Derungs
MEDICAL LIGHTING

LIGHT FOR CLINICS, MEDICAL PRACTICES AND LABORATORIES

LIGHTING SOLUTIONS FOR THE HIGHEST DEMANDS

YOU TAKE CARE OF YOUR PATIENTS.
WE TAKE CARE OF YOUR LIGHTING.

Light and good vision is natural for all of us. Therefore it is natural for us that we enter the latest trends and findings into the development of innovative lighting concepts. Reliable lighting solutions are particularly important in health care.

Quality: Rely on high-quality materials and precise workmanship.
Design: Experience light in a timeless, modern form.
Innovation: Benefit from intelligent lighting and forward-looking technologies.

reddot design award
winner 2012

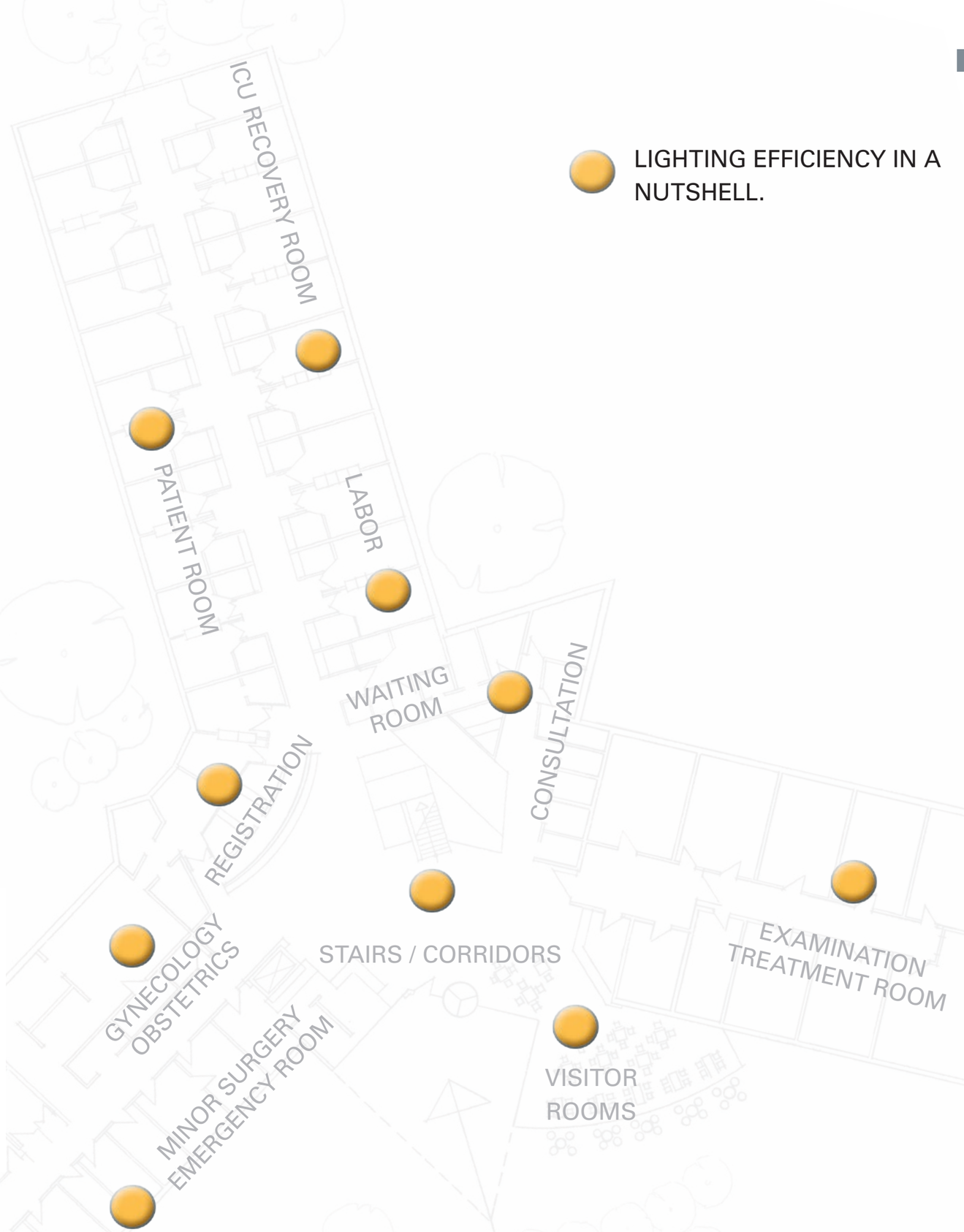
Learn more at → **www.derungslicht.com**

CONTENTS
LIGHTING SOLUTIONS FOR ALL CLINICAL AREAS.

YOUR DAILY WORK.
HIGHEST STANDARDS FOR HUMANS AND TECHNOLOGY.

As a health care provider, doctors and hospitals encounter various tasks: Examinations and treatments, working on the computer. Concentration and an alert mind are almost constantly challenged. Security and reliability of medical equipment are therefore especially important - this includes lighting. At the same time, the subject of economic efficiency gains in importance. Intelligent and high quality lighting solutions help to reduce ongoing operational costs significantly.

LIGHTING EFFICIENCY IN A NUTSHELL.

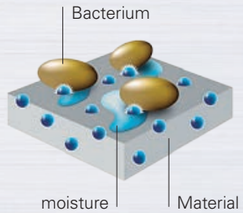


SYNONYM FOR EFFICIENCY? LED!
INNOVATIVE LIGHTING FROM DERUNGS.

Did you know that approximately 40% of all building costs are energy costs when considering the service life? Lighting costs make up a large part of it. Reason enough to think about modern lighting solutions. Whether new investment or replacement: Innovative LED lights are certainly an economic investment. They are not only efficient but also low maintenance. So you can concentrate on your work. In addition to the use of LEDs, well planned lighting has additional positive facets.

HYGIENE IN THE HOSPITAL

Protection against the spread of bacteria
The luminaire head is a critical area for the spread of harmful bacteria and germs. Bacteria are reproduced within 20 minutes on untreated materials. The integrated antimicrobial sanitized® hygiene function in the upper luminaire housing, the control panel and the hand wheels of the joints help to keep these critical areas hygienic. The active biocidal ingredient: Silver ions do not replace regular cleaning.



Permanently stable function
The biocide is integrated in the lamp head during manufacturing. It inhibits the growth and proliferation of microbes and bacteria wherein the silver ions destabilize the cell membrane. This prevents the breathing and feeding of the cell. Tests have shown that 99% of bacteria and germs could be destroyed.

www.sanitized.com

EXAMINATION / TREATMENT ROOM
VERSATILE LIGHTS FOR MULTIPLE TASKS.

For patients, entering the treatment room is often associated with emotional tension, which can be relaxed by good room lighting. On the other hand, the physician and the medical staff need optimal lighting for examinations and treatments, but also for working on the computer. Mobility, long service life, energy efficiency and accurate color reproduction are natural for examination lights. Thanks to the closed geometry of luminaires, Derungs lights meet hygienic requirements and cleaning via spray disinfection.

