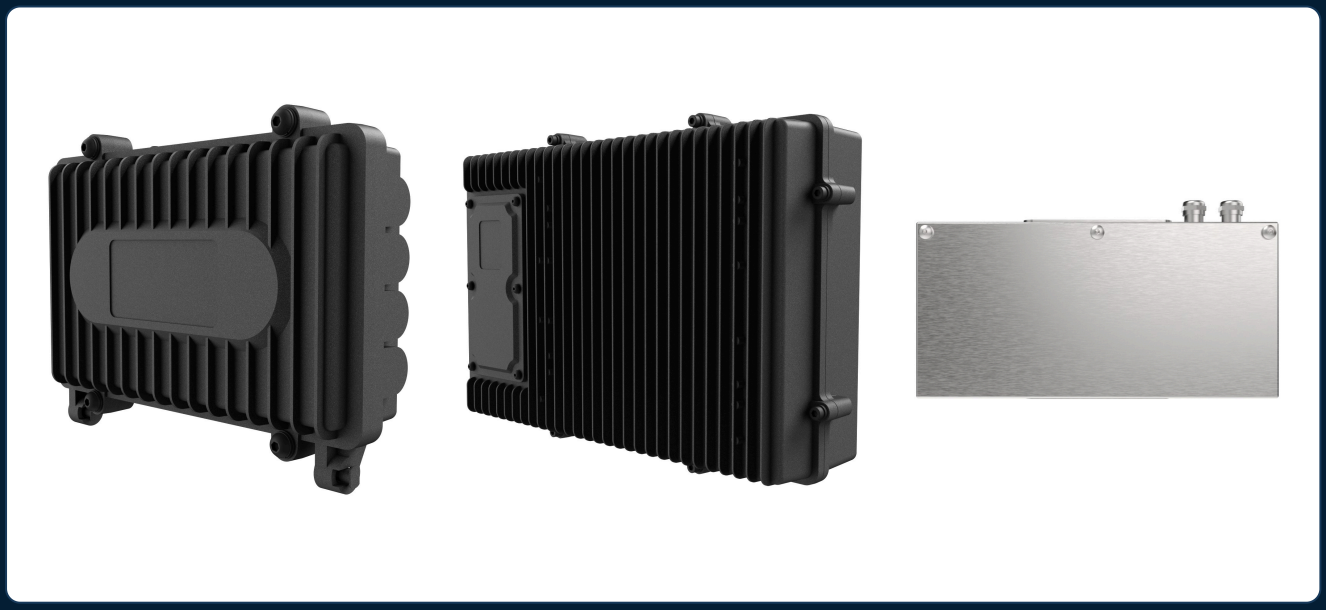
JEL PRODUCTS
SUSTAINABLE | LIGHTING | SOLUTIONS

INSTRUCTION MANUAL

LED drivers and driver boxes

The remote drivers of the JEL range and the housings they live in: the DRB-1 and DRB-2 driver boxes, the 316L Power Box, the driver tray and the bare driver.

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



Read before installation · Keep for future use · Qualified personnel only · BLD075 to TLD800 · DRB-1 · DRB-2 · Power Box

Contents

This manual covers the part of a JEL AC installation that sits outside the luminaire: the remote LED driver, and the box, tray or junction box it is fitted in. It is the companion to every luminaire manual in the range; chapter 7 of each of those refers here for the driver side. The DC luminaires with their drivers on the board are not in this manual.

BEFORE YOU START

1	**About this document**	Who it is for, symbols, hazard classes, revision history
2	**The product**	The four housings, the twelve drivers, which driver belongs to which luminaire, the label
3	**Technical data**	Driver specification, inrush and breakers, box dimensions and weights, standards
4	**Safety**	Electrical, hot surfaces, falling, and what must never be done

INSTALLATION

5	**Preparation**	Transport, storage, contents of the delivery, tools
6	**Mechanical mounting**	Where a box goes, orientation, wall, pole and rear mounting, the tray, torques
7	**Electrical installation**	The standard diagram, multi driver boxes, breakers, dimming, glands, cable length
8	**Commissioning**	Checks before switching on, first power up
9	**Operation and dimming**	Control protocols, NFC setting, what the driver does by itself

THROUGH LIFE

10	**Maintenance**	Interval, inspection, cleaning
11	**Fault finding**	Symptom, probable cause, action
12	**Repair and spare parts**	Driver replacement, glands, brackets, what returns
13	**Removal and disposal**	Taking a box out of service, WEEE, glossary
14	**Appendix**	Declaration of conformity, warranty, contact, documents

WHICH HOUSING DO YOU HAVE

Housing	What it holds
Bare driver	One driver in a customer enclosure or on a tray, both connections in an IP67 junction box
DRB-1	One driver up to 320 W, BLD or TLD, aluminium, IP66 and IP67, 276 × 194 × 86.5 mm
DRB-2	One to three drivers, systems up to 2,000 W, aluminium, 441 × 290 × 145 mm
316L Power Box	One driver in solid stainless steel, for the wash zone and the deck, per driver size
Driver tray	One to three drivers on an open plate for a mast head enclosure or a cabinet

The driver type is on the driver label and on the luminaire label. Section 2.3 says which driver belongs to which luminaire.

DATASHEETS AND FILES

Driver datasheets, the DRB datasheet and the current version of this manual, on the JEL datasheets page.

jelproducts.nl/en/datasheets

KEEP THIS MANUAL

Store it with the site documentation next to the manual of the luminaire the driver feeds, and pass it on to every person who works on the installation.

1 About this document

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

1.1 Who this document is for

This manual is written for the installer, the panel builder, the machine and mast supplier, the maintenance technician and the end user. Everything in it is mains work: 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 the hazards that arise during the work.

Every person who works on the installation 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 opening a box.



General hazard
Described in the text beside the symbol.



Optical radiation
Do not look into the luminaire the driver feeds.



Hot surface
The driver case runs to plus 90 degrees Celsius.



Crush hazard
A DRB-2 weighs 10 to 15 kg.



Two persons
This step must be carried out by two people.



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 datasheets 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 drivers and boxes have been supplied with four separate DCbright instructions: Driver, no box; Driver Box; Driver Box BLD120; and LIN90-120-HT Driver Box. **This edition supersedes all four.** Where they disagree, this manual applies.

Date	Revision	Change
2026	-	DCbright Manual Driver NO BOX, Manual Driver Box, Manual Driver Box BLD120 and Manual LIN90-120-HT Driver Box. Superseded
7 September 2026	1	First edition of the JEL Products manual, every remote driver and every housing in one document, to the JEL Products manual standard. **Corrected against the DCbright manuals:** the boxes are IP66 and IP67 and not IP65, the driver is a JEL programmed part and not interchangeable within a series, and the multi driver box of the DarkLicht Two and Three is documented, which no earlier instruction did

2 The product

Every AC luminaire in the JEL range that is not a wall pack or a canopy panel has its driver outside the housing. The luminaire is a sealed Class II unit on a four core tail; the driver takes the mains, makes the constant current and reads the temperature sensor in the luminaire. That is why the driver can be replaced at ground level, why it stays out of the hot zone, the wash zone and the engine bay, and why it needs a housing of its own.

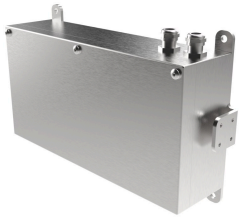
2.1 The four housings



DRB-1. One driver up to 320 W in a finned aluminium box, IP66 and IP67, 4.2 kg. Wall, pole or rear mounted. The standard box for one floodlight



DRB-2. One to three drivers, systems up to 2,000 W, 10.4 kg empty, with a separate terminal compartment. The box for the DarkLicht One, Two and Three and for HT groups



316L Power Box. One driver in solid stainless steel, per driver size, for the wash zone, the deck and the food plant, where a coated box does not last

	DRB-1	DRB-2	316L Power Box	Driver tray, bare driver
Holds	1 driver, BLD075 to BLD320, TLD160 to TLD320	1 to 3 drivers, TLD400 to TLD800, BLD600, SLK1K0, or groups of smaller drivers	1 driver, BLD075, BLD200, BLD320 or BLD600	1 to 3 drivers on a plate, or the driver alone
Material	Cast aluminium, conversion layer plus two layer titanium-based e-coating, grey or black, 304 stainless glands and hardware		Solid 316L, electropolished, 316L glands and hardware	Zinc plated or stainless plate
Ingress	IP66 and IP67, IK08		IP66 and IP67, limited by the glands	None of its own: the enclosure it sits in decides
Dimensions	276 × 194 × 86.5 mm	441 × 290 × 145 mm	260 × 130 × 80 to 390 × 215 × 100 mm, section 3.3	Per order
Weight	4.2 kg with the driver	10.4 kg empty, 12.6 to 15.1 with the drivers	1.6 to 4 kg with the driver	5 to 10 kg with the drivers
Mounting	Wall by the four lugs, pole by the clamp set, or rear mounted behind the luminaire on its bracket		Wall by the four lugs	In a cabinet or a mast head enclosure
Ambient	minus 40 to plus 50 degrees Celsius at the box, driver case Tc to plus 90			
Warranty	5 years, within the ambient of section 6.1			

A box is supplied pre-configured per project: the driver fitted, programmed for its luminaire, the output lead landed on CON 2 and the mains terminals on CON 1. On site you mount the box, land two cables and close it. The bare driver is supplied where a customer cabinet or a machine already offers the enclosure.

2.2 The twelve drivers

All drivers are Upowertek constant current LED drivers, selected and programmed by JEL Products for one luminaire type. The BLD series takes 90 to 305 VAC, the TLD series 180 to 528 VAC for a 400 V supply between two phases, and the SLK1K0 is the 1 kW driver for the largest HT groups. The driver type is printed on the driver and on the luminaire label.

