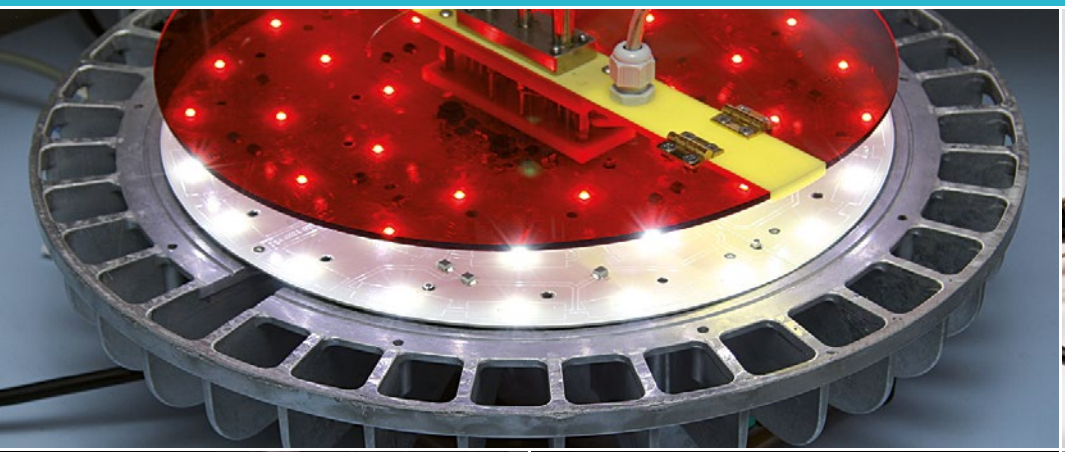
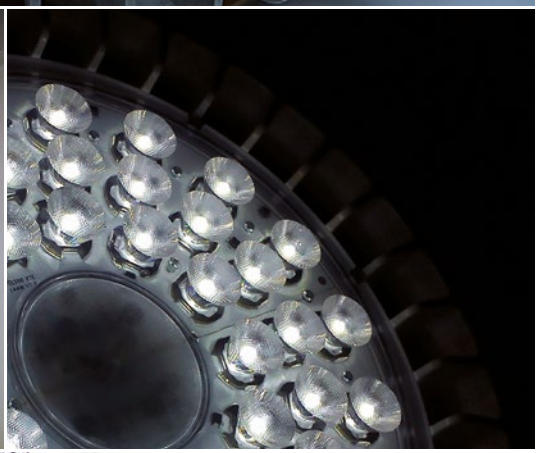
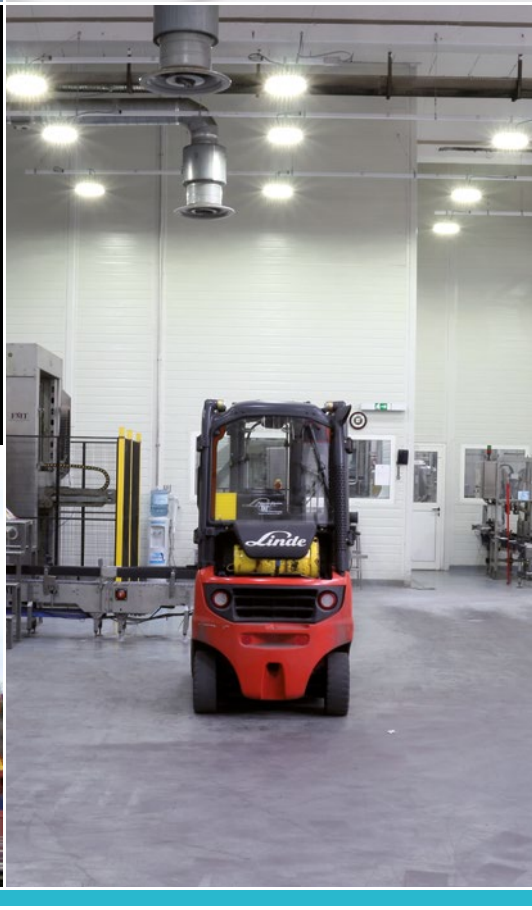
DATA LINK

LED lighting for professional use







The project was selected as part of the Opera-tional programme “Regional Competitiveness”. The project was co-financed by the European Union from from the European Structural and Investment Funds.

Investment in future European Union

European Union

EUROPSKI STRUKTURNI I INVESTICIJSKI FONDOVI

Electronic design and production

DATA LINK has been successfully working for years on the development of various complex electronic devices for world-renowned manufacturers of electronic components. We have developed and made a lot of different sophisticated devices for the process industry such as:

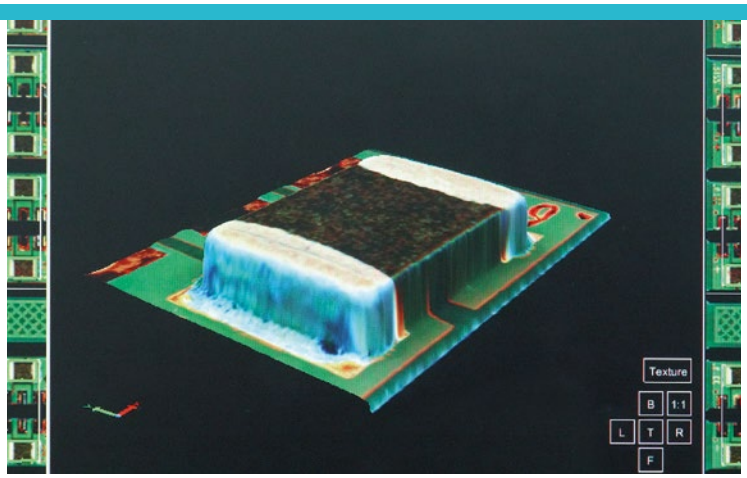
- Automatic high-performance devices for precise measurements and sorting of electronics components
- Varistor Measurement Systems
- NTC Measurement Systems
- Pulse Source Meters
- PTC measurement, sorting and treatment systems
- Robotic optical systems for geometry measurement and surface inspection
- Complete robotic lines for cleaning and controlling piezo electrical components
- Short pulse high voltage pulsing devices calculations.

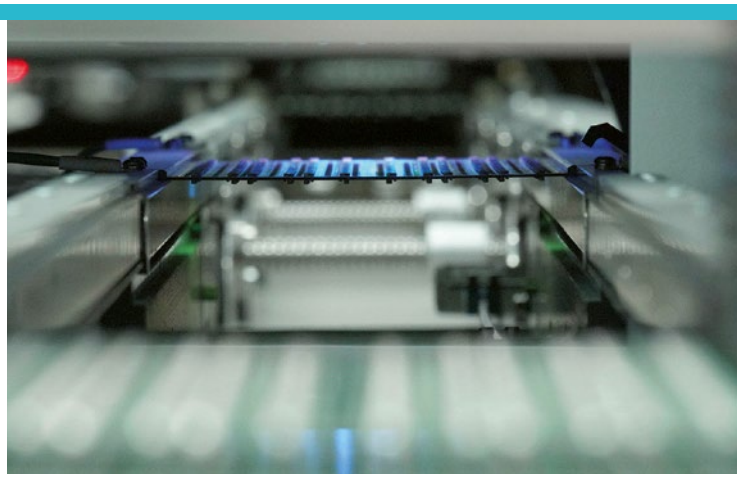
Besides design, development and production of hardware and software of electronic devices as the most complex projects, we also do designing of electronic schemes, creating the layout of Printed Circuit Boards (PCB), optical design, electronic and thermal analysis and highly serial production of electronic modules.

Electronic PCBA services are provided by using 2 state of the art SMD lines.

SMD line 1 (Inline Vapor Phase soldering system) capacity of 25000 components/h, the print format 1200 x 400 mm.

SMD line 2 (Hot Air Reflow) capacity of 65000 components/h, the print format 600 x 400 mm. Laser marking, preservation and storage of components, climate chambers.





SMD line 1

SMD line 1 SAMSUNG SM482 has 6 heads and a maximum speed of 35 000 components per hour. It places components from 0201 to 75mm connector and can make extra-large PCB format from 1200 x 600mm. The components are soldered to PCB plates in the convection oven HELLER 1707 MK III which has 7 heating and 2 cooling areas with a transporter chain width up to 450mm. After that the PCB plates pass the optical and electronic inspection, they are stored in the ASYS Unloader which is programmable and adaptable to all kinds of magazines.

