

HyLED 7 Series

LED Surgical Lights



● R&D Center ● Branch Office

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HyLED 7 Series

LED Surgical Lights

NEW



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healthcare within reach

HyLED 7 Series LED Surgical Lights



In September 2010, LED surgical light innovator Mindray launched HyLED 9700/9500 surgical light with integrating premiere AICS (Automatic Illumination Control System) feature into the global high-end market. The series have been successfully introduced to 60 countries and regions including Western Europe, Eastern Europe, Middle East, CIS, Latin America, Asia-Pacific, Southern Asia and Africa. Mindray's multiple exclusive leading technologies, such as AICS feature, electronically-tunable focusing, and special modes for cardiac, orthopedic and endoscopic surgery, have brought revolutionary changes to clinical users. Mindray lights are highly acclaimed by end-users for their soothing light, focusing-free light beams and cross-shaped design conforming to laminar flow decontamination requirements.

In the beginning of 2013, Mindray will launch its cost-effective HyLED 760/730 surgical light series to march on the middle to high end market. The ultra-light, ultra-thin concentrically circular design conforms perfectly to requirements of modern laminar flow surgery rooms.

Key Features

- Verified Certificate Din-1946 Part 4
- Incredibly long service time up to 40,000 hours
- Central illumination is 160,000 lux or 130,000 lux
- Adjustable light field diameter from 195 to 300 mm
- Maximum depth of illuminance up to 1,200 mm
- Ultra-thin design and excellent maneuverability
- Standard touch control panel
- 330° rotatable integrated HD & SD camera
- Perfectly integrated into Laminar Flow
- Low power consumption
- Ergonomic and compact design less than 12 kg

HyLED 7 Series

LED Surgical Lights

How to Choose Your Surgical Light?

Light Beam Diameter Tuning: Light beam diameter tuning for most conventional surgical lights is done by mechanical structures which tune and reflect light sources. Illuminance for the surgical area is also tunable via mechanical structures. For example, illuminance in the surgical area will drop when light beam diameter increases. This is why the surgeons use 3 light heads to offset the illuminance drop in the surgical area caused by beam diffusion in cardiac surgery. Another example is the adoption of conventional mechanical for focusing purposes to get more concentrated, smaller-diameter beams. However, soaring illuminance in the surgical area is extremely deleterious to surgeons' eyes. Therefore, surgical light illuminance has to be returned to distract surgeons' attention.

HyLED 760/730 surgical light series inherit the exclusive advantages of HyLED 9 series. By adopting non-mechanical, fully-electronic beam diameter tuning while ensuring surgeons' vision will not react significantly to illuminance in the surgical region. This technology substantially improves vision protection for surgeons. So from Mindray's perspective, a good surgical light should, first and foremost, minimize the harm of rays to surgeons' vision.



Shadow dilution with tube 100%



Shadow dilution with one mask 75%

Shadow Dilution: The initial illuminance of a surgical light is in some measure relevant to the residual illuminance in actual operation. But this is not a linear relation. A typical surgical area accommodates 3-4 surgeons, that is to say, in the case of a two-head light where the heads and shoulders of 2 surgeons obstruct the light source, the real effective light for the surgical area includes only the unobstructed rays.



