

Colorimetric scan, display, and print for archiving based on the ergonomic International Standard ISO 9241-306:2018 for work places

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Abstract

ISO 9241-306:2018 shows colorimetric methods for output optimization of displays and projectors at work places. The optimization for equal spacing of colour series, visibility and readability is intended.

There are input linearization methods for scanners and photography and output linearization methods for displays, printers, and offset print. By a start output of a digital ISO-test chart with 729 colours (9x9x9 rgb^* values) for example the loop "ISO standard file \rightarrow ISO print \rightarrow ISO scan \rightarrow ISO file" is closed and the rgb^* colour data of the original ISO file are approximately reproduced at the end of the loop. For any hue there is a linear relation in both directions between the rgb^* and the CIELAB LCh^* data. The closed loop and the linear relations are important properties for archiving.

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Motivation and Problem

The ideal reproduction for archiving occurs, if the loop:

1. ISO-standard file \rightarrow ISO print \rightarrow ISO scan \rightarrow ISO file is closed, and the rgb^* values in the *start and final file are equal*.
2. ISO-standard print \rightarrow ISO scan \rightarrow ISO file \rightarrow ISO print is closed, and the LCh^* values in the *start and final print are equal*.

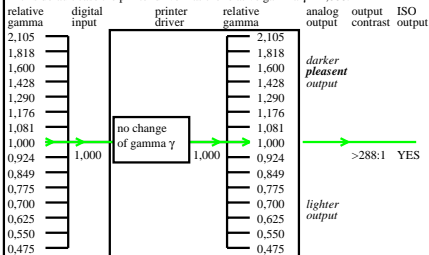
Both goals are approximately possible, if the output linearization method *OLM_16* is applied, see

Richter, 2016, Output linearization method OLM16 for displays, printers and offset: http://farbe.li.tu-berlin.de/OUTLIN16_01.PDF (similar to CIE R8-09:2015)

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Colorimetric workflow: digital input \rightarrow printer \rightarrow analog output based on the ergonomic Standard ISO 9241-306:2018 for work places

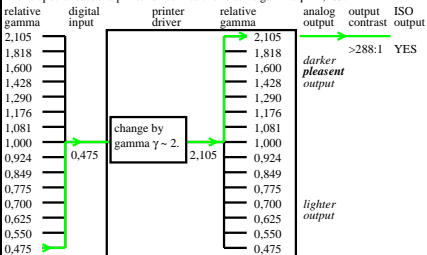
In this default case the printer driver has the relative gamma $\gamma = 1,000$.



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Colorimetric workflow: digital input \rightarrow printer \rightarrow analog output based on the ergonomic Standard ISO 9241-306:2018 for work places

In this special case the printer driver has the relative gamma $\gamma = 2,105$.



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