

Made in
Germany



busch+müller

Made in
Germany



IXON
SPACE
150 LUX

licht

INNOVATION. ORIGINAL. MADE IN GERMANY.

Busch + Müller is the leading brand for bicycle lighting. All groundbreaking innovations such as IQ light technology, daytime running light, brake light function, universal headlights for e-bikes and much more originate here. Our newest headlights pass the 100 Lux mark for dynamo-powered products, while battery-powered headlights even reach 150 Lux. Busch + Müller is Made in Germany. The production facility of the family-owned enterprise has always been in Meinerzhagen, Germany, from its founding in 1925 up until current day.



ON or OFF, that is what bicycle light used to be in the past. Today our headlights contain highly complex electronics. They increase light output and use software to control the LEDs - e.g. for daytime running light, beam boost, standlight, sensor automatic or light at close range. Pictured left is the electronic core of our IQ-X headlight with 100 Lux light output. All engineering achievements as well as the software originate at Busch + Müller. The circuit board is supplied by a specialist in our immediate neighbourhood. Every headlight is assembled and all its functions are individually tested in Meinerzhagen. Busch + Müller is Made in Germany, uncompromisingly - including the electronics.



10 LUX

Standard, required by road traffic regulations.

light output not pictured

20 LUX



Lyt B



Pure B

30 LUX



Fyre



Eyro



Onefive

30 LUX

differently shaped light field, not pictured



Upp



Lyt T

40 LUX

light output not pictured



IQ Fly R



IQ Cyo R



IXON IQ

40 LUX

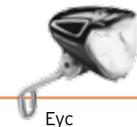
differently shaped light field, not pictured



Avy

Light field similar to Fyre, but brighter

50 LUX



Eyc



Core

60 LUX



IQ Fly RT PREMIUM



IQ Cyo R (T) PREMIUM

60 LUX

differently shaped light field (no light at close range), not pictured



IQ Cyo (T)

70 LUX



LUXOS

80 LUX



IQ Fly PREMIUM



IQ Cyo (T) PREMIUM



IXON IQ PREMIUM



IXON IQ Speed PREMIUM
90 Lux, identical shape of light field

100 LUX



IQ-X

150 LUX



Space



IQ-X Speed

WITH LIGHT/DARK BOUNDARY



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LIGHT SYSTEMS: FOR E-BIKES AND PEDELECS

On e-bikes, the light system is powered by the vehicle's battery. Therefore, e-bikes require special headlights and rear lights - this goes for both pedelecs and speed e-bikes. Until 2013, it was not permitted to power the light from the battery, that is why older e-bikes have a dynamo and a regular bicycle headlight.

Busch + Müller offers five headlights for pedelecs and speed e-bikes. They are based on our best and most successful LUMOTEC models. Their design and light output is identical to their dynamo-powered counterparts. Only the "E" designation indicates that these are e-bike headlights.

THE DECIDING FACTOR

There is one major technical difference: dynamos supply 6 V AC power, but e-bike batteries supply DC voltage - depending on build and drive system 6 to 42 V or even higher. Our headlights are compatible with almost every system - they flexibly operate with a multitude of different voltages. A separate, capacitor-powered standlight function is not required, because the e-bike battery constantly supplies power so that standlight is always ensured.

EXCEPTION SPEED E-BIKE

Our E headlights and rear lights are technically suitable for both pedelecs and speed e-bikes. However, on speed e-bikes light system alterations are a legal exception: They require an operating permit. To conform to the law, any replacement of headlight or rear light must be either an explicitly permitted modification or checked by an inspection authority and noted in the vehicle's documents. Special ECE-approved rear view mirrors are also necessary for speed e-bikes. They may be replaced without an entry in the operating permit. For our E rear view mirrors, please see page 35.



- IQ-X E***
- | 150 Lux
- | 6-60 V DC
- | IQ2 technology
- | Extensive light field
- | Daytime running light
- | Light at close range
- | Type 164R60TS7



- Cyo Premium E**
- | 80 Lux
- | 6-42 V DC
- | IQ Premium technology
- | Extensive light field
- | Light at close range
- | Switch ON/OFF
- | Type 1752Q42/6N



- Eyc E**
- | 50 Lux
- | 6-42 V DC
- | IQ2 technology
- | Light at close range
- | Type 160R42/6



- Avy E**
- | 40 Lux
- | 6-42 V DC
- | IQ technology
- | Light at close range
- | Type 162R42/6



- Fly E**
- | 40 Lux
- | 6-42 V DC
- | IQ technology
- | Light at close range
- | Switch ON/OFF
- | Type 174Q42/6N

REAR LIGHTS

A rear light is mounted to the carrier or mudguard - for both of these mounting options, Busch + Müller offers compact e-bike solutions. The TOPLIGHT series' View E for carrier mounting and the SECULA E for mudguards are E rear lights suitable for DC power. Both shine with the exceptionally bright LineTec light strips and feature an integrated rear reflector.

NEW DEVELOPMENTS

The development rate of pedelecs and speed e-bikes is increasing. Also, vehicle categorisations and regulations may change any time. We at Busch + Müller work as quickly as possible to always provide correct answers to all these changes and requirements - often in the form of individual solutions for different bicycle brands and manufactures. This means that end consumers may not find all replacement parts in retail stores - but our retail range does include many comparable or even better solutions. For all current information regarding e-bike light systems please visit www.bumm.de.



- View E**
- 5-15 V. Two super-bright LEDs create two light strips. Large reflector. Carrier mounting. Type 321ASDC.



- SECULA E**
- 6 V. A super bright LED creates a light crown. Integrated reflector. Type 331ASDC.

AT YOUR RETAIL STORE

All E headlights and rear lights shown here are available wherever our lights are sold. For all current information regarding e-bike light systems please visit www.bumm.de.

* Requires: minimum 7.5 W nominal output of the drive system's light connection

IQ TECHNOLOGY: THE LIGHT REVOLU- TION FOR BICYCLES

At its core of IQ-TEC is the revolutionary idea not to use a high-output LED as an indirect light source. The complete reflective surface is used to focus and guide the light. If one looks into the reflector of an IQ headlight, one only sees the metalised surface. Once the headlight is turned on, what takes its place is "nothing but light". Since 2007, our innovation has continually been developed further.

State of the art are "IQ2-TEC" and "IQ-TEC PREMIUM". In comparison with the first IQ generations, the new IQ-TEC versions offer double the light output and an almost twice as wide, very extensive field of light. Everybody who has cycled with an IQ-TEC headlight at night will never again want to do without this light experience.

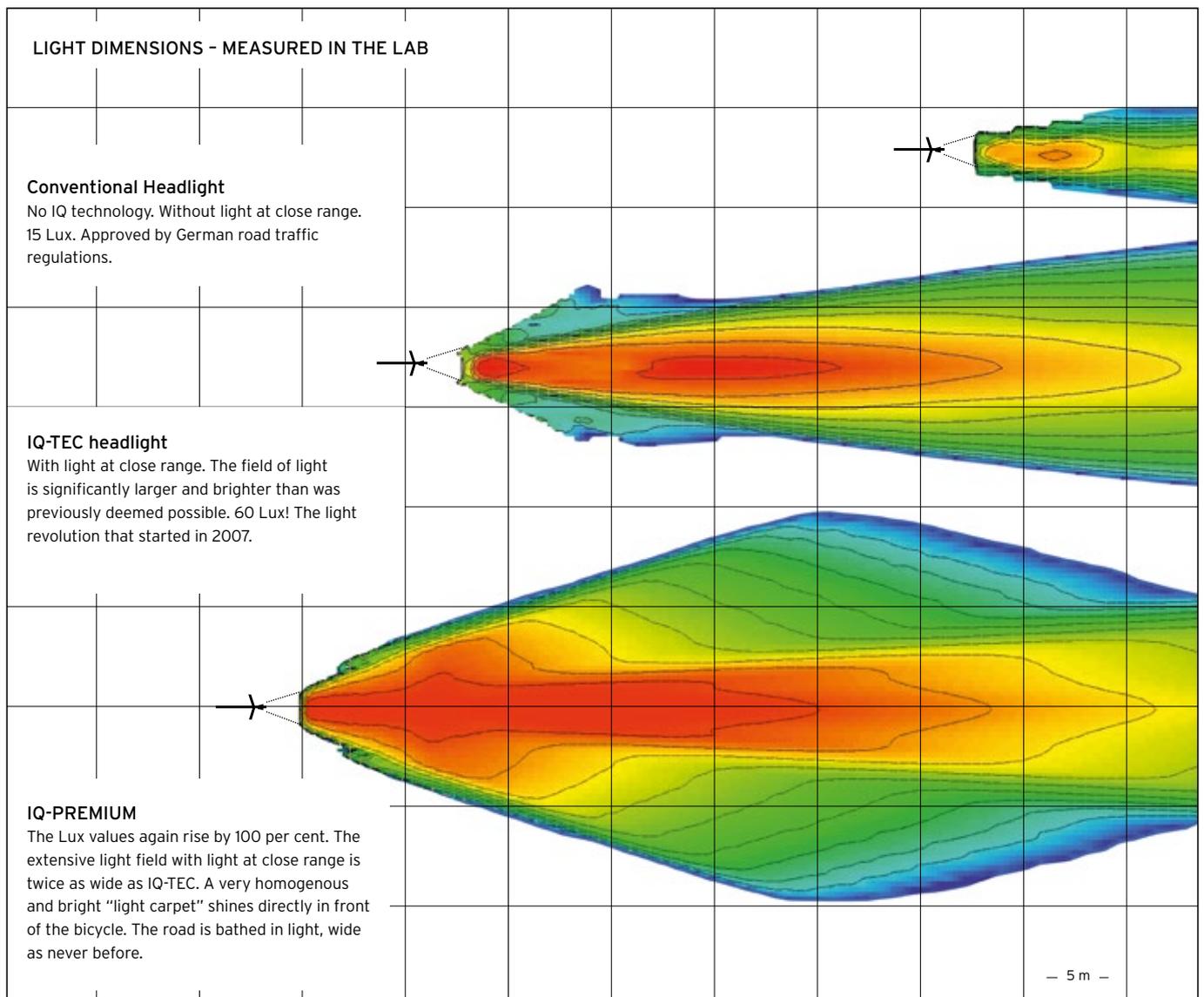


Conventional technology

A light source sits in the centre of the reflector. The result: stray light and loss of efficiency.

IQ technology

A special reflector uses one high output LED as an indirect light source. This creates an extremely homogenous field of light that is much wider.



