LED lighting for stable and farmyard

Animal-friendly - sustainable - economical

www.kerbl.com

KERBL

Your expert in animal-appropriate LED lighting

LED lighting by Kerbl – the right light for every space

Comfort for animals and humans

There are many factors at play when it comes to the right lighting for animals and humans. The light spectrum and the light distribution in particular have a huge influence on the biological effects, and so on the fertility, immune system, welfare, activity, growth and performance of your animals. And yet the working conditions of farmers and vets can also be significantly improved with the right lighting.

Your expert in animal-appropriate LED lighting

Made for long-lasting use in harsh environments!

Put your trust in Kerbl's experience: Our lights were specially developed for lasting use in stables and similarly demanding environments.

As well as high stress due to humidity and dust, lights in stables are exposed to a lot of chemicals in the ambient air and due to cleaning processes. In particular, lights have to be able to withstand high concentrations of ammonia.
Therefore, to ensure a long service life, we focus our efforts on the technical design, the use of suitable electronic components and materials, and high-quality workmanship of our LED lights.

And we don't just rely on our own expertise – we also put our products through special safety and load tests by independent and recognised testing institutes such as TÜV Süd and the DLG Test Lab.

Our LED indoor spotlights and MultiLED Pro and FarmPRO lights have passed ammonia resistance tests at the DLG Test Lab.

LED Indoor Spotlight

ANERKANNT 2019 DLG WWW.DLG.ORG
KERBL HALLENSTRAHLER
✓ **Ammoniakbeständigkeit**
DLG-Prüfbericht 7019

5-year warranty 5

MultiLED Pro

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KERBL MULTILED PRO
✓ **Ammoniakbeständigkeit**
DLG-Prüfbericht 7017

5-year warranty 5

FarmPRO

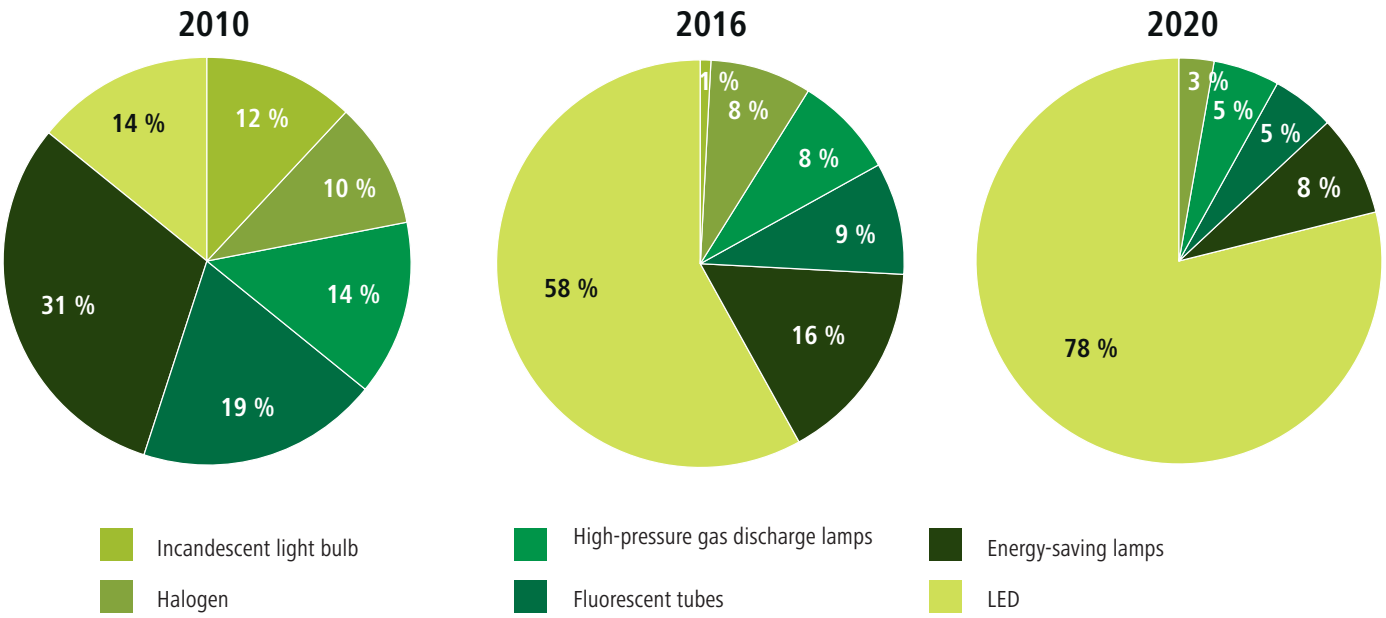
ANERKANNT 2019 DLG WWW.DLG.ORG
KERBL FEUCHTRAUMLEUCHTE FARMPRO
✓ **Ammoniakbeständigkeit**
DLG-Prüfbericht 7018

5-year warranty 5

Economic and environmentally friendly operation

Not all LEDs are made equal. The details matter when it comes to taking full advantage of the potential savings in terms of costs and energy consumption. A high light output and optimised light distribution reduce the number of lamps required. At the same time, it's also what's inside that counts if you want to enjoy your lighting for a long time, as this ultimately affects the life and maintenance costs.

The new standard with many advantages



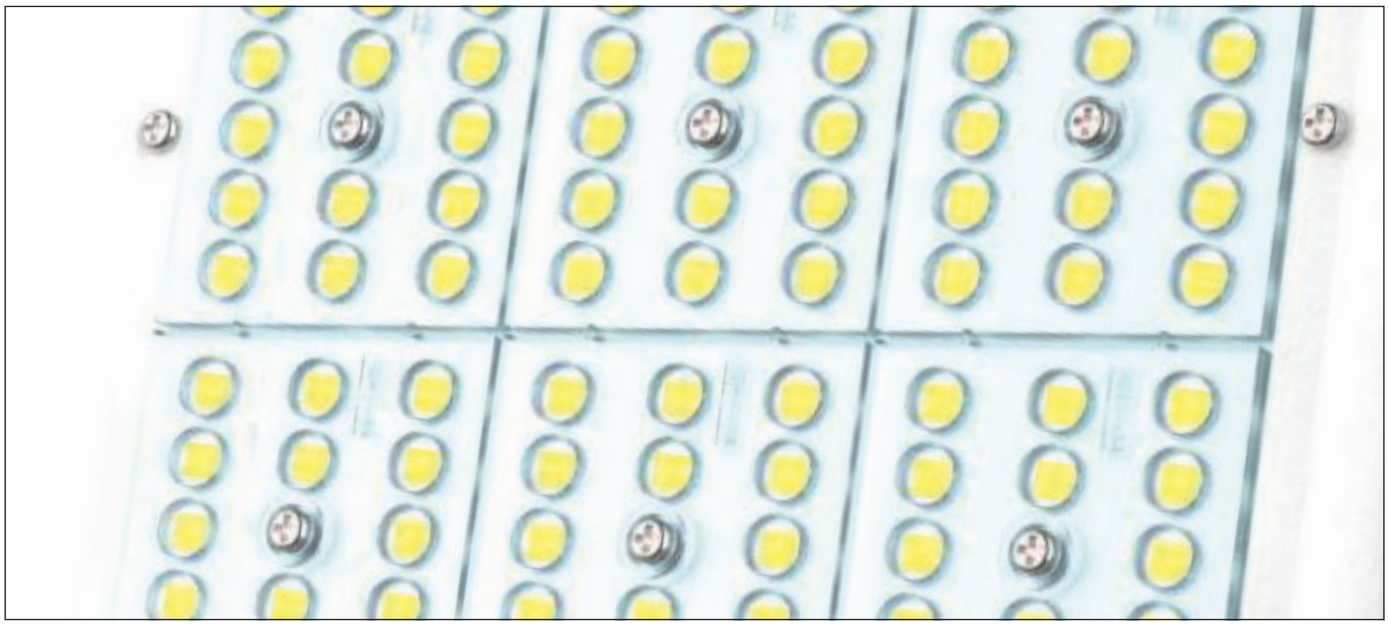
Source: McKinsey

The triumphant advance of the LED

The lighting market is currently undergoing a massive upheaval. While the classic light bulb has already disappeared from the market, other traditional lighting sources such as halogen, energy-saving and discharge lamps are more and more being replaced by more modern technologies.
The European Union is taking a leading role in this: With Directive 2009/125/EC (Ecodesign Directive), the legal framework has been created for the eco-design of energy-related products such as those used for lighting systems. Inefficient products are supposed to be gradually phased out of the market.
And due to its high energy efficiency and life span, LED technology has emerged as the clear winner in this area. In 2011, the share of LED products in the global lighting system market was still at 12 %; however, according to a study by the McKinsey consulting firm, this share is now over 70 % – the triumphant advance of LED is thus rapid and unstoppable.

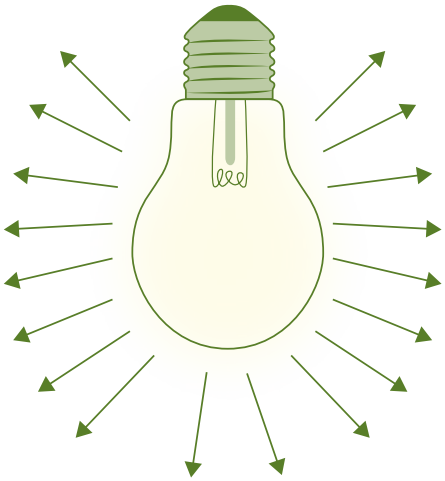
LED lighting for stable and farmyard

This development has obviously also made its way to the stable door and beyond because the advantages of this technology are so overwhelming. Even we are convinced of the benefits of LED lighting and currently offer a select product line for agricultural use. Take a look at our diverse range of products and see for yourself!



Basic lighting technology terms

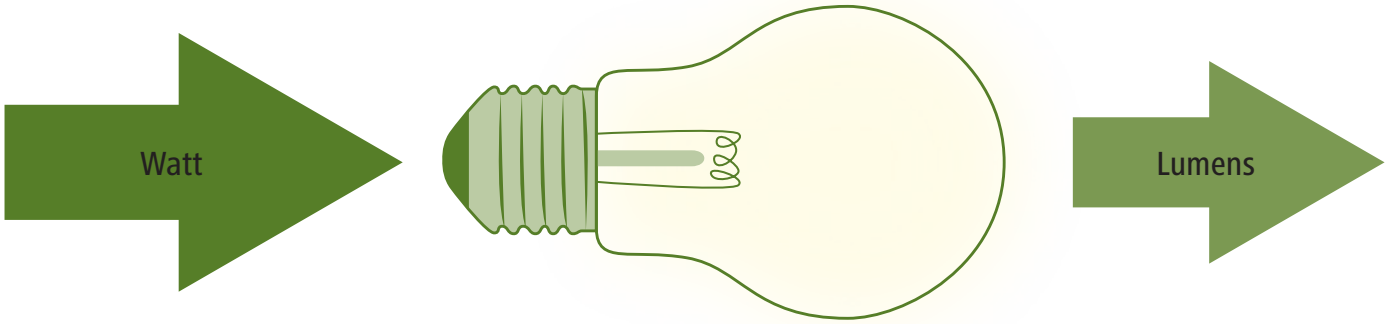
Nowadays it is not enough to judge the light output of a lamp or bulb by just the wattage. What is more important is the luminous flux (lumens) as well as the luminous efficacy (lumens per watts).



Luminous flux
Unit: Lumens (lm)
The luminous flux characterises the total amount of light given off by a light source in all directions. This is an important criterion when comparing luminaires.

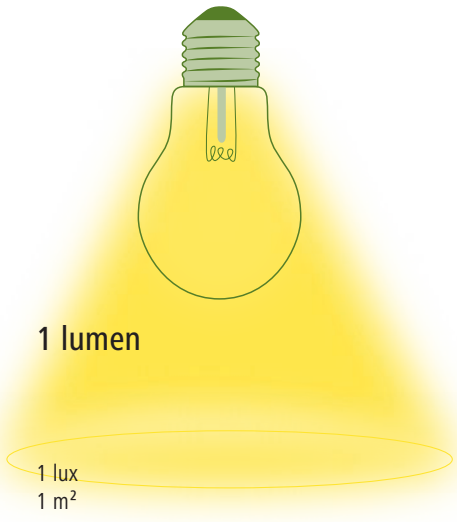
Example
A 100 watt bulb generates a luminous flux of approx. 1000 lumens.

Luminous efficacy
Unit: Lumens per watt (lm/W)
The luminous efficacy characterises the level of effectiveness of a light source and is calculated from the relationship of the luminous flux to the recorded output.



