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HyLED X Series

LED Surgical Lights

Lighten your work

Better Vision

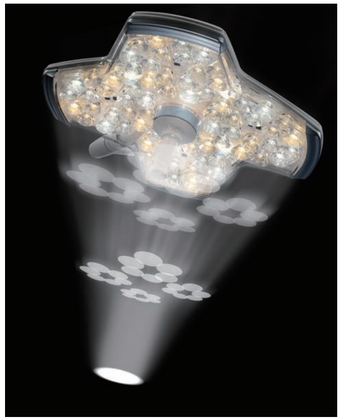
In clinical applications, the optical performance of surgical lamps will change due to the influence of the field of view, the position of the doctor, and the instruments. This can affect the doctor's concentration and efficiency, increasing the risk of surgery and the time of surgery. Therefore, the stability of the optical performance of surgical lamps has become a new standard for assessing their merits.

Unique Lens Design –MPST (Multi-Patch Superposition Technology)

Homogeneous light field even when blocked by the surgeon's head

HyLED X adopts the new Multi-Patch Superposition Technology (MPST) innovative lens group design. Each of lens groups consists of several types of annular light spots, creating a complete patch. All of these light patches are superimposed at the operating field, creating a homogeneous surgical light beam with a shadow dilution of 100% (tube & 2 masks), and D50/D10 values of up to 70%.

The innovative MPST brings a far superior reduction in shadows within the field when compared to traditional lens design. Even if the light head is intercepted by a surgeons' head the illumination in the wound area is always complete and the surgeon's judgement will not be affected.



When the optical path is blocked, the shape of the spot does not change, and there is no local dark area.

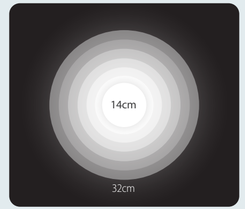
Spot uniformity (D50/D10) reaches 70%

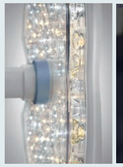
Wide Range Field Size Design with Multistage Adjustment

More Focus and Less Glare

HyLED X surgical light, with innovative light path design, can be adjusted from 14cm to 32cm by 10 levels. This can meet the needs of different types of surgery for different patch sizes.

For surgeries with tiny incisions, such as spine surgery and mitral valve replacement surgery, the light is more focused and the glare from the peripheral region is less. Lens efficiency is is therefore optimised and the luminous area is increased.





Automatic Shadow Management System - AICS Plus

Enhanced Illuminance Compensation by Both Main and Satellite Lights

The illuminance of the operative field will be affected if it is blocked by surgeons' heads. For HyLED X, when sensing a block, the main light will transmit the signal to the satellite light and both main & satellite lights will compensate the blocked field patch luminance in a smooth transition. Specially designed software can avoid a flash caused by an unintentional trigger.

Eye-relaxing Design
iRelax

In clinical applications, visual fatigue is inevitable because medical staff continue to work under high intensity surgical lights for periods of time, and this intraoperative visual fatigue may also increases the chance of surgical errors.

Therefore, eye protection will also be a new criterion for surgical lights.

Combined with "eye-relaxing light" and "smooth brightness" , the iRelax function of HyLED X will reduce the sensitivity of doctors to the illumination of surgical light, reduce their visual fatigue, and provide better Light adaptation.

Eye-relaxing Light

Reducing Eye Fatigue

Eye relaxing light by HyLED X reduces contrast between the surgical site and peripheral region region to provide a decrease in eye fatigue and increase visual performance.

The most effective surgical lighting will provide a gradual transition between the illuminated area and the operating room lighting to reduce eye strain.

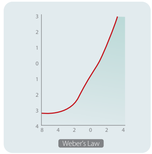
Reducing contrast between the surgical site and peripheral region improves relaxing and visual performance. Ratios in excess of 40:1 can be suitable, but this ratio should be minimised wherever possible. ⓘ

The Illuminating Engineering Society of North America (IESNA)

Smooth Brightness

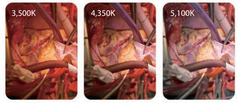
For Better Light Adaptation

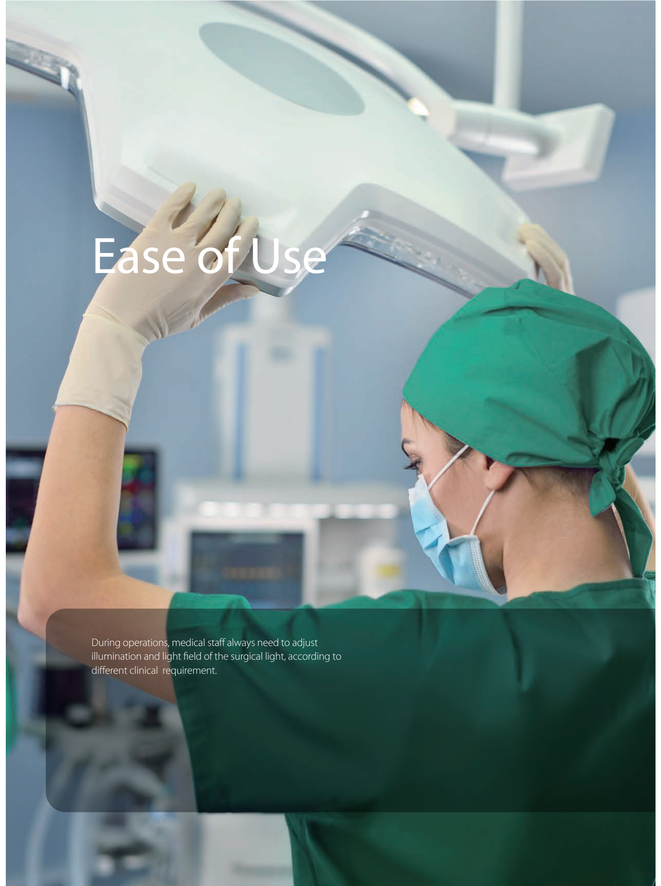
Transition from room lighting to bright operating field light intensity can be discomforting for surgical staff and may take a few seconds for their eyesight to adapt. Based on Weber's law, HyLED X provides a smooth illuminance pattern for better light adaptation.



