JEL PRODUCTS
SUSTAINABLE | LIGHTING | SOLUTIONS

INSTRUCTION MANUAL

DarkLicht One, Two and Three

Full cut off area lights for high masts and tower cranes, one manual for the module family:
the One at 320, 400 and 600 W, the Two at 800 and 1,200 W, and the Three at 1,800 W.

DOCUMENT	REVISION	DATE	LANGUAGE
MAN-DLO-EN	1	07 / 09 / 2026	EN

Read before installation | Keep for future use | Qualified personnel only | DARK01 to DARK06

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Contents

This manual covers the large DarkLicht types: the One with one reflector module, the Two with two and the Three with three, on one 316L bracket, for high masts, tower cranes and structures. Where a section applies to one type or one power level only, it says so.

WHICH TYPE DO YOU HAVE

Code on the label	Type
DARK01	DarkLicht One 320 W, driver BLD320 inside the luminaire
DARK02	DarkLicht One 400 W, driver TLD400 inside the luminaire
DARK03	DarkLicht One 600 W, external TLD600 in a DRB-2 or on a tray
DARK04	DarkLicht Two 800 W, external TLD800
DARK05	DarkLicht Two 1,200 W, external 2 × TLD600
DARK06	DarkLicht Three 1,800 W, external 3 × TLD600

The label is on the rear of the housing. Section 2.5 explains the second code on it, which is not an article number.

PRODUCT PAGE

Photometric files, drawings, the three datasheets and the current version of this manual.

jelproducts.nl/en/products/dcbright-darklicht

KEEP THIS MANUAL

Store it with the site or crane documentation and pass it on to every person who works on the luminaire.

1 About this document

Read this manual and understand its safety instructions before you install, operate or maintain the luminaire. Failure to do so can result in serious injury or death.

1.1 Who this document is for

This manual is written for the buyer, the installer, the mast and crane supplier, the maintenance technician and the end user. Assembly, installation, commissioning and maintenance may only be carried out by a qualified person: someone with electrical training who can recognise the risks described here and avoid them, and who is qualified for work at height.

Every person who works on the luminaire must have read these warnings and must follow them. Keep the manual for the service life of the installation.

1.2 Hazard classes

Safety information in this manual is graded. The class tells you how serious the consequence is if the instruction is ignored.

DANGER
A hazard with a high level of risk which, if not avoided, will result in death or serious injury.

WARNING
A hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

CAUTION
A hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

NOTE
Information that matters for a correct result but that is not related to a hazard.

1.3 Symbols


Electrical hazard
Live parts. Isolate the supply before working on the luminaire.


General hazard
Described in the text beside the symbol.


Optical radiation
Do not look into the operating light source.


Hot surface
The housing and the driver run warm in service.


Crush hazard
Moving parts during mounting and tilting.


Two persons
This step must be carried out by two people, or with a hoist.


Read the manual
Read and understand it before use.


Protective earth
Terminal for the protective earth conductor.


CE marking
Complies with the applicable European legislation.


Separate collection
Not unsorted municipal waste.

1.4 Feedback

The latest version is on the product page. If you find an error, write to info@jelproducts.nl. We would rather correct a sentence than have an installer guess.

1.5 Revision history and what this edition replaces

The One, Two and Three have been supplied with one DCbright Operating Instruction for the Dark Licht Series, nineteen pages, dated 6 December 2023 and issued in February 2024. **This edition supersedes it.** Where they disagree, this manual applies.

Date	Revision	Change
6 December 2023	-	DCbright Operating Instruction Dark Licht Series, nineteen pages, DL1, DL2 and DL3. Superseded
7 September 2026	1	First edition of the JEL Products manual, One, Two and Three in one document, to the JEL Products manual standard. **Corrected against the 2023 instruction:** the ambient range is minus 45 to plus 50 degrees Celsius on every type and not minus 40 on the Two and Three, the ingress rating is IP66 and IP67 and not IP65, the service life is TM-21 L90B05 above 103,500 h and not the L80B10 figures printed there, the supply range is 180 to 528 VAC on every TLD driver and 90 to 305 VAC on the BLD320 of the 320 W One, and the hazard distance is given per type in section 4.3 instead of the single figure of 11.688 m

2 The product

The DarkLicht does not use lenses. A patented parabolic reflector throws the light forward and down and cuts it off completely above an angle between 63 and 75 degrees that is set at the factory to the ordered position, so a high mast delivers full working light next to housing, a carriageway or a protected area with an upward light output ratio of nil. The One, Two and Three carry that reflector in one, two and three modules of 504 by 240 mm on a single bracket, from 51,200 to 307,800 lumens.

2.1 The three types

One. One module, 320, 400 or 600 W. The driver is inside the luminaire at 320 and 400 W and external at 600 W. DARK01 to DARK03

Two. Two modules, 800 or 1,200 W, the driver or drivers always external in a DRB-2 or on a tray up the mast. DARK04 and DARK05

Three. Three modules, 1,800 W, three TLD600 drivers external. The largest full cut off luminaire in the range. DARK06

	One	Two	Three
Article base code	DARK01 320 W · DARK02 400 W · DARK03 600 W	DARK04 800 W · DARK05 1,200 W	DARK06 1,800 W
Luminous flux	51,200 · 68,400 · 102,600 lm	136,800 · 205,200 lm	307,800 lm
Efficacy	160 lm/W at 320 W, 171 lm/W above	171 lm/W	171 lm/W
Supply, to the driver	90 to 305 VAC at 320 W (BLD320), 180 to 528 VAC at 400 and 600 W	180 to 528 VAC or 250 to 740 VDC, 50 or 60 Hz	
Driver	BLD320 internal · TLD400 internal · TLD600 external	TLD800 external · 2 × TLD600 external	3 × TLD600 external
Cut off	63 to 75 degrees in five positions, set at the factory to order. ULOR 0 per cent at every position		
Housing and front	Cast aluminium, e-coated. Impact resistant glass, the luminaire classified IK07		
Bracket	High tensile 316L stainless steel, tilt indexed from minus 20 to plus 20 degrees, pan 30 degrees on the foot		
Dimensions	365 × 550 × 160 mm	635 × 550 × 160 mm	905 × 550 × 160 mm
Weight, luminaire	14.9 · 15.0 · 14.0 kg	24.8 kg	35.0 kg
Weight, with the external driver	23.0 kg at 600 W	36.6 kg at 1,200 W	On request
Ingress and ambient	IP66 and IP67, minus 45 to plus 50 °C		
Warranty	5 years on the complete luminaire, extendable to 10 years under a maintenance agreement		

The whole DarkLicht line shares one light distribution, so one measured set covers every type at its own flux and a lighting designer works with one photometric behaviour at every mounting height. The manufacturer calls these types DL1, DL2 and DL3, and that is how the wiring drawings and the internal production code name them.

2.2 Intended use

The One, Two and Three are intended for permanent professional installation as area lighting from a high mast, a tower crane frame or a structure, outdoors, within the ambient temperature range and the supply range, wherever a large area has to be lit to a working level and the light must stop at a boundary: the neighbour, the carriageway, a nature area or the sky. The luminaire hangs from its foot plate on a vertical face, glass down, and is aimed by setting the cut off angle from a lighting design, not by tilting. Typical applications:

Where	Applications
High masts	Container and intermodal terminal high masts, port and quay areas with a residential boundary, rail yards and marshalling areas, logistics and distribution high mast lighting, vehicle storage and compound lighting, bulk storage and laydown yards, waste and recycling facilities, large car parks and park and ride sites
Tower cranes	The One on the tower crane frame, folded out from the crane to light the site below, transported and stacked on a euro pallet, section 6.3
Sport and events	Sports fields and training grounds under an obtrusive light condition, event grounds, large agricultural and horticultural sites near housing

2.3 What the luminaire is not for

The following uses are outside the intended use. They are not covered by the warranty and, in several cases, they are unsafe.

- **Explosive atmospheres.** No DarkLicht is ATEX or IECEx certified. None may be installed in a zoned hazardous area.
- **Mains into a luminaire with an external driver.** On DARK03 to DARK06 mains goes to the driver box. The luminaire itself is a 100 V device and mains on cable 3 destroys it.
- **A DC supply.** There is no DC One, Two or Three. The 250 to 740 VDC input of the driver is a rectified supply feature, not a battery supply.
- **Ambient above plus 50 degrees Celsius.** There is no high temperature DarkLicht, and the driver box up the mast has the same limit.
- **Immersion and washdown.** IP66 and IP67 cover rain, hosing and a temporary dip. There is no IP68 or IP69K on these types.
- **Permanent salt exposure beyond C5.** The bracket is 316L; the housing is coated aluminium to C5.
- **Tilting for reach.** The tilt index runs from minus 20 to plus 20 degrees so that a mast arm or a crane frame can be compensated. Every degree above nil puts light above the horizontal; on a permanent installation stay within 15 degrees and design the reach on the cut off.
- **Uplighting or lighting anything above the luminaire.** Nothing leaves the reflector above the cut off, by design.
- **Mounting on a horizontal surface, foot down.** The foot plate is vertical. A One laid on a flat roof on its plate does not have its reflector the way up it was measured.
- **Emergency or escape route lighting from an internal battery.** No DarkLicht has battery back up or a self test.
- **A luminaire up a mast without its driver counted.** From 600 W the driver box goes up the mast with the luminaire, and a mast calculation that leaves it out is wrong, section 3.1.
- **Operation with a damaged glass, housing, bracket or cable**, or with a driver other than the one supplied.

2.4 Order codes

DARK03-40K-BIC

DARK01 · DARK02 · DARK03	One at 320, 400 and 600 W
DARK04 · DARK05	Two at 800 and 1,200 W
DARK06	Three at 1,800 W
57K to 27K	5700, 5000, 4000, 3000, 2700 K
22K · 18K · 17K	Amber 2200, 1800 and 1700 K, the DarkSky DS-1 range
BIC	Bi-colour, tuneable white 4000 K with 2200 K and 1700 K, switched in operation, section 9.3

The cut off, the shield position S1 to S5, is specified at order and set at the factory; it is not adjustable on site. Driver placement, in a DRB-2 or on a tray, the tower crane frame, the control protocol, cable 3 length and the Ra 80 or Ra 90 option are confirmed at quotation and are not part of the code.

NOTE, THE OLDER CODE SYSTEM

The 2023 instruction and the wiring drawings use the manufacturer's code, such as **DL1-AC-600W-96 | In-50-70-R | S2**: type and power with the LED count, then bracket, colour, CRI and driver position, then the shield position. That code lives on as the internal production code on the label, section 2.5, and it is where the shield position is recorded. The article code you order is DARK01 to DARK06, with the shield position stated separately on the order.

2.5 The type label, and the second code on it

The type label on the rear of the housing carries the article code, the electrical data, the protection class, the ingress rating and the serial number. The external driver carries a label of its own, and so does the DRB-2. Both also show a **second code that is not an article number and that will not match what you ordered**. That is correct and it is deliberate.

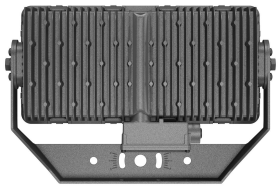
NOTE

The second code is a JEL Products internal production code, such as DL2-AC-1200W-192. It records the specific printed circuit boards fitted, the production batch and the production date. We use it for traceability, for warranty and for service. It carries no information you need in order to specify, order or reorder a luminaire.

When you contact us about a luminaire, quote both. The article code tells us what it is. The internal code tells us exactly which one it is, which boards are in it and when it was built. **Photograph the label before the luminaire goes up:** on a 30 m mast it is not read again until the next platform visit.

WARNING, THE 600 W ONE LOOKS LIKE THE 400 W ONE

The One at 320 and 400 W has its driver inside and takes mains on its tail. The One at 600 W has its driver in a box and takes **100 V DC** on its tail. From the outside the housings are the same. **Read the label:** mains on a 600 W tail destroys the luminaire.



The rear of the One: the fin field of the module, the junction box in the centre and the type label

3 Technical data

All values apply to the standard configuration at 4000 K and 25 degrees Celsius ambient, including reflector losses and driver consumption, with the shield in the standard position. A hyphen means the entry does not apply to that power level.

	One 320 W DARK01	One 400 W DARK02	One 600 W DARK03	Two 800 W DARK04	Two 1,200 W DARK05	Three 1,800 W DARK06
PERFORMANCE						
Luminous flux	51,200 lm	68,400 lm	102,600 lm	136,800 lm	205,200 lm	307,800 lm
Efficacy	160 lm/W	171 lm/W	171 lm/W	171 lm/W	171 lm/W	171 lm/W
Modules, reflectors	1, 6	1, 6	1, 8	2, 12	2, 16	3, 24
Cut off angle	63 to 75 degrees in five shield positions S1 to S5, set at the factory to the ordered position, section 3.3. Upward light output ratio 0 per cent at every position					
Colour	5700, 5000, 4000, 3000, 2700 K, amber 2200, 1800 and 1700 K, tuneable white. Ra above 70 standard, 80 or 90 on request. MacAdam step 3 or better					
ELECTRICAL AND DRIVER						
Supply, at the driver	90 to 305 VAC	180 to 528 VAC or 250 to 740 VDC, 50 or 60 Hz				
Current at 220 V	1.5 A	1.8 A	2.7 A	3.7 A	5.5 A	8.2 A
Current at 380 V	-	1.1 A	1.6 A	2.2 A	3.2 A	4.8 A
Driver	BLD320, inside the luminaire	TLD400, inside the luminaire	TLD600, external	TLD800, external	2 × TLD600, external	3 × TLD600, external
Driver size and mass	225 × 68 × 38.5 mm, 1.1 kg	251 × 90 × 41.5 mm, 1.7 kg	262 × 125 × 49 mm, 2.6 kg each			
Driver life	Above 100,000 h at Tc 75 °C, Tc minus 40 to plus 90 °C, MTBF above 280,000 h on the BLD320 and TLD400 and above 320,000 h on the TLD600 and TLD800					
Inrush, at 220 V	31.2 A, T50 1.3 ms	64 A, T50 400 µs	5.4 A, T50 8 ms	5.4 A, T50 8 ms	2 × 5.4 A, T50 8 ms	3 × 5.4 A, T50 8 ms
Luminaires per MCB, B16 · C16 · C25 · D16	2 · 4 · 7 · 8	4 · 5 · 8 · 6	3 · 3 · 5 · 4	2 · 2 · 4 · 3	1 · 1 · 2 · 2	1 · 1 · 1 · 1
Surge protection	6 kV line to line, 10 kV line to earth, IEC 61000-4-5					
Power factor	Above 0.9 at 60 to 100 per cent load, THD below 15 per cent					
Dimming	0 to 10 V, PWM, DALI-2, or set over NFC on the driver					
Cable and termination	Mains cable into the junction box on the luminaire, free ends on push in terminals, H07RN-F 3G1.5 recommended	Mains into the DRB-2 or the tray. Cable 3 from the box to the junction box on the luminaire, H07BQ-F, 4 cores at 600 and 800 W, 6 cores at 1,200 W, 8 cores at 1,800 W, length per order				

Luminaires per MCB is the driver manufacturer figure on an ABB S200 at 220 V, a guide for engineering and not a substitute for the installation calculation. The JEL test of July 2024 measured a cold start peak of 12.5 A for 3.2 ms per 600 W at 230 V, and recommends a C6, C10 and C16 per single 600, 1,200 and 1,800 W luminaire on its own breaker, section 7.3.

