ITcolorRIP

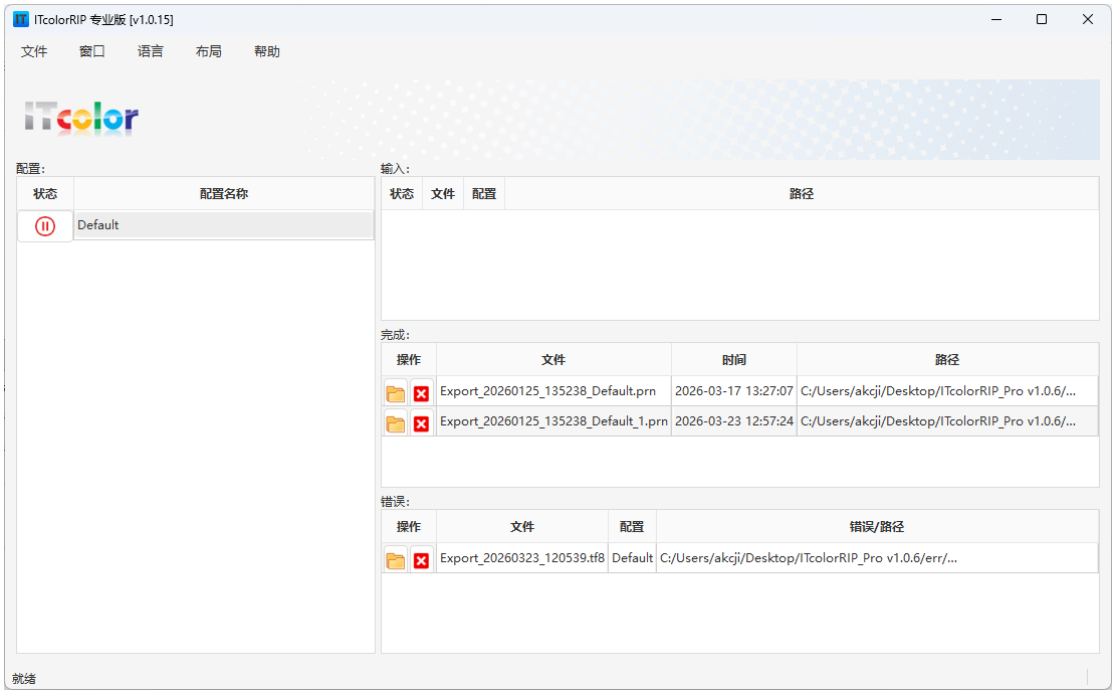
V1.0.15

ITcolorRIP 仅支持 tif、jpg、png、pdf、eps 格式 RIP

ITcolorRIP only supports RIP for tif, jpg, png , pdf、and eps, formats.

目录 directory

一、主界面：



1.1 核心工作流

本软件遵循以下自动化处理路径： 配置参数设定 -> 激活监控状态 -> 文件自动入队 -> 颜色/曲线/网点渲染 -> 输出 PRN 文件。

1.2 界面布局

配置列表区（左侧）： 管理及监控所有工作配置，提供运行/停止状态的切换。
工作队列区（右上）： 实时显示当前待处理及正在执行的任务进度。
完成列表区（右中）： 归档已成功处理的任务，支持快速定位输出目录或清理记录。
错误列表区（右下）： 记录执行失败的任务及其详细的错误日志。
菜单栏： 提供文件管理、窗口布局、多语言切换及帮助支持。

1.3 状态控制

启动/暂停： 选定配置后，点击**绿色箭头**激活监控，点击**红色图标**停止任务。
便捷导入： 支持直接将文件拖拽至特定配置项上，实现手动任务派发。

二、新建工作配置

2.1 任务模式选择

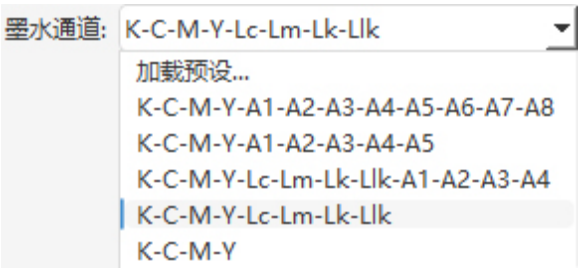
在“文件 > 配置设置”中创建新配置时，需指定处理模式，处理模式可随时修改：

- **仅 RIP：** 纯解释模式，仅生成 PRN，不应用任何色彩控制。
- **线性 + RIP：** 应用墨量限制、浅墨分离及线性化曲线校准。
- **色彩转换：** 在线性化基础上，全量应用 ICC 转换、DeviceLink 及专色转换。

2.2 常规参数设置

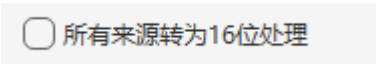
- **热文件夹配置：** 务必为每个配置指定唯一的“输入”、“输出”和“错误”文件夹，建议使用本地磁盘路径以确保 IO 效能。

- **墨水通道：** 支持从基础 CMYK 到最高 32 通道的扩展（包含浅色及多路专色/白墨/光油）。

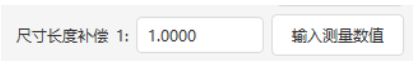


- **打印分辨率：** 请根据设备硬件参数及 Pass 数选择匹配的输出分辨率。

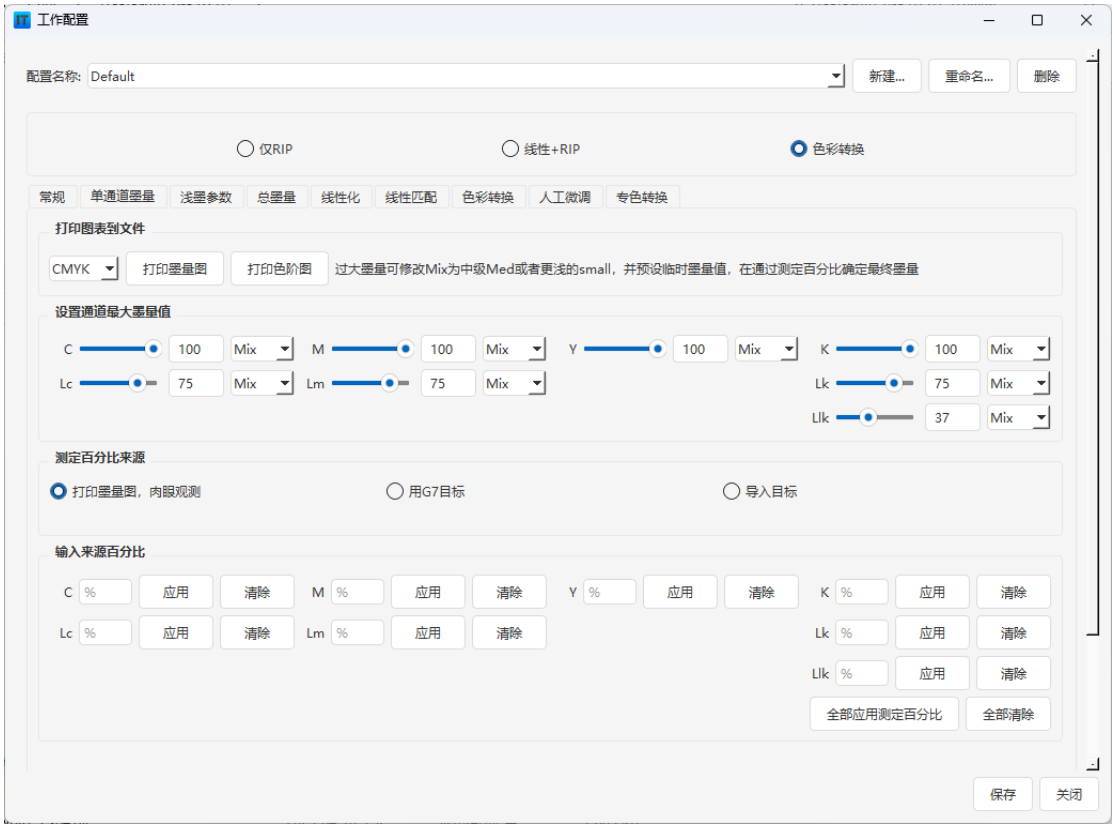
- **16 位深度处理：** 开启后内部以 16-bit 精度运算。虽渲染速度略降，但能显著提升图像过渡的平滑度，适用于高品质影像输出。



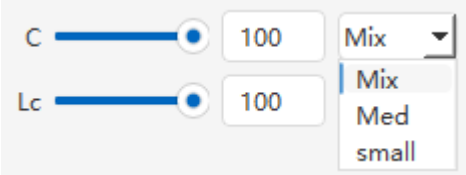
- **尺寸长度补偿：**针对承印物（如布料、薄膜）在打印过程中产生的物理拉伸或走纸误差，通过输入“画面理论长度”与“实际测量长度”，软件将自动计算补偿系数，修正输出尺寸。



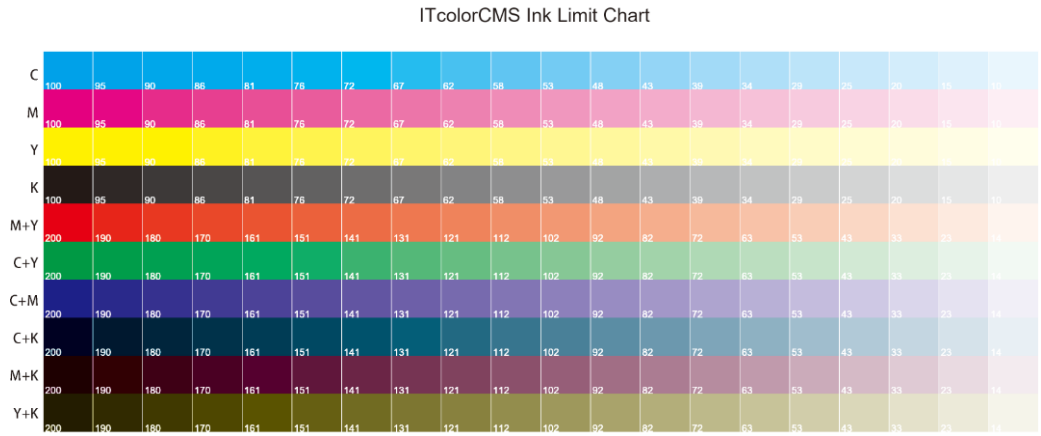
2.3 单通道墨量控制



提供 **Mix (全墨滴组合)、Med (中/小墨滴)、Small (纯小墨滴)** 三种基础滴定策略。



视觉校验流程： 打印墨量梯尺 -> 观察饱和度与溢墨点 -> 手工在测定百分比来源填入数值 -> 应用后可多次迭代优化。



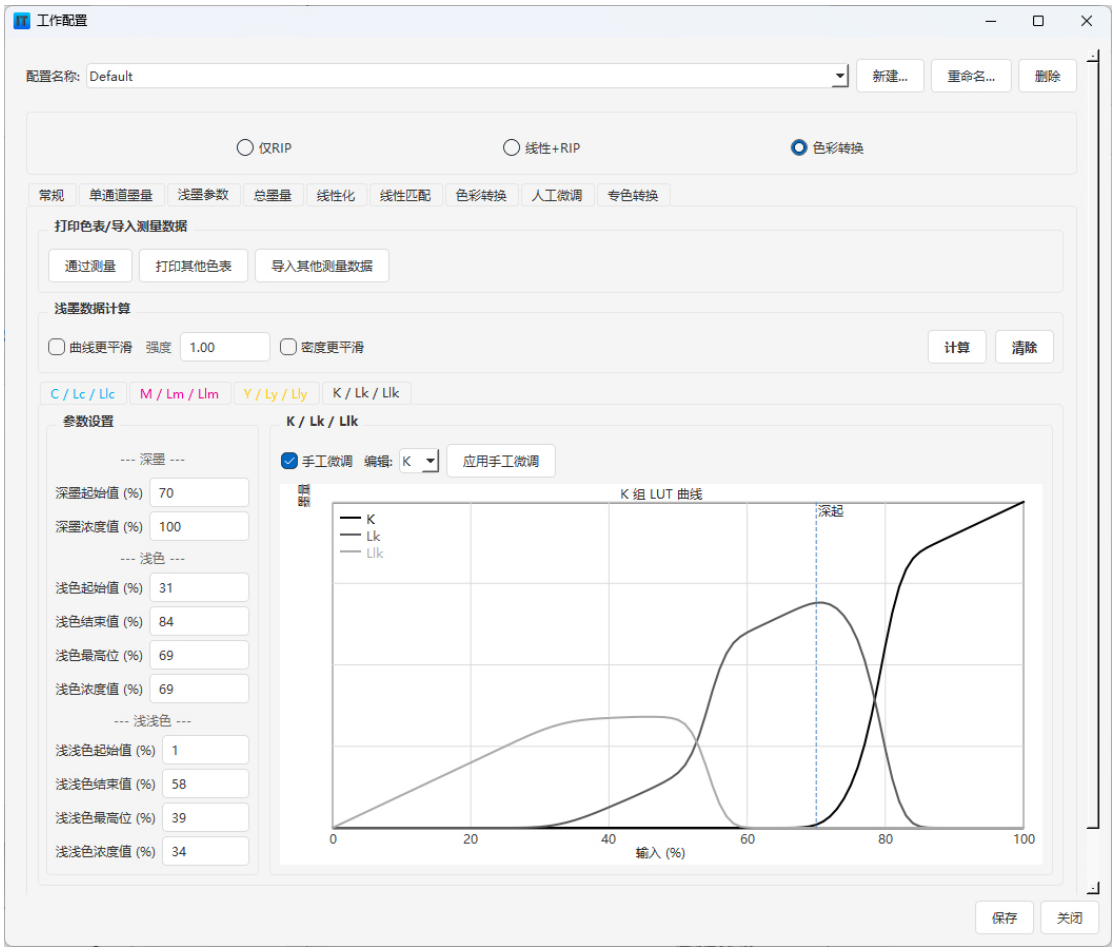
G7 标准校准： 支持导入 ProfileMaker 格式的 CIELab 数据，软件将根据 G7 标准建议单通道墨量，扩大系数建议设为 1.05 以预留色彩空间。

导入目标校准： 导入其他设备 CIELab 数据，软件将其通道密度建议单通道墨量。

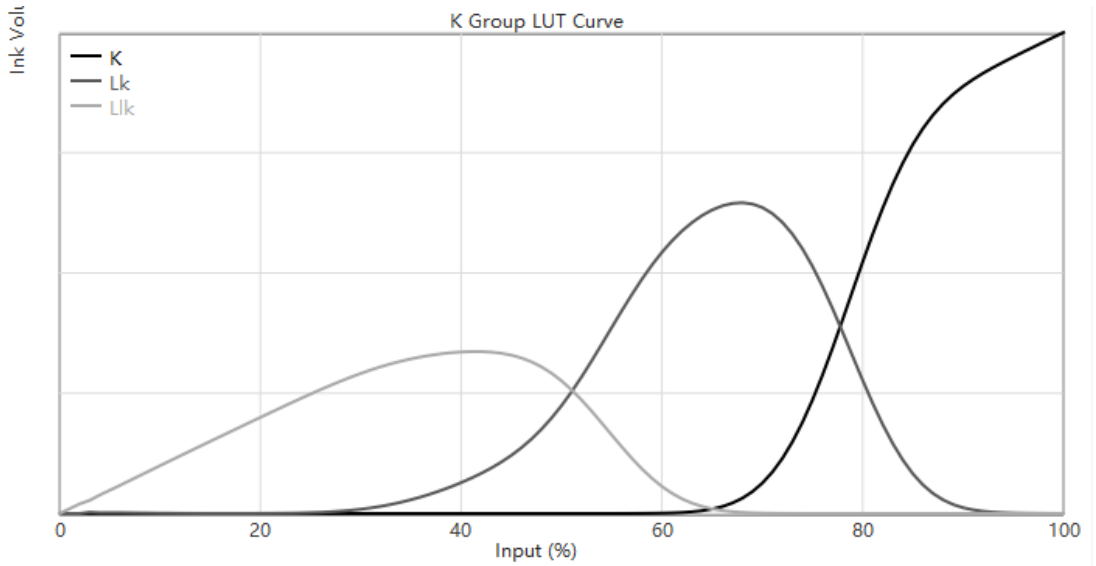
6、**2.4 浅墨分离参数 (Light Ink Parameters)**

2.4 浅墨分离参数（Light Ink Parameters）

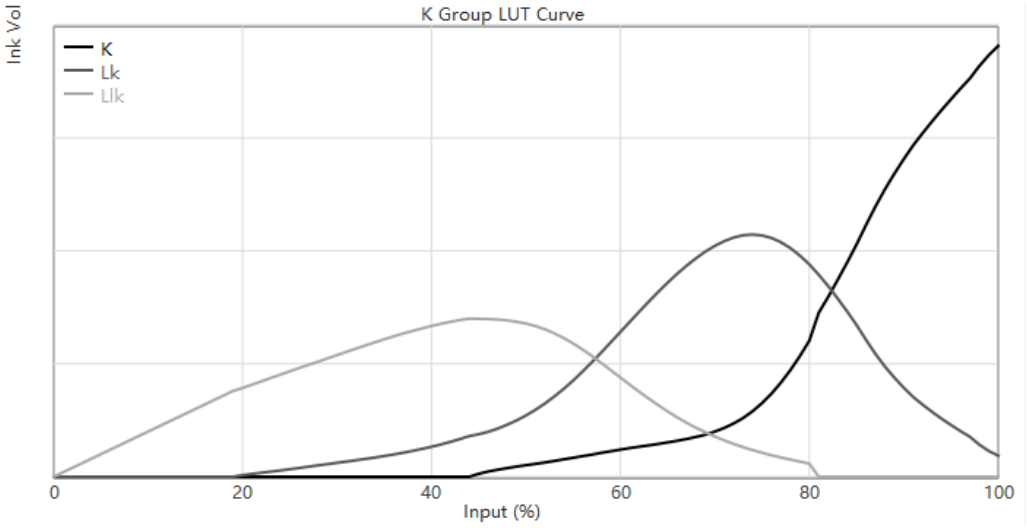
针对具备浅色墨路（如 Lc, Lm, Lk）的任务，通过计算确定深浅墨水的交替点。