D$^{med®}$ visano

THE MASTERPIECE AMONG THE EXAMINATION LIGHTS

D$^{med®}$ **visano**

- latest LED technology
- Highest lighting quality thanks to diamond optics
- antimicrobial hygiene function in important parts of the luminaires
- high luminous intensity of 60,000 lux / 0.5 m
- 190mm fixed light field
- Illumination intensity 4-dimming levels
- Accurate color rendering Ra > 93, R13 > 93
- Color temperatures (3500 K, 4500 K) provide individual contrast vision
- Easy control unit on the head
- Maximum range (360° rotating head)
- excellent ergonomics with a spring-loaded aluminum arm system
- Low maintenance costs thanks to LED technology
- Low heat radiation in the light (reduced dehydration of tissue)
- Fulfillment of normative requirements EN 60601-1 and EN 60601-2-41

D$^{med®}$ **halux** LED-1

- LED technology
- 40,000 lx / 0.5 m
- Color temperature 4400 K
- 170 mm fixed light field
- Accurate color rendering Ra> 93
- Service life > 30,000 hours, maintenance-free
- Control unit on the arm
- Low heat radiation in the light
- Low maintenance costs thanks to LED technology
- spring-balanced arm system

MINOR SURGERY / EMERGENCY ROOM
CONCENTRATED AND SAFE WORK.

Lighting comfort plays an important role especially in the field of surgery. Accurate color reproduction, exceptionally high light output without heat development and exact positioning of the luminaire support personnel during medical procedures. Virtually maintenance-free examination lights ensure that the team can mentally and physically concentrate on the demanding intervention.

Dmed® **triango**

LED MINOR SURGERY
LIGHT WITH HIGH LIGHTING
QUALITY AT MINIMAL ENERGY
CONSUMPTION, VERSATILE USE

med® **triango**

- LED technology
- 60,000 lx / 1 m
- 160 mm fixed light field
- Accurate color rendering Ra > 95, R9 > 90
- Light color 4500 K
- continuously dimmable
- Service life of LED > 30,000 hours, maintenance-free
- No heat radiation
- Glaring and shadow-reduced
- Portable and versatile use
- Removable and sterilizable handle
- Maximum energy efficiency at 30 W

reddot design award
winner 2012

D med® **isis** LED

- LED technology
- 42,000 lux / 1 m (2 levels 60% / 100%)
- 150 mm light field
- Accurate color rendering Ra> 93
- Light color 4300 K
- No heat radiation
- Fading and shadow-reduced
- Portable and versatile use
- without a handle / optionally with a handle (removable and sterilizable)
- Energy efficient at 30 W

GYNECOLOGY / OBSTETRICS
DISCRETION AND EMPATHY.

In gynecology, examinations and treatments are particularly intimate. The patient is the focus and should quickly feel comfortable. A soothing interior design and lighting support a relaxed relationship with the doctor. During the examination, the lighting is of great importance: A higher light color and excellent color reproduction, especially in the red range, are urgently required. Compact and moving examination lights are thereby required. At the same time, heat development should not occur.

D^med® **saturn** LED

- LED technology
- 55,000 lx / 1 m
- Light field, adjustable
- 140 mm - 320 mm / 1 m
- Light colors 3700 K, 4500 K, 5000 K
- Color rendering Ra > 93
- Service life > 30,000 hours, maintenance-free
- No heat radiation
- Dimmable 20% -100 (6 levels)
- Low power consumption of approx. 30 W

D^med® **halux** LED-3

- LED technology
- 40,000 lx / 0.5 m
- Illumination intensity 5-dimming levels
- Light colors 3300 K, 3800 K, 4400 K
- 170 mm fixed light field
- Accurate color rendering Ra> 93
- Service life > 30,000 hours, maintenance-free
- Control unit on the head
- Low heat radiation in the light
- Low maintenance costs thanks to LED technology

D^med® **saturn** LED

ROBUST AND WITH
HIGHEST FUNCTIONALITY

INTENSIVE CARE
INTENSIVE AND SENSITIVE LIGHTING.

The care and monitoring of critically ill patients poses special challenges. Top modern medical technology, continuous monitoring and fast response times require an alert mind. First class visibility conditions are essential for the doctor and staff. A friendly general and night lighting complements perfectly. Since light is also perceived subconsciously, the use of bio-dynamic light as such as the light management system Visual Timing Light is recommended (page 30).

Dmed® visano

LED

LATEST LED TECHNOLOGY, ANTIMICROBIAL HYGIENE FUNCTION IN IMPORTANT PARTS OF LUMINAIRES

Dmed® visano

- latest LED technology
- Highest lighting quality thanks to diamond optics
- antimicrobial hygiene function in important parts of the luminaires
- high luminous intensity of 60,000 lux / 0.5 m
- 190mm fixed light field
- Illumination intensity 4-dimming levels
- Accurate color rendering Ra > 93, R13 > 93
- Color temperatures (3500 K, 4500 K) provide individual contrast vision
- Easy control unit on the head
- Maximum range (360° rotating head)
- excellent ergonomics with a spring-loaded aluminum arm system
- Low maintenance costs thanks to LED
- Low heat radiation in the light (reduced dehydration of tissue)
- Fulfillment of normative requirements EN 60601-1 and EN 60601-2-41

Dmed® halux two

- Switchable illumination intensity
- 18‘000 lx /0.5 m, 10° (spot) 4‘500 lx / 0.5 m, 36° (flood)
- Individually adjustable
- Risk -free placement of light
- Luminaire head will only stay warm to the touch even after continuous use
- Robust and attractive design - long service life guarantee
- Ease of maintenance. Clean and easy to clean thanks to the closed cable duct

RECOVERY ROOM
SOOTHING LIGHT CALMS THE MIND.

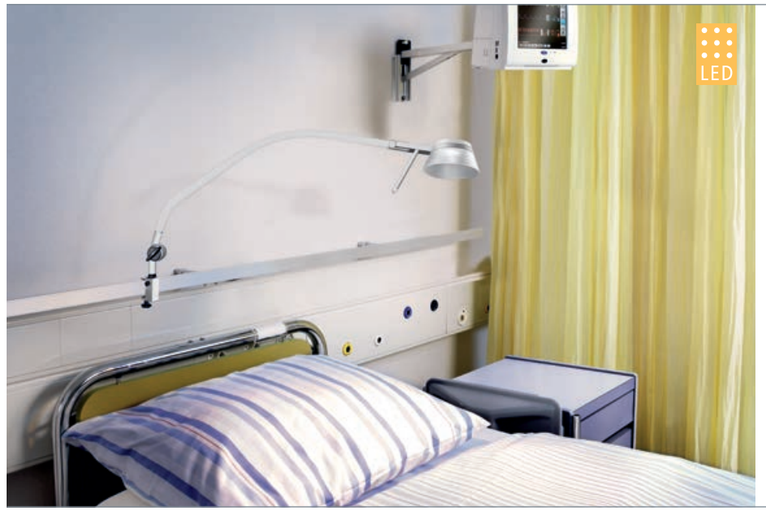
While recently operated patients wake up, it is especially important to provide them guidance and security through homogeneous and glare-free light. A light that addresses the natural lighting needs of patients, for example, via a night light or various light scenes that allows to gently wake up. A separate or investigation or selectable examination light ensures at the same time that the patient's condition can be controlled quickly and safely.

Dlite® **vanera**

DESIGN AND AESTHETICS
IN PERFECTION.

Dlite® **vanera**

- General lighting, indirect
- Reading light (direct)
- Examination light (indirect / direct)
- LED night light
- Optional switchable DALI
- Upon request, the various light scenes are individually switchable or dimmable
- Uniform illumination of the room and pleasant, low glare, low reflectance, low shadow light
- Upon request: Toolbox with socket
- Upon request: Electric switching relay for reading light via a light-signal call installation



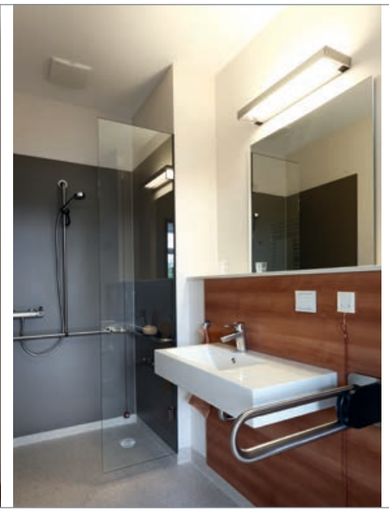
Dcare® **amalia** clinic

- LED technology
- Strong reading and maintenance light in warm white (3000 K) night light in amber
- ON/ OFF sensor button for the operation
- Ambient light function via a 360° turn-over axis
- Handle with illuminated ON/ OFF sensor
- Easy to clean thanks to a closed design
- Flex arm with a plastic coating
- Cable joint on the base
- Lamp shades in various design variants
- Fulfillment of normative requirements EN 60601-1 and EN 60601-2-41

PATIENT ROOM
THE TEMPORARY LIVINGROOM.