Driver	Power	Input	Input current, full load	Size, mm	Mass	Used on
BLD075	75 W	90 to 305 VAC, 127 to 420 VDC	0.8 A at 120 V, 0.4 A at 220 V	131 × 68 × 33.5	650 g	Piranha, Goby HT, Snapper HT, Linear 300 and 600
BLD120	120 W	90 to 305 VAC, 127 to 420 VDC	1.2 A at 120 V, 0.6 A at 220 V	161 × 68 × 33.5	800 g	Manta, WP, DarkLicht D60 and D120, Linear 900 and 1200
BLD200	200 W	90 to 305 VAC	1.8 A at 120 V, 0.9 A at 220 V	175 × 68 × 38.5	850 g	DarkLicht D200
BLD240	240 W	90 to 305 VAC	2.2 A at 120 V, 1.1 A at 220 V	215 × 67.5 × 33.5	1,100 g	Snapper, DarkLicht M150
BLD320	320 W	90 to 305 VAC	2.9 A at 120 V, 1.5 A at 220 V	225 × 68 × 38.5	1,120 g	Shark, Barracuda HT, DarkLicht M300, One 320 W, Snapper HC x2
BLD600	600 W	100 to 305 VAC, 127 to 420 VDC	5.4 A at 120 V, 2.4 A at 277 V	237 × 125 × 49	2,600 g	HT groups, project builds
SLK1K0	1,000 W	180 to 440 VAC	5 A at 220 V, 2.8 A at 380 V	Per datasheet	2,940 g	HT groups, project builds
TLD160	160 W	180 to 528 VAC, 250 to 740 VDC	0.9 A at 277 V, 0.45 A at 480 V	225 × 68 × 33.5	1,100 g	Marlin
TLD320	320 W	180 to 528 VAC, 250 to 740 VDC	1.3 A at 277 V, 0.75 A at 480 V	225 × 68 × 38.5	1,150 g	Barracuda, Shark on 400 V
TLD400	400 W	180 to 528 VAC, 250 to 740 VDC	1.8 A at 277 V, 0.9 A at 480 V	224 × 90 × 41.5	1,650 g	DarkLicht One 400 W, Snapper HC x3
TLD600	600 W	180 to 528 VAC, 250 to 740 VDC	2.5 A at 277 V, 1.4 A at 480 V	237 × 125 × 49	2,600 g	DarkLicht One 600 W, Two 1,200 W, Three, Snapper HC x3
TLD800	800 W	180 to 528 VAC, 250 to 740 VDC	3.5 A at 277 V, 2 A at 480 V	237 × 125 × 49	2,600 g	Orca, Orca HT, DarkLicht Two 800 W

Sizes are the body without the end caps; the TLD600 and TLD800 are 262 mm over the caps. All drivers: surge 6 kV line to line and 10 kV line to earth, leakage 0.7 mA, life above 100,000 h at Tc 75 degrees Celsius, case temperature minus 40 to plus 90, power factor above 0.9 at 60 to 100 per cent load. The full specification per driver is in section 3.1.

WARNING, BLD AND TLD ARE NOT THE SAME DRIVER

A BLD driver is a 90 to 305 V driver. On a 400 V supply between two phases it fails at switch on. A TLD driver takes 180 to 528 V and does not start on a 110 V site supply. **Read the driver label against the supply** before you land cable 1. Where a luminaire is offered in both, such as the Shark and the Barracuda, the quotation says which one you have.

NOTE, ONE DRIVER, ONE LUMINAIRE

Every driver leaves JEL Products programmed for the boards it feeds: output current, dimming protocol and the temperature curve. A BLD320 from a Shark does not run a DarkLicht M300 at the right current, and two luminaires never share one driver. Quote the luminaire's article code and internal code when you order a driver, section 2.4.

2.3 Which driver and which housing, per luminaire

Luminaire, AC version	Driver	Standard housing	Also
Piranha 9, aluminium and 316L	BLD075	Bare, or DRB-1	316L Power Box BLD075
Goby HT	BLD075	DRB-1, outside the hot zone	316L Power Box
Snapper, aluminium and 316L	BLD240	Bare, or DRB-1	316L Power Box BLD200 or BLD320 size
Snapper HT, HT-CHEM, HT 316L	BLD075	DRB-1, outside the hot zone	316L Power Box BLD075
Snapper HC x2 · x3	BLD320 · TLD400 or TLD600	DRB-1 · DRB-2	
Shark	BLD320, or TLD320 on 400 V	Bare, or DRB-1	316L Power Box BLD320
Barracuda, aluminium and 316L	TLD320	Bare, or DRB-1	316L Power Box BLD320 size
Barracuda HT, HT 316L	BLD320	DRB-1, outside the hot zone	316L Power Box
Marlin	TLD160	Bare, or DRB-1	
Orca, Orca 316L, Orca HT	TLD800	DRB-2	Tray
Linear 300 and 600 · 900 and 1200	BLD075 · BLD120	In the luminaire on the standard AC, DRB-1 on the HT AC	
Manta, Manta HT	BLD120	In the driver compartment, DRB-1 on the HT	
DarkLicht D60 and D120 · D200	BLD120 · BLD200	In the luminaire or DRB-1	
DarkLicht M150 · M300	BLD240 · BLD320	Bare, or DRB-1	
DarkLicht WP	BLD120	Inside the luminaire	
DarkLicht One 320 · 400 W	BLD320 · TLD400	Inside the luminaire	
DarkLicht One 600 W	TLD600	DRB-2, up the mast	Tray, tower crane frame
DarkLicht Two 800 · 1,200 W	TLD800 · 2 × TLD600	DRB-2, up the mast	Tray
DarkLicht Three	3 × TLD600	DRB-2, up the mast	Tray
HT groups	Several BLD, or BLD600, SLK1K0	DRB-2, up to six HT luminaires	Engineered per project

From the JEL product specification of August 2026. The luminaire manual of each family states the driver for that family; where this table and that manual disagree, the quotation for the project decides. DC luminaires have their drivers on the board and need none of this.

2.4 The labels, and the second code

The driver carries the manufacturer's label with the type, the input range, the output range and the Tc point, and a JEL label with the article code of the luminaire it is programmed for. A box carries its own label with the box type and the same luminaire code. Both also show a **second code that is not an article number**: the JEL internal production code of the luminaire, such as SN-AC-180W or DL2-AC-1200W-192.

> **NOTE**
>
> The internal code records which boards the driver was programmed for, the batch and the date. It is what makes a replacement driver the right driver. Photograph the driver label and the box label before the box is closed and the luminaire goes up.

ORDER CODES

DRB-1	Driver box 1, with the driver of the luminaire it is ordered for. Grey or black
DRB-2	Driver box 2, with one to three drivers, pre-wired with the PS PCB where the luminaire needs it
Power Box BLD075, BLD200, BLD320, BLD600	316L box per driver size
Tray	Driver tray per project, with the drivers
Pole clamp set	For a DRB-1 or a DRB-2 on a pole or a mast
Rear mount bracket	Carries the box behind the luminaire on its own bracket



The DRB-1 on its rear mount plate: the box rides behind the luminaire on the same bracket

3 Technical data

Driver values are from the Upowertek datasheets of August 2026, revision per driver as stated, at 25 degrees Celsius. Luminaires per MCB is the manufacturer figure on an ABB S200 at 220 V, a guide for engineering and not a substitute for the installation calculation.

3.1 The drivers

Driver	Rev.	Inrush at 220 V	T50	B16	C16	C25	D16	Power factor	MTBF at Tc 75	Note
BLD075	H	66 A	170 µs	11	19	30	32	above 0.9 at 65 to 100 %	320,000 h	380 VAC for 2 h
BLD120	H	66.8 A	350 µs	5	8	13	17	above 0.9 at 70 to 100 %	320,000 h	380 VAC for 2 h
BLD200	H	63.2 A	300 µs	6	11	17	12	above 0.9 at 60 to 100 %	280,000 h	380 VAC for 2 h
BLD240	H	66.0 A	0.5 ms	3	6	9	10	above 0.95 at 60 to 100 %	280,000 h	380 VAC for 2 h
BLD320	H	31.2 A	1.3 ms	2	4	7	8	above 0.95 at 60 to 100 %	280,000 h	380 VAC for 2 h
BLD600	K	5 A	17 ms	3	3	6	4	above 0.9 at 60 to 100 %	320,000 h	Soft start
SLK1K0	I	5.4 A	8 ms	2	2	3	2	above 0.9 at 60 to 100 %	320,000 h	THD below 25 %
TLD160	G	60 A	250 µs	8	13	21	15	above 0.9 at 70 to 100 %	280,000 h	
TLD320	G	64 A	400 µs	4	7	11	8	above 0.9 at 60 to 100 %	280,000 h	
TLD400	G	64 A	400 µs	4	5	8	6	above 0.9 at 60 to 100 %	280,000 h	
TLD600	M	5.4 A	8 ms	3	3	5	4	above 0.9 at 70 to 100 %	320,000 h	Soft start
TLD800	O	5.4 A	8 ms	2	2	4	3	above 0.9 at 60 to 100 %	320,000 h	Soft start

Common to all: surge protection 6 kV line to line and 10 kV line to earth to IEC 61000-4-5, leakage current 0.7 mA maximum, THD below 15 per cent except the SLK1K0, life above 100,000 h at Tc 75 degrees Celsius and above 130,000 h at Tc 50, case temperature Tc minus 40 to plus 90 degrees Celsius, dimming 0 to 10 V, PWM and DALI-2 as ordered, NFC programmable, 12 V 300 mA auxiliary output on the TLD series, output short circuit and over temperature protected with automatic recovery.