3 Technical data, continued

	One	Two	Three
CONSTRUCTION			
Housing	Cast aluminium modules, less than 0.08 per cent copper, conversion layer plus two layer titanium-based e-coating, Titanium Grey or Titanium Black		
Optic	Patented parabolic reflector, no lens, two reflectors per printed circuit board		
Bracket	High tensile 316L stainless steel, one foot plate on a side arm, tilt indexed at 0, 5, 10, 15 and 20 degrees either way, pan 30 degrees on the foot		
Front	Impact resistant glass per module. The luminaire is classified IK07 to IEC 62262; the construction is in practice IK08 but there is no test report for it		
Protection class	Class I. The incoming earth conductor is connected to the housing and to the driver box, section 7.1		
Ingress protection	IP66 and IP67, each class tested separately		
Corrosion class	C5 industrial and marine, ISO 9223, the bracket 316L		
DIMENSIONS, LIFE AND WARRANTY			
Dimensions, from the drawing	550 × 365 × 160 mm, section 3.1	550 × 635 × 160 mm, section 3.2	550 × 905 × 160 mm, section 3.2
Weight, luminaire on its bracket	14.9 kg at 320 W, 15.0 at 400 W, 14.0 at 600 W	24.8 kg	35.0 kg
Weight, driver box or tray	9.1 kg box, 5.1 kg tray, at 600 W	9.1 kg box, 5.4 kg tray at 800 W. 11.3 kg box, 7.8 kg tray at 1,200 W	13.8 kg box, 10.4 kg tray
Ambient and storage	minus 45 to plus 50 degrees Celsius, stored dry in the original packaging		
LED service life, TM-21 L90B05	above 103,500 h at 50 °C		
Warranty	5 years on the complete luminaire, extendable to 10 years under a maintenance agreement		

WHERE THE DRIVER IS

Up to 400 W the driver sits **inside the luminaire**, in the module behind the fin field, and the luminaire takes mains on its tail like a conventional floodlight. From 600 W the driver, or the two or three drivers, sit **outside the luminaire** in a DRB-2 driver box or on an open tray, and the box goes up the mast with the luminaire. That is the trade on this family: the small One is one component, the large types are two, and the second one weighs nine to fourteen kilograms and catches wind.

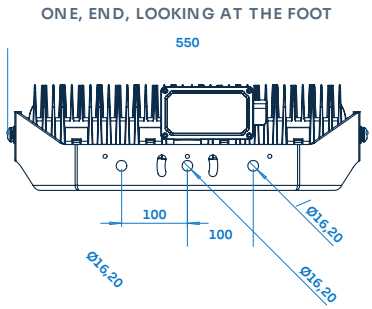
> **WARNING, COUNT THE DRIVER BOX IN THE MAST CALCULATION**
>
> At 600 W and above the driver box adds about nine kilograms and **more than doubles the side area** of what sits on the mast head. A calculation that uses the luminaire row alone is not conservative. Section 3.1 gives both rows for that reason.

WHAT THIS FAMILY DOES NOT DO

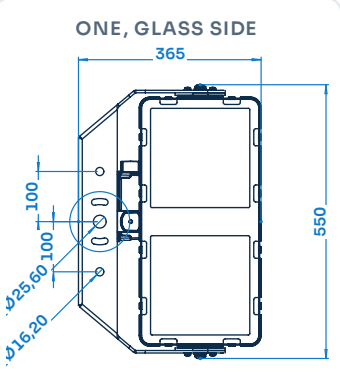
DC supply	None. The DarkLicht M is the 24 V DC type for a light tower
IP68, IP69K	Not on these types. IP66 and IP67
High temperature	No HT version, and the driver box has the same plus 50 limit
316L housing	The bracket is 316L, the housing coated aluminium
Tower crane frame	Available on the One only. The Two and Three are mast luminaires

3.1 Dimensions, weight and wind load, One

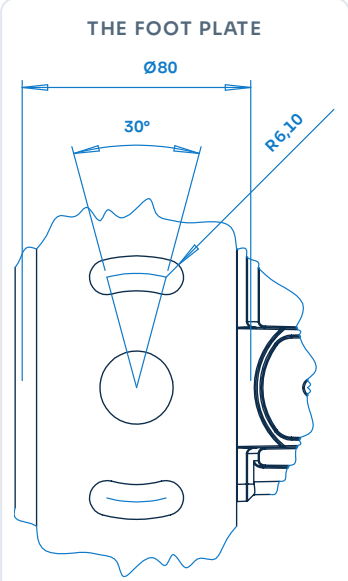
All drawings are dimensioned in millimetres and are taken from the production drawing DL-O1. DXF and STEP models are available on request. The module hangs glass down in a 316L bracket whose arm ends in a vertical foot plate; the tilt index sits on the arm at the module.



One, looking at the foot plate, and from the side. 550 mm long, 365 mm over the bracket, 160 mm high over the fins. The plate hangs below the module, the tilt index is on the arm



The glass side: two reflector pairs, the plate along the 550 mm edge



The plate: Ø 25.6 in the centre, two slots of Ø 12.2 on Ø 80 over 30 degrees, and Ø 16.2 at 100 mm above and below

The One at 600 W from the glass side, in its bracket. The junction box on the rear takes cable 3 from the driver box

DIMENSIONS, FROM THE DRAWING

Envelope	550 long, 365 over the bracket, 160 high
Module	504 × 240 mm, laser boss on the top

MOUNTING INTERFACE, THE PLATE

Centre hole	1 × Ø 25.6 mm, for M24
Outer holes	2 × Ø 16.2 mm on 100 mm above and below, for M16
Pan slots	2 × Ø 12.2 on Ø 80, over 30 degrees
Tilt	Indexed 0, 5, 10, 15, 20 degrees, either way

WEIGHT

Luminaire with bracket	14.9 kg at 320 W, 15.0 at 400 W, 14.0 at 600 W
Driver box, 600 W	plus 9.1 kg, 23.0 kg on the mast head

WIND LOAD, FROM THE WIND RATING REPORT

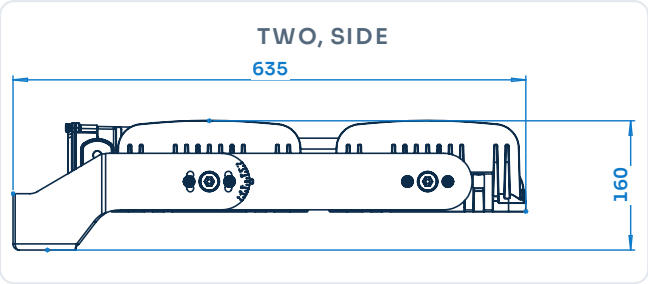
Frontal, 0 to 20 degrees	0.075 · 0.078 · 0.083 · 0.086 · 0.088 m²
Side, luminaire	0.033 m²
Side, with the driver box	0.073 m²
Cd	1.22 luminaire, 1.23 with the box
Force at 45 m/s	About 136 N frontal at 20 degrees, 114 N on the side with the box, air density 1.25 kg/m³

NOTE

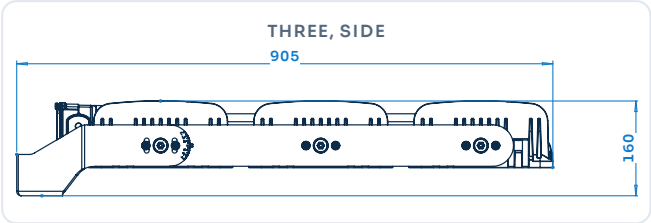
The datasheet envelope of 365 × 550 × 160 mm agrees with the drawing. The wind figures are measured, from the DarkLicht wind rating report of August 2024, and the Cd is the report's envelope value. The mast supplier's head load limit decides; give them both rows.

3.2 Dimensions, weight and wind load, Two and Three

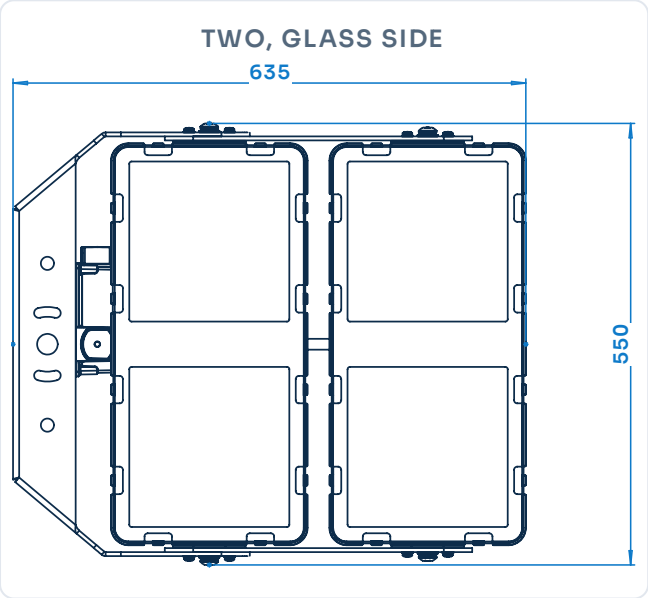
The Two and the Three are the same module two and three times over on one bracket arm. The plate, its holes and the tilt index are identical to the One; what grows is the length, the weight, the frontal area at tilt and the side area. The drawings are DL-O2 and DL-O3.



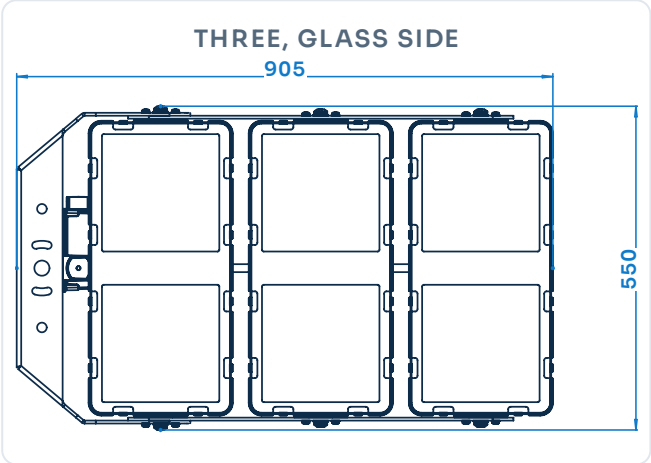
Two from the side, 635 mm over the bracket. Two modules, each with its own junction box and tilt index



Three from the side, 905 mm over the bracket, three modules



Two, glass side: four reflector pairs



Three, glass side: six reflector pairs and the plate along the 550 mm edge

	Two, 0°	Two, 20°	Three, 0°	Three, 20°	Force at 45 m/s, 20°
Frontal area, luminaire	0.075 m²	0.135 m²	0.075 m²	0.182 m²	209 N Two, 281 N Three
Side area, luminaire		0.064 m²		0.095 m²	99 N, 147 N
Side area, with the driver box		0.104 m²		On request	162 N Two
Frontal at 5, 10 and 15 degrees	0.091 · 0.107 · 0.122 m²		0.104 · 0.130 · 0.159 m²		
Weight, luminaire	24.8 kg		35.0 kg		
Weight, with the driver box	36.6 kg at 1,200 W		About 49 kg with the 13.8 kg box		

Cd 1.22 for the luminaire and 1.23 with the box, from the DarkLicht wind rating report of August 2024, air density 1.25 kg/m³. The frontal area at tilt is what a permanent installation at 15 degrees on a mast arm sees; the side area with the box is what the mast sees from the other direction. The Three with its box is quoted on request because the box for three drivers has not been in the wind tunnel. Give the mast supplier every row.

3.3 The cut off, and what it does to the light

A DarkLicht has no lens. A patented parabolic reflector throws the light forward and down and cuts it off completely above the set angle. That angle, measured from the vertical below the luminaire, lies between 63 and 75 degrees in five shield positions on the reflector, and is **set at the factory** to the position specified at order. The upward light output ratio is nil at every position: what changes is how far the light reaches, not how much there is. The whole DarkLicht line shares one light distribution, so one set of photometric files covers the One, Two and Three at their own luminous flux, and a designer works with one behaviour from a 12 m mast to a 40 m mast.

Position	Cut off	Beam angle	Typical use
S1	75°	132°	Maximum reach, sites without a sensitive boundary
S2	72°	123°	Wider cover where the boundary allows it. Supplied where no position is specified
S3	69°	-	The usual setting for a terminal, a yard or a car park
S4	66°	-	A site with housing on one side
S5	63°	-	Tight boundaries, a mast directly against housing or a carriageway

The beam angle is the full angle at 50 per cent of the peak intensity in the C0 to C180 plane. At 69 degrees and below the distribution has no 50 per cent point above the cut off, so no beam angle is stated. The photometric files carry the two measured **shield positions** of the reflector, S1 and S2; S3 to S5 are built on the same shield at order. The tilt index on the bracket is not the cut off: it compensates a mast arm, and the photometry assumes nil. Section 6.7 says what the installer checks.

REACH AGAINST MOUNTING HEIGHT

Mast height	S5, 63°	S3, 69°	S1, 75°
12 m	24 m	31 m	45 m
20 m	39 m	52 m	75 m
30 m	59 m	78 m	112 m
40 m	79 m	104 m	149 m

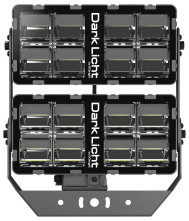
The distance on the ground at which the light stops, height times the tangent of the cut off, at nil tilt. A geometric guide for choosing the position, not a lighting calculation.