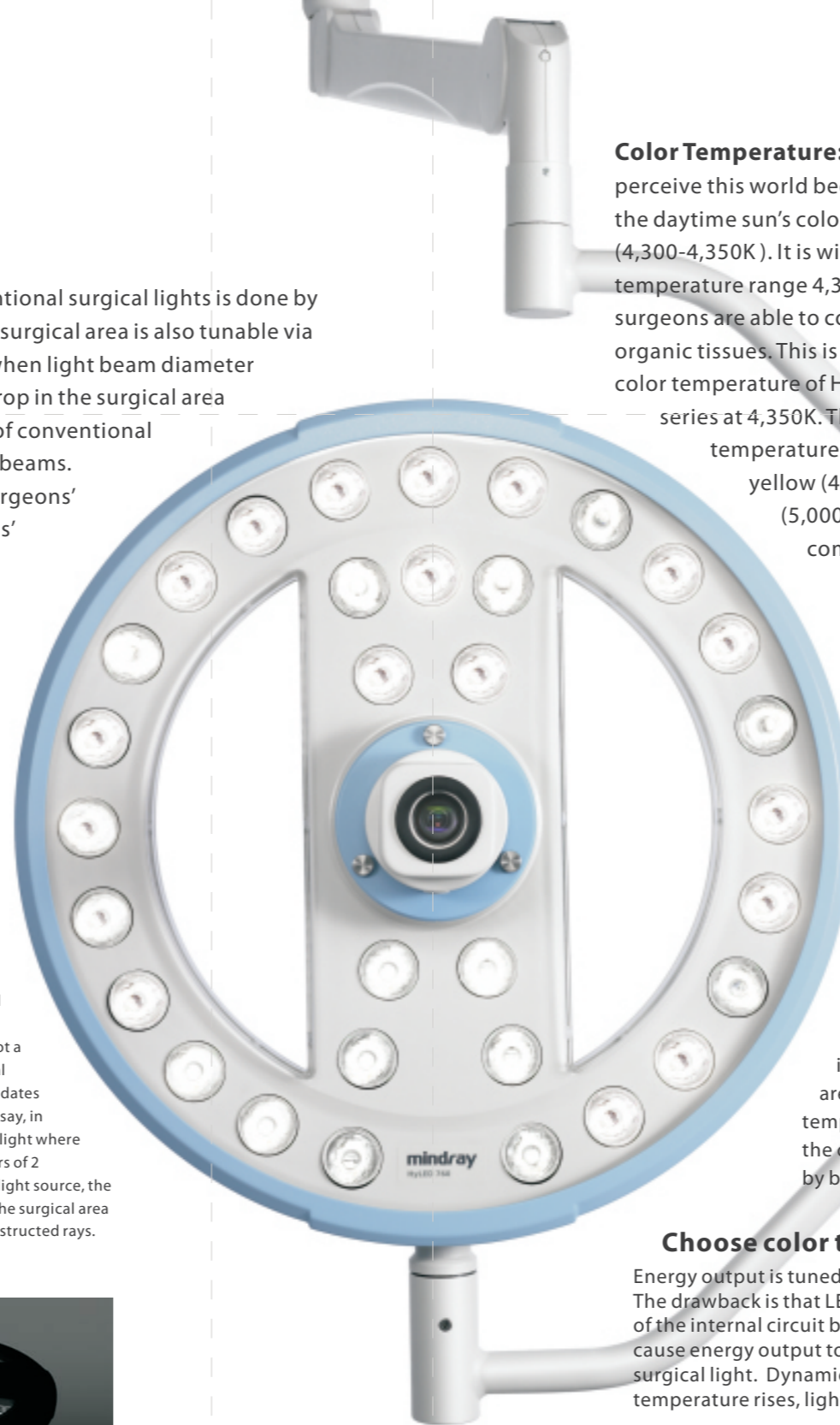
Shadow dilution with tube and one mask 70%



