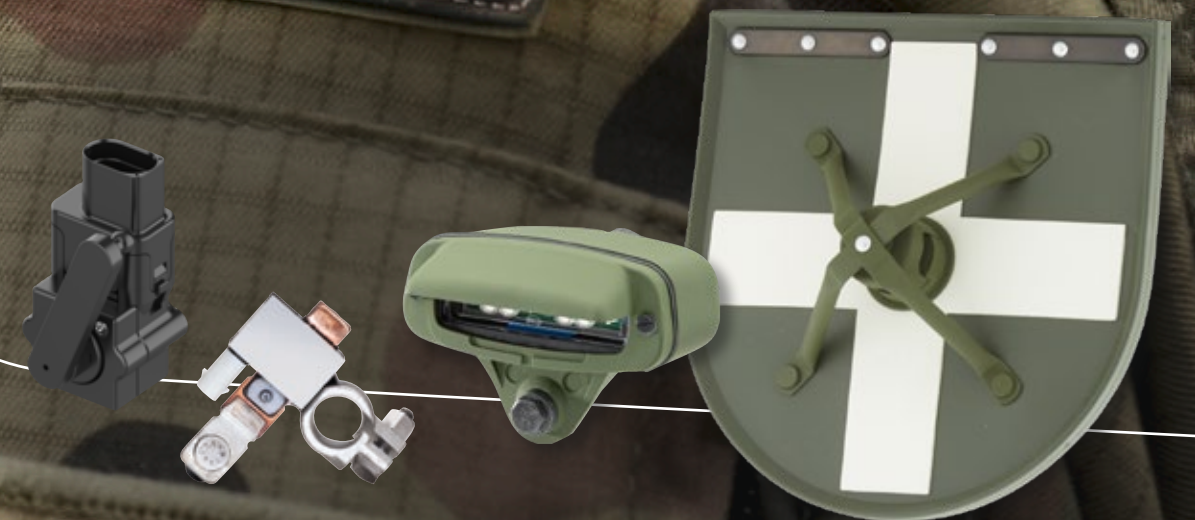


Product Overview

Rugged Electronics & Lighting Solutions for Defense Vehicles

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J02500/07.26
Update 2026



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NATO STOCK NUMBERS (NSN) – ENABLING EFFICIENT MILITARY LOGISTICS AND LIFECYCLE SUPPORT

To ensure seamless integration into military supply chains, FORVIA HELLA products are fully aligned with the NATO Stock Number (NSN) system. Beyond the manufacturer's part number, NSNs serve as the standard reference for logistics, maintenance, and spare-parts management across depot organizations and tactical vehicle fleets.

Once assigned by the relevant authorities, NSNs are linked directly to FORVIA HELLA products, enabling efficient procurement, simplified logistics processes, and reliable lifecycle support throughout deployment, maintenance, and overhaul phases. The applicable NATO Stock Numbers are shown alongside the FORVIA HELLA article numbers in the product descriptions. A detailed cross-reference overview is provided starting on page 70.

KEY OF ICONS

 	Standardisation Agreement (STANAG) NATO regulates the requirements in its Standardisation Agreement (STANAG). STANAG 4381 for example is one relevant standard that deals with „Blackout Lighting Systems for Tactical Land Vehicles“.	
	VG Standards For products with special lighting functions, such as camouflage lighting, FORVIA HELLA fulfills standards of the Military Standards (VG standards) system. These german defence standards are developed by experts in the defence sector together with specialists in the relevant industries and are valid for many European countries. VG stands for “Verteidigungsgeräte” (german) = Defence Equipment	 
	MIL standards (Military Standards) MIL standards are U.S. military specifications that define how equipment must perform and endure under harsh environmental and operational conditions. They ensure reliable, durable, and mission-ready products for defence use.	
	ECE This product is tested in line with ECE guidelines. Further information about the ECE Approvals can be found on the relevant products.	
	Asymmetrical light distribution The product complies with ECE regulation R112, which regulates asymmetrical low beam for passenger cars, commercial vehicles and most larger vehicles.	
	SAE Product has SAE approval.	
	K approval National approval (Germany).	
	Automotive Safety Integrity Level Product electronics are developed according to the most up-to-date methods and the ISO 26262 safety guidelines.	

LED product

This product includes LED technology. LED products are maintenance free and have a very long lifetime.

Bulb not included

The bulb for this product needs to be ordered separately.

Bulb included

The bulb for this product is included in scope of delivery.

Dust and water protection class – IP

International Protection (IP) according to DIN 40050, Part 9.

First digit:
Dust and dirt protection
5K = Dust-protected
6K = Dust protection

Second digit:
Protection against water
4K = protection against splashing water from any direction with increased pressure
7 = protection against temporary immersion
9K = protection against water during high-pressure/ steam-jet cleaning

0.6 bar tightness

This product is watertight up to 0.6 bar

Polarity reversal protection

Even if the connecting cable is connected with reverse polarity, there is still no danger to the electronics.

Temperature range

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



Overvoltage protection

Supplement to the electronics for protecting the LED against high voltage/current in the vehicle network as per ISO 7637-2.

The LEDs can become overloaded by increased voltage peaks in vehicles because of:

- Jump-starting
- Faulty control units
- Load dump impulse (faulty battery contact)

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



Electromagnetic compatibility

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

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



Approved for dangerous goods transport

Lamp approved for dangerous goods transport in accordance with the European Agreement Concerning International Carriage of Dangerous Goods by Road (ADR; in German: GGVS).

IP PROTECTION CLASSES

What is an IP protection class?

IP stands for International Protection. The IP protection classes are defined in DIN 40050, Part 9. The purpose of this standard is to precisely specify the resistance of electrical equipment components in motor vehicles against the ingress of solid foreign objects, dust, and water. The different degrees of protection relevant for lighting and signalling systems s are explained below.

Protection class: IP 44

Solids Ø ≥ 1.0 mm must not penetrate, protection against drops of water from all directions.

Protection class IP 5K4K

Dust may only penetrate to the 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 67

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

Protection class: IP 68

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

Protection class IP X9K

Water that is directed onto the housing during high-pressure/steam-jet cleaning must not have any harmful effects: water pressure approx. 80–100 bar.

FORVIA HELLA products meet the highest requirements and are ideally protected against all kinds of weather conditions.



STANDARDS

FORVIA HELLA has many years of experience equipping vehicles of national and international armed forces with lighting and electronics. While products intended for civil road traffic fall under the scope of the ECE regulations, special-purpose solutions with unique lighting functions – such as camouflage lighting – follow specific military requirements.

In doing so, FORVIA HELLA considers not only the **German military standards (VG standards)** but also **international MIL standards** as well as **NATO norms defined in the STANAG 4381**.

The VG standards are compatible with STANAG and are recognized not only in Germany but also in many other European countries and numerous additional regions worldwide. MIL standards likewise enjoy broad international acceptance and application.

Our products have complied with all these demanding military standards for decades. Developed by experts in the defense sector, they ensure reliable operation even under harsh conditions.

VG STANDARDS FOR LIGHTING

VG 96 957-2
Electrical systems for power driven vehicles – Part 2: Selection of components and interface description, interface standard

VG 96 945-5
Lighting and light-signalling devices on motor vehicles – Part 5: Blackout stop and blackout rear lamp, detail standard

VG 96 945-6
Lighting and light-signalling devices on motor vehicles – Part 6: Blackout driving light, detail standard

VG STANDARDS FOR EMC

VG 95 371-1
Electromagnetic compatibility (EMC) including electromagnetic pulse (EMP) and lightning protection – Fundamentals – Part 1: Circuit symbols, selection

VG 95 371-10
Electromagnetic compatibility (EMC) including electromagnetic pulse (EMP) and lightning protection – Fundamentals – Part 10: Threat levels for NEMP and lightning

VG 95373-10
Electromagnetic compatibility (EMC) – Electromagnetic compatibility of equipment – Part 10: Test procedure for conducted emissions (current)

VG 95 373-20
Electromagnetic Compatibility (EMC) – Electromagnetic compatibility of equipment – Part 20: Limits for conducted emissions (current)

MIL STANDARDS FOR LIGHTING

MIL-STD-810
Environmental Testing (Very Important for Lighting Devices). This is the primary standard for environmental qualification.
Covers:
• Temperature extremes (high/low)
• Thermal shock
• Vibration
• Shock
• Humidity
• Sand & dust
• Rain
• Salt fog
• Altitude

Almost all military lighting must demonstrate compliance to relevant MIL-STD-810 test methods.

MIL-STD-461
EMI/EMC Requirements. Applies to powered lighting systems (especially aircraft, naval, and vehicle lighting).
Covers:
• Conducted emissions
• Radiated emissions
• Susceptibility testing

Critical for:
• Aircraft lighting
• Naval lighting
• Tactical vehicle lighting

MIL-STD-704
Aircraft Electrical Power Characteristics. If the lighting device is aircraft-installed, it must tolerate:
• Voltage transients
• Frequency variations
• Power interruptions

MIL-STD-1472
Human Factors / Ergonomics
Relevant for:
• Cockpit lighting
• Panel backlighting
• Operator controls

Ensures proper:
• Illumination levels
• Color coding
• Night vision compatibility

MIL-STD-3009
NVIS Compatibility. Critical for:
• Aircraft interior lighting
• Tactical vehicle lighting
Defines:
• NVIS radiance limits
• Color requirements (NVIS Green A/B)
• Filtering requirements

MIL-PRF-22885
Lighting Fixture Performance Specification
Covers:
• General performance requirements
• Construction
• Testing
• Qualification
Often referenced for shipboard and military facilities lighting.

MIL-DTL-16377
Shipboard Lighting Fixtures. Used for:
• Naval vessel lighting
• Marine environments

Addresses:
• Corrosion resistance
• Watertight integrity
• Shock resistance

Important: Application drives the Specification
For example: Application Typical MIL Specs
Aircraft exterior light MIL-STD-810, MIL-STD-461, MIL-STD-704, MIL-STD-3009
Cockpit panel light MIL-STD-1472, MIL-STD-3009
Tactical flashlight MIL-STD-810
Naval light fixture MIL-DTL-16377, MIL-STD-810



NATO regulates the requirements in its Standardisation Agreement (STANAG). STANAG 4381 is one relevant standard that deals with „Blackout Lighting Systems for Tactical Land Vehicles“.

EXPORT CONTROL

The devices described in this brochure, which feature industry-specific technical characteristics and functionalities beyond standard ECE requirements, are subject to statutory export control regulations administered by the German Federal Office for Economic Affairs and Export Control (BAFA). Export licences are applied for through BAFA once FORVIA HELLA, as the potential contractor, has provided the required documentation, such as order-specific end-user certificates. Further information is available on the official BAFA website.

SCALABLE PRODUCTION SETUP FOR FUTURE-READY VOLUME EXPANSION

The production setup is specifically designed to support dynamic volume growth while ensuring consistent performance and quality. Its scalable architecture allows flexible capacity adjustments in line with increasing customer and market demands. By leveraging optimized processes, efficient material flows, and advanced manufacturing technologies, the setup enables cost-efficient production with reduced lead times. This approach establishes a reliable and future-proof foundation for sustainable volume expansion and long-term competitiveness.

Key Advantages for Defense Customers:

- **European Sovereignty & Supply Security**
Core production in Germany combined with a diversified European footprint ensures independence, regulatory compliance, and resilience against geopolitical risks
- **Scalable & Reliable Volume Ramp-Up**
Adaptive capacity expansion enables stable processes and consistently high product quality, even as demand increases
- **Secure End-to-End Value Chain**
Europe-based development and production safeguard intellectual property, ensure regulatory compliance, and enable trusted partnerships



More information:
Federal Office for Economic
Affairs and Export Control –
Foreign Trade

ELECTRIC & ELECTRONICS

We offer a broad spectrum of advanced electrical and electronic solutions that keep vehicles reliable, efficient, and mission-ready at all times. Our state-of-the-art electronic products enable intelligent energy management, precise battery monitoring, and powerful environment and object detection – including radar-based systems. Technologies such as CIPOS ensure maximum accuracy, robustness, and functional safety, even in demanding applications.

In addition, our portfolio includes a wide range of proven electrical components: from washer pumps and sensors to signal devices, reliable electrical connections, and intuitive control modules. Operating discreetly in the background, they perform essential functions within the vehicle and ensure operational safety, system efficiency, and long-term readiness – even under challenging conditions.

CONTENT

- ▶ Angular Sensors
- ▶ Pedals
- ▶ Actuators
- ▶ Pumps
- ▶ Radar
- ▶ Energy Management
- ▶ Acoustic Warning Systems
- ▶ Switches
- ▶ Electrical Connections

CIPOS TECHNOLOGY

PRECISE, RELIABLE, AND BUILT FOR DEMANDING APPLICATIONS

Products equipped with CIPOS technology deliver exceptionally accurate measurements of both rotary and linear positions, making them ideal for safety-relevant applications in commercial and off-highway vehicles. Whether in steering systems, actuators, pedal modules, or advanced chassis functions, CIPOS ensures precise, stable, and reliable signal output – even under extreme environmental conditions. This performance is backed by decades of field experience and more than one billion CIPOS-based applications worldwide.

WHAT MAKES CIPOS UNIQUE?

Robust, Redundant Measurement Architecture

CIPOS uses a multi-channel inductive structure that enables redundant measurements. This increases functional safety and reliability – especially in critical systems where precise position information is crucial.

Insensitive to Magnetic Fields

Because CIPOS works entirely without magnets, it is unaffected by magnetic fields or electromagnetic interference. This ensures accurate, stable measurements even in harsh E/E environments and contributes to rare-earth-free sensor designs.

High-Precision Inductive Sensing

Based on a contactless, inductive measuring principle, CIPOS delivers extremely accurate position signals – down to the smallest angular changes. The technology maintains its precision across a wide temperature range from -40°C to +150°C, ensuring reliable performance throughout the sensor's lifetime.

Contactless and Wear-Free Operation

With no mechanical contact or friction, CIPOS provides a wear-free, long-lasting measurement solution. It remains highly stable under temperature fluctuations, vibrations, and mechanical stress-making it ideal for off-road, industrial, and heavy-duty environments.

Mechanical and Chemical Robustness

CIPOS-based products are engineered to withstand challenging environmental influences such as dirt, moisture, chemicals, and shock loads. Their mechanical robustness is proven across a wide range of actuator and sensor applications, from pedal modules to vehicle level sensors and coolant valve control systems.