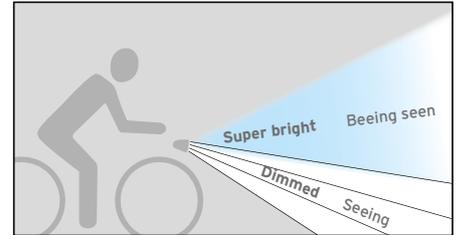
DAYTIME RUNNING LIGHT. BETTER SEEING AND BEING SEEN.

For bicycles – less conspicuous in traffic by nature – daytime running light is a substantial advantage. LICHT24, the daytime running light from Busch + Müller, is the ideal solution. Additional signalling LEDs shine upwards and generate maximum visibility. The “regular” riding light is focused on the road and limited by its clearly defined light/dark boundary to prevent glaring oncoming traffic.

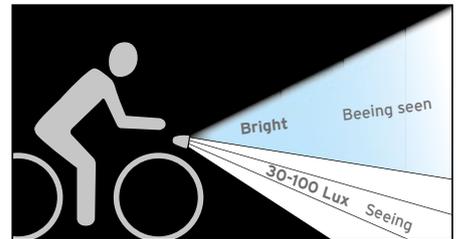
When a headlight with LICHT24 is switched on, it always shines – during day and night. LICHT24 has a day mode and a night mode. As soon as the integrated sensor is activated, it switches automatically between both modes. LICHT24 is approved by German road traffic regulations. The day mode may also be used at night because the main LED is always active.



Daytime running light: LUMOTEC Fly with six signalling LEDs



Advantage during day: LICHT24 day mode.



Advantage in the dark: LICHT24 night mode

MORE LIGHT AND CYCLING COMFORT.

WITH SENSOR AUTOMATIC

„Sensor automatic“ usually means that the headlight activates automatically when cycling during dusk or darkness and switches off when subjected to daylight. Continuous energy supply by a hub dynamo is required for this function. In order for the headlight to not mistakenly react to car headlights, the sensor functions with a time delay.

In headlights equipped with daytime running light, the sensor automatically switches between day and night mode.

WITH STANDLIGHT

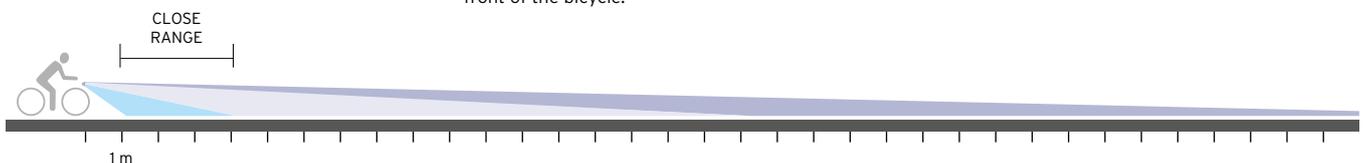
This innovation presented by Busch + Müller in the nineties has become a safety standard. The affix “plus” means that the product is equipped with standlight. For this function, no batteries are necessary. It works this way: As soon as the bicycle stops, the standlight is powered by a maintenance-free capacitor. This capacitor is charged during the ride.

By the way: The standlight of a LUMOTEC headlight can shine for several minutes. Therefore, the standlight of many IQ headlights can be deactivated manually – so as not to attract thieves to a parked bicycle.

WITH LIGHT AT CLOSE RANGE

For a secure ride, it is important to be able to see the road directly in front of the bicycle. Bumps or potholes in the road can be seen better if this area is lit, and can be circumnavigated by short and intuitive steering. During darkness, this is only possible if the area between one and four metres in front of the bicycle is lit brightly and homogeneously. Subjectively, the need for light at close range is higher the slower one is riding, because one’s balance can more easily be influenced by obstacles.

“With light at close range” means that the light field emitted by our headlights starts directly one metre in front of the bicycle.



Illumination levels of headlights can be measured using different units - e.g. Lux or Lumen. Busch + Müller states the light output of headlights using the unit Lux. A Lux value provides the illumination level in relation to its distance from the light source. It is exactly this relation which is a deciding factor when considering a headlight, because it states the amount of light on the road. The value Lumen in turn states how much light exits the headlight at the light source, no matter if the light shines onto the road or is lost as stray light. That is why this value - as excellent as it might sound - can be very misleading.

However, even the Lux value provides only partial information about the output of a headlight. Also important is the quality of the light field which is created on the road. Its width and depth, its light quality that is both homogenous as well as comfortable to look at with the human eye, and finally its

glare-free light/dark boundary are all qualities that cannot be stated using measured data.

By the way: Some manufacturers cite "visibility from x metres" as a means of evaluating headlamp quality, a rather meaningless value. There is no objective measuring method, and the safety gain is only an individually perceived factor, because it implies ideal conditions (no interfering light, "clean" air, unhindered visibility, universally identical abilities of human eyesight ...) that in reality do not exist. That is why we forgo quoting a value we consider useless and that only feigns objectivity. The question that begs the most is: Is there any real value in being seen from a distance of 1000 metres?

HOW TO RECOGNISE A GOOD HEADLIGHT.

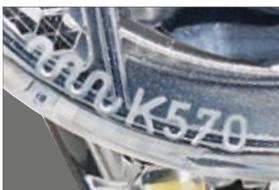


Lux values do not say all. It all depends on the light field. On the left: a nominal output of 60 Lux. On the right: "only" 50 Lux, but with light at close range and a very homogenous light field

Without exception, all headlights and rear lights shown in this catalogue comply with German road traffic regulations (StVZO). Since 2013, battery-powered headlights and rear lights are permitted for use on all bicycles in Germany. However, this does not mean that all light sources powered by batteries can be used as a bicycle headlight. Like dynamo-powered headlights, their battery-powered counterparts are subject to legal regulations (e.g. brightness, light distribution and a light/dark boundary to prevent glaring). Only if these regulations are met, headlights or rear lights are suitable and approved for use on bicycles. This approval is marked on every headlight and consists of a wavy line, the letter "K" and a number.

The StVZO dictates that at its core, the light field of a headlight must have a brightness of at least 10 Lux at a distance of 10 metres. Headlights from Busch + Müller exceed this requirement with no exceptions - in most cases many times over (up to 800%). A large "Z" means that the rear light's integrated reflector complies with the StVZO's requirement to have a large reflector.

HEADLIGHTS AND REAR LIGHTS: ALL ARE APPROVED FOR ROAD USE.



Busch + Müller endorses the initiative "Licht:Check". Participating retailers check bicycle lighting systems free of charge and issue a test badge.





- | 100 Lux. Powered by dynamo!
- | LED IQ2 technology
- | Aluminium casing
- | Extensive light field
- | Daytime running light
- | Sensor automatic
- | Light at close range
- | Lateral light emission
- | Standlight
- | Approved for road use.
- | German mark of approval



Even more comfort

- | On the rear: a large, lit push button
- | Screw-on front reflector
- | Double-jointed mounting bracket
- | Secured cable guide

IQ-X[®]

LUMOTEC SERIES. CLASSY DESIGN. MAXIMALLY BRIGHT. BRILLIANT LIGHT FIELD.

The most striking headlight for dynamo-equipped bicycles we ever built. Its elegant aluminium casing contains all technology that modern high-end bicycle headlights could possibly have. It is the first dynamo headlight to reach the 100 Lux mark. Even more important than this measured value is the light effect: A very homogenous light field spreads out in front of the bicycle, enabling the cyclist to accurately see everything - the immediate close range, the width of the road exceeding the kerbside, and also more than 40 metres far. Cycling in the dark becomes a pure joy - and is safer than ever. Also during daytime - because of the integrated daytime running light.

LUMOTEC IQ-X

RT senso plus	164RTSNDI	<input type="checkbox"/>				
E*	164R60TS7	<input type="checkbox"/>				

- With switch ON/OFF
- Standlight
- Sensor automatic
- Light at close range
- Daytime running light

IQ-X BLACK



Type 164RTSNDI-01

IQ-X SILVER



Type 164RTSNDI

IQ-X E*

- | 150 Lux
- | For e-bikes, 6-60 V DC
- | Extensive light field
- | Daytime running light
- | Sensor automatic
- | Light at close range
- | Lateral light emission
- | ECE mark for speed e-bikes
- | German mark of approval for pedelecs

*Requires: minimum 7.5 W nominal output of the drive system's light connection

LUXOS®

LUMOTEC SERIES. WITH IQ2 TECHNOLOGY AND EXCELLENT COMFORT FEATURES.

Lux output: 70-90! The light field is maximally homogenous and the lit area several times larger compared to original IQ technology. Further light features: panorama light at close range, daytime running light, switchable beam boost for the darkest of nights. Also much more than a headlight: with USB charging option for mobile devices, supported by an integrated lithium battery. The pure output of 70 Lux is also available in a basic version.

Aluminium cooling element, glossy piano lacquer

Integrated into the "forehead" with reflectors of their own: additional LEDs for panorama light at close range and daytime running light.

Hidden inside the "head", more efficient than ever: the IQ2 LED technology.



Handlebar push button with control LEDs. Controls all light features at the push of a button.

Waterproof cable guiding. If the USB cable is disconnected, the "open" cable end is sealed with a rubber cap (included).

USB socket

PANORAMA LIGHT AT CLOSE RANGE

The light field is as excellent and wide as never before: directly in front of the bicycle and also to its side, beyond the edge of the road. Technology: additional LEDs, controlled electronically.

BEAM BOOST

Full output of all light sources. Ideal for navigating tricky road sections in pitch darkness. Activated by push button. Push button during the day: signal pulse. During darkness while standing still: full light.

USB CHARGING OPTION

Charges USB devices (mobile phone, GPS, MP3 player) with USB energy. An integrated lithium cache battery supplies constant voltage.

HANDLEBAR PUSH BUTTON

Now you control your light directly. All important light functions can be switched on the handlebar: ON/OFF, floodlight, flashing headlight etc.

INTEGRATED LITHIUM CACHE BATTERY

This additional energy storage unit is used for peaks of demand as well as charging. Recharges continually when cycling. The charging status is indicated by an LED inside the handlebar button.

DAYTIME RUNNING LIGHT

Signalling LEDs shining brightly forward. A sensor automatic switches automatically between maximum daytime running light by day and maximum riding light by night.

STANDLIGHT

Automatic. Special LEDs are directed so they are perceived by other traffic participants. Can be switched off with the handlebar push button.

REAR LIGHT MONITOR

A control LED inside the headlight continually shows whether or not a connected rear light functions properly.

