PC includes a license for it, you do not need an extra license from FOGRA.

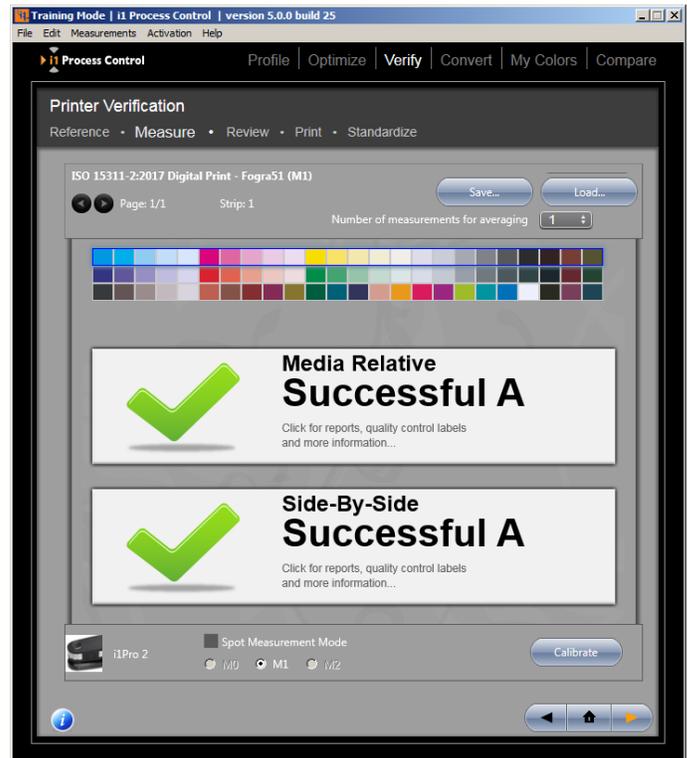
To verify your output, first print the FOGRA Media Wedge v3. Select **Preconfigured Printable Charts** in the **Measurements** menu to open the folder containing the TIFF file of the FOGRA Media Wedge v3. Print it, take care to apply correct ICC color management in your print controller (Fiery, Prism), depending on your color reproduction aim (FOGRA39, FOGRA51).

Select the desired Verification Preset.

Note: verification is possible with the i1Pro / i1Pro 2 and i1iO / iO2, not with iSis / iSis 2 instruments. Additionally, please be aware, that verifications according to FOGRA51 print condition require M1 measurement mode, which is only supported with i1Pro 2 device. If an i1Pro or iO / iO2 is connected, FOGRA51 based verification presets cannot be accessed.

Now measure your printed target with your i1Pro / i1Pro 2 to get the actual output values for your printer. i1PC will generate a pass/fail message based on your measurements. Click the message or the Next button to view the report in detail.

Quick Tip: you can save and reload your measurements of a FOGRA Media Wedge as CXF3 file using the appropriate Save/Load buttons. The CXF3 files can for instance be loaded in other Verification Presets to verify a measurement for another ISO print quality standard. Or you can load the measurement files in the Average workflow to compare them.



Under the **Review** area, you can check your Delta E values to ensure that you are within the defined tolerances for your project. The top area will give key figures, like your maximum and average Delta E, as well as the difference in your paper white and primary colors.

Scroll through the measurement information below to review each patch and visually assess the amount of difference between the measured and expected patches. Check for potential problems, like mis-measurements or an output flaw on your test chart that may have caused a spike in Delta E values.

Click the **Next** button to open a **Print** page where you can choose to print a label to attach to your proof sheet or print a full verification report to keep with your job. Click on **Export CSV** to save your report as a .csv (comma separated text file) for easy import into applications such as Excel.

Quick Tip: Use a printer driver's Save as PDF option or install and use a virtual PDF Printer to save your verification report in PDF format.



If you have custom standards that you would like to record for future jobs, click **Next** to go to the **Standardize** tab. Select which criteria you would like to use, and input your custom tolerances. Select your desired Delta E calculation method in the drop-down menu. Be sure to give your custom chart and tolerances a name that is easy to identify in the list of available standards.

Quick Tip: Custom verification presets created with previous versions of i1PC will reload and process only those verification parameters and methods which were available in the previous i1PC version. If you want to include newly supported verification criteria in your custom verification preset, you will need to create a new custom preset based on one of the new default presets released in i1PC v5.

Quick Tip: For more information on understanding the Delta E calculation methods, go to X-Rite's http://www.xrite.com/documents/literature/en/L11-029_color_guide_en.pdf

Converting Spot Colors

i1PC includes powerful spot color conversion tools to help you get the best custom color results from your imagePRESS.