UNIVERSAL ANGULAR SENSOR

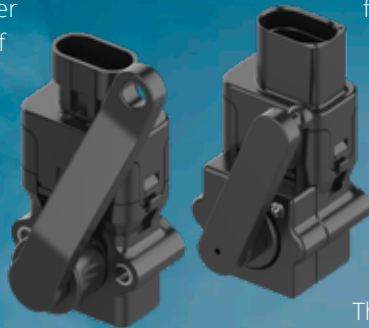
The Universal Angular Sensor (UAS) from FORVIA HELLA is a newly developed, modular rotary angle sensor for precise and reliable measurement of angular positions.

Modularity meets precision!

It uses proven **CIPOS** technology (Contactless Inductive Position Sensor), which enables a contactless, inductive measuring principle. This means that the sensor operates without wear and is extremely resistant to external magnetic fields and interference, even under extreme conditions. With its combination of high precision, flexibility and robustness, the UAS sets new standards in modern angle measurement across numerous off-highway applications.

Thanks to proven CIPOS technology, our new rotary angle sensor meets the industry's need for robust and modular measurement solutions. Here, we draw on our experience from the more than 1 billion CIPOS sensors produced to date, which are successfully used in a wide variety of applications.

Mechanically, the sensor consists of a base sensor that can be configured with different rotor elements, circuit boards and connections as required. This modular design allows different lever arms or profiled shaft connections, fasteners and further connectors to be combined so that the sensor can be optimally adapted to the respective installation situation. The measuring angle range, communication interface, signal resolution and even the nominal voltage can also be defined according to customer specifications to ensure seamless integration into existing systems. This modular design reduces development effort and installation costs. The robust design with IP6K9K protection allows usage in environments with dirt, dust, water and high mechanical loads without impairing the sensor function.



MODULAR BY DESIGN.

BUILT TO ENDURE.

PRECISION WHEN IT COUNTS.

RARE-EARTH-FREE TECHNOLOGY!

SENSORS



Universal Angular Sensor

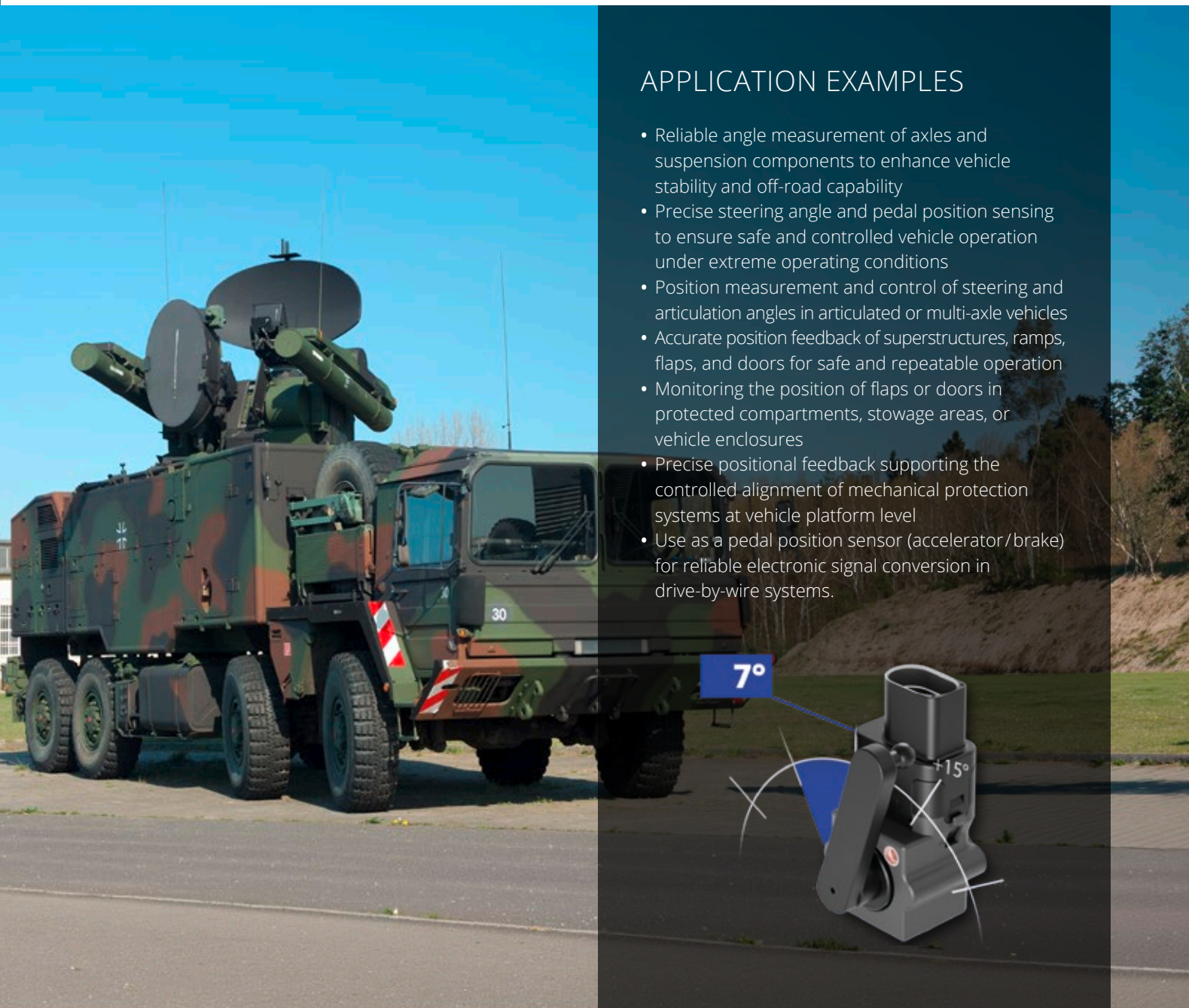
Optimum solution for the precise and reliable measurement of rotary positions in vehicles and machines. Thanks to its modular design, the sensor can be flexibly adapted to specific requirements and enables customized integration into a wide range of applications. The measuring principle of the universal angular sensor operates without magnets and is therefore rare-earth-free.

Supply voltage	U_s 5 V $\pm$ 10 % or 9–32 V
Current consumption	< 20 mA (after start up phase)
Mechanical angle range	360° (without electrical multiturn)
Compliant Interfaces	CISPR 25 Class 4, SAE J-1113-41, ISO 26262 ASIL-D (AgPL e) Single/double analogue, SENT or switch function, PWM

6PD 018 101-00... PU: 1

APPLICATION EXAMPLES

- Reliable angle measurement of axles and suspension components to enhance vehicle stability and off-road capability
- Precise steering angle and pedal position sensing to ensure safe and controlled vehicle operation under extreme operating conditions
- Position measurement and control of steering and articulation angles in articulated or multi-axle vehicles
- Accurate position feedback of superstructures, ramps, flaps, and doors for safe and repeatable operation
- Monitoring the position of flaps or doors in protected compartments, stowage areas, or vehicle enclosures
- Precise positional feedback supporting the controlled alignment of mechanical protection systems at vehicle platform level
- Use as a pedal position sensor (accelerator/brake) for reliable electronic signal conversion in drive-by-wire systems.



SENSORS



Accelerator Pedal Sensors

Designed for acceleration within a Drive by Wire system. Contactless measurement principle, simple mechanical connection, redundant output signal and High measurement accuracy. High immunity to interference from electrical and magnetic fields.

Operating voltage	Pendant: 5 V ± 10 %, Upright: 5 V ± 6 %
Initial force	Pendant: 20 N, Upright: 15.5 N
Final force	Pendant: 35 N, Upright: 31 N
Actuation angle	Pendant: 13°, Upright: 15°

6PV 009 898-007	PU: 33, pendant pedal sensor
6PV 312 093-017	PU: 16, upright pedal sensor



Heavy Duty Pedal

Designed for acceleration within a Drive by Wire system. Robust design.

Operating voltage	5–32 V
Initial force*	15–25 N
Final force*	25–45 N
Actuation angle	Up to 20°

On request	PU: 1
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* Depending on force actuation point.

ACTUATORS



Rotatory smart actuators for 360° angle

Actuator controls the position of its output gear wheel in accordance with the target position. Thanks to the “True Power” function, the actuator can also cover angle ranges smaller than 180°. This enables immediate commissioning without prior calibration. The operating angle range is flexible and allows up to eight revolutions. The electric rotation can be to the left or to the right. It has an integrated error memory with corresponding feedback signals.

Rated voltage	13.5 V
Max. torque (13.5 V, RT)	< 300 Ncm
Protection class	IP 6K9K, IP 6K7 (depending on category of mating connector)
Interface	LIN 2.9 and PWM

6NW 011 303-711	PU: 1, power locking/unlocking and closing, power rotational movement to right/left, with position feedback via CIPOS technology
6NW 011 303-717	PU: 140, power locking/unlocking and closing, power rotational movement to right/left, with position feedback via CIPOS technology

ACTUATORS



Linear Actuator

When reliable electrical locking and unlocking, or closing of hinged and locking systems is required. Examples include the opening and closing of doors, flaps, windows, seats, glove compartments, and much more.

Rated voltage	12 V
Actuating force	-411: 30–140 N, -461/-471/-501: 30–170 N (dependent on the operating voltage and ambient temperature)
Conducted interference emissions	≤ 75 V
Interference suppression (in all ranges)	Intensity level 1 + 10 dB µV
Functional stroke	≤ 18 mm

6NW 009 203-411	PU: 1, electrical retraction and extension
6NW 009 203-461	PU: 1, electrical retraction, extension via mainspring
6NW 009 203-471	PU: 1, electrical retraction, extension via mainspring
6NW 009 203-501	PU: 1, electrical extension, retraction via mainspring



ACTUATORS



Rotatory Actuator for high forces

Used in applications for locking and unlocking or closing for very high actuating forces such as for large flaps and locks or seat release mechanisms. Universal interface for Bowden cable.

Rated Voltage	12 V
Conducted interference emissions	≤ 75 V
Vibration resistance (IEC 68-2-64)	3 geff.
6NW 009 424-781	PU: 1, retraction via spring, power extension
6NW 009 424-791	PU: 1, power extension and retraction
6NW 009 424-777	PU: 70, electrical retraction and extension, without shaft, without cable sheave, and without metal clip



Rotatory actuators for high temperatures

Regulates the pressure boost of turbo-charged combustion engines. It controls a valve that regulates the flow of exhaust gases to the turbine system.

Rated voltage	13.5 V
Temperature hot soak	140 °C to 160 °C
Nominal angle	108 ± 1.5°
Protection Class	IP 6K9K
On request	PU: 2, Waste Gate Actuator



PUMPS
WASHER PUMPS



Pump

24 V washer pump, for pulsating water jet cleaning system, please order successor 8TW 003 803-017 (see below), picture only for reference

8TW 003 803-007	PU: 1, NSN: 4320-12-181-4581, no longer available – only for reference
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Pump

24 V washer pump, for pulsating water jet cleaning system, successor of 8TW 003 803-007

8TW 003 803-017	PU: 1, NSN: 4320-12-374-7761
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PUMPS
THERMAL MANAGEMENT

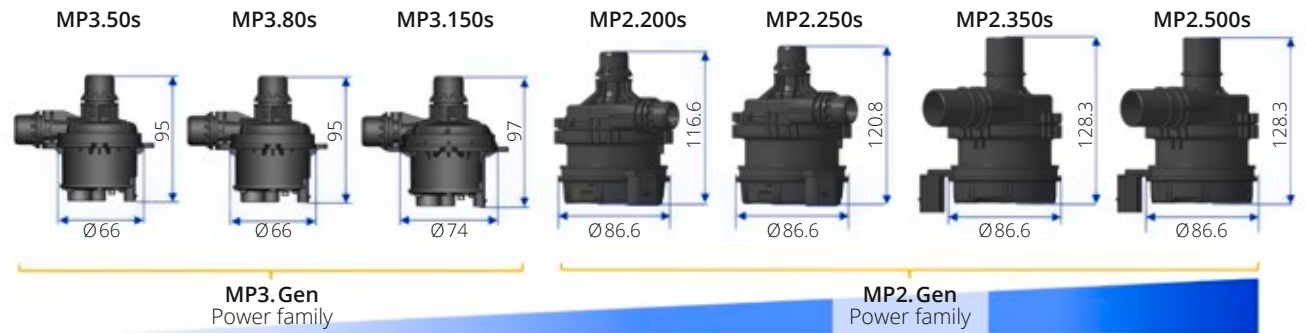


Media Pump MPx

Ensures optimum coolant flow and reliable battery cooling. Thanks to its advanced active cooling concept, it enables efficient heat dissipation, prevents the vehicle components from overheating and thus extends their service life.

Rated voltage	12 V
Power consumption	150–250 W
Temperature range	Coolant: -40 °C to +90 °C (briefly: +95 °C), Ambient: -40 °C to +120 °C (briefly: +130 °C), Storage: -40 °C to +100 °C
Communication interface	LIN 2.0, 2.1, 2.2 (PWM and CAN possible)
Protection class	IP 6KX, IP X7, IP X9K
On request	PU: 1

ENGINEERED PUMP SOLUTIONS



ACTIVE SELF-PROTECTION AND SITUATIONAL AWARENESS FOR MILITARY VEHICLES

Modern radar sensors are a core element of active self-protection and situational awareness in military and protected vehicles. They provide reliable, continuous environment monitoring with long detection range and wide field of view – independent of lighting conditions and robust against rain, fog, dust, and smoke. This makes them ideally suited for complex operational environments, from urban deployments to off-road and convoy operations.

Radar-based **Anti-Collision Warning** supports mission safety by detecting fixed and moving obstacles at an early stage and enabling timely countermeasures such as emergency braking or evasive support – critical when operating heavy, protected vehicles with limited visibility. **Front Traffic Alert (FTA) and Turn Assist (TA)** significantly reduce collision risks during manoeuvring, turning, or crossing intersections, especially in narrow streets, checkpoints, or base environments.

To protect personnel and assets in close-range scenarios, **Blind Spot Information Systems (BSIS)** continuously monitor areas alongside the vehicle and warn of vehicles, personnel, or obstacles hidden in blind spots – a key requirement for convoy operations and urban missions. When starting from standstill, **Moving Off Information Signals (MOIS)** support safe vehicle launch by clearly indicating nearby objects and vulnerable road users.

In addition, radar sensors can **determine whether surfaces ahead are drivable roads**, supporting route assessment in unfamiliar terrain and helping distinguish safe, navigable paths from non-drivable or hazardous areas – an important capability for off-road and semi-autonomous military vehicles.