Temperature colour

The HyLED X light provides a light column with either a fixed daylight-like colour temperature - 4,350K, or a colour temperature variable from 3,500 - 5,100K in five ranks. This function is helpful to distinguish the difference between various tissue types and the perception of true tissue colours, which is used especially within cardiac surgery. Mindray offers a special light source system with a uniform mixed light of cool white LEDs and warm white LEDs to realise the colour temperature adjustment.





Ease of Use

During operations, medical staff always need to adjust illumination and light field of the surgical light, according to different clinical requirement.

Easy to Adjust

Multifunctional Handle with Special Sensor Design

HyLED X can be equipped with a powerful impedance sensor integrated in the control handle. This allows two functions to be controlled directly from the sterile handle, simply rotate to control the illuminance and size of light field. There is no need to reset on the control panel.

Low Resistance Joint Design

With a flexible bearing system integrated in the C-arm joint, it will be much easier to make the adjustment of light head.

Easy to Choose

Specialsed Illuminance Modes

Illuminance requirements, in terms of size of incisions and depth of the operative field, vary with different surgeries. There are 6 options for different surgery mode in the HyLED X control system. One-button switchover to different surgery modes helps save clinical time. All completely intuitive with the self-explanatory, icon-based selection of the touch screen.

- Cardiac surgery mode
- Deep cavity operation mode
- Superficial surgical mode
- Spinal surgery mode
- Urinary operation mode
- General surgical mode

Easy to Change

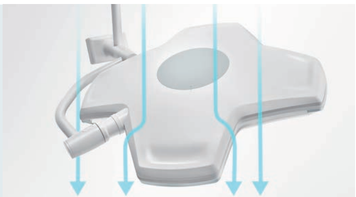
Quick Lock System

Easily transition Integrated Camera and Camera preparation as you Surgical Lights between rooms with no special tools needed.

Mindray focus more on the clinical requirements and design it from the perspective of medical staff, reducing the cost of maintenance and service of the HyLED X.

Safe and Durable

- Invisible screw and seamless design
- Easy to clean for better infection control—more than 49 cleaning disinfectants can be used
- Better Compatibility with Laminar Flow-- DIN 1946
- Safe and durable-- IP54



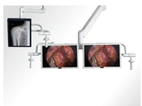
Long Service Life

- LED service life 60000hr
- 5 years warranty for the LED bulbs

Workflow Management

- Arc mask design, more focus on operation
- Anti-Flicker Design, eliminates eye fatigue
- C-arm handle, easy to control

Various Video Solutions



Multi Screen System

Integrated Camera

4K Camera System

Digital Video Recorder

Controller

Wall control

Touch screen control

Control panel

Other Accessories

Various handles for flexibility

HyLED X9 mobile LED surgical light

Technical Specifications *

	HyLED X9, HyLED X9M	HyLED X5
Central illuminance (at 1m distance)	160,000 lux	140,000 Lux
Light field diameter (at 1m distance)	140-320mm in ten levels	140-320mm in ten levels
Light field(D50/D10) **	70%	70%
Depth of illumination (20%)	1,200mm	1,200mm
Colour Temperature	Standard: 4,350K	Standard: 4,350K
	Variable CCT: 3,500-5,100K **	Variable CCT: 3,500-5,100K **
Colour rendering index(Ra)	97	97
Colour rendering index(R9)	97	97
Shadow dilution with tube	100%	100%
Shadow dilution with one mask	65%	60%
	100%(with AICS Plus)	
Shadow dilution with tube and one mask	55%	52%
	100%(with AICS Plus)	
Shadow dilution with two masks	65%	60%
	100%(with AICS Plus)	
Shadow dilution with tube and two masks	55%	52%
	100%(with AICS Plus)	
Ambient light	Green light,＜500lux	Green light,＜500lux
Power supply of all light sources	55w	50w
Power supply	100VAC-240VAC, 50/60Hz	100VAC-240VAC, 50/60Hz
Dimming range	3-100%	3-100%
Light head dimension	≤700mm	≤670mm
Standard features	MPST, iRelax, green ambient light	MPST
Optional functions	AICS Plus	iRelax, green ambient light
Protection against harmful ingress of water or particulate matter	IP54	IP54

* All values measured according to IEC 60601-2-41.
* Due to manufacturing and measuring tolerances, all data relating to lighting systems has a tolerance of +/- 10%.
** Max. patch light field diameter, D50/D10=70%.
*** Five ranks for variable colour temperature 3,500/3,900/4,350/4,700/5,100K.