

Data for printing press makeready according to JapanColor

Instructions for SpectroEye & ColorQuality

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1 Introduction

X-Rite, Incorporated, a leading global provider of color management and color measurement solutions, is simplifying makeready of printing presses by standard color values utilizing SpectroEye. Since its introduction in the printing industry, SpectroEye has become a standard for color measurements.

X-Rite is offering **spectral data** for the JapanColor CIELab values. The spectral data enables SpectroEye to work according to the standard while still offering familiar density values as well as the exclusive “Best Match” function for ink control.

1.1 Spectral data

The user can use spectral data instead of L*a*b* values to realize considerable time and cost savings and to increase the quality of the printing results significantly.

- Without any additional training, the printer can work using the density values he knows and trusts, whilst the pass/fail indicator is given as color measurements conforming to the JapanColor standard.
- Before printing, users can utilize the unique “Best Match” function to determine whether modifying the layer density or adding transparent white will achieve a sufficiently accurate match with the reference color. This means users can save a lot of time and money thanks to rapid assessment of the color quality.
- The “BestMatch” function can also be used to detect contamination early on and to indicate this in the language of the printer. This means that adjustments can be made at the earliest possible stage, before the ink color drifts out of the tolerance range and the wrong color shade is used for printing.

1.2 Data formats

Data are supplied as a downloadable job file for the SpectroEye and as jobs for the ColorQuality application. 4 files contain the data for the different paper types:

All data are available in **XRGA**

Standard Data	File name	Color name	Ink	Paper type	Backing	Physical filter
JapanColor2007	J-AC-U10	C-AC-sb-u M-AC-sb-u Y-AC-sb-u B-AC-sb-u S-AC-bb u	Cyan Magenta Yellow Black Substrate	Art Coated Art Coated Art Coated Art Coated Art Coated	substrate substrate substrate substrate black	unpolarized unpolarized unpolarized unpolarized unpolarized
JapanColor2007 (2011 Revised)	J-Co-U11	C-Co-sb-u	Cyan	Coated	substrate	unpolarized
JapanColor2007	J-MC-U10	C-MC-sb-u	Cyan	Matt Coated	substrate	unpolarized
JapanColor2007	J-UC-U10	C-UC-sb-u	Cyan	UnCoated	substrate	unpolarized

1.3 Overview of reference color values

Paper type	Art Coated			Coated			Matt Coated			Uncoated		
Standard	JPC2007			JPC2007 2011 Revised			JPC2007			JPC2007		
Compatibility	XRGA			XRGA			XRGA			XRGA		
	L*	a*	b*	L*	a*	b*	L*	a*	b*	L*	a*	b*
Black	15	2	2	16.3	1.4	2.1	21	1	2	40	2	4
Cyan	54	-38	-48	53.4	-36.4	-51.6	56	-36	-48	63	-28	-36
Magenta	47	74	-6	46.3	76.1	-2.9	49	73	-6	57	56	-5
Yellow	88	-4	95	88.6	-5.9	93.6	90	-5	92	90	-4	66
Substrate	93	1	-1	93	1	-2	94	1	-1	95	1	-1

Conditions: 45°/0° measurement geometry; D50 illumination; 2° standard observer

2 Loading jobs into SpectroEye

With the 2010/2011 data, only SpectroEye Firmware Version 3.11 or later shall be used.

2.1 Downloading the required files

For the direct loading of the download files into SpectroEye, the software DownloadUtility, version 1.50 or later is required. Proceed as followed on the X-Rite website:

1. Go to www.xrite.com/spectroeye
2. Select "Support"

The following files need to be loaded from this website:

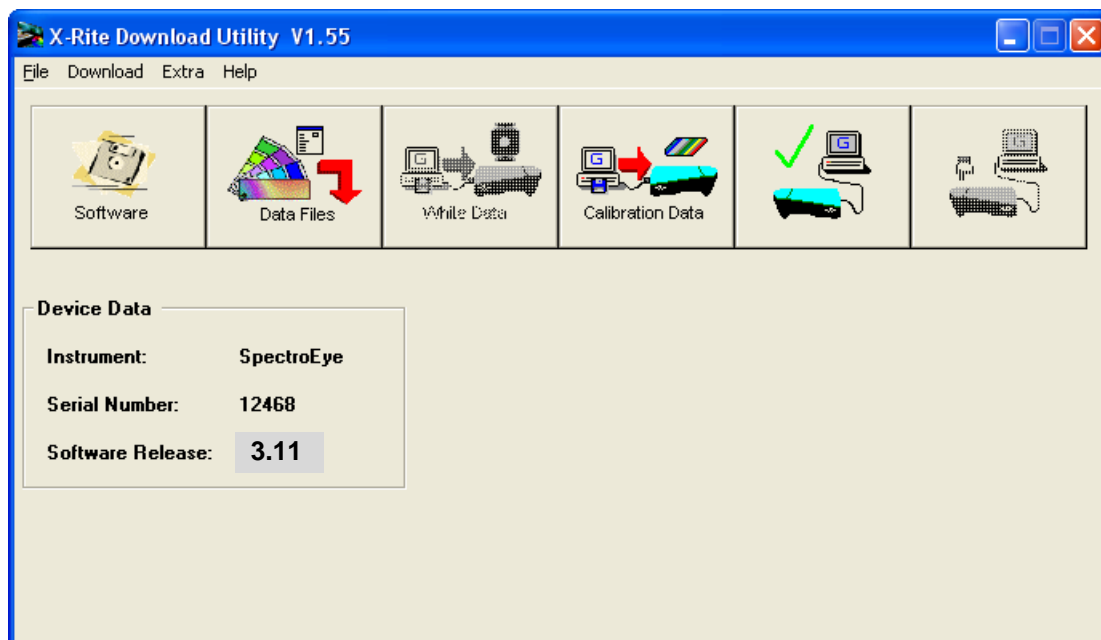
- DownloadUtility
- SpectroEye Firmware
- JapanColor Data

2.2 Installation and setup of Download Utility

- Install Download Utility
- Open Windows Explorer and select DownloadUtility program folder
- Move the latest SpectroEye firmware version 3.11 (File: **Eye311.esw**) or later into the folder "**Data**".
- Move JapanColor files **J-AC-U10.JOB...** **J-UC-U10** to the folder "**DataBase**".

2.3 Firmware update

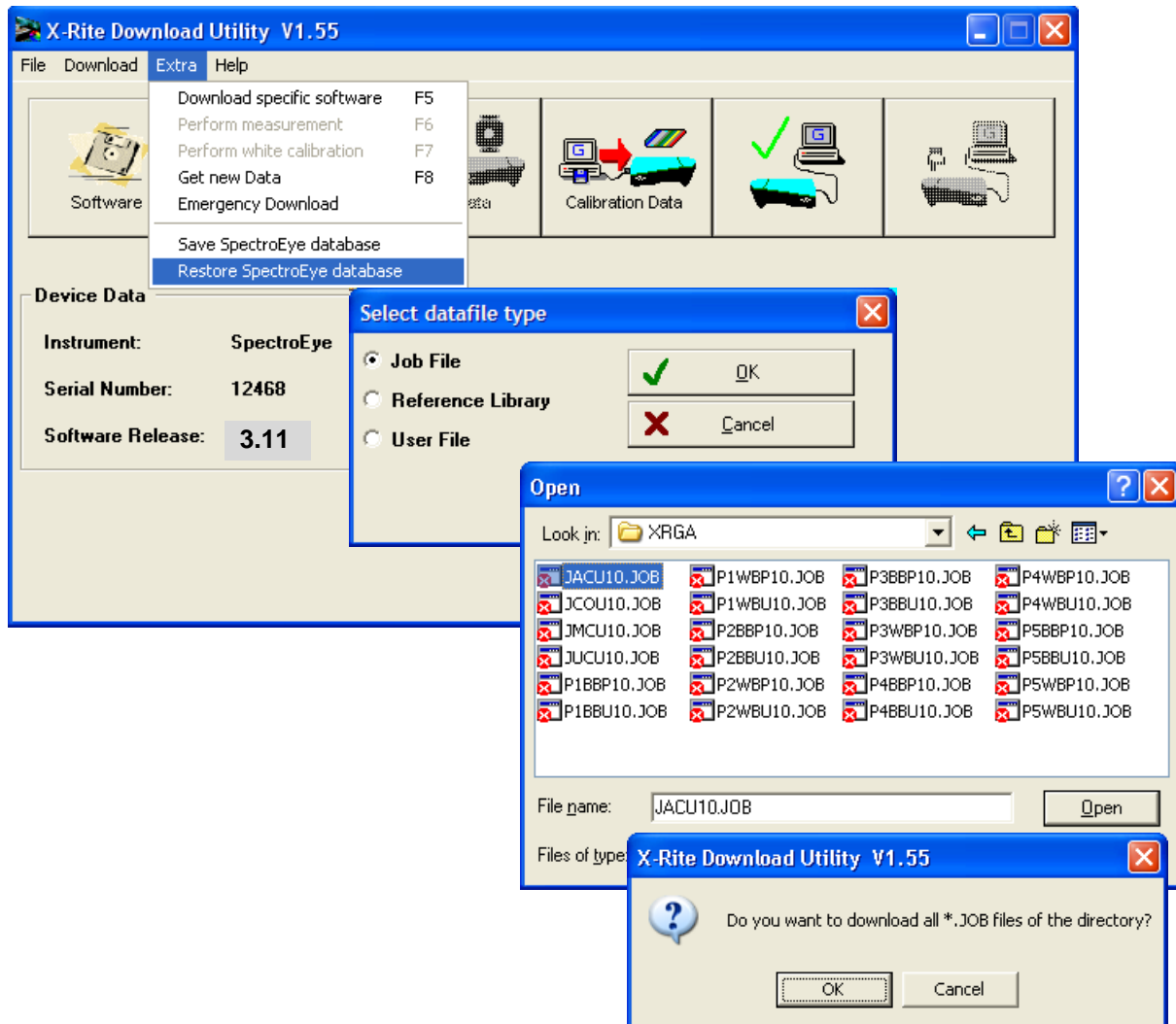
- Connect the SpectroEye to the PC and start Download Utility.
- The instrument is found and the latest firmware version is displayed.
- Press the “Software” button and run the firmware update.