NOTE, TWO KINDS OF DRIVER

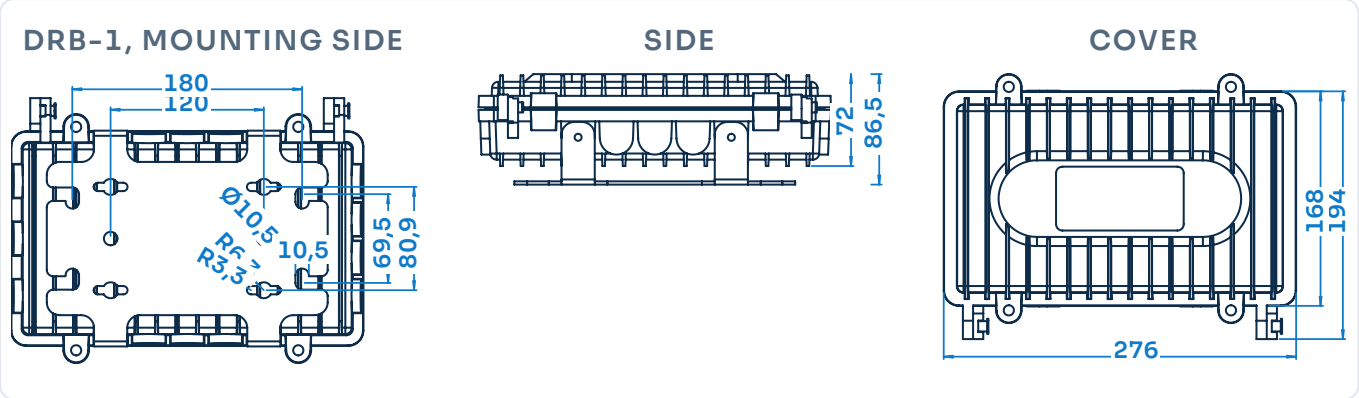
The small BLD and TLD drivers up to 400 W have a high, short inrush peak of 30 to 67 A for well under a millisecond, and it is the peak that limits how many share a breaker. The 600 W and larger drivers soft start at about 5 A over 8 to 17 ms, and there it is the running current that limits the count: **a TLD600 allows fewer per breaker than a TLD400** despite a peak twelve times lower.

NOTE, THE JEL MEASUREMENT ON THE LARGE DRIVERS

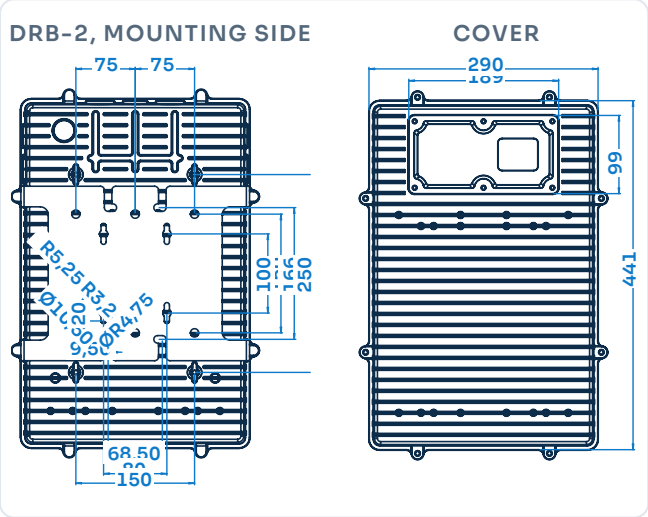
The JEL test of July 2024 on the DarkLicht tray measured a cold start peak of 12.5 A for 3.2 ms per 600 W at 230 V, more than the datasheet's 5.4 A, and recommends one type C breaker per luminaire: C6 for 600 W, C10 for 1,200 W, C16 for 1,800 W. On a mast that is the arrangement to use.

3.2 The DRB-1 and DRB-2, dimensions and weight

All drawings are dimensioned in millimetres and are taken from the DCbright production drawings of the driver box I and II. Both boxes are cast aluminium with a fin field on the cover, a separate mounting side with four lugs and a keyhole pattern for the rear mount plate, and 304 stainless glands. The DRB-2 has a terminal compartment under its own small cover, so the connections are reached without opening the driver compartment.



DRB-1: mounting side with the four lugs on 120 by 180 mm and the keyhole slots on 69.5 mm, side view 86.5 mm deep, and the finned cover. 276 mm long, 194 mm wide



DRB-2: mounting side with the lugs on 150 by 250 mm and the keyhole slots on 80 by 100 mm, and the cover with the terminal compartment lid of 189 by 99 mm. 441 mm long, 290 mm wide, 145 mm deep

DRB-1, FROM THE DRAWING	
Envelope	276 × 194 × 86.5 mm
Lugs	4 × Ø 10.5 on 120 × 180 mm
Keyholes	R6.3 to R3.3, on 69.5 and 80.9 mm, for the rear mount plate
Glands	2 × M20 × 1.5, IN and OUT, in the end face, plus a third on request for a control cable
Weight	4.2 kg with the driver, 3.6 kg empty
Ingress	IP66 and IP67, IK08

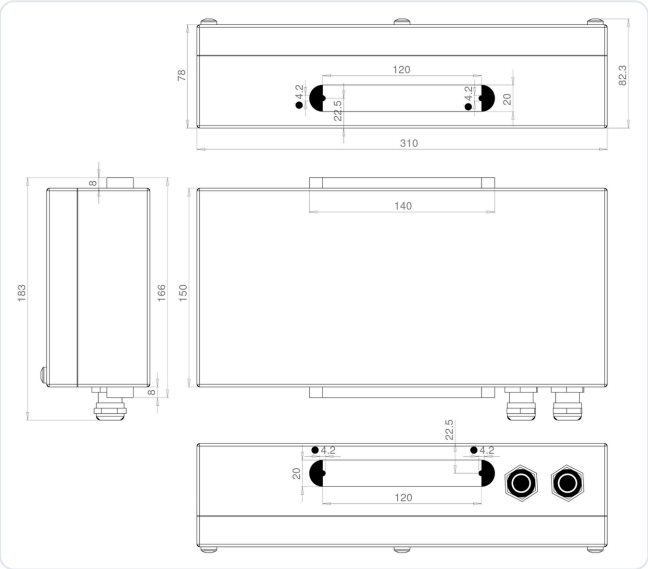
DRB-2, FROM THE DRAWING	
Envelope	441 × 290 × 145 mm
Lugs	4 × Ø 10.5 on 150 × 250 mm
Keyholes	R5.25 to R3.25, on 80 and 100 mm
Glands	Up to four M20 × 1.5 in the end face: IN, OUT per luminaire, and a control cable
Weight	10.4 kg empty; 12.6 kg with two TLD600, 13.0 with two TLD800, 15.1 with three TLD600
Ingress	IP66 and IP67, IK08

3.3 The 316L Power Box

The Power Box is a folded and welded 316L stainless steel box in two halves, front and back, per driver size, with 316L glands and a PE stud. It has no fins: the wall thickness and the material carry the heat. It belongs where the DRB-1 does not: in the wash down zone of a food plant, on an open deck, in a fertiliser store, wherever the luminaire it feeds is a 316L luminaire. It is not an HT box; the ambient limit is the same plus 50 degrees Celsius.

Power Box	Outside, mm	Glands, fixing
BLD075	260 × 130 × 80	2 × Ø 20.5, 4 × M6
BLD200	330 × 180 × 85	2 × Ø 20.5, 4 × Ø 9
BLD320	390 × 180 × 85	2 × Ø 20.5, 4 × M6
BLD600	390 × 215 × 100	2 × Ø 20.5, 4 × Ø 9

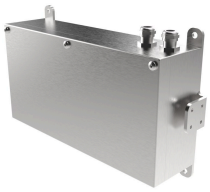
From the assembly drawings Power Box V3. The BLD320 size also takes a TLD320, the BLD200 size a BLD240, and the BLD600 size a TLD600 or TLD800. An earlier box of 310 by 183 by 78 mm for the BLD320 is in the field as well; the fixing pattern differs and the box is drilled from the box you have.



The earlier BLD320 Power Box, 310 by 183 by 78 mm, with the two glands in the end face and the 120 mm fixing slots



Power Box BLD075, the smallest, for a Piranha, a Snapper HT or a Goby HT on a deck



Power Box BLD600, the largest, with the mounting flanges on the back

Material	316L, electropolished, 316L glands, PE stud M6
Ingress	IP66 and IP67, limited by the glands; not IP69K
Corrosion	C5 and CX, ISO 9223, CRC III to EN 1993-1-4
Weight	1.6 kg BLD075 to about 4 kg BLD600, with the driver
Warranty	5 years, box and driver

3.4 Standards and verification

Subject	Standard	By
Driver safety	EN 61347-1, EN 61347-2-13, EN 62384. ENEC, CB, UL Class P	Manufacturer, certified
Driver EMC	EN 55015, EN 61547, EN 61000-3-2	Manufacturer, TÜV on the DarkLicht driver
Surge	IEC 61000-4-5, 6 and 10 kV	Manufacturer

Subject	Standard	By
Box ingress	IEC 60529, IP66 and IP67, every box	Test report, in house
Box impact	IEC 62262, IK08	In house
Corrosion	ISO 9223, C5 aluminium, CX 316L	Salt spray report

4 Safety

This chapter lists the hazards that arise when a driver or a driver box is installed, operated and maintained, and what to do about each of them. It does not replace the national and local electrical regulations that apply on your site. Everything in a driver box is mains work.

4.1 Electrical hazard

DANGER, LIVE PARTS

Opening a driver box, a junction box or a driver tray while the supply is on can cause death or serious injury. Isolate the supply, secure it against being switched on again, and verify that the circuit is dead at CON 1 before you touch a conductor. Check twice. The driver output at CON 2 stays live until the driver is off.

DANGER, THE OUTPUT IS NOT MAINS AND NOT SELV

The driver output is 50 to 100 V DC at up to 8.6 A and is treated as live. Mains on the output side destroys the luminaire and creates a shock hazard on its Class II housing.