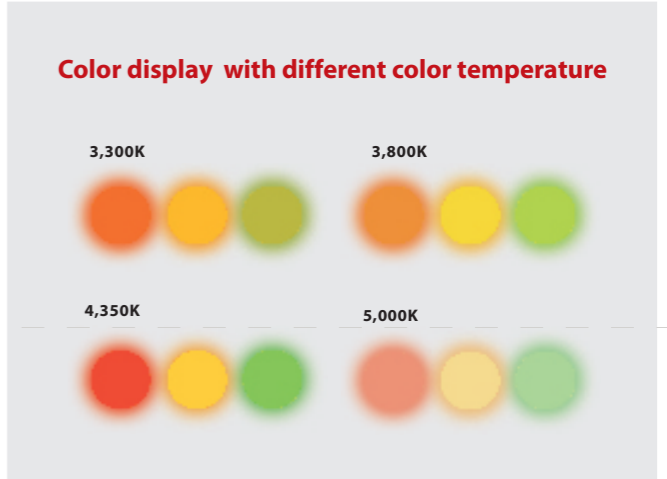
Shadow dilution with two masks 55%



Shadow dilution with tube and two masks 50%



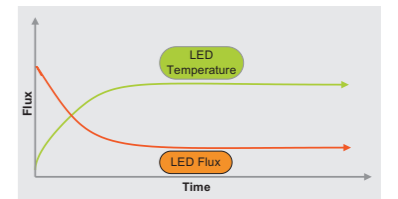
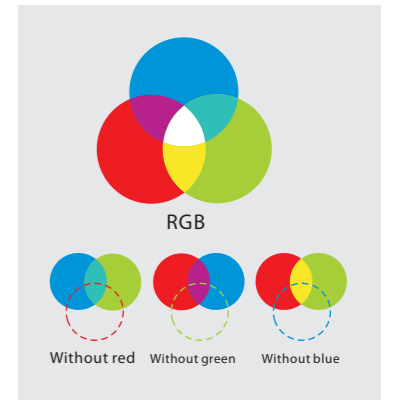
Color Temperature: We can know and perceive this world because we live within the daytime sun's color temperature range (4,300-4,350K). It is within the same color temperature range 4,300-4,350K that surgeons are able to correctly identify organic tissues. This is why Mindray fixes the color temperature of HyLED760/730 light series at 4,350K. Three types of color temperature charts red (3,500k), yellow (4,350k) and green (5,000K) of a signal lamp are compared.



There are Three Commercial Methods of Color Temperature Regulation:

Primary color mixed

The three primary colors (red, green and blue) are blended. The drawback is that surgeons standing under the light will obstruct the light sources for certain colors when a color temperature is configured, because light color derives from blending light sources from different directions. As color temperature changes with the movement of surgeons' body, light color will change and surgeons' identification of tissues will be impacted. (As it's shown in the right picture, the round disks are used in the upper 3 and dozens of RGB photoelectricity are adopted for instruction, a certain color temperature shows in the case of no obstruction, while the color temperature changes in the case of obstruction by body.)



Choose color temperature by power

Energy output is tuned to change the color temperature of light source. The drawback is that LED luminous efficacy will attenuate as temperature of the internal circuit board rises. Therefore, color temperature rise will cause energy output to increase, which affects heat dissipation from the surgical light. Dynamic unbalance in heat dissipation in turn causes temperature rises, light source instability and service life instability.

Color temperature pre-mixed

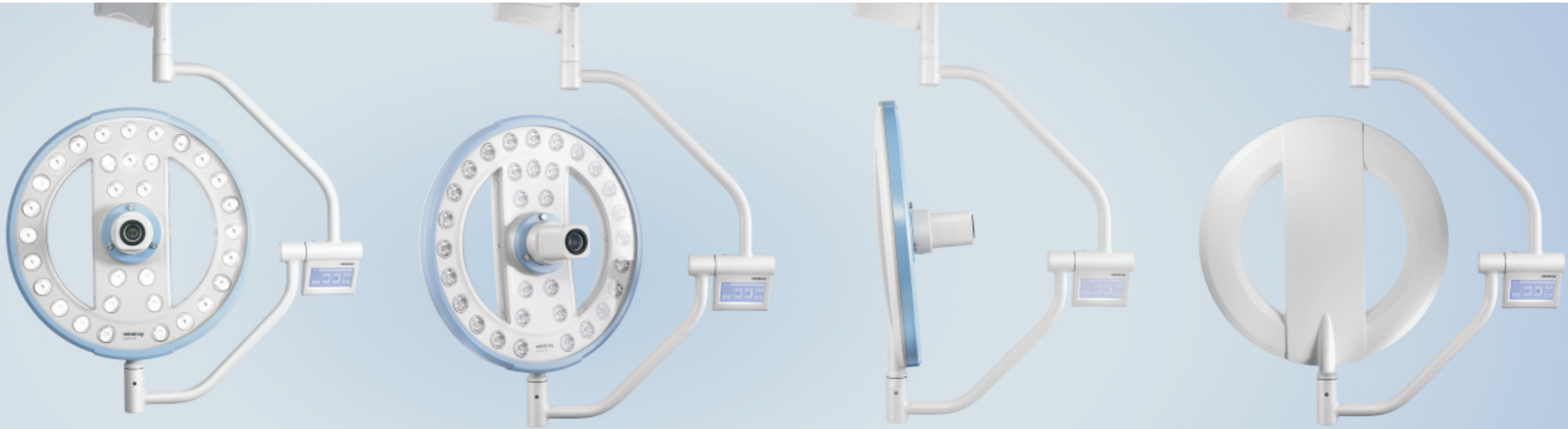
Mindray uses a special light source system with a uniform mixed light of cool white light and warm white light; the light colors within the surgical area will not change even when surgeons block some of the light source during surgery. Therefore, the optimal color temperature adjustment mode is only recommended in the extreme conditions such as cardiac surgery. In addition, this adjustment mode is only available in HyLED9700/9500 series.



