Technology with Vision

HELLA MINING
PRODUCT OVERVIEW
SUB-SAHARA AFRICA
2016 / 2017

HELLA Automotive South Africa (Pty) Ltd.
Nelson Mandela Bay Logistics Park
Jagtvlakte Industrial Area, Erf 2051
Uitenhage, South Africa
6230

P O Box 603
Uitenhage, South Africa
6230

Sales Telephone: +27 (0) 41 996 5700
Sales Telefax: +27 (0) 41 996 5720
Cell: +27 (0) 73 144 7637
E-mail: Oswald.Olckers@hella.com

www.hella.co.za
www.facebook.com/hellasouthafrica

© HELLA KGaA Hueck & Co., Lippstadt
PN: Z9055 04.2015
Printed in South Africa

www.hellamining.com

TECHNOLOGY
HELLA
WITH VISION

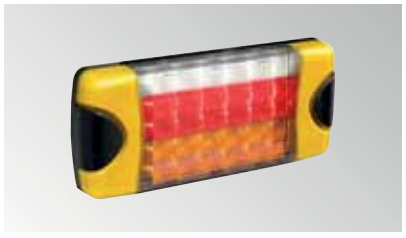
CONTENT

Introduction 2
About HELLA Mining 4
Applications Engineering 5
Quality Standards 6

Examples of Products 8
Haul Truck 8
Rope Shovel 9
Dozer 10
Wheel Loader 11
Excavator 12
Underground Drill Rig 13
Articulated Dump Truck 14
Underground Loader 15

Worklights 16
Features HELLA Mining worklights 18
HypaLUME 19
RokLUME™ 380 N 20
RokLUME™ 380 RFCommSafe™ N 21
RokLUME™ 280 N 22
AS3000 RFCommSafe™ 23
RokLUME™ 155 TP 24
RokLUME™ 190 RFCommSafe™ N 25
RokLUME™ 210 26
RokLUME™ 190 RFCommSafe™ 26
RokLUME™ 160 27
RokLUME™ 140 27
RokLUME™ 120 27

Beacons 28
K-LED Mining 29
DuraRAY³ 29
UltraRAY – R Dual 29
UltraRAY – R Twin 30
UltraRAY – Flashing 30
UltraRAY – R Rotating 30
NaviLED M 31
DuraLED M – High intensity 31
OptiRAY 32
OptiRAY E 32
LED Mine Spec Signal Bar 33



Signal Lights 34
AP 1200 LED Offroad Signal Lights 35
RokLUME™ 140 Green / Red 35
DuraLED Combi RCL 35
DuraLED 36
DuraLED Combi-R 36
DuraLED Combi-S 36
DuraLED M Combi 37
DuraLED Combi MSIP 37
LED Daytime Running Light 37

Interior Lights 38
EuroLED Touch M 39
DuraLED 1000 Lumen Service Light 39
DuraLED 700 Lumen Service Light 39

Alarms and Horns 40
MotoVox Compact 117 dB Horn 42
MotoVox Forward 117 dB Horn 42
MotoVox Compact 107 dB Horn 42
RetroVox Self Adjusting Reversing Alarm 42
RetroVox Ultra Heavy Duty Reversing Alarm 43
RetroVox Compact Broadband 87 dB Alarm 43
RetroVox Compact Broadband 87 – 112 dB Reversing Alarm 43

Accessories 44
HELLA Mine E-Stop 45
LED Buggy Whip 45
Weatherproof Changeover Relay and Connector Assembly Kits 45
Jump Start System 46
Jump Start Plug 46
Jump Start Terminal 46
Battery Master Lockout Switches 46
Battery Master Lockout Switches 47
Crimping Tools 47
DT Connectors 47
Handy Box® 48
Handy Box® Heat Shrink Kit 48
Handy Box® DT Connector Kit 49
Handy Box® Blade Fuse Kit 49
Handy Box® Crimp Terminal Kit 49
SUPERSEAL Connector Kit 50

Additional Information 51
Construction and Meaning of the IP (Ingress Protection) Code 51
Icon Explanation 52
Part Number Index 54

5 YEAR LED WARRANTY

5 Year LED Warranty

HELLA Mining products are covered by a one (1) year warranty which covers faults in material or workmanship only and provided that the product is used for its intended purpose except for globes, ballasts, fuses and sealed beams, which are on fitment. All HELLA Mining LED products are covered by a five (5) year warranty on light output, excluding environmental and physical damage.

ABOUT HELLA MINING

The HELLA Mining Centre of Excellence was created in Australia in 2002 to design, develop and manufacture fixed and mobile lighting products specifically for the mining industry. HELLA uses its research, engineering and logistic expertise to produce lighting products that are designed to world class standards that can be used in mining applications all over the world.

The research behind the product selection is based upon data collected from mining equipment in use in many different regions and applications. This data was utilised to set performance parameters as a baseline criteria for survival in a mining application. These parameters are used in testing our products in house before we can be confident to release them to mining field trials and later for general release to the mining industry. This process is vastly different to most of our competitors that will pass on products designed for other target segments and "offered for trial" to mining companies with little idea of the outcome.

The product sale is also very different to our competitors as only HELLA Mining offer mining companies a free of charge engineered application service. This service offers the end user information on the product, aiming angles and actual lighting performance prior to any purchase that includes safety as a key area of concern. This service highlights to the customer that HELLA Mining are the mining professionals for lighting and assists our customers with another value proposition to their mining purchase.

An area of concern to mining companies with global share-holders is safety and environment. Any negative concerns from ongoing environmental or safety issues can clearly affect the share price of these multinational firms and therefore there is a major focus on HSE (Health, Safety and the Environment). HELLA Mining has advanced lighting technology that meets the criteria for enhanced safety as vision plays a vital part in an environment that operates 24 hours a day and has large mobile machinery capable of destruction on a grand scale and a highly mobile road network.

HELLA Mining products meet the needs of mining companies around the world. The concept of "Technology with Vision" highlights the fact that we exceed our customer's expectations by producing quality products that fulfill the requirements for the harshest industry on earth in an efficient, advanced and professional manner that offers real technology with vision.

HELLA Australia is equipped with highly advanced production and distribution facilities. HELLA Australia has full design and development facilities that include: NATA registered Photometric Laboratory, Chemical Analysis Laboratory Facilities, and some of the most advanced environmental and physical test simulation facilities available anywhere.

HELLA continues to develop, prove and market innovative products based on worldwide leadership in advanced lighting technology – to demonstrably improve end user profitability in mining applications. This is achieved through products that offer:

- → **Greater safety**
- → **Lower operating cost**
- → **Greater productivity**
- → **Predictable service**
- → **Better value**

HELLA Mining products are backed by the renowned global HELLA quality guarantee, and service and distribution network.

Statement of Warranty
HELLA Mining products are covered by a one (1) year warranty which covers faults in material or workmanship only and provided that the product is used for its intended purpose except for globes, ballasts, fuses and sealed beams, which are on fitment. All HELLA Mining LED products are covered by a five (5) year warranty on light output, excluding environmental and physical damage.

Important Note
Only products specifically identified as ECE or SAE compliant are approved for use on public roads, when installed and operated as required by local regulation on approved vehicles. The responsibility for correct selection, fitment and operation to meet local regulations is that of the vehicle operator. Please ensure local regulations and requirements are met.

Project Argon: Charting the extremes:
Developing lighting equipment to go the distance in mines requires a deep understanding of their operating systems and specific environmental conditions.

At HELLA, we don't guess, we measure.
HELLA Australia's PROJECT ARGON collects and researches detailed data from a diverse range of mines and machines. A suite of robust sensors with integrated data loggers is mounted on mining plant and machines to record operating conditions. After the sensors are recovered from the machines, their data is downloaded for analysis and used as the basis of product design and test specifications able to match extreme mining environments.

APPLICATIONS ENGINEERING

The HELLA Centre of Excellence – Mining provides an Applications Engineering lighting design service for HELLA Mining customers. The aim of this unique service is to reduce risk to end users and OEMs of implementing an inappropriate lighting design, enabling all stakeholders to evaluate, comment and positively input into the design prior to implementation.

The HELLA team combines decades of lighting expertise across many countries and industries with the most sophisticated software. However, our most valuable asset is ongoing consultation combined with extensive practical on-site mining experience, enabling us to understand the unique visual and environmental requirements of the mining industry.

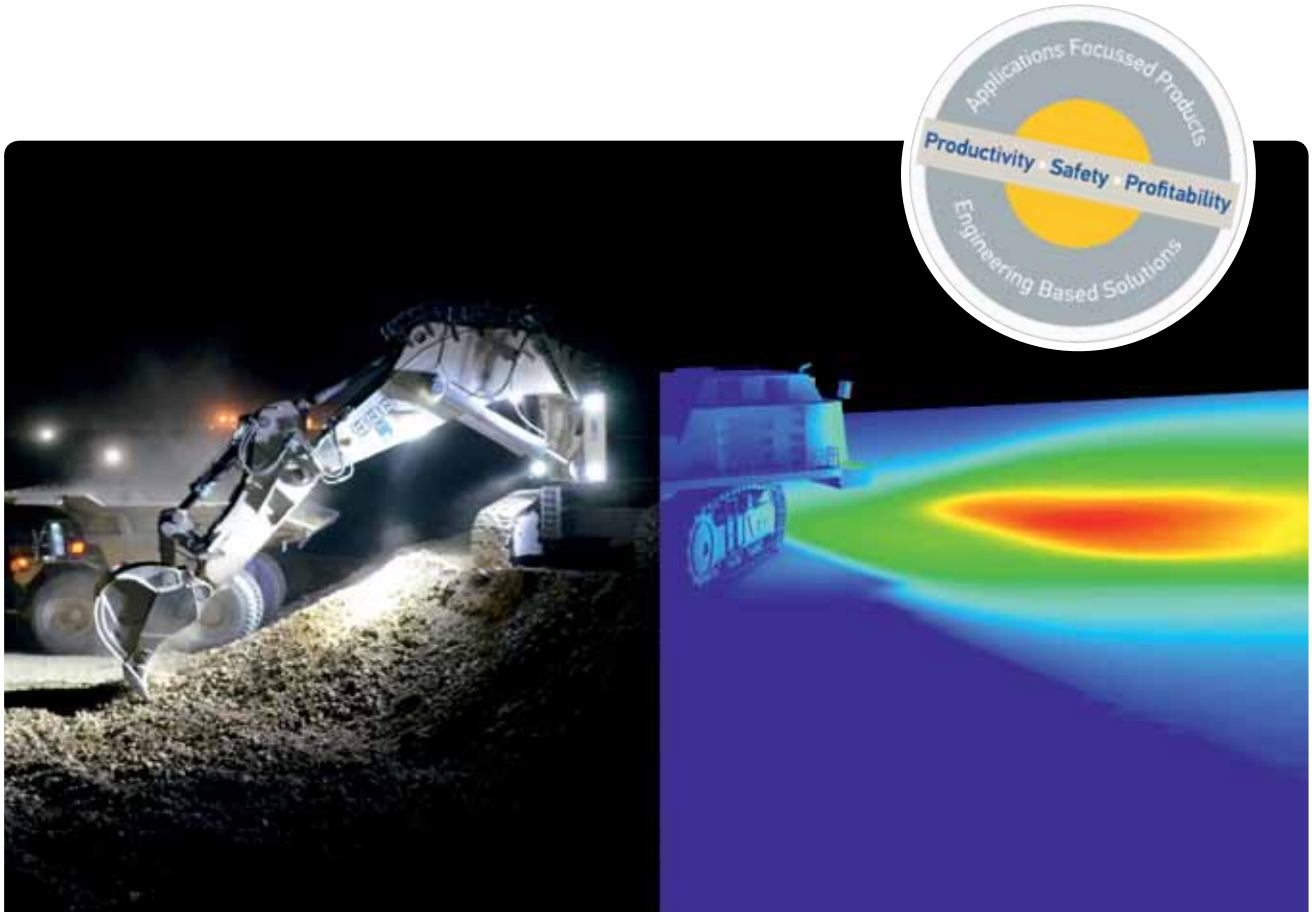
We are fully aware of the wide and sometimes conflicting range of operational requirements, covering the need for greater equipment, operator and maintenance personnel safety, lowered cost of ownership and maintenance, increased productivity requirements and the need for a predictable service life.

We use appropriate, proven technologies and methods to provide the mining operation with an engineering-based, application-focused, customised solution. The system design not only complies with the relevant occupational health and safety regulations, but also with real life maintenance and operational needs.

HELLA lighting designs typically include; aiming and orientation angles, number and type of luminaires, part numbers, spare parts, illumination level achieved and appropriate standards referenced. Our service extends to both fixed and mobile plant lighting designs. The final design is contained in a clear and concise document that can be presented to all relevant stakeholders, ready to be integrated into on-site maintenance documentation systems.

Our experience in Applications Engineering allows us to create lighting designs in a short time frame and with limited information.

On the following pages you will find light simulations for LED lighting upgrades.



QUALITY STANDARDS

HELLA has set itself the ambitious standard of guaranteeing consistently high product quality in every respect.
This is achieved by defining quality criteria and checking every detail using carefully-selected methods throughout the entire manufacturing process. Production quality is ensured by parallel quality monitoring and testing. Quality products from HELLA are subject to different test procedures in accordance with the HELLA standard 67101. These test procedures are conducted by the HELLA test laboratory in Germany.

First-class quality by conviction: HELLA guarantees the perfect, long-term functioning of its products and stands for satisfied customers in the spare parts, accessories and light sources areas. As the long-established company from Lippstadt is an efficient partner to the automotive industry, HELLA products are manufactured to meet the respective precision, tolerance specifications. Combined with the use of sophisticated test procedures in the product development, you can depend on HELLA products in any situation.

HELLA products are subjected to the following tests:

Heat, moisture and cold test
In temperature cycle tests, HELLA products are exposed to temperature fluctuations from -40 degrees Celsius to +100 degrees Celsius in climatic chambers which have a volume of 600 – 1,000 liters. In addition, condensation and defogging tests are carried out up to max. 95 % air humidity and up to 80 degrees Celsius. In the so-called „shock chamber“, the temperatures changes within seconds (intervals of max. 6 seconds) between -40 degrees Celsius and +100 degrees Celsius. These tests signify utmost stress on any material, both for lighting as well as for the individual electronics components. The heat and cold tests last up to 48 hours.

Dust test
In this test, the products are tested for their dust tightness. Unfired Portland cement is used as a test medium for all products. The test is optionally performed in sample function operation, and with overpressure or under pressure exposure of the device under test.

The tests are evaluated by determining the photometric value before and after the test (IP 6KX). This is the only way that HELLA can ensure that dust will not penetrate the product and can guarantee the long service life of the product.

High-pressure cleaner test
In one test system, the products are exposed to a water pressure of up to 120 bar and a water temperature of +85 degrees Celsius. This test simulates cleaning in a carwash or with a pressure cleaner (IP X9K)

Immersion and pressure tightness test
Depending on requirements, this test is carried out for all lighting technology products. An immersion pipe can be submerged to a depth of 1m in water. Another test system can reach a depth of 6 meters. Also, an overpressure test up to 1.6 bar is conducted in an immersion pool. All tests are carried out in accordance with the HELLA standard, 67101, as well as the legal requirements (IP X7).

