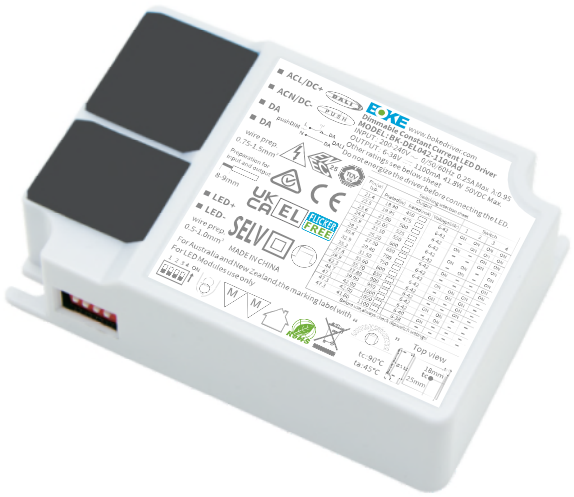
Constant current independent dimmable driver
DEL Series suffix d(DALI-2+pushDIIM)



Features

- Support DALI-2+pushDIM dimming mode
- 16-level current output can be realized through external DIP-switch, easier to adjust the luminaire power
- Soft dimming and flicker-free at any brightness, meets the new requirements of ErP certification
- Using HPC patented technology at any dimming level, the brightness of the lights is the same
- Standby power input<0.5W, meets the ErP requirements of new certification
- High PF, high efficiency, low THD
- Screw-free and pressing type strain relief, easier install
- Independent input and output strain relief, stronger wiring
- Supports 0.75-1.5mm² input wires, stronger wiring
- Intelligent LED hot-plug protection function
- SELV and Class II design, suitable for use outside of the light
- Plassed CE,ENEC,UKCA,RCM,CCC,DALI-2,EL and other certifications
- IP20 protection grade, indoor use
- Nominal life-time up to 100,000 h
- 5-year guarantee

Interfaces

- DALI-2(DALI-2 DT6)
- PUSH(pushDIM)

Functions

- Support central emergency application (dimming normal in DC input)
- Support self-contained emergency application
- Protective features (short-circuit, overload,no-load, hot plug-in protection)

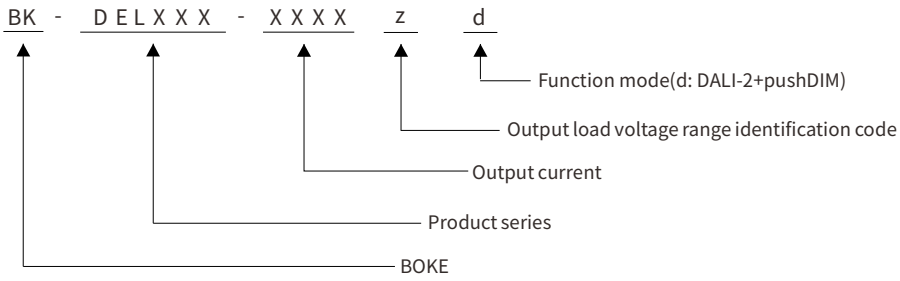
Suitable for lights

- Suitable for lights with independent drivers such as downlights, spotlights, panel lights, etc
- Not suitable for lights with built-in drivers

Typical applications

- LED indoor lighting
- LED office lighting
- LED commercial lighting

Model coding rules of DEL series



Function list

Model	suffix	Wired dimming	
		DALI-2	pushDIM
BK-DEL042	d	√	√

* The description in this specification is only applicable to the products with the suffix d and the model are DEL030,DEL042 and DEL060 .

Model list

Model	Input voltage	Output power	Output voltage	Output current	Dimension	Certifications
BK-DEL042-0800Bd	200-240VAC	42W	6-52/54/60/64/70/76/84VDC	0.25-0.80A	L103*W68.5*H30.5mm	CE, ENEC, UKCA, RCM, CCC, EL, DALI-2

* The description in this specification is only applicable to the products with the suffix d and the model are DEL030,DEL042 and DEL060 .