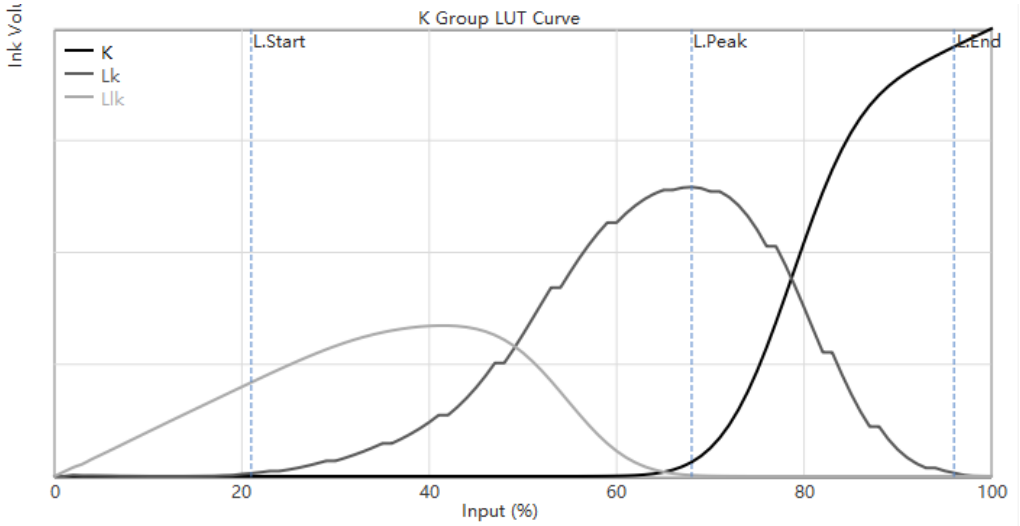
- **计算模式：**
  - **默认计算：** 基于密度测量值自动生成。
  - **曲线平滑：** 引入数学函数优化分离曲线，消除视觉跳阶。



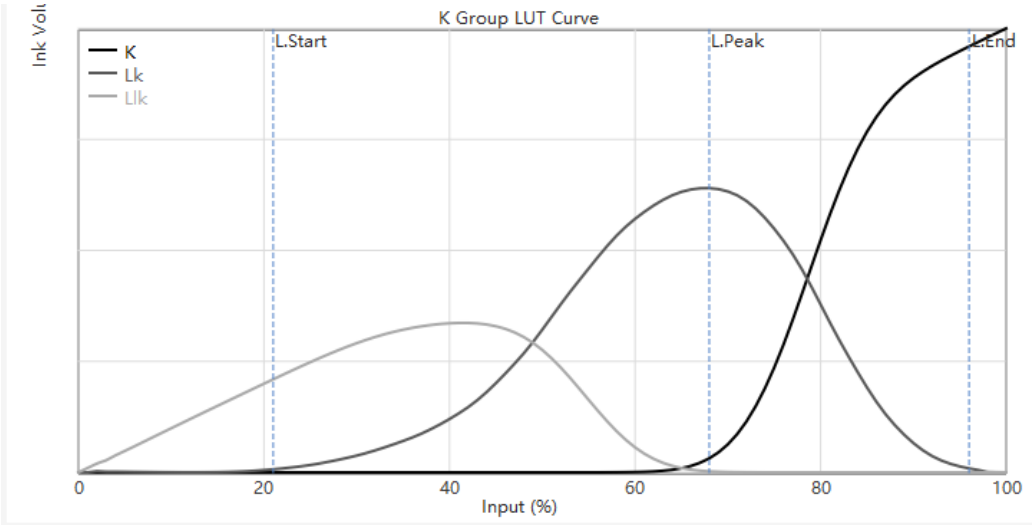
- **密度平滑：** 根据计算密度，进一步强化阶调过渡的连续性。



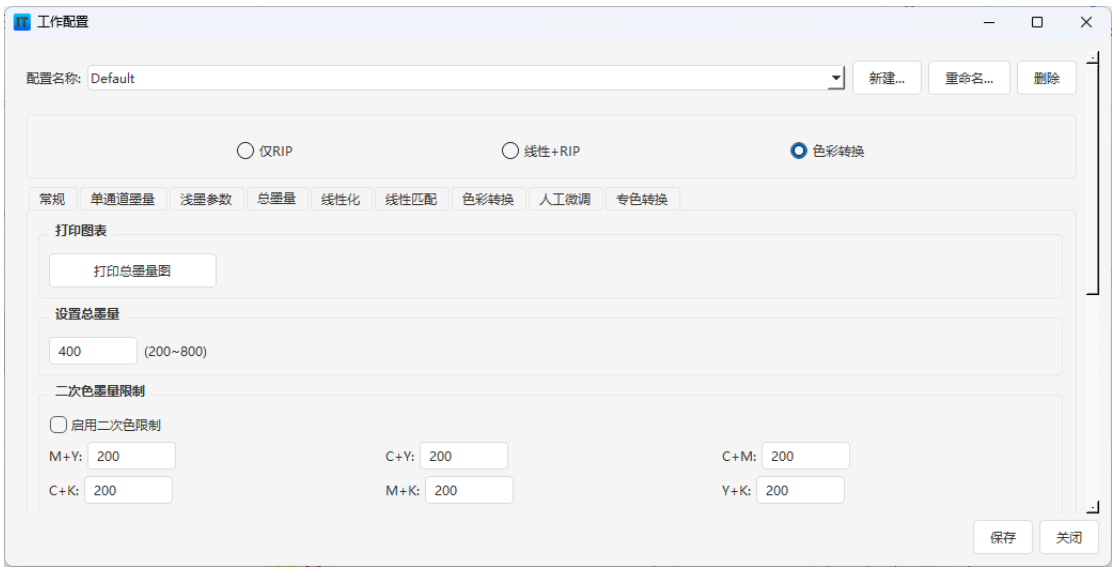
- **人工干预：** 支持手动调整曲线的起点、终点及峰值。



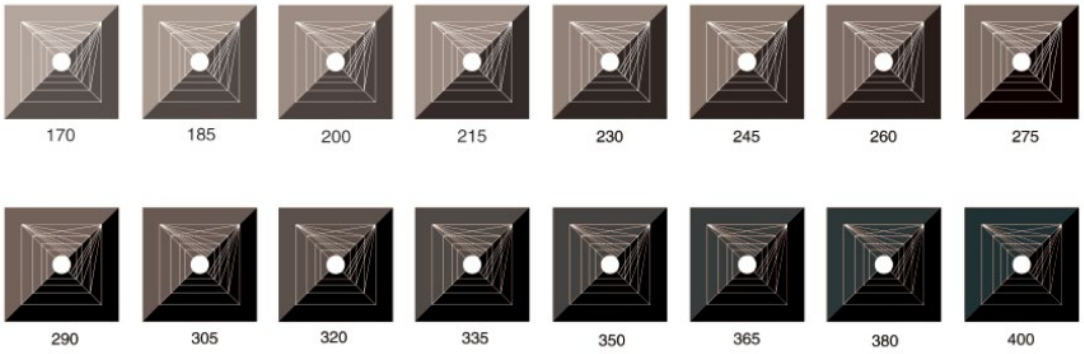
调整后需点击“应用手工微调”重新计算连续函数。



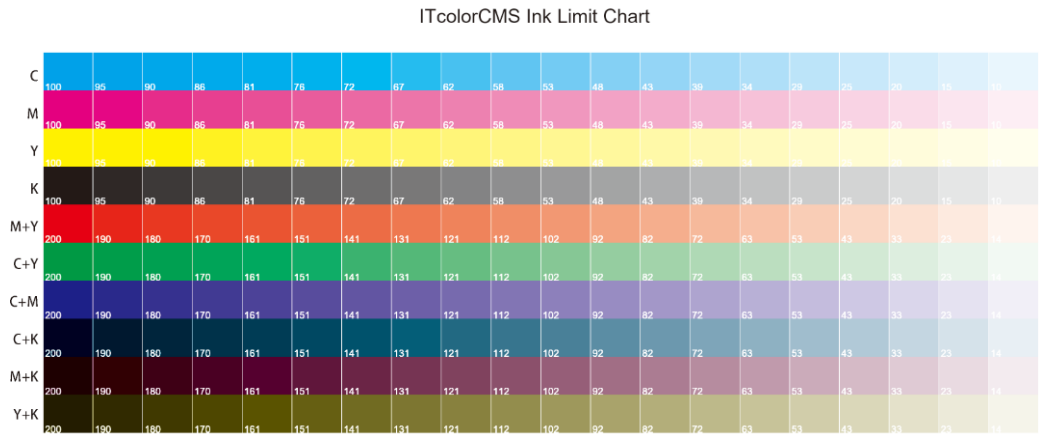
2.5 总墨量（TIL）与二次色控制



通过打印总墨量测试图，确定在不发生流墨、洇墨且细线清晰的前提下的最大喷墨极限。

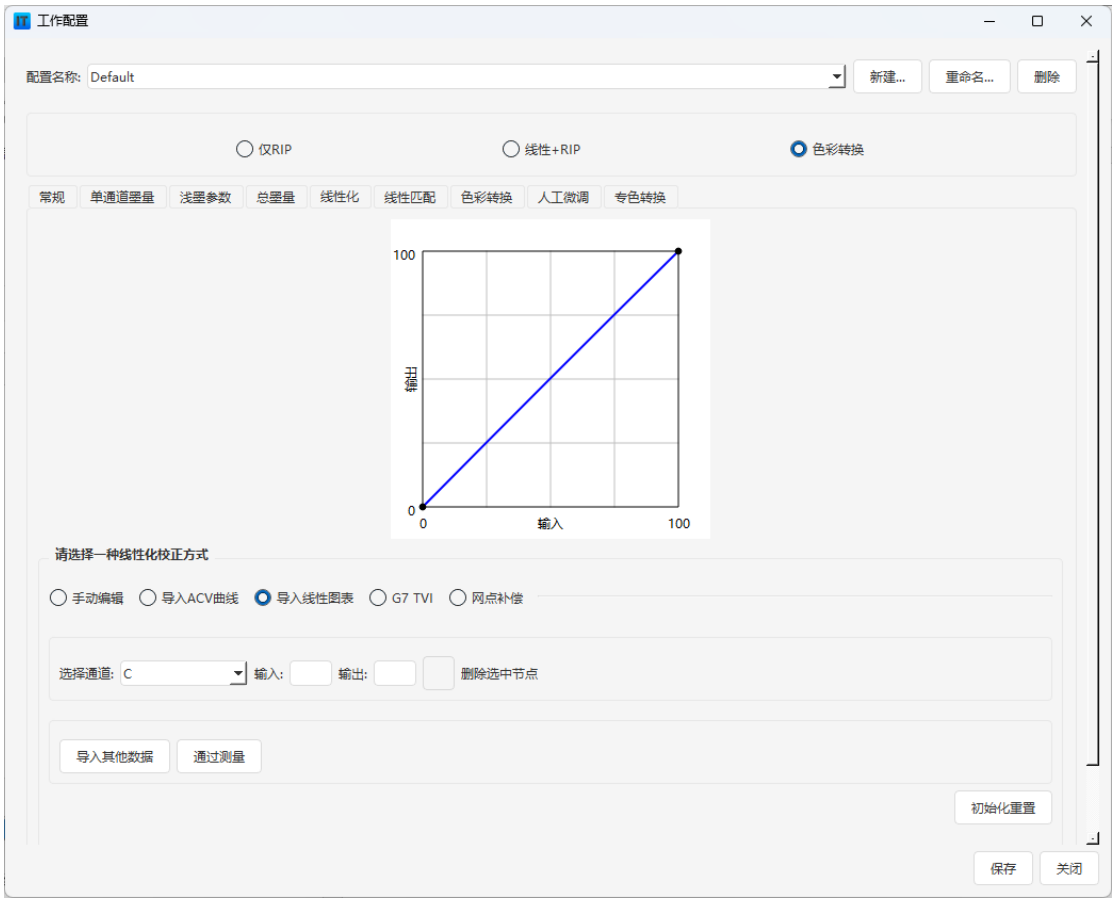


随后可进一步针对二次色（如 CM, MY 等）进行墨量限制：

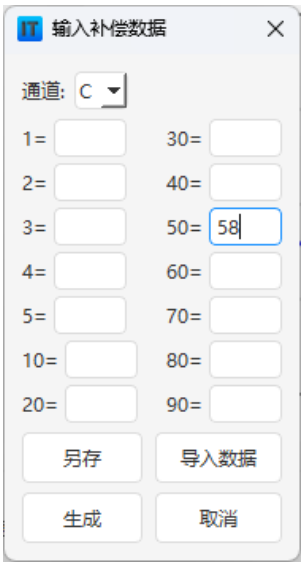


二次色选择不流墨不洇墨小字清晰的最大墨量值。

2.6 线性化校准 (Linearization)



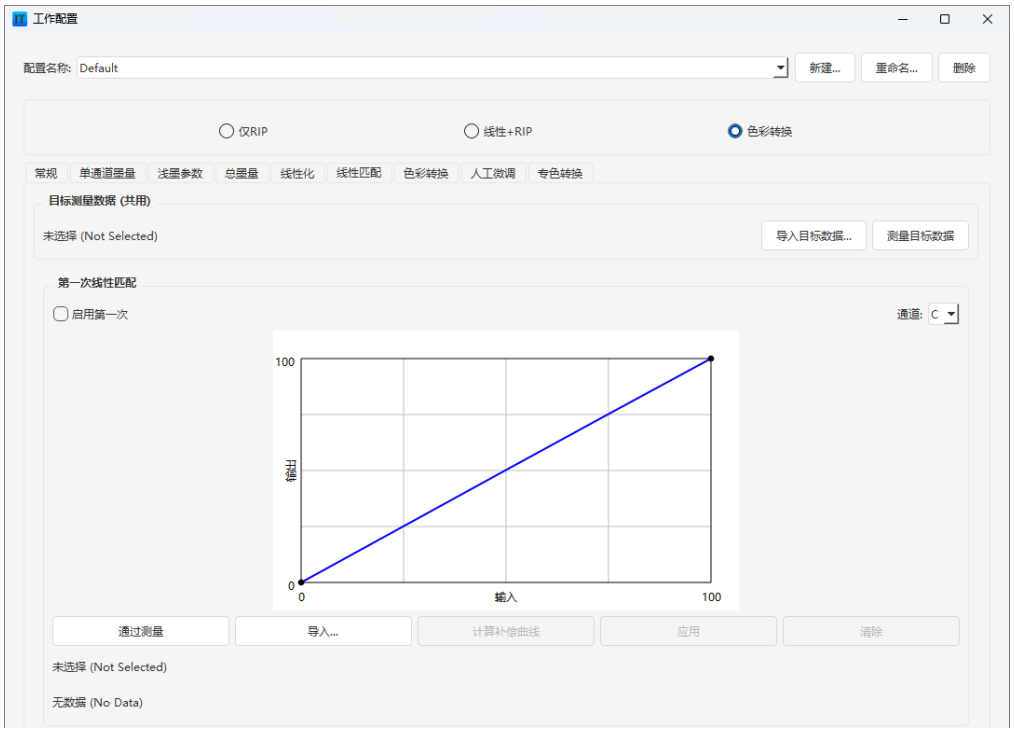
- **ACV 曲线集成：** 支持直接导入 Photoshop 生成的 .ACV 曲线文件。
- **多通道线性化：** 最高支持 CMYK + 11 路专色的同步线性化校准。
- **TVI 控制：** 支持以 G7 网点增益 (TVI) 为基准进行曲线优化，使打印效果更符合印刷工业标准。
- **网点补偿：** 可输入印版测量仪测得的物理网点数据，自动生成反向补偿曲线。