The line consists of:

- Bare Board Loader (Asys–VEGO Dynamic BDS 01) with automatic adjustment of PCB width
- EKRA SERIO 4000 stencil printer
- SAMSUNG Pick & Place SM482
- Heller 1707 MK III convection oven
- Unloader VEGO Dynamic AMS 01
- 3 x ASYS VEGO Compact BC0 03 conveyor.

Fully automatic line for the production of SMD modules, with the capacity of 25 000 components per hour. The entry of the line is equipped with an ASYS Bare Board Loader that adds PCB plates to EKRA. EKRA Serio 4 000 is a stencil printer that is fully programmable and has a print optical inspection, optical adjustment of fiducials and automatic cleaning. The print format is 600 x 400 mm. All line elements are connected with ASYS conveyor which transfer PCB plates to SAMSUNG SM482 Pick & Place, HELLER 1707 MK III and ASYS Unloader.

SMD line 2

SMD line 2 SAMSUNG DECAN F2 is a Dual Lane and Dual Gantry Pick & Place machine with 10 heads and a speed of 80 000 components per hour. It places components from 0402 to >16mm and with a fixed camera up to >42mm. Components are soldered to PCB plates in the ASSCON VP2000 Vapor phase reflow oven which solders by using Galden fumes with absence of air which is perfect for the most demanding requirements of soldering, with minimal power consumption. For the optimization process a Dynamic Profiling system for soldering control is used. After that the PCB plates pass the optical and electronic inspection and are stored in the ASYS Unloader which is programmable and adaptable to all kinds of magazines.

The line consists of:

- Magazine Loader (Asys – VEGO Dynamic AES 01)
- EKRA SERIO 4000 stencil printer
- SAMSUNG DECAN F2
- ASCCON VP2000
- Unloader VEGO Dynamic AMS 01
- 3 x ASYS VEGO Compact BC0 02 conveyor.

Fully automatic line for the production of SMD modules, with the capacity of 55 000 components per hour. The entry of the line is equipped with an ASYS PCB Magazine Loader which adds PCB plates from the storage magazine into EKRA. EKRA Serio 4 000 is a stencil printer that is fully programmable and has a print optical inspection, optical adjustment of fiducials and automatic cleaning. The print format is 600 x 400 mm.

All line elements are connected with ASYS conveyor which transfer PCB plates to SAMSUNG DECAN F2 and ASSCON VP2000 Vapor phase. Elements are connected with ASYS conveyor which transfer PCB plates to SAMSUNG SM482 Pick & Place, HELLER 1707 MK III and ASYS Unloader.

DATA LINK

From the beginning, DATA LINK has always dedicated a part of its potential towards the development and production of new, innovative, and technologically advanced products, services, and solutions.

While this product catalogue provides an insight into the current technical characteristics and specifications of our LED lighting product line, in our development laboratory we have progressed a lot further and we are continuously working on developing new and improving existing products, testing new systems and patents, which place us among the most innovative companies in the industry of LED technology in Europe.

Over the past few years DATA LINK has been committed to developing and producing professional LED lighting, production technologies, software solutions, and measuring devices which lead to the creation of new technologies and patents in the production of LED lighting.

Following global trends and the need for energy-efficient, environmentally friendly, high-quality and long-term sustainable solutions, we have decided to develop and produce technologically advanced LED luminaires. Thanks to the numerous advantages and positive characteristics of LED technology, this innovative and energy efficient type of lighting is suitable for people, the environment, and the entire eco-system.

We independently perform demanding projects using the most advanced specialised equipment, tools, and measuring devices. We are technologically excellently equipped and capable of realising any project starting from the beginning of a concept all the way through to an automated serial production.

Following the desire for continuous improvement and quality enhancement of our products and services, in 2004 we introduced a quality management system; the ISO 9001: 2000 standard, for which we received a certificate.

QUALITY SYSTEM CERTIFICATION
DNV·GL
ISO 9001

LED modules on demand

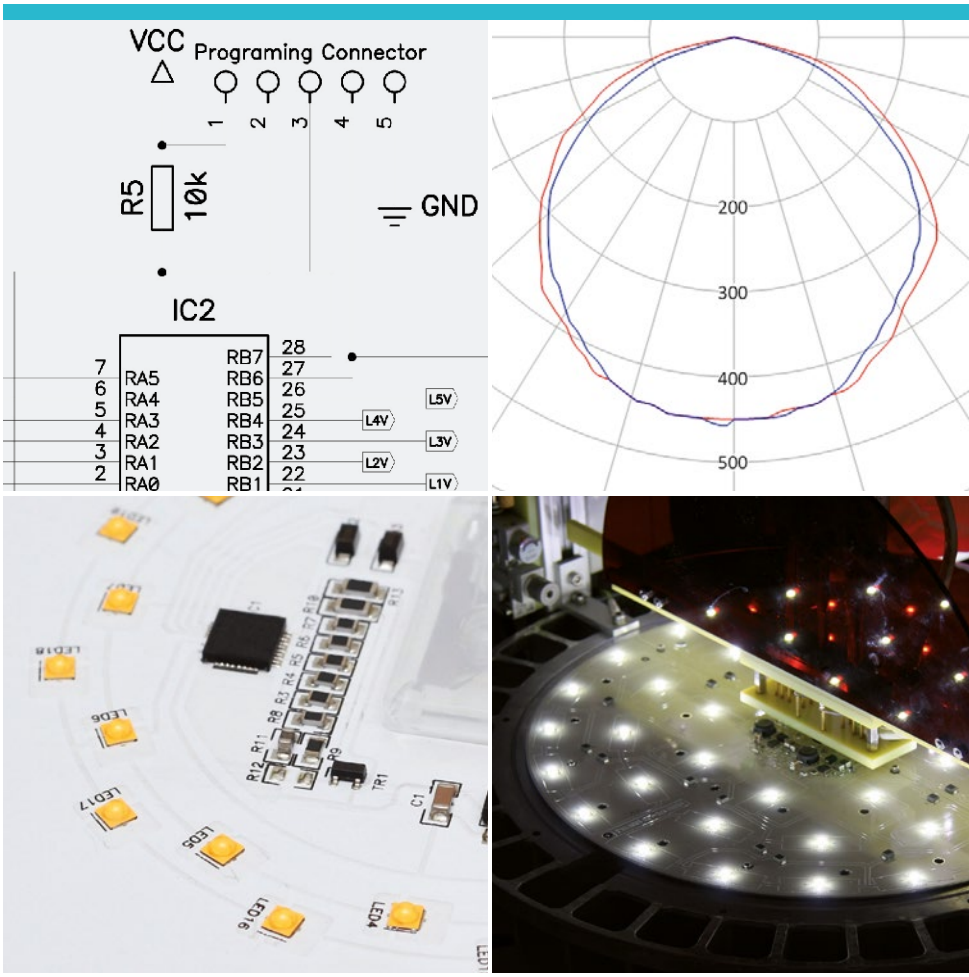
We develop and produce full LED modules on aluminium or FR4 substrates for our users, according to special demands.

Construction includes all necessary solutions, ranging from designing electronic schemes, creating the layout of Printed Circuit Boards (PCB), to optical design, electronic and thermal analysis, and highly serial production of LED modules.

FEATURES

In our own light technology laboratory, we conduct measurement and analysis of LED modules for the following characteristics:

- EMC analysis in the sense of generating interference in the electromagnetic spectrum, both for DC or AC construction of LED modules
- Measuring of all electrical characteristics of the module using high precision equipment
- Thermal analysis of entire LED module and luminarie, with measurements of technical conductibility and LEDs' thermal conductivity and junction temperature
- Analysis of LED modules' behaviour at high environmental temperatures, with or without refrigerator or light fixture
- Measuring of the module lumen output in normal operating conditions and at higher temperatures, both with and without secondary optics
- Photogoniometric measurment of spatial distribution of the LED module and creating the appropriate IES file for use with light technology calculations
- Spectrophotoradiometric measurement of the entire module or LED itself



Using our two fully automated high-capacity SMD lines, we are able to produce a large series of LED modules, with two soldering processes; the standard Reflow technique and the special Vapor Phase welding procedure in strictly controlled temperature conditions. We can produce linear LED modules up to 1200 mm in length, and both lines' capacity exceeds 80,000 components per hour.

We strive to exceed our customers' expectations by delivering the highest quality solutions, products, and services.

