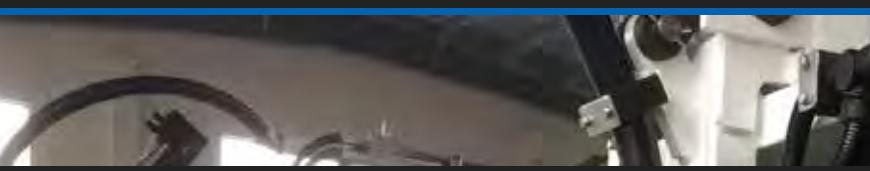




Product Specificaties



DCB SWITCHBOX - Accessories

DCbright switch box is designed to replace relays in 12V and 24V systems. This DCbright switchbox simplifies the standard systems dramatically.

- There are no wire connections between relays and fuse boxes.
- There are no switching contacts.
- The DCbright switch box switches are solid state which increase the reliability of the system.
- Debugging of the system is easy since the inputs, outputs and fuses have LED indicators.

DCbright switch box switches in the +line of the load, and needs a tiny signal current (1-3,5mA) to switch the output on/off.

- Input fused
- Solid state switching (no wear, long lasting)
- Switch on the high end (+line)
- Reduces complexity on electric system (compared to relays)
- Din rail mounted
- Usable for 12V and 24V

Switch box specifications

Working voltage	12 - 24V DC
Available versions	8 and 12 channel (custom possible)
Max current	14A per channel
Input switch voltage and current	12V at 1mA 24V at 3,5mA

Protections

Short circuit proof

Over voltage protection

12V = 17V
24V-L = 31V
24V-H = 39V
48V = 66V

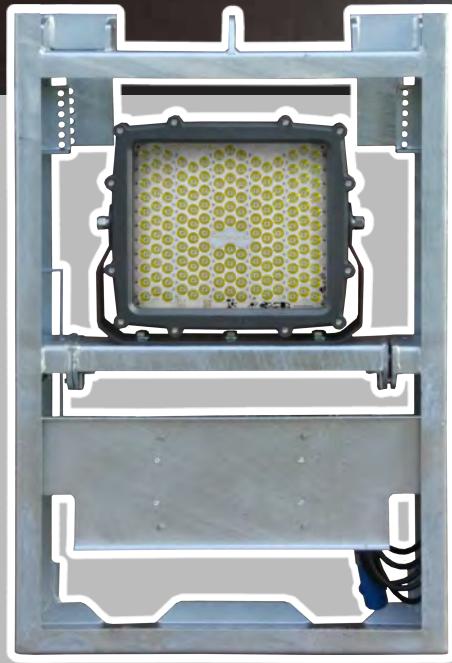


DCB PIPE CLAMP - Driver & Snapper

This pipeclamp is designed to fix your driver and snapper to any round pipe. This product wil fit on any Ø 30mm to Ø 60mm pipe.

Clamp specifications

Clamp material	316 Stainless Steel
Bracket weight	0.1kg
Bracket thickness	-3 mm
Clamp measurements	100 x 35 x 20mm
Clamp angle adjustment	Freely - Parallel along pipe



DCB CRANE BRACKET - Orca series

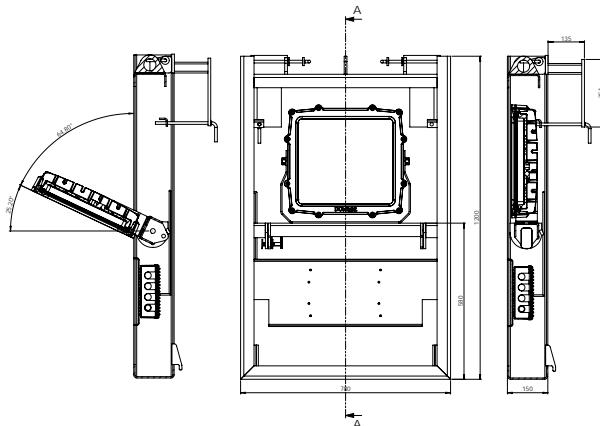
The demand for this product came from Liebherr Holland. Together we looked at the current situation and looked for a simplified way to mount and aim the lightings. This resulted in the DCB crane bracket as end product. The bracket ensures that the lamps can be transported easily, hung in place quickly and have good light distribution at different heights.