Vibration test
This test simulates the behavior of the products over a “poor stretch of road” and shows, for example, reactions to potholes, gravel tracks, gravel, stones, fields and dirt roads. Special rally profiles are tested for selected products, such as auxiliary driving lights. The wide band random vibration test is used to test the mechanical endurance strength in the vertical and horizontal axes. Here, the frequency range extends from 10 to 1000 Hertz. Alongside the vibration test, the products are subjected to a temperature overload of -40 degrees Celsius to +80 degrees Celsius. This includes a check on the ageing process of the plastic. All products are tested for function for up to 24 hours. A mechanical shock test is also carried out as part of testing and is designed to simulate behavior on impact (for example, boxed products during shipping) at an acceleration of 300 to 500 meters per second squared.

Shock test
HELLA Mining products must pass the HELLA 200 G shock test before being certified for use in mining applications. Products are put through 10,000 cycles at 200 G in various orientations to fully test their resistance to shock and vibration.

Lumen measurement according to LM-79-08
Currently there is no universally recognised standard for measuring the photometric properties of solid state (LED) lighting. This has resulted in many manufacturers and resellers using theoretical data (e.g. Raw lumens) which offers no actual useful comparison data for the purchaser, who is either unaware or unable to calculate the actual light output taking into account optical, electrical and thermal losses. The IES (illumination Engineers Society) released in 2008 a standard for testing amongst other things, the total luminous flux of LED fixtures. This publication appears to be the front runner in becoming the benchmark standard in testing solid state luminaire photometric, and has been adopted by most top tier manufacturers, including HELLA Mining. In simple terms, the test will determine the effective light output of a Luminaire, ideally using specialised photometric equipment in a NATA accredited laboratory. For the purpose of this comparison, only data obtained using the LM-79-08 standard is utilised.

You will find further information on the HELLA quality criteria at: www.hella.com/quality

HAUL TRUCK

1 **RokLUME™ 380 N ZeroGlare™**
Page 20

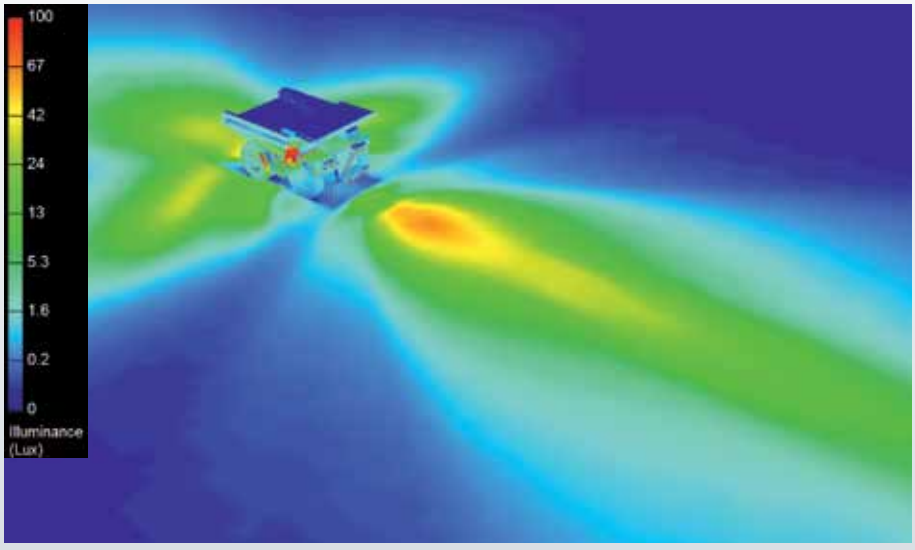
2 **RokLUME™ 380 N**
Page 20

3 **DuraRAY³**
Page 29

4 **AP 1200 LED Offroad Signal Light**
Page 35

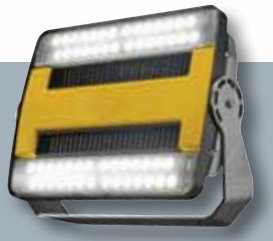
A HELLA Mining lighting solution for Haul Truck applications ensures that there is clear visibility for all operations required. Including forward lighting with glare minimisation for oncoming traffic, dump lighting, reverse lighting and windrow lighting where required.

Please contact us for a tailored proposal for your Haul Truck Fleet.



Product illumination pattern

ROPE SHOVEL



1 **HypaLUME**

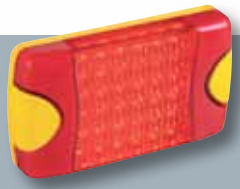
Page 19

2 **RokLUME™ 380 N**

Page 20

3 **DuraRAY³**

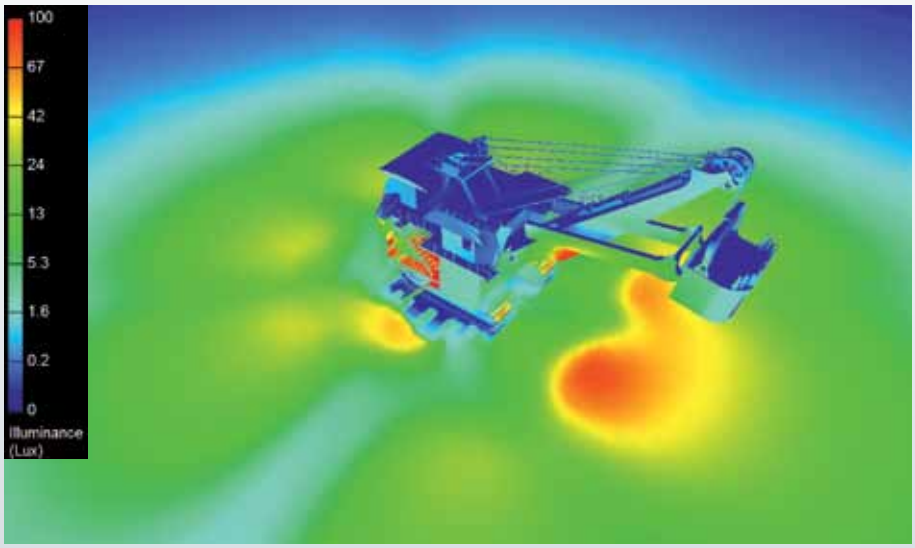
Page 29



4 **DuraLED M**
High intensity

Page 31

A HELLA Mining lighting solution for Rope Shovels is specifically tailored to each application. A typical lighting setup will ensure the dig face is lit clearly and uniformly for operator visibility and increased safety and production. In addition, the perimeter lighting around the sides and rear of the Rope Shovel is uniform to allow Haul Truck operators to see clearly while moving into position.



Product illumination pattern

DOZER

1 **RokLUME™ 380 N**
Page 20

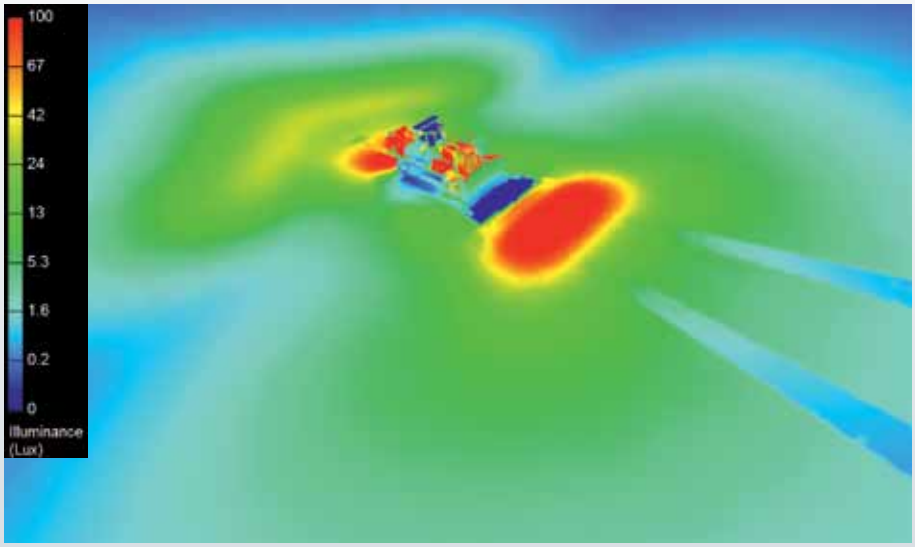
2 **RokLUME™ 280 N Close range**
Page 22

3 **RokLUME™ 190 RFCommSafe™ N**
Page 25

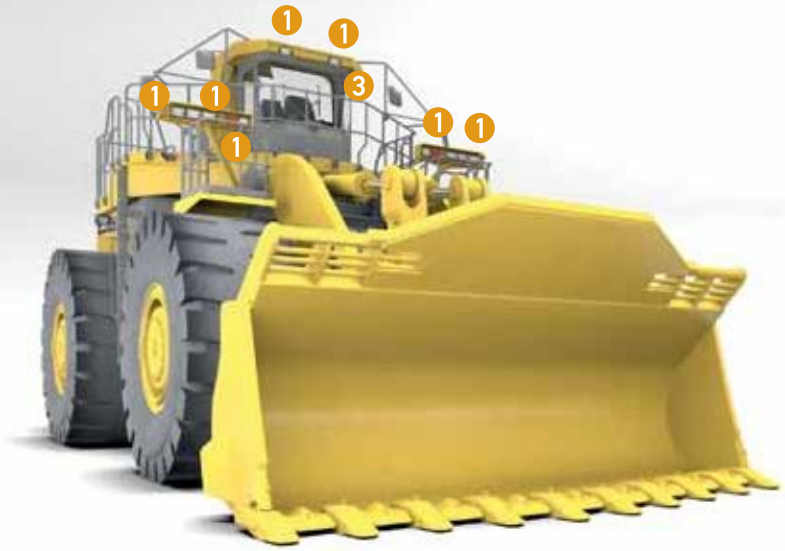
4 **DuraRAY³**
Page 29

A HELLA Mining lighting solution for Bull Dozers makes for more efficient operation. Clear illumination of the ripper and blade edges ensures high productivity and accuracy for Bull Dozer fleets. Ensuring clear forward and rear long range illumination allows the operator to maintain ripping and shoving direction with ease.

Please contact us for a tailored solution to your specific Bull Dozer requirements.



Product illumination pattern



WHEEL LOADER

1

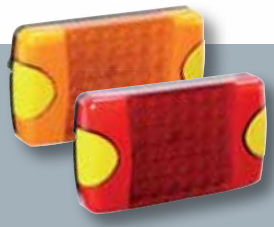
RokLUME™ 380 N ZeroGlare™
Page 20

2

RokLUME™ 190 RFCommSafe™ N Close range
Page 25

3

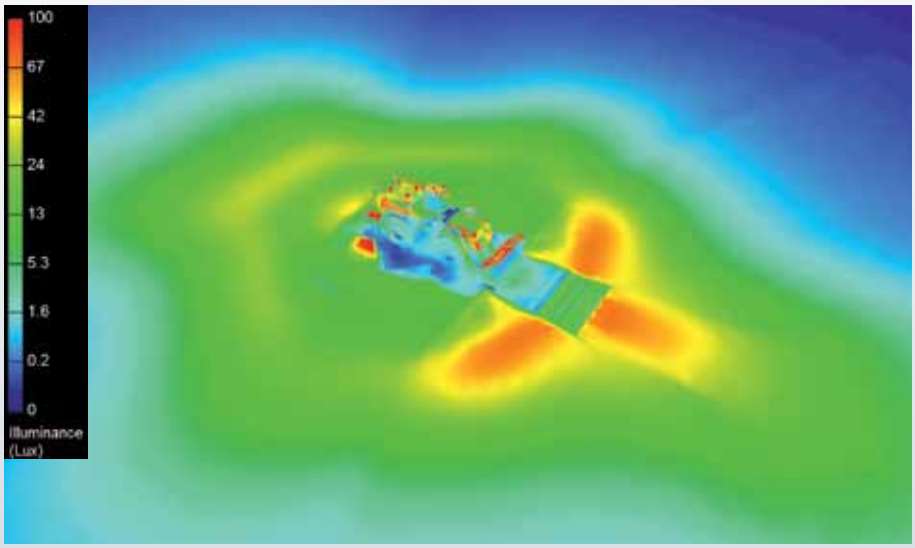
DuraRAY³
Page 29



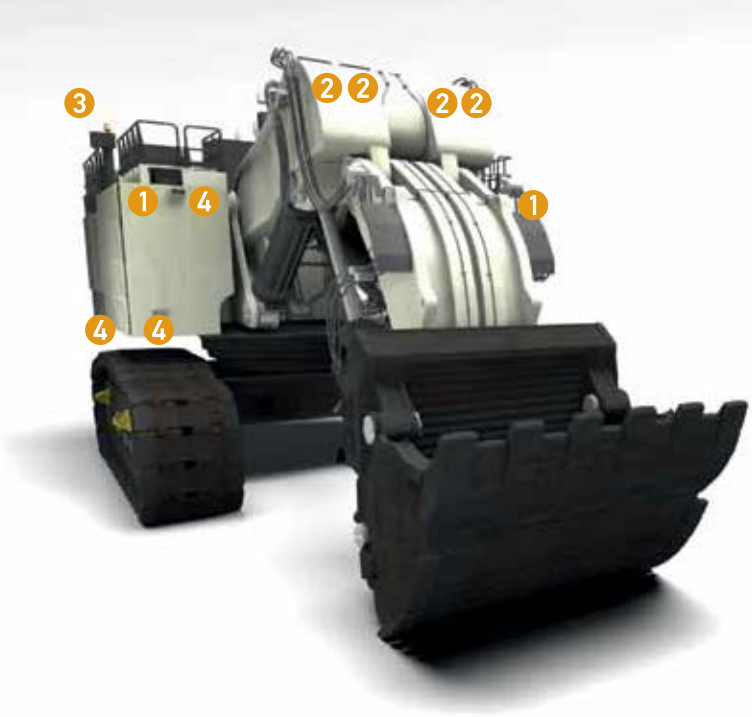
4

DuraLED
Page 36

A HELLA Mining lighting solution for Wheel Loaders of all sizes ensures excellent illumination for the operator and ancillary equipment. HELLA Mining lighting setups for wheel loaders ensures full illumination of the dig face and peripheral work areas for maximum safety and productivity. In addition, we ensure that glare is minimised from reflection on hydraulic cylinders during loading operations. Please contact us with your Wheel Loader model for a tailored lighting solution.