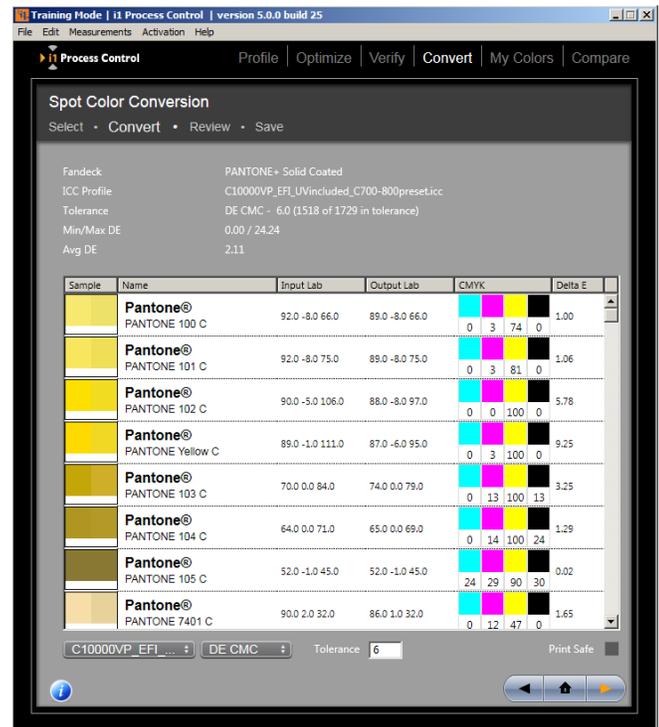
Under the convert tab, select the reference guide specified for your job. Click the **Next** button to view your spot color conversions.

In the drop down menu, select the custom profile that you will be using when you print. Your spot colors will be converted to their CMYK equivalents for this printing condition.

Specify your Delta E conversion method in the drop down menu. (If you need to know more about the differences in Delta E tolerancing methods, check out X-Rite's http://www.xrite.com/documents/literature/en/L10-001_Understand_Color_en.pdf . In the tolerance field, input the amount of Delta E difference that you can accept in your workflow. Check the **Print Safe** box to eliminate any colors that cannot be reproduced within your Delta E tolerance.

Quick tip: Make sure to use the Delta E tolerancing method specified for your job, as each method has its own strengths and weaknesses.

Click the arrow to the right to go to the **Review** area, where you can output a named color profile with your spot color conversions. You can then use this profile in your Canon workflow to ensure accurate spot color reproduction in your printed output. You can also output an Adobe Swatch Library for use with your Adobe applications.



My Colors

You can also add your own spot colors to be converted on the imagePRESS. Either measure a physical sample of your color with your i1Pro, or input the L*a*b* values. You can also import your own colors from an ASE file. Click on **Import** and convert the colors to a Named Color ICC profile.

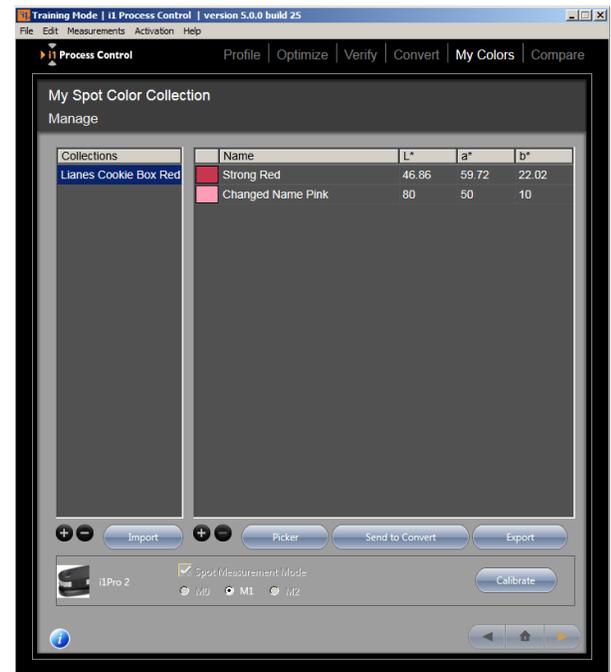
Note: If the selected ASE file contains colors from different color spaces, a window opens. Please select the profiles that you would like to use for transformation, and click OK. The colors shown in the list depend on the type of profile selected, i.e. if you select a RGB profile for the transformation, only RGB colors appear etc.