Bracket specifications

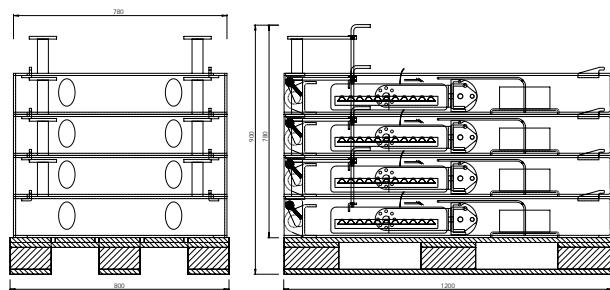
Material	5 mm, galvanised steel
Bracket weight	52 kg
Bracket + lamp weight	82.6 kg
Warranty	3 years

Four of these crane brackets fit together on a single euro pallet for transportation. See measurements below.

DCB crane bracket - Orca series - dimensions



transportation & storage on euro pallet

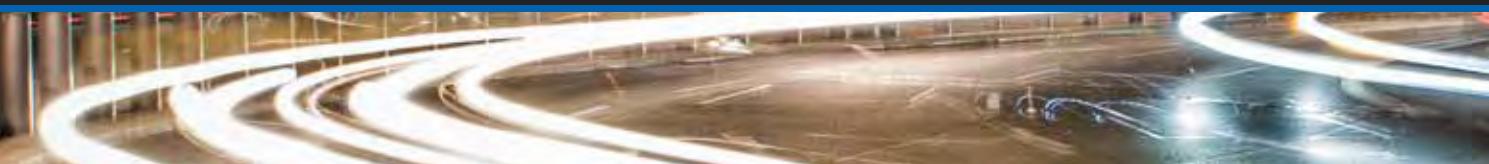


DCB HEAVY DUTY BRACKET - Barracuda series

DCbright heavy duty bracket (HDB) is especially designed for worlds toughest surroundings. The 8mm thick sheet metal is designed to face though situations such as heavy vibrations and heavy use.

Bracket specifications

Bracket material	Galvanised high tensile strength steel with dual E-coating
Bracket ring material	Galvanised high tensile strength steel with dual E-coating
Bracket weight	8.5 kg
Bracket thickness	8 mm
Colour	Titanium grey
Light angle adjustment	± 240° in 5° steps



Reversed polarity protection

Reversing the polarity of a device's power supply can have serious consequences. Changing the positive and negative sides can lead to a burned printed circuit board or more complex problems. DCbright products with polarity protection are protected against accidentally wrong connecting the polarity.

There are various ways to counteract the effects of "reversed polarity." A commonly used method consists of adding a diode to the supply line. The advantages of this method are its simple application and low costs. A major disadvantage of diodes is the huge voltage drop. Furthermore, this method has an efficiency loss of around 1%.



Active polarity protection

Another method is a so-called "active system". The costs for this method are higher, but on the other hand there is no loss of efficiency.



Over voltage protection

In order to prevent damage to components due to excessive voltage, over voltage protection is applied. This is a protection that interrupts the power supply when the occurring voltage exceeds a preset voltage margin. As soon as the voltage exceeds the margin, the lamp switches off. When the voltage is within the set margin again, the lamp will switch on.



Transil protection

The light is protected against static voltage discharges on the connection wires.



Thermal management

Good thermal management has a lot of influence on the efficiency and reliability of LED lighting. A commonly used method is dimming by using a PMW (Pulse Width Modulation). The stroboscopic effects and electromagnetic interference that accompany this can, however, have negative consequences for the health of personnel and the functioning of electronics.

DCbright uses a system for thermal management that, with the help of a temperature sensor, prevents the maximum permissible temperature to be exceeded. In addition, maximum efficiency is achieved by adjusting the power in such a way that the lamp burns with a constant and stable temperature. No PWM is used for this, eliminating the disturbing stroboscopy and electromagnetic interference



Dump load transient

A "dump load transient" is a component that can absorb power when the voltage exceeds a preset point. By making use of this absorbed power, the lamp can arm itself against voltage peaks in the supply line.

DCbright lamps are equipped with a dump load transient that meets the following requirements:

I EC 61000-4-2 exceeds level 4
ISO10605 – C = 330 pF, R = 330 Ω
Pulse 2a: VS = +112 V
Formerly pulses 5a and 5b

30 kV (air discharge)
ISO 7637-2
Pulse 3a: Vs = -220 V
ISO 16750-2 - Tests A and B

30 kV (contact discharge)
Pulse 1: VS = -150
Pulse 3b: Vs = +150 V



Active dumpload protection

This protection is bit the same as the standard dump load protection. Only the difference is that this protection will adsorbed power in line with the led light. So it only eat some voltage of the ingoing power in case the voltage get out of spec and can't be handled any more by a dump load way. The active dump load can switch off the power to the led light to protect it against the out of control surge



Surge protection

Surge protection protects electronic components against voltage spikes. The surge protection that is applied in the DCBright lamps consists of a protection that remains stable up to 75 volts. If this value is exceeded, a maximum of 3000-6000 amperes is withdrawn, thereby smoothing out the voltage increase. This extraction takes place in a maximum of 8/20 μs, whereby the reaction speed is 1000 V/μs.



