KLS martin GROUP



marLED® X

Operating Light – Xtremely different

Xtremely innovative

marLED® X – the most versatile operating light on the market

Light is one of the most important elements in an operating theater. It has a great influence on the course of an operation and is essential for every successful procedure. But every situation, every tissue and every user is different. What is needed is lighting that is so versatile that it is suitable for every situation and for everyone who operates it.

Hospitals are also under pressure to improve success rates while simultaneously reducing costs. Efficiency in achieving results is extremely important – for the budget and also to stay ahead of the competition. marLED® X reduces the time required to set up the lights to a minimum and has a very long service life.

Therefore, KLS Martin presents innovative light technology in a compact unit: marLED® X.



marLED® X is more versatile for illumination than any other system.
Even more: anyone can operate the light system at once without difficulty.
No longer any need to learn how to operate it. Clear icons ensure that every action is completely intuitive. marLED® X is extremely simple.





Extreme is the keyword for marLED® X. To illustrate this we present someone whose lifestyle embodies this term in his own way: the contortionist. Extremely clear.

Xtremely flexible

You can manage all situations in the operating theater with marLED® X – regardless of the light intensity, size of light field or color temperature required! Every single one of the 96 LEDs can be actuated individually. Variable light field geometry, matrix light function, active shadow management and LightTubeMax with separately configurable parameters give you the widest possible range of setting options.





Application of the latest LED technology

Warm white/cold white LEDs combined with unique high-tech lenses provide brilliant, homogenous light. The special feature: every single LED of the marLED® X can be controlled separately!



Active Shadow Management – light precisely where you need it

Where there is light there is also shadow. But not with marLED® X: Active Shadow Management is a fully automatic system for ensuring that light is always available exactly where it is needed.

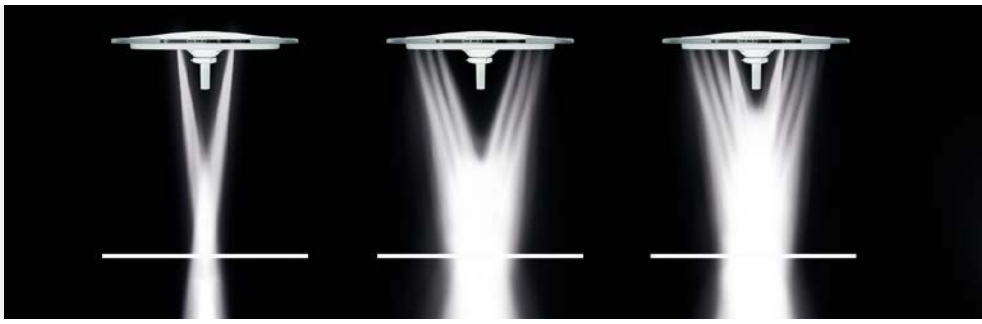


Perfect and even illumination – can be adjusted for any situation

96 powerful LEDs ensure that the surgical site always appears in the best light, literally. The conditions for a successful procedure are always ideal.

X-beam path for maximum variability

Every operation is unique. And that particularly applies to the surgical field and how it is illuminated. The optical-only system can be used to adjust the light field precisely to match the personal preferences of the surgeon – totally without any mechanical parts. With its innovative beam path concept the marLED® X offers you a previously unattainable light field size from 14 cm to 35 cm. The variable light geometry will also impress you – you can select round or oval.



Your benefits at a glance:

- Warm white/cold white LEDs for brilliant, homogenous light
- Variable light field geometry and matrix light function
- Active Shadow Management for shadow-free illumination
- Perfect illumination with 96 separately controllable LEDs
- Maximum light field variability with innovative beam path concept

Xtremely functional

You have three options for operating marLED® X. The control panel on the light for setting the main functions. The SensoGrip multifunction handle, which does not require you to look away from the patient, because all important settings are made simply by turning the handle. However, the best solution is the optional marTouch® Pro control unit, which can be used for individual configuration of all parameters.

Operation with the touch-sensitive marTouch® Pro control unit

marTouch® Pro offers the widest range of functions. You can use the touch-sensitive screen to control all functions intuitively and clearly by tapping and swiping the applicable icons. You can operate every single light separately and multiple lights simultaneously.



Operation with the marLED® X control panel

You control the main functions from the control panel on the light. You can set the illuminance, the size of the light field and the color temperature and activate the default LightTubeMax setting (LTM mode), along with a wide range of camera functions.



Operation with the sensoGrip multifunction handle

The sensoGrip is a multifunction handle. Its microswitches respond to clockwise and anticlockwise rotary movements. This allows two functions to be controlled directly from the sterile handle. You can decide for yourself which functions are essential for you and select them from a total of 36 combinations. Simply rotate to control the size of the light field, illuminance, color temperature, camera zoom and camera image rotation.