OBTRUSIVE LIGHT

ULOR	0 per cent at nil tilt, at every shield position
Guidance	NSVV guideline on obtrusive light, EN 12464-2, EN 12193 for sports
DarkSky DS-1	Met at 1700 to 2200 K, third party tested
Colour for DS-1	Amber 2200, 1800 or 1700 K, or tuneable white with 4000 K for the work and amber for the night, section 9.3

WARNING, TILT UNDOES THE CUT OFF

The cut off is a property of the luminaire at its **nil tilt attitude**, plate vertical and glass down. Every degree of upward tilt on the index puts light above the horizontal like on any floodlight, and the wind area grows with it. The index exists to compensate a mast arm that is not level and to let a crane frame fold; on a permanent installation stay within 15 degrees and choose the reach with the ordered shield position. A permitting condition written against a DarkLicht assumes nil tilt.



The reflectors behind the glass of a Two. Eight reflectors on four boards, no lens: the shape of the reflector is the optic

3.4 Standards and verification

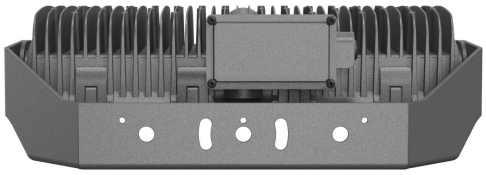
Subject	Standard	By
Luminaire safety	IEC/EN 60598-1, -2-5	TÜV type approval, in house
EMC emission and immunity	EN 55015, EN 61547	TÜV
Marine EMC	IEC 60533, bridge and open deck	TÜV
Ingress	IEC 60529, IP66 and IP67, luminaire and driver box	Test report
Impact	IEC 62262, IK07 signed report	Test report

Subject	Standard	By
Wind load	DarkLicht wind rating report, August 2024, per type and tilt	Test report
Corrosion	ISO 9223 class C5, salt spray report	Test report
Obtrusive light	NSVV guideline, DarkSky DS-1 at 1700 to 2200 K, EN 12464-2, EN 12193	Third party
Photometry and life	IES LM-79 per shield position, LM-80 and TM-21 for lifetime, ISTMT	Test reports
Substances	RoHS, REACH	Self-declaration

This table lists how the product is verified. The harmonised standards named on the declaration of conformity are listed separately in section 14.1. Photobiological safety is covered in section 4.3. The One, Two and Three are the DarkLicht types with the fullest test file in the range: type approval, LM-79 per shield position, LM-80 at 4000 and 5700 K, ISTMT, EMC on the luminaire and on the driver, IP, IK, salt spray, flicker, wind and the DarkSky test. Ask us for a report when a tender or a permit file needs it. To check the authenticity of a test or inspection report and certificate, contact JEL Products on +31 (0)33 785 9809 or at info@jelproducts.nl.

WHAT EACH RATING MEANS HERE

IK07	The glass front, 2 joules, IEC 62262, per the signed report. The construction is in practice IK08 but there is no report for it, so IK07 is what we state. On a mast at 20 m nothing reaches the glass; on a crane frame at ground level the frame protects it
IP66 and IP67	Hosing and a temporary dip. Not IP69K: a One on a crane frame is not pressure washed at close range, and a mast luminaire never is
Class I	The driver sits in the luminaire or in its box and the incoming earth conductor is connected to the housing and to the driver box, per the wiring drawings. On a mast the housing is bonded to the mast earth
C5	Industrial and marine, ISO 9223. A container terminal on the coast is within it. The bracket is 316L and needs no coating
Wind rating	Measured per type at 0 to 20 degrees of tilt, with and without the driver box, section 3.1 and 3.2. The one figure a mast engineer asks for first



The One from the end: the module in its 316L bracket, the plate below

The Three from above: three fin fields, three junction boxes, one arm

4 Safety

This chapter lists the hazards that arise when a One, Two or Three is installed, operated and maintained, and what to do about each of them. It does not replace the national and local electrical, lifting and working at height regulations that apply on your site.

4.1 Electrical hazard

DANGER, LIVE PARTS

Working in a driver box, in the junction box on the luminaire or on a cable while the supply is on can cause death or serious injury. Isolate the supply, secure it, and verify that the circuit is dead before you touch a conductor. On a mast, at the base and again at the head. Check twice.

DANGER, 400 V BETWEEN PHASES

These luminaires are normally fed at 400 V between two phases. A One at 320 W is the exception with its 90 to 305 V BLD320: **400 V on a DARK01 destroys the driver**. Read the label on the driver before you connect, and check the driver range against the supply.

- Every type is a Class I luminaire. The incoming earth conductor is connected to the housing and to the driver box, tray and any metal enclosure, per the wiring drawings, and the mast earth is verified at the furthest point after installation.
- Make the connection to the standards and directives that apply in your country. Stay within the supply range in chapter 3. Keep one metre to a radio receiver.
- Only use the driver and the cable supplied. Another driver can create a dangerous situation and voids the warranty; a TLD600 is programmed for the boards it feeds.

4.2 Falling objects

WARNING, FALLING LUMINAIRE

A luminaire that comes loose from a mast head, a crane frame or a structure can kill whoever is under it: a Three weighs 35 kg and falls from 30 m. Verify the structure before mounting, use all three bolts in the plate, and fit a secondary retention wherever the luminaire is above a walkway or a working area, and always on a crane frame.

The One weighs 14 to 15 kg, the Two 24.8 kg, the Three 35.0 kg, plus a driver box of 9 to 14 kg. Under EN 60598-1 the suspension has to withstand four times the mass. **The mast head, the arm and its bolts are the weak point, not the plate**, and on a crane frame the locking pin.

4.3 Optical radiation

WARNING, OPTICAL RADIATION

Never look into the operating light source. Direct exposure at close range can cause permanent eye damage. On a DarkLicht that means looking up into the glass from below; from beside or behind the luminaire there is nothing to see.

Photobiological safety is classified to **EN 62471**, with the blue light hazard assessed to **IEC/TR 62778**. That gives a **hazard distance**: beyond it the luminaire is Risk Group 1 and no exposure limit is reached in normal viewing. It is set by the peak intensity, so it grows with the power level. The figures come from our own LM-63 photometric files at shield position S2, the higher of the two.

Type	Peak intensity	Hazard distance
One 320 W	65,500 cd	4.3 m
One 400 W	87,500 cd	5.0 m
One 600 W	131,300 cd	6.1 m
Two 800 W	175,000 cd	7.1 m
Two 1,200 W	262,500 cd	8.7 m
Three 1,800 W	393,800 cd	**10.6 m**

The rule on site. Take **5 m** for a One at 320 W, **7 m** for the other Ones and the Two at 800 W, **10 m** for the Two at 1,200 W and **12 m** for the Three. On a mast at working height the distance is met by the height alone. It is not met on a crane frame at ground level, on a lowered mast, or on a platform next to the luminaire: there the luminaire is switched off before anyone is within it.

Method: the square root of the peak intensity divided by the threshold illuminance at the Risk Group 1 boundary, taken as 3,500 lx. The 2023 instruction gave one figure of 11.688 m for the series; that figure is withdrawn in favour of the per type figures. Calculated from our own photometric files, not a measurement report.

4.4 Hot surfaces

CAUTION, HOT HOUSING

A Three puts 1,800 W through three fin fields that face the sky. In service the housing reaches about 70 degrees Celsius and is too hot to hold; the driver case in the box may reach plus 90 degrees Celsius. Let it cool before handling. A platform visit to a running luminaire is a visit to a hot one.

- Isolate the supply and let the luminaire cool to hand temperature before any work.
- Keep at least 75 mm clear above the fins and do not mount the luminaire against insulation or a closed hood; on a crane frame the frame is open above the fins for that reason.
- Never run cold water onto hot glass. The thermal shock can break it, see section 10.4.
- The driver box up the mast sits in an ambient of at most plus 50 degrees Celsius, in the shade of the luminaire where possible, never in a closed mast head enclosure without ventilation.

4.5 Crush and handling

CAUTION, MOVING PARTS

Once the index bolts are slack the housing turns in its arm, 35 kg on the Three. Keep fingers clear of the index and of the gap between the module and the arm while tilting. On a crane frame the luminaire folds out from 90 degrees to its working angle: keep hands out of the frame while it swings and lock it before letting go.

- Wear gloves, safety boots and a hard hat during assembly and installation. A Two or a Three is lifted with a hoist, never carried up a mast.
- Do not work alone at height. Use a rated platform, a lowering mast or the crane's own access, and never use the luminaire, its arm or the driver box as a handhold or a step.

4.6 Heat and surroundings

- Keep at least 75 mm clear above the fin field and around the housing, and 150 mm around a driver box or a tray. Do not cover or wrap the luminaire and do not mount it against insulation material.
- Keep the fins clear. On a mast they collect dust and bird fouling, and trapped dirt reduces cooling and shortens the life of the LEDs. No type in this manual has a fan or a vent.
- Do not install a DarkLicht near a heat source that takes it beyond plus 50 degrees Celsius ambient, and do not put the driver box in one. There is no high temperature version.
- Do not expose the luminaire to corrosive chemicals outside its corrosion class without checking with your supplier first. There is no 316L DarkLicht housing.

4.7 Laying the luminaire down

CAUTION

Stand the luminaire on its **bracket plate**, the way it was delivered, with the glass facing the floor and clear of it. **Never rest it on its glass.** A Three on its glass rests 35 kg on three panes and their seals, and a chipped edge becomes a leak path at the first rain.

On a DarkLicht the glass is the underside of the luminaire and it is what the luminaire lands on if it is put down carelessly. The plate is a flat 316L bar and carries the weight without complaint, which is why the luminaire is shipped standing on it. On a crane frame the luminaire travels folded in, glass inward, and never leaves the frame.

NOTE

Do not stack anything on the fins and do not set a luminaire down on gravel with the plate on the ground: the plate and its slots are the mounting face, and a bent plate is a luminaire that does not sit square on the arm.

4.8 What must never be done

DANGER, DO NOT OPEN THE HOUSING

Do not remove the glass, the glass frame or any part of a module, and do not open a module beyond its junction box. The seal, the ingress protection and the electrical safety all depend on a housing that has not been opened. The junction box on each module and the driver box are the only parts meant to be opened in the field. Opening anything else voids the warranty and the declaration of conformity.

- Do not modify, repair or open the luminaire. Repairs are carried out by JEL Products or by a company it appoints.
- Do not install or switch on a luminaire with a cracked glass or a damaged housing, bracket, cable or box, and do not use it as listed in section 2.3.
- Do not connect mains to cable 3 of a luminaire with an external driver, do not put 400 V on a BLD320, and do not put a luminaire on a supply outside the range on its label.
- Do not mount the plate on the centre bolt alone, and do not move or modify the reflector shield: the cut off is a factory setting.
- Do not parallel two drivers onto one set of boards, and do not feed the boards of a Two or a Three from fewer drivers than they were built for.
- Do not tilt the luminaire beyond 15 degrees on a permanent installation, and never beyond the index.

4.9 Emergency and exceptional situations

- If an electrical fault occurs in a luminaire, a driver or a driver box, switch off the supply immediately.
- If a luminaire is severely damaged during operation, by a load, a crane movement or a storm, switch off the supply immediately and do not switch it on again until the luminaire has been replaced or released by JEL Products. A cracked glass on a module that still works is still a luminaire out of service, and at 30 m it is a falling glass hazard.
- No DarkLicht has battery back up. None of them provides emergency or escape route lighting.

4.10 Potential health consequences

If ignored	Consequence
Working in a live box or on a live cable	Severe injury or death by electric shock
Mains connected to cable 3, or 400 V on a BLD320	Destroyed luminaire or driver, arc, fire and shock risk
Looking up into the operating glass	Permanent eye damage, at close range on every type
Touching a hot housing or driver	Burns, minor to moderate
One bolt, or no secondary retention above a walkway	Death or injury from a falling luminaire of up to 35 kg and a box of 14 kg
Luminaire or box used as a handhold or step	Fall from height, bent arm
Fingers at the index or in a folding crane frame	Crushing, moderate to severe injury
Cold water on hot glass	Broken glass falling from height, loss of ingress protection
Luminaire rested on its glass	Chipped edge, water ingress, later failure
Luminaire tilted upward for reach	Light above the horizontal, glare to drivers and neighbours, a breached permit condition, and a wind area the mast was not checked for
Driver box left out of the mast calculation	Overloaded mast head in a storm

NEVER, ON ANY DARKLICHT

Never open the housing or remove the glass

Never rest the luminaire on its glass

Never carry or suspend it by the tail or the connector

Never aim a pressure washer at the cable entry or the connector

Never cover the fin field or box it in

Never fit a driver other than the one supplied

5 Preparation

Everything that has to be right before the first bolt goes into the mast head.

5.1 Transport and storage

- Transport and store the luminaire in its original packaging, in a dry place, at **minus 45 to plus 50 degrees Celsius**.
- Do not stack pallets beyond the marking on the packaging.
- Store the box the right way up, so that the luminaire stands on its plate and the glass does not carry the weight. A Three weighs 35 kg: move it on the pallet, not by hand.
- On a tower crane frame the luminaire and its driver box travel inside the frame, folded in and locked with the pin, and the frames stack two rows by four high on a euro pallet. That is how they leave the site as well.
- Keep the drivers in the DRB-2 and the box closed until it is at the mast. A box that has stood open on a site has a wet driver.

5.2 Contents of the delivery

1 ×	DarkLicht luminaire in the ordered configuration, on its 316L bracket, with the shield at the ordered position and the tilt index at nil
1 ×	On DARK03 to DARK06: the driver or drivers, pre-wired in a DRB-2 driver box or on a tray, with cable 3 to the ordered length
1 ×	Cable entry open ended spanner, a length of 304 stainless flexible conduit, heat shrink tubing and vulcanising tape, 3M J20
1 ×	This instruction manual

NOTE, THE TOWER CRANE FRAME

Where the One is ordered on the crane frame DL-CCB-600, it arrives assembled in the frame with its driver box, 55 kg complete, ready to hang on the crane beam. Nothing is fitted on site except the supply.

Mounting bolts for the mast head are not supplied, because they depend on the arm. **The safety cable is not supplied as standard**, see section 6.5.

5.3 Unpacking

1. Read the label on the box and check that the article code matches what you ordered and what the lighting design says. A 400 W and a 600 W One look identical and take different supplies.
2. Cut the tape along the seams. Do not push the knife deeper than the tape: the glass is just under the lid.
3. Lift the luminaire out by the bracket arm, two people on a Two, a hoist on a Three, never by the cable, the junction box or the fins.
4. Check that the article code on the type label matches the code on the box, note the internal production code as well, see section 2.5, and **read the driver range on the driver label**.
5. Inspect the glass of every module, the housings, the bracket, the junction boxes, the driver box and cable 3 for cracks, impact damage or a loose gland.
6. Keep the packaging until the luminaire is installed and working. A luminaire that has to be returned travels in its own box.