Most of the time, the patient is located in this room. Of course, this room must provide multiple activities: Barrier-free mobility, reading, or other activities, safety and orientation at night. Functional and easy-to-use light is particularly important for the medical team. It must be switchable during examinations, treatments or emergencies at the push of a button and create optimal visual and working conditions. An additional reading and maintenance light complements the basic lighting here.

D[lite®] **vanera** bed / **vanera** bath



- General lighting, indirect
- Reading light (direct)
- Examination light (indirect / direct)
- LED night light
- Optional switchable DALI
- Special plastic prisms ensure glare-free light
- Provides good visibility and safety
- Upon request: Toolbox with socket
- Upon request: Switching relay for the light-signal call installation
- Upon request: Toolbox with spot
- Upon request: Bath version IP 44

D[lite®] **amadea** bed

- General lighting, indirect
- Reading light (direct)
- Examination light (indirect / direct)
- Night light
- Optional switchable DALI
- Excellent light efficiency and light output thanks to DRS Double
- Reflecting system and T5 fluorescent lamps
- Provides good visibility and safety
- Glare-free light

D[care®] **amalia**

LED

CONVINCES WITH A STRONG LIGHT OUTPUT AND PERFECT DESIGN.

reddot design award
winner 2012

LABORATORY
WORKING WITH OPTIMAL LIGHT.

Laboratory examinations represent an important and no longer indispensable component in the modern hospital. The achieved results are an essential requirement for the diagnosis, treatment, thereby ensuring the entire course of the patient‘s illness. Optimal lighting is imperative for laboratory work. The most demanding tasks require the highest mental concentration. The lighting groups TANEO and TAMETO offer a high quality and efficient solution for optimal light in the clinical laboratory and the dental laboratory with numerous variants.

TANEO

ALL AROUND TALENT FOR WORKING WITH OPTIMUM LIGHT

TANEO

- LED technology
- Shadow and reflection glare free surface light
- Illumination intensity of 1300 to 3500 lux (depending on the model)
- Service life of the LED up to 50,000 hours
- Continuously variable dimming
- Excellent color reproduction and outstanding contrast vision
- Maximum mobility due to the spring-loaded arm system
- Housing made of colorless anodized or white painted aluminum and black plastic side panels

TAMETO

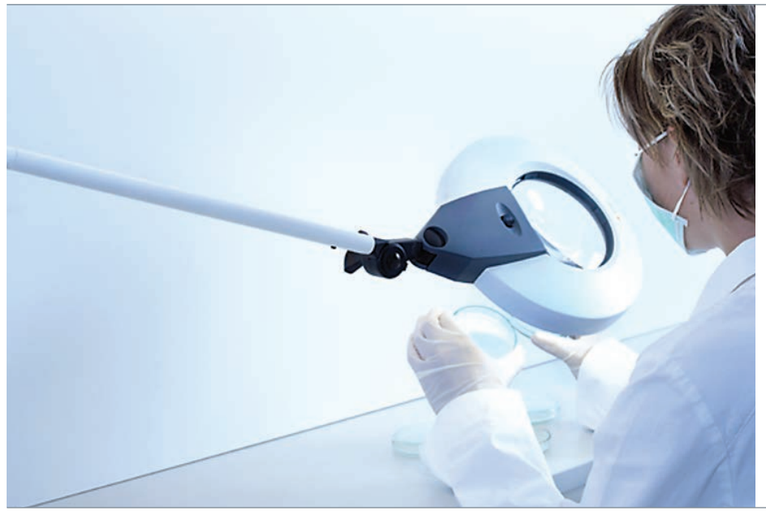
- LED technology
- Extremely homogeneous, glare and flicker free light
- Continuously variable dimming
- Service life of the LED up to 50,000 hours
- Conical prism glare control
- Mounting by using mounting brackets or T-slots
- Protection degree IP20, protection class I
- Housing made of colorless anodized or white painted aluminum and black plastic side panels

MAGNIFYING LAMPS FOR DIAGNOSIS
WHEN DETAILS AND SPECIAL CARE ESPECIALLY COUNT.

In a medical environment, detailed work is required. The magnifying lamps OPTICLUX and TEVISIO offer the perfect lens and the perfect light. The lights thereby not only convince by their ergonomics, but also as extremely efficient bulbs, innovative linkage technology and optimally aligned to the eye distance to the field of vision. Thanks to the excellent illumination of the area to be examined, physicians and laboratory staff can concentrate fully on their work.

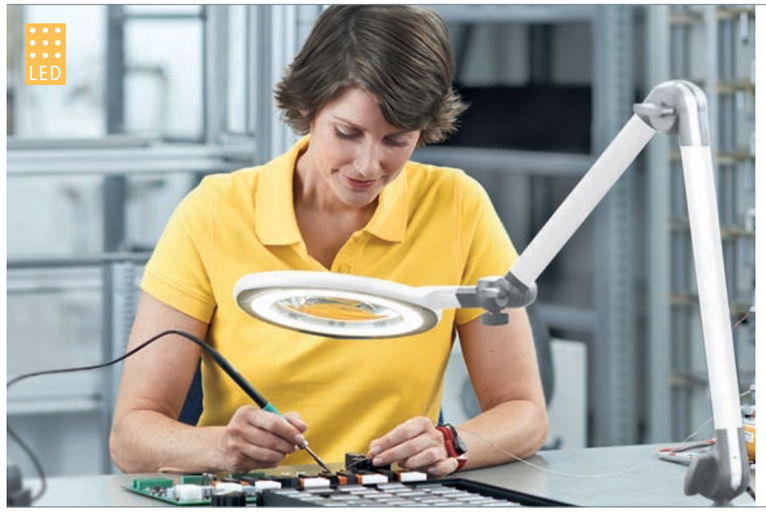
OPTICLUX

GROUNDBREAKING
COMBINATION OF EFFICIENCY,
AGILITY AND QUALITY OF VISION



OPTICLUX

- T16-R fluorescent lamp
- Distortion-free presentation
- Color temperature neutral white 4,000 K
- Glare control through opal white screen
- Hard coated plastic lens Ø 120 mm with 3.5 or 6 diopters
- optional glass lens Ø 120 mm with 4 or 4 + 8 diopters (cemented additional lens)
- Spring-balanced arm system
- With switch in the luminaire head
- Protection degree IP20, protection class I



TEVISIO

- LED technology (48 LEDs)
- Up to 6,000 lx at only 14 W
- Continuously dimmable
- Scratch-resistant glass magnifier
- Large field of view with a diameter of 153 mm
- Visualizer function for structure emphasizing effects
- Very high color rendering
- Magnification through 3.5 diopters, 11.5 diopters with additional lens
- Maximum mobility due to the spring-loaded arm system

iF product design award 2012

REGISTRATION / WAITING ROOM
A FRIENDLY WELCOME.

