TRAILERS
LIGHTING AND WIRING

www.hella.com/trailer

WE GET THE BEST ON THE ROAD WITH YOU

The new HELLA products for trailers are summarised in this brochure. Thanks to the new, modular design, a flexible composition of your individual light solution is possible, as the slogan goes: illuminating quality thanks to modular system. HELLA allows you a great deal of freedom when first selecting the basics you need and then countless ways of easily converting or quickly acquiring spare parts. We present you with the various wiring systems and the comprehensive range of HELLA accessories.

The HELLA Team wishes you a fun read.

What has been mandatory for trucks has also become obligatory for trailers: side direction indicators for enhanced safety.

With effect from November 2017, the legal change of the ECE Regulation R48 requires these for new vehicles.

Due to these requirements, HELLA has developed a concept based on existing side marker lights.

It can be flawlessly and effortlessly integrated into current lighting systems. The side marker light blinks yellow and alerts following traffic, cyclists and pedestrians to the vehicle's turning action.

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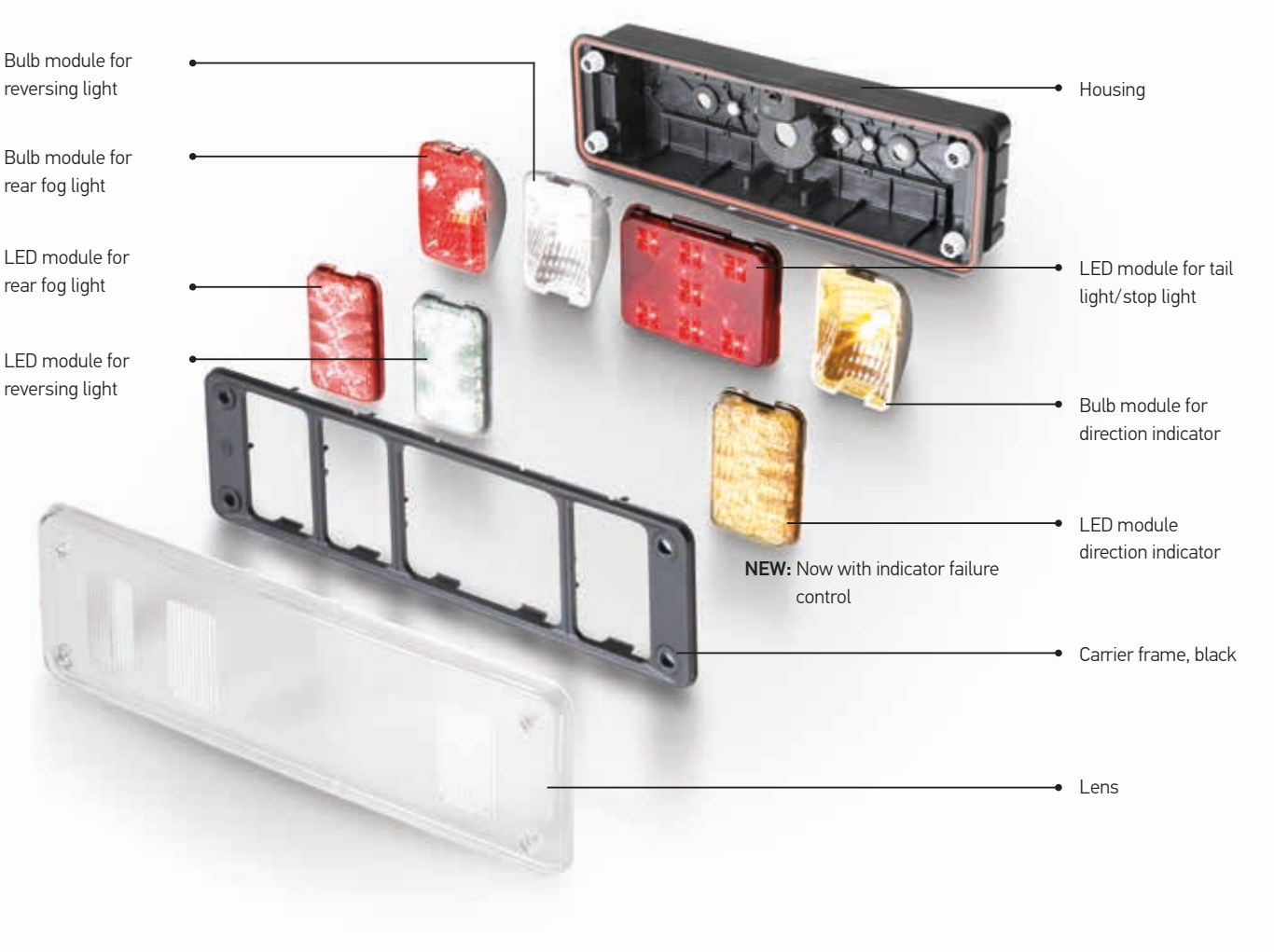
This brochure relates to a selection of our entire product portfolio.
Further parts and accessories from the areas listed are available on request.

THE LED HYBRID REAR COMBINATION LAMP



The modular 24 V trailer lamp by HELLA incorporates hybrid technology and is extremely versatile. Owing to the modular system and associated modularity of light sources and housing parts, the trailer lamp can be adapted flexibly to the requirements in each case. Several light functions, such as the tail, stop, direction indicator, rear fog and reversing light are combined in one single light.

While the design of the tail lamp and stop lamp is essentially based on an LED module, all other functions can be implemented in LED or classic filament bulb technology. The combination options available are almost limitless.

A changeover from filament bulb to highly energy-efficient LED technology is possible retrospectively at any time with no special tools required which offers plenty of scope for future conversions – the same applies for the replaceable lens which can be changed independently of the light source. A further highlight is the junction box function with additional outputs on the rear of the housing. This means that further auxiliary or light functions, such as a side marker light or clearance light, can be easily connected.

For many variants, the flash function from ECE 48, Series 6, Supplement 6 is now also additionally available. It requires a lateral flasher function, which is integrated in the module.

Modular principle of the multi-function lights

Multi-function light with rubber arm

Multi-function light with side marker light

For the variants with integrated flash electronics, the dedicated side marker light connection is orange.

NEW: Variant with flash side marker light connection– the indicator failure control is integrated into the lamp.

THE LED HYBRID ROUND LIGHT

The new generation of this true classic! The round light series comprises a tail light/stop light/direction indicator light and a rear fog/reversing light combination. The lamps have a 140 mm dia. and are available either as a hybrid version (direction indicator as bulb) or as a full LED version.
All versions are optionally available with integrated resistor to ensure the comfort function in the vehicle is available (for the stop light function). The light is downward compatible to the 001 685 series. The excellent level of product quality guarantees characteristics such as easy replacement of lenses in the event of damage or straightforward mounting, that can be done either on the left or right. The series meets the ECE norm and is also approved for double mounting.

The direction indicator failure pulse according to ISO 13207 is integrated in the LED versions. The light has integrated short-circuit protection. All the most common groups of cables are available.

Thanks to the new round light series, HELLA offers a highly-efficient, extremely economical, long-lasting light, due to thermal management.

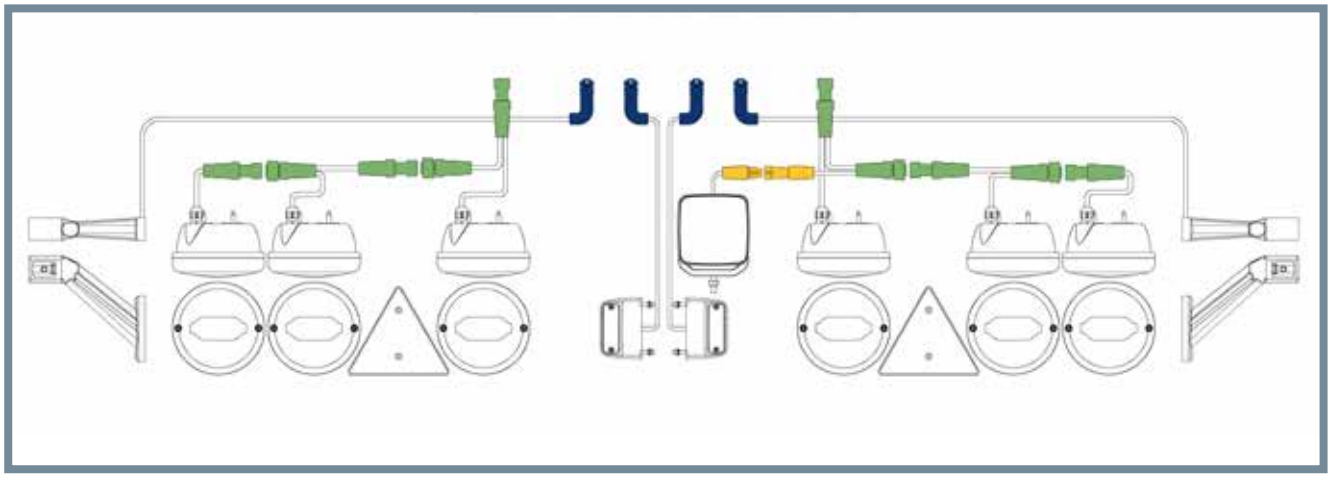
FUNCTIONS

Hybrid
Stop light, direction indicator, tail light

LED
Stop light, direction indicator, tail light

LED
Fog light, reversing light

Accessory: chrome ring



WIRING SYSTEMS – THE HIDDEN TECHNOLOGY

The connector systems

The EasyConn connector system is made up of 2, 7, and 15-pin connector housings and female connector housings. For even easier mounting on trailers, their diameter has been drastically reduced. SUPERSEAL and 7-pin DIN bayonet plug connectors can be used to expand the system. This provides customers with even greater flexibility when designing, retrofitting, or converting the lighting system for their trailers.

The 15-pin front, central and rear main cables in the wiring are still treated as a constituent part of the tried-and-tested EasyConn system. The wiring system makes it quick and easy to connect new products to various systems that are already present. This not only saves time and increases flexibility, but also minimises storage costs for the aftermarket, for workshops, and for fleet operators.

15-pin EasyConn connector
The 15-pin EasyConn connector housing and female connector housing connect the front adapter, the main supply cable, and the rear adapter to one another.

15-pin EasyConn connector with connector set II
The proven 15-pin plug connectors are also available as a connector set, through which customer-specific requests as well as repairs can be easily implemented.

Exploded view of 15-pin EasyConn connector II

The plug connections are tested in compliance with degree of protection **IP 6K9K** and guarantee absolute leak tightness. **6K** = dustproof, **9K** = resistant to high pressure/steam cleaning

Systematic colours

Straightforward connection of all components with process reliability, thanks to the colour system from HELLA.

7-pin EasyConn connector
Rear lamps are connected to the EasyConn system using the 7-pin connector housing and female connector housing.

7-pin DIN bayonet connector
Our round light system as well as third-party products can be connected via a 7-pin DIN bayonet connector.

2-pin EasyConn connector*
The 2-pin EasyConn connector housing and female connector housing make it possible to connect e.g. SMLR, position lights, and clearance lights as well as 2-pin auxiliary functions.

2-pin SUPERSEAL connector
With the 2-pin SUPERSEAL connection, customers can fall back on yet another reliable product for the connecting of single-function lights.

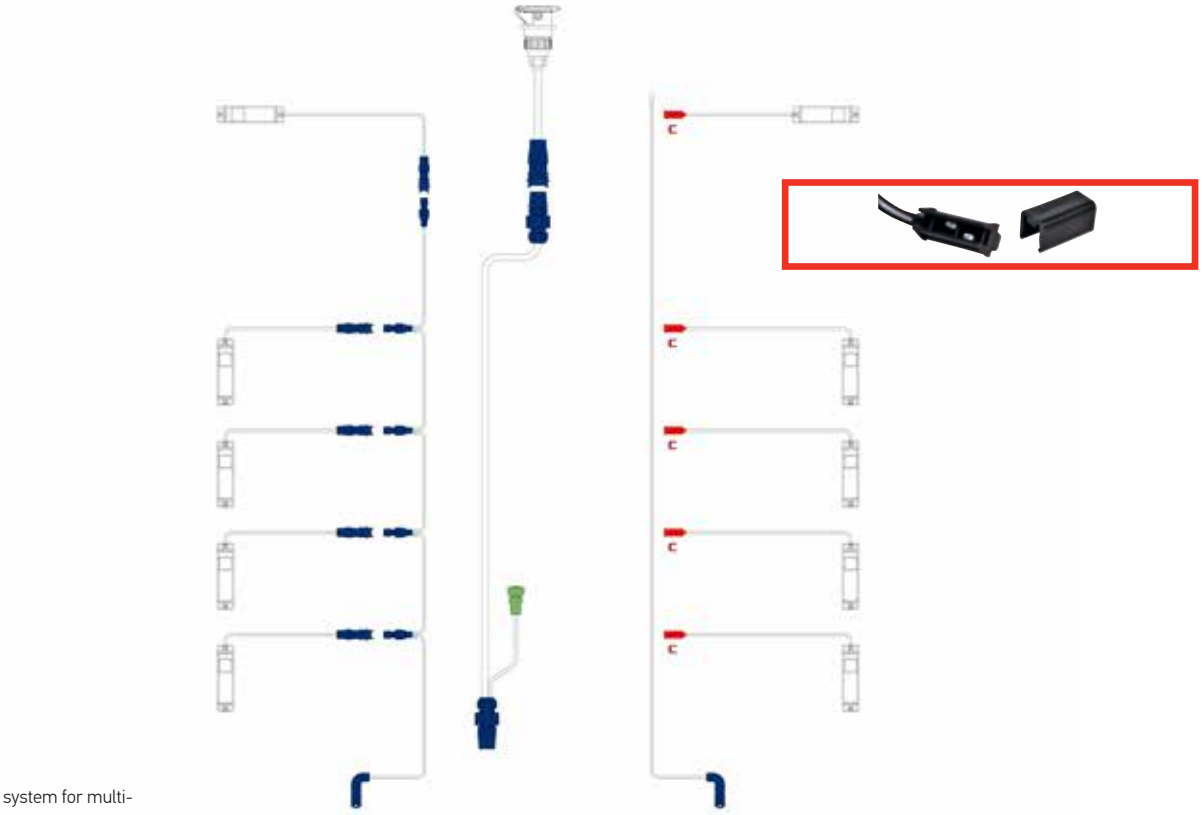
Quick link
Our quick link press connection: flexible and secure mounting of single-function lights on our HELLA flat conductor.

* Version also available in angled design

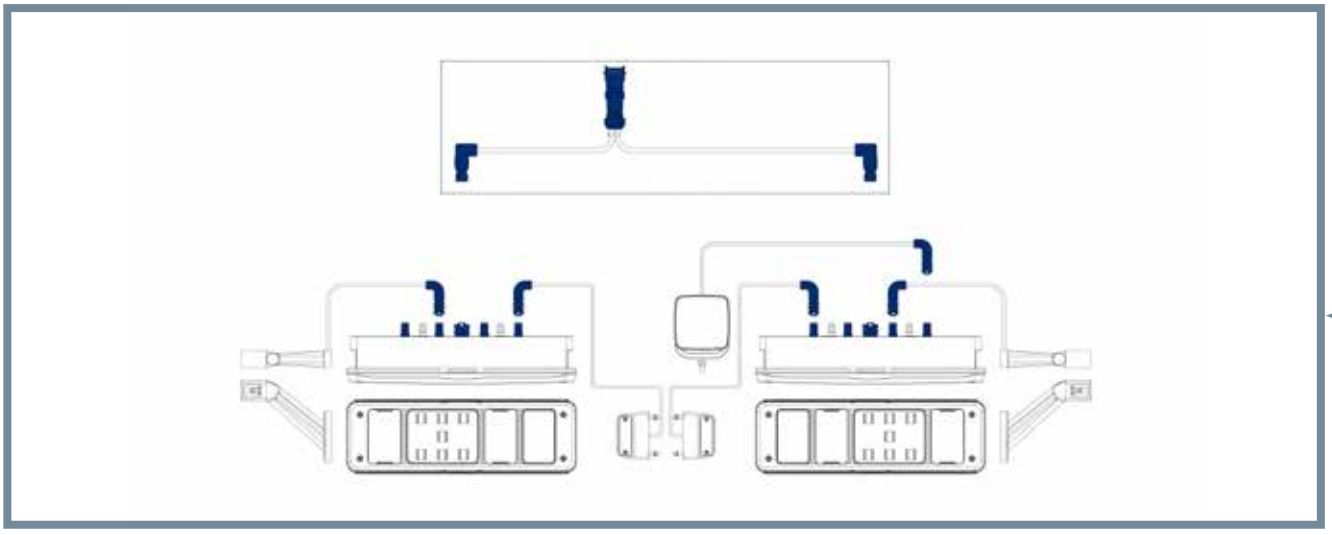
- → Simply connect the coupling to the flat cable.
- → Fix with the clamping piece.
- → Press together with the mounting pliers.
- → Finished.

Quick link wiring: flexible and secure mounting
The quick link wiring system is a further contact option that stands out thanks to fast and straightforward installation. Lamps fitted with HELLA quick link wiring consist of a cable with a coupling. The cables are delivered in different lengths depending on requirements. These lamps can contact a 2-wire flat cable in any place. They may also be used for dangerous goods transport (GGVS / ADR).

WIRING AND LIGHTING SYSTEM WITH EASYCONN

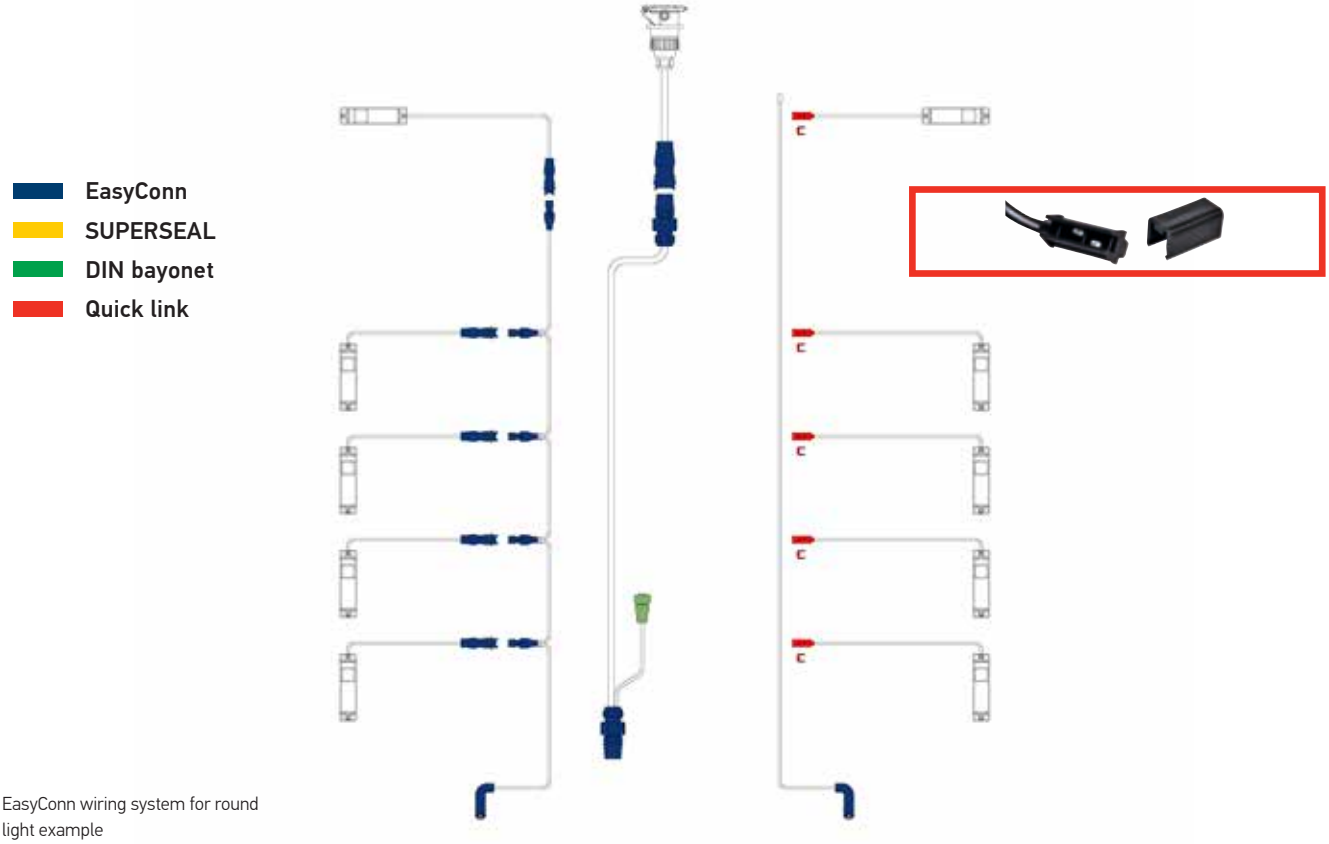


EasyConn wiring system for multi-function light example

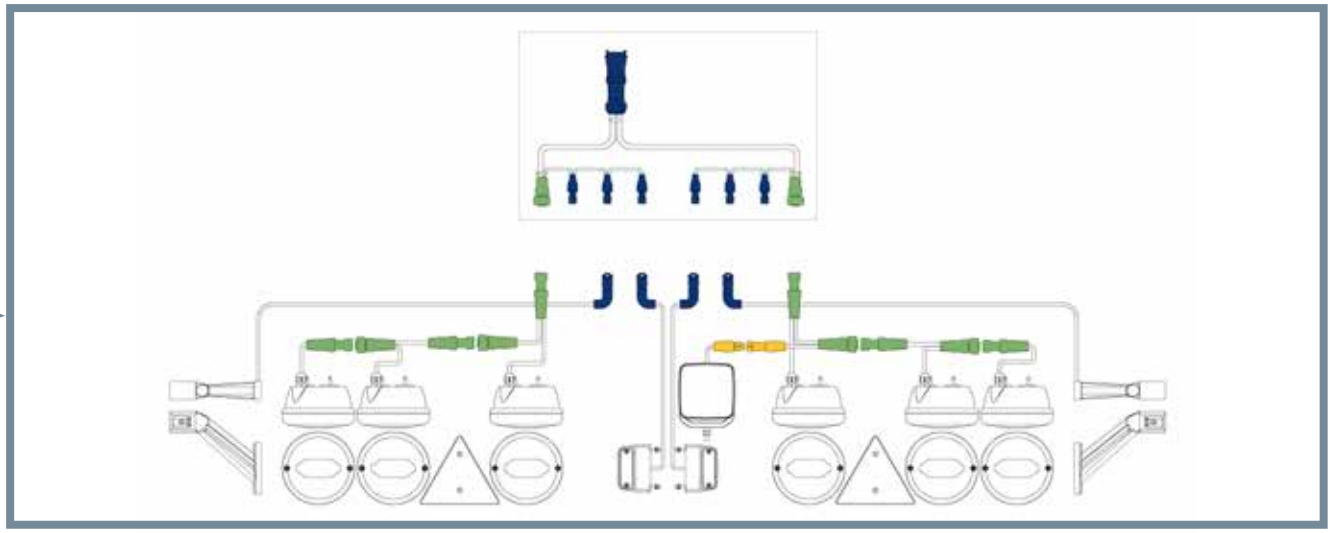


The modular hybrid rear lamp takes over the distributor function for all the lighting functions required according to the German road traffic licensing regulations (StVZO). These are strictly separated from other special lighting and auxiliary functions by a dedicated distributor circuit. This provides the advantage of a cost-effective, easy to install lighting system with a modular structure. Subsequent, hassle-free expansion of the standard system is also possible with additional EasyConn components and other lighting and special functions.