Technical data

Product model	BK-DEL042-0800Bd	
Output parameters		
Regulation method	Constant Current	
Rated output current range	0.25-0.8A	
Rated output voltage range	6-52/54/60/64/70/76/84VDC	
Rated output power	42W Max	
Output current adjustment	DIP S.W(16 levels)	
Output current ripple LF	±2%	
Output current accuracy	±2%	
Linear regulation	±1%	
Load regulation	±1%	
No load output voltage	100VDC	
Flicker-free(typical)	Flickering percent(IEEE 1789)=0.243%, Flicker index(IEEE 1789)=0.001, Pst LM = 0.048, SVM = 0.001, (The above parameters are obtained from testing the panel lights)	
Input parameters		
Rated input voltage range	200-240VAC 200-240VDC	
Input voltage range	180-264VAC 200-264VDC	
Input votage shock	<380 V AC	
Input current	<0.25A (Rated input voltage)	
Input frequency	0/50/60Hz	
Input PF/Input DF	PF: 0.97, DF: 0.98 ,see the electrical values below for details	
Input THD	6.5% ,see the electrical values below for details	
Efficiency(Max)	90.5% ,see the electrical values below for details	
In-rush current	8A peak ,296us duration(50 % Ipeak), see the description below for details	
Start/Switchover/Turn off	<0.7s(AC start),<0.7s(DC start),<0.3s(AC/DC switchover),<0.5s(Turn off)	
Switching cycles	> 50,000 switching cycles	
Power consumption	Full load(Pin):46.4W, No load(Pno): N/A, On stand-by(Psb) : <0.5W, Network stand-by(Pnet) : N/A	
Safety		
Withstand voltage	I/P-O/P:3750V AC, I/P-DALI: 1500V AC, O/P-DALI: 1500V AC.	
Mains surge capability	L-N:2KV(Performance criterion:A)	
Leakage current	0.41mA (230V AC & Full load)	
Isolation resistance	I/P-O/P:100MΩ/500Vdc/25°C/70% RH	
Control interface		
DALI dimming port	Voltage range: 9.5-22.5V, typical 16V, interface current consumption: 1.8mA	
pushDIM dimming port	Voltage range: 180-264V 47/63Hz	
1-10V 3in1 dimming port	N/A	
Auxiliary power supply	N/A	
Dimming range	3%-100%	
Dimming drive mode	AM(amplitude modulation)	
Emergency support		
Central emergency system	Supported(dimming normal in DC input)	
Self-contained emergency	Supported	
Environment & Life time		
Operating temperature	Ta=-20-45°C	
Case temperature	Tc=90°C	
Operating humidity	5-85% RH, not condensed	
Storage temp./humidity	-40-80°C, 5-85% RH, not condensed	
IP grade	IP20	
MTBF	500,000H,MIL-HDBK-217F(25°C)	
Life-time	Nominal life-time up to 100,000 h, see the description below for details	
Vibration resistant	10~500Hz,5G 12min./1cycle,period for 72min. each along X,Y,Z axes	
Acoustic Noise	<25dB(30cm, Normal operation)	
Environmental protection	RoHS	
Certifications and standards		
Certification	CE, ENEC, UKCA, RCM, CCC, EL, DALI-2	
Safety	EN61347-1, EN61347-2-13, EN62384	
EMC	EN55015, EN61000-3-2 , EN61000-3-3, EN61000-4-2,3,4,5,6,8,11, EN61547	
DALI-2	IEC 62386-101(DALI-2), IEC 62386-102(DALI-2), IEC 62386-207(DALI-2)	
EL	Compatible IEC 61347-2- 13 Annex J , compatible with EN 60598-2-22 and EN 50172	
RF	N/A	

Remarks

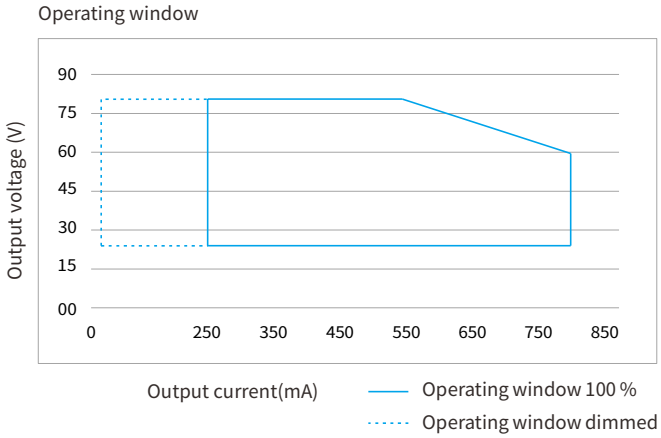
1.By default, all parameter are measured at 230VAC input, full load and 25°C of ambient temperature.