High Bay 380

A professional industrial LED lighting

High Bay 380 is a professional industrial LED lamp intended for illuminating industrial and manufacturing facilities, bus and railway stations, airports, exhibition halls, sports facilities, distribution centers and other facilities with height exceeding 4 meters.

CHARACTERISTICS

- Energy efficiency class A+ and A++ (in accordance with EU Directive 874/2012)
- Lifespan at least 60.000 hours, while the light flow doesn't go below 80% of the nominal light flow
- Safety rating IP66
- Resistant to humidity, dust, impacts and vibrations
- Simple installation, no need for standard maintenance measures
- After the 3 year warranty period, electronic components can be replaced and the lamp's work life extended

High Bay 380 is suitable for interior and exterior use. It is dust and water droplet resistant and does not require standard maintenance measures. The lamp generates significant power consumption savings between 50% and 80% compared to traditional industrial solutions of sodium, mercury and metal-halide light fixtures.

The lifespan of this lamp is at 60.000 hours. The best illumination results are achieved when the lamp it is mounted at a height of 6 m to 9 m, but it can also be mounted in higher structures, depending on the customer's needs.

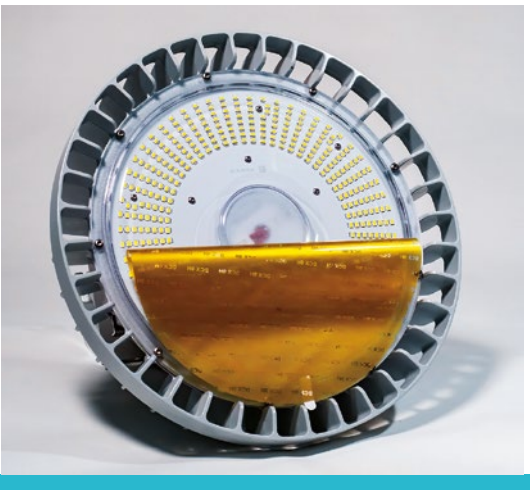
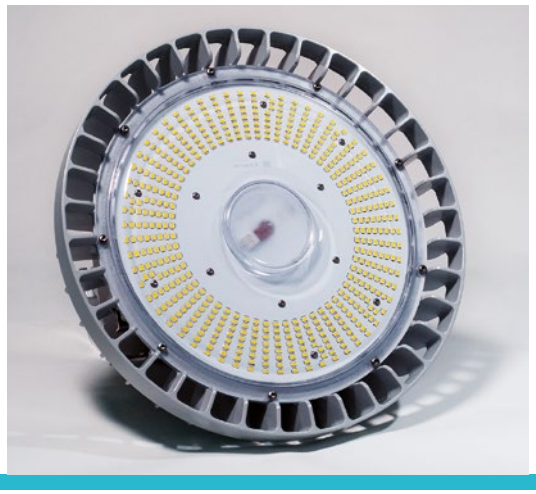
LED diodes installed into this electronic circuit are obtained from one of the best LED diode manufacturers - CREE (USA).

High Bay 380 industrial LED lamp is certified at the Končar Institute in Zagreb.

TECHNICAL SPECIFICATIONS High Bay 380 lamp

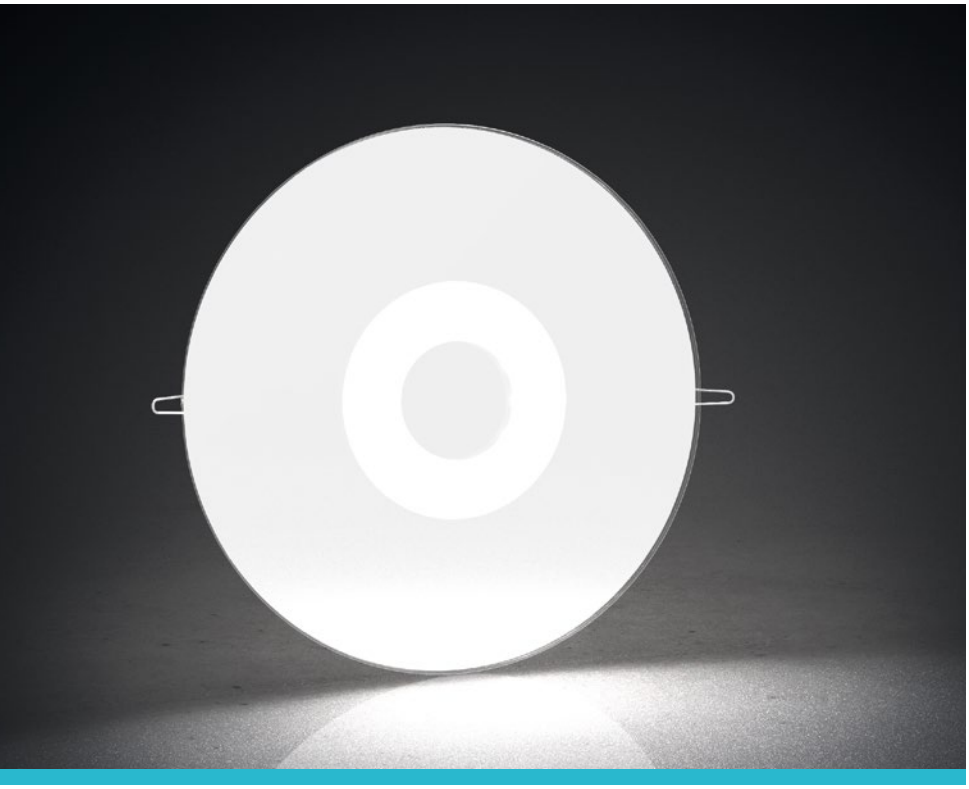
	HB380	HB380 Spot *
Electrical Characteristics		
Operating Voltage	90 - 305VAC; 110 - 400VDC	
Total System Power Consumption	90 - 150 W **	
Power Factor	> 0,95	
Operating Temperature	40°C to +50°C	
Light Technology Characteristics		
Light Flow	12500 - 23000 lm	10000 - 18000 lm
Luminary Efficacy	> 135 lm/W	> 110 lm/W
CCT (Correlated Colour Temperature)	4500K – 5500K ***	4500K – 5500K ***
CRI (Colour Rendering Index)	> 80	> 70
Selectable radiation angle	120°	30°, 45°, 60°, 90°, 120°
Protection, construction and dimensions		
IP protection	IP66	
Other protection	IK10, OVP, OTP	
Protective Fixture Cover	Injection-Molded Polycarbonate 2 mm	
Replaceable protective film	Self-adhesive protective film thickness 0.3 mm	
Fixture Body Material	Die-Cast Aluminum, powder coated in RAL colors	
Fixture Weight	< 6kg	
Dimensions	Ø380 mm, H114 mm	
Mounting		
Fixed Ceiling Suspension	Steel frame with adjustable anchor	
Wall Mounting	Steel frame with 0° - 90° adjustment option	
Flexible Suspension	Pendant for anchoring chain or steel rope	
Pipe mounting	INOX bracket with the possibility of accepting tubes of 50 mm diameter	
Connection	Cable H05VV -F (5 x 0.75 mm^2), black, length 3m ****	

* Using lens reduces light output by up to 8%
** The total power depends on the model of the lamp
*** Depending on the needs of CCT users, it can be 2700K to 7000K
**** The type and length of the cable may vary depending on the user


Flush Mount Ceiling LED lamp

Flush Mount Ceiling Lamp - the first in the series of lamps made in the unique, patented planar technology.



The Flush Mount Ceiling lamp is a low energy alternative to incandescent and compact fluorescent bulbs. It is designed for hallways, staircases, bathrooms, wardrobes, lounges or any other areas which need pleasant and high efficient lighting.

The lamp is made in AC LED technology which enables a minimum of components with no electronic parts susceptible to aging.

The lamp has a very long life span, >60.000 working hours, can endure millions of power cycles and continuous work 24/7.