- The driver, the box, the tray and every metal enclosure must be earthed, and the earth goes on to the luminaire housing at A, section 7.1. Verify it at the furthest point.
- Stay within the input range on the driver label: BLD 90 to 305 V, TLD 180 to 528 V. Keep one metre to a radio receiver. Only use the driver supplied for the luminaire.

4.2 Hot surfaces



CAUTION, HOT BOX

The driver case runs to plus 90 degrees Celsius at its Tc point and the box that carries its heat is hot to the touch in service, above 60 degrees on a summer afternoon. Let it cool before handling. Do not mount a box against insulation, in a closed cabinet without ventilation or in a plus 50 degree ambient.

4.3 Falling objects and handling

WARNING, FALLING BOX

A DRB-2 with three drivers weighs 15 kg and sits at the mast head. Use all four lugs, or the complete clamp set, and fit a secondary retention wherever the box is above a walkway or a working area, and always on a crane frame.

- Wear gloves, safety boots and a hard hat. A DRB-2 is lifted by two people or a hoist, by the box, never by the glands or the cables. Never use a box as a handhold or a step.

4.4 What must never be done

- Do not open a box or a junction box while the supply is on.
- Do not mount a box with the glands upward or sideways. Glands downward is mandatory for the ingress rating.
- Do not put a DRB-1 or a DRB-2 in the wash down zone, in the hot zone, in an engine bay or above plus 50 degrees Celsius.
- Do not parallel two drivers onto one luminaire, do not feed two luminaires from one driver, and do not swap drivers between luminaire types.
- Do not disconnect or bypass the temperature pair. It is the thermal protection of the luminaire.
- Do not use the capped conductors on the driver, and do not drill a box.

4.5 Emergency situations

If an electrical fault occurs in a driver or a box, or a box is damaged or wet, switch off the supply immediately and do not switch on again until it has been inspected and released. A wet driver is replaced, not dried.

NEVER, ON ANY DRIVER BOX



Never open a box or a driver while the supply is on



Never mount a box with the glands upward



Never hang a box or a driver by its cables



Never aim a pressure washer at a gland or a cover joint



Never box a driver in or cover its fins



Never fit a driver other than the one programmed for the luminaire

5 Preparation

Everything that has to be right before the box goes on the wall.

5.1 Transport and storage

- Transport and store the box in its original packaging, in a dry place, at **minus 40 to plus 85 degrees Celsius** for the driver and minus 40 to plus 50 for a box that is running.
- Keep the box closed until it is at its position. A box that has stood open on a site has a wet driver, and a wet driver is a replaced driver.
- A bare driver travels in its own box with its leads coiled; do not stack anything on the driver.
- A Power Box in 316L stays in its wrapping until it is at the machine: polished 316L picks up iron from a steel bench, and that is where surface rust on stainless comes from.

5.2 Contents of the delivery

1 ×	Driver box, Power Box or tray with the driver or drivers fitted and programmed for the luminaire, the output lead landed on CON 2, the mains terminals on CON 1, and on a multi driver box the PS PCB wired. Or the bare driver alone
	Glands pre-installed, M20 × 1.5, sized for the JEL cables; the installer confirms the size for a site cable of another diameter
	Wall lugs on the box. The pole clamp set and the rear mount plate where ordered
1 ×	This instruction manual

> **NOTE**
>
> The driver is already programmed for the luminaire on the same order. Where a box is ordered on its own, state the article code and the internal code of the luminaire it feeds, section 2.4, and check the JEL label on the driver against the luminaire label before you mount anything.

Wall fixings and pole bands are not supplied, because they depend on the structure. **The safety cable is not supplied as standard**, see section 6.5.

5.3 Tools

Tool	Used for
Socket or ring spanner for the lug bolts	Four per box: M8 on a DRB-1, M10 on a DRB-2, M6 on a Power Box
Torque wrench, 5 to 50 Nm	Lug bolts, clamp set, cover screws, section 6.6
Two open ended spanners for the glands	One holds the body, one turns the cap nut, section 7.5
Screwdriver or bit for the cover	The cover screws, and the terminal compartment lid of the DRB-2
Wire stripper and cutter, end sleeve crimping tool	Preparing cable 1, cable 2 and the control cable for the terminals
Voltage tester	Verifying that the circuit is dead before the cover comes off
Multimeter	The supply at CON 1, the output at CON 2
Insulation resistance tester	Commissioning, chapter 8
Heat gun	Heat shrink tubing over every gland, section 7.5
NFC programmer, phone with the Upowertek app	Reading or setting a driver, section 9.2

NOT SUPPLIED

Mains cable	H07RN-F 3G1.5 mm² recommended, sized on section 7.6
Cable 2 extension	H07BQ-F 2 × 1.5 plus 2 × 0.5, or 2 × 2.5 plus 2 × 0.5 mm², where the tail does not reach the box
Control cable	H07BQ-F 4G0.5 mm² for 0 to 10 V or DALI-2
Wall fixings, pole bands	A4 or 316 stainless steel or hot dip galvanised class 8.8, with locking
Junction box, bare driver	Two IP67 boxes, or one with a partition, section 6.4
Heat shrink and self amalgamating tape	Over every gland outdoors

6 Mechanical mounting

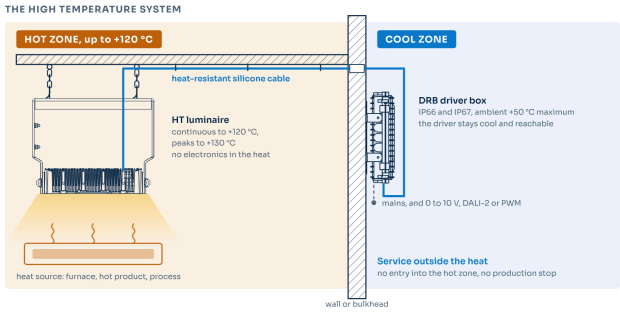
The box is mounted first and the luminaire second, because the box decides the cable route. Where the box goes matters more than how: the ambient at the box sets the life of the driver.

DANGER

Isolate the supply and secure it against being switched on again before you start. Installation may only be carried out by a qualified person.

6.1 Where the box goes

Ambient	minus 40 to plus 50 degrees Celsius at the box, measured in the shade in summer. Not above a generator canopy, not in an engine bay, not in a closed cabinet in the sun, not in a mast head enclosure without ventilation
Reachable	At ground level or from a platform, so that the driver is replaced without touching the luminaire. That is the point of a remote driver
Dry side	Outside the wash down zone and outside the spray of a pressure washer. Rain is fine, a lance is not. In a wash zone, the 316L Power Box
Hot zone	On an HT installation the box sits **outside** the hot zone, at the far end of the silicone cable, up to 150 m away. Never inside it
Distance to the luminaire	Within the cable length of section 7.6: the 0.3 or 2.0 m tail reaches the box, or an extension in an IP67 junction box does
Clearance	150 mm around the box, nothing against the fins, no insulation, no second box stacked on it
Orientation	**Glands downward, always.** Vertical on a wall or a pole with the glands at the bottom, or rear mounted behind the luminaire with the glands down. Never glands up or sideways
Vibration	On a crane or a machine the box goes on the clamp set or the rear mount plate with threadlocker, and the cables are clamped within 300 mm



The principle on an HT installation: the luminaire in the hot zone, the driver box outside it on the silicone cable. The same logic, cool box and reachable box, applies to every installation

WARNING, THE BOX IS THE TEMPERATURE LIMIT OF THE SYSTEM

The luminaire may be rated to plus 50, plus 120 or, on a 316L version, for the deck. The driver in its box is rated to plus 50 degrees Celsius ambient and Tc 90 on the case, and its life halves for every ten degrees above Tc 75. A driver that fails every summer is a box in the wrong place, not a bad driver.

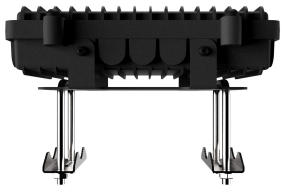
6.2 Wall mounting, DRB-1, DRB-2 and Power Box

1. **Choose the position** per section 6.1 and check that the wall carries four times the weight of the box: 17 kg for a DRB-1, 60 kg for a full DRB-2.
2. **Mark the four lugs** with the box held glands down, or from the drawing: 120 by 180 mm on the DRB-1, 150 by 250 mm on the DRB-2, per the Power Box drawing on a 316L box.
3. **Drill and plug** for M8 on a DRB-1, M10 on a DRB-2, M6 on a Power Box, in A4 or 316 stainless steel or hot dip galvanised class 8.8.
4. **Hang the box** on the two upper bolts, fit the two lower, and torque all four per section 6.6. On a DRB-2, two people or a hoist.
5. **Check the orientation:** glands down, cover outward, 150 mm free around the box.
6. **Fit the secondary retention** where section 6.5 applies.

6.3 Pole mounting and rear mounting

On a pole or a mast the box goes on the **pole clamp set**: two stainless bands through the clamp brackets on the mounting side of the box, around a pole of 60 to 160 mm. Fit the clamp to the box first on the bench, then the assembly to the pole, glands down, bands torqued per the band supplier. On a crane or a machine the box can be **rear mounted**: the rear mount plate bolts to the luminaire bracket and the box hangs on the plate by its keyhole slots, glands down, so that the tail lands in the box without an extension.

> **NOTE, REAR MOUNTED IS STILL REMOTE**
>
> A rear mounted box is behind the luminaire, in its shade and in the same wind, but it is not inside it. It keeps the driver replaceable and it keeps the mains off the tail. It does not keep the driver out of the wash zone: on a washed machine, rear mount the 316L Power Box or put the DRB-1 elsewhere.



