

## Industrial Online Spectrophotometer



- High resolution spectrophotometer
- 100% quality control
- Reduce waste, save time and costs

# ColorLite sph9i

## Online Spectrophotometer



External probe head MA38-VA with a very large  
38 mm measuring area in diameter



sph9i spectrophotometer  
with MA38-VA Probe head

System with  $d/0^\circ$  stainless  
steel probe head

Try the new range of  
spectrophotometers from  
ColorLite. Read more...



### What are the general advantages of online spectral colour measurement?

Continues 100% quality control of colours of plastic components, sheets, granuals, textile paper, granules etc.

Measures slightest - for the human eye non-visible - colour deviations direct in the production... long before tolerance limits are reached.

Helps reduce a main reason for complaints, saving time and money and improving product quality

# ColorLite sph9i

## Online Spectrophotometer



### What are the advantages of the ColorLite sph9i over our competitors?

#### The systems from ColorLite implement:

- **LED light source**

Extremely durable and long lasting operation - Ideal for online applications i.e. 24 hour/365 day use, LED offer the longest interval before any parts need to be replaced. This means lower servicing costs but also higher reliability.

The long life time of the LEDs also means higher scan frequency is possible which improves reproducibility especially on inhomogeneous samples such as granules

As the illumination power remains at the same level over many years, results remain equally stabile.

*In 2003 ColorLite was the first company worldwide to market a spectrophotometer using white LED's.*

- **Real optical gratings**
- **Flexible optical fiber connections**



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What are the advantages of the ColorLite sph9i over our competitors?

- LED light source
- **Real optical gratings**

Only the high resolution of a grating spectrometer ensures smallest colours differences can be reliably detected.

ColorLite sph9i analyses the surface by measuring the spectral characteristics in 3.5 nm steps approximately 115 values per scan!

To compensate for smallest temperature variations we use an automatic compensation routine - instead of expensive climatisation methods.

- **Flexible optical fiber connections**

LED's are small in size, so we can offer our customers small probe heads ideal for measuring small or curved parts. With an optical fiber connection the probe head can be positioned direct in production with the main unit at a distance



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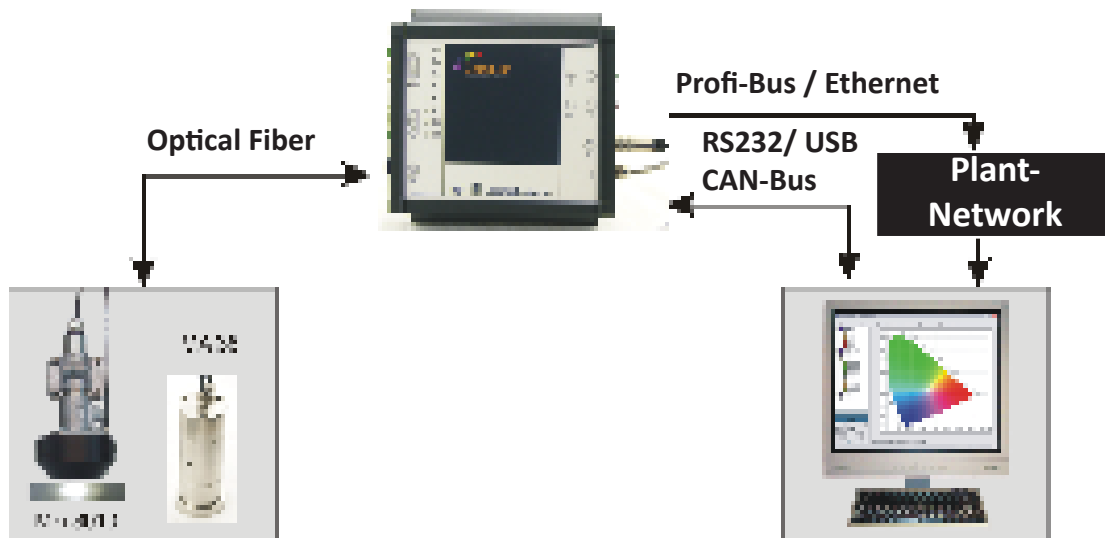


External probe head MKi 6010 with a 45°/0° geometry measuring at a distance of 30mm



System with a 45°/0° probe head

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Schematic diagram - Example for non-contact measurement with a MKi6010 or MA38 probe head

The spectrophotometer can operate without a PC by transferring the colour data direct to the process control system of the plant.

