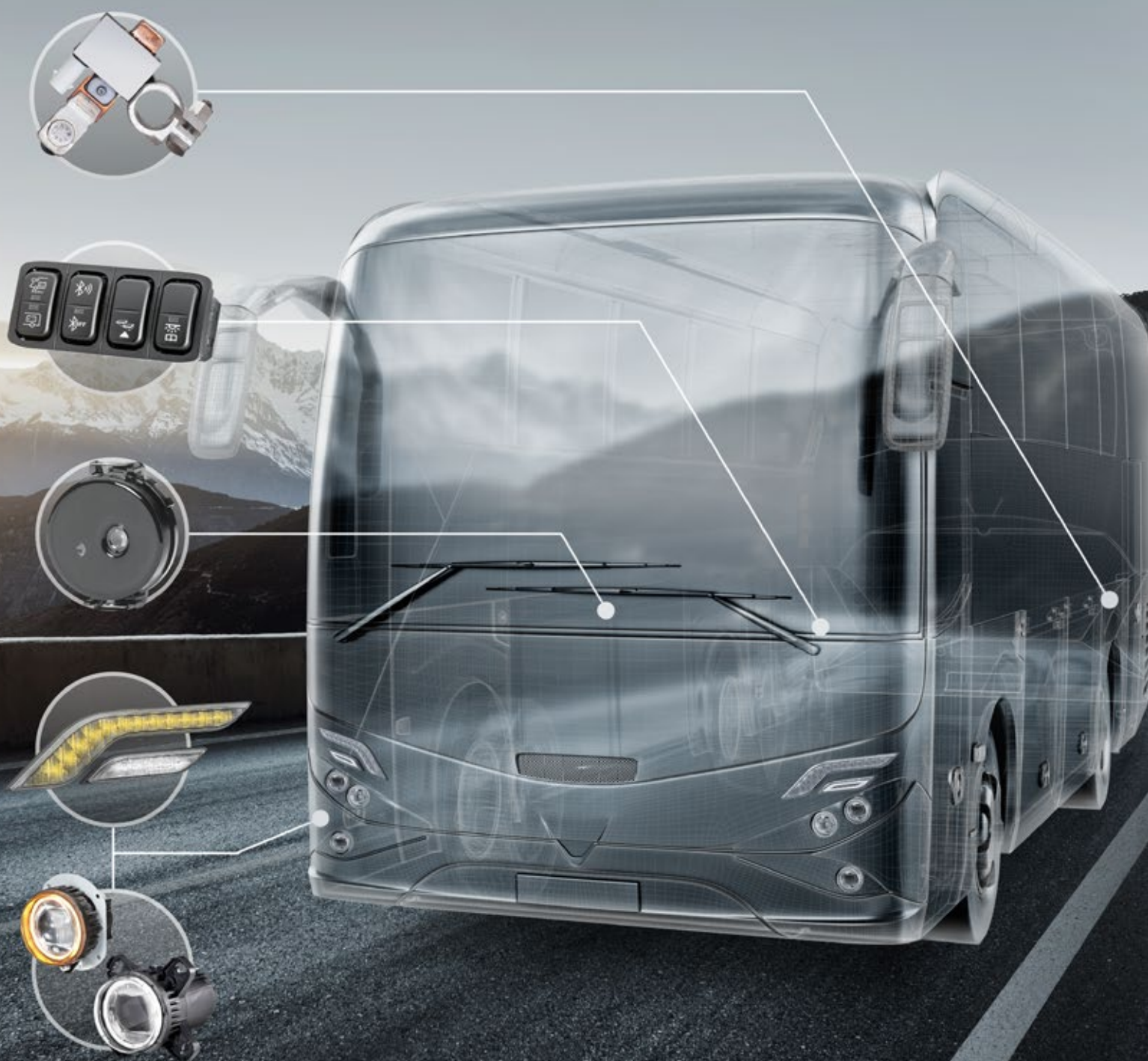




PRODUCT OVERVIEW
CITY BUSES AND COACHES



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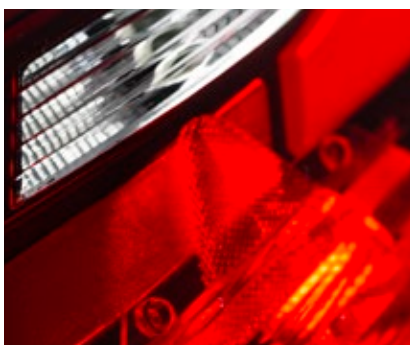
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TODAY AND IN THE FUTURE - ARRIVING SAFELY AT YOUR DESTINATION WITH HELLA

It makes no difference if the journey is short or long: when you travel by bus, it is quite normal to rely on the bus carrying you safely to your destination. And HELLA is indeed a decisive and crucial safety factor in this equation. Our wide range of lighting and electronic products enable us to help achieve the maximum degree of safety on our road networks for public transport, too.

With our modular designs and our specially developed, customer-specific products for city buses and coaches, we are meeting the increasing demands of this sector - right now and will continue to do so in the future. We have on offer a wealth of diverse, tried-and-tested equipment, which you can use to set trends and ultimately highlight your own particular type of brand.

In addition to proven products such as the 90 mm module series for front lighting, our product portfolio also includes new highlights such as the Shapeline lamp series. The modular, extremely design-orientated, building block system with a multitude of lamp functions is the perfect way of giving your vehicles a personalised yet at the same time consistent light signature.

In order to guarantee first-class product quality at all times, we make use of our expertise gained from experience in large-scale production: at HELLA, every product undergoes strict quality controls, which are far more stringent than the legally required test procedures. Take a look and see for yourself!





KEY OF ICONS



ECE

This product is tested in line with ECE guidelines.

Further information about the ECE test mark can be found on the relevant products.



Asymmetrical light distribution

The product complies with the ECE guideline R112, which regulates asymmetrical low beam for passenger cars, buses, commercial vehicles and the majority of larger vehicles.



Symmetrical light distribution

The product complies with ECE guideline R113, which regulates the symmetrical low beam for many agricultural vehicles and also for lighter vehicles (2, 3 or 4-wheeled).



SAE

Product has SAE type approval.



Vehicle electrical system voltage

Defines the power supply of the lamp. This can be 12 V, 24 V or a universal voltage range for multi voltage (e.g. 8–33 V).



Operating temperature

Thermal management and an optimised housing design guarantee full functionality for all operating temperatures as a result of product testing, e.g. from -40°C to 60°C



IP protection classes

International protection (IP) in accordance with DIN 40050, Part 9. Specific definition for road vehicles:

First digit:

Protection against dust and dirt

5K = Dust protected

6K = Dustproof

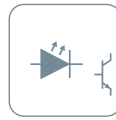
Second digit:

Protection against water

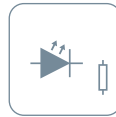
4K = Protection against all-round splashing of water under higher pressure

7 = Protection against temporary immersion

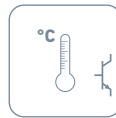
9K = Protection against water during high pressure/steamjet cleaning



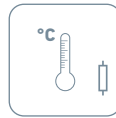
Active



Passive



Active



Passive



Electronic circuit

Basically, two different circuits are possible for LED lamps.

Active (AE):

LED current regulation by means of active electronics

Passive (PT):

Setting a specific voltage range for the LED by means of a series resistor.

Thermal management

Active:

Electronic power control of the LEDs when high ambient temperatures exceed permitted levels. This ensures that LEDs are protected against destruction caused by overheating.

Passive:

Optimal layout of components for even temperature distribution and temperature spread.

Overvoltage protection

Complement to electronics to protect the LED against high voltage / current in the vehicle network as per ISO 7637-2.

Overloading of the LEDs can be caused by increased voltage peaks in vehicles as a result of the following:

- Starting aid
- Defective control units
- Load dump impulse (faulty battery contact)

Such peaks stress / damage the LEDs, which can lead to function failure or to a reduction in lifetime. Complementing the circuit with appropriate components protects the circuit and can extend lifetime or even prevent failure.



Bipolarity of the lamps

If the connecting cable is fitted the wrong way round, the LED still functions fully.

The semiconductor in an LED must always be operated with the specified polarity. Incorrect polarity will damage the LED so LED lamps are generally equipped with polarity reversal protection (diode). However, this function only works if "+" and "-" are correctly connected. If a lamp has a bipolar circuit, its functioning is independent of the contact connections. This then ensures that Poka Yoke (avoidance of faulty installations) is present in operations such as indentation clamping technology. However, the additional components then found on the printed circuit board increase the cost outlay.



Polarity reversal protection

Even if the connecting cable is fitted the wrong way round, there is still no danger for the electronics.



Electromagnetic compatibility

Electromagnetic compatibility (EMC) tested and EU type approval issued.

If the lamp is not designed and constructed according to EMC specifications, and thus is not certified, then interactions between it and other safety-relevant electronic systems may occur.



Direction indicator failure control in accordance with ECE R48

Regulation in accordance with ECE R48:

The driver must be informed if the direction indicator function on the vehicle fails. In order to remain legally compliant, this requirement must also be met for LED direction indicators. Such a requirement is met by means of an integrated self-diagnosis system on the printed circuit board of the LEDs and with an electrical pulse. Since the end of 2011, this HELLA failure control with pulse has been an ISO standard: ISO 13207.

If the direction indicator failure control cannot be guaranteed, then the General Certification for such a vehicle expires. Therefore it is not permitted to operate vehicles without a direction indicator failure control in countries subject to ECE R48.



Integrated short-circuit fuse

Protected against short circuit by means of an amp fuse.



Approved for dangerous goods transports

Lamp is approved for dangerous goods transports in accordance with the European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR - in German abbreviated to GGVS).



Automotive Electronic Council

Components qualified in accordance with automotive standard. Electronic components (LEDs, diodes, ...) governed by automotive specifications are more robust and safer than electronic components designed for industry.



Automotive Safety Integrity Level

Product electronics are developed using cutting-edge methods and in accordance with the ISO 26262 safety guideline.



Tourist solution (passive)

The lamp can be used without adjustments for a short time in countries with left-hand traffic.

IP PROTECTION CLASSES

What is an IP protection class?

IP stands for International Protection. The IP protection classes are defined in accordance with DIN 40050, Part 9. The purpose of the norm is to specify precisely the resistance of electrical equipment components for vehicles against the penetration of solid foreign matter, dust and water. The varying degrees of protection important for signalling systems are explained in more detail below.

Protection class IP 5K4K

Dust may only penetrate to such an extent that function and safety are not impaired. Water that splashes or sprays from any direction at an increased rate of pressure against the housing must not have any damaging effect: with water pressure being ca. 4 bar.

Protection class IP 9K

Water that is directed onto the housing during high pressure/steamjet cleaning must not have any harmful effects: with the water pressure being ca. 80 – 100 bar.

Protection class: IP 6K7

Dust must not penetrate. Even during temporary immersion, no water is to penetrate.

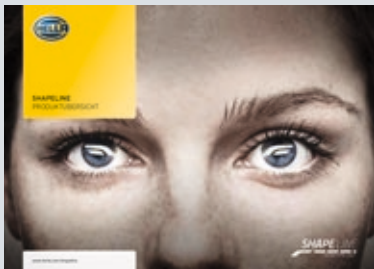
HELLA products meet the highest requirements and are optimally protected against all weather conditions.



DESIGN FREEDOM WITH JUST THE CLICK OF A MOUSE

The HELLA Shapeline online configuration tool turns you into a lighting designer: with just a few clicks, you can create your own complete and personalised lighting design for the front, sides, and rear of your vehicle – and then see the result displayed straight afterwards when it is strikingly and realistically applied to the outline of a car.

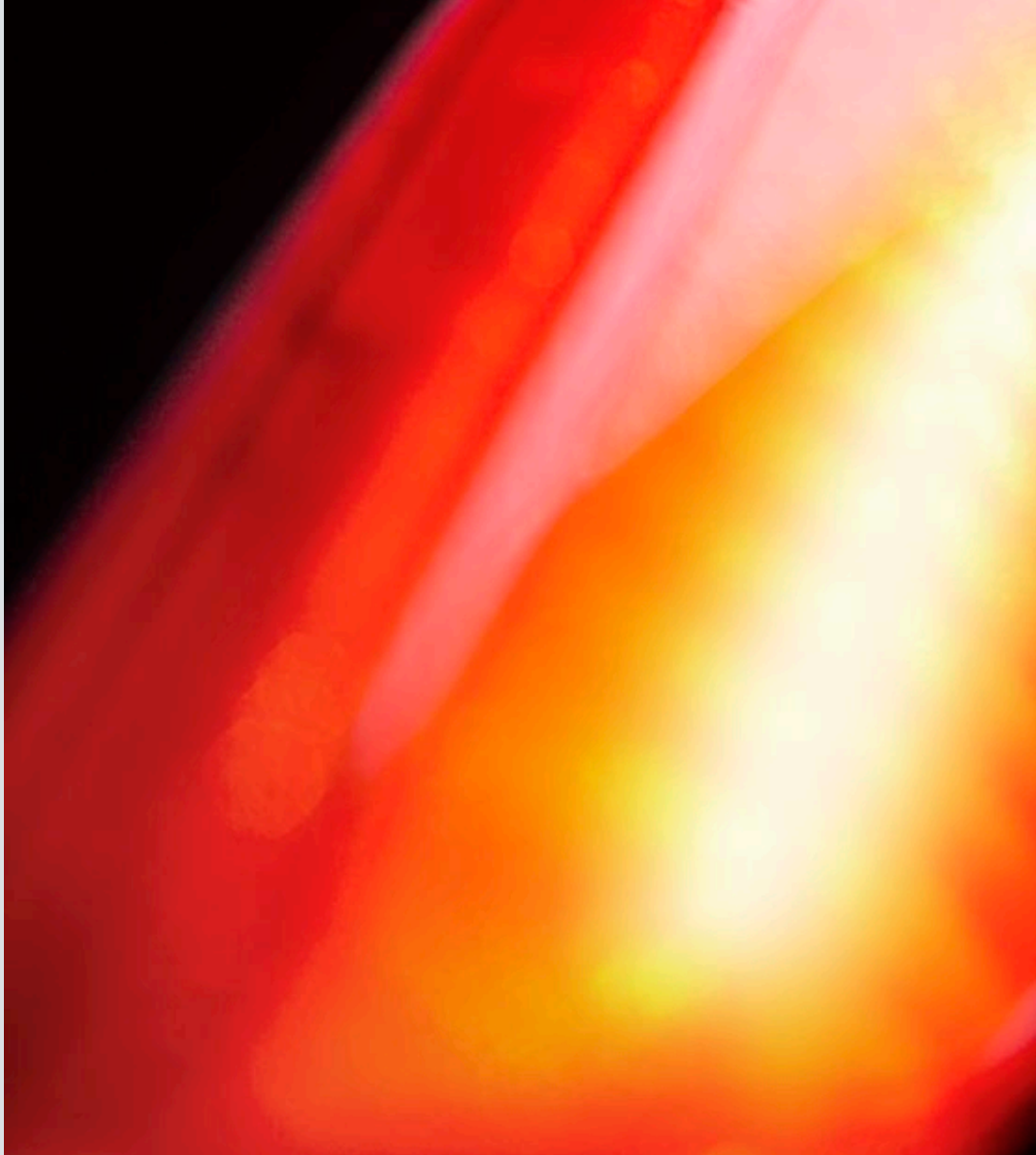
www.hella.com/shapeline



HELLA SHAPELINE BROCHURE

The complete product range in one brochure. Comprehensive product information covering all aspects of the Shapeline series will help you to select the right lamps for your purpose. You will also find the current brochure at:

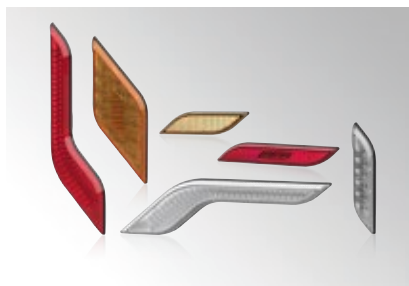
www.hella.com/shapeline



DESIGN YOUR LIGHT – WITH HELLA SHAPELINE!

The variety and range of shapes and the various combination options paired with a technically optimised product design make the new Shapeline lamp series a true innovation in vehicle lighting.

STYLE DESIGN



TECH DESIGN





SHAPELINE
DESIGN YOUR LIGHT

THE HIGHLIGHTS

The HELLA Shapeline series gives you the chance of enjoying design freedom for almost every kind of application.

- **Diversity of functions:** a countless variety of individually combinable LED lighting functions means that virtually every wish can be fulfilled.
- **Flexible design:** whether you prefer the classic straight lines of the Shapeline Tech design or the dynamically curved Shapeline Style design – the choice is yours.
- **High recall value:** with Shapeline you will achieve a unique, yet nevertheless consistent light signature for your vehicles.















YOUR ADVANTAGES









































Shapeline offers a huge variety of shapes and combination options paired with a technically optimised product design.

- **Innovation:** the modular Shapeline series consists entirely of LED technology – durable and energy-efficient.
- **Individuality:** you can design your very own light signature for the front, side and rear of your vehicle by selecting personalised lamp combinations and designing their arrangement yourself.
- **Variability:** thanks to Shapeline, even manufacturers who produce small batches are able to lend their vehicles a unique look.

HELLA SHAPELINE MODULE OVERVIEW

The modular HELLA Shapeline product range offers a variety of diverse lighting functions that can be individually combined with one another. All lamps are available in two different designs: the classic straight lines of the Shapeline Tech design and the dynamically sweeping contours of Shapeline Style.

| | Style | Tech |
|-------|---|--|
| FRONT | POSITION LAMPS  2PF 013 324-... 2PF 013 325-... 2PF 013 325-... 2PF 013 326-... 2PF 013 326-... |  2PF 013 323-... |
| | REFLEX REFLECTORS  8RA 013 347-... |  8RA 013 403-... |
| | DIRECTION INDICATORS  2BA 013 334-... 2BA 013 334-... 2BA 013 335-... 2BA 013 335-... |  2BA 013 330-... 2BA 013 398-... |
| | DAYTIME RUNNING AND POSITION LAMPS  2PT 014 627-... | |
| SIDE | DIRECTION INDICATORS  2BM 013 338-... 2BM 013 339-... |  2BM 013 336-... 2BM 013 337-... 2BM 013 337-... |
| | REFLEX REFLECTORS  8RA 013 347-... |  8RA 013 403-... |
| | CLEARANCE LAMPS |  2XS 013 327-... |
| | SIDE MARKER LAMPS  2PS 013 305/6-... 2PS 013 305-... 2PS 013 307-... 2PS 013 307-... |  2PS 013 300/2-... 2PS 013 300-... 2PS 013 303-... 2PS 013 303-... 2PS 013 301/2-... 2PS 013 301-... 2PS 013 304-... 2PS 013 304-... |

| Style | Tech |
|--|--|
| POSITION LAMPS | |
|  2SA 013 324-... |  2SA 013 323-... |
| TAIL-STOP LAMPS | |
|       2SB 013 342-... 2SB 013 342-... 2SB 013 399-... 2SB 013 399-... 2SB 013 343-... 2SB 013 343-... |  2SB 013 341-... |
| DIRECTION INDICATORS | |
|       2BA 013 331-... 2BA 013 331-... 2BA 013 331-... 2BA 013 331-... 2BA 013 333-... 2BA 013 333-...   2BA 013 332-... 2BA 013 332-... |   2BA 013 330-... 2BA 013 330-... |
| TAIL-STOP-DIRECTION INDICATOR LAMPS | |
|   2SD 013 342-... 2SD 013 342-... |  2SD 013 341-... |
| REVERSE LAMPS | |
|      2ZR 013 345-... 2ZR 013 345-... 2ZR 013 401-... 2ZR 013 401-... 2ZR 013 401-... |  2ZR 013 344-... |
| REAR FOG LAMPS | |
|        2NE 013 345-... 2NE 013 345-... 2NR 013 345-... 2NR 013 345-... 2NE 013 343-... 2NE 013 343-... 2NE 013 343-... |   2NE 013 344-... 2NR 013 344-... |
| REFLEX REFLECTORS | |
|   8RA 013 402-... 8RA 013 347-... |  8RA 013 403-... |

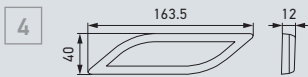
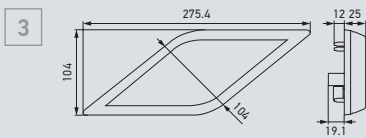
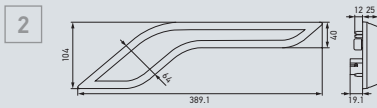
REAR

HELLA SHAPELINE

VERSATILE MODULE COMBINATIONS

Our Shapeline range offers you countless mounting and combination options. Thanks to the modular nature of the product range, these lamps can be combined in virtually every conceivable constellation. You simply just have to configure your own individual lighting design.

DIMENSIONAL DRAWINGS



EXAMPLE OF FRONT VIEW

Daytime running and position lamp, Slim, front

Homologation ECE / SAE
 Number of LEDs 6
 Connectors & wiring 3-pin AMP SUPERSEAL integrated

Dimensional drawing 1

2PT 014 627-021



Direction indicator, Wing, front

Homologation ECE / SAE
 Number of LEDs 12
 Connectors & wiring 2-pin AMP SUPERSEAL integrated

Dimensional drawing 2

2BA 013 334-021



EXAMPLE OF REAR VIEW

Tail-stop lamp, Wing

Homologation ECE / SAE
 Number of LEDs 30
 Connectors & wiring 3-pin AMP SUPERSEAL integrated

Dimensional drawing 2

2SB 013 399-031



Direction indicator, Wing, rear

Homologation ECE
 Number of LEDs 30
 Connectors & wiring 2-pin AMP SUPERSEAL integrated

Dimensional drawing 2

2BA 013 333-031



Rear fog lamp

Homologation ECE / SAE
 Number of LEDs 12
 Connectors & wiring 3-pin AMP SUPERSEAL integrated (with 2-pin function)

Dimensional drawing 3

2NE 013 345-031



Reflex reflector, rear

Homologation ECE / SAE
 Number of LEDs -
 Connectors & wiring -

Dimensional drawing 4

8RA 013 347-061



Clearance lamp*

Homologation ECE
 Number of LEDs -
 Connectors & wiring 2-pin AMP integrated
 Dimensional drawing -

2XS 013 327-001



* Side mounting, light radiation to the front and the rear



Protection class: IP X9K, IP 6K7

Direction indicator, category 6, on the side

Homologation ECE
 Number of LEDs 2
 Connectors & wiring 500 mm cable,
 open-ended

Dimensional drawing 1

2BM 013 339-021



Reverse lamp

Homologation ECE / SAE
 Number of LEDs 4
 Connectors & wiring 3-pin AMP SUPERSEAL
 integrated (with 2-pin
 function)

Dimensional drawing 3

2ZR 013 345-131



Side marker lamp, amber

Homologation ECE / SAE
 Number of LEDs 3
 Connectors & wiring AMP SUPERSEAL, 250 mm
 cable, overmoulded

Dimensional drawing 5

2PS 013 305-011





FRONT LIGHTING

Look ahead – with front lighting solutions from HELLA. On long journeys you are totally lost without powerful headlamps. They are, so to speak, the eyes of the vehicle and they ensure that you and your passengers are safe on the road.

The HELLA 90 mm front lighting modules are specially tailored to suit the requirements of city buses and coaches and, because of their functional versatility, they are able to be implemented in virtually all vehicles and situations. The modules are small but powerful – and offer a high degree of flexibility thanks to their modular concept, particularly so when it comes to buses. And as a result of the future-proof HELLA upgrade concept, traditional halogen modules, at a later date, can also be converted to efficient, light-intense LED technology, a feature which is already present in most of the modules.

90 MM MODULES PROGRAM OVERVIEW

The heavy duty HELLA 90 mm headlamps are used in many vehicle types. Again because of the modular design, they offer maximum flexibility leading to a wide range of possible applications and also to a customised front design.











The 90 mm module headlamp range caters for both halogen and LED technology and offers a choice between them depending on requirements, thus enabling an easy switch from halogen to LED. All the modules score really high points because of their sturdy construction and can therefore also be used in demanding work environments.

The differences between the individual series of the 90 mm range lie in the detail. The L 4060 LED modules, for example, impress with their outstanding light output and supplementary lighting functions. The light colour of the LED modules, which is similar to daylight, considerably improves visibility and levels of concentration during night-time journeys and thus ramps up the safety factor. The L 70 and L 5570 Bi-LED modules and also the Bi-halogen modules combine low beam and high beam in a single headlamp module and, as such, are ideal for installation in situations where space is limited.



HELLA 90 MM MODULE HEADLAMPS STAND FOR

- PREMIUM QUALITY
- RELIABILITY
- AND COST EFFICIENCY.

| | Low beam | High beam | Low beam and high beam | Fog light |
|---------|---|---|--|--|
| LED | PERFORMANCE | | | |
| |  L 4060 |  L 4060 |  Bi-LED L 70 1st gen. |  Bi-LED L 5570 2nd gen. |
| | | |  L 4060 | |
| | ESSENTIAL | | | |
| |  R 80 |  R 80 | | |
| HALOGEN | PERFORMANCE | | | |
| |  |  |  | |

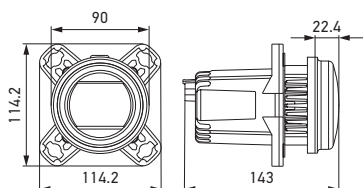


MODULE FINDER

A couple of clicks away from the right module headlamp: simply use the filter to select the required criteria, such as lighting function or homologation, and you will be shown the suitable products right away.

www.hella.com/headlamp-modules

90 MM MODULES / LED / PERFORMANCE
LED LOW BEAM

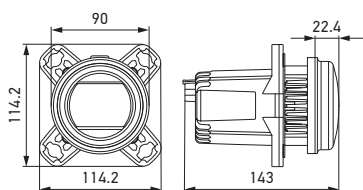


LED low beam headlamp L 4060

Module headlamp with 40 x 60 mm polycarbonate lens, rugged diecast aluminium housing

| | |
|-------------------------|--|
| Rated voltage | Multi voltage (12 / 24 V) |
| Protection class | IP X9K, IP X4K, IP 5KX |
| ECE test mark | 1BL 012 488-001: (E) 3831 1ML 012 488-011: (E) 4090 1BL 012 488-101: (E) 3881 1ML 012 488-111: (E) 4090 |

| | |
|------------------------|---|
| 1BL 012 488-001 | Right-hand traffic, ECE, SAE, FEP connector |
| 1ML 012 488-011 | Left-hand traffic, ECE, FEP connector |
| 1BL 012 488-101 | Right-hand traffic, ECE, SAE, DEUTSCH connector |
| 1ML 012 488-111 | Left-hand traffic, ECE, DEUTSCH connector |



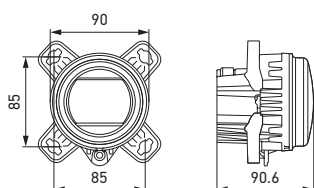
LED low beam headlamp L 4060 with daytime running light/ position light

Module headlamp with 40 x 60 mm polycarbonate lens, rugged diecast aluminium housing

| | |
|-------------------------|--|
| Rated voltage | Multi voltage (12 / 24 V) |
| Protection class | IP X9K, IP X4K, IP 5KX |
| ECE test mark | 1BL 012 488-021: (E) 3831 1ML 012 488-031: (E) 4090 1BL 012 488-121: (E) 3881 1ML 012 488-131: (E) 4090 |

| | |
|------------------------|---|
| 1BL 012 488-021 | Right-hand traffic, ECE, SAE, FEP connector |
| 1ML 012 488-031 | Left-hand traffic, ECE, FEP connector |
| 1BL 012 488-121 | Right-hand traffic, ECE, SAE, DEUTSCH connector |
| 1ML 012 488-131 | Left-hand traffic, ECE, DEUTSCH connector |

90 MM MODULES / LED / PERFORMANCE
LED HIGH BEAM

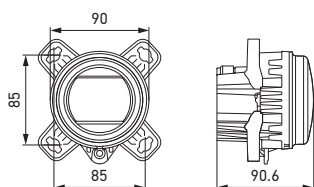


LED high beam headlamp L 4060

Module headlamp with 40 x 60 mm polycarbonate lens, rugged diecast aluminium housing

Rated voltage Multi voltage (12 / 24 V)
Protection class IP X9K, IP X4K, IP 5KX
ECE test mark E 3831

1F0 011 988-021 With preassembled carrier frame
1F0 011 988-121 For Performance mounting

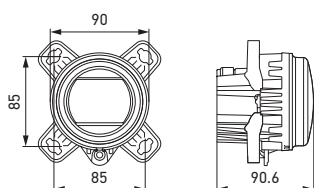


LED high beam headlamp L 4060 with daytime running light/position light

Module headlamp with 40 x 60 mm polycarbonate lens, rugged diecast aluminium housing

Rated voltage Multi voltage (12 / 24 V)
Protection class IP X9K, IP X4K, IP 5KX
ECE test mark E 3831

1F0 011 988-031 With preassembled carrier frame
1F0 011 988-131 For Performance mounting



LED high beam headlamp L 4060 with direction indicator light

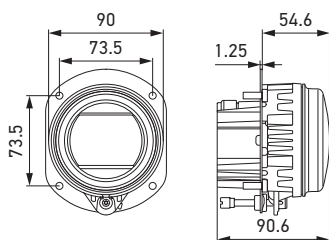
Module headlamp with 40 x 60 mm polycarbonate lens, rugged diecast aluminium housing

Rated voltage Multi voltage (12 / 24 V)
Protection class IP X9K, IP X4K, IP 5KX
ECE test mark E 3831

1F0 011 988-081 With preassembled carrier frame, with pulse generator
1F0 011 988-071 With preassembled carrier frame, without pulse generator
1F0 011 988-181 For Performance mounting, with pulse generator
1F0 011 988-171 For Performance mounting, without pulse generator

Pulse generator | Malfunctions of the high beam module with direction indicator light can usually be detected by means of the vehicle control unit. The detection stages are as follows: direction indicator light (DI): < 400 mA | high beam (HB): < 800 mA. If your vehicle's control unit cannot detect stage < 400 mA for the DI, the pulse generator will increase the amperage in an interval of 100 to 120 ms to simulate the level consistent with a standard 12 V (21 watt) bulb.