LUMOTEC LUXOS	179B	179U
Lux	70	70/90
Panorama light at close range		■
Beam boost 90 Lux		■
Handlebar push button		■
Cache battery		■
USB charging		■
Daytime running light	■	■
Standlight	■	■
Sensor automatic	■	■
Rear light monitor		■

LUXOS B

Basic version with IQ2 technology, LICHT24, sensor automatic and standlight.

LUXOS U

The universal LUXOS for your bicycle. Equipped with all features.

CYO T PREMIUM

The version offering maximum safety effect. Equipped with daytime running light LICHT24: Beneath the main headlight, four additional signalling LEDs shine brightly. The standlight function is fulfilled by two signalling LEDs.

- | LICHT24. Daytime running light
- | Extensive light field
- | Light at close range
- | Standlight & sensor automatic
- | 80 Lux without front reflector
- | 60 Lux with front reflector



pict. Cyo T

CYO PREMIUM

- | Extensive light field
- | Light at close range
- | Standlight & sensor automatic
- | 80 Lux without front reflector
- | 60 Lux with front reflector



pict. Cyo RT

CYO PREMIUM E

- | For e-bikes, 6-42 V DC
- | Extensive light field
- | 80 Lux
- | Light at close range
- | With switch ON/OFF

CYO T

- | LICHT24. Daytime running light
- | Standlight & sensor automatic
- | 60 Lux without front reflector, without light at close range
- | 40 Lux with front reflector, with light at close range



pict. Cyo

CYO

- | Standlight & sensor automatic
- | 60 Lux without front reflector, without light at close range
- | 40 Lux with front reflector, with light at close range



pict. Cyo R
Design alternative: specially chromed casing, aluminium look

CYO®

LUMOTEC SERIES. PREMIUM OUTPUT, COMPACT SIZE. ALREADY A CLASSIC.

Its classically puristic shape is both elegant and dynamic, but that is only one reason for Cyo's success. Another one is the IQ technology's formidable performance spectrum housed in a minimalist casing. Stainless steel mounting bracket and screw emphasise its high quality. Many versions for virtually all different purposes. Approved by German road traffic regulations.

LUMOTEC IQ Cyo T PREMIUM

T senso plus	1752QTSNDI	☉	■	■	■	■	■	■	■
RT senso plus	1752QRTSNDI	☉	■	■	■	■	■	■	■

LUMOTEC IQ Cyo PREMIUM

senso plus	1752QSNDI	☉	■	■	■	■	■	■	■
R senso plus	1752QRSNDI	☉	■	■	■	■	■	■	■
E	1752Q42/6N	☉	■	■	■	■	■	■	■

LUMOTEC IQ Cyo T

T senso plus	175QTSNDI	☉	■	■	■	■	■	■	■
RT senso plus	175QRTSNDI	☉	■	■	■	■	■	■	■

LUMOTEC IQ Cyo

N plus	175QNDI	☉	■	■	■	■	■	■	■
senso plus	175QSNDI	☉	■	■	■	■	■	■	■
RN plus	175QRNDI	☉	■	■	■	■	■	■	■
R senso plus	175QRSNDI	☉	■	■	■	■	■	■	■

- With switch ON/OFF
- Standlight
- Sensor automatic
- Light at close range
- Daytime running light
- ☉ Without front reflector
- ☉ With front reflector

FLY

LUMOTEC SERIES. THE ELEGANT ONE.

The headlight's range can easily be adjusted by tilting its head - it firmly and precisely locks into the chosen position! Mounting bracket and screw made of stainless steel, rear switch. Suitable for suspension forks by combination with different adaptors. Integrated front reflector. Approved by German road traffic regulations.

LUMOTEC IQ Fly T PREMIUM							
RT senso plus	1742QRTSNDI						
LUMOTEC IQ Fly T							
RT senso plus	174QRTSNDI						
LUMOTEC IQ Fly PREMIUM							
senso plus	1742QSNDI						
LUMOTEC IQ Fly							
E	174Q42/6N						

■ With switch ON/OFF
■ Standlight
■ Sensor automatic
■ Light at close range
■ Daytime running light



FLY T PREMIUM

- | LICHT24. Daytime running light
- | Extensive light field
- | Light at close range
- | Standlight & sensor automatic
- | 60 Lux



FLY PREMIUM

- | Extensive light field
- | Light at close range
- | Standlight & sensor automatic
- | 80 Lux

FLY T

- | LICHT24. Daytime running light
- | Light at close range
- | Standlight & sensor automatic
- | 40 Lux

FLY E

- | For e-bikes, 6-42 V DC
- | Light at close range
- | 40 Lux
- | With switch ON/OFF

AVY[®]

LUMOTEC SERIES. EVERYTHING YOU NEED.

It is almost as slender as its exceptionally successful brother Eyc. Inside is genuine IQ technology. With 40 Lux and a good, homogenous lighting of the road it is the the ideal middle class headlight - up-to-date technology at a favourable price-performance ratio. Approved by German road traffic regulations. Also: mark of approval F.

LUMOTEC IQ Avy							
N	162RN						
N plus	162RNDI						
T senso plus	162RTSNDI						
E	162R42/6						

■ With switch ON/OFF
■ Standlight
■ Sensor automatic
■ Light at close range
■ Daytime running light



AVY

- | 40 Lux
- | LICHT24. Daytime running light
- | Includes clip-on front reflector
- | Sensor automatic
- | Standlight
- | Light at close range

AVY E

- | For e-bikes, 6-42 V DC
- | Light at close range

EYC

- | 50 Lux
- | LICHT24. Daytime running light
- | Light at close range
- | Sensor automatic
- | Standlight



EYC[®]

LUMOTEC SERIES. SMALL, YET VERY CAPABLE.

IQ2 technology. Very good and homogenous lighting of the road. Clip-on reflector. Only 70 g light. Decrease in volume of over 60 % when compared to the previously smallest LUMOTEC (Cyo). Approved by German road traffic regulations.

LUMOTEC IQ2 Eyc				
plus	16ORDI		■	■
N plus	16ORNDI	■	■	■
T senso plus	16ORTSNDI	■	■	■
E	16OR42/6			■

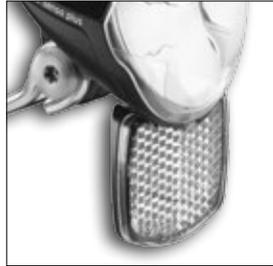
- With switch ON/OFF
- Standlight
- Sensor automatic
- Light at close range
- Daytime running light

EYC E

- | For e-bikes, 6-42 V DC
- | 50 Lux
- | Light at close range



Push-button - backlit with mode indication LED.



Front reflector is included and can easily be clipped on.

UPP

LUMOTEC SERIES. SIMPLE. STYLISH. SOUND.

Its shape: Delicate design with very clear lines. Its function: A robust 30 Lux headlight with light at close range. Approved by German road traffic regulations.

LUMOTEC Upp				
N	166N	■	■	■
N plus	166NDI	■	■	■
T senso plus	166TSNDI	■	■	■

- With switch ON/OFF
- Standlight
- Sensor automatic
- Light at close range
- Daytime running light

UPP T

- | 30 Lux
- | LICHT24. Daytime running light
- | Light at close range
- | Standlight & sensor automatic
- | LED lens technology
- | Integrated front reflector
- | Lateral light emission



UPP

- | 30 Lux
- | Light at close range
- | Standlight & sensor automatic
- | LED lens technology
- | Integrated front reflector
- | Lateral light emission

CLASSIC

LUMOTEC SERIES. LED LIGHT FOR VINTAGE OR CLASSICAL BIKES.

Form and surface material are an homage to bicycle traditions. The technology is both modern and efficient, guaranteeing both light comfort and safety in traffic. Integrated front reflector. Approved by German road traffic regulations.

LUMOTEC Classic T	
T senso plus	1786CTSNDI

LUMOTEC Classic	
N	1786CN
N plus	1786CNDI
senso plus	1786CSNDI

- With switch ON/OFF
- Standlight
- Sensor automatic
- Light at close range
- Daytime running light



CLASSIC T

Daytime running light models have a light output of 30 Lux. Distinctive signalling LEDs for better visibility during the day are integrated into the headlight.

- | 30 Lux
- | LICHT24. Daytime running light
- | Light at close range
- | LED lens technology
- | Standlight

CLASSIC

Modern LED lens technology creates 25 Lux. Very good and homogenous field of light with light at close range and precise light/dark boundary.

- | 25 Lux
- | LICHT24. Daytime running light
- | Light at close range
- | LED lens technology
- | Standlight

HALOGEN

LUMOTEC SERIES. TRADITIONAL MODELS WITH WARM LUMINOUS PERCEIVED COLOUR.

LUMOTEC Retro	
Standard	1706C
N	1706CN

LUMOTEC Basic	
Standard	170
N	170N2
N plus	170N2DI

- With switch ON/OFF
- Standlight
- Sensor automatic
- Light at close range
- Daytime running light



LUMOTEC RETRO

The LUMOTEC Retro combines a nostalgic shape with reliable halogen technology. Circular reflector. Approved by German road traffic regulations. Chromed casing. Bracket for control set available separately.

- | Halogen
- | 17 Lux



LUMOTEC BASIC

In 1991, the LUMOTEC Basic was the first headlight with an integrated ring reflector. Because of its straightforward shape it remains the most popular halogen headlight until today. Approved by German road traffic regulations.

- | Halogen
- | 17 Lux
- | Standlight

LYT T®

The T version with daytime running light LICHT24 offers perfect riding security all around the clock.

- | 30 Lux
- | LICHT24. Daytime running light
- | Integrated front reflector
- | Lateral light emission
- | LED lens technology
- | Standlight
- | Light at close range



LYT®

- | 25 Lux
- | Integrated front reflector
- | Lateral light emission
- | LED lens technology
- | Standlight
- | Light at close range

LYT B®

- | 20 Lux
- | Integrated front reflector
- | Lateral light emission
- | LED lens technology
- | Standlight
- | Light at close range

LYT®

LUMOTEC SERIES. BRIGHT, ROBUST, RELIABLE.

Modern LED lens technology creates a good and homogenous field of light with light at close range and precise light/dark boundary. With integrated front reflector. Approved by German road traffic regulations. Also includes mark of approval F.

LUMOTEC Lyt T	
T senso plus	178TSNDI

LUMOTEC Lyt	
N	178N
N plus	178NDI
senso plus	178SNDI

LUMOTEC Lyt B	
B N	1781N
B N plus	1781NDI
B senso plus	1781SNDI

- With switch ON/OFF
- Standlight
- Sensor automatic
- Light at close range
- Daytime running light



- | 30 Lux
- | LICHT24. Daytime running light
- | Light at close range
- | Standlight
- | Clip-on front reflector included

There is a new generation of hub dynamos. They are rather small and light - with a reduced output of 1.5 W (standard is 3 W). For these special dynamos, we developed the Onefive. Its light technology is optimised for the lower power supply - but please note: this headlight may only be used with these special hub dynamos. Approved by German road traffic regulations.