Seamlessly integrable into higher-level vehicle protection, command, and defence systems, radar sensors form a scalable and robust foundation for active vehicle self-protection, enhanced situational awareness, and future autonomous or assisted military functions.

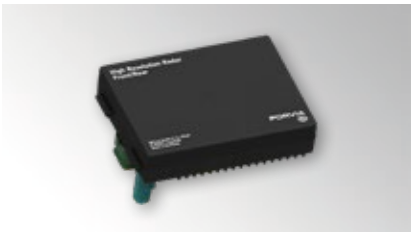


RADAR SENSORS



Dimensions | W 93 x H 68.6 x D 25.7 mm

7. Gen Radar	
Supports hardware interface on detection level up to software perception & functions. Improved detection of close objects and slow moving VRUs. Supports multiple standard features like FTA, TA as well as MOIS & BSIS. Designed with anti-vibration components GSR II, ASIL B, Cybersecurity ISO and RED compliant.	
Rated voltage	12 V and 24 V
NXP single chip	1x (4Tx/4Rx)
Field of view	Up to 300 m
Azimuth coverage	± 80°
Elevation coverage	± 15°
Protection class	IP 6K7, IP X9K*
Temperature range	-40 °C to +85 °C
Weight	< 100 g
On request	PU: 1
* If the membrane is protected according to an installation guideline for pressure equalization.	



Dimensions | W 140 x H 100 x D 40 mm

High Resolution Radar (HRR)	
Building on the proven 7. Gen radar platform, the next-generation High Resolution Radar (HRR) is being developed to extend detection capabilities, delivering enhanced resolution and longer-range performance. This ensures a scalable technology roadmap that meets increasing requirements for advanced safety, automation, and mission-critical applications.	
Rated Voltage	12 V and 24 V
Range	Up to 350 m
Field of View	±50° in Az./ ±20° in Ele.
Angele separation (native)	1.5° for Az./2.0° for Ele.
Protection class	IP 6K7 and IP X9K*
Temperature range	-40 °C to +85 °C
Weight	< 500 g
On request	PU: 1
* If the vent menbrane is protected by integration.	



Radar-Based Turning Assistant	
Intelligent radar technology in the exterior mirrors. The system detects overtaking vehicles from a distance of up to 80 meters and warns the driver immediately – a decisive advantage when turning left on rural roads, where limited visibility and blind spots often lead to serious accidents.	
Rated voltage	12 V
Field of View	Up to 80 m
Resolution	Full use of 77 GHz Band, high range resolution
RF-CMOS	Based on 77 GHz RADAR systems chips
On request	



INTELLIGENT BATTERY SENSORS

Intelligent Battery Sensors (IBS) play a key role in the military vehicle sector in ensuring operational readiness, system safety, and energy efficiency.

The IBS is designed for both 12 V and 24 V applications and provides precise real-time data on voltage, current, temperature, and the state-of-charge (SoC), state-of-health (SoH), and state-of-function (SoF), thereby forming the core of the entire energy anagement system. Through precise monitoring of the battery's health, critical situations such as deep discharge or loss of performance are detected early, and downtime can be prevented.



Find out more!

Especially technical details of the latest Electronic Products can be found on our website.

www.hella.com/soe/en/Products-1356/

ENERGY MANAGEMENT



IBS 12 V

Accurate measurement of battery voltage, current and temperature parameters, determination of the battery state of charge (SOC), state of health (SOH) and state of function (SOF) condition parameters, grounding bolt M8, output signal LIN (2.0) or higher

Operating voltage range	6–16.5 V
Power consumption	Operating modes: ≤ 15 mA (normal mode) ≤ 120 uA (sleep mode)
Permanent load current	± 155 A
Maximum current	± 1.500 A (500 ms)
Protection class	IP 6K9K
Functional safety	ASIL QM, ISO 26262
Temperature range	-40 °C to 115 °C
Max. battery capacity	249 Ah

6PK 010 842-105 PU: 1



IBS 24 V, QM

Accurate measurement of battery voltage, current and temperature parameters, determination of the battery state of charge (SOC), state of health (SOH) and state of function (SOF) condition parameters, grounding bolt M8, output signal LIN (2.0) or higher

Operating voltage range	7.5–32 V
Power consumption	Operating modes: ≤ 16 mA (normal mode) ≤ 230 uA (sleep mode)
Permanent load current	± 200 A
Maximum current	± 2,000 A (500 ms)
Protection class	IP 6K9K
Functional safety	QM
Temperature range	-40 °C to 80 °C
Max. battery capacity	255 Ah

6PK 011 700-001 PU: 1

6PK 011 700-007 PU: 100



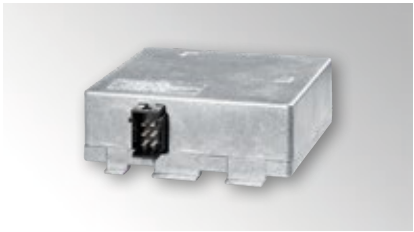
IBS 24 V, ASIL B

Accurate measurement of battery voltage, current and temperature, determination of state of charge (SOC), state of health (SOH) and state of function (SOF), mounting at negative terminal, shunt for indirect current measurement, grounding bolt M8, output signal LIN 2.2a (also supports LIN 1.2, 2.0, 2.1, SAE J2602-1), cast housing with plug connector

Operating voltage range	7.5–32 V
Power consumption	Operating modes: ≤ 16 mA (normal mode) ≤ 230 uA (sleep mode)
Permanent load current	± 200 A
Maximum current	± 2,000 A (500 ms)
Protection class	IP 6K9K
Functional safety	ASIL B (ISO 26262, 2018)
Temperature range	-40 °C to 85 °C
Max. battery capacity	500 Ah

6PK 021 700-001 PU: 1

ENERGY MANAGEMENT



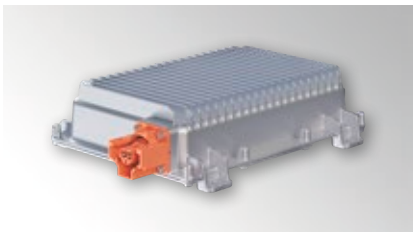
Dimensions | W 105.5 x H 41.4 x D 115.5 mm

DC/DC converter 24 V/12 V

Efficient energy transfer from 24 V to 12 V power supply up to 300 W (passive air cooling), hardware-only solution without CAN/LIN for easy integration, built-in protection against short circuits and reverse polarity

Rated voltage	12 V and 24 V
Protection class	IP 30
Temperature range	-40 °C to +85 °C

8ES 013 517-001 PU: 1



Dimensions | W 235 x H 180 x D 65 mm

High-Voltage DC/DC Converter

Ensuring reliable 12 V power in 400 V and 800 V vehicle architectures. The bidirectional, passively air-cooled design achieves > 96 % efficiency and provides up to 1.2 kW continuous power, scalable via parallel operation

HV Voltage Range	400 V: 220–470 V; 800 V: 340–850 V
Volume	2.45 l
ASIL Level	ASIL Level B
Cooling Concept	Passiv air cooling, Efficiency > 96 %
Communication interface	CAN

On request PU: 1, 400 V to 12 V Boardnet

On request PU: 1, 800 V to 12 V Boardnet

SENSORS



Rain-light sensors for vehicles with steeply raked windscreens

Dual function rain and light detection (ambient and tunnel detection)

Rated voltage	12 V
Protection class	IP 50
Communication interface	LIN 2.1

On request PU: 1



NEW VERSIONS IN PREPARATION!

Rain-light sensors for vehicles with steeply raked windscreens will soon be enhanced with an additional feature: Cabin humidity measurement!



Oil level & temperature sensor

Important for detecting oil level with integrated temperature sensor, which provides an input variable for the thermal management of the engine. It is particularly resistant to shocks and vibrations ensured by the individual multi-chip module

Rated voltage	12 V
Length of damping cup	150 mm
Static and dynamic	13–144 mm

On request

ACOUSTIC WARNING SYSTEMS



Dimensions | Ø 113 mm
H 129 x D 53 mm

Low tone horn B36 bronze-green

Signal Horn, B36, 116 dB(A), housing colour: bronze-green, flat connector

3BA 002 768-211 PU: 1, NSN: 6350-12-146-1870, 24 V, 335 Hz, low tone



Dimensions | Ø 113 mm
H 129 x D 53 mm

Low tone horn B36

Signal Horn, B36, 24 V, 116 dB(A), housing colour: grey, flat connector

3BA 002 768-382 PU: 1, NSN: 2590-12-199-2457, 24 V, 335 Hz, low tone



Dimensions | Ø 123 mm
H 134.5 x D 65 mm

Horn B133

Robust housing in first-class design with distinctive grill,with Teflon pellet and 6.3 mm splash-proof flat connector with rubber grommet

3AG 003 399-081	PU: 1, NSN: 2590-12-196-0842, 12 V, Set, 2 units for military police and ambulance: 300 ± 20 Hz low tone and 450 ± 20 Hz strong tone
3AF 003 399-051	PU: 1, 12 V, 450 ± 20 Hz, strong tone
3AF 003 399-071	PU: 1, NSN: 2590-12-195-8585, 24 V, 450 ± 20 Hz, strong tone
3AF 003 399-041	PU: 1, 12 V, 300 ± 20 Hz, low tone
3AF 003 399-061	PU: 1, NSN: 2590-12-195-8586, 24 V, 300 ± 20 Hz, low tone



Acoustic pedestrian alerting system (AVAS)

The AVAS is an acoustic warning system for hybrid and electric vehicles designed to increase the safety of road users. Once a pre-defined speed has been reached, the noise fades in/fades out.

Rated voltage	12 V or 24 V
Current consumption	200–300 mA
Communication interface	CAN
Protection class	IP 67
Sound pressure level at 2 m	65 dB ± 5 dB

On request PU: 1, passive, driving forward

On request PU: 1, active, driving backwards

ACOUSTIC WARNING SYSTEMS



Reverse and warning alarm BM 30

Provides additional safety in dangerous working and traffic situations with a piercing, widely perceptible alarm tone. The alarm sound is generated when reverse gear is engaged and warns both nearby people and other road users of the vehicle backing up. Backup alarms are mandatory in many countries for vehicles with an obstructed view to the rear.

Rated voltage	12–48 V
Frequency range	700–2,800 Hz
Power consumption	12 W
Protection class	IP 67
3SL 996 139-227	PU: 36, 107 dB(A), with 150 mm cable
3SL 996 139-237	PU: 36, 112 dB(A), with 150 mm cable

SWITCHES



Rocker switches

Waterproof and dustproof rocker switch series for applications with special robustness and sealing needs. A high variety of lasered, abrasion-resistant, and LED-lit symbols provide maximum application flexibility. There are multiple configuration options in 12 V and 24 V.

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



Electrical switch for ECE and blackout functions

Switch for headlight, 20,000 switching cycles, voltage drop before switching: max. 80 mV, voltage drop after switching: max. 160 mV

Test voltage	28.5 V
Protection class	IP 4
6LB 005 389-001	PU: 4, NSN: 5930-12-166-0796



Hazard warning light switch

Hazard warning light switch, voltage drop at electric exposure: max. 250 mv, electrical load: max. at 12 V is 14 A Ohmic load

Test voltage	-13.5 V ± 0.2 V
6HF 001 579-011	PU: 1, NSN: 5930-12-181-2666
Accessories	
8JA 001 926-001	PU: 10, NSN: 5935-12-166-7775, connecting element



ELECTRICAL CONNECTIONS
SOCKETS



Plug socket 1-pole with cover

Socket with cover, 1-pin connector, according to ISO 4165, blade terminal

8JB 001 946-011	PU: 10, NSN: 5935-12-158-9646
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Plug socket 2-poles with cover

Socket with cover, 2-pin connector, according to ISO 4165, screw contact

8JB 001 946-021	PU: 10, NSN: 5935-12-300-4587
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Plug socket

Socket without cover, 1-pin or 2-pin connector

8JB 001 946-031	PU: 10, NSN: 5935-12-130-9273, 2-poles
8JB 850 434-011	PU: 10, NSN: 5935-12-306-2247, 1-pole

LIGHTING

Reliable lighting solutions designed to perform in harsh environments – this is what you will find on the following pages. Our products are thoroughly tested and certified, meeting relevant industry standards such as ECE, ISO, and MIL specifications, and are engineered to withstand high-pressure water exposure with exceptional sealing performance.

In addition to our standard tactical headlamps, which we have been offering for decades, our range also includes 90 mm modules with different technologies as well as a large selection of signal lamps. These components are small but powerful and they stand for quality, practicality, safety and cost-efficiency.

FRONT LIGHTING



Bi-LED low beam and high beam headlamp NovoLED

Bi-LED headlamp, low and high beam, left/right

Light function	Low beam, high beam
Light source	LED
Rated voltage	12 V and 24 V
Power consumption	High beam: max. 18 W Low beam: max. 13 W
Protection class	IP 6K9K
Approved	ECE-R10, ECE-R149 (Class CS)

Dimensions
Flush mounting with plastic carrier frame | W 183 x H 102 x D 92 mm

Flush mounting |
W 183 x H 93 x D 92 mm

Flush mounting with metal carrier frame | W 256 x H 144 x D 92 mm

1SA 327 210-001	PU: 1, flush mounting with plastic carrier frame
1SA 327 210-011	PU: 1, flush mounting
1SA 327 210-031	PU: 1, bottom mounting
1SA 327 210-041	PU: 1, flush mounting with metal carrier frame

CONTENT



- ▶ Front Lighting
- ▶ 90 mm Modules
- ▶ Shapeline
- ▶ Blackout Lamps
- ▶ Accessories



- ▶ Rear and Signal Lighting
- ▶ Rear Lamps
- ▶ Daytime running Lamps
- ▶ Direction Indicators
- ▶ Position Lamps/ Clearance Lamps
- ▶ Stop Lamps
- ▶ Convoy Lamps
- ▶ Licence plate lamps
- ▶ Beacons



- ▶ Interior Lighting
- ▶ Reading Lamps





Dimensions | W 194 x H 120 x D 148 mm



Bi-LED low beam and high beam headlamp SlimLine

Bi-LED headlamp, low and high beam, flush mounting, left/right

Light function	Low beam, high beam
Light source	LED
Rated voltage	12 V and 24 V
Power consumption	Low beam: 19.2 W High beam: 14.9 W Low beam and high beam: 34.1 W
Protection class	IP 6KX, IP X9K, IP X4K
Approved	ECE-R10, ECE-R10 06, ECE ES / LES: R149 Class B, FMVSS 108
1AL 016 330-001	PU: 1, right-hand traffic
1LL 016 330-011	PU: 1, left-hand traffic
1AL 016 330-021	PU: 1, SAE – FMVSS 108



LED fog and cornering light SlimLine

Compact module with 2 functions (fog and cornering light) in one module, housing made of aluminium and lens made of polycarbonate

Light function	Fog light, cornering light
Light source	LED
Rated voltage	12 V and 24 V
Protection class	IP X9K, IP X4K, IP 5KX
Approved	ECE-R149.01, FMVSS 108, CCC
1NL 016 340-001	PU: 1, HB3 connector



LED combination lamp SlimLine

Compact module with 3 functions (daytime running, position and direction indicator light) in one module, housing and lens made of polycarbonate, with 4 LEDs

Light function	Daytime running light, position light, direction indicator
Light source	LED
Rated voltage	12 V and 24 V
Protection class	IP X9K, IP X4K, IP 5KX
Approved	ECE R148.01, FMVSS 108, ECE-R10
2BE 016 545-001	PU: 1, ECE, DEUTSCH connector
2BE 016 545-101	PU: 1, ECE, FEP connector
2BE 016 545-011	PU: 1, SAE, DEUTSCH connector
2BE 016 545-811*	PU: 1, SAE, DEUTSCH connector

* Double variant for vehicles with a width above 2,032 mm according FMVSS 108 and a DI size of > 75mm².