90 MM MODULES / LED / PERFORMANCE
LED FOG LIGHT

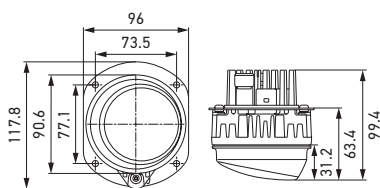


LED fog lamp L 4060

Module headlamp with 40 x 60 mm polycarbonate lens, rugged diecast aluminium housing, preassembled carrier frame

| | |
|-------------------------|------------------------|
| Rated voltage | Multi voltage (12/24V) |
| Protection class | IP X9K, IP X4K, IP 5KX |
| ECE test mark | Ⓔ 3831 |

| | |
|------------------------|--|
| 1N0 011 988-001 | Without daytime running light/position light |
| 1N0 011 988-011 | With daytime running light/position light |



LED fog lamp L 4060 with cornering light

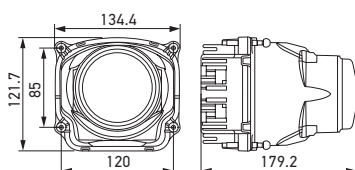
Module headlamp with 40 x 60 mm polycarbonate lens, rugged diecast aluminium housing, preassembled carrier frame

| | |
|-------------------------|------------------------|
| Rated voltage | Multi voltage (12/24V) |
| Protection class | IP X9K, IP X4K, IP 5KX |
| ECE test mark | Ⓔ 3832 |

| | |
|-------------------------------------|---------------------|
| 1N0 011 988-061 | Module, right |
| 1N0 011 988-051 | Module, left |
| 8JD 156 151-807¹⁾ | Connector set |
| 8KB 163 160-801²⁾ | Wiring harness |
| 5DF 009 244-007³⁾ | Control electronics |



90 MM MODULES / LED / PERFORMANCE
BI-LED LOW AND HIGH BEAM



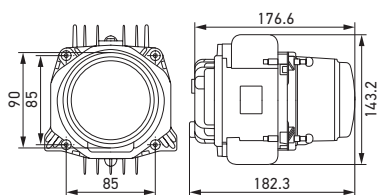
The **L 5570 modules** are equipped with an integrated function monitoring system that monitors current consumption as an alternative to the vehicle. There is a separate pin for the function confirmation signal.

Bi-LED low and high beam headlamp L 5570, 2nd generation

Module headlamp with 55 x 70 mm polycarbonate lens, robust diecast aluminium housing, hardened plastic cover lens, no moving parts

| | |
|-------------------------|---|
| Rated voltage | Multi voltage (12/24V) |
| Protection class | IP X9K, IP X4K, IP 5KX |
| ECE test mark | Right-hand traffic: E 4208 Left-hand traffic: E 4209 |

| | |
|------------------------|--|
| 1AL 012 758-001 | Right-hand traffic, ECE, 4-pin FEP connector |
| 1LL 012 758-011 | Left-hand traffic, ECE, 4-pin FEP connector |
| 1AL 012 758-021 | Right-hand traffic, SAE, 4-pin FEP connector |
| 1AL 012 758-101 | Right-hand traffic, ECE, 4-pin DEUTSCH connector |
| 1LL 012 758-111 | Left-hand traffic, ECE, 4-pin DEUTSCH connector |
| 1AL 012 758-121 | Right-hand traffic, SAE, 4-pin DEUTSCH connector |



Bi-LED low and high beam headlamp L 70, 1st generation

Module headlamp with 70 mm DE lens

| | |
|-------------------------|---|
| Rated voltage | Multi voltage (12/24V) |
| Protection class | IP X9K, IP X4K, IP 5KX |
| ECE test mark | Right-hand traffic: E 3351 / 6189 Left-hand traffic: E 3352 / 6189 |

| | |
|------------------------|--------------------|
| 1AL 010 820-021 | Right-hand traffic |
| 1LL 010 820-031 | Left-hand traffic |

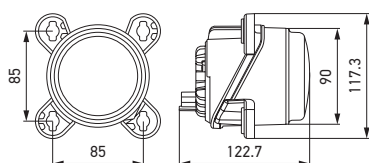
LED low beam headlamp L 70, 1st generation

Module headlamp with 70 mm DE lens

| | |
|-------------------------|---|
| Rated voltage | Multi voltage (12/24V) |
| Protection class | IP X9K, IP X4K, IP 5KX |
| ECE test mark | Right-hand traffic: E 3359 / 6189, left-hand traffic: E 3160 / 6189 |

| | |
|------------------------|--------------------|
| 1BL 010 820-001 | Right-hand traffic |
| 1ML 010 820-011 | Left-hand traffic |

90 MM MODULES / LED / ESSENTIAL
LOW BEAM AND HIGH BEAM



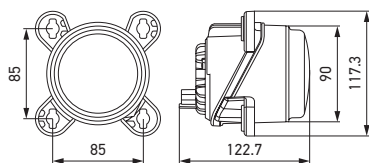
LED low beam headlamp R 80*

Module headlamp with innovative reflector and rugged plastic housing

Rated voltage Multi voltage (12/24V)
Protection class IP X9K, IP X4K, IP 5KX

- 1B0 015 050-001** Right-hand traffic, ECE, 2-pin DEUTSCH connector
- 1B0 015 050-031** Right-hand traffic, SAE, 2-pin DEUTSCH connector
- 1M0 015 050-011** Left-hand traffic, ECE, 2-pin DEUTSCH connector
- 1B0 015 050-101** Right-hand traffic, ECE, 2-pin FEP connector
- 1B0 015 050-131** Right-hand traffic, SAE, 2-pin FEP connector
- 1M0 015 050-111** Left-hand traffic, ECE, 2-pin FEP connector

Available from 01 / 2020
* Mounting set 254 163-00 not included.



LED high beam headlamp R 80*

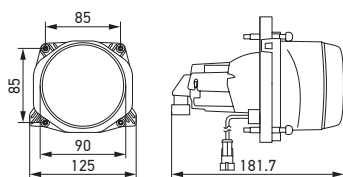
Module headlamp with innovative reflector, robust plastic housing

Rated voltage Multi voltage (12/24V)
Protection class IP X9K, IP X4K, IP 5KX

- 1K0 015 050-021** 2-pin DEUTSCH connector
- 1K0 015 050-121** 2-pin FEP connector

Available from 01 / 2020
*Mounting set 254 163-00 not included.

90 MM MODULES / HALOGEN / PERFORMANCE
BI-HALOGEN LOW BEAM AND HIGH BEAM



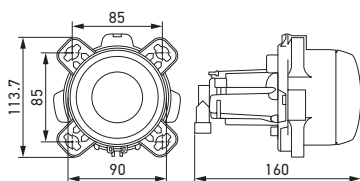
Bi-halogen low and high beam headlamp

Module headlamp with high quality aluminium reflector, unpatterned and hardened glass cover lens for direct view on lens, including light source.

| | |
|-------------------------|----------------|
| Rated voltage | 12 or 24 V |
| Protection class | IP 5K4K |
| ECE test mark | Ⓔ 2484, Ⓔ 2485 |

| | |
|------------------------|-----------------------------------|
| 1AL 009 998-001 | 12 V, right-hand traffic, H7, ECE |
| 1LL 009 998-011 | 12 V, left-hand traffic, H7, ECE |
| 1AL 009 998-021 | 12 V, right-hand traffic, H9, SAE |
| 1AL 009 998-041 | 24 V, right-hand traffic, H7, ECE |
| 1LL 009 998-051 | 24 V, left-hand traffic, H7, ECE |

HALOGEN LOW BEAM



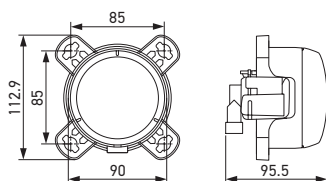
Halogen low beam headlamp

Module headlamp with aluminium reflector and clear DE lens behind unpatterned glass cover lens, including light source.

| | |
|-------------------------|----------------|
| Rated voltage | 12 or 24 V |
| Protection class | IP 5K4K |
| ECE test mark | Ⓔ 2397, Ⓔ 2398 |

| | |
|------------------------|--|
| 1BL 247 042-007 | 12 V, right-hand traffic, H1, for Performance mounting |
| 1ML 247 042-027 | 12 V, left-hand traffic, H1, for Performance mounting |
| 1BL 247 042-177 | 12 V, right-hand traffic, H1, for Premium mounting |
| 1ML 247 042-187 | 12 V, left-hand traffic, H1, for Premium mounting |
| 1BL 247 042-017 | 24 V, right-hand traffic, H1, for Performance mounting |
| 1ML 247 042-037 | 24 V, left-hand traffic, H1, for Performance mounting |
| 1BL 247 042-197 | 24 V, right-hand traffic, H1, for Premium mounting |
| 1ML 247 042-207 | 24 V, left-hand traffic, H1, for Premium mounting |

90 MM MODULES / HALOGEN / PERFORMANCE
 HALOGEN HIGH BEAM



Halogen high beam headlamp

Module headlamp with FF aluminium reflector and unpatterned glass cover lens, including light source.

| | |
|-------------------------|------------|
| Rated voltage | 12 or 24 V |
| Protection class | IP 5K4K |
| ECE test mark | Ⓔ 2397 |

| | |
|------------------------|---|
| 1K0 247 043-007 | 12 V, with position light, H1, for Performance mounting |
| 1K0 247 043-017 | 12 V, without position light, H1, for Performance mounting |
| 1K0 247 043-117 | 12 V, with position light, H1, for Premium mounting |
| 1K0 247 043-127 | 12 V, without position light, H1, for Premium mounting |
| 1K0 247 043-027 | 24 V, with position light, H1 Heavy Duty Longlife, for Performance mounting |
| 1K0 247 043-037 | 24 V, without position light, H1, for Performance mounting |
| 1K0 247 043-137 | 24 V, with position light, for Premium mounting |
| 1K0 247 043-147 | 24 V, without position light, for Premium mounting |
| 1K0 247 043-157 | 12 V, with position light, H1, for replacement of Halogen Essential |
| 1K0 247 043-167 | 12 V, H1, for replacement of Halogen Essential |



UPGRADE TO LED

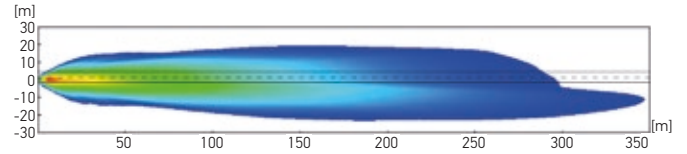
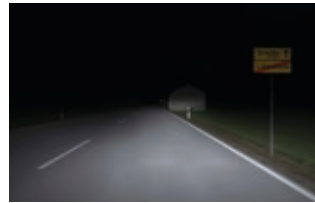
LED lamps offer a number of rock-solid benefits. More and more consumers are therefore deciding to upgrade their existing systems.

The 90 mm halogen single and multifunctional modules from HELLA make the changeover very easy. The installation instructions supplied describe which adjustments are necessary in order to convert each individual lighting function to LED products on the basis of the halogen version currently in use. As the mounting solutions are compatible, the conversion can be completed in the shortest space of time.

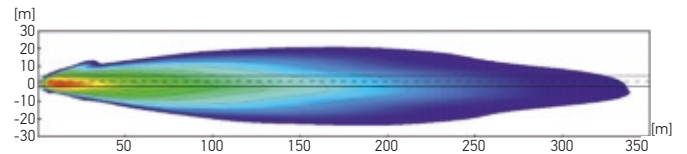
90 MM MODULES - COMPARISON OF THE THREE COMBINATIONS OF LOW BEAM AND HIGH BEAM MODULES



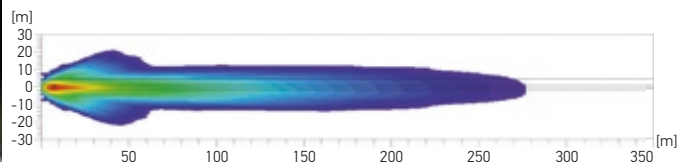
L 4060 LED
(012 488 + 011 988)



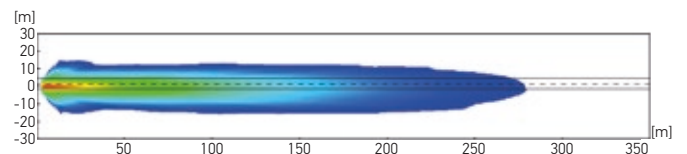
R 80 LED
(015 050 + 015 050)



L 4060 LED + Performance halogen
(012 488 + 247 043)



Performance halogen
(247 042 + 247 043)



Explanatory notes

Headlamp mounting height: 0.65 m /
gap between the headlamps: 1.20 m

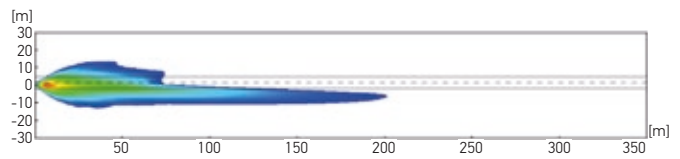
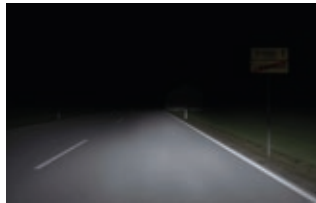
Key for isolux diagram (1 – 350 Lux)



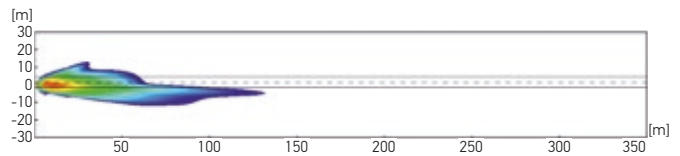
90 MM MODULES - COMPARISON OF LED ILLUMINATION LED LOW BEAM



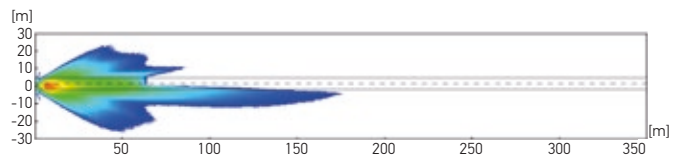
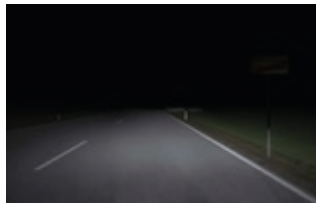
L 4060 LED
(012 488)



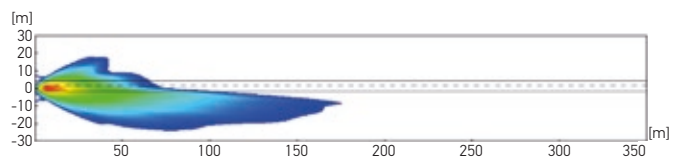
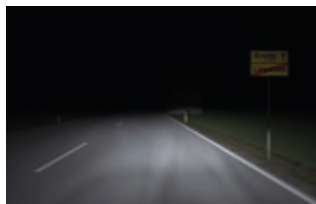
R 80 LED
(015 050)



L 5570, Bi-LED, 2nd generation
(012 758)



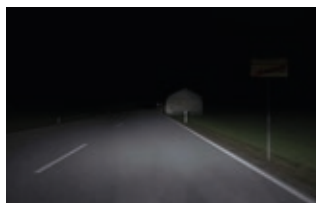
L 70, Bi-LED, 1st generation
(010 820)



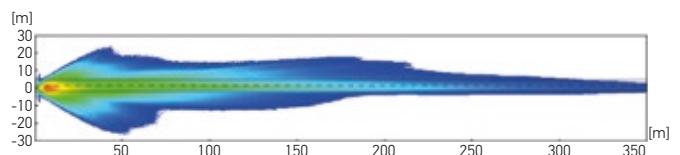
BI-MODULES FOR LED HIGH BEAM



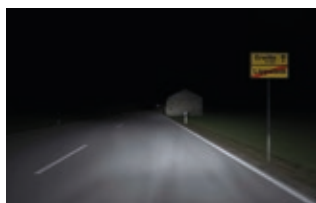
L 5570 Bi-LED, 2nd generation
(012 758)



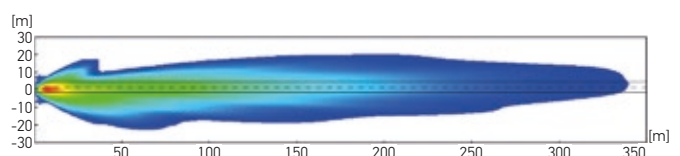
Please note | Bi-light distributions are generated when low beam is switched on and are only available as a bi-version.



L 70 Bi-LED, 1st generation
(010 820)



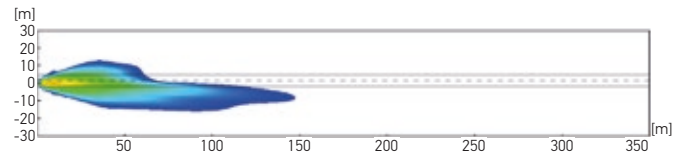
Please note | Bi-light distributions are generated when low beam is switched on and are only available as a bi-version.



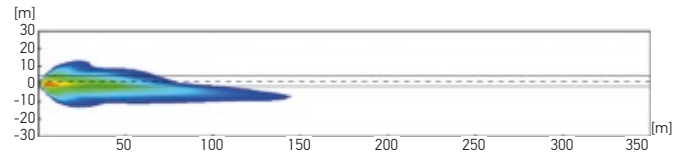
90 MM MODULES - COMPARISON OF HALOGEN ILLUMINATION
 HALOGEN LOW BEAM



Bi-halogen
 (009 998)



Performance halogen
 (247 042)



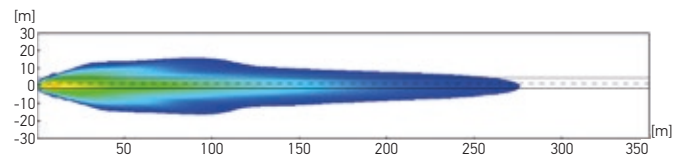
BI-MODULES FOR HALOGEN HIGH BEAM



Bi-halogen
 (009 998)



Please note | Bi-light distributions are generated when low beam is switched on and are only available as a bi-version.



90 MM MODULES

LED ACCESSORIES

Key

-) Accessories for correct connection and also mandatory accessories
-) Optional accessories

| Accessory components | Article number | Features |
|--|-----------------|------------|
| Carrier frames | | |
| Premium carrier frame | 9AH 169 580-011 | Black |
| Performance carrier frame | 9AH 254 228-012 | Black |
| Performance carrier frame for agricultural and truck applications | 9AH 185 978-011 | Black |
| Premium carrier frame | 9AH 205 652-011 | Black |
| Performance carrier frame | 9AH 205 652-111 | Black |
| Adapter for 1:1 replacement from 009 999 bi-halogen modules to bi-LED | 9AH 213 181-001 | Black |
| Adapter for 1:1 replacement from bi-LED to 009 999 bi-halogen modules | 9AH 205 653-001 | Black |
| Surplus supply LED: AMP SUPERSEAL connector, 3-pin | | |
| Housing | 8JA 746 184-032 | 10 pieces |
| Socket contact | 8KW 744 837-002 | 50 pieces |
| Single conductor insulation | 9GD 746 185-002 | 50 pieces |
| Surplus supply LED: FEP connector, 4-pin | | |
| Housing | 8JA 202 231-002 | 10 pieces |
| Flat contact | 8KW 863 933-013 | 50 pieces |
| Single conductor insulation 0.35–0.5 mm ² or | 9GD 863 952-022 | 50 pieces |
| Single conductor insulation 0.75 mm ² | 9GD 863 952-012 | 50 pieces |
| Dummy plug | 9GD 863 952-002 | 50 pieces |
| Surplus supply LED: DEUTSCH connector, 4-pin (in conjunction with adapter cable, see ¹⁾ , except for 012 488-1xx and 012 758-1xx) | | |
| Connector housing | 8JA 201 022-042 | 10 pieces |
| Locking system / wedge lock | 9NB 201 024-042 | 10 pieces |
| Contact sleeve 0.5–1.5 mm ² | 8KW 201 025-112 | 50 pieces |
| Dummy plug | 9NB 201 026-012 | 50 pieces |
| Set (1 connector housing, 1 locking system, 5 contact sleeves, 3 dummy plugs) | 8JA 201 022-821 | |
| Headlamp levelling systems | | |
| Headlamp levelling, 12 V | 6NM 007 282-221 | 1 piece |
| Headlamp levelling, 24 V | 6NM 008 299-501 | 1 piece |
| Bracket for right-side mounting of actuator | 8HG 138 620-007 | 100 pieces |
| Bracket for left-side mounting of actuator | 8HG 138 619-007 | 100 pieces |
| Left bracket/ interface for headlamp levelling actuator for connection to module | 9XX 208 791-011 | 1 piece |
| Right bracket/ interface for headlamp levelling actuator for connection to module | 9XX 208 791-001 | 1 piece |
| Accessories for cornering light | | |
| Connecting cable LED module - cornering light control unit | 8KB 163-160-811 | 1 piece |
| Cornering light control unit | 5DF 009 244-007 | 24 pieces |
| Adapter cable | | |
| ¹⁾ Adapter from FEP connector to DEUTSCH connector (4-pin) | 8KA 202 117-001 | 1 piece |
| Adapter from FEP connector to Performance module (247 043) or DynaView (009 295) | 8KA 202 117-011 | 1 piece |
| Other accessories | | |
| Function monitoring device, 12 V | 5DS 011 630-001 | 1 piece |
| Function monitoring device, 24 V | 5DS 011 630-011 | 1 piece |
| Function monitoring device, 24 V | 5DS 011 630-211 | 1 piece |

| L 4060 | | | | | | | | | | | | | L 5570 | | L 70 | | R 80 | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--------|--|------|--|------|--|
| Low beam 012 488-001 / -011 | | | | | | | | | | | | | | | | | | |
| Low beam 012 488-101 / -111 | | | | | | | | | | | | | | | | | | |
| Low beam, daytime running light and position light 012 488-021 / -031 | | | | | | | | | | | | | | | | | | |
| Low beam, daytime running light and position light 012 488-121 / -131 | | | | | | | | | | | | | | | | | | |
| High beam 011 988-021 | | | | | | | | | | | | | | | | | | |
| High beam 011 988-121 | | | | | | | | | | | | | | | | | | |
| High beam, daytime running light and position light 011 988-031 | | | | | | | | | | | | | | | | | | |
| High beam, daytime running light and position light 011 988-131 | | | | | | | | | | | | | | | | | | |
| High beam and direction indicator light (with pulse) 011 988-061 | | | | | | | | | | | | | | | | | | |
| High beam and direction indicator light (with pulse) 011 988-161 | | | | | | | | | | | | | | | | | | |
| High beam and direction indicator light (without pulse) 011 988-071 | | | | | | | | | | | | | | | | | | |
| High beam and direction indicator light (without pulse) 011 988-171 | | | | | | | | | | | | | | | | | | |
| Fog light 011 988-001 | | | | | | | | | | | | | | | | | | |
| Fog light, daytime running light and position light 011 988-011 | | | | | | | | | | | | | | | | | | |
| Fog light and cornering light 011 988-051 / -061 | | | | | | | | | | | | | | | | | | |
| Bi-LED low beam and high beam 012 758-001 / -011 / -021 | | | | | | | | | | | | | | | | | | |
| Bi-LED low beam and high beam 012 758-101 / -111 / -121 | | | | | | | | | | | | | | | | | | |
| Bi-LED low beam and high beam 010 820-021 / -031 | | | | | | | | | | | | | | | | | | |
| Low beam 010 820-001 / -011 | | | | | | | | | | | | | | | | | | |
| Low beam 015 050 | | | | | | | | | | | | | | | | | | |
| High beam 015 050 | | | | | | | | | | | | | | | | | | |

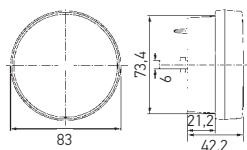
90 MM MODULES HALOGEN ACCESSORIES

Key

-) Accessories for correct connection and also mandatory accessories
-) Optional accessories

| Accessory components | Article number | Features | Performance | | | | |
|--|-----------------|------------|--|--|------------------------------|-------------------------------|--|
| Carrier frames | | | Low beam and high beam, bi-halogen H7 009 998 | Low beam and high beam, bi-halogen H9 009 998 | Low beam, halogen 247 042 | High beam, halogen 247 043 | High beam, halogen H1 with position light 247 043 |
| Premium carrier frame | 9AH 169 580-011 | Black | •• | •• | •• | •• | •• |
| Performance carrier frame | 9AH 254 228-012 | Black | | | •• | •• | •• |
| Caps | | | | | | | |
| Flat for angled plugs | | | | | | | |
| Ventilated | 9GH 152 654-007 | - | | | | | |
| Ventilated | 9GH 152 654-012 | - | | | | | |
| Deep for female connector housing | | | | | | | |
| Ventilated | 9GH 145 943-001 | - | | | | | |
| Non-ventilated | 9GH 145 943-012 | - | | | | | |
| Connector (vehicle side) | | | | | | | |
| Surplus supply H1 / H7 | 8JD 156 151-807 | 20 systems | • | | • | • | • |
| Surplus supply H9 | 8JD 158 175-807 | 20 systems | | • | | | |
| Parking light | 8JD 156 150-807 | 20 systems | | | | | • |
| Changeover high beam – AMP SUPERSEAL, 2-pin | | | | | | | |
| Housing | 8JA 746 184-022 | 10 pieces | • | • | | | |
| Socket contact | 8KW 744 837-002 | 50 pieces | • | • | | | |
| Single conductor insulation | 9GD 746 185-002 | 50 pieces | • | • | | | |

90 MM MODULES AUXILIARY LIGHTING FUNCTIONS



83 mm LED direction indicator, daytime running and position lamp

LED 3-function lamp with integrated electronics, which is configured so that the daytime running lamp switches off during flashing; pre-wired with a 2,500-mm-long, sheathed, four-wire cable.

| | |
|-------------------------|-----------------|
| Rated voltage | 12 or 24 V |
| Protection class | IP 6K7, IP 6K9K |
| ECE test mark | 5854 |

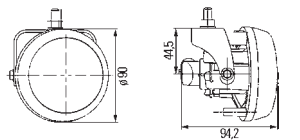
| | |
|-------------------------|-------------------|
| 2BE 980 691-001* | Single lamp, 12 V |
| 2BE 980 690-001* | Single lamp, 24 V |

Optional accessories

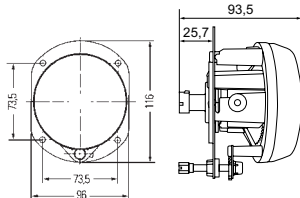
| | |
|------------------------|---|
| 9GD 980 696-001 | The adapter ring is used to replace a 90 mm lamp with a 83 mm lamp. This means that vehicles previously using a 90 mm HELLA lamp can now easily be converted to a 83 mm lamp. |
|------------------------|---|

* No integrated pulse, switching-off of daytime running light when direction indicator is flashing.