As in real life, the first positive impression also supports the well-being and relaxation of the patient. Good lighting provides the patients with safe mobility and creates a pleasant atmosphere. Indirect-direct lighting improves the perception of space and uniformly lights up any room. In addition to the medical activities, personnel have to perform a variety of office tasks. The work on the screen requires customized general and desk lighting.

D^lite® amadea

GLARE-FREE ADVANCED
WORKPLACE LIGHTING

D^care® amalia standard floor lamp

- Powerful reading and maintenance light with 3 LEDs in soft white (3000 K)
- ON / OFF sensor for the orientation / night light in amber
- 360° turn-over axes
- Handle with illuminated ON/ OFF sensor for the reading light
- Easy to clean thanks to a closed design
- Flex arm with a plastic coating
- Cable joint on the base
- Lamp shades in various design variants

reddot design award
winner 2012

D^lite® vanera LED

- LED technology
- Service life of the LED is 50,000 hours (L90 / B10)
- General lighting, indirect
- Reading light (direct)
- Examination light (indirect / direct)
- Night light (LED or DALI)
- Special polymer prism sections provide an optimized asymmetric light steering - uniform ambient lighting and pleasant, low glare, low reflectance, low shadow lighting
- Upon request: Toolbox with socket
- Upon request: Electric switching relay for reading light via a light-signal call installation

VISITOR AREAS / STAIRS / CORRIDORS
SAFETY INSTEAD OF FALLING HAZARD.

Safety and accessibility of patients has top priority in traffic areas in hospitals and doctor's offices. In particular, older patients have a significantly higher lighting requirement. The staff and visitors also must be able to move safely in hallways, common areas or stairwells. Light creates atmosphere here and contributes in relaxing and the well-being of patients. At the same time, modern lighting management systems also fulfill the desire for economic efficiency and biological effect.

D[lite®] **vanera** Orbit

HIGHEST LIGHT QUALITY IN A TIMELESS DESIGN

D[lite®] **vanera** Orbit

- 1 or 2 fluorescent lamp(s) T5 R 22W, 55W or 55/60W
- General direct lighting, indirect distribution for ceiling and wall illumination
- Electronic ballast (optionally DALI)
- high quality lacquered PMMA lamp shade
- Suitable for walls and ceilings
- Upon request: LED version
- Diameter: Ø 395/595 mm

D[lite®] **amadea**

- Available as pendant and wall lamp
- General indirect / direct lighting
- Excellent light efficiency and light output thanks to DRS Double
- Reflecting system and T5 fluorescent lamps
- Pendulum length adaptation 20 - 150 cm
- Suitable for various ceiling heights
- Homogeneous and uniform illumination of the room
- Provides good visibility and safety
- Emergency lighting with 3 hours battery operation (on request)
- Glare-free light creates very low shadow lighting

OFFICE / ADMINISTRATION

MULTIPLE LIGHTING SOLUTIONS FROM WALDMANN.

The demands on the equipment also increase within office areas. Light has therefore become an important design tool for architects and planners. It not only creates atmosphere, but it also affects the well-being and performance at work. Lighting requirements are very personal. Aesthetically and functionally finished pendant, extension, wall or workstation lights create the best conditions for fatigue-free working.

ATARO LED

INTELLIGENT TECHNOLOGY
BRINGS HIGH LIGHTING QUALITY
DIRECTLY TO THE WORKPLACE

ATARO LED

- LED for work and room lighting
- Easy to reach, multi functional control element
- head can be turned by + / - 45°
- Anti-glare with light-amplifying AMBIO micro-prisms
- Future-proof thanks to LED light engines according to the Zhaga standard
- Service life of the LED is 50,000 hours (L70 / B50)
- Base plate cutout for optimal positioning in the workplace
- Separate switching and dimming of direct and indirect light (for luminaires without sensors)

MINELA

- Sensor switch in lamp head
- LED technology

VISUAL TIMING LIGHT.
VTL IN INTENSIVE CARE

Independent studies show a direct link between daylight and well-being. Biodynamic light has therefore a positive impact on the emotional and physical well-being. The light in the morning invigorates the mind and promotes activity. From the middle of the day, warm tone light supports the body and prepares it for the night. The day-night rhythm is sustainably stabilized. Some gerontologists even see the opportunity to reduce the dose of sleep-inducing drugs.

VISUAL TIMING LIGHT.
Whenever there is a lack of natural daylight, the light management system **VTL** from Derungs provides people with the proper light.

ACCESSORIES

HOSE BRACKET

Material:
chrome-plated aluminum

Fastening:
Table, wall, rail, wheeled stand

Specifics:
including double ball holder
including 6 piece cable holder
including 6 piece hose bracket

Order no. D13.433.000

PIPE BRACKET FOR LIGHT

For round and oval profiles Ø 30 to 40 mm

Order no. D12.313.000
white

ROLLING TRIPOD R TELESCOPE

Material:
Stainless steel

Dimensions:
0.8 - 1.4 m

Order no. D14.911.000

EXTENSION ARM

Material:
Powder coated tubular steel

Dimensions:
400 mm, Ø 16 mm

Order no. D13.363.000
pure white

RAIL ATTACHMENT

Material:
natural anodized aluminum

Equipment rail:
25-35 x 8-10 mm

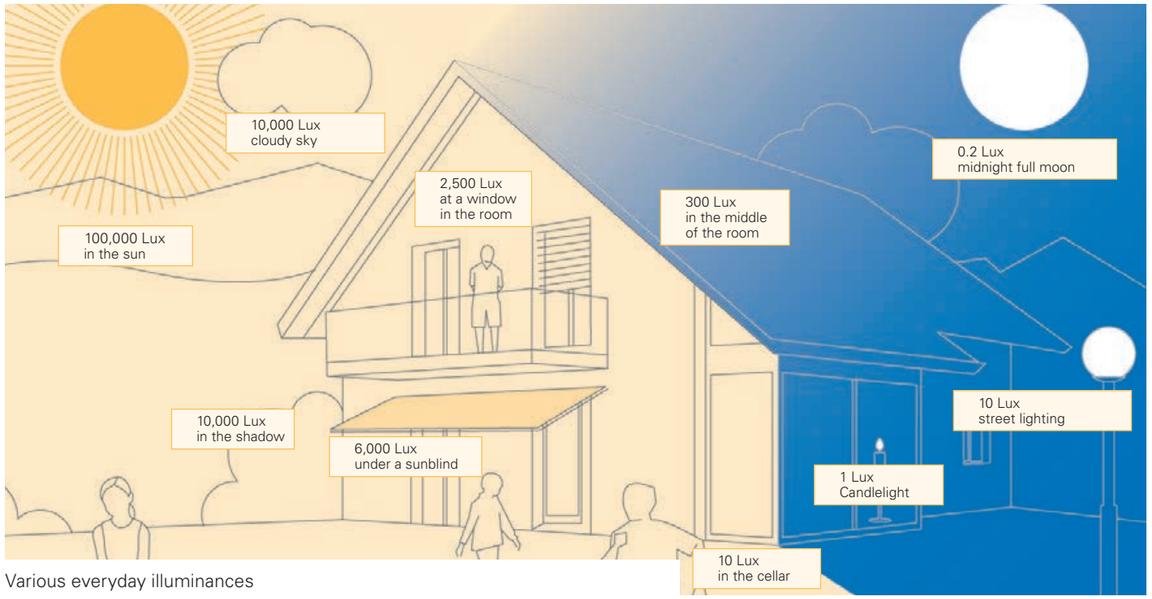
Order no. D13.269.000

WALL FASTENER

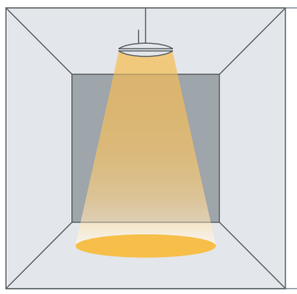
Material:
Polyamide GF

Order no. D13.231.000
pure white

LIGHTING TECHNOLOGY FUNDAMENTALS
ILLUMINANCE

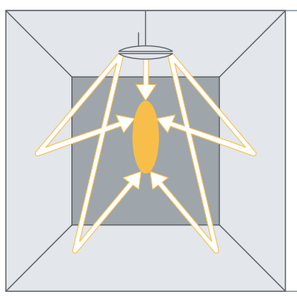


Various everyday illuminances



Illuminance

Illuminance, that is to say the luminous power radiated onto an area, using the unit Lux, is the most important measurement in lighting technology. As a result of declining eyesight, older people need higher levels of lighting for navigating the same visual tasks as younger people. Throughout the day also transition areas between light and dark, e.g. house entrances, which appear especially bright during the day and dimmed at night (lock function), must be lighted so as to facilitate the adjustment of the eye when entering from the light of the world outside into the darker interior. Sufficient illuminance reduces uncertainty and accidents.