ColorLite offers its customers a wide range of connection standards such as **PROFI-Bus**, **Ethernet** or **Wireless LAN**

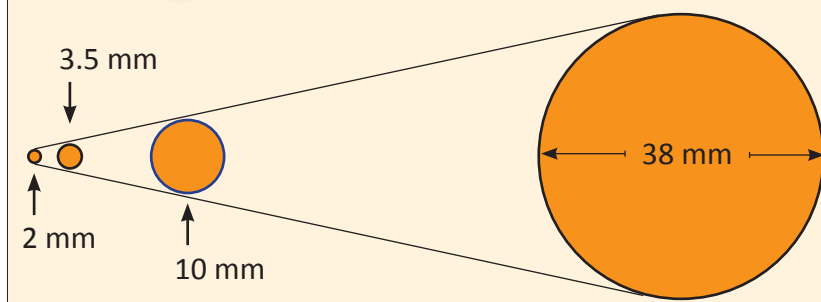
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Different probe heads for different applications  
with measuring areas from 2 mm to 38 mm



Measuring areas with a diameter from 2 to 38 mm



We offer our customers different probe heads...  
with scanning areas from 2 mm to 38 mm with different  
measurement geometries, to perfectly match your  
application.

# ColorLite sph9i

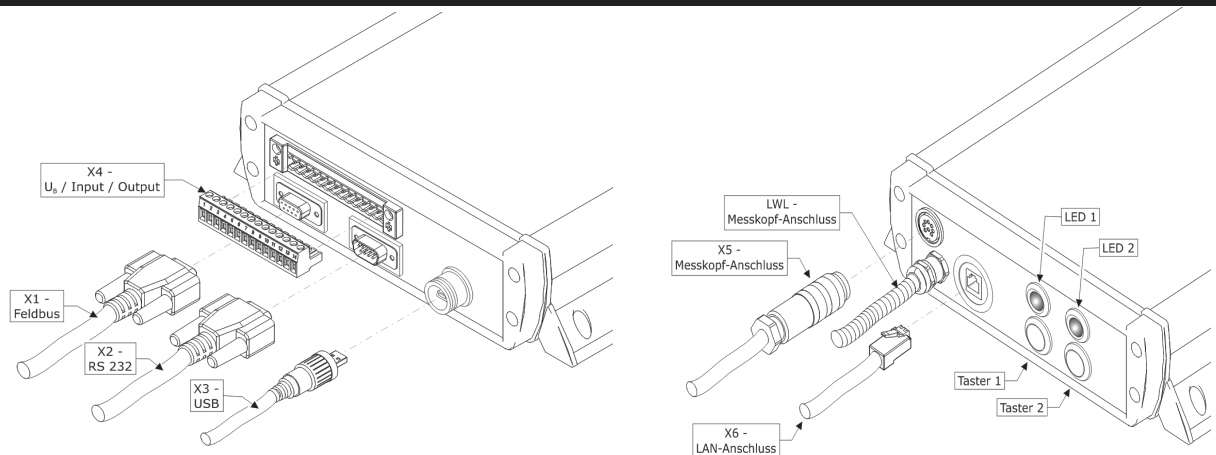
## Online Spectrophotometer

Integration to your  
process control system

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Wide range of interfaces to match your environment



### Multiple interfaces for all applications:

With the probe head connected via optical fiber the main unit can be neatly fitted in a separate enclosure together with switches, fuses, motor controllers etc. as needed.

The distance between the probe head, i.e. the actual measurement spot and the optical and electronic units can vary from only 0.5 to 10 meters. The main unit houses the spectrometer the optical component used to analyse the surface colour.