Your benefits at a glance:

- Multiple control options for functions
- marTouch® Pro: has the greatest range of functions and can be individually programmed
- Control panel: integrated into the light and controls the main functions
- sensoGrip: multifunction handle for control of the most important functions by rotary movements

Xtremely adaptable

Set the light properties – exactly the way you want them

You can use the touch-sensitive marTouch® Pro controller to adjust every parameter for your specific requirements during the operation. And even better: you can set your own "personal light", i.e. the precise light settings that you prefer. You can also control all the functions of the KLS Martin camera systems without difficulty. All completely intuitive with the self-explanatory, icon-based operation of the touch screen.





Cockpit – select your preferred light

The cockpit is the heart of the marTouch® Pro. It offers virtually all functions at a glance and gives you quick and easy access to numerous custom settings. With its wide range of color-coded icons the marTouch® Pro offers a unique guided tour through the newly designed control panel.

marTouch® Pro – control all functions



Customization of the light

How bright should the surgical site be? How large should the light field be? Do you prefer a cool or warm light for your procedure? You can not only customize all parameters with the marTouch® Pro but you can also save all specific values. You can save the optimal settings for specific surgical situations.



LightTubeMax – customizable

You can use the LTM mode to customize the most important light parameters and automatically jump to a default light field with increased lighting depth and preset illuminance and color temperature. You can configure the LTM parameters illuminance and color temperature exactly to your requirements with the expert function.

Your benefits at a glance:

- Capacitive glass for touch-sensitive screen
- Clearly laid-out icons for intuitive operation by tapping and swiping
- Custom configuration of the light parameters
- LightTubeMax as your customizable wellbeing light
- Light perfectly adaptable for the specific operation

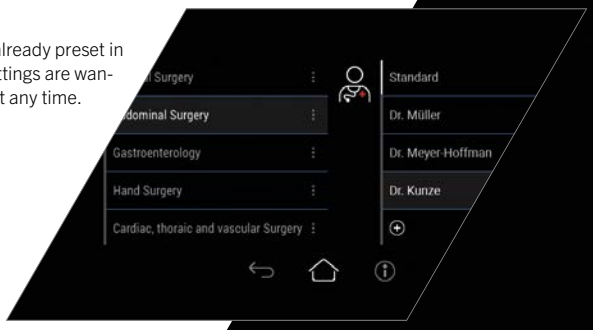
Xtremely individual

Save personal presets – faster preparation for future procedure.

marTouch® Pro offers even more. It allows even more extensive customization. Settings can be saved for specific users and also for specific specialities– available immediately when required. This saves time and increases safety. You can change detailed settings with the expert function.

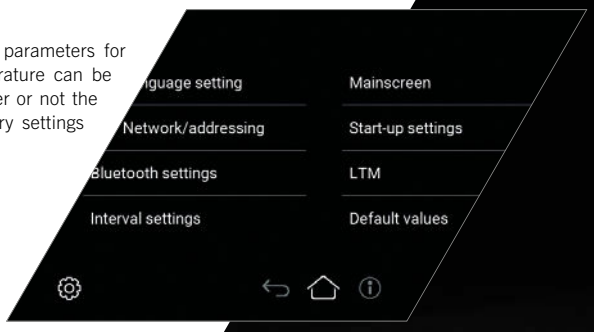
Settings for specific users and specialities

Many operations follow a standard sequence. The most common surgical specialities are already preset in the marTouch® Pro – and they can be called immediately by tapping. If more customized settings are wanted, the surgeon can save the specific settings. They can be modified and supplemented at any time.



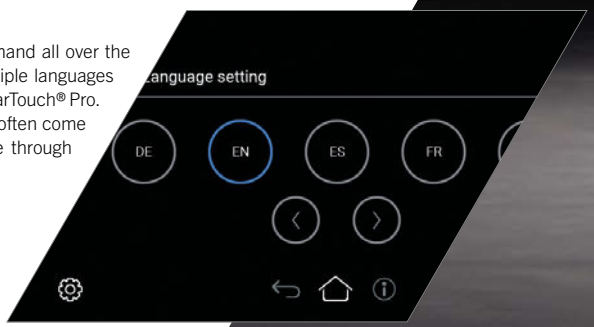
Detailed expert functions

You can specify customized settings for startup actions and parameters for the LTM mode here. Illuminance, light field and color temperature can be adjusted in stages or continuously. You can also define whether or not the marTouch® Pro automatically returns to the cockpit from every settings screen after a specified time.



Language selection

Quality KLS Martin products are in demand all over the world. Therefore, it is obvious that multiple languages can be selected for operation with the marTouch® Pro. Another benefit: surgeons in a hospital often come from different countries and can move through menus faster in their own languages.