PRODUCT CHARACTERISTICS

- Suitable for flush mounting to plasterboard and suspended ceilings - total height 20mm, installation height 15mm
- Luminous flux of 1.500 lumens with power consumption of only 16W, in a 0,58kg lamp
- Drastically decreases energy consumption in comparison with classic incandescent lighting
- Available in broad color temperature span from warm white 2700K to neutral white 4000K
- Thermal management and large surface enable low LED junction temperature of maximum 65C°
- Lamp has raiting IP66
- Reduces maintenance costs due to high reliability of lighting and long life span

TECHNICAL SPECIFICATIONS Flush Mount Ceiling LED lamp

	Ø170 mm	Ø230 mm	Ø260 mm
Electrical Characteristics			
Operating Voltage	230VAC / 50-60Hz		
Total System Power Consumption	10W	16W	26W
Power Factor	> 0,98 at 230VAC		
Total Harmonic Distortion	Ithd 13%		
Operating Temperature	-40°C to +40°C		
Light Technology Characteristics			
IP Rating	IP66		
Initial Total Lumens	~ 970lm	~ 1500lm	~ 2500lm
Luminary Efficacy	~ 95lm/W at 4000K		
CCT (Correlated Colour Temperature)	2700K to 4000K		
CRI (Colour Rendering Index)	70-85 depending on the LED		
Protection, Construction, Dimensions			
Protection	Overvoltage & Over temperature		
Luminary Protective Cover	Tempered Glass 4mm		
Fixture Body	Glass & Aluminum		
Fixture Weight	0,46kg	0,58kg	0,90kg
Dimensions	W170 x H19 mm	W230 x H19 mm	W260 x H19 mm

USAGE

Hotels, factories, hospitals, operating rooms, clinics, airports, museums, galleries, showrooms, shops, passenger ships (cruisers), large department stores, shopping malls, office buildings, closet spaces and other areas which require pleasant, long lasting and energy efficient lighting.

- Visually attractive, modern and innovative
- Size and shape fits into any workspace

GalaLED

Revolution in portable LED work lighting
For shipbuilding, ship repair, conversion, retrofit, maintenance

The GalaLED system can be connected to three types of power supply cable - 2 x 1,5mm², 2 x 2,5mm² and 2 x 6mm² size of cable. This cable type (flat, rubber cable H05RNH2-F) is specifically intended for heavy industry conditions. It is strong, flexible and water resistant.

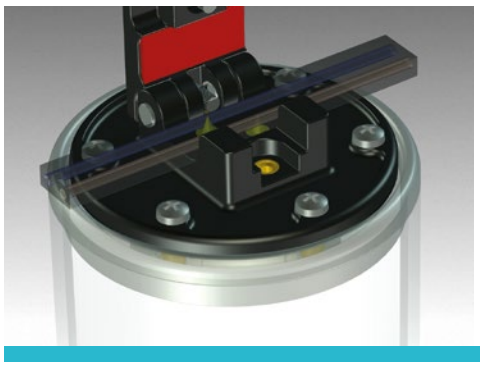
The GalaLED work lighting system is the GO – TO system for any new-building, repair, conversion, retro-fit or any maintenance project. The system ensures maximum productivity and worker safety. Due to its light and robust construction and low operating voltage, the lamps can be used during steelwork, welding, sand-blasting, high-pressure washing and anticorrosion protection.

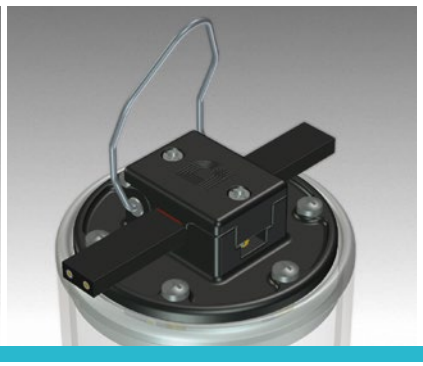
All GalaLED lightening has an outstanding luminous flux ranging from 1300 lm to 2200lm and therefore suitable for dark, confined, dump areas where high reliability illumination is necessary.

GalaLED lamps have a very high degree of ingress protection IP67, as well as the highest level of mechanical/impact protection IK10.

The GalaLED system is available in different voltage levels: 24VAC/DC, 42VAC/DC, 110VAC/DC.

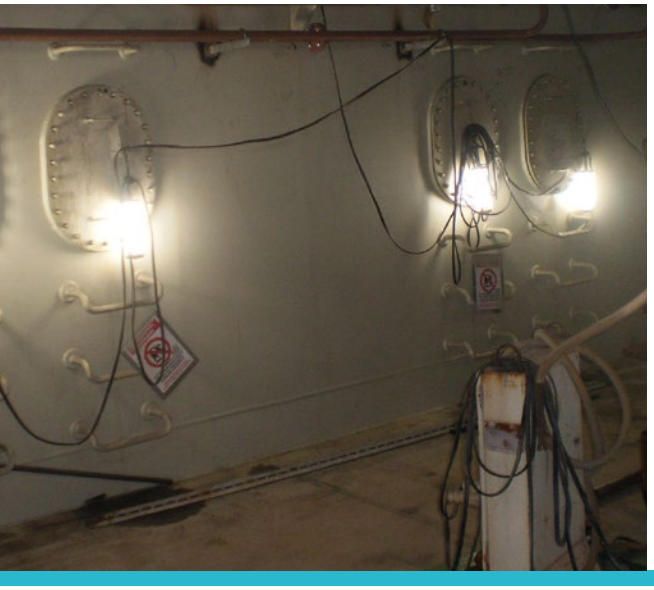
GalaLED system allows fast adding and removing of additional lights to the cable if neccesary.





TECHNICAL SPECIFICATIONS GalaLED lamp

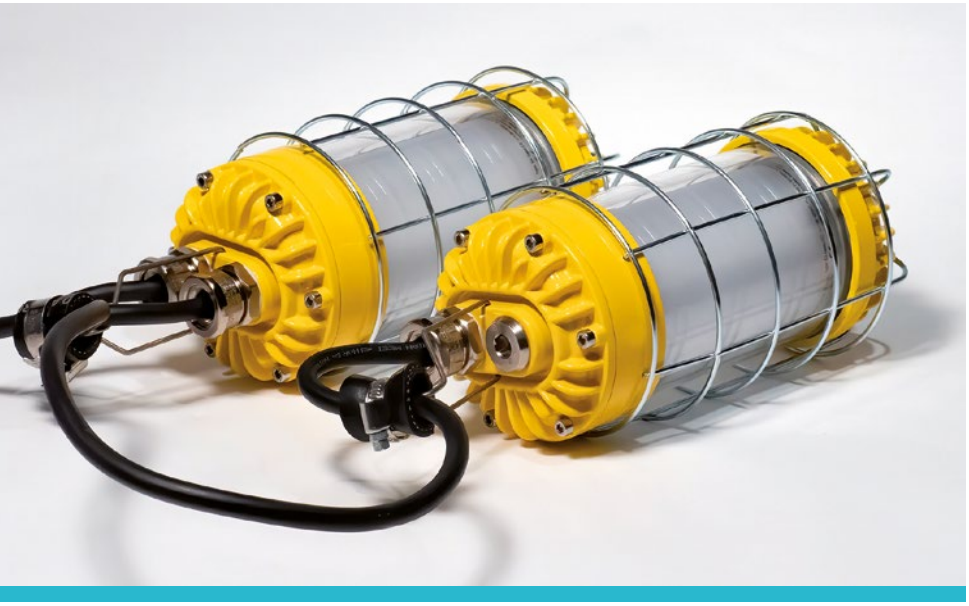
	ST01	BA02	ST11	ST21
Electrical Characteristics				
Nominal Voltage	42VAC	42VAC	110VAC	24VDC
Operating Voltage	38 - 48VAC	20 - 48VAC 20 - 60VDC	80-120VAC 90-130VDC	20 - 30VDC
Total Power	~17W	~12W	~17W	~17W
Power Factor	> 0,7 at 42VAC	> 0,99 at 42VAC	-	-
Total Harmonic Distortion	~22 %	~15%	-	-
Operating Temperature	-40°C to +50°C			
Light Technology Characteristics				
Initial Total Lumens	~1900lm	~1300lm	~2000lm	~2000lm
Luminary Efficacy	~110lm/W	~110lm/W	~120lm/W	~120lm/W
CCT (Correlated Colour Temperature)	4500K to 5500K			
CRI (Colour Rendering Index)	80 - 85			
Protection, Construction, Dimensions				
IP Rating	IP67			
Protection	IK10, OVP, OTP			
Luminary Inner Protective Cover	PMMA 2,5mm			
Removable Protective Cover	Polycarbonate 2,5 - 3mm			
Housing	PMMA, PA6, PC, ABS			
Fixture Weight	0,65kg	0,53kg	0,65kg	0,65kg
Dimensions	D90 x H280mm	D90 x H205mm	D90 x H280mm	D90 x H280mm