Examples	
Classic light bulb	approx. 10 lm/W
Halogen spotlight	approx. 18 lm/W
LED chip	approx. 100-170 lm/W

Lighting strength
Unit: Lux (lx)
1 Lux = 1 lm/m²
The lighting strength characterises the luminous flux striking a specific surface. It is ultimately the deciding measure for evaluating the brightness at a specific point in the space.
The greater distance away the light source is located, the larger the illuminated surface and correspondingly the lower the lighting strength will be. The measurement of the lighting strength in the stable should take place at eye level.



LED technology in the stable pays off

LEDs operate at a high level of effectiveness and are extremely efficient. Their luminous efficacy is thus especially high.
The investment costs for new equipment or a conversion are currently still normally higher when compared to conventional lighting technology; however these costs will pay for themselves over a short amount of time due to the considerable savings in operating costs – when all is said and done, you will be saving real cash, day after day!
LED lights with industrially manufactured LED chips have, for example, approx. a 5 x higher luminous efficacy than conventional halogen lights. Though it is true that modern discharge lamps (fluorescent lamps, metal halide lamps) also achieve high luminous efficacy; however, you have to take into account here that the light is given off in all directions and despite reflectors, a portion of that light is „lost." In contrast, LEDs emit light downward at a defined angle of, e.g. 120° – therefore, the light reaches where it is really needed.

80-90 % less energy costs at the same light output

Comparison of LED and halogen spotlights

Example: Burning life 4 hours per day (1,460 hours per year)

A good 100 watt LED spotlight will be brighter than a 500 watt halogen spotlight, but will consume approx. 80 to 90 % less power.

Luminaire	Light current per spotlight	Total light current generated	Annual electricity costs (based on 0.30 €/kW)
3 x 500 Watt halogen spotlight (18 lm/W)	9000 lumens (500 watt x 18 lm/W)	3 x 9,000 lumens = 27,000 lumens	657,00 €
2 x 100 Watt LED spotlight (130 lm/W)	13,000 lumens (100 Watt x 130 lm/W)	2 x 13,000 lumens = 26,000 lumens	87,60 €
Annual electricity cost savings:			569,40 €

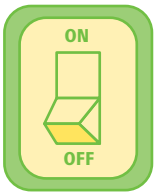
High service life

LED chips have a very long service life up to 100,000 hours. In continual operation, that amounts to approx. 6 years; at 8 hours of daily operation, this amounts to over 17 years. Costs for maintenance and lamp replacement are also reduced to a minimum.
LED chips also do not simply fail, but rather begin to lose their brightness over time (degradation). Reputable providers normally offer a „useful life duration" according to EU Regulation 1194/2012. For example, the information „L70" indicates that the LED chip will still achieve 70 % of its original light output after 50,000 hours.
The life span of an LED chip depends, among other things, on the operating and ambient temperature: The better the heat dissipation and the lower the ambient temperature, the slower the ageing process.

Examples		
LED chip	up to	100.000 h
Modern fluorescent lamp	approx.	18.000 h
Halogen lamp	approx.	2.000 h
Light bulb	approx.	1.000 h

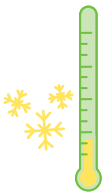
The advantages at a glance

High switching capacity
On – Off – On – Off … Contrary to energy-saving and fluorescent lamps, the robust light emitting diode is practically impervious to frequent switching on/off. Thus they are also well-suited for switch intensive operation on motion detectors.



Immediate full light output
Energy-saving and discharge lamps require a „warm-up time" of almost a few minutes to reach full brightness. With LEDs, this scenario is a thing of the past because they offer immediate 100 % light output when turned on.

Full light output even at low temperatures
LEDs also operate extremely efficiently at low temperatures and are, therefore, ideal for use in outside areas or in unheated buildings. For example, while an LED tube continues to emit its full light output at an ambient temperature of 0 °C, a typical fluorescent tube, which is designed for ambient temperatures of 20 °C, only emits 40-60 % of its max. value.



Does not attract insects
Insect eyes contrary to human eyes are especially sensitive to ultraviolet radiation (UV). While the mercury vapour high pressure lamps frequently used in the past acted like a vacuum cleaner sucking up millions of insects due to its high share of UV, the light emitted by LEDs are very insect-friendly – it contains practically no UV radiation.

No additional heat input
The light emitted by an LED remains cool – compare that to thermal radiators such as halogen or incandescent light bulb lamps for which a large portion of the energy is output in infrared radiation and thus in heat. The electronics of LEDs due in fact produce heat; however, this is not emitted in the direction of the object being illuminated.

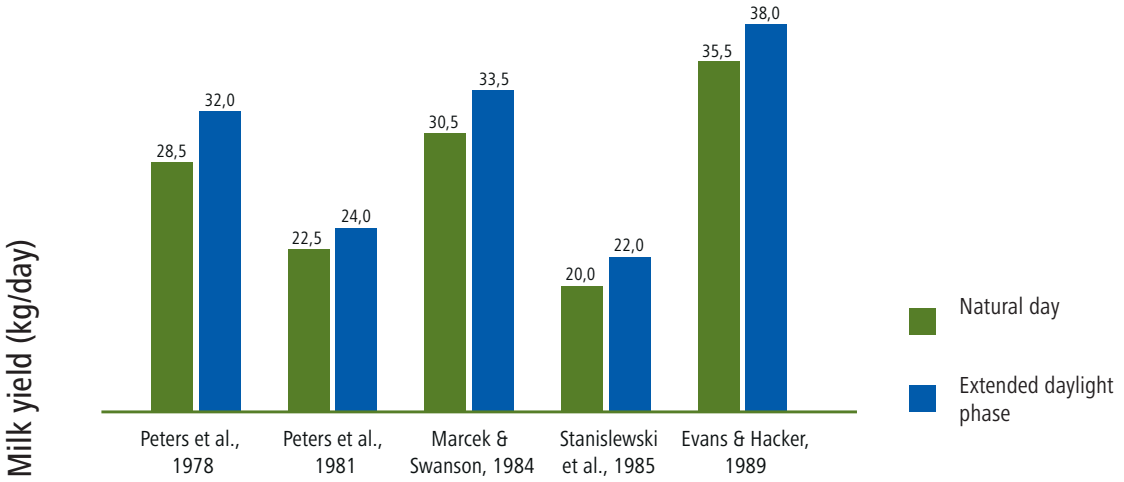
Natural colour perception
In dairy cattle farming, a high and natural colour rendering is required for the colour differentiation between blood, urine and milk, especially in treatment areas, sick stalls and calving bays.
The quality of the colour rendering is expressed in terms of the Ra value. The maximum possible value is 100. A Ra value of > 75 is recommended. Contrary to LEDs, sodium vapour lamps, for example, have a very poor colour rendering (Ra 20-50).

Environmentally-friendly and safe operation
Due to its high energy efficiency, the CO2 pollution is correspondingly low. Operation is completely safe and disposal can be made via community collection centres because LED lights do not contain any mercury. Naturally, all of our products meet the requirements of Guideline 2002/95/EC regarding limiting the use of certain hazardous substances in electric and electronic devices (RoHS).

RoHS

More milk through more light

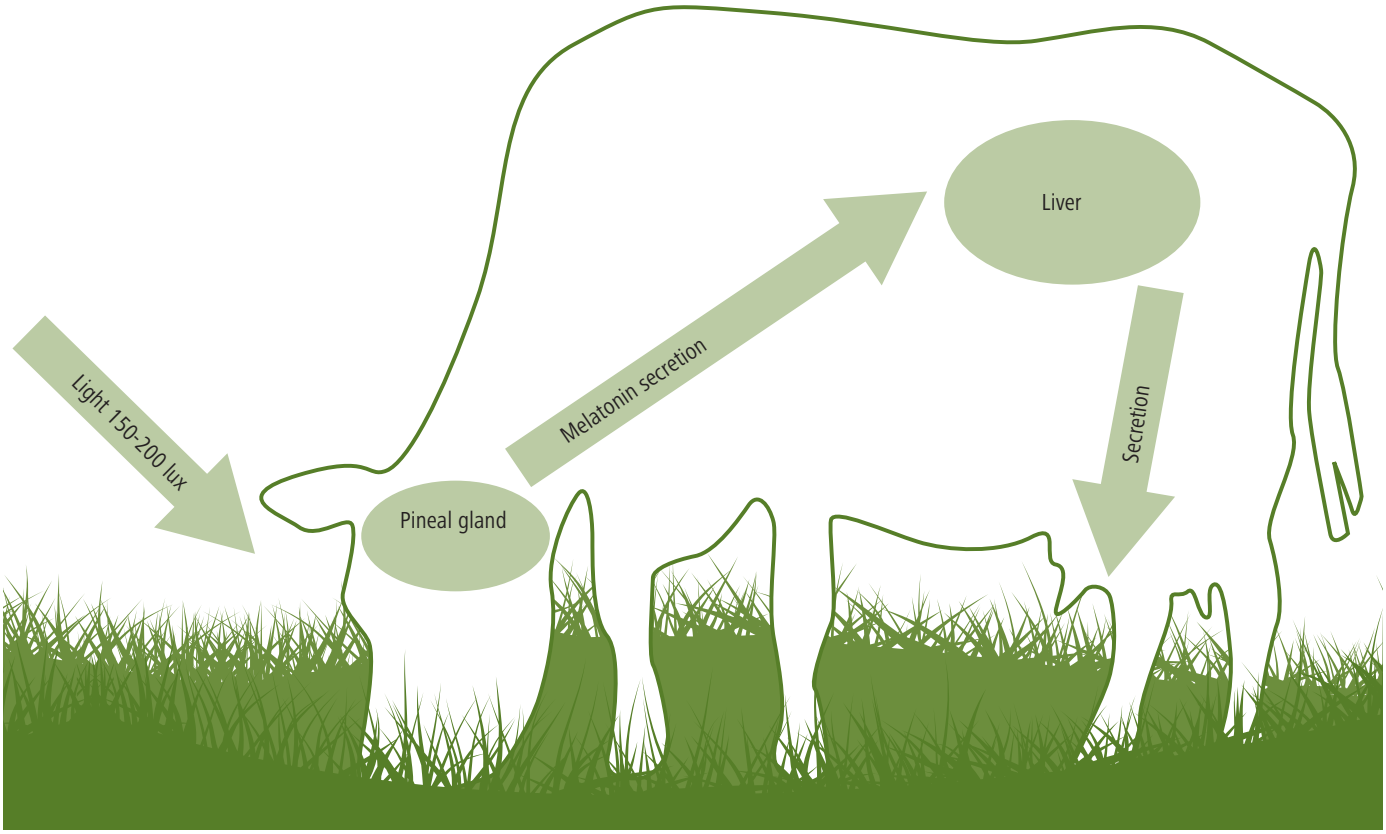
Lighting duration, lighting intensity and light colour all have a major impact on lactation, fertility and the well-being of animals. In dairy cattle farming, lighting management, therefore, is extremely important.
Scientific studies have shown that daily milk production can be increased 5-15 % on average during long daylight phases with 16 hours of light and 8 hours of darkness. However, this requires a uniform lighting strength of 150-200 lux.
Source: Bayerische Landesanstalt für Landwirtschaft (LfL), LfL-Information „Licht und Lichtprogramme in der Rinderhaltung" (Light and lighting programmes in cattle husbandry), February 2012



Source: Bayerische Landesanstalt für Landwirtschaft (LfL), LfL-Information „Licht und Lichtprogramme in der Rinderhaltung" (Light and lighting programmes in cattle husbandry), February 2012

How does this work?

Light signals are sent to the pineal gland via the animal's eyes. A higher amount of light reduces the secretion of the hormone melatonin from the pineal gland, whereby the liver is stimulated to produce the IGF-1 hormone. This leads to increased activity for the cow, increased appetite and increased milk production.



Young cattle
An increase in the light intensity with 16 hours of light and 8 hours of darkness also has a positive effect on young cattle. An increased amount of light encourages activity and appetite, and accelerates the growth of the animal.

Dry cows
For dry cows, daylight phases with 8 hours of light and 16 hours of darkness are helpful. This leads to higher milk yield when lactation starts again. It also has a positive effect on feed intake and the immune system. Thus it is recommended to keep dry cows in a separate stable.

Lactating cows	Young cattle	Dry cows
150-200 lux	150-200 lux	150-200 lux
16 h of light	16 h of light	8 h of light
8 h of darkness	8 h of darkness	16 h of darkness

Influence on colour temperature
The colour temperature of a light source also has a significant influence on biorhythms. In this case, a basic distinction is made between warm white (< 3300 K), neutral white and daylight white (> 5300 K).
The higher the colour temperature, the higher the blue/green portion in the spectral composition of the light. Because the brightness perceived by cattle eyes is highest in the blue/green range, the use of lights with a higher colour temperature is recommended in order to achieve a productivity increase.
LEDs with a colour temperature of at least 5,300 K are, therefore, extremely well-suited for this. For humans, this also promotes mental and physical performance and prevents the eyes from quickly becoming fatigued.