Cylindrical illuminance

Cylindrical illuminance is the evaluation criterion for the lighting level of vertical and nearly vertical areas of spatial items. It is also used as the measurement for the impression of brightness in the room, especially as the evaluation criterion of the brightness of faces. An optimal cylindrical illuminance allows excellent recognition of faces, door handles, light switches, colors etc.

Thanks to the usage of high-quality components in connection with innovative technologies in the development of luminaires, Derungs Licht AG can ensure the maximum illuminance with her luminaires.

LIGHTING TECHNOLOGY FUNDAMENTALS
COLOR RENDERING / COLOR RENDERING PROPERTIES

Color rendering

The impression of color of an illuminated object is dependent upon the spectral composition of the light. For this reason, the spectral properties of the light source play an important role. Cool white lighting highlights blue, purple and green shades. Warm white lighting highlights red, yellow and orange shades.

A measuring value, the color rendering index Ra, is used in order to describe the color rendering properties of light sources. This index indicates how the colors will be reflected under the respective light source in comparison with the color reproduction in natural daylight. The highest Ra value is identified with the number 100 - Ra 100 means that all the colors of an object are perceived as in natural daylight. These then appear to the viewer as “natural”. The more the color reproduction index Ra deviates from 100, the worse the colors on the illuminated objects are rendered.

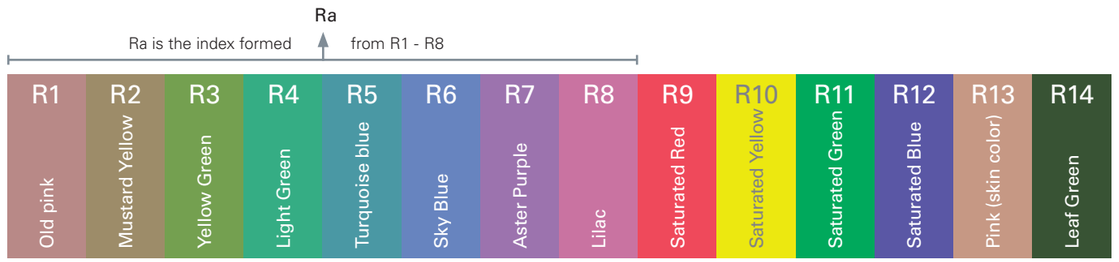
Lamps with the highest color rendering of level 1A will be requested for skin examination, medical treatment and operations. These are so-called color-critical requirements. These lamps produce less light, and are somewhat more expensive than the fluorescent lighting of level 1B (lamps with good color rendering for interior lighting), but they ensure the specialist carrying out the treatment an absolutely color-true light.

Determination of the Ra value of a light source

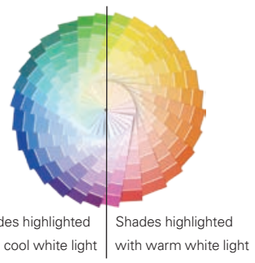
Generally, in order to determine the Ra value of a light source, 14 determined test colors, which are dominant in the nature, are lighted with a reference light source and with the light source to be tested. The smaller the differences between the reference light source and the tested light source, the better the color rendering properties of the tested light source.

The red test color R9 plays an especially important role in medicine, since the differentiation of various shades of red with tissues and blood is extremely difficult.

R13 is the “skin color” test color. It is generally very important for skin treatment (for better recognition of blood-vessels and veins), especially in doctor’s practices, and in the area of cosmetics.



Color rendering properties



Poor color rendering properties make it impossible for our eye to recognise all present colors.

Good color rendering properties enable our eye to see all actually present colors.

LIGHTING TECHNOLOGY FUNDAMENTALS
LIGHT COLOR AND COLOR TEMPERATURE

Light color / Color temperature

The color of a lamp is characterised by its color temperature. The object of comparison is the “black body” (made of platinum) which, when it is heated, takes very precise colors at determined temperatures. At the beginning it is dark red, then red, after that orange, then yellow, finally white, and at very hot temperatures light blue. A specific color is thus defined with an indication of the temperature in K (Kelvin) of the ”black body“. The Kelvin temperature scale begins at the absolute zero point (-459,67 °F / -273 °C).

The light colors of lamps

The standards divide the light colors of the lamps into three groups:

Light color	Color temperature in Kelvin
Warm white (ww)	< 3300
Neutral white (nw)	3300 - 5300
Daylight white (dw)	> 5300

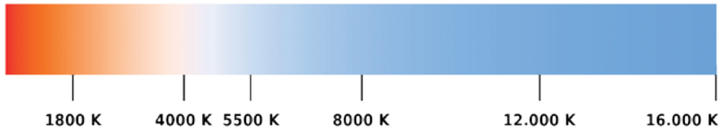
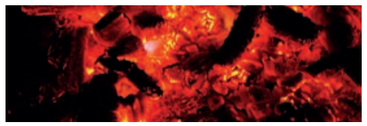
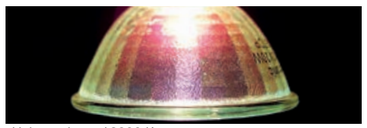


Table for visual understanding:


Red heat / 500 K


Candle / 1500 K


Light bulb 40 W / 2680 K


Halogen lamp / 3200 K


Late evening sun / 3500 K


Fluorescent lamp / 2000 - 17000K


Morning sun / 5000 K


Midday sun / 5500 K


Photo flash / 6000 K


Fog / 8000 K


In the shadow / 9-12000 K


Northern light / 15-25000 K

LIGHTING TECHNOLOGY FUNDAMENTALS
ENERGY EFFICIENCY AND MAINTENANCE / LIGHT FIELD DIMENSION

Energy efficiency (room lights)

It should never be forgotten that older lighting installations consume more energy than new ones. Investments can thus be amortized through savings even in a short period of time. All our room lights are fitted with T5 bulbs and electronic ballasts. This already brings about great energy savings. Much light with low energy consumption - long-life fluorescent lamps (15,000 hours) = low maintenance costs.

Maintenance factor WF

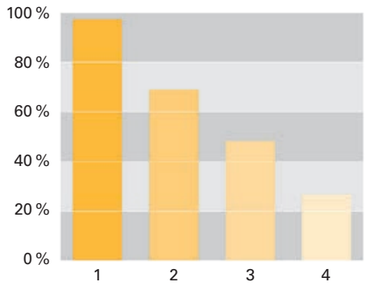
The illuminance of the lighting density diminishes with time. To describe the reduction of lighting intensity through e.g. the ageing of the light sources, a maintenance factor of 0.67 is recommended for indoor lighting in normal ageing and pollution conditions, and up to 0.5 in critical conditions.

