ColorLite
Innovative Farbmesstechnik

User Manual

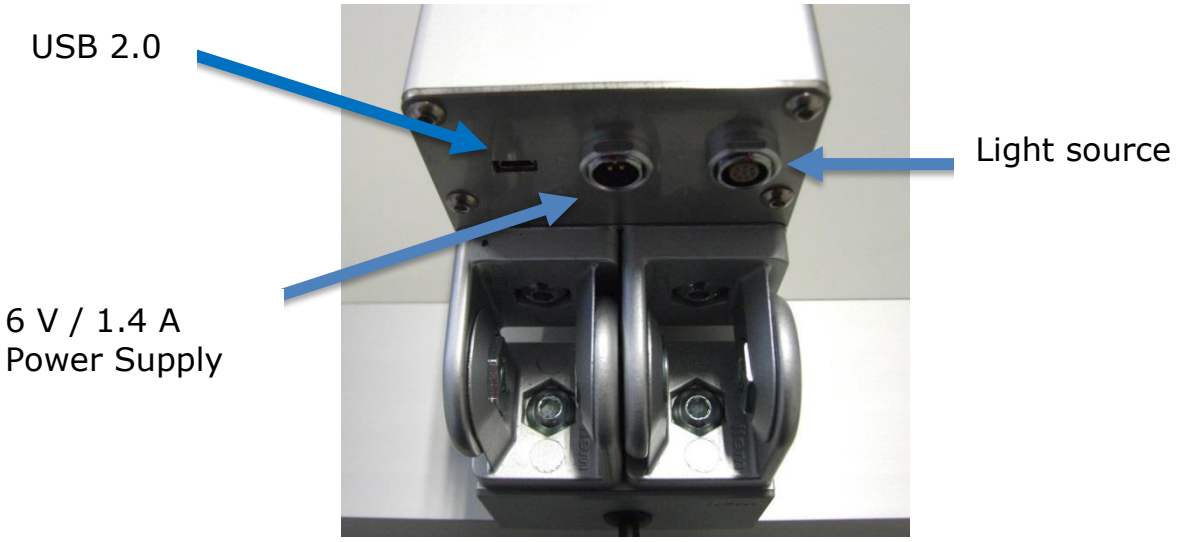
Densitometer - ColorLite sd350

Densitometer

The ColorLite sd350 densitometer is a system for measuring optical density for example of films. The sample is placed on the table and with help of the arm supporting the probe head, the measurement is triggered. The display on the arm is used to show measured values and menu settings.

Connecting the Densitometer to the PC

On the back of the densitometer arm are three sockets (see Fig.: 1 Sockets). On the left is the USB slot for data transfer to a PC, in the middle is the socket for the power supply and on the right the connection for the light source (densitometer viewed from the rear).
Different numbers of pins in the sockets prevents an incorrect assembly.



(**Fig.: 1**–Sockets)

WARNING!

Measurements must not be carried out without inserted the round metal aperture plate, otherwise the glass of the lamp may be damaged.

The densitometer is operated by the two buttons (S1 and S2) with feedback given on the display (see Fig.:2-Densitometer arm).

(**Fig.: 2**–Densitometer arm)

The densitometer is turned on by pressing the S1 button ("Zero Cal."). And is turned off by holding the S1 button down for two seconds, while the arm is an upper position.

S1-Button („Zero Cal.“) functions
Arm is in an upper position: ON/OFF (2 sec. duration).
Menu navigation.
Arm pressed down: Zero calibration.

S2-Button („D3 Cal.“) functions
Arm is in an upper position: Settings menu is opened (hold for 3 sec.)
Arm pressed down: Calibration with the density 3 filter

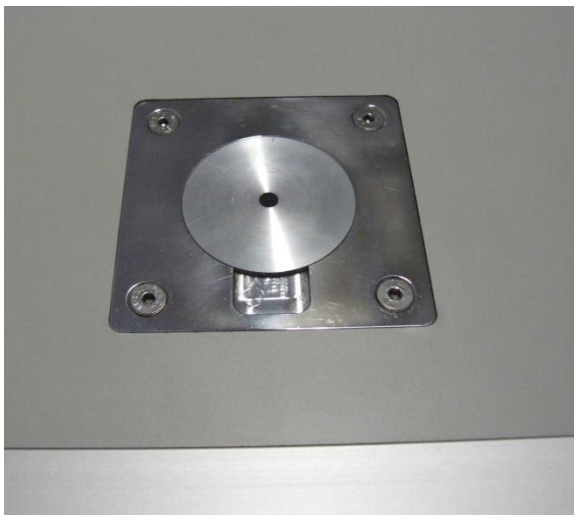
A measurement is triggered when the arm is pressed fully down. During the measurement, the arm must continued to be pressed fully down. When the measurement is completed, the density value or CIE L*a*b* values are displayed (See Fig.: 3 Start the measurement).

