

## Operating Light marLED® V16 LC / V10 LC D



### Mechanical Design

Ceiling-mounted operating light consisting of ceiling tube, horizontal arm, spring arm, cardanic suspension and light head. Mounting is accomplished by means of either ceiling anchor plate or with intermediate ceiling construction. The suspension system ensures maximum maneuverability, resulting in large action radius and considerable height adjustment. High-tech metals such as aluminum, minimize the total weight and torque, thus operating comfort will be improved. The light head has got several integrated handle bars for precise positioning. The sensoTouch control panel allows the non-sterile operating of all functions. A sealed housing with smooth surface and special design elements ensures fast and secure disinfection. The design and the constructional principle of the whole light head have been optimized for Laminar Flow ceilings.

We reserve the right to make alterations

## **Light System**

High-performance LEDs of several color types are used to illuminate the operating field. Different individual LEDs are combined in light engines which create both shadow-free illumination and deep-cavity illumination. Computer-calculated optical lens systems allow an even illumination without any color shadows for small or larger surgical sites. LED light includes only visible light without any infrared radiation. The unique VariLux mode grants a variable field distribution, allowing both circular as well as elliptical beams, depending on the demands of the operating field. The color temperature can be adjusted individually. The huge amount of 256/160 single LEDs each light head assures a high system stability and long service life time.

## **Operation**

All operating functions can be controlled via an easy-to-understand sensoTouch panel, located at the cardanic. Furthermore, the surgeon can adjust relevant parameters, such as the field diameter, by means of the sterilizable sensoGrip handle in the center of the light. Adjustment of the light intensity and the field diameter is done electronically and without mechanical components. The actual setting is visualized on the Touch panel with clear symbols. Integrated grip bars allow a precise positioning of the light from all sides.

## **Additional equipment options**

Touch-sensitive KLS Martin pilot laser system for safe positioning of the light field center.  
KLS Martin camera system surgiCam® - for the highest demands in terms of image quality and resolution and - optionally - network compatibility for digital data transfer of video, audio and control signals. The system can be installed either directly in the center of the light or via a separately available video suspension arm.

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**Technical Data Sheet**

Operating Light

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Electrical Data		marLED® V16 LC	marLED® V10 LC D
Power module incl. Mounting plate: dimensions [LxWxH]	mm	260 x 205 x 125	260 x 205 x 125
Power module, primary voltage	V	85 / 240 (AC)	85 / 240 (AC)
Fuses on 24 V side	A	10	10
Fuses on 230 V side	A	10	10
Power input at 24 V	W	approx. 120	approx. 75
Voltage at point of wall or ceiling mounting	V	28 – 36 (DC)	
Effective lamp life	h	40.000	40.000
Voltage stabilization (electronically)		yes	yes
Soft-start option (light does not immediately start with full brightness/light output)		yes	yes
Focusing/light-field memory		yes	yes
Automatic changeover to backup lamp		yes	yes
Light electronics meet VDE and IEC requirements		yes	yes
Classification acc. to MDD / Medical Devices Act		I	I
Protection class acc. to IEC 601		I	I
Degree of protection: suspension system		IP 30	IP 30
Degree of protection: light head		IP 42	IP 42
Mark of conformity		CE	CE
Battery charging time		no battery operation	
Operating time with battery supply	h	no battery operation	
Battery capacity	h	no battery operation	

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Photometric Data		marLED® V16 LC	marLED® V10 LC D
Central illuminance, electronically dimmable from/to	%	30 – 100 % / 5 % (in Endo-mode)	30 – 100 % / 5 % (in Endo-mode)
Central illuminance at a distance of 1 m (via light field adjustment)	lx	160.000	130.000
Light field diameter (d10, distance of 1 m)	mm	250 – 350	230 – 330
Light field diameter (d50, distance of 1 m)	mm	130	120
Color temperature	K	3.800 – 4300 – 4800	3.800 – 4300 – 4800
Color rendering index (CRI) [Ra(1-8)]		95	95
Red rendering index (RRI) [R9]		> 85	> 85
Total irradiance (at 100,000 lx)	W/m <sup>2</sup>	364	364
Total irradiance at 130,000 lux	W/m <sup>2</sup>	449	449
Luminous efficacy	lm/W	289	289
Illumination depth (20 % on E <sub>C</sub> max. without refocusing) L1/L2	mm	490 / 800	490 / 800
Illumination depth (60 % on E <sub>C</sub> max. without refocusing) L1/L2	mm	320 / 320	320 / 320
Working range from/to (20 % on E <sub>C</sub> max. without refocusing)	mm	510 – 1,800	510 – 1,800
Working range from/to (60 % on E <sub>C</sub> max. without refocusing)	mm	680 – 1,320	680 – 1,320
Shadow dilution with one mask	%	63	46
Shadow dilution with two masks	%	51	44
Shadow dilution with one tube	%	81	99
Shadow dilution with one tube and one mask	%	45	45
Shadow dilution with one tube and two masks	%	37	44
Laminar Flow Index acc. to Leeneman		19,2	15,7
Laminar Flow Index acc. to Oostlander		25,0	16,7
UV irradiance for wavelengths < 400 nm	W/m <sup>2</sup>	< 10	< 10