2.The driver can not be installed inside the light. when the driver is used with the light, the EMC of the whole light needs to be tested.

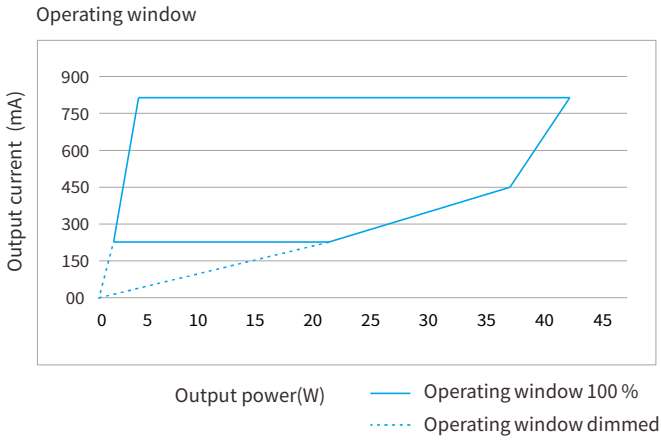
Electrical values

BK-DEL042-0800Bd

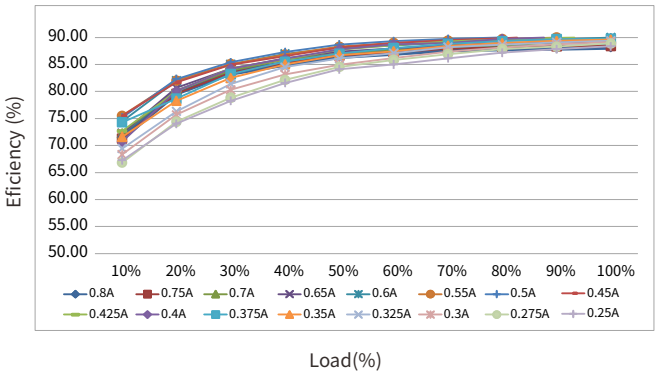
Operating window



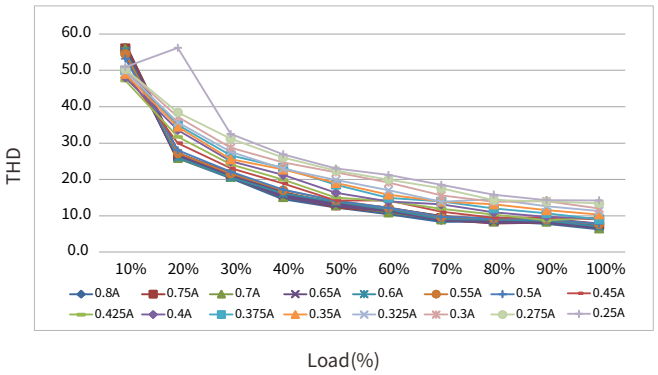
Operating window



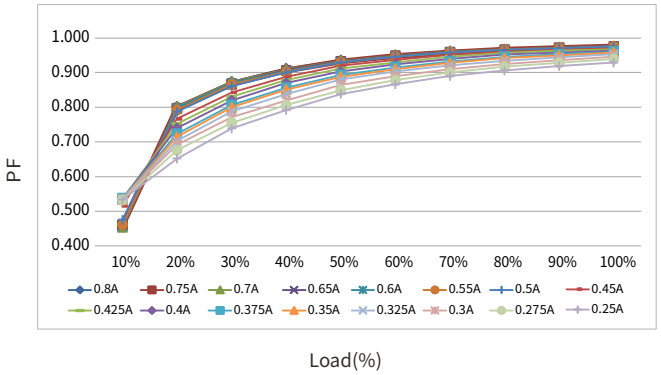
Efficiency vs load



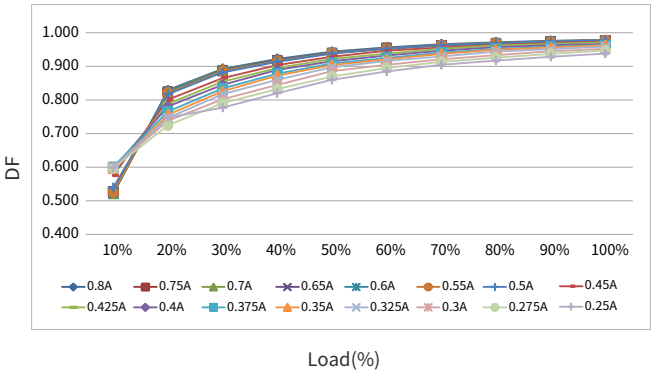
THD vs. Load



Power factor vs. Load

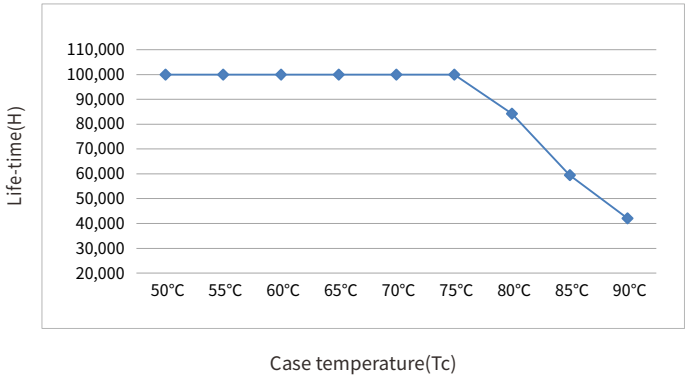


Displacement factor vs. Load



Expected life-time

Life-time vs. case temperature



-The life-time of the LED driver is shown in the figure above (calculated based on the 90% survival rate).

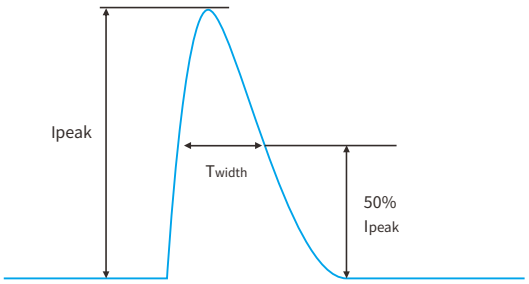
- The relation of tc to ta temperature depends also on the luminaire design.

Surge

Model	Ipeak	Twidth	Condition	Relative number of MCB														
				B10	B13	B16	B20	B25	C10	C13	C16	C20	C25	D10	D13	D16	D20	D25
BK-DEL042-0800Bd	8A	296us	AC 230V,Full load, Cold start,Ta≤30°C, MCB is not installed side by side	24pcs	31pcs	39pcs	48pcs	60pcs	34pcs	44pcs	54pcs	67pcs	84pcs	34pcs	44pcs	54pcs	67pcs	84pcs

Remarks

- The number of drives mounted under different MCBs in the table is the maximum value. Please do not exceed this number during installation.
- Calculation uses typical values from ABB series S200 as a reference.
- Different brands and models of miniature circuit breakers, the number of drives mounted will be slightly different.
- If the ambient temperature of the MCB installation exceeds 30°C or multiple MCBs are installed side by side, the number of drives mounted will be reduced and the calculation needs to be recalculated.
- Electrician's usually consider Type B for household lighting and Type C for commercial lighting application.



Functions

Output short-circuit behaviour

- Output short-circuit will not damage the driver.

After removing the short circuit fault, the driver will automatically resume output.

Output no-load operation

- Output no-load will not damage the driver.

Please turn off the driver first if you need to connect the LED load.

Output overload protection

- The LED driver turns off the output if the output voltage range is exceeded.

The output will be activated again after restart the LED driver .

Output hot plug-in

In the following two cases,the LED driver will automatically turn off the output to protect the LED：

- When the driver is powered on first and the LED is connected later.
- When the driver is powered on,disconnected and connecred again.

The output will be activated again after restart of the LED driver .

Driver restart method

There are two ways to restart the driver:

- Through the AC input:disconnect the AC of the driver and power it again.
- Through dimming interface.