2.4 Loading the JapanColor data file

Load a JapanColor data file into the SpectroEye:

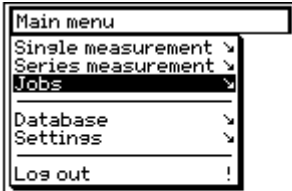
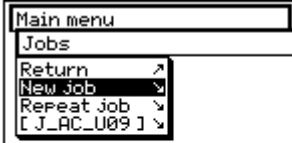
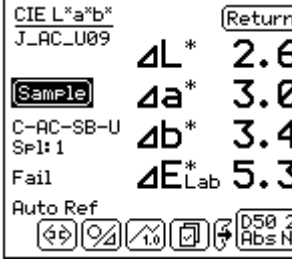
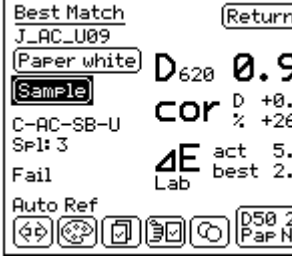

→ “Download Utility” – “Extra” – “Restore SpectroEye database” – “Job File”



You can either transfer to the SpectroEye only one file or all files of a directory.

3 Setup of the printing machine with the SpectroEye

Proceed as follows with the SpectroEye:

	<p>In the main menu, select “Jobs” mode.</p>
	<p>Select a JapanColor job</p> <p>The instrument automatically selects the proper settings for filter, illuminant, observer and white reference. (except Density Filter in BestMatch Function, see below)</p>
	<p>Measured cyan sample is <u>automatically</u> compared to the reference value for cyan “C-AC-sb-u” and the color difference displayed.</p> <p>However, it is better to select the “Best Match” measurement functions as these will also display suggestions to correct the values.</p>
	<p>The Best Match function is a combination of colorimetric and densitometric calculation and shows immediately which corrections needs to be made to achieve the closest possible match with the reference values. To display the density values for CMYK, select the 2. toolbar button “Density filter” and there in the menu select “Automatic”.</p> <p>For example, → Correction: print approx. 26% thicker, i.e. the thickness needs to be increase by approx. 26% or by $D = 0.16$. → Evaluation: The current color difference is $\Delta E_{curr} = 5.36$. The best possible can be achieved $\Delta E_{best} = 2.14$.</p>
	<p>When exiting the job, answer “No” to the question as to whether you want to save the job data, so that the device memory is not overloaded.</p> <p>However, if the measurement values need to be evaluated, they obviously do need to be saved. The software ColorQuality can then be used for the evaluation (see next chapter).</p>

The selected settings make it fast and easy to achieve the best possible preset references. The corrections which need to be made are displayed immediately or that other corrections in the combination of the ink and print media substrate would not produce better results. This means that time and therefore costs are saved each time the printing machine is set up.

4 Working with ColorQuality

Increasing numbers of printers are confronted with customer demands to log color measurement values and thus to demonstrate the quality of the printed matter.

The SpectroEye is the ideal tool for this when used in combination with the software ColorQuality.

With the 2010/2011 data, only ColorQuality 6 or later shall be used.