Dimensions
Bottom mounting | W 246 x H 256 x D 141 mm
Centre mounting | W 248 x H 165 x D 207 mm



LED combination headlamp C240

LED combination headlamp, Housing: PBT GF30, Connection, 6-pin DEUTSCH connector, Mounting M12 x 50 Bolt

Light function	High beam, low beam, daytime running light, position light, front direction indicator and side direction indicator (cat. 5)
Light source	LED
Rated voltage	12 V and 24 V
Protection class	IP 6K9K
Approved	ECE ES / LES: R149.01 ECE symmetric: R149.01 class CS ECE-R148.01 FMVSS 108, ECE-R10.06
Compliant	CISPR 25.06 class 5

ECE – Essential (with symmetrical light distribution)	
1SF 328 550-011	PU:1, central mounting, left
1SF 328 550-021	PU:1, central mounting, right
1SF 328 550-031	PU:1, upright mounting, left
1SF 328 550-041	PU:1, upright mounting, right
1SF 328 550-491	PU:1, Cat. 5 with daytime running light, central mounting, left
1SF 328 550-501	PU:1, Cat. 5 with daytime running light, central mounting, right
ECE – Performance (with asymmetrical light distribution)	
1EF 328 550-131	PU:1, Right-hand traffic, central mounting, left
1EF 328 550-141	PU:1, Right-hand traffic, central mounting, right
1EF 328 550-151	PU:1, Right-hand traffic, upright mounting, left
1EF 328 550-161	PU:1, Right-hand traffic, upright mounting, right
1EF 328 550-231	PU:1, Right-hand traffic, Cat. 5 with daytime running light, upright mounting, left
1EF 328 550-241	PU:1, Right-hand traffic, Cat. 5 with daytime running light, upright mounting, right
1LF 328 550-251	Left-hand traffic, central mounting, left
1LF 328 550-261	PU:1, Left-hand traffic, central mounting, right
1LR 328 550-271	PU:1, Left-hand traffic, upright mounting, left
1LR 328 550-281	PU:1, Left-hand traffic, upright mounting, right
1LF 328 550-351	PU:1, Left-hand traffic, Cat. 5 with daytime running light, upright mounting, left
1LF 328 550-361	PU:1, Left-hand traffic, Cat. 5 with daytime running light, upright mounting, right
SAE – FMVSS	
1EF 328 550-371	PU:1, Central mounting, left
1EF 328 550-381	PU:1, Central mounting, right
1EF 328 550-391	PU:1, Upright mounting, left
1EF 328 550-401	PU:1, Upright mounting, right
1EF 328 550-471	PU:1, Cat. 5 with daytime running light, upright mounting, left
1EF 328 550-481	PU:1, Cat. 5 with daytime running light, upright mounting, right

LED COMBINATION LAMP LEDAYFLEX III

Flexible modularity – unlimited style.

The modular light system promises maximum design and technological freedom: it is possible to choose between three to five LEDayFlex III modules for each side of the vehicle. The highly personalised options for arranging the modules give every headlamp a distinctive look.



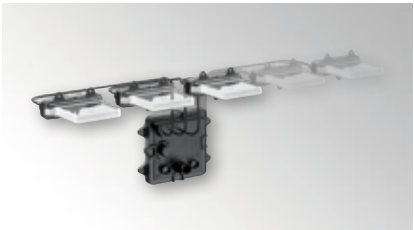
Third generation – Triple function!

The lamp has three LED light functions: daytime running, position and direction indicator light [also with wiper function]. But the real highlight is that all three functions have impressive, innovative EdgeLight technology.

Striking appearance – Cutting edge design!

The outstanding LEDayFlex III modules are strongly compelling. Whether horizontal, vertical or diagonal, flexible alignment options give each headlamp a strong individual character.*

FRONT LIGHTING



Dimensions
Module |
W 92 x H 48 x D 95 mm

Control unit |
W 125.6 x H 114 x D 37.7 mm

LED combination lamp LEDayFlex III

LEDayFlex III combines 3 LED light functions (daytime running, position and direction indicator light) in one module, it has a particularly homogeneous appearance thanks to EdgeLight technology, its housing is made of polycarbonate and the lens of PMMA, scope of delivery: one module chain including control unit

Light function	Daytime running, position light, direction indicator
Light source	LED
Rated voltage	12 V and 24 V
Protection class	IP X9K, IP X4K, IP 5KX
Approved	ECE R148
2BE 016 400-301	PU:1, 3 LED light modules, FEP connector
2BE 016 400-341	PU:1, 3 LED light modules, DEUTSCH connector
2BE 016 400-401	PU:1, 4 LED light modules, FEP connector
2BE 016 400-411	PU:1, 4 LED light modules, direction indicator with wiper function (left), FEP connector
2BE 016 400-421	PU:1, 4 LED light modules, direction indicator with wiper function (right), FEP connector
2BE 016 400-501	PU:1, 5 LED light modules, FEP connector



* Please observe the relevant country-specific legal requirements and guidelines for vehicles in the installation instructions.



DESIGN FREEDOM JUST A MOUSE CLICK AWAY

Use the Shapeline online configurator and become a lighting designer yourself: with a few clicks, make your own vehicle light design for the front, side and rear – and see the results applied to a realistic car outline straight away.

www.hella.com/shapeline



Style Design

Tech Design

DESIGN YOUR LIGHT – WITH HELLA SHAPELINE!

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

SHAPELINE VERSATILE MODULE COMBINATIONS – FRONT LIGHTING

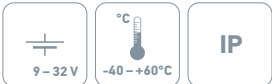
Our Shapeline range offers you countless mounting and combination options. Thanks to the modular product range, these lamps can be combined in virtually every conceivable constellation. Simply configure your individual lighting design.



Front view example

Daytime running and position lamp, Slim, front	Direction indicator, Wing, front	Direction indicator, Category 6, on the side
Homologation ECE / SAE Number of LEDs 6 Connectors & wiring 3-pin AMP SUPERSEAL integrated 2PT 014 627-021	Homologation ECE / SAE Number of LEDs 12 Connectors & wiring 2-pin AMP SUPERSEAL integrated 2BA 013 334-021	Homologation ECE Number of LEDs 2 Connectors & wiring 500 mm cable, open ends 2BM 013 339-021

FRONT LIGHTING SHAPELINE MODUL OVERVIEW



Protection class: IP 6K7

	Style	Tech
FRONT	Position Lamps 	
	Reflex reflectors 	
	Direction indicators 	
	Daytime running and position lamps 	



All information about the product range can be found in the **Shapeline brochure** at www.hella.com/shapeline

COMING
SOON

OUTLOOK: THE NEW LIGHTING KIT

66 % LESS WEIGHT. 100 % PERFORMANCE.

Building on the proven modularity of the 90 mm modules, the new FORVIA HELLA Lighting Kit marks the next step toward even greater flexibility and integration. With an ultra-compact design and high energy efficiency, it is tailored for modern front-end concepts.

UP TO
-66%
WEIGHT*

Ultra-compact design for tight spaces and smart integrations.

With the new FORVIA HELLA Lighting Kit the iconic 90 mm design gets a revolutionary twist: Stay tuned for a completely new design and multiple lighting possibilities. **Symmetrical or Asymmetrical beam patterns, low beam, high beam, Bi-LED and high-performance precisely aligned to On- or Off-Highway requirements.**

* Compared to Bi-Halogen

FRONT LIGHTING 90 MM MODULES



Dimensions | Ø 90 mm
W 125 x H 85 x D 182 mm



Bi-halogen low and high beam headlamp

24 V, H7, ECE, with fording ability, left/right

Light function	Low and high beam
Light source	Bulb H7 24 V
Rated voltage	24 V
Power consumption	Bulb: 70 W
Protection class	IP X9K, IPX8 fording ability
Approved	ECE-R112, CCC

1AL 009 998-201	PU: 1, right-hand traffic
1LL 009 998-221	PU: 1, left-hand traffic



Dimensions | Ø 90 mm
W 114 x H 114 x D 143 mm



L 4060 LED low beam headlamp

ECE, FEP connector, with fording ability, left/right

Light function	Low beam, position light, day time running light
Light source	LED
Rated voltage	12 V and 24 V
Power consumption	Low beam: 20 W Position light: 16 W Day time running light: 2 W
Protection class	IP X9K, IP 67 fording ability
Approved	ECE-R10, ECE-R7, -R87, -R112, -R148, -R149,, FMVSS 108, SAE

1BL 012 488-041	PU: 1
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Dimensions | Ø 90 mm
W 85 x H 85 x D 91 mm



L 4060 LED high beam headlamp

With pulse generator, for performance mounting, with fording ability, left/right

Light function	High beam, direction indicator
Light source	LED
Rated voltage	12 V–24 V
Power consumption	High beam: 20 W Direction indicator: 16 W
Protection class	IP X9K, IP 67 fording ability
Approved	ECE-R6, -R112, -R148, -R149, ref. 12,5 FMVSS 108, SAE ECE-R10

1F0 011 988-191	PU: 1
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FRONT LIGHTING
90 MM MODULES



Dimensions | Ø 90 mm
W ~154.7 x H 145.1 x D 184.2 mm



Bi-LED low beam and high beam headlamp L 4565 – Performance

Headlamp module with robust die-cast aluminium housing, flat cover lens and 4-pin DEUTSCH connector, with "Zero Tolerance Integration"

Light function	Low and high beam
Light source	LED
Rated voltage	12 V and 24 V
Protection class	IP 6K9K
Type approval	ECE-R149.00 Table 8, Class B, FMVSS 108

1AL 015 318-031	PU:1, ECE, right-hand traffic
1LL 015 318-041	PU:1, ECE, left-hand traffic
1AL 015 318-051	PU:1, SAE



FRONT LIGHTING
COMBINATION LAMPS



Dimensions | Ø 94.4 mm
W 124 x H 135.2 x D 161.7 mm



Bi-LED low beam and high beam headlamp L 4565 – Essential

Headlamp module with robust die-cast aluminium housing and 4-pin DEUTSCH DT connector

Light function	Low and high beam
Light source	LED
Rated voltage	12 V and 24 V
Protection class	IP 6K9K
Type approval	ECE-R149.00 Table 8, Class B, FMVSS 108

1AL 015 318-001	Right-hand traffic, ECE
1AL 015 318-111	Right-hand traffic, ECE, with pre-assembled mounting set
1AL 015 318-211	Right-hand traffic, ECE, with pre-assembled mounting set, carrier frame and levelling motor component*
1LL 015 318-011	Left-hand traffic, ECE
1LL 015 318-131	Left-hand traffic, ECE, with pre-assembled mounting set
1AL 015 318-231	Left-hand traffic, ECE, with pre-assembled mounting set, carrier frame and levelling motor component*
1AL 015 318-021	SAE
1AL 015 318-151	SAE, with pre-assembled mounting set
1AL 015 318-251	SAE, with pre-assembled mounting set, carrier frame and levelling motor component*

* Levelling motor not included in scope of delivery



Dimensions | Ø 90 mm
W 90 x H 90 x D 93 mm



90 mm daytime running light/position light combination

24 V, with fording capability for venting hose, left/right

Light function	Daytime running light, position light
Light source	Daytime running light: LED Position light: P21W longlife bulb
Rated voltage	24 V
Power consumption	Daytime running light: LED 1 W Position light: 21 W
Protection class	IP X9K, IP 67 fording ability
Approved	ECE-R112, -R7 ECE-R10

2PT 010 102-211	PU: 1
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FRONT LIGHTING
COMBINATION LAMPS



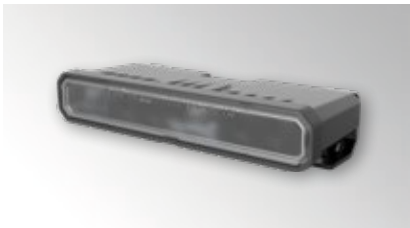
Dimensions | Ø 91 mm
W 91 x H 91 x D 66 mm

LED combination lamp CircLED 90

Multivoltage, daytime running light, position light and indicator light in one round module, compact design in 90 mm format and the low installation depth

Light function	Daytime running light (DRL), position light (PO), direction indicator light (DI) (various light function combinations available)
Light source	LED
Rated voltage	12 V and 24 V
Power consumption	DRL: 5 W, PO: 1.5 W, DI: 5 W
Protection class	IP 5K9K, IP 5K4K
Approved	ECE-R148.01, FMVSS 108, CCC

2BE 016 540-001	PU: 1, DRL, PO, DI, FEP connector, ECE
2BE 016 540-011	PU: 1, DRL, PO, DI, DEUTSCH DT connector, ECE
2BE 016 540-031	PU: 1, DRL, PO, DI, DEUTSCH DT connector, SAE
2PT 016 540-111	PU: 1, DRL and PO, DEUTSCH DT connector, ECE / SAE
2BE 016 540-211	PU: 1, PO and DI, DEUTSCH DT connector, ECE
2BE 016 540-231	PU: 1, PO and DI, DEUTSCH DT connector, SAE



Dimensions | W 180 x H 40.5 x D 32 mm

OctaLane

Multivoltage, LED daytime running and position lamp, grained lens and homogeneous light appearance

Light function	Daytime running light (DRL), Position light (PO)
Light source	LED
Rated voltage	12 V and 24 V
Power consumption	DRL: 8 W, PO: max. 2 W
Protection class	IP 5KX, IP X4K, IP X9K
Approved	ECE-R10.06, ECE-R148.01, FMVSS 108

2PT 017 879-011	PU: 1, ECE/SAE
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FRONT LIGHTING
BLACKOUT LAMPS



Dimensions |
W 216 x H ~240 x D ~180 mm

Low/high beam H4 with blackout lamp

Socket mounting, bottom fixation, front, left/right

Light function	Low beam, high beam, blackout lamp
Light source	Low/high beam: halogen bulb H4 Blackout light: conventional bulb R 18 W
Rated voltage	12 V* and 24 V
Power consumption	75/70 W (24 V), 18 W (24 V)
Protection class	IP 68, IP X9K; watertight up to 0.6 bar
Approved	ECE-R20, Ref. 12,5, K 4301, K 4302 (national approval, Germany)

1A3 001 123-001	PU: 1
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* The headlamp can also be powered by a 12 V bulb – both the main beam and the blackout lamp.