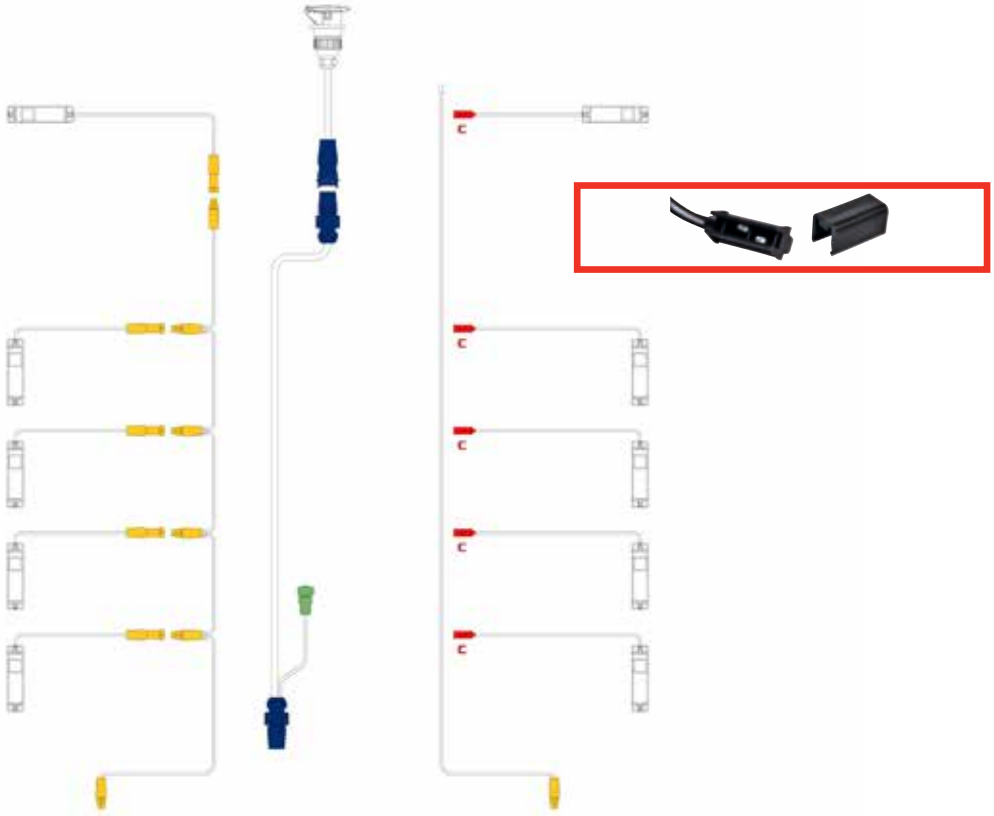
Only the rear adapter is replaced to use our new round light system. All other cable components such as the main power supply and the front adapter remain the same. Connection is via DIN bayonet. All single-function lights remain unchanged with an EasyConn connection and can, in this way, be integrated into the round light system.



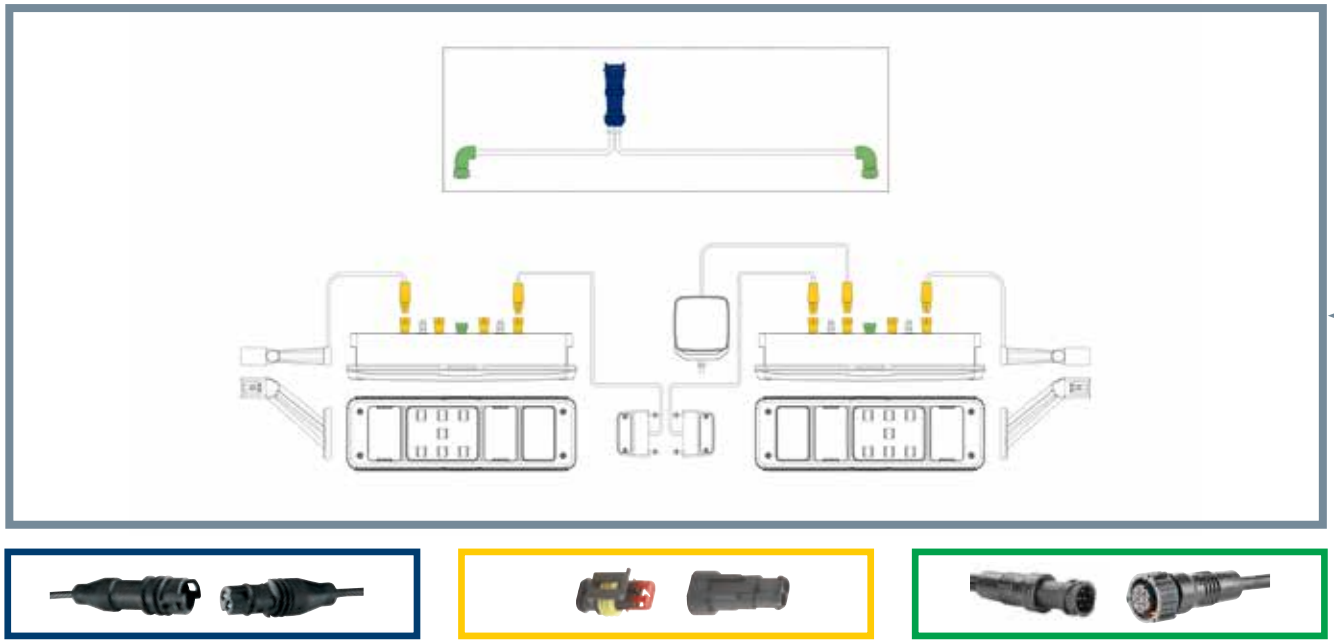
EasyConn wiring system for round light example



WIRING AND LIGHTING SYSTEM WITH SUPERSEAL

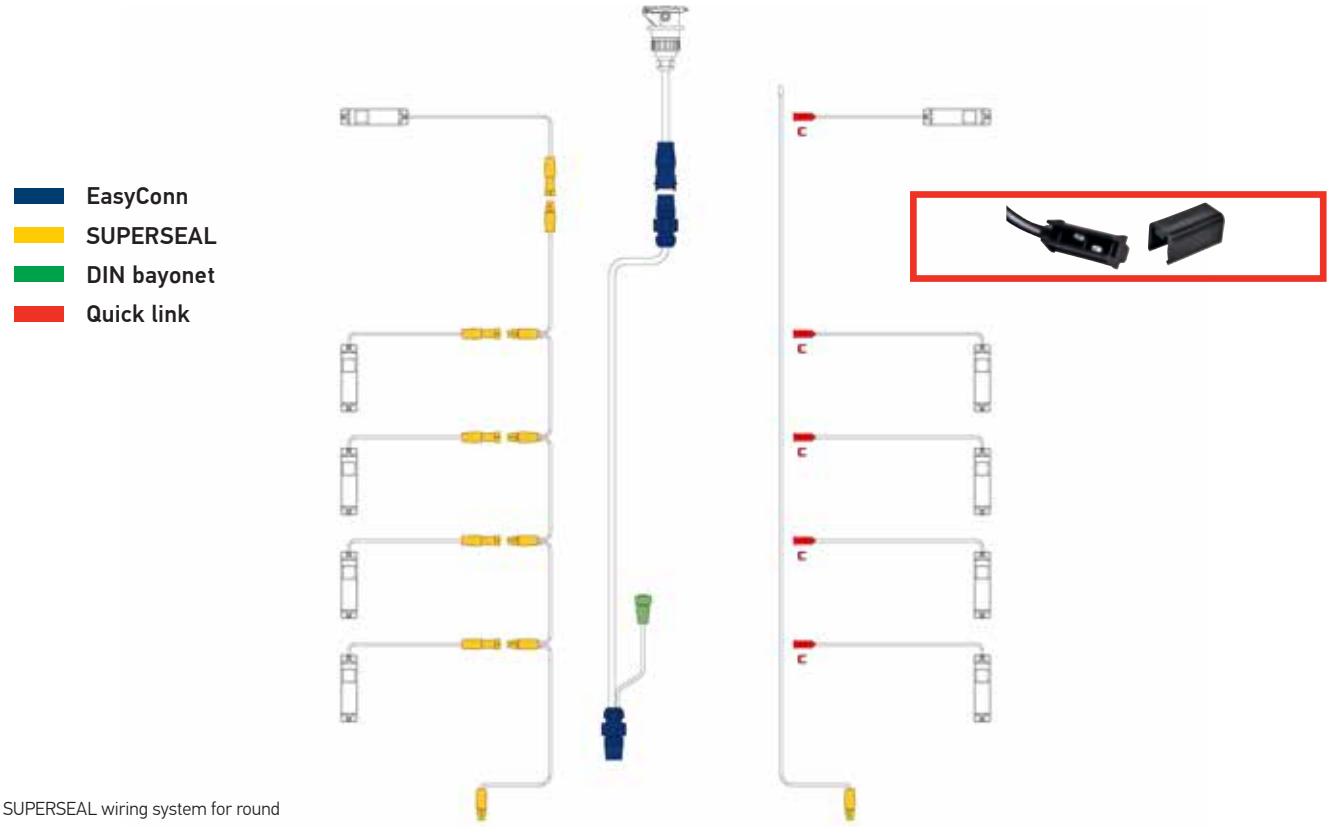


SUPERSEAL wiring system for multi-function light example

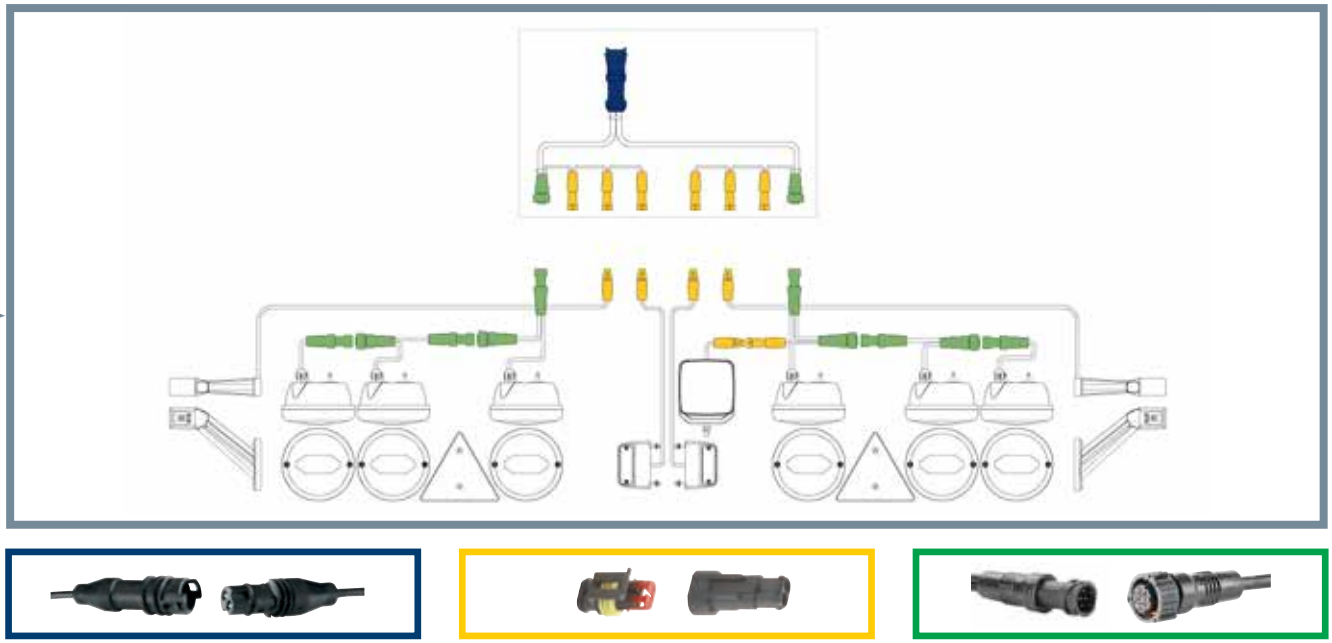


The modular hybrid rear combination lamp also serves as a distributor for our DIN bayonet and SUPERSEAL versions. This is where all the lighting functions required according to the German road traffic licensing regulations (StVZO) are connected. Special and auxiliary functions continue to be strictly separated from the standard by means of a dedicated distributor circuit. This provides the advantage of a cost-effective, easy to install lighting system with a modular structure as well as hassle-free subsequent expansion of the standard system with additional EasyConn, DIN bayonet and SUPERSEAL components.

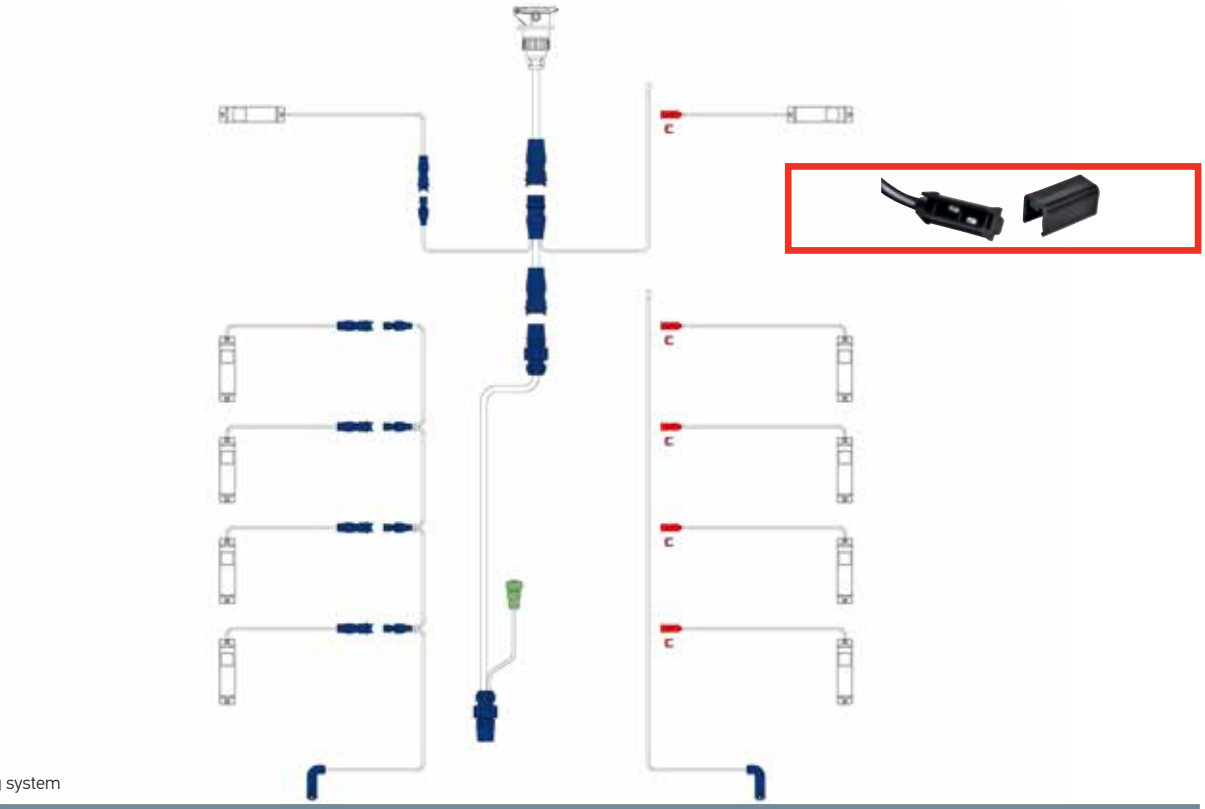
Only the rear adapter must be replaced to use our new round light system. All other cable components such as the main power supply and the front adapter remain the same. Connection is via DIN bayonet. All single-function lights are now connected with a SUPERSEAL connector.



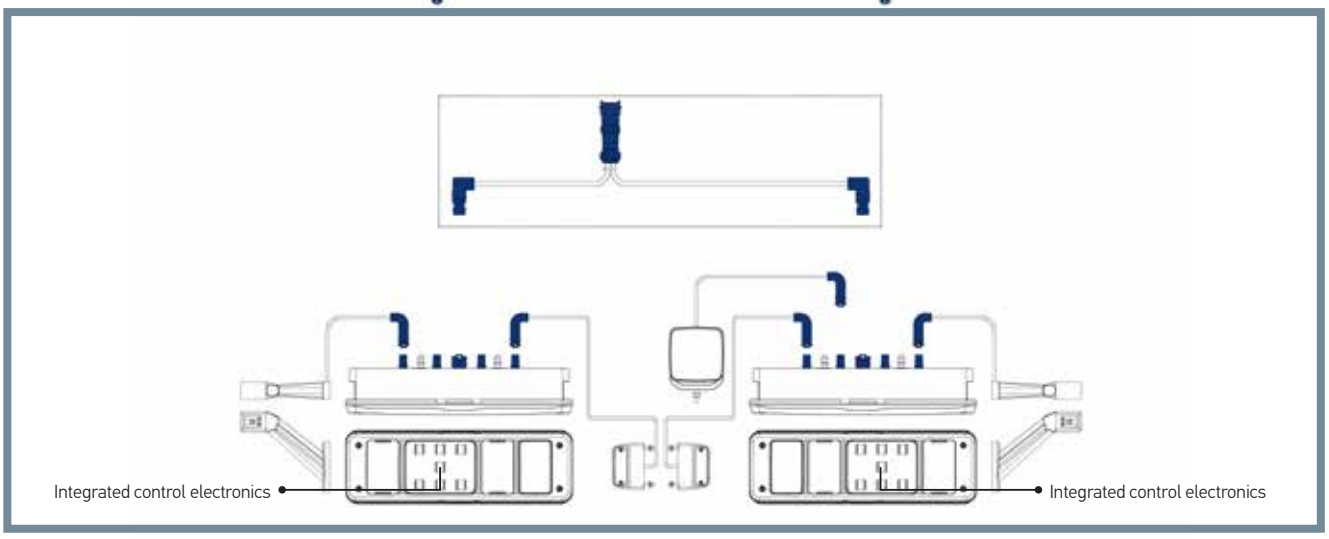
SUPERSEAL wiring system for round light example