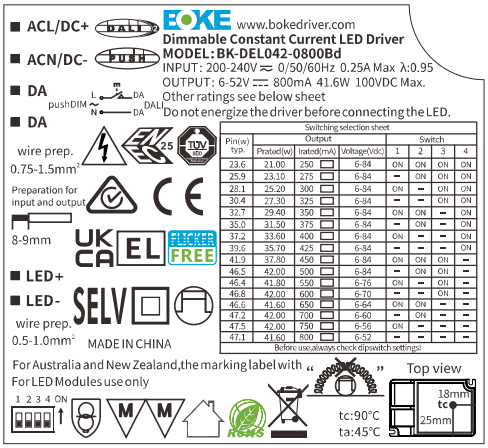
DALI:send “OFF” command first,then send “MAX” command.

pushDIM:short press pushbutton two times,then long press pushbutton.

Insulation between circuits

Isolation	Input	Output	Case	DALI	PUSH
Input	-	Double	Double	Basic	-
Output	Double	-	Basic	Double	Double
Case	Double	Basic	-	Double	Double

Label



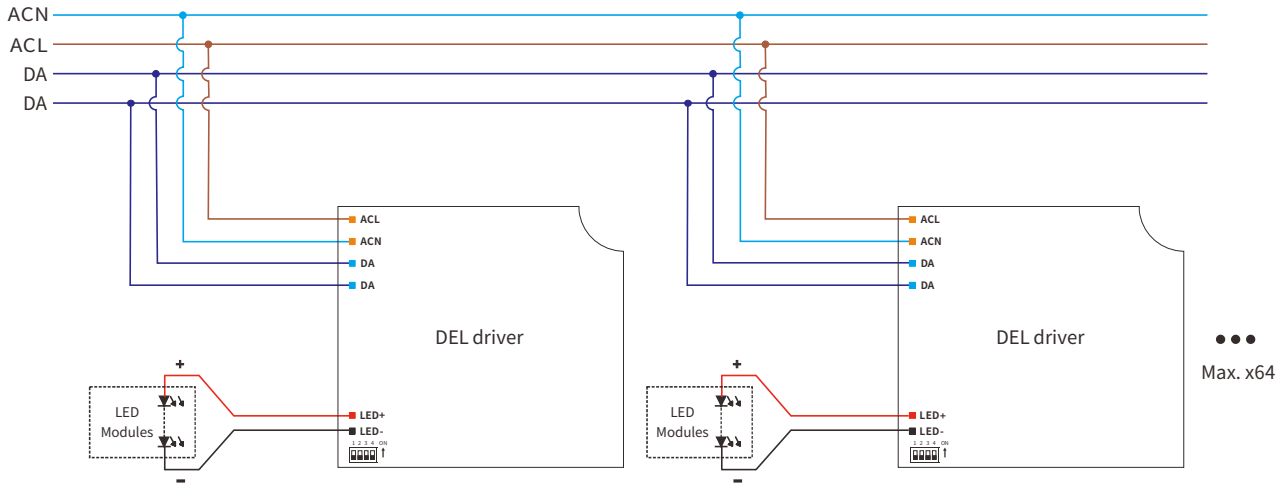
DIP-switch & output current

BK-DEL042-0800Bd

Pin(W) typ.	Output			1	2	3	4
	Prated(w)	Irated(mA)	Voltage(Vdc)				
23.6	21.00	250	6-84	ON	ON	ON	ON
25.9	23.10	275	6-84	--	ON	ON	ON
28.1	25.20	300	6-84	ON	--	ON	ON
30.4	27.30	325	6-84	--	--	ON	ON
32.7	29.40	350	6-84	ON	ON	--	ON
35.0	31.50	375	6-84	--	ON	--	ON
37.2	33.60	400	6-84	ON	--	--	ON
39.6	35.70	425	6-84	--	--	--	ON
41.9	37.80	450	6-84	ON	ON	ON	--
46.5	42.00	500	6-84	--	ON	ON	--
46.4	41.80	550	6-76	ON	--	ON	--
46.8	42.00	600	6-70	--	--	ON	--
46.6	41.60	650	6-64	ON	ON	--	--
47.2	42.00	700	6-60	--	ON	--	--
47.5	42.00	750	6-56	ON	--	--	--
47.1	41.60	800 ★	6-52	--	--	--	--

DALI dimming application

Wiring diagram



Switch to the DALI dimming mode

- After installation according to the wiring diagram of DALI dimming application,the driver will automatically switch to the DALI control mode after receiving any DALI command.