Product illumination pattern

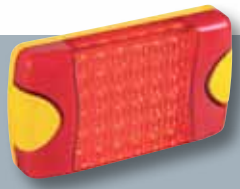


EXCAVATOR

1 **HypaLUME**
Page 19

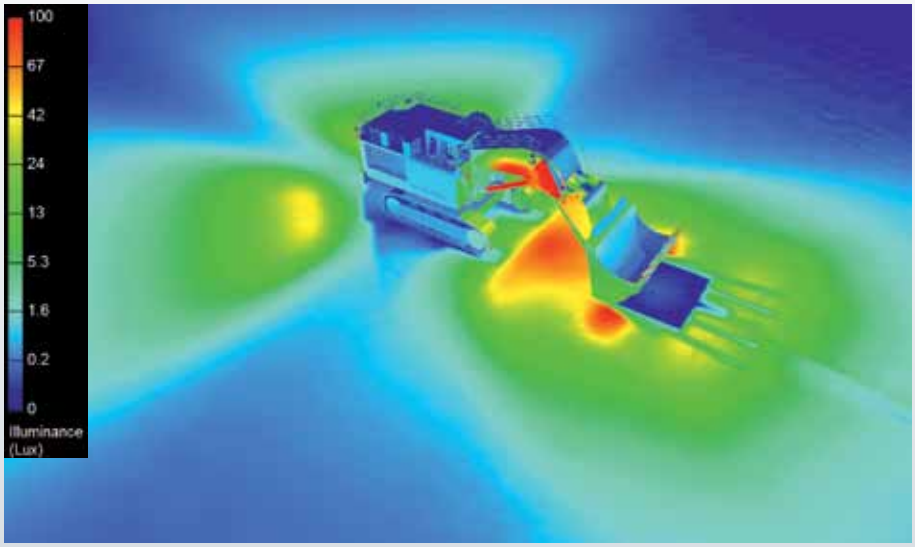
2 **RokLUME™ 380 RFCommSafe™ N**
Page 21

3 **DuraRAY³**
Page 29



4 **DuraLED M**
High intensity
Page 31

A HELLA Mining lighting solution for Hydraulic Excavators is tailored to each specific model or configuration. Lighting setups vary depending on size of the machine, whether the boom is configured in shovel or excavator format. All these variables must be considered to ensure clear illumination of the work area and around the vehicle.



Product illumination pattern

UNDERGROUND DRILL RIG

1

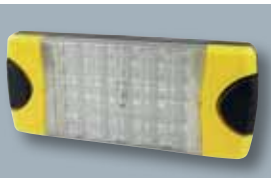
RokLUME™ 280 N ZeroGlare™
Page 22

2

RokLUME™ 190 RFCommSafe™ N
Page 25

3

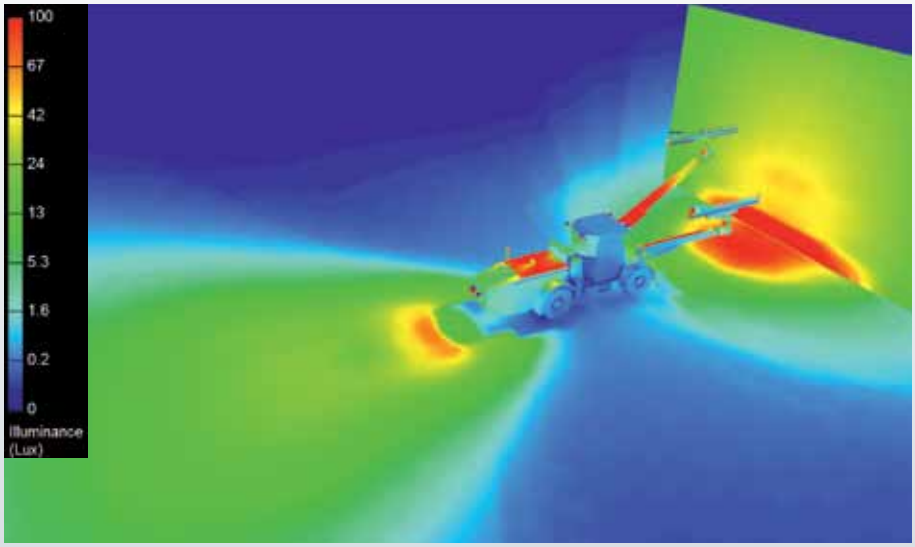
K-LED Mining
Page 29



4

DuraLED Combi-S
Page 36

A HELLA Mining lighting solution for Underground Drill rigs is designed to have a clear and uniform illumination on the work face. The ability to place the drill accurately on drill markers is reliant on a well-lit work area. In addition, the lighting setup for tramming ensures clear forward, rear and side illumination to maximise visibility for the operator.



Product illumination pattern

ARTICULATED DUMP TRUCK

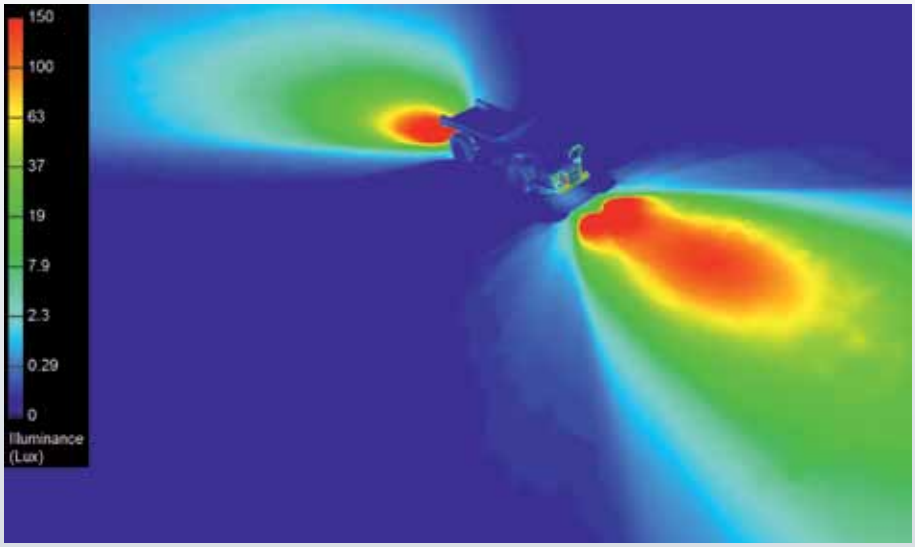
1 **RokLUME™ 280 N ZeroGlare™**
Page 22

2 **RokLUME™ 190 RFCommSafe™ N**
Page 25

3 **K-LED Mining**
Page 29

4 **DuraLED**
Page 36

A HELLA Mining lighting solution for Articulated Dump Trucks ensures that there is clear visibility for all operations required. Forward lighting setups with glare minimisation for oncoming traffic, clear rear and side lighting for tunnel operations and lighting for rear dumping operations are important features. Please contact us for a tailored proposal for your ATD Fleet.



Product illumination pattern

UNDERGROUND LOADER

1

RokLUME™ 280 N ZeroGlare™
Page 22

2

RokLUME™ 190 RFCommSafe™ N
Page 25

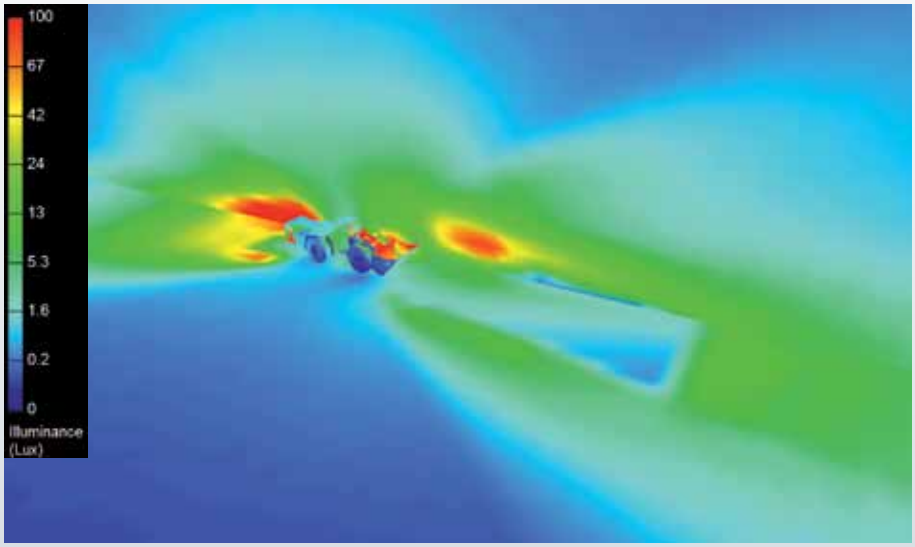
3

K-LED Mining
Page 29

4

DuraLED
Page 36

A HELLA Mining lighting solution for Underground Loaders is designed to ensure safe operation in all applications. Clear forward lighting with extreme vibration resistance is required for loading and bogging operations to ensure a long service life. Clear illumination around the vehicle is needed for operator visibility during tramming, loading and unloading operations.



Product illumination pattern

789C
CAT

FEATURES HELLA MINING WORKLIGHTS

Lumen measurement according to LM-79-08

The correct way to measure the light output of head- and worklights is usage of a Goniometer. This instrument measures defined sphere angles, normally 90 degree in all directions (a half sphere). As a result we get the nominal illumination values of all detected section angles. With our software “Helios” we analyse the measured values and generate the correct lumen output. All measurements are performed at an ambient temperature of 23°C. The light output is measured after thermal stabilisation time of the light unit after 30 minutes in function, the LEDs have then reached their operating temperature.

NanoSafe

HELLA Mining presents the new extreme corrosion resistant worklights with a special coating to improve the resistance of our Mining worklights in harsh conditions. We call this new technology: NanoSafe technology. For our NanoSafe coating, we implemented three more layers to make our worklights more corrosion resistant and implemented a non-stick and easy to clean surface coating. These three additional layers lead to a much higher and longer resistance against corrosion. The NanoSafe technology will be exclusive to our Mining LED worklights, where the conditions are extremely harsh.

RFCommSafe™ Electromagnetic Compatibility (EMC)

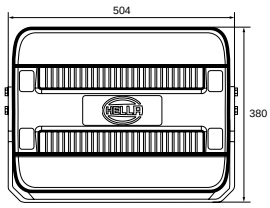
Every LED lamp contains electronic circuitry. It is essential that this circuitry does not cause harmful interference to other devices and at the same time is not susceptible to radiation from other devices.

RFCommSafe™ products were developed in recognition that some radio communication equipment can self-tune to be very sensitive in remote areas. In these situations the limits prescribed by regulatory requirements and as defined in international standards such as CISPR15 or relevant UNECE Standards may not be sufficient to ensure there is no interference with very sensitive radio communication equipment.

Lamps marketed as RFCommSafe™ are designed to go well beyond the requirements of CISPR15, CISPR25 and UNECE Standards.

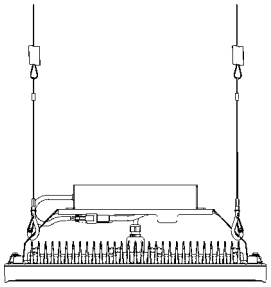
HypaLUME

This LED product has the following features



TURTLE FRIENDLY

High Bay Version



HypaLUME

- → Developed specifically for Mining applications
- → Highly efficient light distribution
- → Suitable for energy saving lighting installations

Light output (measured): 24,000 lumen, power requirement: 240 Watt, colour temperature: 5,700° Kelvin, Multivolt™, reverse polarity protection, transient spike circuit protection, over-voltage protection, thermal management, IP 6K9K / IP 6K7 (high pressure cleaning resistant / submersible), double insulated silicone suppy cable with DT Connector, non-stick and easy to clean surface coating, high impact grilamid nylon lens, Heavy Duty cable gland offers bend protection, RCM compliance, premium aluminium housing for mining use, 10 G / 50 G Heavy Duty stainless steel bracket, mounting standing / hanging.

Close range illumination, fix (10 G)	**1GJ 011 872-071**
Long range illumination, fix (10 G)	**1GJ 011 872-081**
Extra wide illumination, fix (10 G)	**1GJ 011 872-061**
Close range illumination, mob (50 G)	**1GJ 011 872-021**
Long range illumination, mob (50 G)	**1GJ 011 872-031**
Extra wide illumination, mob (50 G)	**1GJ 011 872-011**

Amber Version
Light output (measured): 13,000 lumen, 1,800° Kelvin, Heavy Duty surrounding-bracket, mounting standing / hanging and sea turtle friendly.

Close range illumination, mob (50 G)	**1GJ 011 872-131**
Long range illumination, mob (50 G)	**1GJ 011 872-141**
Extra wide illumination, mob (50 G)	**1GJ 011 872-151**

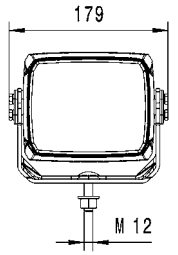
High Bay Version
Light output (measured): 24,000 lumen, 5,700° Kelvin, AC / DC converter is not included.

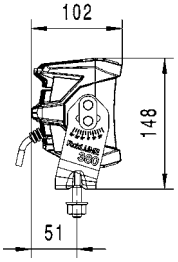
Extra wide illumination AC / DC converter will be installed as part of a complete installation by a suitably qualified person (or electrician). The final installation must be re-confirmed that EMC directives are still met in the respective country.	**1GJ 011 872-211**
AC / DC converter 90~305 V AC, 24 V, Rated Current 13.3 A, 320 Watt, 47~63 Hz, -40~+70°C, 200 G, IP 67	**8EN 332 584-021**

RokLUME™ 380 N

This LED product has the following features

ZeroGlare™ Version





Pencil Beam Version

Amber Version

ZeroGlare™

RokLUME™ 380 N

- Developed specifically for Mining applications
- Heavy Duty bracket resists against vibration
- Light distribution optimised for Mining machinery

Light output (measured): 7,000 lumen, power requirement: 84 Watt, colour temperature: 5,000° Kelvin, 24 V, reverse polarity protection, transient spike circuit protection, overvoltage protection, thermal management, IP 6K9K / IP 6K8 (high pressure cleaning resistant / submersible), ECE-R10 approved, RCM compliance, Heavy Duty stainless steel surrounding bracket 165 mm, double insulated silicone suppy cable with DT Connector, NanoSafe (non-stick and easy to clean surface coating), high impact hardcoated PC lens, Heavy Duty cable gland offers bend protection, mounting angle guide, premium aluminium housing for mining use, mounting standing / hanging, Nord-Lock washers, DT counterpart included.

RokLUME™ 380 N ZG	**1GA 996 197-001**
RokLUME™ 380 N CR	**1GA 996 197-011**
RokLUME™ 380 N LR	**1GA 996 197-021**
RokLUME™ 380 N PB	**1GA 996 197-041**
RokLUME™ 380 N F	**1GA 996 197-031**
RokLUME™ 380 A N ZG	**1GA 996 197-051**
RokLUME™ 380 A N CR	**1GA 996 197-061**
RokLUME™ 380 A N LR	**1GA 996 197-071**
RokLUME™ 380 A N PB	**1GA 996 197-091**
RokLUME™ 380 A N F	**1GA 996 197-081**

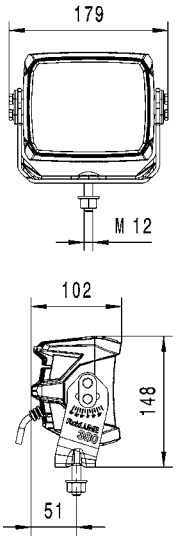
ZG	ZeroGlare™
CR	Close range
LR	Long range
PB	Pencil Beam
F	Flood
N	NanoSafe
A	Amber

RokLUME™ 380 RFCommSafe™ N

This LED product has the following features

ZeroGlare™ Version

Pencil Beam Version



RokLUME™ 380 RFCommSafe™ N

- → Developed specifically for Mining applications
- → Heavy Duty bracket resists against vibration
- → Light distribution optimised for Mining machinery
- → RFCommSafe™ for zero EMC emissions

Light output (measured): 5,000 lumen, power requirement: 85 Watt, colour temperature: 5,000° Kelvin, 24 V, reverse polarity protection, transient spike circuit protection, overvoltage protection, thermal management, IP 6K9K / IP 6K8 (high pressure cleaning resistant / submersible), ECE-R10 approved, RCM compliance, Heavy Duty stainless steel surrounding bracket 165 mm, double insulated silicone suppy cable with DT Connector, NanoSafe (non-stick and easy to clean surface coating), high impact hardcoated PC lens, Heavy Duty cable gland offers bend protection, mounting angle guide, premium aluminium housing for mining use, mounting standing / hanging, Nord-Lock washers, DT counterpart included.