You can then **Export** these colors to be used in your Adobe design applications, or reference this information under the Optimize function to ensure that you get the closest possible rendition. Click **Picker** to open the Add Color dialog. Select the profile you would like to edit from the Profile menu. Enter a name for the edited profile or use the auto name function. Next, enter your color values. The type of values depend on the selected profile, e.g. CMYK, RGB, L*a*b* etc.

This profile is also used to convert color values between device values and colorimetric values.

Quick tip: i1 Process Control will default to the last location you used to save a file. Be sure to place your color swatches in a convenient location for you to access later, like your desktop.

Quick tip: Be sure to give your color the exact same name that was used in your application workflow.



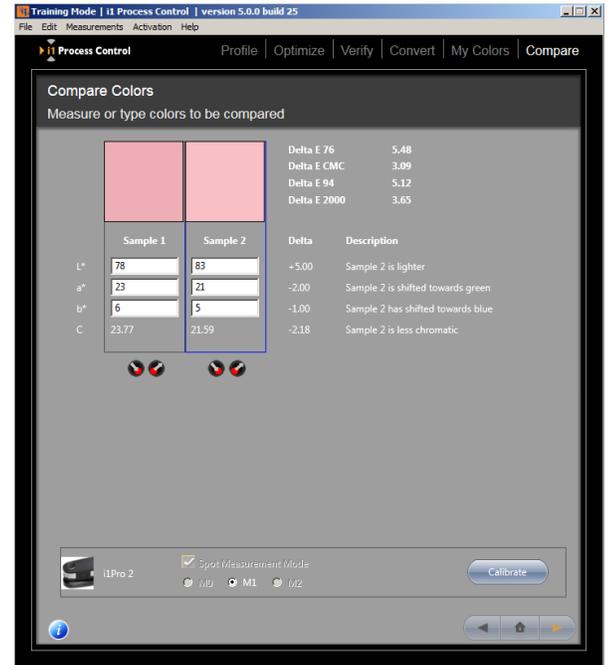
Compare

The Compare function allows you to measure your job's critical colors to determine whether you are reproducing them consistently. Under **Sample 1**, measure your control sample or input the desired L*a*b* samples with your i1Pro. Click on **Sample 2** to measure your output color. You will then see Delta E comparison information listed.

You can load and save individual colors for comparison. Click on the left button below the sample column to load a color file and the right button to save the color file.

Note: Color files use the file type *.processcontrolcolor

Under the **Description** you will find helpful information about the shifts that have taken place in your color to help you quickly make adjustments on your imagePRESS.





Troubleshooting Common Problems

I'm having trouble activating

Your computer may not be connected to the Internet or your network's firewall may be preventing you from automatically retrieving your activation key. If you are experiencing network firewall issues select Proxy Settings in the Activation menu. Enter the appropriate settings for your network. Contact your network administrator for more information about your network. If the problem remains, contact X-Rite's Customer Success department at <https://my.xrite.com/partners/SupportCase.aspx>, create a support request and provide your license key and the serial number of your measurement instrument. They will send you back an activation key with a .lic extension. Under the Activation menu in i1PC select Install License File Manually and follow the instructions to complete your activation.

I'm having trouble measuring my test chart with my i1Pro in strip mode

First, check your test chart to make sure that there is no streaking or smearing that may be causing inaccurate measurements. Next, run i1Diagnostics on your i1Pro to make sure that your hardware is performing correctly.

Once you've ruled out all the other problems, try varying your measurement speed. A good measurement should take between 5 and 10 seconds. Make sure you hear the beep signaling that the i1Pro is ready to proceed before you move into your test chart. Verify that you are starting and stopping in the white area. Finally, try rotating your test chart 90 degrees and measuring in an up-and-down motion rather than side to side.

My i1iO is reading my test chart in a diagonal pattern and failing.

Sometimes the second or third coordinates on your test chart will be in an unlinked area. Be sure to select the coordinates according to the marks on your test chart instead of selecting the inked area in the row above.

My prints don't match my display.

Make sure you're using the custom profile you created in your graphic design applications to soft proof your images. If you still find that you are having trouble, it may be time to re-linearize your imagePRESS to bring it back to its repeatable state.



My critical colors are not reproducing correctly.

First, make sure you have optimized your profile for your critical color palette. Next, use the Compare function to compare your color output to your control sample and determine what adjustments might be needed on your imagePRESS.

Note the Delta E difference between your sample color and your output color. Is it within acceptable tolerances? If you are working with a color that cannot accurately reproduce on your printer, consider selecting another color that is within your printer's gamut. If you are creating a proof for a job that will use spot colors, be sure to reference your Pantone fan deck or color swatch for an accurate rendition of your spot color.

Support

For further assistance with product activation and use of i1 Process Control, please contact your authorized Canon service representative.



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