WARNING, DAMAGED PRODUCT

If you find any damage, do not install the luminaire and do not switch it on. Contact JEL Products.

The Two as delivered: two modules on one arm, standing on the plate, glass clear of the bench

5.4 Tools

The list names the bolt and not a spanner size, because the bolt into the mast head is your choice: the plate takes an M24 in the centre and an M16 above and below it.

Tool	Used for
Socket and ring spanner for the plate bolts	Three per luminaire: M24 in the centre, 2 × M16 above and below. A 36 and a 24 mm socket on a long bar
Socket for the index bolts	The tilt index on the arm at each module, M8 per the 2023 instruction, section 6.4
Torque wrench, 20 to 600 Nm	Plate bolts and index bolts, section 6.6. The M24 asks for 590 Nm
Two open ended spanners for the cable glands	The glands on the junction box, the driver box and the tray, one holds the body, one turns the cap nut. One is supplied
Wire stripper and cutter, end sleeve crimping tool	Preparing cable 1, cable 3 and the dimming cable for the terminals
Voltage tester	Verifying that the circuit is dead before a cover comes off, at the base and at the head
Multimeter	Checking the supply at the driver, and the 100 V output at CON 3
Insulation resistance tester	Commissioning, chapter 8
Heat gun	Heat shrink tubing over every gland, section 7.6
Inclinometer, or a phone with one	Checking that the plate is vertical and the index at the design position, section 6.4
Hoist or crane, rated slings	Lifting a Two or a Three and the driver box to the mast head, or a lowering mast
NFC programmer or a DALI-2 tool	Setting a driver level, section 9.2

Do not drill the plate to another pattern. The three holes and the two slots are what the wind rating was measured with.

NOT SUPPLIED WITH THE LUMINAIRE

Mains cable	H07RN-F 3G1.5 to the junction box on a 320 or 400 W One, or to the driver box, sized per section 7.7
Dimming cable	H07BQ-F 4G0.5 to the driver box, where a control line is used
Mast head bolts	M24 plus 2 × M16, A4 or 316 stainless steel or hot dip galvanised class 8.8, with locking
Safety cable	Ordered separately, see section 6.5
Driver box bracket	The mast head fixing for the DRB-2, per the mast supplier
Threadlocker	On a crane frame, always

NOTE

The reason the tool list names a bolt and not a spanner size is that the bolt into the mast is your choice, not ours. The plate offers a centre hole, two holes and two pan slots, and what goes through them follows from the arm: a mast head bracket, a crane beam or a wall each ask for a different fixing.

ONE PERSON, TWO, OR A HOIST

One person fits a One on a lowered mast or in a crane frame at ground level. A Two is two people. A Three, and any luminaire that goes up a fixed mast, goes on a hoist with rated slings around the arm, never around the modules, and nobody stands under it.

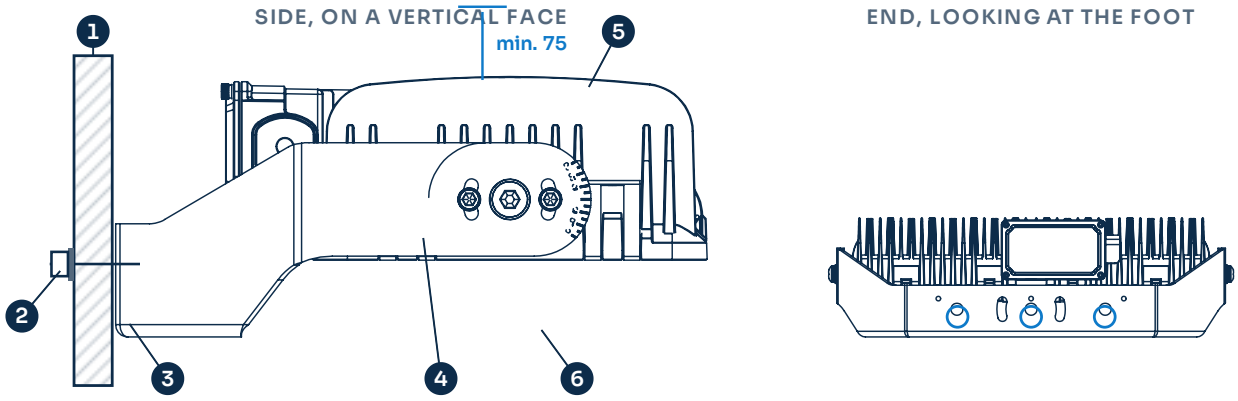
The Three as delivered, 35 kg on one bracket. A hoist, not a ladder

6 Mechanical mounting

Every One, Two and Three hangs from the plate of its bracket on a vertical face: the side of a mast head, an arm bracket, a crane beam or a wall. Bolt the plate first, then set the pan on the slots, then check the tilt index at nil and the shield position on the label, then make the electrical connection. The luminaire is never tilted to aim it: the cut off decides the reach.

DANGER

Isolate the supply and secure it against being switched on again before you start. On a crane, lock out the crane. On a lowering mast, lower it and secure it. Installation may only be carried out by a qualified person, and at height only from a rated platform with the area below closed.



Mounting principle, One. Two views from the production drawing to scale. Three bolts through the plate into a vertical face, the arm carrying the module glass down, the tilt index at the module, and the fin field 75 mm clear of anything above it

1 Load bearing vertical face: a mast head bracket, an arm, a crane beam or a wall. Verify it for four times the weight in chapter 3 plus the driver box, and for the wind load of section 3.1 and 3.2

2 Three bolts through the plate, M24 in the centre and M16 above and below, washer under the head, torque per section 6.6. The centre bolt is the pan axis

3 The 316L plate with its centre hole, the two holes at 100 mm and the two pan slots on Ø 80. Two more bolts through the slots after the pan is set

4 Tilt index on the arm at the module, 0 to 20 degrees either way in steps of 5. Nil for the photometry, section 6.4

5 Fin field, facing up. Minimum **75 mm** free space above it. No fan, no vents: the fins are the only cooling path

6 The glass, facing down. Light leaves here and stops at the cut off angle; nothing goes above the horizontal at nil tilt

BEFORE YOU GO UP

- The lighting design is on site, with position, ordered shield position, mounting height and pan per luminaire, and the mast supplier's head load approval with the driver box included.
- The face behind the plate is flat and vertical: a plate bolted onto a curved mast tube without a saddle is under permanent bending load and the M24 works loose.
- Mounting hardware is A4 or 316 stainless steel or hot dip galvanised class 8.8, with a locking method. The cable route down the mast and the position of the driver box are decided.
- The hoist, the slings and the platform are rated and the area below is closed.
- The supply circuit can be isolated and secured at the mast base, and the crane can be locked out.

6.1 The plate on a vertical or a horizontal face

1. **Check the position.** Follow the lighting design. Check that the face is flat, clean and free of obstructions, and that the structure carries the load and the wind. The plate bolts to a vertical face or to a horizontal one, see the note below.
2. **Mark and drill the holes from the plate,** three per luminaire: Ø 26 mm for M24 in the centre and Ø 17 mm for M16 above and below, 100 mm apart. Drill with the luminaire off the structure. On a mast head bracket the holes are normally there.
3. **Mount the driver box first,** on DARK03 to DARK06, on its own bracket at the mast head in the shade of the luminaire, or on the crane frame, section 7.5.
4. **Lift the luminaire** on slings around the arm and offer the plate up to the face. Fit the centre M24 with a washer under the head, finger tight, so the luminaire hangs on it.
5. **Fit the two M16 through the slots,** finger tight, so the plate can still pan 15 degrees either way on the centre bolt.
6. **Set the pan.** Turn the luminaire to the design direction, and **tighten all three bolts to the torque** in section 6.6 with a torque wrench, centre bolt first.
7. **Check the tilt index** at nil, or at the design angle where the arm is not level, section 6.4. Both index bolts at every module in the same position, torqued.
8. **Check the shield position** on the label of every module against the design, section 6.7. It is a factory setting; a wrong module goes back, it is not adjusted.
9. **Fit the secondary retention** per section 6.5, and release the slings last.

NOTE, THE PAN IS ON THE PLATE

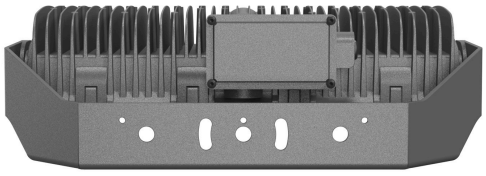
The two slots on Ø 80 give 30 degrees of pan about the centre bolt, enough to square the luminaire to the area it lights when the mast arm does not point at it. More than that is a different arm, not a bent plate.

NOTE, HORIZONTAL MOUNTING

The same plate also bolts to a horizontal face: the top of a mast head plate, a gantry flange or the underside of a beam. Holes, bolts and torques are identical, the arm then stands up from the face or hangs below it, and the slots turn the luminaire about the vertical. Set the aiming with the tilt index, section 6.4, and fit the retention so that it holds the luminaire from above.

WARNING, DO NOT USE THE LUMINAIRE AS A HANDHOLD

A One on a mast head platform looks like a grab handle. It is not. Neither the module, nor the arm, nor the driver box is a handhold or a step.



The plate seen from the end of the One: the three holes and the two slots below the module

FIXING PER LUMINAIRE

	One, Two and Three
Centre hole	Ø 25.6, M24
Outer holes	2 × Ø 16.2 on 100 mm, M16
Pan slots	2 × Ø 12.2 on Ø 80, 30 degrees
Index bolts	M8, two per module
Weight to carry	14.0 to 35.0 kg, plus the box

AFTER MOUNTING, BEFORE WIRING

- ☐ Three plate bolts tightened to torque, locked and marked.
- ☐ Pan set and the slot bolts torqued.
- ☐ Tilt index at nil or at the design angle, both bolts per module, torqued and recorded.
- ☐ Shield position on the label checked against the design on every module and recorded.
- ☐ Secondary retention fitted.
- ☐ Cable 3 and the mains cable free, with room for a drip loop at every gland.
- ☐ Nothing within 75 mm above the fin fields, 150 mm around the box.

6.2 The mounting configurations

Which one you have follows from the position, not from the order: the same plate does all three. What changes is what the plate is bolted to, where the driver box goes, and whether the luminaire moves in service.

High mast. The plate on the mast head bracket, the DRB-2 beside it on the head, mains up the mast. The usual position for every type

Tower crane frame. The One at 600 W folded into the DL-CCB-600 frame with its driver box, hung on the crane beam, section 6.3

Structure. The plate on a wall, a gantry or a building edge, vertical or horizontal, for a yard or a car park, with the driver box within reach at the same level

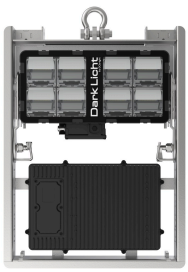
6.3 The tower crane frame, DL-CCB-600

The tower crane frame is a galvanised steel cage of 800 by 600 by 300 mm that carries the One at 600 W and its driver box as one assembly. It hangs on a beam of the crane, the luminaire folds out of it to light the site below, and between jobs the frames slide into each other and stack two rows by four high on a euro pallet, locked with a pin.

Luminaire	DarkLicht One 600 W, DARK03, with its TLD600 in the box below it in the frame
Frame	800 × 600 × 290 mm, 29.2 kg empty, **55 kg** with luminaire and driver
Tilt drop settings	0, 10, 20 and 90 degrees: folded in at 90 for transport, working at 0 to 20
Mounting	On a crane beam by the frame's own hooks and bolts, per the frame instruction. The luminaire is never taken out of the frame on site
Transport	Euro pallet, 2 rows, 4 high, locked. 1200 × 800 mm footprint, 884 mm high per frame in the stack
Supply	Mains to the driver box in the frame, from the crane's distribution, on its own breaker

WARNING

On a crane the luminaire moves with the crane and the frame swings on its hooks. Fit the secondary retention to the frame and the beam, not to the luminaire, lock the frame with its pin every time it is folded, and inspect the hooks and the pin at every crane inspection. A 55 kg frame that comes off a beam at 40 m is a fatality.



The One in the crane frame, folded out: the luminaire on top, the driver box below it, the lifting eye on the frame

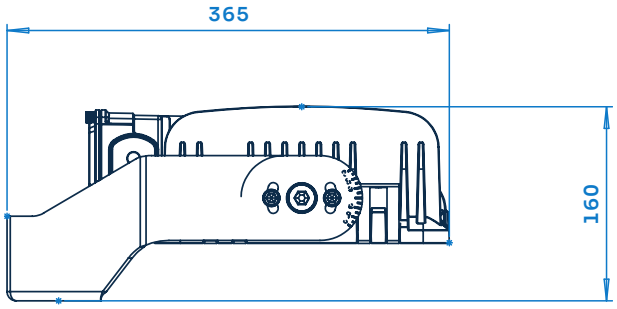
The frame from the side. The pin locks the luminaire folded in for transport and at its working angle

The frame has its own instruction. This section tells you what changes for the luminaire on it; the frame instruction tells you how the frame hangs on the beam.

6.4 Mounting attitude, and the tilt index

Attitude	Plate vertical, arm horizontal, module glass down, tilt index at nil. That is the attitude the photometry, the ULOR of nil and the frontal wind area at 0 degrees assume
Tilt index	0, 5, 10, 15 and 20 degrees either way, two M8 bolts per module. It exists to level a luminaire on an arm that is not level and to let a crane frame fold. On a permanent installation stay within 15 degrees. Every module of a Two or a Three on the same mark
Not permitted	Tilting for reach, and mounting with the plate horizontal. The cut off only works with the reflector the way up it was measured
Cable exit	The junction box on each module. Route the cable down and away with a drip loop, in the supplied flexible conduit where it runs along the arm, and clamp it within 300 mm on a crane
Clearance	At least 75 mm above the fin fields, 150 mm around the driver box or the tray
Maximum mounting height	50 m. No limit on the elevation of the site itself
Wind	Per section 3.1 and 3.2, with the box. The mast supplier's head load is the limit
Salt and chemistry	C5 on the housing, 316L on the bracket. Beyond C5 there is no DarkLicht
Heat	The ambient at the fins and at the box must stay below plus 50 degrees Celsius. A closed mast head enclosure in the sun does not
Cold	Every type runs to minus 45 degrees Celsius and starts at full output

ONE, SIDE, THE INDEX AT THE MODULE



The tilt index on the arm of the One, at nil. At 20 degrees the frontal wind area is 17 per cent larger and the cut off sits 20 degrees higher

6.5 Secondary retention

WARNING

Fit a secondary retention wherever the luminaire is mounted above a walkway, a working area or a road, and always on a crane. A luminaire on a 30 m mast over a terminal is above people and machines all night, every night.