90 MM MODULES
AUXILIARY LIGHTING FUNCTIONS



With fastening clamp



With carrier frame

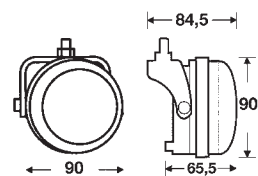


DynaView® Evo 2

Cornering light and fog light, including H7 bulb, vertical or pendant mounting

| | |
|-------------------------|---|
| Light source | H7 bulb |
| Rated voltage | 12 or 24 V |
| Protection class | IP 5KX, IP X4K, IP X9K |
| ECE test mark | ECE Ⓜ 1951 Cornering light: ECE R119 Fog light: ECE R19 B series 02 / B series 03 |

| | |
|-------------------------------------|--|
| 1N0 009 295-801¹⁾ | 12 V, set with fastening clamp, including control electronics and wiring harness |
| 1N0 009 295-077²⁾ | 12 V, single left, with carrier frame |
| 1N0 009 295-087²⁾ | 12 V, single right, with carrier frame |
| 1N0 009 295-057²⁾ | 24 V, single left, with carrier frame |
| 1N0 009 295-067²⁾ | 24 V, single right, with carrier frame |
| 8JD 156 151-807^{A)} | Connector set |
| 8KB 163 160-801^{B)} | Wiring harness |
| 5DF 009 244-007^{C)} | Control electronics |



90 mm LED daytime running lamp set

Black aluminium housing, for upright and pendant mounting in or on the front, set contents: 2 brackets and 2 lamps

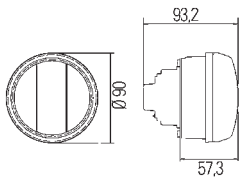
| | |
|-------------------------|---------------------------|
| Light source | 3 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Protection class | IP 6K7, IP 6K9K |
| ECE test mark | Ⓜ 2372 |

| | |
|------------------------|---|
| 2PT 009 599-811 | Daytime running lamp, set |
| 2PT 009 599-111 | Daytime running lamp, left |
| 2PT 009 599-121 | Daytime running lamp, right |
| 2PT 009 599-131 | Daytime running lamp with position light, left |
| 2PT 009 599-141 | Daytime running lamp with position light, right |

Optional accessories

| | |
|------------------------|------------------------------|
| 9AH 165 968-001 | Universal carrier frame |
| 8KA 165 959-001 | Wiring harness, preassembled |

90 MM MODULES
AUXILIARY LIGHTING FUNCTIONS



90 mm direction indicator with position light

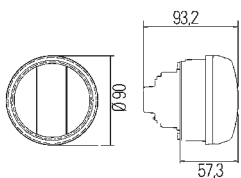
Headlamp with unpatterned glass cover lens, direction indicator light in bulb technology, position light in LED technology

| | |
|----------------------|--|
| Light source | Direction indicator light: bulb (12 or 24 V) Position light: 2 white LEDs |
| Rated voltage | 12 or 24 V |
| ECE test mark | Ⓔ 2586 |

| | |
|------------------------|---------------------------------|
| 2BE 010 102-001 | 12 V, with silver-coloured bulb |
| 2BE 010 102-011 | 24 V, with amber bulb |

Accessories

| | |
|------------------------|--------------------------------------|
| 9AH 165 968-001 | Optional carrier frame with 3 screws |
|------------------------|--------------------------------------|



90 mm daytime running lamp with position light

Headlamp with unpatterned glass cover lens, daytime running light in bulb technology, position light in LED technology

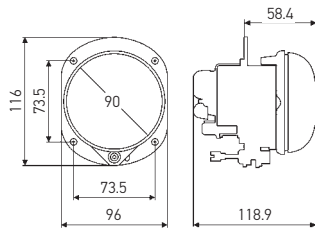
| | |
|----------------------|--|
| Light source | Daytime running light: white bulb (12 or 24 V) Position light: 2 white LEDs |
| Rated voltage | 12 or 24 V |
| ECE test mark | Ⓔ 2586 |

| | |
|------------------------|------|
| 2BE 010 102-101 | 12 V |
| 2PT 010 102-111 | 24 V |

Accessories

| | |
|------------------------|--------------------------------------|
| 8JD 162 581-802 | Connector set, 3-pin |
| 9AH 165 968-001 | Optional carrier frame with 3 screws |

90 MM MODULES
AUXILIARY LIGHTING FUNCTIONS



90 mm high beam headlamp or fog lamp

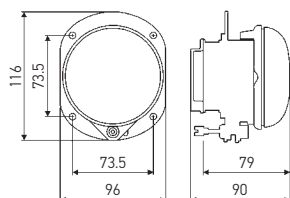
Module headlamp with unpatterned glass cover lens, with carrier frame

| | |
|----------------------|--|
| Light source | H15 bulb |
| Rated voltage | 12 or 24 V |
| ECE test mark | High beam: E 2680, ECE R87, ECE R112 Fog light: E 2681, ECE R19 B series 02, B series 03, ECE R87 |

| | |
|------------------------|---|
| 1F0 010 293-001 | 12 V, with high beam (additional option: daytime running light) |
| 1F0 010 293-011 | 24 V, with high beam (additional option: daytime running light) |
| 1N0 010 294-001 | 12 V, with fog light (additional option: daytime running light) |
| 1N0 010 294-011 | 24 V, with fog light (additional option: daytime running light) |

Accessories for combinations

| | |
|------------------------|---------------------------------------|
| 8JD 162 581-802 | Connector set, 3-pin (20 systems) |
| 8JA 179 631-002 | Connector housing, 3-pin (250 pieces) |



90 mm fog lamp

Minimum installation dimensions for an understated yet impressive lighting design, aluminium reflectors with clear lens, ideal in combination with the matching 90 mm high beam and low beam headlamps.

| | |
|----------------------|--|
| Light source | H7 bulb |
| Rated voltage | 12 or 24 V |
| ECE test mark | E 1342, ECE R19 B series 02, B series 03 |

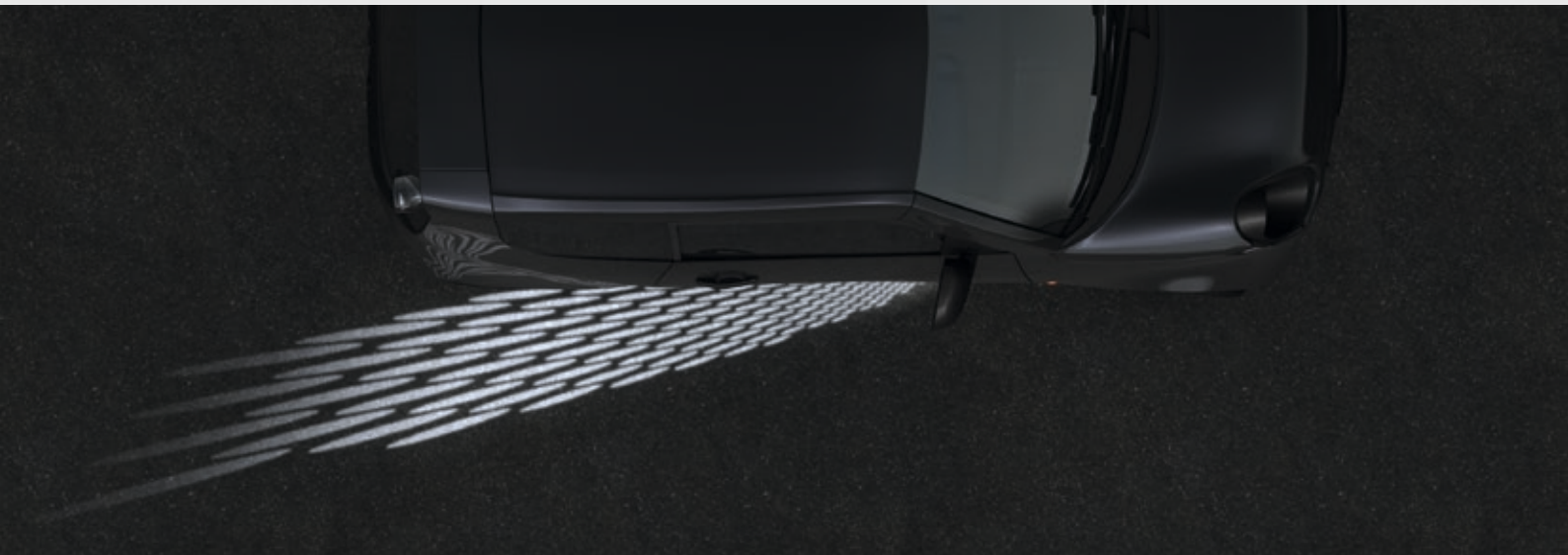
| | |
|------------------------|------|
| 1N0 008 582-007 | 12 V |
| 1N0 008 582-017 | 24 V |

Accessories

| | |
|------------------------|------------|
| 9GH 158 051-007 | Rubber cap |
|------------------------|------------|

Accessories



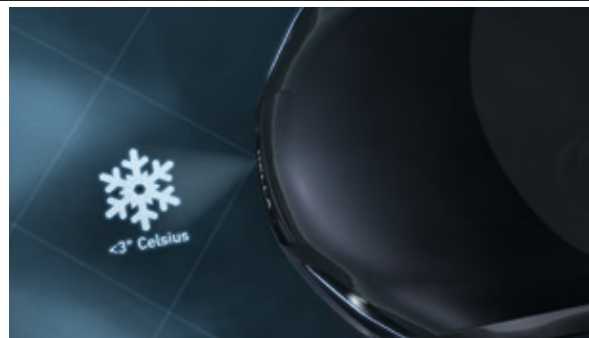


MULTI LENS ARRAY PROJECTOR PROJECTION MODULE

It's dark and the car park is unlit. Now where exactly did I leave the car? With the multi lens array projection module (MLA), a quick touch of a button on the car key is all it takes to find your vehicle. The projector creates on both sides of the vehicle a four-metre-long, so-called light carpet, which is visible from a distance - or indeed it can set up one of many other possible welcoming scenarios around the exterior or in the interior of the vehicle.

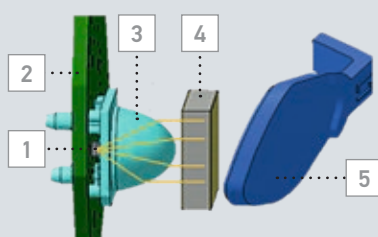
The optics of the module consist of a large number of very small micro lenses whose projections combine to form a very sharp, high contrast and homogeneous image. Since each lens contributes only part of the light, the projection is still clearly visible even if the cover lens is slightly soiled in some places

Why not get in touch with us so that we can work together on a project to design a customised solution that suits your individual requirements perfectly?



Virtually unlimited fields of application

In this video HELLA shows you which lighting effects are possible with the multi lens array projector. In addition to creating a light carpet or ambient interior lighting, attractive lighting motifs can also be projected.

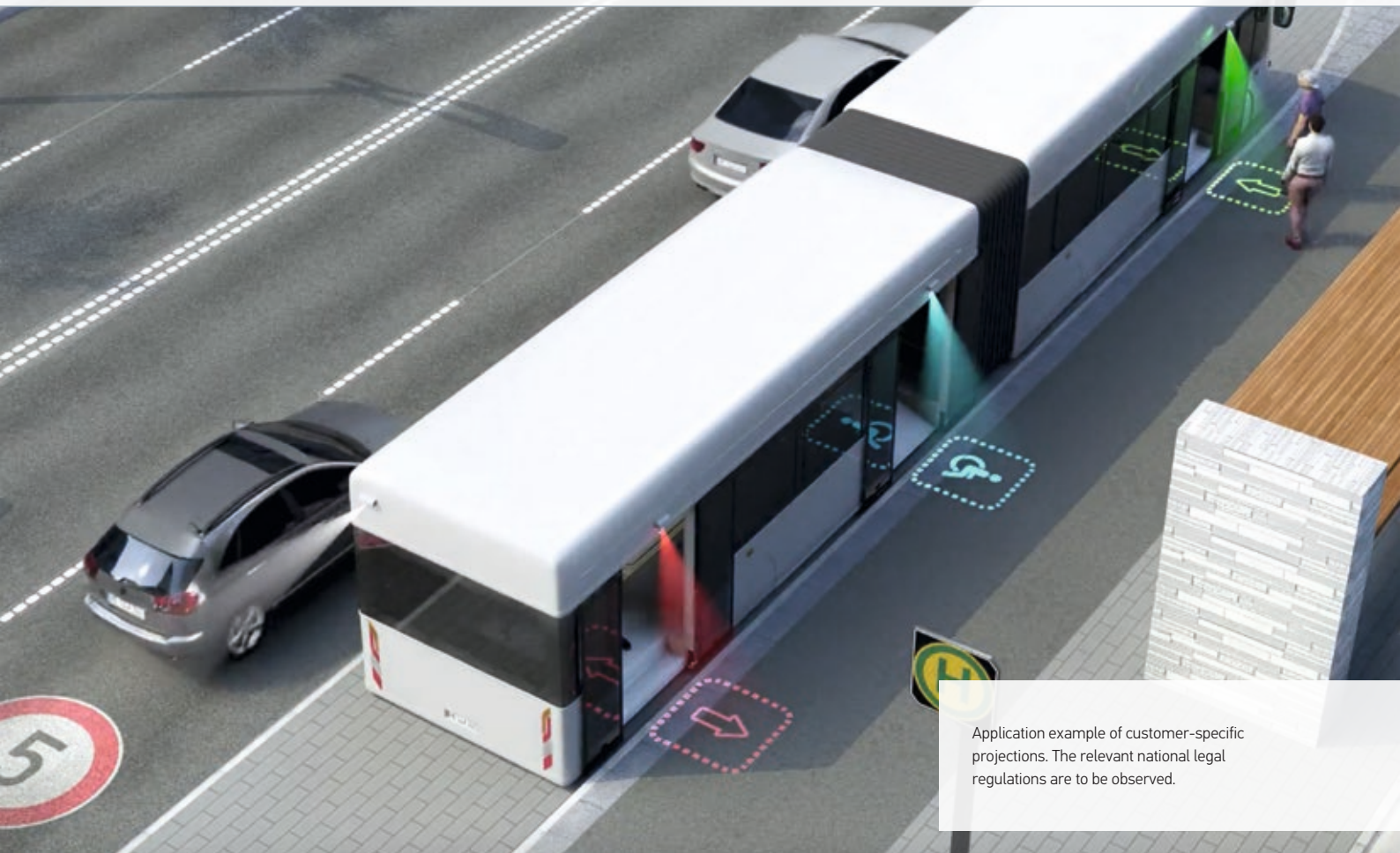


Optical system components

1. LED light source
2. Printed circuit board (PCB)
3. Collimator: focuses the wide light beam of the LED
4. Multi lens array: generation of the light pattern
5. Lens cover

MICRO LENS ARRAY

Each micro lens array consists of many individual micro lenses, each of which produces a low intensity projection. The combination of a large number of these small projectors results in a very bright and sharp light pattern. One image is created by approximately 150 micro projection lenses per multi lens array.



Application example of customer-specific projections. The relevant national legal regulations are to be observed.

VISIOTECH PROJECTION TECHNOLOGY
ENABLES COMMUNICATION BY LIGHT

Vehicle lighting plays an important role when it is a question of safety and a convenient working environment. For this reason, HELLA has further developed the current technical status of projections - which are now also regularly used in everyday life - and expanded them to suit other areas of application. The aim is to ramp up occupational safety levels in the operations of special and commercial vehicles.

With its projection module, HELLA has developed a product that uses VISIOTECH projection technology to project an exclamation mark onto the ground as a warning symbol, thus visually warning other vehicles or pedestrians with the objective of significantly increasing safety. During this process, the light of several LEDs is guided through a printed symbol disc and several lenses.

The version with the warning triangle is already available for original equipment manufacturers. If so required, other projection symbols can be developed and set up in collaboration with customers.



Projection module with warning sign
Article number: 2XA 996 200-101



Projection

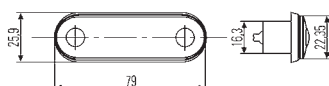
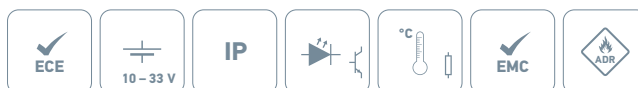
BETTER VISIBILITY WITH
VISIOTECH PROJECTION
TECHNOLOGY.



What could tomorrow's technologies look like on our roads?

Public means of transport such as buses can, for example, project symbols onto the ground by means of light projections in order to identify entrances and exits more clearly. In this video HELLA illustrates how VISIOTECH projection technology could be used in the future.

POSITION LAMPS

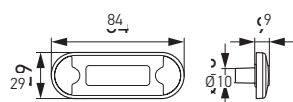
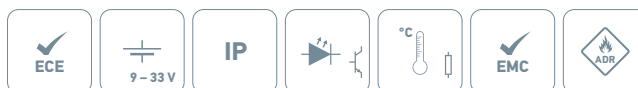


LED position lamp

For horizontal or vertical flush mounting, with 500 mm cable

| | |
|----------------------------|---------------------------|
| Light source | 1 white LED |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | approx. 40 mA |
| Protection class | IP 6K6, IP 6K7 |
| ECE test mark | Ⓔ 7597, Ⓔ 031721 |

2PF 959 590-401 10–33 V



DuraLED position lamp

Surface mounting variant, slimline design with 9 mm profile, horizontal or vertical installation, high vibration resistance, extremely low energy consumption, hermetically sealed against dirt and humidity.

| | |
|-------------------------|---------------------------|
| Light source | 2 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Protection class | IP 6K7, IP 6K9K |
| ECE test mark | Ⓔ 587 |

2PF 959 855-201 With 500 mm cable, black end cap

2PF 959 855-241 With 2,500 mm cable, black end cap

2PF 959 855-251 With 500 mm cable, white end cap

Spare parts / accessories



Spare parts / accessories

9AB 959 685-201 Decorative cover, polished stainless steel (ECE engraving)

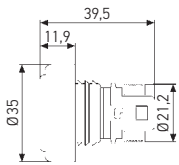
9GD 958 028-001 Contour seal

9GD 980 867-507 Flat, rectangular seal

9HD 980 858-008 Black end caps

9HD 980 858-018 White end caps

POSITION LAMPS

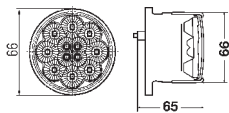


LED position lamp

For flush mounting, clear cover lens, black plastic housing with adhesive film for attaching to body, with 500 mm cable and 2-pin. AMP SUPERSEAL connector

| | |
|----------------------------|---------------|
| Light source | 2 white LEDs |
| Rated voltage | 24 V |
| Current consumption | approx. 50 mA |
| ECE test mark | Ⓜ 11371 |

2PF 340 825-057 24 V

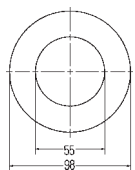


LED position lamp, Ø 66 mm

For flush mounting

| | |
|----------------------|---------|
| Light source | 12 LEDs |
| Rated voltage | 24 V |
| ECE test mark | Ⓜ 12390 |

2PF 009 001-521 24 V



LED position lamp and chromium-plated circular cover

Suitable for lamp series 008 221 and 011 172, for surface mounting

| | |
|----------------------|----------------|
| Light source | 12 LEDs |
| Rated voltage | 24 V |
| ECE test mark | Ⓜ 1696, Ⓜ 2295 |

2PF 008 405-051 Position lamp

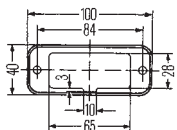
Accessories

8XU 008 405-031 Circular cover, chromium-plated

Accessories



POSITION LAMPS



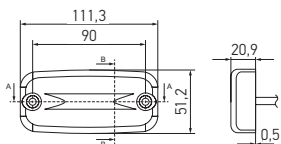
LED position lamp

For horizontal surface mounting, connection via flat connector

| | |
|-------------------------|------------|
| Light source | White LEDs |
| Rated voltage | 24 V |
| Protection class | IP 5K9K |
| ECE test mark | Ⓔ 2300 |

2PF 009 514-001 Position/degree 10-20°

2PF 009 514-011 Position/degree 20-30°



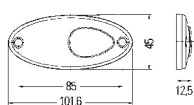
LED position lamp

For horizontal surface mounting, with screws (5.8 mm hole diameter).

| | |
|-------------------------|-----------------------|
| Light source | 2 white LEDs |
| Rated voltage | 24 V |
| Protection class | IP 6K9K |
| ECE test mark | Ⓔ 10R-04 0072, Ⓔ 5881 |

2PG 345 600-401 With 500 mm cable, open end

2PG 345 600-411 With 5,000 mm cable, open end



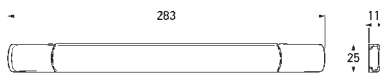
LED position lamp

For horizontal surface mounting, clear lens

| | |
|----------------------------|-----------|
| Light source | 2 LEDs |
| Rated voltage | 24 V |
| Current consumption | ca. 30 mA |
| ECE test mark | Ⓔ 0301 |

2PG 964 295-111 With reflex reflector

DIRECTION INDICATORS

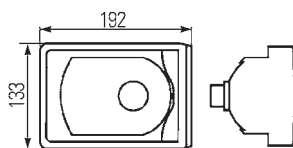


LED direction indicator "Strip Lamp"

Ultra flat design, surface mounting variant, without pulse for direction indicator failure monitor, low power consumption, lens made from highly impact-resistant Grilamid®

| | |
|-------------------------|----------------|
| Light source | 10 LEDs |
| Rated voltage | 12 or 24 V |
| Protection class | IP 5KX X4K |
| ECE test mark | Ⓜ 5869, Ⓜ 5890 |

| | |
|------------------------|------------------|
| 2BA 980 888-311 | 12 V, horizontal |
| 2BA 980 888-411 | 24 V, horizontal |



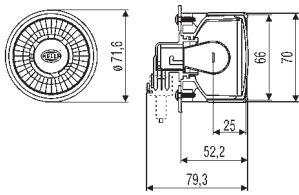
Direction indicator

For flush mounting, rear and front, left and right

| | |
|----------------------|------------|
| Rated voltage | 12 or 24 V |
| ECE test mark | Ⓜ 10151 |

| | |
|------------------------|---------------------------|
| 2BA 008 805-051 | ECE, with clear lens |
| 2BA 008 805-187 | ECE, SAE, with amber lens |

DIRECTION INDICATOR AND POSITION LAMPS



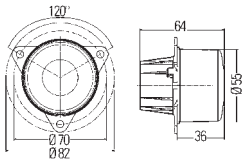
Direction indicator and position lamp, Ø 66 mm

With clear lens

Light source Direction indicator: PY21W bulb
Position lamp: P21/5W
Rated voltage 24 V
ECE test mark Position lamp: E 6546, E 7613

2BA 009 001-167* Direction indicator, amber bulb, ECE
2PF 009 001-177** Position lamp, ECE, SAE

* ECE: distance > 40 mm / < 40 mm / < 20 mm to the low beam headlamp / fog lamp
** SAE: < 2,032 mm wide



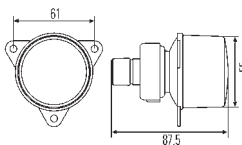
LED direction indicator and position lamp, modular, Ø 55 mm

For front flush mounting, clear lens with pattern and 500 mm connecting cable

Light source 3 LEDs
Rated voltage 24 V
ECE test mark E 3284

2BA 011 172-401* Direction indicator, without pulse
2BA 011 172-411* Direction indicator, with pulse

* ECE: distance < 40 mm to the low beam headlamp / fog lamp



Direction indicator and position lamp, Ø 55 mm

For flush mounting with clear lens

Light source Direction indicator: 24 V HD bulb, amber
Rated voltage 24 V
ECE test mark Direction indicator: E 878
Position lamp: E 879

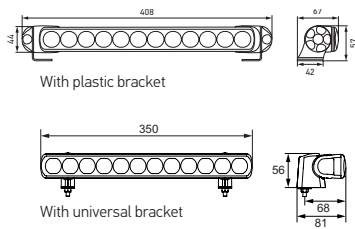
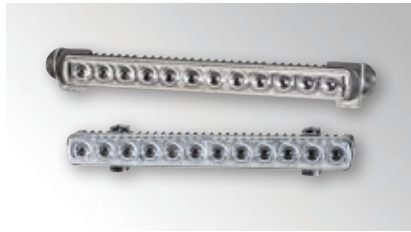
2BA 008 221-217* Direction indicator
2PF 008 221-011 Position lamp

Accessories

8KA 152 134-007 Wiring harness with grommet
9GT 137 236-007 Grommet separate

* ECE: distance < 40 mm / > 40 mm to the low beam headlamp / fog lamp

AUXILIARY HIGH BEAM HEADLAMPS



The **reference number (Ref.)** is a value that refers to high beam headlamps. Under ECE regulations, this reference number may not exceed the upper limit of 100 per vehicle. This figure includes the two values for the standard high beam (left and right headlamp) plus those of any other high beam headlamps that are mounted. The appropriate value is engraved on the lens of each approved headlamp.

Auxiliary high beam headlamp LED Light Bar 350

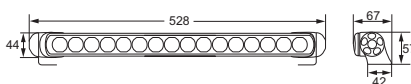
Power requirement: 25 watts, EMC R10

| | |
|-------------------------|------------------------------------|
| Light source | 12 high-power LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Protection class | IP 6K7 |
| ECE test mark | Ref. 20: ☹ 0008 Ref. 30: ☹ 0009 |

| | |
|------------------------|---------------------------------|
| 1FJ 958 040-001 | Ref. 20, with plastic bracket |
| 1FJ 958 040-051 | Ref. 30, with plastic bracket |
| 1FJ 958 040-072 | Ref. 20, with universal bracket |
| 1FJ 958 040-082 | Ref. 30, with universal bracket |

Spare parts / accessories

| | |
|------------------------|--|
| 8HG 958 053-801 | 1 plastic bracket |
| 8HG 958 128-811 | Bracket set (2 steel brackets for dual mounting), only for products with universal bracket |



Auxiliary high beam headlamp LED Light Bar 470

Power requirement: 35 watts, EMC R10

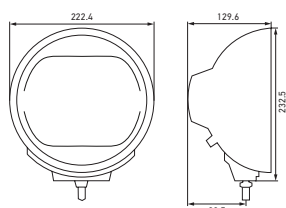
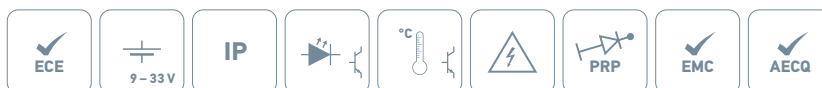
| | |
|-------------------------|--------------------------------------|
| Light source | 16 high-power LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Protection class | IP 6K7 |
| ECE test mark | Ref. 25: ☹ 0012 Ref. 37,5: ☹ 0013 |

| | |
|------------------------|-----------------------------------|
| 1FJ 958 130-111 | Ref. 25, with universal bracket |
| 1FJ 958 130-011 | Ref. 37,5, with universal bracket |

Spare parts / accessories

| | |
|------------------------|---|
| 8HG 958 139-841 | Bracket set (2 universal brackets) |
| 8HG 958 139-071 | Bracket (1 universal bracket without steel bracket, also for customised brackets) |
| 8HG 958 128-811 | Bracket set (2 steel brackets for dual mounting) |

AUXILIARY HIGH BEAM HEADLAMPS



Luminator LED

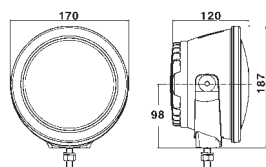
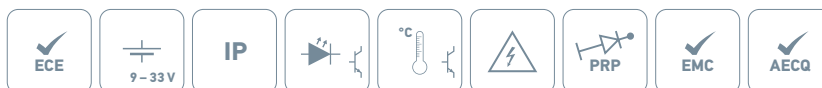
High beam headlamp with position light with distinctive night design, with connecting cable and fastening material; vibration-resistant under extreme conditions

| | |
|-------------------------|---|
| Rated voltage | Multi voltage (12 / 24 V) |
| Protection class | IP X9K, IP 6K7 |
| ECE test mark | High beam: ECE R112 Position light: ECE R7 |

| | |
|------------------------|-------------------|
| 1F8 016 560-001 | Ref. 25, Metal |
| 1F8 016 560-021 | Ref. 25, Chromium |

Spare part

| | |
|------------------------|---|
| 1F8 241 400-011 | Headlamp insert (Ref. 25) with LED position light |
|------------------------|---|



Luminator Compact LED

High beam headlamp, ECE Ref. 45

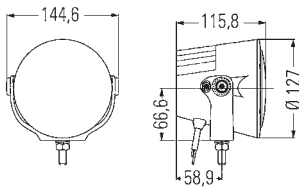
| | |
|-------------------------|---|
| Rated voltage | Multi voltage (12 / 24 V) |
| Protection class | IP 5K4K, IP X9K Heavy Duty Version (-031): IP 67, IP X9K |
| ECE test mark | Ⓔ 3738 |

| | |
|------------------------|---|
| 1F3 011 815-001 | With chrome design ring |
| 1F3 011 815-011 | With black design ring |
| 1F3 011 815-031 | With black design ring (Heavy Duty with hose ventilation) |

Spare parts / accessories

| | |
|------------------------|---|
| 9AG 195 614-001 | Cover lens with chrome design ring |
| 9AG 195 614-011 | Cover lens with matt black design ring |
| 8XS 199 170-011 | Protective cap, not for use on public roads |

AUXILIARY HIGH BEAM HEADLAMPS



Luminator X LED

High beam headlamps

| | |
|-------------------------|--------------------------------------|
| Rated voltage | Multi voltage (12 / 24 V) |
| Protection class | IP 5K4K, IP X9K |
| ECE test mark | Ref. 37,5: E 0009 Ref. 25: E 0477 |

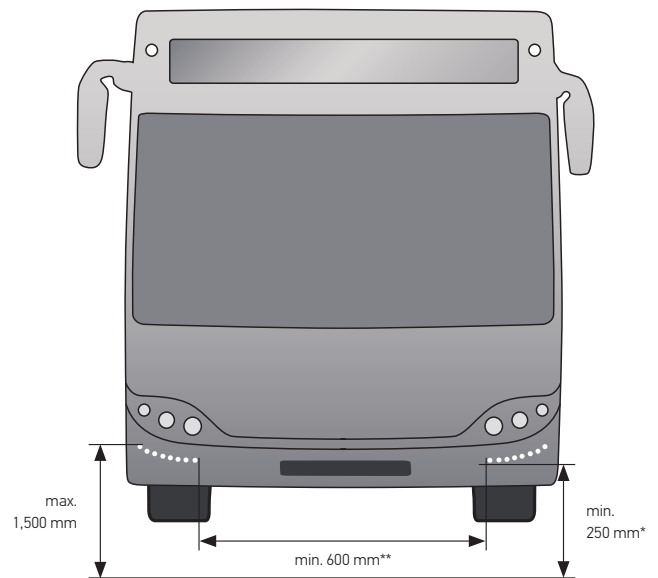
| | |
|------------------------|------------------------------------|
| 1F0 012 206-001 | Ref. 37.5, with chrome design ring |
| 1F0 012 206-011 | Ref. 37.5, with black design ring |
| 1F0 012 206-112 | Ref. 25, with black design ring |

Spare parts / accessories

| | |
|------------------------|----------------------|
| 9ES 199 813-001 | Cover lens with seal |
| 9AG 199 812-011 | Black design ring |



DAYTIME RUNNING LAMPS LEGAL REGULATIONS



min. = minimum distance
max. = maximum distance

The daytime running light provides a significant safety advantage for you in road traffic and prevents ca. 58% of accidents, which would result in serious injuries – for it is indeed far easier to recognise than a normal low beam. Thanks to the daytime running light, your own visibility is considerably increased as your vehicle can be recognised much sooner, a situation which provides a few more seconds of vital response time. It also reduces fuel consumption quite substantially as compared to driving with the low beam switched on.

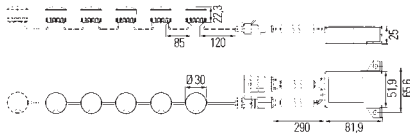
Required by law:

The law has recognised the advantages of daytime running lights: since 2012, daytime running lights have been obligatory for all commercial vehicles newly licenced to use the roads in EU countries. Various surface mounting variants are permitted. However, the distances and beam angles to be observed are specified.

- * When used as a position light, the minimum attachment height must be 350 mm and the maximum distance from the outside edge must be 400 mm.
- ** For vehicles with a width of < 1,300 mm, the spacing distance must be at least 400 mm.
- When using the daytime running light as a position lamp, according to ECE R48 the standard position light has to be permanently deactivated.