DRB-1 on the pole clamp set: two bands around the pole, the box glands down



DRB-2 on the clamp set at a mast head. The lugs take the retention cable

6.4 The bare driver and the tray

A bare driver has no enclosure of its own. It is IP67 as a component, but its leads are not: **both ends go into an IP67 junction box**, mains at one end and the output at the other, or one box with a partition between them. The driver itself is screwed down by its two end lugs on a plate or a rail, Tc label upward, 150 mm free around it, in an enclosure that meets section 6.1. A **tray** is the same idea for one to three drivers on a plate, pre-wired by JEL Products for a cabinet or a mast head enclosure that is already IP rated.

Driver fixing	2 × M4 or M5 through the end lugs, 2.4 or 4.9 Nm
Tray fixing	4 × M8 through the plate, 20 Nm
Junction box	IP67, with a gland per cable and dimension L per section 7.5
Ventilation	The enclosure stays below plus 50 degrees Celsius inside with the drivers running

> **WARNING**
>
> A bare driver with its leads in a domestic junction box or under a bit of tape is the most common cause of a driver failure we see. The IP67 rating of the driver stops at its leads.

6.5 Secondary retention

WARNING

Fit a secondary retention wherever a box is mounted above a walkway, a working area or a road, and always on anything that moves: a crane, a machine, a light tower or a vessel. A DRB-2 at a mast head is above people all night.

NOTE, THE SAFETY CABLE IS AN ORDERED ITEM

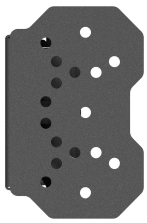
The safety cable is **not supplied as standard**; it is rated for the box it is ordered for. A full DRB-2 at 15 kg needs a different cable from a DRB-1 at 4.2.

1. Choose an anchor point independent of the four lug bolts or the clamp bands that carries four times the mass of the box.
2. Loop the cable around that anchor and attach the other end to a lug of the box, not to a gland and not to a cable.
3. Leave a little slack, and record the cable in the site documentation so that it is inspected at every visit.

6.6 Tightening torques

Connection	Size	Torque
Lug bolts, DRB-1, class 8.8	4 × M8	20 Nm
Lug bolts, DRB-2, class 8.8	4 × M10	40 Nm
Lug bolts, Power Box, 316L	4 × M6	8 Nm
Rear mount plate, clamp bracket to the box	M8	20 Nm
Cover screws, DRB-1 and DRB-2	M5 · M6	4.9 · 8 Nm
Terminal compartment lid, DRB-2	M4	2.4 Nm
Driver end lugs on a plate, PE stud	M4 · M5 · M6	2.4 · 4.9 · 8 Nm
Cable gland cap nut	M20	2.5 Nm, and dimension L in section 7.5

Clean, dry threads, class 8.8. A4 or 316 in a stainless thread: anti-seize and a third less. Pole bands per the band supplier.



The mounting side of the DRB-1: four lugs, the keyhole slots for the rear mount plate and the clamp brackets



The DRB-2 with its terminal compartment lid on the cover. Only the lid comes off on site; the driver compartment stays closed until a driver is replaced

AFTER MOUNTING, BEFORE WIRING

- [ ] Four lug bolts, or the clamp set, at torque and locked.
- [ ] Glands downward, cover outward.
- [ ] 150 mm free around the box, nothing against the fins.
- [ ] Ambient at the box checked, below plus 50 °C in the shade.
- [ ] Secondary retention fitted where required.
- [ ] Driver label checked against the luminaire label, and the input range against the supply.
- [ ] Cable route from the luminaire to the box within section 7.6, with a drip loop at every gland.

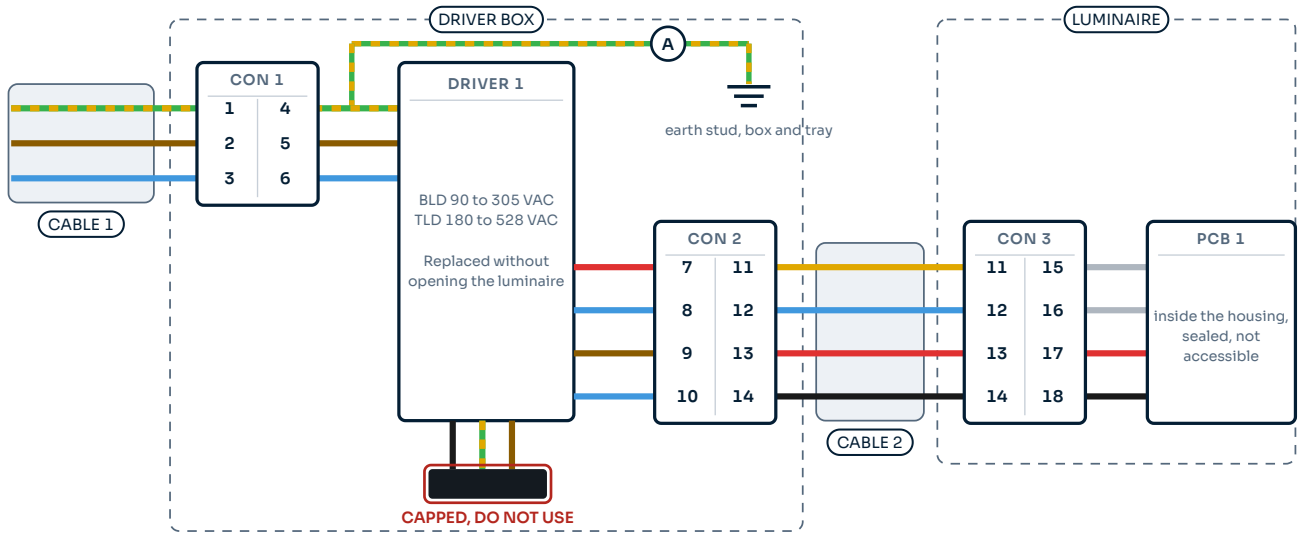
7 Electrical installation

DANGER, LIVE PARTS

Isolate the supply, secure it against being switched on again, and verify that the circuit is dead at CON 1 before the cover comes off. Only a qualified person may make the electrical connection.

7.1 The standard diagram, one driver, one luminaire

Mains arrives on cable 1 at CON 1. The driver takes it, makes the constant current and reads the temperature sensor of the luminaire. Cable 2, the four core tail of the luminaire or its extension, carries the driver output and the temperature signal to CON 3 in the luminaire. This diagram is the same for every JEL luminaire with a remote driver, from the Piranha to the Orca; only the driver type and the cross section of cable 2 change.



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 lands on the earth stud of the driver box, and earths the box and the tray. The luminaire is Class II and is not earthed
CAPPED	**The black, green and brown conductors on the driver are capped off and are not connected. Do not use them**

Every conductor, colour and terminal number as on the production drawing. Cable 1 carries mains, cable 2 the driver output and the temperature feedback

DANGER, THE CAPPED CONDUCTORS ARE NOT SPARE WIRES

The driver leaves the factory with **three capped conductors: black, green and brown**, part of the driver control lead and **not connected on purpose**. Leave the cap in place and do not use them as an earth, a neutral or a spare core. Adding dimming later is a driver change, done by JEL Products or by a qualified person with the driver documentation, section 9.2.

The incoming **earth conductor lands on the earth stud of the driver box**, marked **A**, and earths the box and the tray. The rule across the range: **the place where the driver sits is earthed.** A luminaire fed from a remote driver is Class II and is not earthed; cable 2 carries no protective earth. A luminaire with the driver inside is Class I and is earthed itself.

This diagram applies to models from 2025 onward. For an older luminaire, check the connection against the diagram supplied with it before you rewire anything.

7.2 Conductors

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
10	Blue	Driver 1 to CON 2	Driver output, minus
11	Yellow	CON 2 to CON 3, cable 2	Temperature, plus, 0.5 mm²
12	Blue	CON 2 to CON 3, cable 2	Temperature, minus, 0.5 mm²
13	Red	CON 2 to CON 3, cable 2	Driver output, plus, 1.5 or 2.5 mm²
14	Black	CON 2 to CON 3, cable 2	Driver output, minus, 1.5 or 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	Driver output, plus
18	Black	CON 3 to PCB	Driver output, minus

WARNING, THE THIN PAIR IS THE TEMPERATURE PAIR

The two 0.5 mm² cores in cable 2, conductors 11 and 12, carry the temperature signal from the luminaire to the driver. **They are not a dimming input.** Dimming enters at the driver, on its control lead. An installation that leaves the thin pair unconnected leaves the thermal protection disconnected, and on an HT luminaire that is the protection that matters most. The driver reads an open sensor as a fault and does not start.

Rows 4 to 10 are inside the box and are wired at the factory; on site you land rows 1 to 3 on CON 1 and rows 11 to 14 on CON 2. Rows 15 to 18 are inside the luminaire.