RokLUME™ 380 RFCommSafe™ N ZG	**1GA 996 197-101**
RokLUME™ 380 RFCommSafe™ N CR	**1GA 996 197-111**
RokLUME™ 380 RFCommSafe™ N LR	**1GA 996 197-121**
RokLUME™ 380 RFCommSafe™ N PB	**1GA 996 197-141**
RokLUME™ 380 RFCommSafe™ N F	**1GA 996 197-131**

ZG	ZeroGlare™
CR	Close range
LR	Long range
PB	Pencil Beam
F	Flood
N	NanoSafe

ZeroGlare™

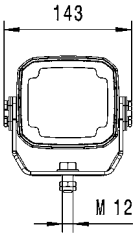
RokLUME™ 280 N

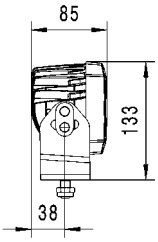
This LED product has the following features

Close range Version

Long range Version

Amber Version





RokLUME™ 280 N

- → Compact size suitable for all Mining machinery
- → Corrosion resistant NanoSafe coating
- → Heavy Duty bracket resists against vibration

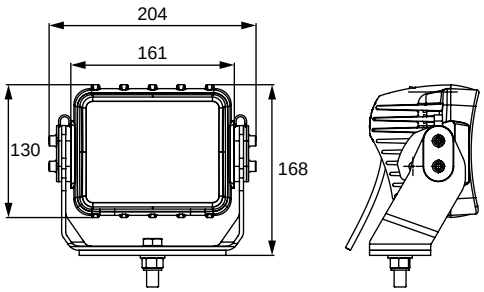
Light output (measured): 3,700 lumen, power requirement: 55 Watt, colour temperature: 5,000° Kelvin, Multivolt™, reverse polarity protection, transient spike circuit protection, over-voltage protection, thermal management, IP 6K9K / IP 6K8 (high pressure cleaning resistant / submersible), DT Connector, high impact nylon lens, NanoSafe (non-stick and easy to clean surface coating), mounting angle guide, ECE-R10 approved, RCM compliance, premium aluminium housing for mining use, Nord-Lock washers, DT counterpart included, mounting standing / hanging, Heavy Duty surrounding-bracket, RCM compliance.

RokLUME™ 280 N ZG	**1GA 995 606-541**
RokLUME™ 280 N CR	**1GA 995 606-501**
RokLUME™ 280 N LR	**1GA 995 606-511**
RokLUME™ 280 N PB	**1GA 995 606-521**
RokLUME™ 280 A N ZG	**1GA 995 606-641**
RokLUME™ 280 A N CR	**1GA 995 606-601**
RokLUME™ 280 A N LR	**1GA 995 606-611**
RokLUME™ 280 A N PB	**1GA 995 606-621**

ZG	ZeroGlare™
CR	Close range
LR	Long range
PB	Pencil Beam
N	NanoSafe
A	Amber

AS3000 RFCommSafe™

This LED product has the following features



AS3000 RFCommSafe™

- → Developed specifically for Mining applications
- → Heavy Duty bracket resists against vibration
- → RFCommSafe™ for zero EMC emissions

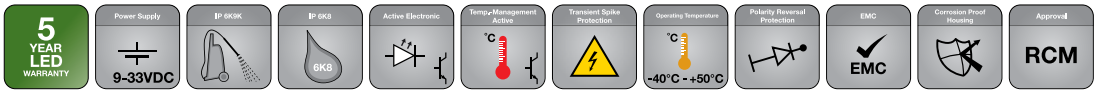
Light output (measured): 3,000 lumen, built-in dimming function (24 V: dims light output to 25 % i.e. approx. 750 lumen; 12 V: dims light output to 50 % i.e. approx. 1,500 lumen), power requirement (high / dimmed): 45 Watt / 12 Watt engraved on housing, colour temperature: 5,000° Kelvin,12 / 24 V, reverse polarity protection, transient spike circuit protection, over-voltage protection, thermal management, IP 6K9K / IP 6K7 (high pressure cleaning resistant / submersible), Draco suspension combined with Heavy Duty stainless steel bracket, pre-wired with 2.5 m of 3-core automotive type cable, non-stick and easy to clean surface coating, high impact grilamid nylon lens, Heavy Duty cable gland offers bend protection, RCM compliance, mounting angle guide, premium aluminium housing for mining use, mounting standing / hanging, 3 pin-DT male and female part included.

12 V Dual level	
AS3000 RFCommSafe™ CR	**1GA 958 060-401**
AS3000 RFCommSafe™ PB	**1GA 958 060-501**
AS3000 RFCommSafe™ XW	**1GA 958 060-601**
24 V Dual level	
AS3000 RFCommSafe™ CR	**1GA 958 060-011**
AS3000 RFCommSafe™ PB	**1GA 958 060-111**
AS3000 RFCommSafe™ XW	**1GA 958 060-201**

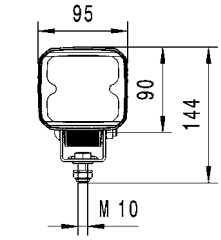
CR Close range
PB Pencil Beam
XW Extra wide

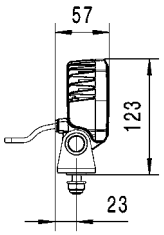
RokLUME™ 155 TP

This LED product has the following features



Amber Version





RokLUME™ 155 TP

- Developed specifically for Mining applications
- Thermo plastic housing
- Compact size

Light output (measured): 1,200 lumen, power requirement: 22 Watt, colour temperature: 5,000° Kelvin, Multivolt™, reverse polarity protection, transient spike circuit protection, over-voltage protection, thermal management, IP 6K9K / IP 6K8 (high pressure cleaning resistant / submersible), ECE-R10 approved, RCM compliance, high quality thermo plastic housing for Heavy Duty use, mounting standing / hanging, harness with DT Connector, Heavy Duty surrounding-bracket.

RokLUME™ 155 TP CR	**1GA 996 283-051**
RokLUME™ 155 TP LR	**1GA 996 283-061**
RokLUME™ 155 TP A CR	**1GA 996 283-071**

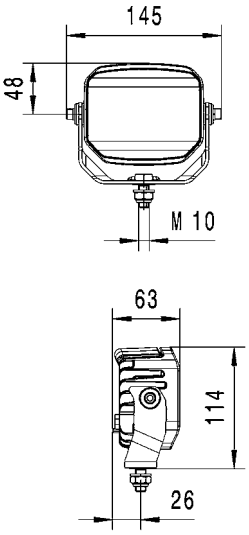
CR Close range
LR Long range
A Amber

RokLUME™ 190 RFCommSafe™ N

This LED product has the following features

Close range Version

Long range Version



RokLUME™ 190 RFCommSafe™ N

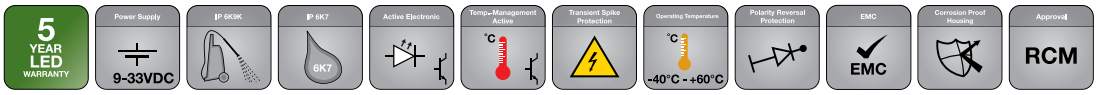
- → Developed specifically for Mining applications
- → Corrosion resistant NanoSafe coating
- → RFCommSafe™ for zero EMC emissions

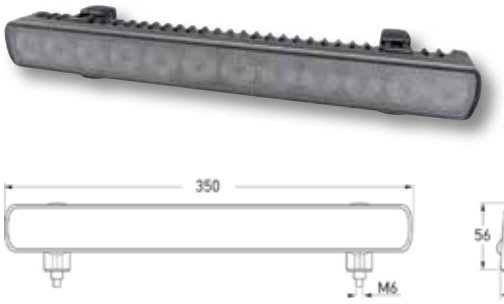
Light output (measured): 1,850 lumen, power requirement: 36 Watt, colour temperature: 5,000° Kelvin, single voltage (24 Volt), reverse polarity protection, transient spike circuit protection, over-voltage protection, thermal management, IP 6K9K / IP 6K8 (high pressure cleaning resistant / submersible), non-stick and easy to clean surface coating, ECE-R10 approved, RCM compliance, premium aluminium housing for mining use, ADR / GGVSEB approved, mounting standing / hanging, DT Connector, Heavy Duty surrounding-bracket, RCM compliance.

RokLUME™ 190 RFCommSafe™ N CR	**1GA 996 388-501**
RokLUME™ 190 RFCommSafe™ N LR	**1GA 996 388-511**

CR	Close range
LR	Long range
N	NanoSafe

This LED product has the following features





RokLUME™ 210

→ Non-metal thermally conductive polymer housing
→ Heavy Duty bracket resists against vibration

Light output (measured): 2,200 lumen, power requirement: 25 Watt, colour temperature: 5,000° Kelvin, Multivolt™, reverse polarity protection, transient spike circuit protection, over-voltage protection, thermal management, IP 6K9K / IP 6K7 (high pressure cleaning resistant / submersible), CE EMC approved, RCM compliance, high quality thermally conductive polymer housing, mounting hanging, connection via 2.5 m wire.

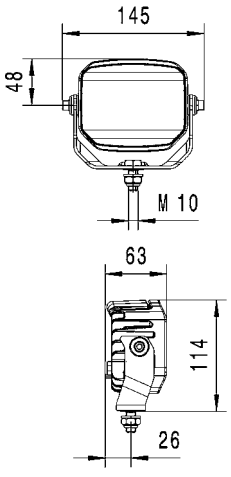
RokLUME™ 210 XW	**1GJ 958 040-501**
RokLUME™ 210 CR	**1GJ 958 040-551**
RokLUME™ 210 LR	**1GJ 958 040-601**

XW Extra wide
CR Close range
LR Long range

This LED product has the following features

Close range Version

Long range Version



RokLUME™ 190 RFCommSafe™

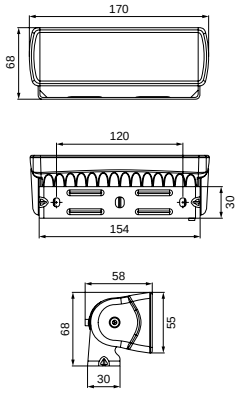
→ Developed specifically for Mining applications
→ Heavy Duty bracket resists against vibration
→ RFCommSafe™ for zero EMC emissions

Light output (measured): 1,850 lumen, power requirement: 36 Watt, colour temperature: 5,000° Kelvin, single voltage (12 or 24 Volt), reverse polarity protection, transient spike circuit protection, over-voltage protection, thermal management, IP 6K9K / IP 6K8 (high pressure cleaning resistant / submersible), ECE-R10 approved, RCM compliance, high quality aluminium housing for mining use, ADR / GGVSEB approved, mounting standing / hanging, DT Connector, Heavy Duty surrounding-bracket.

RokLUME™ 190 RFCommSafe™ CR	**1GA 996 388-521**
RokLUME™ 190 RFCommSafe™ LR	**1GA 996 388-531**

CR Close range
LR Long range

This LED product has the following features



RokLUME™ 160

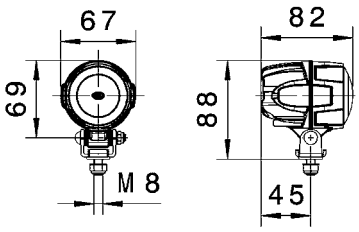
- → Non-metal thermally conductive polymer housing
- → Compact size
- → Heavy Duty bracket resists against vibration

Light output (measured): 1,300 lumen, power requirement: 18 Watt, colour temperature: 5,000° Kelvin, Multivolt™, reverse polarity protection, transient spike circuit protection, over-voltage protection, thermal management, IP 6K9K / IP 6K7 (high pressure cleaning resistant / submersible), CE EMC approved, RCM compliance, high quality thermally conductive polymer housing, mounting hanging, connection via 2,5 m wire.

RokLUME™ 160 CR	**1GA 980 740-321**
RokLUME™ 160 PB	**1GA 980 740-221**
RokLUME™ 160 XW	**1GA 980 740-021**

CR Close range
PB Pencil Beam
XW Extra wide

This LED product has the following features



RokLUME™ 140

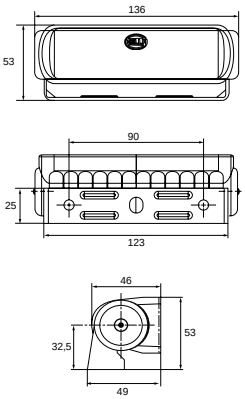
- → Ultra compact worklight
- → Heavy Duty bracket resists against vibration
- → Suitable for engine bays and inspection areas

Light output (measured): 800 lumen, power requirement: 15 Watt, colour temperature: 6,500° Kelvin, Multivolt™, reverse polarity protection, transient spike circuit protection, over-voltage protection, thermal management, IP 6K9K / IP 6K8 (high pressure cleaning resistant / submersible), ECE-R10 approved, RCM compliance, high quality aluminum housing for Heavy Duty use, ADR / GGVSEB approved, DT Connector.

RokLUME™ 140 CR, standing	**1G0 995 050-001**
RokLUME™ 140 CR, hanging	**1G0 995 050-011**
RokLUME™ 140 LR, standing / hanging	**1G0 995 050-021**

CR Close range
LR Long range

This LED product has the following features



RokLUME™ 120

- → Non-metal thermally conductive polymer housing
- → Compact size
- → Heavy Duty bracket resists against vibration

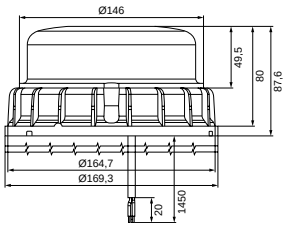
Light output (measured): 550 lumen, power requirement: 7 Watt, colour temperature: 5,000° Kelvin, Multivolt™, reverse polarity protection, transient spike circuit protection, over-voltage protection, thermal management, IP 6K9K / IP 6K7 (high pressure cleaning resistant / submersible), CE EMC approved, RCM compliance, high quality thermally conductive polymer housing, connection via 2,5 m wire.

