

MAQUET
GETINGE GROUP

**HLED™ SURGICAL LIGHT
FEEL THE DIFFERENCE**



This document is intended to provide information to an international audience outside of the US.



HLED™ SURGICAL LIGHT ALWAYS IN-FOCUS ILLUMINATION MAQUET—THE GOLD STANDARD



A pledge to life: MAQUET is among the world's leading vendors of forward-looking medical technology for operating rooms and intensive care units. Whether Surgical Workplaces, Cardiovascular or Critical Care - MAQUET always puts the needs of staff and patients in the foreground during product development work. And thus MAQUET satisfies the even more exacting demands made on the modern hospital - demands for safety, efficiency and economy.

Bringing expertise in surgical lighting, ceiling service units and multimedia solutions, MAQUET defines the highest standards, quality and innovation throughout the industry for the benefit of patients and the medical staff.

MAQUET surgical lights are known as the world's leader in design and innovation. Combined with the extensive line of ceiling pendants systems, MAQUET provides the most comprehensive solutions for various areas in the hospital.

MAQUET has an unique understanding of the operating room and can therefore offer better surgical lights. HLED™ is based on LED technology and combines comfort, cost-savings, integration and sustainable development.

MAQUET - The Gold Standard.

FOR AN EFFICIENT USE OF OPERATING ROOMS HLED™



Less handling:

- No adjustment needed throughout the surgical procedure thanks to the 3D volume of light: Fresnel lenses produce multiple light beams overlapping in the volume of light which guarantees a perfect visualisation on the surface as well as in deep cavities
- Great manoeuvrability and effortless positioning thanks to the compact, slim and innovative profile of the light head



Reduction of visual fatigue for the staff:

- Shadowless light: separate and independent light sources, combined with 80% of illumination from the periphery, remove unwanted cast shadows while contour shadows are left
- A low radiated heat management thanks to LED technology
- An efficient illumination without spotlight. Consistent lighting of the surgical field
- Convenient and fully stable illumination thanks to the patented FSP™ system (Flux Stability Program)



Total concentration:

- Consistent illumination in of the surgical field irrespective of the position of the surgeon under the light head, blocking the light, thanks to the Automatic Illumination Management (AIM™). A system of sensor in the light decreases the illumination of the LEDs directly above the surgeon head and increases the illumination of the unblocked LEDs



Hygiene and security:

HLED™ is the best system to comply with laminar flow, thus controlling contamination in the OR:

- 24,5% turbulence degree. Far below the standard limit of 35% defined in the DIN standard 1946 part 4
 - Minimize heat build up in the middle of the OR
 - Unparalleled heat management: prevents tissue desiccation
 - Aerodynamic compact design with smooth surfaces allows easy cleaning
- A reliable light designed with proven expertise with virtually no downtime:
- 2nd generation of LEDs with long service life
 - Smart electronics with an independent LED module management which guarantees 50% of the illumination at any given time



SHARING KNOWLEDGE IN HD QUALITY H LED™

HLED™ integrates an evolutive platform designed for HD video.

- 2 Million pixels full HD video camera: a resolution five times higher than conventional ones with an accurate colour restitution
- Immediate access to high-quality images that can be printed, transferred through a network, and digitally archived for documentation and communication use
- Maintain accurate, visual reference material for education and training purposes
- Provide HD images for video conferencing equipment to rapid information exchange, interdisciplinary co-operation, research and training
- Visualisation of the surgical site for the entire OR team
- Sharing images outside the OR for a better patient workflow management





NO DOWNTIME HLED™

Long lasting and cost savings light source:

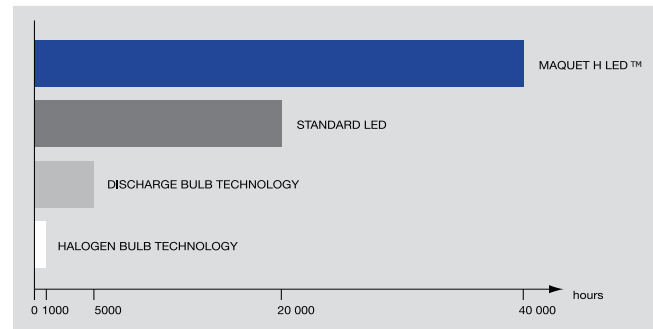
- LEDs have an incredibly long life, compared to halogen light bulbs lasting about 1,000 hours and fluorescent tubes lasting 20,000 hours
- Virtually no maintenance : As LEDs last at least 30 times longer than a halogen light source
- No frequent replacement of the light source, thereby reducing or even eliminating ongoing maintenance costs and periodic bulb replacement expenses

H LED™ is more energy efficient than most halogen light sources:

- more lux with less watts (power consumption)

Highly operational: its “six nines” uptime (99,9999% availability) ensures an optimal OR workflow:

- No moving parts
- Smart electronics architecture
- High number of light sources: from 108 to 168 LEDs





A CLEAN SURGICAL LIGHT HLED™

HLED™ helps to improve productivity and efficiency while reducing costs, inputs, energy consumption, waste, or pollution.