7.3 Circuit breakers

Maximum number of drivers on one miniature circuit breaker, per section 3.1. The short version:

Driver	B16	C16	C25	D16
BLD075	11	19	30	32
BLD120	5	8	13	17
BLD200	6	11	17	12
BLD240	3	6	9	10
BLD320	2	4	7	8
BLD600	3	3	6	4
SLK1K0	2	2	3	2
TLD160	8	13	21	15
TLD320	4	7	11	8
TLD400	4	5	8	6
TLD600	3	3	5	4
TLD800	2	2	4	3

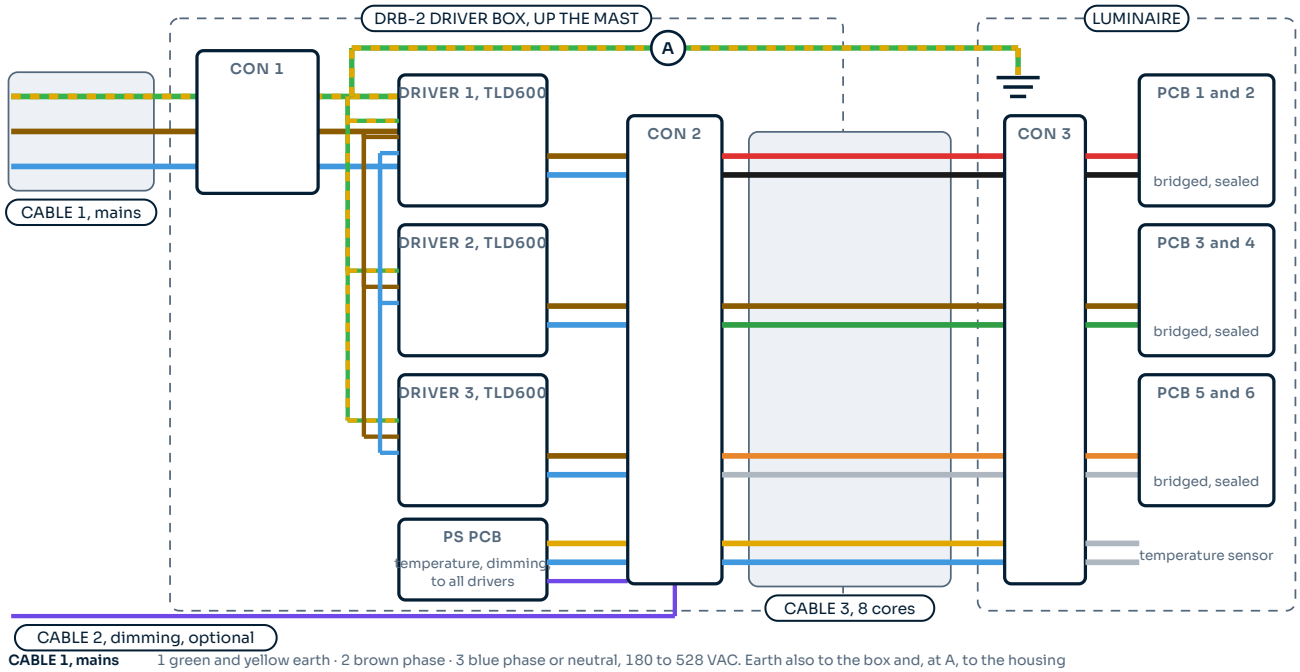
Manufacturer figures on an ABB S200 at 220 V. A C characteristic is the normal choice on a lighting circuit with drivers; a B16 with two BLD320 on it is a figure a site electrician does not expect. Where a residual current device is fitted, count 0.7 mA leakage per driver.

NOTE, MIXED CIRCUITS

Drivers of different types on one breaker: add up the fractions. Two BLD320 on a C16 use half of it; add two BLD120 at an eighth each and the breaker is at three quarters.

7.4 Two and three drivers in one box

A DRB-2 can carry two or three drivers. Two cases exist and they are wired differently. On an **HT group**, several small drivers each feed their own luminaire: mains is bussed to every driver, and every driver has its own cable 2 to its own luminaire through its own gland, the standard diagram three times over. On the **DarkLicht Two at 1,200 W and the Three**, two or three TLD600 feed one luminaire: each driver's output pair goes through CON 2 into one multi core cable 3 to CON 3 in the luminaire, where each pair lands on its own two boards, and the temperature sensor and the dimming signal are shared through the PS PCB in the box.



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, no e
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 DarkLicht 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. Per the DCbright drawing DL3-AC-1800W-288

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, red and black for driver 1, brown and green for driver 2, orange and grey for driver 3, and photograph CON 2 before you touch it.

WARNING, 100 V DC IN CABLE 3

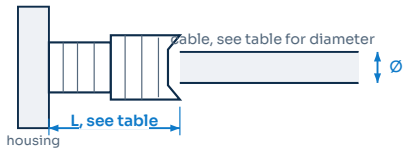
The TLD600 on these types is set to its 100 V output. Cable 3 carries about 100 V DC per pair at up to 6 A. It is not mains and it is not SELV; it is isolated with the box and treated as live until the box is dead.

No	Colour	Function
20, 21	Yellow, blue	Temperature plus and minus, shared, CON 2 to CON 3
24, 27	Red, black	Driver 1 output, to PCB 1 and 2
25, 28	Brown, green	Driver 2 output, to PCB 3 and 4
26, 29	Orange, grey	Driver 3 output, to PCB 5 and 6
22, 23	Per the control cable	Dimming signal into CON 2, optional
7 to 19	Various	Inside the box, factory wired: driver outputs to CON 2, temperature and dimming through the PS PCB
41, A	Green and yellow	Earth to the box, and to the luminaire housing

On an HT group in a DRB-2 there is no PS PCB: every driver reads its own luminaire's temperature pair over its own cable 2, and the box carries one gland per luminaire. The DarkLicht One, Two and Three manual carries the full conductor list for the multi driver case.

7.5 Cable glands

The glands on the box are the only place where the ingress rating of the box depends on the installer. 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 ladder than a torque figure alone. Then apply heat shrink tubing and self amalgamating tape over the gland on every outdoor box. 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. A gland without a cable is closed with its blanking plug, never left open.



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 is the complete JEL gland table; every luminaire manual carries the rows that apply to that family. Here n/a means the combination is outside the clamping range of that gland and must not be used. The two core DC tails and the four core HT silicone cable of 2 × 1.0 plus 2 × 0.5 mm² work to the figures of the nearest diameter in an M20 × 1.5-H gland. Where a cable and a gland do not appear together in this table, ask JEL Products before you fit them. A site cable of another make with another diameter is measured, and the gland that clamps it is fitted; the box takes any M20 × 1.5 gland.

7.6 Cable length and voltage drop

On the mains side the cable is a normal calculation at a few amperes and is never the limit. Cable 2 is: it carries the driver output, about **50 V DC** on the drivers up to 400 W and **100 V DC** on the TLD600 and TLD800 as set for the DarkLicht, and the drop between the box and the luminaire must not exceed **2 V**. That is where the box position comes from: near enough that the tail reaches it, or an extension that stays inside the table.

CABLE 2 AT 50 V, ONE LUMINAIRE, 2 V DROP

Cross section	BLD075 1.4 A	BLD120 2.4 A	BLD240 4.8 A	BLD320 6.4 A	TLD400 8 A
1.0 mm²	41 m	24 m	12 m	9 m	7 m
1.5 mm²	61 m	36 m	18 m	13 m	11 m
2.5 mm²	102 m	60 m	30 m	22 m	18 m
4 mm²	163 m	95 m	48 m	36 m	29 m
6 mm²	245 m	143 m	71 m	54 m	43 m

CABLE 3 AT 100 V, PER DRIVER OUTPUT PAIR, 2 V DROP

Cross section	TLD600, 6 A	TLD800, 8 A
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

> **NOTE, THE HT SILICONE CABLE**
>
> An HT luminaire on its 1.0 mm² silicone cable stays inside 2 V to 81 m at 35 W and 24 m at 120 W; the 150 m the HT datasheet quotes is reached in 4 mm² on a 75 W driver, 6 mm² on 120 W and 16 mm² on 320 W. State the run when you order, and the cable comes in the right cross section.

The current is the driver power divided by 50 or 100 V. All lengths are the maximum at the stated drop, copper, two conductors, one way, rho 0.0175. The thin pair follows in the same cable and carries no current worth mentioning.

7.7 Making the connection

1. Confirm the circuit is dead and secured, and check the driver label against the supply: BLD on 90 to 305 V, TLD on 180 to 528 V.
2. Open the cover, or on a DRB-2 the terminal compartment lid, with the box mounted glands down. Photograph the factory wiring before you touch anything.
3. **Cable 1:** through the IN gland, three cores on CON 1 with end sleeves, earth first, then to the PE stud of the box. One conductor per terminal.
4. **Cable 2:** through the OUT gland, four cores on CON 2 per section 7.2, colour to colour: yellow 11, blue 12, red 13, black 14. Where the luminaire tail is extended, the joint is in an IP67 junction box, both pairs, per section 6.4.
5. **Control cable,** where used: through its own gland to the driver control lead or the PS PCB, section 9.2. Never through the same gland as the mains cable.
6. Tighten every gland to 2.5 Nm and to dimension L in section 7.5, then seal with heat shrink tubing and self amalgamating tape. Plug any unused gland.
7. Check that no conductor is pinched under the cover, that the gasket sits in its groove all the way round, and close the cover to the torque in section 6.6.
8. Clamp both cables within 300 mm of the box with a drip loop below the glands.

> **WARNING, KEEP THE PAIRS TOGETHER**
>
> The 2 × 1.5 or 2.5 mm² carry the driver output and the 2 × 0.5 mm² carry the temperature signal. Extend both, in one cable. A run with the thin pair left out has no thermal protection and the driver does not start.

ON A MACHINE OR A TOWER

Breaker	One per driver or per group, per section 7.3
Isolation	A lockable isolator within sight of the box, or at the mast base
Generator	A set with electronic protection can trip on the combined inrush of a bank switched together: stagger the switching

8 Commissioning

Do not switch on until every item below has been checked. Most driver failures reported to us in the first month trace back to a step skipped here: the wrong supply on the driver, the thin pair left off, or a box in the sun.

8.1 Checks before switching on

- [ ] Driver label matches the luminaire label, and the driver input range matches the supply: BLD 90 to 305 V, TLD 180 to 528 V, measured at CON 1.
- [ ] Cable 1 on CON 1, earth to the PE stud, and the earth through to the luminaire housing at A.
- [ ] All four cores of cable 2 on CON 2, colour to colour, the thin pair included, and any extension joined in an IP67 box.
- [ ] On a multi driver box: every output pair to its own boards, colour to colour, nothing paralleled.
- [ ] Capped conductors still capped. Control cable, if any, on its own gland.
- [ ] Every gland at dimension L and sealed, unused glands plugged, cover closed to torque, gasket seated.
- [ ] Box glands down, four lugs or the clamp set at torque, 150 mm free, retention fitted where required.
- [ ] Ambient at the box below plus 50 °C in the shade, outside the wash zone and the hot zone.
- [ ] Insulation resistance of cable 1 measured and recorded. Breaker per section 7.3.