For more information on legal stipulations and mounting regulations, consult the internet or a qualified vehicle workshop. See the relevant installation instructions for more detailed information.

DAYTIME RUNNING LAMPS



LED daytime running lamp set LEDayFlex

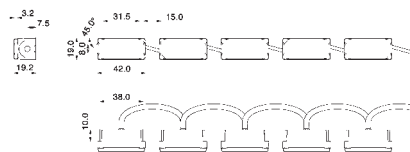
Set consists of two pre-cabled module chains with 5-8 round light modules and two electronics boxes to control the daytime running lamps; available with or without a position light; the system is connected to the vehicle electrical system via a 3-pin AMP SUPERSEAL connector.

| | |
|-------------------------|-------------------------------------|
| Rated voltage | Multi voltage (12 / 24 V) |
| Protection class | IP 6K7, IP 6K9K |
| ECE test mark | Modules: 5852 Control unit: 1152 |

| | |
|------------------------|--|
| 2PT 010 458-701 | 5 LED light modules |
| 2PT 010 458-711 | 5 LED light modules, with position light |
| 2PT 010 458-721 | 6 LED light modules |
| 2PT 010 458-731 | 6 LED light modules, with position light |
| 2PT 010 458-741 | 7 LED light modules |
| 2PT 010 458-751 | 7 LED light modules, with position light |
| 2PT 010 458-761 | 8 LED light modules |
| 2PT 010 458-771 | 8 LED light modules, with position light |

Accessories

| | |
|------------------------|---|
| 5DS 010 668-701 | 12 / 24 V, control unit for daytime running lamp, with position light |
| 5DS 010 668-711 | 12 / 24 V, control unit for position light |
| 8KA 165 959-001 | Wiring harness (not included in delivery) |



LED daytime running lamp set LEDayFlex II

Since 2012, LEDayFlex II has supplemented the system of the flexibly interconnected module chains; the two square LED daytime running lamp chains with 5 or 6 pre-cabled light modules create further design possibilities; includes bracket for screw attachment, positioned above.

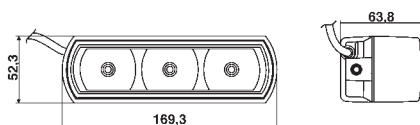
| | |
|-------------------------|-----------------|
| Rated voltage | 24 V |
| Protection class | IP 6K7, IP 6K9K |
| ECE test mark | 5864 |

| | |
|------------------------|---------------------|
| 2PT 980 789-901 | 5 LED light modules |
| 2PT 980 789-911 | 6 LED light modules |

Accessories

| | |
|------------------------|---|
| | Bracket for screw attachment |
| 8HG 980 797-801 | Above, for 5-segment module chain (10 pieces) |
| 8HG 980 797-811 | Above, for 6-segment module chain (12 pieces) |
| 8HG 980 793-801 | Rear, for 5-segment module chain (10 pieces) |
| 8HG 980 793-811 | Rear, for 6-segment module chain (12 pieces) |
| 8HG 980 795-801 | Front, for 5-segment module chain (10 pieces) |
| 8HG 980 795-811 | Front, for 6-segment module chain (12 pieces) |

DAYTIME RUNNING LAMPS



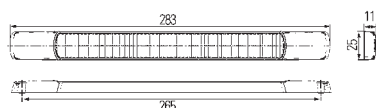
LED daytime running lamp set

LED daytime running lamp set with silver-grey aluminium housing and integrated relays for upright and pendant mounting in or on the front apron; set contents: two lamps, professional wiring harness with AMP SUPERSEAL connector

| | |
|-------------------------|---------------------------|
| Light source | 3 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Protection class | IP 6K7, IP 6K9K |
| ECE test mark | Ⓔ 2344 |

2PT 009 496-801 Daytime running lamps, set*

* Consisting of 2 x 009 496-01; 2 x bracket 165 547-01, 2 x accessories group 168 974-00 and 1 x cable group 165 959-00



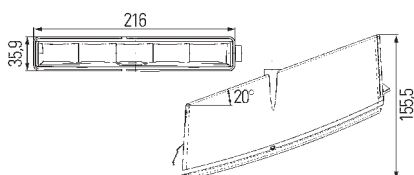
LED daytime running lamp set LEDayLine "Strip Lamp"

Lamp for surface mounting, lens made from highly impact-resistant Grilamid®, horizontal mounting, two fastening screws, one at each end of the lamp, cover caps for concealing the fixing points, with 2.5 m sheathed connecting cable, power consumption 3 W.

| | |
|----------------------|--------------------|
| Light source | 10 high-power LEDs |
| Rated voltage | 12 or 24 V |
| ECE test mark | Ⓔ 5869 |

2PT 980 880-811 12 V, daytime running lamps, set

2PT 980 880-861 24 V, daytime running lamps, set



LED daytime running lamp set LEDayLine, with position light

2 lamps with integrated relay for fully automatic switch-on, including professional wiring harness and fastening material

| | |
|-------------------------|-----------------|
| Light source | 5 LEDs |
| Rated voltage | 12 or 24 V |
| Protection class | IP 6K7, IP 6K9K |
| ECE test mark | Ⓔ 2578 |

2PT 010 043-801 Surface mounting set, 12 V

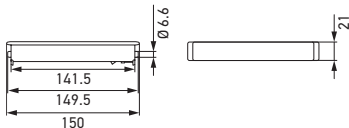
2PT 010 043-011 12 V, left

2PT 010 043-021 12 V, right

2PT 010 043-031 24 V, left

2PT 010 043-041 24 V, right

DAYTIME RUNNING LAMPS

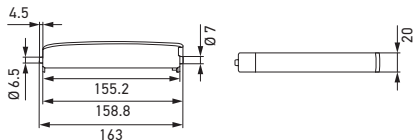


LEDayLine set Zero

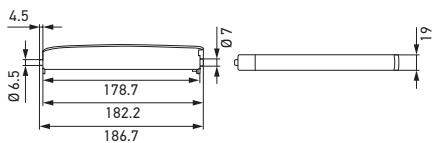
For horizontal flush mounting, suitable for vehicles without angle, power consumption 2 W, high vibration resistance, set includes bracket and fastening accessories

| | |
|-------------------------|-------------------|
| Light source | 8 high-power LEDs |
| Rated voltage | 12 or 24 V |
| Protection class | IP 6K7, IP 6K9K |
| ECE test mark | Ⓜ 5875 |

| | |
|------------------------|---------------------------------|
| 2PT 980 970-821 | 12 V, daytime running lamp, set |
| 2PT 980 970-871 | 24 V, daytime running lamp, set |



For vehicles with 15° angle



For vehicles with 30° angle

LEDayLine with position light

Suitable for vehicles with a 15° or 30° angle at the installation location, for horizontal flush mounting, power consumption 2 W

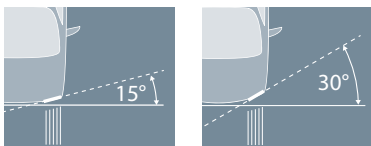
| | |
|-------------------------|--|
| Light source | 8 LEDs |
| Rated voltage | 12 or 24 V |
| Protection class | IP 6K7, IP 6K9K |
| ECE test mark | Daytime running lamp for vehicles with 15° angle: Ⓜ 5863 Daytime running lamp for vehicles with 30° angle: Ⓜ 5862 |

| | |
|------------------------|-----------------------------------|
| 2PT 980 860-001 | 12 V, for vehicles with 15° angle |
| 2PT 980 860-501 | 24 V, for vehicles with 15° angle |
| 2PT 980 850-001 | 12 V, for vehicles with 30° angle |

Accessories

| | |
|------------------------|--|
| 8HG 980 864-101 | Brackets (set right/left) |
| 8KA 959 186-801 | Control unit*, 12 V, with connecting cable |
| 8KA 959 186-811 | Control unit*, 24 V, with connecting cable |

* Lamps cannot be switched on separately (right/left) on the vehicle.



Top view



HEADLAMPS

HELLA gives your vehicle the perfect look.

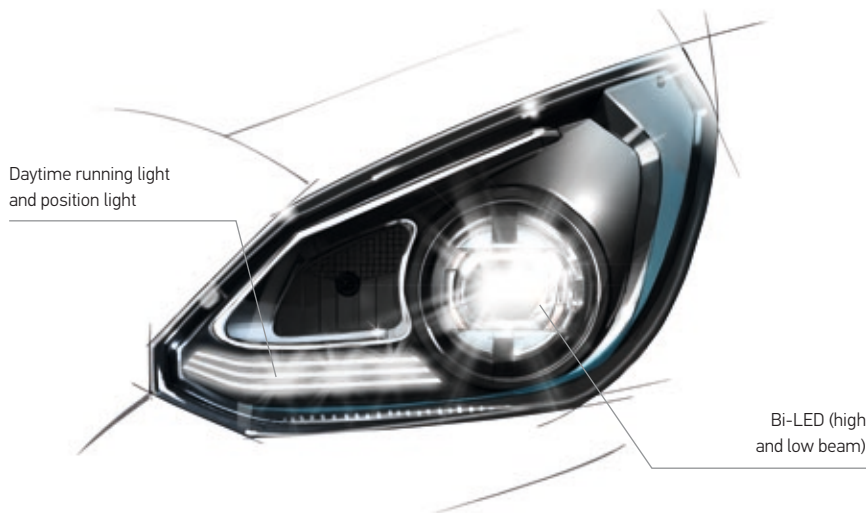
Reliable quality, the very highest comfort, first-class features and maximum safety – at HELLA all this is standard. We are the leading supplier of vehicle-specific lighting in Germany and in many parts of Europe. We use our innovation drive to continuously expand our product range. Functional safety, a perfect fit and product durability are all guaranteed through the 'HELLA Original Parts Quality'. Our wide product range and all the various modular systems serve to emphasise a unique brand character and enable customised trendsetting into the bargain. You, too, can benefit from HELLA's expertise in large-scale production and from the resulting ease with which this can be implemented in your vehicles.

EVOBUS HEADLAMPS A SYMMETRY OF DESIGN AND QUALITY

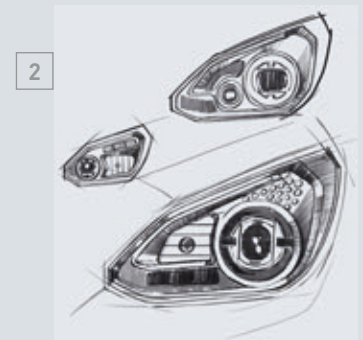
Looks can be forgiving and beguiling – or they just give you that reassuring sense of safety. To this end HELLA has created a headlamp that combines timeless design and sophisticated, superior quality. Defined lines and soft shapes complement each other perfectly and characterise the design. And, thanks to pioneering technology, when lighting the way with HELLA, you travel as a shining example of how it should be.

TECHNOLOGICAL HIGHLIGHTS

The technology behind the design puts the Evobus headlamp in a particularly good light! An innovative bi-LED module ensures ideal light output – but nevertheless in an extravagantly stylish shape.




FROM THE FIRST CONCEPT TO THE FINAL DESIGN



ARE YOU INTERESTED IN A CUSTOMISED LIGHTING SOLUTION THAT IS PERFECTLY SUITED TO YOUR VEHICLE?

THEN WE ARE THE PERFECT PARTNER FOR YOU.
COME AND TALK TO US.

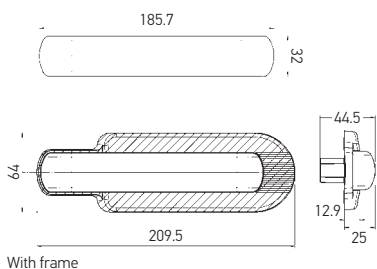
A close-up, low-angle photograph of a car's side marker lamp. The lamp is illuminated, casting a warm, golden glow. It features a prominent, fine-mesh grille that covers the lens. The background is dark, making the glowing lamp stand out. The lighting creates strong highlights and shadows, emphasizing the texture of the mesh and the metallic components of the lamp housing.

SIDE LIGHTING

Our wide product range of marker lamps ensures that vehicles are optimally visible for all road users even in the dark and in difficult visibility conditions - a real bonus for safety whatever the situation.

With these lamps, too, we only accept the highest quality standards and exclusively use efficient technologies. HELLA marker lamps stand out from the crowd in sharp relief because of their magnificent workmanship and stability – features reflected in their long lifetime. So do not leave safety to chance. Be smart and place your trust in HELLA marker lamps.

AUXILIARY DIRECTION INDICATORS



With frame

LED auxiliary direction indicator, CAT. 6

Auxiliary direction indicator in brilliant finish, for horizontal surface mounting, clear lens, can be used with or without frame

| | |
|----------------------------|--------------------------------------|
| Light source | 5 amber LEDs |
| Rated voltage | 12 or 24 V |
| Current consumption | ca. 290 mA (12 V), ca. 150 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Ⓜ 7506 |

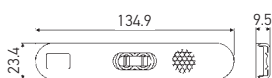
With black frame, direct screw connection

| | |
|------------------------|--------------------------------|
| 2BM 011 788-011 | 12 V, with 2-pin AMP SUPERSEAL |
| 2BM 011 788-031 | 12 V, with 500 mm cable |
| 2BM 011 788-001 | 24 V, with 2-pin AMP SUPERSEAL |
| 2BM 011 788-021 | 24 V, with 500 mm cable |

Self-adhesive

| | |
|------------------------|--------------------------------|
| 2BM 011 788-051 | 12 V, with 2-pin AMP SUPERSEAL |
| 2BM 011 788-041 | 24 V, with 2-pin AMP SUPERSEAL |
| 2BM 011 788-061 | 24 V, with 500 mm cable |

SIDE MARKER LAMPS



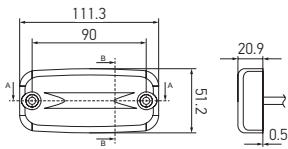
LED side marker lamp

For surface mounting, lens with reflex reflector, amber, self-adhesive

| | |
|-------------------------|--------------|
| Light source | 2 amber LEDs |
| Rated voltage | 12 or 24 V |
| Protection class | IP 5K9K |
| ECE test mark | Ⓜ 10236 |

| | |
|------------------------|---|
| 2PS 009 226-007 | 12 V, horizontal, with 250 mm cable |
| 2PS 009 226-037 | 24 V, horizontal, with 250 mm cable |
| 2PS 009 226-077 | 12 V, vertical, with 250 mm cable |
| 2PS 009 226-087 | 24 V, vertical, with 250 mm cable |
| 2PS 009 226-067 | 12 V, horizontal, with 6.3 mm contacts and mating connector grommet |

SIDE MARKER LAMPS

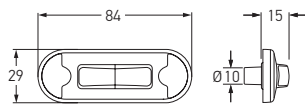


LED side marker lamp

Lens with reflex reflector, amber, base plate black, with 500 mm cable

| | |
|----------------------------|------------------------------------|
| Light source | 2 LEDs |
| Rated voltage | 12 or 24 V |
| Current consumption | ca. 40 mA (12 V), ca. 50 mA (24 V) |
| Protection class | IP 5KX, IP X4K |
| ECE test mark | ⊕ 5881 |

| | |
|------------------------|------|
| 2PS 345 600-001 | 12 V |
| 2PS 345 600-011 | 24 V |



DuraLED side marker lamp

Surface mounting variant, slimline design with 9 mm profile, horizontal installation, high vibration resistance, extremely low energy consumption, hermetically sealed against dirt and humidity.

| | |
|-------------------------|---------------------------|
| Light source | 2 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Protection class | IP 6K7, IP 6K9K |
| ECE test mark | ⊕ 0007 |

| | |
|------------------------|---------------------|
| 2PS 980 868-201 | With 500 mm cable |
| 2PS 980 868-211 | With 2,500 mm cable |

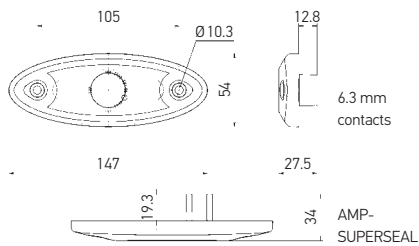
Spare parts / accessories



Spare parts / accessories

| | |
|------------------------|--|
| 9AB 959 685-201 | Decorative cover, polished stainless steel (ECE engraving) |
| 9GD 958 028-001 | Contour seal |
| 9GD 980 867-507 | Flat, rectangular seal |
| 9HD 980 858-008 | Black end caps |
| 9HD 980 858-018 | White end caps |

SIDE MARKER LAMPS



LED side marker lamp OneLED

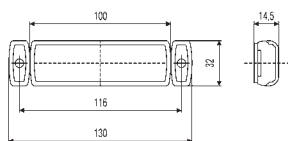
High level of safety thanks to maximum illuminating surface, modern night design, for horizontal and vertical mounting, lens with reflex reflector, amber

| | |
|-------------------------|----------------|
| Light source | 1 LED |
| Rated voltage | 24 V |
| Protection class | IP 5KX, IP X9K |
| ECE test mark | Ⓜ 5853 |

2PS 344 690-627 24 V, housing black, with AMP-SUPERSEAL

Accessories

9GD 343 697-007 Rubber seal



LED side marker lamp with reflex reflector

For horizontal or vertical surface mounting, lens amber, amber light, black housing, with cellular rubber seal to seal lamp and 2 holes for B4.2 fastening screws or with a bracket (to be ordered separately), ADR/GGVS-tested; with horizontal surface mounting the optical field must point to outside of vehicle; also suitable for flash function

| | |
|-------------------------|--|
| Light source | 1 LED |
| Rated voltage | 24 V |
| Protection class | IP 6K9K |
| ECE test mark | Ⓜ 021395, Ⓜ 001396, Ⓜ 021397, Ⓜ 001397 |

2PS 008 645-001 Horizontal, with 1,500 mm cable

2PS 008 645-991 Vertical, with 1,500 mm cable

2PS 008 645-311 Horizontal, with 2-pin EasyConn connector housing and 1,300 mm cable

2PS 008 645-621 Horizontal, with Quick Link cabling and 1,300 mm cable


2PS 008 645-891 Horizontal, with AMP SUPERSEAL plug connection and 450 mm cable

Accessories

8HG 160 409-002 Bracket

Accessories



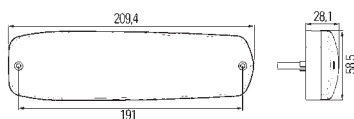
A close-up, artistic photograph of a car's rear light assembly. The image is dominated by a vibrant red glow emanating from the light sources. The light housing is made of clear, faceted glass, and the internal components, including a grid of LEDs and various reflectors, are visible. The background is dark, making the red light stand out prominently.

REAR LIGHTING

LED lighting has also resulted in a quantum leap in the area of rear lighting. The development of ever-new, innovative lighting concepts has perceptibly improved vehicle safety and taken it to the next level - and from the very word go HELLA has been making a significant contribution to all this progress.

The combination of light emitting diodes and advanced optical systems also opens up attractive styling possibilities allowing the creation of an unmistakable look typical of any one brand.

UNIVERSAL REAR COMBINATION LAMPS

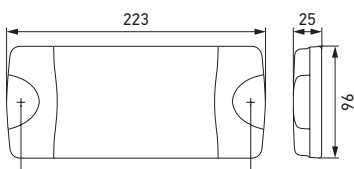


LeanLED

Tail-stop-direction indicator lamp for horizontal or vertical surface mounting; clear lens, with pulse for direction indicator failure control

| | |
|----------------------------|---|
| Light source | 24 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | Tail light: ca. 20 mA (24 V) Stop light: ca. 40 mA (24 V) Direction indicator light: ca. 60 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Ⓔ 035109, Ⓔ 12393 |

| | |
|------------------------|---|
| 2SD 343 910-001 | Silver, with 500 mm cable and open ends |
| 2SD 343 910-017 | Silver, with 200 mm cable and 4-pin AMP SUPERSEAL plug connection |
| 2SD 343 910-027 | Silver, with integrated 4-pin AMP connector 282 106-1 |
| 2SD 343 910-057 | Silver, with 100 mm cable and 4-pin DEUTSCH connector |
| 2SD 343 910-041 | Red, with 500 mm cable and open ends |



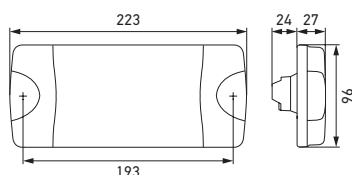
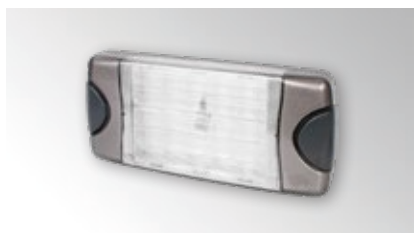
DuraLED Combi

Tail-stop-direction indicator lamp for horizontal or vertical surface mounting, with clear lens, ends red

| | |
|----------------------------|------------------|
| Light source | 30 LEDs |
| Rated voltage | 12 or 24 V |
| Current consumption | ca. 40 mA (24 V) |
| Protection class | IP 6K7, IP 6K9K |
| ECE test mark | Ⓔ 5883 |

| | |
|------------------------|--|
| 2SD 980 613-211 | With 2,500 mm cable with stripped ends |
|------------------------|--|

UNIVERSAL REAR COMBINATION LAMPS

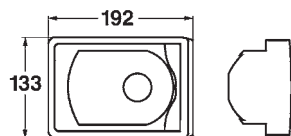


DuraLED

Tail-stop-direction indicator lamp for horizontal or vertical surface mounting, with clear lens, grey lacquer finish

| | |
|----------------------|-----------------------|
| Light source | 30 LEDs |
| Rated voltage | 12 or 24 V |
| ECE test mark | ⊕ 5870, ⊕ 10R-04 0958 |

2SK 980 615-001 With DEUTSCH connector



Rear combination lamp

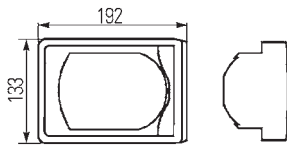
For horizontal flush mounting

| | |
|----------------------|------------|
| Rated voltage | 12 or 24 V |
| ECE test mark | ⊕ 10151 |

| | Lens red |
|------------------------|--|
| 2SA 008 805-007 | Tail lamp* |
| 2DA 008 805-017 | Stop lamp** |
| 2SB 008 805-027 | Tail-stop lamp for dual surface mounting** |
| 2NE 008 805-037 | Rear fog lamp |
| | Lens clear |
| 2ZR 008 805-047 | Reverse lamp* |
| 2BA 008 805-057 | Direction indicator for dual mounting |

* With SAE type approval for vehicles < 2,032 mm and > 2,031 mm wide
 ** With SAE type approval for vehicles > 2,031 mm wide

UNIVERSAL REAR COMBINATION LAMPS

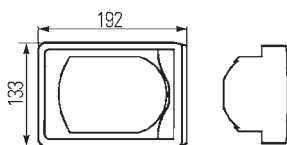


LED tail-stop lamp

For horizontal flush mounting, with red lens and cable with open ends

| | |
|----------------------------|-------------------|
| Light source | LED |
| Rated voltage | 24 V |
| Current consumption | ca. 130 mA (24 V) |
| ECE test mark | Ⓔ 10880 |

2SB 345 982-007 24 V



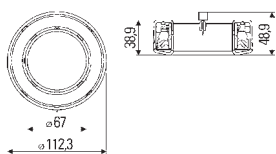
LED direction indicator

For horizontal flush mounting, with clear lens and cable with open ends

| | |
|----------------------------|------------------|
| Light source | LED |
| Rated voltage | 24 V |
| Current consumption | ca. 80 mA (24 V) |
| ECE test mark | Ⓔ 10880 |

2BA 345 982-047 24 V

UNIVERSAL REAR COMBINATION LAMPS
112 MM RING MODULES



Accessories



LED ring modules Edge, Ø 112 mm

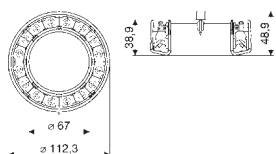
Tail-stop lamp in innovative LED EdgeLight technology, ideal for combination with lamp series 009 001 (Ø 66 mm), optionally available with clear or red cover lens

Rated voltage 12 or 24 V
ECE test mark 7R-025889

- 2SB 009 362-301 12 V, lens red
- 2SB 009 362-321 24 V, lens red
- 2SB 009 362-311 12 V, lens clear
- 2SB 009 362-331 24 V, lens clear

Accessories

- 9HB 163 085-012 Design rings, Ø 118 mm, perfect high sheen finish with one "click" High gloss chromium-plated
- 9HB 163 085-001 Silver



Accessories



LED ring modules, Ø 112 mm

Tail-stop lamp, ideal for combination with lamp series 009 001 (Ø 66 mm)

Light source 16 LEDs
Rated voltage 24 V
ECE test mark Tail-stop lamp: 7748
Reflex reflector: 3302

- 2SB 009 362-011 Tail-stop lamp, lens red
- 8RA 009 362-001 Reflex reflector, lens red (not shown)

Accessories

- 9XD 161 119-017 Adapter ring, for mounting reflex reflector, black
- 9HB 163 085-012 Design rings, Ø 118 mm, perfect high sheen finish with one "click" High gloss chromium-plated
- 9HB 163 085-001 Silver

UNIVERSAL REAR COMBINATION LAMPS
66 MM MODULES



LED tail-stop lamp and direction indicator, Ø 66 mm

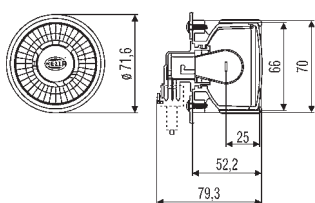
With clear lens, AMP connector

| | |
|----------------------|---------|
| Light source | 12 LEDs |
| Rated voltage | 24 V |
| ECE test mark | Ⓔ 12390 |

| | |
|------------------------|------------------------------------|
| 2SB 009 001-501 | Tail-stop lamp |
| 2BA 009 001-511 | Direction indicator, without pulse |
| 2BA 009 001-531 | Direction indicator, with pulse |

Accessories

| | |
|------------------------|---|
| 8JD 156 150-807 | Mating connector, 2-pin |
| 8JD 162 581-802 | Mating connector, 3-pin |
| 9XD 161 119-017 | Adapter ring, for mounting LED lamps, black |



Rear combination lamps Ø 66 mm

With mounted bulbs, including design ring

| | |
|----------------------|---|
| Rated voltage | 24 V |
| ECE test mark | Ⓔ 3917, Ⓔ 6546, Ⓔ 7613, Ⓔ 23255, reflex reflector: Ⓔ 3189 |

| | |
|--------------------------|--|
| 2DA 009 001-147* | Stop lamp, lens red |
| 2SB 009 001-157* | Tail-stop lamp, lens red |
| 2NE 009 001-127** | Rear fog lamp, lens red |
| 2SA 009 001-137* | Tail lamp, lens red |
| 2BA 009 001-107* | Direction indicator, lens grey |
| 2ZR 009 001-117** | Reverse lamp, lens grey |
| 2BA 009 001-191* | Direction indicator, with Silver Vision bulb |

Accessories

Accessories

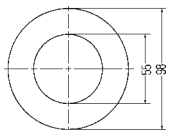
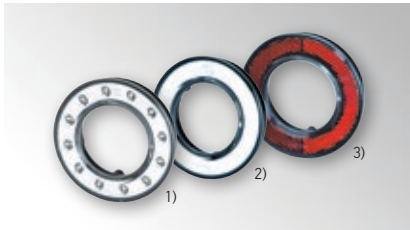


| | |
|------------------------|--|
| 8JD 156 150-807 | Mating connector, 2-pin |
| 8JD 162 581-802 | Mating connector, 3-pin |
| 9XD 161 119-007 | Adapter ring screw connection, frontal, direct mounting and also ring module mounting, black |
| | Design rings, Ø 66 mm, perfect high sheen finish with one "click" |
| 9HB 161 122-012 | High gloss chromium-plated |
| 9HB 161 122-007 | Silver |
| 9HB 164 168-002 | Premium silver |
| 8HG 162 530-002 | Locking ring, comet silver |

* With ECE approval for double lamps

** With SAE type approval for vehicles < 2,032 mm and > 2,031 mm wide

UNIVERSAL REAR COMBINATION LAMPS



LED ring modules, Ø 98 mm

For flush mounting, ideal for combination with lamp series 011 172 (Ø 55 mm), optionally available with clear or red cover lens.

| | |
|----------------------------|---|
| Light source | Tail-clearance lamp: 12 red LEDs Tail-stop lamp: 12 red LEDs Position lamp: 12 white LEDs |
| Rated voltage | 24 V |
| Current consumption | Tail-clearance lamp: ca. 80 mA Tail-stop lamp: ca. 90 mA Position lamp: ca. 80 mA |
| ECE test mark | Ⓔ 1196, Ⓔ 1197, Ⓔ 1892 Position lamp: Ⓔ 1696 |

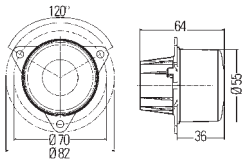
| | |
|-------------------------------------|---|
| 2SA 008 405-011¹⁾ | Tail-clearance lamp, lens clear |
| 2SB 008 405-091¹⁾ | Tail-stop lamp, lens clear, with passive thermal management |
| 2PF 008 405-051¹⁾ | Position lamp |
| 8XU 008 405-031²⁾ | Chromium-plated cover |
| 8RA 008 405-001³⁾ | Reflex reflector, red |



Examples of combination possibilities, rear lighting

| | |
|--|---|
| 2BA 008 221-041¹⁾ 2SA 008 405-011¹⁾ | Tail and direction indicator lamp |
| 2XA 008 221-021²⁾ 8RA 008 405-001²⁾ | Stop and reverse lamp |
| 9XB 161 749-007 | Heat conducting shield (required at ambient temperature > 50°C) |