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An example from the  
paper industry

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ColorLite automatic  
calibration unit



ColorLite automatic calibration units ensure low maintenance and guarantee excellent result stability

## Automatic calibration unit:

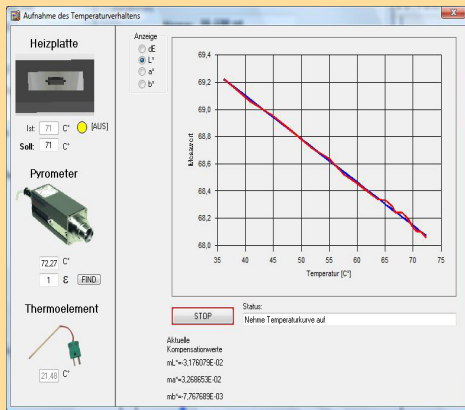
All spectrophotometers need to be calibrated at regular intervals. Colour measurement is based on the comparison of a sample, to an absolute white surface that is traceable to a national standard. At colorLite we use standards certified by the BAM (Bundes Anstalt für Materialforschung, Berlin). All our equipment is delivered with a BAM standard.

Our automatic calibration units are working standards that are matched to the BAM standard. With the ColorLite sph9i working up to 24/7 shifts, the automatic calibration unit ensures optimal reproducibility day and night.



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## Benchtop spectrophotometer

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ColorLite TC4 for thermochromism compensation



Complementing our online colour measuring systems our benchtop spectrophotometer sph TC4

## Benchtop spectrophotometer with integrated heater:

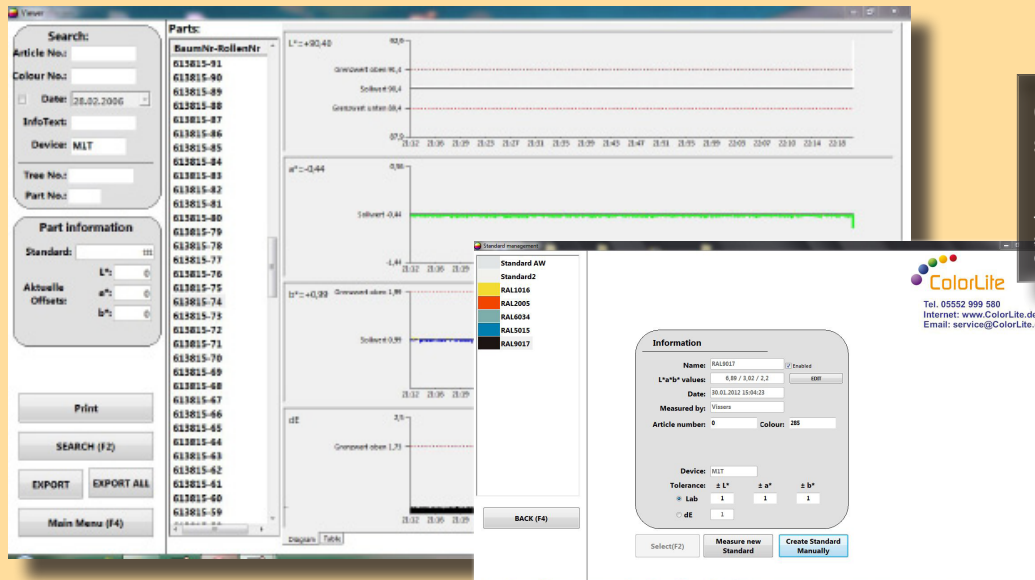
Measuring direct in the production means surfaces are normally still warm... this can not be ignored as many colours are temperature dependent

This temperature dependency means that  $L^*a^*b^*$  colour values are different when the sample is warm to when it is cooled down. By certain colours this can be as much as 0,7  $DE^*ab$  units for a  $10^\circ\text{C}$  change of temperature!

ColorLite solves this problem by measuring standards at different temperatures. Our thermochromatic compensation software then calculates the colour for normal room temperature.

