



Overview

Product name	lightSTUDIO
Principle	Variable lighting of a real scene for reproducible visual assessment of image quality. lightSTUDIO is available in different set-ups to simulate multiple illuminants, moving content and/or mixed light situations.

Features

lightSTUDIO

Inner dimension (space for scene)	Width	Depth	Height
	lightSTUDIO-S	1250 mm	750 mm
lightSTUDIO-SM	1250 mm	750 mm	820 mm
lightSTUDIO-ST (2 x)	624 mm	750 mm	600 mm
lightSTUDIO-SMH	1250 mm	750 mm	820 mm
lightSTUDIO-L	1250 mm	750 mm	780 mm
lightSTUDIO-LM	1250 mm	750 mm	820 mm
lightSTUDIO-LMH	1250 mm	750 mm	820 mm
lightSTUDIO-LH	1250 mm	750 mm	780 mm
Specialties	<ul style="list-style-type: none"> • Interior included • Background chart with natural scene included 		

Illumination / lightHEAD-S

Light sources	<p>lightSTUDIO-S versions:</p> <ul style="list-style-type: none"> 2 x F12 fluorescent tube OSRAM L 36W/930 * 2 x F11 fluorescent tube OSRAM L 36W/940 * 2 x D50 fluorescent tube OSRAM L 36W/950 * 2 x D65 fluorescent tube OSRAM L 36W/965 * 5 x halogen lamp 20 W. 12 V, infrared coated 9 x halogen lamp 20 W. 12 V, infrared coated <p>lightSTUDIO-ST versions:</p> <ul style="list-style-type: none"> 4 x F12 HQ fluorescent tube OSRAM L 18W/930 *
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	2 x F11 HQ fluorescent tube OSRAM L 18W/940 * 2 x D50 HQ fluorescent tube OSRAM L 18W/950 * 2 x D65 HQ fluorescent tube OSRAM L 18W/965 * 6 x halogen lamp 20 W, 12 V, infrared coated 8 x halogen lamp 20 W, 12 V, infrared coated
Response time (illuminant switch)	Fluorescent lamps: stable color temperature after 3 minutes Halogen: < 1s
Illumination levels	F12, F11, D50, D65: approx. 12 lx – 2200 lux Halogen: approx. 5 lx – 700 lux Halogen with blue filter: approx. 4 lx – 400 lux
Dim function	Dimmable from 0-100% in 1% steps
Predefined illuminants	F12, F11, D50, D65, fluorescent light source (100% intensity) Halogen: 10 lux, 100 lux and 400 lux Halogen with blue filter: 400 lux
Service life	lightSTUDIO-S LLMF** F12, F11: 12,000 h: 0.85 4,000 h: 0.9 D50: 12,000 h: 0.68 4,000 h: 0.72 D65: 12,000 h: 0.9 4,000 h: 0.99 lightSTUDIO-ST LLMF**: F12, F11: 12,000 h: 0.91 4,000 h: 0.94 D50: 12,000 h: 0.79 4,000 h: 0.86 D65: 12,000 h: 0.85 4,000 h: 0.9 Halogen: 4,000 h

Illumination / lightHEAD-L

	10 x iQ-LED V2 Image Engineering iQ-LED V2 technology: - 41 SMD high power LEDs - Split into 20 color channels - Spectral range: 380 – 820 nm - Intensity adjustable in 4000 steps per channel with 32 kHz PWM (switchable to 1000 steps with 128 kHz) - Approximate lifetime of 10.000 hours - Typical LED spectra on request
Light source	
Control functionality without PC	Storage of up to 44 different illuminants and one sequence on the device Default illuminant available Controllable with micro switches on the device panel
Illumination stability	+/- 1% when stabilized (2% after switching D illuminants in the first 5 seconds)
Response time (illuminant switch)	< 50 ms
Maximum / Minimum illumination level	Up to 2000 lux for standard D illuminants Minimum down to 25 lux for standard D illuminants
Dim function	Software: set the intensity during creation of illuminant with dedicated illuminant type Device: selection of different illuminants stored on the device with control panel
Predefined standard spectra **	D50, D55, D65, D75, A, B, C, E Create planckian spectral curve by means of selected temperature (1900 - 18,000 K)
Service life	10,000 h (iQ-LED V2)



Spectrometer (only lightSTUDIO-L versions)

Construction	Built-in spectrometer
Spectral range	305 – 1100 nm
Resolution	2048 pixels
FWHM	2.5 nm
Spectra visualization	Real time measurement of spectral distribution and radiant power in lightSTUDIO software
Calibration	Yearly calibration required independent of working hours (contact Image Engineering), NIST traceable

Illumination / HDR box (lightSTUDIO-H versions)

Light source*	2x LG4 with 432 LEDs each
Output window	rectangular output window, 290 x 220 mm dual slot for D280 sized test charts
CRI	> 95 Ra
Color Temperature	approx. 5000K +/-5%
Uniformity	> 95 % for active chart area, 280 x 157.5 mm > 85% at <1% of max. intensity
Illumination stability	+/-5% (after warm-up)
Warm-up time	Up to 10 min (depending on illumination level and ambient temperature)
Guaranteed illumination range	approx. 10 - 65000 lx ***** <ul style="list-style-type: none"> • normal mode: 0 – 100% / 32 kHz / 100 to 65000 lx ***** • low mode: 0 – 100% / 32 kHz / 10 to 6500 lx *****

Moving-Option (only lightSTUDIO-M versions)

Translation	0.001 – 3 m/s (left to right and right to left)
Rotation speed	0.5 – 360 rpm (bidirectional)
Test charts	TE276 Dead Leaves (translation) Black/white sector plate (rotation)

iQ-Timecode (only lightSTUDIO-M versions)

Display range	Timecode mode: 00:00:000 – 99:59:999 [m:s:ms] Counter mode: 0 - 65535 counts
Dimension [W x H x D]	223 x 103 x 30 mm
Weight	approx. 0.5 kg

iQ-Trigger + iQ-Trigger-T (optional, included in lightSTUDIO-M versions)

Please refer to iQ-Trigger and iQ-Trigger -T data sheet.