ONEFIVE®

SPECIAL HEADLIGHT FOR 1.5 W HUB DYNAMOS.

LUMOTEC ONEFIVE	
T senso plus	165RTSNDI

- With switch ON/OFF
- Standlight
- Sensor automatic
- Light at close range
- Daytime running light



Type 470LHPB

Also fits Bosch e-bike control units.

HANDLEBAR MOUNTING BRACKET

DYNAMO HEADLIGHTS MOUNTED TO THE HANDLEBAR? THIS IS HOW IT WORKS!

With this special brackets, LUMOTEC headlights can be mounted to the handlebar both directly and centrally.

LINE

TOPLIGHT SERIES.

2 high power LEDs inside the 90 mm LineTec light strip (transparent glass, shines red). Super bright with 320° visibility. Standlight (powered by capacitor, no batteries required), deactivates automatically after 4 minutes (parking function) or manually. Only 53 g, very slim, 94 x 45 x 16.5 mm. Integrated large Z reflector. Mounting distance 50 or 80 mm. Approved by German road traffic regulations. Also includes mark of approval F.



Toplight Line					
plus	323ALT	■			■
brake plus	323ALTV	■			■ ■
permanent	323BL		■		■
senso	323BLHR		■	■	■

- Dynamo-powered
- Battery-powered
- Sensor automatic
- Standlight
- Brake light function BrakeTec

LINE

- | 2 high power LEDs
- | LineTec light strip
- | 320° visibility
- | Standlight, can be deactivated manually
- | Large Z reflector

BATTERY-POWERED MODELS SENSO AND PERMANENT

- | Theft proof: battery compartment can be locked with special screw
- | Incl. 1 battery (AA)
- | Shines for approx. 40 h
- | With battery indicator

FLAT

TOPLIGHT SERIES.

LED rear light (111 x 50 mm). Design: Extremely flat and light, large Z reflector integrated elegantly in two circular shapes. Battery-powered versions available. Carrier mounting: 50 or 80 mm mounting distance. Approved by German road traffic regulations. Also includes mark of approval F.



FLAT S

- | LineTec light strip
- | 1 high power LED
- | 220° visibility
- | Large Z reflector

Toplight Flat S					
plus	329ASK	■			■
permanent	329BS		■		■
senso	329BSHR		■	■	■

Toplight Flat					
plus	329ALK	■			■
permanent	329BL		■		■
senso	329BLHR		■	■	■

- Dynamo-powered
- Battery-powered
- Sensor automatic
- Standlight
- Brake light function BrakeTec

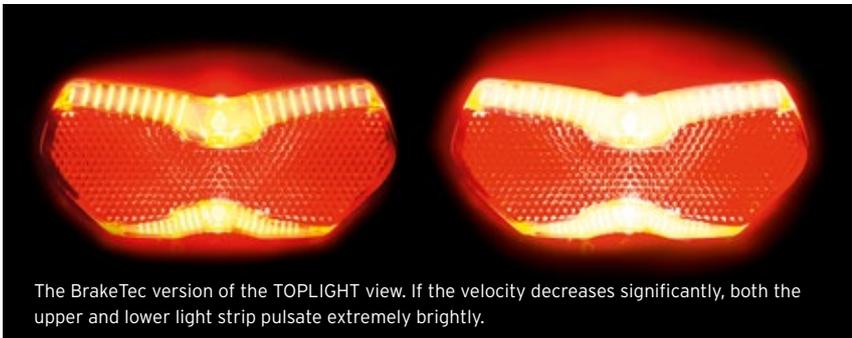


FLAT

- | 1 high power LED
- | 220° visibility
- | Large Z reflector



- | 2x LineTec light strip
- | 2 high power LEDs
- | Large Z reflector



The BrakeTec version of the TOPLIGHT view. If the velocity decreases significantly, both the upper and lower light strip pulsate extremely brightly.

VIEW®

TOPLIGHT SERIES.

Two super bright LEDs create a dual light source. LineTec: Two patented light systems emit two strips of light. The effect: a brightly shining light area that can be perceived from great distances. The clear casing allows for optimal lateral light emission. Automatic standlight. Centrally integrated large reflector. 102x48 mm. Only 50 g. Approved by German road traffic regulations.

Toplight View				
plus	321ASK	■	■	■
brake plus	321ASKV	■	■	■
permanent	321BS	■	■	■
E-Bike-Version	321ASDC	■	■	■

- Dynamo-powered
- Battery-powered
- Sensor automatic
- Standlight
- Brake light function BrakeTec



Type 326ASK

- | LineTec light strip
- | 2 high power LEDs
- | Standlight
- | Large Z reflector
- | Minimalistic design

2C

TOPLIGHT SERIES.

Minimalistic (105 x 31 mm), confidently shaped. Its function: In the dark, two clear and C-shaped arcs to the left and right appear as bright light strips. This distinct "light bracket" is created by two high power LEDs, with a central large Z reflector. 2C offers standlight, serially. Approved by German road traffic regulations.

SMALL

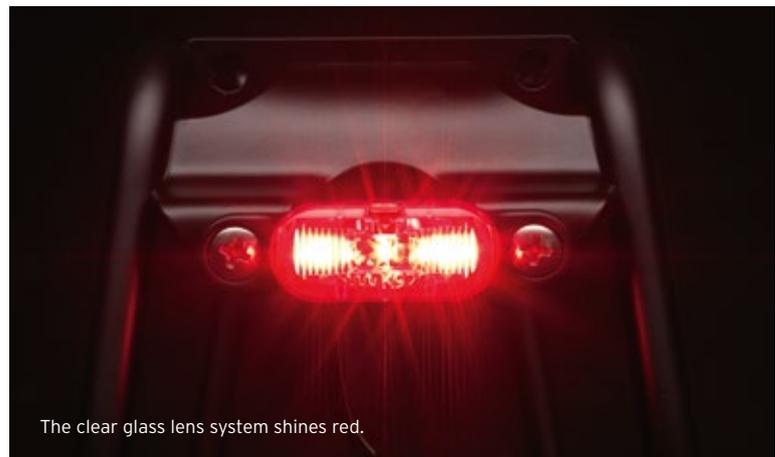
TOPLIGHT SERIES.

The smallest and lightest dynamo-powered headlight approved for road use. The special clear lens system spreads the light of one high power LED to become a very bright, red strip of light. Approved by German road traffic regulations.



Type 53234ASK

- | LineTec light strip
- | Standlight
- | 50 mm mounting distance
- | LED rear light
- | Without reflector



The clear glass lens system shines red.



Type 325AL

D-TOPLIGHT XS

Robust carrier-mounted rear light. Protected against shocks and moisture by soft touch sealing edge. With large Z reflector. 115 x 55 mm. Available as dynamo- or battery-powered version. Carrier mounting with 50 or 80 mm mounting distance. Approved by German road traffic regulations.

Toplight XS

Standard	325AL	■			
plus	325ALK	■		■	
permanent	325BL		■	■	

- Dynamo-powered
- Battery-powered
- Sensor automatic
- Standlight
- Brake light function BrakeTec



Type 328ALK

D-TOPLIGHT

The classic. For dynamo, battery or both energy sources in combination (version Duo). Large Z reflector. 120 x 55 mm. Approved by German road traffic regulations.



Type 320ALK

SELECTRA® PLUS

Basic carrier-mounted rear light with 3 LEDs and standlight function. Large Z reflector. 110 x 60 mm. Mounting distance 50 or 80 mm. Approved by German road traffic regulations.



Type 325AS

TOPLIGHT XS

The robust carrier-mounted rear light is also available as a version with an incandescent bulb. Large Z reflector. 115 x 55 mm. Approved by German road traffic regulations.



Type 327AS

TOPLIGHT

The original. With incandescent bulb. Large Z reflector. 125 x 60 mm. Marks of approval E and F. Carrier mounting with 50 or 80 mm mounting distance. Approved by German road traffic regulations.

MINI

TOPLIGHT SERIES.

The world's smallest TOPLIGHT rear light with integrated Z reflector. Many functions in a minimalistic casing: Two high power LEDs shine brightly. Only 95 x 38 x 17 mm, at 34 g extremely light. Ideally fits on modern bikes with slender carriers. Mounting distance 50 or 80 mm.

- | Standlight
- | Mounting dimension 50/80 mm
- | Approved by German road traffic regulations



Type 322ALK

SECUA[®]

A prism system creates a light crown from one high power LED, which is very distinctive due to its "spatial" shape and enables other traffic participants to better estimate the distance to the bicycle. Approved by German road traffic regulations.

New:
E-bike version (331ASDC) for mudguard mounting.

- | 1 high power LED
- | Exceptionally bright LineTec light crown
- | Standlight
- | Centrally integrated rear reflector
- | Compact casing
- | Battery-powered version also available (type 331BS)



Type 331ASK



Version for strut or seat post mounting (331/ZASK). Battery version (331/2BS).

SECULITE

Standard	330AL	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
plus	330ALK	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Standard	339AS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4D-Lite plus	339ALK	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Dynamo-powered
- Battery-powered
- Sensor automatic
- Standlight
- Brake light function BrakeTec



SECULITE[®]

With 1 high power LED. Integrated rear reflector. Approved by German road traffic regulations. Also includes mark of approval F.



4D-LITE PLUS

Rear light with 4 LEDs and protective frame. Approved by German road traffic regulations.



STANDARD

Mudguard rear light with incandescent bulb 6V/0.6W, integrated rear reflector. Approved by German road traffic regulations.



Cross mounting. For SECULITE. Made from stainless steel. For all bikes without mudguard. Earth connection possible via bicycle frame (type 246).



Rear light safety bar. Black, for all mudguard rear lights (type 245S).



Rear light safety bar. Black, only for SECUA (type 431SBS). Option: stainless steel (type 431SB).