HyLED 7 Series

LED Surgical Lights

Ergonomic and Compact Design



Three Kinds of Camera Systems for Selection



Centrally-located standard definition camera with 330° rotation



Centrally-located high definition camera with 330° rotation

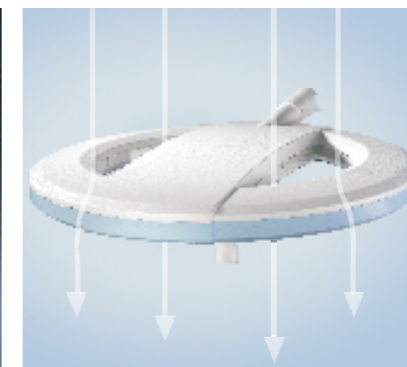


Carrier-arm high definition camera

Ambient Mode and Laminar Flow



Ambient lighting mode: It is a standard configuration that provide a lighting solution for endoscopic operation.

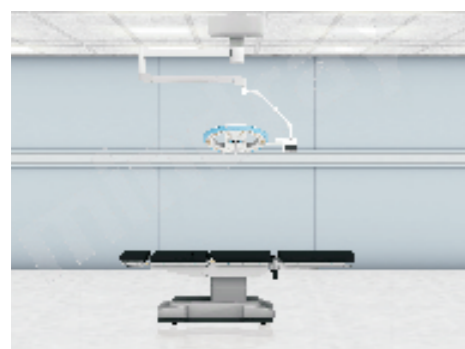
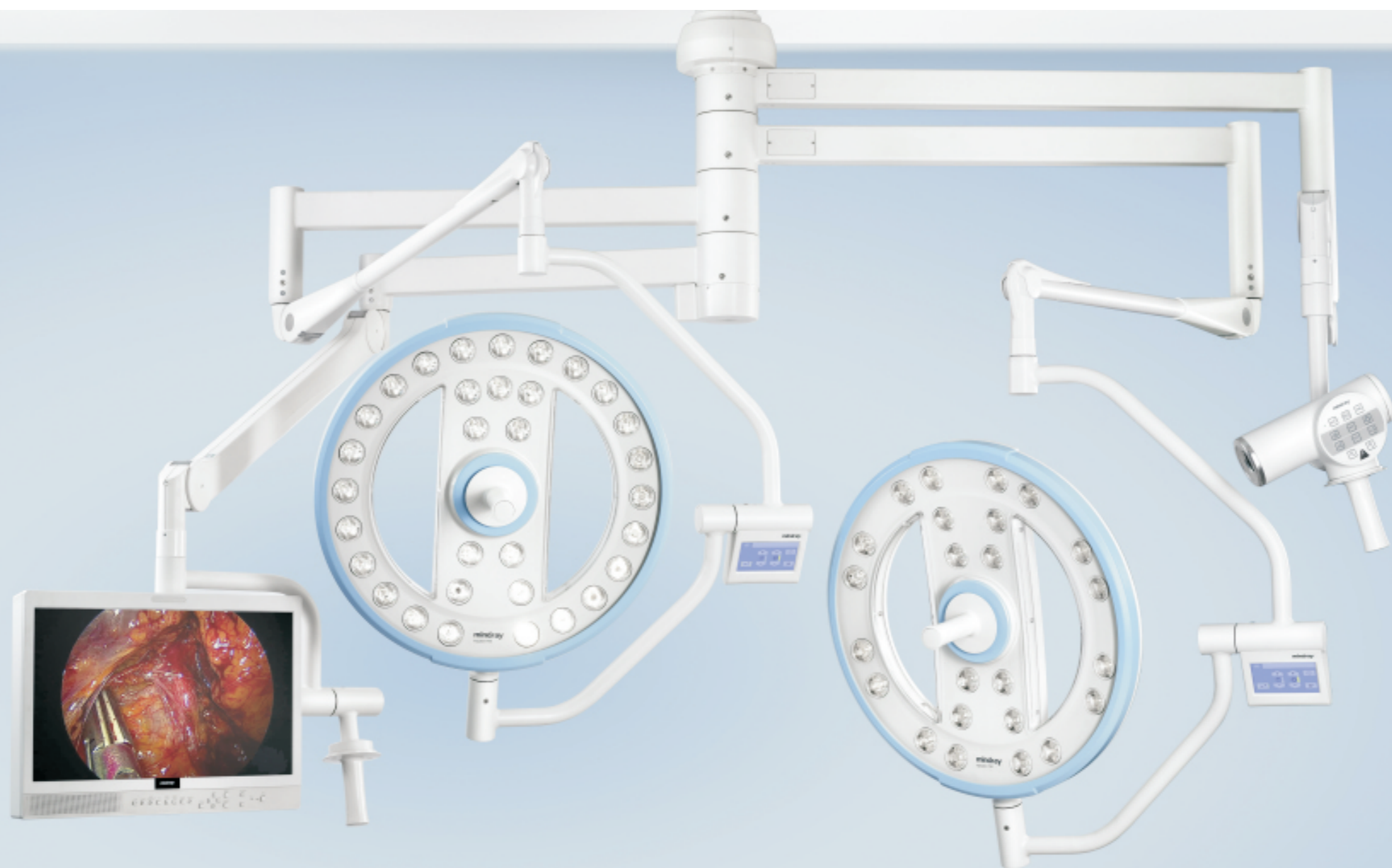