- **手动编辑：** 可人工修改任意节点输入输出数值。

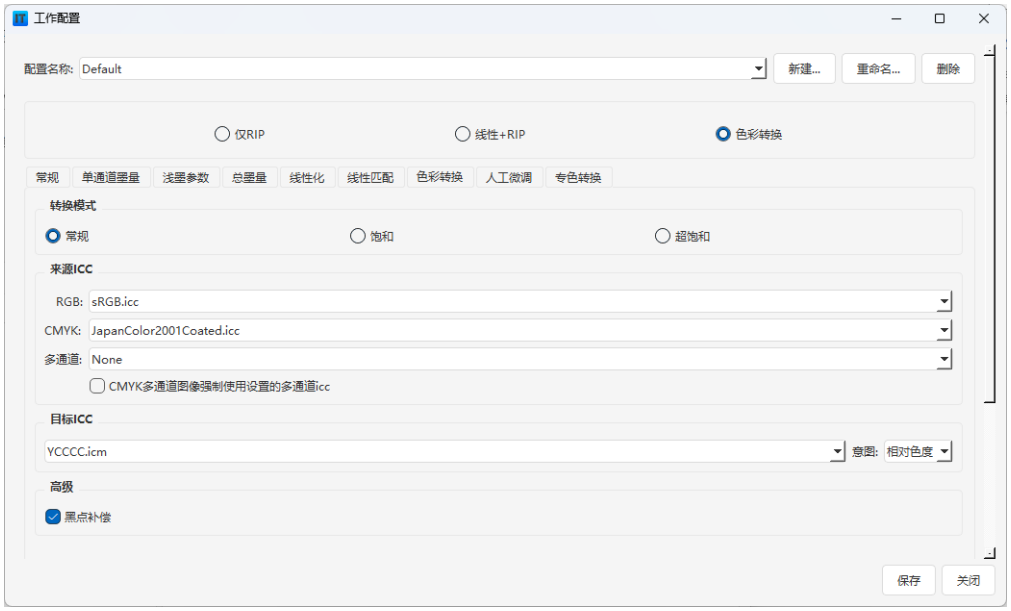
2.7 线性匹配

用于多台设备间的色彩一致性同步。通过循环测量与补偿计算，将当前设备的线性状态模拟至目标状态。



可根据匹配后和平均色差，来决定是否启用第二次、第三次匹配，当平均色差 $\Delta E < 1$ 时，即可视为达成高精度匹配。

2.8 色彩转换与 ICC 管理



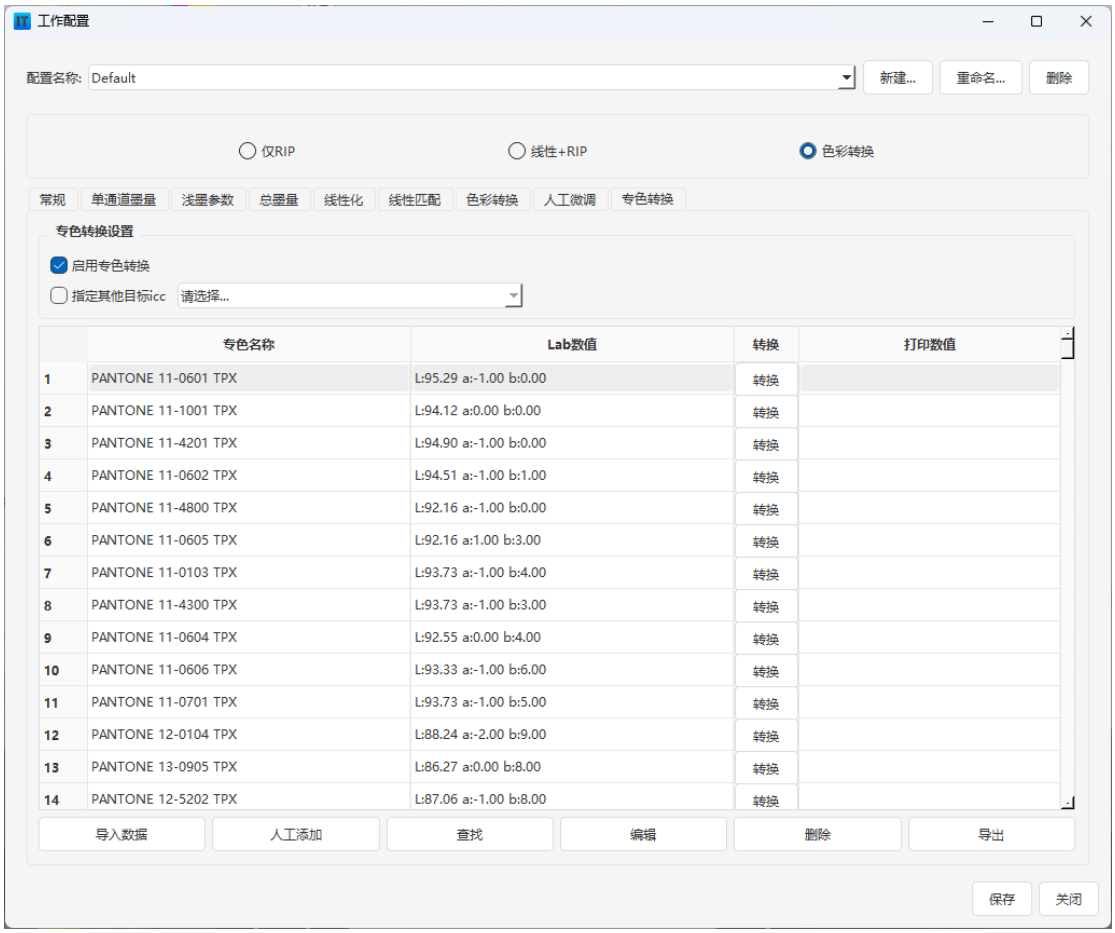
- **转换模式：** 提供“常规（感知/相对色度等）”、“饱和”及“超饱和（ITcolor 自研算法）”三种模式。

- **多通道 TIF 处理：** 支持通过目标 ICC 进行转换，通道根据是否启用专色，进行转换。或强制应用特定的多通道 ICC 进行全通道映射。
- **DeviceLink 支持：** 允许定义纯色保持（如 K100 不参与分色），解决细小黑字带杂色或黄色通道不纯的问题。

2.9 专色转换

支持通过颜色名称索引（Name-based lookup）进行转换。

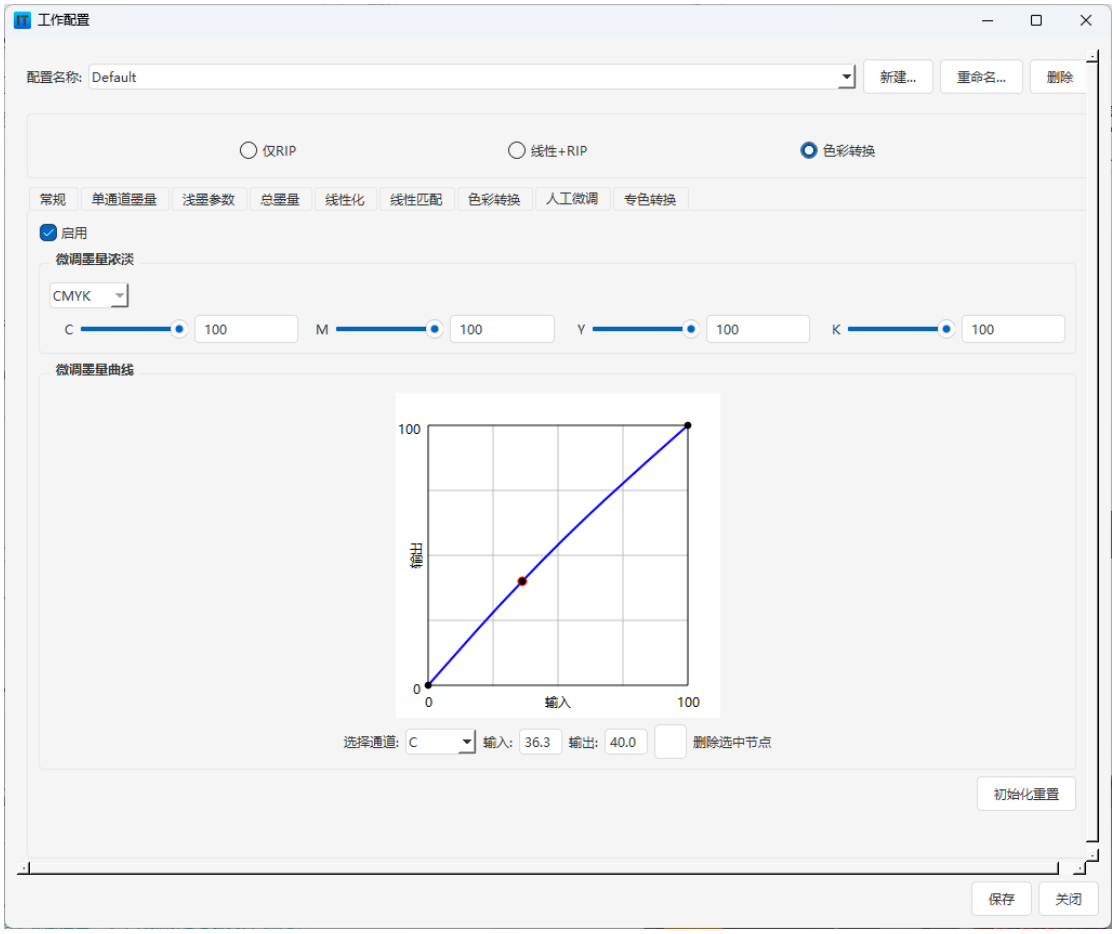
- **输入源：** 支持导入 .ase (Photoshop)、.txt (Pantone Manager) 或手动创建。
- **指定其他目标 icc：** 当色彩转换目标为 DeviceLink 时，必须在此单独指定专色查询的 ICC 库。



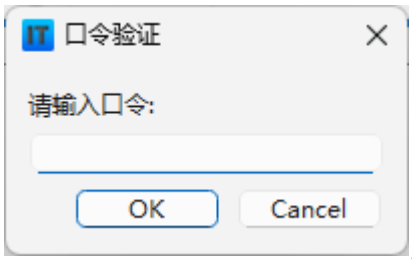
可编辑已有专色色值，并填写实际打印数值，导出为专色转换库。

2.10、人工微调

- **功能说明：** 在不改变现有线性化的情况下，调整各通道墨量或曲线。
- **注意事项：** 通道数自动匹配单通道墨量设置。在“仅 RIP 模式”下，通道数可手动选择。



2.11、口令验证

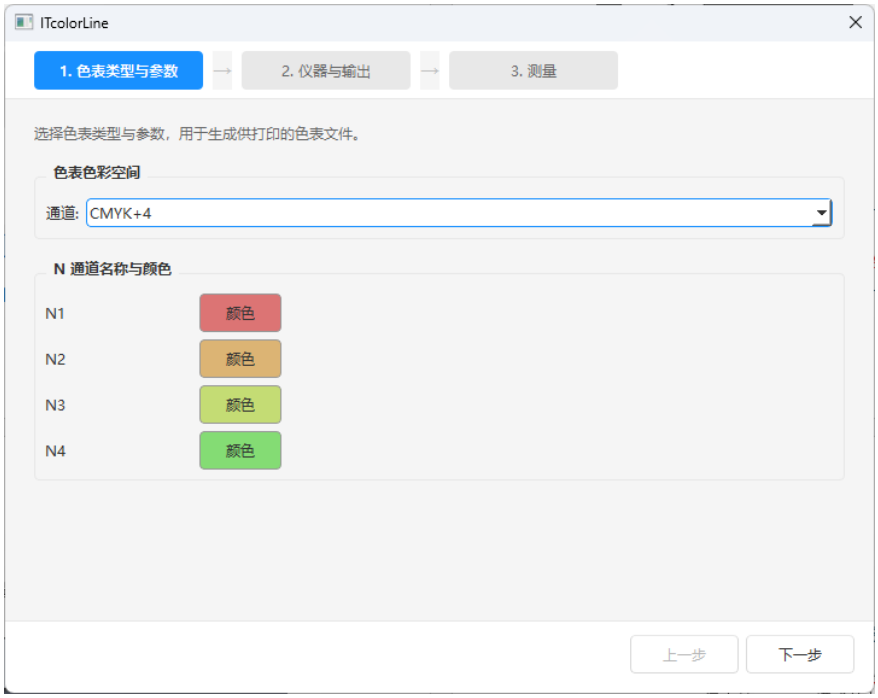


，口令为：000000

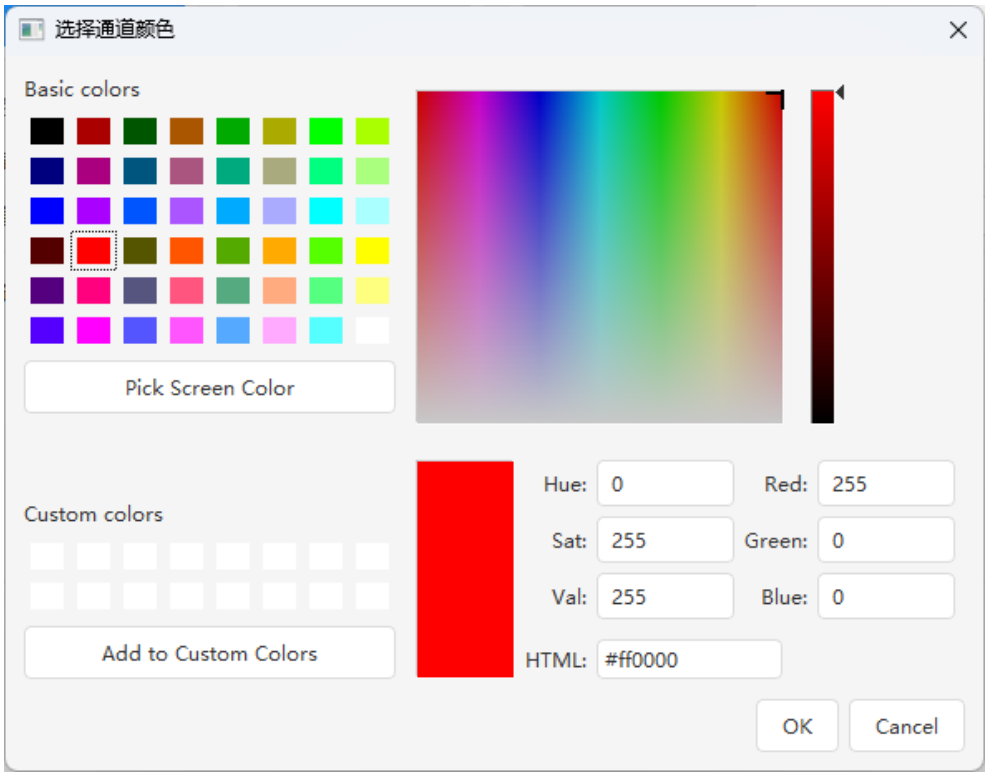
附录:

A1、使用 ITcolorRIP 内置测量

色表色彩空间：选择相应的 CMYK+专色数，ITcolorRIP 测量最高支持 CMYK+11 个专色或浅色。

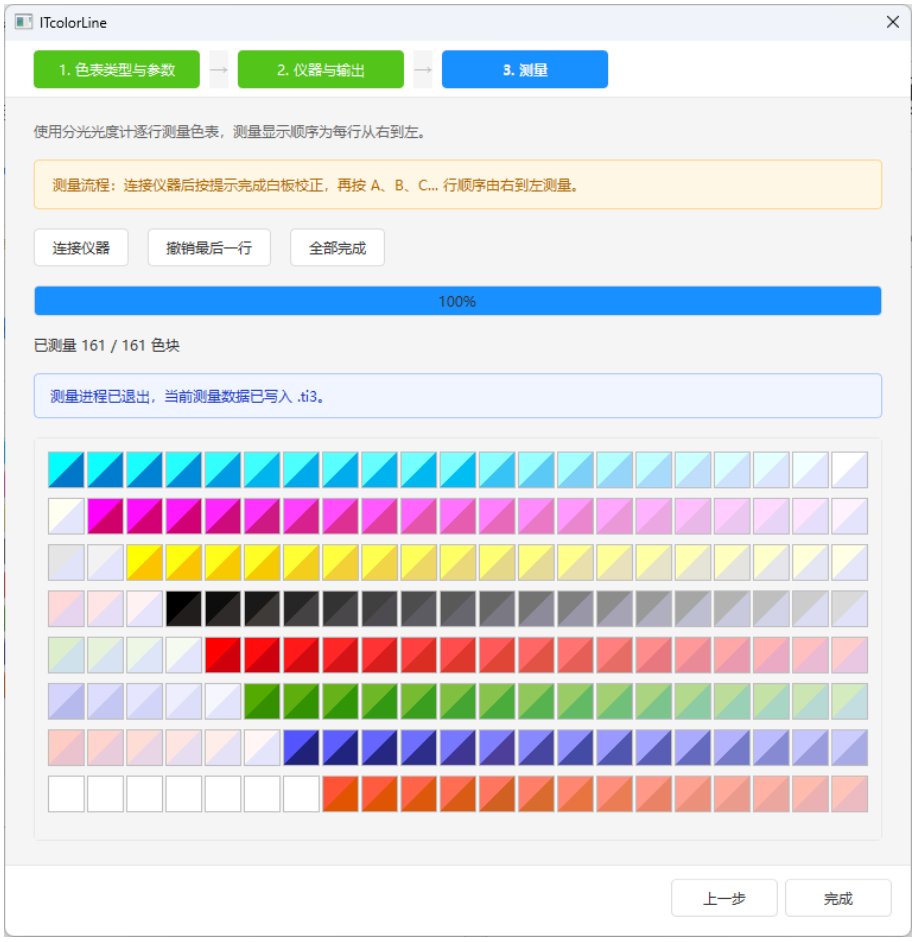


专色可选择屏幕模拟显示用专色色相，请根据实际使用专色墨水选择近似色相即可。



选择仪器和输出：支持 I1 PRO 1 2 3，其他仪器请使用各自软件测量并导入测量数据。

CMYK+4 专色（红绿蓝橙）测量后的软件界面



（注：ITcolorRIP 调用 ArgyllCMS 测量程序，支持 I1 Pro 1/2/3 代。若驱动无法安装费，可通过导入数据方式完成。）

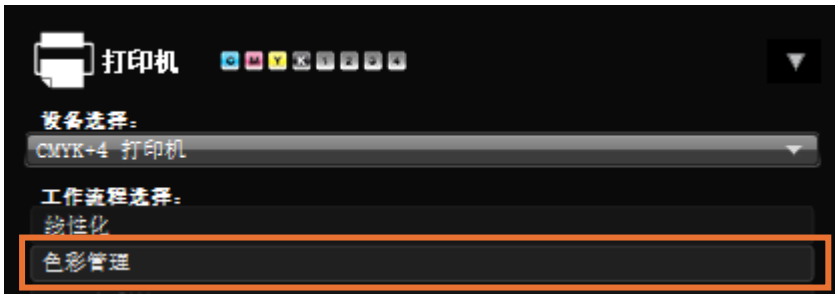
A2、使用 I1 Profiler 协同作业

用户可利用 Linear 文件夹中的 .cxf 格式色表模板，在 I1 Profiler 中生成测量图表，测量后的 CIELab.txt 数据可直接导入 ITcolorRIP 用于墨量控制和线性化。