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Quality control database software

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Online colour measurement in the steel industry

High powered SQL database software ColorDaTra IPM

## SQL database software - ColorDaTra IPM:

Quality control software for visualising and storing colour values

Trend indicator with time dependent deviation of different colour values

Standard colour management with tolerance limits for  $dE^*_{ab}$  or  $dL^*$ ,  $da^*$ ,  $db^*$

Protocol-Printout with statistics

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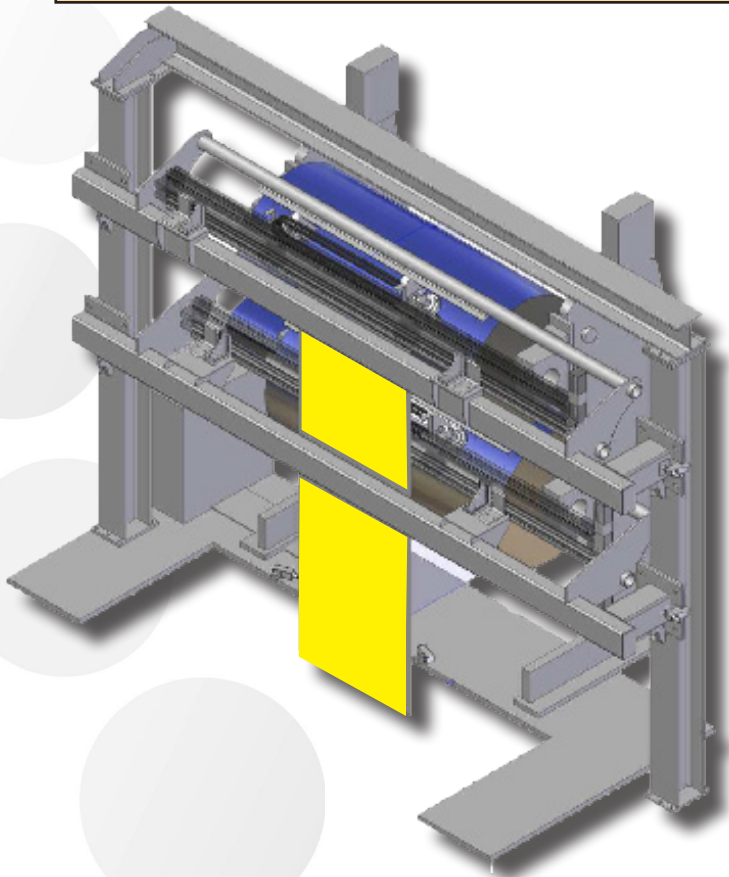
We offer you a complete solution with motor driven probe heads complying to local health and safety regulations



4 movable probe heads, software and control hardware

An example from the steel industry

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### Example - Coil coating at steel producer Salzgitter AG, Germany:

Online colour measurement with **four** motor-driven probe heads and thermochromatic compensation.

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## Technical data

<b>Probe head geometry</b>	45°/ 0° ; 0°/0°; d/0° - Measuring area 2 mm to 38 mm
<b>Standard observer</b>	2° (1931) and 10° (1964)
<b>Illuminants</b>	D65, D55, F11, A, C
<b>Colour data</b>	XYZ; Yxy; dE CIE L*a*b*; L*C*h*, L*u*v*; dE CIE94; dE CMC, dL*,da*,db*
<b>Spectral range</b>	Holographic grating spectrometer FWHM at 500nm < 10nm - VIS Range Scanning interval = 3.5 nm 115 x 16-Bit values per scan
<b>Dimensions</b>	210 mm x 110 mm x 45 mm - main unit
<b>Reproducibility</b>	< 0.05 dE*ab measured on ideal white surface
<b>Memory</b>	FRAM Stores up to 1000 colours and 200 standards
<b>Calibration</b>	With supplied white standard certified by the BAM (Bundesanstalt für Materialforschung)
<b>Supply voltage</b>	24 VDC
<b>Ambient temperature</b>	15° to 55° C
<b>Humidity</b>	max. 85%, non-condensing
<b>Communications</b>	serial communication: USB, isolated RS232; CAN; Profi-Bus; Ethernet - all isolated - optional
<b>Digital input/output:</b>	4/4-channel digital I/O for reading and writing status, feedback for industrial control systems and switchboards 4 isolated inputs 0-30V 4 isolated outputs 0-30V, current load 0.7A / channel