WIRING AND LIGHTING SYSTEM WITH SUPERSEAL OR EASYCONN WITH FLASHING SIDE MARKER LIGHTS

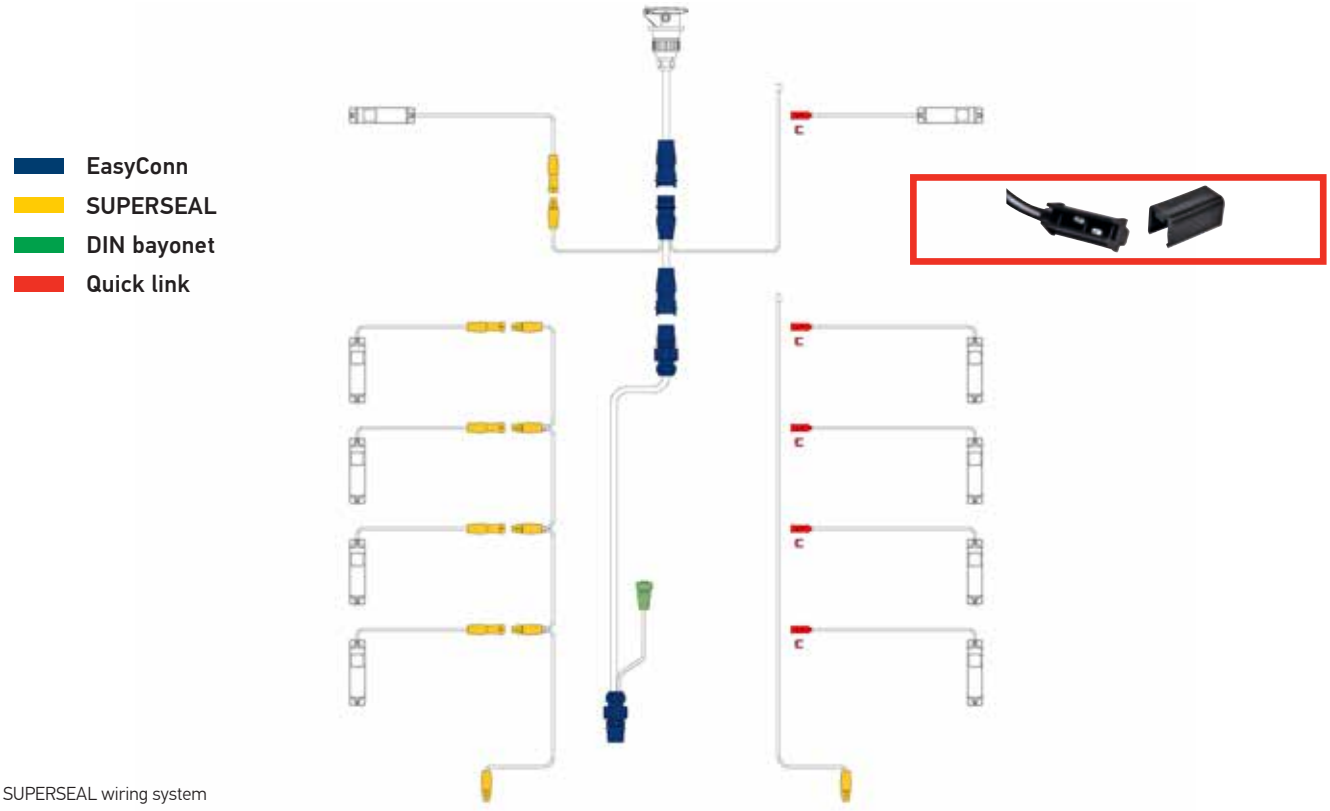


EasyConn wiring system

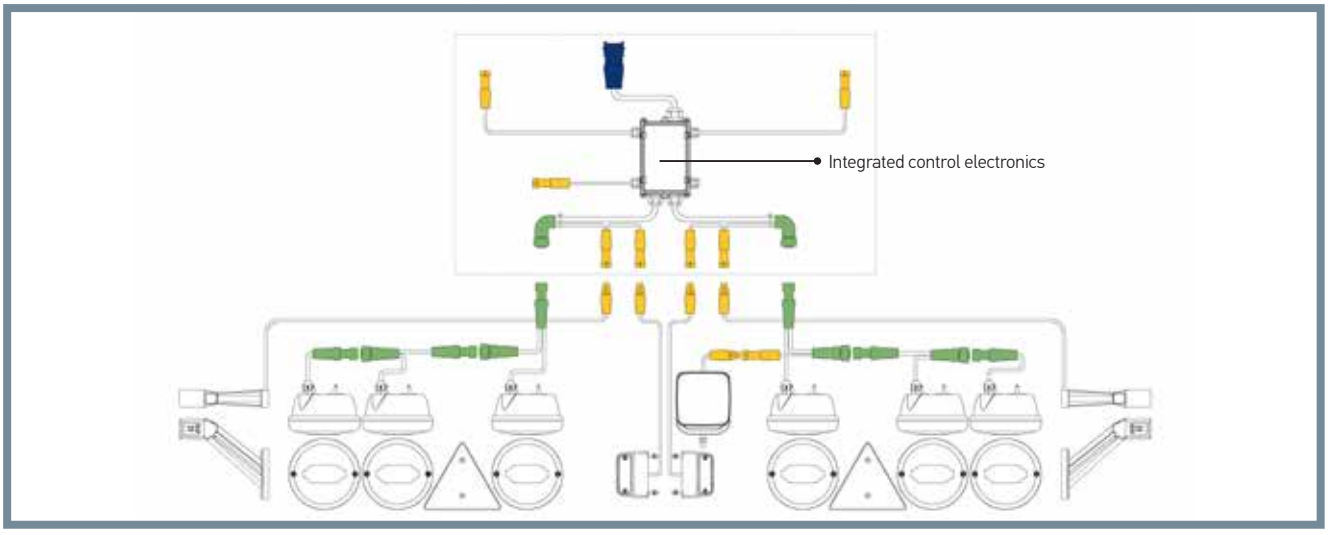


Control electronics for flashing side marker lights
The control electronics serves to meet the ECE R48 Revision 6. It serves a electronic ballast to make conventional side marker lights flash. It furthermore conforms to legislation with existing indicator failure monitors through evaluation of the rear direction indicator. The control unit monitors functioning of the rear direction indicator. With any fault it switches off the flasher function of the side marker lights to ensure that the failure monitor of the towing vehicle conforms to the law.

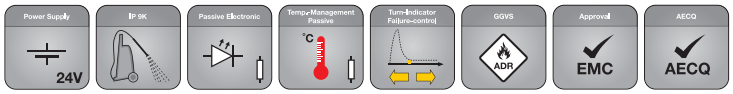
The compact control electronics design permits installation in a distribution box. Only one control unit is required and thanks to the full encapsulation, the control electronics is very robust and watertight. High degree of EMC protection allows use in very challenging environments. The control electronics is suitable for use with all LED side marker lights.



SUPERSEAL wiring system

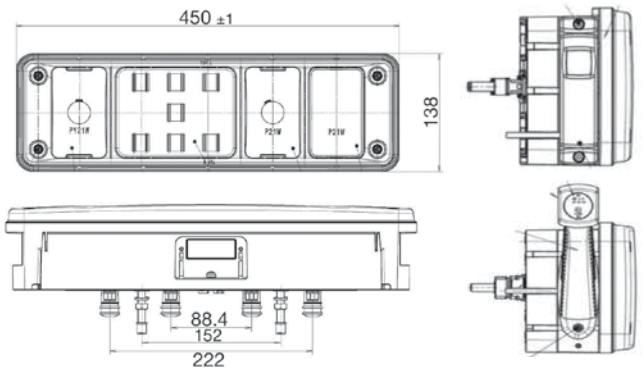


MULTI-FUNCTION LIGHTS



Part Number	Connector type on the light				LED function					Auxiliary		Mounting		
	 7-pin EasyConn pin housing	 2-pin EasyConn socket housing	 7-pin DIN pin housing	 2-pin SUPERSEAL pin housing	Back-up light	Rear fog light	Direction indicator lamp	Stop light	Tail light	Rubber arm	Licence plate light	Right	Left	
2VP 340 961-017	■	■						■	■				■	
2VP 340 961-027	■	■						■	■			■		
2VP 340 961-057	■	■			■	■		■	■				■	
2VP 340 961-067	■	■			■	■		■	■			■		
2VP 340 961-117	■	■						■	■	■			■	
2VP 340 961-127	■	■						■	■	■		■		
2VD 340 961-327	■	■						■	■		■	■		
2VD 340 961-337	■	■						■	■		■		■	
2VD 340 961-357	■	■			■	■		■	■		■		■	
2VP 340 961-417			■	■				■	■				■	
2VP 340 961-427			■	■				■	■			■		
2VP 340 961-437			■	■				■	■	■			■	
2VP 340 961-447			■	■				■	■	■		■		
2VP 340 961-477			■	■	■	■		■	■	■			■	
2VP 340 961-487			■	■	■	■		■	■	■		■		
2VP 340 960-017	■	■			■	■	■	■	■				■	
2VP 340 960-027	■	■			■	■	■	■	■			■		
2VD 340 960-037	■	■			■	■	■	■	■		■		■	
2VD 340 960-047	■	■			■	■	■	■	■		■	■		
2VP 340 960-117	■	■			■	■	■	■	■	■			■	
2VP 340 960-127	■	■			■	■	■	■	■	■		■		
2VP 340 960-277			■	■	■	■	■	■	■				■	
2VP 340 960-287			■	■	■	■	■	■	■			■		

* BAK = Indicator failure control ; ** Flash = lateral direction indicator



	Integrated BAK *	Flash SMLR **	BAK/Flash
		340 965-017	
		340 965-027	
		340 965-057	
		340 965-067	
		340 965-117	
		340 965-127	
		340 965-357	
		340 965-417	
		340 965-427	
		340 965-437	
		340 965-447	
	340 966-017	340 964-017	340 967-017
	340 966-027	340 964-027	340 967-027
	340 966-117	340 964-117	340 967-117
	340 966-117	340 964-127	340 967-127
	340 966-417		
	340 966-427		

LED hybrid rear lamp

Modular multi-function rear lamp for horizontal mounting with the functions: tail light, stop light, direction indicator, triangular, rear fog, and reversing light, whereby the stop and tail light function is integrated as standard into the LED. It is possible to mount a clearance light as well as side marker light with reflex reflector. Other variants with integrated licence plate lamp are also available.

Full LED combination rear light

Modular multi-function rear lamp for horizontal mounting, clear lens, with pulse for direction indicator failure monitor. Tail light/stop light with 7 red LEDs, direction indicator with 7 amber LEDs, reversing light with 6 white LEDs, rear fog light with 7 red LEDs, clearance light with 1 red LED, side marker reflex reflector light with 1 amber LED.

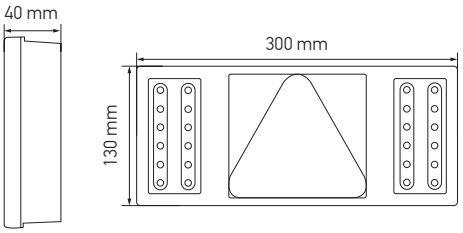
Flash SMLR rear combination lamp

For many variants, the flash function from ECE 48, Series 6, Supplement 6 as well as an integrated indicator failure system for the flasher function in LED for monitoring the towing vehicle is now additionally available.

ACCESSORIES REQUIRED

Cover	8XS 340 092-017 must be used
EasyConn lock	9HV 340 812-007 open connections must be closed
SUPERSEAL lock	9XX 340 814-017 open connections must be closed

MULTI-FUNCTION LIGHTS



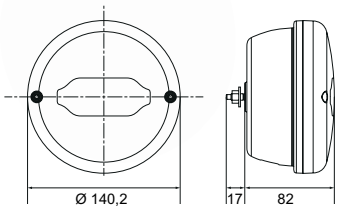
"COLUNA" full LED rear combination lamp

Full LED 5-chamber light with tail light, stop light, direction indicator, rear fog light, and reversing light. With triangular reflex reflector for horizontal mounting on 24 V trailers. 12 white LEDs for tail light function arranged as a light curtain. With fastening bolts from the rear. With pulse for direction indicator failure monitor.

Additional variants also available on request in 12 volts and without flashing impulse.

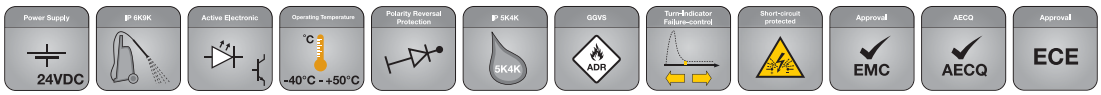
Part Number	Connector type on the light			Cable	LED function					Mounting	
	 7-pin EasyConn pin housing	 7-pin DIN pin housing	 6.3 mm flat receptacles	Length in mm	Back-up light	Rear fog light	Direction indicator lamp	Stop light	Tail light	Right	Left
2VP 345 900-017	■			1,000	■	■	■	■	■		■
2VP 345 900-027	■			1,000	■	■	■	■	■	■	
2VP 345 900-097		■		1,000	■	■	■	■	■		■
2VP 345 900-107		■		1,000	■	■	■	■	■	■	
2VP 345 900-137			■	3,000	■	■	■	■	■		■
2VP 345 900-147			■	3,000	■	■	■	■	■	■	

ROUND LIGHTS



Hybrid and full LED rear combination lamp

The series comprises a hybrid tail, stop, direction indicator light combination (direction indicator function executed with bulb) a full LED tail, stop, and direction indicator combination and a full LED rear fog and reversing light combination.
Tail light function each with 6 LEDs. Lens can be replaced in the event of damage. Suitable for lateral mounting, left and right.



Part Number	Connector type on the light					Cable	Function					
	7-pin DIN pin housing	7-pin DIN socket housing	2-pin SUPERSEAL pin housing	6.3 mm flat receptacles	Resistor (brake)	Length in mm	Reversing light LED	Rear fog light LED	Indicator lamp LED	Direction indicator bulb	Stop light LED	Tail light LED
2SD 013 155-007	■				■	300				■	■	■
2SD 013 155-017	■	■				300				■	■	■
2SD 013 155-027				■	■	3,000				■	■	■
2SD 013 155-037				■		3,000				■	■	■
2SD 013 155-107	■	■				300			■		■	■
2SD 013 155-117				■		3,000			■		■	■
2SD 013 155-127	■					300			■		■	■
2NR 013 155-207	■	■	■		■	800	■	■				
2NR 013 155-217	■	■			■	800	■	■				
2NR 013 155-227				■	■	3,000	■	■				

Find the right reversing light on page 30.

SHAPELINE

The variety and range of shapes and the various combination options paired with a technically optimised product design make the new Shapeline light series a true innovation in vehicle lighting. Whether the front, side or rear of a vehicle, every vehicle series – whether big or small – can have a unique and, above all, consistent look using a customised configuration and arrangement of lights. This allows us meeting the demands of vehicle manufacturers with lower numbers of manufactured vehicles. Along with innovative technology and the familiar high quality of HELLA's products, the variety of shapes of Shapeline lights provide you with infinite design freedom. Design your light – with HELLA Shapeline!

APPLICATION EXAMPLES

Examples are presented for the following products:

Article name	Part number
Tail/stop light wing, rear, right, horizontal	2SB 013 399-02
Direction indicator, slim, rear, right horizontal	2BA 013 332-10
Reversing light, right, horizontal	2ZR 013 345-12
Rear fog light, right, horizontal	2NE 013 345-02
Tail light /stop light wing, rear, left, horizontal	2SB 013 399-01
Direction indicator, slim, rear, left, horizontal	2BA 013 332-09
Reversing light, left, horizontal	2ZR 013 345-11
Rear fog light, left, horizontal	2NE 013 345-01

Examples are presented for the following products:

Article name	Part number
Tail/stop light wing, left, horizontal	2SB 013 399-01
Direction indicator wing, rear, left, horizontal	2BA 013 333-01
Reversing light, slim, left, horizontal (only with 2 lamps)	2ZR 013 401-07
Rear fog light, slim, left, horizontal	2NE 013 343-07
Tail/stop light wing, rear, right horizontal	2SB 013 399-02
Tail light /stop light wing, rear, left, horizontal	2SB 013 399-01
Direction indicator wing, rear, left, horizontal	2BA 013 333-01
Rear fog light, slim, right, horizontal	2NE 013 343-08
Tail/stop light wing, rear, right horizontal	2SB 013 399-02
Direction indicator wing, rear, right, horizontal	2BA 013 333-02
Reversing light, slim, right, horizontal (only with 2 lamps)	2ZR 013 401-08
Rear fog light, slim, right, horizontal	2NE 013 343-08
Direction indicator wing, rear, right, horizontal	2BA 013 333-02
Reversing light, slim, right, horizontal (only with 2 lamps)	2ZR 013 401-08
Rear fog light, slim, left, horizontal	2NE 013 343-07
Reversing light, slim, left, horizontal (only with 2 lamps)	2ZR 013 401-07

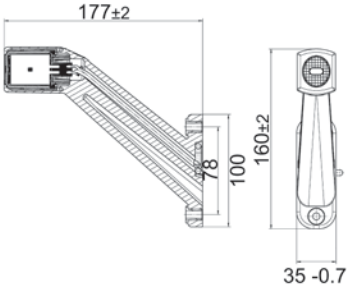
Examples are presented for the following products:

Article name	Part number
Tail/stop light, rear, right horizontal	2SB 013 342-02
Direction indicator (clear), rear, right horizontal	2BA 013 331-02
Rear fog / Reversing light, right horizontal	2NR 013 345-22
Tail/stop light, rear, left, horizontal	2SB 013 342-01
Direction indicator (clear), rear, left, horizontal	2BA 013 331-01
Rear fog / Reversing light, left, horizontal	2NR 013 345-21

CLEARANCE LIGHTS

LED rubber arm clearance light

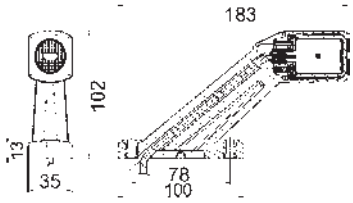
With 3 LEDs, vertical mounting, side marker light, position light, clearance light, power consumption 9 - 32 V / 1.8 W



Part Number	Connector type on the light					Cable	Mounting position
	 2-pin EasyConn 90°	 2-pin SUPERSEAL socket housing	 2-pin EasyConn socket housing	 2-pin quick link	 6.3 mm flat receptacles	Length in mm	
2XS 011 744-017	■					500	Left
2XS 011 744-027	■					500	Right
2XS 011 744-037					■	3,000	Left
2XS 011 744-047					■	3,000	Right
2XS 011 744-057		■				2,000	Left
2XS 011 744-067		■				2,000	Right
2XS 011 744-077				■		500	Left
2XS 011 744-087				■		500	Right
2XS 011 744-107			■			500	Right
2XS 011 744-117			■			500	Left
2XS 011 744-127			■			1,500	Right
2XS 011 744-137			■			1,500	Left
2XS 011 744-187				■		1,000	Right
2XS 011 744-197				■		1,000	Left
2XS 011 744-207		■				800	Right
2XS 011 744-217		■				800	Left

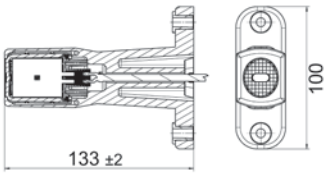
LED rubber arm clearance light

With 3 LEDs, horizontal mounting, side marker light, position light, clearance light, power consumption 9 - 32 V / 1.8 W.



Part Number	Connector type on the light					Cable	Mounting position
	 2-pin EasyConn 90°	 2-pin SUPERSEAL socket housing	 2-pin EasyConn socket housing	 2-pin quick link	 6.3 mm flat receptacles	Length in mm	
2XS 011 769-017			■			500	Left
2XS 011 769-027			■			500	Right
2XS 011 769-037	■					500	Left
2XS 011 769-047	■					500	Right
2XS 011 769-057		■				2,000	Left
2XS 011 769-067		■				2,000	Right

With 3 LEDs, vertical mounting, side marker light, position light, clearance light, power consumption 9 – 32 V / 1.8 W.

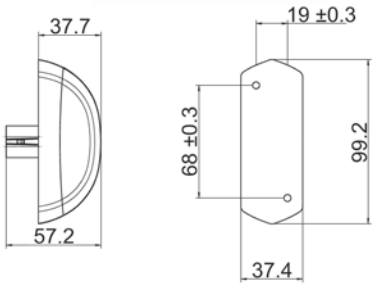


Part Number	Connector type on the light					Cable	Installation position
	2-pin EasyConn 90°	2-pin SUPERSEAL socket housing	2-pin EasyConn socket housing	2-pin quick link	6.3 mm flat receptacles		
2XS 011 768-007				■		500	left / right
2XS 011 768-017	■					500	left / right
2XS 011 768-027			■			500	left / right
2XS 011 768-037		■				2,000	left / right
2XS 011 768-077					■	2,000	left / right

CLEARANCE LIGHTS

LED clearance light

Stylish design – clear alignment and no visible external attachment. Red/clear lens with direct screw coupling, black frame for direct connection. Error-free contacting thanks to bipolarity (+ / – can be inverted). Universal attachment frame – same light can be installed left and right. Theft protection thanks to the "fit and forget" system. 1:1 replacement of bulb version 2XS 008 497 and 2XS 005 020.

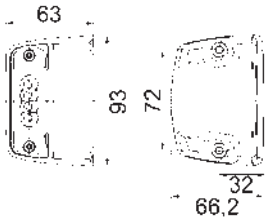


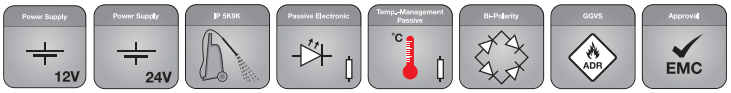
Part Number	Connector type on the light						Cable	Auxiliary
	 2-pin EasyConn 90°	 2-pin SUPERSEAL socket housing	 2-pin EasyConn socket housing	 2-pin quick link	 6.3 mm flat receptacles	 2-pin SUPERSEAL pin housing	Length in mm	Rubber bracket
2XS 205 020-137						■		■
2XS 205 020-177					■		3,000	■

LICENCE PLATE LIGHTS

LED licence plate light

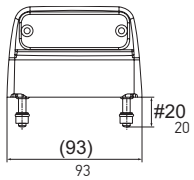
For mounting on the right or left next to the licence plate (520 x 120 mm), only 1 light needed for illumination.
Clear lens, with 4 LEDs, black plastic housing, 2 fastening screws M5 x 35.

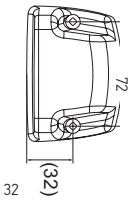




Part Number	Connector type on the light					Cable	Mounting	
	 2-pin EasyConn 90°	 2-pin SUPERSEAL socket housing	 2-pin EasyConn socket housing	 2-pin quick link	 6.3 mm flat receptacles	Length in mm	Single	Double
2KA 010 278-037					■	2,000	■	
2KA 010 278-047				■		500	■	
2KA 010 278-057			■			500	■	
2KA 010 278-097		■				1,350	■	
2KA 010 278-077	■					1,300	■	

For mounting on the right and left next to the licence plate (520 x 120 mm), two lights required for illumination.
Clear lens with optics, 2 LEDs, grey plastic housing.
2 fastening screws M5 x 35.