DYNAMO HEADLIGHT OVERVIEW

	Ref. no.	Light source	Lux	Extensive light field	Light at close range	Daytime running light LICHT24	Front reflector	Stand-light	Switch ON/OFF	Sensor automatic
LUMOTEC IQ-X										
	IQ-X silver	164RTSNDI	LED	100	■	■	■	incl.	■	■
	IQ-X black	164RTSNDI-01	LED	100	■	■	■	incl.	■	■
LUMOTEC IQ2 LUXOS LUXOS U additionally offers handlebar push button, USB charging, beam boost, rear light monitoring										
	B	179B	LED	70	■	■	■	incl.	■	■
	U	179U	LED	70/90	■	■	■	incl.	■	■
LUMOTEC IQ Cyo										
	N plus	175QNDI	LED	60				■	■	
	senso plus	175QSNDI	LED	60				■	■	■
	PREMIUM senso plus	1752QSNDI	LED	80	■	■		■	■	■
	RN plus	175QRNDI	LED	40		■	■	■	■	
	R senso plus	175QRSNDI	LED	40		■	■	■	■	■
	PREMIUM R senso plus	1752QRSNDI	LED	60	■	■	■	■	■	■
	T senso plus	175QTSNDI	LED	60			■	■	■	■
	PREMIUM T senso plus	1752QTSNDI	LED	80	■	■	■	■	■	■
	RT senso plus	175QRTSNDI	LED	40		■	■	■	■	■
	PREMIUM RT senso plus	1752QRTSNDI	LED	60	■	■	■	■	■	■
LUMOTEC IQ Fly										
	PREMIUM senso plus	1742QSNDI	LED	80	■	■	■	■	■	■
	RT senso plus	174QRTSNDI	LED	40		■	■	■	■	■
	PREMIUM RT senso plus	1742QRTSNDI	LED	60	■	■	■	■	■	■
LUMOTEC IQ2 Eyc										
	plus	160RDI	LED	50		■		incl.	■	
	N plus	160RNDI	LED	50		■		incl.	■	
	T senso plus	160RTSNDI	LED	50		■	■	incl.	■	■
LUMOTEC ONEFIVE only for 1.5 W hub dynamos										
	T senso plus	165RTSNDI	LED	30		■	■	incl.	■	■

E-BIKE HEADLIGHT & REAR LIGHT OVERVIEW



	Ref. no.	Light source	Lux	Extensive light field	Light at close range	Daytime running light LICHT24	Front reflector	Stand-light	Switch ON/OFF	Sensor automatic
LUMOTEC Upp										
N	166N	LED	30		■		■		■	
N plus	166NDI	LED	30		■		■	■	■	
T senso plus	166TSNDI	LED	30		■	■	■	■	■	■
LUMOTEC IQ Avy										
N	162RN	LED	40		■		incl.		■	
N plus	162RNDI	LED	40		■		incl.	■	■	
T senso plus	162RTSNDI	LED	40		■	■	incl.	■	■	■
LUMOTEC Lyt										
BN	1781N	LED	20		■		■		■	
BN plus	1781NDI	LED	20		■		■	■	■	
B senso plus	1781SNDI	LED	20		■		■	■	■	■
N	178N	LED	25		■		■		■	
N plus	178NDI	LED	25		■		■	■	■	
senso plus	178SNDI	LED	25		■		■	■	■	■
T senso plus	178TSNDI	LED	30		■	■	■	■	■	■
LUMOTEC Classic										
N	1786CN	LED	25		■		■		■	
N plus	1786CNDI	LED	25		■		■	■	■	
senso plus	1786CSNDI	LED	25		■		■	■	■	■
T senso plus	1786CTSNDI	LED	30		■	■	■	■	■	■
LUMOTEC Basic										
Standard	170	Halogen	17				■			
N	170N2	Halogen	17				■		■	
N plus	170N2DI	Halogen	17				■	■	■	
LUMOTEC Retro										
Standard	1706C	Halogen	17				■			
N	1706CN	Halogen	17				■		■	



	Ref. no.	Light source	Lux	Extensive light field	Light at close range	Daytime running light LICHT24	Front reflector	Stand-light	Switch ON/OFF	Sensor automatic	Rear light connection 6V
IQ-X E*	164R60TS7	LED	150	■	■	■	incl.			■	
Cyo PREMIUM E	1752Q42/6N	LED	80	■	■		incl.		■		■
Fly E	174Q42/6N	LED	40		■		■		■		■
Eyc E	160R42/6	LED	50		■		incl.				■
Avy E	162R42/6	LED	40		■		incl.				■

*requires: minimum 7.5 W nominal output of the drive system's light connection



VIEW E

- | 5-15 V DC
- | Carrier mounting 50/80 mm
- | LineTec
- | Type 321ASDC



SECULA E

- | 6 V DC
- | LineTec
- | Mudguard mounting: type 331ASDC
- | Strut/seat post mounting: type 331/2ASDC

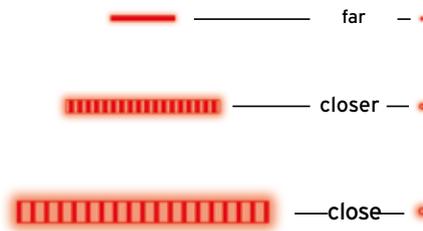
REAR LIGHTS FOR MUDGUARD & STRUT MOUNTING



	Ref. no.	Light source	Dynamo	Standlight	Battery	LineTec
SECULA						
plus	331ASK	LED	■	■		■
plus (strut mounting)	331/2ASK	LED	■	■		■
permanent	331BS	LED		■	■	■
permanent (strut mounting)	331/2BS	LED		■	■	■
SECULITE						
Standard	330AL	LED	■			
plus	330ALK	LED	■	■		
4D-Lite						
plus	339ALK	4 LED	■	■		
Standard	339AS	Incandescent lamp	■			

WHAT IS LINETEC®?

When a rear light shines only as a single point of light, other traffic participants approaching a bicycle at night from behind can estimate the distance only inadequately. This changes when the rear light becomes a wide light strip: Now the distance can be perceived much more accurately, because the light strip emits a "spatial light" in the "spaceless" dark. This special technology that creates a homogenous light strip from one high output LED is called LineTec.



On the left a rear light with LineTec - on the right a conventional rear light. This how other traffic participants see a bicycle if they approach from behind.

LineTec in action.

WHAT IS BRAKETEC?

As a matter of course motorised vehicles signal a brake application to following traffic participants with a red, brightly shining light. Such a "brake light function" is now available for bicycles as well. BrakeTec technology is integrated into the rear light. However, no connection to the brakes has to be established. Simply exchange the existing rear light for a BrakeTec rear light. The new function is approved by German road traffic regulations.

This is how it works - provided that the lighting system (dynamo) is turned on: A processor inside the rear light analyses signals from the dynamo. If the velocity decreases significantly, the processor registers deceleration and the rear light pulsates noticeably and very brightly. The warning function of BrakeTec harmonises ideally in connection with LineTec - so that a wide strip lights up. BrakeTec is an innovation by Busch + Müller.



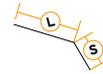
BrakeTec works only when the rear light is connected to a headlight whose rear light contacts supply alternating current.

REAR LIGHTS FOR CARRIER MOUNTING

	Ref. no.	Light source	Mounting distance	Dynamo	Battery	Sensor automatic	Standlight	BrakeTec	LineTec
Toplight Line									
plus	323ALT	LED	50	■			■		■
plus	323/8ALT	LED	80	■			■		■
brake plus	323/5ALTV	LED	50	■			■	■	■
brake plus	323/8ALTV	LED	80	■			■	■	■
permanent	323/5BL	LED	50		■		■		■
permanent	323/8BL	LED	80		■		■		■
senso	323/5BLHR	LED	50		■	■	■		■
senso	323/8BLHR	LED	80		■	■	■		■
Toplight View									
plus	321ASK	LED	50/80	■			■		■
brake plus	321ASKV	LED	50/80	■			■	■	■
permanent	321BS	LED	50/80		■		■		■
Toplight 2C									
plus	326ASK	LED	50/80	■			■		■
Toplight Flat S / Flat									
Standard	329AL	LED	50/80	■					
plus	329ALK	LED	50/80	■			■		
permanent	329BL	LED	50/80		■		■		
senso	329BLHR	LED	50/80		■	■	■		
S plus	329ASK	LED	50/80	■			■		■
S brake plus	329ASKV	LED	50/80	■			■	■	■
S permanent	329BS	LED	50/80		■		■		■
S senso	329BSHR	LED	50/80		■	■	■		■
Toplight Line Small									
plus	53234ASK	LED	50	■			■		■
Toplight Mini									
plus	322ALK	LED	50/80	■			■		
D-Toplight XS									
Standard	325AL	LED	50/80	■					
plus	325ALK	LED	50/80	■			■		
permanent	325BL	LED	50/80		■		■		
D-Toplight									
plus	328ALK	1 LED	50/80	■			■		
permanent	328BL	1 LED	50/80		■		■		
4D permanent	328B4	4 LED	50/80		■		■		
4D senso multi	328AB4HR	4 LED	50/80	■	■	■	■		
Selectra									
plus	320ALK	LED	50/80	■			■		
Toplight XS									
Standard	325AS	Incandescent lamp	50/80	■					
Toplight									
Standard	327AS	Incandescent lamp	50/80	■					