UNIVERSAL REAR COMBINATION LAMPS
55 MM MODULES

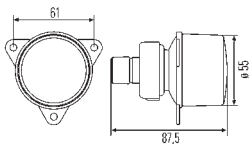


Modular LED lamps, Ø 55 mm

For flush and surface mounting, clear lens with pattern, with 500 mm cable and open ends, 1:1 replacement with bulb version 008 221

| | |
|----------------------------|---|
| Light source | 6 LEDs |
| Rated voltage | 24 V |
| Current consumption | Direction indicator and stop lamp: ca. 30 mA (24 V) Tail lamp: ca. 10 mA (24 V) Rear fog and reverse lamp: ca. 80 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Ⓔ 3283, Ⓔ 3286, Ⓔ 3285, Ⓔ 10R-36 317 |

| | |
|------------------------|--|
| 2BA 011 172-421 | Direction indicator |
| 2BA 011 172-431 | Direction indicator with failure control |
| 2SA 011 172-441 | Tail lamp |
| 2DA 011 172-461 | Stop lamp |
| 2NE 011 172-481 | Rear fog lamp |
| 2ZR 011 172-501 | Reverse lamp |



Tail-stop lamp and rear fog lamp Ø 55 mm

For flush mounting, with red lens

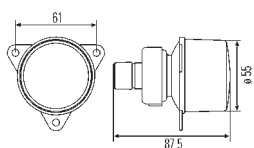
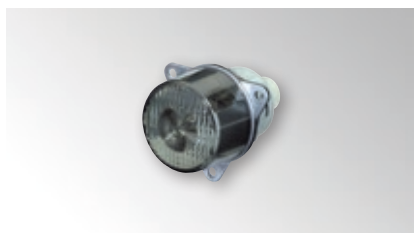
| | |
|----------------------|--|
| Rated voltage | 12 or 24 V |
| ECE test mark | Tail lamp / Stop lamp: Ⓔ 1048, Ⓔ 1049 Rear fog lamp: Ⓔ 1050 |

| | |
|------------------------|-------------------------------------|
| 2XA 008 221-021 | Tail lamp or stop lamp without bulb |
| 2NE 008 221-031 | Rear fog lamp without bulb |

Accessories

| | |
|------------------------|-----------------------------|
| 8KA 152 134-007 | Wiring harness with grommet |
| 9GT 137 236-007 | Grommet separate |

UNIVERSAL REAR COMBINATION LAMPS 55 MM MODULES



Direction indicator and reverse lamp Ø 55 mm

For flush mounting with grey lens

Rated voltage 12 or 24 V
ECE test mark Direction indicator: Ⓧ 1051
 Reverse lamp: Ⓧ 1052

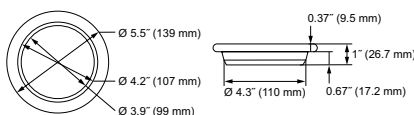
2BA 008 221-041 Direction indicator
ZZR 008 221-051* Reverse lamp

Accessories

8KA 152 134-007 Wiring harness with grommet
9GT 137 236-007 Grommet separate

* With SAE type approval for vehicles < 2,032 mm and > 2,031 mm wide

UNIVERSAL REAR COMBINATION LAMPS



LED rear combination lamps 4", Ø 140 mm

With 300 mm cable and open cable ends, mounting with rubber seal

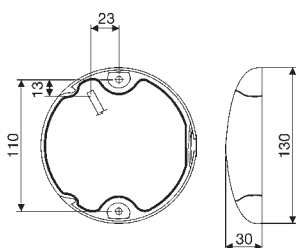
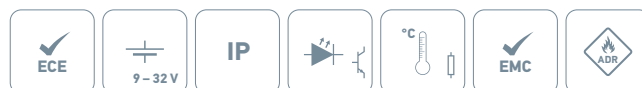
Light source 12 LEDs, except rear fog lamp: 16 LEDs
Rated voltage Multi voltage (12 / 24 V)
Protection class IP 67, IP 69
ECE test mark Ⓧ 11734, Ⓧ 16240, Ⓧ 16341, Ⓧ 11874

2SB 328 870-047 Tail-stop lamp, ECE, SAE, with red lens
2BA 328 870-057 Direction indicator, ECE, SAE, with amber lens
ZZR 328 870-067 Reverse lamp, ECE, SAE, with clear lens
2NE 328 870-077 Rear fog lamp, ECE, with red lens

Accessories

9AR 328 882-007 Chrome ring

UNIVERSAL REAR COMBINATION LAMPS

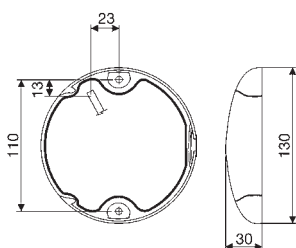
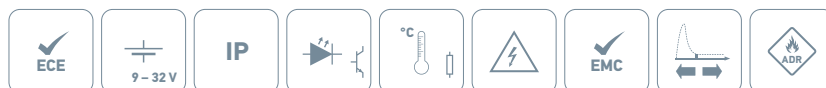


EuroLED rear combination lamps

For surface mounting, cast in one piece with black base plate, electrical connection with a 2,500 -mm-long cable

| | |
|----------------------------|--|
| Light source | 1 Power-LED |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | Tail-stop lamp: ca. 100 mA (24 V) Rear fog lamp: ca. 170 mA (24 V) Reverse lamp: ca. 100 mA (24 V) |
| Protection class | IP 6K6, IP 6K7 |
| ECE test mark | Ⓔ 10208, Ⓔ 10R 2894 |

| | |
|------------------------|---------------------------|
| 2SB 959 821-601 | Tail-stop lamp, lens red |
| 2NE 959 821-201 | Rear fog lamp, lens clear |
| 2ZR 959 820-601 | Reverse lamp, lens clear |



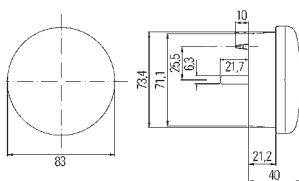
EuroLED direction indicator

For surface mounting, cast in one piece with black base plate, electrical connection with a 2,500 -mm-long cable and pulse for direction indicator failure control

| | |
|----------------------------|---------------------------|
| Light source | 1 Power-LED |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | ca. 100 mA (24 V) |
| Protection class | IP 6K7 |
| ECE test mark | Ⓔ 10208 |

| | |
|------------------------|---------------------------------|
| 2BA 959 822-601 | Direction indicator, lens amber |
|------------------------|---------------------------------|

UNIVERSAL REAR COMBINATION LAMPS

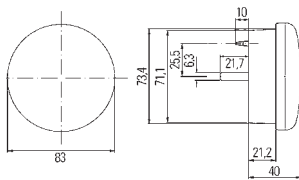


LED rear combination lamps, Ø 83 mm

For flush mounting, with 2,500 mm cable

| | |
|-------------------------|---|
| Light source | 12 LEDs, except tail-stop-direction indicator lamp: 16 LEDs |
| Rated voltage | 24 V |
| Protection class | IP 6K7, IP 6K9K |
| ECE test mark | Tail-stop lamp: ECE 12373 Tail-stop-direction indicator lamp: ECE 1538, ECE 042741 Direction indicator: ECE 12373, ECE 042741 |

| | |
|------------------------|---|
| 2SB 959 010-301 | Tail-stop lamp, with red lens |
| 2SD 959 010-401 | Tail-stop-direction indicator lamp, with red / amber lens |
| 2BA 959 011-301 | Direction indicator, with amber lens |



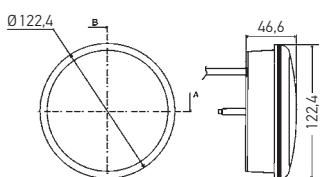
LED rear combination lamps, Ø 83 mm

With clear lens, for flush mounting, with 2,500 mm cable

| | |
|----------------------------|---|
| Light source | 24 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | Reverse lamp: ca. 330 mA (12 V), ca. 170 mA (24 V) Rear fog lamp: ca. 250 mA (12 V), ca. 130 mA (24 V) |
| ECE test mark | ECE 11391, ECE 042741 |

| | |
|------------------------|---------------|
| 2ZR 959 010-501 | Reverse lamp |
| 2NE 959 011-501 | Rear fog lamp |

UNIVERSAL REAR COMBINATION LAMPS

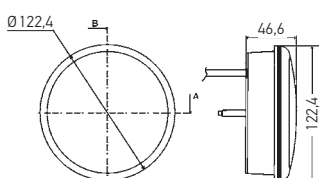
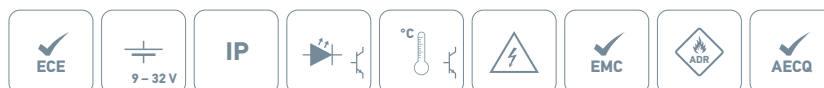


LED tail-stop-direction indicator lamp Ø 122 mm

For surface mounting, redesign of series 964 169, with 500 mm cable

| | |
|----------------------------|---|
| Light source | 24 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | Tail light: ca. 80 mA (12 V), ca. 40 mA (24 V) Stop light: ca. 170 mA (12 V), ca. 80 mA (24 V) Direction indicator light: ca. 170 mA (12 V), ca. 80 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Ⓔ 12371, Ⓔ 12658, Ⓔ 14198 |

| | |
|------------------------|-----------------------|
| 2SD 344 200-001 | With clear lens |
| 2SD 344 200-071 | With red / clear lens |

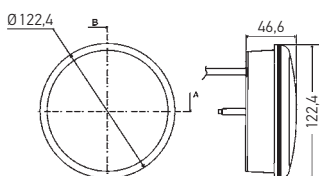


LED tail-stop lamp Ø 122 mm

For surface mounting, with 500 mm cable

| | |
|----------------------------|--|
| Light source | 24 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | Tail light: ca. 80 mA (12 V), ca. 40 mA (24 V) Stop light: ca. 250 mA (12 V), ca. 125 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Ⓔ 12658 |

| | |
|------------------------|-----------------|
| 2SB 344 200-021 | With clear lens |
| 2SB 344 200-081 | With red lens |



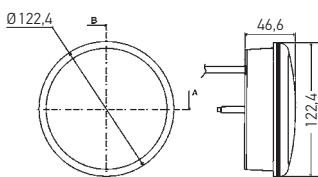
LED direction indicator Ø 122 mm

For surface mounting, with 500 mm cable

| | |
|----------------------------|--------------------------------------|
| Light source | 24 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | ca. 250 mA (12 V), ca. 125 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Ⓔ 12658 |

| | |
|------------------------|-----------------|
| 2BA 344 200-031 | With clear lens |
|------------------------|-----------------|

UNIVERSAL REAR COMBINATION LAMPS

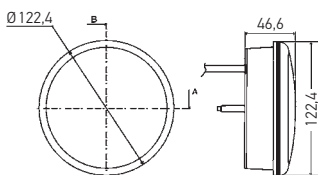


LED rear fog lamp Ø 122 mm

For surface mounting, with 500 mm cable

| | |
|----------------------------|-------------------------------------|
| Light source | 24 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | ca. 170 mA (12 V), ca. 80 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Ⓜ 14198 |

- 2NE 344 200-061** With clear lens
- 2NE 344 200-091** With red lens

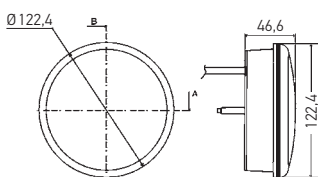


LED reverse lamp Ø 122 mm

For surface mounting, lens clear, with 500 mm cable

| | |
|----------------------------|-------------------------------------|
| Light source | 24 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | ca. 170 mA (12 V), ca. 80 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Ⓜ 14198 |

- 2ZR 344 200-051** Multi voltage



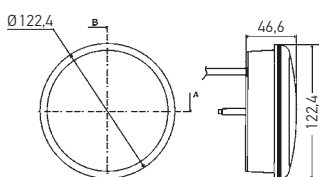
LED tail-stop lamp Ø 122 mm

For surface mounting, passive electronics, with 500 mm cable

| | |
|----------------------------|--|
| Light source | 24 LEDs |
| Rated voltage | 12 or 24 V |
| Current consumption | Stop light: ca. 300 mA (12 V), ca. 200 mA (24 V) Tail light: ca. 80 mA (24 V), ca. 40 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Ⓜ 12658 |

- 2SB 344 200-221** 12 V, lens clear
- 2SB 344 200-321** 24 V, lens clear
- 2SB 344 200-231** 12 V, lens red
- 2SB 344 200-331** 24 V, lens red

UNIVERSAL REAR COMBINATION LAMPS

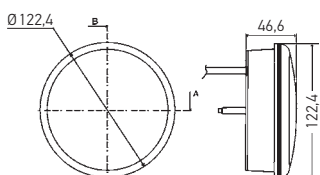


LED tail-stop-direction indicator lamp Ø 122 mm

For surface mounting, passive electronics, with 500 mm cable

| | |
|----------------------------|---|
| Light source | 24 LEDs |
| Rated voltage | 12 or 24 V |
| Current consumption | Tail light: ca. 80 mA (12 V), ca. 40 mA (24 V) Stop light: ca. 170 mA (12 V), ca. 80 mA (24 V) Direction indicator light: ca. 170 mA (12 V), ca. 80 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Ⓔ 12371 |

| | |
|------------------------|------------------------|
| 2SD 344 200-201 | 12 V, lens clear |
| 2SD 344 200-211 | 12 V, lens red / clear |
| 2SD 344 200-311 | 24 V, lens red / clear |
| 2SD 344 200-301 | 24 V, lens clear |

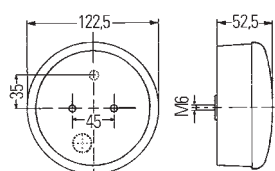
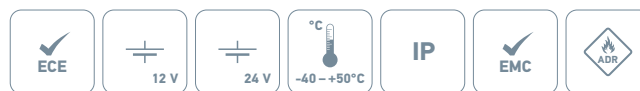


LED direction indicator Ø 122 mm

For surface mounting, lens clear, passive electronics, with 500 mm cable

| | |
|----------------------------|-------------------------------------|
| Light source | 24 LEDs |
| Rated voltage | 12 or 24 V |
| Current consumption | ca. 170 mA (12 V), ca. 80 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Ⓔ 12658 |

| | |
|------------------------|------|
| 2BA 344 200-241 | 12 V |
| 2BA 344 200-341 | 24 V |



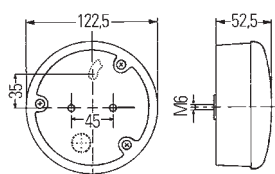
LED rear fog-reverse lamp Ø 122 mm

Combination lamp, long lifetime with low power consumption, rear fog light in red, for surface and flush mounting, lens clear, with moulded 500 mm cable

| | |
|----------------------------|---|
| Light source | 30 LEDs (9 red LEDs for rear fog light, 21 white LEDs for reversing light) |
| Rated voltage | 12 or 24 V |
| Current consumption | Reversing light: ca. 375 mA (12 V), ca. 210 mA (24 V) Rear fog light: ca. 170 mA (12 V), ca. 120 mA (24 V) |
| Protection class | IP 5K9K |
| ECE test mark | Ⓔ 5876 |

| | |
|------------------------|------|
| 2NR 344 169-441 | 12 V |
| 2NR 344 169-461 | 24 V |

UNIVERSAL REAR COMBINATION LAMPS



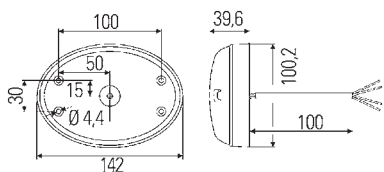
LED rear combination lamps

For surface mounting, with 500 mm cable

| | |
|----------------------------|--|
| Light source | 37 LEDs |
| Rated voltage | 24 V |
| Current consumption | Tail-stop lamp: tail light ca. 46 mA (24 V), stop light ca. 270 mA (24 V) Tail-stop-direction indicator lamp: tail light ca. 50 mA (24 V), stop light ca. 200 mA (24 V), direction indicator light ca. 150 mA (24 V) Rear fog lamp: ca. 380 mA (24 V) Reverse lamp: ca. 300 mA (24 V) Direction indicator: ca. 280 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Ⓔ 10R-05 2822 |

| | |
|-------------------------|---|
| 2SB 964 169-301 | Tail-stop lamp, lens red |
| 2SD 964 169-331* | Tail-stop-direction indicator lamp, lens clear, left |
| 2SD 964 169-421* | Tail-stop-direction indicator lamp, lens clear, right |
| 2NE 964 169-341 | Rear fog lamp, lens red |
| 2ZR 964 169-351* | Reverse lamp, lens clear, left |
| 2ZR 964 169-361* | Reverse lamp, lens clear, right |
| 2BA 964 169-311* | Direction indicator, lens amber |

* Without pulse for direction indicator failure control.



LED rear combination lamps "Oval"

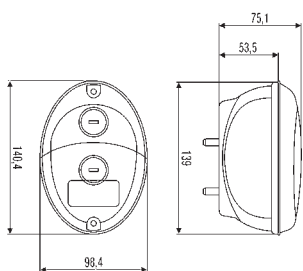
For surface mounting on the vehicle, left or right, horizontal or vertical, with 100 mm cable and open end

| | |
|----------------------------|--|
| Light source | Tail-stop lamp: 24 red LEDs, tail-stop direction indicator lamp: 12 red and 12 amber LEDs, direction indicator: 24 amber LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | Tail-stop lamp: ca. 120 mA (24 V) Tail-stop-direction indicator lamp: ca. 250 mA (24 V) Direction indicator: ca. 130 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Tail-stop lamp: Ⓔ 12381 Tail-stop-direction indicator lamp: Ⓔ 11785 Direction indicator: Ⓔ 12381 |

| | |
|-------------------------|------------------------------------|
| 2SB 343 390-091 | Tail-stop lamp |
| 2SD 343 390-011* | Tail-stop-direction indicator lamp |
| 2BA 343 390-071* | Direction indicator |

* Direction indicator failure control integrated.

UNIVERSAL REAR COMBINATION LAMPS



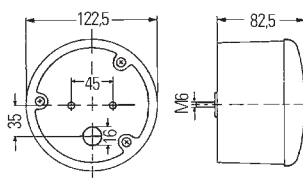
Rear combination lamps "Oval"

Suitable for horizontal and vertical flush and surface mounting, right or left, housing in black, without bulb

| | |
|----------------------|---|
| Rated voltage | 12 or 24 V |
| ECE test mark | Tail-stop lamp: E 7698 Rear fog lamp: E 3919 Direction indicator: E 6550 Reverse lamp: E 23257 |

| | |
|------------------------|---------------------------------|
| 2SB 343 130-021 | Tail-stop lamp, lens red |
| 2NE 343 130-031 | Rear fog lamp, lens red |
| 2BA 343 130-051 | Direction indicator, lens amber |
| 2ZR 343 130-041 | Reverse lamp, lens clear |

With SAE type approval for vehicles < 2,032 mm and > 2,031 mm wide



Rear combination lamps

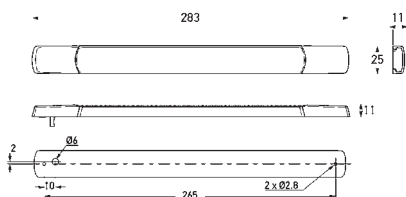
For flush and surface mounting, right or left

| | |
|----------------------|--|
| Rated voltage | 12 or 24 V |
| ECE test mark | Tail-stop lamp: E 816 Rear fog lamp: E 3809 Reverse lamp: E 2312 Direction indicator: E 653 |

| | |
|------------------------|---------------------|
| 2SB 964 169-531 | Tail-stop lamp |
| 2NE 964 169-521 | Rear fog lamp |
| 2ZR 964 169-511 | Reverse lamp |
| 2BA 964 169-501 | Direction indicator |

With SAE type approval for vehicles < 2,032 mm and > 2,031 mm wide

UNIVERSAL REAR COMBINATION LAMPS



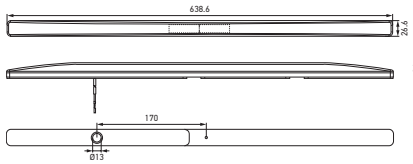
LED rear combination lamp "Strip Lamp"

Surface mounting variant, low power consumption, lens made of particularly impact-resistant Grilamid®

| | |
|-------------------------|---|
| Light source | 10 LEDs |
| Rated voltage | 12 or 24 V |
| ECE test mark | Tail-stop lamp: Ⓜ 10R 04-2913, Ⓜ 5891 Direction indicator: Ⓜ 10R 04-2910 (only 24 V), Ⓜ 5891 Auxiliary stop lamp: Ⓜ 10R 04-2910 (only 24 V), Ⓜ 0087 Rear fog lamp: Ⓜ 10R 04-2910 (only 24 V), Ⓜ 0010 Reverse lamp: Ⓜ 0027 (horizontal), Ⓜ 0028 (vertical) |
| 2SB 980 887-011* | Tail-stop lamp, 12 V with 300 mm cable |
| 2SB 980 887-211* | Tail-stop lamp, 24 V with 300 mm cable |
| 2BA 980 888-011* | Direction indicator, 12 V, with 2,500 mm cable, without pulse for direction indicator failure control |
| 2BA 980 888-211* | Direction indicator, 24 V, with 2,500 mm cable, without pulse for direction indicator failure control |
| 2DA 980 887-311* | Auxiliary stop lamp, 12 V, with 2,500 mm cable |
| 2DA 980 887-411* | Auxiliary stop lamp, 24 V, with 2,500 mm cable |
| 2NE 980 889-501* | Rear fog lamp, 12 V, with 2,500 mm cable |
| 2NE 980 889-601* | Rear fog lamp, 24 V, with 2,500 mm cable |
| 2ZR 980 889-011 | Reverse lamp, 12 V, for horizontal surface mounting, with 2,500 mm cable |
| 2ZR 980 889-111 | Reverse lamp, 12 V, for vertical surface mounting, with 2,500 mm cable |
| 2ZR 980 889-211 | Reverse lamp, 24 V, for horizontal surface mounting, with 2,500 mm cable |
| 2ZR 980 889-311 | Reverse lamp, 24 V, for vertical surface mounting, with 2,500 mm cable |

* For horizontal and vertical surface mounting

AUXILIARY STOP LAMPS

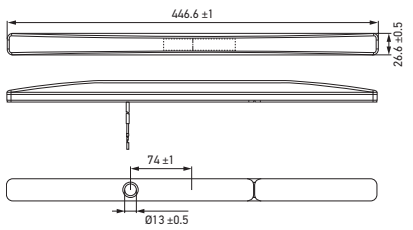


CHMSL auxiliary stop lamp LongLED 64

For horizontal surface mounting, 637 -mm-long, extremely slimline design with a profile height of just 11 mm, highly efficient electronic design with a power consumption of > 3 W, fully sealed housing, high vibration resistance, with 200 mm cable and 6.3 mm flat receptacles

| | |
|----------------------------|-------------------------------------|
| Light source | 16 LEDs |
| Rated voltage | 12 or 24 V |
| Current consumption | ca. 220 mA (12 V), ca. 60 mA (24 V) |
| Protection class | IP 67 |
| ECE test mark | Ⓔ 4127 |

| | |
|------------------------|------|
| 2DA 012 596-041 | 12 V |
| 2DA 012 596-051 | 24 V |

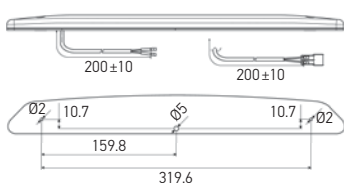


CHMSL auxiliary stop lamp LongLED 45

For horizontal surface mounting, 445 -mm-long, extremely slimline design with a profile height of just 11 mm, highly efficient electronic design with a power consumption of > 3 W, fully sealed housing, high vibration resistance, with 200 mm cable and 6.3 mm flat receptacles.

| | |
|----------------------------|-------------------------------------|
| Light source | 8 LEDs |
| Rated voltage | 12 or 24 V |
| Current consumption | ca. 120 mA (12 V), ca. 40 mA (24 V) |
| Protection class | IP 67 |
| ECE test mark | Ⓔ 024128 |

| | |
|------------------------|------|
| 2DA 012 596-061 | 12 V |
| 2DA 012 596-077 | 24 V |



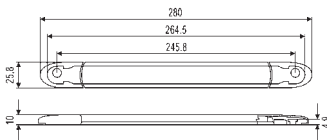
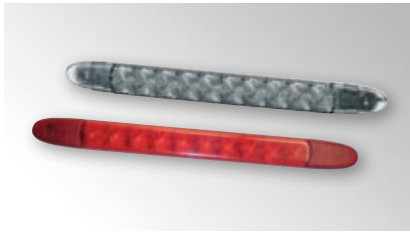
LED auxiliary stop lamp

For horizontal surface mounting, in a brilliant finish, with 3D depth effect by the embedding of each LED in a separate reflector, with 200 mm cable.

| | |
|----------------------------|----------------|
| Light source | 12 red LEDs |
| Rated voltage | 24 V |
| Current consumption | ca. 150 mA |
| Protection class | IP 5KX, IP X9K |
| ECE test mark | Ⓔ 7715 |

| | |
|------------------------|--|
| 2DA 343 800-047 | Lens and housing red, seal fixed with double-sided adhesive tape |
|------------------------|--|

AUXILIARY STOP LAMPS

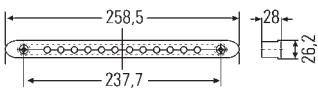
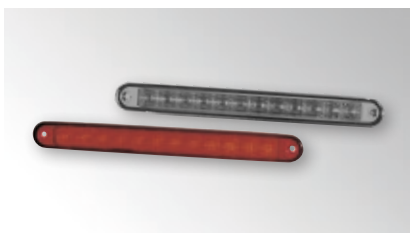


LED auxiliary stop lamp

For horizontal or vertical surface mounting, with 3,000 mm cable, mounting height of 9.5 mm (flush mounted position).

| | |
|----------------------------|----------------|
| Light source | 10 red LEDs |
| Rated voltage | 24 V |
| Current consumption | approx. 60 mA |
| Protection class | IP 5KX, IP X9K |
| ECE test mark | Ⓔ 7696 |

| | |
|------------------------|---|
| 2DA 343 106-011 | Lens red, for screw attachment |
| 2DA 343 106-211 | Lens red, self-adhesive |
| 2DA 343 106-031 | Lens smoked glass, for screw attachment |
| 2DA 343 106-231 | Lens smoked glass, self-adhesive |



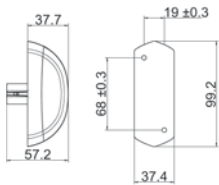
LED auxiliary stop lamp

For horizontal flush mounting, 2,500 mm cable and open cable ends

| | |
|----------------------|-------------|
| Light source | 12 red LEDs |
| Rated voltage | 24 V |
| ECE test mark | Ⓔ 7547 |

| | |
|------------------------|------------|
| 2DA 959 071-737 | Lens red |
| 2DA 959 071-237 | Lens clear |

CLEARANCE LAMPS

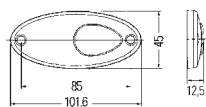
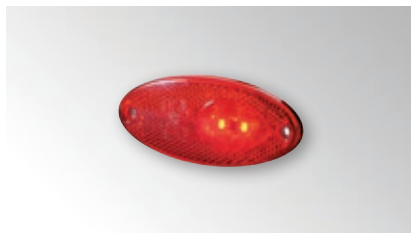


LED clearance lamp

Red / clear lens, with direct screw connection, black frame for direct screw connection, for side-rear surface mounting.

| | |
|----------------------------|------------------------------------|
| Light source | 4 LEDs |
| Rated voltage | 12 or 24 V |
| Current consumption | ca. 50 mA (12 V), ca. 30 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Ⓜ 3011 |

| | |
|------------------------|--------------------------------|
| 2XS 205 020-001 | 12 V, with 2-pin AMP SUPERSEAL |
| 2XS 205 020-011 | 24 V, with 2-pin AMP SUPERSEAL |
| 2XS 205 020-041 | 12 V, with 500 mm cable |
| 2XS 205 020-051 | 24 V, with 500 mm cable |

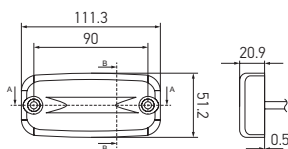


LED tail-reflex reflector lamp

For horizontal surface mounting, with seal, lens with red reflex reflector

| | |
|-------------------------|---------|
| Light source | 2 LEDs |
| Rated voltage | 24 V |
| Protection class | IP 5K9K |
| ECE test mark | Ⓜ 0302 |

| | |
|------------------------|---------------------|
| 2TM 964 295-097 | With 5,000 mm cable |
|------------------------|---------------------|



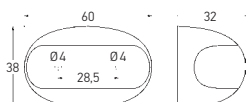
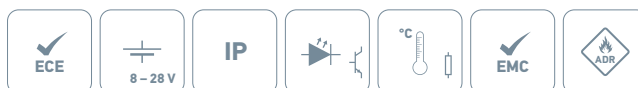
LED clearance lamp

For horizontal surface mounting

| | |
|-------------------------|-----------------------|
| Light source | 2 LEDs |
| Rated voltage | 24 V |
| Protection class | IP 6K9K |
| ECE test mark | Ⓜ 10R-04 0072, Ⓜ 5881 |

| | |
|------------------------|-------------------------------|
| 2TM 345 600-317 | With 5,000 mm cable, open end |
|------------------------|-------------------------------|

CLEARANCE LAMPS

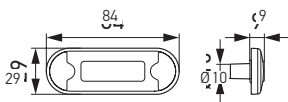


LED clearance lamp

For horizontal surface mounting, lens clear, inner lens red

| | |
|----------------------------|---------------------------|
| Light source | 2 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | approx. 40 mA |
| Protection class | IP 6K6, IP 6K7 |
| ECE test mark | Ⓔ 7574 |

| | |
|------------------------|---------------------|
| 2XA 959 560-401 | With 500 mm cable |
| 2XA 959 560-411 | With 5,000 mm cable |