Dimensions |
W 216 x H ~230 x D ~206 mm

Low/high beam H4 with blackout lamp

Socket mounting, rear fixation, front, left/right

Light function	Low beam, high beam, blackout lamp
Light source	Low/high beam: halogen bulb H4 Blackout light: conventional bulb R 18 W
Rated voltage	12 V* and 24 V
Power consumption	75/70 W (24 V), 18 W (24 V)
Protection class	IP 68, IP X9K; watertight up to 0.6 bar
Approved	ECE-R20, Ref. 12,5, K 4301, K 4302 (national approval, Germany)

1A3 001 123-081	PU: 1, NSN: 6220-12-348-4850
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* The headlamp can also be powered by a 12 V bulb – both the main beam and the blackout lamp.

Accessories for 1A3 001 123-001 and 1A3 001 123-081

1A3 002 850-021	PU: 1, NSN: 6220-12-198-9148, Low/high beam lamp insert H4
8GJ 002 525-251	PU: 1, NSN: 6240-12-165-3331, Light source, 24 V, 75/70 W, H4
8GA 002 072-241	PU: 10, NSN: 6240-12-120-8025, Light source, socket bulb, DIN 72601R 24 V 18 W
8JA 001 909-001	PU: 10, NSN: 5935-12-186-9560, Connector H4
8XT 002 116-001	PU: 2, NSN: 6220-12-136-2601, Quick mounting socket
8XT 004 034-007	PU: 2, NSN: 6220-12-194-5414, Quick mounting socket with vibration damper
9MK 087 369-001	PU: 5, NSN: 6220-12-139-8228, Contact element for socket
9EV 087 390-001	PU: 1, NSN: 6220-12-139-8212, Lens with lensretaining ring
9ES 087 392-002	PU: 10, NSN: 6220-12-139-8209, Lens blackout light
9GD 087 393-001	PU: 10, NSN: 5330-12-139-8210, Gasket for blackout light cap

FRONT LIGHTING
BLACKOUT LAMPS



Dimensions | W 216 x H 181 x D 206 mm

Low/high beam lamp H4	
Socket mounting, front, left/right	
Light function	Low beam, high beam
Light source	Halogen bulb H4
Rated voltage	12 V* and 24 V
Power consumption	75/70 W (24 V)
Protection class	IP 68, IP X9K, watertight up to 0.6 bar
Approved	ECE-R20, Ref. 12,5, K 4301, K 4302 (national approval, Germany)
1A3 003 600-017	PU: 1, NSN: 6220-12-179-3794
Accessories	
8GJ 002 525-251	PU: 1, NSN: 6240-12-165-3331, Light source, 24 V, 75/70 W, H4
8JA 001 909-001	PU: 10, NSN: 5935-12-186-9560, Connector
8XT 002 116-001	PU: 2, NSN: 6220-12-136-2601, Quick mounting socket
8XT 004 034-007	PU: 2, NSN: 6220-12-194-5414, Quick mounting socket with vibration damper

* The headlamp can also be powered by a 12 V bulb.



Dimensions | Ø 135 mm, W 146 mm

Low/high beam lamp insert	
Flush fitting, front, left/right	
Light function	Low beam, high beam
Light source	Halogen bulb H4 12 V* or 24 V
Protection class	IP 5K4K
Approved	ECE-R20, Ref. 12,5
1A3 002 850-021	PU: 1, NSN: 6220-12-198-9148
Accessories	
8GJ 002 525-251	PU: 1, NSN: 6240-12-165-3331, Light source, 24 V, 75/70 W, H4
8JA 001 909-001	PU: 10, NSN: 5935-12-186-9560, Connector

* The headlamp can also be powered by a 12 V bulb.

BLACKOUT LAMP LED:
FORM, FIT AND
EXTENDED FUNCTION

Based on decades of experience with blackout headlamps, FORVIA HELLA created this state-of-the-art LED product with extended functionality in an established housing. The products allow a simple replacement without the necessity for body modifications in current series production of tactical vehicles.

Blackout lamp LED white & IR,
short range

- Visible white light
- Invisible lighting by IR radiation
- Optimized illumination for offroad cornering
- VG standard wiring



1XA 002 409-301

Blackout lamp LED white & IR,
short range

- Visible white light
- Invisible lighting by IR radiation
- Optimized illumination for offroad cornering



1XA 002 409-347

Blackout lamp LED IR, long range

- Especially for IR radiation
- Shutter (blackout light cap) to avoid stray light above 0° line
- VG standard wiring



1XA 002 409-311

Blackout lamp LED IR, long range

- Especially for IR radiation
- Shutter (blackout light cap) to avoid stray light above 0° line



1XA 002 409-357

Complete product details can be found from page 42.

FRONT LIGHTING
BLACKOUT LAMPS



Dimensions | W 113 x H 80 x D 117 mm

Blackout lamp LED white & IR, short range	
LED technology, visible white light, invisible lighting by IR radiation, optimized illumination for offroad cornering due to special blackout light cap, harness 290 mm according to VG standard	
Light function	Blackout lamp, short range
Light source	Visible white light LED, IR radiation LED
Rated voltage	24 V
Power consumption	1.5 W
Protection class	IP 68, IP X9K, watertight up to 0.2 bar
Approved	ECE-R10
1XA 002 409-301	PU: 1
Accessories	
9GD 087 393-001	PU: 10, NSN: 5330-12-139-8210, Gasket for blackout light cap



Dimensions | W 113 x H 80 x D 117 mm

Blackout lamp LED white & IR, short range	
LED technology, visible white light, invisible lighting by IR radiation, harness 200 mm automotive wiring with open ends	
Light function	Blackout lamp, short range
Light source	Visible white light LED, IR radiation LED
Rated voltage	24 V
Power consumption	1.5 W
Protection class	IP 68, IP X9K, watertight up to 0.6 bar
Approved	ECE-R10
1XA 002 409-347	PU: 1, NSN: 6220-12-414-2371
Accessories	
9GD 087 393-001	PU: 10, NSN: 5330-12-139-8210, Gasket for blackout light cap

FRONT LIGHTING
ACCESSORIES



Dimensions | Ø 136 mm, H 47 mm

Quick mounting socket	
Surface mounting, front, left/right	
Rated voltage	24 V
8XT 002 116-001	PU: 2, NSN: 6220-12-136-2601

FRONT LIGHTING
BLACKOUT LAMPS



Dimensions | W 113 x H 80 x D 117 mm

Blackout lamp LED IR, long range	
LED technology, especially for IR radiation, special shutter (blackout light cap) to avoid stray light above 0° line, harness 290 mm according to VG standard	
Light function	Blackout lamp, long range
Light source	IR radiation LED
Rated voltage	24 V
Power consumption	1.5 W
Protection class	IP 68, IP X9K, watertight up to 0.2 bar
Approved	ECE-R10
1XA 002 409-311	PU: 1
Accessories	
9GD 087 393-001	PU: 10, NSN: 5330-12-139-8210, Gasket for blackout light cap



Dimensions | W 113 x H 80 x D 117 mm

Blackout lamp LED IR, long range	
LED technology, especially for IR radiation, harness 200 mm automotive wiring with open ends	
Light function	Blackout lamp, long range
Light source	IR radiation LED
Rated voltage	24 V
Power consumption	1.5 W
Protection class	IP 68, IP X9K, watertight up to 0.6 bar
Approved	ECE-R10
1XA 002 409-357	PU: 1, NSN: 6220-12-414-2372
Accessories	
9GD 087 393-001	PU: 10, NSN: 5330-12-139-8210, Gasket for blackout light cap

FRONT LIGHTING
ACCESSORIES



Dimensions | Ø 136 mm, H 47 mm

Quick mounting socket with vibration damper	
Surface mounting, front, left/right	
Rated voltage	24 V
8XT 004 034-007	PU: 2, NSN: 6220-12-194-5414



Dimensions | W 113 x H 80 x D 117 mm



Blackout lamp	
Surface mounting, front, left/right, without bulb R 24 V 18 W	
Light function	Blackout lamp
Light source	Conventional bulb R 18 W
Rated voltage	24 V
Power consumption	18 W
Protection class	IP 68, IP X9K, watertight up to 0.6 bar
1XA 002 409-031	PU: 1
1XA 002 409-038	PU: 24, NSN: 6220-12-166-1650
Accessories	
8GA 002 072-241	PU: 10, NSN: 6240-12-120-8025, Light source, socket bulb, DIN 72601R 24 V 18 W
9ES 087 392-002	PU: 10, NSN: 6220-12-139-8209, Lens blackout light
9GD 087 393-001	PU: 10, NSN: 5330-12-139-8210, Gasket for blackout light cap
9GD 104 486-007	PU: 10, NSN: 5330-12-151-4413, Gasket for cable gland
9NU 104 487-007	PU: 10, NSN: 5310-12-164-1827, Washer for cable gland



Dimensions | W 112 x H 56 x D 116 mm



Blackout lamp	
Surface mounting, front, left/right, without bulb R 18 W	
Light function	Blackout lamp, short range
Light source	Conventional bulb R 18 W
Rated voltage	24 V
Power consumption	18 W
Protection class	IP 68, IP X9K, watertight up to 0.6 bar
1XA 001 512-001	PU: 6, NSN: 6220-12-121-7310, restricted availability, for predefined projects only
Accessories	
8GA 002 072-241	PU: 10, NSN: 6240-12-120-8025, Light source, socket bulb, DIN 72601R 24 V 18 W
9GD 072 484-005	PU: 150, NSN: 5330-12-121-7312, Seal
9GT 012 144-001	PU: 10, NSN: 5325-12-156-4150, Grommet

LED-REAR COMBINATION LAMP

CONCEPT ALIGNED WITH APPLICABLE CIVILIAN AND MILITARY REGULATIONS, STANDARDS AND QUALIFICATION REQUIREMENTS

Robust & Modern

State-of-the-art technology meets uncompromising ruggedness – ensuring reliable operation in the most demanding environments.

All-in-One Functionality

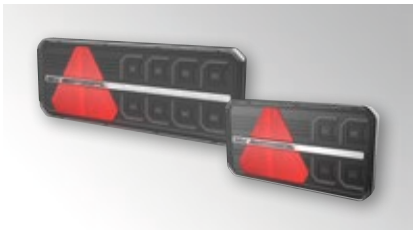
Military and civilian lighting functions combined in a single solution – integrating blackout light, tail light, red light, and infrared light for maximum operational flexibility.



SWaP-Optimized Design

Engineered to deliver comprehensive functionality within the smallest possible installation space, enabling seamless integration across a wide range of defense platforms.

REAR LIGHTING
MULTI-FUNCTION LAMPS



Dimensions
Standard | W 350 x H 135 x D 75 mm
Compact | W 256 x H 135 x D 75 mm

Full-LED trailer rear combination lamp	
Homogeneous illumination due to „Glowing Body“ technology. Efficient lighting technology thanks to EdgeLight technology	
Light function	Tail light, direction indicator, stop light, reverse light, rear fog light, reflex reflector
Light source	Standard: Tail light (48 LEDs), direction indicator light (4 LEDs), stop light (4 LEDs), reverse light (4 LEDs), rear fog light (3 LEDs), reflex reflector Compact: Tail light (24 LEDs), direction indicator light (2 LEDs), stop light (2 LEDs), reverse light (2 LEDs), rear fog light (3 LEDs), reflex reflector
Rated voltage	24 V
Power consumption	Standard: Direction indicator: Input 8.2 W, Output max. 5 W (SML), Reverse light: Input 6.5 W, Output max. 19 W, Tail light: Input 2.2 W, Output max. 4 W (LPL), Stop light: Input 3.3 W, Fog light: Input 2.2 W, Rubber arm: Output max. 2 W (ML) Compact: Direction indicator: Input 7.5 W, Output max. 5 W (SML), Reverse light: Input 6.5 W, Output max. 19 W, Tail light: Input 2 W, Output max. 4 W (LPL), Stop light: Input 1.5 W, Fog light: Input 2.2 W,
Protection class	IP 6K9K
Approved	ECE-R10, ECE-R149, ADR/GGVs
2VP 018 287-017	PU: 12, Standard, left-hand side
2VP 018 287-037	PU: 12, Standard, right-hand side
2VP 018 287-117	PU: 12, Standard with rubber arm, left-hand side
2VP 018 287-107	PU: 12, Standard with rubber arm, right-hand side
2VP 018 288-017	PU: 16, Compact, left-hand side
2VP 018 288-037	PU: 16, Compact, right-hand side

REAR LIGHTING
MULTI-FUNCTION LAMPS



Dimensions
With screw holes | W 209.6 x H 64.6 x D 52.4 mm
With stud screws | W 209.6 x H 64.6 x D 50.4 mm