NOTE, THE SAFETY CABLE IS AN ORDERED ITEM

The safety cable is **not supplied as standard**. It is supplied with the luminaire when it is ordered, and it is rated for the weight of the luminaire it is supplied for. State the type: a Three at 35 kg needs a different cable from a One at 14, and the driver box needs its own.

Length	1 m
Rating	Matched to the weight of the luminaire, or the box, it is supplied for
Anchor	To the mast head or the beam, independent of the plate bolts, not to the cable and not to the box
Supply	Ordered separately, never as standard

1. Choose an anchor point independent of the three plate bolts that carries four times the mass of the luminaire. At 1 m the cable is short, so the anchor has to be close. Pick it before you drill.
2. Loop the cable around that anchor and attach the other end to the bracket arm, not to a module, not to the junction box and not to cable 3.
3. Fit a second cable to the driver box, from the box's own lugs to the mast head.
4. Leave a little slack, enough to set the index later but not so much that the luminaire can gather speed if the fixings fail.
5. Record both cables in the site or crane documentation, so that they are inspected at every maintenance visit and every crane inspection.

DANGER

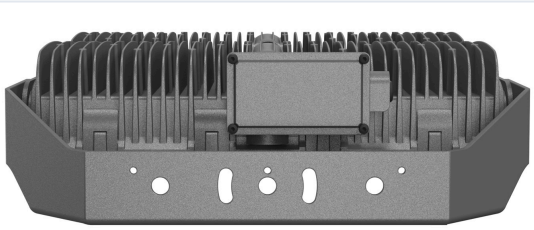
Do not substitute a cable, chain or strap of your own without having it rated. A longer cable turns a drop into a swing, and a 35 kg housing swinging under a mast head takes the box and the platform rail with it.

6.6 Tightening torques

Use a torque wrench, and on the M24 a long one. Overtightening a stainless bolt in a stainless thread causes galling; undertightening lets a 35 kg luminaire work on its plate in the wind.

Connection	Size	Torque
Plate bolt, centre, class 8.8	M24	590 Nm
Plate bolt, centre, class 12.9	M24	995 Nm
Plate bolts, slots, class 8.8	2 × M16	175 Nm
Plate bolts, slots, class 12.9	2 × M16	295 Nm
Index bolts on the arm, per module	2 × M8	20 Nm
Bolts on the luminaire and the bracket, general	M8 · M16 · M20	20 · 175 · 341 Nm
Junction box cover screws	M5	4.9 Nm
Cable gland cap nut, box and junction box	M20	2.5 Nm, and dimension L in section 7.6

Torques apply to clean, dry, undamaged threads, from the JEL torque table for class 8.8 and 12.9. For an A4 or 316 bolt in a stainless thread, and on this bracket every bolt is one, use an anti-seize compound and reduce the torque by about a third. Where the hardware comes from the mast supplier, that supplier's torque takes precedence.



The Two from the end: plate, arm and two modules. The M24 in the centre of the plate carries the lot

6.7 The shield position, a factory setting

The cut off is a position of the **reflector shield** inside the sealed module. The shield has five positions, **S1 to S5**, 75 to 63 degrees, and every module is built at the factory to the position specified at order. **Nothing about it is adjustable on site**: not the shield, not the reflector. The tilt index is a different thing: it levels the luminaire on a mast arm, and the photometry assumes it at nil.

1. Specify the position at order from the lighting design. Where none exists: **S3, 69 degrees**, for a terminal or a yard; S5, 63 degrees, where housing or a carriageway lies directly on the boundary; S1, 75 degrees, only where nothing beyond the reach is sensitive.
2. On delivery, check the shield position on the label and the packing list against the design, module by module, on the ground, before anything goes up a mast. Every module of a Two or a Three carries the same position.
3. Mount at nil tilt and switch on from a safe distance. Check from the boundary, not from under the luminaire, that the light stops where the design says. Record the position on the site drawing.
4. Where the boundary is wrong for the site, do not tilt the luminaire on its index and do not touch the shield. Contact JEL Products: a different position is a factory job, or a different luminaire.

WARNING, THE INDEX IS NOT A SUBSTITUTE FOR THE CUT OFF

A luminaire tilted up on its index for a few metres more reach is a floodlight with light above the horizontal and a wind area the mast was not checked for. If the design needs more reach than S1 gives at that height, the answer is a taller mast or a second luminaire.

NOTE, S1 AND S2 IN THE PHOTOMETRIC FILES

The IES files on the product page carry the two measured shield positions, S1 and S2, per type. A lighting designer working in DIALux uses the file that matches the position that will be ordered, and the order states that position. If the delivered module and the design disagree, the module is exchanged, not adjusted. On a 30 m mast that check is made once, on the ground.

7 Electrical installation

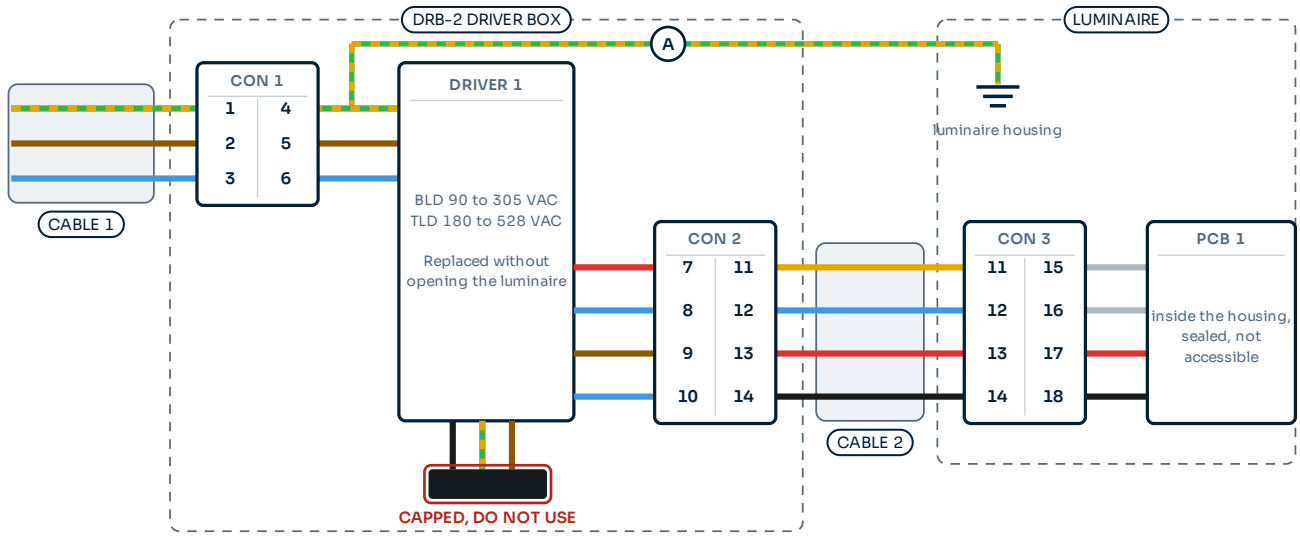
DANGER, LIVE PARTS

Isolate the supply, secure it against being switched on again, and verify that the circuit is dead before a cover comes off, at the head as well as at the base. Only a qualified person may make the electrical connection.

7.1 Three architectures in one family

The One at 320 and 400 W has its driver inside and takes mains on its tail. The One at 600 W and the Two at 800 W have one external driver, wired to the standard JEL diagram. The Two at 1,200 W and the Three have two or three drivers in one box, each feeding its own boards: the only place in the JEL range where the AC diagram is not the standard one.

Type	Driver	Mains goes to	To the luminaire	Diagram
One 320 W, DARK01	BLD320 inside	CON 1 in the junction box, 90 to 305 VAC	Nothing else: one cable	Section 7.5
One 400 W, DARK02	TLD400 inside	CON 1 in the junction box, 180 to 528 VAC	Nothing else: one cable	Section 7.5
One 600 W, DARK03	TLD600 external	CON 1 in the DRB-2 or on the tray	Cable 3, 4 cores, about 100 VDC plus the temperature pair	The standard diagram, below
Two 800 W, DARK04	TLD800 external	CON 1 in the DRB-2 or on the tray	Cable 3, 4 cores	The standard diagram, below
Two 1,200 W, DARK05	2 × TLD600 external	CON 1 in the DRB-2, to both drivers	Cable 3, 6 cores: two output pairs plus the temperature pair	Section 7.4
Three 1,800 W, DARK06	3 × TLD600 external	CON 1 in the DRB-2, to all three	Cable 3, 8 cores: three output pairs plus the temperature pair	Section 7.4



CABLE 1, mains	1 green and yellow earth · 2 brown phase · 3 blue phase or neutral. Mains voltage
DRIVER to CON 2	7 red TEMP + · 8 blue TEMP − · 9 brown DRI OUT + · 10 blue DRI OUT −
CABLE 2	11 yellow TEMP + · 12 blue TEMP − · 13 red DRI OUT + · 14 black DRI OUT −. No mains, no earth
CON 3 to PCB 1	15 grey · 16 grey · 17 red DRI OUT + · 18 black DRI OUT −
A	The incoming earth conductor also connects to the luminaire housing, and to the box and the tray
CAPPED	**The black, green and brown conductors on the driver are capped off and are not connected. Do not use them**

The standard JEL diagram, as used on the One at 600 W and the Two at 800 W. Cable 1 carries mains to the box, cable 2 the driver output and the temperature feedback to CON 3

Cable 2 in the diagram is cable 3 of the wiring drawings: H07BQ-F, 2 × 2.5 plus 2 × 0.5 mm², to the ordered length. The three capped conductors on the driver are not connected on purpose. The earth at A goes to the box and to the housing.

7.2 Conductors, One 600 W and Two 800 W

No	Colour	From, to	Function
1	Green and yellow	Incoming cable to CON 1	Earth, to the box and the housing
2	Brown	Incoming cable to CON 1	Phase
3	Blue	Incoming cable to CON 1	Phase or neutral
4	Green and yellow	CON 1 to driver 1	Earth
5	Brown	CON 1 to driver 1	Phase
6	Blue	CON 1 to driver 1	Phase or neutral
7	Red	Driver 1 to CON 2	Temperature, plus, NTC plus
8	Blue	Driver 1 to CON 2	Temperature, minus, NTC minus
9	Brown	Driver 1 to CON 2	Driver output, plus, about 100 VDC
10	Blue	Driver 1 to CON 2	Driver output, minus
11	Yellow	CON 2 to CON 3, cable 3	Temperature, plus, 0.5 mm²
12	Blue	CON 2 to CON 3, cable 3	Temperature, minus, 0.5 mm²
13	Red	CON 2 to CON 3, cable 3	Driver output, plus, 2.5 mm²
14	Black	CON 2 to CON 3, cable 3	Driver output, minus, 2.5 mm²
15	Grey	CON 3 to PCB	Dimming signal, plus
16	Grey	CON 3 to PCB	Dimming signal, minus
17	Red	CON 3 to PCB 1	Driver output, plus
18	Black	CON 3 to PCB 2	Driver output, minus. PCB 1 and 2 bridged

WARNING, THE THIN PAIR IS THE TEMPERATURE PAIR

The two 0.5 mm² cores in cable 3, conductors 11 and 12, carry the temperature signal from the module to the driver. **They are not a dimming input.** Dimming enters at the box, on cable 2 into the PS PCB. An installation that leaves the thin pair unconnected leaves the thermal protection disconnected, and a Two on a July afternoon at 30 m needs it.

CON 3 is in the junction box on the module; the boards are inside the sealed module. On the Two at 800 W the single TLD800 feeds all four boards through the bridge cables in the same way.

7.3 Circuit breakers

Maximum number of luminaires on one miniature circuit breaker, the driver manufacturer figure on an ABB S200 at 220 V.

Driver	B16	C16	C25	D16
BLD320, One 320 W	2	4	7	8
TLD400, One 400 W	4	5	8	6
TLD600, One 600 W	3	3	5	4
TLD800, Two 800 W	2	2	4	3
2 × TLD600, Two 1,200 W	1	1	2	2
3 × TLD600, Three	1	1	1	1

On the TLD600 and TLD800 it is the running current that limits the count, not the inrush: the driver peaks at only 5.4 A with a T50 of 8 ms, a soft start, while a Three draws 8.2 A at 220 V. On the BLD320 and the TLD400 it is the inrush, 31 and 64 A. A guide for the engineering phase, not a substitute for the installation calculation.