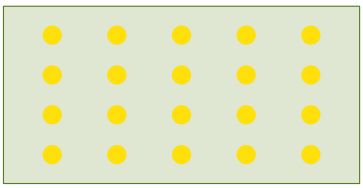
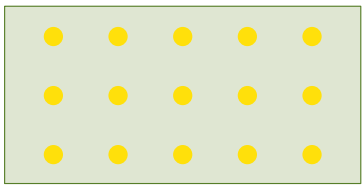
LED lights meets all of these requirements
LED lights are especially well-suited for new stable construction and the renovation of old stables in order to achieve optimal milk and/or growth output. And when it comes to service life and efficiency, LED lights are superior to all other variants. The higher the annual number of operating hours, the greater the importance of this advantage.

Conversion to LED technology

Investment calculation using a dairy stable as an example

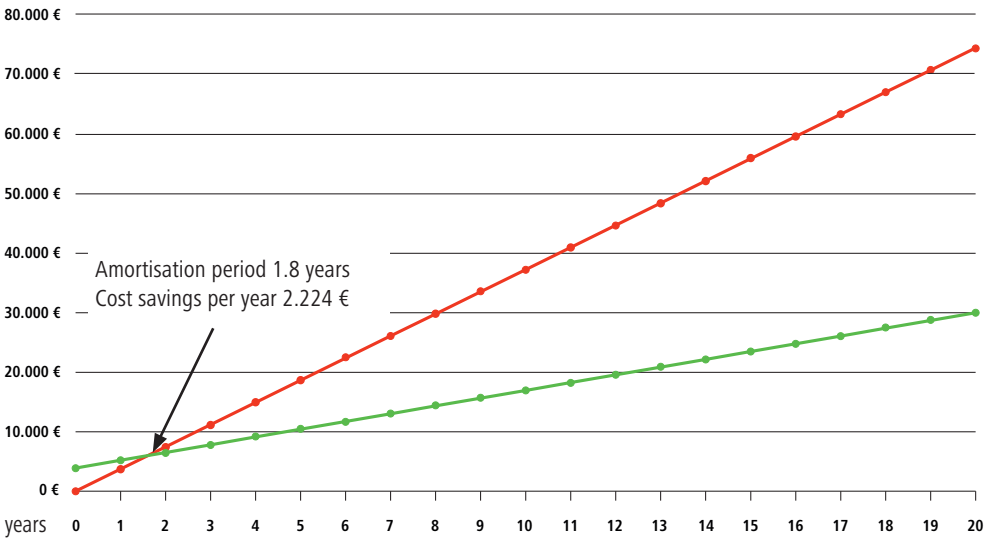
Halogen metal halide lamps (HQI/HIE) are frequently the first choice for stable lighting due to their relatively good luminous efficacy and colour rendering. The following example shows, however, that a conversion to LED technology can pay for itself quite quickly.

Dairy stable with 40 x 24 metres
Installation height of the lights 6 metres
Average lighting strength approx. 200 lux
Average burning life of 6 hours per day

Type of luminaire	Before: Halogen-metal vapour 250 W	After: LED Indoor Spotlight 150 W
Power consumption	272 watts (incl. ballast) 	150 watts 
Power consumption	272 watts (incl. ballast)	150 watts
Service life of the light source	approx. 11,000 hours (= 5 years at a burning life of 6 h/day)	approx. 100,000 hours (= 45 years at a burning life of 6 h/day)
Required number of lights for 200 lux	20 pieces 	15 pieces 
Total connected load in the stable	5440 watts	2250 watts
Energy consumption per year (2190 h)	11.913,60 kWh	4.928 kWh
Investment costs for 15 LED lights		3.975 €
Energy costs per year (€0.30 /kWh)	3.574,08 €	1.478,40 €
Costs for lamp replacement, annualised	128 €	
Total costs per year	3.702,08 €	1.478,40 €

Cost savings per year	2.224 €
Amortisation period	1.8 years
Total cost savings after 20 years	44.480 €

Cost trend over 20 years



(red = HQI, green = LED)

LED Indoor Spotlight

The high-bay LED lamp, with top-quality materials, electronics and workmanship and specially developed for agriculture and demanding conditions, provides additional benefits in terms of safety, resilience and working life.

• resistant to ammonia (DLG-tested) • ideal for high-ceiling structures • high-quality SMD chips from Philips • an insulated LED driver with integrated overload, short-circuit, and no-load protection provides additional safety for the LEDs, and extends their working life • excellent light yield • high colour temperature for fatigue-free visibility • direct or suspended ceiling installation • special heat sink shape for optimised heat dissipation • protected against powerful water jets and dust-proof (IP65 protection class) • flicker-free, so also suitable for animals with high visual acuity • cover made from hardened glass • in combination with the lighting control system (345000), it is ideally suited to help minimise energy costs, optimise the output of the animals and increase comfort for both people and the animal • with D marking according to DIN EN 60598-2-24, therefore suitable for areas at risk of fires due to combustible dusts or fibres (hay storage, feed, litter, etc.) • suitable for outdoor use • TÜV-GS approved • 5-year warranty

Technical data	
Voltage	100 - 240 V AC
Mains frequency	50 - 60 Hz
Luminous efficacy	132 lm/W
Light angle (half intensity angle)	110 °
Chip service life (L70)	> 100.000 h
Dimming function (only with dimmable lamps)	1…10 V, 10 V PWM, 0 - 100 kΩ resistance
Material	Die-cast aluminium with anti-corrosion coating
Operating ambient temperature	-40 - 60 °C
Colour rendering (CRI)	Ra > 80
Protection class	IP65

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TÜV SÜD GS geprüfte Sicherheit

Ref. no.	Power	Ø	Dimming function	Luminous flux	Colour temperature			€
345805	100 W	280 mm	cannot be dimmed	13.200 lm	5.700 K	1	24	
345815	150 W	320 mm	cannot be dimmed	19.800 lm	5.700 K	1	21	
345825	200 W	365 mm	cannot be dimmed	26.400 lm	5.700 K	1	28	
345835	240 W	400 mm	cannot be dimmed	31.680 lm	5.700 K	1	28	
345810	150 W	320 mm	dimmable	19.800 lm	5.700 K	1	24	
345830	240 W	400 mm	dimmable	31.680 lm	5.700 K	1	24	

Ref. no.	Description		€
345802	Metal Bracket for Ceiling/Wall Mounting	1/20	

The lights include integrated LED bulbs.
The bulbs in the lights cannot be replaced.

LED Indoor Spotlight ECO

The compact high-bay LED lamp is the perfect choice for particularly cost-effective illumination in many areas of application in moderately used industrial buildings, as well as in commerce and industry.

- ideal for high-ceiling structures
- extremely efficient through high lumen output
- high colour temperature for fatigue-free visibility
- compact and efficient design
- direct or suspended ceiling installation
- protected against powerful water jets and dust-proof (IP65 protection class)
- not recommended for use in stalls/stables with high concentrations of ammonia
- cover material: PC plastic
- 3-year warranty

Technical data	
Voltage	220 - 240 V AC
Mains frequency	50 - 60 Hz
Luminous efficacy	150 lm/W
Light angle (half intensity angle)	115 °
Chip service life (L70)	> 50.000 h
LED type	SMD
Material	Die-cast aluminium
Operating ambient temperature	-30 - 50 °C
Colour rendering (CRI)	Ra > 80
Protection class	IP65

New product NEW

3-year warranty 3

Ref. no.	Power	Ø	Dimming function	Luminous flux	Colour temperature			€
345850	75 W	240 mm	cannot be dimmed	11.250 lm	5.700 K	1	72	
345851	125 W	280 mm	cannot be dimmed	18.750 lm	5.700 K	1	42	
345852	175 W	320 mm	cannot be dimmed	26.250 lm	5.700 K	1	36	

Ref. no.	Description	Colour	Material		€
345853	Metal Bracket for LED Indoor Spotlights ECO	black	metal	1/20	

The lights include integrated LED bulbs.
The bulbs in the lights cannot be replaced.

MultiLED pro

With its separately rotatable modules, the high-quality LED lamp provides individually adjustable light distribution, and is extremely adaptable as a floodlight or indoor spotlight for stables and riding arenas, and can be used for commerce and industry.

- optimal light distribution via individually adjustable modules
- excellent heat dissipation due to a solid heat sink
- high-quality materials for use in tough environments
- resistant to ammonia (DLG-tested)
- protected against powerful water jets and dust-proof (IP65 protection class)
- direct or hanging ceiling installation with adjustable mounting brackets or eyelets
- incl. dimming function (can be controlled via a 1 - 10 V, PWM or resistance signal)
- high-quality SMD chips from Philips
- an insulated LED driver with integrated overload, short-circuit, and no-load protection provides additional safety for the LEDs, and extends their working life
- flicker-free, so also suitable for animals with high visual acuity
- cover made from hardened glass
- in combination with the lighting control system (345000), it is ideally suited to help minimise energy costs, optimise the output of the animals and increase comfort for both people and the animal
- with D marking according to DIN EN 60598-2-24, therefore suitable for areas at risk of fires due to combustible dusts or fibres (hay storage, feed, litter, etc.)
- suitable for outdoor use
- 5-year warranty

345985

345990

Technical data	
Voltage	100 - 277 V AC
Mains frequency	50 - 60 Hz
Luminous efficacy	120 - 130 lm/W
Light angle (half intensity angle)	110 °
Chip service life (L70)	> 100.000 h
Dimming function (only with dimmable lamps)	1…10 V, 10 V PWM, 0 - 100 kΩ resistance
Operating ambient temperature	-40 - 50 °C
Colour rendering (CRI)	Ra > 80
Protection class	IP65

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Ref. no.	Power	Length	Width	Height	Dimming function	Luminous flux	Colour temperature			€
345985	150 W	430 mm	298 mm	350 mm	dimmable	19.500 lm	5.700 K	1	20	
345990	300 W	580 mm	298 mm	430 mm	dimmable	36.000 lm	5.700 K	1	12	

The lights include integrated LED bulbs.
The bulbs in the lights cannot be replaced.

Calculation aid for building lighting

The following overview contains recommendations for the luminaire type, number and arrangement for different illumination intensities as a function of the building dimensions and the suspension height of the luminaires. The values are chosen in such a way that a sufficiently uniform illumination (E min /E average >= 0.4) is achieved on the entire surface.

Please note that the actual number of luminaires required depends on individual circumstances and may deviate from these specifications. In principle, also other constellations with regard to luminaire selection, arrangement and suspension height can be useful. If you have any questions, please contact our consulting team.

Indoor Spotlight 100 watt

100 lux*				
Building width	20 m		30 m	
Light mounting height	5 m	6 m	5 m	6 m
Building length 30 m	-	3 x 2	-	3 x 3
Building length 40 m	-	4 x 2	-	4 x 3
Building length 50 m	-	5 x 2	-	5 x 3
Building length 60 m	-	6 x 2	-	6 x 3
Building length 70 m	-	7 x 2	-	7 x 3
Building length 80 m	-	8 x 2	-	8 x 3

Indoor Spotlight 150 watt

Building width	20 m		30 m	
Light mounting height	6 m	8 m	6 m	8 m
Building length 30 m	-	-	-	-
Building length 40 m	-	3 x 2	-	3 x 3
Building length 50 m	-	4 x 2	-	4 x 3
Building length 60 m	-	5 x 2	-	4 x 3
Building length 70 m	-	6 x 2	-	5 x 3
Building length 80 m	-	6 x 2	-	6 x 3

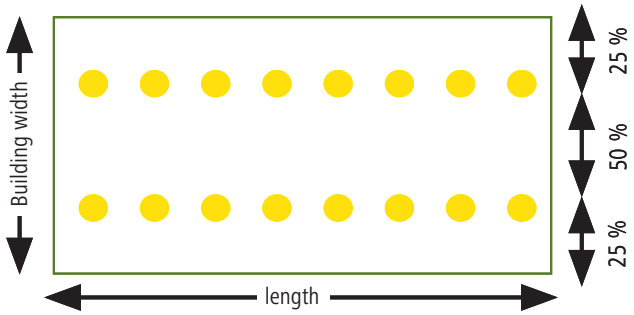
Indoor Spotlight 200 watt

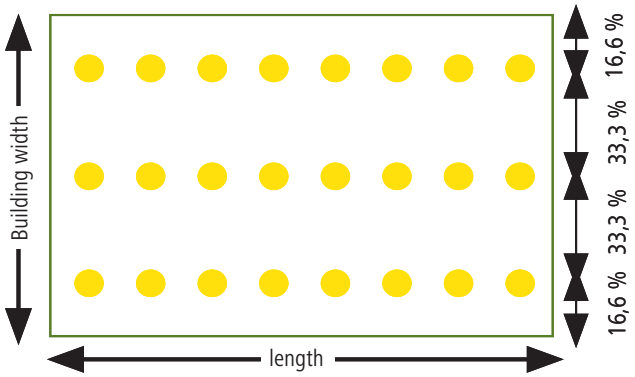
Building width	20 m		30 m	
Light mounting height	6 m	8 m	6 m	8 m
Building length 30 m	-	2 x 2	-	2 x 2
Building length 40 m	-	3 x 2	-	3 x 2
Building length 50 m	-	3 x 2	-	4 x 2
Building length 60 m	-	4 x 2	-	5 x 2
Building length 70 m	-	5 x 2	-	6 x 2
Building length 80 m	-	6 x 2	-	7 x 2