Combination lamp LeanLED II for the rear	
Characteristic LED light curtain provides a homogeneous light signature thanks to Edge light technology. Robust and compact construction for the toughest demands. Compact version available for vehicle with minimum space	
Light function	Tail light, stop light, direction indicator light, reverse light and reflex reflector
Light source	LED
Rated voltage	12 V and 24 V
Current consumption	Direction indicator light 13.5 V min. 123.3 mA, max. 202.4 mA 28 V min. 76.5 mA, max. 116.6 mA Tail light 13.5 V min. 118.8 mA, max. 237.6 mA 28 V min. 73.8 mA, max. 147.4 mA Reverse light 13.5 V min. 90.9 mA, max. 138.6 mA 28 V min. 54.9 mA, max. 81.4 mA Stop light 13.5 V min. 96.3 mA, max. 148.5 mA 28 V min. 101.7 MA, max. 150.7 mA
Protection class	IP 6K9K
Approved	ECE-R148, ECE-R10
2VP 327 300-011	PU: 1, 12 V, with reverse light, ISO pulse, cable with open ends, screw holes
2VP 327 300-021	PU: 1, 12 V, with reverse light, ISO pulse, cable with open ends, M6 stud screw
2VP 327 300-031	PU: 1, 12 V, with reverse light, ISO pulse, 6-pin DEUTSCH DT connector, screw holes
2VP 327 300-041	PU: 1, 12 V, with reverse light, ISO pulse, 6-pin DEUTSCH DT connector, M6 stud screw
2VP 327 300-051	PU: 1, 24 V, with reverse light, ISO pulse, cable with open ends, screw holes
2VP 327 300-061	PU: 1, 24 V, with reverse light, ISO pulse, cable with open ends, M6 stud screw
2VP 327 300-071	PU: 1, 24 V, with reverse light, ISO pulse, 6-pin DEUTSCH DT connector, screw holes
2VP 327 300-081	PU: 1, 24 V, with reverse light, ISO pulse, 6-pin DEUTSCH DT connector, M6 stud screw
2VA 327 300-091	PU: 1, 12 V, with ISO pulse, cable with open ends, screw holes
2VA 327 300-101	PU: 1, 12 V, with ISO pulse, cable with open ends, M6 stud screw
2VA 327 300-111	PU: 1, 12 V, with ISO pulse, 6-pin DEUTSCH DT connector, screw holes
2VA 327 300-121	PU: 1, 12 V, with ISO pulse, 6-pin DEUTSCH DT connector, M6 stud screw
2VA 327 300-131	PU: 1, 24 V, with ISO pulse, cable with open ends, screw holes
2VA 327 300-141	PU: 1, 24 V, with ISO pulse, cable with open ends, M6 stud screw
2VA 327 300-151	PU: 1, 24 V, with ISO pulse, 6-pin DEUTSCH DT connector, screw holes
2VA 327 300-161	PU: 1, 24 V, with ISO pulse, 6-pin DEUTSCH DT connector, M6 stud screw
2VP 327 300-171	PU: 1, 12 V, with reverse light, cable with open ends, screw holes
2VP 327 300-181	PU: 1, 12 V, with reverse light, cable with open ends, M6 stud screw
2VP 327 300-191	PU: 1, 12 V, with reverse light, 6-pin DEUTSCH DT connector, screw holes
2VP 327 300-201	PU: 1, 12 V, with reverse light, 6-pin DEUTSCH DT connector, M6 stud screw
2VP 327 300-211	PU: 1, 24 V, with reverse light, cable with open ends, screw holes
2VP 327 300-221	PU: 1, 24 V, with reverse light, cable with open ends, M6 stud screw
2VP 327 300-231	PU: 1, 24 V, with reverse light, 6-pin DEUTSCH DT connector, screw holes
2VP 327 300-241	PU: 1, 24 V, with reverse light, 6-pin DEUTSCH DT connector, M6 stud screw
2VA 327 300-251	PU: 1, 12 V, with cable with open ends, screw holes
2VA 327 300-261	PU: 1, 12 V, with cable with open ends, M6 stud screw
2VA 327 300-271	PU: 1, 12 V, with 6-pin DEUTSCH DT connector, screw holes
2VA 327 300-281	PU: 1, 12 V, with 6-pin DEUTSCH DT connector, M6 stud screw
2VA 327 300-291	PU: 1, 24 V, with cable with open ends, screw holes
2VA 327 300-301	PU: 1, 24 V, with cable with open ends, M6 stud screw
2VA 327 300-311	PU: 1, 24 V, with 6-pin DEUTSCH DT connector, screw holes
2VA 327 300-321	PU: 1, 24 V, with 6-pin DEUTSCH DT connector, M6 stud screw

REAR LIGHTING
MULTI-FUNCTION LAMPS



Dimensions | W 211 x H 82 x D 75 mm



Blackout tail/tail/stop/direction indicator lamp

Surface mounting, rear, left/right, masked tail light, combined tail/brake/indicator light amber, bulb for masked tail light 12/24 V 2 W, 2 holes for fastening screws M8 x 12 not included in scope of delivery, hole spacing 110 mm, rear cable feed through gland PG11 with special sealing ring for 1–5 single stands 1.5 mm² with cable diameters of between 2.2–3 mm, fixing torque for fastening screws for the lens max. 2 Nm

Light function	Blackout tail light, tail light, stop light, direction indicator
Light source	Blackout tail light: conventional bulb H 2 W Tail light: conventional bulb R 5 W Stop light: Conventional bulb P 21 W Direction indicator: Conventional bulb P 21 W (bulbs are not included into delivery)
Rated voltage	12 V/24 V
Power consumption	21 W, 5 W, 2 W with lamp protection grid: 21 W, 10 W, 2 W
Protection class	IP 6K9K, watertight up to 0.6 bar
Approved	01 2a E1 43268, 02 R1 43268, R1 0228148R00, S1 E1 02281

2SD 001 698-001	PU: 1, NSN: 6220-12-151-4411, housing color: bronze-green RAL 6031
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Accessories	
8GA 002 071-121	PU: 10, NSN: 6240-12-120-7998, Light source, 12 V, R 5 W
8GA 002 071-241	PU: 10, NSN: 6240-12-120-7950, Light source, 24 V, R 5 W
8GA 002 073-121	PU: 10, NSN: 6240-12-159-7268, Light source, 12 V, P 21 W
8GA 002 073-241	PU: 10, NSN: 6240-12-150-4410, Light source, 24 V, P 21 W
8GP 002 068-121	PU: 10, NSN: 6240-12-120-7996, Light source, 12 V, H
8GP 002 068-241	PU: 10, NSN: 6240-12-120-7952, Light source, 24 V, H
9EL 104 544-001	PU: 2, NSN: 6220-12-151-4412, Lens
9FT 104 548-001	PU: 10, NSN: 6250-12-188-7259, Bulb carrier
9GD 104 486-007	PU: 10, NSN: 5330-12-151-4413, Seal
9NS 104 488-097	PU: 10, NSN: 5975-12-311-4801, Screw PG DIN 46255
9NU 104 487-007	PU: 10, NSN: 5310-12-164-1827, Washer

REAR LIGHTING
ACCESSORIES



Dimensions | W 141 x H 60 x D 27 mm

Vibration dampener for surface mounting

9GP 004 028-007	PU: 1, NSN 5340-12-190-2370
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REAR LIGHTING
REAR LAMP MODULES



Dimensions | W 151 x H 87 x D 71 mm



Rear fog lamp

Surface mounting, rear, left/right, bronze-green RAL 6031; cable feed through gland PG11 with special sealing ring for 1–5 single cable 1.5 mm² with cable diameters of between 2.2–3 mm, wiring by means of screw-type and plain connectors, optional installation by means of angle brackets or direct mounting, screw spacing: 106 mm, fastening screws M8 not included in delivery, fixing torque for fastening screws max. 2 Nm

Light function	Rear fog light
Light source	Conventional bulb P 21 W
Rated voltage	12 V and 24 V
Power consumption	21 W
Protection class	Watertight up to 0.6 bar
Approved	ECE-R38

2NE 002 481-001	PU: 1, NSN: 6220-12-152-8600, with bracket
2NE 002 481-017	PU: 20, NSN: 6220-12-152-8600

Accessories	
8GA 002 073-251	PU: 10, Light source, 24 V, P21W
9EL 111 600-001	PU: 5, NSN: 6220-12-164-7718, Lens
9GD 104 486-007	PU: 10, NSN: 5330-12-151-4413, Seal
9NS 104 488-097	PU: 10, NSN: 5975-12-311-4801, Screw
9NU 104 487-007	PU: 10, NSN: 5310-12-164-1827, Washer



Reverse lamp

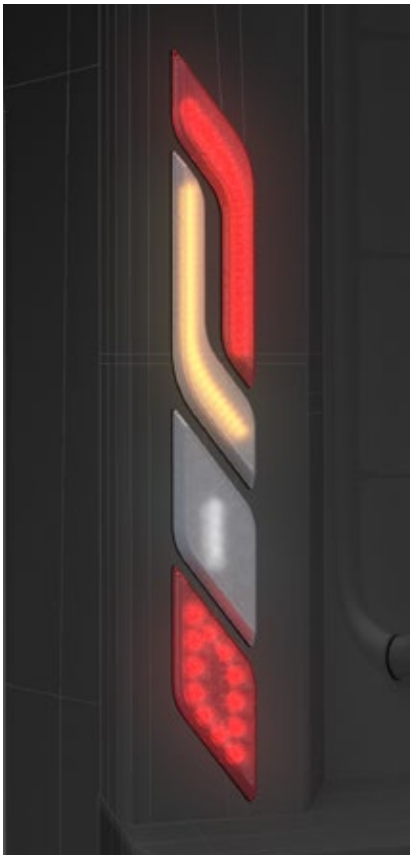
Surface mounting, rear, left/right, bronze-green RAL 6031; cable feed through gland PG11 with special sealing ring for 1–5 single cable 1.5 mm² with cable diameters of between 2.2–3 mm, wiring by means of screw-type and plain connectors, optionally mounting with angle holder or direct installation, screw spacing: 106 mm, fastening screws M8 not included in delivery, fixing torque for fastening screws max. 2 Nm

Light function	Reversing light
Light source	Conventional bulb P 21 W
Rated voltage	12 V and 24 V
Power consumption	21 W
Protection class	Watertight up to 0.6 bar
Approved	ECE-R23

2ZR 002 481-031	PU: 1, NSN: 6220-12-306-3494
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Accessories	
8GA 002 073-241	PU: 10, NSN: 6240-12-150-4410, Light source, 24 V, P 21 W
9GD 104 486-007	PU: 10, NSN: 5330-12-151-4413, Seal
9NS 104 488-097	PU: 10, NSN: 5975-12-311-4801, Screw
9NU 104 487-007	PU: 10, NSN: 5310-12-164-1827, Washer

Style	Tech
Direction Indicators 2BM 013 338- 2BM 013 339-	2BM 013 336- 2BM 013 337- 2BM 013 337-
Reflex Reflectors 8RA 013 347-	8RA 013 403-
Clearance Lamps 2XS 013 327-	
Side Marker Lamps 2PS 013 305/6- 2PS 013 305- 2PS 013 307- 2PS 013 307- 2PS 013 300/2- 2PS 013 300- 2PS 013 303- 2PS 013 303- 2PS 013 301/2- 2PS 013 301- 2PS 013 304- 2PS 013 304-	



Tail-stop lamp, Wing Homologation ECE Number of LEDs 30 Connectors & wiring 3-pin AMP SUPERSEAL integrated 2SB 013 399-131 With MD12 (ECE) and PWM/AAG compatible	Rear fog lamp Homologation ECE / SAE Number of LEDs 12 Connectors & wiring 3-pin AMP SUPERSEAL integrated (with 2-pin function) 2NE 013 345-031
Direction indicator, Wing, rear Homologation ECE Number of LEDs 30 Connectors & wiring 2-pin AMP SUPERSEAL integrated 2BA 013 333-031	Reverse lamp Homologation ECE / SAE Number of LEDs 4 Connectors & wiring 3-pin AMP SUPERSEAL integrated (with 2-pin function) 2ZR 013 345-131
Reflex reflector, rear Homologation ECE / SAE Number of LEDs – Connectors & wiring – 8RA 013 347-061	Side marker lamp, amber Homologation ECE / SAE Number of LEDs 3 Connectors & wiring AMP SUPERSEAL, 250 mm cable, overmoulded 2PS 013 305-011

Style	Tech
Position Lamps 2SA 013 324-	2SA 013 323-
Tail-Stop Lamps 2SB 013 342- 2SB 013 342- 2SB 013 399-* 2SB 013 399-* 2SB 013 343- 2SB 013 343- 2SB 013 341-	
Direction Indicators 2BA 013 331- 2BA 013 331- 2BA 013 331- 2BA 013 331- 2BA 013 333- 2BA 013 333- 2BA 013 332-* 2BA 013 332-*	2BA 013 330- 2BA 013 330-
Tail-Stop-Direction Indicator Lamps 2SD 013 342- 2SD 013 342- 2SD 013 341-	
Reverse Lamps 2ZR 013 345- 2ZR 013 345- 2ZR 013 401- 2ZR 013 401- 2ZR 013 401- 2ZR 013 344-	
Rear Fog Lamps 2NE 013 345- 2NE 013 345- 2NR 013 345- 2NR 013 345- 2NE 013 343- 2NE 013 343- 2NE 013 343- 2NE 013 344- 2NR 013 344-	
Reflex Reflectors 8RA 013 402- 8RA 013 347- 8RA 013 403-	

* PWM/AAG compatible and with MD12 (ECE).