Part Number	Connector type on the light					Cable	Mounting	
	2-pin EasyConn 90°	2-pin SUPERSEAL socket housing	2-pin EasyConn socket housing	2-pin quick link	6.3 mm flat receptacles			
2KA 012 271-037					■	2,000		■
2KA 012 271-047				■		500		■
2KA 012 271-057			■			500		■
2KA 012 271-067		■				1,300		■
2KA 012 271-077	■					1,300		■

CONTOUR MARKINGS

LED position lights with reflex reflector

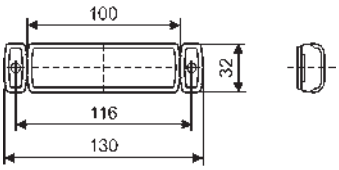
Suitable for horizontal and vertical mounting. With 1 white LED, white light, and black housing. With horizontal mounting, the LED field must point to the outer edge of the vehicle. The light is fixed using the lateral mounting holes or using a bracket.

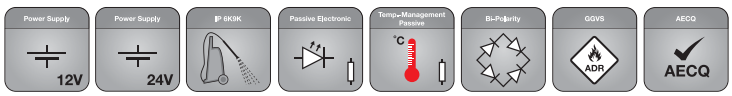
LED side marker light with reflex reflector

Suitable for horizontal and vertical mounting. With 1 yellow LED, yellow light, and black housing. The light is fixed using the lateral mounting holes or using a bracket.

LED tail light with reflex reflector

Suitable for horizontal and vertical mounting. With 1 red LED, red light, and black housing. With horizontal mounting, the LED field must point to the outer edge of the vehicle. The light is fixed using the lateral mounting holes or using a bracket.

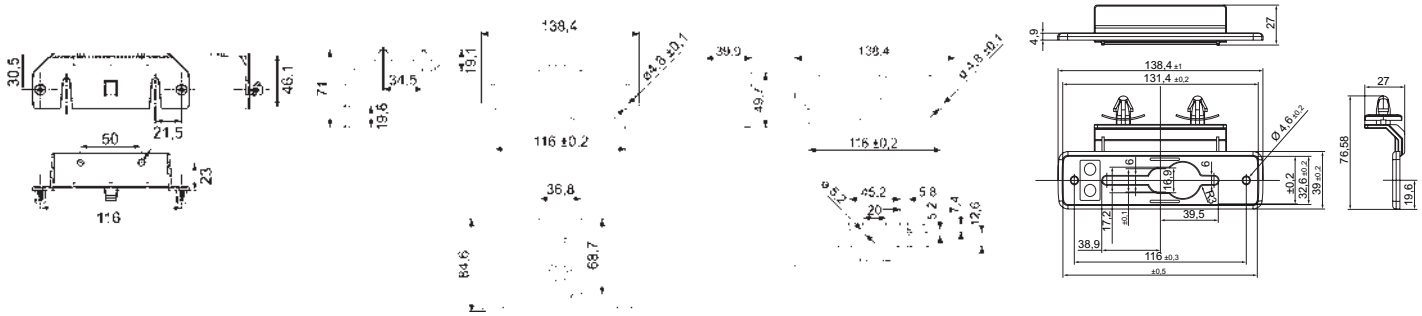




Other versions, fixing material, brackets and reflex reflectors can be found under accessories.

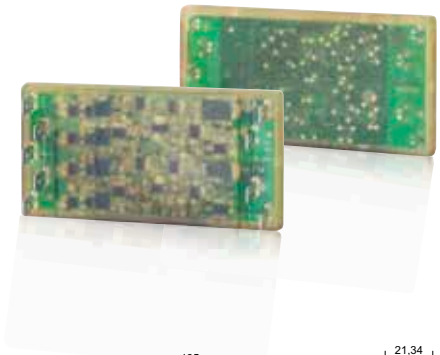
Part Number	Connector type on the light						Cable	Mounting		
	 2-pin SUPERSEAL pin housing	 2-pin SUPERSEAL socket housing	 2-pin SUPERSEAL socket housing	 2-pin quick link	 6.3 mm flat receptacles	 Open contacts	Length in mm	Horizontal	Vertical	
2PG 008 645-107					■		2,130	■	■	
2PG 008 645-127					■		4,930	■	■	
2PG 008 645-337			■				1,300	■	■	
2PG 008 645-637				■			300	■	■	
2PG 008 645-837	■						450	■	■	
2PG 011 422-027	■						5,000	■	■	
2PS 008 645-307			■				300	■		
2PS 008 645-317			■				1,300	■		
2PS 008 645-367			■				2,000	■		
2PS 008 645-847			■				1,300	■		c)
2PS 008 645-587				■			300	■		b)
2PS 008 645-607				■			150	■		
2PS 008 645-617				■			300	■		
2PS 008 645-627				■			1,300	■		
2PS 008 645-717				■			1,600	■		b)
2PS 008 645-787				■			1,300	■		d)
2PS 008 645-797				■			150	■		d)
2PS 011 422-077	■						1,300	■		a)
2PS 011 422-267	■						450	■		
2PS 340 912-327	■	■					1,500			
2TM 008 645-947						■	5,000	■	■	

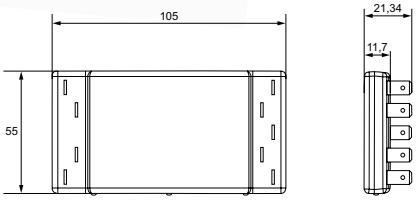
ACCESSORIES: BRACKET



a) **8HG 160 409-00** b) **8HG 340 413-00** c) **8HG 340 489-00** d) **8HG 340 488-03**

ELECTRONIC BALLAST





Control electronics for flashing side marker lights

Control electronics serves to meet ECE R48 Revision 6. It assists as electronic ballast to make conventional side marker lights flash. It furthermore conforms to legislation with existing indicator failure monitors through evaluation of the rear direction indicator.

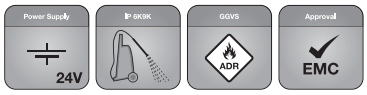
Failure monitor: The side marker lights flash together (in phase) with the rear direction indicator light, they obtain their energy from the same supply line. If the rear direction indicator light is defective, this may have the result that the failure monitor fitted in the towing vehicle no longer functions in conformity with the law and does not identify a failure. The control electronics developed by HELLA ensure the necessary safety here. A fault in the rear direction indicator light is reliably identified, and the towing vehicle is able to inform the driver.

Control electronics	**5DS 223 544-007**

ELECTRONIC BALLAST

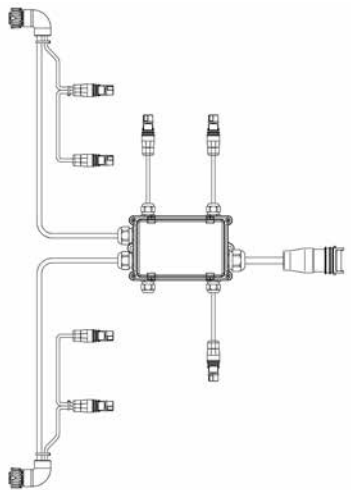
Distribution for flashing side marker lights

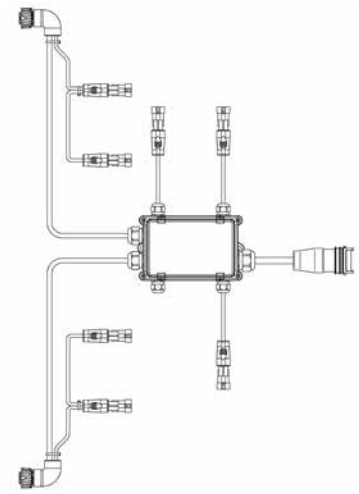
The control unit monitors functioning of the rear direction indicator. With any fault it switches off the flasher function of the side marker lights to ensure that the failure monitor of the towing vehicle conforms to the law. The compact control electronics design permits installation in a distribution box. Only one control unit is required and thanks to full encapsulation, the control electronics is very robust and watertight. High degree of EMC protection allows use in very challenging environments. The control electronics is suitable for use with all LED side marker lights.

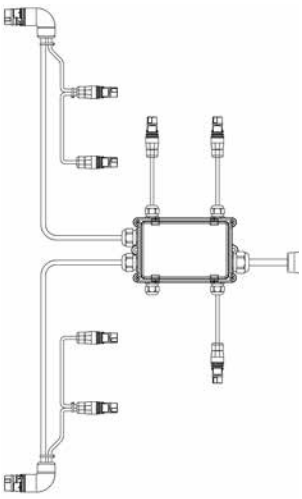


Flash distributor
System integration directly to main supply line via 15-pin EasyConn interface

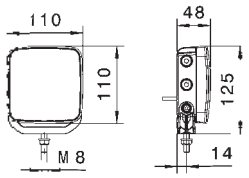
→ Wired DIN / EC with two disposals 7-pin DIN bayonet for connecting rear combination lamps → Each with 2 connections EasyConn 2-pin, right and left, for connecting single function lamps (KZL, URL) → 2 connections EasyConn 2-pin for flash SMLR right and left and an additional connection 2-pin EasyConn for one reversing light	→ Wired DIN / SUPERSEAL with two disposals 7-pin DIN bayonet for connecting rear combination lamps → Each with 2 connections SUPERSEAL 2-pin, right and left, for connecting single function lamps (KZL, URL) → 2 connections SUPERSEAL 2-pin for flash SMLR right and left and an additional connection 2-pin SUPERSEAL for one reversing light	→ Wired EC / EC with two disposals 7-pin EasyConn for connecting rear combination lamps → Each with 2 connections EasyConn 2-pin, right and left, for connecting single function lamps (KZL, URL) → 2 connections EasyConn 2-pin for flash SMLR right and left and an additional connection 2-pin EasyConn for one reversing light
8JE 340 062-207	**8JE 340 062-217**	**8JE 340 062-227**





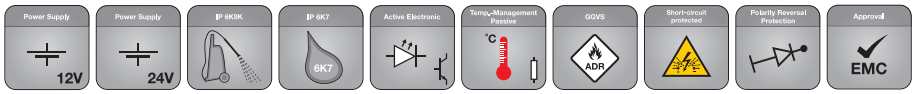


REVERSING LIGHT



LED Repulse Pro reversing light

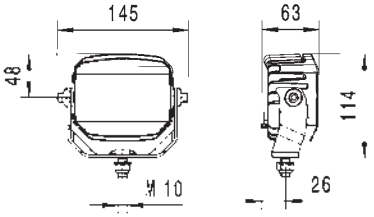
With 3 LEDs, light output (measured): 900 lumens, power requirement: 17 watts, colour temperature: 5,500 Kelvin, multivolt, polarity reversal protection, overvoltage protection, mounting: upright, suspended or from the rear, bracket width 86 mm, surrounding bracket for upright, suspended and rear mounting.

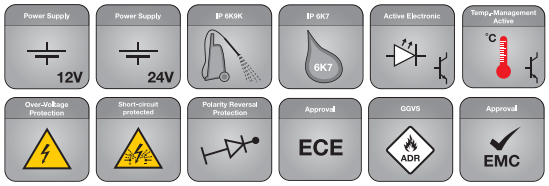


Part Number	Connector type on the light				Cable
	 2-pin EasyConn 90°	 2-pin SUPERSEAL socket housing	 2-pin EasyConn socket housing	 6.3 mm flat receptacles	Length in mm
2ZR 012 456-207		■			2,000
2ZR 012 456-217	■				1,000
2ZR 012 456-227				■	3,500

Power Beam 1000 reversing light

Light output (measured): 850 lumens, power requirement: 14 watts, colour temperature: 6,500 Kelvin. High-quality aluminium housing with CoroSafe coating. Installation: upright or suspended (tilt angle 25°). 116 mm bracket width. Electrical connection: connector type on the "DEUTSCH" lamp pin housing.



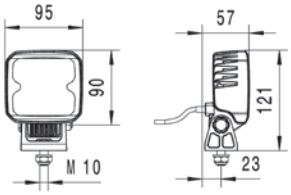


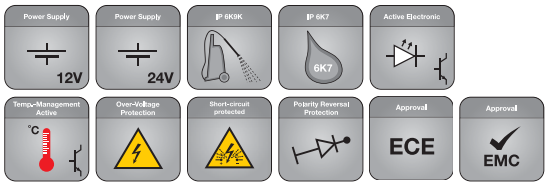
2ZR 996 188-121

REVERSING LIGHT

Q90 compact LED

With 4 high-performance LEDs, light output (measured: 1,000 lumens, power requirement: 15 watts, colour temperature: 5,000 Kelvin, multivolt, installation: upright (tilt angle 25°), corrosion protection thanks to innovative plastic housing.



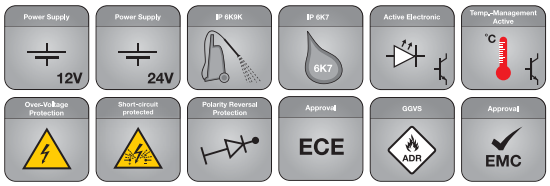


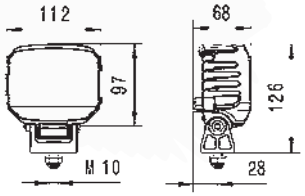
2,000 mm cable — **2ZR 996 284-501**

500 mm cable with DEUTSCH connector — **2ZR 996 284-511**

Power Beam 1000 compact reversing light

Light output (measured): 1,000 lumens, power requirement: 12 watts, colour temperature: 6,500 Kelvin, multivolt, installation: upright or suspended (tilt angle 24°), electric connection: DEUTSCH connector, corrosion protection thanks to innovative plastic housing.





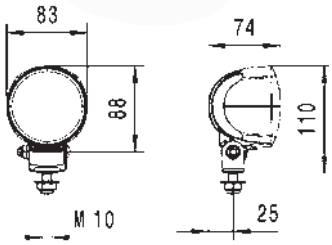
2ZR 996 188-521

WORK & REVERSING LIGHTS

Module 70 LED Gen. 3.2

With 3 high-performance LEDs, light output (measured): 1,800 lumens, power requirement: 20 watts, colour temperature: 6,500 Kelvin, multivolt, installation: upright or suspended.

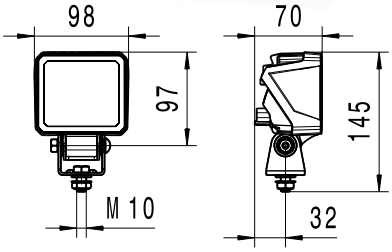
Long-range illumination, 2,000 mm cable	**1G0 996 576-001**
Long-range illumination, DEUTSCH connector	**1G0 996 576-011**
Close-range illumination, 2,000 mm cable	**1G0 996 576-031**
Close-range illumination, DEUTSCH connector	**1G0 996 576-041**



Eco 18 LED

Light output (measured): 1,350 lumens, power requirement: 18 watts, colour temperature: 6,500 Kelvin, multivolt, polarity reversal protection, overvoltage protection, thermal management, IP 6K9K / IP 6K7 (pressure cleaner-proof/submersible), installation: upright or suspended (tilt angle 25°), ECE R10-approved, reversing lights ECE 923-approved, high-quality aluminium housing.

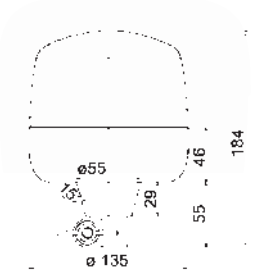
Close-range illumination, 500 mm cable	**1GA 996 479-001**
Long-Range illumination, 500 mm cable	**1GA 996 479-011**
Close-range illumination, DEUTSCH connector	**1GA 996 479-021**
Long-Range illumination, DEUTSCH connector	**1GA 996 479-031**
ECE R23 reversing light, 3,000 mm cable	**2ZR 996 479-501**
ECE R23 reversing light, DEUTSCH connector	**2ZR 996 479-511**

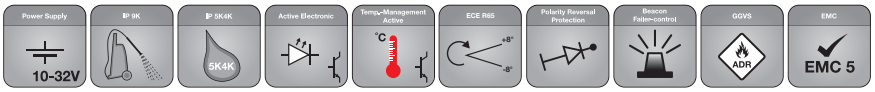


AUXILIARY LIGHT

Rota LED Beacon

The Rota LED impresses due to its high efficiency, flat and compact design, and the rotating LED light function. The Rota LED is highly robust and extremely efficient. Due to the shock-absorbing rubber foot, it boasts a high resilience against vibration and is perfectly suited for challenging applications.

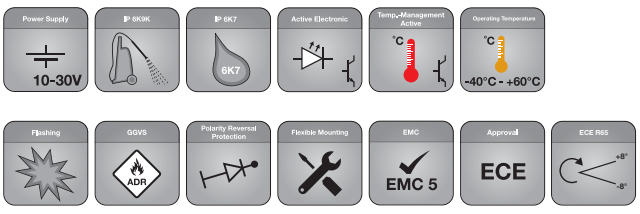


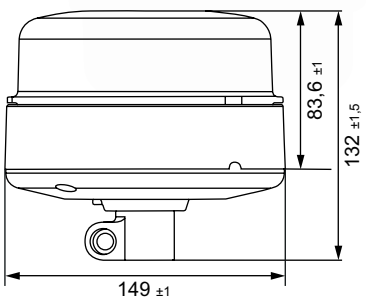


Flexible pipe-socket mounting	**2RL 010 979-011**
Support pipe 90° with EC 2-pin connection	**8HG 340 863-017**

Beacon Blizzard

The K-LED Blizzard is the successor generation to the popular and widespread K-LED FO. These can be replaced like-for-like. The new generation combines its predecessor's popular design with the latest LED technology. Alongside functional control, this beacon boasts the option of synchronising up to 4 beacons with one another.

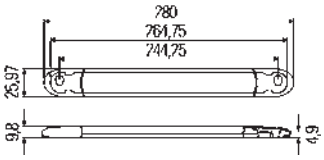




Flexible pipe-socket mounting	**2XD 010 311-011**
Support pipe 90° with EasyConn 2-pin. connection	**8HG 340 863-017**

AUXILIARY LIGHT

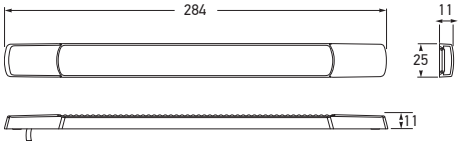
LED additional stop lamp



High-mounted LED stop light 24 V, with 10 SMD LEDs and 3 m connecting cable.
ECE and SAE tested, suitable for horizontal and vertical mounting.
Passive electronics, passive temperature management, EMC tested.

Open cable ends **2DA 343 106-011**

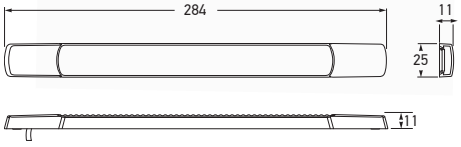
Tail light/stop light



24 V, horizontal/vertical mounting: 360° to light and vehicle axis,
installation on left and right.

300 mm cable **2SB 980 887-211**

Tail/Stop light/Indicator



24 V, horizontal/vertical mounting: 360° to light and vehicle axis,
installation on left and right.

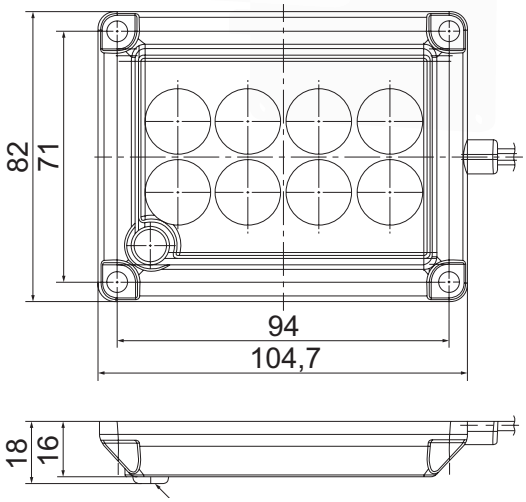
2,500 mm cable **2SD 980 819-201**

AUXILIARY LIGHT

LED interior light

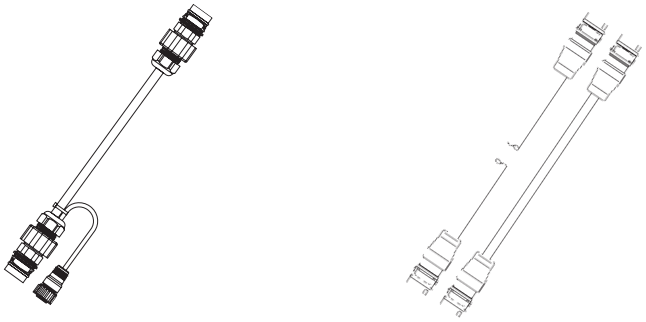
Homogenous illumination with approx. 145 lux at centre and approx. 125 lux at a distance of 0.6 m from the centre in all directions. Clear lens made from polycarbonate. Screw mounting as mounting variant. Ideal for flat installation conditions (16 mm). Multivolt circuits keep the light output constant over a voltage range of 10 to 31 V.

2,400 mm cable with movement sensor (IP54 open cable ends)	**2JA 012 557-001**
3,400 mm cable without movement sensor (IP69 open cable ends)	**2JA 012 557-017**



MAIN POWER SUPPLY CABLE

The cables are 2 x 15-pin EasyConn female connector housings, pre-fitted and extrusion-coated. Standard variants are also pre-fitted with the new EasyConn II connector set. The main supply cables are available with and without an additional outlet for the respective braking systems. The design always has a DIN bayonet 4-pin bayonet connector housing. Female connector housing.
All cables are ADR tested and approved.