Software

System requirements	PC with Windows 7 operating system (or higher) 1 USB port free
lightSTUDIO	<ul style="list-style-type: none"> control of translational and rotational test chart (speed, direction, duration) <ul style="list-style-type: none"> control of iQ-Trigger control of lightHEAD-L (generation of illuminants based on predefined or imported spectral data, creation of sequences, real time spectral measurement) <ul style="list-style-type: none"> control of lightHEAD-S (switch lamps on/off, dim function) <ul style="list-style-type: none"> control of HDR box control of iQ-Timecode Display (start, stop, set time) creation of batch processing lists for all components
API (C++)	Optional available: iQ-LED API, iQ-Standardlight API, iQ-Drive API, iQ-Timecode API, LG API
CLI	A command line interface (CLI) is delivered with the Standard lightHEAD
iQ-Standardlight	A simplified control software is delivered with the lightSTUDIO-ST

General description hardware

Power supply / frequency / consumption		power supply	supply frequency	max. power consumption
	lightSTUDIO-S	220 - 240 V	50/60 Hz	200 W
	lightSTUDIO-SM	220 - 240 V	50/60 Hz	800 W
	lightSTUDIO-SMH	220 - 240 V	50/60 Hz	1300 W
	lightSTUDIO-ST	220 - 240 V	50/60 Hz	200 W
	lightSTUDIO-L	100 - 240 V	50/60 Hz	800 W
	lightSTUDIO-LM	100 - 240 V	50/60 Hz	1400 W
	lightSTUDIO-LH	100 - 240 V	50/60 Hz	1300 W
	lightSTUDIO-LMH	100 - 240 V	50/60 Hz	1900 W
Connectors	1 x USB 1.1 (PC connection) 1 x power adaptor			
Outer dimension		Width	Depth	Height
	lightSTUDIO-S	1300 mm	800 mm	800 mm
	lightSTUDIO-SM	2320 mm	820 mm	1920 mm
	lightSTUDIO-SMH	2320 mm	1290 mm	1920 mm
	lightSTUDIO-ST	1300 mm	800 mm	800 mm
	lightSTUDIO-L	1300 mm	800 mm	1120 mm
	lightSTUDIO-LM	2320 mm	820mm	1980 mm
	lightSTUDIO-LH	1300 mm	1270 mm	1120 mm
	lightSTUDIO-LMH	2320 mm	1290 mm	1980 mm
Weight	lightSTUDIO-S	approx. 40 kg		
	lightSTUDIO-SM	approx. 134 kg		
	lightSTUDIO-SMH	approx. 162 kg		
	lightSTUDIO-ST	approx. 45 kg		
	lightSTUDIO-L	approx. 61 kg		
	lightSTUDIO-LM	approx. 150 kg		
	lightSTUDIO-LH	approx. 89 kg		
	lightSTUDIO-LMH	approx. 178 kg		



Operating conditions	lightHEAD-L: 18 - 28 degrees Celsius, optimal: 22 - 26 degrees Celsius all lightSTUDIOS: normal room temperature and humidity, do not cover vents												
Warm-up time	< 2 min. at optimal ambient temperature (iQ-LED lightHEAD) approximately 3 min. (fluorescent light sources)												
Rolling Cart	<ul style="list-style-type: none"> included in lightSTUDIO-H and lightSTUDIO-M versions optional for all other versions wheels with brakes 												
Scope of delivery (hardware)		lightHEAD-S / -ST / -L	Background Chart	HDR box	Interior	Moving option	power cord	USB cable	iQ-Trigger Adapter-Box I	control software	calibration protocol	iQ-Trigger + iQ-Trigger-T	iQ-Mobilemount
	lightSTUDIO-S	S	x		x		x	x		x	x		
	lightSTUDIO-SM	S	x		x	x	x	x	x	x	x	x	x
	lightSTUDIO-SMH	S	x	x	x	x	x	x	x	x	x	x	x
	lightSTUDIO-ST	S T	x		x		x	x		x	x		
	lightSTUDIO-L	L	x		x		x	x		x	x		
	lightSTUDIO-LM	L	x		x	x	x	x	x	x	x	x	x
	lightSTUDIO-LH	L	x	x	x		x	x		x	x		
	lightSTUDIO-LMH	L	x	x	x	x	x	x	x	x	x	x	x
Scope of delivery (software)		lightSTUDIO	iQ-StandardLight	lightSTUDIO CLI	iQ-LED								
	lightSTUDIO-S	x		x									
	lightSTUDIO-SM	x		x									
	lightSTUDIO-SMH	x		x									
	lightSTUDIO-ST		x	x									
	lightSTUDIO-L	x			x								
	lightSTUDIO-LM	x			x								
	lightSTUDIO-LH	x											
	lightSTUDIO-LMH	x			x								

Miscellaneous

Accessories	Rolling Cart, Replacement Kits (lightSTUDIO Interior, lightSTUDIO Background Chart, lightSTUDIO-S light bulbs, lightSTUDIO-ST light bulbs), iQ-LED software
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* light sources are delivered ready to use, burn-in period of 100 h

** LLMF: Lamp Lumen Maintenance Factor. LLMF is the ratio of the luminous flux emitted by the lamp at a given time in its life to the initial (100 hours burn-in time) luminous flux.

*** iQ-LED light source