Indoor Spotlight 240 watt

Building width	20 m		30 m	
Light mounting height	8 m	10 m	8 m	10 m
Building length 30 m	-	-	-	-
Building length 40 m	-	-	-	-
Building length 50 m	-	-	-	-
Building length 60 m	-	-	-	-
Building length 70 m	-	-	-	-
Building length 80 m	-	-	-	-

Arrangement of lights





150 lux*

20 m		30 m	
5 m	6 m	5 m	6 m
3 x 3	5 x 2	4 x 3	4 x 3
4 x 3	6 x 2	6 x 3	5 x 3
5 x 3	7 x 2	7 x 3	6 x 3
6 x 3	8 x 2	8 x 3	6 x 4
7 x 3	9 x 2	9 x 3	7 x 4
8 x 3	10 x 2	10 x 3	8 x 4

20 m		30 m	
6 m	8 m	6 m	8 m
3 x 2	4 x 2	3 x 3	-
4 x 2	5 x 2	4 x 3	-
5 x 2	6 x 2	5 x 3	7 x 3
6 x 2	7 x 2	6 x 3	9 x 3
7 x 2	8 x 2	6 x 3	10 x 3
8 x 2	9 x 2	7 x 3	11 x 3

20 m		30 m	
6 m	8 m	6 m	8 m
-	3 x 2	-	3 x 2
-	4 x 2	-	4 x 2
4 x 2	4 x 2	5 x 2	5 x 2
5 x 2	5 x 2	6 x 2	6 x 2
6 x 2	6 x 2	7 x 2	7 x 2
7 x 2	7 x 2	8 x 2	8 x 2

20 m		30 m	
7 m	9 m	7 m	9 m
-	2 x 2	-	3 x 2
-	3 x 2	4 x 2	4 x 2
3 x 2	4 x 2	4 x 2	5 x 2
4 x 2	4 x 2	5 x 2	6 x 2
5 x 2	5 x 2	6 x 2	7 x 2
5 x 2	6 x 2	7 x 2	7 x 2

200 lux*

20 m		30 m	
5 m	6 m	5 m	6 m
4 x 3	4 x 3	4 x 4	4 x 4
5 x 3	5 x 3	5 x 4	5 x 4
6 x 3	6 x 3	6 x 4	6 x 4
7 x 3	7 x 3	8 x 4	8 x 4
8 x 3	8 x 3	9 x 4	9 x 4
9 x 3	9 x 3	10 x 4	10 x 4

20 m		30 m	
6 m	8 m	6 m	8 m
5 x 2	3 x 3	4 x 3	4 x 3
6 x 2	4 x 3	5 x 3	6 x 3
7 x 2	5 x 3	6 x 3	7 x 3
9 x 2	6 x 3	7 x 3	8 x 3
10 x 2	7 x 3	8 x 3	9 x 3
11 x 2	8 x 3	10 x 3	11 x 3

20 m		30 m	
6 m	8 m	6 m	8 m
3 x 2	4 x 2	3 x 3	3 x 3
4 x 2	5 x 2	4 x 3	4 x 3
5 x 2	4 x 2	5 x 3	4 x 4
6 x 2	5 x 2	6 x 3	5 x 4
7 x 2	6 x 2	7 x 3	6 x 4
8 x 2	7 x 2	8 x 3	7 x 4

20 m		30 m	
7 m	9 m	7 m	9 m
3 x 2	3 x 2	-	3 x 3
4 x 2	4 x 2	3 x 3	4 x 3
4 x 2	5 x 2	4 x 3	5 x 3
5 x 2	6 x 2	5 x 3	5 x 3
6 x 2	6 x 2	6 x 3	6 x 3
7 x 2	7 x 2	6 x 3	7 x 3

300 lux*

20 m		30 m	
5 m	6 m	5 m	6 m
6 x 3	-	6 x 4	-
7 x 3	-	8 x 4	-
9 x 3	-	10 x 4	-
11 x 3	-	12 x 4	-
12 x 3	-	13 x 4	-
14 x 3	-	15 x 4	-

20 m		30 m	
6 m	8 m	6 m	8 m
-	-	-	-
5 x 3	6 x 3	7 x 3	8 x 3
6 x 3	7 x 3	9 x 3	10 x 3
7 x 3	8 x 3	10 x 3	11 x 3
9 x 3	10 x 3	12 x 3	13 x 3
10 x 3	11 x 3	14 x 3	15 x 3

20 m		30 m	
6 m	8 m	6 m	8 m
3 x 3	5 x 2	4 x 3	5 x 3
4 x 3	6 x 2	5 x 3	6 x 3
5 x 3	8 x 2	7 x 3	8 x 3
6 x 3	9 x 2	8 x 3	9 x 3
7 x 3	11 x 2	10 x 3	10 x 3
8 x 3	12 x 2	11 x 3	12 x 3

20 m		30 m	
7 m	8 m	9 m	8 m
4 x 2	4 x 2	4 x 3	4 x 3
5 x 2	6 x 2	5 x 3	5 x 3
4 x 3	7 x 2	6 x 3	6 x 3
5 x 3	9 x 2	7 x 3	8 x 3
6 x 3	10 x 2	8 x 3	9 x 3
7 x 3	11 x 2	9 x 3	10 x 3

* + max. 10% / - max. 5%

Calculation aid for building lighting

The following overview contains recommendations for the luminaire type, number and arrangement for different illumination intensities as a function of the building dimensions and the suspension height of the luminaires. The values are chosen in such a way that a sufficiently uniform illumination (E min /E average >= 0.4) is achieved on the entire surface.

Please note that the actual number of luminaires required depends on individual circumstances and may deviate from these specifications. In principle, also other constellations with regard to luminaire selection, arrangement and suspension height can be useful. If you have any questions, please contact our consulting team.

MultiLED pro 150 watt

100 lux*				
Building width	20 m		30 m	
Light mounting height	6 m	8 m	6 m	8 m
Building length 30 m	-	2 x 2	-	-
Building length 40 m	-	3 x 2	-	3 x 3
Building length 50 m	-	4 x 2	-	4 x 3
Building length 60 m	-	5 x 2	-	4 x 3
Building length 70 m	-	6 x 2	-	5 x 3
Building length 80 m	-	7 x 2	-	6 x 3

MultiLED pro 300 watt

Building width	20 m		30 m	
Light mounting height	8 m	10 m	8 m	10 m
Building length 30 m	2 x 1	3 x 1	2 x 2	2 x 2
Building length 40 m	3 x 1	4 x 1	2 x 2	3 x 2
Building length 50 m	4 x 1	4 x 1	3 x 2	3 x 2
Building length 60 m	5 x 1	5 x 1	3 x 2	4 x 2
Building length 70 m	6 x 1	6 x 1	4 x 2	4 x 2
Building length 80 m	6 x 1	7 x 1	4 x 2	5 x 2

LED Indoor Spotlight ECO 75 watt

Building width	20 m		30 m	
Light mounting height	5 m	6 m	5 m	6 m
Building length 30 m	3 x 2	3 x 2	3 x 3	3 x 3
Building length 40 m	4 x 2	5 x 2	4 x 3	4 x 3
Building length 50 m	5 x 2	5 x 2	6 x 3	6 x 3
Building length 60 m	6 x 2	7 x 2	7 x 3	7 x 3
Building length 70 m	7 x 2	7 x 2	8 x 3	8 x 3
Building length 80 m	8 x 2	8 x 2	9 x 3	9 x 3

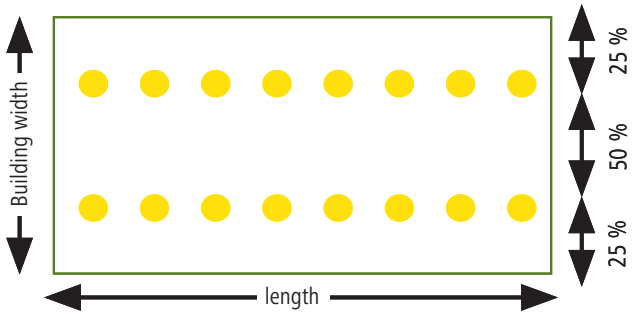
LED Indoor Spotlight ECO 125 watt

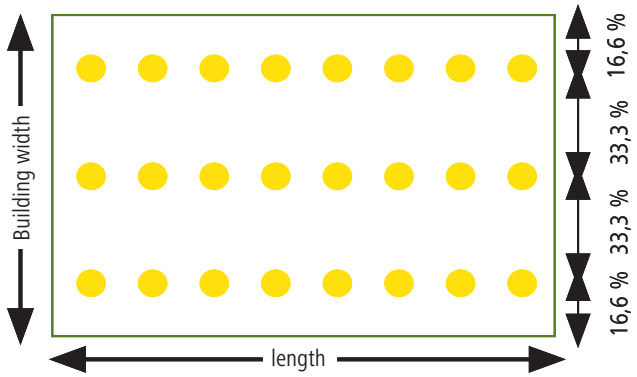
Building width	20 m		30 m	
Light mounting height	5 m	6 m	5 m	6 m
Building length 30 m	2 x 2	2 x 2	3x 2	3 x 2
Building length 40 m	3 x 2	3 x 2	4 x 2	4 x 2
Building length 50 m	4 x 2	4 x 2	5 x 2	4 x 2 & 3 x 1
Building length 60 m	4 x 2	4 x 2	6 x 2	6 x2
Building length 70 m	5 x 2	5 x 2	5 x 2	5 x 2
Building length 80 m	6 x 2	6 x 2	5 x 3	5 x 3

LED Indoor Spotlight ECO 175 watt

Building width	20 m		30 m	
Light mounting height	6 m	8 m	6 m	8 m
Building length 30 m	3 x 1	3 x 1	3 x 2	3 x 2
Building length 40 m	3 x 1	3 x 1	3 x 2	3 x 2
Building length 50 m	3 & 2	3 & 2	4 & 3	4 x 2
Building length 60 m	3 x 2	3 x 2	4 x 2	5 & 3
Building length 70 m	4 x 2	4 x 2	5 x 2	5 x 2
Building length 80 m	5 x 2	5 x 2	4 x 3	4 x 3

Arrangement of lights





150 lux*

20 m		30 m	
6 m	8 m	6 m	8 m
2 x 2	3 x 2	3 x 3	4 x 3
3 x 2	4 x 2	4 x 3	5 x 3
4 x 2	5 x 2	5 x 3	6 x 3
5 x 2	6 x 2	6 x 3	7 x 3
6 x 2	7 x 2	7 x 3	8 x 3
7 x 2	8 x 2	8 x 3	9 x 3

20 m		30 m	
8 m	10 m	8 m	10 m
2 x 2	2 x 2	3 x 2	3 x 2
4 x 1	3 x 2	4 x 2	4 x 2
5 x 1	3 x 2	3 x 3	3 x 3
6 x 1	4 x 2	4 x 3	5 x 2
7 x 1	5 x 2	5 x 3	6 x 2
8 x 1	5 x 2	6 x 3	7 x 2

20 m		30 m	
5 m	6 m	5 m	6 m
5 x 2	4 x 2	4 x 3	4 x 3
6 x 2	5 x 3	5 x 4	5 x 4
5 x 3	6 x 3	6 x 4	6 x 4
6 x 3	7 x 3	7 x 4	7 x 4
7 x 3	8 x 3	8 x 4	8 x 4
8 x 3	7 x 4	9 x 4	9 x 4

20 m		30 m	
5 m	6 m	5 m	6 m
3 x 2	3 x 2	3 x 3	3 x 3
4 x 2	4 x 2	4 x 3	4 x 3
5 x 2	5 x 2	5 x 3	5 x 3
6 x 2	6 x 2	6 x 3	6 x 3
7 x 2	7 x 2	7 x 3	7 x 3
5 x 3	5 x 3	6 x 4	6 x 4