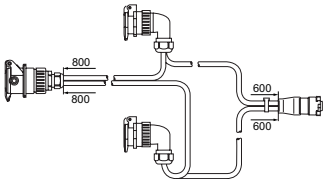


Part Number	Connector type			Cable	Wire count	Function
	 Overmolded	 Connector set II	 Breakout 4-pin DIN bayonet	Length in mm		
8KA 340 817-387		■	500	15,000	15	7/8/12
8KA 340 815-027	■			12,000	15	
8KA 340 815-018	■			10,000	15	
8KA 340 817-397		■	500	10,000	15	7/8/12
8KA 340 817-367		■	500	15,000	10	7/8/12
8KA 340 816-027	■			14,000	10	
8KA 340 817-377		■	500	10,000	10	7/8/12
8KA 340 816-007	■			9,000	10	
8KA 340 913-007	■			15,000	8	

FRONT ADAPTER

For semi-trailers and trailers with EasyConn connector housing, (15-pin), socket and connector (15-pin DIN-ISO 12098) as well as 7N and 7S socket and connector (7-pin, ISO 1185 and ISO 3731). However also available in combination with EC, 12098 and 7N/7S.

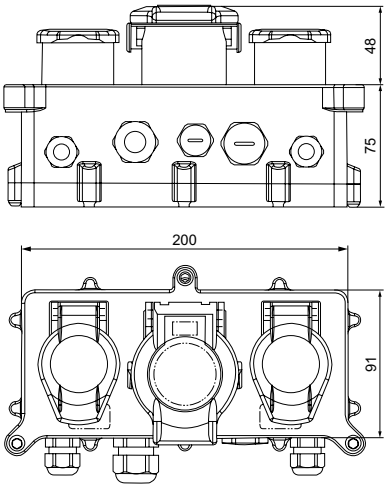
Suitable for the main supply cables from the series 8KA 340 815-..., 8KA 340 816-... and 8KA 340 817-...

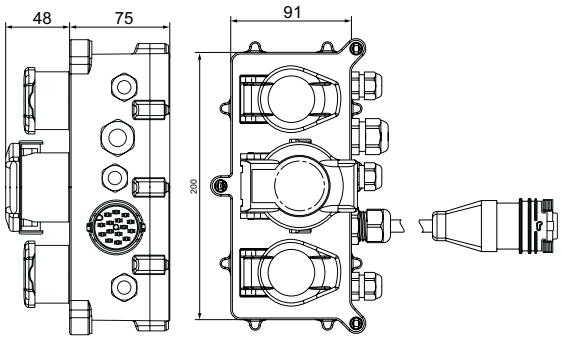


Part Number	Connector type						Cable
	Connector	Socket	ISO 12098	7N 1185	7S 3731	ADR (ISO 12098)	Length in mm
8KA 340 842-007		■	■			■	600
8KA 340 842-017		■	■			■	1,700
8KA 340 843-007	■		■			■	3,500
8KA 340 843-027	■		■			■	6,000
8KA 340 818-007		■		■	■		1,700
8KA 340 818-017		■		■	■		600
8KA 340 841-007	■			■	■		3,500
8KA 340 841-037	■			■	■		6,000
8KA 340 886-027		■	■	■	■		600 + 300
8KA 340 886-077		■	■	■	■		600 + 800

FRONT DISTRIBUTOR

For semi-trailers and a direct connection to the EasyConn system, with 3 combined sockets (1 x socket DIN ISO 12098. 1 x 7-N socket DIN ISO 1185, and 1 x 7-S socket DIN ISO 3731) and 1 EasyConn connection (15-pin, for the main power supply) or available with PG screw connection.





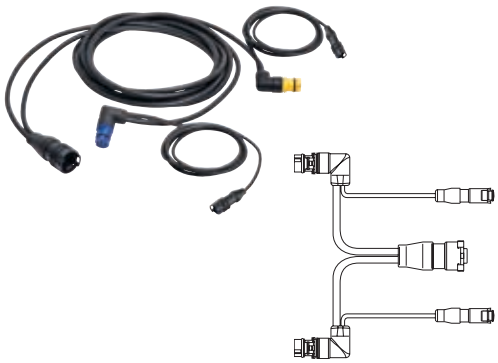
Part Number	Connector type						Cable
	Connector	Socket	ISO 12098	7N 1185	7S 3731	ADR (ISO 12098)	Length in mm
8JE 340 898-107		■	■	■	■	■	500
8JE 340 898-117		■	■	■	■	■	–

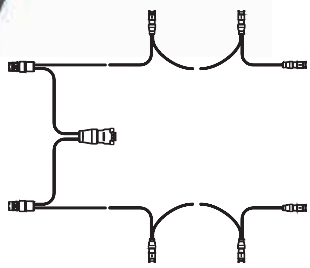
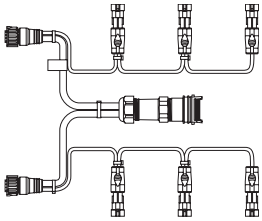
Sealing cap for 7N / 7S on front box
Necessary for ADR-approved vehicles.

Cap **9HV 233 194-007**

REAR ADAPTER

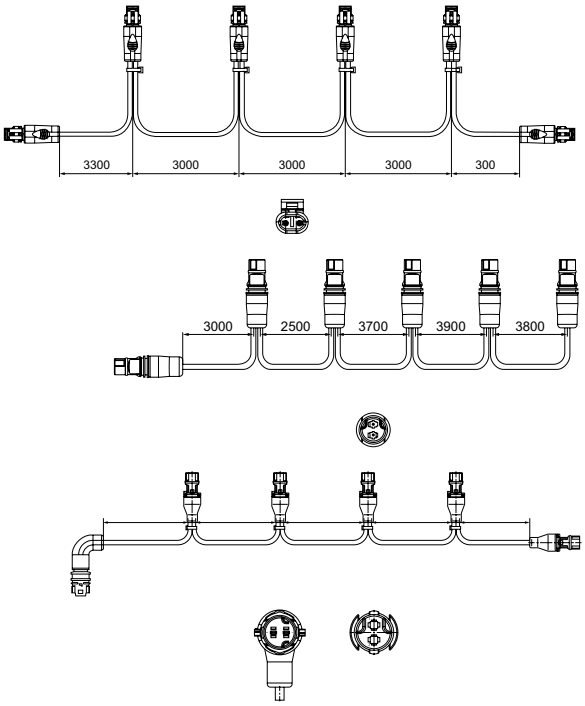
Rear adapter cable with EasyConn connector housing (15-pin). Suitable for the main supply cables from the series 8KA 340 815-..., 8KA 340 816-..., and 8KA 340 817-...

Part Number	Connector type on the cable			Number of break outs				Connector type				Cable
	 7-pin EasyConn socket housing	 7-pin DIN socket housing	90° angle	1	2	4	6	 2-pin EasyConn connector housing	 2-pin SUPERSEAL pin housing	Flat cable for quick link connection	Assignment	Length in mm
8KA 340 819-007	■						■	6x500			58	1300/1300
8KA 340 819-017	■					■		4x500			58	1300/1300
8KA 340 819-067	■						■	6x500			58	2000/2000
8KA 340 819-127	■		■		■			2x1000			58	3000/3000
8KA 340 819-157	■		■		■					2x17000	58	1300/1300
8KA 340 819-197	■		■									1500/2500
8KA 340 819-217	■		■									3000/3000
8KA 340 819-238	■		■	■						1x1500	58	3000/3000
8KA 340 819-427		■	■									2000/2000
8KA 340 819-437		■					■		6x500		58	2000/2000

CHAINS

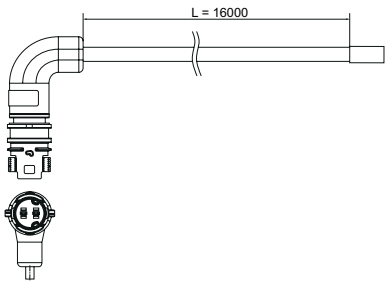


Our SMLR chains and supply cable to connect side marker lights with reflex reflector and position lights with EasyConn or SUPERSEAL.

Part Number	Connector type			Signal and sundry lamps
	 2-pin EasyConn socket housing	 2-pin EasyConn 90°	 2-pin SUPERSEAL socket housing	Number
8KB 340 820-257	■			5
8KB 340 820-327	■			4
8KB 340 820-277	■			6
8KB 340 820-297	■			8
8KB 340 820-427		■		5
8KB 340 820-397		■		4
8KB 340 820-437		■		8
8KB 340 927-027			■	8
8KB 340 927-017			■	5
8KB 340 927-007			■	4

CABLES

Our SMLR chains and supply cable to connect side marker lights with reflex reflector and position lights with EasyConn, SUPERSEAL or via quick link indentation clamping technology.

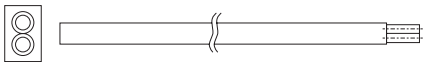


Part Number	Connector type			Cable
	 2-pin EasyConn socket housing	 2-pin EasyConn 90°	 2-pin SUPERSEAL socket housing	Length in mm
8KA 340 822-067	■			15,000
8KA 340 822-087	■			10,000
8KA 340 822-007	■			21,000
8KA 340 822-207		■		16,000
8KA 340 822-217		■		9,000
8KA 340 822-227		■		21,000
8KA 340 038-208			■	8,000
8KA 340 038-228			■	12,000
8KA 340 038-247			■	16,000

CABLES

Cable

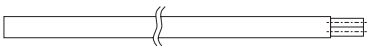
Flat cable, with 2 x 1.5 mm cross section.
Suitable for quick link connections.



8KL 340 050-001

Cable

Cables without plug connection for individual system connection.
Corresponding connector and service sets can be found from page 47.

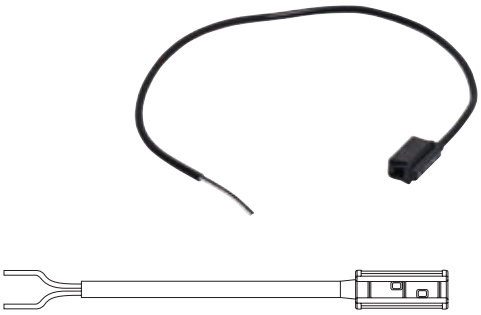


2-pin, cable FLRYY (2 x 1 mm²)	**8KL 340 009-001**
2-pin, wiring harness (2 x 0.5 mm²)	**8KL 340 055-021**
4-pin, cable FLRYY (4 x 1,0 mm²)	**8KL 340 403-011**
7-pin, cable FLRYY (6 x 1.0 mm² / 1 x 1.5 mm²)	**8KL 340 412-001**
7-pin, wiring harness (4 x 1.5 mm² / 2 x 2.5 mm²)	**8KL 340 054-001**
10-pin, wiring harness (8 x 1.0 mm² / 2 x 2.5 mm²)	**8KL 340 093-011**
15-pin, cable FLRYY (12 x 1.0 mm² / 3 x 2.5 mm²)	**8KL 340 059-001**

ADAPTER

Cable

Round cable, with 2 x 1 mm cross section, 500 mm cable length with open end, and quick link connector incl. clamping piece.

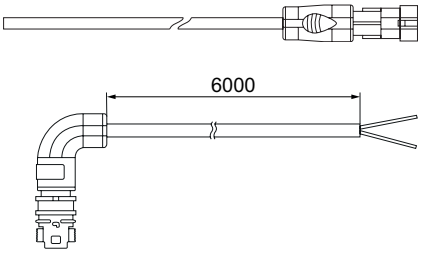


8KA 998 229-017

Connection

With 6,000 mm cable length, 2 x 1.0 mm cross section

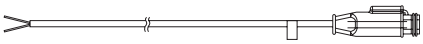
AMP SUPERSEAL pin housing	**8KA 340 954-007**
EasyConn pin housing, angle, overmolded	**8KA 340 854-107**



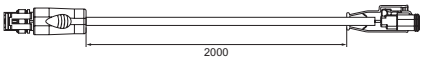
ADAPTER

Cables

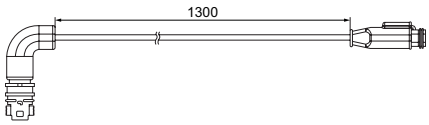
With 2,000 mm cable length, 2 x 1.0 mm cross section, DEUTSCH connector, bush housing (2-pin), and open end. — **8KA 340 038-131**



With 2,000 mm cable length, 2 x 1.0 mm cross section, SUPERSEAL bush housing (2-pin) and DEUTSCH connector bush housing (2-pin). — **8KL 340 038-117**



With 1,300 mm cable length, 2 x 1.0 mm cross section, EasyConn connector housing (2-pin) overmolded, and DEUTSCH connector (2-pin). — **8KA 340 854-127**



Intermediate adapter

Y adapter cable 2-wire (2 x 0.5 mm²) with EasyConn female connector housing (2-pin), and two 150 mm long outlets with 1 EasyConn connector housing (2-pin) and 1 EasyConn female connector housing (2-pin).

8KA 340 859-007

Intermediate adapter

Y adapter cable 2-wire (2 x 0.5 mm²) with EasyConn female connector housing (2-pin), and two 150 mm long outlets each with 1 EasyConn female connector housing (2-pin).

8KA 340 859-017

ADAPTER

Intermediate adapter

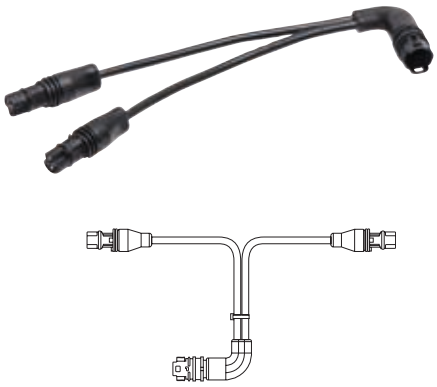
With 2 x 150 mm cable length, 2 x 1.0 mm cross section, AMP SUPERSEAL bush housing (2 x 2-pin), and AMP SUPERSEAL pin housing (1 x 2-pin) over-molded.

8KA 340 859-027

Intermediate adapter

Y adapter cable 2-wire (2 x 0.5 mm²) with EasyConn female connector housing (2-pin), and two 150 mm long outlets each with 1 EasyConn female connector housing (2-pin).

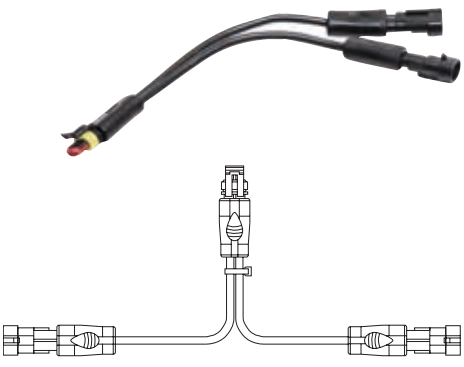
8KA 340 859-037



Intermediate adapter

With 150 mm cable length, 2 x 1.0 mm cross section, AMP SUPERSEAL pin housing (2 x 2-pin) over-molded, and AMP SUPERSEAL bush housing (1 x 2-pin) over-molded.

8KA 340 859-047

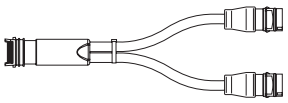


ADAPTER

Intermediate adapter

With 500 mm cable length, 12 x 1.5 mm and 3 x 2.5 mm cross section, EasyConn connector housing (1 x 15-pin) over-molded, and EasyConn female connector housing (2 x 15-pin) over-molded.

8KA 340 864-017

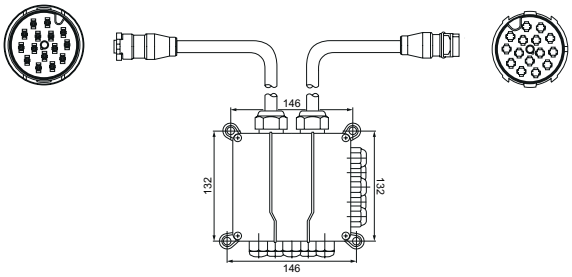


DISTRIBUTORS

Distributor box

Distributor box with M16 and 2 x M25 screwed cable glands as well as two 15-wire cables (12 x 1.0 mm²/3 x 2.5 mm²) with a 15-pin EasyConn connector housing and a 15-pin EasyConn female connector housing, fully assembled on the plug board.

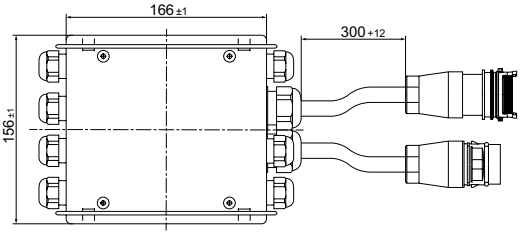
Cable length 500 mm each **8JE 340 847-007**



Distributor box

Distributor box with 7 x PG 9, 7 x PG 13.5 and 2 x PG 21 screwed cable glands, 2 x 15-wire cables (12 x 1.0 mm²/3 x 2.5 mm²) with a 15-pin EasyConn connector housing and a 15-pin EasyConn female connector housing, fully assembled on the plug board.

8JE 340 867-057



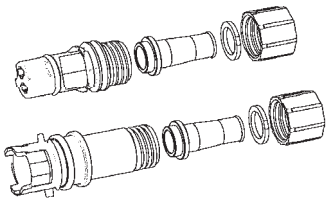
CONNECTOR SET

SUPERSEAL plug housing set

SUPERSEAL plug connectors comply with IEC 529 regulations and DIN ISO 40050, and come with protection class IP 67, which offers the maximum level of water and dust proofing. Where other interconnection systems reach their limits due to adverse pressure or humidity conditions, SUPERSEAL is ideally suited.

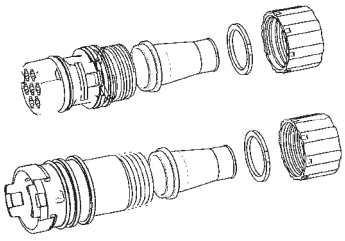
2-pin (bush)	**9XX 744 806-812**
2-pin (pin)	**9XX 744 806-822**
4-pin (bush)	**9XX 744 806-832**
4-pin (pin)	**9XX 744 806-842**

EasyConn connector / EasyConn mating connector



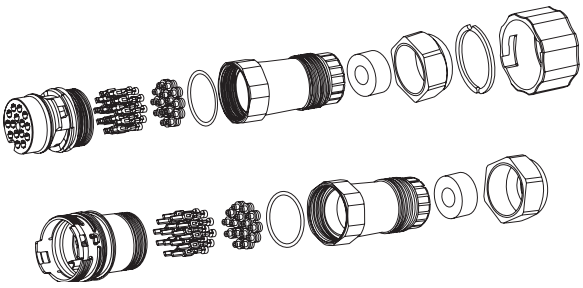
With EasyConn female connecting housing (2-pin mating connector for 2-pin EasyConn connector housing).

Dia.: 19.5 mm	**9XX 340 879-007**
Dia.: 24.5 mm	**9XX 340 882-007**



With 7-pin EasyConn female connector housing (mating connector and 7-pin EasyConn male connector housing).

Dia.: 28.0 mm	**9XX 340 880-007**
Dia.: 33.0 mm	**9XX 340 883-007**



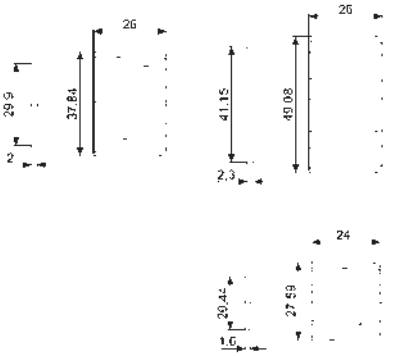
With 15-pin EasyConn female connector housing (mating connector and 15-pin EasyConn male connector housing).

Dia.: 39.0 mm	**9XX 340 981-001**
Dia.: 44.0 mm	**9XX 340 984-001**

FUSE SET

Fuse sets

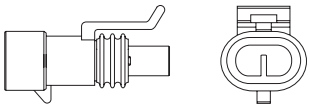
For the additional securing of EasyConn plug connectors under a high tensile load with mechanical seal and union nut.



2-pin	**9XX 340 876-007**
7-pin	**9XX 340 877-007**
15-pin	**9XX 340 878-007**

Cap

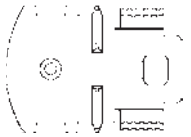
For locking 2-pin SUPERSEAL bush and pin housing.



2-pin	**9XX 340 814-017**

Cap

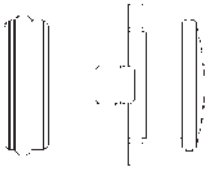
For female connector housing, for airtight sealing of any EasyConn female connector housing that is not required.



2-pin	**9HV 340 812-007**

Plug sets

For connector housing, for airtight sealing of any EasyConn connector housing that is not required with an O-ring.



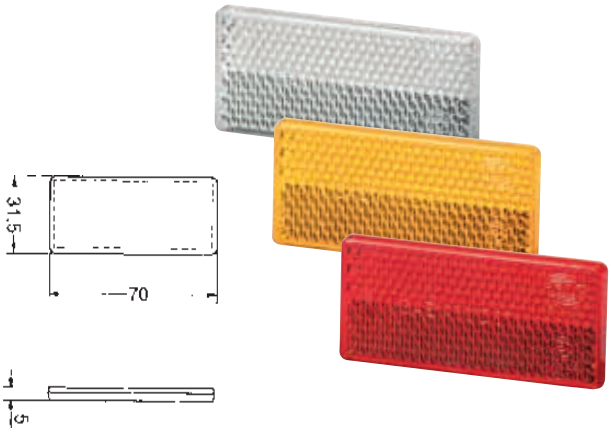
2-pin	**9XX 340 870-007**
7-pin	**9XX 340 871-007**
15-pin	**9XX 340 872-007**

Spare parts

Quick link clamping piece	**8KW 998 602-002**
Heat-shrink end caps up to max. 11 mm	**9GS 340 051-001**

REFLEX REFLECTOR

Reflex reflector with clear PMMA base plate and self-adhesive tape. 31.5 mm x 70 mm dimensions, approved for ECE and SAE.