SIGNAL LIGHTING
DIRECTION INDICATORS



Dimensions | W 65 x H 90 mm



Direction indicator lamp

Surface mounting, left/right

Light function	Direction indicator
Light source	Conventional bulb P 21 W
Rated voltage	12 V and 24 V
Power consumption	21 W
Approved	K 12643 (national approval, Germany)

2BA 001 225-001

PU: 1

Accessories

8GA 002 073-121	PU: 10, NSN: 6240-12-159-7268, Light source, 12 V, P21W
8GA 002 073-241	PU: 10, NSN: 6240-12-150-4410, Light source, 24 V, P21W
9GD 066 177-001	PU: 10, NSN: 5340-12-122-4416, Seal
9GD 066 178-001	PU: 10, NSN: 5330-12-122-4418, Seal



Dimensions | W 65 x H 90 mm



Direction indicator lamp (half side)

Surface mounting, left/right, lens varnished inside (half side) yellow olive (RAL 6014)

Light function	Direction indicator
Light source	Conventional bulb P 21 W
Rated voltage	12 V and 24 V
Power consumption	21 W
Approved	K 12643 (national approval, Germany)

2BA 001 225-017

PU: 45, NSN: 6220-12-171-8462

Accessories

8GA 002 073-121	PU: 10, NSN: 6240-12-159-7268, Light source, 12 V, P21W
8GA 002 073-241	PU: 10, NSN: 6240-12-150-4410, Light source, 24 V, P21W
9EL 064 243-015	PU: 60, NSN: 6220-12-171-4797, Lens
9GD 066 177-001	PU: 10, NSN: 5340-12-122-4416, Seal
9GD 066 178-001	PU: 10, NSN: 5330-12-122-4418, Seal

SIGNAL LIGHTING
DIRECTION INDICATORS



Dimensions | Ø 78 mm, H 97 mm



Direction indicator lamp

Surface mounting, left/right; housing with 2 gland lines (PG 11), optionally with feed from side or bottom, for 1–5 single cables 1.5 mm² with cable diameters between 2.2–3 mm

Light function	Direction indicator
Light source	Conventional bulb P 21 W
Rated voltage	12 V and 24 V
Power consumption	21 W
Protection class	Watertight up to 0.6 bar
Approved	K 43293 (national approval, Germany)

2BA 001 298-027

PU: 6, NSN: 6220-12-166-4992

Accessories

8GA 002 073-121	PU: 10, NSN: 6240-12-159-7268, Light source, 12 V, P21W
8GA 002 073-241	PU: 10, NSN: 6240-12-150-4410, Light source, 24 V, P21W
9EL 102 580-001	PU: 5, NSN: 6220-12-151-4410, Lens
9GD 078 328-001	PU: 10, NSN: 5330-12-138-5085, Seal
9GD 104 486-007	PU: 10, NSN: 5330-12-151-4413, Seal
9HG 102 578-001	PU: 5, NSN: 6220-12-173-9607, Grille
9NS 104 488-097	PU: 10, NSN: 5975-12-311-4801, Screw
9NU 104 487-007	PU: 10, NSN: 5310-12-164-1827, Washer



Dimensions | Ø 78 mm, H 97 mm



Direction indicator/position lamp

Surface mounting, front, left/right; housing with 1 gland line (PG 11) with special sealing for 1–5 single cables 1.5 mm² with cable diameters between 2.2–3 mm

Light function	Direction indicator, position light
Light source	Direction indicator: conventional bulb P 21 W Position light: Conventional bulb R 5 W
Rated voltage	12 V and 24 V
Power consumption	21 W, 5 W
Protection class	Watertight up to 0.6 bar
Approved	K 43293, K 11678 (national approval, Germany)

2BE 001 298-011

PU: 1, NSN: 6220-12-151-4409

Accessories

8GA 002 071-121	PU: 10, NSN: 6240-12-120-7998, Light source, 12 V, R5W
8GA 002 071-241	PU: 10, NSN: 6240-12-120-7950, Light source, 24 V, R5W
8GA 002 073-121	PU: 10, NSN: 6240-12-159-7268, Light source, 12 V, P21W
8GA 002 073-241	PU: 10, NSN: 6240-12-150-4410, Light source, 24 V, P21W
9EL 102 580-001	PU: 5, NSN: 6220-12-151-4410, Lens
9GD 078 328-001	PU: 10, NSN: 5330-12-138-5085, Seal
9GD 104 486-007	PU: 10, NSN: 5330-12-151-4413, Seal
9HG 102 578-001	PU: 5, NSN: 6220-12-173-9607, Grille
9NS 104 488-097	PU: 10, NSN: 5975-12-311-4801, Screw
9NU 104 487-007	PU: 10, NSN: 5310-12-164-1827, Washer

SIGNAL LIGHTING
POSITION LAMPS/CLEARANCE LAMPS



Dimensions | Ø 101,5 mm, H 67 mm



Position lamp	
Surface mounting, front, left/right; cable feed optionally from side or bottom through 2 glands PG9, wiring by means of screwed connection	
Light function	Position light, white
Light source	Conventional bulb R 5 W
Rated voltage	12 V and 24 V
Power consumption	5 W
Protection class	Watertight up to 0.6 bar
Approved	ECE-R7
2PF 001 645-001	PU: 1, NSN: 6220-12-141-1131
Accessories	
8GA 002 071-121	PU: 10, NSN: 6240-12-120-7998, Light source, 12 V, R 5 W
8GA 002 071-241	PU: 10, NSN: 6240-12-120-7950, Light source, 24 V, R 5 W
8HG 002 363-001	PU: 10, NSN: 5340-12-138-5086, Bracket
9GD 078 328-001	PU: 10, NSN: 5330-12-138-5085, Seal



SIGNAL LIGHTING
POSITION LAMPS/CLEARANCE LAMPS



Dimensions | Ø 76 mm, H 61 mm



Position lamp	
Surface mounting, front, left/right; cable feed optionally from side or bottom through 2 glands PG11 with special sealing ring for 1–5 single cable 1.5 mm² with cable diameters of between 2.2–3 mm, wiring by means of screwed connection	
Light function	Position light
Light source	Conventional bulb R 5 W
Rated voltage	12 V and 24 V
Power consumption	5 W
Protection class	Watertight up to 0.6 bar
Approved	ECE-R7
2PF 001 645-011	PU: 1, NSN: 6220-12-156-5168, white light
2XS 001 645-057	PU: 10, NSN: 6220-12-310-3225, red light
Accessories	
8GA 002 071-121	PU: 10, NSN: 6240-12-120-7998, Light source, 12 V, R 5 W
8GA 002 071-241	PU: 10, NSN: 6240-12-120-7950, Light source, 24 V, R 5 W
9GD 078 328-001	PU: 10, NSN: 5330-12-138-5085, Seal
9GD 104 486-007	PU: 10, NSN: 5330-12-151-4413, Seal
9NS 104 488-097	PU: 10, NSN: 5975-12-311-4801, Screw
9NU 104 487-007	PU: 10, NSN: 5310-12-164-1827, Washer



Dimensions | Ø 54 mm, W 87 x H 63 mm

IP

Blackout stop lamp	
Surface mounting, rear, left/right with red lens; hole spacing of the fastening screws 45 mm (screws M6 x 25 and nuts included in delivery), fixing torque for fastening screws max. 2 Nm, cable feed from bottom through gland screw-type connection PG9, usable bulb T8/2 W	
Light function	Blackout stop light
Light source	Conventional bulb H 2 W
Rated voltage	24 V
Power consumption	2 W
Protection class	IP 44
2DA 001 324-011	PU: 1, NSN: 6220-12-138-3985
Accessories	
8GP 002 068-241	PU: 10, NSN: 6240-12-120-7952, Light source, 24 V, H 2 W
9EL 072 373-001	PU: 5, NSN: 6220-12-151-4415, Lens
9FT 091 148-001	PU: 5, NSN: 6250-12-132-5596, Bulb carrier
9GP 085 005-001	PU: 10, NSN: 6220-12-138-5093, Washer



Dimensions | Ø 56 mm, W 90 x H 65 mm

0.6 bar

Blackout stop lamp	
Surface mounting, rear, left/right with yellow lens; hole spacing of the fastening screws 45 mm (screws M6 x 25 and nuts included in delivery), fixing torque for fastening screws max. 2 Nm, cable feed from bottom through gland screw-type connection PG11 with special sealing ring for 1–5 single cable 1.5 mm² with cable diameters of between 2.2–3 mm, usable bulb T8/2 W	
Light function	Blackout stop light
Light source	Conventional bulb H 2 W
Rated voltage	24 V
Power consumption	2 W
Protection class	Watertight up to 0.6 bar
2DA 001 324-121	PU: 1, NSN: to be defined
Accessories	
8GP 002 068-241	PU: 10, NSN: 6240-12-120-7952, Light source, 24 V, H 2 W
9FT 091 148-001	PU: 5, NSN: 6250-12-132-5596, Bulb carrier
9GD 104 486-007	PU: 10, NSN: 5330-12-151-4413, Seal
9GP 085 005-001	PU: 10, NSN: 6220-12-138-5093, Washer
9NS 104 488-097	PU: 10, NSN: 5975-12-311-4801, Screw
9NU 104 487-007	PU: 10, NSN: 5310-12-164-1827, Washer



Dimensions | Ø 56 mm, W 90 x H 65 mm

0.6 bar

Blackout stop lamp	
Surface mounting, rear, left/right with red lens; hole spacing of the fastening screws 45 mm (screws M6 x 25 and nuts included in delivery), fixing torque for fastening screws max. 2 Nm, cable feed from bottom through gland screw-type connection PG11 with special sealing ring for 1–5 single cable 1.5 mm² with cable diameters of between 2.2–3 mm, usable bulb T8/2 W	
Light function	Blackout stop light
Light source	Conventional bulb H 2 W
Rated voltage	24 V
Power consumption	2 W
Protection class	Watertight up to 0.6 bar
2DA 001 324-021	PU: 1, NSN: 6220-12-151-4414
Accessories	
8GP 002 068-241	PU: 10, NSN: 6240-12-120-7952, Light source, 24 V, H 2 W
9EL 072 373-001	PU: 5, NSN: 6220-12-151-4415, Lens
9FT 091 148-001	PU: 5, NSN: 6250-12-132-5596, Bulb carrier
9GD 104 486-007	PU: 10, NSN: 5330-12-151-4413, Seal
9GP 085 005-001	PU: 10, NSN: 6220-12-138-5093, Washer
9NS 104 488-097	PU: 10, NSN: 5975-12-311-4801, Screw
9NU 104 487-007	PU: 10, NSN: 5310-12-164-1827, Washer



SIGNAL LIGHTING
CONVOY LAMPS



Dimensions | W 270 x H 272 x D 95 mm



Convoy lamp

Surface mounting, rear; for fixed mounting on the vehicle, guiding cross white, guiding cross flaps and light head varnished, wiring by means of gland PG9

Light function	Convoy light
Light source	Conventional bulb H 2 W
Rated voltage	24 V
Power consumption	2 W
Protection class	Watertight up to 0.6 bar

2PF 001 637-001	PU: 3, NSN: 6220-12-140-5767
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Accessories

8GP 002 068-241	PU: 10, NSN: 6240-12-120-7952, Light source, 24 V, H 2 W
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Dimensions | W 270 x H 272 x D 95 mm



Convoy lamp

Surface mounting, rear; with detachable holding chain, guiding cross white, guiding cross flaps and light head varnished, wiring by means of gland PG9, with 2-strand supply cable, 2-pin plug 8JA 001 915-001 to be ordered separately

Light function	Convoy light
Light source	Conventional bulb H 2 W
Rated voltage	24 V
Power consumption	2 W
Protection class	Watertight up to 0.6 bar

2PF 001 637-017	PU: 3, NSN: 6220-12-138-3987
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Accessories

8GP 002 068-241	PU: 10, NSN: 6240-12-120-7952, Light source, 24 V, H 2 W
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SIGNAL LIGHTING
CONVOY LAMPS



Dimensions | W 270 x H 272 x D 95 mm



Convoy lamp

Surface mounting, rear; special design for Daimler-Benz, for fixed mounting on the vehicle, guiding cross white, guiding cross flaps and light head varnished, wiring by means of gland PG9, with 500 mm long 2-strand cable

Light function	Convoy light
Light source	Conventional bulb H 2 W
Rated voltage	24 V
Power consumption	2 W
Protection class	Watertight up to 0.6 bar

2PF 001 637-027	PU: 30, NSN: 6220-12-309-2437, Daimler only, universal packaging on demand
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Accessories

8GP 002 068-241	PU: 10, NSN: 6240-12-120-7952, Light source, 24 V, H 2 W
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Dimensions | W 270 x H 272 x D 95 mm



Convoy lamp

Surface mounting, rear; for fixed mounting on the vehicle, guiding cross white, guiding cross flaps and light head varnished, wiring by means of gland PG11 with special sealing ring for 1–5 single cable 1.5 mm² with cable diameters of between 2.2–3 mm

Light function	Convoy light
Light source	Conventional bulb H 2 W
Rated voltage	24 V
Power consumption	2 W
Protection class	Watertight up to 0.6 bar

2PF 001 637-031	PU: 1, NSN: 6220-12-162-0204
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Accessories

8GP 002 068-241	PU: 10, NSN: 6240-12-120-7952, Light source, 24 V, H 2 W
9GD 104 486-007	PU: 10, NSN: 5330-12-151-4413, Seal
9NS 104 488-097	PU: 10, NSN: 5975-12-311-4801, Screw
9NU 104 487-007	PU: 10, NSN: 5310-12-164-1827, Washer

SIGNAL LIGHTING
CONVOY LAMPS



Dimensions | W 270 x H 272 x D 95 mm



Convoy lamp

Surface mounting, rear; with detachable holding chain, guiding cross white, guiding cross flaps and light head varnished, wiring by means of gland PG11 with special sealing ring for 1–5 single cable 1.5 mm² with cable diameters of between 2.2–3 mm

Light function	Convoy light
Light source	Conventional bulb H 2 W
Rated voltage	24 V
Power consumption	2 W
Protection class	Watertight up to 0.6 bar

2PF 001 637-041 PU: 1, NSN: 6220-12-151-4418



Dimensions | W 270 x H 272 x D 95 mm



Convoy lamp MAN

Surface mounting, rear; with detachable holding chain, guiding cross white, guiding cross flaps and light head varnished, wiring by means of gland PG11 with special sealing ring for 1–5 single cable 1.5 mm² with cable diameters of between 2.2–3 mm

Light function	Convoy light
Light source	Conventional bulb H 2 W
Rated voltage	24 V
Power consumption	2 W
Protection class	Watertight up to 0.6 bar

2PF 001 637-061 PU: 1, NSN: to be defined, MAN only



Dimensions | W 270 x H 272 x D 95 mm



Convoy light

Surface mounting, rear; with 500 mm Daimler specific harness, corrugated hose, nominal bore 8,5 mm, norm connector A 928 000 020 black and protective cap

Light function	Convoy light
Light source	Conventional bulb H 2 W
Rated voltage	24 V
Power consumption	2 W
Protection class	Watertight up to 0.6 bar

2PF 001 637-077 PU: 36, NSN: to be defined, universal packaging on demand

SIGNAL LIGHTING
CONVOY LAMPS



Dimensions | W 270 x H 272 x D 95 mm



Convoy lamp, grey-beige

Surface mounting, rear, grey-beige; with 500 mm **Daimler specific harness**, nominal bore 8,5 mm, norm connector A 928 000 020 black and protective cap, rubber base plate, brackets and housings grey beige

Light function	Convoy light
Light source	Conventional bulb H 2 W
Rated voltage	24 V
Power consumption	2 W
Protection class	Watertight up to 0.6 bar

2PF 001 637-097 PU: 36, NSN: to be defined, Daimler only, universal packaging on demand



Dimensions | W 270 x H 272 x D 95 mm



Convoy lamp x-shaped, grey-beige

Surface mounting, rear, X-shaped, grey-beige; for fixed mounting on the vehicle, guiding cross white, guiding cross flaps and light head varnished, wiring by means of gland PG9, with removable fixation chain

Light function	Convoy light
Light source	Conventional bulb H 2 W
Rated voltage	24 V
Power consumption	2 W
Protection class	Watertight up to 0.6 bar

2PF 001 637-051 PU: 1, NSN: to be defined

2PF 001 637-087 PU: 36, with 500 mm Daimler specific harness, NSN: to be defined, universal packaging on demand



LED VERSIONS IN PREPARATION!

