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Technical and economical proposal for

COLORSCAN

**DECOSYSTEM /OFF A419/09 Rev.00
06 November 2009**



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COLORSCAN

Spectrophotometer for differential colorimetry



INTRODUCTION

Dear Sirs,
following our previous contacts we are pleased to submit a technical-economic proposal for the supply of COLORSCAN, the innovative spectrophotometer for inline application.

Hereby we are going to describe the configuration of our system COLORSCAN could be installed on your printing machine

GENERAL FEATURES OF COLORSCAN

System standard features

The Colorscan standard features are:

- ΔUnique Lighting system with seven different LED sources
- ΔAll operations can be carried out using the touch screen
- ΔEasy to learn and easy to use GUI interface
- ΔFast and automatic set up (new job can be started in a minute)
- ΔGreat reliability in the detection of color variations
- ΔFull report and automatic storing of all production process data
- ΔOperating in Windows XP

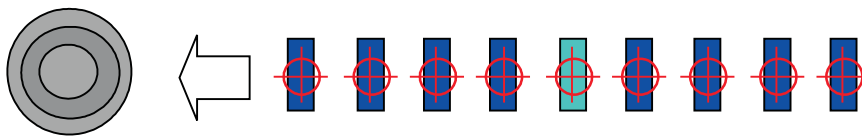
Different configurations of Colorscan

Colorscan can be provided in four different configurations. Each configuration is suitable for a different in-line application:

COLORSCAN - B1

SPOT MEASUREMENT

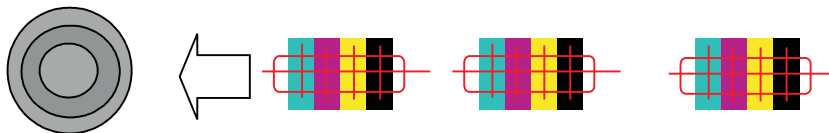
Colorscan B1 measures the color difference (ΔE , CIELAB 1976) between acquired samples and one color previously stored. The acquisition of each sample is triggered by an external signal. The spot of the reading area is about 1mm.



COLORSCAN - B1

PROFILE MEASUREMENT

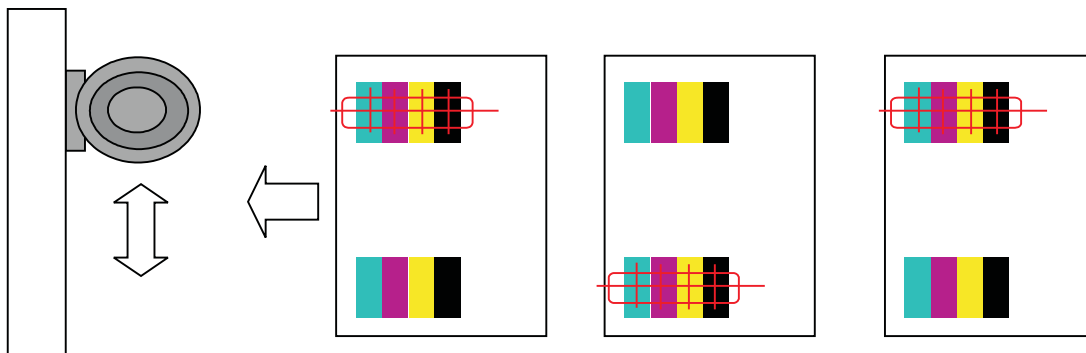
Colorscan B3 measures the color differences (ΔE , CIELAB 1976) between acquired arrays of colors (or *colour profiles*) and one array previously stored. Each profile measurement is triggered by an external signal. The length of the colour profile is configurable. The points where color differences are measured in the profile are also configurable.



COLORSCAN T3

PROFILE MEASUREMENT WITH TRASVERSAL MOVEMENT

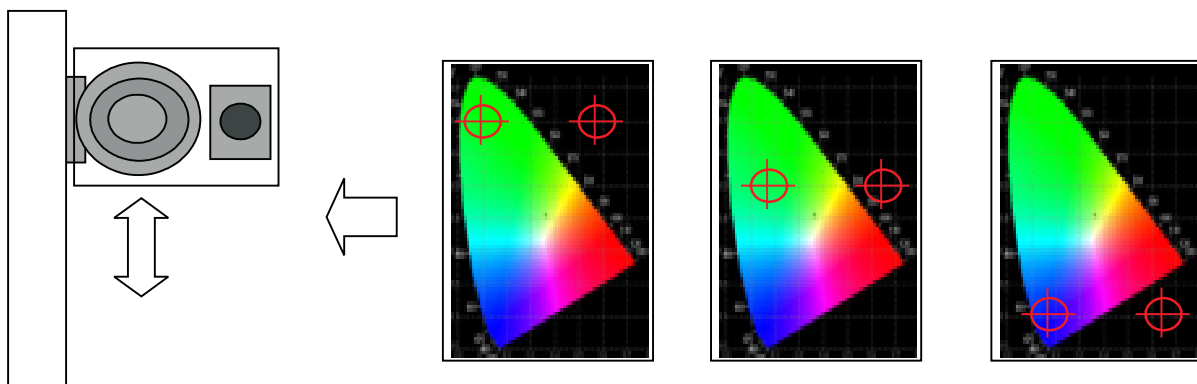
As in Colorscan B3, the Colorscan T3 system measures color variations between profiles of colors. The color sensor is moved and the transverse position of the measured color profile can be varied. The system can store several positions and color profiles.