Formula

Maintenance value and maintenance factors determine the new value: Maintenance value = new value x maintenance factor.

Advantage

Thanks to the enclosed construction of our luminaires, the value is reduced to only 0.8.



New lighting saves energy

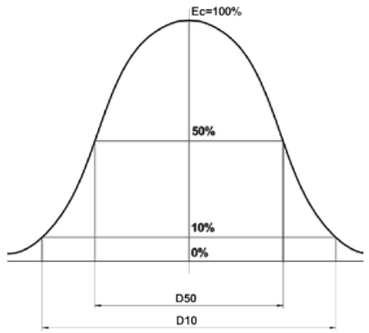
Modern lighting systems consume only 25 % of the energy.

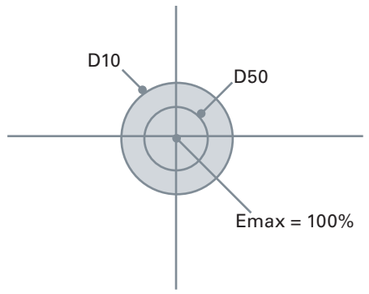
1 - Luminaires with opal covers, standard fluorescent lamps and conventional ballasts

2 - Luminaires with mirror reflectors, three-band fluorescent lamps and low-loss ballasts

3 - Luminaires with specular louvers, directional light distribution, three-band fluorescent lamps and electronic ballasts

4 - Same as 3, however with daytime lighting and presence-dependent control





Light field size (light field diameter) of surgical and examination lights

The light field diameter D10 is the area where the illuminance reaches 10% of the central illuminance. D50 must be greater than or equal to half of D10.

D10 is the visually perceived light or work field.

LIGHTING TECHNOLOGY FUNDAMENTALS
HEAT AND HEAT MANAGEMENT / SHADOWS

Heat and heat management of surgical and examination lights

There are two situations where heat during treatment can be detrimental:

Heat in the treated area
Heat dries out open wounds too quickly and promotes the growth of bacteria.

Heat at head height
Usually the top of the light is located very close to the head of the attending physician. Heat radiating from the light affects the level of performance. The warmer the space the faster tiredness sets in and can cause headaches.

Avoiding heat

Filter glass and special luminaire head designs can reduce, or even avoid, this development of heat at head height or on the treated area. This allows creating thermally favorable working conditions.

Filter glass
Reflects back the infrared component of the light, so that no heat can escape from the front.

Luminaire head design
Chimney effect - heat is radiated upwards thanks to the double wall construction of the luminaire head like in a chimney.

Efficient optics
Ideally, there would be no heat. Professional lighting technology with low light source power is the solution ➞ Heat reduction!

Shadows

A play of light and shade is essential for safe orientation in a room and for the detection of objects. We need shadows on objects for our spatial visualization. But these are undesirable and annoying for treatments/examinations and operations. In this area shadows reduce the light intensity, and thus impair the precise, focused and secure work.

LIGHTING TECHNOLOGY FUNDAMENTALS
STANDARD SPECIFICATIONS / DEFINITIONS

Classification of surgical and examination lighting according to International Standard EN 60601-2-41

Examination light
Lighting in the patient's environment for the local illumination of the body of the patient to support diagnosis or treatment, which could be stopped, in the case of loss of lighting, without risk to the patient. It is not intended for use in operating theatres.

Minor operations light (treatment light)
Single light in the patient's environment for the local illumination of the body of the patient, which produces an adequate central illuminance (def. according to standards table). It is intended for diagnosis and treatment in the operating theatre, which could be stopped in the case of loss of lighting without risk to the patient.

Large operations light
Single light in the patient's environment for the local illumination of the body of the patient, failsafe (able to operate e.g. in the case of the failure of a component or power failure), and generating an adequate central illuminance (def. according to standards table). It is intended to support diagnosis and treatment and for use in the operating theatre.

Operation light system
A combination of several surgical lights to illuminate the area around the body of the patient. It is failsafe (able to operate e.g. in the case of the failure of a component or power failure) and generates an adequate central illuminance (def. according to standard table). It is intended to support treatment and diagnosis as well as for use in the operating theatre.

REQUIREMENT	TYPE OF LUMINAIRE		
	EXAMINATION LIGHTS	SURGICAL LIGHTS	
		SMALL OP (TREATMENT)	LARGE OP AND SYSTEMS
FAILSAFE	NO ✗	NO ✗	YES ✓
ANESTHESIA (INTENDED USE)	LOCAL	LOCAL / GENERAL	LOCAL / GENERAL
INTENDED INSTALLATION LOCATION	EXAMINATION ROOM	OPERATING THEATRE	OPERATING THEATRE
STERILIZABLE HANDLE	NO ✗	YES ✓	YES ✓
CENTRAL ILLUMINANCE	NO REQUIREMENT	40 - 160'000 LUX 40 - 90'000 LUX	40 - 160'000 LUX 90 - 160'000 LUX
LIGHT FIELD DIAMETER	NO REQUIREMENT	YES ✓	YES ✓
LIGHT DISTRIBUTION D50 MUST BE > OR = 1/2 OF D10!	NO REQUIREMENT	YES ✓	YES ✓
SHADOWS	NO REQUIREMENT	YES ✓	YES ✓
COLOR TEMPERATURE	3000 K - 6700 K 3500 K	3000 K - 6700 K 4300 K	3000 K - 6700 K 4300 K
COLOR RENDERING INDEX	85 - 100 RA > 90	85 - 100 RA > 90	85 - 100 RA > 90
TEMPERATURE INCREASE IN THE LIGHT FIELD	NO REQUIREMENT	MAX. 6 MW/M2-LX	MAX. 6 MW/M2-LX

STANDARD VALUES
USUAL MARKET VALUES

LIGHTING TECHNOLOGY FUNDAMENTALS
FOR PRACTICE DESGNERS PART 1

Recommended lighting levels according to EN 12464 (Lighting of workplaces).

Ref. No.	Type of Room Visual Task or Activity	Maintenance Illuminance E_m in Lux	Glare Limitation / Glare Protection UGR_L	Color Rendering Index R_a	Comment
7.1	**Multi-purpose rooms**				All Illuminances on the floor
7.1.1	Waiting rooms	200	22	80	
7.1.2	Corridors: during the day	200	22	80	
7.1.3	Corridors: during the night	50	22	80	
7.1.4	Day rooms	200	22	80	
7.3	**Bedrooms Maternity wards**				All Illuminances on the floor
7.3.1	General lighting	100	19	80	Illuminances on the floor
7.3.2	Reading lighting	300	19	80	
7.3.3	Simple examinations	300	19	80	
7.3.4	Examination and treatment	1000	19	90	
7.3.5	Night lighting	5	-	80	
7.3.6	Bathrooms for patients	200	22	80	
7.4	**Examination rooms (general)**				
7.4.1	General lighting	500	19	90	
7.4.2	Examination and treatment	1000	19	90	
7.8	**Delivery rooms**				
7.8.1	General lighting	300	19	80	
7.8.2	Examination and treatment	1000	19	80	

LIGHTING TECHNOLOGY FUNDAMENTALS
FOR PRACTICE DESGNERS PART 2

Recommended lighting levels according to EN 12464 (Lighting of workplaces).

