The printcolormanager Package

User Manual

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Abstract

The printcolormanager is a LaTeX package providing an automated and unified color management workflow for print and digital publications. It allows users to compile the same document into CMYK (prepress), RGB (screen), or Grayscale formats simply by changing a single package option.

Contents

1 Introduction

While LaTeX's built-in xcolor package is powerful, handling different color spaces consistently for professional prepress workflows can be challenging. Relying on mathematical RGB-to-CMYK conversions often results in "muddy" or inaccurate printed colors.

The printcolormanager solves this by defining a global target color space and using dedicated macros to explicitly set exact values for each color space, ensuring perfect color fidelity across different media.

2 Loading the Package and Options

Load the package in your preamble (after \documentclass) with the desired target color space option:

```
\usepackage[CMYK]{printcolormanager}
```

Supported options include:

- CMYK or cmyk: Four-color print output.
- RGB or rgb: Three-color digital/screen output.
- gray: Continuous grayscale output (0.0 to 1.0).
- GRAY: Discrete grayscale output (integer scale).
- HSB: Hue, Saturation, Brightness.
- Lab: CIE Lab color space.

3 Defining Custom Colors

The core of this package is the `\definePrintColor` macro. It allows you to specify exact, manual values for a single color across all supported color spaces.

3.1 Syntax

```
\definePrintColor{Name}{RGB}{CMYK}{GRAY}{HSB}{Lab}
```

Example for a custom brand color:

```
\definePrintColor{BrandRed}{210, 40, 40}{0.05, 0.95, 0.90, 0.0}%
{0.55}{0, 80, 80}{50, 65, 45}
```

When compiling, the package checks the global option (e.g., `[CMYK]`) and automatically applies the specific values (in this case `0.05, 0.95, 0.90, 0.0`) without relying on inaccurate automatic conversions.

4 Pure Black vs. Rich Black

In professional prepress, typographic text black must be separated from background black. The package provides two predefined macros:

- `\textcolor{PureBlack}{text}`: Uses `0.0, 0.0, 0.0, 1.0` in CMYK. Ideal for thin lines and text to prevent registration issues on the press.
- `\textcolor{RichBlack}{text}`: Uses `0.40, 0.0, 0.0, 1.0` in CMYK. Adds cyan to create a deeper, darker black for large printed areas.

4.1 Mandatory Parameters and Empty Values

The `\definePrintColor` macro strictly expects **six parameters**. You cannot omit any curly braces; doing so will result in a LaTeX compilation error (*Runaway argument*).

If you do not know or do not wish to specify certain values (for example, HSB or Lab), you must still provide the empty braces. You can either use fallback values or leave the brackets empty:

```
% Correct usage with empty HSB and Lab values:
\definePrintColor{ExampleColor}{255,0,0}{0,1,1,0}{0.5}{}{}
```

Warning: If you leave a parameter completely empty (e.g., `{}`), ensure that you never compile the document using the corresponding global package option (in this example, `[HSB]` or `[Lab]`). Passing an empty value to the underlying `xcolor` engine will cause an error! For maximum safety, it is recommended to provide valid numerical values for all six parameters.