8.2 First power up

1. Restore the supply at the breaker.
2. Confirm that the luminaire illuminates at full output at once. There is no warm up. Do not look into it.
3. If it does not: check the supply at CON 1, the output at CON 2 with the luminaire connected, and the thin pair. A driver with an open temperature sensor does not start, section 11.
4. Where a control line is used, drive it to full and to minimum and confirm the luminaire follows.
5. Record the installation: both codes from the driver and the luminaire label, the box type and position, the breaker, the cable 2 length and cross section, the date and the installer.

8.3 Handover

Leave this manual with the site documentation next to the luminaire manual, together with the record from step 5 of section 8.2.

WARNING

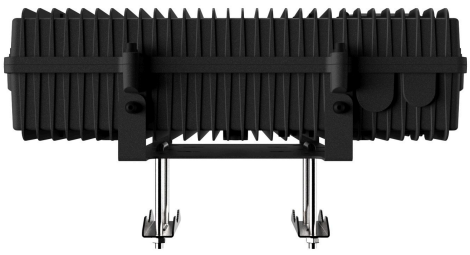
Never open a box or work on a driver while it is energised. Isolate first, every time, and verify at CON 1. The output at CON 2 stays live until the driver is off.

NOTE, MEASURE AT THE BOX, NOT AT THE PANEL

A site generator that reads 400 V at the panel can dip to 350 V at the mast base with everything running, and a BLD driver on a 230 V circuit sees the same dip. The drivers ride it; what they do not ride is a BLD driver that gets 400 V because two phases were landed on CON 1 by mistake. Measure at CON 1 before the cover goes on.

NOTE, THE FIRST HOUR

After switching on, come back in an hour and put a hand on the box. Warm is normal. Too hot to hold on a mild day means the box is in the wrong place or the fins are covered, and the driver will tell you the same thing next summer by failing.



A DRB-2 at a mast head on its clamp set, glands down, cable 1 up the mast and cable 3 to the luminaire. The lugs take the retention cable

9 Operation and dimming

9.1 Normal operation

A driver needs no operator action in normal service. It switches with the circuit, starts the luminaire at full output within 1.2 s, and may be switched as often as the site requires. At minus 40 degrees Celsius it starts at full output. There is nothing to adjust from year to year.

9.2 Dimming and setting

Method	How
0 to 10 V	On a driver ordered with it, on the purple and grey control lead through its own gland, from a 0 to 10 V source or a photocell. Isolated, so the control cable may run with the mains cable
PWM	As 0 to 10 V, from a PWM controller, on request
DALI-2	On a driver ordered with DALI-2, on the DALI pair of the control lead, one address per driver. D4i on the TLD series on request
NFC	A fixed level, a lower wattage or the dimming curve, set with the Upowertek NFC programmer or the phone app **with the supply off**, through the driver case. The way a lower wattage is ordered, and the way a replacement driver is matched
Time dimming	A night time profile programmed into the driver over NFC, no control line, on request
Dim off	The TLD series switches the output off at the bottom of the dimming range and draws 0.5 to 1.5 W standby

WARNING, THE THREE CAPPED CONDUCTORS

The black, green and brown conductors on the driver control lead are capped and not connected on purpose. Adding dimming is a driver change or a programming step done by JEL Products or a qualified person with the driver documentation, not a matter of uncapping them.

NOTE, DALI-2 AND 0 TO 10 V ARE NOT INTERCHANGEABLE

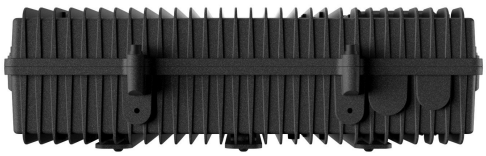
The driver is ordered for one protocol. A DALI-2 bus on a 0 to 10 V driver does nothing; a 0 to 10 V signal on a DALI-2 driver is out of range. Check the quotation against the control system before you connect the control lead.

9.3 What the driver does by itself

- **Thermal foldback on the luminaire.** The driver reads the temperature sensor over the thin pair and reduces the current as the luminaire warms. On overheating it switches the luminaire off and comes back when it has cooled. On an HT luminaire that is the protection that lets it run at plus 120.
- **Thermal foldback on itself.** Above Tc 105 the driver reduces its output; it recovers at Tc 70. A driver that dims on a hot afternoon is protecting itself.
- **Open sensor.** A driver with the thin pair disconnected does not start.
- **Short circuit and open circuit.** Auto recovery when the fault is removed.
- **Undervoltage.** Shut down below the input range and restart when it returns.
- **Surge.** 6 kV line to line, 10 kV line to earth, on every driver.
- **Soft start.** On the 600 W and larger drivers, a 5 A start over 8 to 17 ms.

9.4 What the driver does not do

- It does not run a second luminaire in parallel, and it does not run a luminaire of another type at the right current.
- It does not accept a control protocol that is not in its build.
- It does not provide emergency lighting. There is no battery in any box.
- It does not survive mains on its output, or 400 V on a BLD input.



The DRB-2 from above: the fin field carries the heat of three drivers

10 Maintenance

DANGER

Isolate the supply and secure it before any maintenance work, and verify at CON 1. Let the box cool before touching it.

10.1 Interval

Environment	Interval
Fixed structure, workshop, yard	Once a year, with the luminaire
High mast	With the mast inspection
Machines, cranes, vehicles and vessels	Every machine service: lugs, clamp, retention and glands
Dust, mud, bulk handling	Every six months, clean the fins
HT installation	Every six months: the box is the coolest part of the system and the one that fails if it is not
316L Power Box in a wash zone	Weekly wash with the luminaire, protocol B5.17, glands and PE stud checked monthly

10.2 Inspection

- [ ] Box, cover and gasket: impact damage, corrosion, a cover screw missing, a moisture trace at the gasket, water inside.
- [ ] Four lug bolts or the clamp set tight. Retighten to the torque in section 6.6.
- [ ] Secondary retention present, intact and correctly attached.
- [ ] Glands at dimension L, heat shrink intact, unused glands plugged, drip loops below the glands.
- [ ] Cable 1 and cable 2: chafe, damage, intact insulation, clamps holding.
- [ ] Fins clear of mud, dust and nests, 150 mm around the box open, nothing stacked on it.
- [ ] Ambient at the box still below plus 50 °C: nothing new built, parked or stacked around it since installation.
- [ ] Inside, at a driver change only: terminals tight, no discolouration on the driver case, the Tc label legible.

10.3 Records and cleaning

Record every inspection, fault and driver replacement, with both codes from the driver label and the luminaire label. Under warranty, that record is the difference between a fast decision and a long discussion.

1. Switch off the supply and let the box cool.
2. Remove loose mud and debris from the fins with water and a soft brush.
3. Clean the box with a soft cloth or sponge, water and a mild detergent. No solvents, no caustic cleaners, no abrasives.
4. Do not aim a high pressure lance at a gland or a cover joint. Every box, the 316L Power Box included, is IP66 and IP67 and not IP69K: the glands set the limit. Where the luminaire it feeds is pressure washed, the box is placed outside that zone, section 6.1.

CAUTION

Do not open a box to clean it. Nothing inside needs cleaning, and every opening is a gasket that has to seat again. A box is opened for a driver change and for nothing else.

NOTE, 316L AND IRON STAINING

Brown spots on a Power Box are almost always iron picked up from a grinder, a steel brush or a steel bench, not the stainless corroding. Remove them with a stainless cleaner or a passivating paste, never with a steel brush.



The fin field of the DRB-1. This is what has to stay clear

11 Fault finding

Work through this table before reporting a fault. Isolate the supply before any action that involves opening a box. Most driver faults reported to us turn out to be the supply on the wrong driver, the thin pair, or a box in the sun.

Symptom	Applies to	Probable cause	Action
No light, no supply at CON 1	All	Breaker tripped, isolator off, break in cable 1	Check the breaker and the isolator, measure at CON 1
No light, supply present at CON 1, nothing at CON 2	All	Driver failed, or the thin pair open so the driver reads no sensor, or the driver on the wrong supply range	Check the thin pair through to CON 3, check the label against the supply, then replace the driver, section 12.2
No light, output present at CON 2	All	Cable 2 broken or landed wrong, or the luminaire itself	Check cable 2 colour to colour, then the luminaire manual
Driver destroyed at switch on	BLD	400 V between phases on a 90 to 305 V driver	Not a warranty case. Replace with the right driver on the right circuit
Driver does not start on site supply	TLD	110 or 120 V supply below the 180 V input range	The TLD needs 180 V or more; a BLD driver on that circuit
Breaker trips on switch on	All	Too many drivers on one breaker for the inrush, or a bank switched together on a generator	Reduce the number per breaker, change the characteristic, stagger the switching, section 7.3
Residual current device trips	All	Combined leakage current of the circuit, or water in a box	Split the circuit for 0.7 mA per driver; open the box and look
Luminaire dims back by itself	All	Thermal foldback: luminaire fins blocked, or the driver above Tc 105 because the box is in the sun or boxed in	Clear the fins, measure the ambient at the box, move the box
Luminaire dims on hot afternoons only	All	The box ambient above plus 50 in the sun	Shade or relocate the box, section 6.1
Flicker or unstable output	All	Loose terminal, or a 0 to 10 V line picking up interference	Retighten every terminal, separate or shield the control line
Luminaire at partial output	All	Dimming input at a low level, or an NFC setting from a previous project	Check the control signal, read the driver over NFC, section 9.2
Control signal does nothing	All	That protocol is not in this driver, or the capped conductors were mistaken for the control lead	Check the quotation against section 9.2
One module dark on a Two or a Three	DRB-2, DarkLicht	That module's driver failed, or its pair loose at CON 2 or CON 3	Identify the pair by colour, check both ends, replace that driver
Water in the box	All	Glands upward or sideways, a gland without heat shrink, an unused gland open, a cover screw missing	Dry it, replace the driver if it was wet, remount glands down, reseal every gland
Box warm, luminaire fine	All	Normal: the box carries the driver's heat	Nothing, as long as it can be held on a mild day
Early driver failure, repeated	All	The box ambient above plus 50 degrees Celsius, the fins covered, or the box in the engine bay or the hot zone	Measure the ambient at the box in summer. Relocate it, section 6.1
Brown spots on a Power Box	316L	Iron contamination from a grinder or a steel brush	Clean with a stainless cleaner or passivating paste, section 10.3. Not a warranty case
Box came loose	All	Fewer than four lugs, bands not torqued, no retention on a machine	Refit per chapter 6 with a rated safety cable

If the fault is not in this table, or if the action does not resolve it, contact JEL Products with both codes from the driver label and the luminaire label, the box type and position, the date of installation and what you have already checked. Say what the supply measured at CON 1 and whether the box was warm.