20 m		30 m	
6 m	8 m	6 m	8 m
3 x 2	3 x 2	3 + 2 + 3	3 + 2 + 3
3 x 2	3 x 2	3 + 2 + 3	3 + 2 + 3
3 & 3	3 & 2	3 + 4 + 3	3 + 4 + 3
4 x 2	5 & 4	4 x 3	4 x 3
5 x 2	5 x 2	5 x 3	5 x 3
6 x 2	6 x 2	5 x 3	5 x 3

200 lux*

20 m		30 m	
6 m	8 m	6 m	8 m
4 x 2	5 x 2	4 x 3	5 x 3
5 x 2	6 x 2	5 x 3	6 x 3
7 x 2	8 x 2	6 x 3	7 x 3
8 x 2	9 x 2	7 x 3	8 x 3
9 x 2	10 x 2	9 x 3	9 x 3
11 x 2	12 x 2	10 x 3	11 x 3

20 m		30 m	
8 m	10 m	8 m	10 m
5 x 2	3 x 2	4 x 2	3 x 3
6 x 1	4 x 2	3 x 3	3 x 3
8 x 1	4 x 2	4 x 3	4 x 3
9 x 1	5 x 2	5 x 3	5 x 3
10 x 1	6 x 2	5 x 3	6 x 3
12 x 1	7 x 2	6 x 3	6 x 3

20 m		30 m	
5 m	6 m	5 m	6 m
5 x 3	5 x 3	5 x 4	5 x 4
6 x 3	6 x 3	6 x 4	6 x 5
5 x 4	6 x 4	7 x 5	7 x 5
7 x 4	6 x 5	7 x 6	7 x 6
8 x 4	8 x 5	8 x 4	9 x 4
9 x 4	9 x 4	10 x 4	10 x 4

20 m		30 m	
5 m	6 m	5 m	6 m
4 x 2	4 x 2	4 x 3	4 x 3
5 x 2	4 x 3	4 x 4	4 x 4
4 x 3	5 x 3	5 x 4	5 x 4
5 x 3	4 x 4	6 x 4	6 x 4
6 x 3	6 x 3	6 x 4	7 x 4
7 x 3	7 x 3	6 x 5	6 x 5

20 m		30 m	
6 m	8 m	6 m	8 m
3 x 2	3 x 2	3 x 3	3 x 3
4 x 2	4 x 2	4 x 3	4 x 3
5 x 2	5 x 2	5 x 3	5 x 3
6 x 2	6 x 2	6 x 3	6 x 3
7 x 2	7 x 2	7 x 3	7 x 3
8 x 2	8 x 2	8 x 3	8 x 3

300 lux*

20 m		30 m	
6 m	7 m	6 m	7 m
6 x 2	5 x 3	6 x 3	7 x 3
8 x 2	6 x 3	8 x 3	8 x 3
10 x 2	8 x 3	9 x 3	10 x 3
11 x 2	9 x 3	11 x 3	12 x 3
13 x 2	10 x 3	13 x 3	15 x 3
15 x 2	12 x 3	14 x 3	16 x 3

20 m		30 m	
8 m	10 m	8 m	10 m
4 x 2	3 x 3	3 x 3	4 x 3
4 x 2	4 x 3	4 x 3	5 x 3
5 x 2	7 x 2	5 x 3	6 x 3
6 x 2	8 x 2	6 x 3	7 x 3
7 x 2	9 x 2	7 x 3	8 x 3
8 x 2	10 x 2	8 x 3	9 x 3

20 m		30 m	
5 m	6 m	5 m	6 m
5 x 4	5 x 4	6 x 5	6 x 5
7 x 4	7 x 4	7 x 5	7 x 6
7 x 5	7 x 5	7 x 7	7 x 7
8 x 5	8 x 5	8 x 7	8 x 7
9 x 5	9 x 5	9 x 7	9 x 8
10 x 5	10 x 6	-	-

20 m		30 m	
5 m	6 m	5 m	6 m
3 x 3	3 x 3	4 x 3	4 x 3
4 x 3	4 x 3	4 x 4	4 x 4
5 x 3	5 x 3	5 x 4	6 x 4
6 x 3	6 x 3	6 x 4	7 x 4
7 x 3	7 x 3	7 x 4	8 x 4
8 x 3	8 x 3	8 x 4	8 x 4

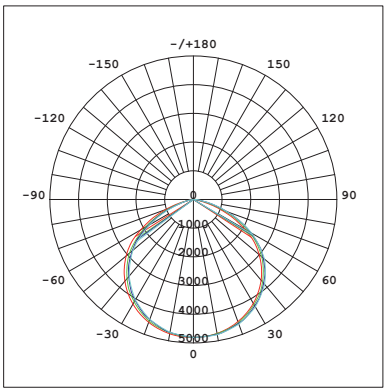
20 m		30 m	
6 m	8 m	6 m	8 m
3 x 3	3 x 3	4 x 3	4 x 3
4 x 3	4 x 3	4 x 4	4 x 4
5 x 3	5 x 3	5 x 4	6 x 4
6 x 3	6 x 3	6 x 4	7 x 4
7 x 3	7 x 3	7 x 4	8 x 4
8 x 3	8 x 3	8 x 4	8 x 4

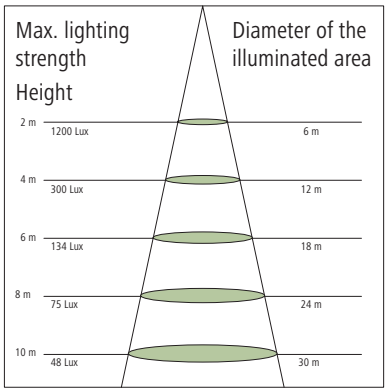
* + max. 10% / - max. 5%

Lighting strength and light distribution curve

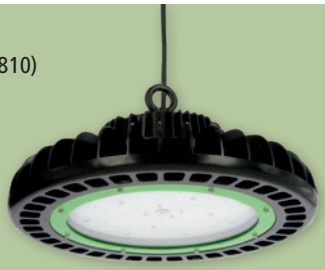
LED Indoor Spotlight

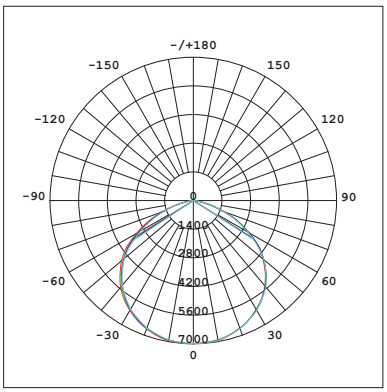
100 W
(345805)

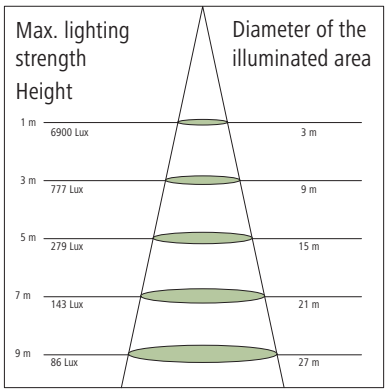




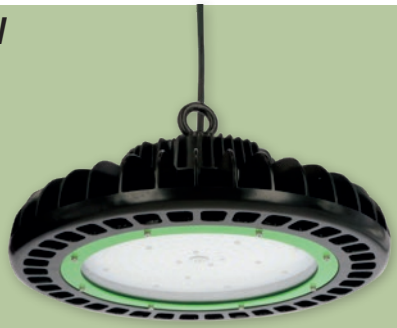
150 W
(345815 / 345810)

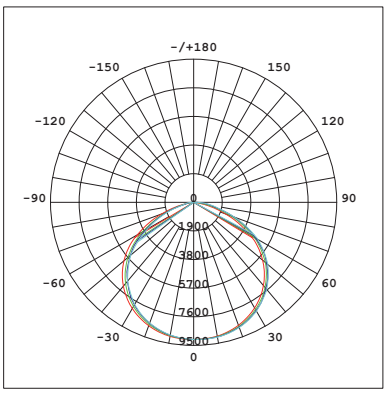


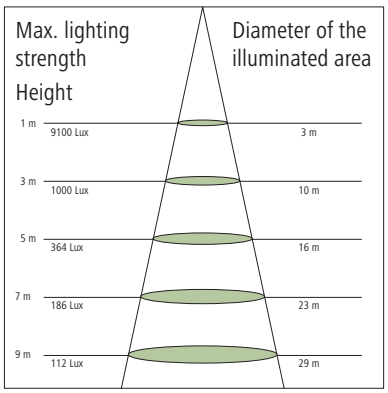




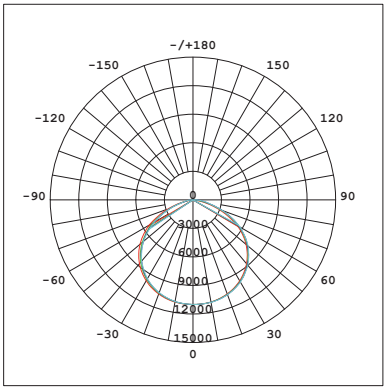
200 W
(345825)

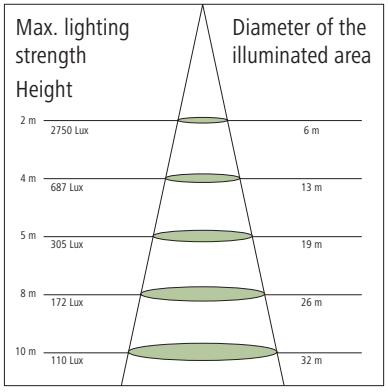






240 W
(345835 / 345830)

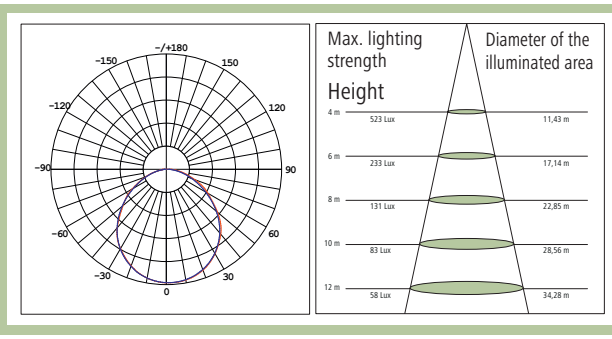




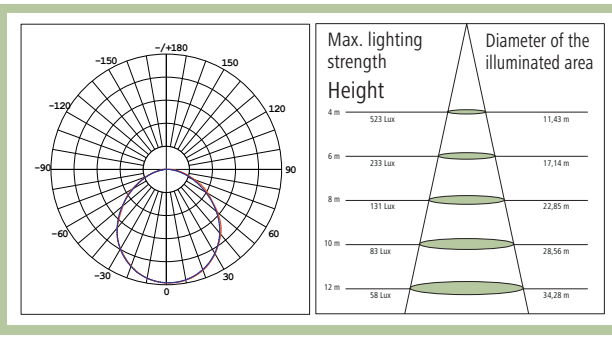
Lighting strength and light distribution curve

MultiLED Pro

150 W
(345985)

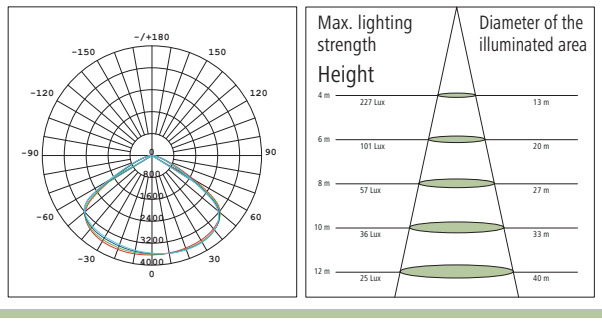


300 W
(345990)

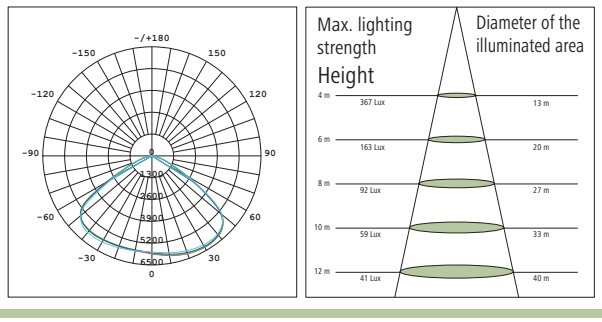


LED Indoor Spotlight ECO

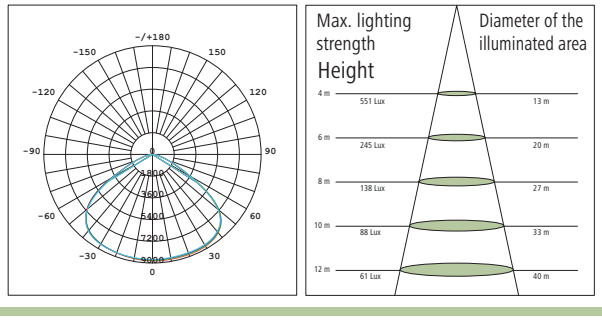
75 W
(345850)



125 W
(345851)



175 W
(345852)



Control for LED lighting

This lighting control allows you to switch the artificial lighting on or off, on a timer and regardless of existing daylight, or even achieve a constant light level (e.g. min. 200 lux) through automatic dimming. This means it ensures ideal lighting conditions throughout the day and year while minimising electricity consumption. Comfort for animals and humans!