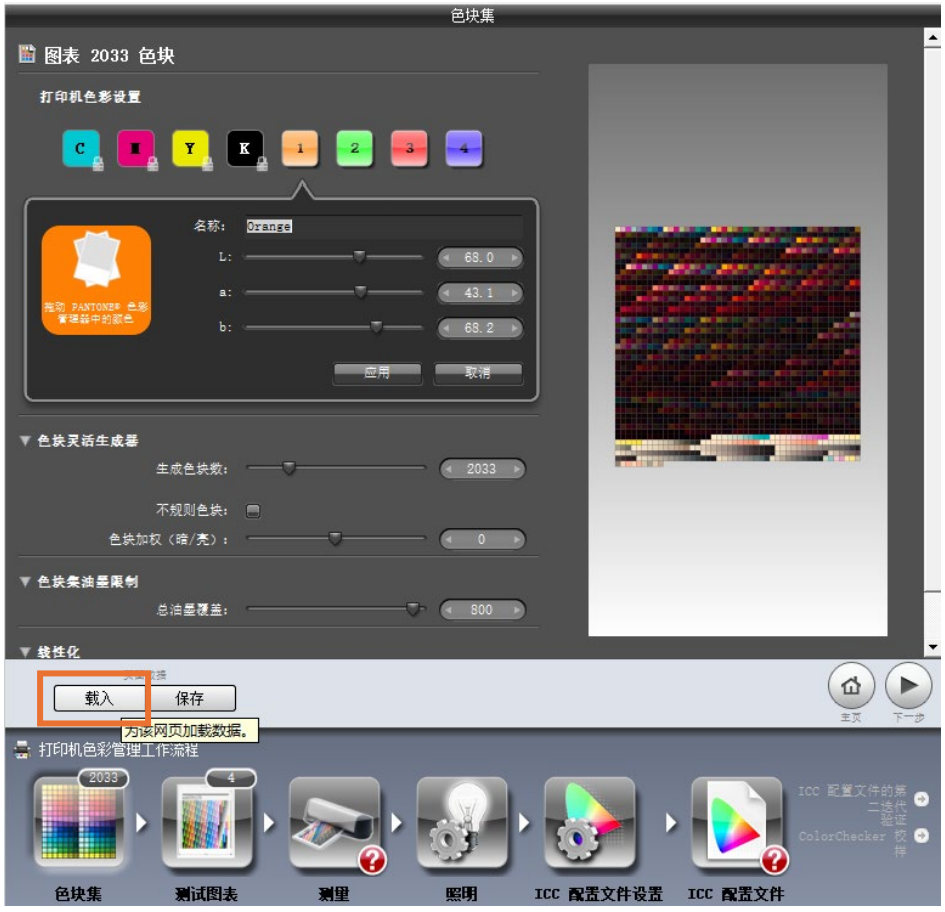
操作步骤：

打开 i1 Prifiler ， 进入高级模式：

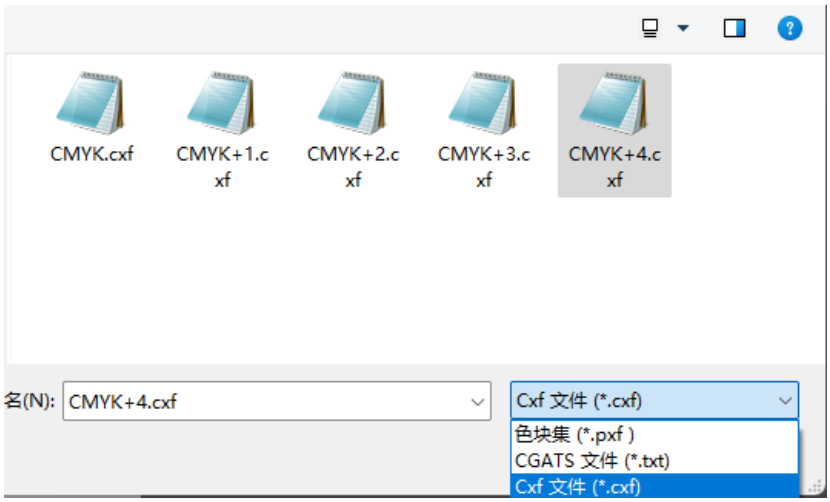
选择相应的打印通道数，如 CMYK+4，然后选择色彩管理



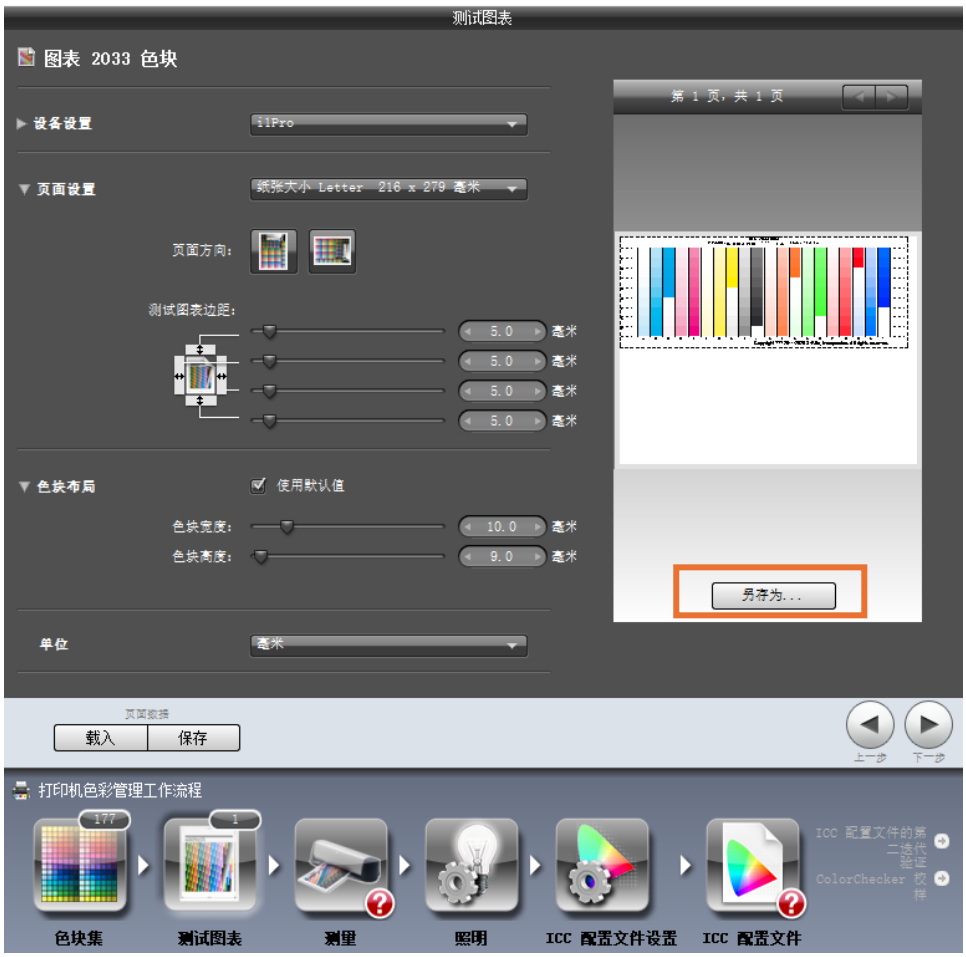
在色块集，选择载入：



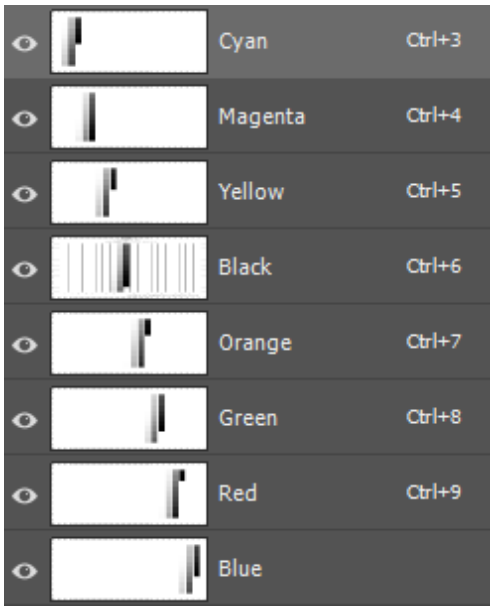
载入 cxf 文件（如 CMYK+4.cxf）



设置分光仪（i1、i1 2、i1 3、i1 io、i1 isis 等）。



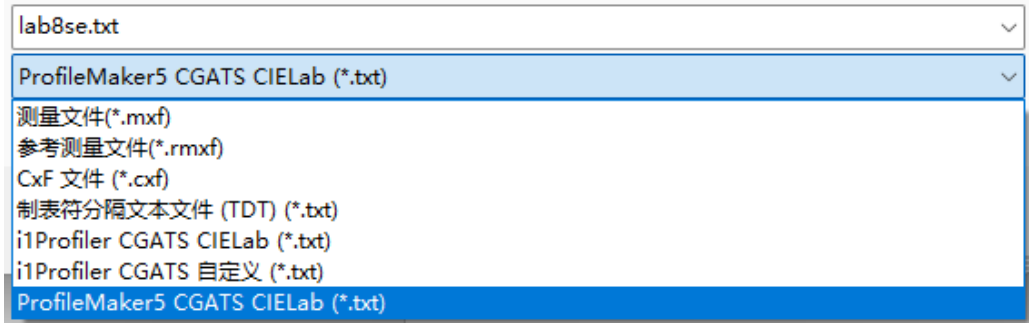
保存图表为 EPS 格式，在 Photoshop 中转为 CMYK 模式，保存为 TIFF 格式。



（注：cxf 为颜色交换格式，目前任何分光光度仪配合的软件，均可以输入此格式，生成适合自身使用的色表文件）

色表打印后，用分光仪测量取得数据后，直接在测量界面保存

保存为 ProfileMaker5 CGATS CIElab 格式的 TXT 文件。



A3、创建设备连接配置文件

ITcolorRIP 文件菜单下，有创建链接选项，会启动创建设备连接配置文件选项:

不同于传统的 ICC 转换，本软件生成的 DeviceLink 配置文件可实现 RGB-多通道、CMYK-多通道的直接映射，有效保持原稿的通道纯净度，提升鲜艳度与通透感。
这对于打印细小黑色文字，保持某些通道纯净（如 Y 通道），都很有帮助。

常见的选择，保持 K100 不变，保持 Y 通道不变，如下图：

RGB-CMYK、RGB-多通道虽然无法设置保持 K100 或者 Y 纯净（因 RGB 模式图像里数据是 RGB 的，没有 K 或者 Y，无从保持），但 ITcolorRIP 的 RGB 模式设备链接，可以让 RGB 来源的图像打印更鲜艳通透。

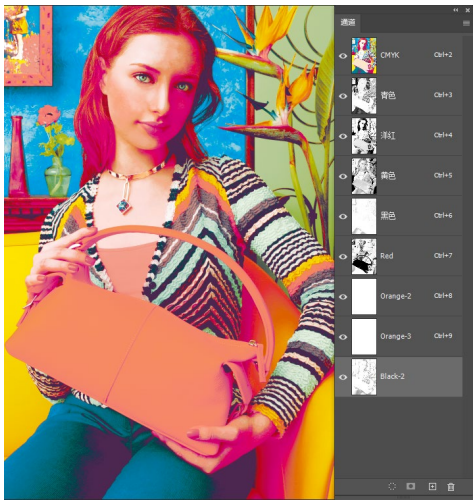
（注：如选择 RGB 来源的设备连接，放入的图像必须是 RGB 模式的，CMYK 来源的设备连接，放入的图像必须是 CMYK 模式的）

A4、独立颜色转换窗口

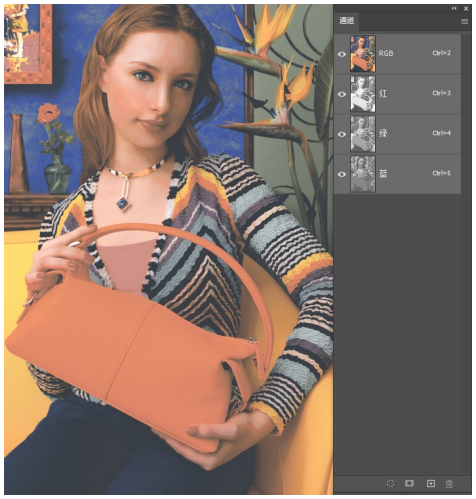
此工具为高级色彩管理需求设计，支持非 RIP 流程下的色彩预处理。
支持以下颜色转换：
RGB 转 RGB、RGB 转 CMYK、RGB 转多通道、RGB-CMYK 设备链接转换、RGB-多通道设备链接转换。
CMYK 转 RGB、CMYK 转 CMYK、CMYK 转多通道、CMYK-CMYK 设备链接、CMYK-多通道设备链接转换。
多通道转 RGB、多通道转 CMYK、多通道转多通道。

- **特有功能：** 弥补了 Photoshop 无法正确预览多通道图像（如印花、陶瓷 8 色等）的缺陷。
- **应用场景：** 实现跨设备模拟（如用相纸、布料模拟陶瓷印花效果）及多通道图像的软打样。

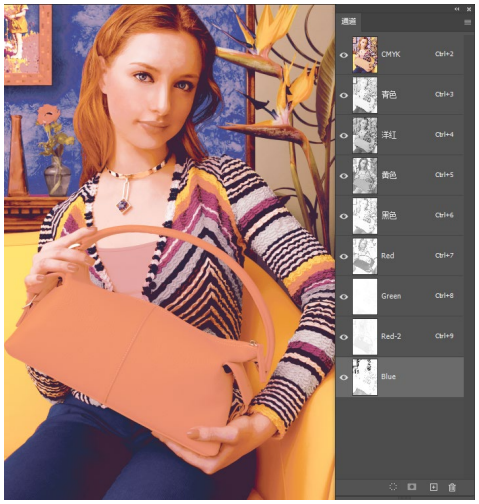
陶瓷 8 色
蓝/棕/黄/灰/包裹红/包裹黄/深棕/黑



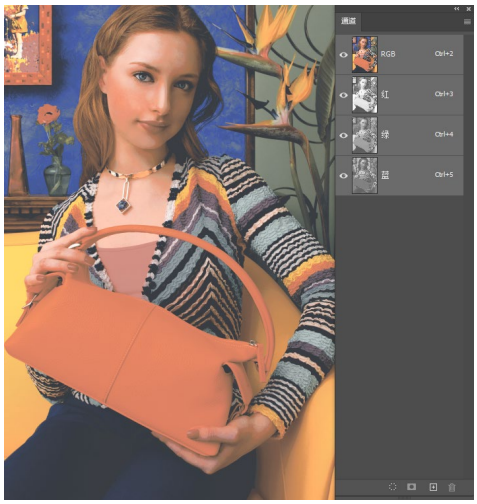
陶瓷 8 色转为 RGB 预览



陶瓷 8 色转为布料印花 8 色
CMYK/桔/大红/绿色/蓝

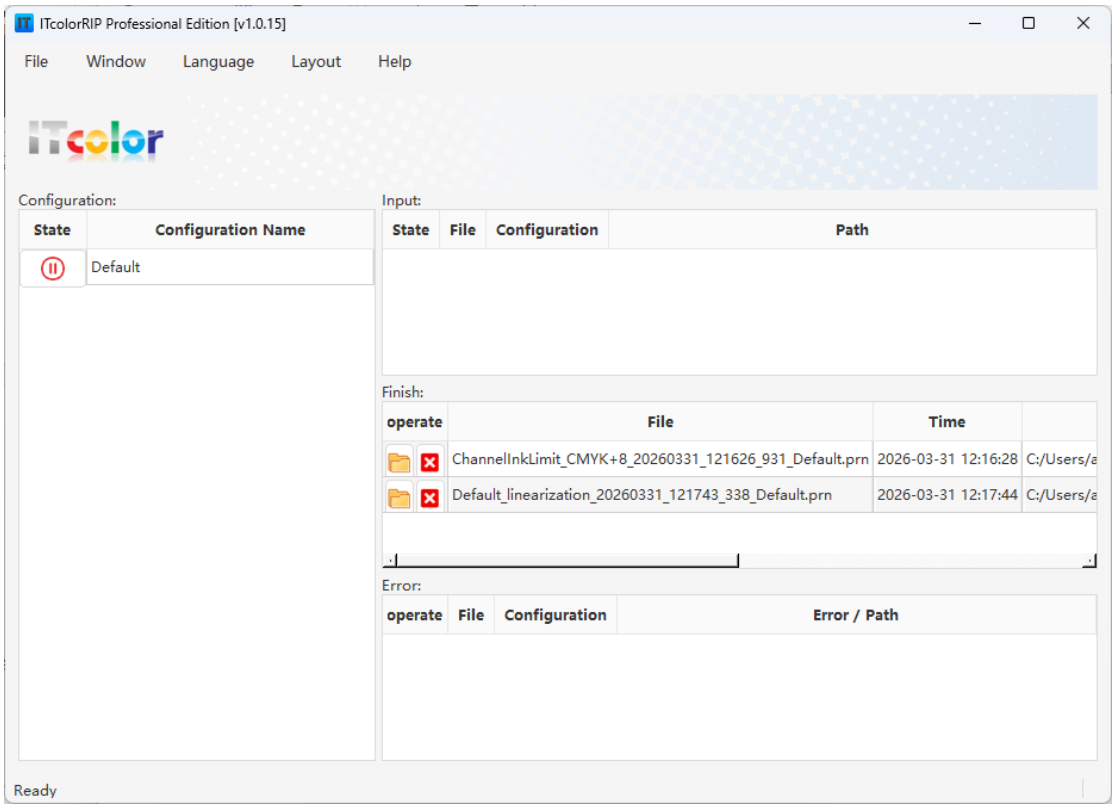


印花 8 色转为 RGB 预览



版本声明： 本手册适用于 ITcolorRIP 专业版及其以上版本。部分高级功能可能因授权级别不同而有所差异。

1. Main Interface



1.1 Core Workflow

This software follows the automated processing path: **Parameter Configuration -> Activate Monitoring Status -> Automatic File Queuing -> Color/Curve/Halftone Rendering -> PRN File Output.**

1.2 Interface Layout

- **Configuration List Area (Left):** Manages and monitors all working configurations; provides Run/Stop status switching.
- **Log Area (Right):** Records detailed steps of file processing and error information.