DuraLED clearance lamp

Surface mounting variant, slimline design with 9 mm profile, horizontal or vertical installation, high vibration resistance, extremely low energy consumption, hermetically sealed against dirt and humidity.

| | |
|-------------------------|---------------------------|
| Light source | 2 red LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Protection class | IP 6K7, IP 6K9K |
| ECE test mark | Ⓔ 5878 |

| | |
|------------------------|--|
| 2XS 959 855-401 | With 500 mm cable and black end caps |
| 2XS 959 855-441 | With 2,500 mm cable and black end caps |
| 2XS 959 855-451 | With 500 mm cable and white end caps |

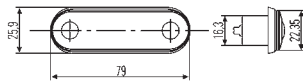
Spare parts / accessories



Spare parts / accessories

| | |
|------------------------|--|
| 9AB 959 685-201 | Decorative cover, polished stainless steel (ECE engraving) |
| 9GD 958 028-001 | Contour seal |
| 9GD 980 867-507 | Flat, rectangular seal |
| 9HD 980 858-008 | Black end caps |
| 9HD 980 858-018 | White end caps |

CLEARANCE LAMPS

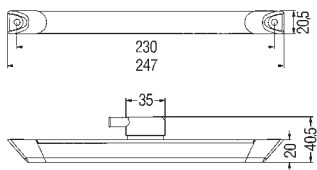


Clearance lamp

For horizontal or vertical flush mounting, lens clear, can be used as tail lamp or clearance lamp, with two cover caps for screw heads

| | |
|----------------------------|---------------------------|
| Light source | 2 red LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | approx. 40 mA |
| Protection class | IP 6K6, IP 6K7 |
| ECE test mark | Ⓔ 7597 |

| | |
|------------------------|---------------------|
| 2XA 959 790-401 | With 500 mm cable |
| 2XA 959 790-411 | With 5,000 mm cable |



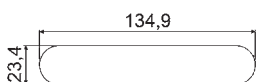
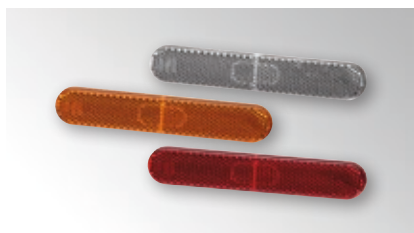
LED clearance lamp

For horizontal or vertical surface mounting, light guide red, 2 screw holes \varnothing 5.4 mm for fastening screws, lens clear

| | |
|----------------------------|------------------|
| Light source | 2 red LEDs |
| Rated voltage | 24 V |
| Current consumption | ca. 30 mA (24 V) |
| Protection class | IP 5K9K |
| ECE test mark | Ⓔ 0515 |

| | |
|------------------------|------|
| 2XS 008 078-001 | 24 V |
|------------------------|------|

REFLEX REFLECTORS

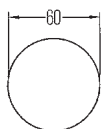


Reflex reflectors

For horizontal or vertical surface mounting, self-adhesive, suitable for combination with lamp series 009 226

ECE test mark \oplus 020668

| | |
|-----------------|-------|
| 8RA 009 226-137 | Red |
| 8RA 009 226-127 | Amber |
| 8RA 009 226-117 | White |

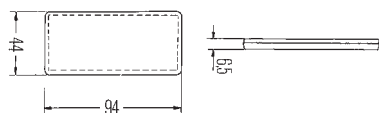


Reflex reflectors

Self-adhesive, effective, reflective surface of 22 cm², with plastic base plate

ECE test mark \oplus 3535

| | |
|-----------------|-------|
| 8RA 002 014-281 | Red |
| 8RA 002 014-301 | Amber |
| 8RA 002 014-291 | White |

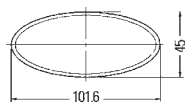


Reflex reflectors

For horizontal or vertical surface mounting, self-adhesive

ECE test mark \oplus 0292031

| | |
|-----------------|-------|
| 8RA 003 326-031 | Red |
| 8RA 003 326-041 | Amber |
| 8RA 003 326-051 | White |



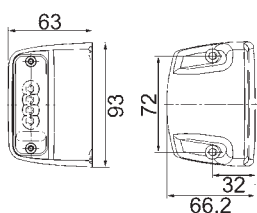
Reflex reflectors

For horizontal or vertical surface mounting, self-adhesive, suitable for combination with lamp series 964 295

ECE test mark \oplus 3190

| | |
|-----------------|-------|
| 8RA 343 160-007 | Red |
| 8RA 343 160-027 | Amber |
| 8RA 343 160-017 | White |

LICENCE PLATE LAMPS



LED licence plate lamp

For surface mounting on the right or left next to the licence plate, only 1 lamp needed for illumination, lens clear, black plastic housing.

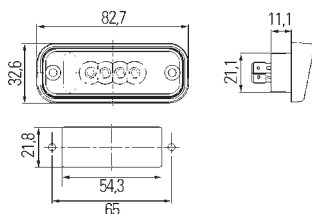
| | |
|----------------------------|------------------------------------|
| Light source | 4 LEDs |
| Rated voltage | 12 or 24 V |
| Current consumption | ca. 80 mA (12 V), ca. 40 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Ⓔ 2609 |

Licence plate 520 x 120 mm

| | |
|------------------------|---|
| 2KA 010 278-321 | 12 V, with 6.3 x 0.8 mm flat connector |
| 2KA 010 278-021 | 24 V, with 6.3 x 0.8 mm flat connector |
| 2KA 010 278-051 | 24 V, with 500 mm cable and 2-pin EasyConn female connector housing |
| 2KA 010 278-031 | 24 V, with 2,000 mm cable and 6.3 x 0.8 mm flat connector |

Licence plate 340 x 240 mm or 280 x 200 mm

| | |
|------------------------|--|
| 2KA 010 278-421 | 12 V, with 6.3 x 0.8 mm flat connector |
| 2KA 010 278-121 | 24 V, with 6.3 x 0.8 mm flat connector |



LED licence plate lamp

For flush mounting above or below the licence plate, 2 lamps required for licence plate lighting

| | |
|----------------------------|------------------------------------|
| Light source | 4 LEDs |
| Rated voltage | 12 or 24 V |
| Current consumption | ca. 80 mA (12 V), ca. 40 mA (24 V) |
| Protection class | IP 6K9K |
| ECE test mark | Ⓔ 2609 |

Licence plate 520 x 120 mm

| | |
|------------------------|--|
| 2KA 010 278-311 | 12 V, with 6.3 x 0.8 mm flat connector |
| 2KA 010 278-011 | 24 V, with 6.3 x 0.8 mm flat connector |
| 2KA 010 278-617 | 12 V, with 1,000 mm cable |
| 2KA 010 278-607 | 24 V, with 1,000 mm cable |

Licence plate 340 x 240 mm

| | |
|------------------------|--|
| 2KA 010 278-411 | 12 V, with 6.3 x 0.8 mm flat receptacles, 1 lamp required for licence plate lighting |
|------------------------|--|

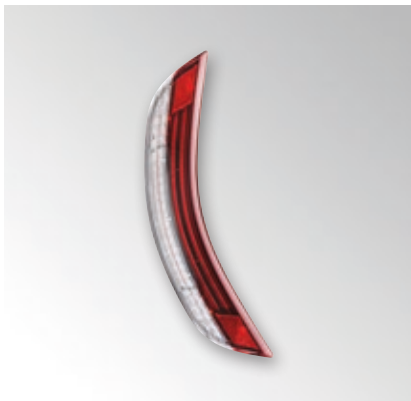
MULTI-FUNCTION LAMPS

An individualised look for the rear. | Our area of expertise lies in developing individual solutions and then turning these into bespoke applications tailored to address your challenges. And also when it comes to rear lighting, you can benefit from the synergies that HELLA generates through its many years of experience in the development of original automotive equipment at international level.

EXCELLENT PERFORMANCE, ICONIC DESIGN - REAR LAMPS FROM HELLA

Maximum safety and reliability: a matter of course at HELLA. But outstanding performance also includes a striking and well-thought-out design, perfectly matched to suit each individual manufacturer and each individual vehicle.

Our solution is this: development and production at our own locations combined with creative consulting and styling support. Whether it is a question of full LED lighting or a hybrid one, with our decades of experience in lighting and electronics, we can guarantee the professional implementation and qualification of your design ideas.




MULTI-FUNCTION LAMPS FROM HELLA

Individual solutions in line with your requirements: HELLA means high-quality design and cutting-edge lighting technologies:

- Glowing body
- EdgeLight
- Light curtain

ARE YOU INTERESTED IN A CUSTOMISED LIGHTING SOLUTION THAT IS PERFECTLY SUITED TO YOUR VEHICLE?

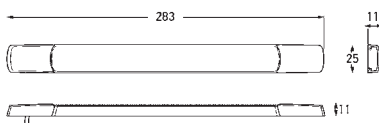
THEN WE ARE THE PERFECT PARTNER FOR YOU. COME AND TALK TO US.

A close-up, black and white photograph of two LED light strips. The strips are cylindrical and feature a textured, faceted lens that creates a shimmering, crystalline effect. The strips are positioned diagonally, with one in the foreground and another slightly behind it, both set against a plain, light-colored background.

INTERIOR LIGHTING

The LED also creates new accents in the interior of buses. Thanks to the constantly increasing performance of white and coloured LEDs, new kinds of applications are appearing all the time - not only in the area of functions, but also on the decorative side of interior lighting for city buses and coaches. The extremely low power consumption compared to bulbs and the almost unlimited lifetime of the lamps are, of course, decisive arguments in favour of using this modern technology.

INTERIOR LAMPS



Accessories



LED interior lamp "Strip Lamp"

With white screw caps (end pieces right and left), for horizontal or vertical surface mounting, connection via 2,500 mm cable, lens clear

| | |
|-------------------------|-----------------|
| Light source | 12 LEDs |
| Rated voltage | 12 or 24 V |
| Protection class | IP 6K7, IP 6K9K |

| | |
|------------------------|------------------|
| 2JA 980 879-011 | 12 V, white |
| 2JA 980 879-111 | 24 V, white |
| 2JA 980 879-201 | 12 V, warm white |
| 2JA 980 879-301 | 24 V, warm white |

Spare parts / accessories

| | |
|------------------------|-------------------------------------|
| 8HG 958 000-011 | "Strip Lamp" bracket 45°, white |
| 8HG 958 000-021 | "Strip Lamp" bracket 45°, dark grey |
| 9HD 980 885-018 | Screw caps, dark grey |
| 9HD 980 885-108 | Screw caps, chromium-plated |
| 9HD 980 885-008 | Screw caps, white (as spare part) |



LED spotlights standard

For flush mounting, adjustable, lens clear, optionally with screw or spring clamp fastening

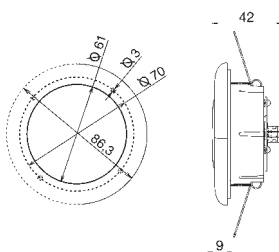
| | |
|---------------------------------|---|
| Light source | 1 white LED |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | Spot: ca. 200 mA (12 V), ca. 100 mA (24 V) Celis® light guide ring: ca. 40 mA (12 V) |
| Protection class | IP 3X |
| Illumination angle | 40° or 20° |
| Illuminance in 1 m range | ca. 156 lux (20°), ca. 65 lux (40°) |

Wide illumination (40°), cover colour*.

| | |
|------------------------|---|
| 2JA 343 790-301 | White, with white, ambient Celis® light guide ring |
| 2JA 343 790-311 | Black, with white, ambient Celis® light guide ring |
| 2JA 343 790-341 | Silver, with white, ambient Celis® light guide ring |
| 2JA 343 790-711 | Black |
| 2JA 343 790-741 | Silver |

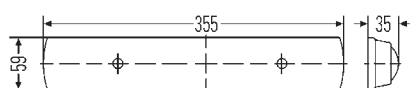
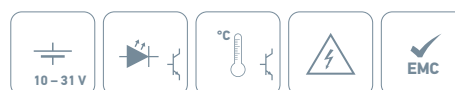
Spot illumination (20°), cover colour*:

| | |
|------------------------|---|
| 2JA 343 790-441 | Silver, with white, ambient Celis® light guide ring |
| 2JA 343 790-611 | Black |



* Other cover colours (e.g. real wood look) or ambient CELIS® light guide ring (e.g. blue, red) on request.

INTERIOR LAMPS



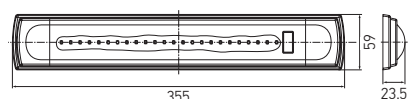
LED ceiling lamp

Lens and frame in impact-proof material, with switch, for surface mounting

| | |
|---------------------------------|--|
| Light source | 12 or 24 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | 12 LEDs: ca. 300 mA (12 V), ca. 150 mA (24 V) 24 LEDs: ca. 580 mA (12 V), ca. 290 mA (24 V) |
| Light colour | 4,000 K (neutral white) |
| Illuminance in 1 m range | ca. 100 lux (12 LEDs), ca. 200 lux (24 LEDs) |

2JA 007 373-151 12 LEDs

2JA 007 373-161 24 LEDs



LED ceiling lamp

For surface mounting, lens clear

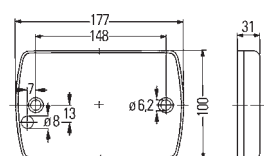
| | |
|---------------------------------|---|
| Light source | 24 LEDs |
| Rated voltage | 12 or 24 V |
| Current consumption | ca. 400 mA (12 V), ca. 200 mA (24 V) |
| Protection class | IP 54 (with switch), IP 67 (without switch) |
| Light colour | 4,000 K (neutral white) |
| Illuminance in 1 m range | ca. 200 lux (24 LEDs) |

2JA 007 373-301 12 V, with switch

2JA 007 373-321 12 V, without switch

2JA 007 373-311 24 V, with switch

2JA 007 373-331 24 V, without switch



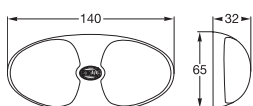
DuraLED ceiling lamp

For surface mounting; cast in one piece with white base plate, made of impact-resistant plastic and UV-resistant; electrical connection via 2,500 -mm-long cable

| | |
|---------------------------------|---|
| Light source | 36 white LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | ca. 750 mA (12 V) |
| Protection class | IP 6K6, IP 6K7 |
| Illumination angle | 62°, wide horizontal and narrow vertical illumination |
| Illuminance in 1 m range | 450 Lux |

2JA 959 037-511 Multi voltage

INTERIOR LAMPS

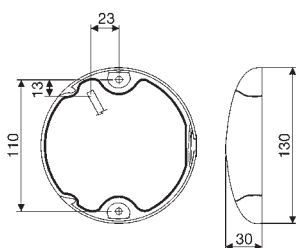


DuraLED oval ceiling lamp

Lens white, with 500 mm cable

| | |
|---------------------------------|---------------------------|
| Light source | 12 white LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | ca. 250 mA |
| Protection class | IP 6K6, IP 6K7 |
| LED beam angle | 120° |
| Illuminance in 1 m range | ca. 60 lux |

2JA 959 700-102 Multi voltage

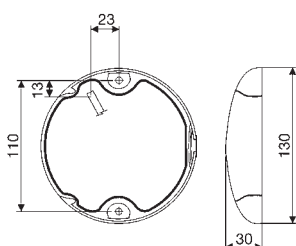
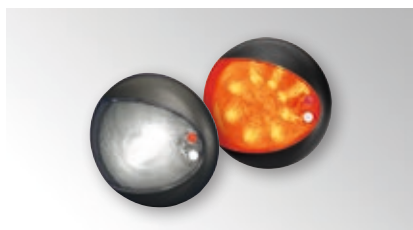


EuroLED ceiling lamp

For surface mounting, cast in one piece with base plate; electrical connection with a 2,500 -mm-long cable, lens white

| | |
|----------------------------|---------------------------|
| Light source | 1 white power LED |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | ca. 170 mA (24 V) |

2JA 959 820-501 Multi voltage



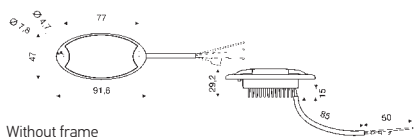
EuroLED Touch ceiling lamp

For surface mounting, cast in one piece with the base plate; electrical connection with a 2,500-mm-long cable, lens white; with sensitive switch, for on/off and dimming and also changing between white and red light

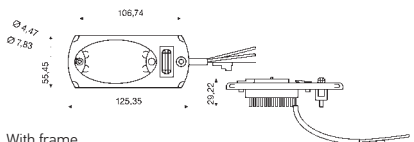
| | |
|----------------------------|--|
| Light source | 1 white and 8 red LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | White light: ca. 170 mA (24 V) Red light: ca. 100 mA (24 V) |

2JA 959 950-031 Housing black

INTERIOR LAMPS



Without frame



With frame

Mini Oval LED

Brilliant and clear lens, illumination of driver's side or instrument area, ambient lighting can be activated, for flush mounting, red or blue lighting possible

| | |
|---------------------------------|--|
| Light source | 4 white LEDs, 1 ambient LED |
| Rated voltage | 12 or 24 V |
| Current consumption | ca. 300 mA (12 V), ca. 150 mA (24 V) |
| Protection class | IP 6K9K (without frame/switch), IP 40 (with frame/switch) |
| Illumination angle | 50° for main light (4 LEDs), 100° for ambient lighting (1 LED) |
| Illuminance in 1 m range | Standard = ca. 14.5 lux, Power = ca. 54 lux |

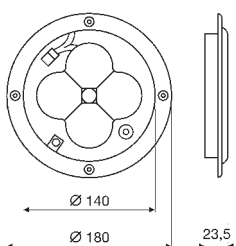
Without bracket and switch

| | |
|------------------------|------------------------|
| 2JA 343 570-117 | Power LEDs, 12 V, blue |
| 2JA 343 570-011 | Power LEDs, 12 V, red |
| 2JA 343 570-001 | Power LEDs, 24 V, red |

With bracket and switch

| | |
|------------------------|--------------------------|
| 2JA 343 570-157 | Power LEDs, 12 V, blue |
| 2JA 343 570-141 | Power LEDs, 24 V, blue |
| 2JA 343 570-051 | Power LEDs, 12 V, red |
| 2JA 343 570-041 | Power LEDs, 24 V, red |
| 2JA 343 570-061 | Standard LEDs, 24 V, red |

Other variants are available on request.



CargoLED ceiling lamp

Lens clear, for flush mounting (aluminium mounting frame), electrical connection with 310 -mm-long cable

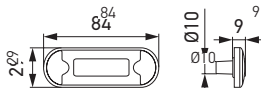
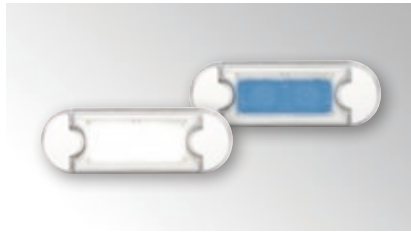
| | |
|---------------------------------|---|
| Light source | 4 white power LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | ca. 500 mA (12 V), ca. 250 mA (24 V) |
| Protection class | IP 6K9K |
| Illumination angle | 44° (wider illumination at close range) |
| Illuminance in 1 m range | ca. 280 lux |

| | |
|------------------------|------------|
| 2JB 344 227-001 | Cold white |
| 2JB 344 227-041 | Warm white |

Accessories

| | |
|------------------------|----------------------|
| 9XD 344 118-101 | Mounting frame, grey |
|------------------------|----------------------|

ORIENTATION LAMPS
LED STEP LAMPS

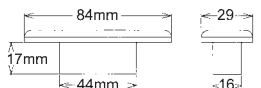


LED step lamp

Lens clear; seal, fastening screws and screw caps included; electrical connection with a 500 -mm-cable, for flush mounting

| | |
|---------------------------------|---------------------------|
| Light source | 2 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | approx. 40 mA |
| Protection class | IP 6K9K |
| Connecting bracket | 22° |
| Illuminance in 1 m range | ca. 25 lux |

- 2XT 980 855-117 White LEDs
- 2XT 980 855-417 Blue LEDs

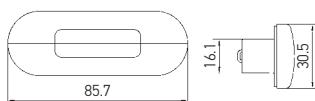


LED step lamp

Lens clear; seal, fastening screws and screw flaps included; electrical connection with a 120 -mm-long cable, for flush mounting

| | |
|---------------------------------|---------------------------|
| Light source | 2 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | approx. 40 mA |
| Protection class | IP 6K6, IP 6K7 |
| Illumination angle | 30° |
| Illuminance in 1 m range | ca. 15 lux |

- 2XT 959 510-427 White LEDs
- 2XT 959 510-657 Blue LEDs



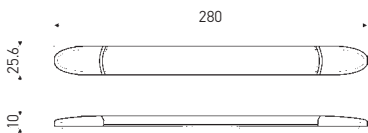
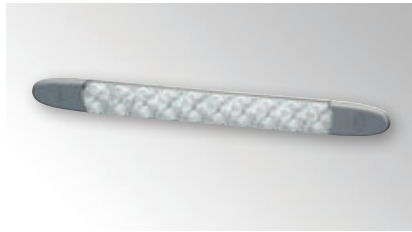
LED step lamp

With polished stainless steel frame, 120 mm cable, seal and fastening screws; for flush mounting

| | |
|-------------------------|---------------------------|
| Light source | 2 LEDs |
| Rated voltage | Multi voltage (12 / 24 V) |
| Protection class | IP 67 |

- 2XT 959 680-612 Blue LEDs
- 2XT 959 680-812 White LEDs

ORIENTATION LAMPS LED STEP LAMPS

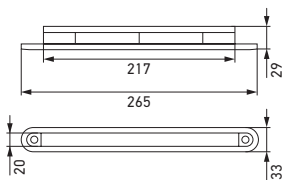
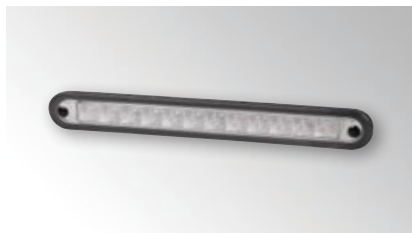


LED orientation lamp

Lens clear, for surface mounting; cast in one piece with grey base plate; electrical connection with a 500 -mm-long cable

| | |
|---------------------------------|------------------|
| Light source | 10 LEDs |
| Rated voltage | 24 V |
| Current consumption | ca. 70 mA (24 V) |
| Protection class | IP 6K9K |
| Illumination angle | 38° |
| Illuminance in 1 m range | ca. 32 lux |

| | |
|------------------------|------------|
| 2JA 343 606-017 | White LEDs |
| 2JA 343 606-217 | Blue LEDs |

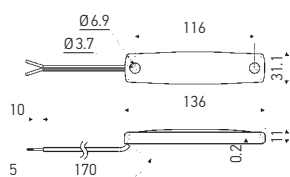


LED step lamp

Lens clear; screws, screw caps, seal and cable connector included; connection with a 2,500 -mm-cable, for flush mounting

| | |
|---------------------------------|------------------|
| Light source | 12 white LEDs |
| Rated voltage | 24 V |
| Current consumption | ca. 80 mA (24 V) |
| Illumination angle | 24° |
| Illuminance in 1 m range | ca. 130 lux |

| | |
|------------------------|------|
| 2JA 959 073-201 | 24 V |
|------------------------|------|



Mini Thin LED orientation lamp

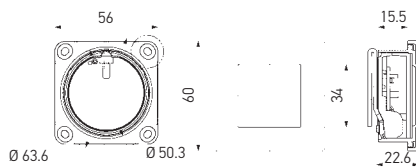
Electrical connection with a 170 -mm-long cable

| | |
|---------------------------------|--------------------------------------|
| Light source | 5 white LEDs |
| Rated voltage | 12 or 24 V |
| Current consumption | ca. 230 mA (12 V), ca. 110 mA (24 V) |
| Protection class | IP 6K9K |
| Illumination angle | 34° |
| Illuminance in 1 m range | ca. 7.2 lux |

| | |
|------------------------|------|
| 2JA 343 660-101 | 12 V |
| 2JA 343 660-117 | 24 V |

ORIENTATION LAMPS

LED STEP LAMPS

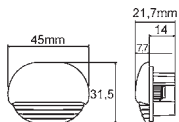
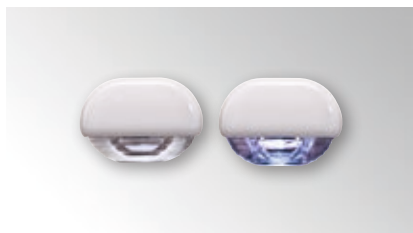


LED step lamp

Lens white, with square white frame, 120 mm cable, seal and fastening screws; for flush mounting

| | |
|---------------------------------|------------------|
| Light source | 4 white LEDs |
| Rated voltage | 24 V |
| Current consumption | ca. 35 mA (24 V) |
| Protection class | IP 67 |
| Connecting bracket | 32° |
| Illuminance in 1 m range | 100 Lux |

2JA 980 596-102 Passive electronics



LED step lamp Generation 2

Lens clear, bright illumination at close range, cover cap white, pre-cabled with 120 mm cable, for flush mounting

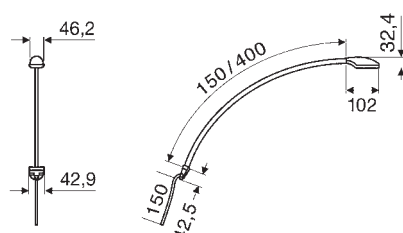
| | |
|----------------------------|------------------------------------|
| Light source | 1 LED |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | ca. 40 mA (12 V), ca. 20 mA (24 V) |
| Protection class | IP 67 |

2JA 958 126-017 White LED

2JA 958 126-117 Blue LED



READING LAMPS



LED reading lamp

Lens with pattern; with flexible arm, ideal for reading maps; electrical connection with a 150 -mm-long cable, for surface mounting

| | |
|-----------------------------------|---------------------------|
| Light source | 1 white power LED |
| Rated voltage | Multi voltage (12 / 24 V) |
| Current consumption | ca. 200 mA |
| Protection class | IP 53 |
| Illumination angle | 38° |
| Illuminance in 0.7 m range | ca. 110 lux |

2JA 346 720-111 400 mm arm, cover colour white

2JA 346 720-121 400 mm arm, cover colour black

2JA 346 720-191 400 mm arm, cover colour silver



ELECTRONICS

HELLA electronic components have proved their worth millions of times over - and indeed frequently under adverse conditions. That is why they are also the first choice for city buses and coaches so as to ensure reliable and economical operation. We develop high-quality, customised solutions for the key issues in the automotive industry: increasing energy efficiency, minimising CO₂ emissions and improving safety and comfort.

We offer a versatile electronics portfolio specially for city buses and coaches that, besides sensors and actuators, also includes countless other components designed for a large number of application scenarios.

ELECTRONICS EXPERTISE

PRODUCT DIVISIONS, SPECIAL OE ELECTRONICS

We are constantly expanding our electronics expertise for special vehicles such as agricultural and construction vehicles, buses, motor homes, electric cars and we are also progressing in the marine sector: in line with all this, we are strengthening our global sales network and expanding our global development expertise on the one hand. While on the other, we are focusing on extending our electronics portfolio at a steady, constant pace.

Our application specialists are always available to support you with the integration of the latest technologies and functions. No matter how specific your requirements are, HELLA tackles the challenge and ensures that a customised solution is found and implemented.

Sales, Product Management and Development unite to focus on your electronics projects, offering flexibility and technical support for your product application.

Reliable, intensive and personal customer support: HELLA works hand in hand with you.

ENERGY MANAGEMENT



Intelligent battery sensors

ENVIRONMENTAL AND MEDIUM SENSORS



Rain/light sensors

POSITION SENSORS



Angular position sensors

ACTUATORS



Actuators (Medium Force)



Actuators (High Force)



Actuators (Smart URA)



Actuators (Low Force)

BODY AND LIGHTING ELECTRONICS



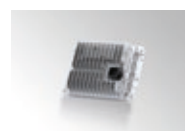
Remote control systems



LED flasher unit:
towing vehicle



LED flasher unit:
for LED direction indicators
12 and 24 V



LED lamps
control unit



Control unit for
current monitoring



Simulation device
for cold check



Mounting on standard battery pole (battery pole adapter not included in delivery)

ENERGY MANAGEMENT INTELLIGENT BATTERY SENSORS

PRODUCT DESCRIPTION

The 24 V intelligent battery sensor (IBS) from HELLA is the key element in vehicle energy management. The 24 V IBS reliably and accurately measures the battery parameters of voltage, current, and temperature. Information on the state of charge (SOC), ageing or state of health (SOH) and also on the expected starting capability or state of function (SOF) of the battery is calculated algorithmically using the measured values.

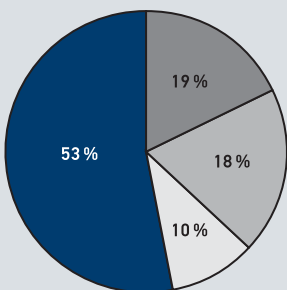
The 24 V IBS is designed for use in starter (standard or EFB), gel and AGM (fleece) batteries for the monitoring of in-vehicle starter or consumer batteries. The 24 V IBS can be directly integrated into the vehicle electrical system with the standardised LIN protocol.

Intelligent battery sensor (IBS) 24 V

| | |
|---|-------------------------|
| Voltage range | 7,5–32 V |
| Rated voltage | 24 V |
| Dimensions (length/width/height) | ca. 71.4 / 68.35 / 22.8 |
| Weight | 119,5 g |
| Operating temperature | -40°C to +80°C |
| Protection class | IP 6K7 |
| Mating connector* | Hirschmann 872-858-546 |

| | |
|------------------------|---------------------------------------|
| 6PK 011 700-001 | IBS 24 V with cable lug, straight |
| 6PK 011 700-317 | IBS 24 V with cable lug, right-angled |
| 9MK 179 472-007 | Battery pole adapter for IBS 24 V |

* This accessory is not included in the scope of delivery. It can be purchased from Hirschmann Automotive.