• controls lighting dependent on time and/or daylight • four different lighting circuits (groups) can be independently controlled, two of which with a dimming function • suitable for LED lights with 1...10V interface • standard surface-mount housing for mounting in the equipment room • Dust and moisture protection (IP54) • suitable e.g. for up to 50 150 watt lights (up to 15 lights on the dimmable circuits 1 and 2, and up to 10 lights on circuits 3 and 4) • supplied with a light sensor (can request up to four light sensors) • input for up to four button signals • easy to use with display and three buttons • with extensive documentation and terminal description

Easy to install by your electric company

Technical data	345000
Supply voltage	230 V / 400 V
Fuse	B16 A
Pole Connectors	3-pin
Max. current value per output	16 A
Max. total power circuit 3 and 4	16 A
Number of circuits	4
Number of dimmable circuits	2
Max. switching capacity	11 kVA
Dimming function circuit 1 and 2	1...10 V
Number of max. light sensors	4
Number of max. button signals	4
Protection class	IP65

Ref. no.	Material	Width	Height		€
345000	Plastic	300 mm	450 mm	1	

Ref. no.	Description		€
345001	Sensor for control	1	

LED oval light, can be controlled as an optional night light (345606) via a separate lighting circuit

345001

Why does lighting need to be controlled?

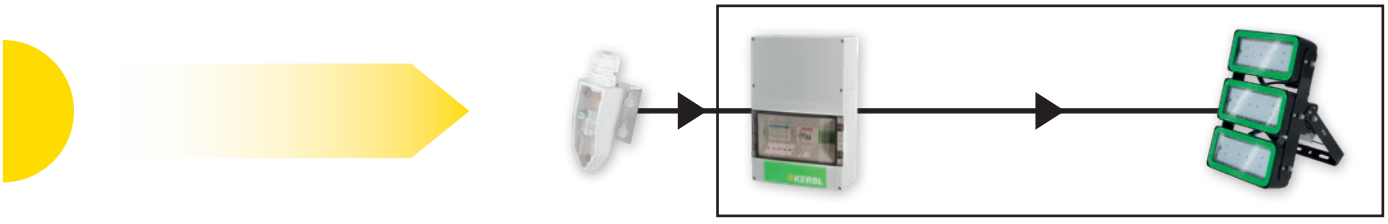
You want to ensure a certain light level (e.g. 200 lux recommended for dairy cattle barns) inside the building. Yet daylight incidence varies greatly throughout the day. Summer days are also generally light and winter days dark. If the lighting is designed to generate the desired brightness in the building at low daylight levels, then it would be too bright at high daylight levels. This would waste energy. You want to generate a long daylight phase in the barn to increase milk production? You certainly don't want to turn on the light very early in the morning and turn it off very late at night every day.

Kerbl's lighting control system has the answer: you can use it to switch the artificial barn lighting on or off with time control and depending on the available daylight, or even achieve a constant lighting level through automatic dimming.

Which control methods are possible?

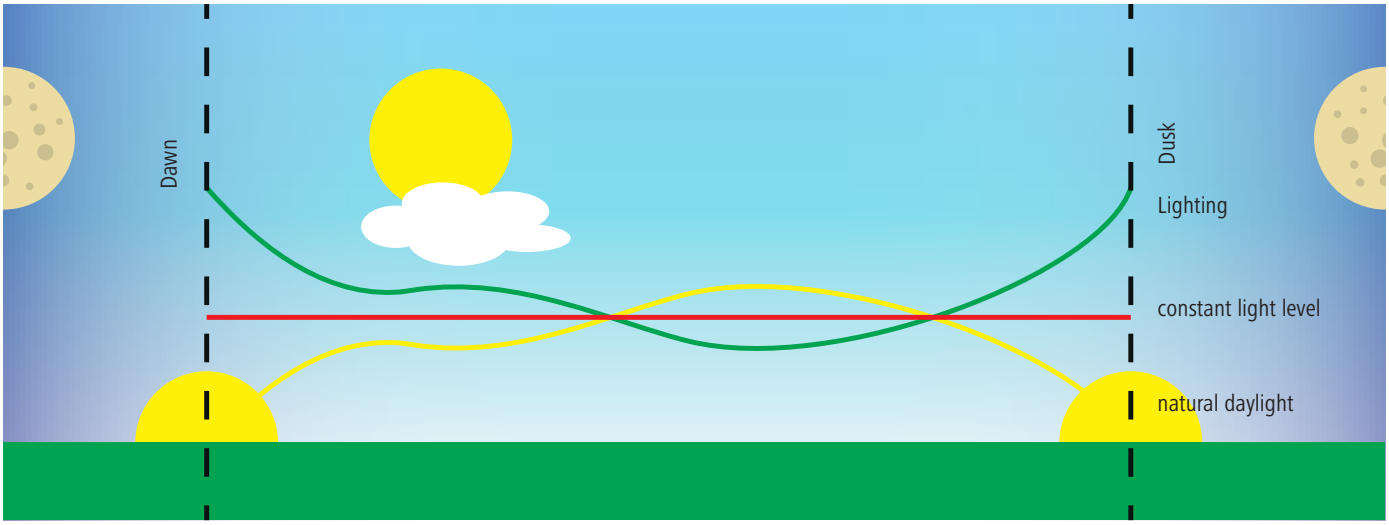
Lighting control with an outdoor light sensor

A light sensor measures the brightness outside. If the light sensor detects that the daylight is sufficient, then the lighting inside the building is switched off. If the available daylight falls below a set threshold, the lighting is switched on. If dimmable lamps are used, you can also specify that the lighting is switched on in a dimmed state. In parallel, you can also pre-set the on and off times in the morning and in the evening using a timer.



Lighting control with an internal sensor

The optimum light control set-up can also take account of the influence of the building envelope on the lighting levels inside the building. If, for example, all windows are darkened due to strong sunlight, the lighting inside the building should be switched on regardless. In this case, the light sensor is installed inside the building. The lighting intensity can then be controlled not only by switching the lights on and off, but also by automatic dimming of the lamps. This creates a constant light level in the building between the specified switch-on and switch-off times.



LED moisture-proof lamp FarmTUBE

- specially developed for use in livestock barns
- resistant to ammonia (DLG-tested)
- suitable for high-pressure cleaning (protection class IP69K)
- flicker-free, so ideally suitable for poultry
- uniform and glare-free illumination due to a frosted cover
- stable, impact-resistant casing made from extruded PMMA, with stainless steel covers
- high energy efficiency
- suitable for low to medium-high ceiling heights
- with through-wiring and rapid clamps on both sides, for simple series installation
- incl. stainless steel installation clips for direct or suspended mounting
- with D marking according to DIN EN 60598-2-24, therefore suitable for areas at risk of fires due to combustible dusts or fibres (hay storage, feed, litter, etc.)
- GS-tested
- 5-year warranty

Technical data	
Voltage	220 - 240 V
Mains frequency	50 - 60 Hz
Luminous efficacy	150 lm/W
Light angle (half intensity angle)	120 °
Chip service life (L70)	> 500.000 h
Dimming function (only with dimmable lamps)	1...10 V
Colour rendering (CRI)	Ra > 80
Protection class	

New product NEW

5-year warranty 5

Ref. no.	Power	Length	Width	Height	Dimming function	Luminous flux	Colour temperature		€
345640	20 W	620 mm	86 mm	86 mm	dimmable	3.000 lm	6.000 K	1	
345641	40 W	1.220 mm	86 mm	86 mm	dimmable	6.000 lm	6.000 K	1	
345642	60 W	1.520 mm	86 mm	86 mm	dimmable	9.000 lm	6.000 K	1	

The lights include integrated LED bulbs.
The bulbs in the lights cannot be replaced.

LED moisture-proof lamp FarmLINE

Perfect for rough conditions in wet, moist or dusty environments!

• for lighting stables, riding halls, industrial buildings and warehouses, barns, workshops, etc. • with integrated high-performance LED chips (no fluorescent tubes required) • protected against powerful water jets and dust-proof (IP65 protection class) • with D marking according to DIN EN 60598-2-24, therefore suitable for areas at risk of fires due to combustible dusts or fibres (hay storage, feed, litter, etc.) • stable, shock-resistant housing made from polycarbonate • uniform and glare-free illumination due to a frosted cover • incl. installation clips made of stainless steel • 3-year warranty

Technical data	
Voltage	220 - 240 V AC
Mains frequency	50 - 60 Hz
Luminous efficacy	120 lm/W
Light angle (half intensity angle)	180 °
Chip service life (L70)	> 30.000 h
Material	Polycarbonate
Colour rendering (CRI)	Ra > 80
Protection class	IP65
Protection class	I

3-year warranty 3

Ref. no.	Power	Length	Width	Height	Dimming function	Luminous flux	Colour temperature			€
345580	25 W	120 cm	8 cm	7,2 cm	cannot be dimmed	3.300 lm	6.000 K	1/10	100	
345581	50 W	150 cm	8 cm	7,2 cm	cannot be dimmed	6.600 lm	6.000 K	1/10	100	

The lights include integrated LED bulbs.
The bulbs in the lights cannot be replaced.

LED moisture-proof lamp

• for lighting stables, riding halls, barns, industrial buildings and warehouses, workshops, cellars, etc. • for low to medium ceiling heights and ideal as a replacement for fluorescent tubes • flicker-free, so ideally suitable for poultry • uniform and glare-free illumination due to a frosted cover • stable, shock-resistant housing made from polycarbonate • protected against water jets and dust-proof (IP 66 protection class) • incl. connection cable and stainless steel mounting clips • with D marking according to DIN EN 60598-2-24, therefore suitable for areas at risk of fires due to combustible dusts or fibres (hay storage, feed, litter, etc.) • 3-year warranty

Technical data	
Voltage	200 - 240 V
Mains frequency	50 - 60 Hz
Luminous efficacy	140 lm/W
Light angle (half intensity angle)	120 °
Chip service life (L70)	> 30.000 h
Colour rendering (CRI)	Ra > 80
Protection class	IP66

New product NEW

3-year warranty 3

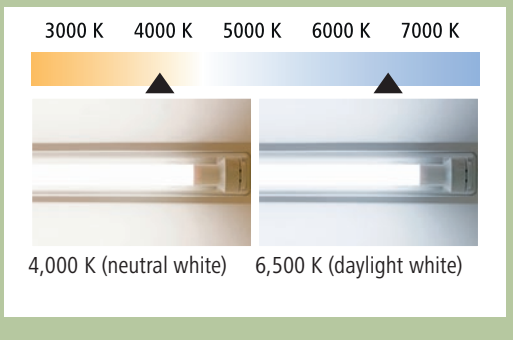
Ref. no.	Power	Length	Width	Height	Dimming function	Colour temperature		€
345630	20 W	600 mm	34,5 mm	36,5 mm	cannot be dimmed	6.000 K	1/15	
345631	35 W	1.200 mm	34,5 mm	36,5 mm	cannot be dimmed	6.000 K	1/15	
345632	45 W	1.500 mm	34,5 mm	36,5 mm	cannot be dimmed	6.000 K	1/15	

The lights include integrated LED bulbs.
The bulbs in the lights cannot be replaced.

The LED tubes EcoTUBE and EcoTUBE Plus come with the latest LED technology and their high light output, high efficiency and extremely attractive price-performance ratio cannot fail to impress.