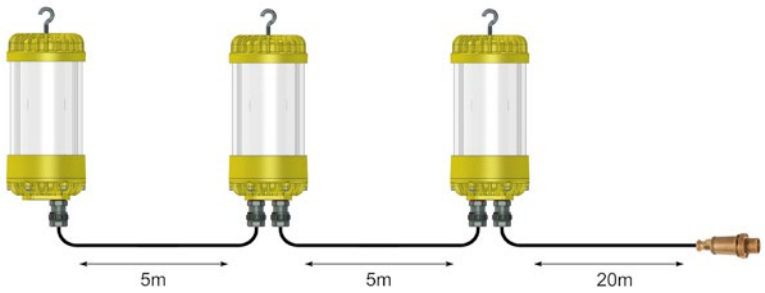


Ex GalaLED

Portable, safety LED lighting with high level of protection intended for use in hazardous areas with explosive gas and dust atmospheres

TYPE OF PROTECTION		Ex d	Ex tb	GAS GROUPS IIB	GAS GROUPS IIC	DUST GROUPS IIIC
EQUIPMENT PROTECTION LEVEL	ZONE	1	2	21	22	
	LEVEL	Gb	Gc	Db	Dc	





The lamp is designed for application in shipbuilding and offshore industries, for both indoor and outdoor spaces, can be used as portable lighting and as general fixed in lighting.

There are three voltages available. 230VAC, 110 VAC and 42 VAC which is in compliance with the highest safety standards (CENELEC norm HD63751).

Ex GalaLED weighs only 2.3kg, has high lumen output and high level of mechanical protection IP67 and IK08.

Ex GalaLED is a state of the art lamp product with many outstanding features. It is not only “armour” with a retrofitted LED light source, but a specially designed LED light source with an robust and reliable external enclosure that is also a heat sink for efficient LED cooling.

During development of Ex GalaLED the main priority was to make a low weight, compact lamp that is easy to manipulate with.

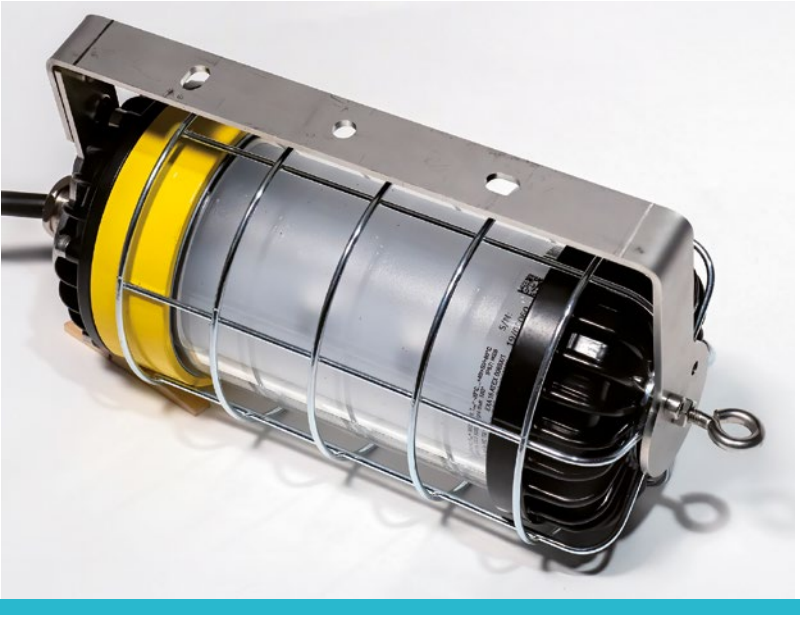
MAIN ADVANTAGES of Ex GalaLED

- Significant cost reductions
- Energy savings
- Increase in lighting operation reliability
- Increase in worker productivity

Ex GalaLED can be used both as fixed and portable lightening.

TECHNICAL SPECIFICATIONS Ex GalaLED lamp

	42V/25W	110V/25W	230V/30W
Electrical Characteristics			
Nominal Voltage	42VAC	110VAC	230VAC
Operating Voltage	38 - 48VAC 38 - 60VDC	90 - 130VAC 90 - 130VDC	210 - 250VAC
Total Power	~25W	~25W	~30W
Power Factor	≥ 0,98 at 42VAC	> 0,85 at 110VAC	> 0,98 at 230VAC
Total Harmonic Distortion	~8%	~40%	~13%
Operating Temperature	-40°C to +50°C		
Light Characteristics			
Lumen output	~2500lm		~3500lm
Luminary Efficacy	~100lm/W		~115lm/W
CCT (Correlated Colour Temperature)	4500K to 5500K		
CRI (Colour Rendering Index)	80 - 85		
Estimated service life	60.000 working hours temp. 25°C		
Protection, Construction, Dimensions			
IP Rating	IP67		
Protection	IK08, OVP, OTP		
Diffuser	PMMA 2,5mm		
Housing	Aluminum alloy powder painted with tempered borosilicate glass tube		
Fixture Weight	2,3kg		
Dimensions	D110 x H268mm		
Cable entry	2xM20 glands or M20 gland and M20 plug		
Connection cable	3x1.5mm^2 or 3x2.5mm^2		
Connection terminal	L1,N,PE max 3x2.5mm^2 External PE terminal M5		
Certificate	EXA 16 ATEX 0069X		
Explosion protection	II 2G Ex db op is IIC T6 Gb; II 2D Ex tb op is IIIC T85°C Db		



Ex GalaLED FEATURES

- Ex GalaLED enables outstanding thermal management since the LED engine is attached directly to the top and bottom cover, acting as a heat sink
- Circular LED light source of 360° or 180° depending on the model
- High light intensity with no glare effect
- Designed for application in hazardous, indoor and outdoor areas
- Applicable in Hazardous zones: 1, 2, 21, 22
- Low weight of 2,3kg

DL-SEAL

Watertight linear LED lamp for humid work areas made of high quality non-corrosive materials

DL-SEAL is a linear LED lamp developed and designed to illuminate access areas to docks, stairways, passageways, and other humid work areas.

CHARATERISTICS

DL-SEAL is made of high quality non-corrosive materials - PMMA, ABS, polycarbonate, and stainless steel thus meeting the IP66, IP67 and IK10 protection requirements.

The lamp is watertight and designed to operate in areas exposed to humidity due to its highly resilient construction, resistant to corrosion and water jets.

It has a cylindrical form - 650mm in length and 90mm in diameter with a cable entry in one end. It is fastened with two spring clips which are easily snapped onto the two ends of the tube.

The lamp can be fixed in any position on metal walls or ceilings with screws or with magnetic holders, each holding up to 5kg of pulling force.

TECHNICAL SPECIFICATIONS DL-SEAL lamp

DL-SEAL linear LED is available in two versions:	
STANDARD MODEL with lumen output of 2700lm and max. power consumption of 24W.	**EMERGENCY LIGHT MODEL** performs as standard model, but in the event of power failure it switches to emergency mode.

Electrical Characteristics	
Operating Voltage	230VAC / 110VAC 50-60Hz
Total Power Consumption	~24W (~4W in emergency mode)
Power Factor	≥ 0,9 at 230VAC / 0,98 at 110VAC
Total Harmonic Distortion	Ithd ~13% at 230VAC / 8% at 110VAC
Operating Temperature	-20°C to +50°C
Light Characteristics	
Initial Total Lumens	~2700lm (~450lm in emergency mode)
Emergency light	1.5h autonomy, 8h charging time, NiCad battery
CCT (Correlated Colour Temperature)	5500K
CRI (Colour Rendering Index)	~80
Illumination angle	120°
Protection, Construction, Dimensions	
IP Rating & Protection	IP66/x7, IK10
Luminary Protective Cover	Polycarbonate tube 3mm
Luminary body	PMMA diffusor, ABS sides, stainless steel cover with gland
Fixture Weight	2.1kg, 2.5kg with emergency light option
Dimensions	Length 650mm, Diameter 90mm