Ref. No.	Type of Room Visual Task or Activity	Maintenance Illuminance E_m in Lux	Glare Limitation / Glare Protection UGR_L	Color Rendering Index R_a	Comment
7.9	**Treatment rooms (general)**				
7.9.1	Dialysis	500	19	80	Lighting should be adjustable
7.9.2	Dermatology	500	19	90	
7.9.3	Endoscopy rooms	300	19	80	
7.9.4	Dressing rooms	500	19	80	
7.9.5	Medical baths	300	19	80	
7.9.6	Massage and radiation therapy	300	19	80	
7.10	**Operation Area**				
7.10.1	Preparation and recovery rooms	500	19	90	
7.10.2	Operation theatres	1000	19	90	
7.10.3	Operation field				E_m 10'000 - 100'000 Lux
7.11	**Intensive care**				
7.11.1	General lighting	100	19	90	Illuminance on the floor
7.11.2	Simple examinations	300	19	90	Illuminance on the bed
7.11.3	Examination and treatment	1000	19	90	Illuminance on the bed
7.11.4	Night supervision	20	19	90	
7.14	**Sterile rooms**				
7.14.1	Sterilization rooms	300	22	80	
7.14.2	Disinfection rooms	300	22	80	

Further information

Other information relating to lighting design such as room size, reflection values, maintenance factors etc. must be obtained individually (according to the project).

PRODUCT FAMILY AT A GLANCE

D[med®] **visano**

- latest LED technology
- Highest lighting quality thanks to diamond optics
- antimicrobial hygiene function
- high luminous intensity of 60,000 lux / 0.5 m
- 190mm fixed light field
- Illumination intensity 4-dimming levels
- Accurate color rendering Ra > 93, R13 > 93
- Color temperatures (3500 K, 4500 K)
- Easy control unit on the head
- Maximum range (360° rotating head)
- spring-loaded aluminum arm system
- corresponds with EN 60601-1 and EN 60601-2-41


visano 20-2 C T1


visano 20-2 P TX

LED

D[med®] **halux** LED-1

- LED technology
- 40,000 lx / 0.5 m
- On / off control on the arm
- Color temperature 4000 K
- 170 mm fixed light field
- Accurate color rendering Ra> 93
- Service life > 30.000 hrs
- spring-balanced arm system
- corresponds with EN 60601-1 and EN 60601-2-41

D[med®] **halux** LED-3

- similar to D[med®] halux LED-1 plus
- Dimming on the luminaire head
- Color temperatures of 3300 K, 3800 K, 4400 K

LED


halux LED 20-3 P FX
halux LED 20-1 P FX


halux LED 20-3 P SX
halux LED 20-1 P SX

PRODUCT FAMILY AT A GLANCE

D[med®] **triango**

- LED technology
- 60,000 lx / 1 m
- 160 mm fixed light field
- Accurate color rendering Ra > 95, R9 > 90
- Light color 4500 K
- continuously dimmable
- Service life of LED > 30,000 hours, maintenance-free
- No heat radiation
- Fading and shadow-reduced
- Portable and versatile use
- Removable and sterilizable handle
- Maximum energy efficiency at 30 W
- Upon request: battery version
- corresponds with EN 60601-1 and EN 60601-2-41

LED

reddot design award winner 2012


triango 30 C


triango 30 W


triango 30 F

D[med®] **isis** LED

- LED technology
- 42,000 lux / 1 m (2 levels 60% / 100%)
- 150 mm light field
- Accurate color rendering Ra> 93
- Light color 4300 K
- No heat radiation
- Fading and shadow-reduced
- Portable and versatile use
- without a handle/ optionally with a handle (can be removed and sterilized)
- Energy efficient at 30 W
- corresponds with EN 60601-1 and EN 60601-2-41

LED


isis 50 W


isis 50 C


isis 50 F

PRODUCT FAMILY AT A GLANCE

D^med® **saturn** LED

- LED technology
- 55,000 lx / 1 m
- Light field adjustable from 140 mm - 320 mm / 1 m
- Light colors 3700 K, 4500 K, 5000 K
- Color rendering Ra > 93
- Service life > 30,000 hours, maintenance-free
- Easy operation using knobs
- No heat radiation
- Dimmable 20% -100 (6 levels)
- Low power consumption of approx. 30 W
- corresponds with EN 60601-1 and EN 60601-2-41


saturn LED 30 W


saturn LED 30 C


saturn LED 30 F

D^med® **hx**

- 17‘700 lx / 0.3 m
  5‘700 lx / 0.5 m
- 94‘000 lx / 0.3 m
  35‘800 lx / 0.5 m
- High energy and luminous efficiency
- Double-walled casing for an optimized cooling of the lamp head (lukewarm)
- Flexible arm for easy positioning of the light
- Robust and functional design; guarantees a long service life

also optionally available with LED bulbs


35 P FX / 35 P SX

PRODUCT FAMILY AT A GLANCE

D^care® **melux** LED

- LED technology
- 400 lx / 0.5m
- Homogeneous light field of approximately 500 mm x 500 mm
- Hygiene friendly sensor button
- Dimmable
- Light colors of 4100 K
- Excellent cleaning and disinfecting properties due to the enclosed design
- IP44 for the lamp head
- Flex arm with a plastic sheath, length: 500 mm +100 mm fixed
- Color rendering Ra > 80
- Fulfillment of normative requirements EN 60598-1 and EN 60598-2-25


melux LED

D^med® **halux** two

- 18‘000 lx /0.5 m, 10° (spot)
  4‘500 lx / 0.5 m, 36° (flood)
- Individually adjustable
- Risk-free placement of light. Luminaire head will only stay warm to the touch even after continuous use
- Robust and attractive design - long service life guarantee
- Ease of maintenance. Clean and easy to clean thanks to the closed cable duct


halux two 35/35 P FX

PRODUCT FAMILY AT A GLANCE

D$^{care®}$ medicool

- Compact fluorescent medium
- 600 lx / 0.5 m
- Glare-free reading light
- Light for routine examinations and minor examinations
- Orientation light on luminaire head
- Low heat build-up
- Spring-loaded arm system for safely and easily positioning the light
- A shield prevents touching the lamp
- Fulfillment of normative requirements EN 60598-1 and EN 60598-2-25


medicool 14 P F1


medicool 14 P S3

D$^{care®}$ amalia / amalia clinic

- LED technology, 1‘000 lx
- Strong reading and maintenance light in warm white (3000 K) night light in amber
- ON/ OFF sensor button for the operation
- Ambient light function via a 360° turn-over axis
- Handle with illuminated ON/ OFF sensor
- Easy to clean thanks to a closed design
- Flex arm with a plastic coating
- Cable joint on the base
- Lamp shades in various design variants
- Fulfillment of normative requirements EN 60601-1 and EN 60601-2-41

LED

reddot design award winner 2012


9 F S3


9 P S4


White lamp shade (washable)


9 P S4 clinic


9 B S8

PRODUCT FAMILY AT A GLANCE

TANEO

- LED technology
- Shadow and reflection glare free surface light
- Illumination intensities of 1300 to 3500 lux (depending on the model)
- Service life of the LED up to 50,000 hours
- Continuously variable dimming
- Excellent color reproduction and outstanding contrast vision
- Maximum mobility due to the spring-loaded arm system
- Housing made of colorless anodized or white painted aluminum and black plastic side panels