Clear reflex reflector	**8RA 004 412-011**
Amber reflex reflector	**8RA 004 412-007**
Reflex-reflector, red	**8RA 004 412-027**

Reflex reflector for modular rear lamp

Reflex reflector	**8RA 011 422-807**

ACCESSORIES

EC spray

EasyConn spray, assembly lubricant, corrosion and humidity protection for electronics and metal.

EasyConn spray	**9XH 340 730-007**

Protection cap

Cover for rear combination lamps.

EasyConn I / II	**8XS 340 092-007**
Modular rear combination lamp	**8XS 340 092-017**

MTL lenses

Lens-modular rear combination lamp, can be used on left and right.

Lens with screws	**9EL 183 432-001**

Lens round lamp

Lens round lamp, can be used on left and right.

Lens	**9EL 213 522-001**

Chrome ring set

Contains chrome ring, seal and U-holder.

Set (3 pieces)	**9XD 997 909-811**

LED INDICATORS AND FAILURE CONTROL FROM HELLA.
NOW ADOPTED IN ISO 13207-1 – FOR 24-V TRUCKS, TRAILERS AND OTHER VEHICLES WITH A 24-V VEHICLE ELECTRIC SYSTEM

Legal requirement in all ECE states
In the case of vehicles approved for use on public roads, the indicators must be monitored: the failure of an indicator must be shown optically or acoustically in the vehicle. This applies to all ECE states in which regulation ECE R 48 is in effect. This means possible indicator failure must be monitored by the vehicle. Manufacturers use different procedures for this.

The failure controls currently in use cannot detect simple LED lights and indicate a fault. Many HELLA LED indicators have integrated failure control electronics. The indicator lights are self-monitoring. When functioning correctly, they create a pulse according to ISO 13207-1 which can be evaluated by the vehicle electronics. If the available vehicle electronics cannot evaluate the pulse themselves, Hella provides various solutions for evaluating this pulse, shown below.

As soon as a single LED fails, the light may be considered faulty, as the impulse is not generated. In this case, for instance, the ballast switches off the bulb simulation and the flasher unit reports the error to the driver.

Safe conversion to LED indicators using HELLA electronics according to ISO 13207-1
As indicators must be checked by law, we recommend operating the lights only in conjunction with a failure control according to ISO 13207-1.

For LED indicators with a control pulse, HELLA offers electronic ballasts which make it possible to display indicator failure for various vehicle assemblies and modifications. This is necessary if the vehicle manufacturer does not guarantee indicator bulb failure control via the vehicle electric system.

There are three different ballasts and several different LED indicators available:

As a new solution, HELLA recommends detecting the electrical pulse directly in the vehicle manufacturer's vehicle electric system.

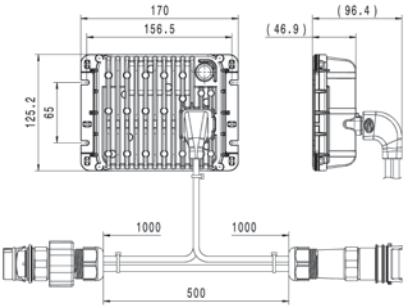
It is merely necessary to integrate the check according to ISO 13207-1. This obviates the need for interim solutions via the indicator control units.

Control units and indicator failure controls from page 52

LED LAMP CONTROL UNIT

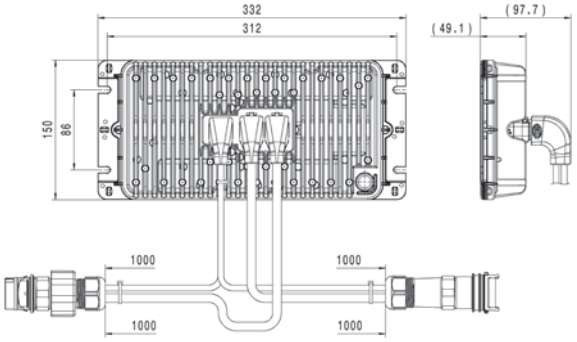
Basic control unit
Control unit is responsible only for monitoring the direction indicators.

24 V standard control unit with wiring **5DS 009 552-087**



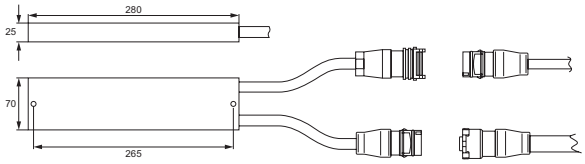
Premium control unit
Control unit is responsible for monitoring the whole rear lighting (tail lights, brake lights, direction indicators, reversing light and rear fog light).

24 V Premium control unit (1 stop light channel) with wiring **5DS 009 552-097**



LED indicator failure control

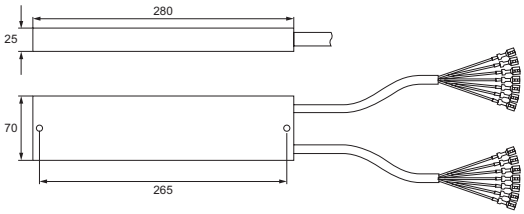
For 24 V range, with a 15-pin EasyConn connector housing on the one side and a 15-pin female connector housing on the other side, plus a 1,300 mm cable length per plug connection, 12 x 1.5 + 3 x 2.5 mm cross section.



Indicator control unit 24 V **5DS 009 552-047**

LED indicator failure control

For 24 V range, 1,500 mm cable length, with 6.3 mm flat receptacles and 300 mm cable length, with 6.3 mm flat receptacles, each with 7 x 1 + 1 x 2.5 mm cross section.



24 V direction indicator ECU **5DS 009 552-037**

"Quick Link" hand crimping tool

Special quick link crimping pliers, suitable for the two-pin "Click-in" contact system

Quick link pliers **8PE 008 932-001**

QUALITY TESTS

Proven quality from HELLA

Heat, long hours in operation, impacts and knocks. The working conditions of work lights impose great demands. Which explains why all HELLA work lights are tested to the highest standards of quality throughout development and manufacture. This enables you to deliver optimum performance.

You can find further information about the HELLA quality criteria at: www.hella.com/quality

Heat, cold and vibration tests

In temperature cycle tests, HELLA work lights are exposed to temperature fluctuations from –40° C to +90° C in climatic chambers. For vibration tests, temperatures fluctuate between -30° and 80° C, while the headlamps are shaken for hours, exposing the lights to forces as high as 9.6 G at times.

These tests are pure stress for any material. But only devices that come through all the tests without any damage make it into serial production. Test reports are archived at HELLA for 15 years.

Splash-water test

HELLA work lights are tested under realistic environmental conditions in universal splash water booths. The booths are equipped with devices for rain, splash water, water jets and water mist.

Here, the products are tested for leaks at a pressure of up to 5 bar in the dripping and spray water test and at a pressure of up to 10 bar in the water jet test.

High-pressure cleaner test

In a test system, the work lights are exposed to a water pressure of up to 100 bar and a water temperature of +80° C. This test reproduces the conditions in a carwash or when a pressure washer is used to clean the vehicle.

Immersion and pressure tightness test

In this test, the headlamps are immersed to a depth of 1 m for 30 minutes in a submerged pipe. No water is allowed to penetrate into the device. This test is performed for all LED work lights.

Dust and salt spray test

The dust protection test examines the extent to which a work light is protected against the ingress of solid foreign bodies, including dust. For this, the device is exposed to an air/dust mixture.

In the salt spray test, the tough environmental conditions of life on the road are simulated. A salt spray swirls around the work lights for up to 700 hours to test corrosion resistance.

IP PROTECTION CLASSES EXPLAINED

What does IP protection category mean?
IP stands for International Protection. The IP protection classes are determined according to DIN 40 050, Part 9. The purpose of the standard is to provide an exact definition of the electrical equipment of vehicles against the ingress of solid foreign objects including dust, and against the ingress of water. The different degrees of protection important for signaling systems are explained below.

Degree of protection IP 5K4K
Dust may only penetrate to such an extent that function and safety are not impaired. Water that is sprayed from every direction at increased pressure against the housing must not have any damaging effect: water pressure approx. 4 bar.

Protection class IP 5K9K
Dust may only penetrate to such an extent that function and safety are not impaired. Water that is directed against the housing during high-pressure/steam-jet cleaning must not have any damaging effect; water pressure approx. 100 bar.

Protection class IP 67
Dust must not penetrate. No water may penetrate, even if the device is submersed for some time.

Protection class IP 6K4K
Dust must not penetrate. Water that is sprayed from every direction at increased pressure against the housing must not have any damaging effect: water pressure approx. 4 bar.

Protection class IP 6K7
Dust must not penetrate. No water may penetrate, even if the device is submersed for some time. HELLA products meet the highest requirements and are ideally protected against all kinds of weather conditions.

Degree of protection IP 6K9K
Dust must not penetrate. Water that is directed against the housing during high-pressure/steam-jet cleaning must not have any damaging effect; water pressure approx. 100 bar.

Protection class IP 9K
Water that is directed from high-pressure/steam-cleaning equipment onto the housing must not have any damaging effect: water pressure approx. 80 – 100 bar.

IP 6K9K
First digit: protection against the ingress of foreign bodies (see Table 1).
Second digit: protection against the ingress of water (see Table 2).
K: Denotes tests for equipment of road vehicles.

Protection against the ingress of foreign bodies (incl. dust)	
X	not tested
0	no special protection
1	solid foreign bodies, diameter ≥ 50 mm
2	solid foreign bodies, diameter ≥ 12.5 mm
3	solid foreign bodies, diameter ≥ 2.5 mm
4	solid foreign bodies, diameter ≥ 1.0 mm
5K as 5	dust-proof
6K as 6	dust-proof

Chart 1

Protection against the ingress of water	
X	not tested
0	no special protection
1	vertically falling drops of water
2	drops of water falling at 15° angle
3	water dropping up to an angle of 60°
4	drops of water from all directions
4K	same as 4 but at increased pressure
5	water jet from a nozzle
6	identical to 5 but at increased pressure
7	temporary immersion in water
8	sustained immersion in water
9K	cleaning under extremely high pressure

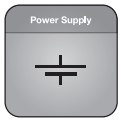
Chart 2

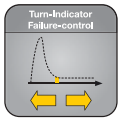
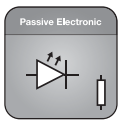
HAZARDOUS GOODS ORDINANCE

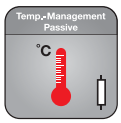
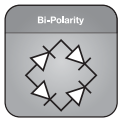
GGVSEB (previously GGVS) refers to the dangerous goods ordinance for roads, railways, and inland waterways.
This ordinance implements the European Parliament and Council Directive 2008/68/EC from September 24, 2008 regarding the transport of dangerous goods inside Europe.

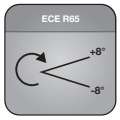
Work lights marked in this way are approved for installation on conveyances that must comply with the provisions of GGVSEB / ADR.

ICON OVERVIEW

CHARACTERISTICS	DESCRIPTION	COMMENTS
Power consumption of LED lights	**Advantages of the LED:** Generally, LED lamps need less power than bulb lighting. Savings of up to 90 % are possible, which also helps to reduce CO_2.	
Vehicle electrical system voltage 	Defines the power supply for the light. This can be 12 V, 24 V or a flexible voltage range for Multivolt (8 – 33 V).	Multivolt is the most flexible: Requires fewer versions, but has more electronic circuit components and is therefore more expensive.

CHARACTERISTICS	DESCRIPTION	COMMENTS
Dust and water protection IP 	International Protection (IP) according to DIN 40050 Part 9. Specific definition for road vehicles. 5K = Dust protected 6K= Dustproof 9K = Water resistance during high-pressure/ steam cleaning.	The higher the protective class, the better the protection against penetrating media. IP 67 maximum value. → Fully sealed against dust and water ingress.
  	Resistant to high-pressure jet cleaners	
Turn indicator failure check according to ECE-R48 	**Regulation according to ECE-R48:** The driver must be informed if the indicator function fails. To remain legally compliant, this requirement must also be fulfilled for LED lights. This requirement is fulfilled by means of an integrated self-diagnostic unit on the PCB of the LED and an electrical pulse. Since the end of 2011, this HELLA failure control with a pulse has been ISO standard: ISO 13207.	If the indicator failure control is not ensured, the general vehicle type approval becomes void. This means it is illegal to operate vehicles without indicator failure control in countries affiliated to ECE R48. The indicator failure check is ensured in combination with ballasts HELLA part no. 5DS 009 552.
Electronic circuit  **Active**  **Passive**	Basically, two different circuits are possible for LED lamps: **Active:** LED current regulation through active electronics. **Passive:** Setting a specific voltage range for the LED by means of a series resistor.	**Active:** Higher expenditure during development because of complex circuit and necessary EMC approval. Higher price because of electronic components, but optimal current regulation allows maximum LED service life. **Passive:** Cost-effective solution without complex protection measures. Shorter LED service life in case of failure. No EMC approval required.

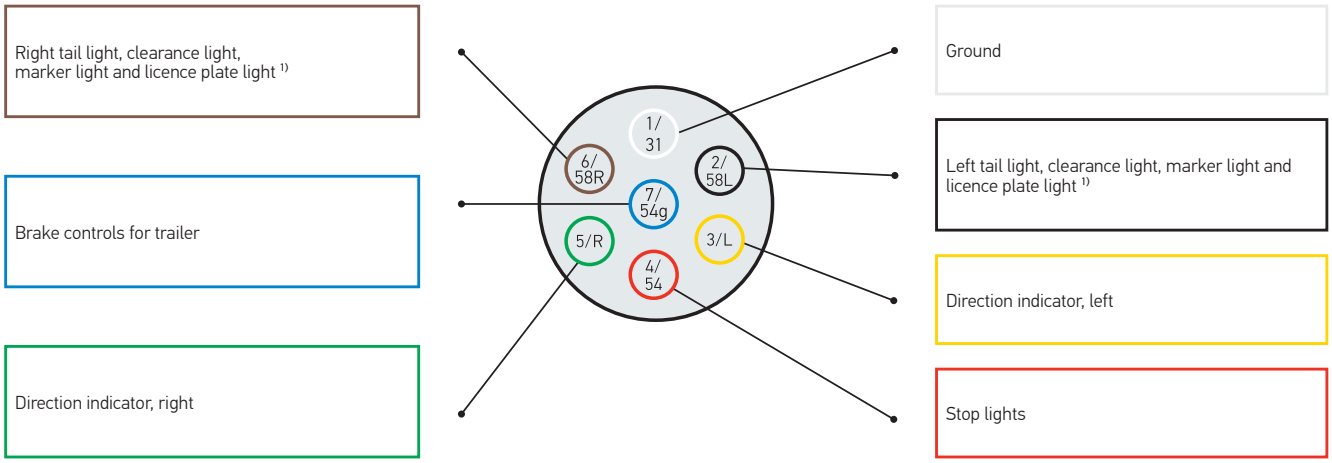
CHARACTERISTICS	DESCRIPTION	COMMENTS
Thermal management  **Active**  **Passive**	**Active:** Electronic power control of the LED in case of impermissible high ambient temperatures. This ensures the LEDs are protected against destruction caused by overheating. **Passive:** Optimum layout of the components for even temperature distribution and temperature spreading.	**Active:** More development overheads with active thermal management and higher parts prices ensure optimal conditions for maximum service life. **Passive:** The warmer the LED gets through exterior factors or heat generated by its own operation, the shorter the service life.
Bi-polarity of the light 	Even if the connecting cable is attached with reverse polarity, the LED functions fully.	The semiconductor in an LED must always be operated with the correct polarity. Inverse polarity damages the LED, so that LED lights are generally equipped with reverse polarity protection (diode). This function only works when "+" and "-" are correctly connected, though. If a lamp has a bi-polar circuit, the functioning is independent of the contact connections. This ensures poka-yoke (avoiding faulty installations) in connection with indentation clamping technology, for example. However, the additional components on the PCB also increase the costs.
Overvoltage protection 	Supplement to the electronics for protecting the LED against high voltage / current in the vehicle's electric system as per ISO 7637-2.	Overloading of the LEDs can be caused by voltage peaks in the vehicle because of: → Starting aid → Faulty control units → Load-dump impulse (incorrect battery contact) They stress / damage the LEDs, which can cause the function to fail or the service life to be reduced. Adding additional components to the circuit protects the circuit and can extend the service life or even prevent an outage.
Short-circuit protected 	Protected against short circuit by means of an amp fuse	

CHARACTERISTICS	DESCRIPTION	COMMENTS
Polarity reversal protection 	Even if the connecting cable is connected the wrong way round, there is still no danger for the electronics.	The semiconductor in an LED must always be operated with the correct polarity. Inverse polarity damages the LED, so that LED lights are generally equipped with reverse polarity protection (diode). This function only works when "+" and "-" are correctly connected, though. If a lamp has a bi-polar circuit, the functioning is independent of the contact connections. This ensures poka-yoke (avoiding faulty installations) in connection with indentation clamping technology, for example. However, the additional components on the PCB also increase the costs.
ECE-R65 	Defines the light distribution, light values and colour location of beacons that are to be achieved.	Only beacons that fulfil ECE-R65 can be used on public roads.
Beacon failure check (DIN 14630 – Blue) 	Beacons for preferential road use.	A function monitoring system must be provided.
Approval for transport of dangerous goods 	Lamp approved for transport of dangerous goods according to the European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR; in German, GGVS).	Generally required for truck and trailer lighting. Precondition for approval: damage of the light source must not cause explosive media to ignite.

CHARACTERISTICS	DESCRIPTION	COMMENTS
Electromagnetic compatibility 	Electromagnetic compatibility (EMC) tested and EU type approval issued.	If the light is not constructed according to EMC specifications, and thus is not certified, then interaction between it and other safety-relevant electronic systems may occur. **Examples:** Interference in the radio loudspeaker, impairment of ABS electronics, or failure of the lamp due to sensitivity to interference.
Automotive Electronic Council 	Components qualified according to automotive standard.	Electronic components (LEDs, diodes, ...) are more robust and safer than electronic components for industry thanks to automotive specifications. By using certified suppliers, a more robust design of the circuit is possible - even for longer periods of time with consistent quality. Therefore slight additional costs for the components improve the service life of LED lighting functions.
Automotive Safety Integrity Level 	Product electronics are developed using the latest methods and according to the ISO 26262 safety guidelines.	This has been considered the standard for technology since July 2011 and is taken account of in product development.
ECE 	Product is licensed according to ECE guidelines.	

PLUG CONNECTIONS AND PIN ASSIGNMENTS

7-PIN PLUG SYSTEM COMPLIANT WITH ISO 11 85 (N-TYPE)



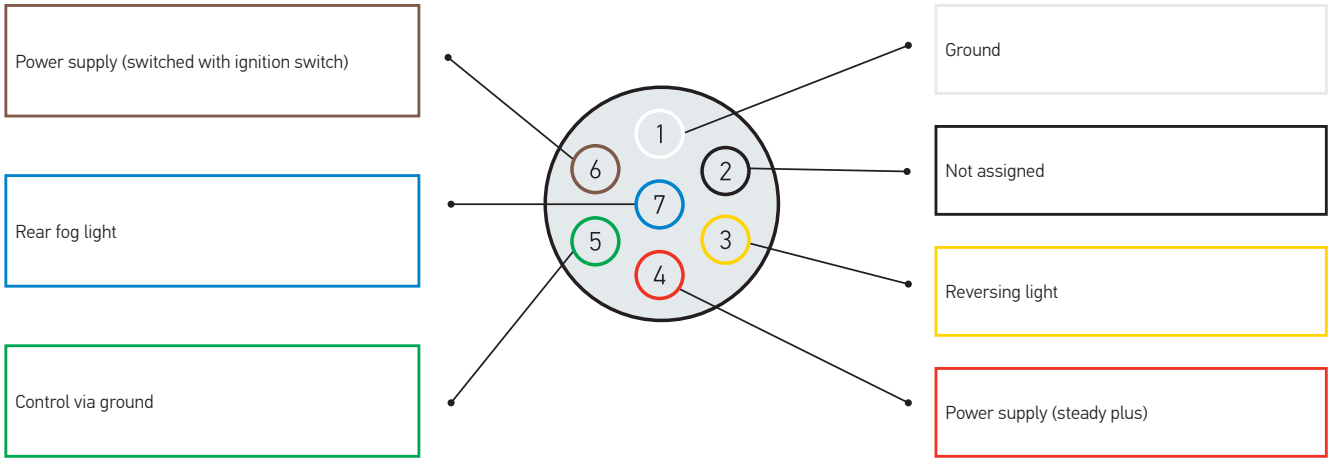
Assignment diagram – trailer plug fitting 24 V/7-pin N type ISO 1185
31 contact/socket – pin; 31 contact/plug – sleeve

Contact assignment for normal plug-type connectors according to ISO 1185, 24 V, 7-pin N

Contact no.	Function	Cable cross-section	Colour and core isolation
1/31	Ground	2.5 mm²	
2/58L	Left tail light, clearance light, sidelight and licence plate lighting 1)	1.5 mm²	
3/L	Direction indicator, left	1.5 mm²	
4/54	Stop lights	1.5 mm²	
5/R	Indicator, right	1.5 mm²	
6/58R	Right tail light, clearance light, sidelight and licence plate lighting 1)	1.5 mm²	
7/54g	Trailer brake controller	1.5 mm²	

1) The licence plate lighting must be connected in such a way that none of its lamps are connected to the two contacts 2 and 6.