RokLUME™ 120 CR	**1GA 980 573-101**
RokLUME™ 120 PB	**1GA 980 573-301**
RokLUME™ 120 XW	**1GA 980 573-001**

CR Close range
PB Pencil Beam
XW Extra wide

D11T

This LED product has the following features

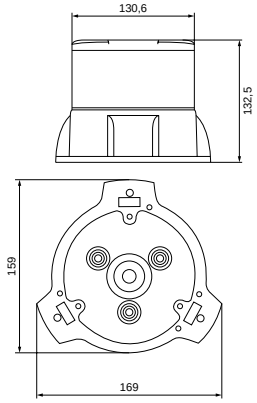


K-LED Mining

Multivolt™ 10 – 32 VDC, max. 30 Watt, Transient Spike Protection, Reverse Polarity Protection, IP 6K9K / IP 6K7, ADR / GGVSEB approved, ECE-R10 approved, (high pressure cleaning resistant / submersible) low profile beacon, height only 87.6 mm, installation Ø 130 mm and SAE Ø 150 mm possible, amber and red ECE (ECE-R65 TA2, ECE-R65 TR2) and SAE (SAE J845 class 1) compliant, impact resistant Polycarbonate lens, RCM compliance, rotating or 17 flashing pattern, light sensor for daylight detection.

amber, direct mount	**2XD 011 557-001**
amber, magnetic mount	**2XD 011 557-051**
amber, pole mount	**2XD 011 557-041**
red, direct mount	**2XD 011 557-021**
blue, direct mount	**2XD 011 557-011**
green, direct mount	**2XD 011 557-031**

This LED product has the following features

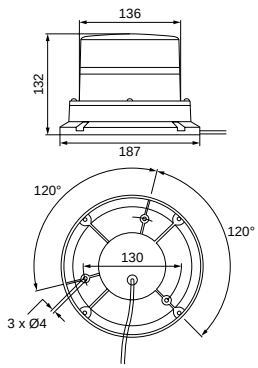


DuraRAY³

High impact resistant Xylex® lens system, Heavy Duty cast alloy base and cap for increased mechanical strength and vibration resistance, advanced self cleaning surface coating for optimal corrosion and UV protection, ISO 13766-2006, polarity reversal protection, power requirement: max. 30 Watt, RCM compliance.

amber	**2RL 011 585-001**

This LED product has the following features



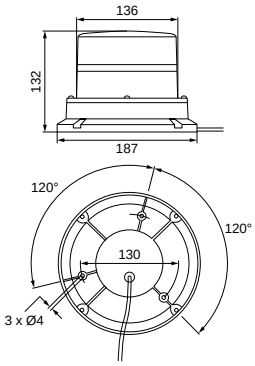
UltraRAY – R Dual

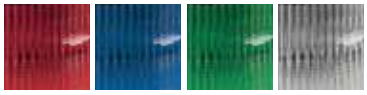
Dual colour beacon allowing flashing or rotating pattern, can run one colour only or both colours intermittently, switching between colours and patterns by hardwiring or by the use of a toggle switch.

Impact resistant Polycarbonate lens, Precision Fresnel optics, powder coated cast alloy base, direct or pipe mount option (Pipe mount kit: 2RL 910 085-001), power requirement: max. 20 Watt and RCM compliance.

red / green	**2RL 910 087-201**
red / amber	**2RL 910 087-211**

This LED product has the following features





UltraRAY – R Twin

User selectable output (rotate or quad flash patterns), impact resistant smooth Polycarbonate lens, precision fresnel optics, powder coated cast alloy base and power requirement: 50 Watt. SAE J845 Class 1 (red and amber version), RCM compliance.

amber, direct mount	**2RL 910 097-001**
red, direct mount	**2RL 182 653-502**
blue, direct mount	**2RL 182 653-102**
green , direct mount	**2RL 182 653-302**
white, direct mount	**2RL 182 653-702**
amber, magnetic mount	**2RL 182 653-002**
red, magnetic mount	**2RL 182 653-602**
blue, magnetic mount	**2RL 182 653-202**
green, magnetic mount	**2RL 182 653-402**
white, magnetic mount	**2RL 182 653-802**

UltraRAY – Flashing

User selectable flash patterns (4), automatic daylight detection, impact resistant smooth, Polycarbonate lens, clear precision fresnel optics, cast alloy base and SAE J845 class 1 (amber and red), power requirement: 20 Watt, RCM compliance.

amber, direct mount	**2RL 910 081-001**
red, direct mount	**2RL 910 081-031**
blue, direct mount	**2RL 910 081-011**
green , direct mount	**2RL 910 081-021**
white, direct mount	**2RL 910 081-041**
amber, magnetic mount	**2RL 910 082-001**
red, magnetic mount	**2RL 910 082-031**
blue, magnetic mount	**2RL 910 082-011**
green, magnetic mount	**2RL 910 082-021**
white, magnetic mount	**2RL 910 082-041**

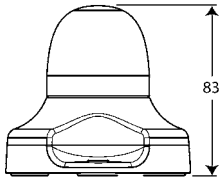
UltraRAY – R Rotating

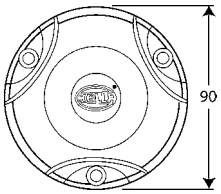
User selectable "rotating" or quad flash paterns*, impact resistant, Polycarbonate lens, precision fresnel optics, powder coated cast alloy base, SAE J845 class 1 (amber and red), power requirement: 20 Watt, RCM compliance.

amber, direct mount	**2RL 910 087-001**
red, direct mount	**2RL 910 087-081**
blue, direct mount	**2RL 910 087-041**
green , direct mount	**2RL 910 087-061**
white, direct mount	**2RL 910 087-101**
amber, magnetic mount	**2RL 910 087-031**
red, magnetic mount	**2RL 910 087-091**
blue, magnetic mount	**2RL 910 087-051**
green, magnetic mount	**2RL 910 087-071**
white, magnetic mount	**2RL 910 087-111**

* Preset to "rotating" pattern

This LED product has the following features





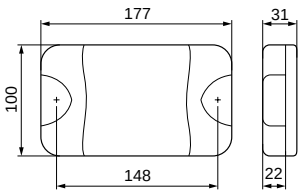
NaviLED M

User selectable flash patterns, high visibility yellow, impact resistant acrylic base, clear UV and chemical resistant modified acrylic lens, function colours coded into lens caps, power requirement: < 5 Watt, RCM compliance.

amber	**2XD 980 911-621**
red	**2XD 980 911-421**
blue	**2XD 980 911-721**
green	**2XD 980 911-221**
white	**2XD 980 911-021**

amber with DT Connector	**2RL 910 141-071**
red with DT Connector	**2RL 910 141-051**
blue with DT Connector	**2RL 910 141-091**
green with DT Connector	**2RL 910 141-031**
white with DT Connector	**2RL 910 141-011**

This LED product has the following features



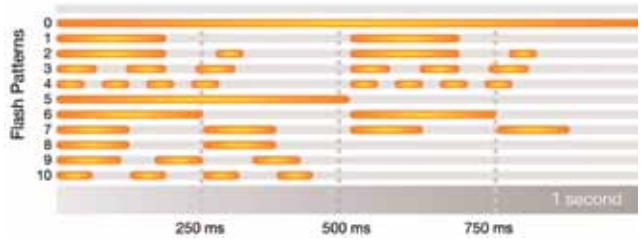
DuraLED M – High intensity

User selectable flash patterns, high impact Grilamid® nylon lens, clear precision micro optics, Multivolt™ 9 – 33 VDC, power requirement: < 10 Watt, fully sealed "Fit and Forget" design, IP 6K9K and IP6K6, RCM compliance.

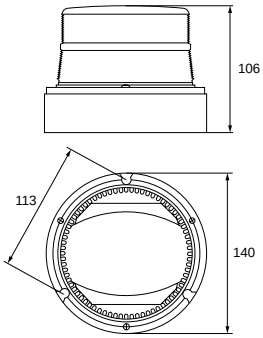
with 2.5 cable, bare wire	
amber	**2XD 959 037-101**
red	**2XD 959 037-001**
blue	**2XD 959 037-601**
green	**2XD 959 037-801**
white	**2XD 959 037-901**

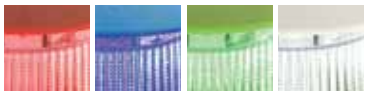
with 250 mm cable and DT plug	
amber	**2XD 959 037-141**
red	**2XD 959 037-021**
blue	**2XD 959 037-621**
green	**2XD 959 037-821**
white	**2XD 959 037-921**

MultiFLASH®



This LED product has the following features



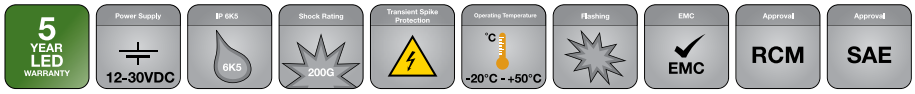


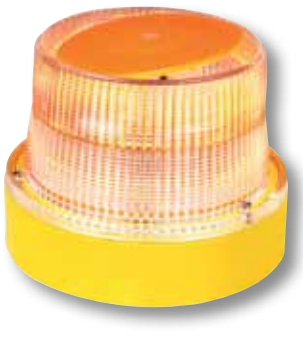
OptiRAY

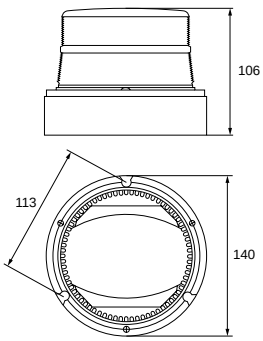
SAE J845 (Class 1 red, Class 2 amber), RCM compliance, automatic daylight detection, impact resistant smooth Polycarbonate lens, clear precision Fresnel optics, 16 user selectable flash patterns.

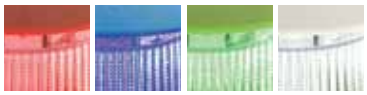
amber, direct mount	**2RL 910 078-021**
red, direct mount	**2RL 910 078-111**
blue, direct mount	**2RL 910 078-061**
green , direct mount	**2RL 910 078-081**
white, direct mount	**2RL 910 078-131**
amber, magnetic mount	**2RL 910 078-041**
red, magnetic mount	**2RL 910 078-121**
blue, magnetic mount	**2RL 910 078-071**
green, magnetic mount	**2RL 910 078-091**
white, magnetic mount	**2RL 910 078-141**

This LED product has the following features









OptiRAY E

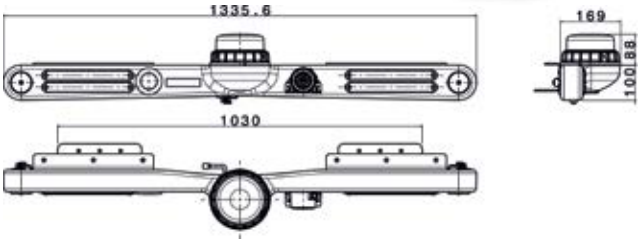
SAE J845 (Class 1 red, Class 2 amber), RCM compliance, impact resistant smooth Polycarbonate lens, clear precision Fresnel optics.

amber, direct mount	**2RL 910 073-001**
red, direct mount	**2RL 910 075-051**
blue, direct mount	**2RL 910 075-011**
green , direct mount	**2RL 910 075-031**
white, direct mount	**2RL 910 075-071**
amber, magnetic mount	**2RL 910 075-001**
red, magnetic mount	**2RL 910 075-061**
blue, magnetic mount	**2RL 910 075-021**
green, magnetic mount	**2RL 910 075-041**
white, magnetic mount	**2RL 910 075-081**

Mounting example:
LED Mine Spec Signal Bar Kit with roof rack kit and with 2 pieces RokLUME™ 140 mounted on it.

1)

2)



LED Mine Spec Signal Bar

Low profile LED Mine Spec Signal Bar, specifically designed for mining industry light vehicles. It is designed to be an all-in-one solution for service vehicles and has a contoured design to suit a vehicle roof line with a low physical footprint.

This new product offers a solution to replace multiple products on a light vehicle fleet. Fitting one quality solution can achieve fleet standardisation, reducing inventory and inspection times and improve performance, reliability and safety.

Designed specifically for mining light vehicles, Low profile mounting position, Low EMC output of integral products ensures no radio interference, corrosion resistant aluminium brackets, and auxiliary 2 pin DT Connectors for further user customisation such as additional worklights and/or Buggy Whip.

1) LED Mine Spec Signal Bar Pod	
Content: 1 x Black Pod* 2 x Stop/Tail light* 1 x Broadband Reverse Alarm* 1 x Brackets (9XX 196 289-101) 1 x K-LED Beacon* 2 x Turn signal light 1 x Reverse indication light* 1 x External Harness (8KB 196 292-011)	**2SD 196 293-001**

* The accessories are pre-assembled

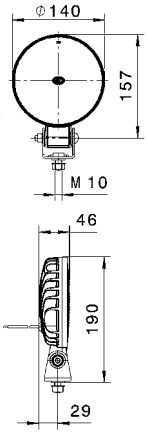
2) LED Mine Spec Signal Bar Kit	
Content: 1 x Mine Spec Signal Bar Kit 2SD 196 293-001 1 x Roof Rack Kit* 4 x Sliders (8XX 196 291-001)	
To suit all Toyota Hilu x 4 Door Dual Cab models (MY2006 onwards)	**2SD 012 074-001**
To suit FORD Ranger 4 Door PX Dual cab models (MY2012 onwards)	**2SD 012 074-101**

* Note: Roof Rack and Brackets are not pre-assembled as shown in picture

Spare parts	
Brackets	**9XX 196 289-101**
Sliders	**8XX 196 291-001**
External harness	**8KB 196 292-011**

CAT

This LED product has the following features



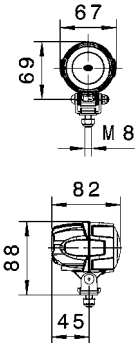
AP 1200 LED Offroad Signal Lights

Round shape Offroad Signal Light, power requirement: 22 Watt, Multivolt™, reverse polarity protection, over-voltage protection, thermal management, IP 6K9K / IP 6K7 (high pressure cleaning resistant / submersible), ECE-R10 approved, RCM compliance, 2-pole DT Connector, 300 mm cabling length, mounting standing / hanging.

amber	**1G0 011 722-501**
red	**1G0 011 722-521**
green	**1G0 011 722-511**
blue	**1G0 011 722-531**

This LED product has the following features

Illuminated

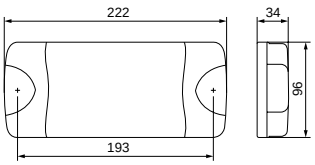


RokLUME™ 140 Green / Red

Light output (measured): 800 lumen, power requirement: 15 Watt, Multivolt™, reverse polarity protection, transient spike circuit protection, over-voltage protection, thermal management, IP 6K9K / IP 6K8 (high pressure cleaning resistant / submersible), ECE-R10 approved, RCM compliance, high quality aluminum housing for Heavy Duty use, ADR / GGVSEB approved, DT Connector.

green	**1G0 995 050-091**
red	**1G0 995 050-101**

This LED product has the following features



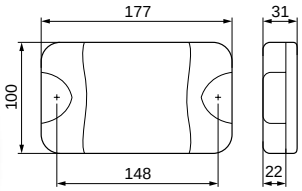
DuraLED RCL Part No. 2SK 980 615-021
(with integrated DT) shown

DuraLED Combi RCL

DuraLED rear combination lamp (stop / tail / indicator / reverse), power requirement: < 10 Watt, Multivolt™, reverse polarity protection, over-voltage protection, clear UV, impact and chemical resistant Grilamid® lens, IP 6K9K / IP 6K7 (high pressure cleaning resistant / submersible), low power, high efficiency, ultra long "Fit and Forget" service life. Optic appears clear until illuminated and RCM compliance. Only horizontal mount.