Your benefits at a glance:

- User settings and settings for specialities can be saved – and recalled immediately when required
- Expert functions for access to deeper light parameters
- Illuminance, light field and color temperature can be adjusted in steps or continuously
- Customized startup actions can be set



Xtremely consistent

Adaptive color temperature combined with excellent color rendering – for a very natural view

The illuminance and the color temperature can be set precisely and retained in order to create and maintain a consistent ideal light situation and mood. The color rendering index is at the top level, as impressively confirmed by the outstanding quality of the marLED® X system.

Extremely reliable color rendering – Ra 99



Continuous illuminance

The intensity of the operating light can be adjusted from >30% to 100% – continuously. The backLite background light suitable for endoscopes can also be regulated continuously from 1% to 30%.



Adjustable color temperature and optimal color rendering

The color temperature can be perfectly adjusted for the specific operation. It can be adjusted from 3,000 K to 5,500 K – continuously. This provides perfectly adjusted contrast and optimal differentiation between different types of tissues.
The marLED® X also offers an optimal color rendering index of [Ra (1 – 8)]: 99.
The red rendering index at [R9]: 99 is also at the highest level.



Latest Bluetooth® technology

marLED® X allows you to exchange data between the networked lights by the Bluetooth® technology. If radio communication is not allowed, the CAN bus can be used as an option.

Your benefits at a glance:

- Illuminance can be continuously adjusted from >30% to 100%
- Backlight continuously adjustable from 1% to 30%
- Color temperature continuously adjustable from 3,000 K to 5,500 K – for perfectly adjusted contrast
- Latest Bluetooth® technology
- Optional CAN bus for data transmission if radio is permitted in the hospital

Xtremely aseptic

Seamless and smooth surface – easy to clean and therefore extremely hygienic

The marLED® X has a consistent slimline shape. Particular attention has been paid to a closed surface and flow-optimized housing design. Both features ensure that the body of the light can be cleaned quickly and thoroughly. The tempered safety glass of the operating light and the protection class IP55 substantially increase safety and service life.

Closed smooth housing contours

The complete housing has a smooth surface - abrasion-resistant, easy to clean and resistant to disinfectants. All components are seamlessly joined and have no external screw fastenings. marLED® X is IP55-certified – for complete protection from internal dust deposition and moisture.



Scratch resistant glass – withstands even the most aggressive cleaning agents

Light-emitting area from genuine glass

The marLED® X has tempered safety glass, which guarantees high resistance to breakage and is resistant to impact and shock. It is also scratch-resistant and can be cleaned with all cleaning agents.



Optimal aerodynamic properties – prevents air turbulence

The external shape of the marLED® X has been designed to optimize flow, allowing vertical air flows to pass the light with little turbulence. The marLED® X is therefore specially designed for laminar air flow systems.





Your benefits at a glance:

- Functional slimline design of the light housing
- Light-emitting area from genuine glass
- Easy-to-clean closed housing shape – therefore extremely hygienic
- Shape optimized for flow to prevent air turbulence
- Suitable for laminar air flow systems
- IP55: complete protection from dust deposits and moisture inside

Xtremely economical

The marLED® X has a high cost/benefit ratio. The use of top-quality materials combined with the rigid quality measures of KLS Martin means that a long service life is guaranteed. Customized adjustable and saved parameters ensure precise reproduction of light situations and promote efficient surgical results. The ease of service during assembly and maintenance also reduces costs.



Many years of uninterrupted operation are possible – with high-performance LEDs



Long service life

Top-quality materials and rigid quality controls ensure that every KLS Martin product is of extremely high quality and is designed for long service life. This also applies to the components: the LEDs have an extremely long service life and can be used in uninterrupted operation. Another advantage of the marLED® X is the low heat development.



Reproducible light situations

Once saved, user settings and settings for specialities can be recalled immediately at any time. This makes repeated operations very efficient and gives the surgeon a secure base for successful results.



Extremely easy to service

marLED® X offers service technicians easy access to the electronics for quick and efficient service and repair. The complete specifications of the specific light can be read out with suitable instruments. The option for access via marTouch Pro simplifies troubleshooting and subsequent maintenance work thanks to the used Bluetooth® technology.