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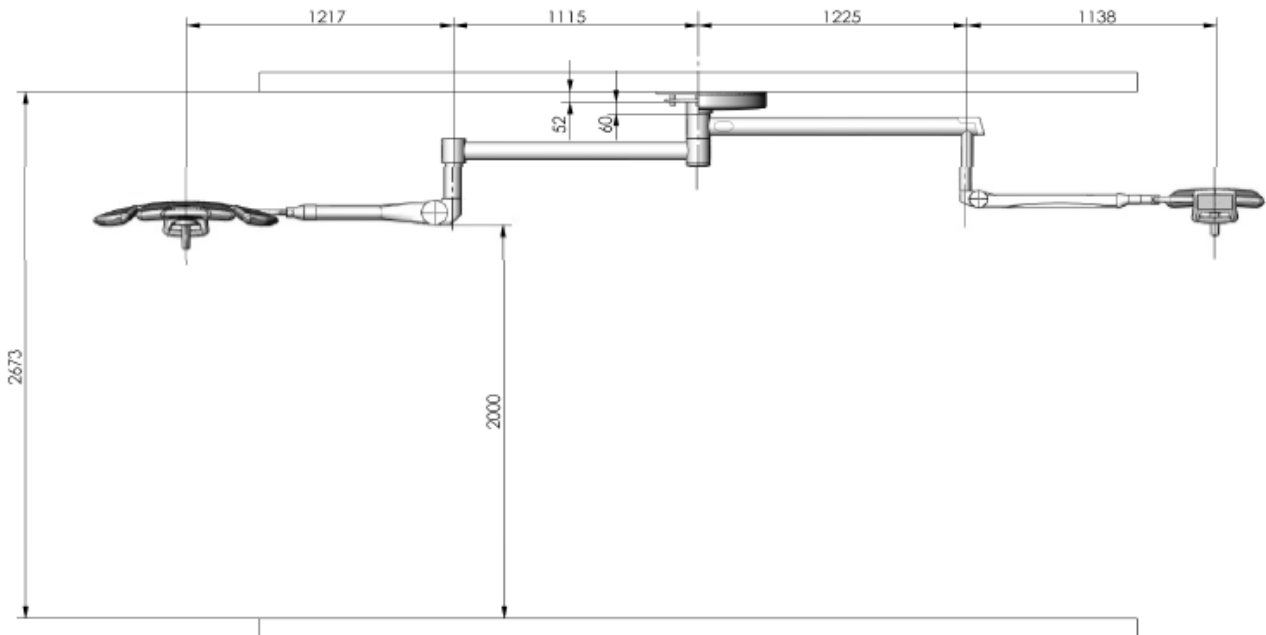
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Mechanical Data		marLED® V16 LC	marLED® V10 LC D
Min. room height (power module on ceiling flange / headroom of 2.00 m)	mm	2589	
Min. room height (external power module / headroom of 2.00 m)	mm	2449	
Operating forces on light head	N	acc. to standard	acc. to standard
Range of movement	mm	2443	2361
Spring arm height adjustment (acc. to ceiling height)	mm	1178	1178
Top position of light head at a headroom of 2.00 m	mm	2539	2539
Dimensions: diameter of ceiling anchor plate	mm	380 x 380	
Bottom position of light head at a headroom of 2.00 m	mm	1350	1350
Force required for moving light head up/down	N	14	14
Force required for swiveling the light head	N	6	6
Max. vertical force due to weight	N	approx. 840	
Total Weight	kg	84	
Single weight (approx.): standard ceiling tube	kg	8	
Single weight (approx.): tracking arm, central bearing shaft, spring arm	kg	16	18
Single weight (approx.): power module	kg	7	7
Single weight (approx.): light head	kg	16	12
Torque, bending moment	Nm	approx. 690	
Permissible ambient temperature range during operation	°C/°F	5 °C to +40 °C / 41 °F to +104 °F	
Storage temperature	°C/°F	-10 °C to +50 °C / 14 °F to +122 °F	
Shock/impact resistance		8g / 10 ms	8g / 10 ms
Vibro stability (immunity to vibration)		10 – 150 Hz / 0,15 mm / 2g	
Canopy dimensions	mm	620 x 208 (110)	
Number of castors	pcs	none	none
Number of lockable castors	pcs	none	none
Castor diameter	mm	none	none
Air flow contact area of light head	cm <sup>2</sup>	4105	2535
Light head height (without sterile handle)	mm	53	53
Light head dimensions	mm	845 x 454	640 x 454

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Technical Drawing:



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