2.5 m bare wire	**2SK 980 603-511**
0.25 m bare wire with 6-pole DT	**2SK 980 603-521**
Integrated 6-pole DT	**2SK 980 615-021**

This LED product has the following features

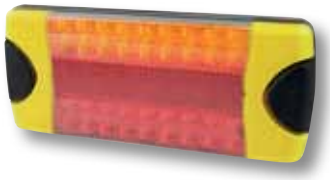


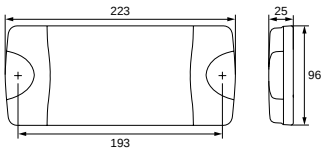
DuraLED

Power requirement: Rear Direction Indicator 9 Watt, Rear Position Lamp 2 Watt, Park Lamp 2 Watt, Stop Lamp 9 Watt, Multivolt™, reverse polarity protection, over-voltage protection, impact resistant Polycarbonate lens, IP 6K9K / IP 6K7 (high pressure cleaning resistant / submersible), low power, high efficiency, ultra long "Fit and Forget" service life and RCM compliance. Mounting horizontal and vertical standing. Connection via 2.5 m wire.

ECE, stop / rear position (amber/red, horizontal mount only)	**2SB 959 060-621**
ECE, rear turn signal (amber/red, horizontal mount only)	**2BA 959 070-621**
SAE, stop / tail / rear turn signal lamp (red)	**2SB 959 060-321**
SAE, rear turn signal / indicator (amber)	**2BA 959 070-321**

This LED product has the following features



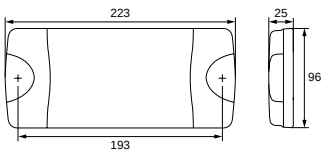


DuraLED Combi-R

DuraLED rear combination lamp (stop / tail / indicator / reflex reflector), power requirement: Stop Lamp 5 Watt, Rear Position Lamp 1 Watt, Rear Direction Indicator 5 Watt, Multivolt™, reverse polarity protection, over-voltage protection, clear UV, impact and chemical resistant Grilamid® lens, IP 6K7 / IP 6K9K (high pressure cleaning resistant / submersible), low power, high efficiency, ultra long "Fit and Forget" service life and RCM compliance. Only horizontal mount.

2.5 m bare wire	**2VA 980 710-071**

This LED product has the following features



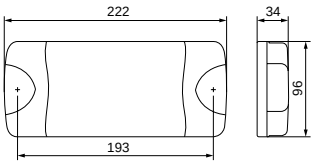
DuraLED Combi-S

DuraLED rear combination lamp (stop / tail / indicator), power requirement: Stop Lamp 5 Watt, Rear Position Lamp 1 Watt, Rear Direction Indicator 5 Watt, Multivolt™, reverse polarity protection, over-voltage protection, clear UV, impact and chemical resistant Grilamid® lens, IP 6K7 / IP 6K9K (high pressure cleaning resistant / submersible), low power, high efficiency, ultra long "Fit and Forget" service life and RCM compliance. Optic appears clear until illuminated. Mounting horizontal and vertical standing.

2.5 m bare wire	**2SD 980 613-011**
Integrated 6-pole DT	**2SD 980 602-011**

DuraLED Combi-S
Part no. 2SD 980 602-011
(with integrated DT) shown

This LED product has the following features

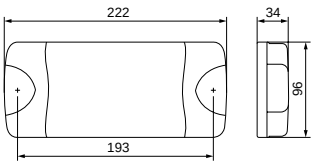


DuraLED M Combi

DuraLED rear combination lamp (stop / tail / indicator), power requirement: < 10 Watt, Multivolt™, reverse polarity protection, over-voltage protection, clear UV, impact and chemical resistant Grilamid® lens, IP 6K7 / IP 6K9K (high pressure cleaning resistant / submersible), low power, high efficiency, ultra long "Fit and Forget" service life and RCM compliance. Optic appears clear until illuminated. Mounting horizontal and vertical standing.

6 m bare wire	**2SD 959 050-061**
0.25 m bare wire with 4-pole DT	**2SD 959 050-071**

This LED product has the following features

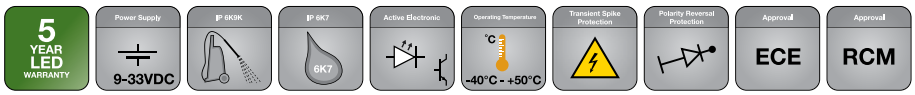


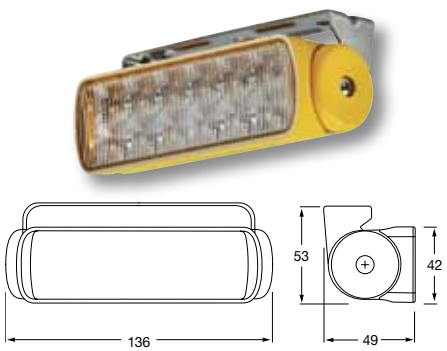
DuraLED Combi MSIP

DuraLed® MSIPs (Mine Safety Indicator Panel) offer both red and green LED signals in one compact housing, engineered for ultra Heavy Duty applications where safety is important, such as underground transport equipment sharing space with foot traffic. Power requirement: < 10 Watt, Multivolt™, reverse polarity protection, over-voltage protection, clear UV, impact and chemical resistant Grilamid® lens, IP 6K9K / IP 6K7 (high pressure cleaning resistant / submersible), low power, high efficiency, ultra long"Fit and Forget" service life and RCM compliance. Optic appears clear until illuminated. Mounting horizontal and vertical standing.

6 m bare wire	**2XA 959 050-301**

This LED product has the following features





LED Daytime Running Light

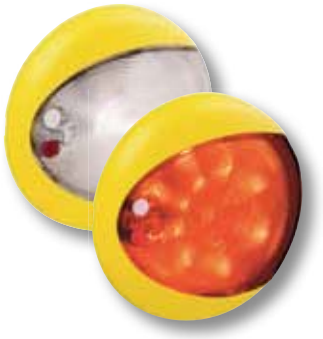
On mine site safety is paramount. On most sites the use of headlights on vehicles is mandatory at all times, however dipped beam headlights are less visible during daylight hours than dedicated "Daytime Running Lamps" (DRLs).

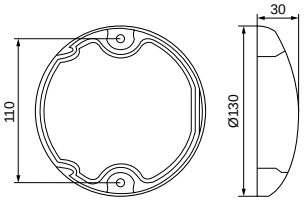
Power requirement: < 2 Watt, Multivolt™, reverse polarity protection, over-voltage protection, clear UV, impact and chemical resistant Grilamid® lens, IP 6K7 / IP 6K9K (high pressure cleaning resistant / submersible), low power, high efficiency, ultra long "Fit and Forget" service life and RCM compliance. Optic appears clear until illuminated. Mounting horizontal standing. Connection via 2.5 m wire with ECE-DRL (SS bracket).

	2PT 980 670-821

472
155
CAT
793F

This LED product has the following features



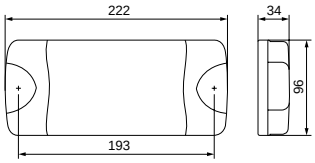


EuroLED Touch M

Dual colour interior lamp, power requirement: white < 4 Watt, red < 1.5 Watt, Multivolt™, touch sensitive switching, dimming function, over-voltage protection, reverse polarity, transient spike circuit protection, RCM compliance and surface mount.

with 2.5 m cable	**2JA 959 950-211**
with 0.5 m cable and DT plug	**2JA 959 950-221**

This LED product has the following features



DuraLED 1000 Lumen Service Light

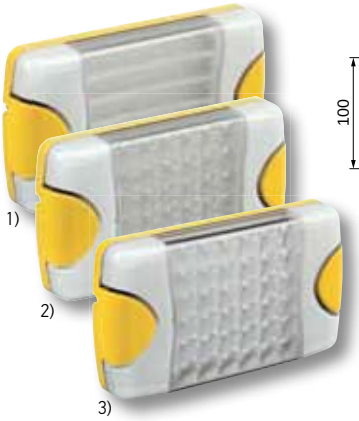
Light output (measured): 1,000 lumen, power requirement: 12 Watt, Multivolt™, reverse polarity protection, over-voltage protection, thermal management, clear UV, impact and chemical resistant Grilamid® lens, IP 6K6 / IP 6K7 (high pressure cleaning resistant / submersible), RCM compliance and spread illumination.

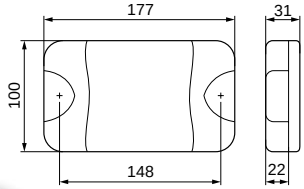
Close range illumination, surface mount, connection via 2.5 m cable	**2JA 980 604-021**

Extra wide illumination

9 – 33 V, magnetic mount, CIG / DIN plug	**1GA 910 057-001**
9 – 33 V, magnetic mount, DT Connector	**1GA 910 057-011**

This LED product has the following features



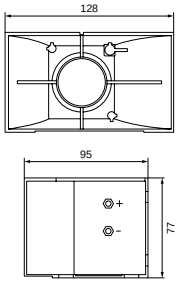


DuraLED 700 Lumen Service Light

Light output (measured): 700 lumen, power requirement: 9 Watt, Multivolt™, reverse polarity protection, over-voltage protection, thermal management, clear UV, impact and chemical resistant Grilamid® lens, IP 6K6 / IP 6K7 (high pressure cleaning resistant / submersible), RCM compliance, with 2.5 m cable and surface mount.

1) Close range illumination	**2JA 959 037-221**
2) Long range illumination	**2JA 959 037-421**
3) Spot illumination	**2JA 959 037-321**

533
533
533

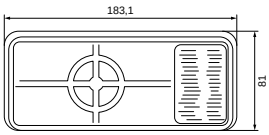


MotoVox Compact 117 dB Horn

Solid state electronic horn designed for extremely long life and to replace high maintenance electromechanical horns. This model is designed to meet or exceed all applicable SAE specifications. Used by major OEMs.

117 db @ 1.2 m
SAE J1105 Sept 89, Type K.
U.L. recognised for electric vehicles and fork lifts

12 – 24 VDC, bare wire connection	**3TA 910 156-021**

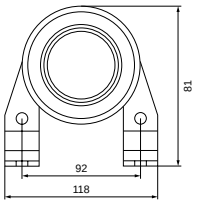


MotoVox Forward 117 dB Horn

Electronic forward horn is designed to be used where a high-decibel rugged horn is necessary.

117 db @ 1.2 m
SAE J1105 Sept 89, Type J @ 24 V systems
SAE J1105 Sept 89, Type K @ 12 V systems

12 – 24 VDC, bare wire connection	**3TA 910 156-011**

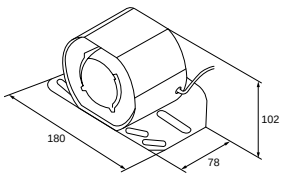


MotoVox Compact 107 dB Horn

Solid state electronic horn designed for extremely long life and to replace high maintenance electromechanical horns. This model is designed to meet or exceed all applicable SAE specifications. Used by major OEMs.

107 db @ 1.2 m
SAE J1105 Sept 89, Type L

12 – 48 VDC, bare wire connection	**3TA 910 156-001**

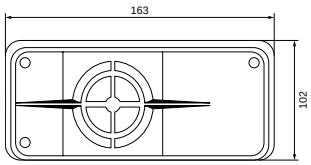


RetroVox Self Adjusting Reversing Alarm

Steel housing and construction for rugged applications. Integral bracket includes same mounting pattern with OEMs, self adjusting. Suitable for high pressure washing, epoxy encapsulated circuit board protects alarm against moisture and vibration damage.

87 – 112 db @ 1.2 m
SAE J994 Type D

12 – 24 VDC, bare wire connection	**3TA 910 174-031**

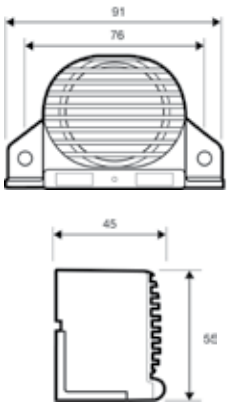


RetroVox Ultra Heavy Duty Reversing Alarm

One of the most rugged adjustable, Heavy Duty alarms on the market. These alarms are designed to withstand the most punishing environments. They have 8 – 32 UNC terminal studs on the back of the unit. Used by major OEMs.

97, 107, 112 db @ 1.2 m
SAE J994 Types A, B and C

12 – 36 VDC, bare wire connection	**3TA 910 174-001**

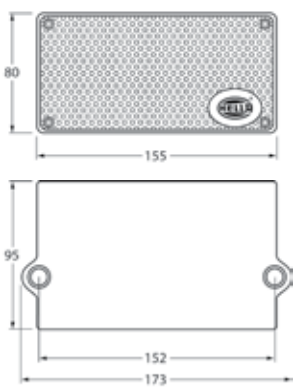


RetroVox Compact Broadband 87 dB Alarm

Noise pollution can be an issue for mine sites close to residential areas. HELLA have introduced a range of broadband or "white noise" reversing alarms to prevent miners from having to compromise on safety. By emitting sound over a large range of frequencies, the sound dissipates faster and is localised so that sound doesn't carry. The RetroVOX features a rugged design, which is highly reliable and unaffected by continuous vibration, moisture, heat, cold, sun glare and dirt."

87 db @ 1.2 m
SAE J994 class E 11
CE and EMC approved

12 – 24 VDC, bare wire connection	**3SL 910 344-001**



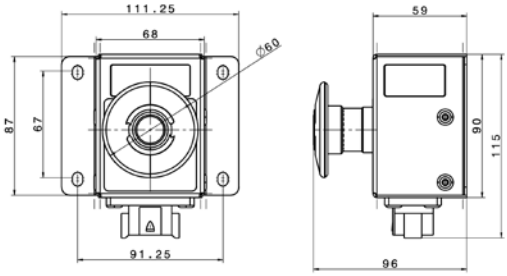
RetroVox Compact Broadband 87 – 112 dB Reversing Alarm

Noise pollution can be an issue for mine sites close to residential areas. HELLA have introduced a range of broadband or "white noise" reversing alarms to prevent miners from having to compromise on safety. By emitting sound over a large range of frequencies, the sound dissipates faster and is localised so that sound doesn't carry. The RetroVOX features a rugged design, which is highly reliable and unaffected by continuous vibration, moisture, heat, cold, sun glare and dirt.

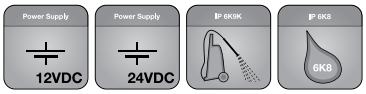
87 – 112 dB @ 1.2 m

12 – 24 VDC, bare wire connection	**3TA 910 174-241**

158
155
RH
RH
RH
RH



This LED product has the following features



HELLA Mine E-Stop

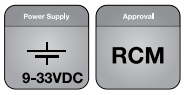
HELLA Mining's new Mine E-Stop. Versatility, Safety, Fast Installation. This Heavy Duty unit features LED illumination visible from 3 sides, user-friendly 60 mm push button, DT connection and direct mount capability.