12 Repair and spare parts

The remote driver exists to be replaced at ground level without touching the luminaire. That is the one repair this manual describes in full. Everything else on a box is a gland, a gasket, a bracket or a cover, and a driver that is wet or burnt is not repaired.

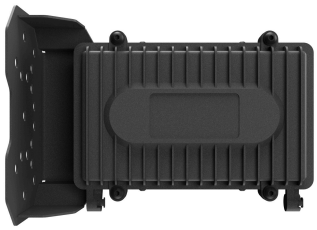
12.1 What is replaceable on site

Part	Reference	Note
Driver	BLD075 to TLD800	Programmed by JEL Products for the luminaire. Quote both codes, and on a multi driver box the driver position
PS PCB	On request	The temperature and dimming board in a multi driver DRB-2
Cable gland	M20 × 1.5, 304 or 316L	With its seal, per cable diameter, section 7.5. Blanking plug for an unused gland
Cover gasket	DRB-1 · DRB-2	Replaced whenever a cover has been off more than a few times, or when it has taken a set
Pole clamp set	DRB-1 · DRB-2	Two brackets and two bands, 60 to 160 mm
Rear mount plate	DRB-1 · DRB-2	For the luminaire bracket, with its keyhole bolts
Safety cable	On request	1 m, rated to the box weight. Not supplied as standard, see section 6.5
Complete box	DRB-1 · DRB-2 · Power Box	Pre-wired, where a box is damaged beyond a gland or a gasket

Drivers are supplied against the luminaire they feed, because the programming is what makes them the right part.

12.2 Driver replacement

1. Isolate the supply and secure it. Verify the box is dead at CON 1 and at CON 2. Let the driver cool.
2. Open the cover and photograph the wiring. Note the ambient: above plus 50 degrees Celsius the position is the fault and the new driver will fail as well.
3. Disconnect the driver at CON 1 and CON 2, per section 7.2, and on a multi driver box at the PS PCB. Note which output pair it fed. Undo the two end lugs and lift it out.
4. Fit the replacement driver of the same type, **programmed for the same luminaire**, Tc label upward, and reconnect per section 7.2 colour to colour. A different driver, or the right driver on the wrong pair, is not permitted.
5. Check the gasket, close the cover to torque, restore the supply and run the checks in section 8.1. Record the replacement with the date and both codes.



The DRB-1 open side: the driver on its end lugs, CON 1 and CON 2 at the gland end

12.3 Returning a driver or a box

1. Contact JEL Products before you send anything. We will tell you whether it is a driver exchange, a gland, or a return.
2. Have both codes ready, plus the box position, the supply measured at CON 1, the ambient at the box, the date of installation and what you have already checked from chapter 11.
3. Pack the driver or the box in its original packaging, cables removed, glands plugged.

WHAT WE LOOK AT ON A RETURN

The driver memory	Over NFC: hours, Tc history, the setting it ran at, and whether it was the driver for that luminaire
The input side	400 V on a BLD, or a surge beyond 10 kV, leaves a signature
The output side	Mains on the output, a short in cable 2, or a paralleled pair
The box	Water, its route in, and the gland it came through

The Tc history settles most warranty questions: a driver that spent its summers above Tc 90 in a box in the sun has a memory of it.

13 Removal and disposal

13.1 Taking a box out of service

1. Isolate the supply and secure it. Verify the box is dead at CON 1 and at CON 2, then disconnect cable 1 and cable 2 and withdraw them through the glands.
2. Plug the glands, so the box stays dry in storage.
3. Release the secondary retention last, not first.
4. Undo the four lug bolts or the clamp bands with the box held throughout; a full DRB-2 is two people.
5. Label the box with the luminaire it fed and its article code before it leaves the site. If it is to be reinstalled, keep the driver in it and pack it in its original box.

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 or 316L box, the brackets and the bands are recyclable materials; the driver and the terminal blocks go to electronic waste. Separate the box from the driver at the recycler rather than in the field. The driver contains no mercury and no lead above the RoHS limits.

Glossary

BLD, TLD, SLK	The Upowertek driver series: 90 to 305 V, 180 to 528 V, and the 1 kW driver
Cable 1, 2, 3	Mains to the box, the driver output to the luminaire, and the multi core output cable of a multi driver box
CON 1, 2, 3	The mains terminals in the box, the output terminals in the box, and the terminals in the luminaire
Constant current	The driver holds the output current; the voltage follows the load. Two luminaires in parallel share the current and both run dark
DALI-2, D4i	Addressable digital lighting control protocols
DRB-1, DRB-2	The JEL driver boxes for one driver to 320 W, and for systems to 2,000 W
Hot zone	The area above plus 50 degrees Celsius around an HT luminaire, where no driver goes
Inrush, T50	The peak current at switch on and the time it stays above half that peak
MCB	Miniature circuit breaker, B, C or D characteristic
NFC	Near field communication, used to read and set the driver through its case without power
NTC	The temperature sensor in the luminaire, read by the driver over the thin pair
Power Box	The 316L driver box, per driver size
PS PCB	The temperature and dimming board in a multi driver DRB-2
Tc	The case temperature of the driver at its marked point, 90 degrees Celsius maximum
Thin pair	The 2 × 0.5 mm² temperature conductors in cable 2
Tray	An open driver plate for a cabinet or a mast head enclosure
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 remote drivers and driver boxes are covered as **components of the luminaires in its product scope**, with all electrical and mechanical variants within the defined type codes, wattages and voltages. The drivers themselves carry the manufacturer's ENEC and CB certification to EN 61347-1 and EN 61347-2-13.

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	2024 to 2026

APPLIED HARMONISED STANDARDS

EN IEC 61347-1 lamp controlgear, general. EN IEC 61347-2-13 LED controlgear. EN IEC 62384 LED driver performance. EN IEC 60598-1 luminaires, general requirements. EN IEC 60529 IP classification. EN IEC 61000-6-2 EMC immunity, industrial. EN IEC 61000-6-4 EMC emission, industrial. EN 55015 and EN 61547 for the drivers.

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.

14.2 Warranty

Part	Term
Driver	5 years with the luminaire, at Tc within the datasheet limit
DRB-1 and DRB-2	5 years, within the ambient of section 6.1
316L Power Box	5 years, on the box, the driver, the glands and the seals
Brackets, clamp set, tray	5 years

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 driver or the box has been installed, operated or maintained contrary to this manual, where the supply was outside the range on the driver label, where mains has been connected to the output, where the temperature pair has been disconnected, where the box has been mounted glands up or in the wash zone, the hot zone, an engine bay or above plus 50 degrees Celsius ambient, where drivers have been paralleled, swapped between luminaire types or fitted with fewer than four lugs, where a gland has been left open, or where a driver other than the one supplied has been fitted.

14.3 Related documents

Document	Where
DRB driver boxes datasheet, v1.1, July 2026	Datasheets page
Upowertek driver datasheets, BLD075 to TLD800, August 2026	On request
Drawings DRB-1 and DRB-2, Power Box V3	On request
Wiring drawings per luminaire family	On request
JEL breaker and inrush test, July 2024	On request
The luminaire manual of each family, chapter 7	Product page of that family
Washdown protocol B5.17 for the 316L Power Box	On request
Signed declaration of conformity	On request

14.4 What this manual replaces

This edition supersedes the four DCbright Operating Instructions Driver NO BOX, Driver Box, Driver Box BLD120 and LIN90-120-HT Driver Box. Where an older document and this manual disagree, this manual applies.

Four points are corrected against those documents: the boxes are **IP66 and IP67**, not IP65; the driver is a **JEL programmed part for one luminaire** and is not interchangeable within a series, where the older documents speak of matching a driver to a "light length"; the twelve drivers, their inrush and breaker figures are stated **per driver in section 3.1**, which no earlier instruction did; and the **multi driver box** of the DarkLicht Two and Three, with its shared temperature sensor and one multi core output cable, is documented for the first time. One point is stated more precisely: the older instructions recommend silicone sealant at the cable entry for a permanent installation, where this manual requires heat shrink tubing and self amalgamating tape over the gland, which can be undone at a driver change and does not hide a loose gland.

> **NOTE**
> If you hold a printed copy, check the revision on the cover against the version on the datasheets page before you rely on a figure. Driver revisions change; the revision letter in section 3.1 is the one this manual was written against.

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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 driver label and the luminaire label.

Datasheets page

The DRB datasheet, the driver datasheets and the current version of this manual.

jelproducts.nl/en/datasheets

DOCUMENT

Number	MAN-DRV-EN
Revision	1
Date	7 September 2026
Language	English
Applies to	BLD075, BLD120, BLD200, BLD240, BLD320, BLD600, SLK1K0, TLD160, TLD320, TLD400, TLD600, TLD800; DRB-1, DRB-2, 316L Power Box, driver tray
Pages	See the footer