All versions of the „Convoy lamp X-Shaped, Grey-Beige“ (Surface-mounting, rear – X-shaped, grey-beige finish) will also be available as **LED versions** in the future.



SIGNAL LIGHTING
LICENCE PLATE LAMPS



Dimensions | Ø 56 mm, W 90 x H 65 mm



Licence plate lamp

Surface mounting, rear; hole spacing of the fastening screws 45 mm (screws M6 x 25 and nuts included in delivery), fixing torque for fastening screws max. 2 Nm, cable feed from bottom through gland screw-type connection PG11 with special sealing ring for 1–5 single cable 1.5 mm with cable diameters of between 2.2–3 mm

Light function	Numberplate light
Light source	Conventional bulb R 5 W
Rated voltage	12 V and 24 V
Power consumption	5 W
Protection class	Watertight up to 0.6 bar
Approved	ECE-R4

2KA 001 324-051	PU: 1, NSN: 6220-12-159-6554
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Accessories

8GA 002 071-121	PU: 10, NSN: 6240-12-120-7998, Light source, 12 V, R 5 W
8GA 002 071-241	PU: 10, NSN: 6240-12-120-7950, Light source, 24 V, R 5 W
9EL 072 373-001	PU: 5, NSN: 6220-12-151-4415, Lens
9GD 104 486-007	PU: 10, NSN: 5330-12-151-4413, Seal
9GP 085 005-001	PU: 10, NSN: 6220-12-138-5093, Washer
9NS 104 488-097	PU: 10, NSN: 5975-12-311-4801, Screw
9NU 104 487-007	PU: 10, NSN: 5310-12-164-1827, Washer

SIGNAL LIGHTING
BEACONS



Dimensions | Ø 112 mm



K-LED Nano 80

LED beacon, rotating or flashing warning signal, black housing

Light function	Beacon
Light source	LED
Rated voltage	12 V and 24 V
Power consumption	Flashing: < 19 W, Rotating: < 5 W
Protection class	IP 6K7, IP 6K9
Approved	ECE-R65, ECE-R10

2RL 099 979-011	PU: 1, amber, rotating, pipe socket mounting
2RL 099 979-001	PU: 1, amber, rotating, fixed mounting
2XD 066 979-011	PU: 1, amber, flashing, pipe socket mounting
2XD 066 979-001	PU: 1, amber, flashing, pipe socket fixed mounting
2XD 066 979-211*	PU: 1, red, flashing, pipe socket mounting
2XD 066 979-201*	PU: 1, red, rotating, fixed mounting

* No ECE-R65 approval, the relevant country-specific legal requirements and guidelines for motor vehicles must be observed when installing the product.



K-LED 2.0

LED beacon, flashing amber warning signal, black housing

Light function	Flashing beacon
Light source	LED
Rated voltage	12 V and 24 V
Power consumption	30 W
Protection class	IP 6K7, IP 6K9K
Approved	ECE-R65, ECE-R10

2XD 011 557-801	PU: 1, fixed mounting
2XD 011 557-811	PU: 1, pipe-socket mounting



KL 600

Halogen beacon for special purpose vehicle, rotating amber warning signal

Light function	Beacon
Light source	H1 bulb
Rated voltage	24 V
Power consumption	70 W
Approved	K 8649, ECE-R10

2RL 004 957-141	PU: 1, NSN: 6220-12-349-6352
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Dimensions | Ø 165 mm



Dimensions | Ø 135 mm



INTERIOR LIGHTING
READING LAMPS



Dimensions | W 133 x H 31 x D 34 mm

Interior lamp	
Surface mounting; lamp switched on by opening the cover	
Light function	Interior light
Light source	K10W
Rated voltage	12 V / 24 V
Power consumption	10 W
2AB 001 208-001	PU: 5, NSN: 6210-12-147-4230
Accessories	
8GM 002 091-131	PU: 10, Light source, 12 V, 10 W
8GM 002 091-251	PU: 10, Light source, 24 V, 10 W



Dimensions | W 133 x H 31 mm

Reading lamp	
Switched by opening the cover, bulb holder with vibration damp bearing	
Light function	Reading light
Light source	Conventional bulb H 2 W
Rated voltage	12 V and 24 V
Power consumption	5 W
2AB 001 208-021	PU: 5, NSN: 6210-12-121-7333, maximum opening angle 70°
2AB 001 208-031	PU: 5, NSN: 6210-12-151-6078, maximum opening angle 170°
Accessories	
8GP 002 068-121	PU: 10, NSN: 6240-12-120-7996, Light source, 12 V, H 2 W
8GP 002 068-241	PU: 10, NSN: 6240-12-120-7952, Light source, 24 V, H 2 W



Dimensions | W 145 x H 125 x D 69 mm

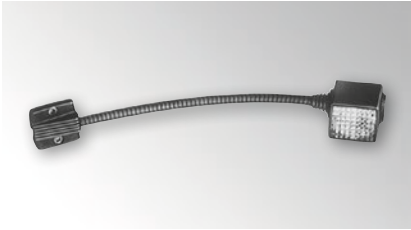
Interior lamp	
Lens for reading light white, for night vision light blue or red, with integrated switch for functions: reading light/off/night vision light, bulb for reading light 12 V and 24 V, 21 W = (P25/1) for night vision light = 12/24 V 5 W (R19/5)	
Light function	Interior light
Light source	Reading light: conventional bulb P 21 W Night vision light: conventional bulb R 5 W
Rated voltage	12 V and 24 V
Power consumption	21 W, 5 W
Protection class	IP 54
2JA 001 361-007	PU: 6, NSN: 6220-12-170-8081, blue night vision light
2JA 001 361-017	PU: 6, NSN: 6220-12-151-4468, red night vision light
Accessories	
8GA 002 071-121	PU: 10, NSN: 6240-12-120-7998, Light source, 12 V, R 5 W
8GA 002 071-241	PU: 10, NSN: 6240-12-120-7950, Light source, 24 V, R 5 W
8GA 002 073-121	PU: 10, NSN: 6240-12-159-7268, Light source, 12 V, P 21 W
8GA 002 073-241	PU: 10, NSN: 6240-12-150-4410, Light source, 24 V, P 21 W

IP

INTERIOR LIGHTING
READING LAMPS



Flexible LED reading lamp 343 720 621	
Surface mounting; compact lamp head with on/off switch, black, flexible metal bracket with foot for fixed installation, with 400 mm lenght	
Light function	Interior light
Light source	LED
Rated voltage	12 V and 24 V
2JA 343 720-621	White/red light, black housing, PU: 1



Lamp	
Surface mounting; compact lamp head with on/off switch, black, flexible metal bracket with foot for fixed installation, with 195 mm lenght, red lens 9EL 128 922-011 available as accessory	
Light function	Interior light
Light source	Halogen
Rated voltage	12 V
2AB 004 532-011	PU: 1
Accessories	
8GH 002 473-151	PU: 10, Light source, 12 V, YL
9EL 128 922-011	PU: 10, Lens, red

NAVIGATION LAMPS



Dimensions | W 87 x H 90 x D 57 mm

NavILED Pro Port Navigation Light

Visibility 2 NM, black shroud with red lens, 2.5 m cable	
Light function	Navigation light, red
Light source	LED
Rated voltage	12 V and 24 V
Power consumption	< 2W (0.17 A at 12 V, 0.09 A at 24 V)
Protection class	IP 67
Approved	IMO COLREG 72, USCG, ABYC C-5, Maritime NZ, Wheelmark (MED), Red Ensign, RCM
2LT 017 460-001	PU: 1, NSN: 6260-98-209-3614



Dimensions | W 87 x H 90 x D 57 mm

NavILED Pro Starboard Navigation Light

Visibility 2 NM, black shroud with green lens, 2.5 m cable	
Light function	Navigation light, green
Light source	LED
Rated voltage	12 V and 24 V
Power consumption	< 2W (0.17 A at 12V, 0.09 A at 24 V)
Protection class	IP 67
Approved	IMO COLREG 72, USCG, ABYC C-5, Maritime NZ, Wheelmark (MED), Red Ensign, RCM
2LT 017 461-001	PU: 1, NSN: 6260-98-209-3613

MARINE LIGHTING

In the marine sector, ruggedness, absolute reliability, and standard-compliant visibility are critical to the safety of modern maritime vessels. Hella marine navigation lights are specifically designed to perform consistently under extreme conditions and reliably meet the operational requirements of military yacht builders. With fully sealed, shock-, vibration-, and corrosion-resistant LED systems, they produce clear, unmistakable signals – even in the most demanding operational scenarios.

CONTENT

- Navigation lamps



The navigation lamps are currently available exclusively to marine retailers and can only be purchased from specialist marine retailers.





Dimensions | Ø 60 | H 56 mm



NaviLED 360 Compact All Round White Navigation Lamps

Visibility 2 NM, black shroud with white LED, 500 mm cable, surface mounting

Light function	Navigation light, white
Light source	LED
Rated voltage	12 V and 24 V
Power consumption	1 W
Protection class	IP 67
Approved	IMO COLREG 72, Wheelmark (MED), USCG, ABYC C-5, Maritime NZ, Red Ensign, RCM

2LT 980 960-001	PU: 1, NSN: 6220-41-003-1550
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Dimensions | Ø 90 | H 68



NaviLED 360 PRO - All Round Navigation

2NM, black shroud with white lens, 1.4 m cable, surface mounting

Light function	Navigation light, white
Light source	LED
Rated voltage	12 V and 24 V
Power consumption	1.5 W
Protection class	IP 67
Approved	IMO COLREG 72, Wheelmark (MED), USCG, ABYC C-5, Maritime NZ, Red Ensign, RCM

2LT 980 910-121	PU: 1
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NaviLED TRIO Tri Colour Navigation Lamp

2NM, black shroud with white, green and red lens, 400 m cable

Light function	Navigation light, white, green and red
Light source	LED
Rated voltage	12 V and 24 V
Power consumption	Port, Starboard and Stern – <3.5 W combined All Round White/Anchor – <1.5 W
Protection class	IP 67
Approved	BSH, IMO COLREG 72, USCG, ABYC A-16, RCM, Maritime NZ

2LT 980 650-001	PU: 1
2LT 980 650-007	PU: 10



Dimensions | Ø 85 | H 95



CROSS-REFERENCES

NATO STOCK NUMBERS (NSN)

As well as the manufacturer's part number, parts logistics at depot organisations and tactical vehicles manufacturers are also based on the international NATO supply number (NSN). After the users have applied and the relevant authorities have issued them, these NSNs are assigned to FORVIA HELLA products and are provided in this overview.



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1XA 002 409-357	6220-12-414-2372	43	8GP 002 068-121	6240-12-120-7996	48
2AB 001 208-001	6210-12-147-4230	64	8GP 002 068-241	6240-12-120-7952	48
2AB 001 208-021	6210-12-121-7333	64	8HG 002 363-001	5340-12-138-5086	54
2AB 001 208-031	6210-12-151-6078	64	8JA 001 909-001	5935-12-186-9560	39
2BA 001 225-017	6220-12-171-8462	52	8JA 001 926-001	5935-12-166-7775	24
2BA 001 298-027	6220-12-166-4992	53	8JB 001 946-011	5935-12-158-9646	25
2BE 001 298-011	6220-12-151-4409	53	8JB 001 946-021	5935-12-300-4587	25
2DA 001 324-011	6220-12-138-3985	56	8JB 001 946-031	5935-12-130-9273	25
2DA 001 324-021	6220-12-151-4414	56	8JB 850 434-011	5935-12-306-2247	25
2JA 001 361-007	6220-12-170-8081	64	8TW 003 803-007	4320-12-181-4581	17
2JA 001 361-017	6220-12-151-4468	64	8TW 003 803-017	4320-12-374-7761	17
2KA 001 324-051	6220-12-159-6554	62	8XT 002 116-001	6220-12-136-2601	39
2LT 017 460-001	6260-98-209-3614	67	8XT 004 034-007	6220-12-194-5414	39
2LT 017 461-001	6260-98-209-3613	67	9EL 064 243-015	6220-12-171-4797	52
2LT 980 960-001	6220-41-003-1550	68	9EL 072 373-001	6220-12-151-4415	56
2NE 002 481-001	6220-12-152-8600	49	9EL 102 580-001	6220-12-151-4410	53
2NE 002 481-017	6220-12-152-8600	49	9EL 104 544-001	6220-12-151-4412	48
2PF 001 637-001	6220-12-140-5767	58	9EL 111 600-001	6220-12-164-7718	49
2PF 001 637-017	6220-12-138-3987	58	9ES 087 392-002	6220-12-139-8209	39
2PF 001 637-027	6220-12-309-2437	59	9EV 087 390-001	6220-12-139-8212	39
2PF 001 637-031	6220-12-162-0204	59	9FT 091 148-001	6250-12-132-5596	56
2PF 001 637-041	6220-12-151-4418	60	9FT 104 548-001	6250-12-188-7259	48
2PF 001 645-001	6220-12-141-1131	54	9GD 066 177-001	5340-12-122-4416	52
2PF 001 645-011	6220-12-156-5168	55	9GD 066 178-001	5330-12-122-4418	52
2RL 004 957-141	6220-12-349-6352	63	9GD 072 484-005	5330-12-121-7312	44
2SD 001 698-001	6220-12-151-4411	48	9GD 078 328-001	5330-12-138-5085	53
2XS 001 645-057	6220-12-310-3225	55	9GD 087 393-001	5330-12-139-8210	39
2ZR 002 481-031	6220-12-306-3494	49	9GD 104 486-007	5330-12-151-4413	44
3AF 003 399-061	2590-12-195-8586	23	9GP 004 028-007	5340-12-190-2370	48
3AF 003 399-071	2590-12-195-8585	23	9GP 085 005-001	6220-12-138-5093	56
3AG 003 399-081	2590-12-196-0842	23	9GT 012 144-001	5325-12-156-4150	44
3BA 002 768-211	6350-12-146-1870	23	9HG 102 578-001	6220-12-173-9607	53
3BA 002 768-382	2590-12-199-2457	23	9MK 087 369-001	6220-12-139-8228	39
6HF 001 579-011	5930-12-181-2666	24	9NS 104 488-097	5975-12-311-4801	48
6LB 005 389-001	5930-12-166-0796	24	9NU 104 487-007	5310-12-164-1827	48