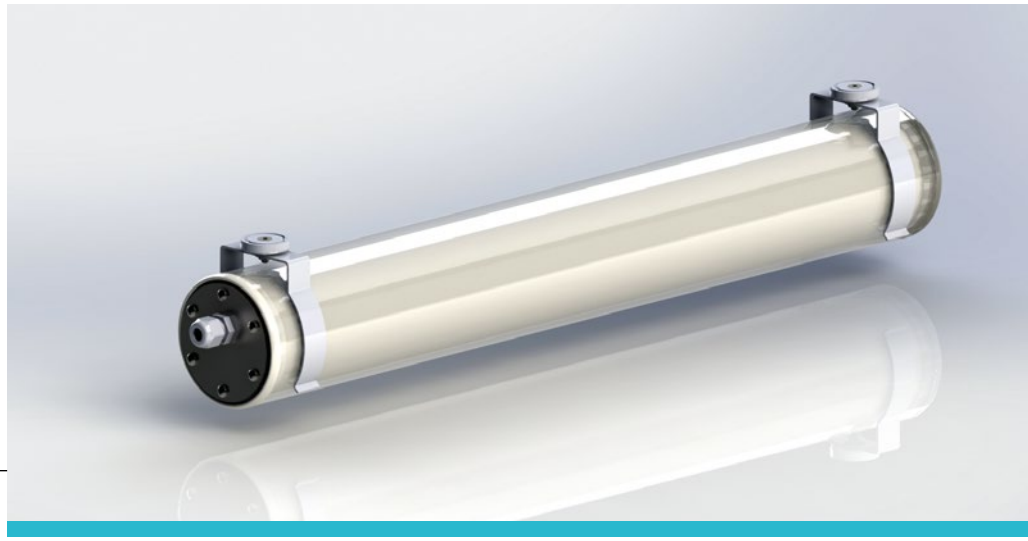
DL-SEAL suspended on adjustable cables

DL-SEAL suspended on a chain

DL-SEAL MOUNTING OPTIONS

Adjust the height of the lamp simply by using two chains.

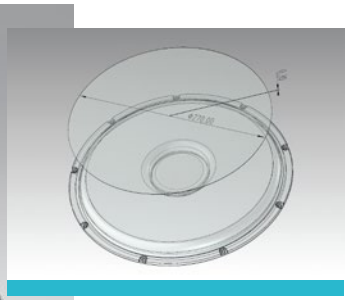
By rotating the tube it is possible to direct the light beam in any desired direction.



DL-SEAL with magnetic holders

Marine LED Floodlight

For shipbuilding, ship repair, dry-docks, offshore, maintenance



Replaceable self-adhesive protective foil

The Marine LED Floodlight is a new model of dry-dock lighting specifically constructed to meet the highest requirements for safety, endurance, quality and reliability of work lighting. The lamp provides 80% higher energy efficacy compared to classic, incandescent lighting. It is resistant to dust and high pressure jets and has mechanical protections IP66 and IK10. The lamp can be equipped with different types of lenses; angles of light beam from 30°, 60°, 90° and 120°.

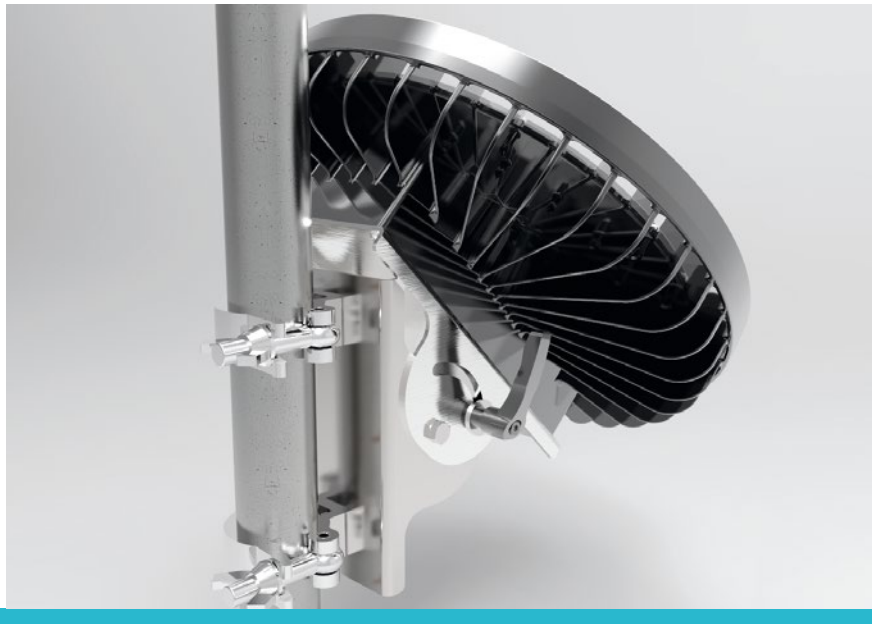
The Marine LED Floodlight is available in two versions – on a trolley as portable lighting and mounted on a scaffold as fixed lighting. As additional protection a replaceable protective self-adhesive PET foil is provided, which is applied on the lamp cover.

Marine LED Floodlight TROLLEY

- Made of stainless steel
- The back of the trolley is equipped with a cable holder
- The trolley is equipped with connecting cable 3x1.5mm² or 3x2.5mm²

TECHNICAL SPECIFICATIONS Marine LED Floodlight lamp

	MLFL 380/HB 380	MLFL 380/HB 380 SPOT	HB380-42
Electrical Characteristics			
Nominal Voltage	110 - 230VAC; 50 - 60 Hz		42VAC
Operating Voltage	90 - 305VAC; 110 - 400VDC		38-48VAC; 38-60VDC
Total Power	150W		130W
Power Factor	> 0,95		> 0,99
Total Harmonic Distortion	<20 %		<10%
Operating Temperature	-40°C to +50°C		-40°C to +40°C
Light Technology Characteristics			
Initial Total Lumens	~23000lm	~18000lm	16000lm
Luminary Efficacy	~150lm/W	~120lm/W	~125lm/W
CCT (Correlated Colour Temperature)	4500K to 5500K		
CRI (Colour Rendering Index)	>80		
Light Angle	120°	60° or 90°	120°
Protection, Construction, Dimensions			
IP Rating	IP66		
Protection	IK10, OVP, OTP		
Removable Protective Cover	Self-adhesive protective PET foil; 0,3mm thick		
Housing	Aluminium alloy cataphoresis, powder coated		
Fixture Weight	6kg		
Dimensions	D380 x H114mm		



Combo search light

Visible and IR light source in one

INTENDED FOR

- Military and Defence
- Marine and Coast guard
- Prison and Security
- Homeland and Border

Search Lighting provides high intensity LED performance of 410.000cd, with addition of Infrared (IR) Illuminators for night observation. It operates successfully in the most demanding environments, illuminating targets at long distances.

KEY BENEFITS

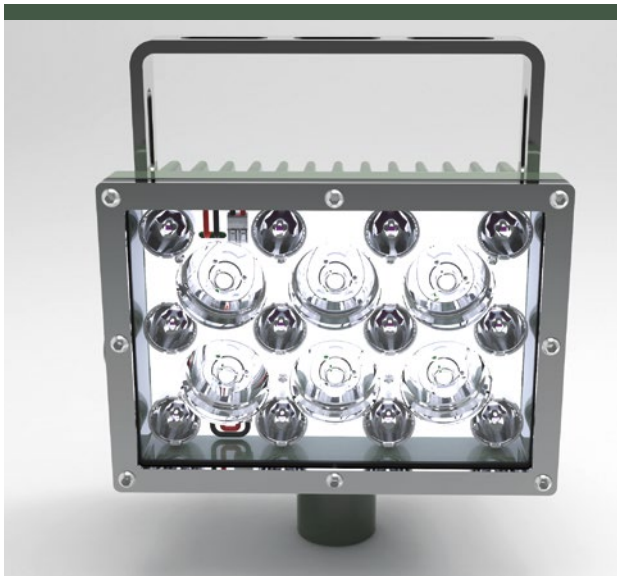
- Unique product on the market
- State of the art technology
- Two light sources in one housing
- Low power consumption
- Maintenance free

CHARATERISTICS

- Combo Search Light – suitable for use on combat armoured vehicles, tanks, trucks or terrain vehicles .
- White LED light source – the 6000K Color Correlated Temperature provides outstanding visibility in mesopic (night) vision conditions.
- Infra-Red light source – enables night observation with a strong IR beam of, the same range as the white light.
- Less power consumption – LED technology consumes 6 times less energy compared to incandescent bulbs for the same light flux.
- Longer range – because of precision optics on each individual LED diode it is possible to focus the light beam and achieve a greater range.
- Maintenance free – the life expectancy is over 60.000 hours without maintenance, no bulbs to change.
- Robust housing – provides excellent mechanical protection and thermal management.
- Practical handle – enables better light steer and handling.