Perfectly Integrated into Laminar flow: Laminar flow ventilation is used in modern operating theatres to reduce the number of infective organisms present in the air, which may lead to post-operative wound infection.

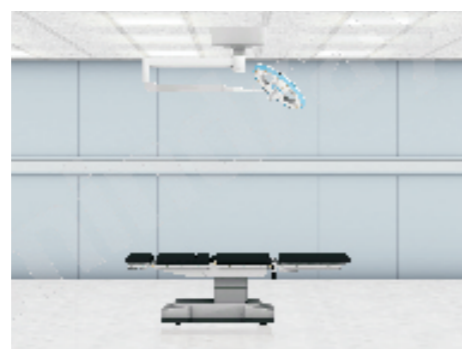
A continuous flow of highly filtered 'bacteria-free' air is recirculated under positive pressure and air contaminants generated during surgery are removed from the site.

Suspended above the operating table, like an umbrella, surgical light might impede such air circulation into the operating field and thus affect laminar flow system. Thanks to the slim double-hollow design bringing minimum turbulence towards clean air, Mindray HyLED 7 series surgical light makes it totally compatible with laminar flow and conducive to perfectly sterile conditions.

Multiple and Customized Choices for Different Needs



Normal spring arm



Low ceiling spring arm



Dual lights with single screen and camera



Dual lights with double screen and camera



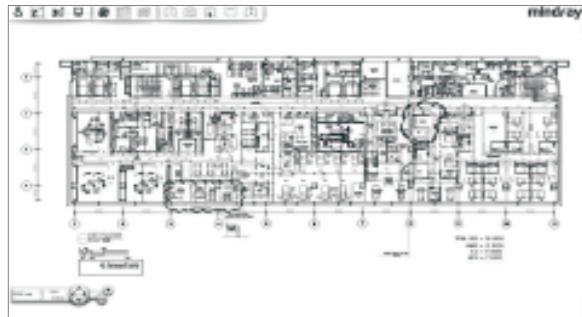
Triple lights with double screen and build-in camera



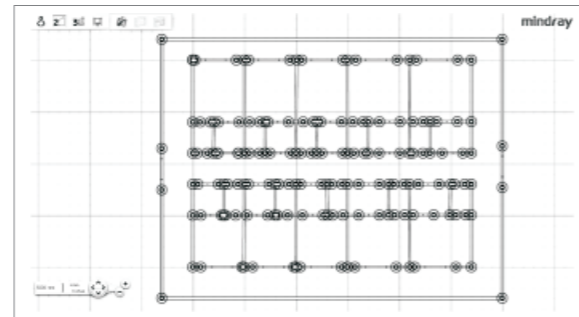
Single light with pendant camera

Mindray 3D Space - Professional 3D Design Tool

How to design the layout of larger scale medical equipment in the hospital, providing optimum work flow for the important departments such as operating room, ICU, and recovery room, is not a easy job which would take a lot of time and effort on AutoCAD & 3ds Max. At the same time, doctors are confused with those layout drawing or elevation drawing. Here comes the solution--3D Space Configurator from Mindray, with friendly user interface, visualized product 3D image and scene simulation.