LED


Linkage light TANEO

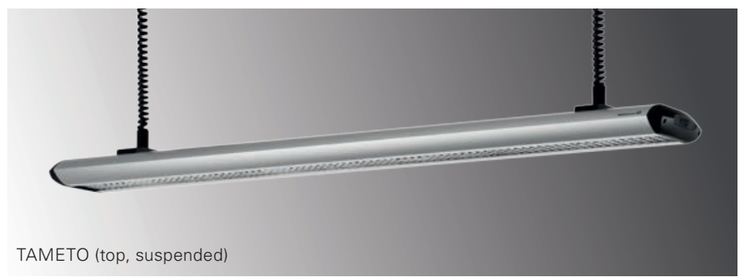

System light TAMETO

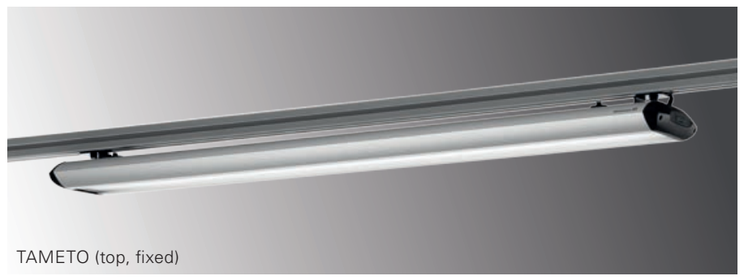

System light TANEO (can be folded out)

TAMETO

- LED technology
- Extremely homogeneous, glare and flicker free light
- Continuously variable dimming
- Service life of the LED up to 50,000 hours
- Conical prism glare control
- Mounting by using mounting brackets or T-slots
- Protection degree IP20, protection class I
- Housing made of colorless anodized or white painted aluminum and black plastic side panels

LED


TAMETO (top, suspended)


TAMETO (top, fixed)

PRODUCT FAMILY AT A GLANCE

OPTICLUX

- T16-R fluorescent lamp
- Distortion-free presentation
- Color temperature neutral white 4,000 K
- Glare control through opal white screen
- Hard coated plastic lens Ø 120 mm with 3.5 or 6 diopters
- optional glass lens Ø 120 mm with 4 or 4 + 8 diopters (cemented additional lens)
- Spring-balanced arm system
- With switch in the luminaire head
- Protection degree IP20, protection class I


opticlux LRE 22 P FX

TEVISIO

- LED technology (48 LEDs)
- Up to 6,000 lx at only 14 W
- Continuously dimmable
- Scratch-resistant glass magnifier
- Large field of view with a diameter of 153 mm
- Visualizer function for structure emphasizing effects
- Very high color rendering
- Magnification through 3.5 diopters, 11.5 diopters with additional lens
- Maximum mobility due to the spring-loaded arm system

LED


TEVISIO RLLQ 48 R

PRODUCT FAMILY AT A GLANCE

D[lite®] **amadea**

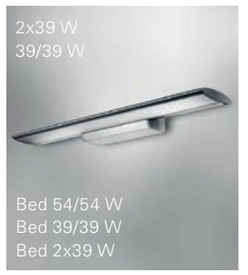
- Available as pendant and wall lamp
- General indirect / direct lighting
- Excellent light efficiency and light output thanks to DRS Double
- Reflecting system and T5 fluorescent lamps
- Pendulum length adaptation 20 - 150 cm
- Suitable for various ceiling heights
- Homogeneous and uniform illumination of the room
- Provides good visibility and safety
- Emergency lighting with 3 hours battery operation (on request)
- Glare-free light creates very low shadow lighting

VTL

C = Ceiling
W = Wall


54/54 C
2x54 C
2x28 C


Compact 55 W


2x39 W
39/39 W
Bed 54/54 W
Bed 39/39 W
Bed 2x39 W


39/39 W

D[lite®] **vanera**

- Available as pendant and wall lamp
- General indirect / direct lighting
- Optimum light distribution, low shadow development, minimum reflection, good glare limitation
- Special plastic prism sections ensure optimum light control
- Direct ceiling mounting, specifically suitable for low ceilings up to 2.3 meters
- Modular design possible
- Upon request: Bath version IP 44
- Upon request: Toolbox with socket
- Upon request: Switching relay for the light-signal call installation
- Upon request: Toolbox with spot
- On request: integrated emergency lighting
- Upon : Decor
- Upon request: VTL
- **LED versions**

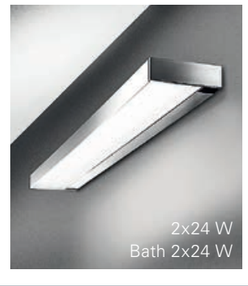
LED VTL

C = Ceiling
W = Wall


2x54 C
2x28 C
High-End 54/54 C


2x28 C
2x39 W
Bed 54/54 W
Bed 39/39 W
HIgh-End 39/39


2x24 C


2x24 W
Bath 2x24 W


Decor

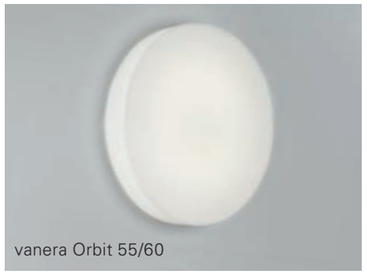
PRODUCT FAMILY AT A GLANCE

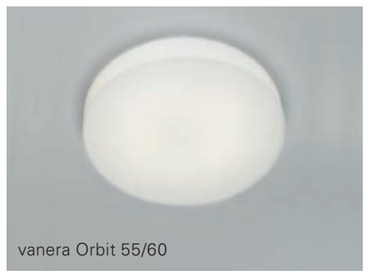
D[lite®] **vanera** Orbit

- 1 or 2 fluorescent lamp(s) T5 R 22W, 55W or 55/60W
- General direct lighting, indirect distribution for ceiling and wall illumination
- high quality lacquered PMMA lamp shade
- Electronic ballast (optionally DALI)
- Suitable for walls and ceilings
- LED version on request


vanera Orbit 22 / Orbit 55


vanera Orbit 22 / Orbit 55


vanera Orbit 55/60


vanera Orbit 55/60

ATARO LED

- LED for work and room lighting
- Easy to reach, multi functional control element
- head connection can be turned by + / - 45°
- Enclosed luminaire head with cover
- Anti-glare with light-amplifying AMBIO micro-prisms
- Future-proof thanks to LED light engines according to the Zhaga standard
- Service life of the LED is 50,000 hours (L70 / B50)
- Base plate cutout for optimal positioning in the workplace
- Separate switching and dimming of direct and indirect light (for luminaires without sensors)

LED


ATARO LED


ATARO (suspended version)


ATARO (wall version)

PRODUCT FAMILY AT A GLANCE

MINELA

- Sensor switch in lamp head
- LED technology

LED


MINELA

UV THERAPY SYSTEM FOR DERMATOLOGY

UV-Therapy System UV 7002

Diagnostic luminaire DHL 122 M

Diagnostic luminaire DHL 111 M

Diagnosis light DHL 109 M (Wood light)

A reliable diagnosis is the basis for each successful therapy. Waldmann offers a large selection of diagnosis systems in various versions with individual accessories.

For more information go to:
www.waldmann.com

INTELLIGENT LIGHTING SOLUTIONS
MADE AND ENGINEERED IN SWITZERLAND

RANGE

Our wide range leaves nothing to be desired and covers the entire medical lighting range in our market segments.

BENEFITS

Our vision is based on the idea of functional solutions connected to with an elegant design. Energy efficient and cost/benefit optimized.

SERVICE

Advice and support are a part of our service as well as the comprehensive lighting design, custom lighting concepts.

QUALITY AND SAFETY

Our company is ISO-9001 certified and all of our products correspond with the current medical standards.

DO YOU HAVE HIGH DEMANDS?
WELL, SO DO WE.

A true masterpiece among the examination lights! The new Visano will not meet your expectations for a versatile and reliable examination lamp, but will even surpass them. The controlling comfort, first-class color rendering and maximum light quality in a shapely luminaire merge here.

Here are some highlights:

- Can be easily positioned and reliably locked
- Premium LEDs for superior light quality and efficiency
- Built-in antimicrobial hygiene function
- Multiple versions: dimmable, with color change, ceiling or pin version

Detailed product information can be found at → **www.derungslicht.com**

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