- HLED™ contains no environmental unfriendly products
- 90% of the H LED™ is made with aluminium, one of the most efficiently recycled materials. Aluminium can be recycled indefinitely without any change to the material. Recycling aluminium saves 95% of the energy costs of processing new aluminium because the melting temperature is reduced from 900 °C to 600 °C
- Special care was taken to select recycling materials and smooth surfaces, hence facilitating cleaning procedures and minimising use of detergents and cleaning solutions

- Highly efficient light sources, more lux with same wattage
- 30 times longer lifespan than halogen bulbs results in less energy waste over ten year period
- HLED™ is delivered in a compact packaging, which reduces waste for the hospital



HLED™ complies with GETINGE's environmental policy. The overall objective being to minimise the impact of products on the environment, by using resources more efficiently in product development, manufacturing processes and operations.

VARIOUS DESIGNS HLED™

Suspensions



Classic anchoring system



SATELITE™ Media System



S Suspension



Wall suspension



ROLITE™



ROLITE Classic™

Lightheads



HLED 700 Single Fork or Double Fork version



HLED 500 Single Fork or Double Fork version



HLED 300 Single Fork or Double Fork version

Multimedia Equipments



Single flat screen



Double flat screen



Orchide HD™ camera



Electro-surgical unit support or laptop holder

TECHNICAL DATA

HLED™

Optical and mechanical characteristics	H LED 300	H LED 500	H LED 700
Diameter of lighthouse (cm/inch)	45/17.7	58/22.8	74/29.1
Illumination (lx)	160,000	160,000	160,000
AIM™ function*	No	No	Yes
Field diameter** (cm/inch)	18/7.1	24/9.4	26/10.24
Depth of volume of light L1+L2 at 20% (cm/inch)	100/39.4	120/47.24	120/47.24
Depth of volume of light L1+L2 at 60% (cm/inch)	60/23.6	70/39.4	50/19.7
Colour rendering index (CRI) (Ra)	95	95	95
Colour temperature (K)	4,200	4,200	4,200
Radiant energy (average) (mW/m².lx)	3.6 +/-10%	3.6 +/-10%	3.6 +/-10%
Ambient light characteristics	H LED 300	H LED 500	H LED 700
Illumination (lx)	< 500	< 500	< 500
Electrical and mechanical characteristics	H LED 300	H LED 500	H LED 700
Power supply input voltage (V)	100-120/220-230	100-120/220-230	100-120/220-230
Lighthouse power consumption (W)	60	140	185
Frequency (Hz)	50/60	50/60	50/60
Video prewired	N/A	H LED video	H LED video
Illumination adjustment (%)	30-100	30-100	30-100
Service life (hrs)	> 60,000	> 60,000	> 60,000
Video cameras	PRISMAVISION	ORCHIS	ORCHIDE HD
CCD sensor	1/4" CCD		1/3" Cmos
Signal system	NTSC or PAL		1080i
Effective number of pixels	380,000 (NTSC) or 440,000 (PAL)		2,000,000
Horizontal resolution (at center) (LVT) - Standard NTSC or PAL	460 or 470		N/A
Aspect Ratio	4:3		16:9
S/N ratio (dB)	> 50		> 50
Lens (zoom range)	36 x motorized zoom		120 x motorized zoom
Focal length (mm/inch)	f=3.4 to 122.4/0.1 to 4.8		f=5.1 to 51/0.2 to 2
Mini working distance (mm/inch)	320 (wide end) to 1.500 (tele end)/ 12.6 (wide end) to 59 (tele end)		10 (wide end) to 800 (tele end)/ 0.4 (wide end) to 31.5 (tele end)
Aperture	F1.6 to F4.5		F1.8 to F2.1
Antiflicker	Integrated	Integrated	Integrated
Autofocus	Integrated	Integrated	Integrated
Freeze	---	Integrated	Integrated
Contrast Enhancement	---	Integrated	Integrated
Sensitivity (lx)	1.4 (F1.6, 50IRE)		1.2 (F1.8, 50IRE)
Location of camera	Center of lighthouse in post for sterilizable handle		Separate arm / Integrated
Control bow power supply	100-230 V ; 50/60 Hz ; 50 VA	100-230 V ; 50/60 Hz ; 50 VA	100-230 V ; 50/60 Hz ; 50 VA
White balance	auto/manual	auto/manual	auto/manual
Foot control	Optional	Optional	Optional
Control box	Wall mounted	Mobile	Mobile
Video signal outputs	SD: Composite (2x)	SD: Composite (2x) SDI (2x)	HD: Component YPbPr (2x) DVI-D (1x) HD-SDI (2x) SD:Y/C (1x) Composite (1x)
Serial link interface	RS-232	RS-232/RS-485	

* AIM : Patent EP 143 39 98, granted on 05/11/2005

** Field diameter given for 10% of central illumination 1 m under the cupola.

All values are measured according to IEC 60601-2-41.

MAQUET S.A.S. Quality & Environmental System is certified according to:

NF EN ISO 13485: 20012

NF EN ISO 14001: 2004



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