NOTE, ONE LUMINAIRE, ONE BREAKER

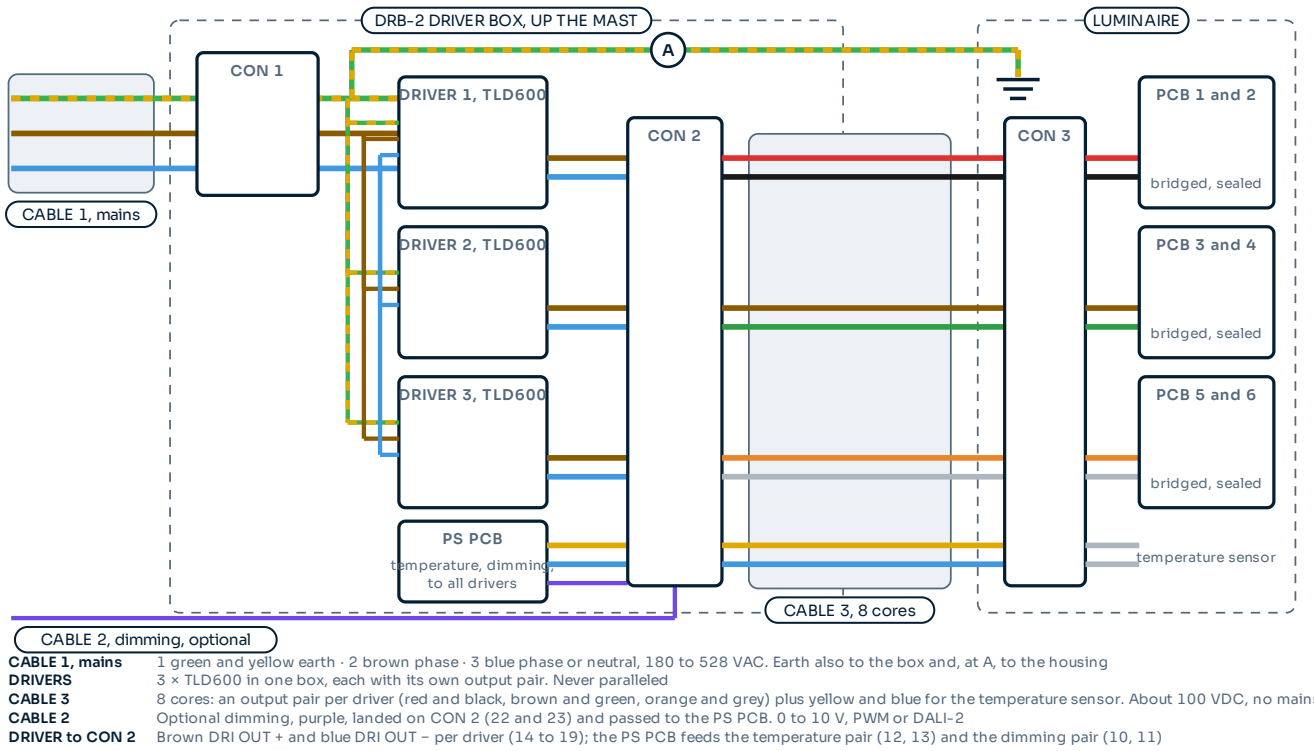
The JEL test of July 2024 on the tray fed each luminaire on its own type C breaker: **C6 for a 600 W One, C10 for a 1,200 W Two, C16 for a Three**, at 230 or 400 V, with a measured cold start peak of 12.5, 25 and 37.5 A for 3.2 ms at 230 V. That is the arrangement we recommend on a mast: one breaker per mast head, in the mast base cabinet.

RESIDUAL CURRENT DEVICES

Where an RCD is fitted, the combined leakage current of the circuit decides. Count 0.7 mA per driver, so 2.1 mA for a Three.

7.4 Two and three drivers in one box, the Two at 1,200 W and the Three

On DARK05 and DARK06 each module pair has its own TLD600, and all the drivers sit in one DRB-2 up the mast. Mains arrives once at CON 1 and is bussed to every driver. Each driver's output pair goes through CON 2 into **one** cable 3, six or eight cores, to CON 3 in the junction box on the luminaire, where each pair lands on its own two boards. The temperature sensor and the dimming signal are shared through the PS PCB in the box. Per the DCbright drawing DL3-AC-1800W-288 of 8 July 2021.



CABLE 1, mains	1 green and yellow earth · 2 brown phase · 3 blue phase or neutral, 180 to 528 VAC. Earth also to the box and, at A, to the housing
DRIVERS	3 × TLD600 in one box, each with its own output pair. Never paralleled
CABLE 3	8 cores: an output pair per driver (red and black, brown and green, orange and grey) plus yellow and blue for the temperature sensor. About 100 VDC, no mains
CABLE 2	Optional dimming, purple, landed on CON 2 (22 and 23) and passed to the PS PCB. 0 to 10 V, PWM or DALI-2
DRIVER to CON 2	Brown DRI OUT + and blue DRI OUT – per driver (14 to 19); the PS PCB feeds the temperature pair (12, 13) and the dimming pair (10, 11)

The Three: three TLD600 in one DRB-2, three output pairs and the temperature pair in one eight core cable 3. The Two at 1,200 W is the same with two drivers and six cores

No	Colour	From, to	Function
20, 21	Yellow, blue	CON 2 to CON 3, cable 3	Temperature plus and minus, shared
24, 27	Red, black	CON 2 to CON 3, cable 3	Driver 1 output plus and minus, to PCB 1 and 2
25, 28	Brown, green	CON 2 to CON 3, cable 3	Driver 2 output plus and minus, to PCB 3 and 4
26, 29	Orange, grey	CON 2 to CON 3, cable 3	Driver 3 output plus and minus, to PCB 5 and 6. Three only
22, 23	Per the control cable	Cable 2 to CON 2	Dimming signal plus and minus, optional
14 to 19	Brown, blue	Drivers 1, 2, 3 to CON 2	Driver outputs inside the box
7 to 13	Purple, black and white, grey, red, blue	Drivers to PS PCB, PS PCB to CON 2	Dimming and temperature inside the box
38, 39, 40	Black	PCB 1 to 2, 3 to 4, 5 to 6	Bridge cables inside the modules
41, A	Green and yellow	CON 1 to the box, and to the housing	Earth

DANGER, THE PAIRS ARE NOT INTERCHANGEABLE

Each TLD600 is programmed for its two boards. Never parallel two drivers onto one pair, never feed two pairs from one driver, and never swap the pairs at CON 3: a driver on the wrong boards overdrives them. Colour to colour, and photograph CON 3 before you touch it.

WARNING, 100 V DC IN CABLE 3

Cable 3 carries about 100 V DC per pair at up to 6 A. It is not mains and it is not SELV. It is isolated with the box, and its conductors are treated as live until the box is dead.

Cable 3 is labelled at both ends per driver. Rows 7 to 19 are inside the box, wired at the factory, and touched only when a driver is replaced, section 12.3.

7.5 The One with its driver inside, and where the driver box goes

ONE 320 W AND 400 W, DARK01 AND DARK02

The driver sits inside the module, and the luminaire takes **mains on its junction box**: cable 1 through the gland into CON 1, on push in terminals, three cores. The junction box is the only part of the module that is opened.

No	Core	To	Function
1	Green and yellow	CON 1, and the housing at A	Earth
2	Brown	CON 1	Phase
3	Blue	CON 1	Phase or neutral
4 to 6	Green and yellow, brown, blue	CON 1 to driver 1	Inside the module
7, 8	Brown, blue	Driver 1 to PCB 1 and 2	Driver output
9, 10	Black and white, grey	Driver 1 to PCB 1	Temperature plus and minus
11	Black	PCB 1 to PCB 2	Bridge cable

DANGER, 400 V ON A DARK01

The BLD320 in the 320 W One is a 90 to 305 V driver. Between two phases of a 400 V supply it fails at switch on. The 400 W One with its TLD400 takes 180 to 528 V. **Read the driver range on the label before you connect.** Dimming on these two types is a driver option ordered with the luminaire, on a separate control cable into the junction box.

Recommended cable: EPDM H07RN-F 3G1.5 mm² for the supply, H07BQ-F 4G0.5 mm² for a control line. Gland dimension L per section 7.6, then heat shrink and vulcanising tape over the gland.

THE DRIVER BOX, DARK03 TO DARK06

1. **Choose the box position first.** Up the mast with the luminaire, on its own bracket at the head, in the shade of the luminaire, within minus 40 to plus 50 degrees Celsius, and reachable from the platform. On a crane frame the box sits in the frame below the luminaire.
2. **Count it in the mast calculation.** DRB-2 441 × 290 × 145 mm, 10.4 kg empty, 9 to 14 kg with the drivers; the side area with the box is in section 3.1 and 3.2.
3. **Land cable 1 on CON 1** and cable 3 on CON 2, per section 7.2 or 7.4, one conductor per terminal, end sleeves, the thin pair with the power pairs.
4. **Earth the box and the tray**, and the housing through cable 3 or the earth clamp, per the drawings: the installation is Class I.
5. **Close the box** with every cover screw, gasket in its groove, and seal every gland with heat shrink and vulcanising tape.

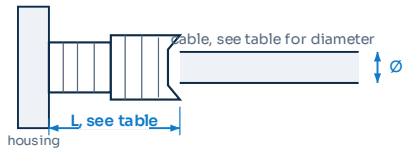
DRB-2	Systems up to 2,000 W, 441 × 290 × 145 mm, 10.4 kg, IP66 and IP67, aluminium
Tray	Open driver tray for a mast head enclosure that is already IP rated, 5.1 to 10.4 kg with the drivers
Box mass with drivers	9.1 kg at 600 and 800 W, 11.3 kg at 1,200 W, 13.8 kg at 1,800 W
TLD600, TLD800	262 × 125 × 49 mm, 2.6 kg each, Tc to plus 90 °C

DRB-2 driver box. One, two or three TLD600, or a TLD800, with the PS PCB

Position the box by the **ambient**, not by its case temperature. A box in a closed mast head enclosure in July is above plus 50 degrees Celsius by noon.

7.6 Cable glands

The glands you meet are those of the junction box on each module, and of the DRB-2 or the tray. Tighten a cap nut to 2.5 Nm and to the dimension in the table, measured over the gland. That is a more reliable instruction on a mast head platform than a torque figure alone. Then apply heat shrink tubing and vulcanising tape over every gland: a mast head sees driving rain from every side and the glands are the only openings. Dimension L runs from the face of the box to the end of the cap nut, with the cable fitted; it is not the thread length. Where cable 3 runs along the arm, it runs in the supplied stainless flexible conduit.



Where dimension L is measured

Cable	M12×1.5 -D-SI 4 to 8	M20×1.5 -2H 4 to 8	M20×1.5 -H 5 to 10	M20×1.5 6 to 12	M20×1.5 -D 8 to 14
H07BQ-F 4G0.5 mm², Ø 6.7 mm	**17.7 mm**	19.8 mm	n/a	n/a	n/a
H07BQ-F 2G2 mm², Ø 7.3 mm	18.4 mm	19.9 mm	n/a	n/a	n/a
H07BQ-F 2G1.5 + 2G0.5 mm², Ø 8 mm	18.9 mm	20.0 mm	20.4 mm	n/a	n/a
H07BQ-F 4G1.5 + 2G0.5 mm², Ø 10.4 mm	n/a	n/a	21.3 mm	22.2 mm	n/a
H07BQ-F 6G1.5 + 2G0.5 mm², Ø 13.6 mm	n/a	n/a	n/a	n/a	**20.8 mm**
H07BQ-F 2G2.5 + 2G0.5 mm², Ø 9.5 mm	n/a	n/a	**21.1 mm**	n/a	n/a
H07BQ-F 4G2.5 + 2G0.5 mm², Ø 12.3 mm	n/a	n/a	n/a	n/a	**21.0 mm**
H07BQ-F 6G2.5 + 2G0.5 mm², Ø 13.8 mm	n/a	n/a	n/a	n/a	**21.1 mm**
SiHF-08 2×1 mm², Ø 7.9 mm	18.9 mm	20.0 mm	n/a	n/a	n/a
SiHF-08 2×2.5 + 2×0.5 mm², Ø 10.7 mm	n/a	n/a	21.3 mm	n/a	n/a
EPDM H07RN-F 3G1.5 mm², Ø 10 mm	n/a	n/a	**21.3 mm**	n/a	n/a

This table is identical across the JEL range, with the two six core rows that only the Two and Three use. The rows in bold are the ones that apply here: cable 3 of the 600 and 800 W types, 2 × 2.5 plus 2 × 0.5 mm²; cable 3 of the Two at 1,200 W, 4 × 2.5 plus 2 × 0.5; cable 3 of the Three, 6 × 2.5 plus 2 × 0.5, or 6 × 1.5 plus 2 × 0.5 on a short run; the H07RN-F 3G1.5 recommended for the mains side; and the H07BQ-F 4G0.5 dimming cable. Here n/a means the combination is outside the clamping range of that gland and must not be used. Where a cable and a gland do not appear together in this table, ask JEL Products before you fit them.

7.7 Cable length and voltage drop

On the mains side the cable up the mast is a normal 400 V calculation at a few amperes and is rarely the limit; a Three on a 40 m mast in 2.5 mm² drops under 3 V. Cable 3 is the one to size: it carries the driver output at about **100 V DC**, and the rule is that the drop between the box and the luminaire must not exceed **2 V**. Cable 3 is supplied to the ordered length for that reason; where it is extended or replaced on site, size it here.

CABLE 3, PER DRIVER OUTPUT PAIR, 2 V DROP

Cross section	TLD600 pair 6 A	TLD800 pair 8 A
1.5 mm²	14 m	11 m
2.5 mm²	24 m	18 m
4 mm²	38 m	29 m
6 mm²	57 m	43 m
10 mm²	95 m	71 m

MAINS SIDE, AT 400 V BETWEEN PHASES

Three, 4.8 A	2.5 mm² stays inside 4 V, one per cent, to about 60 m, a 40 m mast with its base run included. The breaker and the fault loop decide the cross section from there, not the drop
One 320 W at 230 V, 1.5 A	1.5 mm² to about 65 m at 2.3 V, one per cent

NOTE, WHY THE DRIVER GOES UP THE MAST

At 100 V and 6 A a 30 m run in 2.5 mm² costs 2.5 V. At 50 V, the output of the smaller JEL drivers, the same run would cost the same volts out of half the voltage. That is why the TLD600 is set to its 100 V output on these types, and why the box goes up the mast: the long run is on the mains side, where a volt does not matter.

All lengths are the maximum at the stated drop, copper, two conductors, one way, rho 0.0175. The temperature pair carries no current worth mentioning and follows in the same cable.

7.8 Making the connection

DANGER, READ THE LABEL FIRST

On DARK01 and DARK02 **mains goes into the junction box on the module**. On DARK03 to DARK06 **mains goes to the box and only 100 V DC reaches the luminaire** on cable 3. A 400 W and a 600 W One look the same from the outside; the label and the presence of a box tell them apart.

1. Confirm the circuit is dead and secured at the base, and dead at the head.
2. **DARK01 and DARK02:** feed cable 1 through the gland of the junction box, land the three cores on CON 1 with end sleeves, earth to A on the housing, and close the box with its four screws, gasket in its groove.
3. **DARK03 to DARK06:** mount the box per section 7.5, land cable 1 on CON 1 and cable 3 on CON 2 per section 7.2 or 7.4, one conductor per terminal, colour to colour, the thin pair with the power pairs. Earth the box and the tray.
4. **DARK03 to DARK06:** at the luminaire, land cable 3 on CON 3 in the junction box, colour to colour per driver, and close the box.
5. Where a control line is used, land cable 2 on CON 2 in the box, section 9.2.
6. Tighten every gland to 2.5 Nm and to dimension L in section 7.6, then seal every gland with heat shrink tubing and vulcanising tape.
7. Support and clamp cable 3 and cable 1 with a drip loop below every entry, in the flexible conduit along the arm, so that no load reaches a gland. On a crane, clamp within 300 mm.
8. Check that no conductor is pinched under a cover and that every gasket sits in its groove all the way round.