(**Fig.: 3** – Start the measurement)

Calibration

Zero calibration:

Place the aperture into the recess for the disc (see Fig.: 4 - Aperture) and push down the measuring arm. A measurement will be triggered. Now continue to hold the arm down and at the same time press the S1 button to start the calibration. When the calibration is finished, the density value will be displayed. Now the arm can be returned to the horizontal position.



(**Fig.: 4** - Aperture)

Density 3.0 (D3) - Calibration:

Place the D3 filter in die recess instead of the normal aperture and press the arm downwards. A measurement will be triggered. Now continue to hold the arm down and at the same time press the S2 button to start the D3 calibration. Keep the arm down until the density value is displayed, which means the calibration routine is finished. This can take up to 4 seconds. Now return the arm back to the horizontal position.

Settings-Menu

You can access the densitometer settings menu by pressing the S2 button for three seconds, while the arm is in the upper, horizontal position (see Fig.: 5 main menu). Press the S1 button to scroll through the menu and press the S2 button to selection a menu setting. Choose "Exit" to navigate to the main menu and to leave the settings menu altogether (see Fig.: 6 - exit and Fig.: 7 - Exit 2).

(**Bild 5** – Main menu)

(**Bild 6** – Exit)

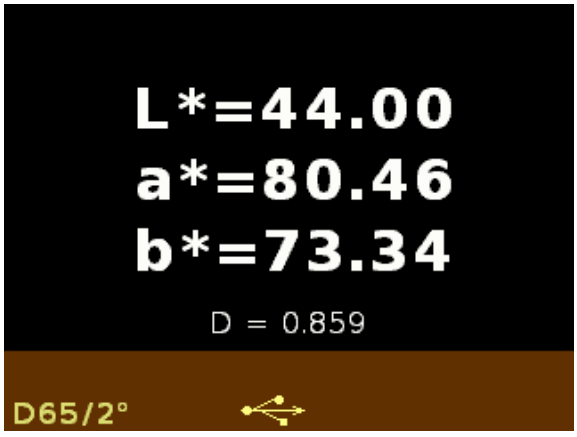
(**Bild 7** – Exit 2)

In the main menu settings from different categories can be selected and changed (see Fig.: 5 main menu).

"Language": Select the menu "language" with S2. You can choose between German and English with the S1 button (see Fig.: 8 Language selection). Confirm your choice with S2. To switch from the language menu to the main menu, select "Exit" (see Fig.: 7 – Exit 2).

(**Fig.: 8**–Language selection)

"Display CIE L*a*b* values": Toggle between displaying the CIE L*a*b* values and the density value by pressing the S2 button and letting it go immediately.



(Fig.: 9 – CIE L*a*b*-Output)

Default Settings

„Calibration warning"(Zero calibration)**:** The default setting for the zero calibration warning is 26 hours (26h).

„Calibration warning D3": The default setting for the D3 calibration warning is 7 days and 2 hours (d7).

„Angle": The standard observer angle default setting is "2°".

"Illuminant ": The default standard illuminant setting is set to "D65".

Technical Data

Dimensions (Height x Length x Width)	210 mm x 570 mm x 404 mm
Weight	11.4 kg
Arm span	350 mm
Maximal sample width	700 mm
Measurement geometry	d/0° - according to the DIN 4512-8
Standard illuminants	D65, D50, A, C, F11
Standard observer	2°, 10°
Colour metric values	Density; CIE L*a*b*; Yxy; X,Y,Z
Density range	D 0.000 to D 6.000
Spectral range	400 – 700 nm
Spektral resolution	Holographic grating spectrometer FWHM at 500 nm < 10 nm Sampling rate 3.5 nm steps 115 x 16-Bit values per scan
Display	High resolution TFT colour display: 1/4-VGA, 320 x 240 Pixel
Repeatability	ΔD = +/- 0.005 at 5D (MSA type 1 - study)
Light source	High powered LEDs positioned in an integrating sphere
Measurement time	0.5 to 2.0 seconds dependent on density
Language	German, English
Power supply	6 V/1.4 A
PC-Interface	USB 2.0
Delivery includes	Aperture, USB-cable, Power supply
Climatic conditions	Ambient temperature: 15°C to 45°C - Relative humidity: max. 85% non-condensing

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