TECHNICAL SPECIFICATIONS GalaLED lamp

White Light Beam	
Nominal Voltage	24VDC (reverse polarity protection)
Operating Voltage	10-32VDC
Load Dump tolerable	70VDC
Maximum power	65W
Luminous output	5100lm
Luminous intensity	~410.000cd
Range	500m
Beam angle FWHM	8° (circular beam)
CCT (Correlated Colour Temperature)	5000K
CRI (Colour Rendering Index)	>80
Infrared Light Beam	
Nominal Voltage	24VDC (reverse polarity protection)
Operating Voltage	10-32VDC
Load Dump tolerable	70VDC
Maximum power	50W
Total Radiant Flux	~8.100 mW
Range	400m
Beam angle	FWHM 12° (circular beam)
Peak Wavelength	950nm

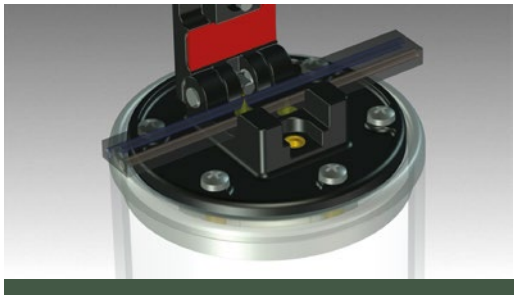


GalaLED 112

Lighting is suitable for application during various military and civil operations

INTENDED FOR

- Special military operations
- Military training camps
- War and civil shelters
- Temporary settlements, campfire and tents
- Storage below or above ground
- Rescue operations
- Outer and inner areas without lighting



Reliable for use in military service during military and rescue operations and war or for use in peacetime for preparation and execution of military exercises.

In civilian purposes it is used during natural disasters – storms, earthquakes, floods, and to work in underground and inaccessible areas which require durable, safe, and high quality lighting.

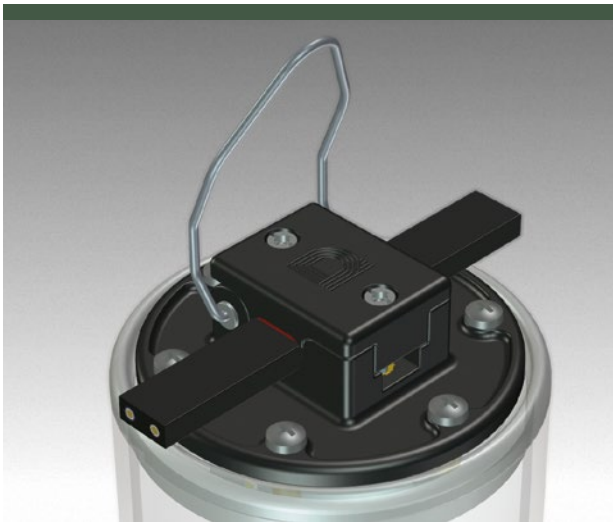
The GalaLED 112 system allows quick and easy installation of emergency lighting for operations in the dark.

GalaLED 112 portable lighting is made from a unique technology which enables flexible power supply either from an electrical network or from sources such as a truck or car engine, which is particularly useful in emergency and improvised situations.

The supply voltage ranges from 12V to 48VAC or VDC, which is safe for humans and does not endanger health or life of living beings.

TECHNICAL SPECIFICATIONS GalaLED 112

Operating voltage	12-36 AC/DC / 56-60Hz
Total system power consumption	~ 12W
Operating temperature	-40°C to +50°C
Initial total lumens	~ 1200lm
CCT (Correlated Colour Temperature)	4500K to 5000K
CRI (Colour Rendering Index)	80–85 depending on LED type
Protection	Overvoltage, over temperature, IK10, IP66
Materials	Inner Protective Cover; PMMA 2.5 mm, removable outer cover PA 3 mm, fixture body PMMA, ABS & PA6
Dimension, weight	Ø90 x H160 (mm), 0,36kg



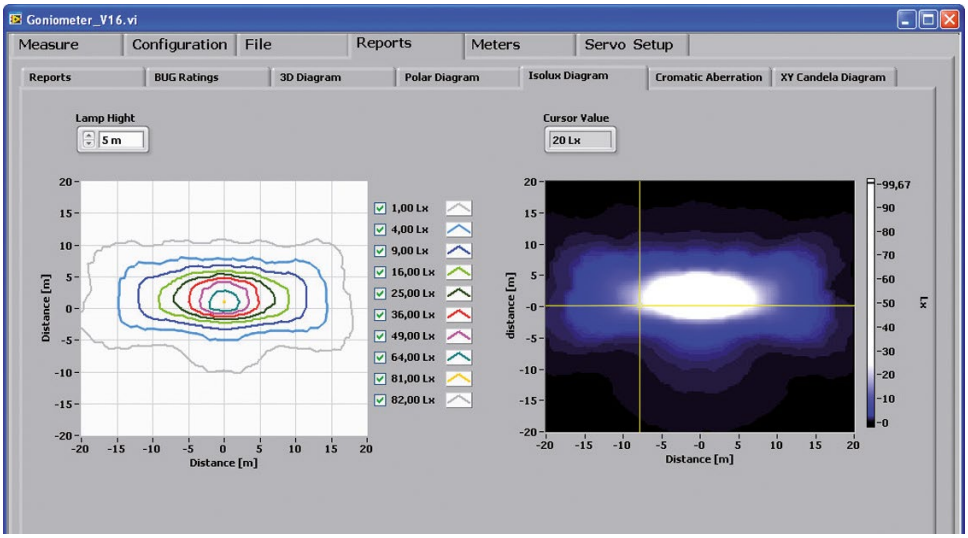
GalaLED 112 SYSTEM SETUP

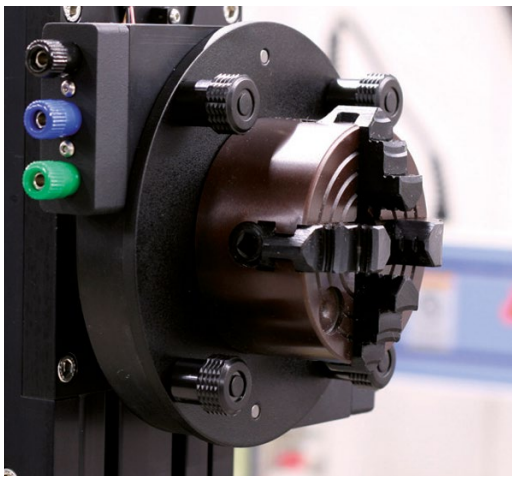
- The GalaLED 112 system is set up quickly due to the low weight of the lamp (0.36kg) and the “long-line” connection system, where the lamps are connected to the power supply cable.
- Lamps are easily connected to the power supply cable with simple connectors that pierce the cable at the connection point. Additional lamps can be connected afterwards even when the system is powered.
- The maximum number of lamps in the system is determined by the cross-sections and by the maximum strength of the power source. In a line there can be several dozens of lamps connected.
- The cabling system is such that the power supply can be branched from one or more power sources (for smaller installations the power source can be a standard vehicle battery of 12V or 24V).
- In case of more complex and larger installations, power supply is performed from a generator or from a standard connector 230VAC, by using a power transformer which lowers the voltage to a safe 24VAC.

Light Photogoniometer - LGPM-C3 Controller

LGPM-C3 is an instrument for measuring spatial distribution of light from the light fixture. The device is based on LabView software platform and is fully programmable.