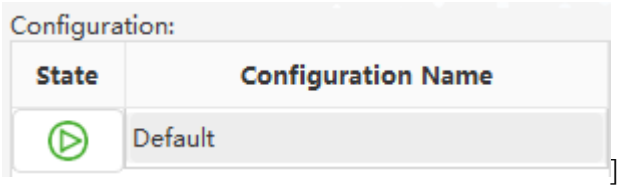
1.3 Status Control

- **Run/Stop:** Click to start or stop automatic monitoring for the selected configuration.
- **Queue Management:** Tasks automatically enter the queue upon file detection; right-click to view properties or clear the queue.

2. Creating a New Working Configuration

Right-click in the configuration area and select "New" to enter the parameter setting interface.

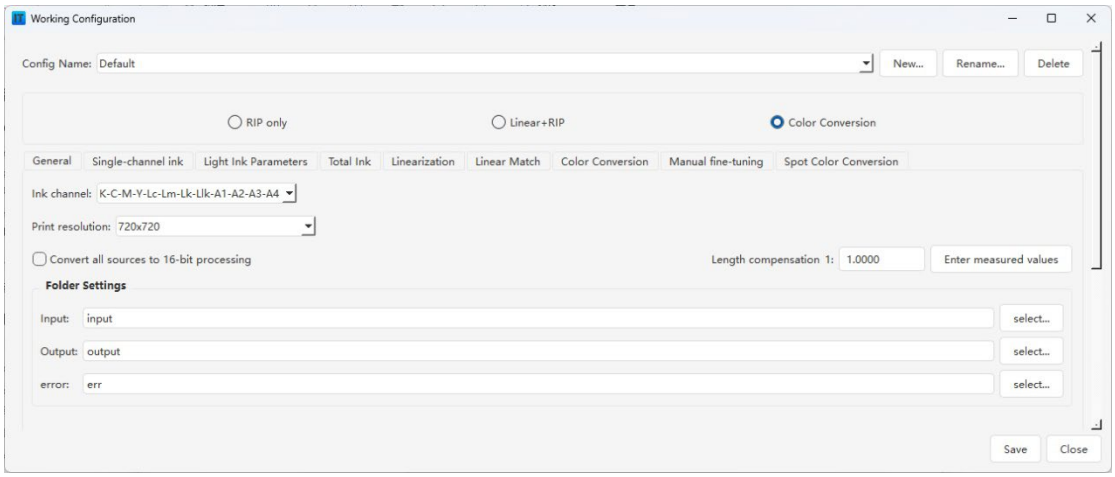
2.1 Task Mode Selection



Choose the appropriate task mode based on the printing hardware and output requirements:

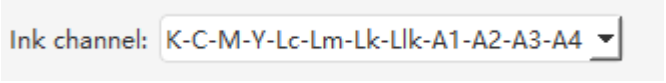
- **Standard RIP Output:** Outputs PRN files for regular printing.
- **Calibration Target Creation:** Generates specific color charts for measurement.

2.2 General Parameter Settings

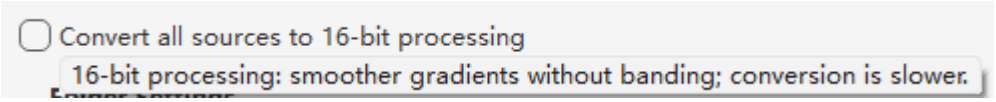


- **Hot Folder Setup:** Define unique **Input**, **Output**, and **Error** folders. It is recommended to use local disks to avoid conflicts.

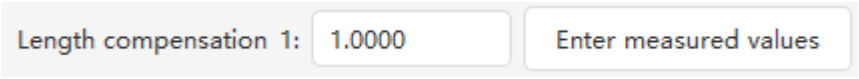
- **Ink Channels:** Select the number of ink channels. Depending on the version, it supports up to 32 channels, including CMYK, 8 light colors, and 20 spot colors (White, Varnish, Glue, etc.).

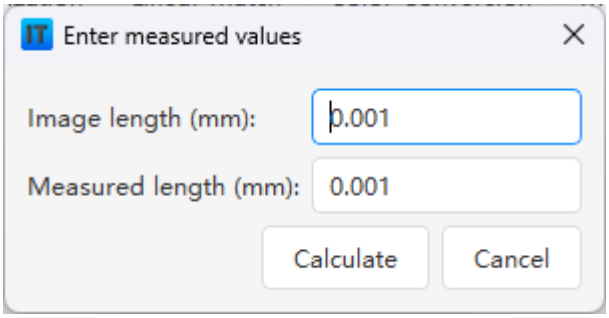


- **16-bit Processing:** Converts all source images to 16-bit internally for smoother gradients (slower but higher precision).

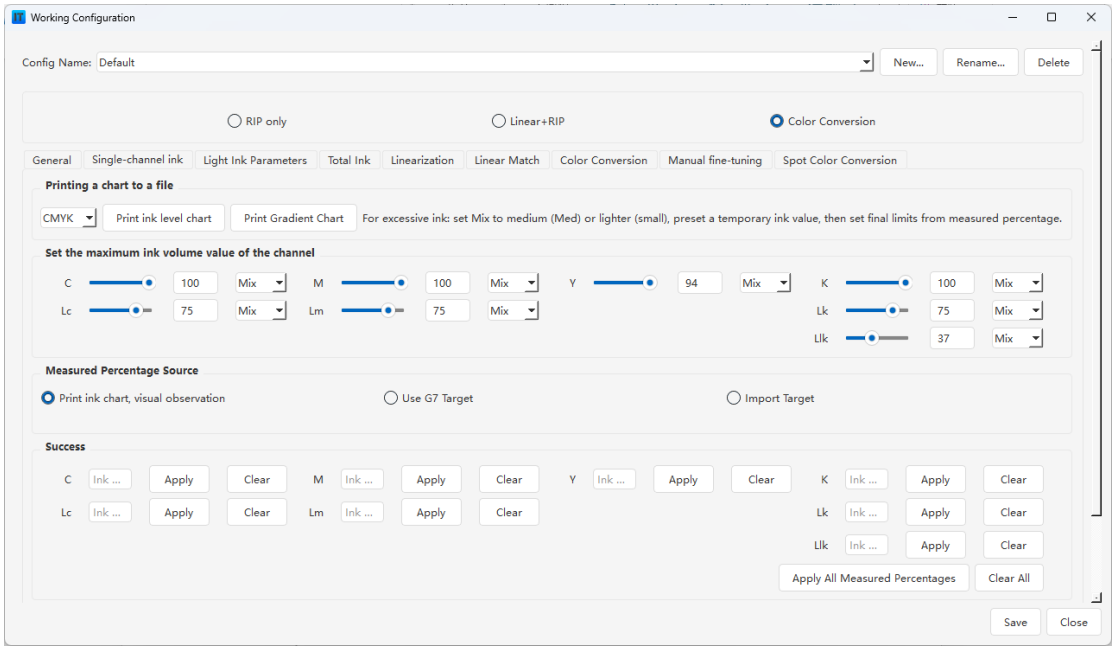


- **Size Compensation:** Enter measured vs. actual print lengths to calculate a compensation coefficient for media stretching.





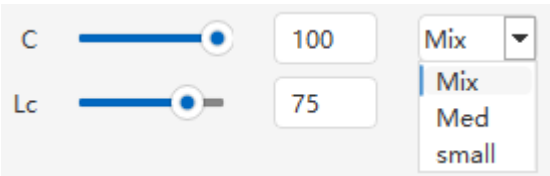
2.3 Single-Channel Ink Limit Control



Determine the maximum ink limit for each primary color channel (C, M, Y, K, etc.) to prevent bleeding and physical ink saturation.

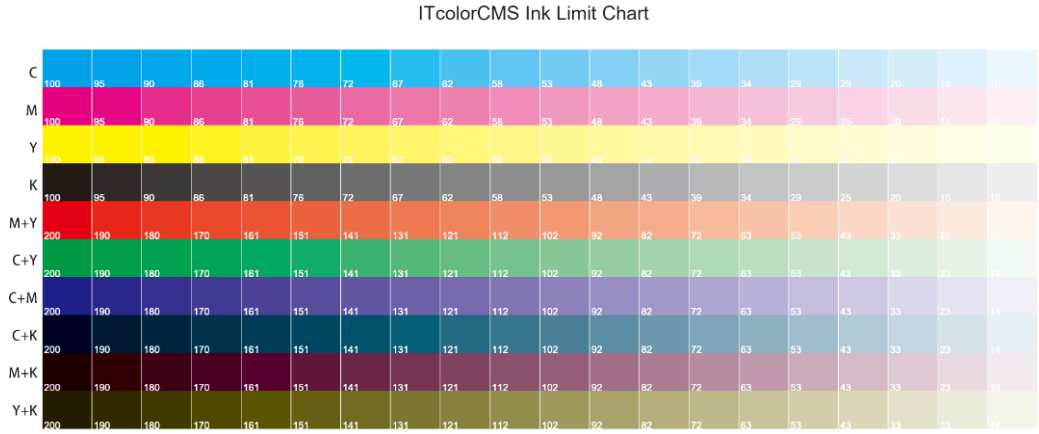
Three base drop combinations are available:

- **Mix:** Large + Medium + Small drops (Maximum ink volume).
- **Med:** Medium + Small drops.
- **Small:** Small drops only (Minimum ink volume).

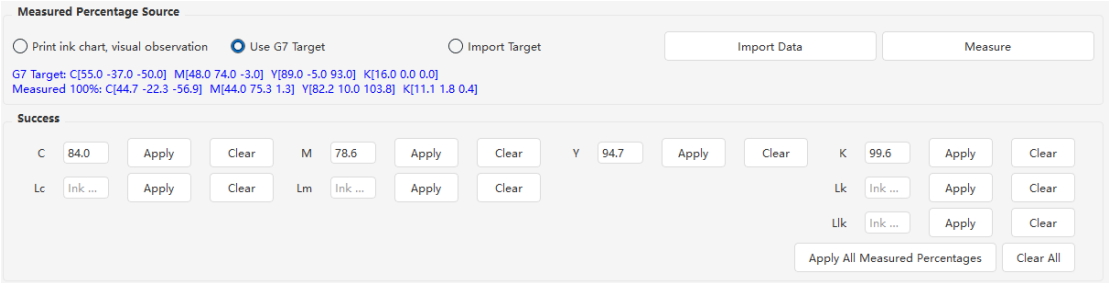


Operation Steps:

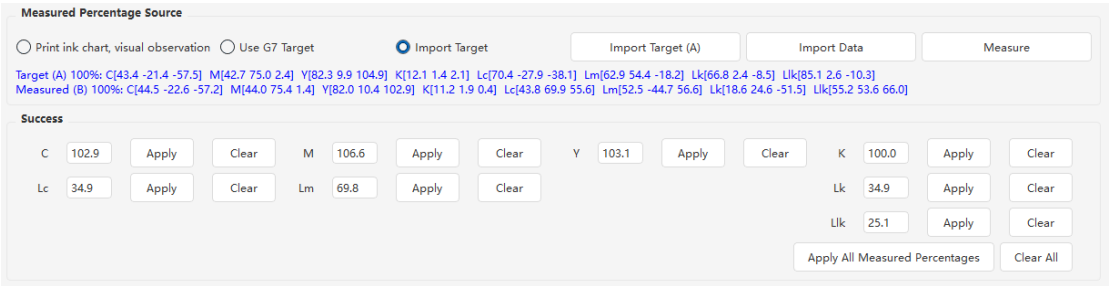
1. Click "Print Chart" to output the single-channel ink limit target.
2. Observe the drying and saturation of the printed blocks.
3. Select the critical point value (before bleeding starts) and input it into the software.



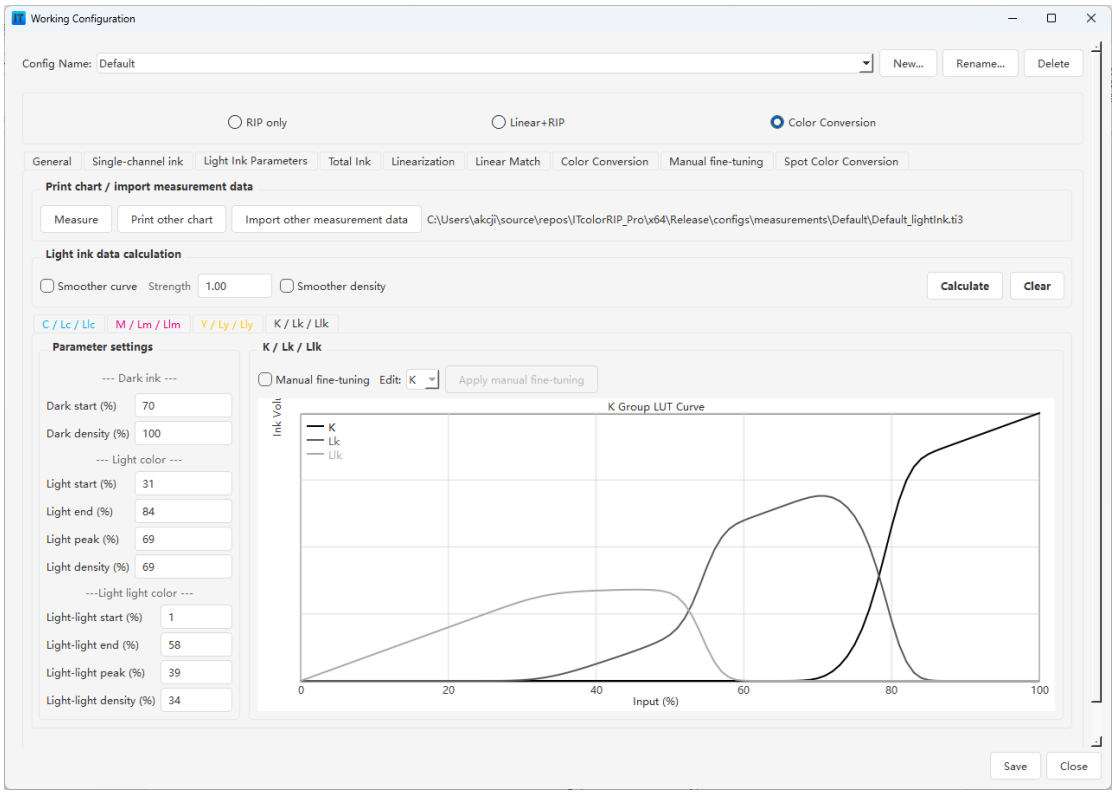
G7 Standard Calibration: Supports importing CIELab data in ProfileMaker format, and the software will recommend a single-pass ink volume based on the G7 standard, with an expansion factor recommendation of 1.05 to reserve color space.



Import target calibration: Import other device CIELab data, and the software recommends a single channel ink amount for its channel density.

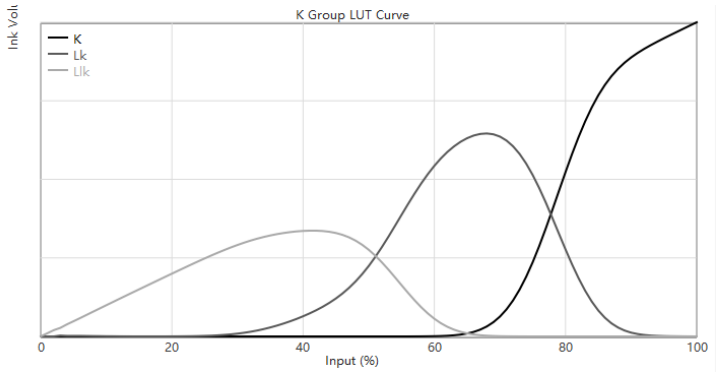


2.4 Light Ink Separation Parameters (Light Ink Parameters)

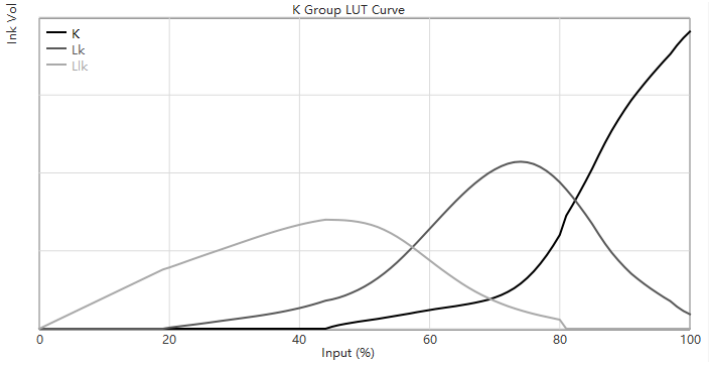


For configurations with light inks (e.g., Lc, Lm), the software calculates separation curves.