4.1 General information on the software ColorQuality

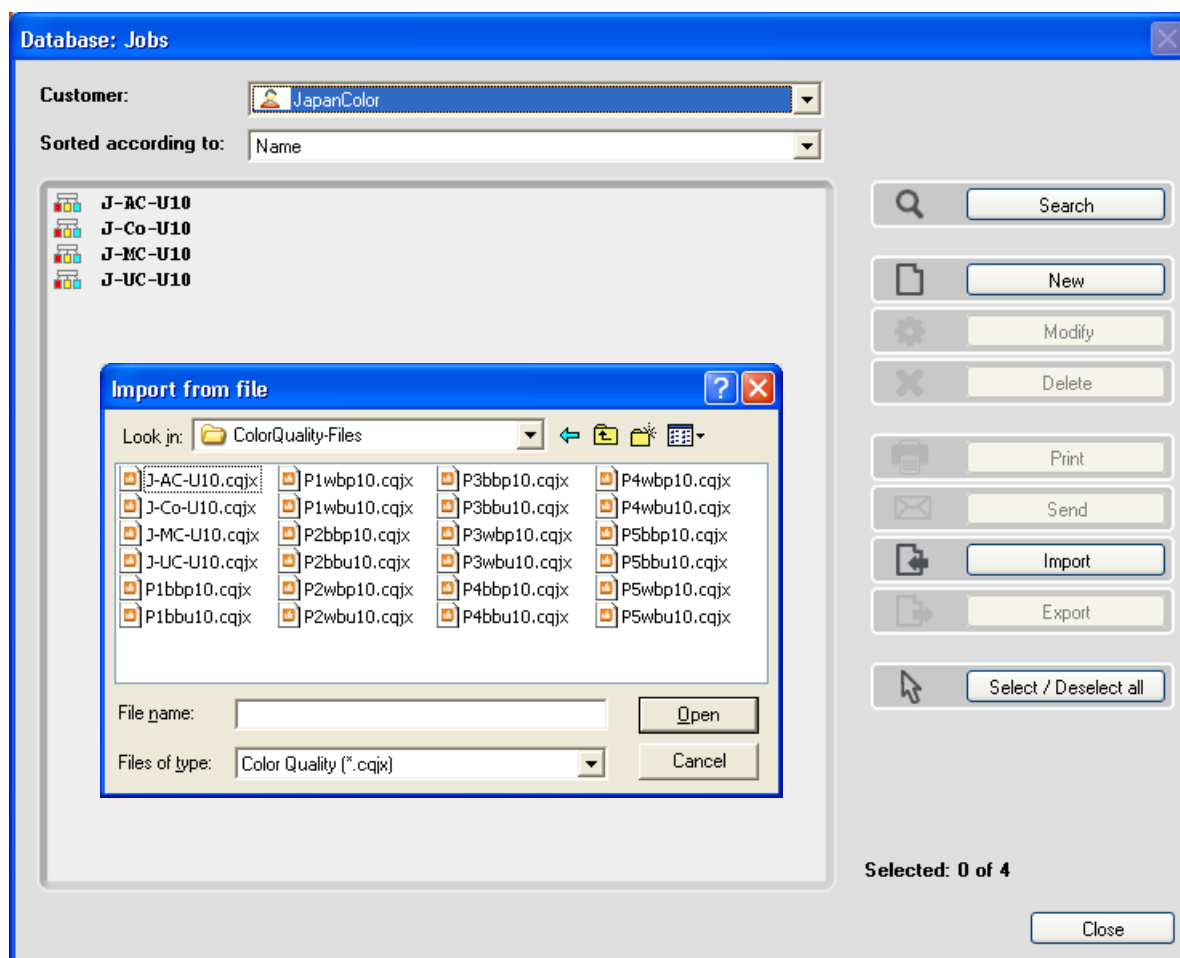
ColorQuality full version is a chargeable software product for PC which can only be operated with a dongle (software protection device). The product can be ordered from authorized X-Rite dealers.

Version 6 or later should be used.

4.2 Loading the spectral data files

The reference value file can be downloaded from the www.xrite.com website to your PC.

The commands “Database” – “Jobs” – “Import” can be used afterwards to import the files into ColorQuality.