Compared with conventional fluorescent tubes, you can save a great deal on energy costs and enjoy many other benefits as well:

- very long service life and high switching durability
- full light output even at low temperatures
- full, immediate luminosity, no flickering, no humming
- uniform and glare-free illumination
- high colour reproduction (Ra > 80), suitable for nearly all operating sites according to workplace guidelines
- sturdy housing
- mercury-free



LED Tube EcoTUBE

• Lamp tube made out of glass with special plastic coating to prevent sagging while also ensuring optimal splinter protection • very high light angle ensures particularly uniform illumination • flicker-free, thus also for poultry with high visual acuity • very efficient through high lumen output • only suitable for lights with conventional electro-magnetic ballasts (conventional ballasts/low-loss ballasts). • TÜV tested • 5-year warranty

Technical data	
Voltage	220 - 240 V AC
Mains frequency	50 - 60 Hz
Light angle (half intensity angle)	210 °
Chip service life (L70)	> 50.000 h
Colour rendering (CRI)	Ra > 80
Lamp Base	G13
Bulb shape	T8

Ref. no.	Power	Length	Dimming function	Luminous flux	Colour temperature	MOQ	Pieces / unit		€
345610	21 W	150 cm	cannot be dimmed	2.750 lm	6.500 K	10 pieces	10 / box	1/10	
345611	17 W	120 cm	cannot be dimmed	2.200 lm	6.500 K	10 pieces	10 / box	1/10	

LED Tube EcoTUBE Plus

• Lamp tube made out of glass with special plastic coating to prevent sagging while also ensuring optimal splinter protection • very high light angle ensures particularly uniform illumination • flicker-free, thus also for poultry with high visual acuity • very high light output • extremely efficient through high lumen output • only suitable for lights with conventional electro-magnetic ballasts (conventional ballasts/low-loss ballasts). • TÜV tested • 5-year warranty

Technical data	
Voltage	220 - 240 V AC
Mains frequency	50 - 60 Hz
Light angle (half intensity angle)	210 °
Chip service life (L70)	> 50.000 h
Colour rendering (CRI)	Ra > 80
Lamp Base	G13
Bulb shape	T8

Ref. no.	Power	Length	Dimming function	Luminous flux	Colour temperature	MOQ	Pieces / unit		€
345614	24 W	150 cm	cannot be dimmed	4.000 lm	4.000 K	10 pieces	10 / box	1/10	
345612	24 W	150 cm	cannot be dimmed	4.000 lm	6.500 K	10 pieces	10 / box	1/10	
345615	18 W	120 cm	cannot be dimmed	3.000 lm	4.000 K	10 pieces	10 / box	1/10	
345613	18 W	120 cm	cannot be dimmed	3.000 lm	6.500 K	10 pieces	10 / box	1/10	

Moisture-proof Diffuser Light for LED Tubes

• only suitable for T8 LED Tubes (Ø 26 mm) • housing made from glass fibre reinforced polyester, low inflammability • cover made from acrylic glass (PMMA), transparent, pearled interior, with clip locks • protected against powerful water jets and dust-proof (IP65 protection class) • incl. microfuse • no bridging starter required • with D marking according to DIN EN 60598-2-24, therefore suitable for areas at risk of fires due to combustible dusts or fibres (hay storage, feed, litter, etc.) • 2-year warranty

Made in Germany

Technical data	
Voltage	230 V AC
Mains frequency	50 Hz
Lamp Base	T8
Protection class	IP65
Protection class	I

Ref. no.	Colour	Length	Dimming function			€
34561	white	120 cm	cannot be dimmed	1	120	
34562	white	150 cm	cannot be dimmed	1	120	

Light source not included!

Moisture-proof Diffuser Light for LED Tubes

• only suitable for T8 LED tubes • no bridging starter required • protected against powerful water jets and dust-proof (IP65 protection class) • unbreakable housing with a high resistance to ammonia • incl. installation clips made of stainless steel • with D marking according to DIN EN 60598-2-24, therefore suitable for areas at risk of fires due to combustible dusts or fibres (hay storage, feed, litter, etc.)

Technical data	
Voltage	220 - 240 V AC
Mains frequency	50 - 60 Hz
Lamp Base	G13
Protection class	IP65
Protection class	I

Ref. no.	Colour	Length		€
345670	grey	120 cm	1/12	
34567	grey	150 cm	1/9	

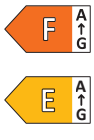
Light source not included!

The lights include integrated LED bulbs.
The bulbs in the lights cannot be replaced.

Philips CorePro LED Bulb E27

Inexpensive bulb replacement. Ideal for general lighting applications.

• matte finish • low energy consumption • cannot be dimmed • available in warm white (2700 K) and neutral white (4000 K) • 2-year warranty



Technical data	
Voltage	220 - 240 V
Mains frequency	50 - 60 Hz
Light angle (half intensity angle)	200 °
Chip service life (L70)	> 15.000 h
Colour rendering (CRI)	Ra > 80
Lamp Base	E27

Ref. no.	Power	Length	Width	Height	Luminous flux	Colour temperature	Corresponds to incandescent lamp output	Energy efficiency class			€
345960	5,5 W	110 mm	60 mm	60 mm	470 lm	2.700 K	approx. 40 W	F	1/10	1.260	
345961	8 W	110 mm	60 mm	60 mm	806 lm	2.700 K	approx. 60 W	F	1/10	1.260	
345962	13 W	110 mm	60 mm	60 mm	1.521 lm	2.700 K	approx. 100 W	E	1/10	1.260	
345963	5 W	110 mm	60 mm	60 mm	470 lm	4.000 K	approx. 40 W	F	1/10	1.260	
345964	7,5 W	110 mm	60 mm	60 mm	806 lm	4.000 K	approx. 60 W	F	1/10	1.260	
345965	12,5 W	110 mm	60 mm	60 mm	1.521 lm	4.000 K	approx. 100 W	E	1/10	1.260	

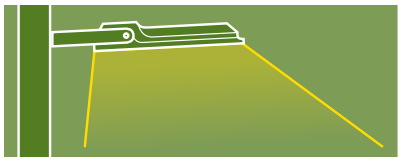
LED Flood Light Comfort Pro

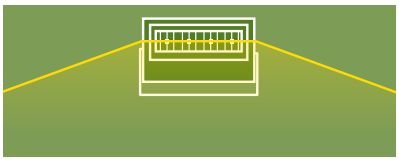
The integrated lens optics of the high-quality LED floodlight provide extremely homogeneous illumination, and at the same time reduce glare and light/shade contrasts. This makes it ideal for the focused, convenient illumination of riding areas and other spaces indoors and outdoors.

• integrated lens optic ensures extremely broad and front-facing lighting • Light is directed to where it is needed – low light pollution • Reduces glare and light-shadow contrast • protected against temporary immersion and dust-proof (IP67 protection class) • high-quality workmanship • high-quality SMD chips from Philips • an insulated LED driver with integrated overload, short-circuit, and no-load protection provides additional safety for the LEDs, and extends their working life • flicker-free, so also suitable for animals with high visual acuity • cover made from hardened glass • with integrated mounting bracket • can be mounted on floodlight towers with optional adapter (item no. 345693) • suitable for indoor and outdoor use • 5-year warranty

Now new with 160 lumens/watt!
(only art. 345962 and 345694)

Extremely wide beam directed forwards





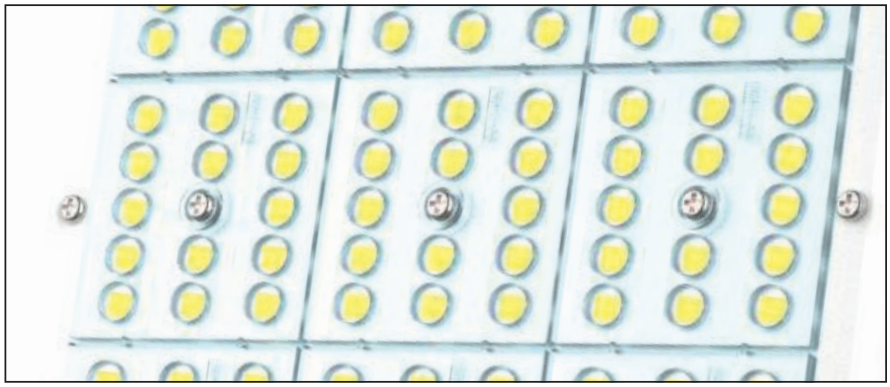
5-year warranty 5

Technical data	
Voltage	100 - 240 V AC
Mains frequency	50 - 60 Hz
Luminous efficacy	120 - 130 lm/W
Light angle (half intensity angle)	140 - 160 °
Chip service life (L70)	> 50.000 h
Dimming function (only with dimmable lamps)	1…10 V, 10 V PWM, 0 - 100 kΩ resistance
Material	Aluminium, powder-coated
Operating ambient temperature	-30 - 50 °C
Colour rendering (CRI)	Ra > 80
Protection class	IP67

345693

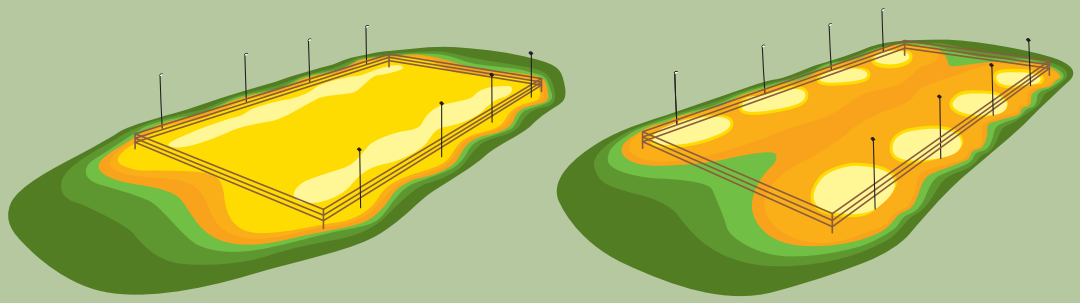
LED Flood Light

Perfect light for horse and rider with Comfort Pro 200 W
As steppe animals, horses have a high need for light and, as prey animals, have a very wide field of view (340 °). They see in mainly shades of green and blue and only adapt slowly to changes between light and dark. The LED floodlight Comfort Pro 200 W is adapted to these needs and special features and is therefore perfectly suited as a riding arena light. It provides high light intensity within a horse-friendly light spectrum. Homogeneous illumination reduces glare and light/shadow contrast, only directing the light to where it is needed. Perfect lighting for horse and rider! Find out more in the "LED Lighting for Horses" brochure.



Lens optic minimises glare and light-shadow contrast

Comparison of riding arena illumination of the Comfort Pro 200 W (left) with standard floodlights (right)



Ref. no.	Power	Length	Width	Height	Dimming function	Luminous flux	Colour temperature			€
345691	50 W	188 mm	266 mm	60 mm	cannot be dimmed	6.000 lm	6.000 K	1/8	80	
345694	100 W	357 mm	270 mm	71 mm	cannot be dimmed	13.000 lm	5.700 K	1	36	
345692	200 W	408 mm	309 mm	71 mm	dimmable	24.000 lm	5.700 K	1	28	

Ref. no.	Description		€
345693	Mounting adapter for flood light towers (spigot Ø 76 mm)	1/16	

The lights include integrated LED bulbs.
The bulbs in the lights cannot be replaced.

LED Outdoor Spotlight

- for even lighting of stalls, barns, sheds, farmyards, gardens etc.
- with energy-efficient, SMD LED chips
- up to 90 % less power consumption
- high light power - 120 lm/W
- adjustable angle, thanks to movable installation bracket
- robust housing made from cast aluminium with safety glass
- protected against dust and spray
- incl. 1 m connection cable
- GS-tested
- 2-year warranty

345663

345667

New product NEW

Technical data	
Voltage	220 - 240 V
Mains frequency	50 - 60 Hz
Luminous efficacy	120 lm/W
Light angle (half intensity angle)	110 °
Chip service life (L70)	~ 30.000 h
Material	Die-cast aluminium
Colour rendering (CRI)	Ra > 80
Cable length	100 cm
Protection class (without motion sensor)	IP65
Protection class (with motion sensor)	IP44

Ref. no.	Description	Power	Width	Height	Depth	Dimming function	Luminous flux	Colour temperature		€
345660	without motion sensor	10 W	8,8 cm	3,2 cm	6,2 cm	cannot be dimmed	1.200 lm	5.000 K	1/50	
345661	without motion sensor	20 W	10 cm	3,5 cm	7 cm	cannot be dimmed	2.400 lm	5.000 K	1/36	
345662	without motion sensor	30 W	13,5 cm	3,5 cm	11 cm	cannot be dimmed	3.600 lm	5.000 K	1/20	
345663	without motion sensor	50 W	18 cm	3,5 cm	14,3 cm	cannot be dimmed	6.000 lm	5.000 K	1/20	
345664	without motion sensor	100 W	21 cm	16,5 cm	3,5 cm	cannot be dimmed	12.000 lm	5.000 K	1/10	
345665	with motion detector	10 W	8,8 cm	4,5 cm	12,5 cm	cannot be dimmed	1.200 lm	5.000 K	1/40	
345666	with motion detector	20 W	10 cm	5 cm	14 cm	cannot be dimmed	2.400 lm	5.000 K	1/30	
345667	with motion detector	30 W	13,5 cm	5 cm	17,5 cm	cannot be dimmed	3.600 lm	5.000 K	1/30	
345668	with motion detector	50 W	18 cm	5 cm	20,7 cm	cannot be dimmed	6.000 lm	5.000 K	1/20	

LED Oval Light

• ideal for passage areas, garage, basement, etc. • sturdy plastic housing with glazed cover • Splash-proof
• ceiling or wall mounting • with energy-efficient, SMD LED chips • up to 80 % less power consumption
• suitable for outdoor use • 2-year warranty

Ideal as a night light in combination with the lighting control (345000).