COLORSCAN FC

SPOT MEASUREMENT WITH TRASVERSAL MOVEMENT AND CAMERA

Colorscan FC can measure color differences in any points on a surface compared to any number of stored colors. The system can memorize multiple positions; for each position a different color can be stored. The system is equipped with a color camera that helps the operator setting the test positions.



In the following we describe the configuration of COLORSCAN T3 model.

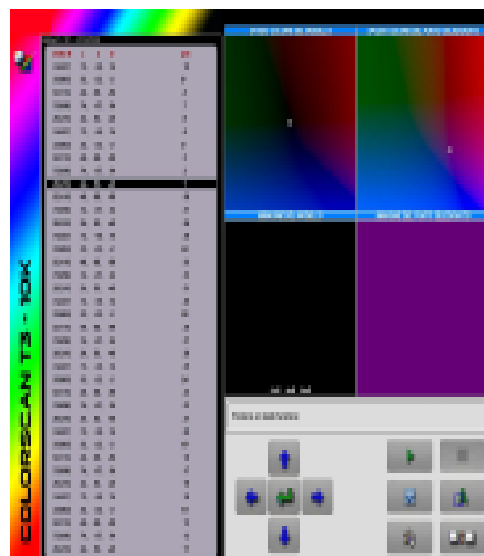
Colorscan Software

The software is easy to use and user-friendly and it doesn't require any particular experience in PC usage. Set-up operation for the product's change are automatic: the operator has nothing more to do except inputting or recalling the client

- and/or product-code; A new Job setup procedure is composed of a few simple steps:
- Setting Job parameters such as: number of reading points, length of color profile, distance of the profile from the trigger, number of colors.
- Setting the coordinate of the position of the

Instruments

- Acquisition of the color profile.
- Storing of data with product-code.





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TECHNICAL DATA CHARACTERISTIC OF COLORSCAN

Reflectance sensor with 7 multi-spectral bands: this characteristic guarantees a higher measurement accuracy than traditional RGB instruments

Insensitivity of ambient light effects: thanks to a dynamic calibration of the black reference, the instruments doesn't suffer any interferences by ambient light. The installation of the device it is easy because it doesn't require a particular cover screen. Only direct sunlight on the measurement area has to be avoided

Optical density measurement: the instruments provides the reflectance optical density at 45/0 geometry.

.Internal reading frequency up to 10Khz: this frequency guarantee a very fast reading rate, up to 10 times more than any existing instruments. The device can measure two consecutive marks of 1mm up at the speed of 300m/min..

Color measurement: the instruments provides the color measurement following the CIE 1931 recommendations (45/0 geometry).

Color display following CEI 1931 and 1976 recommendations: the instruments represents color measurements following the CEI specifications, with D65 standard illumination and standard observer at 2 degree, in the color spaces device independent - XYZ and L*a*b*.

Color display in other color spaces: the instruments can provide color measurement estimations in device dependent color spaces such as RGB and CMYK. For better results the user can provide his color profile for a customized calibrations of color output.

Technical Data of Colorscan

Sensor	7 multi spectral band
Field of view of the camera (only FCmodel)	100mm
Max profile length	20mm
Max number of colors for profile	10
Number of position	20
Speed (max)	300 m/min max
Control time (max)	100ms
Resolution	1mm spot
Control	L*a*b color variation
Minimum detectable color variation	0,2 delta E
Minimum detectable OD variation	1% OD
Safety	UPS
Operating	With touch screen interface



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Tolerances

Dedicated tolerances can be assigned independently to each position of the job and to each color of the profile. The tolerances on color variations can be set in units delta E or separately in delta L, delta a, delta b.

Password-protected menus allow selective access to the system and tolerance set-up can be restricted to appointed personnel.

Report

Data about the controls, defects and any other and real time information on the ongoing production can be made available in form of reports or data file. The reports with the analysis of the detected errors can be graphically or digitally printed, they can be filed and transferred to a host computer.

INPUT AND OUTPUT

Encoder

An encoder signal is necessary to synchronize the acquisition with the speed of the machine.

Input signal

The standard input and output are the following:

Start acquisition: signal that start the image acquisition

Output signals

When COLORSCAN detects a faulty piece a dedicated KO signal is given In case of consecutive defects or in case of many defects an alarm signal is given to stop the printing machine.

System On: this signal is enabled when the COLORSCAN is in control

Alarm: this signal is enabled In case of consecutive defects or in case of many rejections

Alarm: this signal is enabled In case of consecutive defects or in case of many rejections



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SYSTEM COMPOSITION

Composition of COLORSCAN

The system consists of three different parts: a processing unit (PRU), a mechanical and electronic movement devices (MCU) and an acquisition unit (ACQ).

<p>ACQ - acquisition unit</p> <ul style="list-style-type: none">o Mechanical box containing the color sensor heado Color sensor head at 10Khzo Encoder (5.000 pulse/revolution)o Camera (Only the FC model)o Connection cables between the processing unit and the acquisition unit	
<p>PRU - Processing unit</p> <ul style="list-style-type: none">o Rack containing electric and electronic partso P4 Vision hardware module, operating in Windows XP environmento USA-ASCII keyboard and mouseo I/O Interfaceo LCD 17" Monitor (Touch screen)o UPS	
<p>MCU Mouvement device (only for T3 and FC models)</p> <ul style="list-style-type: none">o Bosh Rexroth Module eCKK 110 420mm strokeo Stepper motor IDS91o Drive Ball Screw Assembly	

In addition:

Colorscan Software Package

Software package operating in Windows XP

User manual

User and maintenance manual in English

Back Up disk

Back up disk for damage recovery