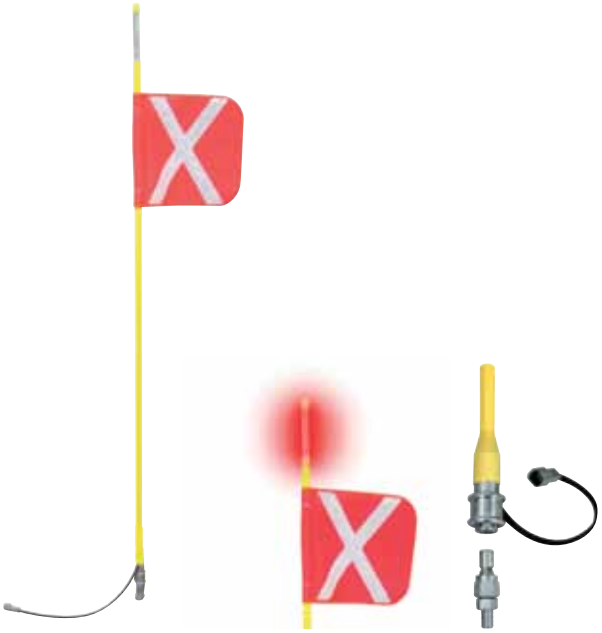
Fast Installation: Most E-Stops need dismantling to be fitted however the HELLA Mine E-Stop mounts directly, saving time on initial installation and damage replacement.

Features and benefits:
Added safety through illumination via LED (visible from 3 sides), IP 6K9 und IP 6K8 rated, all units pressure tested, fully sealed unit, "Plug and Play", supplied with mating DT Connector, hight visibility yellow powder-coated 304 stainless steel, user friendly, large 60 mm mushroom button, 2 normally closed and 1 normally open contacts (rated 10 A each).

Mine E-Stop	**6HF 012 416-001**

This LED product has the following features





LED Buggy Whip

Light source: quality bright LED, Mulitvolt™, low power requirement, integrated mounting bolt on base with snap on / off quick-release shaft for quick and easy installation, connection via 2 pin DT and RCM compliance.

red LED, 1.2 m long	**2AA 910 084-001**
red LED, 1.8 m long	**2AA 910 084-011**
red LED, 2.4 m long	**2AA 910 084-021**
red LED, 3.0 m long	**2AA 910 084-031**
red LED, 3.6 m long	**2AA 910 084-041**
green LED, 2.4 m long	**2AA 910 084-091**

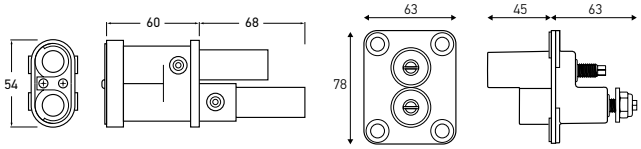
Replacement

Cross flag, silver	**8XX 910 084-051**
Cross flag, yellow	**8XX 910 084-061**
Quick release, male pin connection	**9XX 910 084-071**
Buggy whip, spring	**9KX 910 084-081**

Weatherproof Changeover Relay and Connector Assembly Kits

Dustproof IP 54 to IEC 529 with mounting bracket, weight 35 g, terminals tin plated ISO 8092-1 ambient, shock resistance: 20 G, drop test: 1 Metre onto concrete max, flammability: exceeds UL94-HB, overload current: 240 A for 1 second, 140 A for 5 seconds, 80 A for 40 seconds, 54 A for 1,800 seconds.

12 V	**8KW 910 182-001**
24 V	**8KW 910 182-011**



Jump Start System

Heavy Duty, high capacity jump-start connectors for vehicles and equipment. Ideal for use where access to terminals is restricted or dangerous. Eliminates chance of cross polarity connections through the specially shaped plug.

Reduces chance of sparking and possible ignition of flammable materials. Mounting bracket, protective cap, and kit containing the terminal, bracket and cap are also available.

Jump Start Plug

Jump Start Plug – high impact ABS plastic. Copper (silver brass coated) terminals.	**8JA 177 305-101**

Suitable for 70 mm² cable. Connection via crimping and soldering process.

Jump Start Terminal

1) Jump start Terminal Removes risk of terminal crossing, high impact ABS plastic, zinc coated terminals.	**8JB 177 305-001**
2) Terminal Kit Kit of jump start terminal, bracket and cap.	**8HG 177 305-031**
3) Terminal Bracket Bracket for mounting jump start terminal to vehicle body.	**8HG 177 305-021**
4) Terminal Cap Cap to protect terminal from external environment when not in use.	**9HD 177 305-011**

Battery Master Lockout Switches

The Battery Lockout Switch provides a reliable power disconnection and safety cut-off that protects the vehicle against tampering, theft and battery drain. It also protects service personnel from electrical hazards during service operations.

Composite-engineered polymer housing that will not corrode. 300 A continuous current rating at 12 V and 250 A at 24 V. Temperature operating range -40°C to +85°C. Divider on base prevents accidental shorting of battery cables. Easy to read designations on bezel and 90° switch travel make it easy to identify switch position.

Lockout Switch, Red Handle	**9MK 910 109-001**
Lockout Switch, Yellow Handle	**9MK 910 109-011**

Battery Master Lockout Switches

Battery lockout switches provide a reliable power disconnection and safety cutoff that protects the vehicle against tampering, theft and battery drain. It also protects personnel from electrical hazards during service operations. The 4 Pole 9MK 910 109-201 allows isolation of both positive and negative sides from the battery, or isolation of 2 circuits with only one switch.

125 Amps at 6-36V DC Continuous (9MK 910 109-201), 300 Amps at 6 – 36 V DC Continuous (9MK 910 109-101/111), operating temperature -40°C to +29°C, silver environment contact surfaces, brass electrical contact surfaces, 45 degree switch travel, UL listed, suits panel thickness up to 6.5 mm.

2 Pole and Field Terminals Switch, Red Handle	**9MK 910 109-101**
2 Pole and Field Terminals Switch, Yellow Handle	**9MK 910 109-111**
4 pole Switch	**9MK 910 109-201**

Spare parts:

Red lockout lever	**9MK 910 109-301**
Yellow lockout lever	**9MK 910 109-311**

1)

2)

3)

Crimping Tools

1) DT contact Crimping Tool 0.5 – 4.00 mm	**8PE 910 118-011**
2) SUPERSEAL Connector Crimping Tool	**8PE 980 838-001**
3) DT Connector Crimping Tool	**8PE 980 837-001**

DT Connectors

Environmentally sealed Connectors rated -55°C to +125°C.
Supplied complete with removable, solid copper crimp contacts (1.0 – 2.0 mm^2) and secondary locks. All contacts rated 13 A.

2 Pole DT Connector Set	**8KW 959 772-821**
2 Pole DT Connector Half-Set*	**9MK 910 095-001**
3 Pole DT Connector Set	**8KW 959 772-851**
3 Pole DT Connector Half-Set*	**8KW 959 773-847**
4 Pole DT Connector Set	**8KW 959 772-861**
6 Pole DT Connector Set	**8KW 959 774-821**
6 Pole DT Connector Half-Set*	**8KW 959 774-817**
8 Pole DT Connector Set	**8KW 959 774-831**
12 Pole DT Connector Set	**8KW 959 774-841**

* Half-Set = female socket with male contacts

Handy Box®	
Complete set: Carry case complete with all four Handy Box® kits – DT Connector kit, blade fuse kit, heat shrink kit and crimp terminal kit.	**9XX 910 121-101**
Carry Case (empty) Storage room for four assortment kits.	**9XX 011 959-001**

Handy Box® Heat Shrink Kit	
Heat Shrink Kit (Heat Shrink not adhesive lined)	**9MJ 178 458-821**
Content: 20 x red, shrinking 2,4 (-1,2), Length 50 mm 20 x yellow shrinking 2,4 (-1,2), Length 50 mm 20 x blue shrinking 2,4 (-1,2), Length 50 mm 30 x transparent shrinking 2,4 (-1,2), Length 50 mm 30 x black shrinking 2,4 (-1,2), Length 50 mm 20 x red shrinking 3,2 (-1,6), Length 50 mm 20 x yellow 3,2 (-1,6), Length 50 mm 20 x blue 3,2 (-1,6), Length 50 mm 30 x transparent 3,2 (-1,6), Length 50 mm 30 x black 3,2 (-1,6), Length 50 mm 20 x red shrinking 4,8 (-2,4), Length 50 mm 20 x yellow 4,8 (-2,4), Length 50 mm 20 x blue 4,8 (-2,4), Length 50 mm 30 x transparent 4,8 (-2,4), Length 50 mm 30 x black 4,8 (-2,4), Length 50 mm 20 x red shrinking 6,4 (-3,2), Length 50 mm 20 x yellow shrinking 6,4 (-3,2), Length 50 mm 20 x blue shrinking 6,4 (-3,2), Length 50 mm 30 x transparent shrinking 6,4 (-3,2), Length 50 mm 30 x black shrinking 6,4 (-3,2), Length 50 mm 4 x black shrinking 9,5 (-4,8), Length 100 mm 4 x transparent shrinking 9,5 (-4,8), Length 100 mm 4 x red shrinking 9,5 (-4,8), Length 100 mm 4 x yellow shrinking 9,5 (-4,8), Length 100 mm 4 x blue shrinking 9,5 (-4,8), Length 100 mm 4 x black shrinking 12,5 (-6,2), Length 100 mm 4 x transparent shrinking 12,5 (-6,2), Length 100 mm 4 x red shrinking 12,5 (-6,2), Length 100 mm 4 x yellow shrinking 12,5 (-6,2), Length 100 mm 4 x blue shrinking 12,5 (-6,2), Length 100 mm 10 x black shrinking 19,1 (-9,5), Length 100 mm 10 x transparent shrinking 19,1 (-9,5), Length 100 mm 5 x black shrinking 9,5 (-4,8), Length 200 mm 5 x transparent shrinking 9,5 (-4,8), Length 200 mm 5 x red shrinking 9,5 (-4,8), Length 200 mm 5 x yellow shrinking 9,5 (-4,8), Length 200 mm 5 x blue shrinking 9,5 (-4,8), Length 200 mm 5 x black shrinking 25,4 (-12,7), Length 200 mm 5 x black shrinking 19,1 (-9,5), Length 200 mm	
Heat Shrink Tubing 3 Colors 1,2...5	**9MJ 178 458-002**
Heat Shrink Tubing BK/TR 1,2...50	**9MJ 178 458-012**
Heat Shrink Tubing 3-COLOR 1,6...50	**9MJ 178 458-022**
Heat Shrink Tubing BK/TR 1,6...50	**9MJ 178 458-032**
Heat Shrink Tubing 3-COLOR 2,4...50	**9MJ 178 458-042**
Heat Shrink Tubing BK/TR 2,4...50	**9MJ 178 458-052**
Heat Shrink Tubing 3-COLOR 3,2...50	**9MJ 178 458-062**
Heat Shrink Tubing BK/TR 3,2...50	**9MJ 178 458-072**
Heat Shrink Tubing 5-COLOR 4,8-100	**9MJ 178 458-082**
Heat Shrink Tubing 5-COLOR 6,2-100	**9MJ 178 458-092**
Heat Shrink Tubing BK/TR 9,5-100	**9MJ 178 458-102**
Heat Shrink Tubing 5-COLOR 4,8-200	**9MJ 178 458-112**
Heat Shrink Tubing BK 9,5/12,7-200	**9MJ 178 458-122**

Handy Box® DT Connector Kit

Handy Box® DT Connector Kit (incl. Crimping Tool 8PE 910 118-011)	8KW 910 119-101

Content:
10 x 2-Way Male DT Connector incl. Wedge
10 x 3-Way Male DT Connector incl. Wedge
8 x 6-Way Male DT Connector incl. Wedge
10 x 2-Way Female DT Connector incl. Wedge
10 x 3-Way Female DT Connector incl. Wedge
8 x 6-Way Male DT Connector incl. Wedge
100 x Male DT Connector Socket
100 x Female DT Connector Socket
1 x Crimping Tool
1 x DT Wedge Removal Tool

Crimping Tool	**8PE 910 118-011**
2 Pin DT Plug Set	**8KW 905 683-101**
2 Pin DT Receptacle Set	**8KW 905 684-101**
3 Pin DT Plug Set	**8KW 905 683-111**
3 Pin DT Receptacle Set	**8KW 905 684-111**
6 Pin DT Plug Set	**8KW 905 683-131**
6 Pin DT Receptacle Set	**8KW 905 684-131**

Handy Box® Blade Fuse Kit

Handy Box® Blade Fuse Kit	8JS 009 257-831

Content:
1 x 8PE 713 576-011, A 96
20 x Mini 2 A, D138
20 x Mini 3 A, D139
20 x Mini 4 A, D140
20 x Mini 5 A, D141
20 x Mini 7,5 A, D142
20 x Mini 10 A, D143
20 x Mini 15 A, D144
20 x Mini 20 A, D145
20 x Mini 25 A, D146
20 x Mini 30 A, D147
25 x ATO 2 A, D129
25 x ATO 3 A, D69
25 x ATO 4 A, D188
25 x ATO 5 A, D70
25 x ATO 7,5 A, D71
25 x ATO 10 A, D72
25 x ATO 15 A, D73
25 x ATO 20 A, D74
25 x ATO 25 A, D75
25 x ATO 30 A, D76
25 x ATO 40 A, D130

Handy Box® Crimp Terminal Kit

Handy Box® Crimp Terminal Kit	8KW 009 254-841

Content:
20 x M4, 0,5 – 1,5 mm^2, A 67
20 x M5, 0,5 – 1,5 mm^2, A 69
20 x 6,3 mm, 0,5 – 1,0 mm^2, A 52
20 x 6,3 mm, 0,5 – 1,0 mm^2, A 59
20 x 4 mm, 0,5 – 1,0 mm^2, A 61
20 x M5, 1,5 – 2,5 mm^2, A 78
20 x 6,3mm, 1,5 – 2,5 mm^2, A 53
20 x M4, 1,5 – 2,5 mm^2, A 68
20 x M5, 1,5 – 2,5 mm^2, A 70
20 x M6, 1,5 – 2,5 mm^2, A 72
20 x 1,5 – 2,5 mm^2, A 80
20 x 6,3mm, 1,5 – 2,5 mm^2, A 58
20 x 6,3 mm, 1,5 – 2,5 mm^2, A 60
20 x 4 mm, 0,5 – 1,0 mm^2, A 63
20 x 2,8 mm, 0,5 – 1,0 mm^2, A 50
20 x 6,3 mm, 0,5 – 1,0 mm^2, A 82
20 x M5, 4,0 – 6,0 mm^2, A 71
20 x M6, 4,0 – 6,0 mm^2, A 73
20 x A 84
20 x I 50
1 x Crimping Tool