Remarks:

- Standard DALI control line voltage range:9.5V to 22.5V ,type 16V.
- The two DALI control lines polarity-reversible.
- Max. 64 DALI drivers per DALI control line.
- The maximum distance length of the DALI control line is 300m at 2×1.5mm^2.
- DALI bus can be wired together with any mains voltage cables, but separate wiring is recommended.
- The configuration parameters of the driver can be set through the DALI configuration tool or DALI application controller during installation, such as setting device address, group address, power-on level, bus-failure level, scene level, fade time, dimming curve, etc.

Please refer to the table below

Cable size	Distance
2×0.50mm^2	max.100m
2×0.75mm^2	max.150m
2×1.00mm^2	max.200m
⩾2×1.50mm^2	max.300m

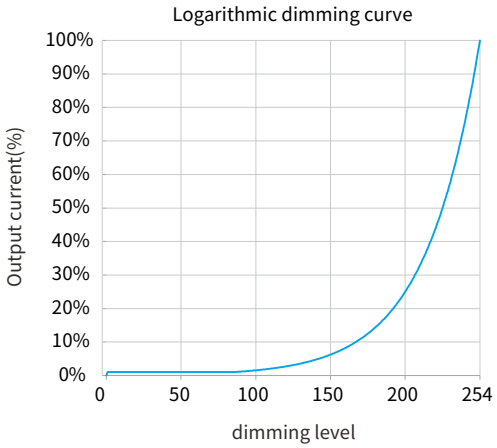
Power-on level :

When the driver is in DALI-2 dimming mode, the factory default level after each power-on is the brightest.

The power-on level can be set through the DALI configuration tool or DALI application controller during installation, and can be set to memory or fixed any brightness (such as off, darkest, 50%, etc.).

Note: The recommended setting for the default factory power-on level of the DALI-2 driver is the brightest in the DALI-2 standard.

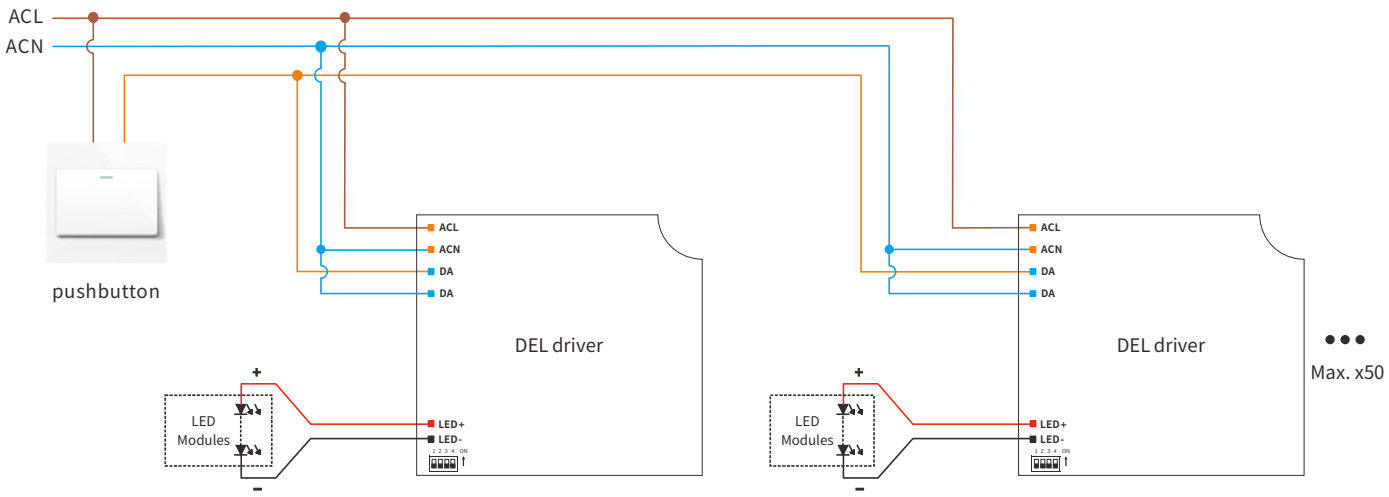
Dimming curve



Remarks: The dimming curve can be selected by DALI configuration. The default is logarithmic dimming curve.

pushDIM dimming application

Wiring diagram



Switch to the dimming mode

- After installation according to the wiring diagram of pushDIM dimming application, short press the pushbutton 1 times or short press the pushbutton 5 times quickly within 3s , the driver will automatically switch to the pushDIM dimming mode.