4.3 Opening jobs

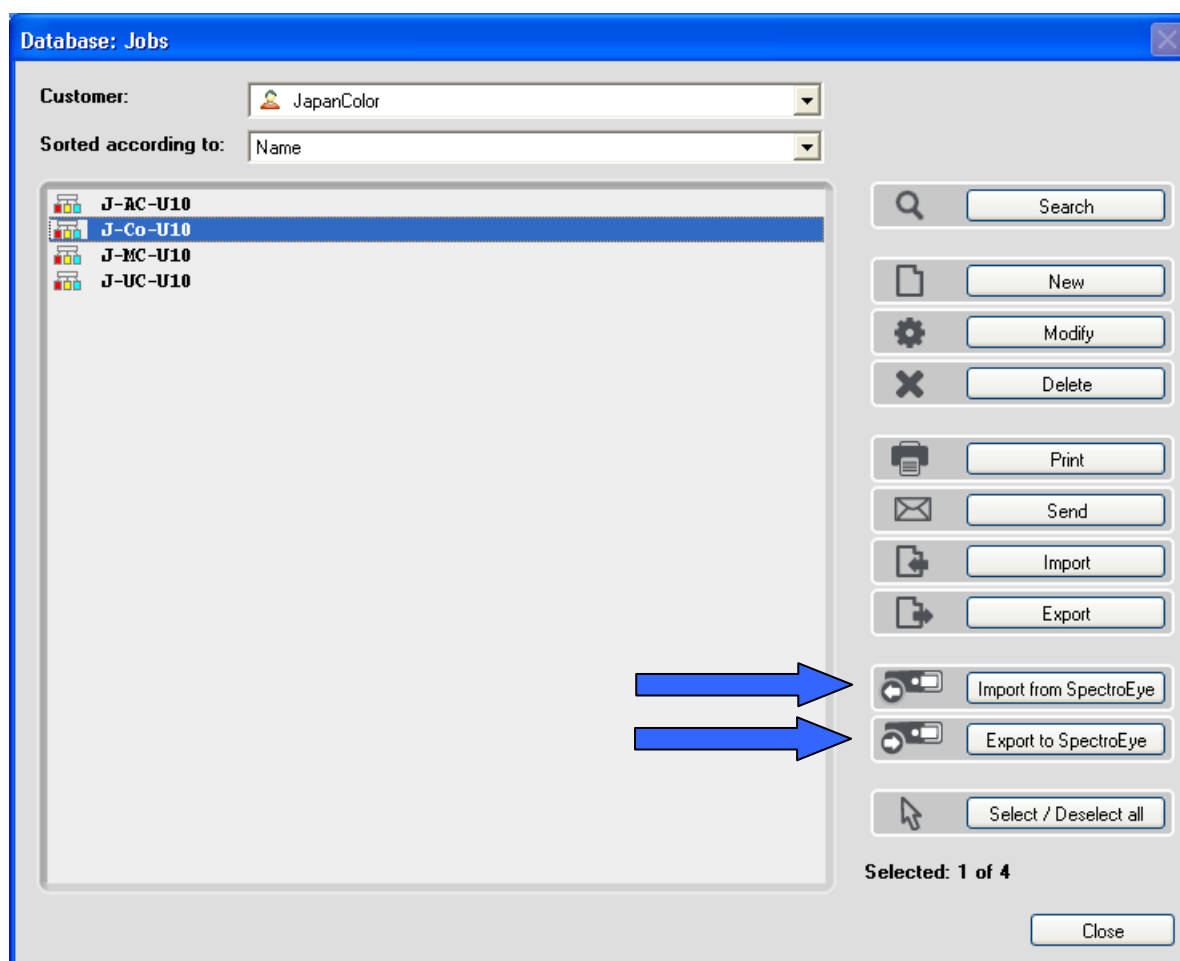
The jobs should be opened as a “Repeat job” in ColorQuality. Measurement values can then be transferred straight into the software and displayed in different views.

4.4 Communication with the SpectroEye

If the SpectroEye remains directly connected to the PC during the measurements, the measurement values can be transferred directly into the ColorQuality software. It doesn't matter here which view is set on the SpectroEye. The total reflectance curve is always applied. In the software the measurement results can be displayed as tables, trend diagrams, etc.

You have to use the data files designated to SpectroEye, in order to use the SpectroEye offline and while still evaluating the measurement values in the application.

After a series of measurements, select “Database” – “Jobs” – “Import from SpectroEye” to load the stored values from SpectroEye into ColorQuality for evaluation.



X-Rite Europe GmbH, Althardstrasse 70, 8105 Regensburg, Switzerland, Phone: +41 44 842 2400

Support:

- e-mail: support@xrite.com
- Hotline: Europe: +800 700 300 01, USA: 800-248-9748