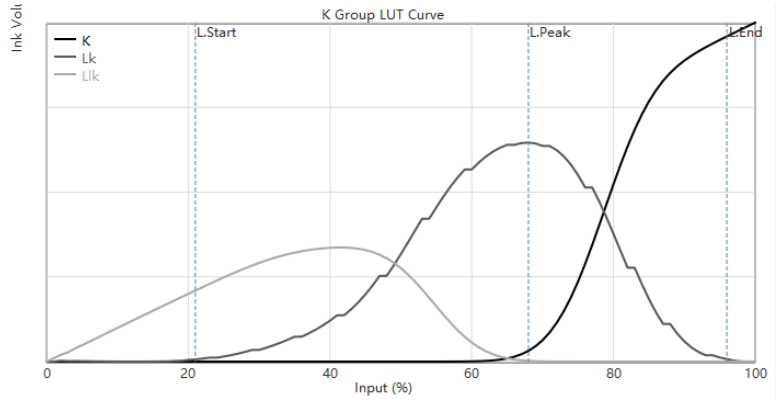
- **Default Calculation:** Automatic separation based on measured density.
- **Smooth Curve:** Mathematical smoothing (0.0 to 1.0 intensity).



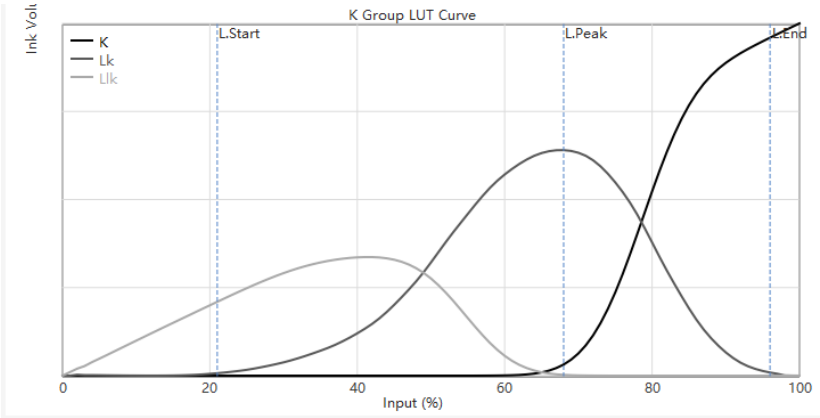
- **Smooth Density:** Secondary density-based smoothing.



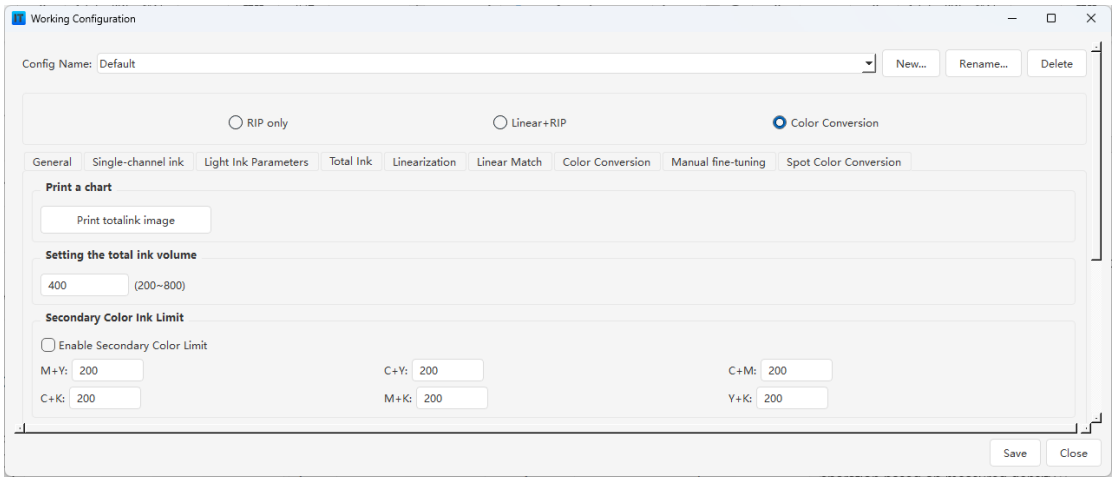
- **Manual intervention:** Supports manual adjustment of the start, end, and peak of the curve.



After adjustment, you need to click "Apply manual fine-tuning" to recalculate the continuous function.

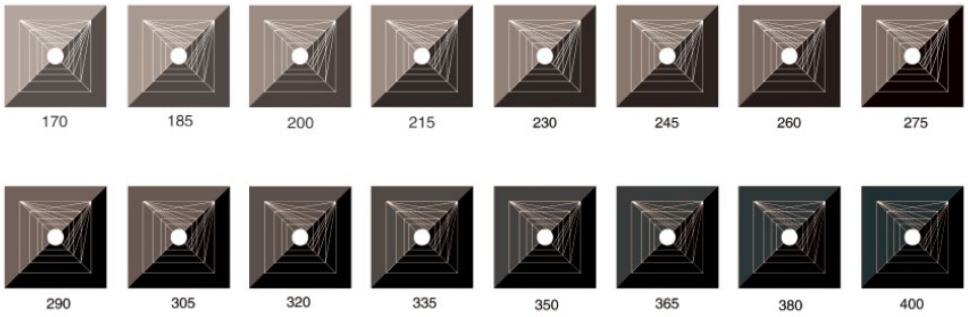


2.5 Total Ink Limit (TIL) and Secondary Color Control

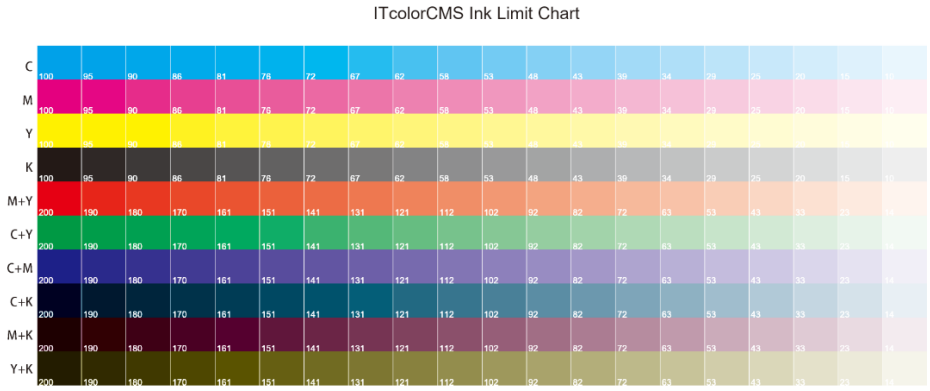


Controls the maximum total amount of ink deposited on the substrate when multiple channels overlap (e.g., 400% for CMYK reduced to 260%-300%).

- **Total ink test chart:** By printing the total ink test chart, the maximum inkjet limit is determined under the premise that no ink flow, ink is clear, and the fine lines are clear.

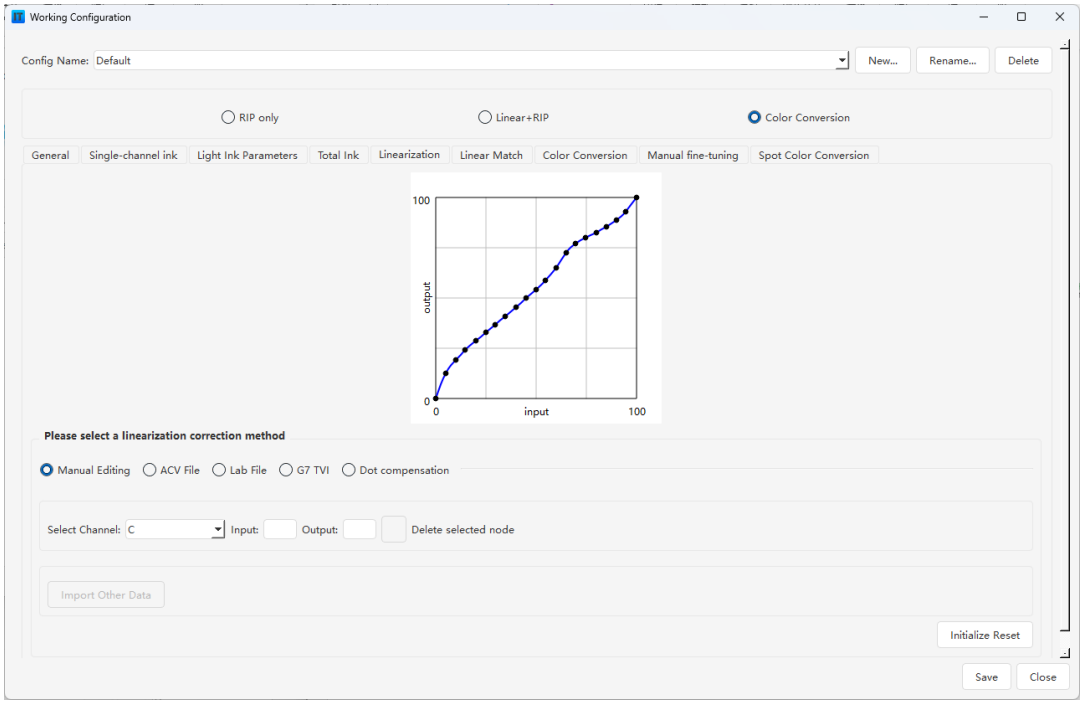


- **Two-color:** Ink volume restrictions can be further imposed on secondary colors (such as CM, MY, etc.).

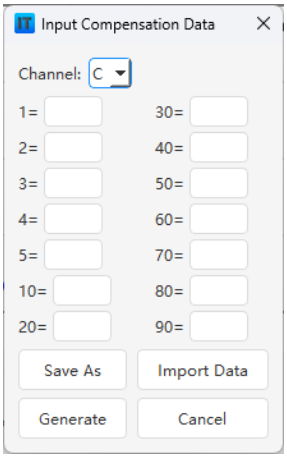


Two-color: Select the maximum ink value that will not bleed or erase small text.

2.6 Linearization Calibration (Linearization)

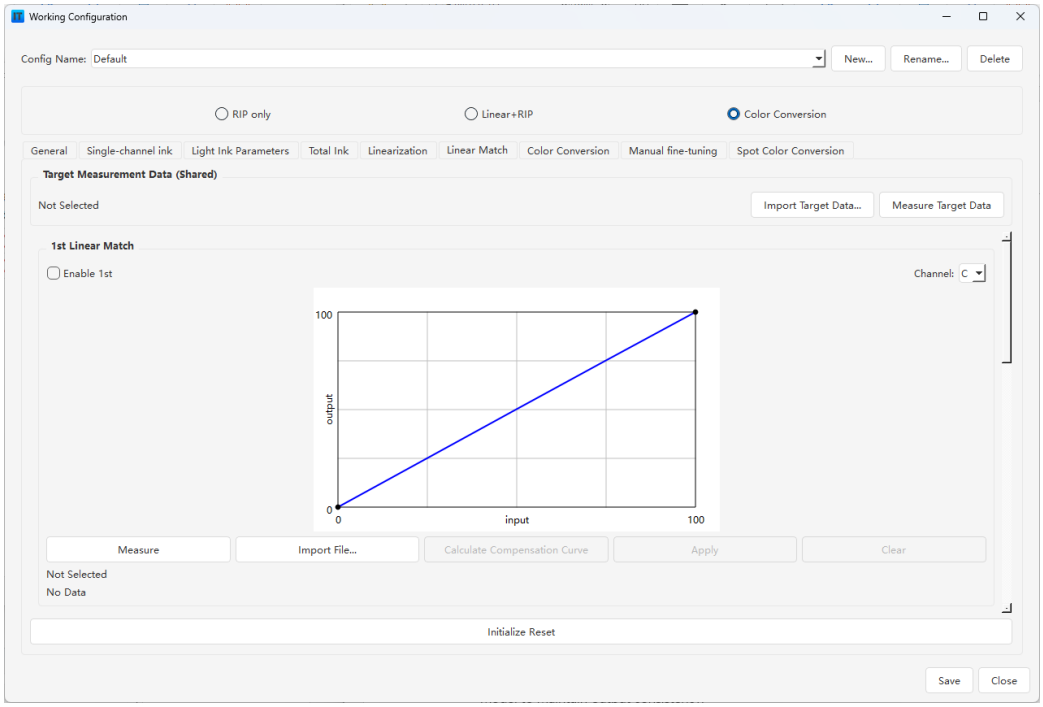


- **ACV Curve Integration:** Supports direct import of .ACV curve files generated by Photoshop.
- **Multi-channel Linearization:** Supports simultaneous linearization calibration of up to CMYK + 11 spot colors.
- **TVI Control:** Supports curve optimization based on G7 dot gain (TVI), making print quality more in line with printing industry standards.
- **Dot Compensation:** Allows input of physical dot data measured by a plate measuring instrument to automatically generate an inverse compensation curve.



- **Manual editing:** You can manually modify the input and output values of any node.

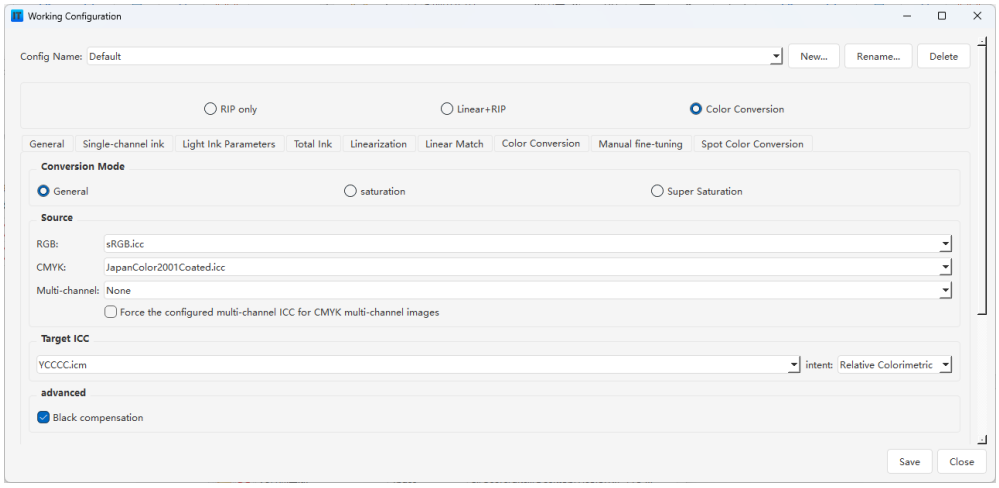
2.7 Linear Matching



Synchronizes the color characteristics of different printers or different batches of the same model to maintain output consistency.

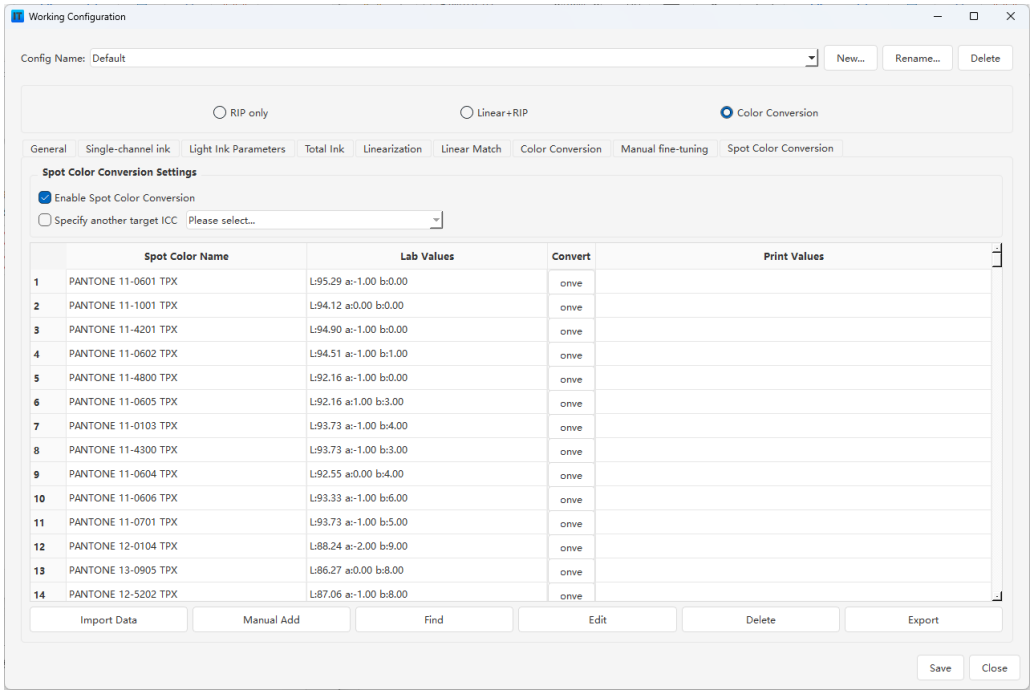
The decision to enable a second or third match can be made based on the match result and the average color difference. When the average color difference $\Delta E < 1$, it can be considered that a high-precision match has been achieved.

2.8 Color Conversion and ICC Management



- **Conversion Modes:** Offers three modes: "Normal (Perceptual/Relative Chroma, etc.)," "Saturation," and "Supersaturation (ITcolor's proprietary algorithm)."
- **Multi-channel TIF Processing:** Supports conversion via target ICC; channel conversion depends on whether spot colors are enabled. Alternatively, it allows for forced application of specific multi-channel ICCs for full-channel mapping.
- **DeviceLink Support:** Allows defining pure color preservation (e.g., K100 does not participate in color separation), resolving issues such as small black text with noise or impure yellow channels.

2.9 Spot Color Conversion

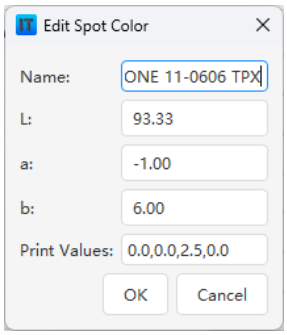


Supports conversion through the color name index (Name-based lookup).