Remarks:

Max. 50 drivers per pushDIM control line.

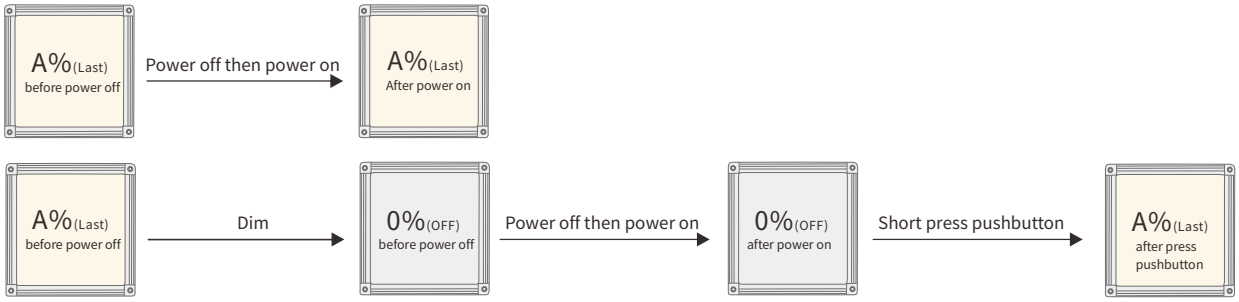
Turn on or turn off:short press pushbutton for 0.2-1s.

Dimming: long press pushbutton for 1-5s.

Power on status: after power on,the light state will be the same as the lighting on state.

If the light is on before power off,the light will be on after power on again,brightness will be the same as the last lighting on brightness.

If the light is off before power off,the light will be off after power on again,short press the pushbutton,then the light will be on,the brightness will be the same as the last brightness.



Multiple lights synchronize control operation

method 1:

Step 1:long press the pushbutton,confirm each light is on.

Step 2:short press the pushbutton,confirm each light is off.

Step 3:long press the pushbutton,confirm each light is from darkest to brightest and all the lights are synchronous.

method 2:

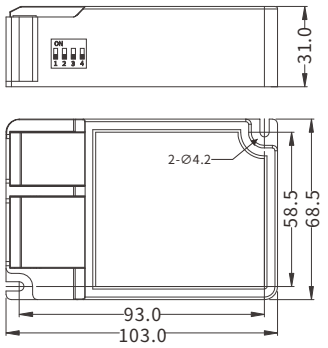
- Long press the pushbutton 15s,all lights output to the brightest state.

Mechanical Specification

Size(Excluding accessories)

Unit:mm

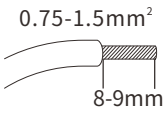
DEL042



INPUT

Numbering	function	colour
1	ACL/DC+	orange
2	ACN/DC-	orange
3	DA	blue
4	DA	blue

Input wire



Installation note

Hot plug-in

- Hot plug-in is not supported due to residual output voltage of > 0 V.
- If a LED load is connected the device has to be restarted.
- Restart can be achieved by re-powering the driver or executing a on/off command (action) through the control interface (DALI, pushDIM)

Wiring guidelines

- All connections must be kept as short as possible to ensure good EMI behaviour.
- Mains leads should be kept apart from LED Driver and other leads (ideally 5 – 10 cm distance)
- Max. lenght of output wires is 2 m.
- Incorrect wiring can damage LED modules.

Mounting screw specifications and torque

- Max. torque at the clamping screw: 0.5 Nm / M4

Replace LED module

1. Mains off
2. Remove LED module
3. Wait for 5 seconds
4. Connect LED module again

Installation requirements

- The driver should be installed in a dry, acid-free, oil-free, fat-free environment.
- The installation ambient temperature of the drive shall not exceed the value of Ta at any time.
- The temperature of the mounting surface of the driver should be lower than 40°C
- The driver should keep a certain distance from the heating stuff (such as the luminaire radiator).
- If the driver is used externally (it needs to be used with the accessories),
  the installation of the driver should also meet the following conditions:
  1.The driver should be a certain distance between the drivers, as shown in Figure 1.
  2.The driver keeps a certain distance from surrounding objects, as shown in Figure 2.
  3.Two power outputs cannot be connected in parallel.