Your benefits at a glance:

- Consistently high cost/benefit ratio due to top-quality materials and rigid quality controls
- Long service life – high-tech LEDs designed for 10 years of uninterrupted operation
- Reproducible light situations for efficient and successful work
- 100% "Made in Germany" – designed and manufactured in Germany
- Maximum support thanks to software access via Bluetooth® technology

Xtremely versatile

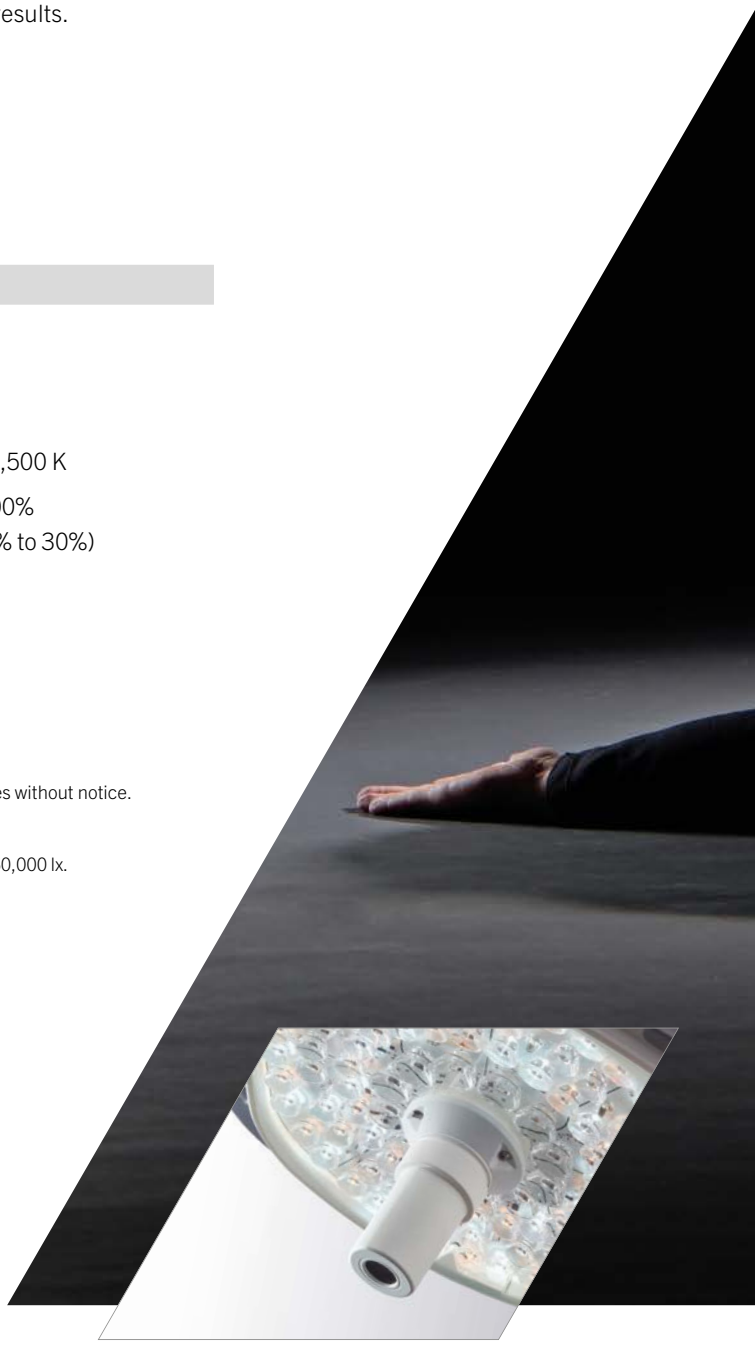
Take advantage of the wide range of accessories from KLS Martin to extend the options for use of the marLED® X operating light. The accessories are designed to match the marLED® X and therefore guarantee the best results.

Technical Data

Operating light	**marLED**® X
Anticipated service life of LED	60,000 h
Light field diameter d10 small – large	14 – 35 cm
Max. illuminance Ec*	160,000 lx
Color temperature	3,000 K – 5,500 K
Dimmability	> 30% to 100% (backLite 1% to 30%)
Color rendering index Ra / R9 / R13	99 / 99 / 99

All values conform to IEC 60601-2-41. Subject to technical and design changes without notice. Light values are subject to a measurement tolerance of ±10 %.

* In accordance with IEC 60601-2-41 the max. illuminance must not exceed 160,000 lx. The measurement tolerance is therefore only -10 %.



Integrated and separate camera systems

marLED® X is designed for integration of KLS Martin medical camera systems – surgiCam® HD and surgiCam® HD wireless. The systems are optimally designed for operation with marLED® X and can be integrated directly into the central sterile handle of the light. The camera is of course available on a separate suspension arm.

For more information: KLS Martin camera brochure





TFT monitor bracket systems

marView® and TFT FS have a wide range of movement for large action radiuses. They can be positioned anywhere in the room and can be easily moved to all positions.

Video components

We also offer various components for further processing of video and image signals for example from endoscopes, arthroscopes or ultrasonic devices. If you are interested, please request more information from the KLS Martin head office.

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