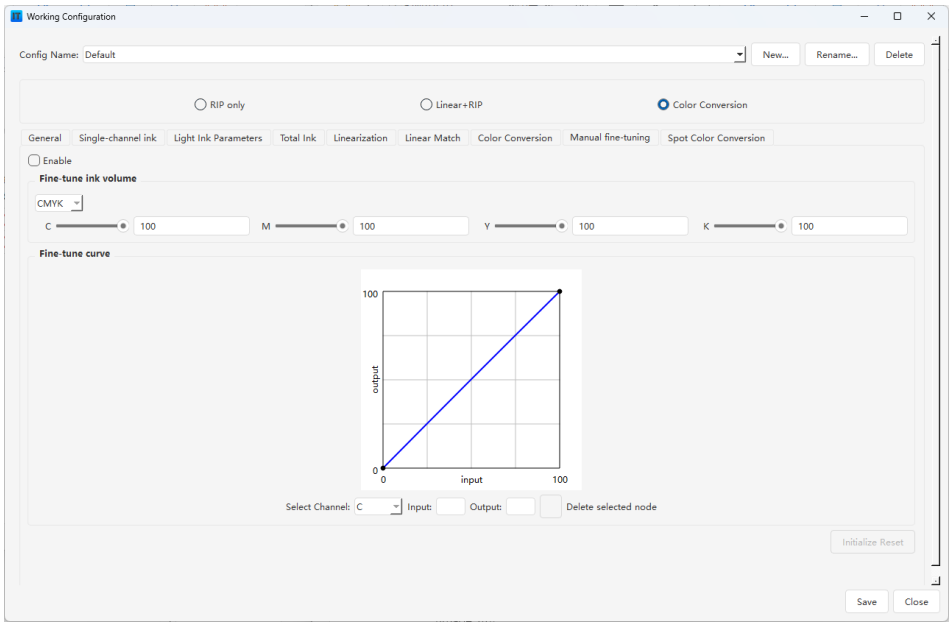
- **Input source:** Supports importing .ase (Photoshop), . txt (Pantone Manager) or create it manually.

- **Specify other target ICC:** When the color conversion target is DeviceLink, the ICC library for the spot color query must be specified separately here.

You can edit the existing spot color values, fill in the actual print values, and export them to the spot color conversion library.

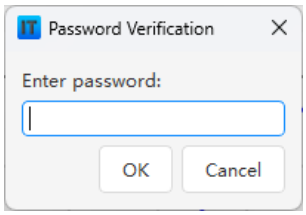


2.10 Manual Fine-Tuning



- **Function description:** Adjust the ink volume or curve of each channel without changing the existing linearization.
- **Note:** The number of channels automatically matches the ink level setting for a single channel. In RIP Only Mode, the number of channels can be selected manually.

2.11 Password Verification



Protects core configuration parameters from unauthorized modifications.

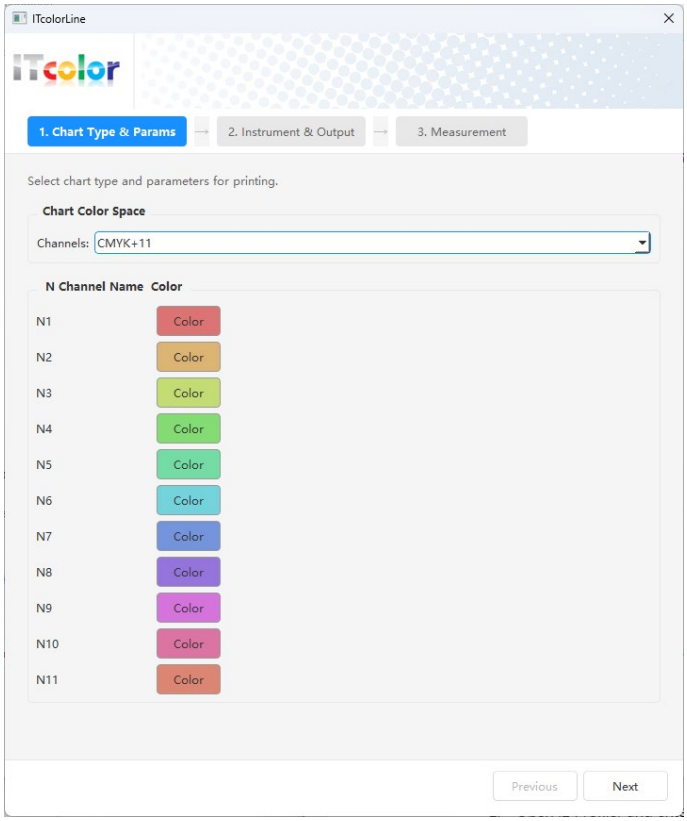
The password is：000000

Appendix:

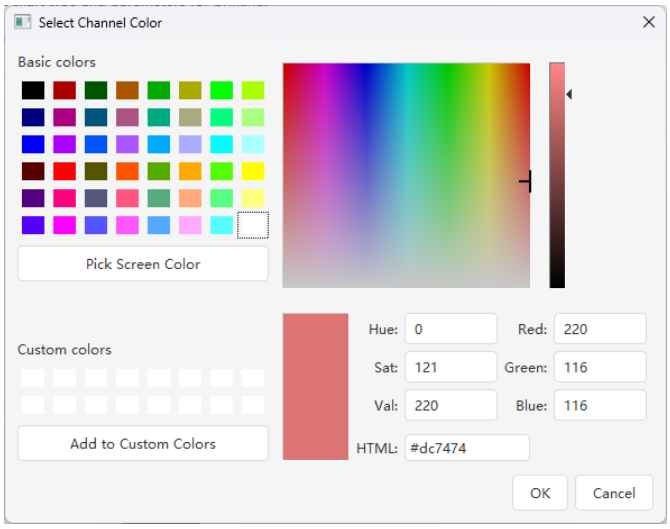
A1. Using ITcolorRIP Built-in Measurement

[Image 15]
Users can perform integrated measurement directly within the software without switching to third-party tools.

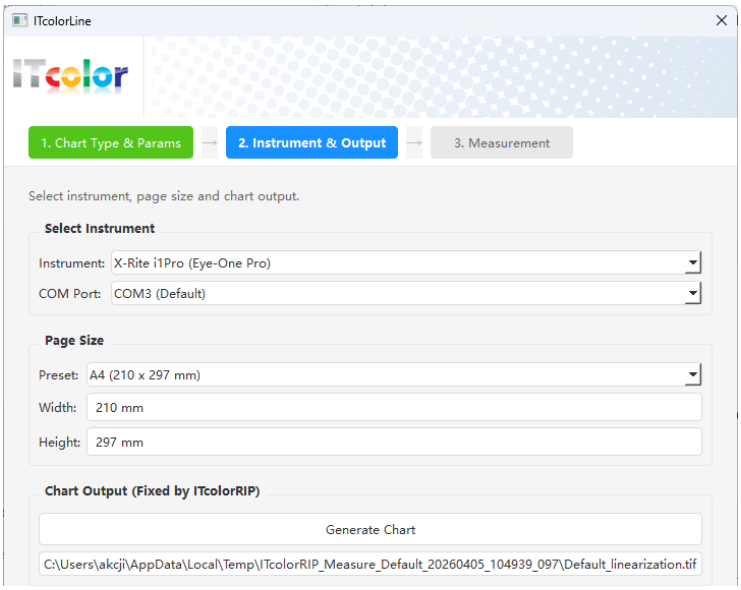
1. Color Table Color Space: Select the corresponding number of CMYK+ spot colors, ITcolorRIP measurement supports up to CMYK+ 11 spot colors or light colors.



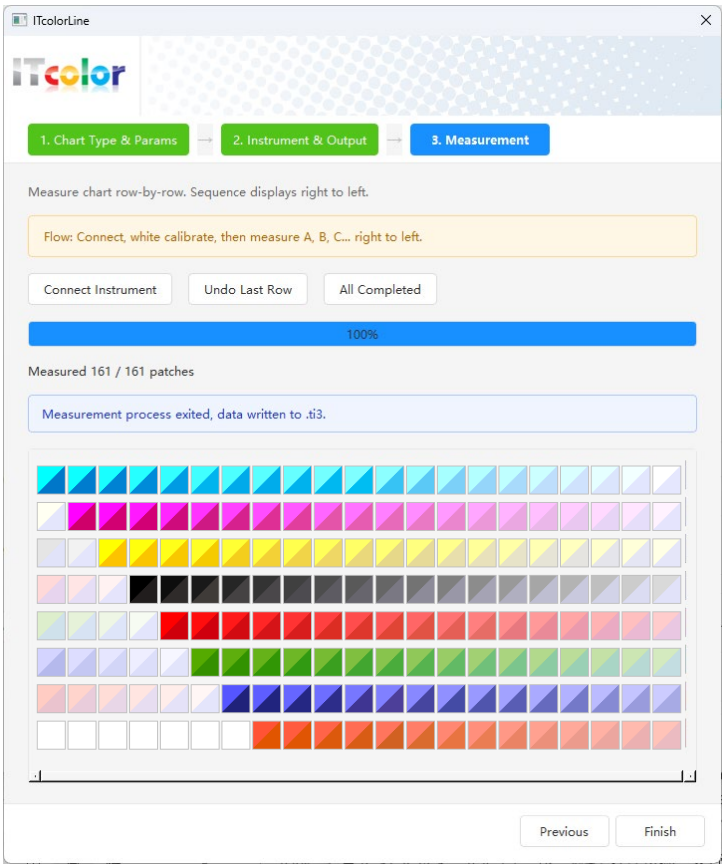
2. Spot color can be selected for screen simulation display, please choose the approximate hue according to the actual use of spot color ink.



3. Select instrument and output: Support I1 PRO 1 2 3, other instruments please use the respective software to measure and import the measurement data.



4. CMYK+4 spot color (red, green, blue, orange) after measurement.



(Note: ITcolorRIP calls the ArgyllCMS measurement program and supports I1 Pro 1/2/3 generations.) If the driver cannot be installed, it can be done by importing data.)

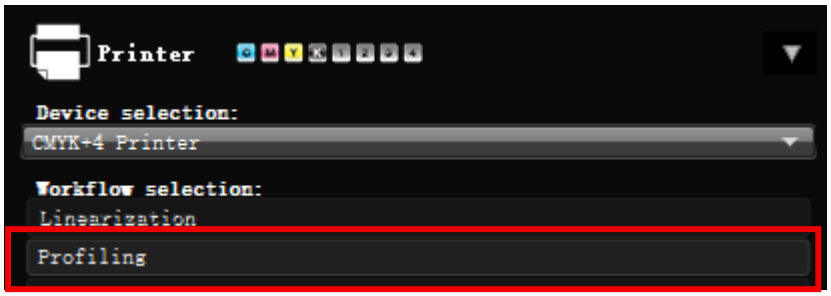
A2. Collaborative Operation with I1 Profiler

Users can leverage the .cxf format color chart templates in the "Linear" folder to generate measurement charts in I1 Profiler. The measured CIELab.txt data can be directly imported into ITcolorRIP for ink control and linearization.

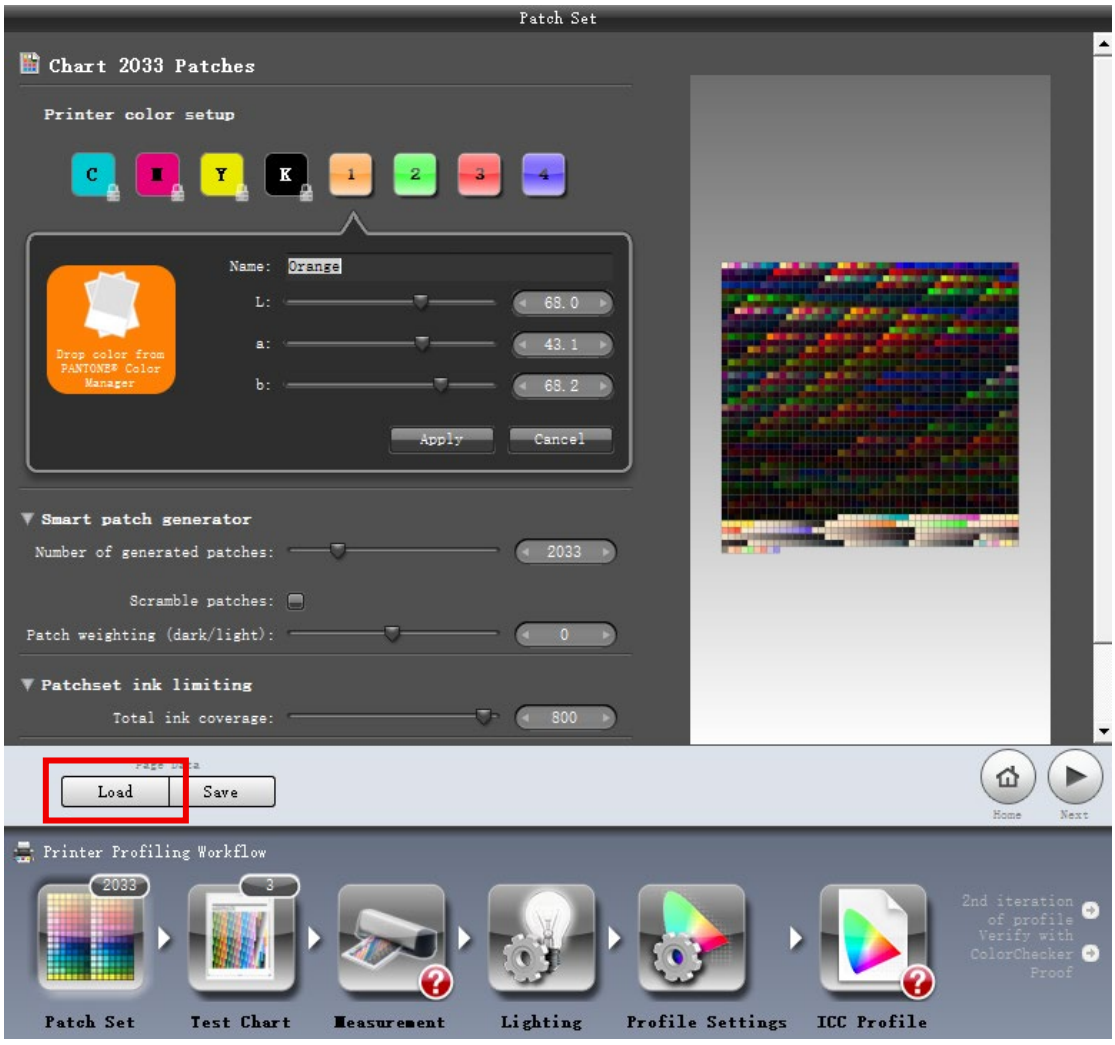
Steps:

1. Open i1 Profiler and enter **Advanced Mode**.

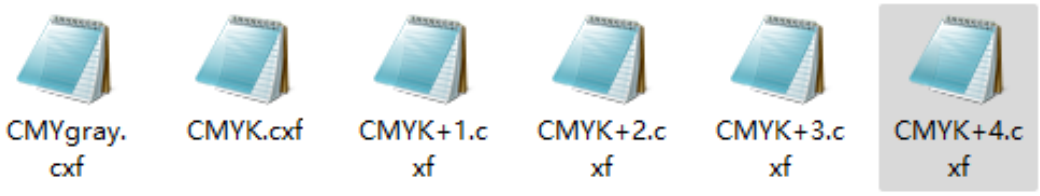
2. Select the number of print channels (e.g., CMYK+4), then select **Color Management**.