MAST BASE CABINET

Breaker	One per mast head, type C: C6 for a 600 W One, C10 for a 1,200 W Two, C16 for a Three, section 7.3
Isolation	A lockable isolator at the base. The platform visit starts with the padlock
Surge	The drivers carry 6 and 10 kV; on a 40 m mast in open country add a type 2 arrester in the base cabinet all the same

8 Commissioning

Do not switch on until every item below has been checked. On a mast, most of it is checked on the ground before the luminaire goes up; what remains is checked from the platform. Most warranty cases that turn out not to be a product fault trace back to a step skipped here.

8.1 Checks before switching on

- [ ] Conditions within the range for that type, chapter 3, and no broken mechanical part: glass of every module, housing, bracket, junction boxes, driver box, cable 3.
- [ ] Supply checked against the driver label: 90 to 305 V on a DARK01, 180 to 528 V on the others, measured at CON 1 in the box or the junction box.
- [ ] DARK03 to DARK06: all cores of cable 3 through from CON 2 to CON 3, colour to colour per driver, the thin pair connected at both ends, the box earthed and closed.
- [ ] DARK01 and DARK02: three cores on CON 1 in the junction box, earth to A, the box closed.
- [ ] Plate: three bolts at torque, locked and marked. Index at nil or at the design angle on every module, torqued.
- [ ] Shield position on the label checked against the design on every module, and recorded.
- [ ] Secondary retention fitted to the luminaire and to the box, and on a crane to the frame.
- [ ] Every gland at dimension L and sealed, drip loops below every entry.
- [ ] Insulation resistance of the mast cable recorded. Nobody within the hazard distance of section 4.3 looking up into the glass.

8.2 First power up

1. Restore the supply at the base, everyone off the platform and outside the hazard distance.
2. Confirm that **every module** illuminates; a dark one is a driver or a pair at CON 3, section 11. **Do not look up into the glass**, see section 4.3.
3. Walk to the boundary and check that the light stops where the design says. Look back at the mast from the boundary: **from outside the cut off you should not see the reflectors lit**. If you do, the index is wrong, or the wrong shield position was delivered.
4. Correct if required: switch off, reset the index per section 6.4, torque, switch on and check again. A wrong shield position is a factory job, section 6.7.
5. Record the installation: both label codes, the mast, the shield position, the index angle, the pan, the colour, the mounting height, the box position, the date and the installer.

8.3 Handover

Leave this manual with the site or crane documentation, together with the record from step 5 of section 8.2 and the mast supplier's head load approval.

WARNING

Never adjust, open or work on the luminaire or the box while it is energised, and never on a crane that is not locked out. Isolate first, every time, with the padlock at the base.

NOTE, THE CUT OFF CHECK IS THE COMMISSIONING

On a floodlight, commissioning is aiming. On a DarkLicht it is the walk to the boundary. A permit condition, a neighbour or a highway authority will judge the installation from there, so that is where the installer judges it too. Photograph the view from the boundary at handover; it is the evidence if a complaint comes, and on a high mast project it usually does.

NOTE, DO IT ON THE GROUND

The shield position, the index, the pan and cable 3 at CON 3 are all checked and set with the luminaire on the ground or on a lowered mast. Once a Three is at 30 m, every correction is a platform hire. Switch it on once on the ground, from a safe distance, before it goes up.

The Three running. The light is on the ground and the housing is dark from the side, which is what the boundary should see. A tuneable white build comes up in 4000 K, section 9.3

9 Operation and dimming

9.1 Normal operation

A DarkLicht needs no operator action in normal service. It switches with the circuit and reaches full output immediately, with no warm up and no restrike delay, and it may be switched as often as the site requires. At minus 45 degrees Celsius it starts at full output. There is no lamp to change and nothing to adjust from year to year, and the cut off does not drift.

9.2 What each type accepts

Type	What it accepts
DARK01, DARK02	**0 to 10 V, PWM or DALI-2** on the internal driver, on a control cable into the junction box, on a driver ordered with dimming. Or a fixed level set over **NFC** on the driver before the module is closed at the factory
DARK03 to DARK06	**0 to 10 V, PWM or DALI-2** on cable 2 into CON 2 of the box, through the PS PCB to every driver. Or a fixed level set over **NFC** on each driver in the box, without power. On a Two or a Three all drivers are set alike
Tuneable white, BIC	4000 K with 2200 K and 1700 K, switched in operation. See section 9.3. Available on every type
Fixed power	A lower wattage than the type is a driver setting and is ordered as a suffix; the 12 V auxiliary of the TLD drivers can power a mast head controller on request

9.3 Tuneable white and the DarkSky colours

A tuneable white DarkLicht carries the working white and the DarkSky colours in one housing and switches between them **on the supply itself**, using how long the luminaire has been off. There is no second control line and no separate switch on the luminaire. On a terminal that is the shift and night regime: 4000 K while the work is on, amber when the yard is quiet and the permit says so.

What you do	What happens
Switch on after more than 5 seconds off	The luminaire comes up in its **default colour**, 4000 K, whatever colour it was showing before
Switch off and back on within 5 seconds	The luminaire steps to the **next colour**: 2200 K, and on the next short cycle 1700 K. On a BIC build, the second colour
Repeat the short cycle	It steps round the colours, as often as you like
Several masts out of step	Switch the whole group off, **wait 30 seconds**, and switch on. All of them reset to the default colour and are back in step

Because the switching is on the supply, a tuneable white luminaire fed from a contactor that chatters, or from a generator that dips on start, can change colour on its own. Where the colour has to be dependable, feed it from a clean switched circuit. On a DALI-2 build the colour can also be selected over the bus; the quotation says which.

NOTE, THE DARKSKY DS-1 COLOURS

Amber 2200, 1800 and 1700 K are the colours at which the DarkLicht has been third party tested against DarkSky DS-1. A permit that names DS-1 is met by ordering one of those colours, or tuneable white and running the amber at night. It is not met by dimming 4000 K down: the spectrum is the condition, not the level.

NOTE, DIMMING AND THE FLUX FIGURES

Every luminous flux figure in chapter 3 is the figure at full output and at 4000 K. A dimmed luminaire and the amber colours deliver less light. If the design relies on a dimmed level, the lighting calculation states it.

9.4 What the luminaire does by itself

- **Thermal foldback.** The luminaire measures its internal temperature and the driver reduces the current as it rises. On overheating it switches off and comes back when it has cooled. On the external driver types that runs through the temperature pair in cable 3 and the PS PCB.
- **Surge protection.** On every driver, 6 kV line to line and 10 kV line to earth.
- **Undervoltage.** The drivers shut down below their input range and restart by themselves when the supply returns.
- **Soft start.** The TLD600 and TLD800 start at 5.4 A peak, which is why a Three sits on a C16 by itself.

9.5 What the luminaire does not do

- It does not carry an emergency function. See section 4.9.
- It does not accept a control protocol that is not in its build. Sending DALI to a 0 to 10 V driver has no effect.
- It does not change its cut off electrically. The cut off is mechanical, section 6.7.
- It does not share a driver between pairs. Every pair of boards on a Two at 1,200 W or a Three has its own TLD600, programmed for it.

10 Maintenance

DANGER

Isolate the supply at the base and secure it with a padlock before any maintenance work, and lock out the crane. Let the luminaire cool to hand temperature before touching it. Work at height only from a rated platform or a lowered mast, with the area below closed.

10.1 Interval

Environment	Interval
High mast, inland, terminal or yard	Once a year, with the mast inspection
High mast, port or coast	Every six months
Tower crane frame	Every crane inspection, and every time the frame is rehung, the hooks, the pin and the retention
Sports field, events	Once a year, before the season
Dust, bulk handling, recycling	Every six months, clean the fins and the glass at every visit
Under a maintenance agreement	Per the agreement; the ten year warranty depends on it

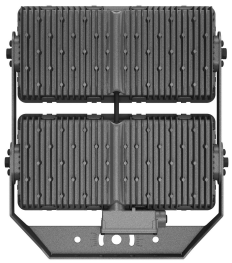
Too little cleaning shortens the life of the product, most of all where the fins fill with dust or the glass, which faces the ground, collects a film that scatters light upward. On a high mast a platform visit is expensive; combine it with the mast inspection.

10.2 Inspection

- [ ] Glass of every module, housing and seals: impact damage, cracks, a chipped glass edge, corrosion, a film on the glass.
- [ ] Three plate bolts tight. Retighten to the torque in section 6.6. On a crane the frame hooks and the pin.
- [ ] Index bolts tight, every module still on its mark, the luminaire still square.
- [ ] Bracket and mast head sound: no cracks at the arm, no corrosion under the plate, no loose head bracket.
- [ ] Secondary retention present on the luminaire and the box, intact and correctly attached.
- [ ] Cable 1 and cable 3: chafe, damage, intact conduit, no exposed conductor, drip loops still below the entries.
- [ ] Every gland tight and sealed, junction box and driver box covers tight, no moisture trace at a gasket, box dry inside.
- [ ] Fins clear of dust, fouling and nests, the 75 mm above them open.
- [ ] From the boundary: the reflectors still dark from outside the cut off, every module lit.
- [ ] Driver box still in the shade of the luminaire, ambient at the box below plus 50 °C.

10.3 Records

Record every inspection, fault, repair and replacement, with both codes from the label. Under warranty, that record is the difference between a fast decision and a long discussion, and under a maintenance agreement it is the condition of the ten year term.



The fin fields of the Two. This is what has to stay clear, and on a mast it faces the sky and collects everything that falls

WHY THE FINS AND THE GLASS BOTH MATTER

The DarkLicht has no fan, no vents and no moving part. Everything the LEDs produce leaves through the fins, and the module is sealed precisely so that nothing gets in. Dust on the fins raises the junction temperature, and the lifetime figures in chapter 3 assume a clean heat sink. **The glass faces the ground**, so it takes less rain washing than a floodlight and more dust from below; a dirty glass scatters light in every direction, including above the cut off. On a cut off luminaire the glass is part of the optic.

CAUTION

Do not hammer, pry or scrape between the fins. A soft brush, water and compressed air clear them. A screwdriver breaks a fin, and the fin is cast into the module. Do not stand on the modules to reach the fins.

10.4 Cleaning

ON A MAST OR A CRANE, FROM THE PLATFORM OR A LOWERED MAST

1. Switch off the supply at the base, lock it out, lower the mast or set up the platform, and let the luminaire cool.
2. Remove loose dust, fouling and debris from the fins with water and a soft brush, then compressed air.
3. Clean the housing and the glass of every module with a soft cloth or sponge, water and a mild detergent. The glass is the underside: clean it from below, with the luminaire cold.
4. Dry the glass with a soft cloth. No grit under the cloth.
5. While you are there, run the inspection of section 10.2. Nobody goes up twice.

CAUTION

Do not use solvents, caustic cleaners or abrasives. Do not aim a high pressure lance at a gland, a junction box, a box cover or the edge of the glass. The luminaire is IP66 and IP67, not IP69K: no high pressure washing at close range on these types.

WARNING, THERMAL SHOCK

Never clean hot glass with cold water. **Do not apply water at all to a luminaire warmer than plus 60 degrees Celsius.** The glass is the underside: if it breaks at 30 m it falls on whoever is below.

PERMITTED

Water	Clean mains water, lukewarm, maximum plus 40 degrees Celsius, from a hose or a bucket
Cloth	Soft microfibre cloth
Sponge	Soft sponge
Detergent	Mild, neutral, rinsed off
Compressed air	For the fins, from above

NOT PERMITTED

Cleaning agents	No aggressive or chemical cleaners, no foaming agents, no solvents
Chemistry	No chlorine based, acid based or alkaline cleaners, no alcohols, no degreasers
Mechanical	No wire brushes, no abrasives, no scouring agents
Steam and pressure	No steam cleaning, no high pressure lance within 1 m

Chlorine on an aluminium housing takes the coating. That is why the chemistry row is there. Where a site protocol, for instance in a port with a food terminal, asks for a washdown regime, the DarkLicht is not the luminaire for it; ask us for the IP69K types.

FREQUENCY

High mast	At every inspection, once or twice a year
Tower crane frame	At every rehang
Heavy dust	Every six months

The Two from the glass side: four panes, four seals, all cleaned from below

11 Fault finding

Work through this table before reporting a fault. Isolate the supply before any action that involves opening a box. Most faults reported to us on this family turn out to be a driver on the wrong supply, one pair at CON 3, or a luminaire that was tilted or set by eye.

Symptom	Applies to	Probable cause	Action
No light at all	All	Supply off, breaker tripped, or a break in the mast cable	Check the breaker in the base cabinet and measure the supply at CON 1
No light, mains present at CON 1	DARK01, 02	Internal driver failed, or the driver on the wrong supply range	Check the label: 400 V on a BLD320 is a destroyed driver. The luminaire is exchanged, section 12.2
No light, mains present in the box	DARK03 to 06	Driver failed, or the temperature pair not connected so the driver reads an open circuit	Check the thin pair through to CON 3, then replace the driver in the box, section 12.3
One module dark, the others lit	Two, Three	That module's driver failed, its pair loose at CON 2 or CON 3, or the pairs swapped	Identify the pair by colour, check both ends, then replace that driver, section 12.3
One module dim or a different colour	Two, Three	That driver set to another level or programmed for other boards	Check the driver setting; a replacement driver must be programmed for its boards
Breaker trips on switch on	DARK01, 02	Too many BLD320 or TLD400 on one breaker for the inrush	Reduce the number per breaker or change the characteristic, section 7.3
Breaker trips on switch on	DARK03 to 06	Breaker too small for the running current of a Two or a Three	C6, C10 or C16 per luminaire, section 7.3
Dims back by itself	All	Thermal foldback: ambient above plus 50 at the fins or at the box, fins packed with dust, or the box in a closed enclosure	Check the ambient at both, clear the fins, move the box into the shade
Flicker or unstable output	All	Loose terminal, or a dimming signal picking up interference from the mains cable in the same conduit	Retighten, separate the control cable from the mains cable
Luminaire stays at partial output	All	Dimming input at a low level, or an NFC setting from a previous project	Check the control signal and the driver setting, section 9.2
Control signal does nothing	All	That protocol is not in this build	Check the quotation against section 9.2
Changes colour on its own	Tuneable white	The supply is being interrupted for less than 5 seconds: a chattering contactor or a generator dip	Feed it from a clean switched circuit, section 9.3
Light beyond the boundary, or a neighbour complains	All	A wider shield position ordered than the site needs, the luminaire tilted upward on its index, or a dirty glass scattering light	Index to nil, clean the glass, check the ordered position against the design, sections 6.4 and 6.7. A different position is a factory job
Ragged boundary, reach differs across the beam	Two, Three	Modules delivered with different shield positions, or on different index marks	Set every module to the same index mark; check the label of every module and exchange a module with the wrong position
Output visibly lower than the design	All	Dirty glass, blocked fins, or a driver at a lower setting	Clean per section 10.4, check the setting, then measure again
Moisture inside a module	All	Chipped glass edge, a luminaire rested on its glass, or a junction box gland left unsealed	Do not open it. Return to JEL Products, section 12.4
Water in the driver box	DARK03 to 06	A gland without heat shrink, a cover screw missing, or the box mounted with the glands upward	Dry it, replace the drivers if they were wet, reseal every gland, glands downward
Luminaire has moved on its plate	All	Slot bolts not torqued, or the plate on a curved face without a saddle	Re-pan, torque all three bolts on a flat face
Luminaire came loose	All	Centre bolt only, a cracked head bracket, or no secondary retention	Refit per chapter 6 on three bolts with a rated safety cable, and have the head bracket inspected
Early driver failure, repeated	DARK03 to 06	The box ambient is above plus 50 degrees Celsius, or the box is in a closed mast head enclosure	Measure the ambient at the box. Relocate it, section 7.5

If the fault is not in this table, or if the action does not resolve it, contact JEL Products with the article code and the internal production code from the type label, the mast or crane, the date of installation and what you have already checked. See section 2.5 for the two codes. On a Two or a Three, say which module is affected, counted from the plate.