53 % – Battery
19 % – Alternator
18 % – Other causes
10 % – Starter

CUSTOMER BENEFITS

The 24 V intelligent battery sensor (IBS) provides information about the current energy balance, thus making it possible to plan the energy supply.

In order to prudently conserve the energy of the vehicle battery, it is necessary to know the state of charge, ageing and any changes to the battery. This is vital because weak batteries are the main cause of vehicle breakdown in more than 50% of cases according to a study by the German motoring organisation ADAC.

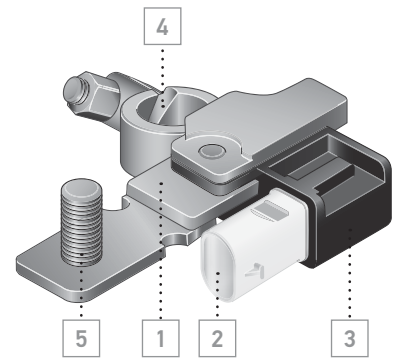
ADVANTAGES

- Accurate measurement of battery voltage, current and temperature parameters
- Determination of parameters regarding condition of the battery- i.e. state of charge (SOC), state of health (SOH) and state of function (SOF)
- Simple electrical and mechanical integration

DESIGN AND FUNCTION

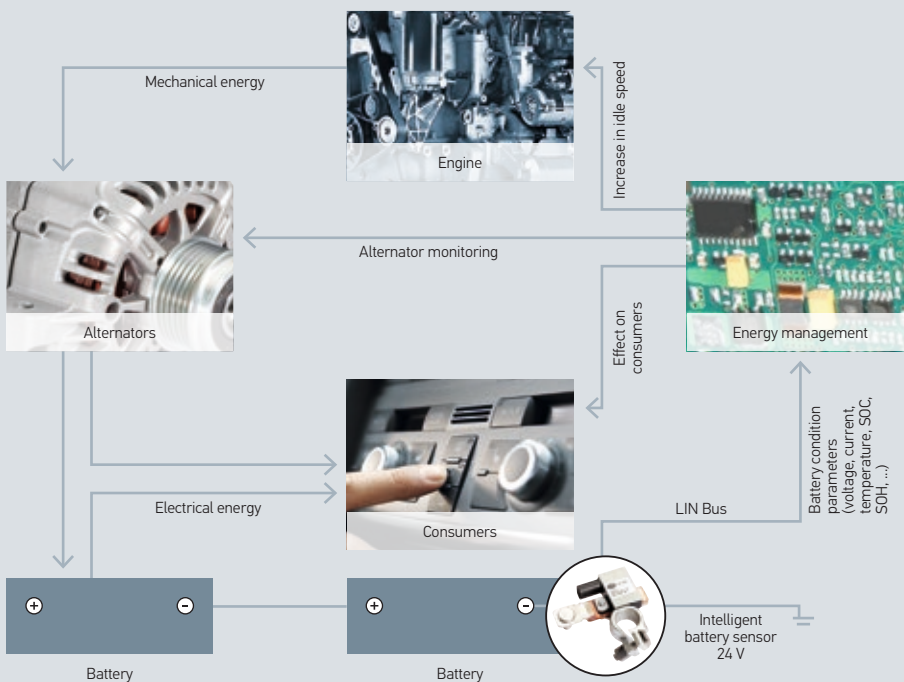
The 24 V IBS is attached directly to the negative pole of the battery via the pole terminal. In addition to the terminal, the mechanical part of the battery sensor consists of the following components: the shunt and earthing bolt. The shunt is attached to the vehicle's load path and serves as a measuring resistor to measure the current indirectly. The existing ground cable can be conveniently attached to the earthing bolt, e.g. with the optionally available battery pole adapter.

The electronics are located in a cast housing with a plug connector, which functions as the interface to the energy management system. The LIN protocol is the communication interface to the higher level control unit. The supply voltage, used simultaneously as the reference voltage for voltage measurement, is provided by the connection to the positive poles of both batteries.



Battery sensor IBS 24 V

1. Shunt on the sensor
2. Connector
3. Sensor module
4. Negative pole terminal
5. Screw-on bolts for battery pole adapter



ENERGY MANAGEMENT WITH 24 V INTELLIGENT BATTERY SENSOR

By using the 24 V intelligent battery sensor, the energy management system can react quickly in the case of a critical battery state and then influence both consumer behaviour and also the alternator.



COMPONENTS

RAIN-LIGHT SENSORS

PRODUCT DESCRIPTION

Rain sensor: The rain sensor is used to recognize different rain situations within the sensor range and it then activates the front windshield wiper accordingly. Manual driver intervention is virtually no longer required.

Light sensor: As a light sensor, it activates the switching on and off of the low beam in varying light conditions or in special situations e.g. in tunnels.

Rain-light sensor

For vehicles with steeply sloping windshields, for the recording of environmental features

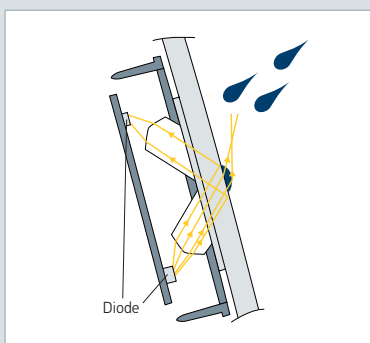
| | |
|---|---|
| Voltage range | 9–16 V |
| Rated voltage | 12 V |
| Dimensions (width/radius/height) | ca. 58.5 / Ø 49 / 22.6 (without protective cap) |
| Weight | ≤ 42 g |
| Operating temperature | -40 to +85°C |
| Protection class | IP 50 |
| Mating connector* | AMP C-1718346, coding A |

On request

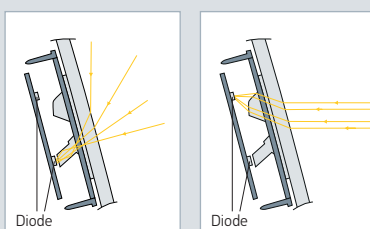
* This accessory is not included in the scope of delivery. It can be purchased from TE Connectivity.

Accessories

| | |
|------------------------|---|
| 9XD 420 696-104 | Bracket, fixing with liquid adhesive |
| 9XD 748 921-011 | Bracket, fixing with liquid adhesive, suitable for design cover 9HB 748 851-107 |
| 9XD 420 696-001 | Bracket, fixing with 3M adhesive tape |



Rain sensor



Ambient light sensor

Front light sensor

OPERATING PRINCIPLE OF RAIN DETECTION:

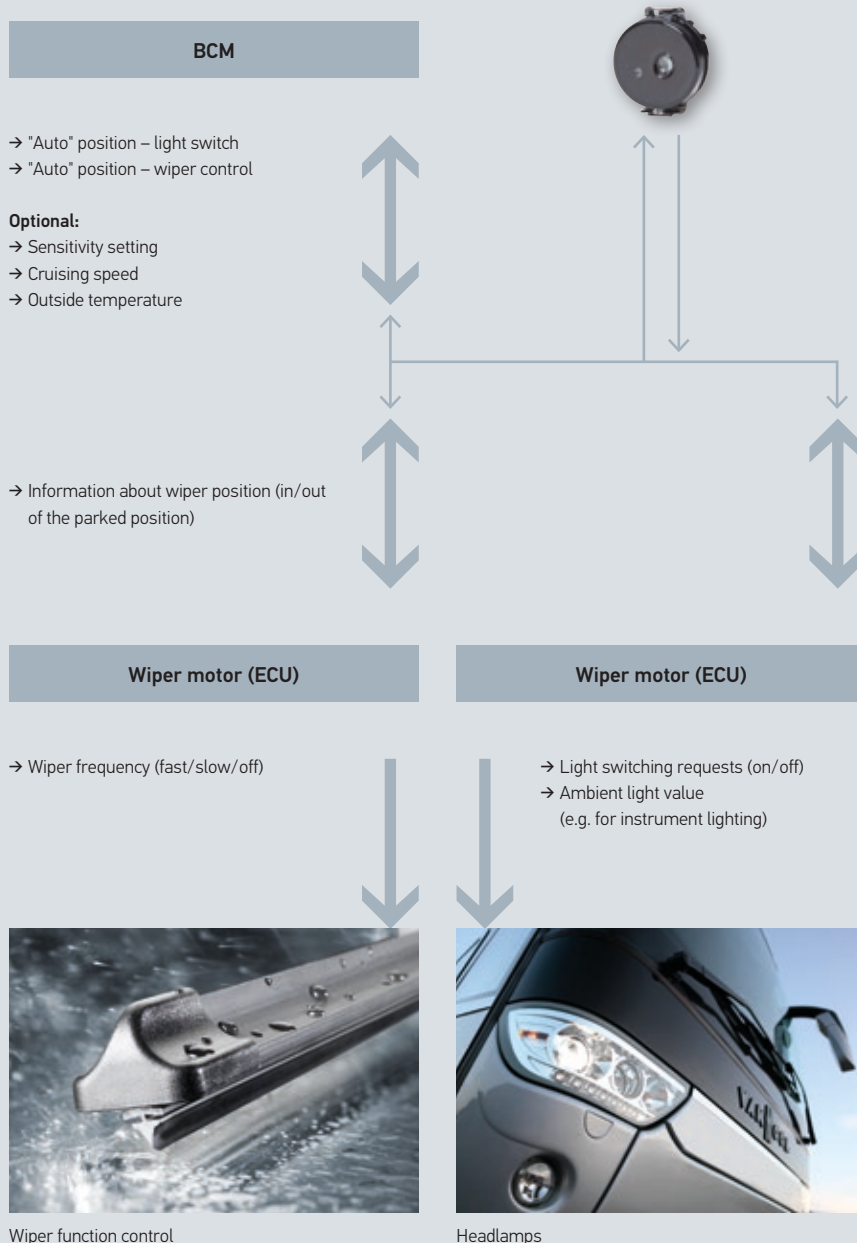
Use of the successfully field-proven principle of total reflection. The large, homogeneous measuring section guarantees good starting behaviour and pleasant wiper performance. The sensor also has additional algorithms for detecting streaks and dirt.

OPERATING PRINCIPLE OF LIGHT DETECTION:

The light sensor contains separate diodes for detecting ambient light and front light. The optical concept is designed such that the light switching characteristics are stable and independent of the direction of travel. The large opening angles of the light diodes enable homogeneous light switching behaviour in all driving situations.

ADVANTAGES

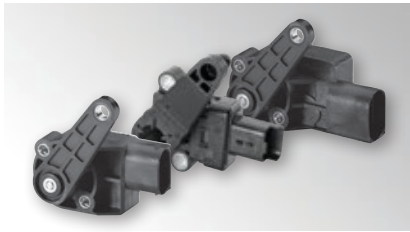
- The fourth generation in a long established line of rain sensors from HELLA
- Optics specially designed for vehicles with steeply sloping windshields
- Dual function: rain and light detection (ambient detection and tunnel detection)
- Optimised design – extremely compact package space



INTERFACES / FUNCTIONAL DESCRIPTION

The following overview illustrates an option of how the sensor communicates with other system components in the vehicle via the LIN interface. Here the sensor is activated by the master control unit and supplied with voltage. It thus provides the system with information but does not directly interfere with the system.

COMPONENTS
ANGULAR POSITION SENSORS



Angular position sensor

Precise and reliable angle measurement, with CIPOS® technology; high temperature stability and linearity, insensitivity to magnetic fields

| | |
|-------------------------------------|---|
| Angle range | Mechanically unlimited (full 360° rotation) |
| Protection class | IP 6K9K |
| Polarity reversal protection | None, mechanical protection only |
| Zero position | Individually programmable |

Single sensors

| | Angle range | Lever arm | Zero position |
|------------------------|--------------|-----------|-------------------|
| 6PM 008 161-241 | -30° to +30° | 50 mm | 0° / 120° / 240° |
| 6PM 008 161-251 | -51° to +51° | 50 mm | 0° / 120° / 240° |
| 6PM 008 161-121 | -54° to +54° | 70 mm | 0° / 120° / 240° |
| 6PM 008 161-131 | -54° to +54° | 70 mm | 60° / 180° / 300° |
| 6PM 008 161-141 | -54° to +54° | 50 mm | 30° / 150° / 270° |
| 6PM 008 161-151 | -54° to +54° | 50 mm | 90° / 210° / 330° |

Single sensors - compact design

| | Angle range | Lever arm | Zero position |
|------------------------|--------------|-----------|------------------|
| 6PM 010 200-501 | -54° to +54° | 39 mm | 0° / 120° / 240° |
| 6PM 010 200-511 | -54° to +54° | 39 mm | 0° / 120° / 240° |
| 6PM 010 200-521 | -54° to +54° | 51 mm | 0° / 120° / 240° |
| 6PM 010 200-531 | -54° to +54° | 70 mm | 0° / 120° / 240° |

Double sensors

| | Angle range | Lever arm | Zero position |
|------------------------|--------------|-----------|------------------|
| 6PD 009 583-001 | -30° to +30° | 50 mm | 0° / 120° / 240° |
| 6PD 009 583-011 | -54 to +54° | 50 mm | 0° / 120° / 240° |
| 6PD 009 580-017 | -54 to +54° | 70 mm | 0° / 120° / 240° |
| 6PD 009 584-017 | -54 to +54° | 90 mm | 0° / 120° / 240° |

Various connecting elements available

COMPONENTS
REMOTE CONTROLS



Remote control system

Switching lamps on and off or opening and locking doors and flaps

| | Remote control transmitter |
|--------------------------------------|-------------------------------------|
| Transmission frequency | 434,42 MHz |
| Transmission power | 30 µW ERP |
| Battery type* | CR2032 |
| Battery lifetime | 100,000 clicks (ca. 3 years of use) |
| Average range** | 70,5 m |
| Max./Min. range** | 119 m / 51 m |
| Operating/storage temperature | -20°C to +60°C |
| Protection class | IP 6K7, IP X5 |

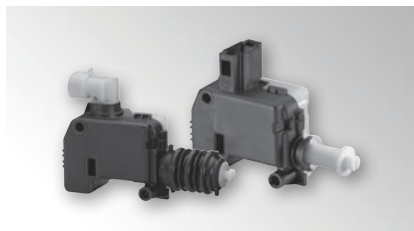
| | Remote receiver |
|------------------------------|-------------------------------------|
| Operating voltage | 6 – 32 V |
| Operating temperature | -40°C to +80°C |
| Storage temperature | -40°C to +90°C |
| Power consumption | 11 mA (signal output not activated) |
| Switching currents | up to 4 x < 300 mA |
| No-load current | < 2 mA |
| Max. voltage | 58 V for a period of 250 ms |
| Overvoltage | 36 V (at 40 °C, 1 hour) |

| | |
|------------------------|---|
| On request | 2 remote control transmitters with light symbol button and receiver, enhanced variant |
| 5FA 012 485-817 | 2 remote control transmitters and receiver, enhanced variant |
| 5FA 012 485-201 | Spare key for 5FA 012 485-817 |

* A battery is included in the scope of delivery for the remote control transmitter.

** Ranges depend on the installation position and interference factors. The values specified are merely an example and must be verified for each new application.

COMPONENTS
ACTUATORS



Door locking actuator/central locking system

Electrical locking/unlocking & closing (Medium Force) of all doors (locking systems), flaps, sunroofs, seats, covers, bonnets, glove compartments

| | |
|--------------------------------------|-------------------------------|
| Rated voltage | 12 or 24 V |
| Voltage range | 9–15 V (12 V), 18–30 V (24 V) |
| Position when delivered | Retracted or extended |
| Mainspring reset | None, retract/extend |
| Actuating force on the tappet | From 30 to 170°N |
| Manual adjustment | From zero to < 35 N |
| Functional stroke | ≤ 18 mm |
| Operating temperature | -40°C to +80°C |
| Lifetime | Up to 100,000 cycles |

Electrical retraction and extension

| | |
|------------------------|--|
| 6NW 009 203-401 | 12 V, actuating force 30 - 130 N, IP 5K0, with manual adjustment |
| 6NW 009 203-411 | 12 V, actuating force 30 - 140 N, IP 5K0 |
| 6NW 009 203-441 | 24 V, actuating force 30 - 130 N, IP 5K4, with manual adjustment |
| 6NW 009 203-451 | 24 V, actuating force 40 - 150 N, IP 5K4 |
| 6NW 009 203-557 | 12 V, actuating force 30 - 140 N, IP 5K4 |
| 6NW 009 203-621 | 12 V, actuating force 20 - 130 N, IP 5K4, with manual adjustment |
| 6NW 009 203-631 | 12 V, actuating force 30 - 160 N, IP 5K4 |

Electrical retraction and extension with mainspring

| | |
|------------------------|---|
| 6NW 009 203-461 | 12 V, actuating force 30 - 170 N, IP 5K0 |
| 6NW 009 203-471 | 12 V, actuating force 30 - 170 N, IP 5K4 |
| 6NW 009 203-541 | 24 V, actuating force 15 - 90 N, IP 5K4, with manual adjustment |

Electrical extension and retraction with mainspring

| | |
|------------------------|--|
| 6NW 009 203-491 | 12 V, actuating force 30 - 170 N, IP 5K0 |
| 6NW 009 203-501 | 12 V, actuating force 30 - 170 N, IP 5K4 |
| 6NW 009 203-521 | 24 V, actuating force 20 - 140 N, IP 5K4 |

* The actuating force depends on the operating voltage and ambient temperature.



Actuator as door closing assistance

Electrical locking/unlocking & closing (High Force), especially for applications requiring much force (e.g. large door locks, large hatchbacks, seat release)

| | |
|------------------------------|----------------|
| Rated voltage | 12 V |
| Voltage range | 9–16 V |
| Functional angle | 0° to 198° |
| Manual adjustment | None |
| Operating temperature | -40°C to +85°C |
| Protection class | IP 5K0 |

| | |
|------------------------|---|
| 6NW 009 424-781 | Retraction via spring, electrical extension, torque 150 Ncm |
| 6NW 009 424-791 | Electrical retraction and extension, torque 300 Ncm |

COMPONENTS
ACTUATORS



Universal rotary actuator (Smart URA)

Electrical locking/unlocking & closing, electrical rotary movement right and left, with position feedback via CIPOS technology, application in supply/discharge air flaps (chokes), control of valves in the cooling circuit or the air flaps/chokes in the radiator grille

| | |
|----------------------------------|---|
| Rated voltage | 13,5 V |
| Voltage range | 9 – 16 V |
| Rated torque (13.5 V; RT) | 60 Ncm |
| Max. torque (13.5 V; RT) | < 300 Ncm |
| Operating angle range | > 360° (< 180° true power on) |
| Operating temperature | -40°C to +85°C |
| Protection class | IP 6K9K, IP 6K7 (depending on mating connector category) |
| Lifetime | Typical 250,000 cycles (1 cycle = 90° angle open – closed – open) |
| Control system | LIN 2.0 & PWM |

6NW 011 303-701



Fuel filler flap actuator

Electrical locking/unlocking of, for example, tank modules, service flaps or glove compartments; space-saving, with micro switch, electrical open rotation, return rotation via return spring, with soft touch button

| | |
|-------------------------------------|--|
| Rated voltage | 12 V |
| Voltage range | 9 – 15,5 V |
| Function and lifetime | Electrical open and return rotation: 100,000 switching cycles; Electrical open and return rotation with micro-switch: 60,000 switching cycles; Electrical open rotation, return rotation via return spring: 7,500 switching cycles |
| Locking lever pulling force | > 75 N |
| Locking lever breaking force | ≥ 300 N |
| Functional angle | ≤ 78° |
| Operating temperature | -40°C to +85°C |
| Protection class | IP 5K4 |

| | |
|------------------------|--|
| 6NW 011 122-017 | Electrical open and return rotation |
| 6NW 011 122-027 | Electrical open and return rotation with micro switch |
| 6NW 011 122-037 | Electrical open and return rotation with micro switch, without operating and locking element |
| 6NW 011 122-057 | Electrical open and return rotation with micro switch, with operating element, without locking element |
| 6NW 011 122-047 | Electrical open rotation and return rotation via return spring with soft touch button |

FAILURE CONTROL AND ELECTRICAL CONNECTION LED LIGHTING

LED LAMP FAILURE CONTROL

A defined standard such as for bulbs cannot be used for the monitoring of LED lamps. Every LED lamp is different in its technical implementation and in its energy consumption:

- they are governed by the number of LEDs,
- by the intensity with which they are driven
- and also by the electronic ballast necessary for their operation.

Monitoring of the failure control is therefore no longer as simple as it once was with bulbs. HELLA has various approaches to solving this problem. They are summarised here under the heading of Lighting Electronics.

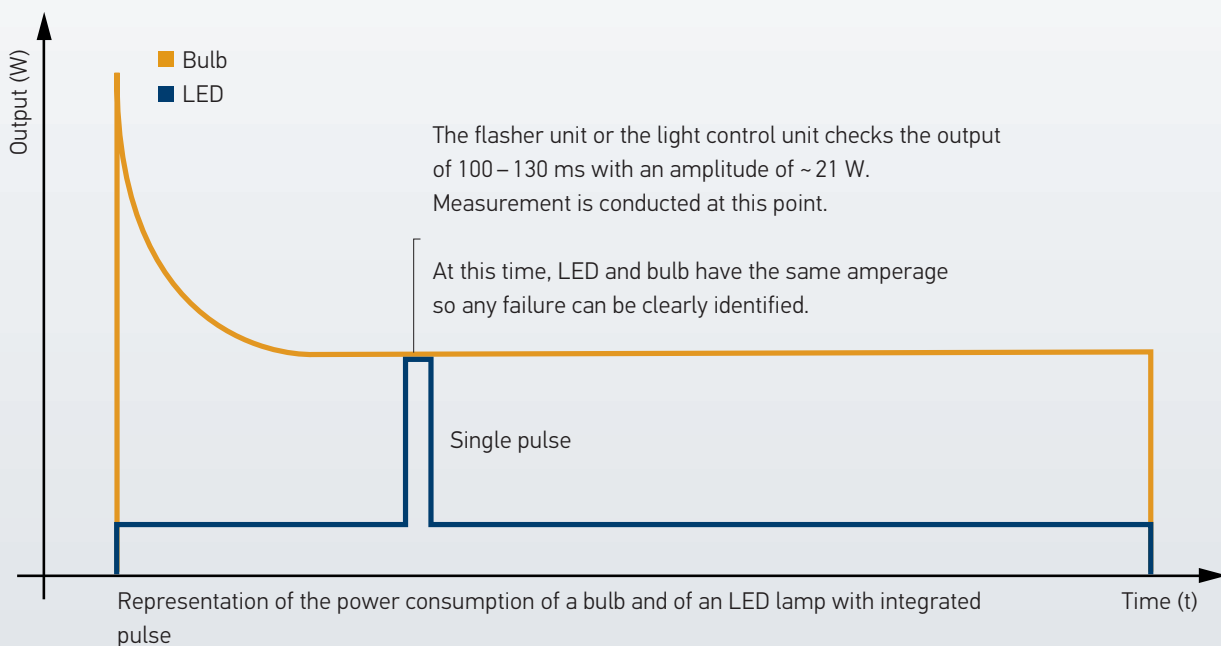
WHAT IS REQUIRED BY LAW?

The ECE R48 regulation defines that direction indicators have to be monitored and that their failure has to be signalled optically or visually.

There are two possibilities:

- The LED lamp either has to be able to "communicate" with the vehicle
- or it is monitored with regard to its energy consumption.

The "communication" option is the better approach here, but is not always possible, e.g. between towing vehicle and trailer.



SOLUTIONS

The optimum solution is to match the lighting electronics or the flasher unit to the connected lighting. This is only possible in the most seldom of cases, however, as either a towing vehicle or trailer is involved or the vehicle electronics have already been determined by third parties.

FLASHER UNITS

LED direction indicators in compliance with ISO 13207 can "communicate" with the flasher unit. The flasher unit checks for a defined energy requirement at a defined point in time: exactly 21 W for 100-130 ms after each activation of the direction indicator. The energy consumption or "pulse" corresponds here to that of a bulb, so that the flasher unit notices no difference between a bulb and an LED lamp that is in compliance with ISO 13207.

If the intelligent LED lamp conforming to ISO 13207 detects a defect or only a partial defect, this "pulse" is switched off and the flasher unit can interpret this as a failure. ISO 13207-conformant LED lamps and ISO 13207-conformant flasher units are required for this method.

The advantage:

Bulbs and ISO LED lamps can be operated in any combination on an ISO 13207-conformant flasher unit. This is relevant both for vehicles that are frequently operated with different trailers and also for manufacturers who wish to offer several variants of the lighting system without having to modify the underlying electronics.

LED LAMP CONTROL UNITS FOR USE WITH THIRD-PARTY ELECTRONICS

If the vehicle electronics have already been dictated by third parties, HELLA offers LED control units that, on the one hand, monitor the LED lamps, and, on the other, simulate to the vehicle that bulbs are connected. This allows LED lamps to be used without any problems.

MONITORING OF CURRENT

Another possibility is to measure the average energy consumption of the headlamp or the LED lamp.

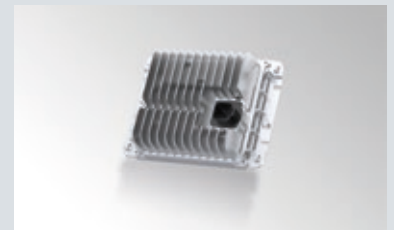
The disadvantage:

In most cases, however, partial defects cannot be detected in this way: with very efficient LED lamps it is possible that their energy consumption is so low that they are detected as defective even when functioning correctly. Or in the worst case: the electronic ballast of the LED lamp requires so much energy that a failure cannot be detected even if all the LEDs are defective.

SUITABLE PRODUCTS



LED flasher unit: towing vehicle



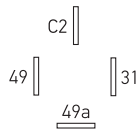
LED lamp control unit



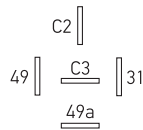
Control unit for current monitoring

FAILURE CONTROL AND ELECTRICAL CONNECTION

LED LIGHTING



Pin configuration
LED flasher unit 3+1



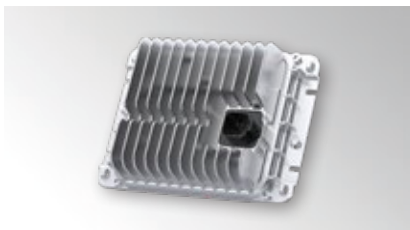
Pin configuration
LED flasher unit 2+1+1

LED flasher unit: towing vehicle

LED direction indicators in compliance with ISO 13207 can "communicate" with the flasher unit. The flasher unit checks for a defined energy requirement at a defined point in time: exactly 21 W for 100-130 ms after each activation of the direction indicator. The energy consumption or "pulse" corresponds here to that of a bulb, so that the flasher unit notices no difference between a bulb and an LED lamp that is in compliance with ISO 13207.

| | |
|---------------------------|------------------------------------|
| Operating voltage | 10 – 15 V (12 V), 18 – 32 V (24 V) |
| Functional voltage | 11 – 14 V (12 V), 20 – 28 V (24 V) |
| Protection class | IP 53 (contacts underneath) |

| | |
|------------------------|------------------------------|
| 4DW 009 492-111 | 12 V, LED flasher unit 3+1 |
| 4DN 009 492-101 | 12 V, LED flasher unit 2+1+1 |
| 4DW 009 492-011 | 24 V, LED flasher unit 3+1 |
| 4DM 009 492-001 | 24 V, LED flasher unit 2+1 |



LED lamp control unit

Basic control unit: the control unit is **only** responsible for monitoring the direction indicators.

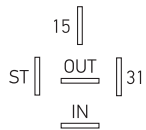
Premium control unit: the control unit is responsible for monitoring **the entire** rear lighting (tail lights, stop lights, direction indicator lights, reverse lights and rear fog lights).

| | |
|-------------------------|---|
| Mating connector | Amphenol 6-pin (Basic control unit) Amphenol 6-pin / 12-pin (Premium control unit) |
|-------------------------|---|

| | |
|------------------------|--|
| 5DS 227 488-001 | Basic control unit, 12 V |
| 5DS 227 488-101 | Basic control unit, 24 V |
| 5DS 227 489-001 | Premium control unit, 12 V Premium (1 stop light channel) |
| 5DS 227 489-011 | Premium control unit, 12 V Premium (2 stop light channels) |
| 5DS 227 489-101 | Premium control unit, 24 V Premium (1 stop light channel) |

FAILURE CONTROL AND ELECTRICAL CONNECTION

LED LIGHTING

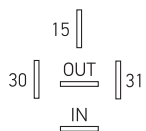


Pin configuration

Control unit for current monitoring

In order to test LED low beam headlamps, the average energy consumption is determined by measuring the current. The current monitors are matched to the HELLA products and enable very reliable monitoring.

| | |
|------------------------|--|
| 5KG 011 630-001 | Direct measurement, 12 V, 500 mA |
| 5KG 011 630-011 | Direct measurement, 24 V, 500 mA |
| 5KG 011 630-211 | Direct measurement, 24 V, 350 mA |
| 5KG 011 630-101 | Integrated measurement over time, 12 V |



Pin configuration

Simulation device for cold check

If the existing vehicle electrical system is programmed to monitor the lighting even when it is not in operation, it is known as a cold check. During a cold check, a small test pulse is transmitted to the lamp while it is switched off to see whether this pulse is discharged via the bulb to ground. The energy here is so low that the bulb does not light up.

As LED lamps are essentially not suitable for this form of monitoring, HELLA offers an electronic system for "simulation of the cold check" in order to ensure operation.

| | |
|---------------------------|-----------------------------|
| Functional voltage | 1,5 A |
| Protection class | IP 54 (contacts underneath) |

| | |
|------------------------|------|
| 5DS 009 602-011 | 12 V |
| 5DS 009 602-001 | 24 V |



ELECTRICS AND ACCESSORIES

What does the perfect switch for the cockpit of city buses and coaches actually look like? Our development engineers have thought long and hard about this question - and the result is something to be proud of. The rocker switches from HELLA impress everyone with their timeless design, a pleasant touch and feel and lasered symbols that are reliably backlit by up to four LEDs. They have self-cleaning contacts so that even small currents can be switched without contamination. In addition, the modules can be freely configured. This means that the number and type of switches can be individually adapted to your requirements.