Technical data	345606
Voltage	220 - 240 V AC
Mains frequency	50 - 60 Hz
Luminous efficacy	80 lm/W
Light angle (half intensity angle)	100 °
Chip service life (L70)	> 30.000 h
Colour rendering (CRI)	Ra > 80
Protection class	IP54

Ref. no.	Power	Length	Width	Height	Dimming function	Luminous flux	Colour temperature			€
345606	5,5 W	16,9 cm	11,5 cm	7,6 cm	cannot be dimmed	450 lm	6.500 K	1/12/24	432	

The lights include integrated LED bulbs. The bulbs in the lights cannot be replaced.

LED Floodlight

- durable housing made from die-cast aluminium
- stable tubular frame
- with steplessly adjustable stand
- light can be rotated around 360°
- with plastic carrying handle
- 230 volt connecting cable with earthed plug
- with energy-efficient, SMD LED chips
- up to 80 % less power consumption
- suitable for outdoor use

Technical data	345623
Voltage	220 - 240 V AC
Mains frequency	50 Hz
Luminous efficacy	100 lm/W
Light angle (half intensity angle)	120 °
Chip service life (L70)	approx. 50.000 h
LED type	SMD
Material	Die-cast aluminium
Colour rendering (CRI)	Ra > 80
Cable length	4 m
Protection class	IP65

Ref. no.	Colour	Power	Length	Width	Height	Dimming function	Luminous flux	Colour temperature			€
345623	yellow / black	70 W	29 cm	18 cm	32 cm	cannot be dimmed	7.000 lm	5.000 K	1/5	90	

Mobile LED Battery Spotlight WorkFire Pro 30

- sturdy plastic housing
- steplessly adjustable stand
- with additional carry handle / mounting bracket
- incl. power bank function
- Li-ion battery with a charge status display and integrated overcharging and deep discharging protection
- LED source: 30 W COB
- incl. USB cable and USB power pack
- dual operation (battery/cable)
- with On/Off switch
- hours of light: ~ 1,5 h 100 %, ~ 3 h 50 %, ~ 6 h Flashing
- dust-proof jet-proof
- suitable for outdoor use

Technical data	345608
Luminous efficacy	83 lm/W
Chip service life (L70)	> 50.000 h
Light levels	3 light levels
Light level modes	100 % / 50 % / Warning light flashing red
Material	Plastic
Voltage	5 V
Battery technology	Li-Ion
Battery capacity	8.000 mAh
Battery charge time	8 h
Hours of light	~ 1,5 h 100 %, ~ 3 h 50 %, ~ 6 h Flashing
Colour rendering (CRI)	Ra > 70
Protection class	IP65

Ref. no.	Colour	Power	Length	Width	Height	Luminous flux	Colour temperature			€
345608	black / yellow	30 W	20,5 cm	18 cm	6,5 cm	2.500 lm	6.500 K	1/4/8	192	

LED Battery Torch MiniFire Akku

• compact and sturdy housing made from aluminium • non-slip ribbing in the handle area • focus function • with wrist loop • with clip for easy attachment • incl. USB cable • Splash-proof • no batteries required

Technical data	345620
Light levels	5 light levels
Light level modes	100 % / 50 % / 25 % / Flashing / SOS
Voltage	3,7 V DC
Battery technology	Li-Ion
Battery capacity	2.200 mAh
Battery charge time	5 - 6 h
Light range	200 m
Protection class	IP44

Ref. no.	Length	Ø	Luminous flux			€
345620	131 mm	28,5 mm	300 lm	1/20/40	1.600	

LED Battery Torch ProFire Akku

• compact and sturdy housing made from aluminium • non-slip ribbing in the handle area • focus function • with wrist loop • incl. USB cable • hours of light: ~ 4 h • Splash-proof

Technical data	345621
Light levels	5 light levels
Light level modes	100 % / 50 % / 25 % / Flashing / SOS
Voltage	3,7 V DC
Battery technology	Li-Ion
Battery capacity	2.200 mAh
Battery charge time	5 - 6 h
Hours of light	~ 4 h
Light range	350 m
Protection class	IP44

Ref. no.	Length	Ø	Luminous flux			€
345621	166 mm	48 mm	800 lm	1/20/40	960	

LED Battery Work Light WorkFire Akku

• sturdy plastic housing • additional lamp on the luminaire head • incl. hanging hook and 2 mounting magnets • 360° rotatable grip and 180° folding foot • incl. USB cable and USB power pack • dual operation (battery/ cable) • hours of light: ~ 3 h, ~ 6 h • battery built-in • includes operating instructions

Technical data	345609
Luminous efficacy	60 lm/W
Material	Plastic
Voltage	5 V DC
Battery technology	Li-Ion
Battery capacity	2.200 mAh
Battery charge time	5 h
Hours of light	~ 3 h, ~ 6 h
Protection class	IP44

Ref. no.	Colour	Power	Length	Width	Height	Luminous flux			€
345609	black / yellow	5 W	24 cm	5,5 cm	4 cm	300 lm	1/10/40	720	

LED Work Light WorkFire

• powerful 3 watt COB LED • 3 additional LEDs in the luminaire head enable economical torch operation • fold-out hook that can be turned 360° • magnet on the back • sturdy and handy ABS plastic housing • non-slip rubber coating in the handle area • only available in display! • with On/Off switch • splash-proof • battery included







Technical data	
Voltage	3 x 1.5 V - AA (Mignon)

Ref. no.	Colour	Power	Length	Width	Height	Luminous flux	MOQ	Pieces / unit			€
345603	yellow / black	3 W	20 cm	6,2 cm	3,4 cm	200 lm	10 pieces	10 / display	1/10/40	1.200	

LED Cordless Hand Lamp

• sturdy plastic housing • main light with two brightness levels: 100 % (3 h) / 50 % (6.5 h) • side lights: white light (100 % - 50 % (18 h)) and red flashing light (24 h) • battery charge indicator • power bank function • 360° rotating handle • 4-step adjustable foot • dual operation (battery/cable) • incl. USB cable • with push button



Technical data	345622
Luminous efficacy	70 lm/W
Material	Plastic
Voltage	5 V DC
Battery technology	Li-Ion
Battery capacity	2.400 mAh
Battery charge time	7 h

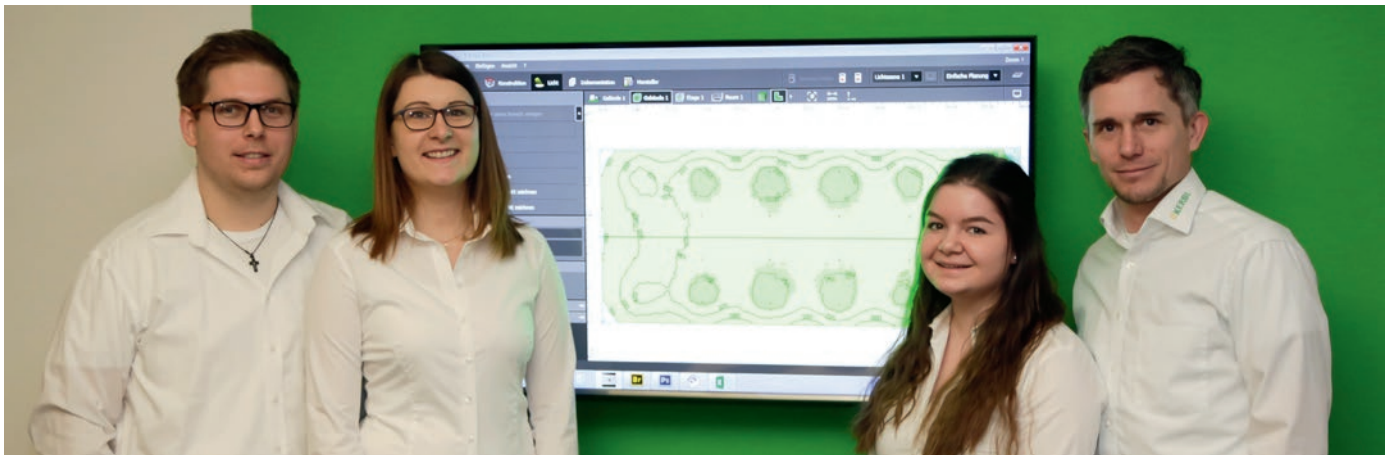
Ref. no.	Colour	Power	Length	Width	Height	Luminous flux			€
345622	black / green	5 W	20 cm	15 cm	11 cm	350 lm	1/20	200	

Recommended illumination levels

Recommended illumination levels in accordance with DIN EN 12464-1.
Recommended light levels for rooms and open spaces are determined by which activities are to be carried out there.

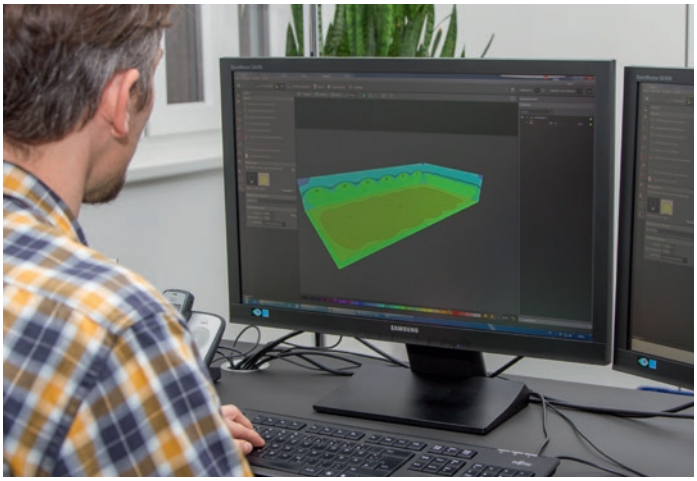
Recommended illumination levels	Lux
Typical office lighting	500
Agriculture	
Calving Pens and Food Preparation	200
Light regime for increasing milk production	200
Pig Sty	80
Stalls for sick animals	200
Loading and operating of conveyors and machines	200
Sales rooms	
Sales area	300
Checkout area	500
Packing Table	500
Riding	
High-level competitions and training	500
Mid-level competitions, performance training	300
Easy competitions, training, recreational sports	200
Bearing	
Packing and posting area	300
Storage rooms for similar, large-scale storage goods	50
Storage rooms with search tasks, not similar storage goods	100
Storage room with reading tasks	200
High bay warehouses with pathways and personnel	150
High bay warehouses with pathways without personnel	20
Installation work	
Heavy-duty work	200
Medium fine work	300
Fine work	500
Very fine work	750
Vehicle repair shops and vehicle inspection sites	300
Exhibition and show rooms	
General lighting	300
Machinery hall	200
Metalworking, metal processing	
Weld	300
Heavy-duty and mid-level machine work	300
Detailed machine work, grinding	500
Marking, inspection	750
Surface treatment and painting	750
General areas, activities and tasks	
Entrance hall	100
Waiting rooms	200
First Aid rooms	500
Break rooms, lounges	200
Public Lighting	
Public access and parking	5-10
Company car parks	10
Electrical industry	
Cable and wire production	300
Galvanising	300
Installation work	
For heavy-duty work such as large transformers	300
Mid-level work such as switchboards	500
Detailed work such as telephones	750
Very detailed work such as measurement instruments	1000
Traffic zones	
Traffic areas and corridors	100
Stairs, Escalators, Moving Walkways	150
Loading ramps, loading areas	150

Professional lighting design by Kerbl



Upon request, we can create a professional lighting design for you that is tailored to your individual needs.

Our services range from simple planning for individual rooms to extensive and complex planning for an entire building. You can also send us the building floor plans and sections.



Our team will be happy to answer your questions. Just call or contact us by e-mail.

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You can find more information and advice on LED lighting on the Internet at:
http://www.kerbl.de/service/produktberatung/led-beleuchtung

Modules

Our module system is your best advisor!

The informative and clear product presentation reduces the problem of selection:

- The purchase characteristics can be seen on the packaging.
- Catalogues and leaflets are at your service to provide more information.
- We offer different presentation options to suit your requirements, in the form of module systems and lower level placings.

Module illustrations are for the purpose of example only.

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