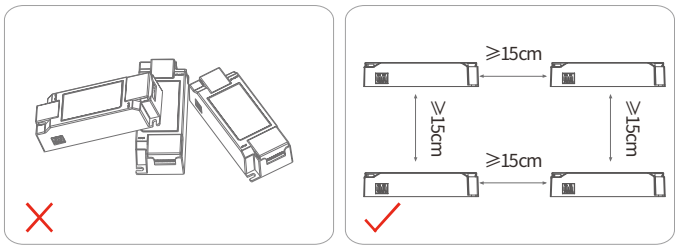


Figure 1

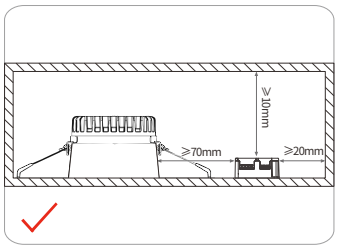
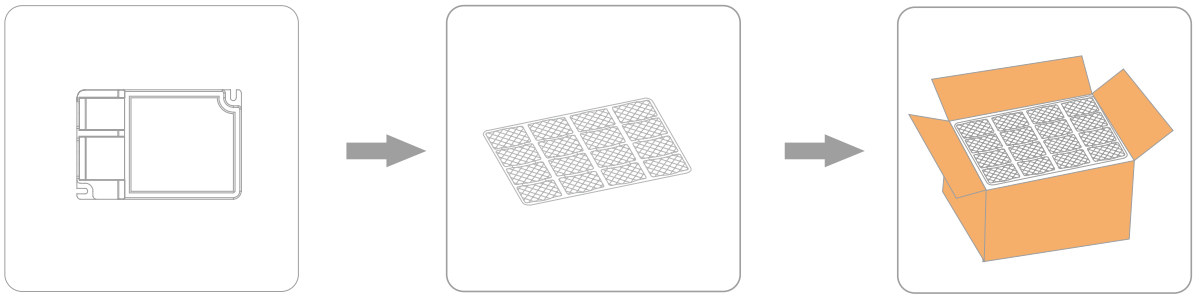


Figure 2

Packaging

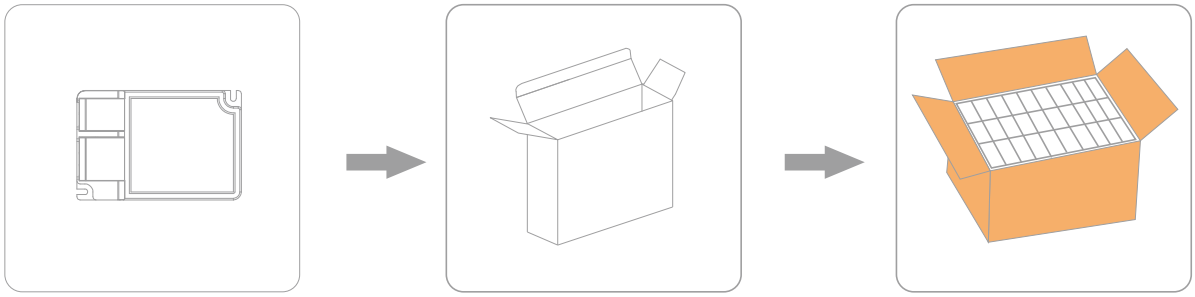
Optional 1: factory default



Product | Blister | 16pcs×4layer=64pcs/CIN 9pcs×4layer=36pcs/CIN

Model	Product size	Weight	Blister size	Carton size	Qty/carton	N.W	G.W
DEL042	L103*W68.5*H31mm	159g	L480*W330*H40mm	L490*W340*H165mm	64pcs	10.2kg	11.2kg

Optional 2:



Product | Packaging | 24pcs×2layer=48pcs/CIN 18pcs×2layer=36pcs/CIN

Model	Product size	Weight	Packaging size	Carton size	Qty/carton	N.W	G.W
DEL042	L103*W68.5*H31mm	159g	L130*W38*H85mm	L415*W330*H190mm	48pcs	7.63kg	9.23kg

Additional information

1. This product can only be used outside the light body, Can not be used inside of the light, and it must be used within the specified working environment.
2. The life and MTBF of the product are for reference only, and do not represent a warranty statement.
3. For more information, please send an email to info@bokedriver.com.