RELAYS

**You can trust our quality relays**

- Production competence: HELLA produces more than 100 million pieces per year in-house. And all thanks to optimised production at an attractive price for customers and with one of the lowest failure rates in the whole branch.
- Flexibility: large volumes are produced fully automatically, smaller volumes semi-automatically.
- Original equipment customers: HELLA develops and produces relays for AGCO, Claas, Daimler AG, Ford, VW, GM, JCB, John Deere, Chrysler to name some examples. Many of our customer relationships have existed for decades.
- Production locations: Xiamen (China); Berlin (Germany).

Relay applications in buses

ABS, starters, audio systems, indicators, stop lamps, injection pump, fanfares, horns, interior lighting, air-conditioning system, signage control, rear fog lamps, cleaning systems, headlamps, seat heating, seat adjustment, warning lamps ...

| | Mini relay, 24 V 4RD 007 903-... 4RD 933 332-... | Mini relay, 24 V 4RA 003 530-... 4RA 007 957-... 4RA 933 332-... 4RA 933 791-... 4RA 965 400-... | High performance relay, 24 V 4RA 003 437-... 4RA 933 321-... |
|--|---|--|---|
| General specifications | | | |
| Test voltage | 27 V | 27 V | 27 V |
| Test temperature | +23°C ± 5°C | +23°C ± 5°C | +23°C ± 5°C |
| Permissible ambient temperature | -40°C ... +125°C | -40°C ... +85°C | -40°C ... +85°C |
| Storage temperature | -40°C ... +130°C | -40°C ... +125°C | -40°C ... +125°C |
| Flat connector (in accordance with ISO 8092) | | | |
| 30 / 87 | 6.3 x 0.8 mm | 6.3 x 0.8 mm | 9.5 x 1.2 mm |
| 85 / 86 | 6.3 x 0.8 mm | 6.3 x 0.8 mm | 6.3 x 0.8 mm |
| 87a | 6.3 x 0.8 mm | - | - |
| 87 | - | 6.3 x 0.8 mm | - |
| Coil specifications | | | |
| Rated voltage | 24 V | 24 V | 24 V |
| Operating voltage range at permissible ambient temperature | 16 V ... 30 V | 16 V ... 30 V | 16 V ... 30 V |
| Pick-up voltage at test temperature | < 17 V | < 15.6 V | < 17 V |
| Dropout voltage at test temperature | > 3.5 V | > 3.5 V | > 5 V |
| Coil resistance at test temperature without parallel component | 305 / 315 Ohm ± 10% | 350 / 360 Ohm ± 10% | 310 Ohm ± 10% |
| Response time | < 10 ms | < 10 ms | < 10 ms |
| Dropout time | < 10 ms | < 10 ms | < 10 ms |
| Insulation resistance - coil circuit/load circuit | > 100 MOhm | > 100 MOhm | > 100 MOhm |
| Dielectric strength - coil circuit/load circuit | > 1,000 VDC | > 1,000 VDC | > 1,000 VDC |
| Contact specifications | | | |
| Contact voltage dropout at test voltage ... | | | |
| ... normally open contact in new state | < 10 mV / A | < 10 mV / A | < 3 mV / A |
| ... break contact in new state | < 10 mV / A | < 15 mV / A | - |
| ... normally open contact after life endurance test | < 10 mV / A | < 15 mV / A | < 10 mV / A |
| ... break contact after life endurance test | < 15 mV / A | < 20 mV / A | - |
| Minimum load current | 1 A / 6 V | 1 A / 6 V | 1 A / 6 V |
| Mechanical lifetime | 107 | 107 | 107 |

SWITCH SERIES
3100



The waterproof modular switch series for electrical systems meets the requirements of protection class IP 68. The lasered symbols are illuminated by integrated LEDs.

The strengths of the product range:

- IP 68 in accordance with test standard IEC EN 60529
- Highly reliable in extreme conditions
- The most diverse switch functions in 12 / 24 V
 - Normally open contact/ changeover contact
 - Button/grid
 - Locking functions
 - Warning light switches
- Wide range of standard and customised lasered symbols
- Up to 2 LED light sources enable direct symbol illumination
- Easy to mount, either directly in the mounting hole or using a modular mounting frame
- Display lamp in the same design for safety-related feedback

Technical data

| | |
|-----------------------------------|--|
| Mounting hole | 21,1 mm x 37,0 mm |
| Material rocker | PC transparent, lacquer finish |
| Housing material | PBT |
| Flat connector | 6,3 x 0,8 mm |
| Coating of switch contacts | CuZn silver-plated |
| Light source | Max. 2 LEDs 1 x orientation lighting, green 1 x function lighting, red Warning lamps available in amber and green |
| Symbol type | Lasered |
| Mechanical lifetime | 150,000 switching cycles |
| Protection class | IP 68, connector side: IP 66 |
| Operating temperature | -40°C to +85°C |
| Dashboard thickness | For direct installation: 1.6 mm to 6.3 mm |

| | |
|-------------------|------|
| On request | 12 V |
| On request | 24 V |

Our switch configurator can be found at: www.hella.com/switch

Accessories

| | |
|--------------------------|--|
| | Installation frame |
| 9AR 169 209-102/7 | End piece left, right |
| 9AR 169 208-102/7 | Centre piece |
| <hr/> | |
| 9HB 172 229-101/7 | Cover plate |
| <hr/> | |
| | Female connector housing |
| 8JD 010 076-102/7 | Type I |
| 8JD 010 076-112/7 | Type II |
| 8JD 010 076-122/7 | Type III |
| <hr/> | |
| | Flat receptacle 6.3 mm |
| 8KW 744 882-003 | 0,5 mm ² –1 mm ² |
| 8KW 744 825-003 | 1,5 mm ² –2,5 mm ² |
| <hr/> | |
| 8PE 197 631-001 | Dismantling tool |

SWITCH SERIES
4100



The modular switch series with self-cleaning contacts is suitable for modern electrical and electronic systems. This ensures safe and reliable switching even of small currents without contamination of the contacts occurring. The series stands out from the crowd with its timeless design and with lasered symbols illuminated by integrated LEDs.

The strengths of the product range:

- Modular design of the switch
- Realisation of a wide variety of 12 V and 24 V switch functions:
 - Normally open contact/ changeover contact
 - Button/grid
 - Locking function
 - Warning light switches
- Wide range of standard and customer-specific symbols
- Selective, reliable and durable illumination of the symbols thanks to the using of up to 4 LED light sources
- Easy to mount, either directly in the mounting hole or using a modular mounting frame
- Display lamps in the same design for safety-related feedback
- Modern and timeless design
- Pleasant to the touch

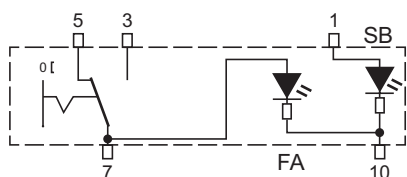
| Technical data | |
|-----------------------------------|--|
| Mounting hole | 19,8 mm x 41,8 mm |
| Material rocker | PC transparent, lacquer finish |
| Base plate material | PA white, housing PA black |
| Flat connector | 2,8 x 0,8 mm |
| Coating of switch contacts | AgNi |
| Light source | Max. 4 LEDs 2 x orientation lighting, green 2 x function lighting, red Warning lamps also available in blue and amber |
| Symbol type | Lasered |
| Mechanical lifetime | 450,000 hours |
| Protection class | IP 52 |
| Operating temperature | -40°C to +85°C |
| Dashboard thickness | For directly installed switches, 2 mm |

| | |
|-------------------|------|
| On request | 12 V |
| On request | 24 V |

Our switch configurator can be found at: www.hella.com/switch

| Accessories | |
|--------------------------|--|
| | Installation frame |
| 9AR 168 396-002/7 | Simple |
| 9AR 169 209-002/7 | End piece, left |
| 9AR 169 210-002/7 | End piece, right |
| 9AR 169 208-002/7 | Centre piece |
| | Cover plate |
| 9HB 172 229-002/7 | |
| | Female connector housing, 10-pin |
| 8JD 010 076-002/7 | |
| | Flat receptacle 2.8 mm |
| 8KW 863 934-003 | Junior Power Timer 0,5 mm ² – 1 mm ² |
| 8KW 863 934-023/4 | Junior Power Timer 1,5 mm ² – 2,5 mm ² |

ROCKER SWITCHES FROM SERIES 4100 FOR CITY BUSES AND COACHES

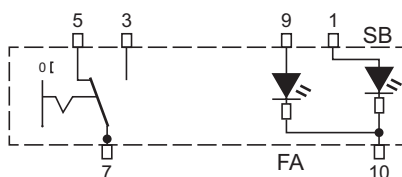


Heatable outside mirror

Latching changeover contact, 1-pin, 2-level

| | |
|-------------------------|--------------|
| Function | 01 |
| Function control | 1 x internal |
| Rated voltage | 24 V |
| Symbol | 1: 176 |
| Packaging unit | 1 piece |

6FH 354 107-711

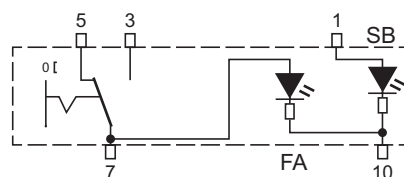


Heatable outside mirror

Latching changeover contact, 1-pin, 2-level

| | |
|-------------------------|--------------|
| Function | 08 |
| Function control | 1 x external |
| Rated voltage | 24 V |
| Symbol | 1: 176 |
| Packaging unit | 12 pieces |

6FH 354 109-471

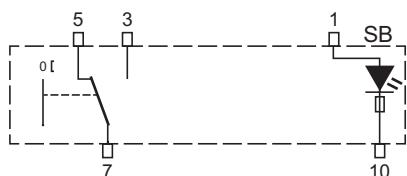


Interior lighting

Latching changeover contact, 1-pin, 2-level

| | |
|-------------------------|--------------|
| Function | 01 |
| Function control | 1 x internal |
| Rated voltage | 24 V |
| Symbol | 1: 020 |
| Packaging unit | 1 piece |

6FH 354 106-321

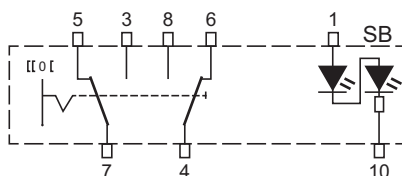


Stop request

Non-latching changeover contact, 1-pin, 2-level

| | |
|-------------------------|-----------|
| Function | 07 |
| Function control | Without |
| Rated voltage | 24 V |
| Symbol | 1: 370 |
| Packaging unit | 12 pieces |

6FH 354 130-581

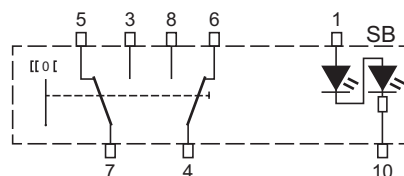


Air Condition

Latching changeover contact, 2 x 1-pin, 2-level

| | |
|-------------------------|----------------|
| Function | 14 |
| Function control | Without |
| Rated voltage | 24 V |
| Symbol | 1: 235, 2: 100 |
| Packaging unit | 1 piece |

6FH 354 130-591

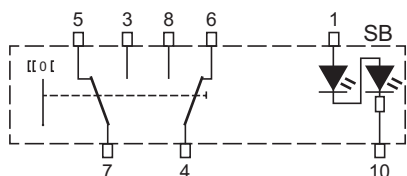


Window blind

Non-latching changeover contact, 2 x 1-pin, 2-level

| | |
|-------------------------|----------------|
| Function | 15 |
| Function control | Without |
| Rated voltage | 24 V |
| Symbol | 1: 308, 2: 307 |
| Packaging unit | 12 pieces |

6FH 354 106-701

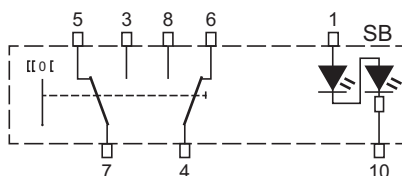


Close/open door

Non-latching changeover contact, 2 x 1-pin, 2-level

| | |
|-------------------------|----------------|
| Function | 15 |
| Function control | Without |
| Rated voltage | 24 V |
| Symbol | 1: 522, 2: 523 |
| Packaging unit | 12 pieces |

6FH 354 130-601

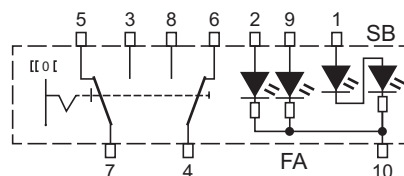


Lower/raise bus

Non-latching changeover contact, 2 x 1-pin, 2-level

| | |
|-------------------------|----------------|
| Function | 15 |
| Function control | Without |
| Rated voltage | 24 V |
| Symbol | 1: 131, 2: 132 |
| Packaging unit | 12 pieces |

6FH 354 130-611



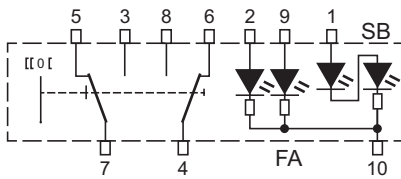
Blower

Latching changeover contact, 2 x 1-pin, 2-level

| | |
|-------------------------|----------------|
| Function | 21 |
| Function control | 2 x external |
| Rated voltage | 24 V |
| Symbol | 1: 156, 2: 155 |
| Packaging unit | 12 pieces |

6FH 354 130-621

ROCKER SWITCHES FROM SERIES 4100
FOR CITY BUSES AND COACHES

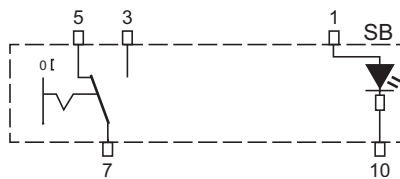


Defrosting windshield

Non-latching changeover contact, 2 x 1-pin, 2-level

| | |
|-------------------------|----------------|
| Function | 22 |
| Function control | 2 x external |
| Rated voltage | 24 V |
| Symbol | 1: 177, 2: 177 |
| Packaging unit | 12 pieces |

6FH 354 110-722

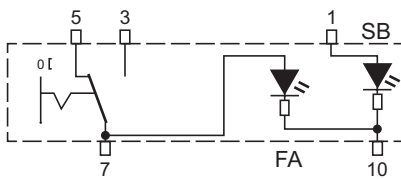


Reading light

Latching changeover contact, 1-pin, 1-level

| | |
|-------------------------|--------------|
| Function | 01 |
| Function control | 1 x internal |
| Rated voltage | 24 V |
| Symbol | 1: 027 |
| Packaging unit | 1 piece |

6FH 354 111-941

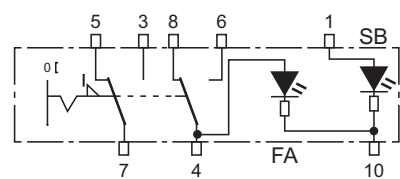


Refrigerator

Latching changeover contact, 1-pin, 1-level

| | |
|-------------------------|---------|
| Function | 00 |
| Function control | Without |
| Rated voltage | 24 V |
| Symbol | 1: 366 |
| Packaging unit | 1 piece |

6FH 354 130-631

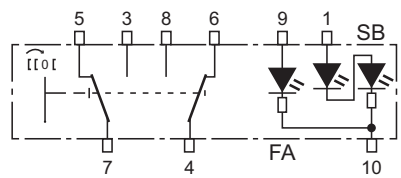


Lower bus

Latching changeover contact, 2-pin, 1-level

| | |
|-------------------------|--------------|
| Function | 05 |
| Function control | 1 x external |
| Rated voltage | 24 V |
| Symbol | 1: 278 |
| Packaging unit | 12 pieces |

6FH 354 130-641

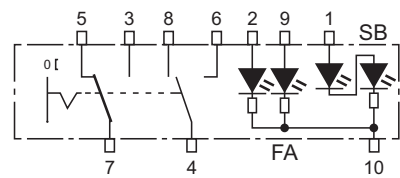


Bluetooth

Latching, non-latching changeover contact,
2 x 1-pin, 2-level

| | |
|-------------------------|----------------|
| Function | 20 |
| Function control | 1 x external |
| Rated voltage | 24 V |
| Symbol | 1: 646, 2: 645 |
| Packaging unit | 12 pieces |

6FH 354 130-651



Night light

Latching changeover contact, 2-pin, 1-level

| | |
|-------------------------|----------------|
| Function | 13 |
| Function control | 2 x external |
| Rated voltage | 24 V |
| Symbol | 1: 020, 2: 036 |
| Packaging unit | 12 pieces |

6FH 354 130-661



www.hella.com/switch

HELLA ROCKER SWITCH
CONFIGURATOR

Configure your very own switches yourself! First of all, choose between the waterproof 3100 series or the 4100 series.

You can select any switch function, the operating voltage, combinations of symbols and also the matching accessories with only a few clicks. Your choices can easily be transferred to a favourites list, printed out or sent as an online request.

Your request will be processed individually with the desired symbol configuration and customer-specific article number on a project-specific basis.

UNIVERSAL ACCESSORIES

CONNECTORS, ADAPTERS AND SOCKETS



Universal connector

2-pin with screwed-on strain relief and 8 A fuse, suitable for cigarette lighters and standard sockets (ISO 4165), screw connection up to 2.5 mm

8JA 007 589-001 6–24 V



Connector

2-pin in accordance with ISO 4165, cross section of cable entry 9.2 mm

8JA 002 262-001 6–24 V



Connector

7-pin in accordance with ISO 1724, plastic version, screw connections

8JA 001 930-003 12 V



Connector

13-pin in accordance with ISO 11 446, plastic version, screw connections, with rubber grommet

8JA 005 951-001 12 V



Mini short adapter

From 7-pin socket (ISO 1724) on the towing vehicle to 13-pin connector (ISO 11 446) on the trailer

8JA 008 981-001 12 V



Cable adapter

From 13-pin socket (ISO 11 446) on the towing vehicle to 7-pin connector (ISO 11 446) on the trailer, with 250 mm cable

8JA 005 952-001 12 V



Super short adapter

From 13-pin socket (ISO 11 446) on the towing vehicle to 7-pin connector (ISO 11 446) on the trailer

8JA 008 969-001 12 V



Connector socket

7-pin in accordance with ISO 1724, plastic version, screw connections

8JB 001 943-003 12 V



Connector socket

13-pin in accordance with ISO 11 446, plastic version, screw connections, with rubber grommet and rubber seal in the cap

8JB 005 949-001 12 V



Connector socket

13-pin in accordance with ISO 11 446, plastic version, screw connections, with rear fog light deactivation.

8JB 005 949-011 12 V



Connector socket

2-pin in accordance with ISO 4165, without cover, 6.3 mm blade terminal connections, load-carrying capacity: max. 16 A, installation opening cross section 18.5 mm

8JB 001 946-072 6–24 V



Connector socket

2-pin in accordance with ISO 4165, 6.3 mm blade terminal connections, with spring-loaded cover, load-carrying capacity: max. 16 A, installation opening cross section 18.5 mm.

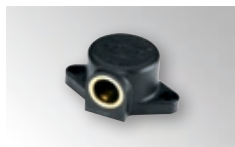
8JB 001 946-082 6–24 V



Connector socket

2-pin in accordance with ISO 4165, 6.3 mm blade terminal connections, with snap-on cover, load-carrying capacity: max. 16 A, installation opening cross section 18.5 mm.

8JB 001 946-092 6–24 V



Surface-mounted socket

2-pin in accordance with ISO 4165, screw connections, load-carrying capacity: max. 16 A.

8JB 004 123-001 6–24 V



Power socket

2-pin with cover and clamping sleeve, suitable for cigarette lighter socket, 6.3 mm blade terminal connections, load-carrying capacity: max. 16 A

8JB 008 023-001 6–24 V

BREAKDOWN ACCESSORIES



Hazard warning lamp Model 3003/3003 ACCU

Type-tested; with fastening bracket (for battery operation via 5 mono cells, not included in delivery)

ACCU version: type approved, autom. battery charging while engine is running; autom. changeover 12 / 24 V, operating time in flashing mode 40 h or 7 h with work light; charging cradle and lead-gel battery included in delivery

2XW 007 146-001 Model 3003

2XW 007 146-011 Model 3003 ACCU

ACOUSTIC WARNING SYSTEM FOR VEHICLES

AVAS



The AVAS is an acoustic warning system for hybrid and electric vehicles designed to increase the safety of road users. Once a pre-defined speed has been reached, the noise fades in / fades out. An acoustic signal is also automatically given off when reversing. The driver can easily activate or deactivate the warning system by means of a switch. The AVAS consists of a dustproof and waterproof housing.

Product features:

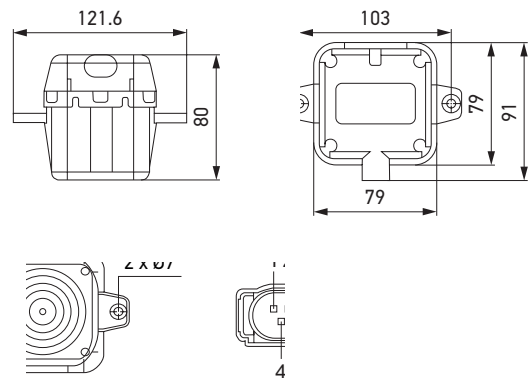
- Designed for vehicles with noiseless engines in order to increase the safety of road users
- For vehicles solely with electric drive (PEV), hybrid electric vehicles (HEV) and fuel cell vehicles (FCV)
- Simulates simple engine sound
- Space-saving and compact sensor
- Low power consumption



AVAS standard sound
Just have a listen!

| Technical data | |
|-------------------------------------|--|
| Operating voltage | 9 – 16 V |
| Current consumption | 100 mA (Normal condition) |
| Maximum current consumption | 150 mA |
| No-load current in idle mode | 100 µA |
| Weight | 350 g |
| Operating temperature | -40°C to +85°C |
| CAN | Diagnostics (based on UDS standard) |
| Loudspeaker | 2 inch (impedance 4 Ω) |
| Mute function | Support for On/Off status via CAN |
| Frequency range | 160 Hz – 5 kHz |
| Sound pressure level | 65 ± 5 dB at 1 m Generation 0 km/h - 30 km/h (tbd) Minimum frequency change speed: 0.8% (km/h) |
| Operating vehicle speed | 0 to 20 km/h |
| Protection class | IP 6K9K |
| Full digital amplifier | 32 bits sampled at max 96 kHz |
| Housing volume | 0.4 L |
| Housing material | PBT-GF15 |
| Thermal overload protection | Yes |
| Connector | TYCO 114-18063-126 |
| Mating connector | TYCO 1-967616-1 |

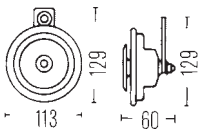
Technical drawing



3SL 015 329-007* Standard sound

* Customer-specific sounds are available on request.

ACOUSTIC SIGNAL DEVICES

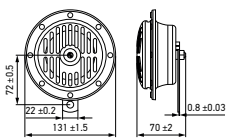


Signal horn B36

Zinc-coated metal housing, diaphragms black, bracket on the horn for fastening screw M8; with blade terminal connections 6.3 mm, protected; with Teflon pellet as humidity protection

Sound pressure level at 2 m distance 116 dB(A)
Power consumption 72 W per horn

3BA 002 768-441 24 V, 335 Hz
3BA 002 768-201 24 V, 400 Hz

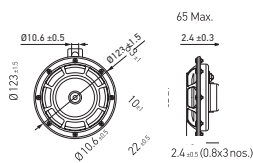


Supertone horn DL 50 V2

Metal housing, black lacquer finish with guard, bracket on the horn for fastening screw M8

Sound pressure level at 2 m distance 114 dB(A)
Power consumption 84 W per horn

3CA 004 811-021 24 V, 310 Hz
3CA 004 811-031 24 V, 380 Hz

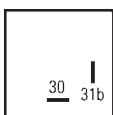


Electronic supertone horn B 133

Metal housing and guard in black lacquer finish, holder on horn for fastening screw M10; with DEUTSCH connector, protected; Teflon pellet for protection against humidity; with interference suppression capacitor

Sound pressure level at 2 m distance 115 dB(A)
Power consumption 78 W

3AF 005 631-227 24 V, 300 Hz
3AF 005 631-237 24 V, 450 Hz



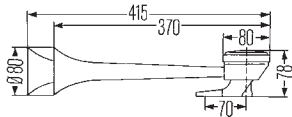
Buzzer with bracket

2 blade terminal connections - 6.3 mm

Sound pressure level at 1 m distance 70 dB(A)
Frequency 500 Hz
Operating temperature -40°C to +85°C

3SB 003 985-061 24 V

ACOUSTIC SIGNAL DEVICES

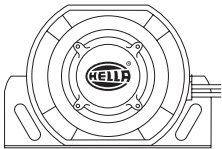


Compressed air fanfare

For vehicles with pneumatic brake systems; with 2 trumpets; hood and trumpet chromium-plated, base matt black

| | |
|-----------------------------|--|
| Compressed air range | 4–8,5 bar |
| Frequency | 300 Hz (trumpet 295 mm long) 320 Hz (trumpet 340 mm long) |

3PB 005 411-001 24 V

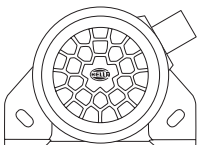


Reversing and warning alarm

Deutsch DT04-2P, 12–24 V, automatic adjustment to environmental sound levels

| | |
|---|-------------------|
| Sound pressure level at 1.2 m distance | 87–112 dB(A) |
| Frequency | 1.200 Hz |
| Housing dimensions (L x W x H) | 146 x 78 x 101 mm |

3SL 996 139-202 12–24 V



Reversing and warning alarm

Deutsch DT04-2P, 12–24 V

| | |
|---|------------------|
| Sound pressure level at 1.2 m distance | 97 dB(A) |
| Frequency | 1.200 Hz |
| Housing dimensions (L x W x H) | 101 x 46 x 74 mm |

3SL 009 148-011 12–24 V

HELLA WORLDS WEBSITE, TOOLS AND MORE

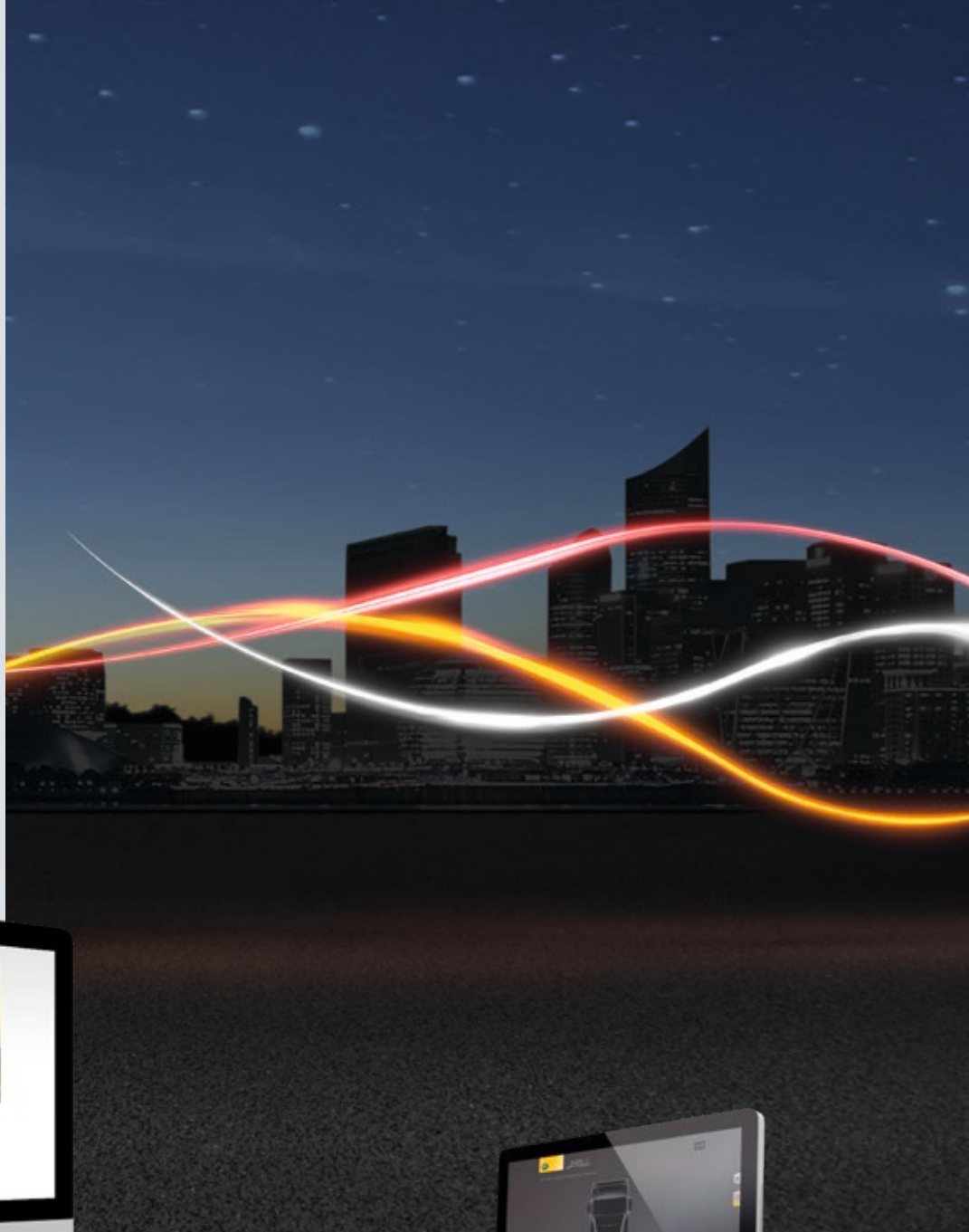
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