HEADLIGHT MOUNTING BRACKETS



S = arm; L = length

<p>470H</p>  <p>Metal, long, black, L/S = 55/20 mm</p>	<p>471F</p>  <p>Metal, short, black, L/S = 40/21 mm</p>	<p>471U</p>  <p>Diecast zinc, U-shaped, black</p>	<p>474D (shiny), 474DS (black) Edel7</p>  <p>Stainless steel, short, L/S = 25/18 mm</p>																																																																																																																								
<p>475D (wire diameter 4.5 mm) - 460D (wire diameter 4 mm)</p>  <p>Stainless steel, shiny, medium length, L/S = 45/18 mm</p>	<p>475D/1 (shiny), 475DS/1 (black)</p>  <p>Stainless steel, medium length, L/S = 45/25 mm</p>	<p>475DS</p>  <p>Stainless steel, black, medium length, L/S = 45/18 mm</p>	<p>474DL (shiny), 474DLS (black)</p>  <p>Stainless steel, long, L/S = 60/18 mm</p>																																																																																																																								
<p>475DU</p>  <p>Bracket for overhead mounting, L/S = 55/20 mm</p>	<p>474DU</p>  <p>Bracket for overhead mounting, L/S = 36/27 mm</p>	<p>471AOK</p>  <p>Adapter for SR suspension forks, NCX-E25, NCX-E45, plastic</p>	<p>4706CB</p>  <p>Chromed metal bracket, for head tube mounting (1")</p>																																																																																																																								
<p>471B (1"), 471B/1 (1 1/8")</p>  <p>Plastic, for head tube mounting</p>	<p>471LH</p>  <p>Plastic, long, extremely break-proof, L = 75 mm</p>	<p>464H</p>  <p>Multi-joint bracket, plastic with aluminium cable guide, L/S = 40/32 mm</p>	<p>471AR</p>  <p>Adapter for RST forks</p>																																																																																																																								
<p>471A</p>  <p>Adapter for SR suspension forks CR8, NEX from 2016</p>	<p>471E</p>  <p>Extension piece (in addition to 471A for hydraulic brakes)</p>	<p>471ASR</p>  <p>Adapter for SRAM suspension forks</p>	<p>471AXK</p>  <p>Adapter, short, for SR suspension forks CR9 + NCX (2009-2015)</p>																																																																																																																								
<p>471AX</p>  <p>Adapter, long, for SR suspension forks CR9 + NCX (2009-2015)</p>	<table border="1"> <thead> <tr> <th></th> <th>Eyc 160/Avy 162/IQ-X 164/Onefive 165/Basic 170/Cyo 175/Lyt 178/LUXOS 179</th> <th>Eyro 163/Upp 166/Fly 174</th> <th>Classic 1786C</th> <th>Retro 1706C</th> </tr> </thead> <tbody> <tr><td>470H</td><td>■</td><td></td><td>■</td><td>■</td></tr> <tr><td>471F</td><td></td><td>■</td><td></td><td></td></tr> <tr><td>471U</td><td></td><td>■</td><td></td><td></td></tr> <tr><td>474D 474DS</td><td></td><td>■</td><td>■</td><td></td></tr> <tr><td>475D 475DS</td><td>■</td><td>■</td><td></td><td></td></tr> <tr><td>460D</td><td>only Eyc 160</td><td></td><td></td><td></td></tr> <tr><td>475D/1 475D/1S</td><td>■</td><td>■</td><td></td><td></td></tr> <tr><td>474DL 474DLS</td><td>■</td><td></td><td></td><td></td></tr> <tr><td>475DU</td><td>for all except Basic und LUXOS</td><td></td><td></td><td></td></tr> <tr><td>474DU</td><td>for all except Basic und LUXOS</td><td></td><td></td><td></td></tr> <tr><td>471AOK</td><td>■</td><td>■</td><td></td><td></td></tr> <tr><td>4706CB</td><td></td><td></td><td>■</td><td>■</td></tr> <tr><td>471B</td><td></td><td>■</td><td></td><td></td></tr> <tr><td>471B/1</td><td></td><td>■</td><td></td><td></td></tr> <tr><td>471LH</td><td>■</td><td></td><td></td><td></td></tr> <tr><td>464H</td><td></td><td>■</td><td></td><td></td></tr> <tr><td>471AR</td><td>■</td><td>■</td><td></td><td></td></tr> <tr><td>471A</td><td>■</td><td>■</td><td></td><td></td></tr> <tr><td>471E</td><td>■</td><td></td><td></td><td></td></tr> <tr><td>471ASR</td><td>■</td><td></td><td></td><td></td></tr> <tr><td>471AXK</td><td></td><td>■</td><td></td><td></td></tr> <tr><td>471AX</td><td>■</td><td></td><td></td><td></td></tr> <tr><td>470LH</td><td>■</td><td>■</td><td></td><td></td></tr> </tbody> </table>				Eyc 160/Avy 162/IQ-X 164/Onefive 165/Basic 170/Cyo 175/Lyt 178/LUXOS 179	Eyro 163/Upp 166/Fly 174	Classic 1786C	Retro 1706C	470H	■		■	■	471F		■			471U		■			474D 474DS		■	■		475D 475DS	■	■			460D	only Eyc 160				475D/1 475D/1S	■	■			474DL 474DLS	■				475DU	for all except Basic und LUXOS				474DU	for all except Basic und LUXOS				471AOK	■	■			4706CB			■	■	471B		■			471B/1		■			471LH	■				464H		■			471AR	■	■			471A	■	■			471E	■				471ASR	■				471AXK		■			471AX	■				470LH	■	■		
	Eyc 160/Avy 162/IQ-X 164/Onefive 165/Basic 170/Cyo 175/Lyt 178/LUXOS 179	Eyro 163/Upp 166/Fly 174	Classic 1786C	Retro 1706C																																																																																																																							
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471AX	■																																																																																																																										
470LH	■	■																																																																																																																									
<p>470LH</p>  <p>Handlebar mount for dynamo headlights, compatible with Bosch e-bike computer displays (see p. 15)</p>																																																																																																																											
<p>475K</p>  <p>Cable guide for 475D, 475DS, 475D/1, 475DS/1</p>																																																																																																																											
<p>475ISS/ISM</p>  <p>Special screw and washer, for all stainless steel brackets</p>																																																																																																																											

REFLECTORS

Cyclists and pedestrians are very much endangered because they are the 'weakest' road users and will often be seen very late by other traffic participants. Reflectors are a considerable safety factor! We only use high quality prisms in order to get high reflection values from small surface areas.

 <p>FRONT 313/5WB</p> <p>Marks of approval B, D, E, GB. Also available in red: HECK Type 313/1WB. Reflector size 55 x 50 mm.</p>	 <p>FRONT 313/5U¹⁾</p> <p>Integral U-shaped plastic bracket. Especially suited for cantilever brakes. Weighs only 12 g. Marks of approval D, E, GB. Also available in red: HECK Type 313/1U. Reflector size 38 x 47 mm</p>	 <p>FRONT 464R</p> <p>For IQ-X and Cyo without daytime running light. Screw-on. Marks of approval D, E, GB</p>	 <p>FRONT 305K¹⁾</p> <p>Fastening clamp for handlebar shaft. Transverse or upright assembly. Marks of approval D, E. Reflector size 36 x 61 mm.</p>	 <p>FRONT 313/5WF¹⁾</p> <p>Metal bracket. Especially suited for suspension forks, V brakes, hydraulic and drum brakes. Wide angle reflection. Marks of approval B, D, E, GB. Also available in red: HECK Type 313/1WF. Reflector size 55 x 50 mm.</p>
 <p>FRONT 313/5WU¹⁾</p> <p>U-shaped metal bracket. M6 thread. Especially suited for cantilever brakes. Wide angle reflection. Marks of approval B, D, E, GB. Also available in red: HECK Type 313/1WU.</p>	 <p>FRONT UNIVERSAL 313/5K¹⁾</p> <p>Tensioning strap and rubber lining for any tube diameter. 10 g only. Marks of approval D, E, GB. Also available in red: HECK universal Type 313/1K. Reflector size 38 x 47 mm.</p>	 <p>306GS</p> <p>Self-adhesive foil on the back. Marks of approval D, E. Reflector size 89 x 13 mm</p>	 <p>REAR 312H²⁾</p> <p>Admitted for contour parallel attachment to mudguards (up to 30° inclination). Marks of approval D, E. Type 312H/8: with metal strap for riveted attachment.</p>	 <p>REAR 313/1²⁾</p> <p>For screw-on attachment to mudguard. Marks of approval D, E. Reflector size 38 x 47 mm.</p>
 <p>REAR MINI-Z 313/1ZB¹⁾</p> <p>Plastic screw-on clamp Ø 13-40 mm. Superior reflection values in spite of small size. Marks of approval D (including Z), E.</p>	 <p>REAR 314/1²⁾</p> <p>For mudguard attachment. Especially suited for short type mudguards. Complete with screw. Marks of approval D, E. Type 314/8: with metal strap for riveted attachment. Reflector size 40 x 45 mm.</p>	 <p>REAR 313/3Z</p> <p>Format 27 x 91 mm. Carrier mounting. Screw hole distance 50 mm. With 2 screws. Mark of approval D (incl. Z).</p>	 <p>REAR BIG 316WZ</p> <p>For luggage carrier attachment. Screw connection at 50 mm and 80 mm distance. Complete with 2 screws. Mark of approval D (including Z). Type 316: with flat reflector. Type 316W: wide angle design.</p>	 <p>TEDDY-REFLEX 621STPB/CLIP 625</p> <p>For pedestrians. Clear or coloured reflector.</p>
 <p>SPACER 317</p> <p>With white (forward reflection) and red (backward reflection) reflector, including brackets and assembly instructions. Approved for use within the area of application of the German StVZO.</p>	 <p>SPOKE REFLECTOR 309M</p> <p>Undetachable. Fits any tyre size. With stainless steel clamps. 85 mm long. Easy assembly: just twist into spokes. Marks of approval D, E.</p>	 <p>SPOKE REFLECTOR 309</p> <p>Undetachable. Fits any tyre size. With rotatable plastic brackets. 97 mm long. Easy assembly: just twist into spokes. Marks of approval D, E. Type 309V for narrow spoke clearance</p>	 <p>SPOKE REFLECTOR 308</p> <p>113 mm long, wide angle design. Easy assembly: just twist into spokes. Marks of approval B, E, F, GB.</p>	 <p>SPECIAL 563</p> <p>Format 36 mm x 61 mm. Self-adhesive foil on the back. Marks of approval E, SAE. Type 563/2: yellow reflector, Type 563/5: white reflector.</p>

1) Many mounting straps available. For the complete range, see www.bumm.de

2) Approved by German StVZO as the required second reflector in combination with the luggage carrier rear light with Z reflector.

IQ-X SPEED

LUMOTEC SERIES. NEW DIMENSION: 150 LUX. FOR HANDLEBAR + HELMET.

For sporty use on or off road. IQ-X Speed is the ideal, compact headlight for mounting on handlebar or helmet (compatible with GoPro fittings). As small as an espresso cup and 90 g light, powered via cable by an external battery - flexibly fixed to the bicycle frame or inside your jacket. The light: the maximum output of 150 Lux is phenomenal, shines for approx. 5 hours. LowPower: 30 Lux (approx. 25 hours). Two headlights may be hooked up to one battery: 300 Lux!



- | High output LED battery-powered headlight
- | Aluminium casing
- | LED IQ2 technology
- | 150 Lux maximum output (approx. 5 hrs.)
- | LowPower: 30 Lux (approx. 25 hrs.)
- | Extensive light field
- | Light at close range
- | Weighs only approx. 90 g
- | External lithium battery pack with fastening strap
- | Battery features digital indication of remaining light duration
- | Special, fast charging mains adapter
- | Splash- and rainwater-proof
- | Universal handlebar mount for diameters 22-32 mm
- | Approved for road use

Black (164BMLA) or silver (164BLA)



Compatible with GoPro fittings, e.g. headband or mounts with adhesive foil

Battery can be used as a power bank to charge USB mobile devices



SPACE

IXON SERIES. NEW DIMENSION: 150 LUX. ADJUSTABLE OUTPUT.

Busch + Müller's new maximum light output, compact, with integrated battery. 150 Lux is the peak level and shines for more than two hours - both space and the road are illuminated widely and brilliantly as never before. Like all our headlights, IXON Space is approved for road use with a clearly defined light/dark boundary.