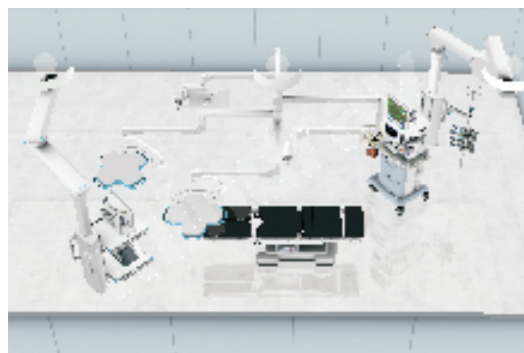
The system is compatible with AutoCAD which allows inputting floor layout in a simple and accurate way.



In a few steps the user can get the professional space and work flow design.



The result is a realistic 3D scene that allows you to walk through the facility and explore the set-up from 360 degrees even prior to production and installation.



Relation Between the Digitalized System and Lights Suspension System

The digitalized surgery room has become a new standard since commercially initiated about 10 years ago, and all surgeries are closely related to the digitalized system. However, digitalization is impossible unless with the ultimate assistance of surgical light suspension/pendant systems. Specifically, AV signal lines should be properly embedded before leaving the works. Therefore, Mindray is ready to enter into an all-embracing partnership with global digitalized system suppliers. Mindray has specialized laminar flow canopy shops, and optic fiber technology is optional, wherein a light arm-embedded optic fiber system transmits audio signals. Professional 3D software is available to locate surgical lights precisely. Conventional lights are installed in the center of the room, the 3D software enables us to install lights in any of the following ways for a maximized laminar flow decontamination effect.



HyLED 7 Series

LED Surgical Lights

Technical Specifications

	HyLED 760	HyLED 730
Central illuminance(at 1m distance)	160,000 lux	130,000 lux
Light field diameter(at 1m distance)	195~300 mm	195~300 mm
Depth of illumination(L1+L2)	1,200 mm	1,200 mm
Correlated color temperature	4,350 K	4,350 K
Color rendering index	95	95
Shadow dilution with tube	100%	100%
Shadow dilution with one mask	75%	70%
Shadow dilution with tube and one mask	70%	65%
Shadow dilution with two masks	55%	55%
Shadow dilution with tube and two masks	50%	50%
Radiant energy	3.6 mW/(m ² *lux)	3.6 mW/(m ² *lux)
Ambient illumination	8,000 lux	6,500 lux
Service life of bulb	>40,000 h	>40,000 h
Bulb power consumption	85 W	65 W
Power supply	100~240 VAC, 50/60 Hz	100~240 VAC, 50/60 Hz
Number of LED bulbs	32	24
Dimming range	5~100%	5~100%
Light head dimension	600 mm	600 mm
Integrated Camera	Optional	No
Carrier-arm Camera	Optional	Optional

Carrier Arm Camera/Integrated Camera	
Picture Elements	Two Mega Pixels HD Camera
Optical Zoom	10 X (f=5.1-50.1mm, F=1.8-2.1)
Digital Zoom	12 X (120X with optical zoom)
S/N Ratio	>50dB
Electric shutter	1/2-1/10,000s
Video Output	Component

Integrated SD Camera	
Picture Elements	400,000 Pixels
Lens	28zoom=3.5mm(WIDE) to 98.0mm(TELE),F1.35p to F3.7
Digital Zoom	12 X (324 X with optical zoom)
S/N Ratio	50dB
Electric shutter speed	1/4-1/10,000 sec
Video Output	FBAS(Composite Video)

Mindray OR Total Solution— Welcome to Mindray Showroom

All the advanced and reliable facilities from Mindray technology, are perfectly matched to give you total support !



Certificate

Exam norm **DIN 1946 Part 4 (12-2008)**

TÜV Rheinland Industrie Service GmbH certifies

Certificate holder: **Company Mindray**
Nanjing Mindray Bio-medical
Electronics Co., Ltd
Nanjing, China

Scope: **HyLED 730, Fa. Mindray**
Condition according to DIN 1946 part 4
Requirements of Annex B, Visual pre-screening
Requirements of Annex D, degree of turbulence
measurement

By an external audit, Report No. 121128 Tu-Guta Mindray
HyLED 730, it was verified that the requirements according
to DIN 1946-4 are met.

Validity: This certificate is only valid in conjunction with the
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HyLED 730 from 28-11-2012, TransMIT GmbH, Kerkrader
Straße 3, 35394 Gießen

Period of validity: The maturity date for the follow-up audit is
10th January 2015

Koblenz, 06/12/2012

Dipl. Ing.(FH)  Holmeister



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