Inrush current limiter

An inrush current limiter is a component used to limit the inrush current to prevent gradual damage to components and to prevent fuses or circuit breakers. Without this protection, the lamps will extract a large current during start-up, since the capacitors must be charged.



Heat transfer PCB

Generally Led light use pcb's with a heat transfer of 0.23Wmk to 3Wmk but DCbright focused to use the best for our customers. So we use board with the heat conductance of up to 390wmk. Higher heat conductance means the leds get less hot. If the leds get less hot the light will give more light out and have a long life time.



Short circuit protection

The short-circuit protection switches off the voltage supply if a short-circuit occurs in the lamp.



Flicker free lighting

In many recent scientific studies, connections are made between physical and psychological complaints and the so-called "flickering" of LED lighting. Migraine, loss of concentration, eye strain and light-sensitive epilepsy are some possible consequences of LED lighting with a frequency that is registered by the brain, but cannot be "seen" with the eye.

To avoid this ever-increasing problem, DCbright uses completely flicker-free lamps! This is achieved by applying a frequency of 1MHz for example. In addition, a capacitor is used to smoothe out wrinkles.



Anti vibration

In order to make the lamps as vibration-resistant as possible, the heavier components are soldered and glued onto the PCB. Given the high absorbency of glue with regard to vibrations, this results in a considerably longer service life of both the components and the PCB. And screws that are used are special screws or they are sealed in.



EMV - EMC

DCbright lamps have a component that suppresses interference. As a result, less electromagnetic interference occurs and the chance of electronics malfunctioning near the lamps is reduced.



Low glare

In order to prevent light pollution or 'glare' (light that falls outside the desired distribution angle), there are "low-glare" variants available for the vast majority of the products that DCbright offers.



DCbright standard production quality

Soldering: Traditionally, it is customary to solder components onto the printed circuit board using a fan oven. DCBright solders its components by using a special method in a liquid. This ensures a stronger bonding of the components to the PCB, but also a considerably lower porosity of the solder tin. A lower porosity reduces the risk of cracking. Furthermore, no oxidation can occur during soldering, due to the airtight environment in which the soldering takes place. The method originates from the aerospace industry and is rarely used in the lighting industry due to its higher costs.

Heat transfer: To ensure an optimum heat transfer from the PCB, DCBright places a heat-exchanging sheet between the PCB and its housing. This brings various advantages with respect to the commonly used cooling paste. Not only is there no longer any chance of the paste drying out, but it is also not possible for the paste to end up on components. Such a paste usually contains chemical components that are harmful to electronic components, so this is undesirable. The heat-exchanging sheet prevents short-circuiting and overheating of components and the lamp, giving both a longer life span.

Cable management: Practice has shown that moisture sometimes ends up in LED lamps via the cabling, with disastrous consequences. By applying a unique connection between cable and lamp, this danger does not exist with DCBright lamps.

Individual tested: After production each lamp is tested individually to determine whether the lamps are functioning properly. Every lamp is also monitored with a thermal camera to ensure that all specifications are met.

Moisture-free housing: The assembly of the lamps takes place in a room with low humidity. This results in both a low pressure and a low degree of humidity inside of the housing. This minimizes the risk of oxidation and condensation, resulting in an optimum light output. Hereby, the lamp is suitable for a wide variety of external conditions.

Screws: All screws are made of stainless steel 316 and sealed in the housing to prevent vibrations and corrosion.

Materials: All lamps and fixtures are made of high-quality aluminum. The aluminum is tested with an X-Ray scan to check whether it meets the quality requirements.

Paint: The aluminum housing is provided with a layer of "chrome conversion coating", which promotes the corrosion resistance of the lamps. A dual layer of "powder paint" is then applied. Titanium is used in the powder paint in order to improve the heat transfer capacity of the housing.

PC sheets: The polycarbonate sheets used by DCBright are UV-coated PC sheets. This ensures durability and prevents discoloration.

Warranty: A warranty of at least five years applies to all lamps.



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