IXON Space is compellingly comfortable when its eight light levels are used efficiently. They can be controlled freely by the gentle push of a finger on a digital scale. That way the ideal brightness can be selected for every occasion - in the lowest mode, one charge of the battery even lasts for approximately 30 hours.

Even more extra comfort: The illuminated display shows the remaining light duration for each light level, the current time or when the battery is used to charge mobile devices, e.g. smartphones, via USB (power bank mode).

POWER BANK MODE

In this mode, the integrated lithium battery can be used to supply energy to other mobile devices like smartphones.



Type 196L

- | High output LED battery-powered headlight
- | Aluminium casing, anodised
- | LED IQ2 technology
- | 150 Lux maximum output
- | Extensive light field
- | Light at close range
- | Eight light levels, may be selected individually, illuminated digital display
- | HighPower: 150 Lux, more than 2 hours
- | LowPower: more than 10 Lux, approx. 30 hours
- | Integrated lithium battery



- | Illuminated display
- | Exact display of remaining light duration at each light level
- | Chargeable via micro USB socket with all USB mains adapters
- | Rapid charging with special mains adapter (included)
- | Circumferential soft component offers shock protection
- | Splash- and rainwater-proof
- | 240 g (including battery)
- | Universal handlebar mount for diameters 22-32 mm
- | Approved for road use



Power bank mode

Remaining charge in percent

Remaining light duration

SPEED

IXON SERIES.

The sportive, high-end battery-powered headlight. Compact. Powerful. Robust. Excellent lighting of the road with a single LED, considering German road traffic regulations. Weighs only 98 g (without battery/cable). Test winner in Europe's largest racing cycle magazine.

IXON IQ Speed PREMIUM	
Basic set: headlight with charging unit and battery pack	1932QLA
Secondary headlight	1932QZ
Secondary headlight with mounting set for helmet and forehead	1932QK
Accessories	
Replacement set: mounting set for helmet and forehead	493HHSTB
Anti-glare protection	492BPB



SPEED PREMIUM

- | LED IQ-TEC
- | 90 Lux
- | Extensive light field
- | Light at close range
- | HighPower mode: 90 Lux, 10 hours
- | LowPower mode: 15 Lux, 50 hours
- | Approved by German road traffic regulations

Germany's no. 1 website for computers tested battery-powered headlights. Best in test was IXON IQ PREMIUM Speed: "True power during on-road tests: No competitor better accomplishes the feat of lighting the road as well as the kerbside."



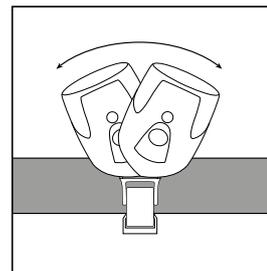
POWER SUPPLY

High-output battery pack, separate in nylon bag with Velcro strap. Second socket for additional headlight. Charging unit deactivates automatically.

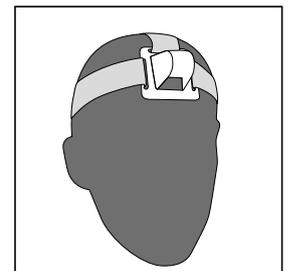


ELASTIC STRAP

universally mounts to handlebars, with quick release, suitable for all handlebar diameters. Pivots, can be adapted to handlebar curve.



rotatable



option: forehead mount

ANTI-GLARE PROTECTION

For IXON IQ and IXON IQ Speed. Prevents glaring when cycling out of saddle. Easy mounting with adhesive pads.



option: anti-glare protection



option: helmet mount

IXON® IQ

THE EPONYMOUS IXON.

When set to HighPower mode, the high output LED inside the LED reflector shines extremely bright for up to 5 hours. In low power mode, 10 or 15 Lux are reached - for 20 hours. The electronic system (90% efficiency) shows battery capacity, charging process and condition. Supercharging is not possible.

IXON IQ PREMIUM	
Headlight	1922QM
Headlight/ mains charger/ 4 rechargeable batteries	1922QMLA
IXON IQ	
Headlight	192QM
Headlight/ mains charger/ 4 rechargeable batteries	192QMLA
Mains adapter	
4 rechargeable batteries, Ni-MH, each 2100 mAh	447L
492A/2100	
Universal mounting bracket	492HKPB
Fork mounting bracket	475D/492GAPB
Anti-glare protection	492BPB



IXON IQ PREMIUM

- | 80 Lux
- | Extensive light field
- | Light at close range
- | HighPower: 80 Lux, 5 hours
- | LowPower: 15 Lux, 20 hours
- | Approved by German road traffic regulations



IXON IQ

- | 40 Lux
- | Good and homogenous lighting of the road
- | Light at close range
- | HighPower: 40 Lux, 5 hours
- | LowPower: 10 Lux, 20 hours
- | Approved by German road traffic regulations

OPTION: FORK MOUNTING BRACKET



Type 475D/492GAPB



Type 475ISS/ISM

Fork mounting made of stainless steel for IXON IQ and IXON Pure. Special screw for all stainless steel mounting brackets.

UNIVERSAL MOUNTING BRACKET



Always included

Easy mounting, convenient handling: The headlight can be tilted, pivoted and removed from its mounting bracket with one click.

POWER SUPPLY

4 rechargeable Ni-MH batteries, each 2100 mAh, no memory effect. Charging time approx. 5 hours using included charging unit. Power supply by 4 nonrechargeable AA batteries possible.

CORE

IXON SERIES. THE SMALL, MOBILE ONE. CLICKS ON SIMPLY.

... and is easily pocketed. In Germany approved for all bikes. IQ2 technology. Very good and homogenous lighting of the road. Fits all handlebars. Circumferential soft component offers shock protection. Only 112 g including battery and mounting bracket.

TOUR Europe's largest racing bicycle magazine: No headlight is more compact than the IXON Core ... the most affordable, smallest and lightest headlight. **Trekkingbike** For their editors, the IXON Core is the only headlight earning the highest grade SUPER and the award "Trekkingbike TIPP". **RoadBIKE** The racing cycle magazine's test result: SEHR GUT (EXCELLENT).

Type 180L

- | HighPower: 50 Lux, 3 hours
- | LowPower: 12 Lux, 15 hours
- | Aluminium casing, silver anodised
- | Integrated lithium battery
- | Charged via micro USB port
- | With capacity indicator
- | Splash- and rainwater-proof
- | Approved by German road traffic regulations



Included: universal mounting bracket

PURE

IXON SERIES.

Battery-powered LED headlight with lens technology. Good lighting of the road, with light at close range. A circumferential rubber edge is moulded over the headlight's front, protects from shocks and serves as an anti-glare protection for the cyclist when riding out of the saddle. Lateral light emission: improved visibility for other traffic participants.

IXON Pure	
Headlight with all accessories	194LA
Headlight without charging set	194

IXON Pure B	
Headlight without charging set	1941



Type 194

PURE

- | Good lighting of the road
- | With light at close range
- | HighPower: approx. 30 Lux, 5 hours
- | LowPower: approx. 15 Lux, 15 hours
- | Approved by German road traffic regulations

PURE B

Economically priced basic version with good lighting of the road. No charging socket.

- | Approx. 15 Lux
- | Shines for up to 12 hours
- | Power supply: standard AA or externally charged rechargeable AA batteries

Fully equipped

Headlight with USB charging socket, includes mains charging unit with charging cable, 3 rechargeable AA batteries.

Also available without accessories

Charging via micro USB socket, e.g. using standard mobile phone charging units. Batteries not included.

FYRE®

IXON SERIES.

The practical entry level model with IQ technology. Charging via micro USB socket (type 195L includes mains adapter and charging wire). Weighs only 143 g, including battery and mounting bracket.

- | 30 Lux
- | Light at close range
- | Integrated lithium battery
- | Capacity indicator
- | Splash- and rainwater-proof
- | Approved by German road traffic regulations
- | HighPower: 30 Lux, 5 hrs.
- | LowPower: 10 Lux, 15 hrs.



Included: universal mounting bracket

Type 195

EYRO®

LUMOTEC SERIES.

This battery headlight is mounted to the fork! Modern IQ technology with an integrated lithium battery. For charging, the light/battery unit is removed - while the holder stays fixed to the bicycle. Moderately theft-proof by twistlock. Charging via micro USB socket (an appropriate cable is included).

- | 30 Lux
- | Light at close range
- | Integrated lithium battery
- | Capacity indicator
- | Splash- and rainwater-proof
- | Approved by German road traffic regulations
- | HighPower: 30 Lux, 5 hrs.
- | LowPower: 10 Lux, 15 hrs.



Type 163



IXON IQ + IXBACK
Type 1922QMLA/382/1S-00 = IXON IQ Premium Komplett-set + IXBACK senso

Type 192QMLA/382/1S-00 = IXON IQ Set + IXBACK senso



IXON Core + IXXI
Type 180L/383 = IXON Core + IXXI



IXON Fyre + IXXI
Type 195L/383 = IXON Fyre + IXXI

IXBACK®

IX SERIE.

25 hours full light intensity. Quick and easy mounting using rubber bands or cable straps - light box can be removed with one click. Also possible: maximally theft-protected mounting.

- | LineTec: patented lens system
- | Integrated lithium battery
- | Charging via micro USB socket
- | 360° visibility
- | Automatic activation (light/motion sensor) or permanent light
- | 50 g (incl. batteries)

NEW

- | With capacity indicator
- | Approved by German road traffic regulations



IXXI®

IX SERIES.

Battery-powered rear light. High output LED. Very bright, large beam angle. Fits all seat posts. 53 mm tall, 31 mm wide. Weight (incl. battery and mount): 35 g.

- | Integrated lithium battery
- | Shines for 15 hours
- | Charging via micro USB socket
- | With capacity indicator
- | Approved by German road traffic regulations

RoadBIKE The racing cycle magazine awarded the battery-powered rear light with the highest possible grade: ÜBERA-GEND = OUTSTANDING. They say that IXXI is appealing because it is the lightest tested rear light that also offers long endurance. Mounting via rubber strap is lightning-fast.



IX-POST®

IX SERIES.

Battery LED rear light. Enclosed in rubber casing. For two AAA batteries (included).

- | Shines for 30 hours
- | With capacity indicator
- | Seat post mounting
- | Approved by German road traffic regulations



IX-RED

Battery LED rear light. Approved by German road traffic regulations.



RELITE-D®

Battery LED rear light. Universal mounting for seat post, frame brace or clothing. Integrated rear reflector. Approved by German road traffic regulations.