7-PIN PLUG SYSTEM COMPLIANT WITH ISO 37 31 (S-TYPE)

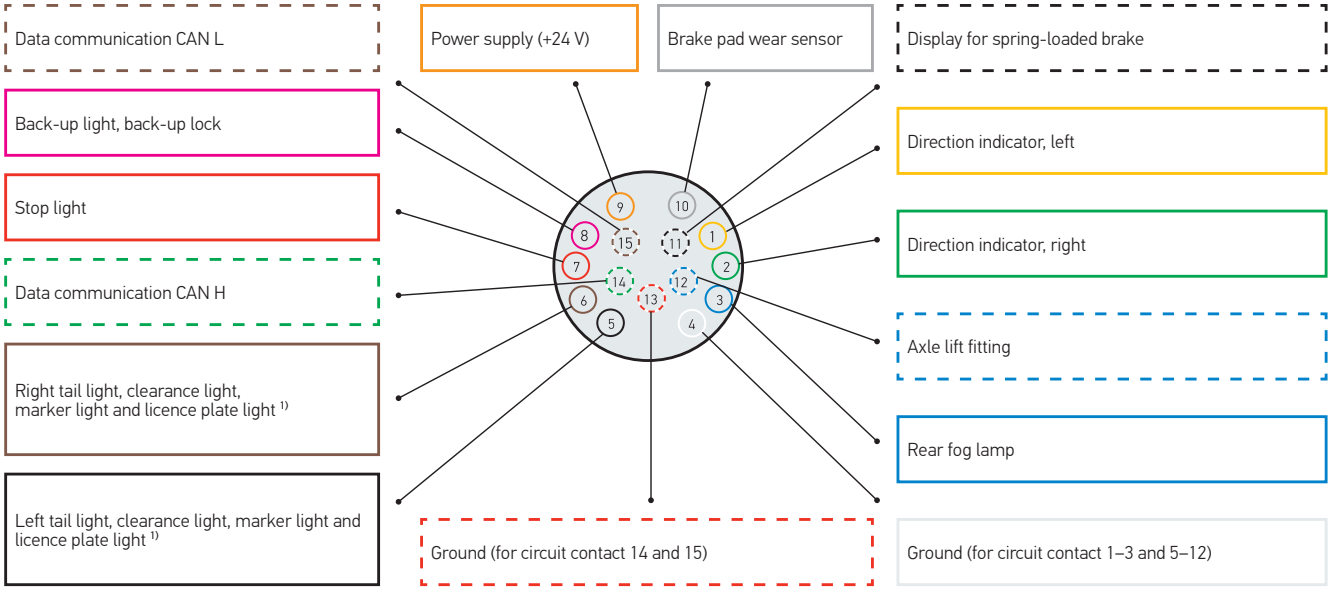


Assignment diagram – trailer plug fitting 24 V/7-pin S type ISO 3731
31 contact/socket – sleeve; 31 contact/plug – pin

Contact assignment for auxiliary plug-type connectors according to ISO 3731, 24 V, 7-pin S

Contact no.	Function	Cable cross-section	Colour and core isolation
1	Ground	2.5 mm²	
2	Reserved for future applications	1.5 mm²	
3	Reversing light	1.5 mm²	
4	Power supply (steady plus)	2.5 mm²	
5	Control via ground	1.5 mm²	
6	Power supply via the ignition switch	2.5 mm²	
7	Rear fog light	1.5 mm²	

TRAILER PLUG FITTING, 15-PIN, COMPLIANT WITH ISO 12098



Contact assignment for plug connectors according to ISO 12098, 24 V, 15-pin

Contact no.	Function	Ø cable	Colour and core isolation
1	Direction indicator, left	1.5 mm²	
2	Direction indicator, right	1.5 mm²	
3	Rear fog lamp	1.5 mm²	
4	Ground for contacts 1–3 and 5–12	2.5 mm²	
5	Left tail light, clearance light, sidelight and licence plate lighting 1)	1.5 mm²	
6	Right tail light, clearance light, sidelight and licence plate lighting 1)	1.5 mm²	
7	Stop lights	1.5 mm²	
8	Reversing light	1.5 mm²	
9	Permanent power supply (24 V)	2.5 mm²	
10	Sensor for brake pad wear indication	1.5 mm²	
11	Display for spring-loaded brake	1.5 mm²	
12	Axle lift	1.5 mm²	
13	Ground for data cables 14 and 15	2.5 mm²	
14	CAN H	1.5 mm²	
15	CAN L	1.5 mm²	

1) The licence plate lighting must be connected in such a way that none of its lamps are connected to the two contacts 5 and 6.

LEGAL REGULATIONS

For rear lighting according to ECE regulation 48

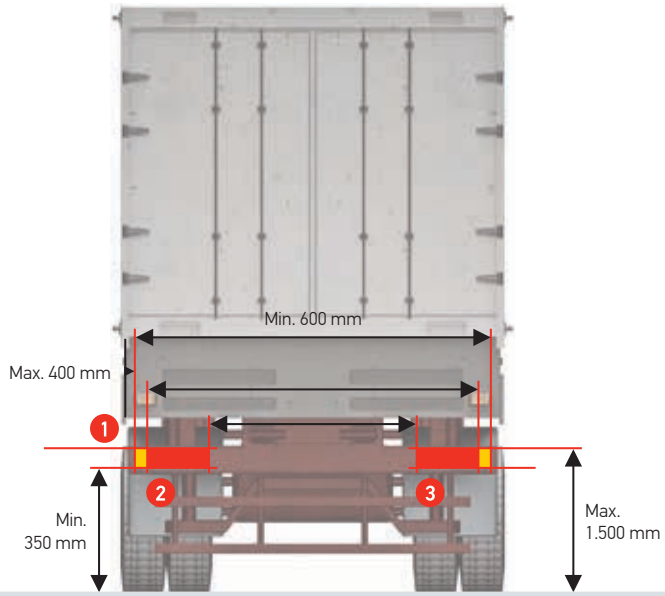
Vehicle classes:
O_1 trailers up to 0.75 t
O_2 trailers over 0.75 t up to 3.5 t
O_3 trailers over 3.5 t up to 10 t
O_4 trailers over 10 t

HELLA shall assume no liability for potential deviations from the equipment requirements documented here, as experience shows that statutory regulations are modified at irregular intervals.

1

Rear direction indicator (indicator) ECE-R48 section 6.5 and ECE-R6	
Attachment ECE-R48 § 6.5.1	Prescribed for all trailers. Category 2a or 2b.
Number ECE-R48 § 6.5.2	2 units, additional 2 optional on O_2, O_3 and O_4 vehicles.
Color ECE-R48 § 5.15	Amber
Attachment width ECE-R48 § 6.5.4.1	Max. Max. 400 mm from the outermost point of the vehicle width. This does not apply to the additional direction indicators. Min. 600 mm between the two indicators, but min. 400 mm for vehicle widths < 1,300 mm.
Mounting Height ECE-R48 § 6.5.4.2	Min. 350 mm, max. 1,500 mm (exception: 2,100 mm, only if the vehicle geometry does not allow for an attachment of less than 1,500 mm and 2 additional direction indicators are not attached). Attachment height of the additional indicators: min. 600 mm above the prescribed direction indicators.
Geometric angle of visibility ECE-R48 § 6.5.5	Horizontal 45° inside to 80° outside. Vertical ± 15°, but for an attachment height of < 750 mm also 5° downwards. Optionally with an attachment height of 2,100 mm also 5° upwards.
Electrical Circuit ECE-R48 § 6.5.7	It must light up independently of the other lights. They are to be switched on and off on the same side of the vehicle by the same operating device. They must flash synchronously.
Switch-On Control ECE-R48 § 6.5.8	Prescribed. The function control is prescribed for the front and rear direction indicators. Vehicles which are equipped to pull a trailer must feature a special function control for the direction indicator of the trailer. This is unless every malfunction in the direction indicator of the convoy can be signalised via the control unit of the towing vehicle. The function control is not necessary for the two additional direction indicators on trailers.

ECE-R6 (6.1)
Category 2a (constant) = luminous intensity min. 50 cd, single light max. 500 cd, type "D" light max. 250 cd
Category 2b (variable) = luminous intensity min. 50 cd, single light max. 1,000 cd, type "D" light max. 500 cd



2

Tail light ECE-R48 § 6.10 und ECE-R7	
Attachment ECE-R48 § 6.10.1	Prescribed for all trailers. Category R1, R1 or R2.
Number ECE-R48 § 6.10.2	2 units, further 2 optionally possible for O_2, O_3 and O_4 vehicles if clearance lights are not attached.
Color ECE-R48 § 5.15	Red
Attachment width ECE-R48 § 6.10.4.1	Max. 400 mm from the outermost point of the vehicle width. This does not apply to the additional tail lights. Min. 600 mm between the two tail lights, but min. 400 mm for vehicle widths < 1,300 mm.
Mounting Height ECE-R48 § 6.10.4.2	Min. 350 mm, max. 1,500 mm (exception: 2,100 mm, only if the vehicle geometry does not allow for an attachment of less than 1,500 mm and 2 additional tail lights are not attached). Attachment height of the additional indicators: min. 600 mm above the prescribed tail lights.
Geometric angle of visibility ECE-R48 § 6.10.5	Horizontal 45° inside to 80° outside. Vertical ± 15°, but for an attachment height of < 750 mm also 5° downwards. Optionally with an attachment height of 2,100 mm also 5° upwards.
Electrical Circuit ECE-R48 § 6.10.7	Must be designed so that the sidelight, tail light, side marker lights and licence plate lights can only be switched on and off simultaneously.
Switch-On Control ECE-R48 § 6.10.8	Prescribed. It must be combined with the control unit for the marker lights.
Other regulations ECE-R48 § 6.10.9	Except if clearance lights are attached, 2 additional sidelights and tail lights can be attached to all trailers of the classes O_2, O_3, O_4.

ECE-R7 § 6.1
Category R, R1 (constant) = luminous intensity min. 4 cd, single light max. 17 cd, type "D" light max. 8.5 cd
Category R2 (variable) = luminous intensity min. 4 cd, single light max. 42 cd, type "D" light max. 21 cd

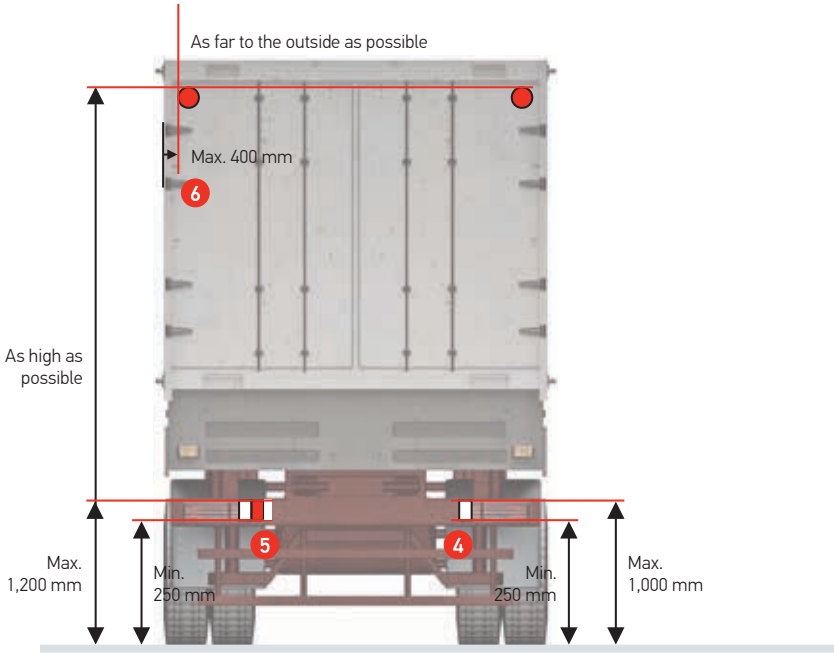
3

Stop light ECE-R48 § 6.7 und ECE-R7	
Attachment 6.7.1	Prescribed for all trailers. Category S1 or S2.
Number R48 § 6.7.2	2 units Except if stoplights in category S3 or S4 are attached, two additional stoplights in category S1 or S2 can be attached to vehicle classes O_2, O_3 and O_4.
Color ECE-R48 § 5.15	Red
Attachment width ECE-R48 § 6.7.4.1	For all trailers min. 600 mm between both stoplights, but min. 400 mm for vehicle widths < 1,300 mm.
Mounting Height ECE-R48 § 6.7.4.2	Min. 350 mm, max. 1,500 mm (exception: 2,100 mm, only if the vehicle geometry does not allow for an attachment of less than 1,500 mm and 2 additional stop lights are not attached). Attachment height of the additional stop lights: min. 600 mm above the prescribed stop lights.
Geometric angle of visibility ECE-R48 § 6.7.5	Horizontal ± 45°. Vertical ± 15°, but for an attachment height of < 750 mm also 5° downwards. Optionally with an attachment height of 2,100 mm also 5° upwards.
Electrical Circuit ECE-R48 § 6.7.7	Must shine when the brake is pressed.
Switch-On Control ECE-R48 § 6.7.8	Approved. If there is one, only as a function indicator lamp in the form of a non-flashing warning light that flashes in the event of a fault.
Other regulations ECE-R48 § 6.7.9	The clearance of the stoplight to the rear fog light must be ≥ 100 mm.

ECE-R7 § 6.1
Category S1 (constant) = luminous intensity min. 60 cd, single light max. 260 cd, type "D" light max. 130 cd
Category S2 (variable) = luminous intensity min. 60 cd, single light max. 730 cd, type "D" light max. 365 cd

LEGAL REGULATIONS

For rear lighting according to ECE regulation 48



4

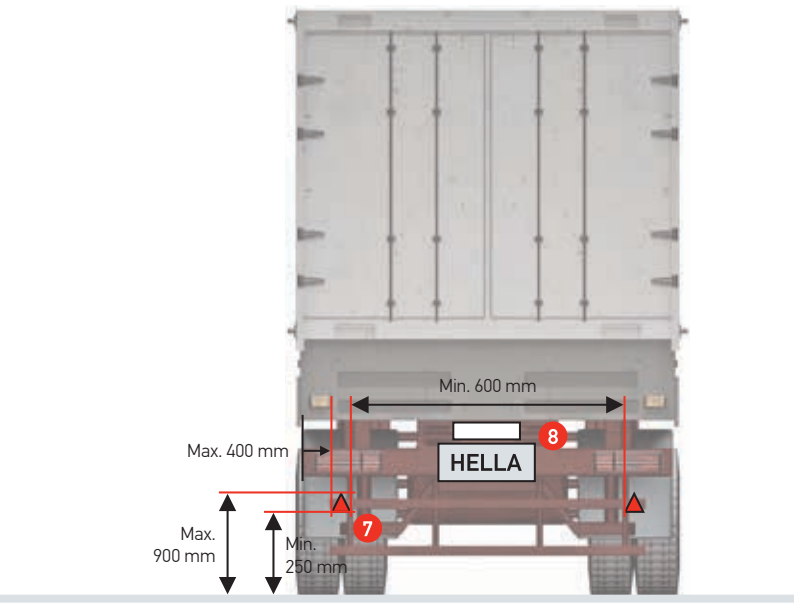
Reversing light ECE-R48 section 6.4 and ECE-R23	
Attachment ECE R48 Section 6.4.1	Prescribed for all trailers of the vehicle classes O_2, O_3 and O_4. Approved for trailers of the vehicle class O_1.
Number ECE R48 Section 6.4.2	1 is prescribed, a 2nd one is allowed for trailers < 6 m. 2 1 is prescribed > 6 m required for trailers and a 2nd one is allowed*.
Colour ECE R48 Section 5.15	White
Attachment width ECE R48 Section 6.4.4.1	No regulations
Mounting Height ECE R48 Section 6.4.4.2	Min. 250 mm, max. 1,200 mm.
Geometric angle of visibility ECE R48 Section 6.4.5	1 light: horizontal ± 45°. 2 Lamps: Horizontal 30° inside to 45° outside. Vertical 15° above, up to 5° downwards.
Electrical Circuit ECE R48 Section 6.4.7	Only activated when the reverse gear is engaged and the vehicle is in running order. The special conditions in Section 6.4.7.2 apply to the optional reversing lights.
Switch-On Control ECE R48 Section 6.4.8	Permissible

* Installation of the two optional reversing spotlights also allowed on the vehicle side.

5

Rear fog light ECE-R48 section 6.11 and ECE-R38	
Attachment ECE R48 Section 6.11.1	Prescribed for all trailers. Category F, F1 or F2.
Number ECE R48 Section 6.11.2	1 or 2 units
Colour ECE R48 Section 5.15	Red
Attachment width ECE R48 Section 6.11.4.1	No regulations
Mounting Height ECE R48 Section 6.11.4.2	Min. 250 mm, max. 1,000 mm or if built together with another function max. 1200 mm
General attachment ECE R48 Section 6.11.4.1	With 1 rear fog light: left of center = right-hand traffic, right of center = left-hand traffic. Attachment in the middle is allowed
Geometric angle of visibility ECE R48 Section 6.11.5	Horizontal ± 25°. Vertikal ± 5°.
Electrical Circuit ECE R48 Section 6.11.7	Only switched on when the low beam, high beam or fog lights are switched on.
Switch-On Control ECE R48 Section 6.11.8	Prescribed. An independent, non-flashing indicator light.
Other regulations ECE R48 Section 6.11.9	The clearance to the stop light must be > 100 mm. The rear fog light of the tractor vehicle can switch off automatically if a trailer is attached and its rear fog light is thereby switched on.

ECE-R38 § 6.1
Category F, F1 (constant) = luminous intensity min. 150 cd, max. 300 cd
Category F2 (variable) = luminous intensity min. 150 cd, max. 840 cd



7

Rear reflectors ECE-R48 section 6.15 and ECE-R3	
Attachment ECE R48 Section 6.15.1	Prescribed for all trailers.
Number ECE R48 Section 6.15.2	Min. 2 units
Colour ECE R48 Section 5.15	Red
Form ECE-R48 § 6.15	Triangular
Attachment method ECE R48 Section 6.15.3	The tip of the triangle must point upwards.
Attachment width ECE R48 Section 6.15.4.1	Max. 400 mm from the most outside point of the vehicle width, min. 600 mm between the two reflex reflectors, but min. 400 mm for vehicle widths of < 1,300 mm.
Mounting Height ECE R48 Section 6.15.4.2	Min. 250 mm, max. 900 mm, max. 1,200 mm if integrated in another light (exception.: 1,500 mm)*.
Geometric angle of visibility ECE R48 Section 6.15.5	Horizontal ± 30°. Vertical ± 15°, but for an attachment height of < 750 mm 5° downwards
Other regulations ECE R48 Section 6.15.9	The shining surface of the reflex reflector may be integrated in any other rear light.

* An exception is only possible if the vehicle geometry does not make standard attachment possible.

6

Rear contour light ECE-R48 section 6.13 and ECE-R7	
Attachment ECE R48 Section 6.13.1	Prescribed for all trailers > 2.1 m wide. Approved for trailers > 1.8 m to ≤ 2.1 m width. Category R, R1, R2, RM1 or RM2.
Number ECE R48 Section 6.13.2	2 units, further 2 clearance lights optionally possible
Colour ECE R48 Section 5.15	Red
Attachment width ECE R48 Section 6.13.4.1	As far outside as possible, max. 400 mm from the outermost point of the vehicle width.
Mounting Height ECE R48 Section 6.13.4.2	As high as possible. Optional and prescribed with the greatest possible clearance.
Geometric angle of visibility ECE R48 Section 6.13.5	Horizontal 80° outwards. Vertical 5° over and 20° below the horizontal line.
Electrical Circuit ECE R48 Section 6.13.7	Must be designed so that the sidelight, tail light, side marker lights and licence plate lights can only be switched on and off simultaneously.
Switch-On Control ECE R48 Section 6.13.8	Approved. If there is a control unit, its function must be satisfied by the prescribed control unit for the marker lights and tail lights.
Other regulations ECE R48 Section 6.13.9	The rear red and front white clearance lights may be combined in one light unit as long as the installation instructions and angle of vision ranges are satisfied. Clearance of the clearance light to the tail light min. 200 mm.

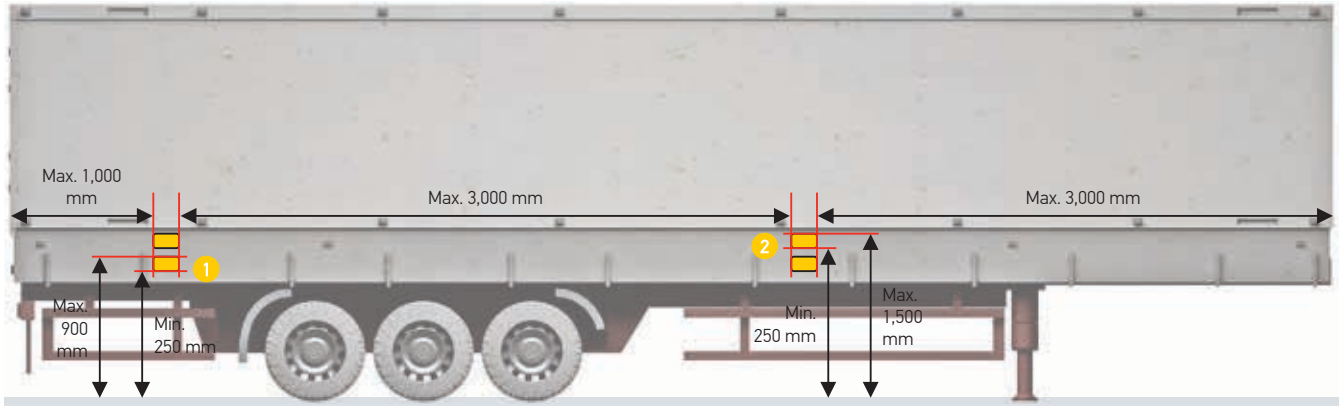
ECE-R7 § 6.1
Category R, R1, RM1 (constant) = luminous intensity min. 4 cd, single light max. 17 cd, type "D" light max. 8.5 cd
Category R2, RM2 (variable) = luminous intensity min. 4 cd, single light max. 42 cd, type "D" light max. 21 cd

8

Licence plate light ECE-R48 section 6.8 and ECE-R4	
Attachment ECE R48 Section 6.8.1	Prescribed for all trailers.
Number ECE R48 Section 6.8.2	1 or more
Colour ECE R48 Section 5.15	White
Attachment of the licence plate ECE R48 Section 6.8.3	In a way that the licence plate is illuminated.
Electrical Circuit ECE R48 Section 6.8.7	Must be designed so that the sidelight, licence plate light, tail light and side marker lights can only be switched on and off simultaneously.
Switch-On Control ECE R48 Section 6.8.8	Approved. If there is a control unit, its function must be satisfied by the prescribed control unit for the marker lights and tail lights.