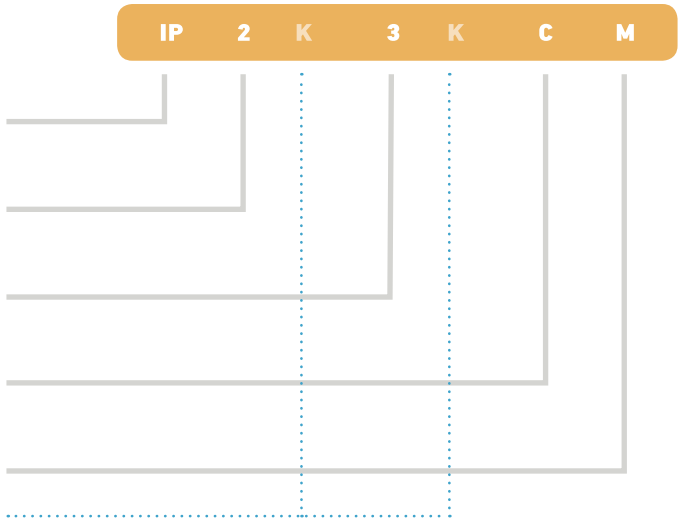
SUPERSEAL Connector Kit	
SUPERSEAL Connector Kit	**8JA 009 256-801**
Content: 5 of each SUPERSEAL Connector plug and socket 100 x Plug Terminals 100 x Socket Terminals 100 x Yellow conductor seals 100 x Red cavity plugs	
1 Pole SUPERSEAL Plug	**8KW 959 881-516**
1 Pole SUPERSEAL Socket	**8KW 959 881-016**
2 Pole SUPERSEAL Plug	**8KW 959 881-526**
2 Pole SUPERSEAL Socket	**8KW 959 881-006**
3 Pole SUPERSEAL Plug	**8KW 959 881-536**
3 Pole SUPERSEAL Socket	**8KW 959 881-036**
4 Pole SUPERSEAL Plug	**8KW 959 881-546**
4 Pole SUPERSEAL Socket	**8KW 959 881-046**
5 Pole SUPERSEAL Plug	**8JA 959 881-556**
5 Pole SUPERSEAL Socket	**8JA 959 881-056**
6 Pole SUPERSEAL Plug	**8KW 959 881-566**
6 Pole SUPERSEAL Socket	**8KW 959 881-066**
Plug Terminals to suit cable 0.35 – 0.50 mm^2	**8KW 959 882-818**
Plug Terminals to suit cable 0.75 – 1.50 mm^2	**8KW 959 882-518**
Socket Terminals to suit cable 0.35 – 0.50 mm^2	**8KW 959 882-418**
Socket Terminals to suit cable 0.75 – 1.50 mm^2	**8KW 959 882-118**
Green Seal to suit cable insulation 1.4 – 1.7 mm^2	**9GD 959 883-208**
Yellow Seal to suit cable insulation 1.8 – 2.4 mm^2	**9GD 959 883-008**
Red Seal to suit cable insulation 2.5 – 3.3 mm^2	**9GD 959 883-308**
Red Cavity Plug	**9GD 959 883-508**

CONSTRUCTION AND MEANING OF THE IP (INGRESS PROTECTION) CODE

The specification of a degree of protection for protection against access and foreign object includes all lower degrees of protection.

The degrees of protection 1 to 6K for protection against water include all the lower degrees of protection.

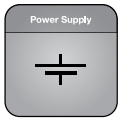
Due to different physical affects, this does not automatically have to apply to water protection grades 7, 8 and 9K.



Element	Numeral / letter	Meaning for the protection of electrical equipment	Meaning for the protection of persons
First characteristic numeral / supplementary letter		Against the ingress of solid foreign objects (including dust):	Against access to hazardous parts (unless described by extra letters):
	0	Not protected	Not protected
	1	With Ø ≥ 50 mm	With back of hand
	2	With Ø ≥ 50 mm	With finger
	3	With Ø ≥ 50 mm	With tool
	4	With Ø ≥ 50 mm	With wire
	5K	Dust-protected	With wire
	6K	Dust-tight	With wire
Second characteristic numeral / supplementary letter		Against the ingress of water:	
	0	Not protected	
	1	Vertical dripping	
	2	Dripping (inclined 15°)	
	3	Spraying	
	4	Splashing	
	4K	Same with increased pressure	
	5	Jetting	
	6	Powerful jetting	
	6K	Same at increased pressure	
	7	Temporary immersion	
	8	Continuous immersion	
	9K	High-pressure / steam jet cleaning	
Additional letter (optional)		Meaning for the protection of electrical equipment	Against access to hazardous parts (unless described by first characteristic numeral):
	A		With back of hand
	B		With finger
	C		With tool
	D		With wire
Supplementary letter (optional)	**M**	Movement of moving parts during water test	
	S	Standstill of moving parts during water test	
	K	Specifically for the electrical equipment in road vehicles	

ICON EXPLANATION

Vehicle electrical system voltage



Defines the voltage supply of the light.

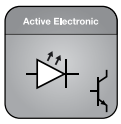
Multivolt™ is the most flexible: Requires fewer versions, but has more electronic circuit components and is therefore more expensive.

Dust and water protection IP

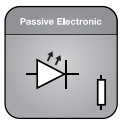
International Protection (IP) as per DIN 40050, Part 9.
Specific definition for road vehicles.
5K = Dust protected
6K = Dust tight
9K = Protection against water during pressure / steam cleaning.

The higher the protective category, the better the protection against penetrating media. IP 67 maximum value.
→ Completely sealed against dust and water.

Electronic circuit



Active



Passive

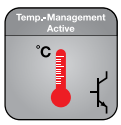
Basically, two different circuits are possible for LED lamps:

Active:
LED current regulation by means of active electronics.

Higher expenditure during development because of complex circuit and necessary EMC approval. Higher price because of electronic components, but electronic current regulation allows for maximum LED service life.

Passive:
Setting a specific voltage range for the LED by means of a series resistor. Inexpensive solution without complex protection measures. No EMC approval required.

Thermal management



Active

Passive

Active:
Electronic power control of the LED in case of impermissibly high ambient temperatures. This ensures the protection of the LED against destruction by overheating. More development overhead with active thermal management and higher parts prices ensure optimal conditions for maximum design life.

Passive
Optimised layout of the components for even temperature distribution and spread. The warmer the LED gets through exterior factors or heating caused by its own operation, the shorter the service life.

Rated shock resistance

Operational duty cycles in mining are some of the most demanding, and field research by HELLA has measured shock and vibration levels of remarkable magnitudes. Equipment designed for less demanding environments will fail rapidly when used in mining, and often when most needed. Our design aim is to produce equipment that will function reliably in a continuously shock and vibration laden environment.

Draco® Dampening

Draco® Dampening systems greatly reduce the vibration and shock forces that are consistently experienced on mining vehicles. The system provides a non-rigid mounting arrangement between the vibration source (the mining machine) and load (the light fitting), ensuring greater product lifespan and reduced servicing intervals.

Approval for transport of dangerous goods

Light approved for transport of dangerous goods according to Hazardous Waste Road Directive (GGVS).

Generally required for lorry and trailer lighting. Pre-conditioned for approval: damage to the light source must not cause explosive media to ignite.

Transient spike protection

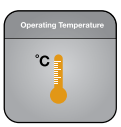
In some circumstances, the electrical system of mining vehicles can experience sudden high voltage spikes which have the potential to destroy sensitive electronic equipment, such as lighting. Products marked with this symbol ensures there is adequate protection from these instances.

Supplement to the electronics for protecting the LEDs against high voltages / currents in the vehicle electrical system as per ISO 7637-2.

Overloading of the LEDs can be caused by voltage peaks in the vehicle because of:
→ Jump-starting
→ Devective control units
→ Load-Dump Impulse (incorrect battery contact)

They stress / damage the LEDs, which can cause the function to fail or the service life to be reduced. Adding additional components to the circuit protects the circuit and can extend the service life or even prevent an outage.

Operating Temperature

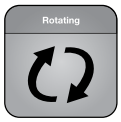


Whether it's in cold or warm climates, our products have to perform every time. Thermal management and a well designed housing allows full function of our products in all operating conditions. To ensure this performance we test our products from -40°C up to 100°C.

ICON EXPLANATION

Signal light beacons

Flashing signal light



Rotating signal light

Steady On signal light

Electrical Compliance

Electrical Compliance

Approval

Product is licensed according to ECE guidelines.

Product is licensed according to RCM guidelines.

From 2013, Products marketed in Australia and New Zealand will share a common electrical safety standard. As part of the registration process, suppliers must make a declaration that all the equipment they sell meets relevant standards and is electrically safe. The RCM mark will eventually superceed the C-Tick and A-Tick marks.

Product is licensed according to SABS guidelines.

Product is licensed according to SAE guidelines.

Polarity reversal protection

Even if the connecting cable is connected the wrong way round, there is still no danger for the electronics. The semiconductor in an LED must always be operated with the correct polarity. Inverse polarity damages the LED, so that LED lamps are always equipped with a reverse polarity protection (diode).

This function only works when "+" and "-" are correctly connected, however. If a lamp has a bi-polar circuit, the functioning is independent of the contact connections. This ensures Poka-yoke (avoiding faulty installations) in connection with the indentation clamping technology, for instance.

RFCommSafe™ Electromagnetic Compatibility (EMC)

Every LED lamp contains electronic circuitry. It is essential that this circuitry does not cause harmful interference to other devices and at the same time is not susceptible to radiation from other devices.

RFCommSafe™ products were developed in recognition that some radio communication equipment can self-tune to be very sensitive in remote areas. In these situations the limits prescribed by regulatory requirements and as defined in international standards such as CISPR15 or relevant UNECE Standards may not be sufficient to ensure there is no interference with very sensitive radio communication equipment.

Electromagnetic compatibility

Electromagnetic compatibility (EMC) tested.

If the lamp has not been built to EMC specifications, and is thus not certified, interactions that impair other safety-relevant electronic systems may occur.

Examples:
Interference in the radio loudspeaker, impairment of ABS electronics, or failure of the lamp due to sensitivity to interference.

ZeroGlare™

The ZeroGlare™ light distribution is designed specifically for low beam applications to completely remove glare for oncoming traffic. ZeroGlare™ brings on-road lighting safety and technology to the mine site.

Corrosion Proof Housing

Corrosion Proof Housing means new extreme corrosion resistant worklights with a special housing to improve the resistance of our Mining worklights in harsh conditions.

Sea turtle friendly product

Turtles' vision is in a higher frequency range than that of humans. It extends from about 580 nm up into the ultraviolet, peaking in the blue-green. So light at 590 nm and below. Amber is invisible to the turtles.

Sea turtle friendly lights will be used to avoid that hatchlings will walk toward civilisation instead of toward the ocean.

PART NUMBER INDEX

009 254-841 49
009 256-801 50
009 257-831 49
011 557-001 29
011 557-011 29
011 557-021 29
011 557-031 29
011 557-041 29
011 557-051 29
011 585-001 29
011 722-501 35
011 722-511 35
011 722-521 35
011 722-531 35
011 872-011 19
011 872-021 19
011 872-031 19
011 872-061 19
011 872-071 19
011 872-081 19
011 872-131 19
011 872-141 19
011 872-151 19
011 872-211 19
011 959-001 48
012 074-001 33
012 074-101 33
012 416-001 45

177 305-001 46
177 305-011 46
177 305-021 46
177 305-031 46
177 305-101 46
178 458-002 48
178 458-012 48
178 458-022 48
178 458-032 48
178 458-042 48
178 458-052 48
178 458-062 48
178 458-072 48
178 458-082 48
178 458-092 48
178 458-102 48
178 458-112 48
178 458-122 48
178 458-821 48
182 653-002 30
182 653-102 30
182 653-202 30
182 653-302 30
182 653-402 30
182 653-502 30
182 653-602 30
182 653-702 30
182 653-802 30
196 289-101 33
196 291-001 33
196 292-011 33
196 293-001 33

332 584-021 19

905 683-101 49
905 683-111 49
905 683-131 49
905 684-101 49
905 684-111 49
905 684-131 49
910 057-001 39
910 057-011 39
910 073-001 32
910 075-001 32
910 075-011 32
910 075-021 32
910 075-031 32
910 075-041 32
910 075-051 32
910 075-061 32
910 075-071 32
910 075-081 32
910 078-021 32
910 078-041 32
910 078-061 32
910 078-071 32
910 078-081 32
910 078-091 32
910 078-111 32
910 078-121 32
910 078-131 32
910 078-141 32
910 081-001 30
910 081-011 30
910 081-021 30
910 081-031 30
910 081-041 30
910 082-001 30
910 082-011 30
910 082-021 30
910 082-031 30
910 082-041 30
910 084-001 45
910 084-011 45
910 084-021 45
910 084-031 45
910 084-041 45
910 084-051 45
910 084-061 45
910 084-071 45
910 084-081 45
910 084-091 45
910 087-001 30
910 087-031 30
910 087-041 30
910 087-051 30
910 087-061 30
910 087-071 30
910 087-081 30
910 087-091 30
910 087-101 30
910 087-111 30
910 087-201 29
910 087-211 29
910 095-001 47
910 097-001 30
910 109-001 46
910 109-011 46
910 109-101 47
910 109-111 47
910 109-201 47
910 109-301 47
910 109-311 47
910 118-011 ..... 47, 49
910 119-101 49
910 121-101 48
910 141-011 31
910 141-031 31
910 141-051 31
910 141-071 31
910 141-091 31
910 156-001 42
910 156-011 42
910 156-021 42
910 174-001 43
910 174-031 42
910 174-241 43
910 182-001 45
910 182-011 45
910 344-001 43

958 040-501 26
958 040-551 26
958 040-601 26
958 060-011 23
958 060-111 23
958 060-201 23
958 060-401 23
958 060-501 23
958 060-601 23
959 037-001 31
959 037-021 31
959 037-101 31
959 037-141 31
959 037-221 39
959 037-321 39
959 037-421 39
959 037-601 31
959 037-621 31
959 037-801 31
959 037-821 31
959 037-901 31
959 037-921 31
959 050-061 37
959 050-071 37
959 050-301 37
959 060-321 36
959 060-621 36
959 070-321 36
959 070-621 36
959 772-821 47
959 772-851 47
959 772-861 47
959 773-847 47
959 774-817 47
959 774-821 47
959 774-831 47
959 774-841 47
959 881-006 50
959 881-016 50
959 881-036 50
959 881-046 50
959 881-056 50
959 881-066 50
959 881-516 50
959 881-526 50
959 881-536 50
959 881-546 50
959 881-556 50
959 881-566 50
959 882-118 50
959 882-418 50
959 882-518 50
959 882-818 50
959 883-008 50
959 883-208 50
959 883-308 50
959 883-508 50
959 950-211 39
959 950-221 39
980 573-001 27
980 573-101 27
980 573-301 27
980 602-011 36
980 603-511 35
980 603-521 35
980 604-021 39
980 613-011 36
980 615-021 35
980 670-821 37
980 710-071 36
980 740-021 27
980 740-221 27
980 740-321 27
980 837-001 47
980 838-001 47
980 911-021 31
980 911-221 31
980 911-421 31
980 911-621 31
980 911-721 31
995 050-001 27
995 050-011 27
995 050-021 27
995 050-091 35
995 050-101 35
995 606-501 22
995 606-511 22
995 606-521 22
995 606-541 22
995 606-601 22
995 606-611 22
995 606-621 22
995 606-641 22
996 197-001 20
996 197-011 20
996 197-021 20
996 197-031 20
996 197-041 20
996 197-051 20
996 197-061 20
996 197-071 20
996 197-081 20
996 197-091 20
996 197-101 21
996 197-111 21
996 197-121 21
996 197-131 21
996 197-141 21
996 283-051 24
996 283-061 24
996 283-071 24
996 388-501 25
996 388-511 25
996 388-521 26
996 388-531 26