TOPFIRE®

Flashing light, 4 super bright LEDs. Fits into almost every helmet. Extremely light (18 g) and very efficient (up to 180 hours).



Type 361

E-WERK®

For connection to a hub dynamo. Supplies energy to charge or power mobile devices. Voltage (up to 13.3 V) and current (up to 1.5 A) can be adjusted variably. Charges at velocities of approx. 8 km/h and faster - at only 15 km/h as quickly and efficiently as standard mains connected chargers. It can also be connected to DC power sources of up to 50 V, so that operation with an e-bike or car battery is possible as well. Extensive accessories. Universal connections (also USB). Splash- and rainwater-proof.



Type 461A

CACHE BATTERY

Some sensitive mobile electronic devices react to voltage fluctuations by interrupting the charging process. Since the E-WERK is connected to a hub dynamo, it cannot supply power free of those kinds of fluctuations. The cache battery harmonises the voltage and prevents charging interruptions. Only suitable for E-WERK. Constantly supplies 5 V. 1400 mAh capacity. With nylon bag.



Type 361BW

USB-WERK

For powering/charging mobile devices via hub dynamo. Supplies 5 V and up to 500 mA current. An integrated small cache battery ensures constant 5 V supply during slow riding and/or stops. Universal connections. Contains cable with USB socket. Splash- and rainwater-proof.



Type 261

UNIVERSAL COCKPIT ADAPTER

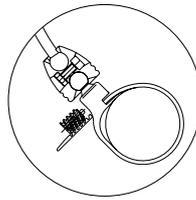
Keeps mobile devices securely on the handlebar. For devices with a width ranging from 45 to 115 mm. For handlebar diameters from 22 to 40 mm. Easy mounting with elastic strap, no tools necessary. Mobile devices can be inserted/removed with one movement of the hand. Includes additional retaining strap.

CYCLE STAR®

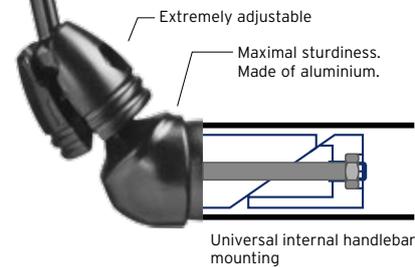
The premium rear view mirror series for bicycles and pedelecs is now available in three sizes and two shapes. The pronounced curvature of the mirror provides an extra large field of vision. Its glass is protected against shattering. All CYCLE STAR mirrors are extremely adjustable and can be turned inwards..

MOUNTING

Using the internal handlebar mount is the sturdiest mounting option, saving space on the handlebar itself. Most CYCLE STAR mirrors can be clamped onto the handlebar as well, all mounting accessories are included. (Only internal handlebar mounting for types 901/2, 903/2, 903/7 and 913/712.)



Bracket mounting



Universal internal handlebar mounting



NEW

Ø 80 mm: Type 903/7
Can easily be folded in - this also protects in case of collisions! If the mirror is folded out again, it automatically locks back into its previous position. Approved for speed e-bikes in Switzerland. Only with internal handlebar mount. For handlebar diameters 17.2 to 22 mm. For straight or bent handlebars (maximum angle 45°).



Extra long bar
Ø 60 mm: Type 901
Ø 80 mm: Type 903



NEW

Ø 80 mm: Type 903/6A
Turns away in case of a collision. Approved for speed e-bikes in Switzerland. Bracket or internal handlebar mount for diameters 14.5 to 18.5 mm. For straight or bent handlebars (maximum angle 45°).



Short straight bar
Ø 60 mm: Type 901/1
Ø 80 mm: Type 903/1



Only with internal handlebar mount
Ø 60 mm: Type 901/2
Ø 60 mm: Type 903/2



Short bent bar
Ø 60 mm: Type 901/3
Ø 80 mm: Type 903/3



CYCLE STAR E

This new pentagonal CYCLE STAR shape offers an even larger reflecting surface. These mirrors are approved for speed e-bikes. Mark of approval "E".

CYCLE STAR E 913/712

NEW



NEW

Can easily be folded in - this also protects in case of collisions! If the mirror is folded out again, it automatically locks back into its previous position. Approved for speed e-bikes in Switzerland. Only with internal handlebar mount. For handlebar diameters 17.2 to 22 mm. For straight or bent handlebars (maximum angle 45°).



NEW

CYCLE STAR E 913/612A

Turns away in case of a collision. Approved for speed e-bikes in Switzerland. Can be mounted over or under the handlebar using bracket or internal handlebar mount for diameters 14.5 to 18.5 mm. For straight or bent handlebars (maximum angle 45°).



Type 913/701VLME
No bar, space-saving,
low-vibration



Type 913/801VLME

E-BIKE MIRRORS

Comply with requirements for fast e-bikes. Defined size, curvature and function: The mirror must not stay rigid during collisions, but must collapse. Mark of approval "E".



Mirror 902/1 with reflective foil



Mirror 902/2

STANDARD MIRRORS

Plastic casing: Ø 93 mm, plane glass.
Bar: Ø 6 mm, with sturdy metal clamp.

REAR VIEW MIRRORS FOR MOTORCYCLES

A selection from our range. Many more models available upon request!



Universal
Ref. no. 911/2 - L+R / P+V



Legshield mirror
Ref. no. 912/2 - L+R / P+V



Swivel mirror (retractable)
Ref. no. 913/3 - L+R / P+V
Ref. no. 913/1 - 6) - version made of plastic



Universal
Ref. no. 920P



Universal
Ref. no. 922 - M / P+V



Universal
Ref. no. 922/15 - M / P+V / e



Universal
Ref. no. 922/16 - M / P+V / e



Pivot mirror
Ref. no. 960VE



BMW
Ref. no. 1911/302VLM¹⁾



BMW
Ref. no. 1911/903VCE¹⁾



BMW
Ref. no. 1911/72 - L+R / P+V
Ref. no. 1911/82 - short stem for elevated handlebars



BMW
Ref. no. 1911/77BVME



Hercules
Ref. no. 913/4 - L+R / P+V
Ref. no. 913/2 - universal handlebar end fitting



Honda
Ref. no. 926/25A30VM



Honda
Ref. no. 926/300A0VE2



Honda
Ref. no. 926/37V / M+C

L+R separate versions available for mounting on the left or right

P+V available with plane or convex glass

V only available with convex glass
M available also with black matte finish



Honda
Ref. no. 926/38VM



Honda
Ref. no. 926/500AVME / L+R



KTM
Ref. no. 916/140VE / L+R



KTM
Ref. no. 916/307VMEKT¹⁾



KTM
Ref. no. 916/809VME / L+R¹⁾



KTM
Ref. no. 916/909VE / L+R¹⁾



KTM
Ref. no. 916/962VM / L+R¹⁾



MBK / Peugeot
Ref. no. 928/801SILBVE / L+R



MBK
Ref. no. 928/808VE / L+R



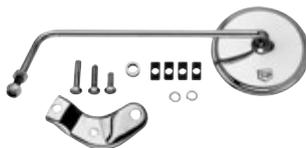
MZ
Ref. no. 928/105AVM / L+R



Peugeot
Ref. no. 917/90V - L+R



Triumph
Ref. no. 928/27VME



Vespa
Ref. no. 928/44 - L+R / P+V



Zündapp, Kreidler
Ref. no. 911/62K - L+R / P+V / M



Zündapp, Kreidler
Ref. no. 911/67M - P+V / C / e



Zündapp, Kreidler
Ref. no. 911/6 - L+R / P+V

C chrome-coloured version available
M+C black matte finish or chromed versions available

e also available with mark of approval "E"
E with mark of approval "E"

1) exclusive for original equipment manufacturers

Our technical sales people exclusively advise retailers in all matters regarding "Best light for bicycles". If you are a retailer, make an appointment with our technically versed advisors.



Herbert Baltrusch
Northern Germany
PLZ 2

h.baltrusch@bumm.de



Frank Regge
Central Germany
PLZ 0-1, 3-6

f.regge@bumm.de



Thomas Schmidt
Southern Germany
PLZ 7-9

t.schmidt@bumm.de

LIGHT ADJUSTER

Adjust LUMOTEC headlights quickly and precisely according to German regulations: in the workshop or in the sales room - no need to use wall or ground to estimate the light field.



- 1) Attach the appropriate adapter to a headlight and secure with an elastic loop.
- 2) Slide on the measuring unit and adjust the headlight glare-free for close, standard or far light. Bicycle has to be on an even surface.
- 3) Fix headlight in this position.
- 4) An integrated laser always points exactly to the light/dark boundary.



Carrying case set complete with measuring unit and adapters for LUMOTEC series: IQ-X, LUXOS, Cyo, Eyc, Avy, Lyt. Upgradeable for future models. Type 1516LC3

❶ Lightchecker Pro, type 1516LC2: Electronic and professional tool for bicycle workshops. Checks light system, dynamo and wiring - optical and acoustic signal. Reversible polarity. Battery and charging unit included. (1a) Adapter, type 4516LC2GKA: Checks for short circuits (frame earthing) and tests incandescent bulbs. (1b) Shimano adapter, type 4516LC2SHIA. Quick connection for Shimano hub dynamos.

❷ Lightchecker Light, type 1516LC1: Simple checking of headlights and rear lights. With quick connection terminals.

❸ Light adapter, type 447LIA: Show the full output of headlights in display windows or during sales pitches - without using a dynamo. Connect the light adapter to the mains and the headlight to the quick connection terminals.

Please note: Both Lightcheckers 1 + 2 do not show the full light output.



PRESENT LIGHT. EXPERIENCE LIGHT.

All dynamo and battery headlights fully functional.
All rear lights "powered". All products within reach.

LIGHT BOX MODULE

With translucent sheet.

DYNAMO MODULE

Lights up when connected to mains! Completely labelled.

BATTERY MODULE

Lights up when connected to mains! Shines permanently, no battery change necessary. Completely labelled.

SALES WALL MODULE

Rear wall, base plate, columns, pegs, label set.

All units can be integrated flexibly into store concepts, because all modules are available separately.



ORIGINAL REPLACEMENT PARTS, TOOLS, WIRE SETS, incandescent lamps, wiring accessories, bicycle equipment like chain protectors or stabilisers ... details on all available parts can be found online at www.bumm.de

www.bumm.de

MADE IN GERMANY

Our products can be found mounted
on premium quality bicycles or at well
sorted retailers.

BUSCH+MÜLLER KG

Auf dem Bamberg 1
58540 Meinerzhagen
Germany

Tel. +49 (0) 23 54-9 15-6000
Fax +49 (0) 23 54-9 15-7000

info@bumm.de
www.bumm.de