LEGAL REGULATIONS

For side lighting pursuant to ECE regulation 48



1

Side reflex reflector ECE-R48 § 6.17 and ECE-R3	
Attachment ECE-R48 § 6.17.1	Prescribed for all trailers.
Number ECE-R48 § 6.17.2	See lengthwise mounting
Color ECE-R48 § 5.15	Amber
Form ECE-R48 § 6.17	Not triangular
Mounting Height ECE-R48 § 6.17.4.2	Min. 250 mm, max. 900 mm, max. 1,200 mm if integrated in another light (exception.: 1,500 mm).
Lengthwise Mounting ECE-R48 § 6.17.4.3	The reflex reflector attached at the most foremost point must be max. 3 m from the front vehicle point. Max. 3 m between the individual reflex reflectors (exception: 4 m). Max distance from behind 1 m. Min. 1 reflector in middle third.
Geometric angle of visibility ECE-R48 § 6.17.5	Horizontal ± 45°. Vertical ± 10°, but for an attachment height of < 750 mm 5° downwards
Other regulations ECE-R48 § 6.17.9	The shining surface of the reflex reflector may be integrated in any other side light.

2

Side marker light (SM1) ECE-R48 § 6.18 and ECE-R91	
Attachment ECE-R48 § 6.18.1	Prescribed for all trailers > 6 m long. Approved for trailers ≤ 6 m long.
Number ECE-R48 § 6.18.2	See lengthwise mounting
Color ECE-R48 § 5.15	Front amber, rear amber (in combination with the combination rear light, red is also possible)
Mounting Height ECE-R48 § 6.18.4.2	Min. 250 mm, max. 1,500 mm (exception: 2,100 mm)*.
Lengthwise Mounting ECE-R48 § 6.18.4.3	Front-most side marker light max. 3 m from the front, rear-most side marker light max. 1 m from rear, max. 3 m between the individual side marker lights (exception: 4 m). Min. 1 in the front and / or rear third. For vehicle lengths of ≤ 6 m, alternatively min. one in the middle third.
Geometric angle of visibility ECE-R48 § 6.18.5	Horizontal ± 45°, with optional side marker lights ± 30°. Vertical ± 10°, but for an attachment height of < 750 mm 5° downwards
Electrical Circuit ECE-R48 § 6.18.7	No regulations
Switch-On Control ECE-R48 § 6.18.8	Approved. If there is a control unit, its function must be met by the prescribed control unit for the marker lights and tail lights.
Other regulations ECE-R48 § 6.18.9	The shining surface of the reflector may be integrated into the side indicator light. The max. attachment height of the reflex reflector needs to be observed here. The rear side marker lights must be amber if they flash together with the rear direction indicator.

* An exception is only possible if the vehicle geometry does not make standard attachment possible.

ECE-R91 (7.1)
Category SM1 (use in all vehicle classes) = luminous intensity min. 4 cd, max. 25 cd

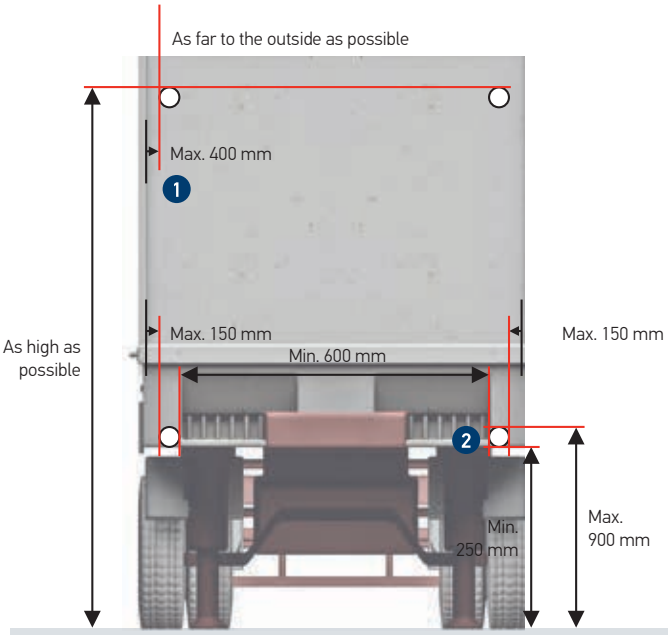
3

Additional side direction indicator (indicator lamp) ECE R48 Section 6.5 and ECE R6	
Attachment and number ECE-R48 § 6.5.1, § 6.5.2 § 6.5.3	O_2 vehicle > 9 m length: Up to 3 optional Category 5 or one Category 6 per O_3 and O_4 vehicle side: Three Category 5* distributed as evenly as possible per vehicle side is stipulated.
Color ECE-R48 § 5.15	Amber
Mounting Height ECE-R48 § 6.5.4.2.1	> 500 mm to max. 1,500 mm (in exceptional cases up to 2,300 mm)**.
Lengthwise Mounting ECE-R48 § 6.5.4.3	Category 5 = distributed evenly along the length of the trailer. Category 6 = between the 1st and the last quarter of the trailer.
Geometric angle of visibility ECE-R48 § 6.5.5	Horizontal min. 5° to 60° rear. Vertical ± 15° for Category 5, but for mounting heights of < 750 mm also 5° downwards. For category 6, however, additionally 30° over and 5° below the horizontal plane.
Electrical Circuit ECE-R48 § 6.5.7	It must light up independently of the other lights. They are to be switched on and off on the same side of the vehicle by the same operating device.
Switch-On Control ECE-R48 § 6.5.8	Not prescribed

* These three Category 5 lamps are not necessary if at least three flashing side marker lights, which flash synchronously with the other direction indicators, are attached to the same vehicle side. (ECE R48 Supplement 6)
** An exception is only possible if the vehicle geometry makes standard attachment impossible.

LEGAL REGULATIONS

For front lighting pursuant to ECE regulation 48



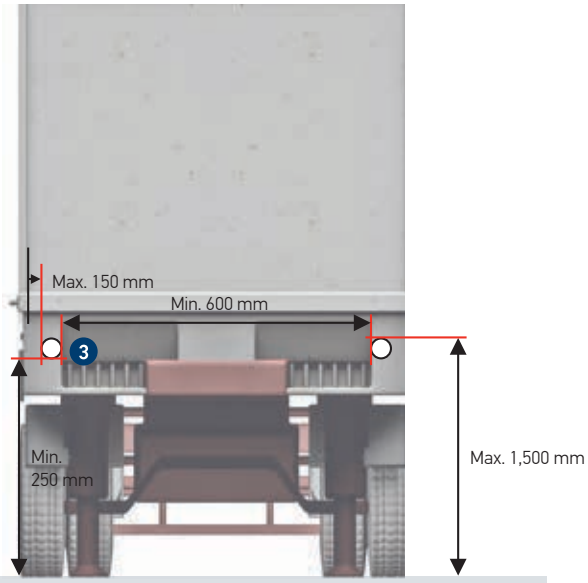
1

Front contour light ECE-R48 § 6.13 and ECE-R7	
Attachment ECE-R48 § 6.13.1	Prescribed for all trailers > 2.1 m wide. Approved for trailers > 1.8 m to ≤ 2.1 m width. Category A or AM.
Number ECE-R48 § 6.13.2	2 units, 2 additional units allowed
Colour ECE-R48 § 5.15	White
Attachment width ECE-R48 § 6.13.4.1	Max. 400 mm from the outermost point of the vehicle width.
Mounting Height ECE-R48 § 6.13.4.2	As high as possible.
Geometric angle of visibility ECE-R48 § 6.13.5	Horizontal 80° to the outside, vertical 5° over and 20° below the horizontal plane.
Electrical Circuit ECE-R48 § 6.13.7	Must be designed so that the sidelight, tail light, side marker lights and licence plate lights can only be switched on and off simultaneously.
Switch-On Control ECE-R48 § 6.13.8	Approved. If there is a control unit, its function must be satisfied by the prescribed control unit for the marker lights and tail lights.
Other regulations ECE-R48 § 6.13.9	The front white and rear clearance lights may be combined in one light unit as long as the installation instructions and angle of vision ranges are satisfied. Clearance from clearance light to marker light > 200 mm.

ECE R7 § 6.1.1
category A, AM = luminous intensity min. 4 cd, single light max. 140 cd, type "D" light max. 70 cd

2

Front reflex reflector ECE-R48 § 6.16 and ECE-R3	
Attachment ECE-R48 § 6.16.1	Prescribed for all trailers.
Number ECE-R48 § 6.16.2	Min. 2 units, further 2 optional
Colour ECE-R48 § 5.15	White/colourless
Form ECE-R48 § 6.16	Not triangular
Attachment width ECE-R48 § 6.16.4.1	Max. 150 mm, min. 600 mm between both reflex reflectors, but min. 400 mm for vehicle widths < 1,300 mm.
Mounting Height ECE-R48 § 6.16.4.2	Min. 250 mm, max. 900 mm (exception: 1,500 mm).
Geometric angle of visibility ECE-R48 § 6.16.5	Horizontal 10° inside and 30° outside. Additional reflex reflectors can help with the horizontal values. Vertical ± 10°, but for an attachment height of < 750 mm 5° downwards.
Other regulations ECE-R48 § 6.16.9	The shining surface of the reflex reflector may be integrated in any other front light.



3

Front sidelight ECE-R48 § 6.9 and ECE-R7	
Attachment ECE-R48 § 6.9.1	Prescribed for all trailers > 1.6 m wide. Approved for trailers ≤ 1.6 m wide.
Number ECE-R48 § 6.9.2	2 pcs.
Colour R48 § 5.15	White
Attachment width ECE-R48 § 6.9.4.1	Max. 150 mm from the outermost point of the vehicle width. Min. 600 mm between both marker lights, but min. 400 mm for vehicle widths < 1,300 mm.
Mounting Height ECE-R48 § 6.9.4.2	Min. 250 mm, max. 1,500 mm (exception: 2,100 mm only for trailers in classes O_1 and O_2 or if max. 1,500 mm is not possible for other trailers).
Geometric angle of visibility ECE-R48 § 6.9.5	Horizontal 5° inwards and 80° outwards. Vertical ± 15°, but for an attachment height of < 750 mm also 5° downwards.
Electrical Circuit ECE-R48 § 6.9.7	Must be designed so that the marker light, tail light, side marker lights and licence plate lights can only be switched on and off simultaneously. Can be switched off when indicating.
Switch-On Control ECE-R48 § 6.9.8	Prescribed. The indicator lamp may not flash. Not necessary if the lighting equipment in the dashboard can only be switched on at the same time as the marker lights.

AN OVERVIEW OF THE LED HYBRID REAR COMBINATION LAMPS AND CONNECTOR SYSTEMS

MULTI-FUNCTION LIGHT

Modular principle of the multi-function lights

Multi-function light with rubber arm

Multi-function light with side marker light

ROUND LIGHT

Hybrid
stop light, direction indicator, tail light

LED
stop light, direction indicator, tail light

LED
fog light, reversing light

SYSTEMATIC COLOURS

Straightforward connection of all components with process reliability, thanks to the colour system from HELLA.

15-pin EasyConn connector
The 15-pin EasyConn connector housing and female connector housing connect the front adapter, the main supply cable, and the rear adapter to one another.

15-pin EasyConn connector II
The proven 15-pin plug connectors are also available as a connector set, through which customer-specific requests as well as repairs can be easily implemented.

7-pin EasyConn connector
Rear lamps are connected to the EasyConn system using the 7-pin connector housing and female connector housing.

7-pin DIN bayonet connector
Our round light system as well as third-party products can be connected via a 7-pin DIN bayonet connector.

2-pin EasyConn connector*
The 2-pin EasyConn connector housing and female connector housing make it possible to connect e.g. SMLR, position lights, and clearance lights as well as 2-pin auxiliary functions.

2-pin SUPERSEAL connector
With the 2-pin SUPERSEAL connection, customers can fall back on yet another reliable product for the connecting of single-function lights.

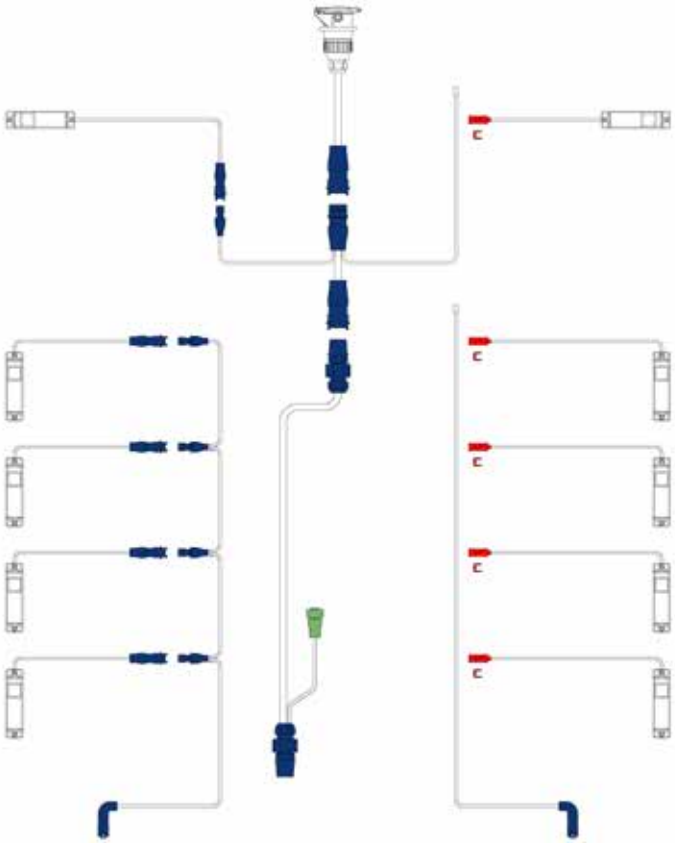
Quick link
Our quick link press connection: flexible and secure mounting of single-function lights on our HELLA flat conductor.

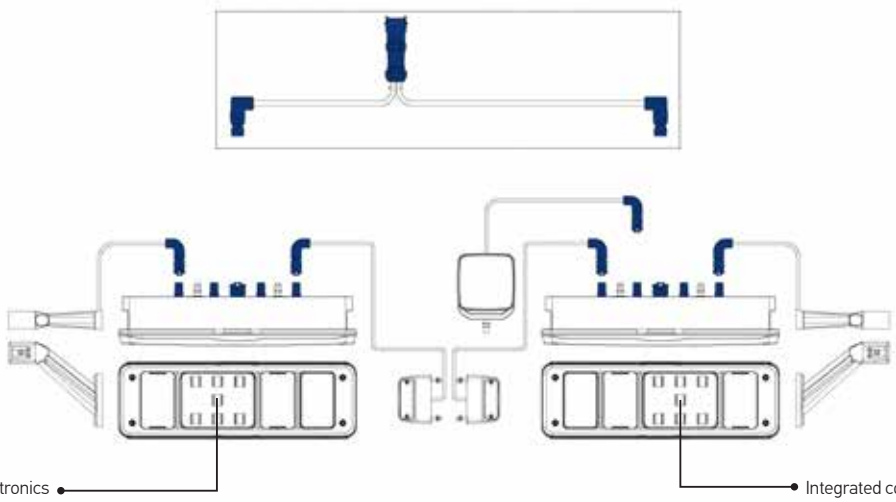
* Version also available in angled design

EasyConn NextGeneration system

Multi-function light concept

EasyConn
SUPERSEAL
DIN bayonet
Quick link

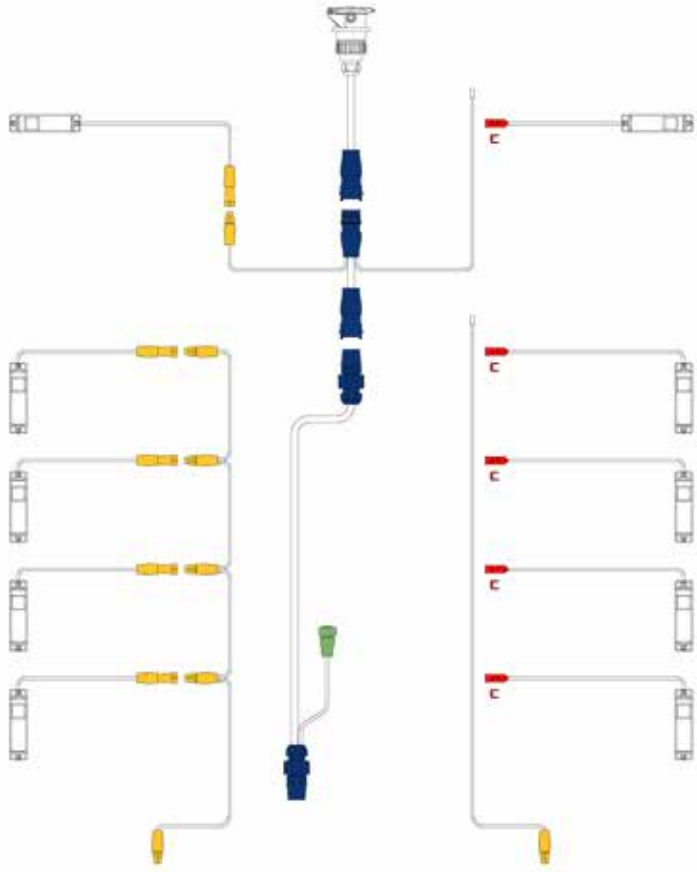


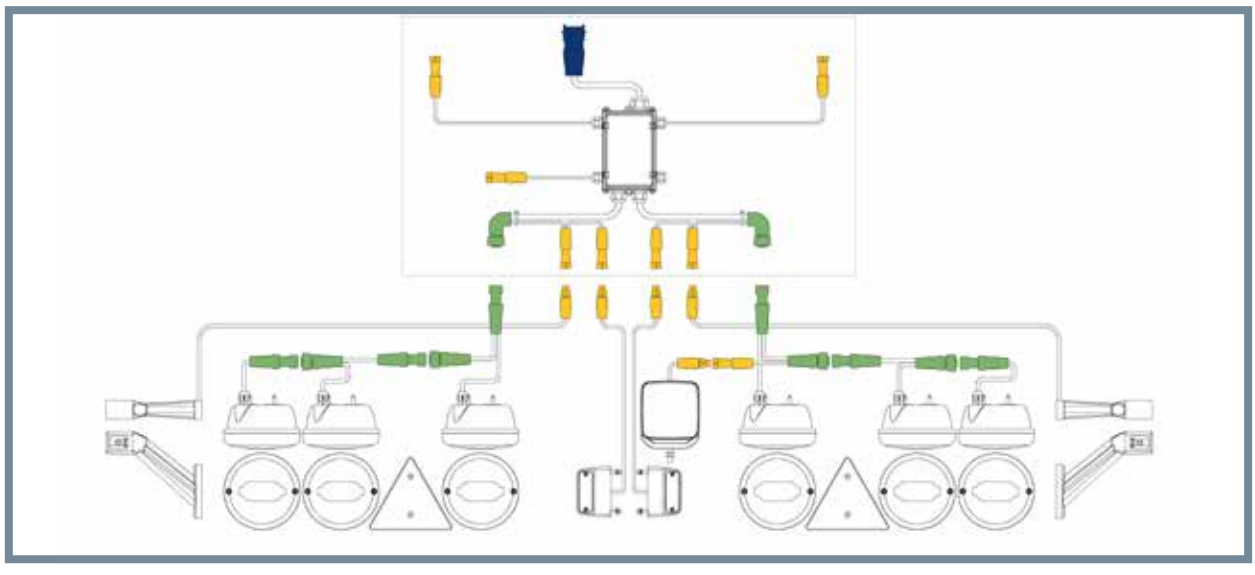


SUPERSEAL DIN bayonet system

Round light concept

EasyConn
SUPERSEAL
DIN bayonet
Quick link





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ELIVER – the light comparison tool
This online tool allows you to compare many HELLA worklights and beacons on the basis of their illumination in a realistic environment.

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THE HELLA TRAILER TOOL: INTERACTIVE CONFIGURATION

The Trailer Tool from HELLA provides a wide range of information on lighting and wiring systems. The configurator also makes system selection considerably easier.

Also available on your mobile device:
www.hella.com/trailertool

In only 3 steps, the HELLA trailer tool takes you from the light to the technology selection and finally to your individual system proposal. The configurator can be used to select a corresponding rear lamp type according to whether a trailer is to be equipped or converted. In this example, two lamp types are available to choose from – rectangular and round lamps. Combined with the corresponding light source (bulb, hybrid, or full LED) and wiring system (EasyConn Next Generation, SUPERSEAL DIN bayonet system), the user is provided with a corresponding system proposal. The matching accessories are also listed..

The user can learn more about the wiring and lighting products from product information, animated videos, and mounting instructions.

HELLA SHAPELINE: INTERACTIVE CONFIGURATION

Also available on your mobile device:
www.hella.com/shapeline

HELLA Shapeline – design your light

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

Shapeline is divided into two design lines throughout: Shapeline Tech, the classic and linear variant and Shapeline Style. Each line offers endless combination options. Here, creativity knows no limits. Thanks to the specially developed online configurator, designers and developers can experiment with the light signature of their vehicle at an early stage and configure their customised lighting design.

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