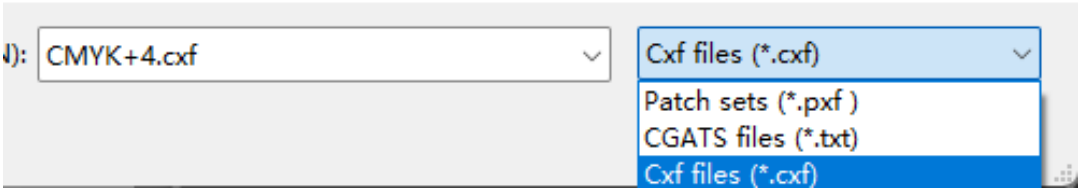


3. In the Patch Set, select **Load**.

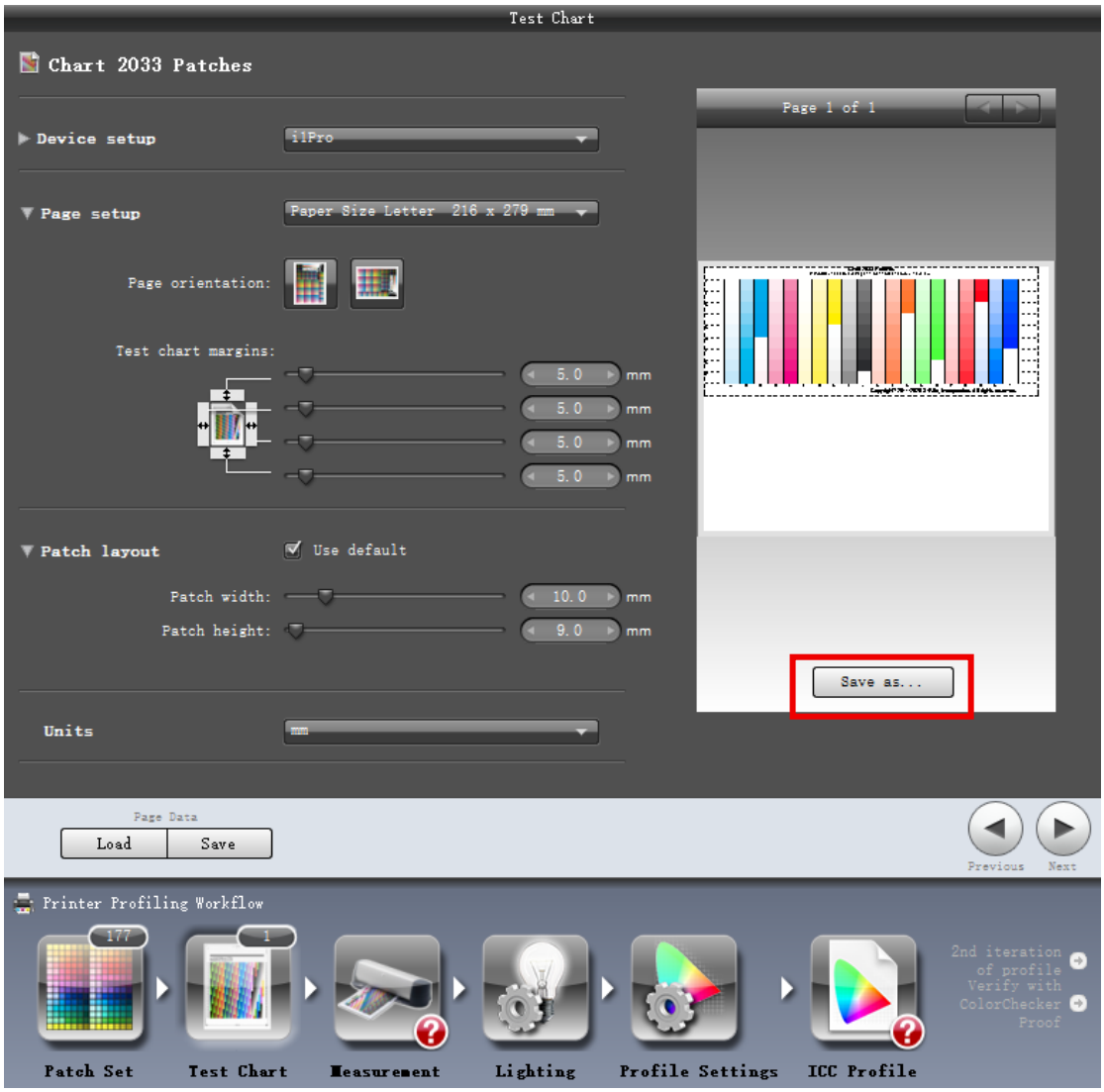


4. Load the .cxf file (e.g., CMYK+4.cxf).

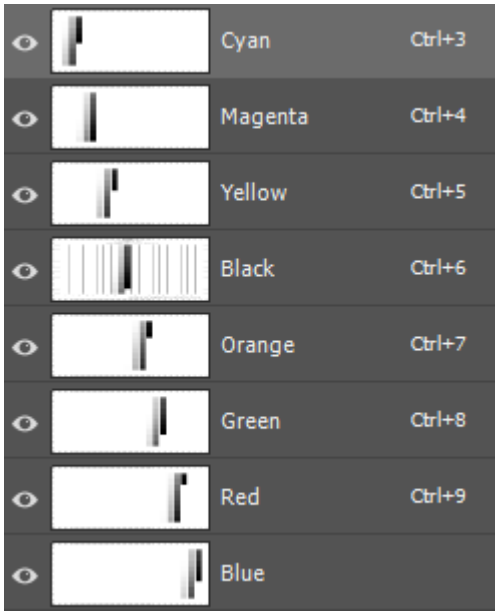




5. Set up the spectrophotometer (i1, i1 2, i1 3, i1 io, i1 isis, etc.).



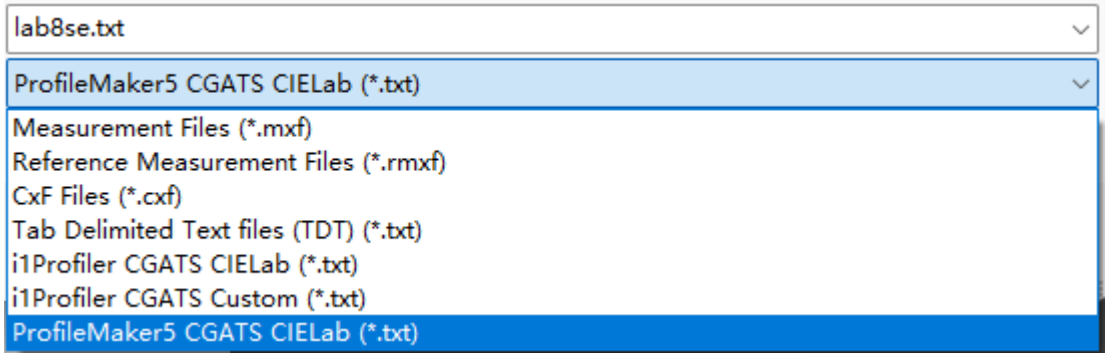
6. Save the chart as EPS, convert to CMYK mode in Photoshop, and save as TIFF.



(Note: CXF is a color exchange format, and any spectrophotometer software can input this format to generate a color chart file suitable for your own use.)

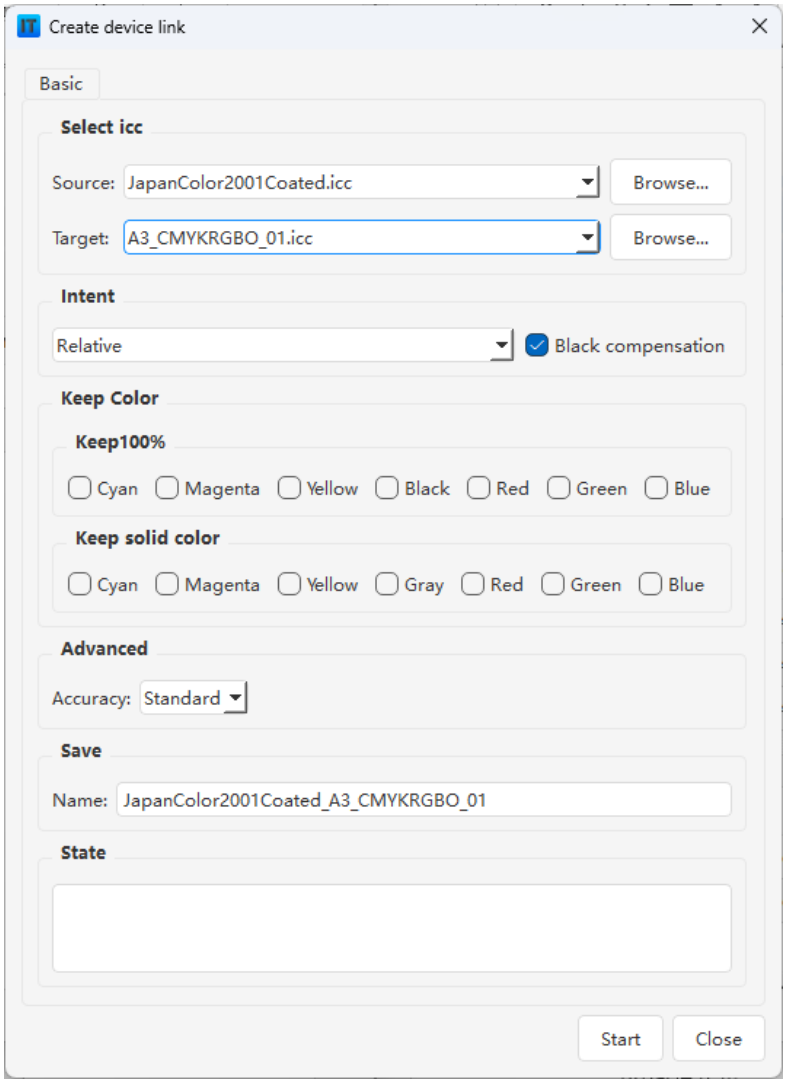
7. After printing and measuring, save the data in the measurement interface.

8. Save as a **ProfileMaker5 CGATS CIElab** formatted TXT file.

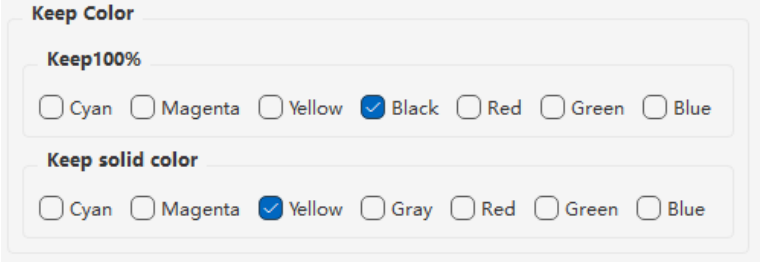


A3. Creating DeviceLink Profiles

Under the ITcolorRIP File menu, there is an option to **Create Link**, which launches the DeviceLink profile creation tool.



Unlike traditional ICC conversion, the DeviceLink profile generated by this software can achieve direct mapping of RGB-multi-channel and CMYK-multi-channel, effectively maintaining the channel purity of the original and improving the vividness and transparency. This is useful for printing fine black text, keeping certain channels pure (such as the Y channel) A common choice, keep K100 unchanged and keep the Y channel unchanged, as shown in the figure below:

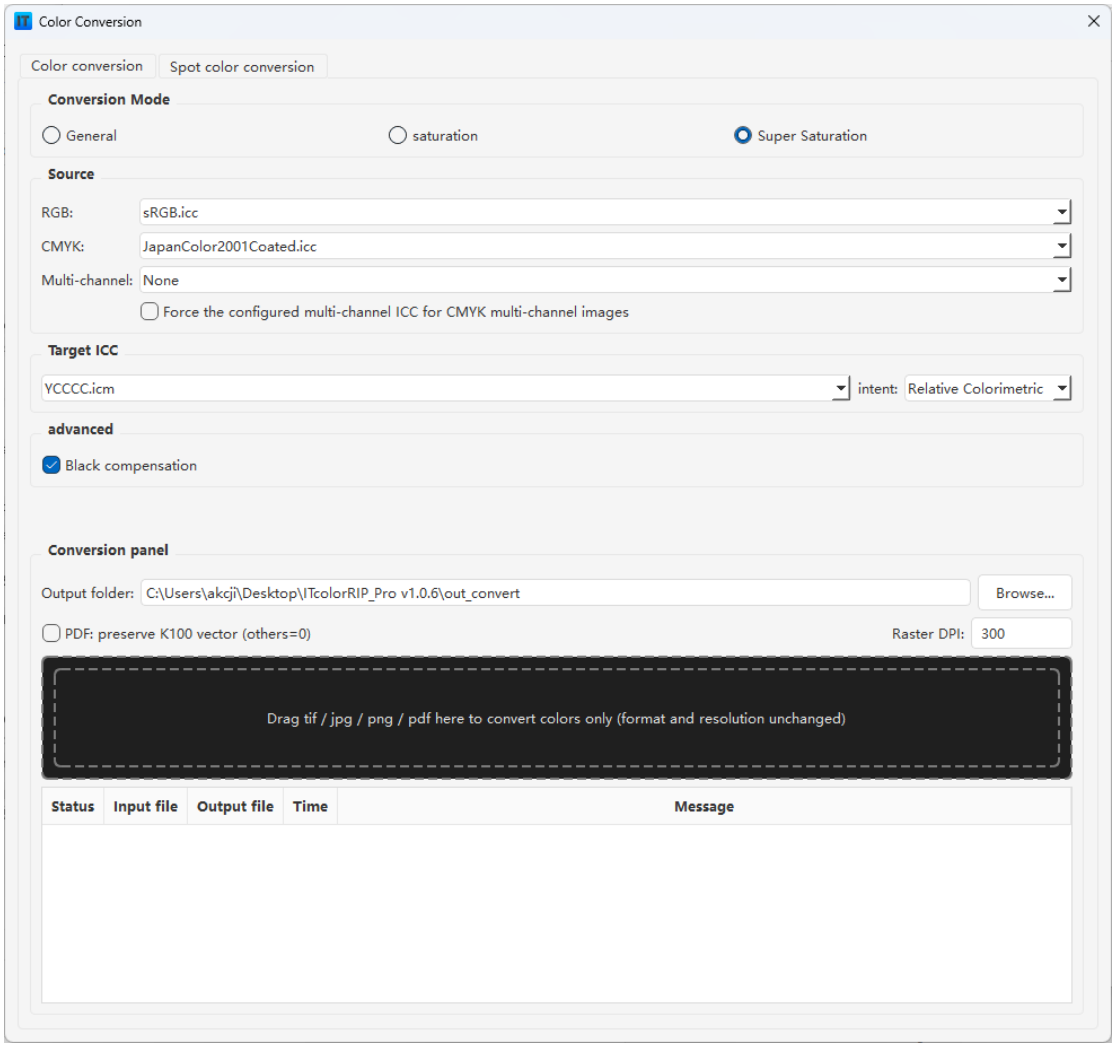


Although RGB-CMYK and RGB-Multi-channel cannot be set to keep K100 or Y pure (because

the data in the RGB mode image is RGB, there is no K or Y, it cannot be maintained), but ITcolorRIP's RGB mode device link can make the image print of RGB source more vivid and transparent.

(Note: If you choose a device connection from RGB source, the image must be in RGB mode, and if you connect a device from CMYK source, the image must be in CMYK mode)

A4. Independent Color Conversion Window



This tool is designed for advanced color management needs and supports color preprocessing in non-RIP processes.

The following color conversions are supported:

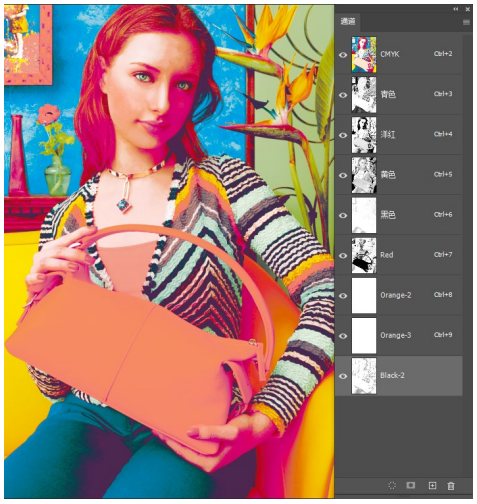
RGB to RGB, RGB to CMYK, RGB to Multichannel, RGB-CMYK Device Link Conversion, RGB-Multichannel Device Link Conversion.

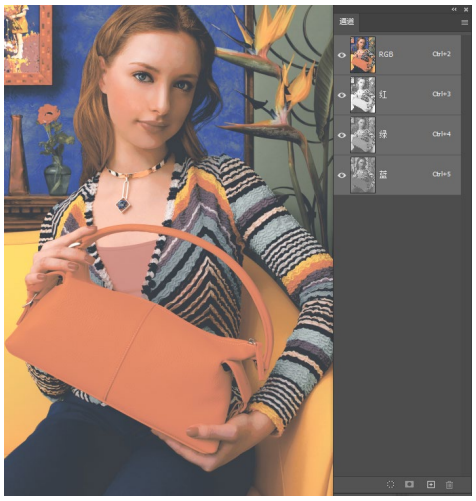
CMYK to RGB, CMYK to CMYK, CMYK to Multichannel, CMYK-CMYK Device Link, CMYK-Multichannel Device Link Conversion.

Multi-channel to RGB, multi-channel to CMYK, multi-channel to multi-channel.

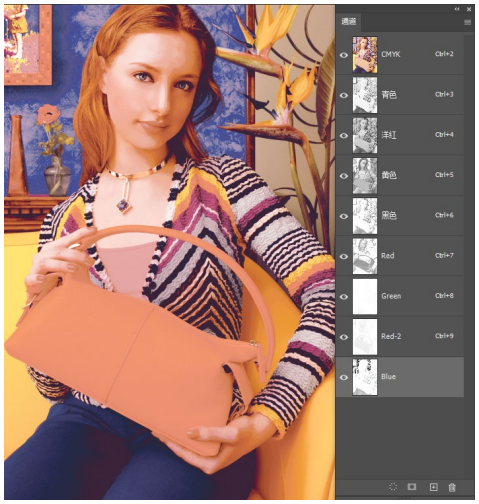
- **Unique features:** Compensates for Photoshop's inability to properly preview multi-channel images like prints, ceramic 8-colors, and more.
- **Application scenarios:** Realize cross-device simulation (such as simulating ceramic printing effects with photo paper and fabric) and soft proofing of multi-channel images.

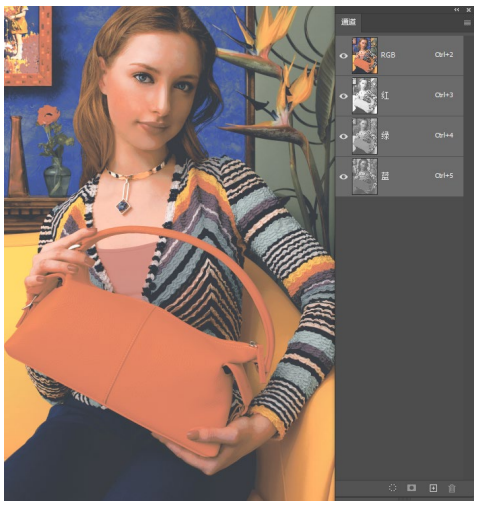
Ceramic 8 colors
Blue/brown/yellow/gray/wrapped red/
wrapped yellow/dark brown/black → ceramic 8 colors are converted to RGB preview





↓ 8 colors of ceramics are converted into 8 colors of fabric printing
CMYK/ Orange/red/green/blue → Printed 8 colors to RGB preview





Release Statement: This manual is for ITcolorRIP Pro and above. Some advanced features may vary by license level.