12 Repair and spare parts

The modules are built so that nothing inside them needs to be reached in service. On the external driver types the drivers sit in the box at the mast head and are replaced there, one at a time; on the 320 and 400 W One the driver is inside the module and a driver fault is a luminaire exchange. The junction box and the driver box are the only things opened in the field.

12.1 What is replaceable on site

Part	Reference	Note
Driver, One 600 W and each pair of a Two 1,200 W or a Three	TLD600	262 × 125 × 49 mm, 2.6 kg, 180 to 528 VAC, programmed for its boards. Replaced in the box without touching the luminaire. Quote the type and the driver position
Driver, Two 800 W	TLD800	Same size, programmed for four boards
Driver box	DRB-2	441 × 290 × 145 mm, 10.4 kg, IP66 and IP67. Supplied pre-wired with the drivers and the PS PCB
Driver tray	On request	For a mast head enclosure, pre-wired
PS PCB	On request	The temperature and dimming board in the box
Cable 3	On request	4, 6 or 8 cores to length, labelled per driver
Bracket	On request	316L, complete with index bolts, per type: the arm differs between One, Two and Three
Junction box cover and gasket	On request	Per module
Tower crane frame parts	On request	Locking pin, hooks, per the frame instruction
Safety cable	On request	1 m, rated to the luminaire or the box weight. Not supplied as standard, see section 6.5

Drivers, brackets, cables and safety cables are supplied against a specification rather than a shelf article number, because they follow the type and the position. State both codes from the type label and, on a Two or a Three, which driver, and we issue the right part programmed for it.

DRB-2 driver box, the home of one to three TLD600 at the mast head

The One from the rear: the junction box in the centre of the module is the only part of it that is opened

Quote the article code and the internal production code from the type label in any spare part order, see section 2.5. A TLD600 programmed for the boards of a One does not run a pair of a Three at the right current, and a TLD400 does not replace a BLD320.

12.2 What is not replaceable on site

DANGER

Do not open a module beyond its junction box, do not remove the glass or the glass frame, and do not cut cable 3 short of its label. Opening a module ends its ingress protection, its electrical safety, its warranty and its declaration of conformity.

- The light source is not replaceable in the field. At the end of its life the complete luminaire is returned or replaced.
- The reflector and its shield are part of the sealed module. Their shape and position are the optic; nothing about them is changed on site, section 6.7.
- **On the 320 and 400 W One the driver is inside the module** and is not a field part. A driver fault means the luminaire is exchanged. That is the trade for having nothing outside the housing on the small One.
- The glass and its seal are not replaceable in the field. A cracked or chipped glass returns to JEL Products, the whole luminaire.
- Repair, overhaul and modification are carried out by JEL Products or by a company it appoints. In case of doubt, return the luminaire for inspection.

12.3 Driver replacement in the box

1. Isolate the supply at the base and lock it. Verify the box is dead at CON 1 and at CON 2. Let the drivers cool.
2. Open the box and photograph the wiring. Note the ambient: above plus 50 degrees Celsius the position is the fault and the new driver will fail too.
3. Identify the driver by its output pair colour at CON 2, per section 7.4, and disconnect it at CON 1, at CON 2 and at the PS PCB.
4. Fit the replacement driver of the same type, **programmed for the same boards**, and reconnect colour to colour, one conductor per terminal. A different driver, or the right driver on the wrong pair, is not permitted.
5. Close the box, check the gasket, restore the supply and run the checks in section 8.1. Record the replacement, with the date, both codes from the label and the driver position, in the site documentation.

NOTE

The internal production code tells us which boards the driver has to work with. Quote both codes and say which pair.

12.4 Returning a luminaire

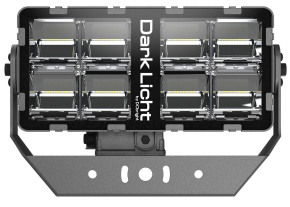
1. Contact JEL Products before you send anything. We will tell you whether the fault is a field repair, a driver exchange or a return, and a Three is not lowered from a mast for a driver.
2. Have both codes from the type label ready, plus the mast or crane, the date of installation and what you have already checked from chapter 11.
3. Pack the luminaire in its original box, standing on its plate, glass protected, never resting on the glass. Leave the bracket on it. A One on a crane frame returns in the frame.
4. State what the luminaire was doing when it failed: the supply at CON 1, the shield and index positions, and which module went dark first.

NOTE

Do not open a module before returning it, not even to look. An opened module changes a warranty assessment into a discussion, and the evidence we need is usually inside the seal you would break.

WHAT WE LOOK AT ON A RETURN

The internal code	Which boards, which batch, which production date
The glass seal and the junction box	Whether water got in, and from where
The boards	Overvoltage, a swapped pair or mains on cable 3 leave a signature
The glass	Impact, thermal shock or a chipped edge
The bracket	Whether three bolts were used, whether the index was within range, and whether a retention was fitted
The driver	Case temperature history and failure mode, with the box position



The One from the glass side. A luminaire returns complete, on its bracket

13 Removal and disposal

13.1 Taking the luminaire out of service

1. Isolate the supply at the base and lock it, and lock out the crane. Verify the circuit is dead at the head, then disconnect cable 1 in the junction box or cable 3 at CON 3 and cable 1 in the box.
2. Sling the luminaire around the arm to the hoist and take the weight before anything is loosened. Release the secondary retention last, not first.
3. Undo the two slot bolts, then the centre M24, with the hoist holding the luminaire throughout. Leave the bracket on the luminaire.
4. Lower the luminaire, then the driver box on its own slings.
5. Label the luminaire with its mast, its shield and index positions and its article code before it leaves the site. If it is to be reinstalled, pack it in its original box, standing on its plate and never resting on its glass. A crane frame is folded in, pinned and stacked.

WARNING, WORKING AT HEIGHT

Removal is the moment a luminaire falls. On a mast head have the hoist loaded before the first bolt comes out, keep the area below closed, and never hold a 35 kg Three by hand while the last bolt is undone.

13.2 Disposal

Electrical equipment does not belong in household or unsorted municipal waste. Under European Directive 2012/19/EU it must be collected separately and processed by an approved recycling facility. Observe the national and regional rules at the place of disposal.

The cast aluminium modules, the 316L bracket and the aluminium driver box are recyclable materials; the LED boards, the drivers, the glass and the cables go to electronic waste, glass or plastics. Separate the modules from the electronics at the recycler rather than in the field. The DarkLicht contains no mercury and no lead above the RoHS limits.

Glossary

Beam angle	Full angle between the directions where the intensity has fallen to 50 per cent of the peak
BLD320, TLD400, TLD600, TLD800	The drivers of the six power levels, internal up to 400 W, external from 600 W
C5	Corrosivity category per ISO 9223, industrial and marine
Cd · A	Drag coefficient times projected area, the figure used for wind load
Cut off	The angle from the vertical above which the reflector emits no light, 63 to 75 degrees
DALI-2	Addressable digital lighting control protocol, on every driver
DarkSky DS-1	The DarkSky approved luminaire standard, met at 1700 to 2200 K
DL1, DL2, DL3	The manufacturer's names for the One, Two and Three
DRB-2	The driver box for systems up to 2,000 W, up the mast
Hazard distance	The distance beyond which the luminaire is Risk Group 1 per IEC/TR 62778
IK	Impact rating per IEC 62262
Index	The tilt setting on the bracket arm, 0 to 20 degrees either way in steps of 5
L90B05	90 per cent of initial output retained by 95 per cent of the units
MCB	Miniature circuit breaker
Module	One 504 by 240 mm housing with its reflectors, boards, glass and junction box
NFC	Near field communication, used to set the driver without power
Nil tilt	The attitude the photometry assumes: plate vertical, index at 0, glass down
Pan	Rotation of the plate about the centre bolt, 30 degrees on the slots
Shield position, S1 to S5	The five factory positions of the reflector shield, 75 to 63 degrees of cut off
BIC	Bi-colour, the tuneable white build, switched from the supply
ULOR	Upward light output ratio
WEEE	Waste electrical and electronic equipment

Specifications are subject to change. This manual describes the standard configurations. Where a project specification differs, the project documentation takes precedence.

14 Appendix

14.1 Declaration of conformity

EU Declaration of Conformity, 9 December 2025

JEL Products B.V., Ampèrestraat 19e, 3861 NC Nijkerk, The Netherlands, declares under its sole responsibility that the products it covers are in conformity with the essential requirements of the directives below. The DarkLicht range is named in its product scope as **DarkLicht Series, including the One, Two and Three, DL1, DL2 and DL3**, with all electrical, optical and mechanical variants within the defined type codes, wattages, voltages and colour temperatures. The One, Two and Three additionally hold a TÜV type approval, certificate CN231JKL 001.

DIRECTIVES	
Low Voltage	2014/35/EU
EMC	2014/30/EU
RoHS	2011/65/EU and (EU) 2015/863
WEEE	2012/19/EU

DECLARATION	
Date	9 December 2025
Place of issue	Nijkerk
Signed by	L. de Graaf, Technical Director
Serial number	See product marking
Year of manufacture	2021 to 2026

APPLIED HARMONISED STANDARDS

EN IEC 60598-1 luminaires, general requirements. EN IEC 60598-2-5 floodlights. EN IEC 61347-1 lamp controlgear, general. EN IEC 61347-2-13 LED controlgear. EN IEC 62384 LED driver performance. EN IEC 60529 IP classification. EN IEC 61000-6-2 EMC immunity, industrial. EN IEC 61000-6-4 EMC emission, industrial. EN ISO 12100 risk assessment, where applicable.

The technical file is compiled and maintained by JEL Products B.V. at the address above. The **signed declaration** is available on request and is supplied with the project documentation. Document: EU DECLARATION OF CONFORMITY_DCbright_EU_09122025. On a crane, the luminaire in its frame is a component and the crane owner's file under the Machinery Directive covers the installation.

14.2 Warranty

Part	Term
One, Two and Three, complete luminaire	5 years, extendable to **10 years** under a maintenance agreement with JEL Products or a party it appoints
External drivers, DRB-2 and tray	5 years, within the driver ambient of section 7.5
Bracket and tower crane frame	5 years, with the luminaire

Warranty runs from the date of delivery under the JEL Products warranty terms and covers material and manufacturing defects.

It does not apply where the luminaire has been installed, operated or maintained contrary to this manual, where a module has been opened or a cable cut, where mains has been connected to cable 3 or 400 V to a BLD320, where the supply was outside the range on the driver label, where the temperature pair has been disconnected, where the driver box has been installed above plus 50 degrees Celsius ambient or in a closed enclosure, where the luminaire has been mounted on fewer than three bolts, where the index has been set beyond 15 degrees on a permanent installation or the reflector shield has been moved or modified, where drivers have been paralleled or swapped between pairs, where it has been cleaned outside the limits in section 10.4, or where it has been used outside the intended use in section 2.2.

> **NOTE**
> Improper installation, operation or maintenance may also invalidate the certificate and the declaration of conformity, not only the warranty.

14.3 Related documents

Document	Where
One, Two and Three datasheets, Rev. 1, August 2026	Product page
Photometric files, S1 and S2, EULUMDAT and IES	Product page
Drawings DL-O1, DL-O2, DL-O3, DXF and STEP	On request
Wiring drawings DL1-600, DL2-1200, DL3-1800	On request
Wind rating report, test reports, type approval	On request
Tower crane frame DL-CCB-600 datasheet	On request
Driver box manual, DRB-1 and DRB-2	On request
JEL high mast datasheet, masts to 50 m	On request
Signed declaration of conformity	On request

14.4 What this manual replaces

This edition supersedes the DCbright Operating Instruction Dark Licht Series of 6 December 2023, issued in February 2024. Where the older document and this manual disagree, this manual applies.

Five points are corrected against that document: the ambient range is **minus 45 to plus 50 degrees Celsius** on every type, not minus 40 on the Two and Three; the ingress rating is **IP66 and IP67**, not IP65; the expected life is **TM-21 L90B05 above 103,500 h**, not the L80B10 figures printed there; the 400 W One takes **180 to 528 VAC** on its TLD400, not 90 to 305; and the hazard distance is given **per type in section 4.3**, from 4.3 to 10.6 m, instead of the single figure of 11.688 m. Two points are stated more precisely: the driver position is fixed per power level and the older code letters I, B, R and P are no longer ordered; and the five shield positions S1 to S5 are **factory settings specified at order**, not adjustments made on site as the 2026 datasheets say, and not part of the article code.

> **NOTE**
>
> If you hold a printed copy, check the revision on the cover against the version on the product page before you rely on a figure. A manual in a mast file can be several years old.

CONTACT

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To verify the authenticity of a test or inspection report and certificate, contact us on the number above. Quote both codes from the type label.

Product page

Photometric files, drawings, the three datasheets and the current version of this manual.

jelproducts.nl/en/products/dcbright-darklicht

DOCUMENT

Number	MAN-DLO-EN
Revision	1
Date	7 September 2026
Language	English
Applies to	DARK01, DARK02, DARK03, DARK04, DARK05 and DARK06
Pages	See the footer