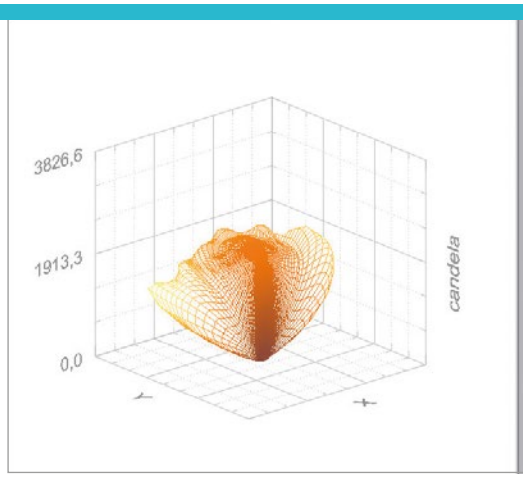
The basic purpose of this device is for creating IES and LTD file's witch are later used for light technology calculations in software tools like Dialux and Relux. The operating application allows the creation of a file in PDF format. The report contains data on the lamp, the measuring instrument and measurement parameters, as well as polar, Cartesian, and 3D diagram of the spatial distribution of light, BUG standard, and the illumination shown in isoluxes. The spatial diagram with standard features generates an isolux diagram which shows area luminance. The program can adjust the mounting height of the lamp and the program automatically calculates the new luminance. The device consists of top-quality of the shelf parts used in robotics and there is no need for maintenance.

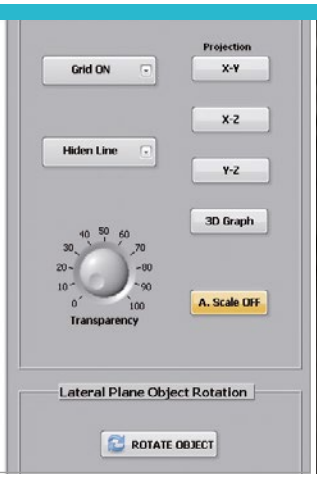


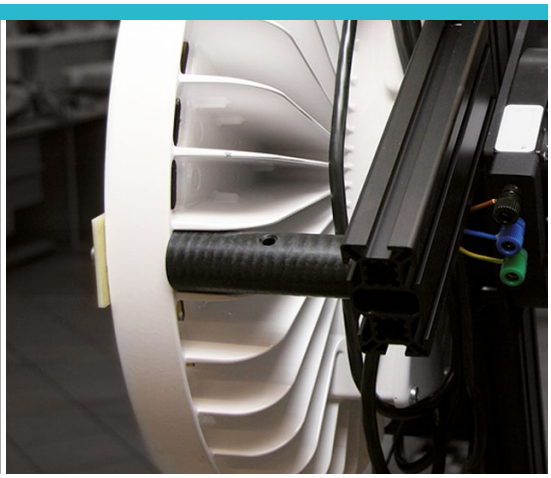


FEATURES

- Ideal for large SSL lamps and LED modules
- Comprehensive software
- Excellent price/performance ratio
- Top quality materials
- Comply to IES TM-75, LM-63 & TM 15
- Type "C" with horizontal optical axis







LGPM-C3 Controller

Goniometer	
CIE Goniometer type	Type C with horizontal optical axis, comply to LM-75, LM-63 & TM-15
Driver	Servo motors with Harmonic Drives®
Angular range C axis	0° - 360° with optical end switches
Angular range γ axis	± 180° with optical end switches
Angular resolution	0,005°
Repeatability C axis	≤ 0,1° (at maximal load)
Repeatability γ axis	≤ 0,1° (at maximal load))
Angular step C & γ axis	1° to 30°
Travel range Z axis (lamp depth)	0 to 350 mm via hand crank (integrated measuring scale in 0,1 mm steps) Other depths are possible
Clear height	850 mm
Height of optical axes	1500 mm
Dimensions & weight	W720 x D1055 x H1560 (mm); 75 kg
Alignment laser	In the center of rotation of the γ axis, 1 mW laser class 2
Sample Hub	
Maximum luminary size	Ø1500 mm
Maximum rated load	30 kg
Fixing Hub	4 x M5 thread with locating pins
Lamp power connection	AC or DC 2 wire power connection; Kelvin probe return 2 wire connection; PE Remote power ON/OF
LGPM – C3 Controller	
Functions	Driving the servo motors of the goniometer, supplying the lamp with the AC power
Interfaces	RS-232-C for connecting the servo motors to the PC
Cabinet dimensions	W380 x D155 x H30 (mm)
Power supply	230 V; approx. 150 VA + Lamp power (max. 1500 VA)
LabWIEV Control program	
Controlling device	Laptop or standard PC with available 2 x USB 2.0 ports
Photometric file formats	IES, LDT
PDF reports file	Test & manufacturer data, 3D diagram, Polar diagram, XY Candela diagram, Isolux diagram, CCT Shift , BUG ratings
Photometer type	KONICA MINOLTA CL-200 A

LED LIGHTING

ASRY Arabian Ship Repair Yard, Kingdom of Bahrain
GIFAS Electric, Germany
Lurssen Neue Jadewerft, Germany
Drydocks World Dubai, UAE
Dalmont – Brodogradilište Kraljevica, Croatia
Zrakoplovno Tehnički Centar, Croatia
Maxibel, Netherlands
HEISCO, Kuwait
Pliva, Croatia
CROSCO, Croatia
MG International, San Marino
SRC Group, Estonia
Oman Dry Dock, Oman
Dinamarin, Croatia
AEKS, Croatia
Karl Dose, Germany
AD Plastik d.d., Croatia
Anglia LED Limited Norwich, Great Britain
Arvai Neumarkt, Austria
Ashmole Academy London, Great Britain
Bandvulc Limited Devon, Great Britain
Baotić d.d. Zagreb, Croatia
Bomark Pak d.o.o. Varaždin, Croatia
Coca- Cola HBC, Croatia
Coca- Cola HBC, Bosnia and Herzegovina
Croatia insurance d.d., Zagreb
DPM Electrical Engineers Ipswich, Great Britain
Đuro Đaković Holding Slavonski Brod, Croatia
Eurocable group, Croatia
Fuelproof Limited Milton Keynes, Great Britain
Graphlex Limited Billerica, Great Britain
Graphitwerk Kropfmühl, Germany
Gumiimpex d.o.o. Varaždin, Croatia
HEP d.d. Croatia
HEP ESCO d.o.o. Zagreb, Croatia
Hilding Anders d.o.o. Prelog, Croatia
Hödl Wegscheid, Germany- agricultural farm
IOU-Ramps Passau, Germany
Leggett & Platt Components, Croatia
Magna Ebergassing, Austria
Magna Sandersdorf, Germany
Magna Soest, Germany
Magna Massen, Germany
Magna Henriville, France
Magna Oberweikelsdorf, Austria
Magna Straubing, Germany
Metal Product d.o.o. Zagreb, Croatia
Mercedes – car salon Linkenheim-Hochstetten, Germany
Military base – Freyung, Germany
MIV Varaždin, Croatia
Mürdter Mutlagen, Germany
Omco group, Croatia
PD Motors Billingshurst, Great Britain
Podravka d.d.- project Lipik Studenac, Croatia
Reitberger Passau, Germany- agricultural farm
Resting place along the road- Knüllwald, Germany
Shipyard Viktor Lenac d.d. Rijeka, Croatia
The Cultural Community Partnership Pemberton, Great Britain
Tehnix d.o.o. Croatia
Wienerberger Ilovac d.d. Karlovac, Croatia
World Dry Dock Dubai, UAE
Shipyard Viktor Lenac (Member of Palumbo Group), Croatia
Shipyard 3. MAJ, Croatia
Shipyard Uljanik d.d., Croatia,
Shipyard ASTANDER, Spain, Lisnave Shipyard, Portugal
Pella Sietas, Germany
Carrel Shipping and Shiprepairs, Greece
Zamakona, Spain
Freire, Spain
Oresund Dry Docks, Sweeden
MTG Dolphin, Bulgaria
Carell, Grece
Työvene Oy Finland
Palumbo, Malta; Bredo Group, Germany
Norderwerft repair, Germany
Peene Werft, Germany
Neue Jadewerft, Germany
Croatia Airlines Technical Services, Croatia
Jat Tehnika, Serbia
Air Nostrum, Spain
Aeronautical Technical Center J.S.C., Croatia

ROBOTICS AND AUTOMATION

HPDI robotic line – the company TDK EPCOS
PUMA robotic line – the company TDK EPCOS
Varistor measuring robot –the company TDK EPCOS

MEASURING INSTRUMENTS

Pulse Source Meter PSM300/10 - the company TDK EPCS
ESI3300A Varistor Measurement System - the company TDK EPCOS
ESI3300A NTC Measurement System - the company TDK EPCOS
LPGM2 Light Photogoniometar:
- FILIKS Ltd, Croatia
- KEKO-VARICON Ltd, Slovenija
- I-VALO Ltd, Finland
- Meteor fabrika dek. svjetiljki i stubova Ltd, Beograd, Serbija

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